Project 5

Appendices

UPPER GREAT PLAINS REGION
Transmission Planning

JULY 2002

A. GENERATION AND TRANSMISSION FACILITY PARAMETERS

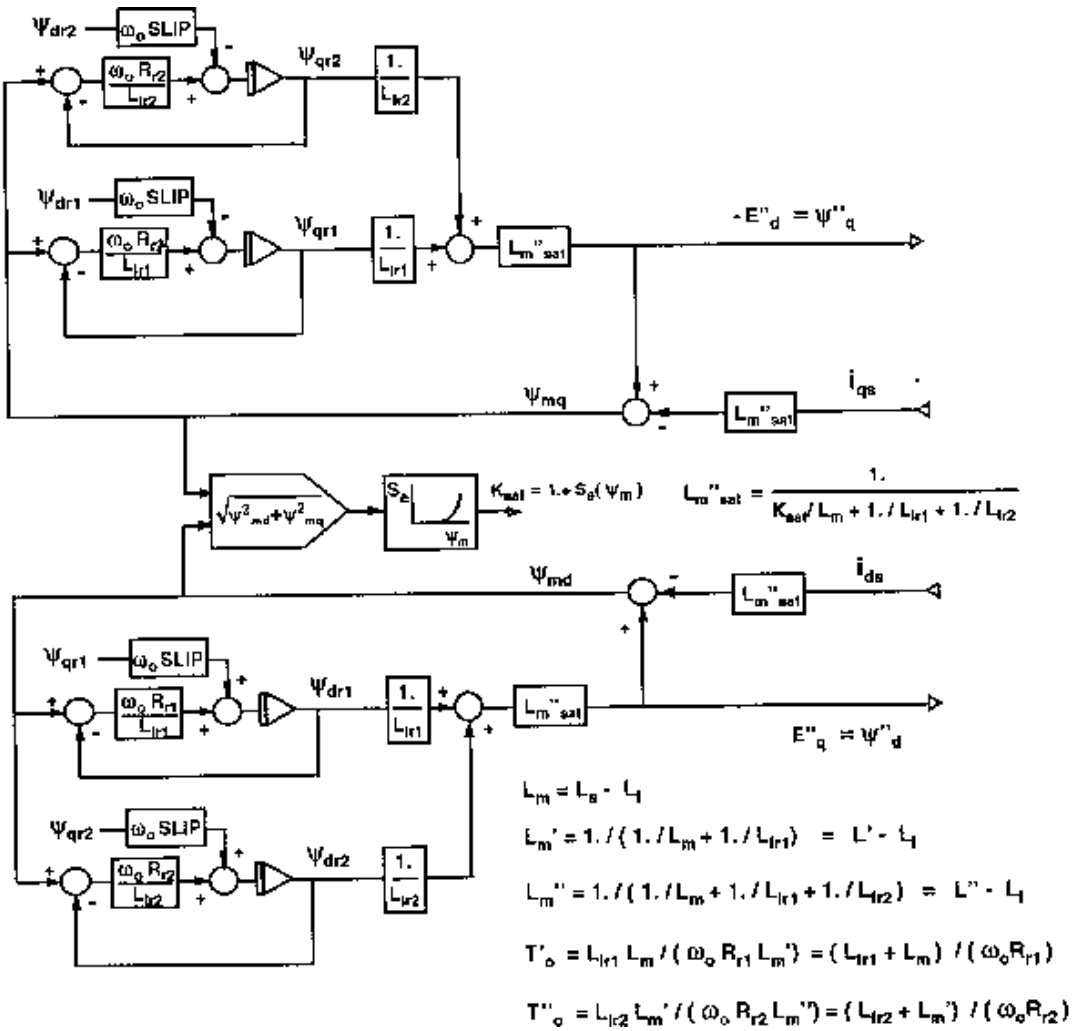
A.1 Generator Parameters

Wind Farm Model

Generator Group (approximately 31 wind turbines at 800 kW each)

Rated kVA	29,330	
Rated kW	24,931	
Max kvar	15,451	(0.85 pf)
Min kvar	-9,158	(-0.95 pf)
Voltage	34,500	
Amps	491	
P.F.	0.85	
Hertz	60	

Dynamic Model: motor1
Description: “Two-cage” or “one-cage” induction machine



Value	*Name*	*EPCL Variable*	*Description*
3.2920	L	ls	Synchronous reactance, pu
0.3001	L'	lp	Transient reactance, pu
0.0063	Ra	ra	Stator resistance, p.u.
1.2116	T'	tpo	Transient rotor time constant, seconds
5.0400	H	h	Inertia constant, sec
0.0200	D	d	Damping factor, p.u.
0.1000	Se1.0	se1	Saturation factor at 1 p.u. flux
0.4000	Se1.2	se2	Saturation factor at 1.2 p.u. flux
0.8000	Vt	vt	Voltage threshold for tripping (default = 0), p.u.
999	Tv	tv	Voltage trip pickup time (default = 999), sec.
0.0	Ft	ft	Frequency threshold for tripping (default = 0), Hz
999	Tf	tf	Frequency trip pickup time (default = 999), sec.
1.2000	Vr	vr	Voltage at which reconnection is permitted (default = 1.2), p.u.
999	Tvr	tvr	Time delay for reconnection (default = 999), sec.
0.5000	Acc	acc	Acceleration factor for initialization

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0.2011  lpp    lpp      Subtransient reactance, pu
0.0907  ll     ll       Stator leakage reactance, pu
0.0300  tppo   tppo     Subtransient rotor time constant, seconds
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B. CATEGORY A (PRE-CONTINGENCY) DATA

Legend for filenames and abbreviations:

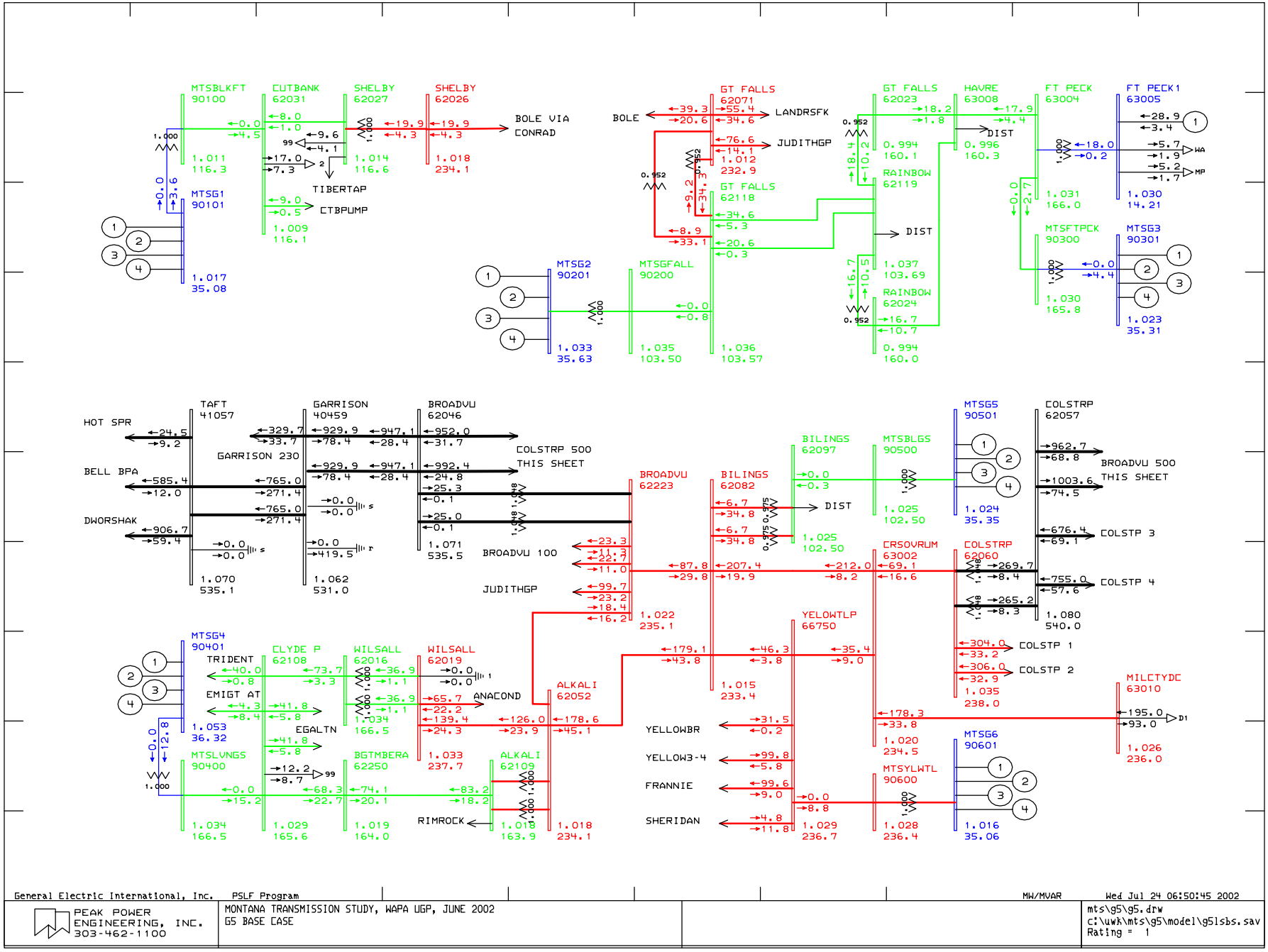
- G1 through G5 - Generator number, synonymous with Project number.
- lsbs - Light Summer Base
- hsbs - Heavy Summer Base
- sp - schedule to Spokane
- slc - schedule to Salt Lake City
- den - schedule to Denver
- lb or let - schedule to N. Lethbridge

Example: A filename or title description containing the string “G1sp_l2” represents Project 1 Line 2 scheduled to Spokane.

Each case includes the following data:

- Power Flow Plots
- Rate Reports
- Voltage Reports
- Area Interchange Summaries
- Area Tie Line Summaries
- Loss Reports

lsbs


MTSBLKFT 90100
CUTBANK 62031
SHELBY 62027
SHELBY 62026
BOLE VIA CONRAD
MTSG1 90101
TIBERTAP
CTBPUMP
BOLE
GT FALLS 62071
LANDRSFK
JUDITHGP
GT FALLS 62118
GT FALLS 62023
HAVRE 63008
DIST
RAINBOW 62119
RAINBOW 62024
FT PECK 63004
FT PECK1 63005
MTSFTPCK 90300
MTSG3 90301
MTSG2 90201
MTSGFALL 90200
TAFT 41057
GARRISON 40459
BROADVU 62046
HOT SPR
BELL BPA
DWORSHAK
GARRISON 230
COLSTRP 500 THIS SHEET
BROADVU 100
JUDITHGP
BROADVU 62223
BILINGS 62082
BILINGS 62097
MTSBLGS 90500
MTSG5 90501
COLSTRP 62057
BROADVU 500 THIS SHEET
COLSTP 3
COLSTP 4
CRSOVRUM 63002
COLSTRP 62060
COLSTP 1
COLSTP 2
YELOWTLP 66750
MILCTYDC 63010
MTSG4 90401
TRIDENT
EMIGT AT
CLYDE P 62108
WILSALL 62016
WILSALL 62019
ANACOND
EGALTN
ALKALI 62052
ALKALI 62109
MTSLVNGS 90400
BGTMBERA 62250
RIMROCK
YELLOWBR
YELLOW3-4
FRANNIE
SHERIDAN
MTSYLWTL 90600
MTSG6 90601
General Electric International, Inc.
PSLF Program
MW/MVAR
Wed Jul 24 06:50:45 2002
PEAK POWER ENGINEERING, INC. 303-462-1100
MONTANA TRANSMISSION STUDY, WAPA UGP, JUNE 2002
G5 BASE CASE
mts\g5\g5.drw
c:\uwk\mts\g5\model\g51sbs.sav
Rating = 1

GENERAL ELECTRIC INTERNATIONAL, INC. - PSLF - V11.1
WESTERN SYSTEMS COORDINATING COUNCIL, WAPA UGP, JUNE 2002

Percent Loading Summary -- using rating 1 - 100.0 percent of rating

----------from----------				---------- to ----------								rate	per cent	
--no.--	--name--	-kv-	-ar-	--no.--	--name--	-kv-	-ar-	ck	---mw---	-mvar-	-mva--	------	loading	
54083	E EDMON9	138	54	55938	STEL TAP	138	54	22	197.9	1.5	197.9	468.6A	169.9	F
54503	STELCOA9	138	54	55938	STEL TAP	138	54	22	-197.3	-0.1	197.3	497.9A	159.8	F
55015	DOME EA9	14	54	55525	163ST2	240	54	T2	-66.0	-5.3	66.2	45.0M	148.3	T
54506	BELLAMY4	240	54	54518	ARGYLL E	240	54	04	81.2	84.2	117.0	240.6A	134.0	T
54062	BARDO 7	138	54	54065	N HOLDE9	138	54	74	82.0	-53.0	97.7	355.6A	111.9	F
54154	E CALGAR	240	54	54161	SARCEE 4	240	54	16	-91.2	365.6	376.8	801.1A	110.9	T
54681	NEVIS 7	138	54	54823	NEVIS 9	138	54	1	33.2	15.6	36.7	33.3M	110.2	F
50459	KIT287	287	50	51075	KIT B5	13	50	5	80.3	23.6	83.7	79.0M	106.0	F
40229	CHIEF JO	14	40	40231	CHIEF JO	230	40	12	144.0	-51.7	153.0	156.5M	103.0	T
40229	CHIEF JO	14	40	40231	CHIEF JO	230	40	34	144.0	-51.7	153.0	156.5M	103.0	T
54290	BALZAC G	138	54	55290	BALZAC 1	14	54	T1	107.1	13.1	107.9	105.0M	102.8	F
41304	COUGAR T	7	40	46211	COUGAR T	115	40	1	28.0	-7.9	29.1	30.0M	100.8	T
54079	MILLAR 7	138	54	55102	MILLARA9	14	54	T2	55.6	29.0	62.7	62.5M	100.4	F

GENERAL ELECTRIC INTERNATIONAL, INC. - PSLF - V12.0
WESTERN SYSTEMS COORDINATING COUNCIL
2002 LS2B APPROVED OPERATING CASE

overvoltage summary > 1.100000

--no.--	--name--	-kv-	(v pu)	--no.--	--name--	-kv-	(v pu)	--no.--	--name--	-kv-	(v pu)
54054	LAMOURE4	240	1.1046	54081	METIS644	240	1.1120	54090	BICKERD4	240	1.1205
54103	DEERLAN4	240	1.1029	54121	ELLERSLI	240	1.1124	54126	WABAMUN4	240	1.1072
54128	SUNDANM9	240	1.1080	54129	E EDMON4	240	1.1084	54130	N CALDE4	240	1.1056
54131	N BARRH4	240	1.1049	54150	LANGDON2	500	1.1250	54329	KEEPHIL4	240	1.1222
54441	946/947X	240	1.1124	54505	JASPER 4	240	1.1078	54506	BELLAMY4	240	1.1213
54509	ARGYLL W	240	1.1206	54512	DOME T29	240	1.1119	54513	LAMBTON4	240	1.1090
54514	CLOVERB4	240	1.1050	54518	ARGYLL E	240	1.1201	54519	CASTLTX2	240	1.1045
54521	PETROLIA	240	1.1140	54524	GENESEE4	240	1.1210	54675	PAINTRT7	240	1.1015
54681	NEVIS 7	138	1.1099	54806	946/947N	240	1.1084	54844	709S702T	138	1.1092
54978	EAST IN4	240	1.1085	55891	904AL TP	240	1.1085	55969	770S701T	138	1.1087
51017	KMS230	230	1.1064								

overvoltage summary > 1.050000

--no.--	--name--	-kv-	(v pu)	--no.--	--name--	-kv-	(v pu)	--no.--	--name--	-kv-	(v pu)
54003	COLINTO9	138	1.0523	54007	BOYLE 9	138	1.0564	54012	FOX CREE	138	1.0666
54013	KAYBOB 9	138	1.0717	54014	GULF RO9	138	1.0819	54015	MTN COA9	138	1.0653
54016	FLATBUS9	138	1.0542	54017	COLD CR7	138	1.0666	54019	WESGEN T	138	1.0531
54020	EDSON A9	138	1.0624	54021	WESGEN 7	138	1.0556	54054	LAMOURE4	240	1.1046
54069	JARROW 9	138	1.0542	54073	IPPL ST9	138	1.0585	54075	SEDGEWI9	138	1.0508
54076	BUFFALO9	138	1.0545	54077	BIGSTON4	240	1.0949	54078	CHEVRON7	138	1.0717
54081	METIS644	240	1.1120	54082	BICKERD7	138	1.0718	54090	BICKERD4	240	1.1205
54097	BIG HOR9	138	1.0675	54103	DEERLAN4	240	1.1029	54111	SANDHIL7	138	1.0794
54121	ELLERSLI	240	1.1124	54125	SUNDANL9	138	1.0654	54126	WABAMUN4	240	1.1072
54128	SUNDANM9	240	1.1080	54129	E EDMON4	240	1.1084	54130	N CALDE4	240	1.1056
54131	N BARRH4	240	1.1049	54134	DALEHUR9	138	1.0656	54139	GAETZ 4	240	1.0751
54141	HIGHVAL9	138	1.0652	54142	WILLESD4	240	1.0883	54144	RED DEE4	240	1.0671
54147	BENALTO4	240	1.0665	54148	E CROSS4	240	1.0574	54150	LANGDON2	500	1.1250
54153	BRAZEAU4	240	1.0977	54155	SAGITAW4	240	1.0591	54157	PEIGAN 4	240	1.0705
54159	N LETHB4	240	1.0856	54200	848S901T	240	1.0730	54232	PANCAN 9	138	1.0792
54233	DOME EM7	138	1.0794	54258	PLAMOND9	138	1.0551	54259	LAC LA 9	138	1.0996
54260	WINEFRE9	138	1.0966	54269	COALSPU7	138	1.0846	54281	MILO 2	240	1.0684
54285	LEISMER9	240	1.0825	54287	GREGG R9	138	1.0959	54298	ALB NEWS	240	1.0502
54302	MARIONA9	138	1.0652	54308	FLATLK-3	138	1.0559	54325	CHEV KG9	138	1.0717
54326	COAL VA9	138	1.0834	54329	KEEPHIL4	240	1.1222	54335	W BROOK4	240	1.0589
54362	EDGERTO7	138	1.0548	54381	FLATLK-1	138	1.0558	54412	BENBOW 9	138	1.0717
54441	946/947X	240	1.1124	54505	JASPER 4	240	1.1078	54506	BELLAMY4	240	1.1213
54509	ARGYLL W	240	1.1206	54512	DOME T29	240	1.1119	54513	LAMBTON4	240	1.1090
54514	CLOVERB4	240	1.1050	54518	ARGYLL E	240	1.1201	54519	CASTLTX2	240	1.1045
54521	PETROLIA	240	1.1140	54524	GENESEE4	240	1.1210	54557	WESLY C4	240	1.0613
54558	WESLY C7	138	1.0651	54559	CARMON 9	138	1.0630	54560	PEACE/29	138	1.0623
54561	DIASHOW7	138	1.0624	54567	FRIEDEN7	138	1.0537	54571	MERCER 9	138	1.0735
54572	MERC TAP	138	1.0738	54576	CRYST L7	138	1.0749	54578	SADHL TP	138	1.0598
54579	SADDLE 9	138	1.0529	54580	FLYSHT/2	138	1.0630	54581	WAP JCT7	138	1.0513
54584	ALBRIGHT	138	1.0569	54585	P&G 7	138	1.0570	54588	BIG MTN7	138	1.0614
54589	DOME CU7	138	1.0736	54590	BRDGE C7	138	1.0619	54593	DONNELL9	138	1.0661
54594	TAP7L487	138	1.0690	54595	TRIANGL7	138	1.0645	54596	VALLEYV9	138	1.0777
54598	BEZANSON	138	1.0756	54599	L. SMOKY	240	1.0645	54600	L.SMOKY7	138	1.0840
54601	STURGEO7	138	1.0838	54606	SIMONET9	138	1.0843	54607	FOXCRK/2	138	1.0643
54608	GOOSE R9	138	1.0662	54612	RUTH LA7	138	1.0925	54613	RUTH LK7	138	1.0929
54618	PARS CR7	138	1.0897	54619	HANGSTO9	138	1.0871	54621	MITS E.4	240	1.0748
54622	MITS E.7	138	1.0980	54623	AEC MILL	138	1.0970	54624	OTAUWAU7	138	1.0978
54632	LOU CR.4	240	1.0638	54633	LOU CR.7	138	1.0596	54634	SARHLK/2	138	1.0532
54636	ESSO JU7	138	1.0543	54637	MORSE RV	138	1.0548	54639	VIRGINI9	138	1.0521
54643	WOLF LK9	138	1.0698	54646	MARG LK4	240	1.0781	54647	MARG LK7	138	1.0829
54648	LACOREY9	138	1.0806	54649	ETHEL L7	138	1.0671	54652	BONNY 9	138	1.0838
54654	BONN SVC	138	1.0838	54655	WHITFISH	240	1.0951	54656	WHITBY 7	138	1.0841
54657	VILNA 9	138	1.0819	54663	IRISH C9	138	1.0616	54665	BUFALOTP	138	1.0545
54666	VERMILO7	138	1.0596	54670	HILL 9	138	1.0685	54675	PAINTRT7	240	1.1015
54680	NEVIS 4	240	1.0776	54681	NEVIS 7	138	1.1099	54685	3HILLS/3	138	1.0615
54691	MICH. C9	138	1.0997	54693	WINT HI9	138	1.0934	54694	BULLPON9	138	1.0872
54700	MCNEILL	138	1.0795	54701	OYEN 7	138	1.0600	54707	SHEER 14	240	1.0545
54709	ANDERSO4	240	1.0547	54710	ANDERSON	138	1.0846	54711	SHEER 24	240	1.0535
54714	JAROW TP	138	1.0542	54715	BAT. RV7	138	1.0809	54721	BAT RV79	240	1.0990
54723	CORDEL 4	240	1.0990	54729	PRIM TAP	138	1.0650	54730	PRIMROSE	138	1.0710
54798	800S701T	138	1.0612	54802	STURGEO9	138	1.0860	54806	946/947N	240	1.1084
54809	732S901T	240	1.0752	54814	717S701T	138	1.0634	54818	VERMILA9	138	1.0803
54819	TER 70A9	138	1.0630	54822	766S901T	240	1.0624	54823	NEVIS 9	138	1.0747
54827	MONITOR9	138	1.0519	54828	767S701T	138	1.0935	54836	MILNERB9	138	1.0720
54838	848S902T	240	1.0734	54840	732S902T	240	1.0517	54844	709S702T	138	1.1092
54847	BAT RV80	240	1.0990	54962	KAYBOBTP	138	1.0717	54978	EAST IN4	240	1.1085
54983	MARION T	138	1.0653	54984	HIGHVL T	138	1.0652	54988	CROSSF T	240	1.0574
54995	W.GRN TP	240	1.0883	55003	SANDYPT9	138	1.0794	55007	ALGAR-39	138	1.0918
55008	MARIANA7	138	1.0931	55072	SYNC_D04	240	1.0652	55073	AURORA 4	240	1.0698

55117	CLAIR L	138	1.0736	55118	POPLAR 7	138	1.0599	55147	MILNERC9	138	1.0825
55226	WABASCA9	240	1.0677	55260	EMP LIQ7	138	1.0774	55272	FIELDGA9	138	1.0534
55280	BRINTNEL	240	1.0629	55352	GRND CTR	138	1.0684	55367	VEGREVL9	138	1.0539
55515	PRIMROSE	138	1.0563	55820	FICKLE 9	138	1.0675	55891	904AL TP	240	1.1085
55909	DALEH TP	138	1.0656	55910	OBED TAP	138	1.0656	55911	EMPLIQTP	138	1.0779
55912	740L JNC	138	1.0846	55913	G.ROBB T	138	1.0825	55924	CH KGT T	138	1.0717
55943	MILO 1	240	1.0684	55969	770S701T	138	1.1087	50010	COM132	132	1.0509
50016	CKY230	230	1.0520	50020	CMS230	230	1.0500	50036	RBW230	230	1.0582
50037	PEM230	230	1.0614	50038	RBW230-1	230	1.0573	50182	ARN132	132	1.0675
50185	ALZ230	230	1.0610	50186	ROS230	230	1.0718	50187	BRT230	230	1.0684
50188	BUT230	230	1.0500	50190	CBN230	230	1.0531	50191	ROS360	360	1.0530
50192	WAH360	360	1.0535	50193	BRT360	360	1.0500	50313	VIT132	132	1.0704
50314	PVO133	132	1.0699	50315	PVO132	132	1.0703	50316	LDY132	132	1.0524
50318	JPT132	132	1.0715	50319	COC132	132	1.0681	50320	HMC132	132	1.0679
50321	PHY132	132	1.0566	50322	CFT132	132	1.0661	50323	DMR132	132	1.0838
50324	PAL132	132	1.0666	50325	GCL132	132	1.0681	50326	NFD132	132	1.0725
50327	ASH132	132	1.0718	50328	PUN132	132	1.0563	50330	LDR132	132	1.0500
50334	KGH132	132	1.0609	50335	UTA132	132	1.0612	50336	PVL132-2	132	1.0732
50337	LDY122	132	1.0712	50338	CMX132	132	1.0578	50339	PVL132	132	1.0732
50342	SCA132	132	1.0500	50343	KSH132-2	132	1.0732	50344	SHA1	132	1.0715
50345	KSH132	132	1.0726	50346	SHA2	132	1.0757	50347	GOW132	132	1.0862
50348	GTP132	132	1.0901	50349	CLD132	132	1.0940	50350	SOO132	132	1.0954
50351	JOR132	132	1.0991	50352	PML132	132	1.0592	50353	WOS132	132	1.0561
50354	GLSTP17	132	1.0748	50355	GLSTP18	132	1.0719	50356	DND132	132	1.0855
50357	LTZ115	132	1.0713	50358	LTZ116	132	1.0713	50359	JHT132	132	1.0500
50377	LDYTP138	132	1.0526	50381	PVLTP116	132	1.0732	50382	HWDTP122	132	1.0716
50383	LDYTP122	132	1.0712	50385	CMXTP102	132	1.0559	50386	CMXTP101	132	1.0598
50387	PVLTP115	132	1.0732	50390	KSHTP11	132	1.0728	50391	KSHTP14	132	1.0735
50393	SHATP10	132	1.0716	50394	SHATP14	132	1.0757	50395	SALTP17	132	1.0733
50396	SALTP18	132	1.0733	50399	LTZTP115	132	1.0713	50400	LTZTP116	132	1.0713
50403	CMX132-2	132	1.0543	50460	KMO287	287	1.0539	50463	SKA500	500	1.0502
50545	BLW230	230	1.0703	50546	SCK230	230	1.0657	50547	HMH230	230	1.0629
50548	BLM230	230	1.0525	50549	QNT230	230	1.0518	50550	QRP230	230	1.0700
50551	TLR230	230	1.0523	50553	BCR230	230	1.0523	50554	RBF230	230	1.0714
50556	LAP230	230	1.0501	50557	SNK230	230	1.0517	50560	KDS500	500	1.0565
50562	GLN500	500	1.0556	50677	MCK138	138	1.0538	50678	AVO138	138	1.0559
50679	BLU138	138	1.0629	50680	VLM138	138	1.0694	50686	SCO138	138	1.0688
50687	ABA138	138	1.0686	50701	REV500	500	1.0500	50729	PRI138TP	138	1.0687
50782	CBK230	230	1.0502	50783	SEL230	230	1.0534	50785	SEV230	230	1.0519
50786	INV230	230	1.0514	50789	AAL230	230	1.0506	50791	CBK500	500	1.0802
50792	SEL500	500	1.0500	50899	ABA138TP	138	1.0686	50913	HWD132-2	132	1.0694
50914	HWDTP112	132	1.0694	50922	DNDTAP	132	1.0861	50923	HSY-PH	132	1.0904
50924	ESQ-PH	132	1.0855	50928	SCG IPP	132	1.0500	50932	IPH132	132	1.0679
50933	JUL132	132	1.0578	50934	JULTP130	132	1.0609	51017	KMS230	230	1.1064
51019	OYR132B1	132	1.0540	51020	OYR132B2	132	1.0563	51021	OYR T101	132	1.0545
51022	OYR T119	132	1.0570	51024	QLC132B1	132	1.0757	51025	QLC132B2	132	1.0756
51040	ICG132	132	1.0500	51045	ALH230	230	1.0547	51051	PGS132	132	1.0699
51052	PGS-105T	132	1.0699	51053	PGS-114T	132	1.0699	60085	BRIDGER	345	1.0500
60240	MIDPOINT	500	1.0630	62012	TOWN2	500	1.0852	62013	TOWN1	500	1.0852
62033	ANA BPA	115	1.0512	62046	BROADVU	500	1.0706	62053	BROADV&2	500	1.0634
62054	BROADV&1	500	1.0641	62057	COLSTRP	500	1.0800	40045	ALLSTON	500	1.0769
40051	ALVEY	500	1.0813	40061	ASHE	500	1.0800	41184	BALD MT	115	1.0514
40091	BELL BPA	500	1.0511	40111	BIG EDDY	500	1.0803	43049	BOARD F	500	1.0800
47013	BRIDGPRT	115	1.0548	40155	BUCKLEY	500	1.0832	45029	BURNS	500	1.0668
45035	CAPTJACK	500	1.0755	46209	CARMEN	115	1.0524	42315	CASCADEP	115	1.0582
41311	CELILO1	500	1.0801	41312	CELILO2	500	1.0801	40233	CHIEF JO	500	1.0800
42316	CLE ELUM	115	1.0586	40269	CONNEL T	115	1.0510	40271	CONNELL	115	1.0541
40287	COULEE	500	1.0810	40302	COVINGT4	500	1.0770	40306	COVINGT5	500	1.0775
43123	COYOTE	500	1.0834	40323	CUSTER W	500	1.0538	45095	DIXONVLE	500	1.0779
40369	DWORSHAK	500	1.0722	42395	EASTON	115	1.0601	40381	ECHOLAKE	500	1.0825
40451	GAR1EAST	500	1.0817	40453	GAR2EAST	500	1.0817	40459	GARRISON	500	1.0613
40485	GREEN PT	115	1.0520	40489	GRIZZLY	500	1.0725	40499	HANFORD	500	1.0872
47165	HANLY R1	115	1.0509	40517	HATTON T	115	1.0522	40521	HATWAI	500	1.0739
45137	HERMIST	230	1.0509	41212	HILLS CR	115	1.0500	40553	HOT SPR	500	1.0641
42405	HYAK	115	1.0609	40585	JOHN DAY	500	1.0800	40601	KEELER	500	1.0758
45262	KFALLS	500	1.0794	42411	KITTITAS	115	1.0609	40629	LANE	500	1.0717
40665	LIT GOOS	500	1.0805	40679	LOW GRAN	500	1.0800	40683	LOW MON	500	1.0800
40687	MALIN	500	1.0736	40693	MAPLE VL	500	1.0842	40699	MARION	500	1.0807
40711	MCLOUGLN	500	1.0802	40721	MCNARY	345	1.0513	40723	MCNARY	500	1.0815
45197	MERIDINP	500	1.0798	40749	MONROE	500	1.0787	42429	NCLE ELM	115	1.0582
40797	OLYMPIA	500	1.0799	40809	OSTRNDER	500	1.0796	40821	PAUL	500	1.0800
40827	PEARL	500	1.0798	40837	PONDROSA	500	1.0761	40869	RAVER	500	1.0806
40887	RINGOLD	115	1.0500	43485	ROUND BU	500	1.0696	40913	SACJAWEA	500	1.0813
40917	SACJWA T	500	1.0817	40941	SANTIAM	500	1.0804	40949	SATSOP	500	1.0820
40957	SCHULTZ	500	1.0926	40973	SICKLER	500	1.0842	40989	SLATT	500	1.0825
41043	SUMMER L	500	1.0736	45289	SWIFT	230	1.0500	41051	TACOMA	500	1.0815
41057	TAFT	500	1.0697	41095	TROUTDAL	500	1.0825	41103	UNDRWOOD	115	1.0513
41113	VANTAGE	500	1.0905	47099	WELLS	115	1.0623	42467	WOLDALE	115	1.0597
42314	X-POINT	200	1.0597	65510	EMERY	345	1.0500	64074	MILLERS	120	1.0556
64165	SQAW VLY	120	1.0605	64182	SANDIA	120	1.0555	64229	SUMMIT 2	115	1.0507
52226	PRI138	138	1.0696	52229	KER138	138	1.0766	52230	HED138	138	1.0745
52291	DKL138	138	1.0582	52300	LEE138T3	138	1.0580	52301	LEE138T4	138	1.0580

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  52302 LEE138C   138 1.0580    52303 JOR138TP  138 1.0576    52304 DGB138    138 1.0568
  52306 SEX138    138 1.0583    52307 GLE138    138 1.0584    52308 REC138    138 1.0587
  52309 SAU138    138 1.0572    52310 SPR138TP  138 1.0572    52313 HOL138    138 1.0571
  52314 OKM138    138 1.0564    52319 JOR138    138 1.0574    52426 MAS138    138 1.0745
  52809 LEE-T3    230 1.0588    52810 LEE-T4A   230 1.0581    52811 LEE-T4B   230 1.0599
  52812 LEE-T4C   230 1.0585    52813 LEE-T4D   230 1.0586    52815 PRI-T2    138 1.0729


    undervoltage summary < 0.900000
--no.-- --name-- -kv- (v pu)  --no.-- --name-- -kv- (v pu)  --no.-- --name-- -kv- (v pu)



    undervoltage summary < 0.950000
--no.-- --name-- -kv- (v pu)  --no.-- --name-- -kv- (v pu)  --no.-- --name-- -kv- (v pu)

  54551 RING CK7  138 0.9484    54796 791S701T  138 0.9196    54835 791S702T  138 0.9260
  50781 NTL VR    138 0.9447
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GENERAL ELECTRIC INTERNATIONAL, INC. - PSLF - V12.0
WESTERN SYSTEMS COORDINATING COUNCIL
2002 LS2B APPROVED OPERATING CASE

		generation capacity	generation on-line	--- load categories ---- power	current	imped.	shunt	-- svd --	net inter	losses	slack bus
area name	ALBERTA										
	mw	10743.6	6887.3	6274.4	0.0	0.0	0.0	0.0	200.4	412.4	37.5
54	mvar	4941.5	852.3	1997.1	0.0	0.0	-21.7	-1195.6	-19.2	91.8	20.4
area name	B.C.HYDRO										
	mw	14043.0	8254.7	6035.1	0.0	0.0	0.0	0.0	1799.8	419.8	260.9
50	mvar	6475.0	225.2	2359.8	0.0	0.0	2924.0	2703.5	-386.1	-7376.0	1.1
area name	IDAHO										
	mw	4676.4	3192.7	1955.0	0.0	0.0	0.0	0.0	1066.3	171.4	177.3
60	mvar	2192.5	558.8	501.3	0.0	0.0	-96.2	0.0	-377.3	531.0	25.7
area name	MONTANA										
	mw	3502.2	3004.4	1207.7	0.0	0.0	0.4	0.0	1700.6	95.7	736.4
62	mvar	1309.0	404.9	524.8	0.0	0.0	-121.3	26.4	-444.0	419.0	152.8
area name	NORTHWEST										
	mw	43404.3	17473.9	16651.6	0.0	0.0	0.0	0.0	253.5	568.8	579.5
40	mvar	15534.6	198.7	5157.0	0.0	0.0	-1726.4	2143.4	1169.1	-6544.3	-308.9
area name	PACE										
	mw	6242.0	5528.2	4750.0	0.0	0.0	0.0	0.0	589.7	188.5	77.2
65	mvar	3201.9	530.2	1528.0	0.0	0.0	-528.2	0.0	-173.8	-295.8	12.6
area name	PSCOLORADO										
	mw	5792.0	4234.7	4858.1	0.0	0.0	0.0	0.0	-744.4	121.0	102.7
70	mvar	3667.3	621.6	1835.0	0.0	0.0	0.0	-1397.7	49.8	134.4	3.8
area name	SIERRA										
	mw	1901.7	1069.7	1075.2	0.0	0.0	0.0	0.0	-36.3	30.8	99.7
64	mvar	925.4	-25.6	280.4	0.0	0.0	-158.5	73.9	16.2	-237.5	7.8
area name	W KOOTENAY										
	mw	763.5	498.0	486.1	0.0	0.0	0.0	0.0	0.4	11.5	98.0
52	mvar	450.0	8.4	160.7	0.0	0.0	-79.2	-71.9	-8.8	7.6	-3.5
area name	WAPA R.M.										
	mw	6091.6	3956.3	2784.2	0.0	0.0	0.0	0.0	1050.4	121.7	411.4
73	mvar	2883.8	-184.9	950.8	0.0	0.0	-299.3	-177.1	-206.0	-453.5	16.2
area name	WAPA U.M.										
	mw	61.8	28.9	-120.2	0.0	0.0	0.0	0.0	140.8	8.3	28.9
63	mvar	34.0	1.8	117.5	0.0	0.0	-79.0	4.5	-5.8	-35.4	1.8
TOTL	mw	97222.1	54128.8	45957.1	0.0	0.0	0.4	0.0	6021.3	2150.0	
	mvar	41615.0	3191.5	15412.5	0.0	0.0	-185.8	2109.5	-386.0	-13758.7	

Area Interchange Summary

		mw	mvar
FROM AREA	54 ALBERTA		
TO AREA	50 B.C.HYDRO	200.4	-19.2
TOTAL		200.4	-19.2

FROM AREA	50 B.C.HYDRO	mw	mvar
TO AREA	54 ALBERTA	-200.4	19.2
TO AREA	40 NORTHWEST	2000.7	-414.2
TO AREA	52 W KOOTENAY	-0.4	8.8
TOTAL		1799.8	-386.1
FROM AREA	60 IDAHO	mw	mvar
TO AREA	40 NORTHWEST	948.9	-336.3
TO AREA	65 PACE	249.9	-23.4
TO AREA	64 SIERRA	-132.6	-17.5
TOTAL		1066.3	-377.3
FROM AREA	62 MONTANA	mw	mvar
TO AREA	40 NORTHWEST	1784.2	-451.3
TO AREA	65 PACE	21.7	4.7
TO AREA	63 WAPA U.M.	-105.3	2.6
TOTAL		1700.6	-444.0
FROM AREA	40 NORTHWEST	mw	mvar
TO AREA	50 B.C.HYDRO	-2000.7	414.2
TO AREA	60 IDAHO	-948.9	336.3
TO AREA	26 LADWP	1956.0	411.8
TO AREA	62 MONTANA	-1784.2	451.3
TO AREA	30 PG AND E	2897.8	-424.5
TO AREA	64 SIERRA	133.4	-20.1
TOTAL		253.5	1169.1
FROM AREA	65 PACE	mw	mvar
TO AREA	14 ARIZONA	270.5	36.8
TO AREA	60 IDAHO	-249.9	23.4
TO AREA	26 LADWP	66.9	-133.0
TO AREA	62 MONTANA	-21.7	-4.7
TO AREA	18 NEVADA	154.8	-81.3
TO AREA	64 SIERRA	23.7	9.1
TO AREA	19 WAPA L.C.	177.1	-26.4
TO AREA	73 WAPA R.M.	168.4	2.3
TOTAL		589.7	-173.8
FROM AREA	70 PSCOLORADO	mw	mvar
TO AREA	73 WAPA R.M.	-744.4	49.8
TOTAL		-744.4	49.8
FROM AREA	64 SIERRA	mw	mvar
TO AREA	60 IDAHO	132.6	17.5
TO AREA	26 LADWP	-30.7	6.3
TO AREA	40 NORTHWEST	-133.4	20.1
TO AREA	65 PACE	-23.7	-9.1
TO AREA	30 PG AND E	6.2	-15.5
TO AREA	24 SOCALIF	12.9	-3.1
TOTAL		-36.3	16.2
FROM AREA	52 W KOOTENAY	mw	mvar
TO AREA	50 B.C.HYDRO	0.4	-8.8
TOTAL		0.4	-8.8
FROM AREA	73 WAPA R.M.	mw	mvar
TO AREA	10 NEW MEXICO	334.8	-92.9
TO AREA	65 PACE	-168.4	-2.3
TO AREA	70 PSCOLORADO	744.4	-49.8
TO AREA	19 WAPA L.C.	175.1	-64.2
TO AREA	63 WAPA U.M.	-35.5	3.2

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  TOTAL                                          1050.4     -206.0

FROM AREA   63 WAPA U.M.                           mw        mvar
  TO AREA   62 MONTANA                           105.3       -2.6
  TO AREA   73 WAPA R.M.                          35.5       -3.2
  TOTAL                                          140.8       -5.8
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AREA TIE LINE SUMMARY

GENERAL ELECTRIC INTERNATIONAL, INC. - PSLF - V12.0
WESTERN SYSTEMS COORDINATING COUNCIL
2002 LS2B APPROVED OPERATING CASE

--no.--	--name--	-kv-	--no.--	--name--	-kv-	ck	---mw----	---mvar--	meter
54150	LANGDON2	500	50791	CBK500	500	1	193.16	4.17	f
54205	COLEMAN7	138	50776	NTL138	138	1	6.34	-20.67	t
54273	POCATER7	138	50830	FRO T274	138	1	0.92	-2.70	t
from area 54 to area 50 B.C.HYDRO							200.41	-19.20	
Total from area 54 ALBERTA							200.41	-19.20	

---------from--------			--------- to --------						
--no.--	--name--	-kv-	--no.--	--name--	-kv-	ck	---mw----	---mvar--	meter
62004	ANACOND	230	40457	GARRISON	230	1	-80.48	6.94	f
62004	ANACOND	230	40457	GARRISON	230	2	-87.58	3.85	f
62009	RATTLE S	161	40867	RATTLE S	230	1	-63.16	-22.36	t
62012	TOWN2	500	40453	GAR2EAST	500	2	930.26	-199.40	t
62013	TOWN1	500	40451	GAR1EAST	500	1	930.26	-199.40	t
62066	KERR	115	40391	ELMO	115	1	15.82	-22.16	f
62072	OVANDO	230	40457	GARRISON	230	1	-48.80	11.23	t
62072	OVANDO	230	40551	HOT SPR	230	1	94.14	6.41	t
62085	CROWCR B	115	48055	BURKAVAB	115	1	45.54	-18.10	t
62086	THOMSON	115	48053	BURKAVAA	115	1	48.17	-18.31	t
from area 62 to area 40 NORTHWEST							1784.16	-451.31	
62030	PTRSNFLT	230	65025	AMPS	230	1	69.42	12.47	t
62045	BLGS PHA	230	66750	YELOWTLP	230	1	-46.01	-5.99	t
62061	RMRK PHA	161	66755	YELOWTLP	161	1	-22.96	-5.87	f
62084	DILLON S	161	65155	BIGGRASS	161	1	21.27	4.09	t
from area 62 to area 65 PACE							21.71	4.70	
62023	GT FALLS	161	63008	HAVRE	161	1	18.48	-10.61	f
62024	RAINBOW	161	63015	VERONA	161	1	16.74	-10.83	f
62027	SHELBY	115	63014	TIBERTAP	115	1	2.16	0.14	f
62051	HARDIN	230	63002	CRSOVRUM	230	1	69.16	16.54	t
62056	HUNTLEY	230	63002	CRSOVRUM	230	1	-211.84	7.35	t
from area 62 to area 63 WAPA U.M.							-105.30	2.58	
Total from area 62 MONTANA							1700.57	-444.02	

---------from--------			--------- to --------						
--no.--	--name--	-kv-	--no.--	--name--	-kv-	ck	---mw----	---mvar--	meter
40145	BOUNDARY	230	50822	NLYPHS	230	1	-239.74	2.37	f
40323	CUSTER W	500	50194	ING500	500	1	-887.85	207.14	t
40323	CUSTER W	500	50194	ING500	500	2	-873.08	204.67	t
from area 40 to area 50 B.C.HYDRO							-2000.67	414.18	
45029	BURNS	500	60240	MIDPOINT	500	1	-995.66	360.71	t
45103	ENTERPRS	230	60150	HELLSCYN	230	1	-19.06	-13.65	f
40507	HARNEY	115	61826	HINES	115	1	-15.61	10.68	f
40621	LAGRANDE	230	60192	LADD	230	1	9.25	-10.91	f
48197	LOLO	230	60278	IMNAHA	230	1	72.13	-10.49	t
from area 40 to area 60 IDAHO							-948.94	336.34	
41311	CELILO1	500	26097	SYLMAR1	230	1	388.82	62.88	f
41313	CELILO3	230	26098	SYLMAR3	230	1	589.18	142.96	f
41312	CELILO2	500	26099	SYLMAR2	230	1	388.82	62.86	f
41314	CELILO4	230	26100	SYLMAR4	230	1	589.18	143.08	f
from area 40 to area 26 LADWP							1956.00	411.78	
48053	BURKAVAA	115	62086	THOMSON	115	1	-48.17	18.31	f
48055	BURKAVAB	115	62085	CROWCR B	115	1	-45.54	18.10	f
40391	ELMO	115	62066	KERR	115	1	-15.82	22.16	t
40451	GAR1EAST	500	62013	TOWN1	500	1	-930.26	199.40	f
40453	GAR2EAST	500	62012	TOWN2	500	2	-930.26	199.40	f
40457	GARRISON	230	62072	OVANDO	230	1	48.80	-11.23	f
40457	GARRISON	230	62004	ANACOND	230	1	80.48	-6.94	t
40457	GARRISON	230	62004	ANACOND	230	2	87.58	-3.85	t
40551	HOT SPR	230	62072	OVANDO	230	1	-94.14	-6.41	f
40867	RATTLE S	230	62009	RATTLE S	161	1	63.16	22.36	f
from area 40 to area 62 MONTANA							-1784.16	451.31	
45035	CAPTJACK	500	30020	OLINDA	500	1	1067.90	-144.52	f
45087	DELTA	115	31468	CASCADE	115	1	71.13	-19.39	f
40687	MALIN	500	30005	ROUND MT	500	1	875.77	-122.30	f
40687	MALIN	500	30005	ROUND MT	500	2	883.03	-138.25	f

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from area  40 to area  30 PG AND E                              2897.83   -424.45

   40537 HIL TOP   230        64058 HIL TOP   345  1             133.44    -20.10   f
from area  40 to area  64 SIERRA                                 133.44    -20.10

Total from area  40 NORTHWEST                                    253.50   1169.05

 ---------from--------      --------- to --------
 --no.-- --name-- -kv-      --no.-- --name-- -kv- ck          ---mw---- ---mvar-- meter

   66235 PINTO PS  345        14101 FOURCORN  345  1             270.45     36.79   t
from area  65 to area  14 ARIZONA                                270.45     36.79

   65075 ANTLOPE   230        60073 BRADY     230  1              35.55    -19.18   f
   65135 BENLOMND  345        60060 BORAH     345  1             -10.57     94.46   t
   65220 BRIDGER   230        60085 BRIDGER   345  1              -5.29     -4.20   t
   65220 BRIDGER   230        60085 BRIDGER   345  2              -5.38     -4.27   t
   65220 BRIDGER   230        60085 BRIDGER   345  3              -5.29     -4.20   t
   65665 GOSHEN    345        60085 BRIDGER   345  1            -606.31    -57.46   f
   65665 GOSHEN    345        60190 KINPORT   345  1             306.99      2.16   t
   65670 GOSHEN    161        60030 BLACKFT   161  1              81.95     -2.31   f
   65920 MALAD     138        60020 AMFLS     138  1             -19.95      0.72   t
   66565 TREASTON  230        60073 BRADY     230  1             -21.63     17.73   t
from area  65 to area  60 IDAHO                                 -249.93     23.45

   65995 MONA      345        26043 INTERMT   345  1              33.46    -66.48   f
   65995 MONA      345        26043 INTERMT   345  2              33.46    -66.48   f
from area  65 to area  26 LADWP                                   66.93   -132.96

   65025 AMPS      230        62030 PTRSNFLT  230  1             -69.42    -12.47   f
   65155 BIGGRASS  161        62084 DILLON S  161  1             -21.27     -4.09   f
   66750 YELOWTLP  230        62045 BLGS PHA  230  1              46.01      5.99   f
   66755 YELOWTLP  161        62061 RMRK PHA  161  1              22.96      5.87   t
from area  65 to area  62 MONTANA                                -21.71     -4.70

   66280 REDBUTTE  345        18002 HA PS     345  1             154.76    -81.31   f
from area  65 to area  18 NEVADA                                 154.76    -81.31

   66210 PAVANT    230        64124 UTAH-NEV  230  1              23.74      9.12   t
from area  65 to area  64 SIERRA                                  23.74      9.12

   66355 SIGURDPS  230        79031 GLENCANY  230  1             177.11    -26.45   t
from area  65 to area  19 WAPA L.C.                              177.11    -26.45

   65060 ANT MINE  230        73276 TEKLA     230  1              36.54     12.75   f
   65085 ASHLEY    138        79067 VERNAL    138  1             -47.98      5.37   t
   65192 BONANZA   138        79067 VERNAL    138  1              48.34     -2.78   t
   65193 BONANZA   345        79005 BEARS     345  1            -187.44    -11.13   f
   65305 CASPERPP  115        73167 REFNRYTP  115  1             -38.85     -0.18   f
   65305 CASPERPP  115        73042 CASPERLM  115  1              -0.02     -8.25   t
   65420 DAVEJOHN  230        73107 LAR.RIVR  230  1              84.19    -20.15   f
   65420 DAVEJOHN  230        73190 STEGALL   230  1              88.41    -18.23   f
   65425 DAVEJOHN  115        73070 GLENRCKN  115  1              70.85     -2.91   f
   65425 DAVEJOHN  115        73071 GLENRCKS  115  1              80.84     -0.09   f
   65565 FLAMGORG  230        79026 FLAMGORG  138  1             -52.19      9.17   f
   65565 FLAMGORG  230        79026 FLAMGORG  138  2             -52.19      9.17   f
   66278 RANGELY   138        79001 ARTESIA   138  1              -5.64     -6.18   f
   66278 RANGELY   138        79046 MEEKER    138  1              18.46     -4.80   f
   66305 RIVERTON  230        73170 RIVERTON  115  1               4.60      5.21   f
   66535 THERMOPL  230        73197 THERMOPL  115  1               2.59      5.93   t
   66540 THERPACE  115        73197 THERMOPL  115  1               6.82      4.38   t
   66720 WORLAND   115        73222 WORLANTP  115  1              -5.56      4.25   t
   66725 WYODAK    230        73148 OSAGE     230  1             102.62    -11.96   t
   66725 WYODAK    230        73168 RENO      230  1              54.09     -0.83   f
   66725 WYODAK    230        73294 HUGHES    230  1             107.11     -2.53   f
   66725 WYODAK    230        73282 WYODAK     69  1              11.61     13.90   f
   66725 WYODAK    230        73282 WYODAK     69  2               7.85      9.40   f
   66725 WYODAK    230        74016 WYGEN      14  1               0.00      0.00   f
   66750 YELOWTLP  230        73229 YELLOWBR  230  1            -166.68     12.77   t
from area  65 to area  73 WAPA R.M.                              168.39      2.27

Total from area  65 PACE                                         589.73   -173.79

 ---------from--------      --------- to --------
 --no.-- --name-- -kv-      --no.-- --name-- -kv- ck          ---mw---- ---mvar-- meter

   70005 BRUSHCPP  115        73013 B.CK PS   115  1              42.00      2.48   f
   70005 BRUSHCPP  115        73013 B.CK PS   115  2              44.57      4.60   f
   70116 COBBLAKE  115        73044 COBBLKTP  115  1             -11.50     -1.10   f
   70122 COMANCHE  230        73477 FULLER    230  1              85.18     16.97   t
   70139 DANIELPK  230        73477 FULLER    230  1             -23.06      2.09   t
   70193 FTN VALL  115        73412 MIDWAYBR  115  1              11.71     -5.84   t
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70205	GRANDJCT	230	79036	GRANDJCT	345	1	-21.68	-12.02	f
70256	LAPORTPS	115	73105	LAPORTE	115	1	-13.32	-5.91	t
70274	MALTA	230	73138	MT.ELBRT	230	1	-69.85	6.78	f
70285	MIDWAYPS	115	73412	MIDWAYBR	115	1	20.22	-43.14	f
70286	MIDWAYPS	230	73413	MIDWAYBR	230	1	152.43	51.05	t
70287	MILL	115	73296	FRASER	115	1	-35.27	5.40	f
70308	PALMER	115	73414	MONUMENT	115	1	-14.44	3.39	t
70311	PAWNEE	230	73192	STORY	230	1	-88.07	-29.76	t
70327	PONCHA	115	79037	GUNNISON	115	1	-3.83	4.19	f
70350	RAWHIDE	24	73165	RAWHIDE	230	1	262.21	33.58	t
70358	RIFLE PS	230	79059	RIFLE WA	230	1	-67.89	27.21	f
70358	RIFLE PS	230	79250	AMATLAS	230	1	-49.95	-13.05	f
70375	SAN LUIS	230	79054	PONCHABR	230	1	-60.01	13.25	t
70410	ST.VRAIN	230	73116	LONGPEAK	230	1	-30.82	32.07	f
70470	WELD PS	115	73211	WELD LM	115	1	-16.11	122.25	f
70471	WELD PS	230	73212	WELD LM	230	1	-272.04	-84.74	f
70474	WINDSOR	230	73011	AULT	230	1	-223.63	-11.97	t
70476	WOODLAND	115	73400	EMIL AND	115	1	11.49	-0.05	f
70525	MTHARRIS	138	79038	HAYDEN	138	1	-5.59	-1.05	t
79033	GOREPASS	230	79039	HAYDEN	230	1	-188.03	-0.69	t
79033	GOREPASS	230	73072	GOREPASS	138	1	-3.11	5.45	f
79034	GRANDJCT	115	79048	MONTROSE	115	1	29.82	-6.64	t
79056	RIFLE CU	138	79046	MEEKER	138	1	-44.03	0.67	f
79057	RIFLE CU	230	79059	RIFLE WA	230	1	1.18	-52.22	t
79058	RIFLE CU	345	79014	CRAIG	345	1	-399.54	-18.61	f
79058	RIFLE CU	345	79036	GRANDJCT	345	1	393.86	18.81	f
79091	WOLCOTTP	230	79039	HAYDEN	230	1	-151.73	6.59	f
79173	COLBRAN	115	79174	MOLINA-L	115	1	0.00	-0.53	f
70351	RAWHIDEA	14	73165	RAWHIDE	230	1	0.00	0.00	t
70550	W CANON	115	73551	W CANON	230	1	-5.58	-19.68	t
from area 70 to area 73 WAPA R.M.							-744.38	49.82	
Total from area 70 PSCOLORADO							-744.38	49.82	

---------from--------			--------- to --------						
--no.--	--name--	-kv-	--no.--	--name--	-kv-	ck	---mw----	---mvar--	meter
79060	SANJN PS	345	10292	SAN_JUAN	345	1	334.78	-92.93	t
from area 73 to area 10 NEW MEXICO							334.78	-92.93	
73042	CASPERLM	115	65305	CASPERPP	115	1	0.02	8.25	f
73070	GLENRCKN	115	65425	DAVEJOHN	115	1	-70.85	2.91	t
73071	GLENRCKS	115	65425	DAVEJOHN	115	1	-80.84	0.09	t
73107	LAR.RIVR	230	65420	DAVEJOHN	230	1	-84.19	20.15	t
73148	OSAGE	230	66725	WYODAK	230	1	-102.62	11.96	f
73167	REFNRYTP	115	65305	CASPERPP	115	1	38.85	0.18	t
73168	RENO	230	66725	WYODAK	230	1	-54.09	0.83	t
73170	RIVERTON	115	66305	RIVERTON	230	1	-4.60	-5.21	t
73190	STEGALL	230	65420	DAVEJOHN	230	1	-88.41	18.23	t
73197	THERMOPL	115	66540	THERPACE	115	1	-6.82	-4.38	f
73197	THERMOPL	115	66535	THERMOPL	230	1	-2.59	-5.93	f
73222	WORLANTP	115	66720	WORLAND	115	1	5.56	-4.25	f
73229	YELLOWBR	230	66750	YELOWTLP	230	1	166.68	-12.77	f
73276	TEKLA	230	65060	ANT MINE	230	1	-36.54	-12.75	t
73282	WYODAK	69	66725	WYODAK	230	1	-11.61	-13.90	t
73282	WYODAK	69	66725	WYODAK	230	2	-7.85	-9.40	t
73294	HUGHES	230	66725	WYODAK	230	1	-107.11	2.53	t
79001	ARTESIA	138	66278	RANGELY	138	1	5.64	6.18	t
79005	BEARS	345	65193	BONANZA	345	1	187.44	11.13	t
79026	FLAMGORG	138	65565	FLAMGORG	230	1	52.19	-9.17	t
79026	FLAMGORG	138	65565	FLAMGORG	230	2	52.19	-9.17	t
79046	MEEKER	138	66278	RANGELY	138	1	-18.46	4.80	t
79067	VERNAL	138	65085	ASHLEY	138	1	47.98	-5.37	f
79067	VERNAL	138	65192	BONANZA	138	1	-48.34	2.78	f
74016	WYGEN	14	66725	WYODAK	230	1	0.00	0.00	t
from area 73 to area 65 PACE							-168.39	-2.27	
73011	AULT	230	70474	WINDSOR	230	1	223.63	11.97	f
73013	B.CK PS	115	70005	BRUSHCPP	115	1	-42.00	-2.48	t
73013	B.CK PS	115	70005	BRUSHCPP	115	2	-44.57	-4.60	t
73044	COBBLKTP	115	70116	COBBLAKE	115	1	11.50	1.10	t
73072	GOREPASS	138	79033	GOREPASS	230	1	3.11	-5.45	t
73105	LAPORTE	115	70256	LAPORTPS	115	1	13.32	5.91	f
73116	LONGPEAK	230	70410	ST.VRAIN	230	1	30.82	-32.07	t
73138	MT.ELBRT	230	70274	MALTA	230	1	69.85	-6.78	t
73165	RAWHIDE	230	70350	RAWHIDE	24	1	-262.21	-33.58	f
73165	RAWHIDE	230	70351	RAWHIDEA	14	1	-0.00	-0.00	f
73192	STORY	230	70311	PAWNEE	230	1	88.07	29.76	f
73211	WELD LM	115	70470	WELD PS	115	1	16.11	-122.25	t
73212	WELD LM	230	70471	WELD PS	230	1	272.04	84.74	t
73296	FRASER	115	70287	MILL	115	1	35.27	-5.40	t
73400	EMIL AND	115	70476	WOODLAND	115	1	-11.49	0.05	t

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   73412 MIDWAYBR  115        70193 FTN VALL  115  1            -11.71      5.84   f
   73412 MIDWAYBR  115        70285 MIDWAYPS  115  1            -20.22     43.14   t
   73413 MIDWAYBR  230        70286 MIDWAYPS  230  1           -152.43    -51.05   f
   73414 MONUMENT  115        70308 PALMER    115  1             14.44     -3.39   f
   73477 FULLER    230        70122 COMANCHE  230  1            -85.18    -16.97   f
   73477 FULLER    230        70139 DANIELPK  230  1             23.06     -2.09   f
   79014 CRAIG     345        79058 RIFLE CU  345  1            399.54     18.61   t
   79036 GRANDJCT  345        79058 RIFLE CU  345  1           -393.86    -18.81   t
   79036 GRANDJCT  345        70205 GRANDJCT  230  1             21.68     12.02   t
   79037 GUNNISON  115        70327 PONCHA    115  1              3.83     -4.19   t
   79038 HAYDEN    138        70525 MTHARRIS  138  1              5.59      1.05   f
   79039 HAYDEN    230        79033 GOREPASS  230  1            188.03      0.69   f
   79039 HAYDEN    230        79091 WOLCOTTP  230  1            151.73     -6.59   t
   79046 MEEKER    138        79056 RIFLE CU  138  1             44.03     -0.67   t
   79048 MONTROSE  115        79034 GRANDJCT  115  1            -29.82      6.64   f
   79054 PONCHABR  230        70375 SAN LUIS  230  1             60.01    -13.25   f
   79059 RIFLE WA  230        70358 RIFLE PS  230  1             67.89    -27.21   t
   79059 RIFLE WA  230        79057 RIFLE CU  230  1             -1.18     52.22   f
   79174 MOLINA-L  115        79173 COLBRAN   115  1             -0.00      0.53   t
   79250 AMATLAS   230        70358 RIFLE PS  230  1             49.95     13.05   t
   73551 W CANON   230        70550 W CANON   115  1              5.58     19.68   f
from area  73 to area  70 PSCOLORADO                            744.38    -49.82

   79061 SHIP PS   230        79063 SHIPROCK  230  1            149.59    -43.11   t
   79260 ELPASOTP  115        79105 GLADETAP  115  1             25.56    -21.05   t
from area  73 to area  19 WAPA L.C.                             175.14    -64.16

   73229 YELLOWBR  230        63001 CROS PHA  230  1            -35.48      3.23   f
from area  73 to area  63 WAPA U.M.                             -35.48      3.23

Total from area  73 WAPA R.M.                                  1050.44   -205.95

 ---------from--------      --------- to --------
 --no.-- --name-- -kv-      --no.-- --name-- -kv- ck          ---mw---- ---mvar-- meter

   63002 CRSOVRUM  230        62051 HARDIN    230  1            -69.16    -16.54   f
   63002 CRSOVRUM  230        62056 HUNTLEY   230  1            211.84     -7.35   f
   63008 HAVRE     161        62023 GT FALLS  161  1            -18.48     10.61   t
   63014 TIBERTAP  115        62027 SHELBY    115  1             -2.16     -0.14   t
   63015 VERONA    161        62024 RAINBOW   161  1            -16.74     10.83   t
from area  63 to area  62 MONTANA                               105.30     -2.58

   63001 CROS PHA  230        73229 YELLOWBR  230  1             35.48     -3.23   t
from area  63 to area  73 WAPA R.M.                              35.48     -3.23

Total from area  63 WAPA U.M.                                   140.78     -5.81
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WESTERN SYSTEMS COORDINATING COUNCIL, WAPA UGP, JUNE 2002
G1

Summation of selected system

	-----MW----	----MVAR---		
Generation	54128.789	3025.492	Generators	2550
Actual Load	45957.066	15412.540	Loads	6811
Net actual shunt	0.405	-185.823	Shunts	1294
Net actual svd	0.000	2107.439	Svd	587
Loss	2150.197	-13922.676	Buses	13159
			Lines	10964
			Transformers	5120
MVA-miles	4534994.0	1050228.6	DC buses	6
Miles	46968.402		DC converters	10
			DC lines	3

WESTERN SYSTEMS COORDINATING COUNCIL, WAPA UGP, JUNE 2002
G1

Area 54 [ALBERTA]

	-----MW----	----MVAR---		
Generation	6887.254	852.430	Generators	136
Actual Load	6274.402	1997.100	Loads	517
Net actual shunt	0.000	-21.744	Shunts	9
Net actual svd	0.000	-1195.581	Svd	76
Net Interchange	200.408	-19.199	Buses	989
Sched Interchange	200.000		Lines	782
Loss	412.444	91.859	Transformers	406
MVA-miles	1164695.4	291562.3	DC buses	0
Miles	18668.695		DC converters	0
			DC lines	0
Loss at 13.20 Kv	1.466	19.090		
Loss at 13.80 Kv	3.240	76.348		
Loss at 14.40 Kv	0.440	14.459		
Loss at 25.00 Kv	1.465	16.921		
Loss at 34.00 Kv	0.046	0.759		
Loss at 69.00 Kv	14.504	-22.349		
Loss at 138.00 Kv	157.645	-309.209		
Loss at 240.00 Kv	217.491	-426.238		
Loss at 500.00 Kv	0.000	0.000		
Loss at other Kv	16.147	722.078		
Largest mismatch MVA	0.0084	0.0499		

WESTERN SYSTEMS COORDINATING COUNCIL, WAPA UGP, JUNE 2002
G1

Area 50 [B.C.HYDRO]

	-----MW----	----MVAR---		
Generation	8254.719	225.159	Generators	106
Actual Load	6035.052	2359.838	Loads	395
Net actual shunt	0.000	2924.022	Shunts	104
Net actual svd	0.000	2703.485	Svd	125
Net Interchange	1799.825	-386.142	Buses	1054
Sched Interchange	1800.000		Lines	719
Loss	419.843	-7376.047	Transformers	644
MVA-miles	0.0	0.0	DC buses	0
Miles	0.000		DC converters	0
			DC lines	0
Loss at 13.20 Kv	0.045	1.966		
Loss at 13.80 Kv	6.690	399.883		
Loss at 34.00 Kv	0.000	0.002		
Loss at 46.00 Kv	0.301	0.082		
Loss at 132.00 Kv	25.089	36.375		
Loss at 138.00 Kv	11.037	-136.497		
Loss at 230.00 Kv	39.633	-770.071		
Loss at 500.00 Kv	290.678	-7381.497		
Loss at other Kv	46.369	473.712		
Largest mismatch MVA	0.0337	0.0390		

WESTERN SYSTEMS COORDINATING COUNCIL, WAPA UGP, JUNE 2002
G1

Area 60 [IDAHO]

-----MW---- ----MVAR---

Generation	3192.674	558.774	Generators	49
Actual Load	1955.000	501.300	Loads	64
Net actual shunt	0.000	-96.193	Shunts	2
Net actual svd	0.000	0.000	Svd	0
Net Interchange	1066.273	-377.224	Buses	156
Sched Interchange	1066.000		Lines	120
Loss	171.401	530.889	Transformers	96
MVA-miles	0.0	0.0	DC buses	0
Miles	0.000		DC converters	0
			DC lines	0
Loss at 13.20 Kv	0.271	5.817		
Loss at 13.80 Kv	1.166	43.754		
Loss at 14.40 Kv	0.390	15.211		
Loss at 34.50 Kv	0.000	0.000		
Loss at 100.00 Kv	0.913	81.895		
Loss at 115.00 Kv	0.434	0.343		
Loss at 138.00 Kv	14.241	-58.646		
Loss at 161.00 Kv	1.197	0.908		
Loss at 230.00 Kv	15.301	-301.093		
Loss at 345.00 Kv	132.482	579.176		
Loss at 500.00 Kv	0.000	0.000		
Loss at other Kv	5.007	163.526		
Largest mismatch MVA	0.0071	0.0083		

WESTERN SYSTEMS COORDINATING COUNCIL, WAPA UGP, JUNE 2002
G1

Area 62 [MONTANA]

	-----MW----	----MVAR---		
Generation	3004.414	236.578	Generators	22
Actual Load	1207.745	524.807	Loads	200
Net actual shunt	0.405	-121.249	Shunts	56
Net actual svd	0.000	26.439	Svd	11
Net Interchange	1700.345	-448.191	Buses	310
Sched Interchange	1701.000		Lines	317
Loss	95.919	254.774	Transformers	89
MVA-miles	0.0	0.0	DC buses	0
Miles	0.000		DC converters	0
			DC lines	0
Loss at 13.80 Kv	0.000	39.319		
Loss at 69.00 Kv	0.539	1.671		
Loss at 100.00 Kv	12.469	-55.300		
Loss at 115.00 Kv	2.839	-16.732		
Loss at 161.00 Kv	9.961	-96.772		
Loss at 230.00 Kv	12.995	-182.797		
Loss at 500.00 Kv	56.492	381.151		
Loss at other Kv	0.625	184.233		
Largest mismatch MVA	0.0038	0.0158		

WESTERN SYSTEMS COORDINATING COUNCIL, WAPA UGP, JUNE 2002
G1

Area 40 [NORTHWEST]

	-----MW----	----MVAR---		
Generation	17473.885	199.058	Generators	290
Actual Load	16651.566	5157.048	Loads	1663
Net actual shunt	0.000	-1726.490	Shunts	46
Net actual svd	0.000	2143.414	Svd	163
Net Interchange	253.510	1169.405	Buses	2740
Sched Interchange	253.000		Lines	2709
Loss	568.792	-6544.327	Transformers	632
MVA-miles	2866149.5	635845.3	DC buses	4
Miles	18402.309		DC converters	4
			DC lines	2
Loss at 11.00 Kv	-0.000	0.223		
Loss at 13.20 Kv	0.000	2.267		
Loss at 13.80 Kv	4.466	150.383		
Loss at 14.40 Kv	-0.000	0.000		
Loss at 25.00 Kv	3.293	174.030		
Loss at 34.50 Kv	0.069	-0.965		
Loss at 69.00 Kv	7.427	2.567		
Loss at 100.00 Kv	0.120	-0.323		
Loss at 115.00 Kv	126.826	-36.380		
Loss at 230.00 Kv	137.422	-744.993		
Loss at 345.00 Kv	7.065	-312.695		

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Loss at 500.00 Kv         221.623    -6635.248
Loss at other Kv           60.479      856.816

Largest mismatch MVA       0.0240       0.0529

WESTERN SYSTEMS COORDINATING COUNCIL, WAPA UGP, JUNE 2002
G1

Area  65 [PACE                           ]

                      -----MW----  ----MVAR---
Generation               5528.244      530.654        Generators           53
Actual Load              4749.998     1528.040        Loads               273
Net actual shunt            0.000     -528.263        Shunts               51
Net actual svd              0.000        0.000        Svd                   2
Net Interchange           589.741     -173.419        Buses               564
Sched Interchange         590.300                     Lines               408
Loss                      188.505     -295.706        Transformers        336

MVA-miles                     3.4          1.1        DC buses              0
Miles                       1.900                     DC converters         0
                                                      DC lines              0
Loss at  13.80 Kv           0.819       22.935
Loss at  34.50 Kv           1.010        7.109
Loss at  46.00 Kv           3.908       70.489
Loss at  69.00 Kv           0.728        8.212
Loss at 100.00 Kv           0.017        0.583
Loss at 115.00 Kv           2.786       -8.588
Loss at 138.00 Kv          40.604       35.466
Loss at 161.00 Kv           7.688      -26.374
Loss at 230.00 Kv          63.918     -105.762
Loss at 345.00 Kv          64.589     -358.180
Loss at other Kv            2.440       58.404

Largest mismatch MVA       0.0273       0.0779

WESTERN SYSTEMS COORDINATING COUNCIL, WAPA UGP, JUNE 2002
G1

Area  70 [PSCOLORADO                     ]

                      -----MW----  ----MVAR---
Generation               4234.680      621.565        Generators           46
Actual Load              4858.050     1835.016        Loads               358
Net actual shunt            0.000        0.000        Shunts                0
Net actual svd              0.000    -1397.656        Svd                  43
Net Interchange          -744.395       49.817        Buses               500
Sched Interchange        -743.800                     Lines               461
Loss                      121.026      134.431        Transformers        147

MVA-miles                 22717.3       6310.8        DC buses              0
Miles                     564.500                     DC converters         0
                                                      DC lines              0
Loss at  13.80 Kv           2.115       74.404
Loss at  14.40 Kv           0.081        0.808
Loss at  25.00 Kv           0.013        0.166
Loss at  46.00 Kv           0.190        0.001
Loss at  69.00 Kv           3.820      -11.984
Loss at 100.00 Kv           0.007       -0.105
Loss at 115.00 Kv          21.169     -103.917
Loss at 138.00 Kv           0.647       -3.754
Loss at 230.00 Kv          85.921      -46.552
Loss at 345.00 Kv           0.000        0.004
Loss at other Kv            7.063      225.361

Largest mismatch MVA       0.0098       0.0537

WESTERN SYSTEMS COORDINATING COUNCIL, WAPA UGP, JUNE 2002
G1

Area  64 [SIERRA                         ]

                      -----MW----  ----MVAR---
Generation               1069.690      -25.558        Generators           19
Actual Load              1075.167      280.355        Loads               115
Net actual shunt            0.000     -158.467        Shunts               23
Net actual svd              0.000       73.889        Svd                   5
Net Interchange           -36.245       16.165        Buses               275
Sched Interchange         -36.000                     Lines               197
Loss                       30.770     -237.521        Transformers        117

MVA-miles                 51756.4      28302.4        DC buses              0
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Miles	1042.600		DC converters	0
			DC lines	0
Loss at 13.80 Kv	1.784	32.653		
Loss at 69.00 Kv	0.000	0.000		
Loss at 115.00 Kv	0.298	-7.513		
Loss at 230.00 Kv	0.902	-112.910		
Loss at 345.00 Kv	7.224	-180.866		
Loss at other Kv	20.563	31.115		
Largest mismatch MVA	0.0106	0.0203		

WESTERN SYSTEMS COORDINATING COUNCIL, WAPA UGP, JUNE 2002
G1

Area 52 [W KOOTENAY]

	-----MW----	----MVAR---		
Generation	498.040	8.446	Generators	18
Actual Load	486.100	160.700	Loads	65
Net actual shunt	0.000	-79.194	Shunts	27
Net actual svd	0.000	-71.873	Svd	4
Net Interchange	0.430	-8.836	Buses	260
Sched Interchange	0.000		Lines	166
Loss	11.510	7.649	Transformers	116
MVA-miles	18675.5	6123.0	DC buses	0
Miles	1005.200		DC converters	0
			DC lines	0
Loss at 13.20 Kv	-0.000	9.145		
Loss at 13.80 Kv	0.000	0.000		
Loss at 14.40 Kv	0.000	21.896		
Loss at 25.00 Kv	0.000	0.000		
Loss at 138.00 Kv	0.104	-8.447		
Loss at 161.00 Kv	2.006	-19.726		
Loss at 230.00 Kv	0.710	-19.318		
Loss at other Kv	8.690	24.098		
Largest mismatch MVA	0.0025	0.0087		

WESTERN SYSTEMS COORDINATING COUNCIL, WAPA UGP, JUNE 2002
G1

Area 73 [WAPA R.M.]

	-----MW----	----MVAR---		
Generation	3956.307	-183.442	Generators	74
Actual Load	2784.180	950.836	Loads	356
Net actual shunt	0.000	-299.295	Shunts	4
Net actual svd	0.000	-177.105	Svd	53
Net Interchange	1050.453	-204.383	Buses	620
Sched Interchange	1050.700		Lines	567
Loss	121.673	-453.515	Transformers	174
MVA-miles	410996.3	82083.9	DC buses	0
Miles	7283.200		DC converters	0
			DC lines	0
Loss at 13.80 Kv	3.825	48.729		
Loss at 34.50 Kv	0.149	2.098		
Loss at 69.00 Kv	3.015	-20.123		
Loss at 115.00 Kv	43.509	-234.484		
Loss at 138.00 Kv	3.351	-37.193		
Loss at 230.00 Kv	29.696	-352.339		
Loss at 345.00 Kv	33.755	-54.281		
Loss at other Kv	4.373	194.078		
Largest mismatch MVA	0.0128	0.0823		

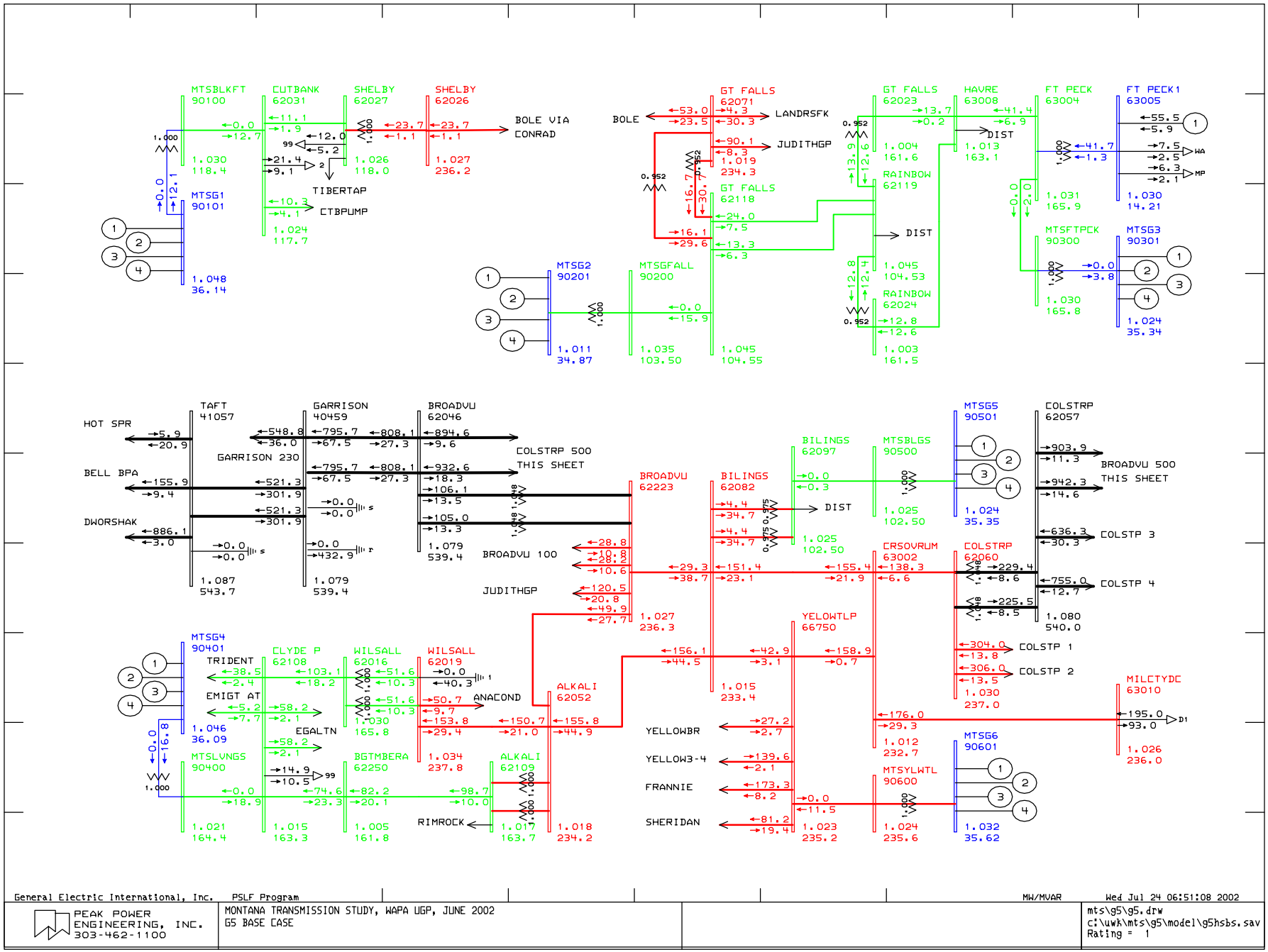
WESTERN SYSTEMS COORDINATING COUNCIL, WAPA UGP, JUNE 2002
G1

Area 63 [WAPA U.M.]

	-----MW----	----MVAR---		
Generation	28.882	1.828	Generators	1
Actual Load	-120.200	117.500	Loads	17
Net actual shunt	0.000	-78.951	Shunts	1
Net actual svd	0.000	2.427	Svd	4
Net Interchange	140.768	-3.986	Buses	15
Sched Interchange	141.000		Lines	12
Loss	8.314	-35.163	Transformers	3
MVA-miles	0.0	0.0	DC buses	0

Miles	0.000		DC converters	0
			DC lines	0
Loss at 13.80 Kv	0.041	1.533		
Loss at 115.00 Kv	0.038	-6.833		
Loss at 161.00 Kv	0.580	-50.345		
Loss at 230.00 Kv	7.654	20.481		
Largest mismatch MVA	0.0001	0.0007		

hsbs


MTSBLKFT 90100
CUTBANK 62031
SHELBY 62027
SHELBY 62026
BOLE VIA CONRAD
TIBERTAP
CTBPUMP
MTSG1 90101
1.030 118.4
1.026 118.0
1.027 236.2
1.024 117.7
1.048 36.14
BOLE
GT FALLS 62071
LANDRSFK
JUDITHGP
1.019 234.3
GT FALLS 62118
MTSG2 90201
MTSGFALL 90200
1.011 34.87
1.035 103.50
1.045 104.55
GT FALLS 62023
HAVRE 63008
FT PECK 63004
FT PECK1 63005
DIST
1.004 161.6
1.013 163.1
RAINBOW 62119
1.031 165.9
1.030 14.21
MTSFTPCK 90300
MTSG3 90301
1.045 104.53
RAINBOW 62024
1.030 165.8
1.024 35.34
1.003 161.5
TAFT 41057
GARRISON 40459
BROADVU 62046
HOT SPR
GARRISON 230
COLSTRP 500 THIS SHEET
BELL BPA
DWORSHAK
1.087 543.7
1.079 539.4
1.079 539.4
BROADVU 100
JUDITHGP
BROADVU 62223
BILINGS 62082
BILINGS 62097
MTSBLGS 90500
MTSG5 90501
COLSTRP 62057
BROADVU 500 THIS SHEET
1.025 102.50
1.025 102.50
1.024 35.35
COLSTP 3
COLSTP 4
CRSOVRUM 63002
COLSTRP 62060
1.027 236.3
1.015 233.4
YELOWTLP 66750
1.080 540.0
COLSTP 1
COLSTP 2
1.030 237.0
MTSG4 90401
TRIDENT
EMIGT AT
CLYDE P 62108
WILSALL 62016
WILSALL 62019
ANACOND
ALKALI 62052
EGALTN
MILCTYDC 63010
YELLOWBR
YELLOW3-4
FRANNIE
SHERIDAN
1.046 36.09
MTSLVNGS 90400
BGTMBERA 62250
ALKALI 62109
RIMROCK
1.034 237.8
1.012 232.7
1.026 236.0
MTSG6 90601
MTSYLWTL 90600
1.021 164.4
1.015 163.3
1.005 161.8
1.017 163.7
1.018 234.2
1.023 235.2
1.024 235.6
1.032 35.62
General Electric International, Inc.
PSLF Program
MW/MVAR
Wed Jul 24 06:51:08 2002
PEAK POWER ENGINEERING, INC. 303-462-1100
MONTANA TRANSMISSION STUDY, WAPA UGP, JUNE 2002
G5 BASE CASE
mts\g5\g5.drw
c:\uwk\mts\g5\model\g5hsbs.sav
Rating = 1

GENERAL ELECTRIC INTERNATIONAL, INC. - PSLF - V11.1
MONTANA TRANSMISSION STUDY, WAPA UGP, JUNE 2002

Percent Loading Summary -- using rating 1 - 100.0 percent of rating

----------from----------				---------- to ----------									rate	per cent	
--no.--	--name--	-kv-	-ar-	--no.--	--name--	-kv-	-ar-	ck	---mw---	-mvar-	-mva--	------	loading		
54611	RUTH LK8	69	54	54839	RUTH LK1	138	54	1	57.9	13.8	59.5	45.0M	132.3	T	
64026	CARSON	120	64	64027	CARSON T	120	64	1	-55.6	-6.6	56.0	216.5A	130.5	F	
55015	DOME EA9	14	54	55525	163ST2	240	54	T2	-57.3	-4.6	57.5	45.0M	128.6	T	
64194	DAYTON	120	64	64254	DAYTON	25	64	1	16.6	6.5	17.8	14.0M	127.5	F	
79026	FLAMGORG	138	73	79029	FLAMGORG	69	73	1	22.1	6.0	22.9	19.0M	120.4	F	
64099	SPAN SPG	120	64	64114	TRACY	120	64	1	-128.2	-2.8	128.2	514.8A	118.8	F	
64091	RENO	120	64	64263	RENO	25	64	1	50.3	20.5	54.3	46.7M	116.3	F	
70249	LAJUNTAW	115	70	70250	LAJUNTAW	69	70	1	26.2	12.4	29.0	25.0M	116.0	F	
64127	VAL ROAD	120	64	64274	VAL ROAD	25	64	1	50.2	20.3	54.2	46.7M	116.0	F	
64091	RENO	120	64	64263	RENO	25	64	2	50.2	20.3	54.2	46.7M	116.0	F	
64127	VAL ROAD	120	64	64274	VAL ROAD	25	64	2	47.8	19.3	51.6	46.7M	110.4	F	
64202	HAN CRTP	120	64	64203	TWN CRTP	120	64	1	74.2	19.8	76.8	356.0A	109.1	F	
64201	PINSN TP	120	64	64202	HAN CRTP	120	64	1	74.6	20.6	77.4	356.0A	109.1	F	
64200	REDHOUSE	120	64	64201	PINSN TP	120	64	1	75.9	23.6	79.5	356.0A	109.0	T	
64129	VALMY	120	64	64200	REDHOUSE	120	64	1	77.0	26.3	81.4	356.0A	108.6	T	
54234	CASTLE R	138	54	55972	CASTLE-1	25	54	1	-50.0	21.0	54.2	50.0M	108.4	F	
50459	KIT287	287	50	51075	KIT B5	13	50	5	80.3	24.1	83.8	79.0M	106.1	F	
54232	PANCAN 9	138	54	55386	EMPRESS9	25	54	T1	15.7	1.0	15.7	15.0M	104.7	F	
64114	TRACY	120	64	64118	TRACY G2	14	64	1	-82.5	-4.0	82.6	81.0M	104.0	T	
48319	PLEASANT	115	40	48355	RATHDRUM	115	40	1	-84.1	-16.2	85.6	430.8A	103.3	F	
43017	BEAVER	14	40	43021	BEAVER	230	40	1	356.8	44.1	359.6	348.0M	103.3	F	
54052	BLUERIDG	138	54	55281	BLUERDGE	14	54	T1	20.8	15.2	25.7	25.0M	102.9	F	
54154	E CALGAR	240	54	54189	ENMX2SD9	138	54	T1	234.1	-169.4	289.0	300.0M	102.8	T	
40221	CHIEF J2	14	40	40231	CHIEF JO	230	40	9A	155.0	-10.5	155.4	155.0M	101.9	T	
40221	CHIEF J2	14	40	40231	CHIEF JO	230	40	BC	155.0	-10.5	155.4	155.0M	101.9	T	
40221	CHIEF J2	14	40	40231	CHIEF JO	230	40	78	155.0	-10.5	155.4	155.0M	101.9	T	
40221	CHIEF J2	14	40	40231	CHIEF JO	230	40	56	155.0	-10.5	155.4	155.0M	101.9	T	
40229	CHIEF JO	14	40	40231	CHIEF JO	230	40	34	155.0	-10.5	155.4	155.0M	101.9	T	
40229	CHIEF JO	14	40	40231	CHIEF JO	230	40	DE	155.0	-10.5	155.4	155.0M	101.9	T	
40229	CHIEF JO	14	40	40231	CHIEF JO	230	40	12	155.0	-10.5	155.4	155.0M	101.9	T	
41304	COUGAR T	7	40	46211	COUGAR T	115	40	1	28.0	-8.7	29.3	30.0M	101.9	T	
46733	LAGRND5	14	40	46735	LGBK5	115	40	1	40.0	6.8	40.6	40.0M	101.4	F	

GENERAL ELECTRIC INTERNATIONAL, INC. - PSLF - V12.0
WESTERN SYSTEMS COORDINATING COUNCIL
2002 HS3A APPROVED OPERATING CASE

overvoltage summary > 1.100000

--no.--	--name--	-kv-	(v pu)	--no.--	--name--	-kv-	(v pu)	--no.--	--name--	-kv-	(v pu)
54090	BICKERD4	240	1.1047	54153	BRAZEAU4	240	1.1053	54329	KEEPHIL4	240	1.1117
54524	GENESEE4	240	1.1086	54681	NEVIS 7	138	1.1101	54802	STURGEO9	138	1.1003
55969	770S701T	138	1.1052	51017	KMS230	230	1.1081	62012	TOWN2	500	1.1014
62013	TOWN1	500	1.1014								

overvoltage summary > 1.050000

--no.--	--name--	-kv-	(v pu)	--no.--	--name--	-kv-	(v pu)	--no.--	--name--	-kv-	(v pu)
54012	FOX CREE	138	1.0510	54013	KAYBOB 9	138	1.0517	54014	GULF RO9	138	1.0592
54021	WESGEN 7	138	1.0507	54050	RBCUPIL7	138	1.0507	54054	LAMOURE4	240	1.0795
54073	IPPL ST9	138	1.0575	54077	BIGSTON4	240	1.0600	54078	CHEVRON7	138	1.0515
54081	METIS644	240	1.0853	54082	BICKERD7	138	1.0557	54090	BICKERD4	240	1.1047
54097	BIG HOR9	138	1.0817	54098	STRACHA9	138	1.0577	54103	DEERLAN4	240	1.0820
54121	ELLERSLI	240	1.0759	54125	SUNDANL9	138	1.0543	54126	WABAMUN4	240	1.0869
54128	SUNDANM9	240	1.0965	54129	E EDMON4	240	1.0709	54130	N CALDE4	240	1.0645
54131	N BARRH4	240	1.0836	54139	GAETZ 4	240	1.0597	54141	HIGHVAL9	138	1.0538
54142	WILLESD4	240	1.0961	54144	RED DEE4	240	1.0636	54147	BENALTO4	240	1.0767
54148	E CROSS4	240	1.0586	54150	LANGDON2	500	1.0533	54152	JANET 4	240	1.0533
54153	BRAZEAU4	240	1.1053	54157	PEIGAN 4	240	1.0748	54159	N LETHB4	240	1.0648
54184	SARCEE 7	138	1.0530	54195	RUNDLE S	138	1.0504	54223	WARE JCT	240	1.0511
54249	RP05103S	138	1.0669	54261	SPRAY S	138	1.0508	54269	COALSPU7	138	1.0609
54281	MILO 2	240	1.0605	54285	LEISMER9	240	1.0749	54287	GREGG R9	138	1.0701
54302	MARIONA9	138	1.0540	54325	CHEV KG9	138	1.0515	54326	COAL VA9	138	1.0582
54329	KEEPHIL4	240	1.1117	54335	W BROOK4	240	1.0550	54384	ENMX28S9	138	1.0523
54412	BENBOW 9	138	1.0518	54441	946/947X	240	1.0759	54444	SPRINGB9	138	1.0505
54505	JASPER 4	240	1.0658	54506	BELLAMY4	240	1.0757	54509	ARGYLL W	240	1.0758
54512	DOME T29	240	1.0764	54513	LAMBTON4	240	1.0705	54514	CLOVERB4	240	1.0694
54518	ARGYLL E	240	1.0760	54519	CASTLTX2	240	1.0705	54521	PETROLIA	240	1.0746
54524	GENESEE4	240	1.1086	54542	RBW LAK7	138	1.0505	54546	CHINCHA7	138	1.0575
54547	KEG RVR7	138	1.0561	54548	KEMP RV9	138	1.0578	54549	HOTCHKS7	138	1.0596
54552	CADOTTE9	138	1.0585	54553	NORCEN 9	138	1.0552	54554	LUBICON7	138	1.0582
54555	CRANBER9	138	1.0591	54558	WESLY C7	138	1.0791	54559	CARMON 9	138	1.0767
54560	PEACE/29	138	1.0753	54561	DIASHOW7	138	1.0736	54589	DOME CU7	138	1.0672
54593	DONNELL9	138	1.0669	54594	TAP7L487	138	1.0686	54595	TRIANGL7	138	1.0619
54596	VALLEYV9	138	1.0782	54600	L.SMOKY7	138	1.0848	54601	STURGEO7	138	1.0844
54606	SIMONET9	138	1.0846	54607	FOXCRK/2	138	1.0515	54608	GOOSE R9	138	1.0666
54612	RUTH LA7	138	1.0600	54613	RUTH LK7	138	1.0603	54618	PARS CR7	138	1.0508
54621	MITS E.4	240	1.0565	54622	MITS E.7	138	1.0892	54623	AEC MILL	138	1.0881
54624	OTAUWAU7	138	1.0890	54633	LOU CR.7	138	1.0570	54634	SARHLK/2	138	1.0511
54636	ESSO JU7	138	1.0519	54637	MORSE RV	138	1.0524	54639	VIRGINI9	138	1.0529
54643	WOLF LK9	138	1.0709	54646	MARG LK4	240	1.0740	54647	MARG LK7	138	1.0861
54648	LACOREY9	138	1.0683	54652	BONNY 9	138	1.0544	54654	BONN SVC	138	1.0544
54655	WHITFISH	240	1.0857	54675	PAINTRT7	240	1.0896	54680	NEVIS 4	240	1.0748
54681	NEVIS 7	138	1.1101	54685	3HILLS/3	138	1.0581	54691	MICH. C9	138	1.0735
54693	WINT HI9	138	1.0749	54694	BULLPON9	138	1.0750	54707	SHEER 14	240	1.0625
54709	ANDERSO4	240	1.0630	54710	ANDERSON	138	1.0850	54711	SHEER 24	240	1.0625
54715	BAT. RV7	138	1.0821	54721	BAT RV79	240	1.0926	54723	CORDEL 4	240	1.0926
54729	PRIM TAP	138	1.0652	54730	PRIMROSE	138	1.0712	54796	791S701T	138	1.0628
54802	STURGEO9	138	1.1003	54806	946/947N	240	1.0709	54809	732S901T	240	1.0667
54818	VERMILA9	138	1.0798	54822	766S901T	240	1.0628	54823	NEVIS 9	138	1.0878
54835	791S702T	138	1.0631	54836	MILNERB9	138	1.0779	54844	709S702T	138	1.0732
54847	BAT RV80	240	1.0926	54848	791S703T	138	1.0530	54962	KAYBOBTP	138	1.0517
54963	CANMORE9	138	1.0506	54978	EAST IN4	240	1.0705	54983	MARION T	138	1.0541
54984	HIGHVL T	138	1.0538	54988	CROSSF T	240	1.0586	54995	W.GRN TP	240	1.0962
55012	BASSET 7	138	1.0562	55013	HAIGRIVE	138	1.0572	55067	FTNELSON	138	1.0665
55072	SYNC_D04	240	1.0563	55073	AURORA 4	240	1.0619	55075	SEAL LK9	138	1.0643
55147	MILNERC9	138	1.0880	55226	WABASCA9	240	1.0532	55272	FIELDGA9	138	1.0513
55280	BRINTNEL	240	1.0504	55515	PRIMROSE	138	1.0565	55763	BC BORDE	138	1.0627
55891	904AL TP	240	1.0705	55894	SARCEE M	138	1.0512	55912	740L JNC	138	1.0609
55913	G.ROBB T	138	1.0600	55924	CH KGT T	138	1.0515	55943	MILO 1	240	1.0605
55969	770S701T	138	1.1052	50010	COM132	132	1.0725	50020	CMS230	230	1.0500
50036	RBW230	230	1.0549	50037	PEM230	230	1.0586	50038	RBW230-1	230	1.0534
50182	ARN132	132	1.0822	50185	ALZ230	230	1.0521	50186	ROS230	230	1.0620
50187	BRT230	230	1.0698	50188	BUT230	230	1.0500	50193	BRT360	360	1.0500
50313	VIT132	132	1.0518	50314	PVO133	132	1.0507	50315	PVO132	132	1.0512
50323	DMR132	132	1.0557	50330	LDR132	132	1.0504	50331	GLD132	132	1.0518
50334	KGH132	132	1.0529	50335	UTA132	132	1.0531	50342	SCA132	132	1.0500
50343	KSH132-2	132	1.0501	50346	SHA2	132	1.0504	50347	GOW132	132	1.0518
50348	GTP132	132	1.0553	50349	CLD132	132	1.0571	50350	SOO132	132	1.0577
50351	JOR132	132	1.0614	50352	PML132	132	1.0518	50353	WOS132	132	1.0536
50354	GLSTP17	132	1.0562	50355	GLSTP18	132	1.0548	50356	DND132	132	1.0521
50391	KSHTP14	132	1.0504	50394	SHATP14	132	1.0504	50395	SALTP17	132	1.0547
50396	SALTP18	132	1.0549	50447	TKW138	138	1.0535	50463	SKA500	500	1.0632
50464	TKW500	500	1.0688	50540	GMS230	230	1.0548	50541	KDS230	230	1.0544

50545	BLW230	230	1.0657	50546	SCK230	230	1.0598	50547	HMH230	230	1.0581
50548	BLM230	230	1.0587	50549	QNT230	230	1.0579	50550	QRP230	230	1.0653
50551	TLR230	230	1.0585	50553	BCR230	230	1.0585	50554	RBF230	230	1.0665
50556	LAP230	230	1.0569	50557	SNK230	230	1.0589	50558	GMS500	500	1.0500
50560	KDS500	500	1.0620	50561	WSN500	500	1.0502	50562	GLN500	500	1.0681
50653	NIC138	138	1.0529	50655	VVW138	138	1.0510	50656	SVA138	138	1.0521
50659	BDM138	138	1.0513	50660	WGS138	138	1.0610	50661	MON138	138	1.0582
50672	BKL138	138	1.0520	50679	BLU138	138	1.0539	50680	VLM138	138	1.0591
50686	SCO138	138	1.0679	50687	ABA138	138	1.0586	50691	NIC230	230	1.0502
50700	MCA500	500	1.0500	50701	REV500	500	1.0500	50729	PRI138TP	138	1.0678
50776	NTL138	138	1.0539	50783	SEL230	230	1.0589	50785	SEV230	230	1.0580
50792	SEL500	500	1.0500	50899	ABA138TP	138	1.0586	50902	BDM138TP	138	1.0513
50922	DNDTAP	132	1.0529	50923	HSY-PH	132	1.0556	50924	ESQ-PH	132	1.0521
50928	SCG IPP	132	1.0684	50934	JULTP130	132	1.0529	51017	KMS230	230	1.1081
51045	ALH230	230	1.0578	60085	BRIDGER	345	1.0500	60240	MIDPOINT	500	1.0687
62012	TOWN2	500	1.1014	62013	TOWN1	500	1.1014	62033	ANA BPA	115	1.0568
62046	BROADVU	500	1.0783	62053	BROADV&2	500	1.0737	62054	BROADV&1	500	1.0745
62057	COLSTRP	500	1.0800	40045	ALLSTON	500	1.0726	40051	ALVEY	500	1.0801
40061	ASHE	500	1.0800	40091	BELL BPA	500	1.0665	40111	BIG EDDY	500	1.0768
43049	BOARD F	500	1.0840	40139	BONNVILE	115	1.0500	47013	BRIDGPRT	115	1.0540
40155	BUCKLEY	500	1.0780	45029	BURNS	500	1.0552	45035	CAPTJACK	500	1.0772
46209	CARMEN	115	1.0621	41311	CELILO1	500	1.0767	41312	CELILO2	500	1.0767
40233	CHIEF JO	500	1.0800	40287	COULEE	500	1.0810	40302	COVINGT4	500	1.0754
40306	COVINGT5	500	1.0759	43115	COYO M1	500	1.0557	43123	COYOTE	500	1.0848
45095	DIXONVLE	500	1.0806	40369	DWORSHAK	500	1.0749	40381	ECHOLAKE	500	1.0786
40451	GAR1EAST	500	1.0938	40453	GAR2EAST	500	1.0938	40459	GARRISON	500	1.0778
40485	GREEN PT	115	1.0520	40489	GRIZZLY	500	1.0747	40499	HANFORD	500	1.0816
40521	HATWAI	500	1.0720	45137	HERMIST	230	1.0509	41212	HILLS CR	115	1.0500
40553	HOT SPR	500	1.0778	40585	JOHN DAY	500	1.0850	40601	KEELER	500	1.0823
45262	KFALLS	500	1.0799	40629	LANE	500	1.0733	40665	LIT GOOS	500	1.0800
40679	LOW GRAN	500	1.0800	40683	LOW MON	500	1.0800	40687	MALIN	500	1.0758
40693	MAPLE VL	500	1.0776	40699	MARION	500	1.0809	40711	MCLOUGLN	500	1.0700
40721	MCNARY	345	1.0510	40723	MCNARY	500	1.0800	45197	MERIDINP	500	1.0785
40749	MONROE	500	1.0797	40797	OLYMPIA	500	1.0791	40809	OSTRNDER	500	1.0723
40821	PAUL	500	1.0800	40827	PEARL	500	1.0789	40837	PONDROSA	500	1.0798
40869	RAVER	500	1.0797	43485	ROUND BU	500	1.0713	40913	SACJAWEA	500	1.0755
40917	SACJWA T	500	1.0768	40941	SANTIAM	500	1.0802	40949	SATSOP	500	1.0799
40957	SCHULTZ	500	1.0843	40973	SICKLER	500	1.0795	40989	SLATT	500	1.0812
41043	SUMMER L	500	1.0785	45289	SWIFT	230	1.0500	41051	TACOMA	500	1.0794
41057	TAFT	500	1.0867	41095	TROUTDAL	500	1.0646	41113	VANTAGE	500	1.0749
45337	WEED JPS	115	1.0507	47099	WELLS	115	1.0630	66225	PINTO	345	1.0511
66235	PINTO PS	345	1.0501	52226	PRI138	138	1.0679	52229	KER138	138	1.0714
52230	HED138	138	1.0704	52426	MAS138	138	1.0703	52815	PRI-T2	138	1.0686

undervoltage summary < 0.900000

--no.--	--name--	-kv-	(v pu)	--no.--	--name--	-kv-	(v pu)	--no.--	--name--	-kv-	(v pu)

undervoltage summary < 0.950000

--no.--	--name--	-kv-	(v pu)	--no.--	--name--	-kv-	(v pu)	--no.--	--name--	-kv-	(v pu)
50781	NTL VR	138	0.9499	48069	CHESTER	115	0.9447	48165	IRVIN	115	0.9489
48310	OPORTUNE	115	0.9494	48299	OPPORTUN	115	0.9468	48306	OTIS	230	0.9384
70249	LAJUNTAW	115	0.9285	64072	MEYERS	120	0.9484	64092	RND HILL	120	0.9466
64102	STATELIN	120	0.9457	64203	TWN CRTP	120	0.9452				

GENERAL ELECTRIC INTERNATIONAL, INC. - PSLF - V12.0
WESTERN SYSTEMS COORDINATING COUNCIL
2002 HS3A APPROVED OPERATING CASE

		generation capacity	generation on-line	--- load categories ---- power	current	imped.	shunt	-- svd --	net inter	losses	slack bus
area name		ALBERTA									
	mw	10743.6	7862.7	7899.2	0.0	0.0	0.0	0.0	-399.4	363.0	59.3
54	mvar	4916.5	857.1	2641.0	0.0	0.0	-22.5	-1851.9	-37.0	127.6	11.7
area name		B.C.HYDRO									
	mw	14693.0	10251.1	6889.1	0.0	0.0	0.0	0.0	2850.1	511.8	197.5
50	mvar	6719.0	925.9	2565.8	0.0	0.0	2957.8	2143.6	-276.4	-6464.9	9.1
area name		IDAHO									
	mw	4676.4	4111.5	2984.0	0.0	0.0	0.0	0.0	919.9	207.6	144.1
60	mvar	2192.5	457.6	711.6	0.0	0.0	-595.5	0.0	-311.2	652.6	0.1
area name		MONTANA									
	mw	3502.2	2908.3	1422.9	0.0	0.0	0.3	0.0	1367.7	117.4	696.3
62	mvar	1309.0	313.5	610.2	0.0	0.0	-122.0	-90.5	-448.3	364.1	109.1
area name		NORTHWEST									
	mw	43502.3	27331.8	22671.3	0.0	0.0	0.0	0.0	3513.9	1146.6	664.7
40	mvar	15475.0	3752.3	6850.3	0.0	0.0	-1855.3	-4060.1	1035.8	1781.6	35.3
area name		PACE									
	mw	6212.0	5584.9	6293.7	0.0	0.0	0.0	0.0	-981.2	272.3	163.9
65	mvar	3201.9	755.6	1960.1	0.0	0.0	-1762.6	-48.6	36.6	569.9	32.1
area name		PSCOLORADO									
	mw	5806.0	5191.5	6332.7	0.0	0.0	0.0	0.0	-1332.4	191.1	112.5
70	mvar	3667.3	1771.8	2372.6	0.0	0.0	0.0	-1672.0	285.5	785.7	33.2
area name		SIERRA									
	mw	1901.7	1375.4	1719.1	0.0	0.0	0.0	0.0	-399.9	56.2	109.4
64	mvar	925.4	126.5	458.7	0.0	0.0	-188.1	69.0	57.3	-270.4	24.2
area name		W KOOTENAY									
	mw	763.5	596.5	722.4	0.0	0.0	0.0	0.0	-150.5	24.7	104.6
52	mvar	450.0	100.1	210.2	0.0	0.0	-77.8	-130.7	-8.1	106.5	25.3
area name		WAPA R.M.									
	mw	6091.6	5379.5	3608.3	0.0	0.0	0.0	0.0	1611.9	159.3	497.1
73	mvar	2883.8	217.9	1237.0	0.0	0.0	-296.1	-271.8	-388.5	-62.7	58.0
area name		WAPA U.M.									
	mw	61.8	55.5	-102.1	0.0	0.0	0.0	0.0	146.9	10.7	55.5
63	mvar	34.0	4.8	123.6	0.0	0.0	-79.0	-15.8	-28.2	4.2	4.8
TOTL	mw	97954.1	70648.6	60440.6	0.0	0.0	0.3	0.0	7147.1	3060.6	
	mvar	41774.4	9282.9	19741.2	0.0	0.0	-2041.1	-5929.0	-82.5	-2405.6	

Area Interchange Summary

		mw	mvar
FROM AREA	54 ALBERTA		
TO AREA	50 B.C.HYDRO	-399.4	-37.0
TOTAL		-399.4	-37.0

		mw	mvar
FROM AREA	50 B.C.HYDRO		

```
  TO AREA   54 ALBERTA                          399.4       37.0
  TO AREA   40 NORTHWEST                       2300.2     -321.6
  TO AREA   52 W KOOTENAY                       150.5        8.1
  TOTAL                                        2850.1     -276.4

FROM AREA   60 IDAHO                             mw        mvar
  TO AREA   40 NORTHWEST                        -56.8     -295.4
  TO AREA   65 PACE                             843.9       36.2
  TO AREA   64 SIERRA                           132.8      -52.0
  TOTAL                                         919.9     -311.2

FROM AREA   62 MONTANA                           mw        mvar
  TO AREA   40 NORTHWEST                       1118.8     -362.7
  TO AREA   65 PACE                             239.2      -88.3
  TO AREA   63 WAPA U.M.                          9.7        2.8
  TOTAL                                        1367.7     -448.3

FROM AREA   40 NORTHWEST                         mw        mvar
  TO AREA   50 B.C.HYDRO                      -2300.2      321.6
  TO AREA   60 IDAHO                             56.8      295.4
  TO AREA   26 LADWP                           2806.7      607.1
  TO AREA   62 MONTANA                        -1118.8      362.7
  TO AREA   30 PG AND E                        3884.1     -501.7
  TO AREA   64 SIERRA                           185.3      -49.3
  TOTAL                                        3513.9     1035.8

FROM AREA   65 PACE                              mw        mvar
  TO AREA   14 ARIZONA                          -37.5       92.9
  TO AREA   60 IDAHO                           -843.9      -36.2
  TO AREA   26 LADWP                            -27.7     -168.6
  TO AREA   62 MONTANA                         -239.2       88.3
  TO AREA   18 NEVADA                           251.8      -58.1
  TO AREA   64 SIERRA                            36.2       13.4
  TO AREA   19 WAPA L.C.                         42.0       31.7
  TO AREA   73 WAPA R.M.                       -162.9       73.2
  TOTAL                                        -981.2       36.6

FROM AREA   70 PSCOLORADO                        mw        mvar
  TO AREA   73 WAPA R.M.                      -1332.4      285.5
  TOTAL                                       -1332.4      285.5

FROM AREA   64 SIERRA                            mw        mvar
  TO AREA   60 IDAHO                           -132.8       52.0
  TO AREA   26 LADWP                            -51.3        1.5
  TO AREA   40 NORTHWEST                       -185.3       49.3
  TO AREA   65 PACE                             -36.2      -13.4
  TO AREA   30 PG AND E                          -7.7      -29.1
  TO AREA   24 SOCALIF                           13.4       -2.9
  TOTAL                                        -399.9       57.3

FROM AREA   52 W KOOTENAY                        mw        mvar
  TO AREA   50 B.C.HYDRO                       -150.5       -8.1
  TOTAL                                        -150.5       -8.1

FROM AREA   73 WAPA R.M.                         mw        mvar
  TO AREA   10 NEW MEXICO                       186.5      -27.2
  TO AREA   65 PACE                             162.9      -73.2
  TO AREA   70 PSCOLORADO                      1332.4     -285.5
  TO AREA   19 WAPA L.C.                         86.8      -28.1
  TO AREA   63 WAPA U.M.                       -156.6       25.4
  TOTAL                                        1611.9     -388.5
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		mw	mvar
FROM AREA	63 WAPA U.M.		
TO AREA	62 MONTANA	-9.7	-2.8
TO AREA	73 WAPA R.M.	156.6	-25.4
TOTAL		146.9	-28.2

AREA TIE LINE SUMMARY

GENERAL ELECTRIC INTERNATIONAL, INC. - PSLF - V12.0
WESTERN SYSTEMS COORDINATING COUNCIL
2002 HS3A APPROVED OPERATING CASE

---------from--------			--------- to --------					---mw----	---mvar--	meter
--no.--	--name--	-kv-	--no.--	--name--	-kv-	ck				
54150	LANGDON2	500	50791	CBK500	500	1		-359.38	-36.30	f
54205	COLEMAN7	138	50776	NTL138	138	1		-14.09	-8.93	t
54273	POCATER7	138	50830	FRO T274	138	1		-25.95	8.19	t
from area 54 to area 50 B.C.HYDRO								-399.42	-37.04	
Total from area 54 ALBERTA								-399.42	-37.04	

---------from--------			--------- to --------					---mw----	---mvar--	meter
--no.--	--name--	-kv-	--no.--	--name--	-kv-	ck				
62004	ANACOND	230	40457	GARRISON	230	1		-196.40	-5.63	f
62004	ANACOND	230	40457	GARRISON	230	2		-212.29	-15.45	f
62009	RATTLE S	161	40867	RATTLE S	230	1		-122.28	-32.74	t
62012	TOWN2	500	40453	GAR2EAST	500	2		796.40	-152.91	t
62013	TOWN1	500	40451	GAR1EAST	500	1		796.40	-152.91	t
62066	KERR	115	40391	ELMO	115	1		5.85	-15.09	f
62072	OVANDO	230	40457	GARRISON	230	1		-39.03	23.15	t
62072	OVANDO	230	40551	HOT SPR	230	1		33.20	13.65	t
62085	CROWCR B	115	48055	BURKAVAB	115	1		25.37	-12.00	t
62086	THOMSON	115	48053	BURKAVAA	115	1		31.63	-12.79	t
from area 62 to area 40 NORTHWEST								1118.84	-362.73	
62030	PTRSNFLT	230	65025	AMPS	230	1		210.53	-50.02	t
62045	BLGS PHA	230	66750	YELOWTLP	230	1		-42.51	5.04	t
62061	RMRK PHA	161	66755	YELOWTLP	161	1		-22.35	-2.61	f
62084	DILLON S	161	65155	BIGGRASS	161	1		93.49	-40.75	t
from area 62 to area 65 PACE								239.16	-88.34	
62023	GT FALLS	161	63008	HAVRE	161	1		14.01	-12.26	f
62024	RAINBOW	161	63015	VERONA	161	1		12.92	-12.05	f
62027	SHELBY	115	63014	TIBERTAP	115	1		0.19	-2.50	f
62051	HARDIN	230	63002	CRSOVRUM	230	1		137.96	8.14	t
62056	HUNTLEY	230	63002	CRSOVRUM	230	1		-155.40	21.46	t
from area 62 to area 63 WAPA U.M.								9.68	2.79	
Total from area 62 MONTANA								1367.68	-448.28	

---------from--------			--------- to --------					---mw----	---mvar--	meter
--no.--	--name--	-kv-	--no.--	--name--	-kv-	ck				
40145	BOUNDARY	230	50822	NLYPHS	230	1		-306.33	-0.42	f
40323	CUSTER W	500	50194	ING500	500	1		-1005.27	161.80	t
40323	CUSTER W	500	50194	ING500	500	2		-988.60	160.18	t
from area 40 to area 50 B.C.HYDRO								-2300.20	321.56	
45029	BURNS	500	60240	MIDPOINT	500	1		-239.39	368.00	t
45103	ENTERPRS	230	60150	HELLSCYN	230	1		25.68	-34.46	f
40507	HARNEY	115	61826	HINES	115	1		-13.43	15.60	f
40621	LAGRANDE	230	60192	LADD	230	1		68.93	-28.95	f
48197	LOLO	230	60278	IMNAHA	230	1		215.04	-24.83	t
from area 40 to area 60 IDAHO								56.83	295.37	
41311	CELILO1	500	26097	SYLMAR1	230	1		529.60	58.88	f
41313	CELILO3	230	26098	SYLMAR3	230	1		873.73	244.48	f
41312	CELILO2	500	26099	SYLMAR2	230	1		529.60	58.81	f
41314	CELILO4	230	26100	SYLMAR4	230	1		873.73	244.92	f
from area 40 to area 26 LADWP								2806.66	607.09	
48053	BURKAVAA	115	62086	THOMSON	115	1		-31.63	12.79	f
48055	BURKAVAB	115	62085	CROWCR B	115	1		-25.37	12.00	f
40391	ELMO	115	62066	KERR	115	1		-5.85	15.09	t
40451	GAR1EAST	500	62013	TOWN1	500	1		-796.40	152.91	f
40453	GAR2EAST	500	62012	TOWN2	500	2		-796.40	152.91	f
40457	GARRISON	230	62072	OVANDO	230	1		39.03	-23.15	f
40457	GARRISON	230	62004	ANACOND	230	1		196.40	5.63	t
40457	GARRISON	230	62004	ANACOND	230	2		212.29	15.45	t
40551	HOT SPR	230	62072	OVANDO	230	1		-33.20	-13.65	f
40867	RATTLE S	230	62009	RATTLE S	161	1		122.28	32.74	f
from area 40 to area 62 MONTANA								-1118.84	362.73	
45035	CAPTJACK	500	30020	OLINDA	500	1		1373.16	-223.88	f
45087	DELTA	115	31468	CASCADE	115	1		71.53	-15.41	f

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   40687 MALIN     500        30005 ROUND MT  500  1            1214.33   -122.22   f
   40687 MALIN     500        30005 ROUND MT  500  2            1225.10   -140.17   f
from area  40 to area  30 PG AND E                              3884.11   -501.68

   40537 HIL TOP   230        64058 HIL TOP   345  1             185.34    -49.27   f
from area  40 to area  64 SIERRA                                 185.34    -49.27

Total from area  40 NORTHWEST                                   3513.89   1035.81

 ---------from--------      --------- to --------
 --no.-- --name-- -kv-      --no.-- --name-- -kv- ck          ---mw---- ---mvar-- meter

   66235 PINTO PS  345        14101 FOURCORN  345  1             -37.50     92.91   t
from area  65 to area  14 ARIZONA                                -37.50     92.91

   65075 ANTLOPE   230        60073 BRADY     230  1             103.66    -38.16   f
   65135 BENLOMND  345        60060 BORAH     345  1            -344.66     18.24   t
   65220 BRIDGER   230        60085 BRIDGER   345  1             -41.56     -8.45   t
   65220 BRIDGER   230        60085 BRIDGER   345  2             -42.24     -8.57   t
   65220 BRIDGER   230        60085 BRIDGER   345  3             -41.56     -8.45   t
   65665 GOSHEN    345        60085 BRIDGER   345  1            -593.41    -56.31   f
   65665 GOSHEN    345        60190 KINPORT   345  1             221.69     27.34   t
   65670 GOSHEN    161        60030 BLACKFT   161  1             100.67     11.42   f
   65920 MALAD     138        60020 AMFLS     138  1             -66.06      2.40   t
   66565 TREASTON  230        60073 BRADY     230  1            -140.43     24.37   t
from area  65 to area  60 IDAHO                                 -843.90    -36.18

   65995 MONA      345        26043 INTERMT   345  1             -13.85    -84.32   f
   65995 MONA      345        26043 INTERMT   345  2             -13.85    -84.32   f
from area  65 to area  26 LADWP                                  -27.71   -168.65

   65025 AMPS      230        62030 PTRSNFLT  230  1            -210.53     50.02   f
   65155 BIGGRASS  161        62084 DILLON S  161  1             -93.49     40.75   f
   66750 YELOWTLP  230        62045 BLGS PHA  230  1              42.51     -5.04   f
   66755 YELOWTLP  161        62061 RMRK PHA  161  1              22.35      2.61   t
from area  65 to area  62 MONTANA                               -239.16     88.34

   66280 REDBUTTE  345        18002 HA PS     345  1             251.84    -58.11   f
from area  65 to area  18 NEVADA                                 251.84    -58.11

   66210 PAVANT    230        64124 UTAH-NEV  230  1              36.17     13.41   t
from area  65 to area  64 SIERRA                                  36.17     13.41

   66355 SIGURDPS  230        79031 GLENCANY  230  1              41.97     31.68   t
from area  65 to area  19 WAPA L.C.                               41.97     31.68

   65060 ANT MINE  230        73276 TEKLA     230  1              30.13     18.58   f
   65085 ASHLEY    138        79067 VERNAL    138  1             -80.81      5.97   t
   65192 BONANZA   138        79067 VERNAL    138  1              49.69      6.29   t
   65193 BONANZA   345        79005 BEARS     345  1            -351.43      0.36   f
   65305 CASPERPP  115        73167 REFNRYTP  115  1             -35.74     -4.03   f
   65305 CASPERPP  115        73042 CASPERLM  115  1              -4.99     -5.24   t
   65420 DAVEJOHN  230        73107 LAR.RIVR  230  1              87.72    -19.04   f
   65420 DAVEJOHN  230        73190 STEGALL   230  1              96.56    -14.22   f
   65425 DAVEJOHN  115        73070 GLENRCKN  115  1              73.50      2.46   f
   65425 DAVEJOHN  115        73071 GLENRCKS  115  1              85.03      6.33   f
   65565 FLAMGORG  230        79026 FLAMGORG  138  1             -45.92      5.94   f
   65565 FLAMGORG  230        79026 FLAMGORG  138  2             -45.92      5.94   f
   66278 RANGELY   138        79001 ARTESIA   138  1              -6.99     -5.16   f
   66278 RANGELY   138        79046 MEEKER    138  1              -7.98     -0.75   f
   66305 RIVERTON  230        73170 RIVERTON  115  1               6.22     10.15   f
   66535 THERMOPL  230        73197 THERMOPL  115  1               0.84      8.85   t
   66540 THERPACE  115        73197 THERMOPL  115  1              11.47      9.05   t
   66720 WORLAND   115        73222 WORLANTP  115  1             -12.52      9.03   t
   66725 WYODAK    230        73148 OSAGE     230  1             121.55    -16.48   t
   66725 WYODAK    230        73168 RENO      230  1              91.00      6.36   f
   66725 WYODAK    230        73294 HUGHES    230  1             116.77     -1.57   f
   66725 WYODAK    230        73282 WYODAK     69  1             -10.63     15.21   f
   66725 WYODAK    230        73282 WYODAK     69  2              -7.19     10.28   f
   66725 WYODAK    230        74016 WYGEN      14  1               0.00      0.00   f
   66750 YELOWTLP  230        73229 YELLOWBR  230  1            -323.22     18.92   t
from area  65 to area  73 WAPA R.M.                             -162.88     73.22

Total from area  65 PACE                                        -981.16     36.63

 ---------from--------      --------- to --------
 --no.-- --name-- -kv-      --no.-- --name-- -kv- ck          ---mw---- ---mvar-- meter

   70005 BRUSHCPP  115        73013 B.CK PS   115  1             118.30     23.01   f
   70005 BRUSHCPP  115        73013 B.CK PS   115  2             124.81     30.01   f
   70116 COBBLAKE  115        73044 COBBLKTP  115  1             -15.34     -1.44   f
   70122 COMANCHE  230        73477 FULLER    230  1              95.49     31.36   t
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70139	DANIELPK	230	73477	FULLER	230	1	-115.06	-18.30	t
70193	FTN VALL	115	73412	MIDWAYBR	115	1	4.47	-0.15	t
70205	GRANDJCT	230	79036	GRANDJCT	345	1	-46.91	-23.06	f
70256	LAPORTPS	115	73105	LAPORTE	115	1	-14.74	-6.25	t
70274	MALTA	230	73138	MT.ELBRT	230	1	-145.52	-6.88	f
70285	MIDWAYPS	115	73412	MIDWAYBR	115	1	18.43	-22.63	f
70286	MIDWAYPS	230	73413	MIDWAYBR	230	1	132.07	79.33	t
70287	MILL	115	73296	FRASER	115	1	-41.68	9.51	f
70308	PALMER	115	73414	MONUMENT	115	1	-47.42	17.72	t
70311	PAWNEE	230	73192	STORY	230	1	-228.76	-30.81	t
70327	PONCHA	115	79037	GUNNISON	115	1	-23.83	10.86	f
70350	RAWHIDE	24	73165	RAWHIDE	230	1	262.16	80.95	t
70358	RIFLE PS	230	79059	RIFLE WA	230	1	-90.98	11.09	f
70358	RIFLE PS	230	79250	AMATLAS	230	1	-75.90	-3.66	f
70375	SAN LUIS	230	79054	PONCHABR	230	1	-80.57	6.69	t
70410	ST.VRAIN	230	73116	LONGPEAK	230	1	-51.99	66.34	f
70470	WELD PS	115	73211	WELD LM	115	1	-20.39	61.43	f
70471	WELD PS	230	73212	WELD LM	230	1	-369.21	1.17	f
70474	WINDSOR	230	73011	AULT	230	1	-307.19	1.38	t
70476	WOODLAND	115	73400	EMIL AND	115	1	14.70	2.51	f
70525	MTHARRIS	138	79038	HAYDEN	138	1	-7.21	-1.37	t
79033	GOREPASS	230	79039	HAYDEN	230	1	-250.97	-22.33	t
79033	GOREPASS	230	73072	GOREPASS	138	1	2.66	3.44	f
79034	GRANDJCT	115	79048	MONTROSE	115	1	22.95	-4.66	t
79056	RIFLE CU	138	79046	MEEKER	138	1	-18.96	-2.19	f
79057	RIFLE CU	230	79059	RIFLE WA	230	1	9.38	-24.09	t
79058	RIFLE CU	345	79014	CRAIG	345	1	-336.13	-1.45	f
79058	RIFLE CU	345	79036	GRANDJCT	345	1	306.73	-2.71	f
79091	WOLCOTTP	230	79039	HAYDEN	230	1	-183.00	0.02	f
79173	COLBRAN	115	79174	MOLINA-L	115	1	-0.00	-0.53	f
70351	RAWHIDEA	14	73165	RAWHIDE	230	1	50.81	40.24	t
70550	W CANON	115	73551	W CANON	230	1	-23.57	-19.05	t

from area 70 to area 73 WAPA R.M. -1332.36 285.47

Total from area 70 PSCOLORADO -1332.36 285.47

---------from--------			--------- to --------						
--no.--	--name--	-kv-	--no.--	--name--	-kv-	ck	---mw----	---mvar--	meter
79060	SANJN PS	345	10292	SAN_JUAN	345	1	186.46	-27.16	t

from area 73 to area 10 NEW MEXICO 186.46 -27.16

73042	CASPERLM	115	65305	CASPERPP	115	1	4.99	5.24	f
73070	GLENRCKN	115	65425	DAVEJOHN	115	1	-73.50	-2.46	t
73071	GLENRCKS	115	65425	DAVEJOHN	115	1	-85.03	-6.33	t
73107	LAR.RIVR	230	65420	DAVEJOHN	230	1	-87.72	19.04	t
73148	OSAGE	230	66725	WYODAK	230	1	-121.55	16.48	f
73167	REFNRYTP	115	65305	CASPERPP	115	1	35.74	4.03	t
73168	RENO	230	66725	WYODAK	230	1	-91.00	-6.36	t
73170	RIVERTON	115	66305	RIVERTON	230	1	-6.22	-10.15	t
73190	STEGALL	230	65420	DAVEJOHN	230	1	-96.56	14.22	t
73197	THERMOPL	115	66540	THERPACE	115	1	-11.47	-9.05	f
73197	THERMOPL	115	66535	THERMOPL	230	1	-0.84	-8.85	f
73222	WORLANTP	115	66720	WORLAND	115	1	12.52	-9.03	f
73229	YELLOWBR	230	66750	YELOWTLP	230	1	323.22	-18.92	f
73276	TEKLA	230	65060	ANT MINE	230	1	-30.13	-18.58	t
73282	WYODAK	69	66725	WYODAK	230	1	10.63	-15.21	t
73282	WYODAK	69	66725	WYODAK	230	2	7.19	-10.28	t
73294	HUGHES	230	66725	WYODAK	230	1	-116.77	1.57	t
79001	ARTESIA	138	66278	RANGELY	138	1	6.99	5.16	t
79005	BEARS	345	65193	BONANZA	345	1	351.43	-0.36	t
79026	FLAMGORG	138	65565	FLAMGORG	230	1	45.92	-5.94	t
79026	FLAMGORG	138	65565	FLAMGORG	230	2	45.92	-5.94	t
79046	MEEKER	138	66278	RANGELY	138	1	7.98	0.75	t
79067	VERNAL	138	65085	ASHLEY	138	1	80.81	-5.97	f
79067	VERNAL	138	65192	BONANZA	138	1	-49.69	-6.29	f
74016	WYGEN	14	66725	WYODAK	230	1	0.00	0.00	t

from area 73 to area 65 PACE 162.88 -73.22

73011	AULT	230	70474	WINDSOR	230	1	307.19	-1.38	f
73013	B.CK PS	115	70005	BRUSHCPP	115	1	-118.30	-23.01	t
73013	B.CK PS	115	70005	BRUSHCPP	115	2	-124.81	-30.01	t
73044	COBBLKTP	115	70116	COBBLAKE	115	1	15.34	1.44	t
73072	GOREPASS	138	79033	GOREPASS	230	1	-2.66	-3.44	t
73105	LAPORTE	115	70256	LAPORTPS	115	1	14.74	6.25	f
73116	LONGPEAK	230	70410	ST.VRAIN	230	1	51.99	-66.34	t
73138	MT.ELBRT	230	70274	MALTA	230	1	145.52	6.88	t
73165	RAWHIDE	230	70350	RAWHIDE	24	1	-262.16	-80.95	f
73165	RAWHIDE	230	70351	RAWHIDEA	14	1	-50.81	-40.24	f
73192	STORY	230	70311	PAWNEE	230	1	228.76	30.81	f
73211	WELD LM	115	70470	WELD PS	115	1	20.39	-61.43	t
73212	WELD LM	230	70471	WELD PS	230	1	369.21	-1.17	t

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   73296 FRASER    115        70287 MILL      115  1             41.68     -9.51   t
   73400 EMIL AND  115        70476 WOODLAND  115  1            -14.70     -2.51   t
   73412 MIDWAYBR  115        70193 FTN VALL  115  1             -4.47      0.15   f
   73412 MIDWAYBR  115        70285 MIDWAYPS  115  1            -18.43     22.63   t
   73413 MIDWAYBR  230        70286 MIDWAYPS  230  1           -132.07    -79.33   f
   73414 MONUMENT  115        70308 PALMER    115  1             47.42    -17.72   f
   73477 FULLER    230        70122 COMANCHE  230  1            -95.49    -31.36   f
   73477 FULLER    230        70139 DANIELPK  230  1            115.06     18.30   f
   79014 CRAIG     345        79058 RIFLE CU  345  1            336.13      1.45   t
   79036 GRANDJCT  345        79058 RIFLE CU  345  1           -306.73      2.71   t
   79036 GRANDJCT  345        70205 GRANDJCT  230  1             46.91     23.06   t
   79037 GUNNISON  115        70327 PONCHA    115  1             23.83    -10.86   t
   79038 HAYDEN    138        70525 MTHARRIS  138  1              7.21      1.37   f
   79039 HAYDEN    230        79033 GOREPASS  230  1            250.97     22.33   f
   79039 HAYDEN    230        79091 WOLCOTTP  230  1            183.00     -0.02   t
   79046 MEEKER    138        79056 RIFLE CU  138  1             18.96      2.19   t
   79048 MONTROSE  115        79034 GRANDJCT  115  1            -22.95      4.66   f
   79054 PONCHABR  230        70375 SAN LUIS  230  1             80.57     -6.69   f
   79059 RIFLE WA  230        70358 RIFLE PS  230  1             90.98    -11.09   t
   79059 RIFLE WA  230        79057 RIFLE CU  230  1             -9.38     24.09   f
   79174 MOLINA-L  115        79173 COLBRAN   115  1              0.00      0.53   t
   79250 AMATLAS   230        70358 RIFLE PS  230  1             75.90      3.66   t
   73551 W CANON   230        70550 W CANON   115  1             23.57     19.05   f
from area  73 to area  70 PSCOLORADO                           1332.36   -285.47

   79061 SHIP PS   230        79063 SHIPROCK  230  1             87.43    -14.92   t
   79260 ELPASOTP  115        79105 GLADETAP  115  1             -0.61    -13.17   t
from area  73 to area  19 WAPA L.C.                              86.82    -28.08

   73229 YELLOWBR  230        63001 CROS PHA  230  1           -156.57     25.41   f
from area  73 to area  63 WAPA U.M.                            -156.57     25.41

Total from area  73 WAPA R.M.                                  1611.95   -388.52

 ---------from--------      --------- to --------
 --no.-- --name-- -kv-      --no.-- --name-- -kv- ck          ---mw---- ---mvar-- meter

   63002 CRSOVRUM  230        62051 HARDIN    230  1           -137.96     -8.14   f
   63002 CRSOVRUM  230        62056 HUNTLEY   230  1            155.40    -21.46   f
   63008 HAVRE     161        62023 GT FALLS  161  1            -14.01     12.26   t
   63014 TIBERTAP  115        62027 SHELBY    115  1             -0.19      2.50   t
   63015 VERONA    161        62024 RAINBOW   161  1            -12.92     12.05   t
from area  63 to area  62 MONTANA                                -9.68     -2.79

   63001 CROS PHA  230        73229 YELLOWBR  230  1            156.57    -25.41   t
from area  63 to area  73 WAPA R.M.                             156.57    -25.41

Total from area  63 WAPA U.M.                                   146.89    -28.20
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MONTANA TRANSMISSION STUDY, WAPA UGP, JUNE 2002
G1

Summation of selected system

	-----MW----	----MVAR---		
Generation	70648.648	9117.936	Generators	2564
Actual Load	60440.602	19741.215	Loads	6813
Net actual shunt	0.321	-2041.117	Shunts	1297
Net actual svd	0.000	-5930.230	Svd	585
Loss	3060.728	-2569.394	Buses	13183
			Lines	10961
			Transformers	5140
MVA-miles	6287675.5	972363.3	DC buses	6
Miles	46985.316		DC converters	10
			DC lines	3

MONTANA TRANSMISSION STUDY, WAPA UGP, JUNE 2002
G1

Area 54 [ALBERTA]

	-----MW----	----MVAR---		
Generation	7862.734	857.197	Generators	142
Actual Load	7899.199	2641.000	Loads	512
Net actual shunt	0.000	-22.487	Shunts	9
Net actual svd	0.000	-1851.936	Svd	76
Net Interchange	-399.428	-37.039	Buses	991
Sched Interchange	-400.000		Lines	781
Loss	362.961	127.660	Transformers	406
MVA-miles	1111698.0	226120.4	DC buses	0
Miles	18637.697		DC converters	0
			DC lines	0
Loss at 13.20 Kv	1.733	25.322		
Loss at 13.80 Kv	3.367	88.111		
Loss at 14.40 Kv	0.019	2.275		
Loss at 25.00 Kv	1.931	27.273		
Loss at 34.00 Kv	0.053	0.877		
Loss at 69.00 Kv	18.964	-3.364		
Loss at 138.00 Kv	151.490	-263.415		
Loss at 240.00 Kv	167.689	-572.756		
Loss at 500.00 Kv	0.000	0.000		
Loss at other Kv	17.714	823.337		
Largest mismatch MVA	0.0121	0.1179		

MONTANA TRANSMISSION STUDY, WAPA UGP, JUNE 2002
G1

Area 50 [B.C.HYDRO]

	-----MW----	----MVAR---		
Generation	10251.102	925.883	Generators	112
Actual Load	6889.125	2565.790	Loads	395
Net actual shunt	0.000	2957.812	Shunts	104
Net actual svd	0.000	2143.605	Svd	125
Net Interchange	2850.135	-276.386	Buses	1054
Sched Interchange	2849.900		Lines	718
Loss	511.839	-6464.939	Transformers	645
MVA-miles	0.0	0.0	DC buses	0
Miles	0.000		DC converters	0
			DC lines	0
Loss at 13.20 Kv	0.307	7.922		
Loss at 13.80 Kv	10.057	491.737		
Loss at 34.00 Kv	0.000	0.002		
Loss at 46.00 Kv	0.302	0.084		
Loss at 132.00 Kv	36.981	105.857		
Loss at 138.00 Kv	15.076	-120.952		
Loss at 230.00 Kv	53.123	-614.115		
Loss at 500.00 Kv	338.766	-7000.631		
Loss at other Kv	57.226	665.161		
Largest mismatch MVA	0.0312	0.0351		

MONTANA TRANSMISSION STUDY, WAPA UGP, JUNE 2002
G1

Area 60 [IDAHO]

	-----MW----	----MVAR---

Generation	4111.463	457.600	Generators	62
Actual Load	2984.000	711.600	Loads	64
Net actual shunt	0.000	-595.478	Shunts	15
Net actual svd	0.000	0.000	Svd	0
Net Interchange	919.864	-311.091	Buses	156
Sched Interchange	920.000		Lines	120
Loss	207.600	652.570	Transformers	96
MVA-miles	0.0	0.0	DC buses	0
Miles	0.000		DC converters	0
			DC lines	0
Loss at 13.20 Kv	0.272	5.839		
Loss at 13.80 Kv	3.375	116.064		
Loss at 14.40 Kv	0.878	34.174		
Loss at 34.50 Kv	0.000	0.000		
Loss at 100.00 Kv	0.590	27.429		
Loss at 115.00 Kv	0.438	0.380		
Loss at 138.00 Kv	19.680	-4.774		
Loss at 161.00 Kv	1.800	2.733		
Loss at 230.00 Kv	72.395	-34.598		
Loss at 345.00 Kv	102.916	335.740		
Loss at 500.00 Kv	0.000	0.000		
Loss at other Kv	5.255	169.583		
Largest mismatch MVA	0.0024	0.0082		

MONTANA TRANSMISSION STUDY, WAPA UGP, JUNE 2002
G1

Area 62 [MONTANA]

	-----MW----	----MVAR---		
Generation	2908.334	146.846	Generators	22
Actual Load	1422.895	610.184	Loads	200
Net actual shunt	0.321	-121.986	Shunts	56
Net actual svd	0.000	-90.512	Svd	11
Net Interchange	1367.597	-450.856	Buses	310
Sched Interchange	1368.000		Lines	317
Loss	117.521	200.016	Transformers	89
MVA-miles	0.0	0.0	DC buses	0
Miles	0.000		DC converters	0
			DC lines	0
Loss at 13.80 Kv	0.000	36.356		
Loss at 69.00 Kv	0.538	2.554		
Loss at 100.00 Kv	15.820	-45.784		
Loss at 115.00 Kv	2.234	-18.339		
Loss at 161.00 Kv	30.178	-13.233		
Loss at 230.00 Kv	24.146	-80.848		
Loss at 500.00 Kv	43.958	143.897		
Loss at other Kv	0.648	175.413		
Largest mismatch MVA	0.0045	0.0081		

MONTANA TRANSMISSION STUDY, WAPA UGP, JUNE 2002
G1

Area 40 [NORTHWEST]

	-----MW----	----MVAR---		
Generation	27331.773	3752.767	Generators	383
Actual Load	22671.295	6850.328	Loads	1652
Net actual shunt	0.000	-1855.398	Shunts	43
Net actual svd	0.000	-4060.109	Svd	159
Net Interchange	3513.902	1036.054	Buses	2740
Sched Interchange	3514.000		Lines	2710
Loss	1146.586	1781.908	Transformers	654
MVA-miles	4582896.5	611580.2	DC buses	4
Miles	18469.418		DC converters	4
			DC lines	2
Loss at 11.00 Kv	-0.000	0.606		
Loss at 13.20 Kv	0.000	4.928		
Loss at 13.80 Kv	4.807	207.596		
Loss at 14.40 Kv	0.284	13.035		
Loss at 25.00 Kv	3.168	165.818		
Loss at 34.50 Kv	0.345	6.193		
Loss at 69.00 Kv	14.912	42.575		
Loss at 100.00 Kv	0.121	-0.183		
Loss at 115.00 Kv	218.081	502.353		
Loss at 230.00 Kv	338.233	1624.930		
Loss at 345.00 Kv	16.041	-175.694		

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Loss at 500.00 Kv         425.745    -1920.996
Loss at other Kv          124.848     1310.747

Largest mismatch MVA       0.0286       0.0790

MONTANA TRANSMISSION STUDY, WAPA UGP, JUNE 2002
G1

Area  65 [PACE                           ]

                      -----MW----  ----MVAR---
Generation               5584.900      755.788        Generators           52
Actual Load              6293.716     1960.150        Loads               274
Net actual shunt            0.000    -1762.570        Shunts               74
Net actual svd              0.000      -48.571        Svd                   2
Net Interchange          -981.147       36.871        Buses               564
Sched Interchange        -981.200                     Lines               407
Loss                      272.334      569.904        Transformers        337

MVA-miles                     5.0          1.6        DC buses              0
Miles                       1.900                     DC converters         0
                                                      DC lines              0
Loss at  13.80 Kv           0.868       28.077
Loss at  34.50 Kv           0.990        7.429
Loss at  46.00 Kv           6.339      137.414
Loss at  69.00 Kv           1.672       22.771
Loss at 100.00 Kv           0.056        1.037
Loss at 115.00 Kv           3.001       -9.332
Loss at 138.00 Kv          71.155      198.499
Loss at 161.00 Kv          15.087        2.871
Loss at 230.00 Kv          80.593       61.975
Loss at 345.00 Kv          88.501       20.527
Loss at other Kv            4.074       98.636

Largest mismatch MVA       0.0031       0.0248

MONTANA TRANSMISSION STUDY, WAPA UGP, JUNE 2002
G1

Area  70 [PSCOLORADO                     ]

                      -----MW----  ----MVAR---
Generation               5191.508     1771.750        Generators           66
Actual Load              6332.696     2372.604        Loads               362
Net actual shunt            0.000        0.000        Shunts                0
Net actual svd              0.000    -1672.031        Svd                  43
Net Interchange         -1332.337      285.456        Buses               500
Sched Interchange       -1332.800                     Lines               461
Loss                      191.144      785.742        Transformers        147

MVA-miles                 30598.7       6263.1        DC buses              0
Miles                     564.500                     DC converters         0
                                                      DC lines              0
Loss at  13.80 Kv           4.007      136.179
Loss at  14.40 Kv           0.080        0.798
Loss at  25.00 Kv           0.010        0.140
Loss at  46.00 Kv           0.196        0.009
Loss at  69.00 Kv           7.173        1.660
Loss at 100.00 Kv           0.032       -0.501
Loss at 115.00 Kv          33.096      -37.718
Loss at 138.00 Kv           0.225       -5.718
Loss at 230.00 Kv         138.902      449.863
Loss at 345.00 Kv           0.002        0.112
Loss at other Kv            7.423      240.917

Largest mismatch MVA       0.0243       0.0264

MONTANA TRANSMISSION STUDY, WAPA UGP, JUNE 2002
G1

Area  64 [SIERRA                         ]

                      -----MW----  ----MVAR---
Generation               1375.351      126.528        Generators           22
Actual Load              1719.091      458.744        Loads               121
Net actual shunt            0.000     -188.116        Shunts               30
Net actual svd              0.000       68.967        Svd                   5
Net Interchange          -399.899       57.299        Buses               275
Sched Interchange        -399.000                     Lines               197
Loss                       56.159     -270.358        Transformers        117

MVA-miles                 66649.6      38456.5        DC buses              0
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Miles	1042.600		DC converters	0
			DC lines	0
Loss at 13.80 Kv	2.542	51.449		
Loss at 69.00 Kv	0.000	0.000		
Loss at 115.00 Kv	0.479	-6.145		
Loss at 230.00 Kv	1.908	-99.624		
Loss at 345.00 Kv	9.075	-441.238		
Loss at other Kv	42.154	225.200		
Largest mismatch MVA	0.0067	0.0424		

MONTANA TRANSMISSION STUDY, WAPA UGP, JUNE 2002
G1

Area 52 [W KOOTENAY]

	-----MW----	----MVAR---		
Generation	596.550	100.091	Generators	20
Actual Load	722.400	210.200	Loads	64
Net actual shunt	0.000	-77.820	Shunts	27
Net actual svd	0.000	-130.690	Svd	4
Net Interchange	-150.510	-8.137	Buses	260
Sched Interchange	-149.900		Lines	165
Loss	24.660	106.536	Transformers	117
MVA-miles	30835.6	4863.4	DC buses	0
Miles	986.000		DC converters	0
			DC lines	0
Loss at 13.20 Kv	0.000	8.258		
Loss at 13.80 Kv	0.000	0.000		
Loss at 14.40 Kv	0.000	29.986		
Loss at 25.00 Kv	0.000	0.000		
Loss at 138.00 Kv	0.396	-0.490		
Loss at 161.00 Kv	9.043	11.279		
Loss at 230.00 Kv	1.525	-8.685		
Loss at other Kv	13.696	66.188		
Largest mismatch MVA	0.0008	0.0060		

MONTANA TRANSMISSION STUDY, WAPA UGP, JUNE 2002
G1

Area 73 [WAPA R.M.]

	-----MW----	----MVAR---		
Generation	5379.477	218.708	Generators	80
Actual Load	3608.290	1237.018	Loads	355
Net actual shunt	0.000	-296.124	Shunts	4
Net actual svd	0.000	-271.844	Svd	53
Net Interchange	1611.933	-387.598	Buses	620
Sched Interchange	1612.000		Lines	567
Loss	159.255	-62.738	Transformers	174
MVA-miles	464992.6	85078.0	DC buses	0
Miles	7283.200		DC converters	0
			DC lines	0
Loss at 13.80 Kv	6.221	91.895		
Loss at 34.50 Kv	0.315	4.024		
Loss at 69.00 Kv	5.364	-11.099		
Loss at 115.00 Kv	64.437	-116.586		
Loss at 138.00 Kv	4.687	-30.251		
Loss at 230.00 Kv	36.118	-278.216		
Loss at 345.00 Kv	34.875	-45.982		
Loss at other Kv	7.239	323.477		
Largest mismatch MVA	0.0228	0.0342		

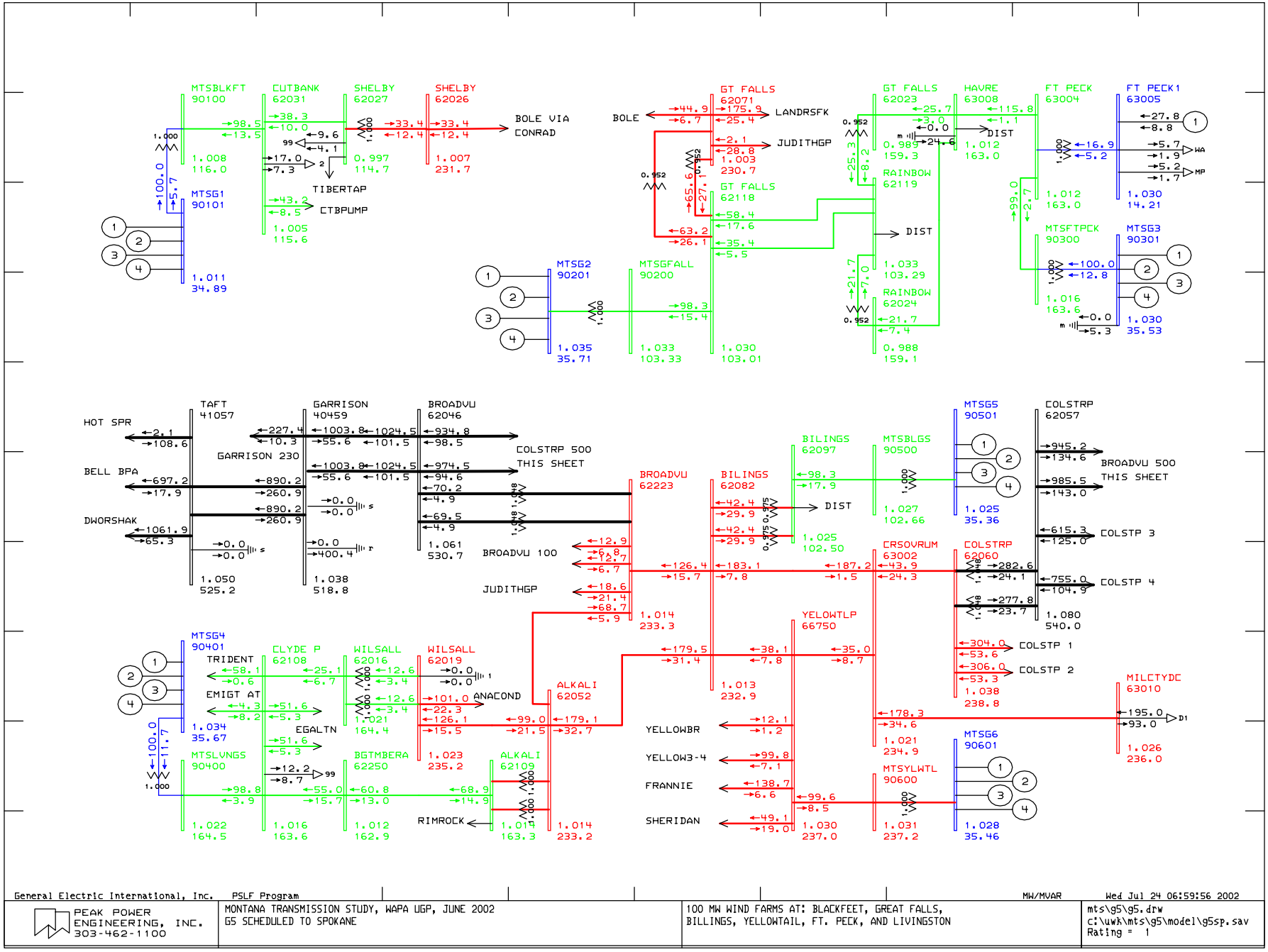
MONTANA TRANSMISSION STUDY, WAPA UGP, JUNE 2002
G1

Area 63 [WAPA U.M.]

	-----MW----	----MVAR---		
Generation	55.454	4.779	Generators	1
Actual Load	-102.100	123.600	Loads	17
Net actual shunt	0.000	-78.951	Shunts	1
Net actual svd	0.000	-17.109	Svd	4
Net Interchange	146.885	-27.065	Buses	15
Sched Interchange	147.000		Lines	12
Loss	10.669	4.305	Transformers	3
MVA-miles	0.0	0.0	DC buses	0

Miles	0.000		DC converters	0
			DC lines	0
Loss at 13.80 Kv	0.219	6.218		
Loss at 115.00 Kv	0.025	-7.077		
Loss at 161.00 Kv	0.926	-47.969		
Loss at 230.00 Kv	9.498	53.134		
Largest mismatch MVA	0.0001	0.0010		

sp



General Electric International, Inc. PSLF Program MW/MVAR Wed Jul 24 06:59:56 2002

PEAK POWER ENGINEERING, INC. 303-462-1100

MONTANA TRANSMISSION STUDY, WAPA UGP, JUNE 2002
G5 SCHEDULED TO SPOKANE

100 MW WIND FARMS AT: BLACKFEET, GREAT FALLS, BILLINGS, YELLOWTAIL, FT. PECK, AND LIVINGSTON

mts\g5\g5.drw
c:\uwk\mts\g5\model\g5sp.sav
Rating = 1

GENERAL ELECTRIC INTERNATIONAL, INC. - PSLF - V11.1
MONTANA TRANSMISSION STUDY, WAPA UGP, JUNE 2002
G5 SCHEDULED TO SPOKANE

Percent Loading Summary -- using rating 1 - 100.0 percent of rating

----------from----------				---------- to ----------								rate	per cent
--no.--	--name--	-kv-	-ar-	--no.--	--name--	-kv-	-ar-	ck	---mw---	-mvar-	-mva--	------	loading
54083	E EDMON9	138	54	55938	STEL TAP	138	54	22	197.9	1.5	197.9	468.6A	169.9 F
54503	STELCOA9	138	54	55938	STEL TAP	138	54	22	-197.3	-0.2	197.3	497.9A	159.8 F
55015	DOME EA9	14	54	55525	163ST2	240	54	T2	-66.0	-5.3	66.2	45.0M	148.3 T
54506	BELLAMY4	240	54	54518	ARGYLL E	240	54	04	81.2	84.2	117.0	240.6A	134.0 T
54062	BARDO 7	138	54	54065	N HOLDE9	138	54	74	82.0	-53.0	97.7	355.6A	111.9 F
54154	E CALGAR	240	54	54161	SARCEE 4	240	54	16	-91.2	365.6	376.8	801.1A	110.9 T
54681	NEVIS 7	138	54	54823	NEVIS 9	138	54	1	33.2	15.6	36.7	33.3M	110.2 F
50459	KIT287	287	50	51075	KIT B5	13	50	5	80.3	23.6	83.7	79.0M	106.0 F
54290	BALZAC G	138	54	55290	BALZAC 1	14	54	T1	107.1	13.1	107.9	105.0M	102.8 F
62047	COLSTP 4	26	62	62057	COLSTRP	500	62	1	755.0	172.4	774.4	770.0M	100.6 F
54079	MILLAR 7	138	54	55102	MILLARA9	14	54	T2	55.6	29.0	62.7	62.5M	100.4 F

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Processing file c:\uwk\mts\base\rvoltlsbs.out
Processing file c:\uwk\mts\g5\rvoltsp.out

Compvolt found the following for comparisons:
     477 Voltage Violations read from c:\uwk\mts\base\rvoltlsbs.out
     470 Voltage Violations read from c:\uwk\mts\g5\rvoltsp.out


**** VOLTS:  NEW ****
Component                   w/o Prj         w/ Prj  Rating
63006 HARLEM    161   0.95 <= pu <= 1.05    0.9231  1.00 pu kV
63009 MALTA UM  161   0.95 <= pu <= 1.05    0.9265  1.00 pu kV

**** VOLTS: WORSE ****
Component             w/o Prj  w/ Prj  Rating

**** VOLTS: BETTER ****
Component             w/o Prj  w/ Prj  Rating

**** VOLTS:  AWAY ****
Component             w/o Prj      w/ Prj          Rating
62033 ANA BPA   115   1.0511  0.95 <= pu <= 1.05   1.00 pu kV
47165 HANLY R1  115   1.0509  0.95 <= pu <= 1.05   1.00 pu kV
40887 RINGOLD   115   1.0500  0.95 <= pu <= 1.05   1.00 pu kV
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GENERAL ELECTRIC INTERNATIONAL, INC. - PSLF - V11.1
MONTANA TRANSMISSION STUDY, WAPA UGP, JUNE 2002
G5 SCHEDULED TO SPOKANE

overvoltage summary > 1.100000

--no.--	--name--	-kv-	(v pu)	--no.--	--name--	-kv-	(v pu)	--no.--	--name--	-kv-	(v pu)
54054	LAMOURE4	240	1.1046	54081	METIS644	240	1.1120	54090	BICKERD4	240	1.1205
54103	DEERLAN4	240	1.1029	54121	ELLERSLI	240	1.1124	54126	WABAMUN4	240	1.1072
54128	SUNDANM9	240	1.1080	54129	E EDMON4	240	1.1083	54130	N CALDE4	240	1.1056
54131	N BARRH4	240	1.1049	54150	LANGDON2	500	1.1250	54329	KEEPHIL4	240	1.1222
54441	946/947X	240	1.1124	54505	JASPER 4	240	1.1078	54506	BELLAMY4	240	1.1213
54509	ARGYLL W	240	1.1206	54512	DOME T29	240	1.1119	54513	LAMBTON4	240	1.1090
54514	CLOVERB4	240	1.1050	54518	ARGYLL E	240	1.1201	54519	CASTLTX2	240	1.1045
54521	PETROLIA	240	1.1140	54524	GENESEE4	240	1.1210	54675	PAINTRT7	240	1.1015
54681	NEVIS 7	138	1.1099	54806	946/947N	240	1.1083	54844	709S702T	138	1.1092
54978	EAST IN4	240	1.1085	55891	904AL TP	240	1.1085	55969	770S701T	138	1.1087
51017	KMS230	230	1.1061								

overvoltage summary > 1.050000

--no.--	--name--	-kv-	(v pu)	--no.--	--name--	-kv-	(v pu)	--no.--	--name--	-kv-	(v pu)
54003	COLINTO9	138	1.0523	54007	BOYLE 9	138	1.0564	54012	FOX CREE	138	1.0666
54013	KAYBOB 9	138	1.0717	54014	GULF RO9	138	1.0819	54015	MTN COA9	138	1.0653
54016	FLATBUS9	138	1.0542	54017	COLD CR7	138	1.0666	54019	WESGEN T	138	1.0531
54020	EDSON A9	138	1.0624	54021	WESGEN 7	138	1.0556	54054	LAMOURE4	240	1.1046
54069	JARROW 9	138	1.0542	54073	IPPL ST9	138	1.0585	54075	SEDGEWI9	138	1.0508
54076	BUFFALO9	138	1.0545	54077	BIGSTON4	240	1.0949	54078	CHEVRON7	138	1.0717
54081	METIS644	240	1.1120	54082	BICKERD7	138	1.0718	54090	BICKERD4	240	1.1205
54097	BIG HOR9	138	1.0675	54103	DEERLAN4	240	1.1029	54111	SANDHIL7	138	1.0794
54121	ELLERSLI	240	1.1124	54125	SUNDANL9	138	1.0654	54126	WABAMUN4	240	1.1072
54128	SUNDANM9	240	1.1080	54129	E EDMON4	240	1.1083	54130	N CALDE4	240	1.1056
54131	N BARRH4	240	1.1049	54134	DALEHUR9	138	1.0656	54139	GAETZ 4	240	1.0751
54141	HIGHVAL9	138	1.0652	54142	WILLESD4	240	1.0883	54144	RED DEE4	240	1.0671
54147	BENALTO4	240	1.0665	54148	E CROSS4	240	1.0574	54150	LANGDON2	500	1.1250
54153	BRAZEAU4	240	1.0977	54155	SAGITAW4	240	1.0591	54157	PEIGAN 4	240	1.0705
54159	N LETHB4	240	1.0856	54200	848S901T	240	1.0730	54232	PANCAN 9	138	1.0792
54233	DOME EM7	138	1.0794	54258	PLAMOND9	138	1.0551	54259	LAC LA 9	138	1.0996
54260	WINEFRE9	138	1.0966	54269	COALSPU7	138	1.0846	54281	MILO 2	240	1.0684
54285	LEISMER9	240	1.0825	54287	GREGG R9	138	1.0959	54298	ALB NEWS	240	1.0502
54302	MARIONA9	138	1.0652	54308	FLATLK-3	138	1.0559	54325	CHEV KG9	138	1.0717
54326	COAL VA9	138	1.0834	54329	KEEPHIL4	240	1.1222	54335	W BROOK4	240	1.0589
54362	EDGERTO7	138	1.0548	54381	FLATLK-1	138	1.0558	54412	BENBOW 9	138	1.0717
54441	946/947X	240	1.1124	54505	JASPER 4	240	1.1078	54506	BELLAMY4	240	1.1213
54509	ARGYLL W	240	1.1206	54512	DOME T29	240	1.1119	54513	LAMBTON4	240	1.1090
54514	CLOVERB4	240	1.1050	54518	ARGYLL E	240	1.1201	54519	CASTLTX2	240	1.1045
54521	PETROLIA	240	1.1140	54524	GENESEE4	240	1.1210	54557	WESLY C4	240	1.0613
54558	WESLY C7	138	1.0651	54559	CARMON 9	138	1.0630	54560	PEACE/29	138	1.0623
54561	DIASHOW7	138	1.0623	54567	FRIEDEN7	138	1.0537	54571	MERCER 9	138	1.0735
54572	MERC TAP	138	1.0738	54576	CRYST L7	138	1.0749	54578	SADHL TP	138	1.0598
54579	SADDLE 9	138	1.0529	54580	FLYSHT/2	138	1.0630	54581	WAP JCT7	138	1.0513
54584	ALBRIGHT	138	1.0569	54585	P&G 7	138	1.0570	54588	BIG MTN7	138	1.0614
54589	DOME CU7	138	1.0736	54590	BRDGE C7	138	1.0619	54593	DONNELL9	138	1.0661
54594	TAP7L487	138	1.0690	54595	TRIANGL7	138	1.0645	54596	VALLEYV9	138	1.0777
54598	BEZANSON	138	1.0756	54599	L. SMOKY	240	1.0645	54600	L.SMOKY7	138	1.0840
54601	STURGEO7	138	1.0838	54606	SIMONET9	138	1.0843	54607	FOXCRK/2	138	1.0643
54608	GOOSE R9	138	1.0662	54612	RUTH LA7	138	1.0925	54613	RUTH LK7	138	1.0929

54618	PARS CR7	138	1.0897	54619	HANGSTO9	138	1.0871	54621	MITS E.4	240	1.0748
54622	MITS E.7	138	1.0980	54623	AEC MILL	138	1.0970	54624	OTAUWAU7	138	1.0978
54632	LOU CR.4	240	1.0638	54633	LOU CR.7	138	1.0596	54634	SARHLK/2	138	1.0532
54636	ESSO JU7	138	1.0543	54637	MORSE RV	138	1.0548	54639	VIRGINI9	138	1.0521
54643	WOLF LK9	138	1.0698	54646	MARG LK4	240	1.0781	54647	MARG LK7	138	1.0829
54648	LACOREY9	138	1.0806	54649	ETHEL L7	138	1.0671	54652	BONNY 9	138	1.0838
54654	BONN SVC	138	1.0838	54655	WHITFISH	240	1.0951	54656	WHITBY 7	138	1.0841
54657	VILNA 9	138	1.0819	54663	IRISH C9	138	1.0616	54665	BUFALOTP	138	1.0545
54666	VERMILO7	138	1.0596	54670	HILL 9	138	1.0685	54675	PAINTRT7	240	1.1015
54680	NEVIS 4	240	1.0776	54681	NEVIS 7	138	1.1099	54685	3HILLS/3	138	1.0615
54691	MICH. C9	138	1.0997	54693	WINT HI9	138	1.0934	54694	BULLPON9	138	1.0872
54700	MCNEILL	138	1.0795	54701	OYEN 7	138	1.0600	54707	SHEER 14	240	1.0545
54709	ANDERSO4	240	1.0547	54710	ANDERSON	138	1.0846	54711	SHEER 24	240	1.0535
54714	JAROW TP	138	1.0542	54715	BAT. RV7	138	1.0809	54721	BAT RV79	240	1.0990
54723	CORDEL 4	240	1.0990	54729	PRIM TAP	138	1.0650	54730	PRIMROSE	138	1.0710
54798	800S701T	138	1.0612	54802	STURGEO9	138	1.0860	54806	946/947N	240	1.1083
54809	732S901T	240	1.0752	54814	717S701T	138	1.0634	54818	VERMILA9	138	1.0803
54819	TER 70A9	138	1.0630	54822	766S901T	240	1.0624	54823	NEVIS 9	138	1.0747
54827	MONITOR9	138	1.0519	54828	767S701T	138	1.0935	54836	MILNERB9	138	1.0720
54838	848S902T	240	1.0734	54840	732S902T	240	1.0517	54844	709S702T	138	1.1092
54847	BAT RV80	240	1.0990	54962	KAYBOBTP	138	1.0717	54978	EAST IN4	240	1.1085
54983	MARION T	138	1.0653	54984	HIGHVL T	138	1.0652	54988	CROSSF T	240	1.0574
54995	W.GRN TP	240	1.0883	55003	SANDYPT9	138	1.0794	55007	ALGAR-39	138	1.0918
55008	MARIANA7	138	1.0931	55072	SYNC_D04	240	1.0652	55073	AURORA 4	240	1.0698
55117	CLAIR L	138	1.0736	55118	POPLAR 7	138	1.0599	55147	MILNERC9	138	1.0825
55226	WABASCA9	240	1.0677	55260	EMP LIQ7	138	1.0774	55272	FIELDGA9	138	1.0534
55280	BRINTNEL	240	1.0629	55352	GRND CTR	138	1.0684	55367	VEGREVL9	138	1.0539
55515	PRIMROSE	138	1.0563	55820	FICKLE 9	138	1.0675	55891	904AL TP	240	1.1085
55909	DALEH TP	138	1.0656	55910	OBED TAP	138	1.0656	55911	EMPLIQTP	138	1.0779
55912	740L JNC	138	1.0846	55913	G.ROBB T	138	1.0825	55924	CH KGT T	138	1.0717
55943	MILO 1	240	1.0684	55969	770S701T	138	1.1087	50010	COM132	132	1.0509
50016	CKY230	230	1.0519	50020	CMS230	230	1.0500	50036	RBW230	230	1.0581
50037	PEM230	230	1.0613	50038	RBW230-1	230	1.0572	50182	ARN132	132	1.0669
50185	ALZ230	230	1.0605	50186	ROS230	230	1.0714	50187	BRT230	230	1.0683
50188	BUT230	230	1.0500	50190	CBN230	230	1.0525	50191	ROS360	360	1.0527
50192	WAH360	360	1.0532	50193	BRT360	360	1.0500	50313	VIT132	132	1.0702
50314	PVO133	132	1.0697	50315	PVO132	132	1.0701	50316	LDY132	132	1.0522
50318	JPT132	132	1.0713	50319	COC132	132	1.0679	50320	HMC132	132	1.0676
50321	PHY132	132	1.0564	50322	CFT132	132	1.0660	50323	DMR132	132	1.0835
50324	PAL132	132	1.0664	50325	GCL132	132	1.0679	50326	NFD132	132	1.0723
50327	ASH132	132	1.0716	50328	PUN132	132	1.0562	50330	LDR132	132	1.0500
50334	KGH132	132	1.0607	50335	UTA132	132	1.0610	50336	PVL132-2	132	1.0729
50337	LDY122	132	1.0710	50338	CMX132	132	1.0576	50339	PVL132	132	1.0730
50342	SCA132	132	1.0500	50343	KSH132-2	132	1.0730	50344	SHA1	132	1.0713
50345	KSH132	132	1.0724	50346	SHA2	132	1.0755	50347	GOW132	132	1.0860
50348	GTP132	132	1.0899	50349	CLD132	132	1.0938	50350	SOO132	132	1.0951
50351	JOR132	132	1.0988	50352	PML132	132	1.0590	50353	WOS132	132	1.0559
50354	GLSTP17	132	1.0746	50355	GLSTP18	132	1.0717	50356	DND132	132	1.0853
50357	LTZ115	132	1.0711	50358	LTZ116	132	1.0711	50359	JHT132	132	1.0500
50377	LDYTP138	132	1.0524	50381	PVLTP116	132	1.0729	50382	HWDTP122	132	1.0713
50383	LDYTP122	132	1.0710	50385	CMXTP102	132	1.0558	50386	CMXTP101	132	1.0596
50387	PVLTP115	132	1.0730	50390	KSHTP11	132	1.0726	50391	KSHTP14	132	1.0733
50393	SHATP10	132	1.0714	50394	SHATP14	132	1.0755	50395	SALTP17	132	1.0731
50396	SALTP18	132	1.0731	50399	LTZTP115	132	1.0711	50400	LTZTP116	132	1.0711
50403	CMX132-2	132	1.0542	50460	KMO287	287	1.0539	50463	SKA500	500	1.0501

50545	BLW230	230	1.0700	50546	SCK230	230	1.0654	50547	HMH230	230	1.0626
50548	BLM230	230	1.0525	50549	QNT230	230	1.0518	50550	QRP230	230	1.0697
50551	TLR230	230	1.0523	50553	BCR230	230	1.0523	50554	RBF230	230	1.0710
50556	LAP230	230	1.0501	50557	SNK230	230	1.0517	50560	KDS500	500	1.0562
50562	GLN500	500	1.0554	50677	MCK138	138	1.0531	50678	AVO138	138	1.0553
50679	BLU138	138	1.0622	50680	VLM138	138	1.0687	50686	SCO138	138	1.0682
50687	ABA138	138	1.0679	50701	REV500	500	1.0500	50729	PRI138TP	138	1.0681
50782	CBK230	230	1.0502	50783	SEL230	230	1.0539	50785	SEV230	230	1.0524
50786	INV230	230	1.0515	50789	AAL230	230	1.0510	50791	CBK500	500	1.0802
50792	SEL500	500	1.0500	50899	ABA138TP	138	1.0679	50913	HWD132-2	132	1.0691
50914	HWDTP112	132	1.0691	50922	DNDTAP	132	1.0859	50923	HSY-PH	132	1.0901
50924	ESQ-PH	132	1.0853	50928	SCG IPP	132	1.0500	50932	IPH132	132	1.0676
50933	JUL132	132	1.0576	50934	JULTP130	132	1.0607	51017	KMS230	230	1.1061
51019	OYR132B1	132	1.0539	51020	OYR132B2	132	1.0562	51021	OYR T101	132	1.0544
51022	OYR T119	132	1.0570	51024	QLC132B1	132	1.0754	51025	QLC132B2	132	1.0754
51040	ICG132	132	1.0500	51045	ALH230	230	1.0550	51051	PGS132	132	1.0697
51052	PGS-105T	132	1.0697	51053	PGS-114T	132	1.0697	60085	BRIDGER	345	1.0500
60240	MIDPOINT	500	1.0582	62012	TOWN2	500	1.0617	62013	TOWN1	500	1.0617
62046	BROADVU	500	1.0610	62057	COLSTRP	500	1.0800	40045	ALLSTON	500	1.0770
40051	ALVEY	500	1.0814	40061	ASHE	500	1.0800	41184	BALD MT	115	1.0514
40111	BIG EDDY	500	1.0803	43049	BOARD F	500	1.0800	47013	BRIDGPRT	115	1.0539
40155	BUCKLEY	500	1.0831	45029	BURNS	500	1.0673	45035	CAPTJACK	500	1.0753
46209	CARMEN	115	1.0525	42315	CASCADEP	115	1.0582	41311	CELILO1	500	1.0801
41312	CELILO2	500	1.0801	40233	CHIEF JO	500	1.0800	42316	CLE ELUM	115	1.0586
40269	CONNEL T	115	1.0509	40271	CONNELL	115	1.0539	40287	COULEE	500	1.0810
40302	COVINGT4	500	1.0768	40306	COVINGT5	500	1.0773	43123	COYOTE	500	1.0833
40323	CUSTER W	500	1.0532	45095	DIXONVLE	500	1.0780	40369	DWORSHAK	500	1.0598
42395	EASTON	115	1.0600	40381	ECHOLAKE	500	1.0823	40451	GAR1EAST	500	1.0562
40453	GAR2EAST	500	1.0562	40485	GREEN PT	115	1.0520	40489	GRIZZLY	500	1.0721
40499	HANFORD	500	1.0872	40517	HATTON T	115	1.0520	40521	HATWAI	500	1.0654
45137	HERMIST	230	1.0509	41212	HILLS CR	115	1.0500	40553	HOT SPR	500	1.0562
42405	HYAK	115	1.0609	40585	JOHN DAY	500	1.0800	40601	KEELER	500	1.0760
45262	KFALLS	500	1.0794	42411	KITTITAS	115	1.0608	40629	LANE	500	1.0717
40665	LIT GOOS	500	1.0805	40679	LOW GRAN	500	1.0786	40683	LOW MON	500	1.0800
40687	MALIN	500	1.0733	40693	MAPLE VL	500	1.0840	40699	MARION	500	1.0807
40711	MCLOUGLN	500	1.0802	40721	MCNARY	345	1.0513	40723	MCNARY	500	1.0814
45197	MERIDINP	500	1.0799	40749	MONROE	500	1.0783	42429	NCLE ELM	115	1.0582
40797	OLYMPIA	500	1.0798	40809	OSTRNDER	500	1.0796	40821	PAUL	500	1.0800
40827	PEARL	500	1.0799	40837	PONDROSA	500	1.0751	40869	RAVER	500	1.0804
43485	ROUND BU	500	1.0691	40913	SACJAWEA	500	1.0812	40917	SACJWA T	500	1.0816
40941	SANTIAM	500	1.0804	40949	SATSOP	500	1.0819	40957	SCHULTZ	500	1.0925
40973	SICKLER	500	1.0842	40989	SLATT	500	1.0825	41043	SUMMER L	500	1.0719
45289	SWIFT	230	1.0500	41051	TACOMA	500	1.0813	41095	TROUTDAL	500	1.0825
41103	UNDRWOOD	115	1.0514	41113	VANTAGE	500	1.0905	47099	WELLS	115	1.0617
42467	WOLDALE	115	1.0596	42314	X-POINT	200	1.0596	65510	EMERY	345	1.0500
64074	MILLERS	120	1.0556	64165	SQAW VLY	120	1.0607	64182	SANDIA	120	1.0555
64229	SUMMIT 2	115	1.0508	52226	PRI138	138	1.0690	52229	KER138	138	1.0760
52230	HED138	138	1.0739	52291	DKL138	138	1.0579	52300	LEE138T3	138	1.0577
52301	LEE138T4	138	1.0577	52302	LEE138C	138	1.0577	52303	JOR138TP	138	1.0573
52304	DGB138	138	1.0565	52306	SEX138	138	1.0580	52307	GLE138	138	1.0581
52308	REC138	138	1.0583	52309	SAU138	138	1.0568	52310	SPR138TP	138	1.0568
52313	HOL138	138	1.0568	52314	OKM138	138	1.0561	52319	JOR138	138	1.0570
52426	MAS138	138	1.0739	52809	LEE-T3	230	1.0585	52810	LEE-T4A	230	1.0577
52811	LEE-T4B	230	1.0595	52812	LEE-T4C	230	1.0581	52813	LEE-T4D	230	1.0582
52815	PRI-T2	138	1.0723								

undervoltage summary < 0.900000

--no.--	--name--	-kv-	(v pu)	--no.--	--name--	-kv-	(v pu)	--no.--	--name--	-kv-	(v pu)

undervoltage summary < 0.950000

--no.--	--name--	-kv-	(v pu)	--no.--	--name--	-kv-	(v pu)	--no.--	--name--	-kv-	(v pu)
54551	RING CK7	138	0.9484	54796	791S701T	138	0.9196	54835	791S702T	138	0.9260
50781	NTL VR	138	0.9447	63006	HARLEM	161	0.9231	63009	MALTA UM	161	0.9265

GENERAL ELECTRIC INTERNATIONAL, INC. - PSLF - V11.1
MONTANA TRANSMISSION STUDY, WAPA UGP, JUNE 2002
G5 SCHEDULED TO SPOKANE

	generation capacity	generation on-line	--- load categories ---- power	current	imped.	shunt	-- svd --	net inter	losses	slack bus
area name	ALBERTA									
mw	10743.6	6887.3	6274.4	0.0	0.0	0.0	0.0	200.4	412.4	37.5
54 mvar	4941.5	852.4	1997.1	0.0	0.0	-21.7	-1195.6	-19.2	91.8	20.4
area name	B.C.HYDRO									
mw	14043.0	8257.8	6035.1	0.0	0.0	0.0	0.0	1799.6	423.1	263.9
50 mvar	6475.0	261.8	2359.8	0.0	0.0	2922.5	2701.3	-381.2	-7340.6	1.6
area name	IDAHO									
mw	4676.4	3202.2	1955.0	0.0	0.0	0.0	0.0	1065.6	181.6	186.9
60 mvar	2192.5	662.8	501.3	0.0	0.0	-97.3	0.0	-376.3	635.2	29.6
area name	MONTANA									
mw	3902.2	3343.3	1207.7	0.0	0.0	0.4	0.0	2001.2	134.0	675.3
62 mvar	1389.0	667.0	524.8	0.0	0.0	-119.3	25.3	-523.4	759.7	201.5
area name	NORTHWEST									
mw	43404.3	17014.3	16651.6	0.0	0.0	0.0	0.0	-226.9	589.6	577.3
40 mvar	15534.6	346.3	5157.0	0.0	0.0	-1744.9	1974.4	1265.5	-6305.7	-300.6
area name	PACE									
mw	6342.0	5630.2	4750.0	0.0	0.0	0.0	0.0	680.4	199.8	79.2
65 mvar	3221.9	585.3	1528.0	0.0	0.0	-527.1	-49.4	-177.7	-188.5	14.2
area name	PSCOLORADO									
mw	5792.0	4236.3	4858.1	0.0	0.0	0.0	0.0	-744.2	122.4	104.3
70 mvar	3667.3	643.4	1835.0	0.0	0.0	0.0	-1397.3	61.1	144.5	4.3
area name	SIERRA									
mw	1901.7	1069.6	1075.2	0.0	0.0	0.0	0.0	-36.0	30.4	99.6
64 mvar	925.4	-24.3	280.4	0.0	0.0	-158.5	73.8	20.2	-240.2	7.7
area name	W KOOTENAY									
mw	763.5	498.0	486.1	0.0	0.0	0.0	0.0	0.5	11.5	98.0
52 mvar	450.0	6.0	160.7	0.0	0.0	-79.2	-71.9	-11.2	7.6	-4.2
area name	WAPA R.M.									
mw	6091.6	3966.2	2784.2	0.0	0.0	0.0	0.0	1050.3	131.8	421.3
73 mvar	2883.8	-136.7	950.8	0.0	0.0	-298.9	-184.2	-246.9	-357.6	22.4

GENERAL ELECTRIC INTERNATIONAL, INC. - PSLF - V11.1
MONTANA TRANSMISSION STUDY, WAPA UGP, JUNE 2002
G5 SCHEDULED TO SPOKANE

		generation capacity	generation on-line	--- load categories ---- power	current	imped.	shunt	-- svd	-- inter	net losses	slack bus
area name		WAPA U.M.									
	mw	161.8	130.9	-120.2	0.0	0.0	0.0	0.0	231.9	19.2	30.9
63	mvar	54.0	18.7	117.5	0.0	0.0	-79.0	-36.0	-46.1	62.3	16.8
TOTL	mw	97822.1	54236.1	45957.1	0.0	0.0	0.4	0.0	6022.7	2256.0	
	mvar	41735.0	3882.7	15412.5	0.0	0.0	-203.4	1840.5	-435.4	-12731.5	

Area Interchange Summary

		mw	mvar
FROM AREA	54 ALBERTA		
TO AREA	50 B.C.HYDRO	200.4	-19.2
TOTAL		200.4	-19.2
FROM AREA	50 B.C.HYDRO	mw	mvar
TO AREA	54 ALBERTA	-200.4	19.2
TO AREA	40 NORTHWEST	2000.5	-411.7
TO AREA	52 W KOOTENAY	-0.5	11.2
TOTAL		1799.6	-381.2
FROM AREA	60 IDAHO	mw	mvar
TO AREA	40 NORTHWEST	1037.9	-341.9
TO AREA	65 PACE	154.6	-12.7
TO AREA	64 SIERRA	-127.0	-21.8
TOTAL		1065.6	-376.3
FROM AREA	62 MONTANA	mw	mvar
TO AREA	40 NORTHWEST	2126.9	-554.4
TO AREA	65 PACE	71.1	-13.3
TO AREA	63 WAPA U.M.	-196.9	44.3
TOTAL		2001.2	-523.4
FROM AREA	40 NORTHWEST	mw	mvar
TO AREA	50 B.C.HYDRO	-2000.5	411.7
TO AREA	60 IDAHO	-1037.9	341.9
TO AREA	26 LADWP	1956.0	412.2
TO AREA	62 MONTANA	-2126.9	554.4
TO AREA	30 PG AND E	2854.9	-434.5
TO AREA	64 SIERRA	127.5	-20.2
TOTAL		-226.9	1265.5
FROM AREA	65 PACE	mw	mvar
TO AREA	14 ARIZONA	283.2	29.8
TO AREA	60 IDAHO	-154.6	12.7
TO AREA	26 LADWP	69.0	-136.5
TO AREA	62 MONTANA	-71.1	13.3
TO AREA	18 NEVADA	147.5	-81.0
TO AREA	64 SIERRA	25.0	8.9
TO AREA	19 WAPA L.C.	183.4	-31.3
TO AREA	73 WAPA R.M.	198.0	6.4
TOTAL		680.4	-177.7
FROM AREA	70 PSCOLORADO	mw	mvar
TO AREA	73 WAPA R.M.	-744.2	61.1
TOTAL		-744.2	61.1
FROM AREA	64 SIERRA	mw	mvar
TO AREA	60 IDAHO	127.0	21.8
TO AREA	26 LADWP	-32.8	6.4
TO AREA	40 NORTHWEST	-127.5	20.2
TO AREA	65 PACE	-25.0	-8.9
TO AREA	30 PG AND E	10.2	-16.5
TO AREA	24 SOCALIF	12.1	-2.8

TOTAL		-36.0	20.2
FROM AREA	52 W KOOTENAY	mw	mvar
TO AREA	50 B.C.HYDRO	0.5	-11.2
TOTAL		0.5	-11.2
FROM AREA	73 WAPA R.M.	mw	mvar
TO AREA	10 NEW MEXICO	354.0	-109.1
TO AREA	65 PACE	-198.0	-6.4
TO AREA	70 PSCOLORADO	744.2	-61.1
TO AREA	19 WAPA L.C.	185.2	-72.1
TO AREA	63 WAPA U.M.	-35.0	1.8
TOTAL		1050.3	-246.9
FROM AREA	63 WAPA U.M.	mw	mvar
TO AREA	62 MONTANA	196.9	-44.3
TO AREA	73 WAPA R.M.	35.0	-1.8
TOTAL		231.9	-46.1

AREA TIE LINE SUMMARY

GENERAL ELECTRIC INTERNATIONAL, INC. - PSLF - V11.1
MONTANA TRANSMISSION STUDY, WAPA UGP, JUNE 2002
G5 SCHEDULED TO SPOKANE

```
  ---------from--------      --------- to --------
  --no.-- --name-- -kv-      --no.-- --name-- -kv- ck          ---mw---- ---mvar-- meter

    54150 LANGDON2  500        50791 CBK500    500  1             193.24      4.12   f
    54205 COLEMAN7  138        50776 NTL138    138  1               6.29    -20.66   t
    54273 POCATER7  138        50830 FRO T274  138  1               0.88     -2.70   t
 from area  54 to area  50 B.C.HYDRO                              200.41    -19.23

 Total from area  54 ALBERTA                                      200.41    -19.23

  ---------from--------      --------- to --------
  --no.-- --name-- -kv-      --no.-- --name-- -kv- ck          ---mw---- ---mvar-- meter

    62004 ANACOND   230        40457 GARRISON  230  1             -54.35     -7.48   f
    62004 ANACOND   230        40457 GARRISON  230  2             -58.62    -10.46   f
    62009 RATTLE S  161        40867 RATTLE S  230  1             -53.22    -30.65   t
    62012 TOWN2     500        40453 GAR2EAST  500  2            1003.84   -203.92   t
    62013 TOWN1     500        40451 GAR1EAST  500  1            1003.84   -203.92   t
    62066 KERR      115        40391 ELMO      115  1              19.85    -23.96   f
    62072 OVANDO    230        40457 GARRISON  230  1              14.31     -9.89   t
    62072 OVANDO    230        40551 HOT SPR   230  1             145.42    -21.26   t
    62085 CROWCR B  115        48055 BURKAVAB  115  1              52.25    -20.23   t
    62086 THOMSON   115        48053 BURKAVAA  115  1              53.52    -19.53   t
 from area  62 to area  40 NORTHWEST                             2126.84   -551.30

    62030 PTRSNFLT  230        65025 AMPS      230  1              90.44      6.14   t
    62045 BLGS PHA  230        66750 YELOWTLP  230  1             -38.13     -7.84   t
    62061 RMRK PHA  161        66755 YELOWTLP  161  1             -18.02     -6.98   f
    62084 DILLON S  161        65155 BIGGRASS  161  1              36.64     -3.63   t
 from area  62 to area  65 PACE                                    70.94    -12.31

    62023 GT FALLS  161        63008 HAVRE     161  1             -25.35     -8.68   f
    62024 RAINBOW   161        63015 VERONA    161  1             -21.65     -7.35   f
    62027 SHELBY    115        63014 TIBERTAP  115  1              -5.66     -3.01   f
    62051 HARDIN    230        63002 CRSOVRUM  230  1              43.91     24.35   t
    62056 HUNTLEY   230        63002 CRSOVRUM  230  1            -187.19      1.50   t
 from area  62 to area  63 WAPA U.M.                             -195.94      6.81

 Total from area  62 MONTANA                                     2001.85   -556.80

  ---------from--------      --------- to --------
  --no.-- --name-- -kv-      --no.-- --name-- -kv- ck          ---mw---- ---mvar-- meter

    40145 BOUNDARY  230        50822 NLYPHS    230  1            -206.76     -3.38   f
    40323 CUSTER W  500        50194 ING500    500  1            -904.38    208.77   t
    40323 CUSTER W  500        50194 ING500    500  2            -889.33    206.29   t
 from area  40 to area  50 B.C.HYDRO                            -2000.48    411.68

    45029 BURNS     500        60240 MIDPOINT  500  1           -1063.09    361.07   t
    45103 ENTERPRS  230        60150 HELLSCYN  230  1             -29.69    -11.64   f
    40507 HARNEY    115        61826 HINES     115  1             -16.73     11.13   f
    40621 LAGRANDE  230        60192 LADD      230  1              -0.22     -9.19   f
    48197 LOLO      230        60278 IMNAHA    230  1              71.85     -9.39   t
 from area  40 to area  60 IDAHO                                 -1037.88    341.98

    41311 CELILO1   500        26097 SYLMAR1   230  1             388.81     62.94   f
    41313 CELILO3   230        26098 SYLMAR3   230  1             589.18    143.13   f
    41312 CELILO2   500        26099 SYLMAR2   230  1             388.81     62.91   f
    41314 CELILO4   230        26100 SYLMAR4   230  1             589.18    143.25   f
 from area  40 to area  26 LADWP                                  1955.99    412.23

    48053 BURKAVAA  115        62086 THOMSON   115  1             -53.52     19.53   f
    48055 BURKAVAB  115        62085 CROWCR B  115  1             -52.25     20.23   f
    40391 ELMO      115        62066 KERR      115  1             -19.85     23.96   t
    40451 GAR1EAST  500        62013 TOWN1     500  1           -1003.84    203.92   f
    40453 GAR2EAST  500        62012 TOWN2     500  2           -1003.84    203.92   f
    40457 GARRISON  230        62072 OVANDO    230  1             -14.31      9.89   f
    40457 GARRISON  230        62004 ANACOND   230  1              54.35      7.48   t
    40457 GARRISON  230        62004 ANACOND   230  2              58.62     10.46   t
    40551 HOT SPR   230        62072 OVANDO    230  1            -145.42     21.26   f
    40867 RATTLE S  230        62009 RATTLE S  161  1              53.22     30.65   f
 from area  40 to area  62 MONTANA                               -2126.84    551.30

    45035 CAPTJACK  500        30020 OLINDA    500  1            1052.75   -148.47   f
    45087 DELTA     115        31468 CASCADE   115  1              70.67    -19.09   f
    40687 MALIN     500        30005 ROUND MT  500  1             862.12   -125.53   f
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   40687 MALIN     500        30005 ROUND MT  500  2            869.22   -141.43   f
from area  40 to area  30 PG AND E                             2854.76   -434.51

   40537 HIL TOP   230        64058 HIL TOP   345  1            127.53    -20.22   f
from area  40 to area  64 SIERRA                                127.53    -20.22

Total from area  40 NORTHWEST                                  -226.93   1262.45

 ---------from--------      --------- to --------
 --no.-- --name-- -kv-      --no.-- --name-- -kv- ck          ---mw---- ---mvar-- meter

   66235 PINTO PS  345        14101 FOURCORN  345  1            283.18     29.85   t
from area  65 to area  14 ARIZONA                               283.18     29.85

   65075 ANTLOPE   230        60073 BRADY     230  1             53.18    -23.41   f
   65135 BENLOMND  345        60060 BORAH     345  1             -0.35     97.50   t
   65220 BRIDGER   230        60085 BRIDGER   345  1              9.35     -8.34   t
   65220 BRIDGER   230        60085 BRIDGER   345  2              9.50     -8.48   t
   65220 BRIDGER   230        60085 BRIDGER   345  3              9.35     -8.34   t
   65665 GOSHEN    345        60085 BRIDGER   345  1           -615.16    -53.82   f
   65665 GOSHEN    345        60190 KINPORT   345  1            329.14      1.44   t
   65670 GOSHEN    161        60030 BLACKFT   161  1             85.60     -2.84   f
   65920 MALAD     138        60020 AMFLS     138  1            -18.48      0.48   t
   66565 TREASTON  230        60073 BRADY     230  1            -16.82     18.84   t
from area  65 to area  60 IDAHO                                -154.70     13.02

   65995 MONA      345        26043 INTERMT   345  1             34.52    -68.26   f
   65995 MONA      345        26043 INTERMT   345  2             34.52    -68.26   f
from area  65 to area  26 LADWP                                  69.04   -136.53

   65025 AMPS      230        62030 PTRSNFLT  230  1            -90.44     -6.14   f
   65155 BIGGRASS  161        62084 DILLON S  161  1            -36.64      3.63   f
   66750 YELOWTLP  230        62045 BLGS PHA  230  1             38.13      7.84   f
   66755 YELOWTLP  161        62061 RMRK PHA  161  1             18.02      6.98   t
from area  65 to area  62 MONTANA                                -70.94     12.31

   66280 REDBUTTE  345        18002 HA PS     345  1            147.46    -80.95   f
from area  65 to area  18 NEVADA                                147.46    -80.95

   66210 PAVANT    230        64124 UTAH-NEV  230  1             24.98      8.90   t
from area  65 to area  64 SIERRA                                 24.98      8.90

   66355 SIGURDPS  230        79031 GLENCANY  230  1            183.38    -31.32   t
from area  65 to area  19 WAPA L.C.                             183.38    -31.32

   65060 ANT MINE  230        73276 TEKLA     230  1             23.40     14.57   f
   65085 ASHLEY    138        79067 VERNAL    138  1            -49.71      5.71   t
   65192 BONANZA   138        79067 VERNAL    138  1             46.95     -2.41   t
   65193 BONANZA   345        79005 BEARS     345  1           -198.80    -11.34   f
   65305 CASPERPP  115        73167 REFNRYTP  115  1            -35.80     -0.01   f
   65305 CASPERPP  115        73042 CASPERLM  115  1              3.60     -7.19   t
   65420 DAVEJOHN  230        73107 LAR.RIVR  230  1             97.32    -19.79   f
   65420 DAVEJOHN  230        73190 STEGALL   230  1             94.63    -16.91   f
   65425 DAVEJOHN  115        73070 GLENRCKN  115  1             69.97     -3.21   f
   65425 DAVEJOHN  115        73071 GLENRCKS  115  1             79.38     -0.52   f
   65565 FLAMGORG  230        79026 FLAMGORG  138  1            -50.91      8.87   f
   65565 FLAMGORG  230        79026 FLAMGORG  138  2            -50.91      8.87   f
   66278 RANGELY   138        79001 ARTESIA   138  1             -6.32     -6.14   f
   66278 RANGELY   138        79046 MEEKER    138  1             17.82     -4.21   f
   66305 RIVERTON  230        73170 RIVERTON  115  1              1.34      8.49   f
   66535 THERMOPL  230        73197 THERMOPL  115  1             -2.73      7.05   t
   66540 THERPACE  115        73197 THERMOPL  115  1              7.22      4.79   t
   66720 WORLAND   115        73222 WORLANTP  115  1            -11.05      4.75   t
   66725 WYODAK    230        73148 OSAGE     230  1            110.04    -12.24   t
   66725 WYODAK    230        73168 RENO      230  1             67.34     -1.81   f
   66725 WYODAK    230        73294 HUGHES    230  1            112.23     -1.81   f
   66725 WYODAK    230        73282 WYODAK     69  1             11.83     13.91   f
   66725 WYODAK    230        73282 WYODAK     69  2              8.00      9.41   f
   66725 WYODAK    230        74016 WYGEN      14  1              0.00      0.00   f
   66750 YELOWTLP  230        73229 YELLOWBR  230  1           -146.76      7.72   t
from area  65 to area  73 WAPA R.M.                             198.07      6.56

Total from area  65 PACE                                        680.47   -178.16

 ---------from--------      --------- to --------
 --no.-- --name-- -kv-      --no.-- --name-- -kv- ck          ---mw---- ---mvar-- meter

   70005 BRUSHCPP  115        73013 B.CK PS   115  1             42.01      2.91   f
   70005 BRUSHCPP  115        73013 B.CK PS   115  2             44.56      5.06   f
   70116 COBBLAKE  115        73044 COBBLKTP  115  1            -11.50     -1.09   f
   70122 COMANCHE  230        73477 FULLER    230  1             84.61     17.24   t
   70139 DANIELPK  230        73477 FULLER    230  1            -20.40      1.58   t
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   70193 FTN VALL  115        73412 MIDWAYBR  115  1             11.47     -5.59   t
   70205 GRANDJCT  230        79036 GRANDJCT  345  1            -19.10    -11.16   f
   70256 LAPORTPS  115        73105 LAPORTE   115  1            -13.32     -5.91   t
   70274 MALTA     230        73138 MT.ELBRT  230  1            -69.85      6.46   f
   70285 MIDWAYPS  115        73412 MIDWAYBR  115  1             19.87    -42.98   f
   70286 MIDWAYPS  230        73413 MIDWAYBR  230  1            154.75     51.92   t
   70287 MILL      115        73296 FRASER    115  1            -34.74      5.25   f
   70308 PALMER    115        73414 MONUMENT  115  1            -13.40      3.09   t
   70311 PAWNEE    230        73192 STORY     230  1            -97.93    -27.92   t
   70327 PONCHA    115        79037 GUNNISON  115  1             -1.85      3.34   f
   70350 RAWHIDE    24        73165 RAWHIDE   230  1            262.21     34.94   t
   70358 RIFLE PS  230        79059 RIFLE WA  230  1            -63.11     28.72   f
   70358 RIFLE PS  230        79250 AMATLAS   230  1            -49.95    -14.52   f
   70375 SAN LUIS  230        79054 PONCHABR  230  1            -59.74     13.52   t
   70410 ST.VRAIN  230        73116 LONGPEAK  230  1            -33.34     33.45   f
   70470 WELD  PS  115        73211 WELD  LM  115  1            -16.28    122.20   f
   70471 WELD  PS  230        73212 WELD  LM  230  1           -275.72    -82.33   f
   70474 WINDSOR   230        73011 AULT      230  1           -227.02    -10.15   t
   70476 WOODLAND  115        73400 EMIL AND  115  1             11.16      0.04   f
   70525 MTHARRIS  138        79038 HAYDEN    138  1             -5.59     -1.05   t
   79033 GOREPASS  230        79039 HAYDEN    230  1           -183.85     -0.07   t
   79033 GOREPASS  230        73072 GOREPASS  138  1             -3.35      5.48   f
   79034 GRANDJCT  115        79048 MONTROSE  115  1             31.28     -6.74   t
   79056 RIFLE CU  138        79046 MEEKER    138  1            -45.01      0.27   f
   79057 RIFLE CU  230        79059 RIFLE WA  230  1             -3.10    -54.43   t
   79058 RIFLE CU  345        79014 CRAIG     345  1           -409.78    -23.61   f
   79058 RIFLE CU  345        79036 GRANDJCT  345  1            408.22     26.78   f
   79091 WOLCOTTP  230        79039 HAYDEN    230  1           -151.07      6.44   f
   79173 COLBRAN   115        79174 MOLINA-L  115  1             -0.00     -0.52   f
   70351 RAWHIDEA   14        73165 RAWHIDE   230  1              0.00      0.00   t
   70550 W CANON   115        73551 W CANON   230  1             -5.30    -19.55   t
from area  70 to area  73 WAPA R.M.                            -744.16     61.06

Total from area  70 PSCOLORADO                                 -744.16     61.06

 ---------from--------      --------- to --------
 --no.-- --name-- -kv-      --no.-- --name-- -kv- ck          ---mw---- ---mvar-- meter

   79060 SANJN PS  345        10292 SAN_JUAN  345  1            353.94   -109.09   t
from area  73 to area  10 NEW MEXICO                            353.94   -109.09

   73042 CASPERLM  115        65305 CASPERPP  115  1             -3.60      7.19   f
   73070 GLENRCKN  115        65425 DAVEJOHN  115  1            -69.97      3.21   t
   73071 GLENRCKS  115        65425 DAVEJOHN  115  1            -79.38      0.52   t
   73107 LAR.RIVR  230        65420 DAVEJOHN  230  1            -97.32     19.79   t
   73148 OSAGE     230        66725 WYODAK    230  1           -110.04     12.24   f
   73167 REFNRYTP  115        65305 CASPERPP  115  1             35.80      0.01   t
   73168 RENO      230        66725 WYODAK    230  1            -67.34      1.81   t
   73170 RIVERTON  115        66305 RIVERTON  230  1             -1.34     -8.49   t
   73190 STEGALL   230        65420 DAVEJOHN  230  1            -94.63     16.91   t
   73197 THERMOPL  115        66540 THERPACE  115  1             -7.22     -4.79   f
   73197 THERMOPL  115        66535 THERMOPL  230  1              2.73     -7.05   f
   73222 WORLANTP  115        66720 WORLAND   115  1             11.05     -4.75   f
   73229 YELLOWBR  230        66750 YELOWTLP  230  1            146.76     -7.72   f
   73276 TEKLA     230        65060 ANT MINE  230  1            -23.40    -14.57   t
   73282 WYODAK     69        66725 WYODAK    230  1            -11.83    -13.91   t
   73282 WYODAK     69        66725 WYODAK    230  2             -8.00     -9.41   t
   73294 HUGHES    230        66725 WYODAK    230  1           -112.23      1.81   t
   79001 ARTESIA   138        66278 RANGELY   138  1              6.32      6.14   t
   79005 BEARS     345        65193 BONANZA   345  1            198.80     11.34   t
   79026 FLAMGORG  138        65565 FLAMGORG  230  1             50.91     -8.87   t
   79026 FLAMGORG  138        65565 FLAMGORG  230  2             50.91     -8.87   t
   79046 MEEKER    138        66278 RANGELY   138  1            -17.82      4.21   t
   79067 VERNAL    138        65085 ASHLEY    138  1             49.71     -5.71   f
   79067 VERNAL    138        65192 BONANZA   138  1            -46.95      2.41   f
   74016 WYGEN      14        66725 WYODAK    230  1              0.00      0.00   t
from area  73 to area  65 PACE                                 -198.07     -6.56

   73011 AULT      230        70474 WINDSOR   230  1            227.02     10.15   f
   73013 B.CK PS   115        70005 BRUSHCPP  115  1            -42.01     -2.91   t
   73013 B.CK PS   115        70005 BRUSHCPP  115  2            -44.56     -5.06   t
   73044 COBBLKTP  115        70116 COBBLAKE  115  1             11.50      1.09   t
   73072 GOREPASS  138        79033 GOREPASS  230  1              3.35     -5.48   t
   73105 LAPORTE   115        70256 LAPORTPS  115  1             13.32      5.91   f
   73116 LONGPEAK  230        70410 ST.VRAIN  230  1             33.34    -33.45   t
   73138 MT.ELBRT  230        70274 MALTA     230  1             69.85     -6.46   t
   73165 RAWHIDE   230        70350 RAWHIDE    24  1           -262.21    -34.94   f
   73165 RAWHIDE   230        70351 RAWHIDEA   14  1             -0.00     -0.00   f
   73192 STORY     230        70311 PAWNEE    230  1             97.93     27.92   f
   73211 WELD  LM  115        70470 WELD  PS  115  1             16.28   -122.20   t
   73212 WELD  LM  230        70471 WELD  PS  230  1            275.72     82.33   t
   73296 FRASER    115        70287 MILL      115  1             34.74     -5.25   t
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   73400 EMIL AND  115        70476 WOODLAND  115  1            -11.16     -0.04   t
   73412 MIDWAYBR  115        70193 FTN VALL  115  1            -11.47      5.59   f
   73412 MIDWAYBR  115        70285 MIDWAYPS  115  1            -19.87     42.98   t
   73413 MIDWAYBR  230        70286 MIDWAYPS  230  1           -154.75    -51.92   f
   73414 MONUMENT  115        70308 PALMER    115  1             13.40     -3.09   f
   73477 FULLER    230        70122 COMANCHE  230  1            -84.61    -17.24   f
   73477 FULLER    230        70139 DANIELPK  230  1             20.40     -1.58   f
   79014 CRAIG     345        79058 RIFLE CU  345  1            409.78     23.61   t
   79036 GRANDJCT  345        79058 RIFLE CU  345  1           -408.22    -26.78   t
   79036 GRANDJCT  345        70205 GRANDJCT  230  1             19.10     11.16   t
   79037 GUNNISON  115        70327 PONCHA    115  1              1.85     -3.34   t
   79038 HAYDEN    138        70525 MTHARRIS  138  1              5.59      1.05   f
   79039 HAYDEN    230        79033 GOREPASS  230  1            183.85      0.07   f
   79039 HAYDEN    230        79091 WOLCOTTP  230  1            151.07     -6.44   t
   79046 MEEKER    138        79056 RIFLE CU  138  1             45.01     -0.27   t
   79048 MONTROSE  115        79034 GRANDJCT  115  1            -31.28      6.74   f
   79054 PONCHABR  230        70375 SAN LUIS  230  1             59.74    -13.52   f
   79059 RIFLE WA  230        70358 RIFLE PS  230  1             63.11    -28.72   t
   79059 RIFLE WA  230        79057 RIFLE CU  230  1              3.10     54.43   f
   79174 MOLINA-L  115        79173 COLBRAN   115  1              0.00      0.52   t
   79250 AMATLAS   230        70358 RIFLE PS  230  1             49.95     14.52   t
   73551 W CANON   230        70550 W CANON   115  1              5.30     19.55   f
from area  73 to area  70 PSCOLORADO                            744.16    -61.06

   79061 SHIP PS   230        79063 SHIPROCK  230  1            157.78    -49.24   t
   79260 ELPASOTP  115        79105 GLADETAP  115  1             27.40    -22.88   t
from area  73 to area  19 WAPA L.C.                             185.18    -72.12

   73229 YELLOWBR  230        63001 CROS PHA  230  1            -34.88      1.83   f
from area  73 to area  63 WAPA U.M.                             -34.88      1.83

Total from area  73 WAPA R.M.                                  1050.33   -247.00

 ---------from--------      --------- to --------
 --no.-- --name-- -kv-      --no.-- --name-- -kv- ck          ---mw---- ---mvar-- meter

   63002 CRSOVRUM  230        62051 HARDIN    230  1            -43.91    -24.35   f
   63002 CRSOVRUM  230        62056 HUNTLEY   230  1            187.19     -1.50   f
   63008 HAVRE     161        62023 GT FALLS  161  1             25.35      8.68   t
   63014 TIBERTAP  115        62027 SHELBY    115  1              5.66      3.01   t
   63015 VERONA    161        62024 RAINBOW   161  1             21.65      7.35   t
from area  63 to area  62 MONTANA                               195.94     -6.81

   63001 CROS PHA  230        73229 YELLOWBR  230  1             34.88     -1.83   t
from area  63 to area  73 WAPA R.M.                              34.88     -1.83

Total from area  63 WAPA U.M.                                   230.83     -8.64
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MONTANA TRANSMISSION STUDY, WAPA UGP, JUNE 2002
G5 SCHEDULED TO SPOKANE

Summation of selected system

	-----MW----	----MVAR---		
Generation	54236.141	3882.676	Generators	2572
Actual Load	45957.066	15412.540	Loads	6811
Net actual shunt	0.394	-203.439	Shunts	1294
Net actual svd	0.000	1840.528	Svd	588
Loss	2255.959	-12731.534	Buses	13168
			Lines	10968
			Transformers	5124
MVA-miles	4652476.0	1055826.5	DC buses	6
Miles	47033.402		DC converters	10
			DC lines	3

MONTANA TRANSMISSION STUDY, WAPA UGP, JUNE 2002
G5 SCHEDULED TO SPOKANE

Area 54 [ALBERTA]

	-----MW----	----MVAR---		
Generation	6887.254	852.373	Generators	136
Actual Load	6274.402	1997.100	Loads	517
Net actual shunt	0.000	-21.744	Shunts	9
Net actual svd	0.000	-1195.582	Svd	76
Net Interchange	200.414	-19.233	Buses	989
Sched Interchange	200.000		Lines	782
Loss	412.438	91.836	Transformers	406
MVA-miles	1164685.5	291561.2	DC buses	0
Miles	18668.695		DC converters	0
			DC lines	0
Loss at 13.20 Kv	1.466	19.090		
Loss at 13.80 Kv	3.240	76.348		
Loss at 14.40 Kv	0.440	14.459		
Loss at 25.00 Kv	1.465	16.921		
Loss at 34.00 Kv	0.046	0.759		
Loss at 69.00 Kv	14.504	-22.350		
Loss at 138.00 Kv	157.640	-309.229		
Loss at 240.00 Kv	217.491	-426.240		
Loss at 500.00 Kv	0.000	0.000		
Loss at other Kv	16.147	722.078		
Largest mismatch MVA	0.0098	0.0412		

MONTANA TRANSMISSION STUDY, WAPA UGP, JUNE 2002
G5 SCHEDULED TO SPOKANE

Area 50 [B.C.HYDRO]

	-----MW----	----MVAR---		
Generation	8257.765	261.771	Generators	106
Actual Load	6035.052	2359.838	Loads	395
Net actual shunt	0.000	2922.463	Shunts	104
Net actual svd	0.000	2701.285	Svd	125
Net Interchange	1799.581	-381.219	Buses	1054
Sched Interchange	1800.000		Lines	719
Loss	423.131	-7340.599	Transformers	644
MVA-miles	0.0	0.0	DC buses	0
Miles	0.000		DC converters	0
			DC lines	0
Loss at 13.20 Kv	0.044	1.963		
Loss at 13.80 Kv	6.662	398.847		
Loss at 34.00 Kv	0.000	0.002		
Loss at 46.00 Kv	0.301	0.082		
Loss at 132.00 Kv	25.091	36.443		
Loss at 138.00 Kv	11.092	-136.201		
Loss at 230.00 Kv	39.501	-771.645		
Loss at 500.00 Kv	294.052	-7344.088		
Loss at other Kv	46.387	473.995		
Largest mismatch MVA	0.0336	0.0348		

MONTANA TRANSMISSION STUDY, WAPA UGP, JUNE 2002
G5 SCHEDULED TO SPOKANE

Area 60 [IDAHO]

-----MW---- ----MVAR---

Generation	3202.233	662.839	Generators	49
Actual Load	1955.000	501.300	Loads	64
Net actual shunt	0.000	-97.325	Shunts	2
Net actual svd	0.000	0.000	Svd	0
Net Interchange	1065.603	-376.320	Buses	156
Sched Interchange	1066.000		Lines	120
Loss	181.630	635.183	Transformers	96
MVA-miles	0.0	0.0	DC buses	0
Miles	0.000		DC converters	0
			DC lines	0
Loss at 13.20 Kv	0.271	5.818		
Loss at 13.80 Kv	1.208	45.749		
Loss at 14.40 Kv	0.390	15.219		
Loss at 34.50 Kv	0.000	0.000		
Loss at 100.00 Kv	1.022	93.429		
Loss at 115.00 Kv	0.438	0.371		
Loss at 138.00 Kv	15.403	-53.849		
Loss at 161.00 Kv	1.305	1.243		
Loss at 230.00 Kv	15.893	-294.286		
Loss at 345.00 Kv	140.679	657.516		
Loss at 500.00 Kv	0.000	0.000		
Loss at other Kv	5.020	163.973		
Largest mismatch MVA	0.0017	0.0086		

MONTANA TRANSMISSION STUDY, WAPA UGP, JUNE 2002
G5 SCHEDULED TO SPOKANE

Area 62 [MONTANA]

	-----MW----	----MVAR---		
Generation	3343.332	667.019	Generators	36
Actual Load	1207.745	524.807	Loads	200
Net actual shunt	0.394	-119.281	Shunts	56
Net actual svd	0.000	25.264	Svd	11
Net Interchange	2001.159	-523.433	Buses	315
Sched Interchange	2001.000		Lines	319
Loss	134.034	759.664	Transformers	91
MVA-miles	4475.0	261.4	DC buses	0
Miles	45.000		DC converters	0
			DC lines	0
Loss at 13.80 Kv	0.000	39.836		
Loss at 34.50 Kv	2.222	58.840		
Loss at 69.00 Kv	0.546	1.708		
Loss at 100.00 Kv	29.894	-1.621		
Loss at 115.00 Kv	6.010	-4.535		
Loss at 161.00 Kv	13.167	-86.652		
Loss at 230.00 Kv	18.657	-122.463		
Loss at 500.00 Kv	62.913	697.366		
Loss at other Kv	0.626	177.185		
Largest mismatch MVA	0.0056	0.0083		

MONTANA TRANSMISSION STUDY, WAPA UGP, JUNE 2002
G5 SCHEDULED TO SPOKANE

Area 40 [NORTHWEST]

	-----MW----	----MVAR---		
Generation	17014.266	346.336	Generators	290
Actual Load	16651.566	5157.048	Loads	1663
Net actual shunt	0.000	-1744.925	Shunts	46
Net actual svd	0.000	1974.424	Svd	163
Net Interchange	-226.925	1265.485	Buses	2740
Sched Interchange	-227.000		Lines	2709
Loss	589.602	-6305.705	Transformers	632
MVA-miles	2959654.0	638731.4	DC buses	4
Miles	18402.309		DC converters	4
			DC lines	2
Loss at 11.00 Kv	-0.000	0.211		
Loss at 13.20 Kv	0.000	2.209		
Loss at 13.80 Kv	4.246	142.283		
Loss at 14.40 Kv	-0.000	0.000		
Loss at 25.00 Kv	3.146	164.951		
Loss at 34.50 Kv	0.072	-0.881		
Loss at 69.00 Kv	7.409	2.723		
Loss at 100.00 Kv	0.118	-0.126		
Loss at 115.00 Kv	126.433	-50.489		
Loss at 230.00 Kv	140.447	-740.902		

Loss at 345.00 Kv	7.234	-310.126
Loss at 500.00 Kv	240.184	-6356.804
Loss at other Kv	60.312	841.244
Largest mismatch MVA	0.0430	0.0737

MONTANA TRANSMISSION STUDY, WAPA UGP, JUNE 2002
G5 SCHEDULED TO SPOKANE

Area 65 [PACE]

	-----MW----	----MVAR---		
Generation	5630.231	585.331	Generators	57
Actual Load	4749.998	1528.040	Loads	273
Net actual shunt	0.000	-527.107	Shunts	51
Net actual svd	0.000	-49.354	Svd	2
Net Interchange	680.418	-177.744	Buses	566
Sched Interchange	680.300		Lines	409
Loss	199.815	-188.501	Transformers	337
MVA-miles	1001.5	102.3	DC buses	0
Miles	11.900		DC converters	0
			DC lines	0
Loss at 13.80 Kv	0.803	22.656		
Loss at 34.50 Kv	1.201	16.601		
Loss at 46.00 Kv	3.907	70.493		
Loss at 69.00 Kv	0.730	8.223		
Loss at 100.00 Kv	0.017	0.586		
Loss at 115.00 Kv	2.830	-8.378		
Loss at 138.00 Kv	41.208	37.934		
Loss at 161.00 Kv	7.613	-26.180		
Loss at 230.00 Kv	72.978	-30.535		
Loss at 345.00 Kv	66.085	-338.335		
Loss at other Kv	2.442	58.435		
Largest mismatch MVA	0.0147	0.0213		

MONTANA TRANSMISSION STUDY, WAPA UGP, JUNE 2002
G5 SCHEDULED TO SPOKANE

Area 70 [PSCOLORADO]

	-----MW----	----MVAR---		
Generation	4236.330	643.363	Generators	46
Actual Load	4858.050	1835.016	Loads	358
Net actual shunt	0.000	0.000	Shunts	0
Net actual svd	0.000	-1397.260	Svd	43
Net Interchange	-744.163	61.107	Buses	500
Sched Interchange	-743.800		Lines	461
Loss	122.445	144.512	Transformers	147
MVA-miles	22364.3	6485.7	DC buses	0
Miles	564.500		DC converters	0
			DC lines	0
Loss at 13.80 Kv	2.116	74.467		
Loss at 14.40 Kv	0.081	0.808		
Loss at 25.00 Kv	0.013	0.165		
Loss at 46.00 Kv	0.190	0.001		
Loss at 69.00 Kv	3.850	-11.815		
Loss at 100.00 Kv	0.007	-0.111		
Loss at 115.00 Kv	21.439	-102.791		
Loss at 138.00 Kv	0.700	-3.484		
Loss at 230.00 Kv	86.977	-38.428		
Loss at 345.00 Kv	0.000	0.002		
Loss at other Kv	7.072	225.698		
Largest mismatch MVA	0.0106	0.0291		

MONTANA TRANSMISSION STUDY, WAPA UGP, JUNE 2002
G5 SCHEDULED TO SPOKANE

Area 64 [SIERRA]

	-----MW----	----MVAR---		
Generation	1069.571	-24.331	Generators	19
Actual Load	1075.167	280.355	Loads	115
Net actual shunt	0.000	-158.507	Shunts	23
Net actual svd	0.000	73.801	Svd	5
Net Interchange	-36.032	20.211	Buses	275
Sched Interchange	-36.000		Lines	197
Loss	30.432	-240.182	Transformers	117

MVA-miles	52641.4	27507.9	DC buses	0
Miles	1042.600		DC converters	0
			DC lines	0
Loss at 13.80 Kv	1.783	32.636		
Loss at 69.00 Kv	0.000	0.000		
Loss at 115.00 Kv	0.298	-7.506		
Loss at 230.00 Kv	0.992	-112.207		
Loss at 345.00 Kv	6.720	-184.960		
Loss at other Kv	20.639	31.855		
Largest mismatch MVA	0.0088	0.0211		

MONTANA TRANSMISSION STUDY, WAPA UGP, JUNE 2002
G5 SCHEDULED TO SPOKANE

Area 52 [W KOOTENAY]

	-----MW----	----MVAR---		
Generation	498.040	5.989	Generators	18
Actual Load	486.100	160.700	Loads	65
Net actual shunt	0.000	-79.163	Shunts	27
Net actual svd	0.000	-71.874	Svd	4
Net Interchange	0.475	-11.225	Buses	260
Sched Interchange	0.000		Lines	166
Loss	11.465	7.552	Transformers	116
MVA-miles	18639.8	6145.1	DC buses	0
Miles	1005.200		DC converters	0
			DC lines	0
Loss at 13.20 Kv	0.000	9.143		
Loss at 13.80 Kv	0.000	0.000		
Loss at 14.40 Kv	0.000	21.943		
Loss at 25.00 Kv	0.000	0.000		
Loss at 138.00 Kv	0.104	-8.435		
Loss at 161.00 Kv	2.006	-19.730		
Loss at 230.00 Kv	0.707	-19.384		
Loss at other Kv	8.647	24.015		
Largest mismatch MVA	0.0008	0.0052		

MONTANA TRANSMISSION STUDY, WAPA UGP, JUNE 2002
G5 SCHEDULED TO SPOKANE

Area 73 [WAPA R.M.]

	-----MW----	----MVAR---		
Generation	3966.244	-136.746	Generators	74
Actual Load	2784.180	950.836	Loads	356
Net actual shunt	0.000	-298.899	Shunts	4
Net actual svd	0.000	-184.184	Svd	53
Net Interchange	1050.294	-246.932	Buses	620
Sched Interchange	1050.700		Lines	567
Loss	131.769	-357.596	Transformers	174
MVA-miles	428020.7	84903.6	DC buses	0
Miles	7283.200		DC converters	0
			DC lines	0
Loss at 13.80 Kv	3.829	48.844		
Loss at 34.50 Kv	0.149	2.095		
Loss at 69.00 Kv	3.098	-19.796		
Loss at 115.00 Kv	47.743	-218.248		
Loss at 138.00 Kv	3.390	-37.014		
Loss at 230.00 Kv	32.542	-321.651		
Loss at 345.00 Kv	36.639	-6.458		
Loss at other Kv	4.380	194.633		
Largest mismatch MVA	0.0051	0.0756		

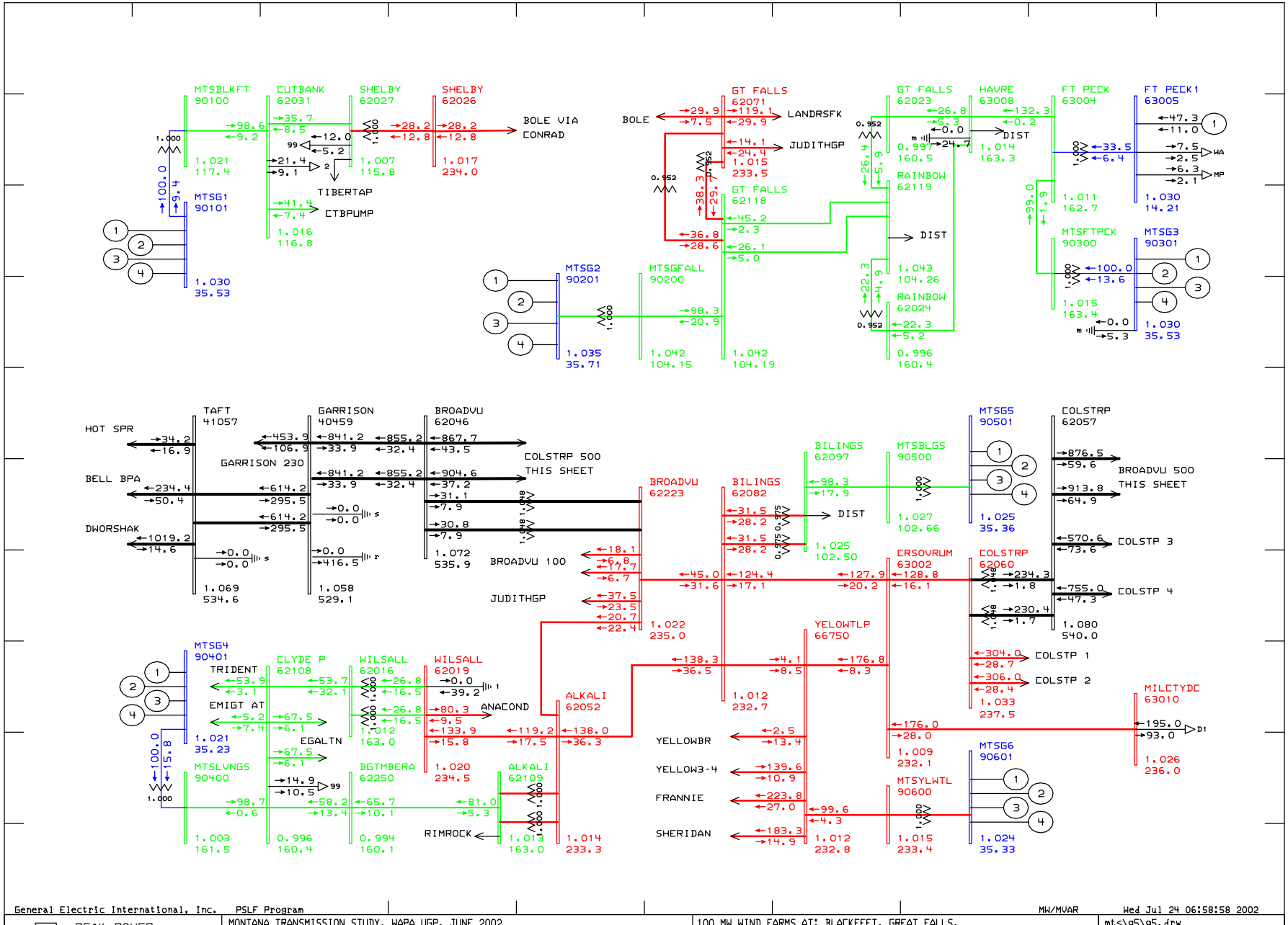
MONTANA TRANSMISSION STUDY, WAPA UGP, JUNE 2002
G5 SCHEDULED TO SPOKANE

Area 63 [WAPA U.M.]

	-----MW----	----MVAR---		
Generation	130.874	18.733	Generators	5
Actual Load	-120.200	117.500	Loads	17
Net actual shunt	0.000	-78.951	Shunts	1
Net actual svd	0.000	-35.994	Svd	5
Net Interchange	231.875	-46.125	Buses	17
Sched Interchange	231.000		Lines	13
Loss	19.199	62.302	Transformers	4

MVA-miles	994.1	127.9	DC buses	0
Miles	10.000		DC converters	0
			DC lines	0
Loss at 13.80 Kv	0.072	2.312		
Loss at 34.50 Kv	0.591	15.649		
Loss at 115.00 Kv	0.243	-5.785		
Loss at 161.00 Kv	10.659	30.052		
Loss at 230.00 Kv	7.634	20.073		
Largest mismatch MVA	0.0002	0.0014		

den



General Electric International, Inc. PSLF Program MW/MVAR Wed Jul 24 06:58:58 2002

PEAK POWER ENGINEERING, INC. 303-462-1100

MONTANA TRANSMISSION STUDY, WAPA UGP, JUNE 2002
G5 SCHEDULED TO DENVER

100 MW WIND FARMS AT: BLACKFEET, GREAT FALLS, BILLINGS, YELLOWTAIL, FT. PECK, AND LIVINGSTON

mts\g5\g5.drw
c:\uwk\mts\g5\model\g5den.sav
Rating = 1

GENERAL ELECTRIC INTERNATIONAL, INC. - PSLF - V11.1
MONTANA TRANSMISSION STUDY, WAPA UGP, JUNE 2002
G5 SCHEDULED TO DENVER

Percent Loading Summary -- using rating 1 - 100.0 percent of rating

----------from----------				---------- to ----------								rate	per cent
--no.--	--name--	-kv-	-ar-	--no.--	--name--	-kv-	-ar-	ck	---mw---	-mvar-	-mva--	------	loading
54611	RUTH LK8	69	54	54839	RUTH LK1	138	54	1	57.9	13.8	59.5	45.0M	132.3 T
64026	CARSON	120	64	64027	CARSON T	120	64	1	-56.2	-6.2	56.5	216.5A	131.9 F
55015	DOME EA9	14	54	55525	163ST2	240	54	T2	-57.3	-4.6	57.5	45.0M	128.6 T
64194	DAYTON	120	64	64254	DAYTON	25	64	1	16.6	6.5	17.8	14.0M	127.5 F
79026	FLAMGORG	138	73	79029	FLAMGORG	69	73	1	22.1	6.0	22.9	19.0M	120.4 F
64099	SPAN SPG	120	64	64114	TRACY	120	64	1	-127.6	-3.4	127.6	514.8A	118.3 F
64091	RENO	120	64	64263	RENO	25	64	1	50.3	20.5	54.3	46.7M	116.3 F
64127	VAL ROAD	120	64	64274	VAL ROAD	25	64	1	50.2	20.3	54.2	46.7M	116.0 F
70249	LAJUNTAW	115	70	70250	LAJUNTAW	69	70	1	26.2	12.4	29.0	25.0M	116.0 F
64091	RENO	120	64	64263	RENO	25	64	2	50.2	20.4	54.2	46.7M	116.0 F
65850	JEFFERSN	161	65	65860	JFRSNPHA	161	65	1	-79.9	81.4	114.0	100.0M	114.0 F
64127	VAL ROAD	120	64	64274	VAL ROAD	25	64	2	47.8	19.3	51.6	46.7M	110.4 F
64202	HAN CRTP	120	64	64203	TWN CRTP	120	64	1	74.2	19.8	76.8	356.0A	109.1 F
64201	PINSN TP	120	64	64202	HAN CRTP	120	64	1	74.6	20.6	77.4	356.0A	109.1 F
64200	REDHOUSE	120	64	64201	PINSN TP	120	64	1	75.9	23.6	79.5	356.0A	109.0 T
64129	VALMY	120	64	64200	REDHOUSE	120	64	1	77.0	26.3	81.4	356.0A	108.7 T
54234	CASTLE R	138	54	55972	CASTLE-1	25	54	1	-50.0	21.0	54.2	50.0M	108.4 F
50459	KIT287	287	50	51075	KIT B5	13	50	5	80.3	24.1	83.8	79.0M	106.1 F
54232	PANCAN 9	138	54	55386	EMPRESS9	25	54	T1	15.7	1.0	15.7	15.0M	104.7 F
64114	TRACY	120	64	64118	TRACY G2	14	64	1	-82.5	-4.2	82.6	81.0M	104.1 T
48319	PLEASANT	115	40	48355	RATHDRUM	115	40	1	-84.1	-16.3	85.7	430.8A	103.8 F
43017	BEAVER	14	40	43021	BEAVER	230	40	1	356.8	45.4	359.7	348.0M	103.4 F
54052	BLUERIDG	138	54	55281	BLUERDGE	14	54	T1	20.8	15.2	25.7	25.0M	102.9 F
54154	E CALGAR	240	54	54189	ENMX2SD9	138	54	T1	234.1	-169.4	289.0	300.0M	102.8 T
40221	CHIEF J2	14	40	40231	CHIEF JO	230	40	BC	155.0	-9.2	155.3	155.0M	101.7 T
40221	CHIEF J2	14	40	40231	CHIEF JO	230	40	78	155.0	-9.2	155.3	155.0M	101.7 T
40221	CHIEF J2	14	40	40231	CHIEF JO	230	40	9A	155.0	-9.2	155.3	155.0M	101.7 T
40221	CHIEF J2	14	40	40231	CHIEF JO	230	40	56	155.0	-9.2	155.3	155.0M	101.7 T
40229	CHIEF JO	14	40	40231	CHIEF JO	230	40	DE	155.0	-9.2	155.3	155.0M	101.7 T
40229	CHIEF JO	14	40	40231	CHIEF JO	230	40	12	155.0	-9.2	155.3	155.0M	101.7 T
40229	CHIEF JO	14	40	40231	CHIEF JO	230	40	34	155.0	-9.2	155.3	155.0M	101.7 T
41304	COUGAR T	7	40	46211	COUGAR T	115	40	1	28.0	-8.5	29.3	30.0M	101.6 T
46733	LAGRND5	14	40	46735	LGBK5	115	40	1	40.0	7.1	40.6	40.0M	101.6 F

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Processing file c:\uwk\mts\base\rvolthsbs.out
Processing file c:\uwk\mts\g5\rvoltden.out

Compvolt found the following for comparisons:
     349 Voltage Violations read from c:\uwk\mts\base\rvolthsbs.out
     373 Voltage Violations read from c:\uwk\mts\g5\rvoltden.out


**** VOLTS:  NEW ****
Component                   w/o Prj         w/ Prj  Rating
63006 HARLEM    161   0.95 <= pu <= 1.05    0.8638  1.00 pu kV
63009 MALTA UM  161   0.95 <= pu <= 1.05    0.8627  1.00 pu kV
62030 PTRSNFLT  230   0.95 <= pu <= 1.05    0.9305  1.00 pu kV
62065 ENNIS MT  161   0.95 <= pu <= 1.05    0.9462  1.00 pu kV
62084 DILLON S  161   0.95 <= pu <= 1.05    0.9322  1.00 pu kV
62158 SHERDNMT  161   0.95 <= pu <= 1.05    0.9400  1.00 pu kV
48185 LIBTYLK   115   0.95 <= pu <= 1.05    0.9498  1.00 pu kV
65025 AMPS      230   0.95 <= pu <= 1.05    0.9483  1.00 pu kV
65155 BIGGRASS  161   0.95 <= pu <= 1.05    0.9252  1.00 pu kV
70239 JEWELL2   230   0.95 <= pu <= 1.05    0.9489  1.00 pu kV
70260 LEETSDAL  230   0.95 <= pu <= 1.05    0.9497  1.00 pu kV
70491 TOLGATE   230   0.95 <= pu <= 1.05    0.9493  1.00 pu kV
73043 CHEYENNE  115   0.95 <= pu <= 1.05    0.9418  1.00 pu kV
73066 GEMCTYTP  115   0.95 <= pu <= 1.05    0.9471  1.00 pu kV
73077 HAPPYJCK  115   0.95 <= pu <= 1.05    0.9372  1.00 pu kV
73109 LARAMIE   115   0.95 <= pu <= 1.05    0.9413  1.00 pu kV
73128 MAY       115   0.95 <= pu <= 1.05    0.9490  1.00 pu kV
73146 OASISTAP  115   0.95 <= pu <= 1.05    0.9497  1.00 pu kV
73183 SKYLINE   115   0.95 <= pu <= 1.05    0.9409  1.00 pu kV
73187 SPRINGCK  115   0.95 <= pu <= 1.05    0.9472  1.00 pu kV
73348 CORLETT   115   0.95 <= pu <= 1.05    0.9349  1.00 pu kV
73367 FTSANDER  115   0.95 <= pu <= 1.05    0.9472  1.00 pu kV
73375 WARRENLM  115   0.95 <= pu <= 1.05    0.9362  1.00 pu kV
73480 CROWCRK   115   0.95 <= pu <= 1.05    0.9443  1.00 pu kV
73504 PONNEQUI  115   0.95 <= pu <= 1.05    0.9489  1.00 pu kV
63006 HARLEM    161   0.95 <= pu <= 1.05    0.8638  1.00 pu kV
63007 HAVRE     115   0.95 <= pu <= 1.05    0.9245  1.00 pu kV
63008 HAVRE     161   0.95 <= pu <= 1.05    0.9171  1.00 pu kV
63009 MALTA UM  161   0.95 <= pu <= 1.05    0.8627  1.00 pu kV
63011 RICHARDC  161   0.95 <= pu <= 1.05    0.9083  1.00 pu kV
63013 RUDYARD   115   0.95 <= pu <= 1.05    0.9432  1.00 pu kV
63015 VERONA    161   0.95 <= pu <= 1.05    0.9338  1.00 pu kV

**** VOLTS: WORSE ****
Component             w/o Prj  w/ Prj  Rating

**** VOLTS: BETTER ****
Component             w/o Prj  w/ Prj  Rating

**** VOLTS:  AWAY ****
Component             w/o Prj      w/ Prj          Rating
50343 KSH132-2  132   1.0501  0.95 <= pu <= 1.05   1.00 pu kV
50691 NIC230    230   1.0502  0.95 <= pu <= 1.05   1.00 pu kV
62033 ANA BPA   115   1.0568  0.95 <= pu <= 1.05   1.00 pu kV
45337 WEED JPS  115   1.0507  0.95 <= pu <= 1.05   1.00 pu kV
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GENERAL ELECTRIC INTERNATIONAL, INC. - PSLF - V11.1
MONTANA TRANSMISSION STUDY, WAPA UGP, JUNE 2002
G5 SCHEDULED TO DENVER

overvoltage summary > 1.100000

--no.--	--name--	-kv-	(v pu)	--no.--	--name--	-kv-	(v pu)	--no.--	--name--	-kv-	(v pu)
54090	BICKERD4	240	1.1047	54153	BRAZEAU4	240	1.1053	54329	KEEPHIL4	240	1.1117
54524	GENESEE4	240	1.1086	54681	NEVIS 7	138	1.1101	54802	STURGEO9	138	1.1003
55969	770S701T	138	1.1052	51017	KMS230	230	1.1078				

overvoltage summary > 1.050000

--no.--	--name--	-kv-	(v pu)	--no.--	--name--	-kv-	(v pu)	--no.--	--name--	-kv-	(v pu)
54012	FOX CREE	138	1.0510	54013	KAYBOB 9	138	1.0517	54014	GULF RO9	138	1.0592
54021	WESGEN 7	138	1.0507	54050	RBCUPIL7	138	1.0507	54054	LAMOURE4	240	1.0795
54073	IPPL ST9	138	1.0575	54077	BIGSTON4	240	1.0600	54078	CHEVRON7	138	1.0515
54081	METIS644	240	1.0853	54082	BICKERD7	138	1.0557	54090	BICKERD4	240	1.1047
54097	BIG HOR9	138	1.0817	54098	STRACHA9	138	1.0577	54103	DEERLAN4	240	1.0820
54121	ELLERSLI	240	1.0759	54125	SUNDANL9	138	1.0543	54126	WABAMUN4	240	1.0869
54128	SUNDANM9	240	1.0965	54129	E EDMON4	240	1.0709	54130	N CALDE4	240	1.0645
54131	N BARRH4	240	1.0836	54139	GAETZ 4	240	1.0597	54141	HIGHVAL9	138	1.0538
54142	WILLESD4	240	1.0961	54144	RED DEE4	240	1.0636	54147	BENALTO4	240	1.0767
54148	E CROSS4	240	1.0585	54150	LANGDON2	500	1.0533	54152	JANET 4	240	1.0533
54153	BRAZEAU4	240	1.1053	54157	PEIGAN 4	240	1.0748	54159	N LETHB4	240	1.0648
54184	SARCEE 7	138	1.0530	54195	RUNDLE S	138	1.0504	54223	WARE JCT	240	1.0511
54249	RP05103S	138	1.0669	54261	SPRAY S	138	1.0508	54269	COALSPU7	138	1.0609
54281	MILO 2	240	1.0605	54285	LEISMER9	240	1.0749	54287	GREGG R9	138	1.0701
54302	MARIONA9	138	1.0540	54325	CHEV KG9	138	1.0515	54326	COAL VA9	138	1.0582
54329	KEEPHIL4	240	1.1117	54335	W BROOK4	240	1.0550	54384	ENMX28S9	138	1.0523
54412	BENBOW 9	138	1.0517	54441	946/947X	240	1.0759	54444	SPRINGB9	138	1.0505
54505	JASPER 4	240	1.0658	54506	BELLAMY4	240	1.0757	54509	ARGYLL W	240	1.0758
54512	DOME T29	240	1.0764	54513	LAMBTON4	240	1.0705	54514	CLOVERB4	240	1.0694
54518	ARGYLL E	240	1.0760	54519	CASTLTX2	240	1.0705	54521	PETROLIA	240	1.0746
54524	GENESEE4	240	1.1086	54542	RBW LAK7	138	1.0505	54546	CHINCHA7	138	1.0575
54547	KEG RVR7	138	1.0561	54548	KEMP RV9	138	1.0578	54549	HOTCHKS7	138	1.0596
54552	CADOTTE9	138	1.0585	54553	NORCEN 9	138	1.0552	54554	LUBICON7	138	1.0582
54555	CRANBER9	138	1.0591	54558	WESLY C7	138	1.0791	54559	CARMON 9	138	1.0767
54560	PEACE/29	138	1.0753	54561	DIASHOW7	138	1.0736	54589	DOME CU7	138	1.0672
54593	DONNELL9	138	1.0669	54594	TAP7L487	138	1.0686	54595	TRIANGL7	138	1.0619
54596	VALLEYV9	138	1.0782	54600	L.SMOKY7	138	1.0848	54601	STURGEO7	138	1.0844
54606	SIMONET9	138	1.0846	54607	FOXCRK/2	138	1.0515	54608	GOOSE R9	138	1.0666
54612	RUTH LA7	138	1.0600	54613	RUTH LK7	138	1.0603	54618	PARS CR7	138	1.0508
54621	MITS E.4	240	1.0565	54622	MITS E.7	138	1.0892	54623	AEC MILL	138	1.0881
54624	OTAUWAU7	138	1.0890	54633	LOU CR.7	138	1.0570	54634	SARHLK/2	138	1.0511
54636	ESSO JU7	138	1.0519	54637	MORSE RV	138	1.0524	54639	VIRGINI9	138	1.0529
54643	WOLF LK9	138	1.0709	54646	MARG LK4	240	1.0740	54647	MARG LK7	138	1.0861
54648	LACOREY9	138	1.0683	54652	BONNY 9	138	1.0544	54654	BONN SVC	138	1.0544
54655	WHITFISH	240	1.0857	54675	PAINTRT7	240	1.0896	54680	NEVIS 4	240	1.0748
54681	NEVIS 7	138	1.1101	54685	3HILLS/3	138	1.0581	54691	MICH. C9	138	1.0735
54693	WINT HI9	138	1.0749	54694	BULLPON9	138	1.0750	54707	SHEER 14	240	1.0625
54709	ANDERSO4	240	1.0630	54710	ANDERSON	138	1.0850	54711	SHEER 24	240	1.0625
54715	BAT. RV7	138	1.0821	54721	BAT RV79	240	1.0926	54723	CORDEL 4	240	1.0926
54729	PRIM TAP	138	1.0652	54730	PRIMROSE	138	1.0712	54796	791S701T	138	1.0628
54802	STURGEO9	138	1.1003	54806	946/947N	240	1.0709	54809	732S901T	240	1.0667
54818	VERMILA9	138	1.0798	54822	766S901T	240	1.0628	54823	NEVIS 9	138	1.0878
54835	791S702T	138	1.0631	54836	MILNERB9	138	1.0779	54844	709S702T	138	1.0732

54847	BAT RV80	240	1.0926	54848	791S703T	138	1.0530	54962	KAYBOBTP	138	1.0517
54963	CANMORE9	138	1.0506	54978	EAST IN4	240	1.0705	54983	MARION T	138	1.0541
54984	HIGHVL T	138	1.0538	54988	CROSSF T	240	1.0585	54995	W.GRN TP	240	1.0961
55012	BASSET 7	138	1.0562	55013	HAIGRIVE	138	1.0572	55067	FTNELSON	138	1.0665
55072	SYNC_D04	240	1.0563	55073	AURORA 4	240	1.0619	55075	SEAL LK9	138	1.0643
55147	MILNERC9	138	1.0880	55226	WABASCA9	240	1.0532	55272	FIELDGA9	138	1.0513
55280	BRINTNEL	240	1.0504	55515	PRIMROSE	138	1.0565	55763	BC BORDE	138	1.0627
55891	904AL TP	240	1.0705	55894	SARCEE M	138	1.0512	55912	740L JNC	138	1.0609
55913	G.ROBB T	138	1.0600	55924	CH KGT T	138	1.0515	55943	MILO 1	240	1.0605
55969	770S701T	138	1.1052	50010	COM132	132	1.0723	50020	CMS230	230	1.0500
50036	RBW230	230	1.0548	50037	PEM230	230	1.0585	50038	RBW230-1	230	1.0533
50182	ARN132	132	1.0815	50185	ALZ230	230	1.0516	50186	ROS230	230	1.0616
50187	BRT230	230	1.0697	50188	BUT230	230	1.0500	50193	BRT360	360	1.0500
50313	VIT132	132	1.0516	50314	PVO133	132	1.0505	50315	PVO132	132	1.0510
50323	DMR132	132	1.0554	50330	LDR132	132	1.0504	50331	GLD132	132	1.0517
50334	KGH132	132	1.0527	50335	UTA132	132	1.0529	50342	SCA132	132	1.0500
50346	SHA2	132	1.0502	50347	GOW132	132	1.0516	50348	GTP132	132	1.0550
50349	CLD132	132	1.0568	50350	SOO132	132	1.0574	50351	JOR132	132	1.0611
50352	PML132	132	1.0516	50353	WOS132	132	1.0534	50354	GLSTP17	132	1.0560
50355	GLSTP18	132	1.0546	50356	DND132	132	1.0519	50391	KSHTP14	132	1.0502
50394	SHATP14	132	1.0502	50395	SALTP17	132	1.0545	50396	SALTP18	132	1.0547
50447	TKW138	138	1.0533	50463	SKA500	500	1.0631	50464	TKW500	500	1.0687
50540	GMS230	230	1.0548	50541	KDS230	230	1.0542	50545	BLW230	230	1.0654
50546	SCK230	230	1.0595	50547	HMH230	230	1.0578	50548	BLM230	230	1.0587
50549	QNT230	230	1.0579	50550	QRP230	230	1.0651	50551	TLR230	230	1.0585
50553	BCR230	230	1.0585	50554	RBF230	230	1.0663	50556	LAP230	230	1.0569
50557	SNK230	230	1.0589	50558	GMS500	500	1.0500	50560	KDS500	500	1.0618
50561	WSN500	500	1.0500	50562	GLN500	500	1.0679	50653	NIC138	138	1.0525
50655	VVW138	138	1.0506	50656	SVA138	138	1.0517	50659	BDM138	138	1.0508
50660	WGS138	138	1.0608	50661	MON138	138	1.0581	50672	BKL138	138	1.0515
50679	BLU138	138	1.0533	50680	VLM138	138	1.0586	50686	SCO138	138	1.0674
50687	ABA138	138	1.0580	50700	MCA500	500	1.0500	50701	REV500	500	1.0500
50729	PRI138TP	138	1.0673	50776	NTL138	138	1.0539	50783	SEL230	230	1.0590
50785	SEV230	230	1.0581	50792	SEL500	500	1.0500	50899	ABA138TP	138	1.0580
50902	BDM138TP	138	1.0508	50922	DNDTAP	132	1.0526	50923	HSY-PH	132	1.0553
50924	ESQ-PH	132	1.0519	50928	SCG IPP	132	1.0682	50934	JULTP130	132	1.0527
51017	KMS230	230	1.1078	51045	ALH230	230	1.0579	60085	BRIDGER	345	1.0500
60240	MIDPOINT	500	1.0669	62012	TOWN2	500	1.0818	62013	TOWN1	500	1.0818
62046	BROADVU	500	1.0712	62053	BROADV&2	500	1.0627	62054	BROADV&1	500	1.0633
62057	COLSTRP	500	1.0800	40045	ALLSTON	500	1.0717	40051	ALVEY	500	1.0767
40061	ASHE	500	1.0800	40091	BELL BPA	500	1.0561	40111	BIG EDDY	500	1.0766
43049	BOARD F	500	1.0840	40139	BONNVILE	115	1.0500	47013	BRIDGPRT	115	1.0534
40155	BUCKLEY	500	1.0750	45035	CAPTJACK	500	1.0724	46209	CARMEN	115	1.0616
41311	CELILO1	500	1.0765	41312	CELILO2	500	1.0765	40233	CHIEF JO	500	1.0800
40287	COULEE	500	1.0810	40302	COVINGT4	500	1.0745	40306	COVINGT5	500	1.0751
43115	COYO M1	500	1.0552	43123	COYOTE	500	1.0839	45095	DIXONVLE	500	1.0767
40369	DWORSHAK	500	1.0652	40381	ECHOLAKE	500	1.0777	40451	GAR1EAST	500	1.0694
40453	GAR2EAST	500	1.0694	40459	GARRISON	500	1.0572	40485	GREEN PT	115	1.0514
40489	GRIZZLY	500	1.0707	40499	HANFORD	500	1.0807	40521	HATWAI	500	1.0661
45137	HERMIST	230	1.0509	41212	HILLS CR	115	1.0500	40553	HOT SPR	500	1.0602
40585	JOHN DAY	500	1.0850	40601	KEELER	500	1.0806	45262	KFALLS	500	1.0756
40629	LANE	500	1.0706	40665	LIT GOOS	500	1.0800	40679	LOW GRAN	500	1.0800
40683	LOW MON	500	1.0800	40687	MALIN	500	1.0710	40693	MAPLE VL	500	1.0768
40699	MARION	500	1.0783	40711	MCLOUGLN	500	1.0684	40721	MCNARY	345	1.0510
40723	MCNARY	500	1.0794	45197	MERIDINP	500	1.0741	40749	MONROE	500	1.0789

40797	OLYMPIA	500	1.0790	40809	OSTRNDER	500	1.0708	40821	PAUL	500	1.0800
40827	PEARL	500	1.0770	40837	PONDROSA	500	1.0757	40869	RAVER	500	1.0788
43485	ROUND BU	500	1.0673	40913	SACJAWEA	500	1.0751	40917	SACJWA T	500	1.0764
40941	SANTIAM	500	1.0776	40949	SATSOP	500	1.0798	40957	SCHULTZ	500	1.0835
40973	SICKLER	500	1.0791	40989	SLATT	500	1.0802	41043	SUMMER L	500	1.0742
45289	SWIFT	230	1.0500	41051	TACOMA	500	1.0786	41057	TAFT	500	1.0685
41095	TROUTDAL	500	1.0632	41113	VANTAGE	500	1.0737	47099	WELLS	115	1.0626
66225	PINTO	345	1.0515	66235	PINTO PS	345	1.0506	52226	PRI138	138	1.0674
52229	KER138	138	1.0709	52230	HED138	138	1.0699	52426	MAS138	138	1.0698
52815	PRI-T2	138	1.0681								

undervoltage summary < 0.900000

--no.--	--name--	-kv-	(v pu)	--no.--	--name--	-kv-	(v pu)	--no.--	--name--	-kv-	(v pu)
63006	HARLEM	161	0.8638	63009	MALTA UM	161	0.8627				

undervoltage summary < 0.950000

--no.--	--name--	-kv-	(v pu)	--no.--	--name--	-kv-	(v pu)	--no.--	--name--	-kv-	(v pu)
50781	NTL VR	138	0.9499	62030	PTRSNFLT	230	0.9305	62065	ENNIS MT	161	0.9462
62084	DILLON S	161	0.9322	62158	SHERDNMT	161	0.9400	48069	CHESTER	115	0.9408
48165	IRVIN	115	0.9450	48185	LIBTYLK	115	0.9498	48310	OPORTUNE	115	0.9455
48299	OPPORTUN	115	0.9429	48306	OTIS	230	0.9346	65025	AMPS	230	0.9483
65155	BIGGRASS	161	0.9252	70239	JEWELL2	230	0.9489	70249	LAJUNTAW	115	0.9278
70260	LEETSDAL	230	0.9497	70491	TOLGATE	230	0.9493	64072	MEYERS	120	0.9479
64092	RND HILL	120	0.9461	64102	STATELIN	120	0.9452	64203	TWN CRTP	120	0.9450
73043	CHEYENNE	115	0.9418	73066	GEMCTYTP	115	0.9471	73077	HAPPYJCK	115	0.9372
73109	LARAMIE	115	0.9413	73128	MAY	115	0.9490	73146	OASISTAP	115	0.9497
73183	SKYLINE	115	0.9409	73187	SPRINGCK	115	0.9472	73348	CORLETT	115	0.9349
73367	FTSANDER	115	0.9472	73375	WARRENLM	115	0.9362	73480	CROWCRK	115	0.9443
73504	PONNEQUI	115	0.9489	63006	HARLEM	161	0.8638	63007	HAVRE	115	0.9245
63008	HAVRE	161	0.9171	63009	MALTA UM	161	0.8627	63011	RICHARDC	161	0.9083
63013	RUDYARD	115	0.9432	63015	VERONA	161	0.9338				

GENERAL ELECTRIC INTERNATIONAL, INC. - PSLF - V11.1
MONTANA TRANSMISSION STUDY, WAPA UGP, JUNE 2002
G5 SCHEDULED TO DENVER

	generation capacity	generation on-line	--- load categories ---- power	current	imped.	shunt	-- svd --	net inter	losses	slack bus
area name	ALBERTA									
mw	10743.6	7862.7	7899.2	0.0	0.0	0.0	0.0	-399.4	363.0	59.3
54 mvar	4916.5	857.1	2641.0	0.0	0.0	-22.5	-1851.9	-37.1	127.7	11.7
area name	B.C.HYDRO									
mw	14693.0	10252.5	6889.1	0.0	0.0	0.0	0.0	2849.6	513.8	198.9
50 mvar	6719.0	951.7	2565.8	0.0	0.0	2956.5	2142.1	-268.6	-6444.0	9.4
area name	IDAHO									
mw	4676.4	4110.9	2984.0	0.0	0.0	0.0	0.0	920.4	206.5	143.5
60 mvar	2192.5	477.0	711.6	0.0	0.0	-595.9	0.0	-258.4	619.6	4.0
area name	MONTANA									
mw	3902.2	3242.6	1422.9	0.0	0.0	0.3	0.0	1668.1	151.3	630.6
62 mvar	1389.0	548.5	610.2	0.0	0.0	-118.3	-88.8	-458.9	604.3	143.7
area name	NORTHWEST									
mw	43502.3	27373.4	22671.3	0.0	0.0	0.0	0.0	3514.1	1188.1	706.4
40 mvar	15475.0	4379.9	6850.3	0.0	0.0	-1868.9	-4070.3	1038.0	2430.8	46.3
area name	PACE									
mw	6312.0	5688.6	6293.7	0.0	0.0	0.0	0.0	-886.0	280.8	167.6
65 mvar	3221.9	803.9	1960.1	0.0	0.0	-1764.5	-48.2	71.1	585.3	31.8
area name	PSCOLORADO									
mw	5806.0	4732.2	6332.7	0.0	0.0	0.0	0.0	-1806.8	206.3	122.9
70 mvar	3667.3	1938.5	2372.6	0.0	0.0	0.0	-1659.9	351.2	874.6	37.5
area name	SIERRA									
mw	1901.7	1375.4	1719.1	0.0	0.0	0.0	0.0	-399.8	56.1	109.4
64 mvar	925.4	131.6	458.7	0.0	0.0	-187.7	69.5	59.3	-268.3	24.8
area name	W KOOTENAY									
mw	763.5	596.5	722.4	0.0	0.0	0.0	0.0	-150.5	24.6	104.6
52 mvar	450.0	98.8	210.2	0.0	0.0	-77.8	-130.7	-9.3	106.3	25.0
area name	WAPA R.M.									
mw	6091.6	5405.6	3608.3	0.0	0.0	0.0	0.0	1611.1	186.1	523.2
73 mvar	2883.8	377.2	1237.0	0.0	0.0	-293.5	-281.9	-405.9	121.5	101.1

GENERAL ELECTRIC INTERNATIONAL, INC. - PSLF - V11.1
MONTANA TRANSMISSION STUDY, WAPA UGP, JUNE 2002
G5 SCHEDULED TO DENVER

		generation capacity	generation on-line	--- load categories ---- power	current	imped.	shunt	-- svd	-- inter	net losses	slack bus
area name		WAPA U.M.									
	mw	161.8	152.2	-102.1	0.0	0.0	0.0	0.0	227.2	27.1	52.2
63	mvar	54.0	45.9	123.6	0.0	0.0	-79.0	-43.4	-107.9	152.6	27.4
TOTL	mw	98554.1	70792.7	60440.6	0.0	0.0	0.3	0.0	7148.0	3203.8	
	mvar	41894.4	10610.3	19741.2	0.0	0.0	-2051.5	-5963.5	-26.4	-1089.6	

Area Interchange Summary

		mw	mvar
FROM AREA	54 ALBERTA		
TO AREA	50 B.C.HYDRO	-399.4	-37.1
TOTAL		-399.4	-37.1
FROM AREA	50 B.C.HYDRO		
TO AREA	54 ALBERTA	399.4	37.1
TO AREA	40 NORTHWEST	2299.7	-315.0
TO AREA	52 W KOOTENAY	150.5	9.3
TOTAL		2849.6	-268.6
FROM AREA	60 IDAHO		
TO AREA	40 NORTHWEST	-164.3	-263.5
TO AREA	65 PACE	951.8	57.4
TO AREA	64 SIERRA	132.9	-52.3
TOTAL		920.4	-258.4
FROM AREA	62 MONTANA		
TO AREA	40 NORTHWEST	1376.3	-418.8
TO AREA	65 PACE	344.7	-121.3
TO AREA	63 WAPA U.M.	-52.8	81.2
TOTAL		1668.1	-458.9
FROM AREA	40 NORTHWEST		
TO AREA	50 B.C.HYDRO	-2299.7	315.0
TO AREA	60 IDAHO	164.3	263.5
TO AREA	26 LADWP	2806.7	604.9
TO AREA	62 MONTANA	-1376.3	418.8
TO AREA	30 PG AND E	4028.4	-514.0
TO AREA	64 SIERRA	190.7	-50.2
TOTAL		3514.1	1038.0
FROM AREA	65 PACE		
TO AREA	14 ARIZONA	-39.2	92.6
TO AREA	60 IDAHO	-951.8	-57.4
TO AREA	26 LADWP	-32.9	-142.6
TO AREA	62 MONTANA	-344.7	121.3
TO AREA	18 NEVADA	255.5	-57.5
TO AREA	64 SIERRA	32.8	13.5
TO AREA	19 WAPA L.C.	36.6	32.8
TO AREA	73 WAPA R.M.	157.6	68.3
TOTAL		-886.0	71.1
FROM AREA	70 PSCOLORADO		
TO AREA	73 WAPA R.M.	-1806.8	351.2
TOTAL		-1806.8	351.2
FROM AREA	64 SIERRA		
TO AREA	60 IDAHO	-132.9	52.3
TO AREA	26 LADWP	-46.4	1.8
TO AREA	40 NORTHWEST	-190.7	50.2
TO AREA	65 PACE	-32.8	-13.5
TO AREA	30 PG AND E	-10.1	-28.6
TO AREA	24 SOCALIF	13.1	-2.8

TOTAL		-399.8	59.3
FROM AREA	52 W KOOTENAY	mw	mvar
TO AREA	50 B.C.HYDRO	-150.5	-9.3
TOTAL		-150.5	-9.3
FROM AREA	73 WAPA R.M.	mw	mvar
TO AREA	10 NEW MEXICO	100.0	2.0
TO AREA	65 PACE	-157.6	-68.3
TO AREA	70 PSCOLORADO	1806.8	-351.2
TO AREA	19 WAPA L.C.	36.2	-15.0
TO AREA	63 WAPA U.M.	-174.4	26.7
TOTAL		1611.1	-405.9
FROM AREA	63 WAPA U.M.	mw	mvar
TO AREA	62 MONTANA	52.8	-81.2
TO AREA	73 WAPA R.M.	174.4	-26.7
TOTAL		227.2	-107.9

AREA TIE LINE SUMMARY

GENERAL ELECTRIC INTERNATIONAL, INC. - PSLF - V11.1
MONTANA TRANSMISSION STUDY, WAPA UGP, JUNE 2002
G5 SCHEDULED TO DENVER

```
  ---------from--------      --------- to --------
  --no.-- --name-- -kv-      --no.-- --name-- -kv- ck          ---mw---- ---mvar-- meter

    54150 LANGDON2  500        50791 CBK500    500  1            -359.33    -36.36   f
    54205 COLEMAN7  138        50776 NTL138    138  1             -14.12     -8.92   t
    54273 POCATER7  138        50830 FRO T274  138  1             -25.98      8.19   t
 from area  54 to area  50 B.C.HYDRO                              -399.43    -37.09

 Total from area  54 ALBERTA                                      -399.43    -37.09

  ---------from--------      --------- to --------
  --no.-- --name-- -kv-      --no.-- --name-- -kv- ck          ---mw---- ---mvar-- meter

    62004 ANACOND   230        40457 GARRISON  230  1            -179.43    -32.63   f
    62004 ANACOND   230        40457 GARRISON  230  2            -192.61    -43.82   f
    62009 RATTLE S  161        40867 RATTLE S  230  1            -114.41    -38.30   t
    62012 TOWN2     500        40453 GAR2EAST  500  2             841.16   -133.86   t
    62013 TOWN1     500        40451 GAR1EAST  500  1             841.16   -133.86   t
    62066 KERR      115        40391 ELMO      115  1               8.09    -16.17   f
    62072 OVANDO    230        40457 GARRISON  230  1              28.82      5.40   t
    62072 OVANDO    230        40551 HOT SPR   230  1              77.49      4.51   t
    62085 CROWCR B  115        48055 BURKAVAB  115  1              30.48    -12.48   t
    62086 THOMSON   115        48053 BURKAVAA  115  1              35.76    -12.55   t
 from area  62 to area  40 NORTHWEST                              1376.50   -413.74

    62030 PTRSNFLT  230        65025 AMPS      230  1             236.80    -68.29   t
    62045 BLGS PHA  230        66750 YELOWTLP  230  1               4.06      8.46   t
    62061 RMRK PHA  161        66755 YELOWTLP  161  1              -4.46     -2.88   f
    62084 DILLON S  161        65155 BIGGRASS  161  1             108.95    -57.48   t
 from area  62 to area  65 PACE                                    345.35   -120.20

    62023 GT FALLS  161        63008 HAVRE     161  1             -26.43     -6.35   f
    62024 RAINBOW   161        63015 VERONA    161  1             -22.33     -5.20   f
    62027 SHELBY    115        63014 TIBERTAP  115  1              -5.33     -1.60   f
    62051 HARDIN    230        63002 CRSOVRUM  230  1             128.75     16.06   t
    62056 HUNTLEY   230        63002 CRSOVRUM  230  1            -127.94     20.18   t
 from area  62 to area  63 WAPA U.M.                               -53.29     23.08

 Total from area  62 MONTANA                                      1668.56   -510.85

  ---------from--------      --------- to --------
  --no.-- --name-- -kv-      --no.-- --name-- -kv- ck          ---mw---- ---mvar-- meter

    40145 BOUNDARY  230        50822 NLYPHS    230  1            -281.92     -5.03   f
    40323 CUSTER W  500        50194 ING500    500  1           -1017.31    160.82   t
    40323 CUSTER W  500        50194 ING500    500  2           -1000.44    159.22   t
 from area  40 to area  50 B.C.HYDRO                             -2299.68    315.01

    45029 BURNS     500        60240 MIDPOINT  500  1            -177.48    351.48   t
    45103 ENTERPRS  230        60150 HELLSCYN  230  1              41.41    -39.91   f
    40507 HARNEY    115        61826 HINES     115  1             -13.23     15.34   f
    40621 LAGRANDE  230        60192 LADD      230  1              77.15    -30.37   f
    48197 LOLO      230        60278 IMNAHA    230  1             235.99    -32.95   t
 from area  40 to area  60 IDAHO                                   163.84    263.59

    41311 CELILO1   500        26097 SYLMAR1   230  1             529.68     58.74   f
    41313 CELILO3   230        26098 SYLMAR3   230  1             873.66    243.52   f
    41312 CELILO2   500        26099 SYLMAR2   230  1             529.68     58.65   f
    41314 CELILO4   230        26100 SYLMAR4   230  1             873.66    243.98   f
 from area  40 to area  26 LADWP                                  2806.68    604.89

    48053 BURKAVAA  115        62086 THOMSON   115  1             -35.76     12.55   f
    48055 BURKAVAB  115        62085 CROWCR B  115  1             -30.48     12.48   f
    40391 ELMO      115        62066 KERR      115  1              -8.09     16.17   t
    40451 GAR1EAST  500        62013 TOWN1     500  1            -841.16    133.86   f
    40453 GAR2EAST  500        62012 TOWN2     500  2            -841.16    133.86   f
    40457 GARRISON  230        62072 OVANDO    230  1             -28.82     -5.40   f
    40457 GARRISON  230        62004 ANACOND   230  1             179.43     32.63   t
    40457 GARRISON  230        62004 ANACOND   230  2             192.61     43.82   t
    40551 HOT SPR   230        62072 OVANDO    230  1             -77.49     -4.51   f
    40867 RATTLE S  230        62009 RATTLE S  161  1             114.41     38.30   f
 from area  40 to area  62 MONTANA                               -1376.50    413.74

    45035 CAPTJACK  500        30020 OLINDA    500  1            1423.83   -224.09   f
    45087 DELTA     115        31468 CASCADE   115  1              71.92    -16.27   f
    40687 MALIN     500        30005 ROUND MT  500  1            1261.04   -127.69   f
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   40687 MALIN     500        30005 ROUND MT  500  2            1272.27   -145.88   f
from area  40 to area  30 PG AND E                             4029.05   -513.94

   40537 HIL TOP   230        64058 HIL TOP   345  1             190.68    -50.18   f
from area  40 to area  64 SIERRA                                190.68    -50.18

Total from area  40 NORTHWEST                                  3514.09   1033.11

 ---------from--------      --------- to --------
 --no.-- --name-- -kv-      --no.-- --name-- -kv- ck          ---mw---- ---mvar-- meter

   66235 PINTO PS  345        14101 FOURCORN  345  1             -39.13     92.64   t
from area  65 to area  14 ARIZONA                               -39.13     92.64

   65075 ANTLOPE   230        60073 BRADY     230  1             121.05    -56.54   f
   65135 BENLOMND  345        60060 BORAH     345  1            -393.57     10.82   t
   65220 BRIDGER   230        60085 BRIDGER   345  1             -63.22     -4.63   t
   65220 BRIDGER   230        60085 BRIDGER   345  2             -64.26     -4.67   t
   65220 BRIDGER   230        60085 BRIDGER   345  3             -63.22     -4.63   t
   65665 GOSHEN    345        60085 BRIDGER   345  1            -573.34    -65.72   f
   65665 GOSHEN    345        60190 KINPORT   345  1             214.76     28.06   t
   65670 GOSHEN    161        60030 BLACKFT   161  1             100.57     11.43   f
   65920 MALAD     138        60020 AMFLS     138  1             -72.35      2.79   t
   66565 TREASTON  230        60073 BRADY     230  1            -157.73     25.97   t
from area  65 to area  60 IDAHO                                 -951.30    -57.10

   65995 MONA      345        26043 INTERMT   345  1             -16.44    -71.29   f
   65995 MONA      345        26043 INTERMT   345  2             -16.44    -71.29   f
from area  65 to area  26 LADWP                                  -32.88   -142.59

   65025 AMPS      230        62030 PTRSNFLT  230  1            -236.80     68.29   f
   65155 BIGGRASS  161        62084 DILLON S  161  1            -108.95     57.48   f
   66750 YELOWTLP  230        62045 BLGS PHA  230  1              -4.06     -8.46   f
   66755 YELOWTLP  161        62061 RMRK PHA  161  1               4.46      2.88   t
from area  65 to area  62 MONTANA                               -345.35    120.20

   66280 REDBUTTE  345        18002 HA PS     345  1             255.54    -57.48   f
from area  65 to area  18 NEVADA                                 255.54    -57.48

   66210 PAVANT    230        64124 UTAH-NEV  230  1              32.85     13.52   t
from area  65 to area  64 SIERRA                                  32.85     13.52

   66355 SIGURDPS  230        79031 GLENCANY  230  1              36.66     32.77   t
from area  65 to area  19 WAPA L.C.                               36.66     32.77

   65060 ANT MINE  230        73276 TEKLA     230  1              14.05     20.94   f
   65085 ASHLEY    138        79067 VERNAL    138  1             -77.66      6.15   t
   65192 BONANZA   138        79067 VERNAL    138  1              32.17      8.04   t
   65193 BONANZA   345        79005 BEARS     345  1            -254.42     -4.41   f
   65305 CASPERPP  115        73167 REFNRYTP  115  1             -27.24     -7.03   f
   65305 CASPERPP  115        73042 CASPERLM  115  1               9.34     -6.16   t
   65420 DAVEJOHN  230        73107 LAR.RIVR  230  1             173.32    -12.81   f
   65420 DAVEJOHN  230        73190 STEGALL   230  1             138.15     -3.66   f
   65425 DAVEJOHN  115        73070 GLENRCKN  115  1              76.84      6.02   f
   65425 DAVEJOHN  115        73071 GLENRCKS  115  1              86.57     10.29   f
   65565 FLAMGORG  230        79026 FLAMGORG  138  1             -28.39      3.91   f
   65565 FLAMGORG  230        79026 FLAMGORG  138  2             -28.39      3.91   f
   66278 RANGELY   138        79001 ARTESIA   138  1             -12.52     -3.50   f
   66278 RANGELY   138        79046 MEEKER    138  1               6.61     -4.52   f
   66305 RIVERTON  230        73170 RIVERTON  115  1               4.09     10.64   f
   66535 THERMOPL  230        73197 THERMOPL  115  1              -4.27      5.46   t
   66540 THERPACE  115        73197 THERMOPL  115  1              14.12      6.70   t
   66720 WORLAND   115        73222 WORLANTP  115  1             -20.12      7.68   t
   66725 WYODAK    230        73148 OSAGE     230  1             143.82    -15.38   t
   66725 WYODAK    230        73168 RENO      230  1             107.31      5.92   f
   66725 WYODAK    230        73294 HUGHES    230  1             132.31      2.52   f
   66725 WYODAK    230        73282 WYODAK     69  1              -9.95     15.26   f
   66725 WYODAK    230        73282 WYODAK     69  2              -6.73     10.32   f
   66725 WYODAK    230        74016 WYGEN      14  1               0.00      0.00   f
   66750 YELOWTLP  230        73229 YELLOWBR  230  1            -311.35      2.32   t
from area  65 to area  73 WAPA R.M.                              157.68     68.61

Total from area  65 PACE                                        -885.93     70.57

 ---------from--------      --------- to --------
 --no.-- --name-- -kv-      --no.-- --name-- -kv- ck          ---mw---- ---mvar-- meter

   70005 BRUSHCPP  115        73013 B.CK PS   115  1             107.51     27.59   f
   70005 BRUSHCPP  115        73013 B.CK PS   115  2             113.12     34.38   f
   70116 COBBLAKE  115        73044 COBBLKTP  115  1             -15.33     -1.44   f
   70122 COMANCHE  230        73477 FULLER    230  1              83.35     34.85   t
   70139 DANIELPK  230        73477 FULLER    230  1            -103.70    -22.67   t
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70193	FTN VALL	115	73412	MIDWAYBR	115	1	1.01	0.86	t
70205	GRANDJCT	230	79036	GRANDJCT	345	1	-60.64	-24.59	f
70256	LAPORTPS	115	73105	LAPORTE	115	1	-14.74	-6.28	t
70274	MALTA	230	73138	MT.ELBRT	230	1	-145.51	-19.00	f
70285	MIDWAYPS	115	73412	MIDWAYBR	115	1	13.89	-21.48	f
70286	MIDWAYPS	230	73413	MIDWAYBR	230	1	82.41	87.20	t
70287	MILL	115	73296	FRASER	115	1	-48.17	11.43	f
70308	PALMER	115	73414	MONUMENT	115	1	-46.24	16.67	t
70311	PAWNEE	230	73192	STORY	230	1	-304.50	-14.20	t
70327	PONCHA	115	79037	GUNNISON	115	1	-35.16	14.95	f
70350	RAWHIDE	24	73165	RAWHIDE	230	1	236.17	94.37	t
70358	RIFLE PS	230	79059	RIFLE WA	230	1	-130.52	5.04	f
70358	RIFLE PS	230	79250	AMATLAS	230	1	-75.90	-2.26	f
70375	SAN LUIS	230	79054	PONCHABR	230	1	-82.67	6.51	t
70410	ST.VRAIN	230	73116	LONGPEAK	230	1	-83.35	78.66	f
70470	WELD PS	115	73211	WELD LM	115	1	-24.58	67.79	f
70471	WELD PS	230	73212	WELD LM	230	1	-432.42	17.38	f
70474	WINDSOR	230	73011	AULT	230	1	-361.98	14.54	t
70476	WOODLAND	115	73400	EMIL AND	115	1	20.36	-0.22	f
70525	MTHARRIS	138	79038	HAYDEN	138	1	-7.21	-1.37	t
79033	GOREPASS	230	79039	HAYDEN	230	1	-293.22	-37.88	t
79033	GOREPASS	230	73072	GOREPASS	138	1	2.50	3.22	f
79034	GRANDJCT	115	79048	MONTROSE	115	1	17.40	-3.84	t
79056	RIFLE CU	138	79046	MEEKER	138	1	-23.67	0.25	f
79057	RIFLE CU	230	79059	RIFLE WA	230	1	47.00	-16.90	t
79058	RIFLE CU	345	79014	CRAIG	345	1	-315.42	4.62	f
79058	RIFLE CU	345	79036	GRANDJCT	345	1	253.47	-18.19	f
79091	WOLCOTTP	230	79039	HAYDEN	230	1	-198.59	-4.61	f
79173	COLBRAN	115	79174	MOLINA-L	115	1	0.00	-0.54	f
70351	RAWHIDEA	14	73165	RAWHIDE	230	1	46.09	45.13	t
70550	W CANON	115	73551	W CANON	230	1	-27.62	-18.79	t
from area 70 to area 73 WAPA R.M.							-1806.86	351.21	

Total from area 70 PSCOLORADO -1806.86 351.21

---------from--------			--------- to --------						
--no.--	--name--	-kv-	--no.--	--name--	-kv-	ck	---mw----	---mvar--	meter
79060	SANJN PS	345	10292	SAN_JUAN	345	1	100.05	1.95	t
from area 73 to area 10 NEW MEXICO							100.05	1.95	
73042	CASPERLM	115	65305	CASPERPP	115	1	-9.34	6.16	f
73070	GLENRCKN	115	65425	DAVEJOHN	115	1	-76.84	-6.02	t
73071	GLENRCKS	115	65425	DAVEJOHN	115	1	-86.57	-10.29	t
73107	LAR.RIVR	230	65420	DAVEJOHN	230	1	-173.32	12.81	t
73148	OSAGE	230	66725	WYODAK	230	1	-143.82	15.38	f
73167	REFNRYTP	115	65305	CASPERPP	115	1	27.24	7.03	t
73168	RENO	230	66725	WYODAK	230	1	-107.31	-5.92	t
73170	RIVERTON	115	66305	RIVERTON	230	1	-4.09	-10.64	t
73190	STEGALL	230	65420	DAVEJOHN	230	1	-138.15	3.66	t
73197	THERMOPL	115	66540	THERPACE	115	1	-14.12	-6.70	f
73197	THERMOPL	115	66535	THERMOPL	230	1	4.27	-5.46	f
73222	WORLANTP	115	66720	WORLAND	115	1	20.12	-7.68	f
73229	YELLOWBR	230	66750	YELOWTLP	230	1	311.35	-2.32	f
73276	TEKLA	230	65060	ANT MINE	230	1	-14.05	-20.94	t
73282	WYODAK	69	66725	WYODAK	230	1	9.95	-15.26	t
73282	WYODAK	69	66725	WYODAK	230	2	6.73	-10.32	t
73294	HUGHES	230	66725	WYODAK	230	1	-132.31	-2.52	t
79001	ARTESIA	138	66278	RANGELY	138	1	12.52	3.50	t
79005	BEARS	345	65193	BONANZA	345	1	254.42	4.41	t
79026	FLAMGORG	138	65565	FLAMGORG	230	1	28.39	-3.91	t
79026	FLAMGORG	138	65565	FLAMGORG	230	2	28.39	-3.91	t
79046	MEEKER	138	66278	RANGELY	138	1	-6.61	4.52	t
79067	VERNAL	138	65085	ASHLEY	138	1	77.66	-6.15	f
79067	VERNAL	138	65192	BONANZA	138	1	-32.17	-8.04	f
74016	WYGEN	14	66725	WYODAK	230	1	0.00	0.00	t
from area 73 to area 65 PACE							-157.68	-68.61	
73011	AULT	230	70474	WINDSOR	230	1	361.98	-14.54	f
73013	B.CK PS	115	70005	BRUSHCPP	115	1	-107.51	-27.59	t
73013	B.CK PS	115	70005	BRUSHCPP	115	2	-113.12	-34.38	t
73044	COBBLKTP	115	70116	COBBLAKE	115	1	15.33	1.44	t
73072	GOREPASS	138	79033	GOREPASS	230	1	-2.50	-3.22	t
73105	LAPORTE	115	70256	LAPORTPS	115	1	14.74	6.28	f
73116	LONGPEAK	230	70410	ST.VRAIN	230	1	83.35	-78.66	t
73138	MT.ELBRT	230	70274	MALTA	230	1	145.51	19.00	t
73165	RAWHIDE	230	70350	RAWHIDE	24	1	-236.17	-94.37	f
73165	RAWHIDE	230	70351	RAWHIDEA	14	1	-46.09	-45.13	f
73192	STORY	230	70311	PAWNEE	230	1	304.50	14.20	f
73211	WELD LM	115	70470	WELD PS	115	1	24.58	-67.79	t
73212	WELD LM	230	70471	WELD PS	230	1	432.42	-17.38	t
73296	FRASER	115	70287	MILL	115	1	48.17	-11.43	t

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   73400 EMIL AND  115        70476 WOODLAND  115  1            -20.36      0.22   t
   73412 MIDWAYBR  115        70193 FTN VALL  115  1             -1.01     -0.86   f
   73412 MIDWAYBR  115        70285 MIDWAYPS  115  1            -13.89     21.48   t
   73413 MIDWAYBR  230        70286 MIDWAYPS  230  1            -82.41    -87.20   f
   73414 MONUMENT  115        70308 PALMER    115  1             46.24    -16.67   f
   73477 FULLER    230        70122 COMANCHE  230  1            -83.35    -34.85   f
   73477 FULLER    230        70139 DANIELPK  230  1            103.70     22.67   f
   79014 CRAIG     345        79058 RIFLE CU  345  1            315.42     -4.62   t
   79036 GRANDJCT  345        79058 RIFLE CU  345  1           -253.47     18.19   t
   79036 GRANDJCT  345        70205 GRANDJCT  230  1             60.64     24.59   t
   79037 GUNNISON  115        70327 PONCHA    115  1             35.16    -14.95   t
   79038 HAYDEN    138        70525 MTHARRIS  138  1              7.21      1.37   f
   79039 HAYDEN    230        79033 GOREPASS  230  1            293.22     37.88   f
   79039 HAYDEN    230        79091 WOLCOTTP  230  1            198.59      4.61   t
   79046 MEEKER    138        79056 RIFLE CU  138  1             23.67     -0.25   t
   79048 MONTROSE  115        79034 GRANDJCT  115  1            -17.40      3.84   f
   79054 PONCHABR  230        70375 SAN LUIS  230  1             82.67     -6.51   f
   79059 RIFLE WA  230        70358 RIFLE PS  230  1            130.52     -5.04   t
   79059 RIFLE WA  230        79057 RIFLE CU  230  1            -47.00     16.90   f
   79174 MOLINA-L  115        79173 COLBRAN   115  1             -0.00      0.54   t
   79250 AMATLAS   230        70358 RIFLE PS  230  1             75.90      2.26   t
   73551 W CANON   230        70550 W CANON   115  1             27.62     18.79   f
from area  73 to area  70 PSCOLORADO                            1806.86   -351.21

   79061 SHIP PS   230        79063 SHIPROCK  230  1             47.01     -5.80   t
   79260 ELPASOTP  115        79105 GLADETAP  115  1            -10.75     -9.20   t
from area  73 to area  19 WAPA L.C.                               36.25    -15.00

   73229 YELLOWBR  230        63001 CROS PHA  230  1           -174.30     26.68   f
from area  73 to area  63 WAPA U.M.                             -174.30     26.68

Total from area  73 WAPA R.M.                                   1611.18   -406.20

 ---------from--------      --------- to --------
 --no.-- --name-- -kv-      --no.-- --name-- -kv- ck          ---mw---- ---mvar-- meter

   63002 CRSOVRUM  230        62051 HARDIN    230  1           -128.75    -16.06   f
   63002 CRSOVRUM  230        62056 HUNTLEY   230  1            127.94    -20.18   f
   63008 HAVRE     161        62023 GT FALLS  161  1             26.43      6.35   t
   63014 TIBERTAP  115        62027 SHELBY    115  1              5.33      1.60   t
   63015 VERONA    161        62024 RAINBOW   161  1             22.33      5.20   t
from area  63 to area  62 MONTANA                                53.29    -23.08

   63001 CROS PHA  230        73229 YELLOWBR  230  1            174.30    -26.68   t
from area  63 to area  73 WAPA R.M.                              174.30    -26.68

Total from area  63 WAPA U.M.                                    227.59    -49.76
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MONTANA TRANSMISSION STUDY, WAPA UGP, JUNE 2002
G5 SCHEDULED TO DENVER

Summation of selected system

	-----MW----	----MVAR---		
Generation	70792.680	10610.254	Generators	2586
Actual Load	60440.602	19741.215	Loads	6813
Net actual shunt	0.287	-2051.465	Shunts	1297
Net actual svd	0.000	-5963.530	Svd	586
Loss	3203.810	-1089.639	Buses	13192
			Lines	10965
			Transformers	5144
MVA-miles	6483813.0	974123.5	DC buses	6
Miles	47050.316		DC converters	10
			DC lines	3

MONTANA TRANSMISSION STUDY, WAPA UGP, JUNE 2002
G5 SCHEDULED TO DENVER

Area 54 [ALBERTA]

	-----MW----	----MVAR---		
Generation	7862.734	857.141	Generators	142
Actual Load	7899.199	2641.000	Loads	512
Net actual shunt	0.000	-22.487	Shunts	9
Net actual svd	0.000	-1851.935	Svd	76
Net Interchange	-399.430	-37.090	Buses	991
Sched Interchange	-400.000		Lines	781
Loss	362.962	127.656	Transformers	406
MVA-miles	1111697.3	226120.2	DC buses	0
Miles	18637.697		DC converters	0
			DC lines	0
Loss at 13.20 Kv	1.733	25.322		
Loss at 13.80 Kv	3.367	88.111		
Loss at 14.40 Kv	0.019	2.275		
Loss at 25.00 Kv	1.931	27.273		
Loss at 34.00 Kv	0.053	0.877		
Loss at 69.00 Kv	18.965	-3.364		
Loss at 138.00 Kv	151.492	-263.411		
Loss at 240.00 Kv	167.689	-572.766		
Loss at 500.00 Kv	0.000	0.000		
Loss at other Kv	17.714	823.337		
Largest mismatch MVA	0.0235	0.1646		

MONTANA TRANSMISSION STUDY, WAPA UGP, JUNE 2002
G5 SCHEDULED TO DENVER

Area 50 [B.C.HYDRO]

	-----MW----	----MVAR---		
Generation	10252.527	951.738	Generators	112
Actual Load	6889.125	2565.790	Loads	395
Net actual shunt	0.000	2956.470	Shunts	104
Net actual svd	0.000	2142.120	Svd	125
Net Interchange	2849.577	-268.606	Buses	1054
Sched Interchange	2849.900		Lines	718
Loss	513.821	-6444.044	Transformers	645
MVA-miles	0.0	0.0	DC buses	0
Miles	0.000		DC converters	0
			DC lines	0
Loss at 13.20 Kv	0.307	7.915		
Loss at 13.80 Kv	10.051	491.502		
Loss at 34.00 Kv	0.000	0.002		
Loss at 46.00 Kv	0.302	0.084		
Loss at 132.00 Kv	36.989	105.960		
Loss at 138.00 Kv	15.114	-120.733		
Loss at 230.00 Kv	52.950	-616.522		
Loss at 500.00 Kv	340.857	-6978.061		
Loss at other Kv	57.252	665.812		
Largest mismatch MVA	0.0209	0.0240		

MONTANA TRANSMISSION STUDY, WAPA UGP, JUNE 2002
G5 SCHEDULED TO DENVER

Area 60 [IDAHO]

-----MW---- ----MVAR---

Generation	4110.875	476.959	Generators	62
Actual Load	2984.000	711.600	Loads	64
Net actual shunt	0.000	-595.866	Shunts	15
Net actual svd	0.000	0.000	Svd	0
Net Interchange	920.405	-258.386	Buses	156
Sched Interchange	920.000		Lines	120
Loss	206.470	619.612	Transformers	96
MVA-miles	0.0	0.0	DC buses	0
Miles	0.000		DC converters	0
			DC lines	0
Loss at 13.20 Kv	0.272	5.839		
Loss at 13.80 Kv	3.362	115.571		
Loss at 14.40 Kv	0.879	34.218		
Loss at 34.50 Kv	0.000	0.000		
Loss at 100.00 Kv	0.572	25.488		
Loss at 115.00 Kv	0.437	0.373		
Loss at 138.00 Kv	19.744	-4.850		
Loss at 161.00 Kv	1.795	2.717		
Loss at 230.00 Kv	78.703	2.382		
Loss at 345.00 Kv	95.455	268.444		
Loss at 500.00 Kv	0.000	0.000		
Loss at other Kv	5.252	169.429		
Largest mismatch MVA	0.0050	0.0070		

MONTANA TRANSMISSION STUDY, WAPA UGP, JUNE 2002
G5 SCHEDULED TO DENVER

Area 62 [MONTANA]

	-----MW----	----MVAR---		
Generation	3242.647	548.539	Generators	36
Actual Load	1422.895	610.184	Loads	200
Net actual shunt	0.287	-118.274	Shunts	56
Net actual svd	0.000	-88.752	Svd	11
Net Interchange	1668.118	-458.892	Buses	315
Sched Interchange	1668.000		Lines	319
Loss	151.346	604.269	Transformers	91
MVA-miles	4474.8	254.1	DC buses	0
Miles	45.000		DC converters	0
			DC lines	0
Loss at 13.80 Kv	-0.000	37.008		
Loss at 34.50 Kv	2.229	59.038		
Loss at 69.00 Kv	0.525	2.650		
Loss at 100.00 Kv	29.757	-3.720		
Loss at 115.00 Kv	4.586	-9.432		
Loss at 161.00 Kv	39.003	13.662		
Loss at 230.00 Kv	28.284	-39.722		
Loss at 500.00 Kv	46.304	378.243		
Loss at other Kv	0.658	166.540		
Largest mismatch MVA	0.0049	0.0182		

MONTANA TRANSMISSION STUDY, WAPA UGP, JUNE 2002
G5 SCHEDULED TO DENVER

Area 40 [NORTHWEST]

	-----MW----	----MVAR---		
Generation	27373.428	4379.933	Generators	383
Actual Load	22671.295	6850.328	Loads	1652
Net actual shunt	0.000	-1868.889	Shunts	43
Net actual svd	0.000	-4070.340	Svd	159
Net Interchange	3514.062	1038.038	Buses	2740
Sched Interchange	3514.000		Lines	2710
Loss	1188.079	2430.812	Transformers	654
MVA-miles	4736899.0	611133.9	DC buses	4
Miles	18469.418		DC converters	4
			DC lines	2
Loss at 11.00 Kv	-0.000	0.608		
Loss at 13.20 Kv	0.000	4.933		
Loss at 13.80 Kv	4.796	207.768		
Loss at 14.40 Kv	0.297	13.625		
Loss at 25.00 Kv	3.145	164.133		
Loss at 34.50 Kv	0.352	6.407		
Loss at 69.00 Kv	15.168	43.116		
Loss at 100.00 Kv	0.119	-0.088		
Loss at 115.00 Kv	221.127	515.234		
Loss at 230.00 Kv	346.638	1704.633		

Loss at 345.00 Kv	16.190	-173.268
Loss at 500.00 Kv	454.965	-1372.041
Loss at other Kv	125.283	1315.753
Largest mismatch MVA	0.0264	0.0552

MONTANA TRANSMISSION STUDY, WAPA UGP, JUNE 2002
G5 SCHEDULED TO DENVER

Area 65 [PACE]

	-----MW----	----MVAR---		
Generation	5688.587	803.940	Generators	56
Actual Load	6293.716	1960.150	Loads	274
Net actual shunt	0.000	-1764.493	Shunts	74
Net actual svd	0.000	-48.151	Svd	2
Net Interchange	-885.961	71.109	Buses	566
Sched Interchange	-886.200		Lines	408
Loss	280.830	585.316	Transformers	338
MVA-miles	1003.1	30.0	DC buses	0
Miles	11.900		DC converters	0
			DC lines	0
Loss at 13.80 Kv	0.907	29.853		
Loss at 34.50 Kv	1.184	17.082		
Loss at 46.00 Kv	6.338	137.324		
Loss at 69.00 Kv	1.670	22.777		
Loss at 100.00 Kv	0.056	1.036		
Loss at 115.00 Kv	3.004	-9.341		
Loss at 138.00 Kv	68.944	184.832		
Loss at 161.00 Kv	18.283	16.735		
Loss at 230.00 Kv	90.839	131.436		
Loss at 345.00 Kv	85.536	-44.936		
Loss at other Kv	4.071	98.517		
Largest mismatch MVA	0.0101	0.0513		

MONTANA TRANSMISSION STUDY, WAPA UGP, JUNE 2002
G5 SCHEDULED TO DENVER

Area 70 [PSCOLORADO]

	-----MW----	----MVAR---		
Generation	4732.170	1938.517	Generators	66
Actual Load	6332.696	2372.604	Loads	362
Net actual shunt	0.000	0.000	Shunts	0
Net actual svd	0.000	-1659.949	Svd	43
Net Interchange	-1806.840	351.238	Buses	500
Sched Interchange	-1807.000		Lines	461
Loss	206.329	874.649	Transformers	147
MVA-miles	34392.3	5784.5	DC buses	0
Miles	564.500		DC converters	0
			DC lines	0
Loss at 13.80 Kv	3.670	119.606		
Loss at 14.40 Kv	0.066	0.657		
Loss at 25.00 Kv	0.010	0.142		
Loss at 46.00 Kv	0.199	0.013		
Loss at 69.00 Kv	7.162	0.523		
Loss at 100.00 Kv	0.025	-0.396		
Loss at 115.00 Kv	33.605	-35.144		
Loss at 138.00 Kv	0.176	-5.908		
Loss at 230.00 Kv	154.728	587.183		
Loss at 345.00 Kv	0.008	0.508		
Loss at other Kv	6.680	207.464		
Largest mismatch MVA	0.0118	0.0495		

MONTANA TRANSMISSION STUDY, WAPA UGP, JUNE 2002
G5 SCHEDULED TO DENVER

Area 64 [SIERRA]

	-----MW----	----MVAR---		
Generation	1375.351	131.642	Generators	22
Actual Load	1719.091	458.744	Loads	121
Net actual shunt	0.000	-187.672	Shunts	30
Net actual svd	0.000	69.532	Svd	5
Net Interchange	-399.847	59.330	Buses	275
Sched Interchange	-399.000		Lines	197
Loss	56.107	-268.316	Transformers	117

MVA-miles	64431.5	38582.8	DC buses	0
Miles	1042.600		DC converters	0
			DC lines	0
Loss at 13.80 Kv	2.545	51.511		
Loss at 69.00 Kv	0.000	0.000		
Loss at 115.00 Kv	0.479	-6.141		
Loss at 230.00 Kv	1.566	-102.550		
Loss at 345.00 Kv	9.486	-436.149		
Loss at other Kv	42.031	225.013		
Largest mismatch MVA	0.0066	0.0295		

MONTANA TRANSMISSION STUDY, WAPA UGP, JUNE 2002
G5 SCHEDULED TO DENVER

Area 52 [W KOOTENAY]

	-----MW----	----MVAR---		
Generation	596.550	98.761	Generators	20
Actual Load	722.400	210.200	Loads	64
Net actual shunt	0.000	-77.794	Shunts	27
Net actual svd	0.000	-130.680	Svd	4
Net Interchange	-150.479	-9.304	Buses	260
Sched Interchange	-149.900		Lines	165
Loss	24.629	106.338	Transformers	117
MVA-miles	30804.5	4870.4	DC buses	0
Miles	986.000		DC converters	0
			DC lines	0
Loss at 13.20 Kv	0.000	8.258		
Loss at 13.80 Kv	0.000	0.000		
Loss at 14.40 Kv	-0.000	29.954		
Loss at 25.00 Kv	0.000	0.000		
Loss at 138.00 Kv	0.397	-0.477		
Loss at 161.00 Kv	9.043	11.278		
Loss at 230.00 Kv	1.521	-8.769		
Loss at other Kv	13.668	66.093		
Largest mismatch MVA	0.0013	0.0047		

MONTANA TRANSMISSION STUDY, WAPA UGP, JUNE 2002
G5 SCHEDULED TO DENVER

Area 73 [WAPA R.M.]

	-----MW----	----MVAR---		
Generation	5405.576	377.167	Generators	80
Actual Load	3608.290	1237.018	Loads	355
Net actual shunt	0.000	-293.509	Shunts	4
Net actual svd	0.000	-281.949	Svd	53
Net Interchange	1611.138	-405.917	Buses	620
Sched Interchange	1612.000		Lines	567
Loss	186.134	121.473	Transformers	174
MVA-miles	499117.2	87071.5	DC buses	0
Miles	7283.200		DC converters	0
			DC lines	0
Loss at 13.80 Kv	6.235	92.134		
Loss at 34.50 Kv	0.316	4.025		
Loss at 69.00 Kv	5.760	-9.687		
Loss at 115.00 Kv	77.206	-66.547		
Loss at 138.00 Kv	5.488	-29.842		
Loss at 230.00 Kv	47.371	-176.780		
Loss at 345.00 Kv	36.409	-20.514		
Loss at other Kv	7.350	328.683		
Largest mismatch MVA	0.0274	0.0375		

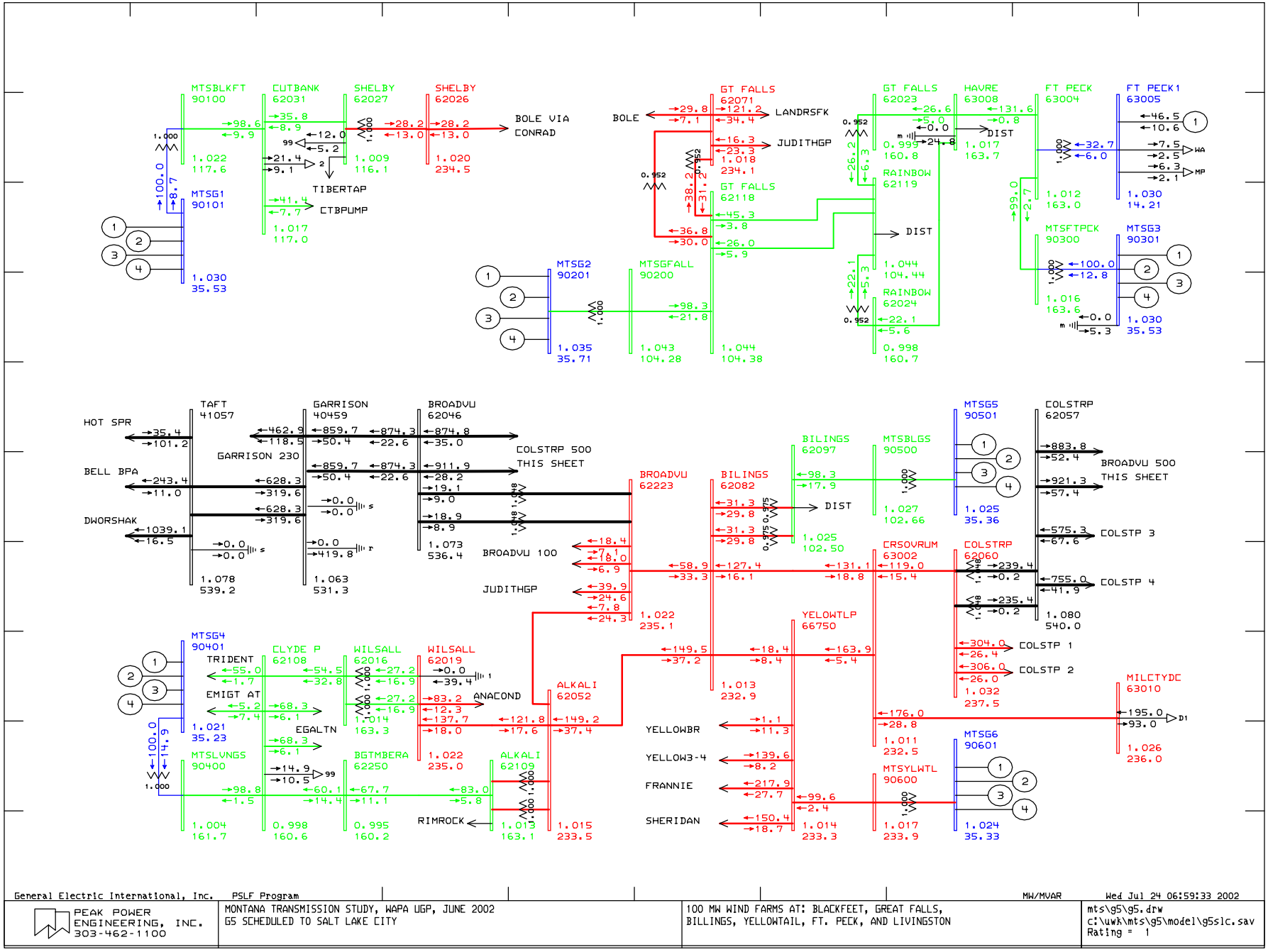
MONTANA TRANSMISSION STUDY, WAPA UGP, JUNE 2002
G5 SCHEDULED TO DENVER

Area 63 [WAPA U.M.]

	-----MW----	----MVAR---		
Generation	152.236	45.916	Generators	5
Actual Load	-102.100	123.600	Loads	17
Net actual shunt	0.000	-78.951	Shunts	1
Net actual svd	0.000	-43.427	Svd	5
Net Interchange	227.236	-107.899	Buses	17
Sched Interchange	227.000		Lines	13
Loss	27.100	152.595	Transformers	4

MVA-miles	993.4	276.2	DC buses	0
Miles	10.000		DC converters	0
			DC lines	0
Loss at 13.80 Kv	0.251	7.024		
Loss at 34.50 Kv	0.658	17.415		
Loss at 115.00 Kv	0.470	-4.875		
Loss at 161.00 Kv	15.713	71.064		
Loss at 230.00 Kv	10.008	61.967		
Largest mismatch MVA	0.0002	0.0022		

slc



General Electric International, Inc. PSLF Program MW/MVAR Wed Jul 24 06:59:33 2002

PEAK POWER ENGINEERING, INC. 303-462-1100

MONTANA TRANSMISSION STUDY, WAPA UGP, JUNE 2002
G5 SCHEDULED TO SALT LAKE CITY

100 MW WIND FARMS AT: BLACKFEET, GREAT FALLS, BILLINGS, YELLOWTAIL, FT. PECK, AND LIVINGSTON

mts\g5\g5.drw
c:\uwk\mts\g5\model\g5slc.sav
Rating = 1

GENERAL ELECTRIC INTERNATIONAL, INC. - PSLF - V11.1
MONTANA TRANSMISSION STUDY, WAPA UGP, JUNE 2002
G5 SCHEDULED TO SALT LAKE CITY

Percent Loading Summary -- using rating 1 - 100.0 percent of rating

----------from----------				---------- to ----------								rate	per cent
--no.--	--name--	-kv-	-ar-	--no.--	--name--	-kv-	-ar-	ck	---mw---	-mvar-	-mva--	------	loading
54611	RUTH LK8	69	54	54839	RUTH LK1	138	54	1	57.9	13.8	59.5	45.0M	132.3 T
64026	CARSON	120	64	64027	CARSON T	120	64	1	-56.3	-6.1	56.6	216.5A	132.2 F
55015	DOME EA9	14	54	55525	163ST2	240	54	T2	-57.3	-4.6	57.5	45.0M	128.6 T
64194	DAYTON	120	64	64254	DAYTON	25	64	1	16.6	6.5	17.8	14.0M	127.5 F
79026	FLAMGORG	138	73	79029	FLAMGORG	69	73	1	22.1	6.1	22.9	19.0M	120.4 F
64099	SPAN SPG	120	64	64114	TRACY	120	64	1	-127.3	-3.5	127.3	514.8A	118.1 F
65850	JEFFERSN	161	65	65860	JFRSNPHA	161	65	1	-82.6	84.3	118.0	100.0M	118.0 F
64091	RENO	120	64	64263	RENO	25	64	1	50.3	20.5	54.3	46.7M	116.3 F
70249	LAJUNTAW	115	70	70250	LAJUNTAW	69	70	1	26.2	12.4	29.0	25.0M	116.0 F
64127	VAL ROAD	120	64	64274	VAL ROAD	25	64	1	50.2	20.3	54.2	46.7M	116.0 F
64091	RENO	120	64	64263	RENO	25	64	2	50.2	20.4	54.2	46.7M	116.0 F
64127	VAL ROAD	120	64	64274	VAL ROAD	25	64	2	47.8	19.3	51.6	46.7M	110.4 F
64202	HAN CRTP	120	64	64203	TWN CRTP	120	64	1	74.2	19.8	76.8	356.0A	109.2 F
64201	PINSN TP	120	64	64202	HAN CRTP	120	64	1	74.6	20.6	77.4	356.0A	109.1 F
64200	REDHOUSE	120	64	64201	PINSN TP	120	64	1	75.9	23.6	79.5	356.0A	109.0 T
64129	VALMY	120	64	64200	REDHOUSE	120	64	1	77.0	26.3	81.4	356.0A	108.7 T
54234	CASTLE R	138	54	55972	CASTLE-1	25	54	1	-50.0	21.0	54.2	50.0M	108.4 F
65560	FISHCREK	161	65	65670	GOSHEN	161	65	1	-154.3	44.2	160.5	531.1A	107.8 T
50459	KIT287	287	50	51075	KIT B5	13	50	5	80.3	24.1	83.8	79.0M	106.1 F
65560	FISHCREK	161	65	65690	GRACE	161	65	1	150.7	-45.4	157.4	530.7A	105.0 F
54232	PANCAN 9	138	54	55386	EMPRESS9	25	54	T1	15.7	1.0	15.7	15.0M	104.7 F
64114	TRACY	120	64	64118	TRACY G2	14	64	1	-82.5	-4.3	82.6	81.0M	104.1 T
48319	PLEASANT	115	40	48355	RATHDRUM	115	40	1	-84.1	-16.3	85.6	430.8A	103.5 F
43017	BEAVER	14	40	43021	BEAVER	230	40	1	356.8	45.5	359.7	348.0M	103.4 F
54052	BLUERIDG	138	54	55281	BLUERDGE	14	54	T1	20.8	15.2	25.7	25.0M	102.9 F
54154	E CALGAR	240	54	54189	ENMX2SD9	138	54	T1	234.1	-169.4	289.0	300.0M	102.8 T
40221	CHIEF J2	14	40	40231	CHIEF JO	230	40	BC	155.0	-9.6	155.3	155.0M	101.8 T
40221	CHIEF J2	14	40	40231	CHIEF JO	230	40	78	155.0	-9.6	155.3	155.0M	101.8 T
40221	CHIEF J2	14	40	40231	CHIEF JO	230	40	9A	155.0	-9.6	155.3	155.0M	101.8 T
40221	CHIEF J2	14	40	40231	CHIEF JO	230	40	56	155.0	-9.6	155.3	155.0M	101.8 T
40229	CHIEF JO	14	40	40231	CHIEF JO	230	40	DE	155.0	-9.6	155.3	155.0M	101.8 T
40229	CHIEF JO	14	40	40231	CHIEF JO	230	40	12	155.0	-9.6	155.3	155.0M	101.8 T
40229	CHIEF JO	14	40	40231	CHIEF JO	230	40	34	155.0	-9.6	155.3	155.0M	101.8 T
46733	LAGRND5	14	40	46735	LGBK5	115	40	1	40.0	7.1	40.6	40.0M	101.6 F
41304	COUGAR T	7	40	46211	COUGAR T	115	40	1	28.0	-8.5	29.3	30.0M	101.6 T

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Processing file c:\uwk\mts\base\rvolthsbs.out
Processing file c:\uwk\mts\g5\rvoltslc.out

Compvolt found the following for comparisons:
     349 Voltage Violations read from c:\uwk\mts\base\rvolthsbs.out
     356 Voltage Violations read from c:\uwk\mts\g5\rvoltslc.out


**** VOLTS:  NEW ****
Component                   w/o Prj         w/ Prj  Rating
63006 HARLEM    161   0.95 <= pu <= 1.05    0.8700  1.00 pu kV
63009 MALTA UM  161   0.95 <= pu <= 1.05    0.8689  1.00 pu kV
62030 PTRSNFLT  230   0.95 <= pu <= 1.05    0.9289  1.00 pu kV
62065 ENNIS MT  161   0.95 <= pu <= 1.05    0.9472  1.00 pu kV
62084 DILLON S  161   0.95 <= pu <= 1.05    0.9324  1.00 pu kV
62158 SHERDNMT  161   0.95 <= pu <= 1.05    0.9406  1.00 pu kV
65025 AMPS      230   0.95 <= pu <= 1.05    0.9445  1.00 pu kV
65155 BIGGRASS  161   0.95 <= pu <= 1.05    0.9215  1.00 pu kV
73348 CORLETT   115   0.95 <= pu <= 1.05    0.9483  1.00 pu kV
73375 WARRENLM  115   0.95 <= pu <= 1.05    0.9495  1.00 pu kV
63006 HARLEM    161   0.95 <= pu <= 1.05    0.8700  1.00 pu kV
63007 HAVRE     115   0.95 <= pu <= 1.05    0.9288  1.00 pu kV
63008 HAVRE     161   0.95 <= pu <= 1.05    0.9215  1.00 pu kV
63009 MALTA UM  161   0.95 <= pu <= 1.05    0.8689  1.00 pu kV
63011 RICHARDC  161   0.95 <= pu <= 1.05    0.9126  1.00 pu kV
63013 RUDYARD   115   0.95 <= pu <= 1.05    0.9469  1.00 pu kV
63015 VERONA    161   0.95 <= pu <= 1.05    0.9377  1.00 pu kV

**** VOLTS: WORSE ****
Component             w/o Prj  w/ Prj  Rating

**** VOLTS: BETTER ****
Component             w/o Prj  w/ Prj  Rating

**** VOLTS:  AWAY ****
Component             w/o Prj      w/ Prj          Rating
50343 KSH132-2  132   1.0501  0.95 <= pu <= 1.05   1.00 pu kV
50691 NIC230    230   1.0502  0.95 <= pu <= 1.05   1.00 pu kV
62033 ANA BPA   115   1.0568  0.95 <= pu <= 1.05   1.00 pu kV
45337 WEED JPS  115   1.0507  0.95 <= pu <= 1.05   1.00 pu kV
66235 PINTO PS  345   1.0501  0.95 <= pu <= 1.05   1.00 pu kV
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GENERAL ELECTRIC INTERNATIONAL, INC. - PSLF - V11.1
MONTANA TRANSMISSION STUDY, WAPA UGP, JUNE 2002
G5 SCHEDULED TO SALT LAKE CITY

overvoltage summary > 1.100000

--no.--	--name--	-kv-	(v pu)	--no.--	--name--	-kv-	(v pu)	--no.--	--name--	-kv-	(v pu)
54090	BICKERD4	240	1.1047	54153	BRAZEAU4	240	1.1053	54329	KEEPHIL4	240	1.1117
54524	GENESEE4	240	1.1086	54681	NEVIS 7	138	1.1101	54802	STURGEO9	138	1.1003
55969	770S701T	138	1.1052	51017	KMS230	230	1.1078				

overvoltage summary > 1.050000

--no.--	--name--	-kv-	(v pu)	--no.--	--name--	-kv-	(v pu)	--no.--	--name--	-kv-	(v pu)
54012	FOX CREE	138	1.0510	54013	KAYBOB 9	138	1.0517	54014	GULF RO9	138	1.0592
54021	WESGEN 7	138	1.0507	54050	RBCUPIL7	138	1.0507	54054	LAMOURE4	240	1.0795
54073	IPPL ST9	138	1.0575	54077	BIGSTON4	240	1.0600	54078	CHEVRON7	138	1.0515
54081	METIS644	240	1.0853	54082	BICKERD7	138	1.0557	54090	BICKERD4	240	1.1047
54097	BIG HOR9	138	1.0817	54098	STRACHA9	138	1.0577	54103	DEERLAN4	240	1.0820
54121	ELLERSLI	240	1.0759	54125	SUNDANL9	138	1.0543	54126	WABAMUN4	240	1.0869
54128	SUNDANM9	240	1.0965	54129	E EDMON4	240	1.0709	54130	N CALDE4	240	1.0645
54131	N BARRH4	240	1.0836	54139	GAETZ 4	240	1.0597	54141	HIGHVAL9	138	1.0538
54142	WILLESD4	240	1.0961	54144	RED DEE4	240	1.0636	54147	BENALTO4	240	1.0767
54148	E CROSS4	240	1.0585	54150	LANGDON2	500	1.0533	54152	JANET 4	240	1.0533
54153	BRAZEAU4	240	1.1053	54157	PEIGAN 4	240	1.0748	54159	N LETHB4	240	1.0648
54184	SARCEE 7	138	1.0530	54195	RUNDLE S	138	1.0504	54223	WARE JCT	240	1.0511
54249	RP05103S	138	1.0669	54261	SPRAY S	138	1.0508	54269	COALSPU7	138	1.0609
54281	MILO 2	240	1.0605	54285	LEISMER9	240	1.0749	54287	GREGG R9	138	1.0701
54302	MARIONA9	138	1.0540	54325	CHEV KG9	138	1.0515	54326	COAL VA9	138	1.0582
54329	KEEPHIL4	240	1.1117	54335	W BROOK4	240	1.0550	54384	ENMX28S9	138	1.0523
54412	BENBOW 9	138	1.0517	54441	946/947X	240	1.0759	54444	SPRINGB9	138	1.0505
54505	JASPER 4	240	1.0658	54506	BELLAMY4	240	1.0757	54509	ARGYLL W	240	1.0758
54512	DOME T29	240	1.0764	54513	LAMBTON4	240	1.0705	54514	CLOVERB4	240	1.0694
54518	ARGYLL E	240	1.0760	54519	CASTLTX2	240	1.0705	54521	PETROLIA	240	1.0746
54524	GENESEE4	240	1.1086	54542	RBW LAK7	138	1.0505	54546	CHINCHA7	138	1.0575
54547	KEG RVR7	138	1.0561	54548	KEMP RV9	138	1.0578	54549	HOTCHKS7	138	1.0596
54552	CADOTTE9	138	1.0585	54553	NORCEN 9	138	1.0552	54554	LUBICON7	138	1.0582
54555	CRANBER9	138	1.0591	54558	WESLY C7	138	1.0791	54559	CARMON 9	138	1.0767
54560	PEACE/29	138	1.0753	54561	DIASHOW7	138	1.0736	54589	DOME CU7	138	1.0672
54593	DONNELL9	138	1.0669	54594	TAP7L487	138	1.0686	54595	TRIANGL7	138	1.0619
54596	VALLEYV9	138	1.0782	54600	L.SMOKY7	138	1.0848	54601	STURGEO7	138	1.0844
54606	SIMONET9	138	1.0846	54607	FOXCRK/2	138	1.0515	54608	GOOSE R9	138	1.0666
54612	RUTH LA7	138	1.0600	54613	RUTH LK7	138	1.0603	54618	PARS CR7	138	1.0508
54621	MITS E.4	240	1.0565	54622	MITS E.7	138	1.0892	54623	AEC MILL	138	1.0881
54624	OTAUWAU7	138	1.0890	54633	LOU CR.7	138	1.0570	54634	SARHLK/2	138	1.0511
54636	ESSO JU7	138	1.0519	54637	MORSE RV	138	1.0524	54639	VIRGINI9	138	1.0529
54643	WOLF LK9	138	1.0709	54646	MARG LK4	240	1.0740	54647	MARG LK7	138	1.0861
54648	LACOREY9	138	1.0683	54652	BONNY 9	138	1.0544	54654	BONN SVC	138	1.0544
54655	WHITFISH	240	1.0857	54675	PAINTRT7	240	1.0896	54680	NEVIS 4	240	1.0748
54681	NEVIS 7	138	1.1101	54685	3HILLS/3	138	1.0581	54691	MICH. C9	138	1.0735
54693	WINT HI9	138	1.0749	54694	BULLPON9	138	1.0750	54707	SHEER 14	240	1.0625
54709	ANDERSO4	240	1.0630	54710	ANDERSON	138	1.0850	54711	SHEER 24	240	1.0625
54715	BAT. RV7	138	1.0821	54721	BAT RV79	240	1.0926	54723	CORDEL 4	240	1.0926
54729	PRIM TAP	138	1.0652	54730	PRIMROSE	138	1.0712	54796	791S701T	138	1.0628
54802	STURGEO9	138	1.1003	54806	946/947N	240	1.0709	54809	732S901T	240	1.0667
54818	VERMILA9	138	1.0798	54822	766S901T	240	1.0628	54823	NEVIS 9	138	1.0878
54835	791S702T	138	1.0631	54836	MILNERB9	138	1.0779	54844	709S702T	138	1.0732

54847	BAT RV80	240	1.0926	54848	791S703T	138	1.0530	54962	KAYBOBTP	138	1.0517
54963	CANMORE9	138	1.0506	54978	EAST IN4	240	1.0705	54983	MARION T	138	1.0541
54984	HIGHVL T	138	1.0538	54988	CROSSF T	240	1.0585	54995	W.GRN TP	240	1.0961
55012	BASSET 7	138	1.0562	55013	HAIGRIVE	138	1.0572	55067	FTNELSON	138	1.0665
55072	SYNC_D04	240	1.0563	55073	AURORA 4	240	1.0619	55075	SEAL LK9	138	1.0643
55147	MILNERC9	138	1.0880	55226	WABASCA9	240	1.0532	55272	FIELDGA9	138	1.0513
55280	BRINTNEL	240	1.0504	55515	PRIMROSE	138	1.0565	55763	BC BORDE	138	1.0627
55891	904AL TP	240	1.0705	55894	SARCEE M	138	1.0512	55912	740L JNC	138	1.0609
55913	G.ROBB T	138	1.0600	55924	CH KGT T	138	1.0515	55943	MILO 1	240	1.0605
55969	770S701T	138	1.1052	50010	COM132	132	1.0722	50020	CMS230	230	1.0500
50036	RBW230	230	1.0548	50037	PEM230	230	1.0585	50038	RBW230-1	230	1.0533
50182	ARN132	132	1.0815	50185	ALZ230	230	1.0515	50186	ROS230	230	1.0615
50187	BRT230	230	1.0697	50188	BUT230	230	1.0500	50193	BRT360	360	1.0500
50313	VIT132	132	1.0516	50314	PVO133	132	1.0504	50315	PVO132	132	1.0510
50323	DMR132	132	1.0554	50330	LDR132	132	1.0504	50331	GLD132	132	1.0517
50334	KGH132	132	1.0527	50335	UTA132	132	1.0529	50342	SCA132	132	1.0500
50346	SHA2	132	1.0502	50347	GOW132	132	1.0515	50348	GTP132	132	1.0550
50349	CLD132	132	1.0568	50350	SOO132	132	1.0574	50351	JOR132	132	1.0611
50352	PML132	132	1.0516	50353	WOS132	132	1.0534	50354	GLSTP17	132	1.0560
50355	GLSTP18	132	1.0546	50356	DND132	132	1.0518	50391	KSHTP14	132	1.0502
50394	SHATP14	132	1.0502	50395	SALTP17	132	1.0545	50396	SALTP18	132	1.0547
50447	TKW138	138	1.0533	50463	SKA500	500	1.0631	50464	TKW500	500	1.0687
50540	GMS230	230	1.0548	50541	KDS230	230	1.0542	50545	BLW230	230	1.0654
50546	SCK230	230	1.0595	50547	HMH230	230	1.0578	50548	BLM230	230	1.0587
50549	QNT230	230	1.0579	50550	QRP230	230	1.0650	50551	TLR230	230	1.0585
50553	BCR230	230	1.0585	50554	RBF230	230	1.0662	50556	LAP230	230	1.0569
50557	SNK230	230	1.0589	50558	GMS500	500	1.0500	50560	KDS500	500	1.0617
50562	GLN500	500	1.0679	50653	NIC138	138	1.0524	50655	VVW138	138	1.0505
50656	SVA138	138	1.0516	50659	BDM138	138	1.0508	50660	WGS138	138	1.0608
50661	MON138	138	1.0581	50672	BKL138	138	1.0515	50679	BLU138	138	1.0533
50680	VLM138	138	1.0585	50686	SCO138	138	1.0674	50687	ABA138	138	1.0580
50700	MCA500	500	1.0500	50701	REV500	500	1.0500	50729	PRI138TP	138	1.0673
50776	NTL138	138	1.0539	50783	SEL230	230	1.0590	50785	SEV230	230	1.0582
50792	SEL500	500	1.0500	50899	ABA138TP	138	1.0580	50902	BDM138TP	138	1.0508
50922	DNDTAP	132	1.0526	50923	HSY-PH	132	1.0553	50924	ESQ-PH	132	1.0518
50928	SCG IPP	132	1.0681	50934	JULTP130	132	1.0527	51017	KMS230	230	1.1078
51045	ALH230	230	1.0579	60085	BRIDGER	345	1.0500	60240	MIDPOINT	500	1.0661
62012	TOWN2	500	1.0857	62013	TOWN1	500	1.0857	62046	BROADVU	500	1.0723
62053	BROADV&2	500	1.0644	62054	BROADV&1	500	1.0651	62057	COLSTRP	500	1.0800
40045	ALLSTON	500	1.0717	40051	ALVEY	500	1.0765	40061	ASHE	500	1.0800
40091	BELL BPA	500	1.0577	40111	BIG EDDY	500	1.0765	43049	BOARD F	500	1.0840
40139	BONNVILE	115	1.0500	47013	BRIDGPRT	115	1.0535	40155	BUCKLEY	500	1.0749
45035	CAPTJACK	500	1.0724	46209	CARMEN	115	1.0616	41311	CELILO1	500	1.0764
41312	CELILO2	500	1.0764	40233	CHIEF JO	500	1.0800	40287	COULEE	500	1.0810
40302	COVINGT4	500	1.0745	40306	COVINGT5	500	1.0751	43115	COYO M1	500	1.0552
43123	COYOTE	500	1.0839	45095	DIXONVLE	500	1.0765	40369	DWORSHAK	500	1.0680
40381	ECHOLAKE	500	1.0776	40451	GAR1EAST	500	1.0763	40453	GAR2EAST	500	1.0763
40459	GARRISON	500	1.0614	40485	GREEN PT	115	1.0513	40489	GRIZZLY	500	1.0705
40499	HANFORD	500	1.0806	40521	HATWAI	500	1.0675	45137	HERMIST	230	1.0509
41212	HILLS CR	115	1.0500	40553	HOT SPR	500	1.0830	40585	JOHN DAY	500	1.0850
40601	KEELER	500	1.0804	45262	KFALLS	500	1.0755	40629	LANE	500	1.0704
40665	LIT GOOS	500	1.0800	40679	LOW GRAN	500	1.0800	40683	LOW MON	500	1.0800
40687	MALIN	500	1.0710	40693	MAPLE VL	500	1.0767	40699	MARION	500	1.0782
40711	MCLOUGLN	500	1.0683	40721	MCNARY	345	1.0509	40723	MCNARY	500	1.0793
45197	MERIDINP	500	1.0740	40749	MONROE	500	1.0788	40797	OLYMPIA	500	1.0790

40809	OSTRNDER	500	1.0706	40821	PAUL	500	1.0800	40827	PEARL	500	1.0769
40837	PONDROSA	500	1.0757	40869	RAVER	500	1.0788	43485	ROUND BU	500	1.0672
40913	SACJAWEA	500	1.0751	40917	SACJWA T	500	1.0763	40941	SANTIAM	500	1.0775
40949	SATSOP	500	1.0798	40957	SCHULTZ	500	1.0835	40973	SICKLER	500	1.0791
40989	SLATT	500	1.0801	41043	SUMMER L	500	1.0741	45289	SWIFT	230	1.0500
41051	TACOMA	500	1.0785	41057	TAFT	500	1.0777	41095	TROUTDAL	500	1.0631
41113	VANTAGE	500	1.0736	47099	WELLS	115	1.0627	66225	PINTO	345	1.0502
52226	PRI138	138	1.0674	52229	KER138	138	1.0709	52230	HED138	138	1.0699
52426	MAS138	138	1.0698	52815	PRI-T2	138	1.0681				

undervoltage summary < 0.900000

--no.--	--name--	-kv-	(v pu)	--no.--	--name--	-kv-	(v pu)	--no.--	--name--	-kv-	(v pu)
63006	HARLEM	161	0.8700	63009	MALTA UM	161	0.8689				

undervoltage summary < 0.950000

--no.--	--name--	-kv-	(v pu)	--no.--	--name--	-kv-	(v pu)	--no.--	--name--	-kv-	(v pu)
50781	NTL VR	138	0.9499	62030	PTRSNFLT	230	0.9289	62065	ENNIS MT	161	0.9472
62084	DILLON S	161	0.9324	62158	SHERDNMT	161	0.9406	48069	CHESTER	115	0.9437
48165	IRVIN	115	0.9479	48310	OPORTUNE	115	0.9484	48299	OPPORTUN	115	0.9458
48306	OTIS	230	0.9374	65025	AMPS	230	0.9445	65155	BIGGRASS	161	0.9215
70249	LAJUNTAW	115	0.9285	64072	MEYERS	120	0.9480	64092	RND HILL	120	0.9462
64102	STATELIN	120	0.9453	64203	TWN CRTP	120	0.9449	73348	CORLETT	115	0.9483
73375	WARRENLM	115	0.9495	63006	HARLEM	161	0.8700	63007	HAVRE	115	0.9288
63008	HAVRE	161	0.9215	63009	MALTA UM	161	0.8689	63011	RICHARDC	161	0.9126
63013	RUDYARD	115	0.9469	63015	VERONA	161	0.9377				

GENERAL ELECTRIC INTERNATIONAL, INC. - PSLF - V11.1
MONTANA TRANSMISSION STUDY, WAPA UGP, JUNE 2002
G5 SCHEDULED TO SALT LAKE CITY

	generation capacity	generation on-line	--- load categories ---- power	current	imped.	shunt	-- svd --	net inter	losses	slack bus
area name	ALBERTA									
mw	10743.6	7862.7	7899.2	0.0	0.0	0.0	0.0	-399.4	363.0	59.3
54 mvar	4916.5	857.1	2641.0	0.0	0.0	-22.5	-1851.9	-37.1	127.7	11.7
area name	B.C.HYDRO									
mw	14693.0	10253.4	6889.1	0.0	0.0	0.0	0.0	2850.2	514.0	199.8
50 mvar	6719.0	954.2	2565.8	0.0	0.0	2956.3	2142.0	-268.2	-6441.7	9.5
area name	IDAHO									
mw	4676.4	4117.0	2984.0	0.0	0.0	0.0	0.0	919.9	213.1	149.7
60 mvar	2192.5	581.8	711.6	0.0	0.0	-596.1	0.0	-203.5	669.8	5.4
area name	MONTANA									
mw	3902.2	3247.3	1422.9	0.0	0.0	0.3	0.0	1668.1	156.0	635.3
62 mvar	1389.0	509.5	610.2	0.0	0.0	-118.9	-99.0	-527.2	644.5	138.2
area name	NORTHWEST									
mw	43502.3	27377.7	22671.3	0.0	0.0	0.0	0.0	3514.2	1192.2	710.7
40 mvar	15475.0	4304.2	6850.3	0.0	0.0	-1865.7	-4240.8	1093.9	2466.5	46.0
area name	PACE									
mw	6312.0	5235.9	6293.7	0.0	0.0	0.0	0.0	-1361.2	303.4	94.9
65 mvar	3221.9	888.2	1960.1	0.0	0.0	-1760.4	-46.9	-2.7	738.0	38.4
area name	PSCOLORADO									
mw	5806.0	5191.5	6332.7	0.0	0.0	0.0	0.0	-1332.5	191.4	112.5
70 mvar	3667.3	1792.1	2372.6	0.0	0.0	0.0	-1671.2	305.0	785.7	33.5
area name	SIERRA									
mw	1901.7	1375.7	1719.1	0.0	0.0	0.0	0.0	-399.0	55.6	109.7
64 mvar	925.4	132.1	458.7	0.0	0.0	-187.6	69.9	61.6	-270.6	24.9
area name	W KOOTENAY									
mw	763.5	596.5	722.4	0.0	0.0	0.0	0.0	-150.5	24.6	104.6
52 mvar	450.0	98.7	210.2	0.0	0.0	-77.8	-130.7	-9.4	106.3	25.0
area name	WAPA R.M.									
mw	6091.6	5392.4	3608.3	0.0	0.0	0.0	0.0	1612.0	172.1	510.0
73 mvar	2883.8	268.6	1237.0	0.0	0.0	-295.3	-306.2	-391.3	24.4	69.6

GENERAL ELECTRIC INTERNATIONAL, INC. - PSLF - V11.1
MONTANA TRANSMISSION STUDY, WAPA UGP, JUNE 2002
G5 SCHEDULED TO SALT LAKE CITY

		generation capacity	generation on-line	--- load categories ---- power	current	imped.	shunt	-- svd	-- inter	net losses	slack bus
area name		WAPA U.M.									
	mw	161.8	151.3	-102.1	0.0	0.0	0.0	0.0	227.1	26.3	51.3
63	mvar	54.0	43.5	123.6	0.0	0.0	-79.0	-42.5	-100.6	142.0	26.5
TOTL	mw	98554.1	70801.6	60440.6	0.0	0.0	0.3	0.0	7148.9	3211.7	
	mvar	41894.4	10430.0	19741.2	0.0	0.0	-2046.9	-6177.4	-79.4	-1007.5	

Area Interchange Summary

		mw	mvar
FROM AREA	54 ALBERTA		
TO AREA	50 B.C.HYDRO	-399.4	-37.1
TOTAL		-399.4	-37.1
FROM AREA	50 B.C.HYDRO		
TO AREA	54 ALBERTA	399.4	37.1
TO AREA	40 NORTHWEST	2300.3	-314.6
TO AREA	52 W KOOTENAY	150.5	9.4
TOTAL		2850.2	-268.2
FROM AREA	60 IDAHO		
TO AREA	40 NORTHWEST	-210.4	-260.7
TO AREA	65 PACE	1001.0	109.9
TO AREA	64 SIERRA	129.3	-52.6
TOTAL		919.9	-203.5
FROM AREA	62 MONTANA		
TO AREA	40 NORTHWEST	1409.4	-480.9
TO AREA	65 PACE	324.0	-123.6
TO AREA	63 WAPA U.M.	-65.3	77.3
TOTAL		1668.1	-527.2
FROM AREA	40 NORTHWEST		
TO AREA	50 B.C.HYDRO	-2300.3	314.6
TO AREA	60 IDAHO	210.4	260.7
TO AREA	26 LADWP	2806.7	605.1
TO AREA	62 MONTANA	-1409.4	480.9
TO AREA	30 PG AND E	4014.1	-517.2
TO AREA	64 SIERRA	192.8	-50.2
TOTAL		3514.2	1093.9
FROM AREA	65 PACE		
TO AREA	14 ARIZONA	-110.7	93.4
TO AREA	60 IDAHO	-1001.0	-109.9
TO AREA	26 LADWP	-32.9	-168.0
TO AREA	62 MONTANA	-324.0	123.6
TO AREA	18 NEVADA	257.4	-57.7
TO AREA	64 SIERRA	29.9	13.4
TO AREA	19 WAPA L.C.	8.8	37.7
TO AREA	73 WAPA R.M.	-188.7	64.8
TOTAL		-1361.2	-2.7
FROM AREA	70 PSCOLORADO		
TO AREA	73 WAPA R.M.	-1332.5	305.0
TOTAL		-1332.5	305.0
FROM AREA	64 SIERRA		
TO AREA	60 IDAHO	-129.3	52.6
TO AREA	26 LADWP	-46.3	2.4
TO AREA	40 NORTHWEST	-192.8	50.2
TO AREA	65 PACE	-29.9	-13.4
TO AREA	30 PG AND E	-12.2	-28.1
TO AREA	24 SOCALIF	11.5	-2.1

TOTAL		-399.0	61.6
FROM AREA	52 W KOOTENAY	mw	mvar
TO AREA	50 B.C.HYDRO	-150.5	-9.4
TOTAL		-150.5	-9.4
FROM AREA	73 WAPA R.M.	mw	mvar
TO AREA	10 NEW MEXICO	171.8	-19.8
TO AREA	65 PACE	188.7	-64.8
TO AREA	70 PSCOLORADO	1332.5	-305.0
TO AREA	19 WAPA L.C.	80.8	-25.0
TO AREA	63 WAPA U.M.	-161.9	23.2
TOTAL		1612.0	-391.3
FROM AREA	63 WAPA U.M.	mw	mvar
TO AREA	62 MONTANA	65.3	-77.3
TO AREA	73 WAPA R.M.	161.9	-23.2
TOTAL		227.1	-100.6

AREA TIE LINE SUMMARY

GENERAL ELECTRIC INTERNATIONAL, INC. - PSLF - V11.1
MONTANA TRANSMISSION STUDY, WAPA UGP, JUNE 2002
G5 SCHEDULED TO SALT LAKE CITY

```
  ---------from--------      --------- to --------
  --no.-- --name-- -kv-      --no.-- --name-- -kv- ck          ---mw---- ---mvar-- meter

    54150 LANGDON2  500        50791 CBK500    500  1            -359.33    -36.37   f
    54205 COLEMAN7  138        50776 NTL138    138  1             -14.13     -8.92   t
    54273 POCATER7  138        50830 FRO T274  138  1             -25.98      8.19   t
 from area  54 to area  50 B.C.HYDRO                              -399.43    -37.09

 Total from area  54 ALBERTA                                      -399.43    -37.09

  ---------from--------      --------- to --------
  --no.-- --name-- -kv-      --no.-- --name-- -kv- ck          ---mw---- ---mvar-- meter

    62004 ANACOND   230        40457 GARRISON  230  1            -182.38    -38.89   f
    62004 ANACOND   230        40457 GARRISON  230  2            -195.49    -50.73   f
    62009 RATTLE S  161        40867 RATTLE S  230  1            -115.77    -41.36   t
    62012 TOWN2     500        40453 GAR2EAST  500  2             859.72   -154.22   t
    62013 TOWN1     500        40451 GAR1EAST  500  1             859.72   -154.22   t
    62066 KERR      115        40391 ELMO      115  1               8.24    -16.43   f
    62072 OVANDO    230        40457 GARRISON  230  1              28.09      5.81   t
    62072 OVANDO    230        40551 HOT SPR   230  1              80.16     -0.30   t
    62085 CROWCR B  115        48055 BURKAVAB  115  1              31.13    -12.49   t
    62086 THOMSON   115        48053 BURKAVAA  115  1              36.12    -13.08   t
 from area  62 to area  40 NORTHWEST                              1409.52   -475.90

    62030 PTRSNFLT  230        65025 AMPS      230  1             243.06    -69.33   t
    62045 BLGS PHA  230        66750 YELOWTLP  230  1             -18.36      8.45   t
    62061 RMRK PHA  161        66755 YELOWTLP  161  1             -11.96     -2.46   f
    62084 DILLON S  161        65155 BIGGRASS  161  1             111.91    -59.17   t
 from area  62 to area  65 PACE                                   324.66   -122.52

    62023 GT FALLS  161        63008 HAVRE     161  1             -26.18     -6.77   f
    62024 RAINBOW   161        63015 VERONA    161  1             -22.13     -5.59   f
    62027 SHELBY    115        63014 TIBERTAP  115  1              -5.24     -1.77   f
    62051 HARDIN    230        63002 CRSOVRUM  230  1             118.97     15.43   t
    62056 HUNTLEY   230        63002 CRSOVRUM  230  1            -131.06     18.80   t
 from area  62 to area  63 WAPA U.M.                               -65.64     20.10

 Total from area  62 MONTANA                                      1668.53   -578.33

  ---------from--------      --------- to --------
  --no.-- --name-- -kv-      --no.-- --name-- -kv- ck          ---mw---- ---mvar-- meter

    40145 BOUNDARY  230        50822 NLYPHS    230  1            -280.76     -5.25   f
    40323 CUSTER W  500        50194 ING500    500  1           -1018.22    160.73   t
    40323 CUSTER W  500        50194 ING500    500  2           -1001.35    159.14   t
 from area  40 to area  50 B.C.HYDRO                             -2300.33    314.63

    45029 BURNS     500        60240 MIDPOINT  500  1            -142.81    350.22   t
    45103 ENTERPRS  230        60150 HELLSCYN  230  1              45.42    -40.57   f
    40507 HARNEY    115        61826 HINES     115  1             -12.98     15.23   f
    40621 LAGRANDE  230        60192 LADD      230  1              79.46    -30.77   f
    48197 LOLO      230        60278 IMNAHA    230  1             240.86    -33.30   t
 from area  40 to area  60 IDAHO                                  209.95    260.81

    41311 CELILO1   500        26097 SYLMAR1   230  1             529.67     58.73   f
    41313 CELILO3   230        26098 SYLMAR3   230  1             873.67    243.48   f
    41312 CELILO2   500        26099 SYLMAR2   230  1             529.67     58.65   f
    41314 CELILO4   230        26100 SYLMAR4   230  1             873.67    243.94   f
 from area  40 to area  26 LADWP                                  2806.68    604.81

    48053 BURKAVAA  115        62086 THOMSON   115  1             -36.12     13.08   f
    48055 BURKAVAB  115        62085 CROWCR B  115  1             -31.13     12.49   f
    40391 ELMO      115        62066 KERR      115  1              -8.24     16.43   t
    40451 GAR1EAST  500        62013 TOWN1     500  1            -859.72    154.22   f
    40453 GAR2EAST  500        62012 TOWN2     500  2            -859.72    154.22   f
    40457 GARRISON  230        62072 OVANDO    230  1             -28.09     -5.81   f
    40457 GARRISON  230        62004 ANACOND   230  1             182.38     38.89   t
    40457 GARRISON  230        62004 ANACOND   230  2             195.49     50.73   t
    40551 HOT SPR   230        62072 OVANDO    230  1             -80.16      0.30   f
    40867 RATTLE S  230        62009 RATTLE S  161  1             115.77     41.36   f
 from area  40 to area  62 MONTANA                               -1409.52    475.90

    45035 CAPTJACK  500        30020 OLINDA    500  1            1418.98   -225.41   f
    45087 DELTA     115        31468 CASCADE   115  1              71.88    -16.27   f
    40687 MALIN     500        30005 ROUND MT  500  1            1256.34   -128.67   f
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   40687 MALIN     500        30005 ROUND MT  500  2            1267.52   -146.84   f
from area  40 to area  30 PG AND E                             4014.73   -517.19

   40537 HIL TOP   230        64058 HIL TOP   345  1             192.75    -50.21   f
from area  40 to area  64 SIERRA                                192.75    -50.21

Total from area  40 NORTHWEST                                  3514.25   1088.76

 ---------from--------      --------- to --------
 --no.-- --name-- -kv-      --no.-- --name-- -kv- ck          ---mw---- ---mvar-- meter

   66235 PINTO PS  345        14101 FOURCORN  345  1            -110.62     93.40   t
from area  65 to area  14 ARIZONA                              -110.62     93.40

   65075 ANTLOPE   230        60073 BRADY     230  1             126.52    -57.97   f
   65135 BENLOMND  345        60060 BORAH     345  1            -452.44     -0.09   t
   65220 BRIDGER   230        60085 BRIDGER   345  1             -48.54    -19.90   t
   65220 BRIDGER   230        60085 BRIDGER   345  2             -49.35    -20.20   t
   65220 BRIDGER   230        60085 BRIDGER   345  3             -48.54    -19.90   t
   65665 GOSHEN    345        60085 BRIDGER   345  1            -586.11    -60.21   f
   65665 GOSHEN    345        60190 KINPORT   345  1             217.62     27.15   t
   65670 GOSHEN    161        60030 BLACKFT   161  1             101.23     11.33   f
   65920 MALAD     138        60020 AMFLS     138  1             -80.26      3.04   t
   66565 TREASTON  230        60073 BRADY     230  1            -180.62     27.16   t
from area  65 to area  60 IDAHO                               -1000.48   -109.57

   65995 MONA      345        26043 INTERMT   345  1             -16.44    -84.01   f
   65995 MONA      345        26043 INTERMT   345  2             -16.44    -84.01   f
from area  65 to area  26 LADWP                                 -32.87   -168.02

   65025 AMPS      230        62030 PTRSNFLT  230  1            -243.06     69.33   f
   65155 BIGGRASS  161        62084 DILLON S  161  1            -111.91     59.17   f
   66750 YELOWTLP  230        62045 BLGS PHA  230  1              18.36     -8.45   f
   66755 YELOWTLP  161        62061 RMRK PHA  161  1              11.96      2.46   t
from area  65 to area  62 MONTANA                               -324.66    122.52

   66280 REDBUTTE  345        18002 HA PS     345  1             257.47    -57.74   f
from area  65 to area  18 NEVADA                                257.47    -57.74

   66210 PAVANT    230        64124 UTAH-NEV  230  1              29.86     13.43   t
from area  65 to area  64 SIERRA                                 29.86     13.43

   66355 SIGURDPS  230        79031 GLENCANY  230  1               8.79     37.69   t
from area  65 to area  19 WAPA L.C.                               8.79     37.69

   65060 ANT MINE  230        73276 TEKLA     230  1              14.98     20.80   f
   65085 ASHLEY    138        79067 VERNAL    138  1             -86.60      7.40   t
   65192 BONANZA   138        79067 VERNAL    138  1              27.86     12.26   t
   65193 BONANZA   345        79005 BEARS     345  1            -421.94     13.52   f
   65305 CASPERPP  115        73167 REFNRYTP  115  1             -31.88     -6.62   f
   65305 CASPERPP  115        73042 CASPERLM  115  1               0.47     -7.88   t
   65420 DAVEJOHN  230        73107 LAR.RIVR  230  1             111.09    -18.14   f
   65420 DAVEJOHN  230        73190 STEGALL   230  1             107.94    -11.49   f
   65425 DAVEJOHN  115        73070 GLENRCKN  115  1              73.24      4.65   f
   65425 DAVEJOHN  115        73071 GLENRCKS  115  1              84.00      8.95   f
   65565 FLAMGORG  230        79026 FLAMGORG  138  1             -33.10      0.62   f
   65565 FLAMGORG  230        79026 FLAMGORG  138  2             -33.10      0.62   f
   66278 RANGELY   138        79001 ARTESIA   138  1             -12.57     -3.22   f
   66278 RANGELY   138        79046 MEEKER    138  1             -20.47      1.97   f
   66305 RIVERTON  230        73170 RIVERTON  115  1               1.88      9.35   f
   66535 THERMOPL  230        73197 THERMOPL  115  1              -5.52      2.20   t
   66540 THERPACE  115        73197 THERMOPL  115  1              12.07      4.40   t
   66720 WORLAND   115        73222 WORLANTP  115  1             -19.24      6.93   t
   66725 WYODAK    230        73148 OSAGE     230  1             131.77    -16.41   t
   66725 WYODAK    230        73168 RENO      230  1             106.36      5.93   f
   66725 WYODAK    230        73294 HUGHES    230  1             123.88     -0.04   f
   66725 WYODAK    230        73282 WYODAK     69  1             -10.32     15.23   f
   66725 WYODAK    230        73282 WYODAK     69  2              -6.98     10.30   f
   66725 WYODAK    230        74016 WYGEN      14  1               0.00      0.00   f
   66750 YELOWTLP  230        73229 YELLOWBR  230  1            -302.47      3.73   t
from area  65 to area  73 WAPA R.M.                             -188.64     65.06

Total from area  65 PACE                                       -1361.14     -3.22

 ---------from--------      --------- to --------
 --no.-- --name-- -kv-      --no.-- --name-- -kv- ck          ---mw---- ---mvar-- meter

   70005 BRUSHCPP  115        73013 B.CK PS   115  1             118.32     23.77   f
   70005 BRUSHCPP  115        73013 B.CK PS   115  2             124.79     30.82   f
   70116 COBBLAKE  115        73044 COBBLKTP  115  1             -15.33     -1.44   f
   70122 COMANCHE  230        73477 FULLER    230  1              95.35     31.43   t
   70139 DANIELPK  230        73477 FULLER    230  1            -114.35    -18.60   t
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   70193 FTN VALL  115        73412 MIDWAYBR  115  1              4.35     -0.08   t
   70205 GRANDJCT  230        79036 GRANDJCT  345  1            -48.62    -23.55   f
   70256 LAPORTPS  115        73105 LAPORTE   115  1            -14.73     -6.26   t
   70274 MALTA     230        73138 MT.ELBRT  230  1           -145.53     -4.73   f
   70285 MIDWAYPS  115        73412 MIDWAYBR  115  1             18.35    -22.59   f
   70286 MIDWAYPS  230        73413 MIDWAYBR  230  1            132.37     79.43   t
   70287 MILL      115        73296 FRASER    115  1            -40.28      9.07   f
   70308 PALMER    115        73414 MONUMENT  115  1            -46.93     17.45   t
   70311 PAWNEE    230        73192 STORY     230  1           -243.21    -28.25   t
   70327 PONCHA    115        79037 GUNNISON  115  1            -23.47     10.89   f
   70350 RAWHIDE    24        73165 RAWHIDE   230  1            262.16     82.75   t
   70358 RIFLE PS  230        79059 RIFLE WA  230  1            -83.30      9.55   f
   70358 RIFLE PS  230        79250 AMATLAS   230  1            -75.90     -2.65   f
   70375 SAN LUIS  230        79054 PONCHABR  230  1            -80.78      6.66   t
   70410 ST.VRAIN  230        73116 LONGPEAK  230  1            -54.38     68.31   f
   70470 WELD  PS  115        73211 WELD  LM  115  1            -20.75     61.66   f
   70471 WELD  PS  230        73212 WELD  LM  230  1           -372.30      4.51   f
   70474 WINDSOR   230        73011 AULT      230  1           -310.15      4.00   t
   70476 WOODLAND  115        73400 EMIL AND  115  1             13.95      2.90   f
   70525 MTHARRIS  138        79038 HAYDEN    138  1             -7.21     -1.37   t
   79033 GOREPASS  230        79039 HAYDEN    230  1           -240.91    -19.37   t
   79033 GOREPASS  230        73072 GOREPASS  138  1              2.79      3.41   f
   79034 GRANDJCT  115        79048 MONTROSE  115  1             21.14     -4.12   t
   79056 RIFLE CU  138        79046 MEEKER    138  1            -10.72     -3.14   f
   79057 RIFLE CU  230        79059 RIFLE WA  230  1              0.64    -22.24   t
   79058 RIFLE CU  345        79014 CRAIG     345  1           -319.58      0.03   f
   79058 RIFLE CU  345        79036 GRANDJCT  345  1            293.00     -5.91   f
   79091 WOLCOTTP  230        79039 HAYDEN    230  1           -178.23      1.21   f
   79173 COLBRAN   115        79174 MOLINA-L  115  1              0.00     -0.54   f
   70351 RAWHIDEA   14        73165 RAWHIDE   230  1             50.81     41.03   t
   70550 W CANON   115        73551 W CANON   230  1            -23.86    -19.05   t
from area  70 to area  73 WAPA R.M.                            -1332.51    305.02

Total from area  70 PSCOLORADO                                 -1332.51    305.02

 ---------from--------      --------- to --------
 --no.-- --name-- -kv-      --no.-- --name-- -kv- ck          ---mw---- ---mvar-- meter

   79060 SANJN PS  345        10292 SAN_JUAN  345  1            171.82    -19.84   t
from area  73 to area  10 NEW MEXICO                             171.82    -19.84

   73042 CASPERLM  115        65305 CASPERPP  115  1             -0.47      7.88   f
   73070 GLENRCKN  115        65425 DAVEJOHN  115  1            -73.24     -4.65   t
   73071 GLENRCKS  115        65425 DAVEJOHN  115  1            -84.00     -8.95   t
   73107 LAR.RIVR  230        65420 DAVEJOHN  230  1           -111.09     18.14   t
   73148 OSAGE     230        66725 WYODAK    230  1           -131.77     16.41   f
   73167 REFNRYTP  115        65305 CASPERPP  115  1             31.88      6.62   t
   73168 RENO      230        66725 WYODAK    230  1           -106.36     -5.93   t
   73170 RIVERTON  115        66305 RIVERTON  230  1             -1.88     -9.35   t
   73190 STEGALL   230        65420 DAVEJOHN  230  1           -107.94     11.49   t
   73197 THERMOPL  115        66540 THERPACE  115  1            -12.07     -4.40   f
   73197 THERMOPL  115        66535 THERMOPL  230  1              5.52     -2.20   f
   73222 WORLANTP  115        66720 WORLAND   115  1             19.24     -6.93   f
   73229 YELLOWBR  230        66750 YELOWTLP  230  1            302.47     -3.73   f
   73276 TEKLA     230        65060 ANT MINE  230  1            -14.98    -20.80   t
   73282 WYODAK     69        66725 WYODAK    230  1             10.32    -15.23   t
   73282 WYODAK     69        66725 WYODAK    230  2              6.98    -10.30   t
   73294 HUGHES    230        66725 WYODAK    230  1           -123.88      0.04   t
   79001 ARTESIA   138        66278 RANGELY   138  1             12.57      3.22   t
   79005 BEARS     345        65193 BONANZA   345  1            421.94    -13.52   t
   79026 FLAMGORG  138        65565 FLAMGORG  230  1             33.10     -0.62   t
   79026 FLAMGORG  138        65565 FLAMGORG  230  2             33.10     -0.62   t
   79046 MEEKER    138        66278 RANGELY   138  1             20.47     -1.97   t
   79067 VERNAL    138        65085 ASHLEY    138  1             86.60     -7.40   f
   79067 VERNAL    138        65192 BONANZA   138  1            -27.86    -12.26   f
   74016 WYGEN      14        66725 WYODAK    230  1              0.00      0.00   t
from area  73 to area  65 PACE                                   188.64    -65.06

   73011 AULT      230        70474 WINDSOR   230  1            310.15     -4.00   f
   73013 B.CK PS   115        70005 BRUSHCPP  115  1           -118.32    -23.77   t
   73013 B.CK PS   115        70005 BRUSHCPP  115  2           -124.79    -30.82   t
   73044 COBBLKTP  115        70116 COBBLAKE  115  1             15.33      1.44   t
   73072 GOREPASS  138        79033 GOREPASS  230  1             -2.79     -3.41   t
   73105 LAPORTE   115        70256 LAPORTPS  115  1             14.73      6.26   f
   73116 LONGPEAK  230        70410 ST.VRAIN  230  1             54.38    -68.31   t
   73138 MT.ELBRT  230        70274 MALTA     230  1            145.53      4.73   t
   73165 RAWHIDE   230        70350 RAWHIDE    24  1           -262.16    -82.75   f
   73165 RAWHIDE   230        70351 RAWHIDEA   14  1            -50.81    -41.03   f
   73192 STORY     230        70311 PAWNEE    230  1            243.21     28.25   f
   73211 WELD  LM  115        70470 WELD  PS  115  1             20.75    -61.66   t
   73212 WELD  LM  230        70471 WELD  PS  230  1            372.30     -4.51   t
   73296 FRASER    115        70287 MILL      115  1             40.28     -9.07   t
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   73400 EMIL AND  115        70476 WOODLAND  115  1            -13.95     -2.90   t
   73412 MIDWAYBR  115        70193 FTN VALL  115  1             -4.35      0.08   f
   73412 MIDWAYBR  115        70285 MIDWAYPS  115  1            -18.35     22.59   t
   73413 MIDWAYBR  230        70286 MIDWAYPS  230  1           -132.37    -79.43   f
   73414 MONUMENT  115        70308 PALMER    115  1             46.93    -17.45   f
   73477 FULLER    230        70122 COMANCHE  230  1            -95.35    -31.43   f
   73477 FULLER    230        70139 DANIELPK  230  1            114.35     18.60   f
   79014 CRAIG     345        79058 RIFLE CU  345  1            319.58     -0.03   t
   79036 GRANDJCT  345        79058 RIFLE CU  345  1           -293.00      5.91   t
   79036 GRANDJCT  345        70205 GRANDJCT  230  1             48.62     23.55   t
   79037 GUNNISON  115        70327 PONCHA    115  1             23.47    -10.89   t
   79038 HAYDEN    138        70525 MTHARRIS  138  1              7.21      1.37   f
   79039 HAYDEN    230        79033 GOREPASS  230  1            240.91     19.37   f
   79039 HAYDEN    230        79091 WOLCOTTP  230  1            178.23     -1.21   t
   79046 MEEKER    138        79056 RIFLE CU  138  1             10.72      3.14   t
   79048 MONTROSE  115        79034 GRANDJCT  115  1            -21.14      4.12   f
   79054 PONCHABR  230        70375 SAN LUIS  230  1             80.78     -6.66   f
   79059 RIFLE WA  230        70358 RIFLE PS  230  1             83.30     -9.55   t
   79059 RIFLE WA  230        79057 RIFLE CU  230  1             -0.64     22.24   f
   79174 MOLINA-L  115        79173 COLBRAN   115  1             -0.00      0.54   t
   79250 AMATLAS   230        70358 RIFLE PS  230  1             75.90      2.65   t
   73551 W CANON   230        70550 W CANON   115  1             23.86     19.05   f
from area  73 to area  70 PSCOLORADO                           1332.51   -305.02

   79061 SHIP PS   230        79063 SHIPROCK  230  1             82.73    -12.72   t
   79260 ELPASOTP  115        79105 GLADETAP  115  1             -1.96    -12.24   t
from area  73 to area  19 WAPA L.C.                              80.76    -24.96

   73229 YELLOWBR  230        63001 CROS PHA  230  1           -161.77     23.22   f
from area  73 to area  63 WAPA U.M.                            -161.77     23.22

Total from area  73 WAPA R.M.                                  1611.96   -391.66

 ---------from--------      --------- to --------
 --no.-- --name-- -kv-      --no.-- --name-- -kv- ck          ---mw---- ---mvar-- meter

   63002 CRSOVRUM  230        62051 HARDIN    230  1           -118.97    -15.43   f
   63002 CRSOVRUM  230        62056 HUNTLEY   230  1            131.06    -18.80   f
   63008 HAVRE     161        62023 GT FALLS  161  1             26.18      6.77   t
   63014 TIBERTAP  115        62027 SHELBY    115  1              5.24      1.77   t
   63015 VERONA    161        62024 RAINBOW   161  1             22.13      5.59   t
from area  63 to area  62 MONTANA                                65.64    -20.10

   63001 CROS PHA  230        73229 YELLOWBR  230  1            161.77    -23.22   t
from area  63 to area  73 WAPA R.M.                             161.77    -23.22

Total from area  63 WAPA U.M.                                   227.41    -43.32
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MONTANA TRANSMISSION STUDY, WAPA UGP, JUNE 2002
G5 SCHEDULED TO SALT LAKE CITY

Summation of selected system

	-----MW----	----MVAR---		
Generation	70801.563	10430.037	Generators	2586
Actual Load	60440.602	19741.215	Loads	6813
Net actual shunt	0.288	-2046.914	Shunts	1297
Net actual svd	0.000	-6177.374	Svd	586
Loss	3211.746	-1007.512	Buses	13192
			Lines	10965
			Transformers	5144
MVA-miles	6468179.5	976491.6	DC buses	6
Miles	47050.316		DC converters	10
			DC lines	3

MONTANA TRANSMISSION STUDY, WAPA UGP, JUNE 2002
G5 SCHEDULED TO SALT LAKE CITY

Area 54 [ALBERTA]

	-----MW----	----MVAR---		
Generation	7862.734	857.142	Generators	142
Actual Load	7899.199	2641.000	Loads	512
Net actual shunt	0.000	-22.487	Shunts	9
Net actual svd	0.000	-1851.935	Svd	76
Net Interchange	-399.430	-37.092	Buses	991
Sched Interchange	-400.000		Lines	781
Loss	362.962	127.655	Transformers	406
MVA-miles	1111697.1	226120.2	DC buses	0
Miles	18637.697		DC converters	0
			DC lines	0
Loss at 13.20 Kv	1.733	25.322		
Loss at 13.80 Kv	3.367	88.111		
Loss at 14.40 Kv	0.019	2.275		
Loss at 25.00 Kv	1.931	27.273		
Loss at 34.00 Kv	0.053	0.877		
Loss at 69.00 Kv	18.965	-3.364		
Loss at 138.00 Kv	151.492	-263.411		
Loss at 240.00 Kv	167.689	-572.766		
Loss at 500.00 Kv	0.000	0.000		
Loss at other Kv	17.714	823.337		
Largest mismatch MVA	0.0256	0.0361		

MONTANA TRANSMISSION STUDY, WAPA UGP, JUNE 2002
G5 SCHEDULED TO SALT LAKE CITY

Area 50 [B.C.HYDRO]

	-----MW----	----MVAR---		
Generation	10253.402	954.247	Generators	112
Actual Load	6889.125	2565.790	Loads	395
Net actual shunt	0.000	2956.334	Shunts	104
Net actual svd	0.000	2141.977	Svd	125
Net Interchange	2850.237	-268.151	Buses	1054
Sched Interchange	2849.900		Lines	718
Loss	514.038	-6441.703	Transformers	645
MVA-miles	0.0	0.0	DC buses	0
Miles	0.000		DC converters	0
			DC lines	0
Loss at 13.20 Kv	0.306	7.915		
Loss at 13.80 Kv	10.051	491.477		
Loss at 34.00 Kv	0.000	0.002		
Loss at 46.00 Kv	0.302	0.084		
Loss at 132.00 Kv	36.989	105.969		
Loss at 138.00 Kv	15.116	-120.720		
Loss at 230.00 Kv	52.947	-616.563		
Loss at 500.00 Kv	341.073	-6975.734		
Loss at other Kv	57.254	665.869		
Largest mismatch MVA	0.0340	0.0408		

MONTANA TRANSMISSION STUDY, WAPA UGP, JUNE 2002
G5 SCHEDULED TO SALT LAKE CITY

Area 60 [IDAHO]

	-----MW----	----MVAR---

Generation	4117.018	581.761	Generators	62
Actual Load	2984.000	711.600	Loads	64
Net actual shunt	0.000	-596.142	Shunts	15
Net actual svd	0.000	0.000	Svd	0
Net Interchange	919.888	-203.460	Buses	156
Sched Interchange	920.000		Lines	120
Loss	213.131	669.765	Transformers	96
MVA-miles	0.0	0.0	DC buses	0
Miles	0.000		DC converters	0
			DC lines	0
Loss at 13.20 Kv	0.272	5.839		
Loss at 13.80 Kv	3.378	116.414		
Loss at 14.40 Kv	0.880	34.229		
Loss at 34.50 Kv	0.000	0.000		
Loss at 100.00 Kv	0.568	25.234		
Loss at 115.00 Kv	0.436	0.368		
Loss at 138.00 Kv	19.819	-4.392		
Loss at 161.00 Kv	1.817	2.786		
Loss at 230.00 Kv	81.255	17.311		
Loss at 345.00 Kv	99.439	302.030		
Loss at 500.00 Kv	0.000	0.000		
Loss at other Kv	5.268	169.946		
Largest mismatch MVA	0.0032	0.0051		

MONTANA TRANSMISSION STUDY, WAPA UGP, JUNE 2002
G5 SCHEDULED TO SALT LAKE CITY

Area 62 [MONTANA]

	-----MW----	----MVAR---		
Generation	3247.324	509.543	Generators	36
Actual Load	1422.895	610.184	Loads	200
Net actual shunt	0.288	-118.875	Shunts	56
Net actual svd	0.000	-98.990	Svd	11
Net Interchange	1668.098	-527.240	Buses	315
Sched Interchange	1668.000		Lines	319
Loss	156.043	644.463	Transformers	91
MVA-miles	4474.9	242.3	DC buses	0
Miles	45.000		DC converters	0
			DC lines	0
Loss at 13.80 Kv	0.000	36.978		
Loss at 34.50 Kv	2.226	58.940		
Loss at 69.00 Kv	0.521	2.607		
Loss at 100.00 Kv	29.818	-4.305		
Loss at 115.00 Kv	4.534	-9.692		
Loss at 161.00 Kv	40.904	18.916		
Loss at 230.00 Kv	29.682	-28.128		
Loss at 500.00 Kv	47.699	402.249		
Loss at other Kv	0.659	166.898		
Largest mismatch MVA	0.0056	0.0071		

MONTANA TRANSMISSION STUDY, WAPA UGP, JUNE 2002
G5 SCHEDULED TO SALT LAKE CITY

Area 40 [NORTHWEST]

	-----MW----	----MVAR---		
Generation	27377.729	4304.194	Generators	383
Actual Load	22671.295	6850.328	Loads	1652
Net actual shunt	0.000	-1865.709	Shunts	43
Net actual svd	0.000	-4240.829	Svd	159
Net Interchange	3514.206	1093.922	Buses	2740
Sched Interchange	3514.000		Lines	2710
Loss	1192.234	2466.468	Transformers	654
MVA-miles	4755648.5	611339.0	DC buses	4
Miles	18469.418		DC converters	4
			DC lines	2
Loss at 11.00 Kv	0.000	0.608		
Loss at 13.20 Kv	0.000	4.924		
Loss at 13.80 Kv	4.796	207.613		
Loss at 14.40 Kv	0.286	13.092		
Loss at 25.00 Kv	3.143	164.027		
Loss at 34.50 Kv	0.351	6.363		
Loss at 69.00 Kv	15.208	43.134		
Loss at 100.00 Kv	0.120	-0.094		
Loss at 115.00 Kv	221.268	514.738		
Loss at 230.00 Kv	348.032	1711.665		

Loss at 345.00 Kv	16.202	-173.067
Loss at 500.00 Kv	457.475	-1343.002
Loss at other Kv	125.352	1316.468
Largest mismatch MVA	0.0384	0.0397

MONTANA TRANSMISSION STUDY, WAPA UGP, JUNE 2002
G5 SCHEDULED TO SALT LAKE CITY

Area 65 [PACE]

	-----MW----	----MVAR---		
Generation	5235.943	888.160	Generators	56
Actual Load	6293.716	1960.150	Loads	274
Net actual shunt	0.000	-1760.374	Shunts	74
Net actual svd	0.000	-46.937	Svd	2
Net Interchange	-1361.162	-2.704	Buses	566
Sched Interchange	-1361.200		Lines	408
Loss	303.388	738.041	Transformers	338
MVA-miles	1003.1	10.8	DC buses	0
Miles	11.900		DC converters	0
			DC lines	0
Loss at 13.80 Kv	0.940	32.737		
Loss at 34.50 Kv	1.211	17.261		
Loss at 46.00 Kv	6.342	137.459		
Loss at 69.00 Kv	1.663	22.685		
Loss at 100.00 Kv	0.056	1.039		
Loss at 115.00 Kv	3.075	-8.993		
Loss at 138.00 Kv	75.623	198.239		
Loss at 161.00 Kv	20.711	25.362		
Loss at 230.00 Kv	100.931	226.423		
Loss at 345.00 Kv	88.750	-12.946		
Loss at other Kv	4.088	98.775		
Largest mismatch MVA	0.0029	0.0374		

MONTANA TRANSMISSION STUDY, WAPA UGP, JUNE 2002
G5 SCHEDULED TO SALT LAKE CITY

Area 70 [PSCOLORADO]

	-----MW----	----MVAR---		
Generation	5191.508	1792.132	Generators	66
Actual Load	6332.696	2372.604	Loads	362
Net actual shunt	0.000	0.000	Shunts	0
Net actual svd	0.000	-1671.206	Svd	43
Net Interchange	-1332.542	304.987	Buses	500
Sched Interchange	-1332.800		Lines	461
Loss	191.360	785.738	Transformers	147
MVA-miles	29601.6	6126.5	DC buses	0
Miles	564.500		DC converters	0
			DC lines	0
Loss at 13.80 Kv	4.009	136.240		
Loss at 14.40 Kv	0.080	0.798		
Loss at 25.00 Kv	0.010	0.140		
Loss at 46.00 Kv	0.196	0.010		
Loss at 69.00 Kv	7.161	1.583		
Loss at 100.00 Kv	0.031	-0.494		
Loss at 115.00 Kv	32.892	-38.309		
Loss at 138.00 Kv	0.182	-5.940		
Loss at 230.00 Kv	139.364	450.219		
Loss at 345.00 Kv	0.001	0.094		
Loss at other Kv	7.433	241.395		
Largest mismatch MVA	0.0092	0.0170		

MONTANA TRANSMISSION STUDY, WAPA UGP, JUNE 2002
G5 SCHEDULED TO SALT LAKE CITY

Area 64 [SIERRA]

	-----MW----	----MVAR---		
Generation	1375.711	132.054	Generators	22
Actual Load	1719.091	458.744	Loads	121
Net actual shunt	0.000	-187.608	Shunts	30
Net actual svd	0.000	69.922	Svd	5
Net Interchange	-398.986	61.616	Buses	275
Sched Interchange	-399.000		Lines	197
Loss	55.606	-270.627	Transformers	117

MVA-miles	62800.1	38820.5	DC buses	0
Miles	1042.600		DC converters	0
			DC lines	0
Loss at 13.80 Kv	2.547	51.562		
Loss at 69.00 Kv	0.000	0.000		
Loss at 115.00 Kv	0.479	-6.140		
Loss at 230.00 Kv	1.416	-103.997		
Loss at 345.00 Kv	9.549	-435.324		
Loss at other Kv	41.614	223.273		
Largest mismatch MVA	0.0049	0.0118		

MONTANA TRANSMISSION STUDY, WAPA UGP, JUNE 2002
G5 SCHEDULED TO SALT LAKE CITY

Area 52 [W KOOTENAY]

	-----MW----	----MVAR---		
Generation	596.550	98.687	Generators	20
Actual Load	722.400	210.200	Loads	64
Net actual shunt	0.000	-77.792	Shunts	27
Net actual svd	0.000	-130.679	Svd	4
Net Interchange	-150.478	-9.371	Buses	260
Sched Interchange	-149.900		Lines	165
Loss	24.627	106.330	Transformers	117
MVA-miles	30803.0	4870.8	DC buses	0
Miles	986.000		DC converters	0
			DC lines	0
Loss at 13.20 Kv	-0.000	8.258		
Loss at 13.80 Kv	0.000	0.000		
Loss at 14.40 Kv	-0.000	29.952		
Loss at 25.00 Kv	0.000	0.000		
Loss at 138.00 Kv	0.397	-0.475		
Loss at 161.00 Kv	9.043	11.278		
Loss at 230.00 Kv	1.521	-8.772		
Loss at other Kv	13.667	66.089		
Largest mismatch MVA	0.0011	0.0048		

MONTANA TRANSMISSION STUDY, WAPA UGP, JUNE 2002
G5 SCHEDULED TO SALT LAKE CITY

Area 73 [WAPA R.M.]

	-----MW----	----MVAR---		
Generation	5392.367	268.571	Generators	80
Actual Load	3608.290	1237.018	Loads	355
Net actual shunt	0.000	-295.309	Shunts	4
Net actual svd	0.000	-306.186	Svd	53
Net Interchange	1611.966	-391.332	Buses	620
Sched Interchange	1612.000		Lines	567
Loss	172.105	24.398	Transformers	174
MVA-miles	471158.1	88698.6	DC buses	0
Miles	7283.200		DC converters	0
			DC lines	0
Loss at 13.80 Kv	6.224	91.913		
Loss at 34.50 Kv	0.315	4.024		
Loss at 69.00 Kv	5.508	-10.498		
Loss at 115.00 Kv	71.545	-89.387		
Loss at 138.00 Kv	5.590	-27.095		
Loss at 230.00 Kv	38.424	-257.294		
Loss at 345.00 Kv	37.233	-12.348		
Loss at other Kv	7.265	325.082		
Largest mismatch MVA	0.0215	0.0355		

MONTANA TRANSMISSION STUDY, WAPA UGP, JUNE 2002
G5 SCHEDULED TO SALT LAKE CITY

Area 63 [WAPA U.M.]

	-----MW----	----MVAR---		
Generation	151.284	43.545	Generators	5
Actual Load	-102.100	123.600	Loads	17
Net actual shunt	0.000	-78.951	Shunts	1
Net actual svd	0.000	-42.511	Svd	5
Net Interchange	227.133	-100.551	Buses	17
Sched Interchange	227.000		Lines	13
Loss	26.251	141.959	Transformers	4

MVA-miles	993.5	263.1	DC buses	0
Miles	10.000		DC converters	0
			DC lines	0
Loss at 13.80 Kv	0.237	6.658		
Loss at 34.50 Kv	0.650	17.221		
Loss at 115.00 Kv	0.449	-4.988		
Loss at 161.00 Kv	15.278	67.485		
Loss at 230.00 Kv	9.638	55.582		
Largest mismatch MVA	0.0003	0.0014		

C. CATEGORY B (CONTINGENCY) DATA

Continuous Rating (Rate 1) Reports

Emergency Rating (Rate 2) Reports

Light Summer and Heavy Summer Contingency Lists

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Compost found the following for comparisons:
     34 lines of MVA Rating Violations read from c:\uwk\mts\g5\pflow\lsbs\plsbs-1.out
     25 lines of kV Voltage Violations read from c:\uwk\mts\g5\pflow\lsbs\plsbs-1.out
     43 lines of MVA Rating Violations read from c:\uwk\mts\g5\pflow\sp\psp-1.out
     104 lines of kV Voltage Violations read from c:\uwk\mts\g5\pflow\sp\psp-1.out


**** RATES:  NEW ****
Component                                    w/o Prj  w/ Prj  Rating   Cont#
40 BURKE    115 to 40 HECLA    115 CKT 1    <0.95     1.06   92.80   371
40 BELL BPA 500 to 40 BELL SO  230 CKT 1    <0.95     1.06   1220.00   420
40 GAR1EAST 500 to 40 GARRISON 500 CKT 1    <0.95     1.05   1732.10   606
40 GAR2EAST 500 to 40 GARRISON 500 CKT 1    <0.95     1.05   1732.10   607
40 OSBURN   115 to 40 PINE CRK 115 CKT 1    <0.95     1.03   85.80   371
40 WALLACE  115 to 40 OSBURN   115 CKT 1    <0.95     1.03   92.80   371
40 BIGCREEK 115 to 40 BUNKRHIL 115 CKT 1    <0.95     1.01   85.80   370
40 BELL MI  230 to 40 BELL BPA 115 CKT 1    <0.95     1.00   249.00   420
40 BUNKRHIL 115 to 40 PINE CRK 115 CKT 1    <0.95     0.98   85.80   370

**** RATES: WORSE ****
Component                                  w/o Prj  w/ Prj Rating   Cont#
40 OROFINO  115 to 40 AHSAHKA  115 CKT 1    1.94   2.16   113.70   419
40 BURKE    115 to 40 BURKAVAA 115 CKT 1    1.26   1.37   73.90   58
40 BURKE    115 to 40 BURKAVAB 115 CKT 1    1.21   1.36   73.90   368
40 BEACON N 115 to 40 ROSSPARK 115 CKT 1    1.18   1.26   138.20   343
40 AHSAHKA  115 to 40 DWORSHAK 115 CKT 1    1.04   1.16   213.10   419
40 BURKE    115 to 40 LUCKYFTP 115 CKT 1    1.02   1.15   85.80   370
62 COLSTRP  500 to 62 COLSTRP  230 CKT 2    1.00   1.05   500.00   660
62 COLSTRP  500 to 62 COLSTRP  230 CKT 1    1.00   1.06   500.00   661
40 BEACON N 230 to 40 BEACON N 115 CKT 1    0.97   1.06   287.00   339
40 BEACON S 230 to 40 BEACON S 115 CKT 1    0.97   1.06   287.00   339
40 HECLAT   115 to 40 BIGCREEK 115 CKT 1    0.96   1.08   85.80   370
40 LUCKYFTP 115 to 40 HECLAT   115 CKT 1    0.96   1.08   85.80   370

Area Count, Rates new and worse:
Area 40: 19
Area 62: 2

**** VOLTS:  NEW ****
Component          w/o Prj  w/ Prj  Rating     Cont#
63 HAVRE    161.0  >0.95    0.664  1.00 pu kV  592
62 TAFTAUTO 115.0  >0.95    0.946  1.00 pu kV  8
63 VERONA   161.0  >0.95    0.728  1.00 pu kV  592
40 AIRWAYTP 115.0  >0.95    0.930  1.00 pu kV  420
40 FOURLBPA 115.0  >0.95    0.931  1.00 pu kV  420
40 HAL&WHIT 115.0  >0.95    0.930  1.00 pu kV  420
40 HAYFORD  115.0  >0.95    0.933  1.00 pu kV  420
40 RALSTONB 115.0  >0.95    0.941  1.00 pu kV  420
70 CLIFTON  230.0  >0.95    0.949  1.00 pu kV  419
70 GRANDJPS 230.0  >0.95    0.948  1.00 pu kV  420
40 4LAKE TP 115.0  >0.95    0.945  1.00 pu kV  420
40 AIRWAYHT 115.0  >0.95    0.945  1.00 pu kV  420
40 BELL BPA 500.0  >0.95    0.976  1.00 pu kV  420
40 COLLWALN 115.0  >0.95    0.946  1.00 pu kV  420
40 FAIRCHLD 115.0  >0.95    0.944  1.00 pu kV  420
40 FTWRIGHT 115.0  >0.95    0.948  1.00 pu kV  420
40 GARDENSP 115.0  >0.95    0.947  1.00 pu kV  420
40 GLENROSE 115.0  >0.95    0.948  1.00 pu kV  420
40 GLENTAP  115.0  >0.95    0.948  1.00 pu kV  420
40 HANGMAN  115.0  >0.95    0.945  1.00 pu kV  420
40 METRO    115.0  >0.95    0.946  1.00 pu kV  420
40 POSTSTRT 115.0  >0.95    0.946  1.00 pu kV  420
40 SOUTHEAS 115.0  >0.95    0.946  1.00 pu kV  420
40 SPKINDPK 115.0  >0.95    0.944  1.00 pu kV  420
40 SPKWASTE 115.0  >0.95    0.949  1.00 pu kV  420
40 SULLIVNB 115.0  >0.95    0.946  1.00 pu kV  420
40 SUNSET   115.0  >0.95    0.946  1.00 pu kV  420
40 THIRHACH 115.0  >0.95    0.948  1.00 pu kV  420
40 TRENTWOD 115.0  >0.95    0.948  1.00 pu kV  420
40 VALY WAY 115.0  >0.95    0.947  1.00 pu kV  420
40 VERA     115.0  >0.95    0.945  1.00 pu kV  420
40 VERA TAP 115.0  >0.95    0.947  1.00 pu kV  420
70 HORIZON  230.0  >0.95    0.949  1.00 pu kV  420
62 MTSBLKFT 115.0  >0.95    0.834  1.00 pu kV  592
62 GT FALLS 161.0  >0.95    0.873  1.00 pu kV  592
62 RAINBOW  161.0  >0.95    0.881  1.00 pu kV  592
62 SHELBY   230.0  >0.95    0.881  1.00 pu kV  592
62 SHELBY   115.0  >0.95    0.842  1.00 pu kV  592
62 CUTBANK  115.0  >0.95    0.842  1.00 pu kV  592
62 BOLE     230.0  >0.95    0.918  1.00 pu kV  592
62 CNRDWAPA 230.0  >0.95    0.899  1.00 pu kV  592
62 CNRDWAPA 115.0  >0.95    0.888  1.00 pu kV  592
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62 GT FALLS 115.0  >0.95    0.959  1.00 pu kV  592
62 GT FALLS 230.0  >0.95    0.942  1.00 pu kV  592
62 CONRAD   115.0  >0.95    0.885  1.00 pu kV  592
62 CTBPUMP  115.0  >0.95    0.843  1.00 pu kV  592
62 VAL-WILL 115.0  >0.95    0.870  1.00 pu kV  592
62 DUTTON   115.0  >0.95    0.931  1.00 pu kV  592
62 CNRD-SRA 115.0  >0.95    0.887  1.00 pu kV  592
63 RICHARDC 161.0  >0.95    0.049  1.00 pu kV  592
63 RUDYARD  115.0  >0.95    0.731  1.00 pu kV  592
63 TIBERTAP 115.0  >0.95    0.779  1.00 pu kV  592
62 MTSLVNGS 161.0  >0.95    0.964  1.00 pu kV  606
62 ANACOND  230.0  >0.95    0.964  1.00 pu kV  606
62 ANACOND  161.0  >0.95    0.944  1.00 pu kV  606
62 TOWN1    500.0  >0.95    0.995  1.00 pu kV  606
62 BUTTEMHD 161.0  >0.95    0.925  1.00 pu kV  606
62 WILSALL  161.0  >0.95    0.961  1.00 pu kV  606
62 MT ASIMI 161.0  >0.95    0.929  1.00 pu kV  606
62 WILSALL  230.0  >0.95    0.962  1.00 pu kV  606
62 ANA BPA  115.0  >0.95    0.988  1.00 pu kV  606
62 BRADLEYC 161.0  >0.95    0.945  1.00 pu kV  606
62 ENNIS MT 161.0  >0.95    0.948  1.00 pu kV  606
62 OVANDO   230.0  >0.95    0.966  1.00 pu kV  606
62 TRIDENT  161.0  >0.95    0.929  1.00 pu kV  606
62 BUTTE MT 161.0  >0.95    0.924  1.00 pu kV  606
62 CLYDE P  161.0  >0.95    0.956  1.00 pu kV  606
62 SHERDNMT 161.0  >0.95    0.955  1.00 pu kV  606
62 GLDNSNLT 161.0  >0.95    0.924  1.00 pu kV  606
62 EGALTN A 161.0  >0.95    0.947  1.00 pu kV  606
62 JACKRABT 161.0  >0.95    0.944  1.00 pu kV  606
62 EMIGT AT 161.0  >0.95    0.960  1.00 pu kV  606
62 EGALTN B 161.0  >0.95    0.947  1.00 pu kV  606
40 GARRISON 230.0  >0.95    0.968  1.00 pu kV  606
40 GARRISON 500.0  >0.95    0.973  1.00 pu kV  606
62 TOWN2    500.0  >0.95    0.995  1.00 pu kV  607
63 FT PECK  161.0  >0.95    0.689  1.00 pu kV  629

**** VOLTS: WORSE ****
Component          w/o Prj w/ Prj  Rating     Cont#
63 HAVRE    115.0  0.929   0.678  1.00 pu kV  592

Area Count, Volts new and worse:
Area 40: 29
Area 62: 39
Area 63: 7
Area 70: 3

**** RATES: BETTER ****
Component                                  w/o Prj  w/ Prj Rating  Cont#
40 GARRISON 500 to 40 TAFT     500 CKT 2    1.41   1.02   944.00   695
40 GARRISON 500 to 40 TAFT     500 CKT 1    1.41   1.02   944.00   695

**** RATES:  AWAY ****
Component                                    w/o Prj  w/ Prj  Rating   Cont#

Area Count, Rates better and away:
Area 40: 2

**** VOLTS: BETTER ****
Component          w/o Prj w/ Prj  Rating     Cont#

**** VOLTS:  AWAY ****
Component         w/o Prj     w/ Prj          Rating  Cont#

Area Count, Volts better and away:
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Compost found the following for comparisons:
     27 lines of MVA Rating Violations read from c:\uwk\mts\g5\pflow\lsbs\plsbs-2.out
     25 lines of kV Voltage Violations read from c:\uwk\mts\g5\pflow\lsbs\plsbs-2.out
     34 lines of MVA Rating Violations read from c:\uwk\mts\g5\pflow\sp\psp-2.out
     104 lines of kV Voltage Violations read from c:\uwk\mts\g5\pflow\sp\psp-2.out


**** RATES:  NEW ****
Component                                      w/o Prj  w/ Prj  Rating   Cont#
40 BURKE    115 to 40 HECLA    115 CKT 1    <0.95     1.06   92.80   371
40 GAR1EAST 500 to 40 GARRISON 500 CKT 1    <0.95     1.05   1732.10   606
40 GAR2EAST 500 to 40 GARRISON 500 CKT 1    <0.95     1.05   1732.10   607
40 OSBURN   115 to 40 PINE CRK 115 CKT 1    <0.95     1.03   85.80   371
40 WALLACE  115 to 40 OSBURN   115 CKT 1    <0.95     1.03   92.80   371
40 BIGCREEK 115 to 40 BUNKRHIL 115 CKT 1    <0.95     1.01   85.80   370
40 BUNKRHIL 115 to 40 PINE CRK 115 CKT 1    <0.95     0.98   85.80   370

**** RATES: WORSE ****
Component                                    w/o Prj  w/ Prj Rating   Cont#
40 OROFINO  115 to 40 AHSAHKA  115 CKT 1    1.94   2.16   113.70   419
40 BURKE    115 to 40 BURKAVAA 115 CKT 1    1.26   1.37   73.90   58
40 BURKE    115 to 40 BURKAVAB 115 CKT 1    1.21   1.36   73.90   368
40 BEACON N 115 to 40 ROSSPARK 115 CKT 1    1.18   1.26   138.20   343
40 AHSAHKA  115 to 40 DWORSHAK 115 CKT 1    1.04   1.16   213.10   419
40 BURKE    115 to 40 LUCKYFTP 115 CKT 1    1.02   1.15   85.80   370
40 BEACON N 230 to 40 BEACON N 115 CKT 1    0.97   1.06   287.00   339
40 BEACON S 230 to 40 BEACON S 115 CKT 1    0.97   1.06   287.00   339
40 HECLAT   115 to 40 BIGCREEK 115 CKT 1    0.96   1.08   85.80   370
40 LUCKYFTP 115 to 40 HECLAT   115 CKT 1    0.96   1.08   85.80   370

Area Count, Rates new and worse:
Area 40: 17

**** VOLTS:  NEW ****
Component          w/o Prj  w/ Prj  Rating     Cont#
63 HAVRE    161.0  >0.95    0.664  1.00 pu kV  592
62 TAFTAUTO 115.0  >0.95    0.946  1.00 pu kV  8
63 VERONA   161.0  >0.95    0.728  1.00 pu kV  592
40 AIRWAYTP 115.0  >0.95    0.930  1.00 pu kV  420
40 FOURLBPA 115.0  >0.95    0.931  1.00 pu kV  420
40 HAL&WHIT 115.0  >0.95    0.930  1.00 pu kV  420
40 HAYFORD  115.0  >0.95    0.933  1.00 pu kV  420
40 RALSTONB 115.0  >0.95    0.941  1.00 pu kV  420
70 CLIFTON  230.0  >0.95    0.949  1.00 pu kV  419
70 GRANDJPS 230.0  >0.95    0.948  1.00 pu kV  420
40 4LAKE TP 115.0  >0.95    0.945  1.00 pu kV  420
40 AIRWAYHT 115.0  >0.95    0.945  1.00 pu kV  420
40 BELL BPA 500.0  >0.95    0.976  1.00 pu kV  420
40 COLLWALN 115.0  >0.95    0.946  1.00 pu kV  420
40 FAIRCHLD 115.0  >0.95    0.944  1.00 pu kV  420
40 FTWRIGHT 115.0  >0.95    0.948  1.00 pu kV  420
40 GARDENSP 115.0  >0.95    0.947  1.00 pu kV  420
40 GLENROSE 115.0  >0.95    0.948  1.00 pu kV  420
40 GLENTAP  115.0  >0.95    0.948  1.00 pu kV  420
40 HANGMAN  115.0  >0.95    0.945  1.00 pu kV  420
40 METRO    115.0  >0.95    0.946  1.00 pu kV  420
40 POSTSTRT 115.0  >0.95    0.946  1.00 pu kV  420
40 SOUTHEAS 115.0  >0.95    0.946  1.00 pu kV  420
40 SPKINDPK 115.0  >0.95    0.944  1.00 pu kV  420
40 SPKWASTE 115.0  >0.95    0.949  1.00 pu kV  420
40 SULLIVNB 115.0  >0.95    0.946  1.00 pu kV  420
40 SUNSET   115.0  >0.95    0.946  1.00 pu kV  420
40 THIRHACH 115.0  >0.95    0.948  1.00 pu kV  420
40 TRENTWOD 115.0  >0.95    0.948  1.00 pu kV  420
40 VALY WAY 115.0  >0.95    0.947  1.00 pu kV  420
40 VERA     115.0  >0.95    0.945  1.00 pu kV  420
40 VERA TAP 115.0  >0.95    0.947  1.00 pu kV  420
70 HORIZON  230.0  >0.95    0.949  1.00 pu kV  420
62 MTSBLKFT 115.0  >0.95    0.834  1.00 pu kV  592
62 GT FALLS 161.0  >0.95    0.873  1.00 pu kV  592
62 RAINBOW  161.0  >0.95    0.881  1.00 pu kV  592
62 SHELBY   230.0  >0.95    0.881  1.00 pu kV  592
62 SHELBY   115.0  >0.95    0.842  1.00 pu kV  592
62 CUTBANK  115.0  >0.95    0.842  1.00 pu kV  592
62 BOLE     230.0  >0.95    0.918  1.00 pu kV  592
62 CNRDWAPA 230.0  >0.95    0.899  1.00 pu kV  592
62 CNRDWAPA 115.0  >0.95    0.888  1.00 pu kV  592
62 GT FALLS 115.0  >0.95    0.959  1.00 pu kV  592
62 GT FALLS 230.0  >0.95    0.942  1.00 pu kV  592
62 CONRAD   115.0  >0.95    0.885  1.00 pu kV  592
62 CTBPUMP  115.0  >0.95    0.843  1.00 pu kV  592
62 VAL-WILL 115.0  >0.95    0.870  1.00 pu kV  592
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62 DUTTON   115.0  >0.95    0.931  1.00 pu kV  592
62 CNRD-SRA 115.0  >0.95    0.887  1.00 pu kV  592
63 RICHARDC 161.0  >0.95    0.049  1.00 pu kV  592
63 RUDYARD  115.0  >0.95    0.731  1.00 pu kV  592
63 TIBERTAP 115.0  >0.95    0.779  1.00 pu kV  592
62 MTSLVNGS 161.0  >0.95    0.964  1.00 pu kV  606
62 ANACOND  230.0  >0.95    0.964  1.00 pu kV  606
62 ANACOND  161.0  >0.95    0.944  1.00 pu kV  606
62 TOWN1    500.0  >0.95    0.995  1.00 pu kV  606
62 BUTTEMHD 161.0  >0.95    0.925  1.00 pu kV  606
62 WILSALL  161.0  >0.95    0.961  1.00 pu kV  606
62 MT ASIMI 161.0  >0.95    0.929  1.00 pu kV  606
62 WILSALL  230.0  >0.95    0.962  1.00 pu kV  606
62 ANA BPA  115.0  >0.95    0.988  1.00 pu kV  606
62 BRADLEYC 161.0  >0.95    0.945  1.00 pu kV  606
62 ENNIS MT 161.0  >0.95    0.948  1.00 pu kV  606
62 OVANDO   230.0  >0.95    0.966  1.00 pu kV  606
62 TRIDENT  161.0  >0.95    0.929  1.00 pu kV  606
62 BUTTE MT 161.0  >0.95    0.924  1.00 pu kV  606
62 CLYDE P  161.0  >0.95    0.956  1.00 pu kV  606
62 SHERDNMT 161.0  >0.95    0.955  1.00 pu kV  606
62 GLDNSNLT 161.0  >0.95    0.924  1.00 pu kV  606
62 EGALTN A 161.0  >0.95    0.947  1.00 pu kV  606
62 JACKRABT 161.0  >0.95    0.944  1.00 pu kV  606
62 EMIGT AT 161.0  >0.95    0.960  1.00 pu kV  606
62 EGALTN B 161.0  >0.95    0.947  1.00 pu kV  606
40 GARRISON 230.0  >0.95    0.968  1.00 pu kV  606
40 GARRISON 500.0  >0.95    0.973  1.00 pu kV  606
62 TOWN2    500.0  >0.95    0.995  1.00 pu kV  607
63 FT PECK  161.0  >0.95    0.689  1.00 pu kV  629

**** VOLTS: WORSE ****
Component          w/o Prj w/ Prj  Rating     Cont#
63 HAVRE    115.0  0.929   0.678  1.00 pu kV  592

Area Count, Volts new and worse:
Area 40: 29
Area 62: 39
Area 63: 7
Area 70: 3

**** RATES: BETTER ****
Component                                  w/o Prj  w/ Prj Rating  Cont#
40 GARRISON 500 to 40 TAFT     500 CKT 2    1.41   1.02   944.00   695
40 GARRISON 500 to 40 TAFT     500 CKT 1    1.41   1.02   944.00   695

**** RATES:  AWAY ****
Component                                    w/o Prj  w/ Prj  Rating   Cont#

Area Count, Rates better and away:
Area 40: 2

**** VOLTS: BETTER ****
Component          w/o Prj w/ Prj  Rating     Cont#

**** VOLTS:  AWAY ****
Component         w/o Prj     w/ Prj          Rating  Cont#

Area Count, Volts better and away:
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Compost found the following for comparisons:
     51 lines of MVA Rating Violations read from c:\uwk\mts\g5\pflow\hsbs\phsbs-1.out
     85 lines of kV Voltage Violations read from c:\uwk\mts\g5\pflow\hsbs\phsbs-1.out
     57 lines of MVA Rating Violations read from c:\uwk\mts\g5\pflow\den\pden-1.out
     165 lines of kV Voltage Violations read from c:\uwk\mts\g5\pflow\den\pden-1.out


**** RATES:  NEW ****
Component                                    w/o Prj  w/ Prj  Rating   Cont#
73 BASIN    115 to 73 GREYBULL 115 CKT 1    <0.95     1.06   109.00   620
73 CARTERMT 115 to 73 THERMOPL 115 CKT 1    <0.95     1.06   40.00   620
62 DILLON S 161 to 65 BIGGRASS 161 CKT 1    <0.95     1.03   164.50   419
65 BIGGRASS 161 to 65 JFRSNPHA 161 CKT 1    <0.95     1.02   148.10   420
40 CLARKSTN 115 to 40 POMEROY  115 CKT 1    <0.95     0.99   63.70   443
73 LOVELL   115 to 73 YELLOWBR 115 CKT 1    <0.95     0.99   109.00   620
40 BEACON S 115 to 40 NINTHCNT 115 CKT 1    <0.95     0.98   91.00   343
62 ANACOND  161 to 62 DILLON S 161 CKT 1    <0.95     0.97   165.00   34
40 BURKE    115 to 40 BURKAVAA 115 CKT 1    <0.95     0.97   73.90   58

**** RATES: WORSE ****
Component                                  w/o Prj  w/ Prj Rating   Cont#
40 OROFINO  115 to 40 AHSAHKA  115 CKT 1    1.94   2.16   113.70   419
40 N LEWIST 115 to 40 CLEARWTR 115 CKT 1    1.26   1.38   113.70   439
65 JFRSNPHA 161 to 65 JEFFERSN 161 CKT 1    1.17   1.45   100.00   420
73 GREYBULL 115 to 73 LOVELL   115 CKT 1    1.07   1.23   109.00   620
40 AHSAHKA  115 to 40 DWORSHAK 115 CKT 1    1.05   1.17   213.10   419
40 GARRISON 500 to 40 TAFT     500 CKT 2    0.99   1.18   944.00   432
40 GARRISON 500 to 40 TAFT     500 CKT 1    0.99   1.18   944.00   433
65 BRIDGER  230 to 65 ROCKSPGS 230 CKT 1    0.99   1.05   423.90   624
60 OXBOW    230 to 60 BROWNLEE 230 CKT 1    0.96   1.02   478.00   443

Area Count, Rates new and worse:
Area 40: 8
Area 60: 1
Area 62: 2
Area 65: 3
Area 73: 4

**** VOLTS:  NEW ****
Component          w/o Prj  w/ Prj  Rating     Cont#
62 BRADLEYC 161.0  >0.95    0.891  1.00 pu kV  420
73 OASISTAP 115.0  >0.95    0.942  1.00 pu kV  420
62 EGALTN A 161.0  >0.95    0.919  1.00 pu kV  695
62 JACKRABT 161.0  >0.95    0.910  1.00 pu kV  695
62 EGALTN B 161.0  >0.95    0.919  1.00 pu kV  695
63 FT PECK  161.0  >0.95    0.933  1.00 pu kV  19
63 MTSFTPCK 161.0  >0.95    0.945  1.00 pu kV  19
62 SHELBY   230.0  >0.95    0.765  1.00 pu kV  598
62 SHELBY   115.0  >0.95    0.715  1.00 pu kV  598
63 TIBERTAP 115.0  >0.95    0.625  1.00 pu kV  598
62 ANACOND  161.0  >0.95    0.923  1.00 pu kV  695
62 BUTTEMHD 161.0  >0.95    0.901  1.00 pu kV  695
62 MT ASIMI 161.0  >0.95    0.906  1.00 pu kV  695
62 TRIDENT  161.0  >0.95    0.906  1.00 pu kV  695
62 BUTTE MT 161.0  >0.95    0.900  1.00 pu kV  695
62 GLDNSNLT 161.0  >0.95    0.901  1.00 pu kV  695
62 MTSLVNGS 161.0  >0.95    0.945  1.00 pu kV  86
40 EGRANVIL 115.0  >0.95    0.938  1.00 pu kV  419
40 AIRWAYTP 115.0  >0.95    0.940  1.00 pu kV  420
40 FOURLBPA 115.0  >0.95    0.941  1.00 pu kV  420
40 FOURLKS  115.0  >0.95    0.940  1.00 pu kV  420
40 HAL&WHIT 115.0  >0.95    0.940  1.00 pu kV  420
40 SCOTPAPR 115.0  >0.95    0.946  1.00 pu kV  419
40 STMARIES 115.0  >0.95    0.942  1.00 pu kV  420
65 ANTLOPE  230.0  >0.95    0.936  1.00 pu kV  420
65 LOST RIV 230.0  >0.95    0.926  1.00 pu kV  420
40 4LAKE TP 115.0  >0.95    0.945  1.00 pu kV  420
40 COLLWALN 115.0  >0.95    0.949  1.00 pu kV  420
40 HANGMAN  115.0  >0.95    0.945  1.00 pu kV  420
40 HAYFORD  115.0  >0.95    0.942  1.00 pu kV  420
40 METRO    115.0  >0.95    0.949  1.00 pu kV  420
40 POSTSTRT 115.0  >0.95    0.949  1.00 pu kV  420
40 SOUTHEAS 115.0  >0.95    0.948  1.00 pu kV  420
40 SPKINDPK 115.0  >0.95    0.947  1.00 pu kV  420
40 SUNSET   115.0  >0.95    0.949  1.00 pu kV  420
62 MTSBLKFT 115.0  >0.95    0.719  1.00 pu kV  598
62 GT FALLS 161.0  >0.95    0.752  1.00 pu kV  598
62 RAINBOW  161.0  >0.95    0.763  1.00 pu kV  598
62 CUTBANK  115.0  >0.95    0.721  1.00 pu kV  598
62 BOLE     230.0  >0.95    0.818  1.00 pu kV  598
62 CNRDWAPA 230.0  >0.95    0.789  1.00 pu kV  598
62 JUDITHGP 230.0  >0.95    0.952  1.00 pu kV  598
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62 CNRDWAPA 115.0  >0.95    0.773  1.00 pu kV  598
62 GT FALLS 115.0  >0.95    0.852  1.00 pu kV  598
62 GT FALLS 230.0  >0.95    0.859  1.00 pu kV  598
62 CONRAD   115.0  >0.95    0.769  1.00 pu kV  598
62 CTBPUMP  115.0  >0.95    0.722  1.00 pu kV  598
62 LANDRSFK 230.0  >0.95    0.967  1.00 pu kV  598
62 VAL-WILL 115.0  >0.95    0.753  1.00 pu kV  598
62 DUTTON   115.0  >0.95    0.821  1.00 pu kV  598
62 CNRD-SRA 115.0  >0.95    0.772  1.00 pu kV  598
62 ANACOND  230.0  >0.95    0.941  1.00 pu kV  695
62 WILSALL  161.0  >0.95    0.955  1.00 pu kV  695
62 ANA BPA  115.0  >0.95    0.988  1.00 pu kV  695
62 MILLERCK 161.0  >0.95    0.936  1.00 pu kV  721
62 BGTMBERA 161.0  >0.95    0.948  1.00 pu kV  695
40 GARRISON 230.0  >0.95    0.956  1.00 pu kV  695
62 BONNERMT 161.0  >0.95    0.942  1.00 pu kV  721
62 RATTLE S 161.0  >0.95    0.943  1.00 pu kV  721
62 RESERVST 161.0  >0.95    0.937  1.00 pu kV  721
62 MISSLA 7 161.0  >0.95    0.937  1.00 pu kV  721

**** VOLTS: WORSE ****
Component          w/o Prj w/ Prj  Rating     Cont#
65 JFRSNPHA 161.0  0.946   0.898  1.00 pu kV  420

Area Count, Volts new and worse:
Area 40: 17
Area 62: 38
Area 63: 3
Area 65: 3
Area 73: 1

**** RATES: BETTER ****
Component                                 w/o Prj  w/ Prj Rating  Cont#

**** RATES:  AWAY ****
Component                                    w/o Prj  w/ Prj  Rating   Cont#
62 ANACOND  230 to 62 ANACOND  161 CKT 2    1.01    <= 0.95  200.00   633
62 ANACOND  230 to 62 ANACOND  161 CKT 1    1.01    <= 0.95  200.00   634
65 BONANZA  345 to 65 MONA     345 CKT 1    0.98    <= 0.95  650.00   624

Area Count, Rates better and away:
Area 62: 2
Area 65: 1

**** VOLTS: BETTER ****
Component          w/o Prj w/ Prj  Rating     Cont#

**** VOLTS:  AWAY ****
Component         w/o Prj     w/ Prj          Rating  Cont#
65 BIGGRASS 161.0 0.922  0.95 <= pu <= 1.05   1.00 pu kV  420
62 PTRSNFLT 230.0 0.912  0.95 <= pu <= 1.05   1.00 pu kV  420
62 DILLON S 161.0 0.931  0.95 <= pu <= 1.05   1.00 pu kV  420
65 AMPS     230.0 0.931  0.95 <= pu <= 1.05   1.00 pu kV  420
62 SHERDNMT 161.0 0.943  0.95 <= pu <= 1.05   1.00 pu kV  420

Area Count, Volts better and away:
Area 62: 3
Area 65: 2
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Compost found the following for comparisons:
     39 lines of MVA Rating Violations read from c:\uwk\mts\g5\pflow\hsbs\phsbs-2.out
     85 lines of kV Voltage Violations read from c:\uwk\mts\g5\pflow\hsbs\phsbs-2.out
     43 lines of MVA Rating Violations read from c:\uwk\mts\g5\pflow\den\pden-2.out
     165 lines of kV Voltage Violations read from c:\uwk\mts\g5\pflow\den\pden-2.out


**** RATES:  NEW ****
Component                                    w/o Prj  w/ Prj  Rating   Cont#
40 CLARKSTN 115 to 40 POMEROY  115 CKT 1    <0.95     0.99   63.70   443
40 BEACON S 115 to 40 NINTHCNT 115 CKT 1    <0.95     0.98   91.00   343
65 FISHCREK 161 to 65 GRACE    161 CKT 1    <0.95     0.98   176.00   625
40 BURKE    115 to 40 BURKAVAA 115 CKT 1    <0.95     0.97   73.90   58

**** RATES: WORSE ****
Component                                  w/o Prj  w/ Prj Rating   Cont#
40 OROFINO  115 to 40 AHSAHKA  115 CKT 1    1.94   2.16   113.70   419
40 N LEWIST 115 to 40 CLEARWTR 115 CKT 1    1.26   1.38   113.70   439
65 JFRSNPHA 161 to 65 JEFFERSN 161 CKT 1    1.17   1.45   100.00   420
40 AHSAHKA  115 to 40 DWORSHAK 115 CKT 1    1.05   1.17   213.10   419
40 GARRISON 500 to 40 TAFT     500 CKT 2    0.99   1.18   944.00   432
40 GARRISON 500 to 40 TAFT     500 CKT 1    0.99   1.18   944.00   433

Area Count, Rates new and worse:
Area 40: 8
Area 65: 2

**** VOLTS:  NEW ****
Component          w/o Prj  w/ Prj  Rating     Cont#
62 BRADLEYC 161.0  >0.95    0.891  1.00 pu kV  420
73 OASISTAP 115.0  >0.95    0.942  1.00 pu kV  420
62 EGALTN A 161.0  >0.95    0.919  1.00 pu kV  695
62 JACKRABT 161.0  >0.95    0.910  1.00 pu kV  695
62 EGALTN B 161.0  >0.95    0.919  1.00 pu kV  695
63 FT PECK  161.0  >0.95    0.933  1.00 pu kV  19
63 MTSFTPCK 161.0  >0.95    0.945  1.00 pu kV  19
62 SHELBY   230.0  >0.95    0.765  1.00 pu kV  598
62 SHELBY   115.0  >0.95    0.715  1.00 pu kV  598
63 TIBERTAP 115.0  >0.95    0.625  1.00 pu kV  598
62 ANACOND  161.0  >0.95    0.923  1.00 pu kV  695
62 BUTTEMHD 161.0  >0.95    0.901  1.00 pu kV  695
62 MT ASIMI 161.0  >0.95    0.906  1.00 pu kV  695
62 TRIDENT  161.0  >0.95    0.906  1.00 pu kV  695
62 BUTTE MT 161.0  >0.95    0.900  1.00 pu kV  695
62 GLDNSNLT 161.0  >0.95    0.901  1.00 pu kV  695
62 MTSLVNGS 161.0  >0.95    0.945  1.00 pu kV  86
40 EGRANVIL 115.0  >0.95    0.938  1.00 pu kV  419
40 AIRWAYTP 115.0  >0.95    0.940  1.00 pu kV  420
40 FOURLBPA 115.0  >0.95    0.941  1.00 pu kV  420
40 FOURLKS  115.0  >0.95    0.940  1.00 pu kV  420
40 HAL&WHIT 115.0  >0.95    0.940  1.00 pu kV  420
40 SCOTPAPR 115.0  >0.95    0.946  1.00 pu kV  419
40 STMARIES 115.0  >0.95    0.942  1.00 pu kV  420
65 ANTLOPE  230.0  >0.95    0.936  1.00 pu kV  420
65 LOST RIV 230.0  >0.95    0.926  1.00 pu kV  420
40 4LAKE TP 115.0  >0.95    0.945  1.00 pu kV  420
40 COLLWALN 115.0  >0.95    0.949  1.00 pu kV  420
40 HANGMAN  115.0  >0.95    0.945  1.00 pu kV  420
40 HAYFORD  115.0  >0.95    0.942  1.00 pu kV  420
40 METRO    115.0  >0.95    0.949  1.00 pu kV  420
40 POSTSTRT 115.0  >0.95    0.949  1.00 pu kV  420
40 SOUTHEAS 115.0  >0.95    0.948  1.00 pu kV  420
40 SPKINDPK 115.0  >0.95    0.947  1.00 pu kV  420
40 SUNSET   115.0  >0.95    0.949  1.00 pu kV  420
62 MTSBLKFT 115.0  >0.95    0.719  1.00 pu kV  598
62 GT FALLS 161.0  >0.95    0.752  1.00 pu kV  598
62 RAINBOW  161.0  >0.95    0.763  1.00 pu kV  598
62 CUTBANK  115.0  >0.95    0.721  1.00 pu kV  598
62 BOLE     230.0  >0.95    0.818  1.00 pu kV  598
62 CNRDWAPA 230.0  >0.95    0.789  1.00 pu kV  598
62 JUDITHGP 230.0  >0.95    0.952  1.00 pu kV  598
62 CNRDWAPA 115.0  >0.95    0.773  1.00 pu kV  598
62 GT FALLS 115.0  >0.95    0.852  1.00 pu kV  598
62 GT FALLS 230.0  >0.95    0.859  1.00 pu kV  598
62 CONRAD   115.0  >0.95    0.769  1.00 pu kV  598
62 CTBPUMP  115.0  >0.95    0.722  1.00 pu kV  598
62 LANDRSFK 230.0  >0.95    0.967  1.00 pu kV  598
62 VAL-WILL 115.0  >0.95    0.753  1.00 pu kV  598
62 DUTTON   115.0  >0.95    0.821  1.00 pu kV  598
62 CNRD-SRA 115.0  >0.95    0.772  1.00 pu kV  598
62 ANACOND  230.0  >0.95    0.941  1.00 pu kV  695
62 WILSALL  161.0  >0.95    0.955  1.00 pu kV  695
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62 ANA BPA  115.0  >0.95    0.988  1.00 pu kV  695
62 MILLERCK 161.0  >0.95    0.936  1.00 pu kV  721
62 BGTMBERA 161.0  >0.95    0.948  1.00 pu kV  695
40 GARRISON 230.0  >0.95    0.956  1.00 pu kV  695
62 BONNERMT 161.0  >0.95    0.942  1.00 pu kV  721
62 RATTLE S 161.0  >0.95    0.943  1.00 pu kV  721
62 RESERVST 161.0  >0.95    0.937  1.00 pu kV  721
62 MISSLA 7 161.0  >0.95    0.937  1.00 pu kV  721

**** VOLTS: WORSE ****
Component          w/o Prj w/ Prj  Rating     Cont#
65 JFRSNPHA 161.0  0.946   0.898  1.00 pu kV  420

Area Count, Volts new and worse:
Area 40: 17
Area 62: 38
Area 63: 3
Area 65: 3
Area 73: 1

**** RATES: BETTER ****
Component                                 w/o Prj  w/ Prj Rating  Cont#

**** RATES:  AWAY ****
Component                                   w/o Prj  w/ Prj  Rating   Cont#

Area Count, Rates better and away:

**** VOLTS: BETTER ****
Component          w/o Prj w/ Prj  Rating     Cont#

**** VOLTS:  AWAY ****
Component         w/o Prj     w/ Prj          Rating  Cont#
65 BIGGRASS 161.0 0.922  0.95 <= pu <= 1.05   1.00 pu kV  420
62 PTRSNFLT 230.0 0.912  0.95 <= pu <= 1.05   1.00 pu kV  420
62 DILLON S 161.0 0.931  0.95 <= pu <= 1.05   1.00 pu kV  420
65 AMPS     230.0 0.931  0.95 <= pu <= 1.05   1.00 pu kV  420
62 SHERDNMT 161.0 0.943  0.95 <= pu <= 1.05   1.00 pu kV  420

Area Count, Volts better and away:
Area 62: 3
Area 65: 2
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Compost found the following for comparisons:
     51 lines of MVA Rating Violations read from c:\uwk\mts\g5\pflow\hsbs\phsbs-1.out
     85 lines of kV Voltage Violations read from c:\uwk\mts\g5\pflow\hsbs\phsbs-1.out
     61 lines of MVA Rating Violations read from c:\uwk\mts\g5\pflow\slc\pslc-1.out
     146 lines of kV Voltage Violations read from c:\uwk\mts\g5\pflow\slc\pslc-1.out


**** RATES:  NEW ****
Component                                    w/o Prj  w/ Prj  Rating   Cont#
62 DILLON S 161 to 65 BIGGRASS 161 CKT 1    <0.95     1.06   164.50   420
65 BIGGRASS 161 to 65 JFRSNPHA 161 CKT 1    <0.95     1.04   148.10   420
73 BASIN    115 to 73 GREYBULL 115 CKT 1    <0.95     1.02   109.00   620
73 CARTERMT 115 to 73 THERMOPL 115 CKT 1    <0.95     1.02   40.00   620
73 STEGALDC 230 to 73 STEGALL  230 CKT 1    <0.95     1.01   150.00   599
40 CLARKSTN 115 to 40 POMEROY  115 CKT 1    <0.95     1.00   63.70   443
62 ANACOND  161 to 62 DILLON S 161 CKT 1    <0.95     0.99   165.00   34
40 BEACON S 115 to 40 NINTHCNT 115 CKT 1    <0.95     0.99   91.00   343
40 BURKE    115 to 40 BURKAVAA 115 CKT 1    <0.95     0.98   73.90   58
73 LOVELL   115 to 73 YELLOWBR 115 CKT 1    <0.95     0.96   109.00   620
40 HATWAI   230 to 40 MOSCOW   230 CKT 1    <0.95     0.95   372.10   419
40 POMEROY  115 to 40 WALAWALA 115 CKT 1    <0.95     0.95   63.70   443

**** RATES: WORSE ****
Component                                  w/o Prj  w/ Prj Rating   Cont#
40 OROFINO  115 to 40 AHSAHKA  115 CKT 1    1.94   2.17   113.70   419
40 N LEWIST 115 to 40 CLEARWTR 115 CKT 1    1.26   1.41   113.70   439
65 JFRSNPHA 161 to 65 JEFFERSN 161 CKT 1    1.17   1.49   100.00   420
65 FISHCREK 161 to 65 GOSHEN   161 CKT 1    1.14   1.27   148.10   625
65 FISHCREK 161 to 65 GRACE    161 CKT 1    1.11   1.24   148.00   625
73 GREYBULL 115 to 73 LOVELL   115 CKT 1    1.07   1.19   109.00   620
40 AHSAHKA  115 to 40 DWORSHAK 115 CKT 1    1.05   1.17   213.10   419
65 GRACE    161 to 65 GRACE    138 CKT 1    1.00   1.11   168.00   625
40 GARRISON 500 to 40 TAFT     500 CKT 2    0.99   1.21   944.00   432
40 GARRISON 500 to 40 TAFT     500 CKT 1    0.99   1.21   944.00   433
65 BRIDGER  230 to 65 ROCKSPGS 230 CKT 1    0.99   1.11   423.90   624
60 OXBOW    230 to 60 BROWNLEE 230 CKT 1    0.96   1.03   478.00   443

Area Count, Rates new and worse:
Area 40: 10
Area 60: 1
Area 62: 2
Area 65: 6
Area 73: 5

**** VOLTS:  NEW ****
Component          w/o Prj  w/ Prj  Rating     Cont#
62 BRADLEYC 161.0  >0.95    0.861  1.00 pu kV  715
73 WARRENLM 115.0  >0.95    0.945  1.00 pu kV  420
62 EGALTN A 161.0  >0.95    0.918  1.00 pu kV  695
62 JACKRABT 161.0  >0.95    0.901  1.00 pu kV  715
62 EGALTN B 161.0  >0.95    0.918  1.00 pu kV  695
63 TIBERTAP 115.0  >0.95    0.586  1.00 pu kV  598
62 ANACOND  161.0  >0.95    0.926  1.00 pu kV  695
62 BUTTEMHD 161.0  >0.95    0.904  1.00 pu kV  695
62 MT ASIMI 161.0  >0.95    0.909  1.00 pu kV  695
62 TRIDENT  161.0  >0.95    0.908  1.00 pu kV  695
62 BUTTE MT 161.0  >0.95    0.903  1.00 pu kV  695
62 GLDNSNLT 161.0  >0.95    0.903  1.00 pu kV  695
73 HAPPYJCK 115.0  >0.95    0.946  1.00 pu kV  420
62 MTSLVNGS 161.0  >0.95    0.947  1.00 pu kV  86
40 EGRANVIL 115.0  >0.95    0.938  1.00 pu kV  419
40 SCOTPAPR 115.0  >0.95    0.946  1.00 pu kV  419
65 ANTLOPE  230.0  >0.95    0.931  1.00 pu kV  420
65 LOST RIV 230.0  >0.95    0.922  1.00 pu kV  420
40 AIRWAYTP 115.0  >0.95    0.948  1.00 pu kV  420
40 FOURLBPA 115.0  >0.95    0.949  1.00 pu kV  420
40 FOURLKS  115.0  >0.95    0.948  1.00 pu kV  420
40 HAL&WHIT 115.0  >0.95    0.948  1.00 pu kV  420
40 STMARIES 115.0  >0.95    0.946  1.00 pu kV  420
63 MTSFTPCK 161.0  >0.95    0.920  1.00 pu kV  594
63 FT PECK  161.0  >0.95    0.908  1.00 pu kV  594
62 MTSBLKFT 115.0  >0.95    0.674  1.00 pu kV  598
62 GT FALLS 161.0  >0.95    0.721  1.00 pu kV  598
62 RAINBOW  161.0  >0.95    0.732  1.00 pu kV  598
62 SHELBY   230.0  >0.95    0.729  1.00 pu kV  598
62 SHELBY   115.0  >0.95    0.675  1.00 pu kV  598
62 CUTBANK  115.0  >0.95    0.676  1.00 pu kV  598
62 BOLE     230.0  >0.95    0.787  1.00 pu kV  598
62 CNRDWAPA 230.0  >0.95    0.755  1.00 pu kV  598
62 JUDITHGP 230.0  >0.95    0.940  1.00 pu kV  598
62 CNRDWAPA 115.0  >0.95    0.736  1.00 pu kV  598
62 GT FALLS 115.0  >0.95    0.820  1.00 pu kV  598
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62 GT FALLS 230.0  >0.95    0.835  1.00 pu kV  598
62 CONRAD   115.0  >0.95    0.731  1.00 pu kV  598
62 CTBPUMP  115.0  >0.95    0.677  1.00 pu kV  598
62 LANDRSFK 230.0  >0.95    0.963  1.00 pu kV  598
62 VAL-WILL 115.0  >0.95    0.712  1.00 pu kV  598
62 DUTTON   115.0  >0.95    0.786  1.00 pu kV  598
62 CNRD-SRA 115.0  >0.95    0.735  1.00 pu kV  598
62 ANACOND  230.0  >0.95    0.944  1.00 pu kV  695
62 WILSALL  161.0  >0.95    0.956  1.00 pu kV  695
62 WILSALL  230.0  >0.95    0.963  1.00 pu kV  695
62 ANA BPA  115.0  >0.95    0.986  1.00 pu kV  695
62 OVANDO   230.0  >0.95    0.981  1.00 pu kV  695
62 BGTMBERA 161.0  >0.95    0.948  1.00 pu kV  695
40 GARRISON 230.0  >0.95    0.961  1.00 pu kV  695
62 RESERVST 161.0  >0.95    0.946  1.00 pu kV  721
62 MILLERCK 161.0  >0.95    0.945  1.00 pu kV  721
62 MISSLA 7 161.0  >0.95    0.946  1.00 pu kV  721

**** VOLTS: WORSE ****
Component          w/o Prj w/ Prj  Rating     Cont#
65 JFRSNPHA 161.0  0.946   0.244  1.00 pu kV  715

Area Count, Volts new and worse:
Area 40: 8
Area 62: 38
Area 63: 3
Area 65: 3
Area 73: 2

**** RATES: BETTER ****
Component                                  w/o Prj  w/ Prj Rating  Cont#

**** RATES:  AWAY ****
Component                                    w/o Prj  w/ Prj  Rating   Cont#
62 ANACOND  230 to 62 ANACOND  161 CKT 2    1.01    <= 0.95  200.00   633
62 ANACOND  230 to 62 ANACOND  161 CKT 1    1.01    <= 0.95  200.00   634

Area Count, Rates better and away:
Area 62: 2

**** VOLTS: BETTER ****
Component          w/o Prj w/ Prj  Rating     Cont#

**** VOLTS:  AWAY ****
Component         w/o Prj     w/ Prj          Rating  Cont#
65 BIGGRASS 161.0 0.922  0.95 <= pu <= 1.05   1.00 pu kV  420
62 PTRSNFLT 230.0 0.912  0.95 <= pu <= 1.05   1.00 pu kV  420
62 DILLON S 161.0 0.931  0.95 <= pu <= 1.05   1.00 pu kV  420
65 AMPS     230.0 0.931  0.95 <= pu <= 1.05   1.00 pu kV  420
62 SHERDNMT 161.0 0.943  0.95 <= pu <= 1.05   1.00 pu kV  420

Area Count, Volts better and away:
Area 62: 3
Area 65: 2
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Compost found the following for comparisons:
     39 lines of MVA Rating Violations read from c:\uwk\mts\g5\pflow\hsbs\phsbs-2.out
     85 lines of kV Voltage Violations read from c:\uwk\mts\g5\pflow\hsbs\phsbs-2.out
     45 lines of MVA Rating Violations read from c:\uwk\mts\g5\pflow\slc\pslc-2.out
     146 lines of kV Voltage Violations read from c:\uwk\mts\g5\pflow\slc\pslc-2.out


**** RATES:  NEW ****
Component                                    w/o Prj  w/ Prj  Rating   Cont#
65 FISHCREK 161 to 65 GRACE    161 CKT 1    <0.95     1.05   176.00   625
40 CLARKSTN 115 to 40 POMEROY  115 CKT 1    <0.95     1.00   63.70   443
40 BEACON S 115 to 40 NINTHCNT 115 CKT 1    <0.95     0.99   91.00   343
40 BURKE    115 to 40 BURKAVAA 115 CKT 1    <0.95     0.98   73.90   58
40 HATWAI   230 to 40 MOSCOW   230 CKT 1    <0.95     0.95   372.10   419
40 POMEROY  115 to 40 WALAWALA 115 CKT 1    <0.95     0.95   63.70   443

**** RATES: WORSE ****
Component                                  w/o Prj  w/ Prj Rating   Cont#
40 OROFINO  115 to 40 AHSAHKA  115 CKT 1    1.94   2.17   113.70   419
40 N LEWIST 115 to 40 CLEARWTR 115 CKT 1    1.26   1.41   113.70   439
65 JFRSNPHA 161 to 65 JEFFERSN 161 CKT 1    1.17   1.49   100.00   420
40 AHSAHKA  115 to 40 DWORSHAK 115 CKT 1    1.05   1.17   213.10   419
65 GRACE    161 to 65 GRACE    138 CKT 1    1.00   1.11   168.00   625
40 GARRISON 500 to 40 TAFT     500 CKT 2    0.99   1.21   944.00   432
40 GARRISON 500 to 40 TAFT     500 CKT 1    0.99   1.21   944.00   433
65 FISHCREK 161 to 65 GOSHEN   161 CKT 1    0.96   1.07   176.00   625

Area Count, Rates new and worse:
Area 40: 10
Area 65: 4

**** VOLTS:  NEW ****
Component          w/o Prj  w/ Prj  Rating     Cont#
62 BRADLEYC 161.0  >0.95    0.861  1.00 pu kV  715
73 WARRENLM 115.0  >0.95    0.945  1.00 pu kV  420
62 EGALTN A 161.0  >0.95    0.918  1.00 pu kV  695
62 JACKRABT 161.0  >0.95    0.901  1.00 pu kV  715
62 EGALTN B 161.0  >0.95    0.918  1.00 pu kV  695
63 TIBERTAP 115.0  >0.95    0.586  1.00 pu kV  598
62 ANACOND  161.0  >0.95    0.926  1.00 pu kV  695
62 BUTTEMHD 161.0  >0.95    0.904  1.00 pu kV  695
62 MT ASIMI 161.0  >0.95    0.909  1.00 pu kV  695
62 TRIDENT  161.0  >0.95    0.908  1.00 pu kV  695
62 BUTTE MT 161.0  >0.95    0.903  1.00 pu kV  695
62 GLDNSNLT 161.0  >0.95    0.903  1.00 pu kV  695
73 HAPPYJCK 115.0  >0.95    0.946  1.00 pu kV  420
62 MTSLVNGS 161.0  >0.95    0.947  1.00 pu kV  86
40 EGRANVIL 115.0  >0.95    0.938  1.00 pu kV  419
40 SCOTPAPR 115.0  >0.95    0.946  1.00 pu kV  419
65 ANTLOPE  230.0  >0.95    0.931  1.00 pu kV  420
65 LOST RIV 230.0  >0.95    0.922  1.00 pu kV  420
40 AIRWAYTP 115.0  >0.95    0.948  1.00 pu kV  420
40 FOURLBPA 115.0  >0.95    0.949  1.00 pu kV  420
40 FOURLKS  115.0  >0.95    0.948  1.00 pu kV  420
40 HAL&WHIT 115.0  >0.95    0.948  1.00 pu kV  420
40 STMARIES 115.0  >0.95    0.946  1.00 pu kV  420
63 MTSFTPCK 161.0  >0.95    0.920  1.00 pu kV  594
63 FT PECK  161.0  >0.95    0.908  1.00 pu kV  594
62 MTSBLKFT 115.0  >0.95    0.674  1.00 pu kV  598
62 GT FALLS 161.0  >0.95    0.721  1.00 pu kV  598
62 RAINBOW  161.0  >0.95    0.732  1.00 pu kV  598
62 SHELBY   230.0  >0.95    0.729  1.00 pu kV  598
62 SHELBY   115.0  >0.95    0.675  1.00 pu kV  598
62 CUTBANK  115.0  >0.95    0.676  1.00 pu kV  598
62 BOLE     230.0  >0.95    0.787  1.00 pu kV  598
62 CNRDWAPA 230.0  >0.95    0.755  1.00 pu kV  598
62 JUDITHGP 230.0  >0.95    0.940  1.00 pu kV  598
62 CNRDWAPA 115.0  >0.95    0.736  1.00 pu kV  598
62 GT FALLS 115.0  >0.95    0.820  1.00 pu kV  598
62 GT FALLS 230.0  >0.95    0.835  1.00 pu kV  598
62 CONRAD   115.0  >0.95    0.731  1.00 pu kV  598
62 CTBPUMP  115.0  >0.95    0.677  1.00 pu kV  598
62 LANDRSFK 230.0  >0.95    0.963  1.00 pu kV  598
62 VAL-WILL 115.0  >0.95    0.712  1.00 pu kV  598
62 DUTTON   115.0  >0.95    0.786  1.00 pu kV  598
62 CNRD-SRA 115.0  >0.95    0.735  1.00 pu kV  598
62 ANACOND  230.0  >0.95    0.944  1.00 pu kV  695
62 WILSALL  161.0  >0.95    0.956  1.00 pu kV  695
62 WILSALL  230.0  >0.95    0.963  1.00 pu kV  695
62 ANA BPA  115.0  >0.95    0.986  1.00 pu kV  695
62 OVANDO   230.0  >0.95    0.981  1.00 pu kV  695
62 BGTMBERA 161.0  >0.95    0.948  1.00 pu kV  695
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40 GARRISON 230.0  >0.95    0.961  1.00 pu kV  695
62 RESERVST 161.0  >0.95    0.946  1.00 pu kV  721
62 MILLERCK 161.0  >0.95    0.945  1.00 pu kV  721
62 MISSLA 7 161.0  >0.95    0.946  1.00 pu kV  721

**** VOLTS: WORSE ****
Component          w/o Prj w/ Prj  Rating     Cont#
65 JFRSNPHA 161.0  0.946   0.244  1.00 pu kV  715

Area Count, Volts new and worse:
Area 40: 8
Area 62: 38
Area 63: 3
Area 65: 3
Area 73: 2

**** RATES: BETTER ****
Component                                 w/o Prj  w/ Prj Rating  Cont#

**** RATES:  AWAY ****
Component                                   w/o Prj  w/ Prj  Rating   Cont#

Area Count, Rates better and away:

**** VOLTS: BETTER ****
Component          w/o Prj w/ Prj  Rating     Cont#

**** VOLTS:  AWAY ****
Component         w/o Prj     w/ Prj          Rating  Cont#
65 BIGGRASS 161.0 0.922  0.95 <= pu <= 1.05   1.00 pu kV  420
62 PTRSNFLT 230.0 0.912  0.95 <= pu <= 1.05   1.00 pu kV  420
62 DILLON S 161.0 0.931  0.95 <= pu <= 1.05   1.00 pu kV  420
65 AMPS     230.0 0.931  0.95 <= pu <= 1.05   1.00 pu kV  420
62 SHERDNMT 161.0 0.943  0.95 <= pu <= 1.05   1.00 pu kV  420

Area Count, Volts better and away:
Area 62: 3
Area 65: 2
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MONTANA TRANSMISSION STUDY WAPA UGP JUNE 2002
G5 BASE CASE

FILE made from cont. file : [C:\uwk\mts\g5\pflow\lsbs\cLSBS-1.out]
DATE REPORT MADE - Wed May 08 10:37:47 2002

Outage 518 failed to converge
Outage 682 failed to converge
Outage 701 failed to converge

--------FROM bus--------					---------TO bus---------								base	pu	rating		
#	---name---	-kv-	ar	#	---name---	-kv-	ar	ID	--mw-	-mvar	amps	load	load	load	[MVA]	Cnt	# freq.
48125	"FOURLBPA"	115	40	48132	"HAL&WHIT"	115	40	"1 "	108	132	857	0.49	2.97	57.40	426	2	
48303	"OROFINO "	115	40	40023	"AHSAHKA "	115	40	"1 "	-219	1	1106	0.78	1.94	113.70	419	3	
54083	"E EDMON9"	138	54	55938	"STEL TAP"	138	54	"22"	198	1	796	1.70	1.70	112.00	1	719	
54503	"STELCOA9"	138	54	55938	"STEL TAP"	138	54	"22"	-197	0	795	1.60	1.60	119.00	1	719	
48319	"PLEASANT"	115	40	48355	"RATHDRUM"	115	40	"1 "	-110	-42	621	0.72	1.44	85.80	514	3	
40459	"GARRISON"	500	40	41057	"TAFT "	500	40	"2 "	1326	-203	1535	0.81	1.41	944.00	432	1	
40459	"GARRISON"	500	40	41057	"TAFT "	500	40	"1 "	1326	-203	1535	0.81	1.41	944.00	433	1	
40855	"PRAIRIEB"	115	40	48349	"RAMSEY "	115	40	"1 "	-110	-43	618	0.61	1.35	91.00	510	3	
54518	"ARGYLL E"	240	54	54506	"BELLAMY4"	240	54	"04"	-81	-126	322	1.34	1.34	100.00	1	719	
48253	"N LEWIST"	115	40	48075	"CLEARWTR"	115	40	"1 "	146	34	750	0.47	1.31	113.70	439	1	
48311	"OTIS "	115	40	47511	"MOAB "	115	40	"1 "	-97	-34	561	0.59	1.30	85.80	514	2	
48051	"BURKE "	115	40	48053	"BURKAVAA"	115	40	"1 "	-86	34	465	0.71	1.26	73.90	58	3	
47511	"MOAB "	115	40	48319	"PLEASANT"	115	40	"1 "	-100	-37	570	0.57	1.25	91.00	514	2	
48329	"POST FLS"	115	40	40855	"PRAIRIEB"	115	40	"1 "	-93	-35	527	0.44	1.22	85.80	510	3	
48051	"BURKE "	115	40	48055	"BURKAVAB"	115	40	"1 "	-82	34	448	0.67	1.21	73.90	368	2	
48023	"BEACON N"	115	40	48371	"ROSSPARK"	115	40	"1 "	158	41	822	0.80	1.18	138.20	343	4	
54065	"N HOLDE9"	138	54	54062	"BARDO 7"	138	54	"74"	-78	59	392	1.12	1.12	85.00	1	720	
54161	"SARCEE 4"	240	54	54154	"E CALGAR"	240	54	"16"	93	-354	889	1.11	1.11	333.00	1	719	
54681	"NEVIS 7"	138	54	54823	"NEVIS 9"	138	54	"1 "	33	16	37	1.10	1.10	33.30	1	719	
60085	"BRIDGER "	345	60	60060	"BORAH "	345	60	"1 "	971	270	1607	0.84	1.08	892.20	624	1	
46805	"CHELAN "	115	40	48149	"HEADWORK"	115	40	"1 "	-92	33	482	0.99	1.06	91.00	545	719	
60085	"BRIDGER "	345	60	60190	"KINPORT "	345	60	"1 "	945	266	1565	0.73	1.05	892.20	624	1	
40023	"AHSAHKA "	115	40	40367	"DWORSHAK"	115	40	"1 "	-223	-9	1115	0.42	1.04	213.10	419	1	
62054	"BROADV&1"	500	62	62046	"BROADVU "	500	62	"1 "	1842	-206	2030	0.54	1.02	1732.00	22	2	
62053	"BROADV&2"	500	62	62046	"BROADVU "	500	62	"2 "	1831	-163	2038	0.52	1.02	1732.00	27	2	
48051	"BURKE "	115	40	48217	"LUCKYFTP"	115	40	"1 "	81	-29	439	0.59	1.02	85.80	370	3	
62057	"COLSTRP "	500	62	62060	"COLSTRP "	230	62	"2 "	-496	4	496	0.53	1.00	500.00	660	1	
62057	"COLSTRP "	500	62	62060	"COLSTRP "	230	62	"1 "	-497	3	497	0.54	1.00	500.00	661	1	
54156	"SAGITAW7"	138	54	54079	"MILLAR 7"	138	54	"25"	106	58	492	0.97	0.97	121.00	1	719	
48025	"BEACON N"	230	40	48023	"BEACON N"	115	40	"1 "	272	62	279	0.60	0.97	287.00	339	1	
48031	"BEACON S"	230	40	48029	"BEACON S"	115	40	"1 "	273	61	279	0.60	0.97	287.00	339	1	
54542	"RBW LAK7"	138	54	54835	"791S702T"	138	54	"1 "	20	-9	22	0.96	0.96	24.00	1	719	
48153	"HECLAT "	115	40	48041	"BIGCREEK"	115	40	"1 "	75	-31	412	0.53	0.96	85.80	370	2	
48217	"LUCKYFTP"	115	40	48153	"HECLAT "	115	40	"1 "	75	-31	412	0.53	0.96	85.80	370	2	

low voltage violations							delta voltage violations							high voltage violations						
CNT	freq	---name---	-kv-	ar	-base-case- pu vt	-cont-case- pu vt	---name---	-kv-	ar	freq	delta V	freq	---name---	-kv-	ar	-base-case- pu vt	-cont-case- pu vt
20	0		0	0	99.000	99.000	GAR2EAST	500	40	1	0.060	0		0	0	99.000	0.000
21	0		0	0	99.000	99.000	GAR1EAST	500	40	1	0.060	0		0	0	99.000	0.000
314	0		0	0	99.000	99.000	AHSAHKA	115	40	1	0.051	0		0	0	99.000	0.000
319	3	OTIS	230	40	0.950	0.946		0	0	0	0.000	0		0	0	99.000	0.000
326	3	OTIS	230	40	0.950	0.946		0	0	0	0.000	0		0	0	99.000	0.000
337	1	CHENEY	115	40	0.970	0.948		0	0	0	0.000	0		0	0	99.000	0.000
376	1	OTIS	230	40	0.950	0.949		0	0	0	0.000	0		0	0	99.000	0.000
392	0		0	0	99.000	99.000	KALISPEL	115	40	1	0.057	0		0	0	99.000	0.000
409	3	OTIS	230	40	0.950	0.946		0	0	0	0.000	0		0	0	99.000	0.000
411	3	OTIS	230	40	0.950	0.947		0	0	0	0.000	0		0	0	99.000	0.000
420	3	CHENEY	115	40	0.970	0.945		0	0	0	0.000	0		0	0	99.000	0.000
421	8	CHESTER	115	40	0.952	0.930		0	0	0	0.000	0		0	0	99.000	0.000
427	1	DELIGHT	115	40	0.978	0.941		0	0	0	0.000	0		0	0	99.000	0.000
432	0		0	0	99.000	99.000	GAR1EAST	500	40	3	0.072	0		0	0	99.000	0.000
433	0		0	0	99.000	99.000	GAR1EAST	500	40	3	0.072	0		0	0	99.000	0.000
446	3	OTIS	230	40	0.950	0.945		0	0	0	0.000	0		0	0	99.000	0.000
453	3	OTIS	230	40	0.950	0.944		0	0	0	0.000	0		0	0	99.000	0.000
476	0		0	0	99.000	99.000	ROUNDUP	230	40	1	0.069	0		0	0	99.000	0.000
483	13	CHESTER	115	40	0.952	0.912		0	0	0	0.000	0		0	0	99.000	0.000
504	11	CHESTER	115	40	0.952	0.913		0	0	0	0.000	0		0	0	99.000	0.000
510	14	CHESTER	115	40	0.952	0.903	PLEASANT	115	40	3	0.064	0		0	0	99.000	0.000
513	11	CHESTER	115	40	0.952	0.920		0	0	0	0.000	0		0	0	99.000	0.000
514	14	CHESTER	115	40	0.952	0.904	PRAIRIEB	115	40	5	0.070	0		0	0	99.000	0.000
516	1	OTIS	230	40	0.950	0.949		0	0	0	0.000	0		0	0	99.000	0.000
517	3	OTIS	230	40	0.950	0.946		0	0	0	0.000	0		0	0	99.000	0.000
522	2	GAFFNEY	115	40	0.984	0.931	GAFFNEY	115	40	1	0.053	0		0	0	99.000	0.000
606	0		0	0	99.000	99.000	GAR2EAST	500	40	1	0.056	0		0	0	99.000	0.000
607	0		0	0	99.000	99.000	GAR1EAST	500	40	1	0.056	0		0	0	99.000	0.000
719	1	HAVRE	115	63	0.990	0.929	HAVRE	115	63	1	0.061	0		0	0	99.000	0.000

BUSES with voltage violations

bus no	---name---	--kv-	area	-base-case- pu vt	BASE CASE VOLT VIOLATION	lowest -cont-case- pu vt	cont with lowest pu vt	contingencies with voltage violations
54551	RING CK7	138.0	54	0.948	***	0.948	1:	all
54796	791S701T	138.0	54	0.920	***	0.920	1:	all
54835	791S702T	138.0	54	0.926	***	0.926	1:	all
40453	GAR2EAST	500.0	40	1.083		1.011	432:	20 432 433 606
40451	GAR1EAST	500.0	40	1.083		1.011	432:	21 432 433 607
48069	CHESTER	115.0	40	0.952		0.903	510:	319 326 409 411 421 446 453 483 504 510 513 514 517
48299	OPPORTUN	115.0	40	0.953		0.905	510:	319 326 409 411 421 446 453 483 504 510 513 514 517
48306	OTIS	230.0	40	0.950		0.904	510:	319 326 376 409 411 421 446 453 483 504 510 513 514 516 517
40215	CHENEY	115.0	40	0.970		0.945	420:	337 420
40589	KALISPEL	115.0	40	1.019		0.962	392:	392
40439	FOURLKS	115.0	40	0.972		0.947	420:	420
48387	SILVRLAK	115.0	40	0.972		0.947	420:	420
48021	BARKER	115.0	40	0.967		0.919	510:	421 483 504 510 513 514
48117	EASTFARM	115.0	40	0.970		0.918	514:	421 483 504 510 513 514

48165	IRVIN	115.0	40	0.957	0.908	510:421 483 504 510 513 514
48185	LIBTYLK	115.0	40	0.966	0.919	510:421 483 504 510 513 514
48311	OTIS	115.0	40	0.968	0.920	510:421 483 504 510 513 514
47025	DELIGHT	115.0	40	0.978	0.941	427:427 522
40905	ROUNDUP	230.0	40	1.029	0.960	476:476
47033	DOWER RD	115.0	40	0.973	0.913	514:483 504 510 513 514
48111	DOWERRDT	115.0	40	0.974	0.913	514:483 504 510 513 514
47511	MOAB	115.0	40	0.974	0.918	510:483 510 514
48310	OPORTUNE	115.0	40	0.975	0.918	510:483 510 514
48329	POST FLS	115.0	40	0.974	0.913	514:483 504 510 513 514
48319	PLEASANT	115.0	40	0.981	0.917	510:510
40855	PRAIRIEB	115.0	40	0.980	0.910	514:514
40449	GAFFNEY	115.0	40	0.984	0.931	522:522
63007	HAVRE	115.0	63	0.990	0.929	719:719

MONTANA TRANSMISSION STUDY WAPA UGP JUNE 2002
G5 BASE CASE

FILE made from cont. file : [C:\uwk\mts\g5\pflow\lsbs\cLSBS-2.out]
DATE REPORT MADE - Wed May 08 10:37:58 2002

Outage 518 failed to converge
Outage 682 failed to converge
Outage 701 failed to converge

--------FROM bus--------					---------TO bus---------								base	pu	rating		
#	---name---	-kv-	ar	#	---name---	-kv-	ar	ID	--mw-	-mvar	amps	load	load	[MVA]	Cnt	# freq.
48125	"FOURLBPA"	115	40	48132	"HAL&WHIT"	115	40	"1 "	108	132	857	0.49	2.97	57.40	426	2
48303	"OROFINO "	115	40	40023	"AHSAHKA "	115	40	"1 "	-219	1	1106	0.78	1.94	113.70	419	3
48319	"PLEASANT"	115	40	48355	"RATHDRUM"	115	40	"1 "	-110	-42	621	0.72	1.44	85.80	514	3
54083	"E EDMON9"	138	54	55938	"STEL TAP"	138	54	"22"	198	1	796	1.41	1.41	135.00	1	719
40459	"GARRISON"	500	40	41057	"TAFT "	500	40	"2 "	1326	-203	1535	0.81	1.41	944.00	432	1
40459	"GARRISON"	500	40	41057	"TAFT "	500	40	"1 "	1326	-203	1535	0.81	1.41	944.00	433	1
40855	"PRAIRIEB"	115	40	48349	"RAMSEY "	115	40	"1 "	-110	-43	618	0.61	1.35	91.00	510	3
54518	"ARGYLL E"	240	54	54506	"BELLAMY4"	240	54	"04"	-81	-126	322	1.34	1.34	100.00	1	719
48253	"N LEWIST"	115	40	48075	"CLEARWTR"	115	40	"1 "	146	34	750	0.47	1.31	113.70	439	1
54503	"STELCOA9"	138	54	55938	"STEL TAP"	138	54	"22"	-197	0	795	1.30	1.30	146.00	1	719
48311	"OTIS "	115	40	47511	"MOAB "	115	40	"1 "	-97	-34	561	0.59	1.30	85.80	514	2
48051	"BURKE "	115	40	48053	"BURKAVAA"	115	40	"1 "	-86	34	465	0.71	1.26	73.90	58	3
47511	"MOAB "	115	40	48319	"PLEASANT"	115	40	"1 "	-100	-37	570	0.57	1.25	91.00	514	2
48329	"POST FLS"	115	40	40855	"PRAIRIEB"	115	40	"1 "	-93	-35	527	0.44	1.22	85.80	510	3
48051	"BURKE "	115	40	48055	"BURKAVAB"	115	40	"1 "	-82	34	448	0.67	1.21	73.90	368	2
48023	"BEACON N"	115	40	48371	"ROSSPARK"	115	40	"1 "	158	41	822	0.80	1.18	138.20	343	4
54161	"SARCEE 4"	240	54	54154	"E CALGAR"	240	54	"16"	93	-354	889	1.11	1.11	333.00	1	719
54681	"NEVIS 7"	138	54	54823	"NEVIS 9"	138	54	"1 "	33	16	37	1.10	1.10	33.30	1	719
54065	"N HOLDE9"	138	54	54062	"BARDO 7"	138	54	"74"	-78	59	392	1.06	1.06	90.00	1	720
46805	"CHELAN "	115	40	48149	"HEADWORK"	115	40	"1 "	-92	33	482	0.99	1.06	91.00	545	719
40023	"AHSAHKA "	115	40	40367	"DWORSHAK"	115	40	"1 "	-223	-9	1115	0.42	1.04	213.10	419	1
48051	"BURKE "	115	40	48217	"LUCKYFTP"	115	40	"1 "	81	-29	439	0.59	1.02	85.80	370	3
48025	"BEACON N"	230	40	48023	"BEACON N"	115	40	"1 "	272	62	279	0.60	0.97	287.00	339	1
48031	"BEACON S"	230	40	48029	"BEACON S"	115	40	"1 "	273	61	279	0.60	0.97	287.00	339	1
54542	"RBW LAK7"	138	54	54835	"791S702T"	138	54	"1 "	20	-9	22	0.96	0.96	24.00	1	719
48153	"HECLAT "	115	40	48041	"BIGCREEK"	115	40	"1 "	75	-31	412	0.53	0.96	85.80	370	2
48217	"LUCKYFTP"	115	40	48153	"HECLAT "	115	40	"1 "	75	-31	412	0.53	0.96	85.80	370	2

low voltage violations							delta voltage violations						high voltage violations					
CNT	freq	---name---	-kv-	ar	-base-case- pu vt	-cont-case- pu vt	---name---	-kv-	ar	freq	delta V	freq	---name---	-kv-	ar	-base-case- pu vt	-cont-case- pu vt
20	0		0	0	99.000	99.000	GAR2EAST	500	40	1	0.060	0		0	0	99.000	0.000
21	0		0	0	99.000	99.000	GAR1EAST	500	40	1	0.060	0		0	0	99.000	0.000
314	0		0	0	99.000	99.000	AHSAHKA	115	40	1	0.051	0		0	0	99.000	0.000
319	3	OTIS	230	40	0.950	0.946		0	0	0	0.000	0		0	0	99.000	0.000
326	3	OTIS	230	40	0.950	0.946		0	0	0	0.000	0		0	0	99.000	0.000
337	1	CHENEY	115	40	0.970	0.948		0	0	0	0.000	0		0	0	99.000	0.000
376	1	OTIS	230	40	0.950	0.949		0	0	0	0.000	0		0	0	99.000	0.000
392	0		0	0	99.000	99.000	KALISPEL	115	40	1	0.057	0		0	0	99.000	0.000
409	3	OTIS	230	40	0.950	0.946		0	0	0	0.000	0		0	0	99.000	0.000
411	3	OTIS	230	40	0.950	0.947		0	0	0	0.000	0		0	0	99.000	0.000
420	3	CHENEY	115	40	0.970	0.945		0	0	0	0.000	0		0	0	99.000	0.000
421	8	CHESTER	115	40	0.952	0.930		0	0	0	0.000	0		0	0	99.000	0.000
427	1	DELIGHT	115	40	0.978	0.941		0	0	0	0.000	0		0	0	99.000	0.000
432	0		0	0	99.000	99.000	GAR1EAST	500	40	3	0.072	0		0	0	99.000	0.000
433	0		0	0	99.000	99.000	GAR1EAST	500	40	3	0.072	0		0	0	99.000	0.000
446	3	OTIS	230	40	0.950	0.945		0	0	0	0.000	0		0	0	99.000	0.000
453	3	OTIS	230	40	0.950	0.944		0	0	0	0.000	0		0	0	99.000	0.000
476	0		0	0	99.000	99.000	ROUNDUP	230	40	1	0.069	0		0	0	99.000	0.000
483	13	CHESTER	115	40	0.952	0.912		0	0	0	0.000	0		0	0	99.000	0.000
504	11	CHESTER	115	40	0.952	0.913		0	0	0	0.000	0		0	0	99.000	0.000
510	14	CHESTER	115	40	0.952	0.903	PLEASANT	115	40	3	0.064	0		0	0	99.000	0.000
513	11	CHESTER	115	40	0.952	0.920		0	0	0	0.000	0		0	0	99.000	0.000
514	14	CHESTER	115	40	0.952	0.904	PRAIRIEB	115	40	5	0.070	0		0	0	99.000	0.000
516	1	OTIS	230	40	0.950	0.949		0	0	0	0.000	0		0	0	99.000	0.000
517	3	OTIS	230	40	0.950	0.946		0	0	0	0.000	0		0	0	99.000	0.000
522	2	GAFFNEY	115	40	0.984	0.931	GAFFNEY	115	40	1	0.053	0		0	0	99.000	0.000
606	0		0	0	99.000	99.000	GAR2EAST	500	40	1	0.056	0		0	0	99.000	0.000
607	0		0	0	99.000	99.000	GAR1EAST	500	40	1	0.056	0		0	0	99.000	0.000
719	1	HAVRE	115	63	0.990	0.929	HAVRE	115	63	1	0.061	0		0	0	99.000	0.000

BUSES with voltage violations

bus no	---name---	--kv-	area	-base-case- pu vt	BASE CASE VOLT VIOLATION	lowest -cont-case- pu vt	cont with lowest pu vt	contingencies with voltage violations
54551	RING CK7	138.0	54	0.948	***	0.948	1:	all
54796	791S701T	138.0	54	0.920	***	0.920	1:	all
54835	791S702T	138.0	54	0.926	***	0.926	1:	all
40453	GAR2EAST	500.0	40	1.083		1.011	432:	20 432 433 606
40451	GAR1EAST	500.0	40	1.083		1.011	432:	21 432 433 607
48069	CHESTER	115.0	40	0.952		0.903	510:	319 326 409 411 421 446 453 483 504 510 513 514 517
48299	OPPORTUN	115.0	40	0.953		0.905	510:	319 326 409 411 421 446 453 483 504 510 513 514 517
48306	OTIS	230.0	40	0.950		0.904	510:	319 326 376 409 411 421 446 453 483 504 510 513 514 516 517
40215	CHENEY	115.0	40	0.970		0.945	420:	337 420
40589	KALISPEL	115.0	40	1.019		0.962	392:	392
40439	FOURLKS	115.0	40	0.972		0.947	420:	420
48387	SILVRLAK	115.0	40	0.972		0.947	420:	420
48021	BARKER	115.0	40	0.967		0.919	510:	421 483 504 510 513 514
48117	EASTFARM	115.0	40	0.970		0.918	514:	421 483 504 510 513 514
48165	IRVIN	115.0	40	0.957		0.908	510:	421 483 504 510 513 514
48185	LIBTYLK	115.0	40	0.966		0.919	510:	421 483 504 510 513 514
48311	OTIS	115.0	40	0.968		0.920	510:	421 483 504 510 513 514
47025	DELIGHT	115.0	40	0.978		0.941	427:	427 522
40905	ROUNDUP	230.0	40	1.029		0.960	476:	476
47033	DOWER RD	115.0	40	0.973		0.913	514:	483 504 510 513 514
48111	DOWERRDT	115.0	40	0.974		0.913	514:	483 504 510 513 514

47511	MOAB	115.0	40	0.974	0.918	510:483 510 514
48310	OPORTUNE	115.0	40	0.975	0.918	510:483 510 514
48329	POST FLS	115.0	40	0.974	0.913	514:483 504 510 513 514
48319	PLEASANT	115.0	40	0.981	0.917	510:510
40855	PRAIRIEB	115.0	40	0.980	0.910	514:514
40449	GAFFNEY	115.0	40	0.984	0.931	522:522
63007	HAVRE	115.0	63	0.990	0.929	719:719

MONTANA TRANSMISSION STUDY WAPA UGP JUNE 2002
G5 BASE CASE

FILE made from cont. file : [C:\uwk\mts\g5\pflow\hsbs\cHSBS-1.out]
DATE REPORT MADE - Wed May 08 10:38:09 2002

Outage 682 failed to converge
Outage 701 failed to converge

--------FROM bus--------					---------TO bus---------										base	pu	rating		
#	---name---	-kv-	ar	#	---name---	-kv-	ar	ID	--mw-	-mvar	amps	load	load	[MVA]	Cnt	# freq.
48125	"FOURLBPA"	115	40	48132	"HAL&WHIT"	115	40	"1 "	107	133	856	0.45	2.97	57.40	426	2
48319	"PLEASANT"	115	40	48355	"RATHDRUM"	115	40	"1 "	-153	-42	864	1.03	2.01	85.80	514	717
48303	"OROFINO "	115	40	40023	"AHSAHKA "	115	40	"1 "	-219	-2	1107	0.82	1.94	113.70	419	3
40855	"PRAIRIEB"	115	40	48349	"RAMSEY "	115	40	"1 "	-154	-48	880	0.78	1.93	91.00	510	3
48329	"POST FLS"	115	40	40855	"PRAIRIEB"	115	40	"1 "	-133	-35	771	0.59	1.79	85.80	510	2
47511	"MOAB "	115	40	48319	"PLEASANT"	115	40	"1 "	-139	-33	793	0.83	1.74	91.00	514	5
48025	"BEACON N"	230	40	40090	"BELL SO "	230	40	"5 "	-492	-141	1268	0.79	1.38	366.50	329	4
48023	"BEACON N"	115	40	48371	"ROSSPARK"	115	40	"1 "	169	46	882	0.94	1.27	138.20	343	22
48253	"N LEWIST"	115	40	48075	"CLEARWTR"	115	40	"1 "	142	16	719	0.26	1.26	113.70	439	1
48311	"OTIS "	115	40	47511	"MOAB "	115	40	"1 "	-93	-17	532	0.45	1.24	85.80	514	2
48117	"EASTFARM"	115	40	48329	"POST FLS"	115	40	"1 "	-118	-23	683	0.31	1.23	110.90	510	2
65860	"JFRSNPHA"	161	65	65850	"JEFFERSN"	161	65	"1 "	82	-74	110	0.87	1.17	100.00	420	7
48159	"HUETTER "	115	40	48355	"RATHDRUM"	115	40	"1 "	-118	-40	654	0.74	1.17	110.90	510	6
48311	"OTIS "	115	40	48117	"EASTFARM"	115	40	"1 "	-111	-19	648	0.26	1.16	110.90	510	2
65560	"FISHCREK"	161	65	65670	"GOSHEN "	161	65	"1 "	-165	40	602	0.95	1.14	148.10	625	17
48279	"NORTHWES"	115	40	48461	"WEST "	115	40	"1 "	-99	-27	520	0.92	1.12	92.80	688	19
40021	"ADDY 2 "	230	40	40017	"ADDY "	115	40	"1 "	178	34	181	0.56	1.11	163.00	312	1
65560	"FISHCREK"	161	65	65690	"GRACE "	161	65	"1 "	162	-42	591	0.92	1.11	148.00	625	3
40145	"BOUNDARY"	230	40	40143	"BOUNDARY"	115	40	"1 "	135	17	136	0.66	1.09	125.00	313	3
48258	"NEWPORTT"	115	40	48043	"BLANCHRD"	115	40	"1 "	124	-4	616	0.73	1.08	113.70	342	4
48357	"RATHDRUM"	230	40	48355	"RATHDRUM"	115	40	"1 "	217	122	249	0.49	1.08	230.00	703	1
48043	"BLANCHRD"	115	40	47505	"HOODOO "	115	40	"1 "	121	-9	611	0.72	1.07	113.70	342	4
47505	"HOODOO "	115	40	48403	"SPIRITLT"	115	40	"1 "	118	-15	603	0.71	1.07	111.90	342	4
73075	"GREYBULL"	115	73	73123	"LOVELL "	115	73	"1 "	-101	35	582	0.55	1.07	109.00	620	1
47027	"DIAM LAK"	115	40	40907	"SACHEEN "	115	40	"1 "	-140	15	695	0.33	1.05	131.50	342	1
40023	"AHSAHKA "	115	40	40367	"DWORSHAK"	115	40	"1 "	-224	-13	1120	0.45	1.05	213.10	419	1
48403	"SPIRITLT"	115	40	48017	"ATHOLTAP"	115	40	"1 "	115	-20	592	0.68	1.04	113.70	342	1
54189	"ENMX2SD9"	138	54	54154	"E CALGAR"	240	54	"T1"	-233	201	308	1.03	1.03	300.00	1	720
40088	"BELL MI "	230	40	40087	"BELL BPA"	115	40	"1 "	255	17	256	0.87	1.03	249.00	420	11
48258	"NEWPORTT"	115	40	47086	"PINE ST "	115	40	"1 "	-125	3	624	0.70	1.03	120.10	342	1
48155	"HERN "	115	40	48159	"HUETTER "	115	40	"1 "	-104	-34	573	0.60	1.03	110.90	510	2
48349	"RAMSEY "	115	40	48155	"HERN "	115	40	"1 "	-102	-33	567	0.59	1.02	110.90	510	1
46805	"CHELAN "	115	40	48149	"HEADWORK"	115	40	"1 "	-88	32	462	0.91	1.02	91.00	545	1
60085	"BRIDGER "	345	60	60060	"BORAH "	345	60	"1 "	915	242	1509	0.78	1.01	892.20	624	1
62004	"ANACOND "	230	62	62005	"ANACOND "	161	62	"2 "	190	67	201	0.58	1.01	200.00	633	1
62004	"ANACOND "	230	62	62005	"ANACOND "	161	62	"1 "	190	67	201	0.58	1.01	200.00	634	1
48131	"GARDENSP"	115	40	40525	"HAYFORD "	115	40	"1 "	55	-1	288	0.97	1.00	57.40	337	717
54542	"RBW LAK7"	138	54	54796	"791S701T"	138	54	"1 "	17	17	24	1.00	1.00	24.00	1	720
54542	"RBW LAK7"	138	54	54835	"791S702T"	138	54	"1 "	18	16	24	1.00	1.00	24.00	1	720
65690	"GRACE "	161	65	65695	"GRACE "	138	65	"1 "	158	-50	166	0.82	1.00	168.00	625	1
40087	"BELL BPA"	115	40	48449	"WAIKIKIT"	115	40	"1 "	108	29	557	0.84	0.99	111.90	328	5
40459	"GARRISON"	500	40	41057	"TAFT "	500	40	"2 "	918	-312	1082	0.59	0.99	944.00	432	1
40459	"GARRISON"	500	40	41057	"TAFT "	500	40	"1 "	918	-312	1082	0.59	0.99	944.00	433	1
60085	"BRIDGER "	345	60	60190	"KINPORT "	345	60	"1 "	901	237	1485	0.68	0.99	892.20	624	1
65220	"BRIDGER "	230	65	66315	"ROCKSPGS"	230	65	"1 "	428	37	1057	0.75	0.99	423.90	624	1
65193	"BONANZA "	345	65	65995	"MONA "	345	65	"1 "	647	29	1071	0.95	0.98	650.00	624	706
54110	"RED DEE9"	138	54	54144	"RED DEE4"	240	54	"T1"	-40	-171	175	0.98	0.98	200.00	1	720
48017	"ATHOLTAP"	115	40	40953	"SCARCELO"	115	40	"1 "	107	-23	557	0.62	0.98	113.70	342	1
60275	"OXBOW "	230	60	60095	"BROWNLEE"	230	60	"1 "	468	-57	1147	0.82	0.96	478.00	443	1
48165	"IRVIN "	115	40	48299	"OPPORTUN"	115	40	"1 "	49	16	275	0.34	0.96	57.40	482	1
60291	"PINGREE "	138	60	60125	"DON "	138	60	"1 "	-130	-32	567	0.26	0.96	141.00	622	1

low voltage violations							delta voltage violations							high voltage violations					
CNT	freq	---name---	-kv-	ar	-base- pu vt	-cont- -case- pu vt	---name---	-kv-	ar	freq	delta V	freq	---name---	-kv-	ar	-base- pu vt	-cont- -case- pu vt
2	1	BIGGRASS	161	65	0.963	0.939		0	0	0	0.000	0		0	0	99.000	0.000
8	1	TAFTAUTO	115	62	0.980	0.935		0	0	0	0.000	0		0	0	99.000	0.000
86	0		0	0	99.000	99.000	EMIGT AT	161	62	3	0.057	0		0	0	99.000	0.000
314	0		0	0	99.000	99.000	AHSAHKA	115	40	1	0.063	0		0	0	99.000	0.000
317	3	BARKER	115	40	0.954	0.947		0	0	0	0.000	0		0	0	99.000	0.000
319	4	BARKER	115	40	0.954	0.947		0	0	0	0.000	0		0	0	99.000	0.000
326	4	BARKER	115	40	0.954	0.947		0	0	0	0.000	0		0	0	99.000	0.000
329	2	BARKER	115	40	0.954	0.949		0	0	0	0.000	0		0	0	99.000	0.000
330	31	BARKER	115	40	0.954	0.873	CHESTER	115	40	36	0.082	0		0	0	99.000	0.000
337	12	LIBTYLK	115	40	0.954	0.932		0	0	0	0.000	0		0	0	99.000	0.000
342	2	BARKER	115	40	0.954	0.948		0	0	0	0.000	0		0	0	99.000	0.000
358	3	LIBTYLK	115	40	0.954	0.947		0	0	0	0.000	0		0	0	99.000	0.000
373	26	LIBTYLK	115	40	0.954	0.904	LAKEVIEW	230	40	7	0.066	0		0	0	99.000	0.000
403	0		0	0	99.000	99.000	WAGNERLK	115	40	2	0.058	0		0	0	99.000	0.000
409	4	BARKER	115	40	0.954	0.947		0	0	0	0.000	0		0	0	99.000	0.000
411	4	BARKER	115	40	0.954	0.946		0	0	0	0.000	0		0	0	99.000	0.000
419	8	PTRSNFLT	230	62	0.972	0.920	PTRSNFLT	230	62	1	0.052	0		0	0	99.000	0.000
420	12	PTRSNFLT	230	62	0.972	0.912	PTRSNFLT	230	62	2	0.060	0		0	0	99.000	0.000
421	5	BARKER	115	40	0.954	0.934		0	0	0	0.000	0		0	0	99.000	0.000
427	2	DELIGHT	115	40	0.965	0.895	DELIGHT	115	40	2	0.070	0		0	0	99.000	0.000
432	6	PTRSNFLT	230	62	0.972	0.937	GAR1EAST	500	40	2	0.061	0		0	0	99.000	0.000
433	6	PTRSNFLT	230	62	0.972	0.937	GAR1EAST	500	40	2	0.061	0		0	0	99.000	0.000
443	2	PTRSNFLT	230	62	0.972	0.944		0	0	0	0.000	0		0	0	99.000	0.000
446	6	BARKER	115	40	0.954	0.946		0	0	0	0.000	0		0	0	99.000	0.000
452	0		0	0	99.000	99.000	HOT SPR	500	40	1	0.051	0		0	0	99.000	0.000
453	8	BARKER	115	40	0.954	0.943		0	0	0	0.000	0		0	0	99.000	0.000
460	27	BARKER	115	40	0.954	0.901	CHESTER	115	40	23	0.054	0		0	0	99.000	0.000
467	1	DELIGHT	115	40	0.965	0.945		0	0	0	0.000	0		0	0	99.000	0.000
475	2	DELIGHT	115	40	0.965	0.945		0	0	0	0.000	0		0	0	99.000	0.000
476	2	ROUNDUP	230	40	1.011	0.888	ROUNDUP	230	40	3	0.123	0		0	0	99.000	0.000
482	2	BARKER	115	40	0.954	0.949		0	0	0	0.000	0		0	0	99.000	0.000
483	9	MOAB	115	40	0.959	0.890	MOAB	115	40	10	0.069	0		0	0	99.000	0.000
488	3	LIBTYLK	115	40	0.954	0.947		0	0	0	0.000	0		0	0	99.000	0.000
504	4	BARKER	115	40	0.954	0.946		0	0	0	0.000	0		0	0	99.000	0.000
510	10	PLEASANT	115	40	0.966	0.866	PLEASANT	115	40	14	0.100	0		0	0	99.000	0.000

513	9	DOWER RD	115	40	0.959	0.911		0	0	0	0.000	0		0	0	99.000	0.000
514	10	PRAIRIEB	115	40	0.966	0.877	PRAIRIEB	115	40	14	0.089	0		0	0	99.000	0.000
517	5	BARKER	115	40	0.954	0.946		0	0	0	0.000	0		0	0	99.000	0.000
522	3	GAFFNEY	115	40	0.981	0.876	GAFFNEY	115	40	3	0.105	0		0	0	99.000	0.000
550	1	BIGGRASS	161	65	0.963	0.946		0	0	0	0.000	0		0	0	99.000	0.000
552	5	AEC IPC	138	65	0.979	0.937		0	0	0	0.000	0		0	0	99.000	0.000
568	2	BGEORGE	115	73	0.984	0.946		0	0	0	0.000	0		0	0	99.000	0.000
569	8	BGEORGE	115	73	0.984	0.935	FRANNIE	230	65	8	0.063	0		0	0	99.000	0.000
577	1	BIGGRASS	161	65	0.963	0.942		0	0	0	0.000	0		0	0	99.000	0.000
609	1	BIGGRASS	161	65	0.963	0.941		0	0	0	0.000	0		0	0	99.000	0.000
620	7	BGEORGE	115	73	0.984	0.905	BGEORGE	115	73	9	0.079	0		0	0	99.000	0.000
622	0		0	0	99.000	99.000	BLACKFT	161	60	1	0.053	0		0	0	99.000	0.000
624	3	BIGGRASS	161	65	0.963	0.923		0	0	0	0.000	0		0	0	99.000	0.000
687	12	BARKER	115	40	0.954	0.933		0	0	0	0.000	0		0	0	99.000	0.000
696	10	DELIGHT	115	40	0.965	0.928	HATWAI	230	40	6	0.073	0		0	0	99.000	0.000
703	15	LIBTYLK	115	40	0.954	0.924		0	0	0	0.000	0		0	0	99.000	0.000
704	9	BARKER	115	40	0.954	0.937		0	0	0	0.000	0		0	0	99.000	0.000
721	2	HAMLTNMA	161	62	0.991	0.946		0	0	0	0.000	0		0	0	99.000	0.000

BUSES with voltage violations

bus no	---name---	--kv-	area	-base- -case- pu vt	BASE CASE VOLT VIOLATION	lowest -cont- -case- pu vt	cont with lowest pu vt	contingencies with voltage violations
48069	CHESTER	115.0	40	0.945	***	0.857	510:	all
48165	IRVIN	115.0	40	0.949	***	0.863	510:	all
48310	OPORTUNE	115.0	40	0.949	***	0.861	510:	all
48299	OPPORTUN	115.0	40	0.947	***	0.859	510:	all
48306	OTIS	230.0	40	0.938	***	0.858	510:	all
70249	LAJUNTAW	115.0	70	0.929	***	0.928	20:	all
65155	BIGGRASS	161.0	65	0.963		0.922	420:	2 419 420 432 433 443 550 577 609 624
62006	TAFTAUTO	115.0	62	0.980		0.935	8:	8
62108	CLYDE P	161.0	62	1.015		0.959	86:	86
62257	EMIGT AT	161.0	62	1.019		0.962	86:	86
40023	AHSAHKA	115.0	40	1.028		0.965	314:	314
48021	BARKER	115.0	40	0.954		0.872	510:	317 319 326 329 330 337 342 358 373 409 411 419 420 421 432 433 446 453 460 482 483 488 504 510 513 514 517 687 696 703 704
48185	LIBTYLK	115.0	40	0.954		0.872	510:	317 319 326 329 330 337 342 358 373 409 411 419 420 421 432 433 446 453 460 482 483 488 504 510 513 514 517 687 696 703 704
48311	OTIS	115.0	40	0.956		0.874	330:	317 319 326 330 337 358 373 409 411 420 421 432 433 446 453 460 483 488 504 510 513 514 517 687 696 703 704
48117	EASTFARM	115.0	40	0.957		0.876	330:	319 326 330 337 373 409 411 420 421 446 453 460 483 504 510 513 514 517 687 703 704
48011	APPLETAP	115.0	40	0.976		0.900	330:	330 373 460 703
48013	APPLEWAY	115.0	40	0.976		0.900	330:	330 373 460 703
40067	ATHOL	115.0	40	0.993		0.935	330:	330
48017	ATHOLTAP	115.0	40	0.995		0.938	330:	330
48019	AVONDALE	115.0	40	0.988		0.912	330:	330 373 460
48045	BLUECRK	115.0	40	0.974		0.897	330:	330 373 460 703
48067	CDA	115.0	40	0.974		0.897	330:	330 373 460 703
48093	DALTON A	115.0	40	0.978		0.902	330:	330 373 460
48095	DALTON2T	115.0	40	0.981		0.905	330:	330 373 460
48097	DALTONT	115.0	40	0.978		0.902	330:	330 373 460
47033	DOWER RD	115.0	40	0.959		0.879	330:	330 337 373 446 453 460 483 510 513 514 517 687 703 704
48111	DOWERRDT	115.0	40	0.959		0.880	330:	330 337 373 446 453 460 483 510 513 514 687 703 704
48155	HERN	115.0	40	0.979		0.903	330:	330 373 460
48159	HUETTER	115.0	40	0.981		0.904	330:	330 373 460
47511	MOAB	115.0	40	0.959		0.868	510:	330 337 373 420 421 453 460 483 510 513 514 687 703 704
48319	PLEASANT	115.0	40	0.966		0.866	510:	330 337 373 460 510 513 514 687 703 704
48329	POST FLS	115.0	40	0.959		0.880	330:	330 337 373 453 460 483 510 513 514 687 703 704
40855	PRAIRIEB	115.0	40	0.966		0.877	514:	330 337 373 460 483 510 514 687 703
48349	RAMSEY	115.0	40	0.976		0.899	330:	330 373 460 703
48351	RATHBUS1	115.0	40	0.994		0.919	330:	330 373 460
48353	RATHBUS2	115.0	40	0.994		0.919	330:	330 373 460
48356	RATHDRME	115.0	40	0.994		0.919	330:	330 373 460
48355	RATHDRUM	115.0	40	0.994		0.919	330:	330 373 460
48357	RATHDRUM	230.0	40	0.993		0.920	330:	330 373 460
40953	SCARCELO	115.0	40	0.994		0.928	330:	330 460
48401	SPIRITLK	115.0	40	0.996		0.942	330:	330
48403	SPIRITLT	115.0	40	0.996		0.942	330:	330
40215	CHENEY	115.0	40	0.974		0.948	337:	337 687
48387	SILVRLAK	115.0	40	0.973		0.948	337:	337 687
48179	LAKEVIEW	230.0	40	1.016		0.950	373:	373
41125	WAGNERLK	115.0	40	1.014		0.956	403:	403
41127	WAGNERLT	115.0	40	1.025		0.967	403:	403
62030	PTRSNFLT	230.0	62	0.972		0.912	420:	419 420 432 433 443
62084	DILLON S	161.0	62	0.976		0.931	420:	419 420 432 433 624
47025	DELIGHT	115.0	40	0.965		0.892	522:	419 420 427 467 475 522 696
47073	RALSTONB	115.0	40	0.971		0.912	522:	419 420 427 475 522 696
65025	AMPS	230.0	65	0.983		0.931	420:	419 420
62158	SHERDNMT	161.0	62	0.981		0.943	420:	420
40451	GAR1EAST	500.0	40	1.095		1.034	432:	432 433
40453	GAR2EAST	500.0	40	1.095		1.034	432:	432 433
60192	LADD	230.0	60	1.017		0.950	476:	476
40621	LAGRANDE	230.0	40	1.007		0.926	476:	476
40905	ROUNDUP	230.0	40	1.011		0.888	476:	476
40449	GAFFNEY	115.0	40	0.981		0.876	522:	522
65010	AEC IPC	138.0	65	0.979		0.937	552:	552
65015	AEC SCOV	138.0	65	0.980		0.937	552:	552
65065	ANTLOP 1	138.0	65	0.980		0.938	552:	552
65070	ANTLOP 2	138.0	65	0.980		0.938	552:	552
65080	ANTLOPE	161.0	65	0.982		0.940	552:	552
73022	BGEORGE	115.0	73	0.984		0.905	620:	568 569 620
73534	MEETSETP	115.0	73	0.990		0.914	620:	568 569 620
65575	FRANNIE	230.0	65	1.004		0.941	569:	569
65620	GARLAND	230.0	65	1.001		0.942	569:	569
66145	OREBASIN	230.0	65	0.998		0.947	569:	569
73041	CARTERMT	115.0	73	0.995		0.927	620:	569 620
73075	GREYBULL	115.0	73	1.000		0.921	620:	569 620
73340	NAHNEJEN	115.0	73	0.998		0.919	620:	569 620
66720	WORLAND	115.0	65	1.018		0.960	620:	620
73019	BASIN	115.0	73	1.011		0.937	620:	620
73123	LOVELL	115.0	73	1.001		0.930	620:	620
73222	WORLANTP	115.0	73	1.016		0.955	620:	620
65860	JFRSNPHA	161.0	65	0.981		0.946	624:	624
47501	ARMSTRNG	115.0	40	1.002		0.945	696:	696

40149	BRINKENS	115.0	40	0.997	0.939	696:696
47503	CHAMBERS	115.0	40	1.001	0.946	696:696
40239	CLARKSTN	115.0	40	1.005	0.949	696:696
48075	CLEARWTR	115.0	40	1.004	0.948	696:696
40519	HATWAI	230.0	40	1.041	0.968	696:696
62311	HAMLTNMA	161.0	62	0.991	0.946	721:721
62312	HAMLTNMB	161.0	62	0.991	0.946	721:721

MONTANA TRANSMISSION STUDY WAPA UGP JUNE 2002
G5 BASE CASE

FILE made from cont. file : [C:\uwk\mts\g5\pflow\hsbs\cHSBS-2.out]
DATE REPORT MADE - Wed May 08 10:38:20 2002

Outage 682 failed to converge
Outage 701 failed to converge

--------FROM bus--------					---------TO bus---------									base	pu	rating		
#	---name---	-kv-	ar	#	---name---	-kv-	ar	ID	--mw-	-mvar	amps	load	load	[MVA]	Cnt	# freq.
48125	"FOURLBPA"	115	40	48132	"HAL&WHIT"	115	40	"1 "	107	133	856	0.45	2.97	57.40	426	2
48319	"PLEASANT"	115	40	48355	"RATHDRUM"	115	40	"1 "	-153	-42	864	1.03	2.01	85.80	514	717
48303	"OROFINO "	115	40	40023	"AHSAHKA "	115	40	"1 "	-219	-2	1107	0.82	1.94	113.70	419	3
40855	"PRAIRIEB"	115	40	48349	"RAMSEY "	115	40	"1 "	-154	-48	880	0.78	1.93	91.00	510	3
48329	"POST FLS"	115	40	40855	"PRAIRIEB"	115	40	"1 "	-133	-35	771	0.59	1.79	85.80	510	2
47511	"MOAB "	115	40	48319	"PLEASANT"	115	40	"1 "	-139	-33	793	0.83	1.74	91.00	514	5
48025	"BEACON N"	230	40	40090	"BELL SO "	230	40	"5 "	-492	-141	1268	0.79	1.38	366.50	329	4
48023	"BEACON N"	115	40	48371	"ROSSPARK"	115	40	"1 "	169	46	882	0.94	1.27	138.20	343	22
48253	"N LEWIST"	115	40	48075	"CLEARWTR"	115	40	"1 "	142	16	719	0.26	1.26	113.70	439	1
48311	"OTIS "	115	40	47511	"MOAB "	115	40	"1 "	-93	-17	532	0.45	1.24	85.80	514	2
48117	"EASTFARM"	115	40	48329	"POST FLS"	115	40	"1 "	-118	-23	683	0.31	1.23	110.90	510	2
65860	"JFRSNPHA"	161	65	65850	"JEFFERSN"	161	65	"1 "	82	-74	110	0.87	1.17	100.00	420	7
48159	"HUETTER "	115	40	48355	"RATHDRUM"	115	40	"1 "	-118	-40	654	0.74	1.17	110.90	510	6
48311	"OTIS "	115	40	48117	"EASTFARM"	115	40	"1 "	-111	-19	648	0.26	1.16	110.90	510	2
48279	"NORTHWES"	115	40	48461	"WEST "	115	40	"1 "	-99	-27	520	0.92	1.12	92.80	688	19
40145	"BOUNDARY"	230	40	40143	"BOUNDARY"	115	40	"1 "	135	17	136	0.66	1.09	125.00	313	3
48258	"NEWPORTT"	115	40	48043	"BLANCHRD"	115	40	"1 "	124	-4	616	0.73	1.08	113.70	342	4
48357	"RATHDRUM"	230	40	48355	"RATHDRUM"	115	40	"1 "	217	122	249	0.49	1.08	230.00	703	1
48043	"BLANCHRD"	115	40	47505	"HOODOO "	115	40	"1 "	121	-9	611	0.72	1.07	113.70	342	4
47505	"HOODOO "	115	40	48403	"SPIRITLT"	115	40	"1 "	118	-15	603	0.71	1.07	111.90	342	4
47027	"DIAM LAK"	115	40	40907	"SACHEEN "	115	40	"1 "	-140	15	695	0.33	1.05	131.50	342	1
40023	"AHSAHKA "	115	40	40367	"DWORSHAK"	115	40	"1 "	-224	-13	1120	0.45	1.05	213.10	419	1
48403	"SPIRITLT"	115	40	48017	"ATHOLTAP"	115	40	"1 "	115	-20	592	0.68	1.04	113.70	342	1
54189	"ENMX2SD9"	138	54	54154	"E CALGAR"	240	54	"T1"	-233	201	308	1.03	1.03	300.00	1	720
48258	"NEWPORTT"	115	40	47086	"PINE ST "	115	40	"1 "	-125	3	624	0.70	1.03	120.10	342	1
48155	"HERN "	115	40	48159	"HUETTER "	115	40	"1 "	-104	-34	573	0.60	1.03	110.90	510	2
48349	"RAMSEY "	115	40	48155	"HERN "	115	40	"1 "	-102	-33	567	0.59	1.02	110.90	510	1
46805	"CHELAN "	115	40	48149	"HEADWORK"	115	40	"1 "	-88	32	462	0.91	1.02	91.00	545	1
48131	"GARDENSP"	115	40	40525	"HAYFORD "	115	40	"1 "	55	-1	288	0.97	1.00	57.40	337	717
54542	"RBW LAK7"	138	54	54796	"791S701T"	138	54	"1 "	17	17	24	1.00	1.00	24.00	1	720
54542	"RBW LAK7"	138	54	54835	"791S702T"	138	54	"1 "	18	16	24	1.00	1.00	24.00	1	720
65690	"GRACE "	161	65	65695	"GRACE "	138	65	"1 "	158	-50	166	0.82	1.00	168.00	625	1
40087	"BELL BPA"	115	40	48449	"WAIKIKIT"	115	40	"1 "	108	29	557	0.84	0.99	111.90	328	5
40459	"GARRISON"	500	40	41057	"TAFT "	500	40	"2 "	918	-312	1082	0.59	0.99	944.00	432	1
40459	"GARRISON"	500	40	41057	"TAFT "	500	40	"1 "	918	-312	1082	0.59	0.99	944.00	433	1
54110	"RED DEE9"	138	54	54144	"RED DEE4"	240	54	"T1"	-40	-171	175	0.98	0.98	200.00	1	720
48017	"ATHOLTAP"	115	40	40953	"SCARCELO"	115	40	"1 "	107	-23	557	0.62	0.98	113.70	342	1
48165	"IRVIN "	115	40	48299	"OPPORTUN"	115	40	"1 "	49	16	275	0.34	0.96	57.40	482	1
65560	"FISHCREK"	161	65	65670	"GOSHEN "	161	65	"1 "	-165	40	602	0.80	0.96	176.00	625	1

low voltage violations							delta voltage violations							high voltage violations					
					-base-	-cont-											-base-	-cont-
					-case-	-case-						delta					-case-	-case-
CNT	freq	---name---	-kv-	ar	pu vt	pu vt	---name---	-kv-	ar	freq	V	freq	---name---	-kv-	ar	pu vt	pu vt
2	1	BIGGRASS	161	65	0.963	0.939		0	0	0	0.000	0		0	0	99.000	0.000
8	1	TAFTAUTO	115	62	0.980	0.935		0	0	0	0.000	0		0	0	99.000	0.000
86	0		0	0	99.000	99.000	EMIGT AT	161	62	3	0.057	0		0	0	99.000	0.000
314	0		0	0	99.000	99.000	AHSAHKA	115	40	1	0.063	0		0	0	99.000	0.000
317	3	BARKER	115	40	0.954	0.947		0	0	0	0.000	0		0	0	99.000	0.000
319	4	BARKER	115	40	0.954	0.947		0	0	0	0.000	0		0	0	99.000	0.000
326	4	BARKER	115	40	0.954	0.947		0	0	0	0.000	0		0	0	99.000	0.000
329	2	BARKER	115	40	0.954	0.949		0	0	0	0.000	0		0	0	99.000	0.000
330	31	BARKER	115	40	0.954	0.873	CHESTER	115	40	36	0.082	0		0	0	99.000	0.000
337	12	LIBTYLK	115	40	0.954	0.932		0	0	0	0.000	0		0	0	99.000	0.000
342	2	BARKER	115	40	0.954	0.948		0	0	0	0.000	0		0	0	99.000	0.000
358	3	LIBTYLK	115	40	0.954	0.947		0	0	0	0.000	0		0	0	99.000	0.000
373	26	LIBTYLK	115	40	0.954	0.904	LAKEVIEW	230	40	7	0.066	0		0	0	99.000	0.000
403	0		0	0	99.000	99.000	WAGNERLK	115	40	2	0.058	0		0	0	99.000	0.000
409	4	BARKER	115	40	0.954	0.947		0	0	0	0.000	0		0	0	99.000	0.000
411	4	BARKER	115	40	0.954	0.946		0	0	0	0.000	0		0	0	99.000	0.000
419	8	PTRSNFLT	230	62	0.972	0.920	PTRSNFLT	230	62	1	0.052	0		0	0	99.000	0.000
420	12	PTRSNFLT	230	62	0.972	0.912	PTRSNFLT	230	62	2	0.060	0		0	0	99.000	0.000
421	5	BARKER	115	40	0.954	0.934		0	0	0	0.000	0		0	0	99.000	0.000
427	2	DELIGHT	115	40	0.965	0.895	DELIGHT	115	40	2	0.070	0		0	0	99.000	0.000
432	6	PTRSNFLT	230	62	0.972	0.937	GAR1EAST	500	40	2	0.061	0		0	0	99.000	0.000
433	6	PTRSNFLT	230	62	0.972	0.937	GAR1EAST	500	40	2	0.061	0		0	0	99.000	0.000
443	2	PTRSNFLT	230	62	0.972	0.944		0	0	0	0.000	0		0	0	99.000	0.000
446	6	BARKER	115	40	0.954	0.946		0	0	0	0.000	0		0	0	99.000	0.000
452	0		0	0	99.000	99.000	HOT SPR	500	40	1	0.051	0		0	0	99.000	0.000
453	8	BARKER	115	40	0.954	0.943		0	0	0	0.000	0		0	0	99.000	0.000
460	27	BARKER	115	40	0.954	0.901	CHESTER	115	40	23	0.054	0		0	0	99.000	0.000
467	1	DELIGHT	115	40	0.965	0.945		0	0	0	0.000	0		0	0	99.000	0.000
475	2	DELIGHT	115	40	0.965	0.945		0	0	0	0.000	0		0	0	99.000	0.000
476	2	ROUNDUP	230	40	1.011	0.888	ROUNDUP	230	40	3	0.123	0		0	0	99.000	0.000
482	2	BARKER	115	40	0.954	0.949		0	0	0	0.000	0		0	0	99.000	0.000
483	9	MOAB	115	40	0.959	0.890	MOAB	115	40	10	0.069	0		0	0	99.000	0.000
488	3	LIBTYLK	115	40	0.954	0.947		0	0	0	0.000	0		0	0	99.000	0.000
504	4	BARKER	115	40	0.954	0.946		0	0	0	0.000	0		0	0	99.000	0.000
510	10	PLEASANT	115	40	0.966	0.866	PLEASANT	115	40	14	0.100	0		0	0	99.000	0.000
513	9	DOWER RD	115	40	0.959	0.911		0	0	0	0.000	0		0	0	99.000	0.000
514	10	PRAIRIEB	115	40	0.966	0.877	PRAIRIEB	115	40	14	0.089	0		0	0	99.000	0.000
517	5	BARKER	115	40	0.954	0.946		0	0	0	0.000	0		0	0	99.000	0.000
522	3	GAFFNEY	115	40	0.981	0.876	GAFFNEY	115	40	3	0.105	0		0	0	99.000	0.000
550	1	BIGGRASS	161	65	0.963	0.946		0	0	0	0.000	0		0	0	99.000	0.000
552	5	AEC IPC	138	65	0.979	0.937		0	0	0	0.000	0		0	0	99.000	0.000
568	2	BGEORGE	115	73	0.984	0.946		0	0	0	0.000	0		0	0	99.000	0.000
569	8	BGEORGE	115	73	0.984	0.935	FRANNIE	230	65	8	0.063	0		0	0	99.000	0.000
577	1	BIGGRASS	161	65	0.963	0.942		0	0	0	0.000	0		0	0	99.000	0.000
609	1	BIGGRASS	161	65	0.963	0.941		0	0	0	0.000	0		0	0	99.000	0.000
620	7	BGEORGE	115	73	0.984	0.905	BGEORGE	115	73	9	0.079	0		0	0	99.000	0.000
622	0		0	0	99.000	99.000	BLACKFT	161	60	1	0.053	0		0	0	99.000	0.000

624	3	BIGGRASS	161	65	0.963	0.923		0	0	0	0.000	0		0	0	99.000	0.000
687	12	BARKER	115	40	0.954	0.933		0	0	0	0.000	0		0	0	99.000	0.000
696	10	DELIGHT	115	40	0.965	0.928	HATWAI	230	40	6	0.073	0		0	0	99.000	0.000
703	15	LIBTYLK	115	40	0.954	0.924		0	0	0	0.000	0		0	0	99.000	0.000
704	9	BARKER	115	40	0.954	0.937		0	0	0	0.000	0		0	0	99.000	0.000
721	2	HAMLTNMA	161	62	0.991	0.946		0	0	0	0.000	0		0	0	99.000	0.000

BUSES with voltage violations

bus no	---name---	--kv-	area	-base-case- pu vt	BASE CASE VOLT VIOLATION	lowest -cont-case- pu vt	cont with lowest pu vt	contingencies with voltage violations
48069	CHESTER	115.0	40	0.945	***	0.857	510:	all
48165	IRVIN	115.0	40	0.949	***	0.863	510:	all
48310	OPORTUNE	115.0	40	0.949	***	0.861	510:	all
48299	OPPORTUN	115.0	40	0.947	***	0.859	510:	all
48306	OTIS	230.0	40	0.938	***	0.858	510:	all
70249	LAJUNTAW	115.0	70	0.929	***	0.928	20:	all
65155	BIGGRASS	161.0	65	0.963		0.922	420:	2 419 420 432 433 443 550 577 609 624
62006	TAFTAUTO	115.0	62	0.980		0.935	8:	8
62108	CLYDE P	161.0	62	1.015		0.959	86:	86
62257	EMIGT AT	161.0	62	1.019		0.962	86:	86
40023	AHSAHKA	115.0	40	1.028		0.965	314:	314
48021	BARKER	115.0	40	0.954		0.872	510:	317 319 326 329 330 337 342 358 373 409 411 419 420 421 432 433 446 453 460 482 483 488 504 510 513 514 517 687 696 703 704
48185	LIBTYLK	115.0	40	0.954		0.872	510:	317 319 326 329 330 337 342 358 373 409 411 419 420 421 432 433 446 453 460 482 483 488 504 510 513 514 517 687 696 703 704
48311	OTIS	115.0	40	0.956		0.874	330:	317 319 326 330 337 358 373 409 411 420 421 432 433 446 453 460 483 488 504 510 513 514 517 687 696 703 704
48117	EASTFARM	115.0	40	0.957		0.876	330:	319 326 330 337 373 409 411 420 421 446 453 460 483 504 510 513 514 517 687 703 704
48011	APPLETAP	115.0	40	0.976		0.900	330:	330 373 460 703
48013	APPLEWAY	115.0	40	0.976		0.900	330:	330 373 460 703
40067	ATHOL	115.0	40	0.993		0.935	330:	330
48017	ATHOLTAP	115.0	40	0.995		0.938	330:	330
48019	AVONDALE	115.0	40	0.988		0.912	330:	330 373 460
48045	BLUECRK	115.0	40	0.974		0.897	330:	330 373 460 703
48067	CDA	115.0	40	0.974		0.897	330:	330 373 460 703
48093	DALTON A	115.0	40	0.978		0.902	330:	330 373 460
48095	DALTON2T	115.0	40	0.981		0.905	330:	330 373 460
48097	DALTONT	115.0	40	0.978		0.902	330:	330 373 460
47033	DOWER RD	115.0	40	0.959		0.879	330:	330 337 373 446 453 460 483 510 513 514 517 687 703 704
48111	DOWERRDT	115.0	40	0.959		0.880	330:	330 337 373 446 453 460 483 510 513 514 687 703 704
48155	HERN	115.0	40	0.979		0.903	330:	330 373 460
48159	HUETTER	115.0	40	0.981		0.904	330:	330 373 460
47511	MOAB	115.0	40	0.959		0.868	510:	330 337 373 420 421 453 460 483 510 513 514 687 703 704
48319	PLEASANT	115.0	40	0.966		0.866	510:	330 337 373 460 510 513 514 687 703 704
48329	POST FLS	115.0	40	0.959		0.880	330:	330 337 373 453 460 483 510 513 514 687 703 704
40855	PRAIRIEB	115.0	40	0.966		0.877	514:	330 337 373 460 483 510 514 687 703
48349	RAMSEY	115.0	40	0.976		0.899	330:	330 373 460 703
48351	RATHBUS1	115.0	40	0.994		0.919	330:	330 373 460
48353	RATHBUS2	115.0	40	0.994		0.919	330:	330 373 460
48356	RATHDRME	115.0	40	0.994		0.919	330:	330 373 460
48355	RATHDRUM	115.0	40	0.994		0.919	330:	330 373 460
48357	RATHDRUM	230.0	40	0.993		0.920	330:	330 373 460
40953	SCARCELO	115.0	40	0.994		0.928	330:	330 460
48401	SPIRITLK	115.0	40	0.996		0.942	330:	330
48403	SPIRITLT	115.0	40	0.996		0.942	330:	330
40215	CHENEY	115.0	40	0.974		0.948	337:	337 687
48387	SILVRLAK	115.0	40	0.973		0.948	337:	337 687
48179	LAKEVIEW	230.0	40	1.016		0.950	373:	373
41125	WAGNERLK	115.0	40	1.014		0.956	403:	403
41127	WAGNERLT	115.0	40	1.025		0.967	403:	403
62030	PTRSNFLT	230.0	62	0.972		0.912	420:	419 420 432 433 443
62084	DILLON S	161.0	62	0.976		0.931	420:	419 420 432 433 624
47025	DELIGHT	115.0	40	0.965		0.892	522:	419 420 427 467 475 522 696
47073	RALSTONB	115.0	40	0.971		0.912	522:	419 420 427 475 522 696
65025	AMPS	230.0	65	0.983		0.931	420:	419 420
62158	SHERDNMT	161.0	62	0.981		0.943	420:	420
40451	GAR1EAST	500.0	40	1.095		1.034	432:	432 433
40453	GAR2EAST	500.0	40	1.095		1.034	432:	432 433
60192	LADD	230.0	60	1.017		0.950	476:	476
40621	LAGRANDE	230.0	40	1.007		0.926	476:	476
40905	ROUNDUP	230.0	40	1.011		0.888	476:	476
40449	GAFFNEY	115.0	40	0.981		0.876	522:	522
65010	AEC IPC	138.0	65	0.979		0.937	552:	552
65015	AEC SCOV	138.0	65	0.980		0.937	552:	552
65065	ANTLOP 1	138.0	65	0.980		0.938	552:	552
65070	ANTLOP 2	138.0	65	0.980		0.938	552:	552
65080	ANTLOPE	161.0	65	0.982		0.940	552:	552
73022	BGEORGE	115.0	73	0.984		0.905	620:	568 569 620
73534	MEETSETP	115.0	73	0.990		0.914	620:	568 569 620
65575	FRANNIE	230.0	65	1.004		0.941	569:	569
65620	GARLAND	230.0	65	1.001		0.942	569:	569
66145	OREBASIN	230.0	65	0.998		0.947	569:	569
73041	CARTERMT	115.0	73	0.995		0.927	620:	569 620
73075	GREYBULL	115.0	73	1.000		0.921	620:	569 620
73340	NAHNEJEN	115.0	73	0.998		0.919	620:	569 620
66720	WORLAND	115.0	65	1.018		0.960	620:	620
73019	BASIN	115.0	73	1.011		0.937	620:	620
73123	LOVELL	115.0	73	1.001		0.930	620:	620
73222	WORLANTP	115.0	73	1.016		0.955	620:	620
65860	JFRSNPHA	161.0	65	0.981		0.946	624:	624
47501	ARMSTRNG	115.0	40	1.002		0.945	696:	696
40149	BRINKENS	115.0	40	0.997		0.939	696:	696
47503	CHAMBERS	115.0	40	1.001		0.946	696:	696
40239	CLARKSTN	115.0	40	1.005		0.949	696:	696
48075	CLEARWTR	115.0	40	1.004		0.948	696:	696
40519	HATWAI	230.0	40	1.041		0.968	696:	696
62311	HAMLTNMA	161.0	62	0.991		0.946	721:	721
62312	HAMLTNMB	161.0	62	0.991		0.946	721:	721

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                          SUMMARY OF CONTINGENCY (CNT) NUMBERS
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Outage case   1                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62004 ANACOND  230.0 to   62019 WILSALL  230.0   circuit 1

Outage case   2                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62004 ANACOND  230.0 to   62030 PTRSNFLT 230.0   circuit 1

Outage case   3                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62005 ANACOND  161.0 to   62003 BONNERMT 161.0   circuit 1

Outage case   4                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62005 ANACOND  161.0 to   62009 RATTLE S 161.0   circuit 1

Outage case   5                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62005 ANACOND  161.0 to   62017 MT ASIMI 161.0   circuit 1

Outage case   6                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62005 ANACOND  161.0 to   62017 MT ASIMI 161.0   circuit 2

Outage case   7                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62005 ANACOND  161.0 to   62084 DILLON S 161.0   circuit 1

Outage case   8                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62006 TAFTAUTO 115.0 to   62085 CROWCR B 115.0   circuit 1

Outage case   9                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62009 RATTLE S 161.0 to   62003 BONNERMT 161.0   circuit 1

Outage case  10                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62009 RATTLE S 161.0 to   62007 KERR B   161.0   circuit 1

Outage case  11                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62009 RATTLE S 161.0 to   62008 KERR A   161.0   circuit 1

Outage case  12                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62009 RATTLE S 161.0 to   62078 RESERVST 161.0   circuit 1

Outage case  13                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62014 BUTTEMHD 161.0 to   62017 MT ASIMI 161.0   circuit 1

Outage case  14                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62022 MADISON  100.0 to   62105 BRADLEYC 100.0   circuit 1

Outage case  15                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62031 CUTBANK  115.0 to   62027 SHELBY   115.0   circuit 1

Outage case  16                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62032 RYAN     100.0 to   62314 MTGENJCT 100.0   circuit 1

Outage case  17                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62032 RYAN     100.0 to   62314 MTGENJCT 100.0   circuit 2

Outage case  18                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62034 BOLE     230.0 to   62035 CNRDWAPA 230.0   circuit 1

Outage case  19                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62035 CNRDWAPA 230.0 to   62026 SHELBY   230.0   circuit 1

Outage case  20                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62046 BROADVU  500.0 to   62012 TOWN2    500.0   circuit 2

Outage case  21                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62046 BROADVU  500.0 to   62013 TOWN1    500.0   circuit 1

Outage case  22                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62053 BROADV&2 500.0 to   62046 BROADVU  500.0   circuit 2

Outage case  23                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62053 BROADV&2 500.0 to   62046 BROADVU  500.0   circuit 4

Outage case  24                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62054 BROADV&1 500.0 to   62046 BROADVU  500.0   circuit 1

Outage case  25                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62054 BROADV&1 500.0 to   62046 BROADVU  500.0   circuit 3

Outage case  26                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62057 COLSTRP  500.0 to   62053 BROADV&2 500.0   circuit 2

Outage case  27                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62057 COLSTRP  500.0 to   62054 BROADV&1 500.0   circuit 1

Outage case  28                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62058 SHOREYRD 230.0 to   62019 WILSALL  230.0   circuit 1

Outage case  29                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62058 SHOREYRD 230.0 to   62052 ALKALI   230.0   circuit 1

Outage case  30                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62058 SHOREYRD 230.0 to   62055 BASELINE 230.0   circuit 1

Outage case  31                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62059 MONTANA1 115.0 to   62221 NICHOL-R 115.0   circuit 1

Outage case  32                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62060 COLSTRP  230.0 to   62051 HARDIN   230.0   circuit 1

Outage case  33                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62062 RIMROCK  161.0 to   62109 ALKALI   161.0   circuit 1

Outage case  34                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62065 ENNIS MT 161.0 to   62064 BRADLEYC 161.0   circuit 1

Outage case  35                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62066 KERR     115.0 to   62303 PLAINS   115.0   circuit 1

Outage case  36                Y, WAPA UGP, JUNE 2002
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    switched OUT LINE        62066 KERR     115.0 to   62304 THFLPM T 115.0   circuit 1
Outage case  37               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62069 CNRDWAPA 115.0 to   62188 CNRD-SRA 115.0   circuit 1
Outage case  38               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62070 GT FALLS 115.0 to   62180 DUTTON   115.0   circuit 1
Outage case  39               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62071 GT FALLS 230.0 to   62034 BOLE     230.0   circuit 1
Outage case  40               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62071 GT FALLS 230.0 to   62036 JUDITHGP 230.0   circuit 1
Outage case  41               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62071 GT FALLS 230.0 to   62126 LANDRSFK 230.0   circuit 1
Outage case  42               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62073 TRIDENT  100.0 to   62021 THREERIV 100.0   circuit 1
Outage case  43               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62073 TRIDENT  100.0 to   62247 TRIDTPLT 100.0   circuit 1
Outage case  44               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62073 TRIDENT  100.0 to   62248 THREFORK 100.0   circuit 1
Outage case  45               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62076 TRIDENT  161.0 to   62108 CLYDE P  161.0   circuit 1
Outage case  46               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62077 BUTTE MT 161.0 to   62014 BUTTEMHD 161.0   circuit 1
Outage case  47               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62077 BUTTE MT 161.0 to   62017 MT ASIMI 161.0   circuit 1
Outage case  48               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62077 BUTTE MT 161.0 to   62159 GLDNSNLT 161.0   circuit 1
Outage case  49               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62079 MILLERCK 161.0 to   62003 BONNERMT 161.0   circuit 1
Outage case  50               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62079 MILLERCK 161.0 to   62311 HAMLTNMA 161.0   circuit 1
Outage case  51               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62079 MILLERCK 161.0 to   62312 HAMLTNMB 161.0   circuit 1
Outage case  52               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62081 COLSTRP  115.0 to   62059 MONTANA1 115.0   circuit 1
Outage case  53               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62081 COLSTRP  115.0 to   62210 ARMELLCR 115.0   circuit 1
Outage case  54               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62082 BILINGS  230.0 to   62052 ALKALI   230.0   circuit 1
Outage case  55               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62082 BILINGS  230.0 to   62056 HUNTLEY  230.0   circuit 1
Outage case  56               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62082 BILINGS  230.0 to   62125 BILINGSW 230.0   circuit 1
Outage case  57               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62084 DILLON S 161.0 to   62158 SHERDNMT 161.0   circuit 1
Outage case  58               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62086 THOMSON  115.0 to   62085 CROWCR B 115.0   circuit 1
Outage case  59               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62086 THOMSON  115.0 to   62305 TFALLCIT 115.0   circuit 1
Outage case  60               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62086 THOMSON  115.0 to   62306 TFALCITA 115.0   circuit 1
Outage case  61               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62087 CONRAD   115.0 to   62069 CNRDWAPA 115.0   circuit 1
Outage case  62               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62087 CONRAD   115.0 to   62178 VAL-WILL 115.0   circuit 1
Outage case  63               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62088 CTBPUMP  115.0 to   62031 CUTBANK  115.0   circuit 1
Outage case  64               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62089 BROADVU  100.0 to   62106 HARLOWTN 100.0   circuit 1
Outage case  65               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62091 WALDORF  100.0 to   62300 HUSON-R  100.0   circuit 1
Outage case  66               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62096 RIMROCK  100.0 to   62097 BILINGS  100.0   circuit 1
Outage case  67               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62096 RIMROCK  100.0 to   62208 BERTOOTH 100.0   circuit 1
Outage case  68               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62096 RIMROCK  100.0 to   62217 BILL ES  100.0   circuit 1
Outage case  69               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62097 BILINGS  100.0 to   62098 BILINGS8 100.0   circuit 1
Outage case  70               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62097 BILINGS  100.0 to   62107 LAURELMT 100.0   circuit 1
Outage case  71               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62097 BILINGS  100.0 to   62196 CONOCOMT 100.0   circuit 1
Outage case  72               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62097 BILINGS  100.0 to   62199 BILLCITY 100.0   circuit 1
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Outage case  73                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62097 BILINGS  100.0 to   62217 BILL ES  100.0   circuit 1

Outage case  74                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62098 BILINGS8 100.0 to   62199 BILLCITY 100.0   circuit 1

Outage case  75                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62098 BILINGS8 100.0 to   62202 BELLROCK 100.0   circuit 1

Outage case  76                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62098 BILINGS8 100.0 to   62204 KING AVE 100.0   circuit 1

Outage case  77                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62099 BASELINE 100.0 to   62226 GRNDAV-R 100.0   circuit 1

Outage case  78                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62104 JUDITHGP 100.0 to   62238 UTICA    100.0   circuit 1

Outage case  79                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62104 JUDITHGP 100.0 to   62241 STRAWXPT 100.0   circuit 1

Outage case  80                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62105 BRADLEYC 100.0 to   62251 HAR-PONY 100.0   circuit 1

Outage case  81                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62105 BRADLEYC 100.0 to   62254 COBLSTNT 100.0   circuit 1

Outage case  82                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62106 HARLOWTN 100.0 to   62227 TWO DOT  100.0   circuit 1

Outage case  83                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62106 HARLOWTN 100.0 to   62233 JUDITGPT 100.0   circuit 1

Outage case  84                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62107 LAURELMT 100.0 to   62213 EDGARXPT 100.0   circuit 1

Outage case  85                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62107 LAURELMT 100.0 to   62222 BRIDGERA 100.0   circuit 2

Outage case  86                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62108 CLYDE P  161.0 to   62016 WILSALL  161.0   circuit 1

Outage case  87                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62108 CLYDE P  161.0 to   62249 EGALTN A 161.0   circuit 1

Outage case  88                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62108 CLYDE P  161.0 to   62250 BGTMBERA 161.0   circuit 99

Outage case  89                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62108 CLYDE P  161.0 to   62257 EMIGT AT 161.0   circuit 1

Outage case  90                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62108 CLYDE P  161.0 to   62258 EGALTN B 161.0   circuit 1

Outage case  91                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62113 RESERVST 100.0 to   62292 FRENCH-R 100.0   circuit 99

Outage case  92                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62114 MISOULA  100.0 to   62091 WALDORF  100.0   circuit 1

Outage case  93                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62114 MISOULA  100.0 to   62290 MISSLA 1 100.0   circuit 1

Outage case  94                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62114 MISOULA  100.0 to   62302 MISSLA 3 100.0   circuit 1

Outage case  95                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62115 ANACOND  100.0 to   62129 ANA CITY 100.0   circuit 1

Outage case  96                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62115 ANACOND  100.0 to   62129 ANA CITY 100.0   circuit 2

Outage case  97                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62115 ANACOND  100.0 to   62130 MOREL    100.0   circuit 1

Outage case  98                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62115 ANACOND  100.0 to   62138 PCIFICST 100.0   circuit 1

Outage case  99                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62116 BUTTE MT 100.0 to   62145 RENOVA   100.0   circuit 1

Outage case 100                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62116 BUTTE MT 100.0 to   62150 CONDR TA 100.0   circuit 1

Outage case 101                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62116 BUTTE MT 100.0 to   62151 CONDR TB 100.0   circuit 1

Outage case 102                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62116 BUTTE MT 100.0 to   62152 BTMINDPK 100.0   circuit 1

Outage case 103                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62117 GOLD CR  100.0 to   62135 MT PHOST 100.0   circuit 1

Outage case 104                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62117 GOLD CR  100.0 to   62263 GILBERT  100.0   circuit 1

Outage case 105                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62118 GT FALLS 100.0 to   62028 MORONY   100.0   circuit 1

Outage case 106                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62118 GT FALLS 100.0 to   62119 RAINBOW  100.0   circuit 1

Outage case 107                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62118 GT FALLS 100.0 to   62119 RAINBOW  100.0   circuit 2

Outage case 108                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62118 GT FALLS 100.0 to   62165 GF ESIDE 100.0   circuit 1

Outage case 109                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62118 GT FALLS 100.0 to   62177 GFCITYT1 100.0   circuit 1
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Outage case 110                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62118 GT FALLS 100.0 to   62181 GF RVRVW 100.0   circuit 1

Outage case 111                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62119 RAINBOW  100.0 to   62029 COCHRAN  100.0   circuit 1

Outage case 112                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62119 RAINBOW  100.0 to   62173 BELT     100.0   circuit 1

Outage case 113                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62119 RAINBOW  100.0 to   62179 GF NEAST 100.0   circuit 1

Outage case 114                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62119 RAINBOW  100.0 to   62183 WAYNEPMT 100.0   circuit 1

Outage case 115                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62119 RAINBOW  100.0 to   62187 MALMSTRM 100.0   circuit 1

Outage case 116                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62119 RAINBOW  100.0 to   62314 MTGENJCT 100.0   circuit 1

Outage case 117                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62120 HOLTER   100.0 to   62262 CANYONCR 100.0   circuit 1

Outage case 118                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62120 HOLTER   100.0 to   62269 HELVLY T 100.0   circuit 1

Outage case 119                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62120 HOLTER   100.0 to   62274 CRAIGMT  100.0   circuit 1

Outage case 120                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62121 E HELENA 100.0 to   62260 CANFERTA 100.0   circuit 1

Outage case 121                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62121 E HELENA 100.0 to   62261 CANFERTB 100.0   circuit 1

Outage case 122                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62121 E HELENA 100.0 to   62264 CONLIM T 100.0   circuit 1

Outage case 123                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62121 E HELENA 100.0 to   62269 HELVLY T 100.0   circuit 1

Outage case 124                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62121 E HELENA 100.0 to   62275 HELSS TA 100.0   circuit 1

Outage case 125                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62121 E HELENA 100.0 to   62276 HELSS TB 100.0   circuit 1

Outage case 126                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62122 CANYON F 100.0 to   62281 SPOKANEA 100.0   circuit 1

Outage case 127                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62122 CANYON F 100.0 to   62282 SPOKANEB 100.0   circuit 1

Outage case 128                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62125 BILINGSW 230.0 to   62223 BROADVU  230.0   circuit 1

Outage case 129                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62126 LANDRSFK 230.0 to   62072 OVANDO   230.0   circuit 1

Outage case 130                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62130 MOREL    100.0 to   62131 DERLDG T 100.0   circuit 1

Outage case 131                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62130 MOREL    100.0 to   62132 FAIRMTMT 100.0   circuit 1

Outage case 132                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62131 DERLDG T 100.0 to   62133 DRLDGCTY 100.0   circuit 1

Outage case 133                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62131 DERLDG T 100.0 to   62134 DRLDG CM 100.0   circuit 1

Outage case 134                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62132 FAIRMTMT 100.0 to   62143 RAMSAYPM 100.0   circuit 1

Outage case 135                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62133 DRLDGCTY 100.0 to   62134 DRLDG CM 100.0   circuit 1

Outage case 136                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62134 DRLDG CM 100.0 to   62117 GOLD CR  100.0   circuit 1

Outage case 137                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62135 MT PHOST 100.0 to   62146 DRUMPM T 100.0   circuit 1

Outage case 138                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62136 BUTECRSH 100.0 to   62139 MONST TP 100.0   circuit 1

Outage case 139                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62136 BUTECRSH 100.0 to   62140 BUT CONC 100.0   circuit 1

Outage case 140                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62137 BUTECORA 100.0 to   62138 PCIFICST 100.0   circuit 1

Outage case 141                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62137 BUTECORA 100.0 to   62139 MONST TP 100.0   circuit 1

Outage case 142                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62137 BUTECORA 100.0 to   62144 TAILBOS2 100.0   circuit 1

Outage case 143                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62137 BUTECORA 100.0 to   62148 PRECIPIT 100.0   circuit 1

Outage case 144                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62139 MONST TP 100.0 to   62141 MONT ST  100.0   circuit 1

Outage case 145                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62140 BUT CONC 100.0 to   62142 TAILBOOS 100.0   circuit 1

Outage case 146                Y, WAPA UGP, JUNE 2002
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    switched OUT LINE        62140 BUT CONC 100.0 to   62151 CONDR TB 100.0   circuit 1
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Outage case 147               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62141 MONT ST  100.0 to   62143 RAMSAYPM 100.0   circuit 1
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Outage case 148               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62141 MONT ST  100.0 to   62152 BTMINDPK 100.0   circuit 1
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Outage case 149               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62142 TAILBOOS 100.0 to   62150 CONDR TA 100.0   circuit 1
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Outage case 150               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62144 TAILBOS2 100.0 to   62149 BARGE PM 100.0   circuit 1
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Outage case 151               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62145 RENOVA   100.0 to   62155 MAYFLWRT 100.0   circuit 1
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Outage case 152               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62145 RENOVA   100.0 to   62253 MONTTALC 100.0   circuit 1
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Outage case 153               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62146 DRUMPM T 100.0 to   62157 DRUMN PM 100.0   circuit 1
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Outage case 154               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62147 DRMCLARK 100.0 to   62291 CLINTN-R 100.0   circuit 1
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Outage case 155               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62148 PRECIPIT 100.0 to   62259 BASINMT  100.0   circuit 1
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Outage case 156               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62149 BARGE PM 100.0 to   62278 MTTUNTAP 100.0   circuit 1
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Outage case 157               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62150 CONDR TA 100.0 to   62153 CONTDRVE 100.0   circuit 1
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Outage case 158               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62151 CONDR TB 100.0 to   62153 CONTDRVE 100.0   circuit 1
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Outage case 159               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62154 RHONPOUL 100.0 to   62033 ANA BPA  115.0   circuit 1
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Outage case 160               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62155 MAYFLWRT 100.0 to   62156 MAYFLWRM 100.0   circuit 1
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Outage case 161               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62155 MAYFLWRT 100.0 to   62251 HAR-PONY 100.0   circuit 1
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Outage case 162               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62158 SHERDNMT 161.0 to   62065 ENNIS MT 161.0   circuit 1
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Outage case 163               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62159 GLDNSNLT 161.0 to   62076 TRIDENT  161.0   circuit 1
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Outage case 164               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62160 ULM MT   100.0 to   62176 ULM TAP  100.0   circuit 1
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Outage case 165               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62161 GF NWEST 100.0 to   62163 GF SWEST 100.0   circuit 1
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Outage case 166               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62161 GF NWEST 100.0 to   62174 GF NW T1 100.0   circuit 1
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Outage case 167               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62161 GF NWEST 100.0 to   62175 GF NW T2 100.0   circuit 1
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Outage case 168               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62161 GF NWEST 100.0 to   62184 GFCITYT2 100.0   circuit 1
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Outage case 169               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62162 MISSIONM 100.0 to   62176 ULM TAP  100.0   circuit 1
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Outage case 170               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62162 MISSIONM 100.0 to   62274 CRAIGMT  100.0   circuit 1
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Outage case 171               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62163 GF SWEST 100.0 to   62166 GF SSIDE 100.0   circuit 1
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Outage case 172               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62164 GF CITY  100.0 to   62166 GF SSIDE 100.0   circuit 1
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Outage case 173               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62164 GF CITY  100.0 to   62177 GFCITYT1 100.0   circuit 1
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Outage case 174               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62165 GF ESIDE 100.0 to   62261 CANFERTB 100.0   circuit 1
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Outage case 175               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62166 GF SSIDE 100.0 to   62171 GF ES A  100.0   circuit 1
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Outage case 176               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62166 GF SSIDE 100.0 to   62172 ADEL     100.0   circuit 1
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Outage case 177               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62167 WAYNE PM 100.0 to   62183 WAYNEPMT 100.0   circuit 1
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Outage case 178               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62168 RAYNE PM 100.0 to   62182 RNFRDP T 100.0   circuit 1
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Outage case 179               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62169 MONARCHM 100.0 to   62170 KINGHILL 100.0   circuit 1
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Outage case 180               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62169 MONARCHM 100.0 to   62173 BELT     100.0   circuit 1
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Outage case 181               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62170 KINGHILL 100.0 to   62235 MARTNSDA 100.0   circuit 1
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Outage case 182               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62171 GF ES A  100.0 to   62179 GF NEAST 100.0   circuit 1
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Outage case 183                Y, WAPA UGP, JUNE 2002
    switched OUT LINE         62172 ADEL     100.0 to   62260 CANFERTA 100.0   circuit 1
Outage case 184                Y, WAPA UGP, JUNE 2002
    switched OUT LINE         62174 GF NW T1 100.0 to   62175 GF NW T2 100.0   circuit 1
Outage case 185                Y, WAPA UGP, JUNE 2002
    switched OUT LINE         62174 GF NW T1 100.0 to   62176 ULM TAP  100.0   circuit 1
Outage case 186                Y, WAPA UGP, JUNE 2002
    switched OUT LINE         62175 GF NW T2 100.0 to   62181 GF RVRVW 100.0   circuit 1
Outage case 187                Y, WAPA UGP, JUNE 2002
    switched OUT LINE         62177 GFCITYT1 100.0 to   62184 GFCITYT2 100.0   circuit 1
Outage case 188                Y, WAPA UGP, JUNE 2002
    switched OUT LINE         62178 VAL-WILL 115.0 to   62088 CTBPUMP  115.0   circuit 1
Outage case 189                Y, WAPA UGP, JUNE 2002
    switched OUT LINE         62180 DUTTON   115.0 to   62069 CNRDWAPA 115.0   circuit 1
Outage case 190                Y, WAPA UGP, JUNE 2002
    switched OUT LINE         62181 GF RVRVW 100.0 to   62123 BEAGLE   100.0   circuit 1
Outage case 191                Y, WAPA UGP, JUNE 2002
    switched OUT LINE         62182 RNFRDP T 100.0 to   62185 NORNFDPT 100.0   circuit 1
Outage case 192                Y, WAPA UGP, JUNE 2002
    switched OUT LINE         62182 RNFRDP T 100.0 to   62231 STANFRDM 100.0   circuit 1
Outage case 193                Y, WAPA UGP, JUNE 2002
    switched OUT LINE         62183 WAYNEPMT 100.0 to   62185 NORNFDPT 100.0   circuit 1
Outage case 194                Y, WAPA UGP, JUNE 2002
    switched OUT LINE         62185 NORNFDPT 100.0 to   62186 NORNFDPM 100.0   circuit 1
Outage case 195                Y, WAPA UGP, JUNE 2002
    switched OUT LINE         62189 RAIL TAP 100.0 to   62099 BASELINE 100.0   circuit 99
Outage case 196                Y, WAPA UGP, JUNE 2002
    switched OUT LINE         62189 RAIL TAP 100.0 to   62107 LAURELMT 100.0   circuit 1
Outage case 197                Y, WAPA UGP, JUNE 2002
    switched OUT LINE         62189 RAIL TAP 100.0 to   62194 RAILWELD 100.0   circuit 1
Outage case 198                Y, WAPA UGP, JUNE 2002
    switched OUT LINE         62190 CENEX A  100.0 to   62191 CENEX B  100.0   circuit 1
Outage case 199                Y, WAPA UGP, JUNE 2002
    switched OUT LINE         62190 CENEX A  100.0 to   62207 LAURELPM 100.0   circuit 1
Outage case 200                Y, WAPA UGP, JUNE 2002
    switched OUT LINE         62191 CENEX B  100.0 to   62107 LAURELMT 100.0   circuit 1
Outage case 201                Y, WAPA UGP, JUNE 2002
    switched OUT LINE         62192 PANTROBE 100.0 to   62089 BROADVU  100.0   circuit 1
Outage case 202                Y, WAPA UGP, JUNE 2002
    switched OUT LINE         62192 PANTROBE 100.0 to   62106 HARLOWTN 100.0   circuit 1
Outage case 203                Y, WAPA UGP, JUNE 2002
    switched OUT LINE         62192 PANTROBE 100.0 to   62218 ROUNDUPM 100.0   circuit 1
Outage case 204                Y, WAPA UGP, JUNE 2002
    switched OUT LINE         62196 CONOCOMT 100.0 to   62198 BILLNGPM 100.0   circuit 1
Outage case 205                Y, WAPA UGP, JUNE 2002
    switched OUT LINE         62197 MERIDNMT 100.0 to   62099 BASELINE 100.0   circuit 1
Outage case 206                Y, WAPA UGP, JUNE 2002
    switched OUT LINE         62197 MERIDNMT 100.0 to   62202 BELLROCK 100.0   circuit 1
Outage case 207                Y, WAPA UGP, JUNE 2002
    switched OUT LINE         62197 MERIDNMT 100.0 to   62204 KING AVE 100.0   circuit 99
Outage case 208                Y, WAPA UGP, JUNE 2002
    switched OUT LINE         62198 BILLNGPM 100.0 to   62208 BERTOOTH 100.0   circuit 1
Outage case 209                Y, WAPA UGP, JUNE 2002
    switched OUT LINE         62200 ABSRKE-R 100.0 to   62201 ABSAROKE 100.0   circuit 1
Outage case 210                Y, WAPA UGP, JUNE 2002
    switched OUT LINE         62201 ABSAROKE 100.0 to   62224 COLBUSAT 100.0   circuit 1
Outage case 211                Y, WAPA UGP, JUNE 2002
    switched OUT LINE         62201 ABSAROKE 100.0 to   62225 CHROMEAT 100.0   circuit 1
Outage case 212                Y, WAPA UGP, JUNE 2002
    switched OUT LINE         62205 COLRPLJE 161.0 to   62109 ALKALI   161.0   circuit 1
Outage case 213                Y, WAPA UGP, JUNE 2002
    switched OUT LINE         62205 COLRPLJE 161.0 to   62214 CLMBUSPM 161.0   circuit 1
Outage case 214                Y, WAPA UGP, JUNE 2002
    switched OUT LINE         62205 COLRPLJE 161.0 to   62250 BGTMBERA 161.0   circuit 1
Outage case 215                Y, WAPA UGP, JUNE 2002
    switched OUT LINE         62206 NICHOLPM 115.0 to   62221 NICHOL-R 115.0   circuit 1
Outage case 216                Y, WAPA UGP, JUNE 2002
    switched OUT LINE         62207 LAURELPM 100.0 to   62107 LAURELMT 100.0   circuit 1
Outage case 217                Y, WAPA UGP, JUNE 2002
    switched OUT LINE         62209 EDGARXPM 100.0 to   62213 EDGARXPT 100.0   circuit 1
Outage case 218                Y, WAPA UGP, JUNE 2002
    switched OUT LINE         62210 ARMELLCR 115.0 to   62211 CASTLERT 115.0   circuit 1
Outage case 219                Y, WAPA UGP, JUNE 2002
    switched OUT LINE         62211 CASTLERT 115.0 to   62212 CASTLERK 115.0   circuit 1
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Outage case 220                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62211 CASTLERT 115.0 to   62219 SARPY AT 115.0   circuit 1

Outage case 221                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62213 EDGARXPT 100.0 to   62222 BRIDGERA 100.0   circuit 1

Outage case 222                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62215 LAVINAPT 100.0 to   62089 BROADVU  100.0   circuit 1

Outage case 223                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62215 LAVINAPT 100.0 to   62216 LAVINAPM 100.0   circuit 1

Outage case 224                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62215 LAVINAPT 100.0 to   62218 ROUNDUPM 100.0   circuit 1

Outage case 225                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62219 SARPY AT 115.0 to   62080 HARDIN   115.0   circuit 1

Outage case 226                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62220 COLRPLJE 100.0 to   62224 COLBUSAT 100.0   circuit 1

Outage case 227                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62223 BROADVU  230.0 to   62036 JUDITHGP 230.0   circuit 1

Outage case 228                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62223 BROADVU  230.0 to   62052 ALKALI   230.0   circuit 1

Outage case 229                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62227 TWO DOT  100.0 to   62235 MARTNSDA 100.0   circuit 1

Outage case 230                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62227 TWO DOT  100.0 to   62268 LOWETH   100.0   circuit 1

Outage case 231                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62228 UTICAPMP 100.0 to   62229 UTICATAP 100.0   circuit 1

Outage case 232                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62229 UTICATAP 100.0 to   62230 BENCHLND 100.0   circuit 1

Outage case 233                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62229 UTICATAP 100.0 to   62238 UTICA    100.0   circuit 1

Outage case 234                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62230 BENCHLND 100.0 to   62231 STANFRDM 100.0   circuit 1

Outage case 235                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62230 BENCHLND 100.0 to   62232 GLENGARY 100.0   circuit 1

Outage case 236                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62232 GLENGARY 100.0 to   62241 STRAWXPT 100.0   circuit 1

Outage case 237                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62233 JUDITGPT 100.0 to   62104 JUDITHGP 100.0   circuit 1

Outage case 238                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62233 JUDITGPT 100.0 to   62239 JUDTHSMT 100.0   circuit 1

Outage case 239                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62234 JUDGAPSM 100.0 to   62239 JUDTHSMT 100.0   circuit 1

Outage case 240                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62236 JUDTHPMP 100.0 to   62239 JUDTHSMT 100.0   circuit 1

Outage case 241                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62237 UTICA-R  100.0 to   62238 UTICA    100.0   circuit 1

Outage case 242                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62240 STRAWXPM 100.0 to   62241 STRAWXPT 100.0   circuit 1

Outage case 243                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62244 EUSTIS   100.0 to   62073 TRIDENT  100.0   circuit 1

Outage case 244                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62244 EUSTIS   100.0 to   62267 CROWCREK 100.0   circuit 1

Outage case 245                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62245 COBLSTON 100.0 to   62254 COBLSTNT 100.0   circuit 1

Outage case 246                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62246 FRANCIS  100.0 to   62021 THREERIV 100.0   circuit 1

Outage case 247                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62246 FRANCIS  100.0 to   62268 LOWETH   100.0   circuit 1

Outage case 248                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62248 THREFORK 100.0 to   62252 WILLWCKM 100.0   circuit 1

Outage case 249                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62248 THREFORK 100.0 to   62254 COBLSTNT 100.0   circuit 1

Outage case 250                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62249 EGALTN A 161.0 to   62256 JACKRABT 161.0   circuit 1

Outage case 251                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62249 EGALTN A 161.0 to   62256 JACKRABT 161.0   circuit 99

Outage case 252                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62249 EGALTN A 161.0 to   62258 EGALTN B 161.0   circuit 1

Outage case 253                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62252 WILLWCKM 100.0 to   62253 MONTTALC 100.0   circuit 1

Outage case 254                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62256 JACKRABT 161.0 to   62064 BRADLEYC 161.0   circuit 1

Outage case 255                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62256 JACKRABT 161.0 to   62258 EGALTN B 161.0   circuit 99

Outage case 256                Y, WAPA UGP, JUNE 2002
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    switched OUT LINE        62259 BASINMT  100.0 to   62279 MTTUNTPA 100.0   circuit 1
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Outage case 257               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62260 CANFERTA 100.0 to   62281 SPOKANEA 100.0   circuit 1
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Outage case 258               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62261 CANFERTB 100.0 to   62282 SPOKANEB 100.0   circuit 1
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Outage case 259               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62262 CANYONCR 100.0 to   62263 GILBERT  100.0   circuit 1
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Outage case 260               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62264 CONLIM T 100.0 to   62265 TOWNSEND 100.0   circuit 1
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Outage case 261               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62264 CONLIM T 100.0 to   62271 CONTLIME 100.0   circuit 1
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Outage case 262               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62265 TOWNSEND 100.0 to   62266 TOSTON   100.0   circuit 1
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Outage case 263               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62265 TOWNSEND 100.0 to   62273 TOWNSD-R 100.0   circuit 1
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Outage case 264               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62266 TOSTON   100.0 to   62272 TOSTON-R 100.0   circuit 1
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Outage case 265               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62266 TOSTON   100.0 to   62286 BRDWTR T 100.0   circuit 1
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Outage case 266               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62267 CROWCREK 100.0 to   62286 BRDWTR T 100.0   circuit 1
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Outage case 267               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62269 HELVLY T 100.0 to   62270 HELVALLY 100.0   circuit 1
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Outage case 268               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62275 HELSS TA 100.0 to   62277 HELENASS 100.0   circuit 1
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Outage case 269               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62275 HELSS TA 100.0 to   62285 CLANCYTA 100.0   circuit 1
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Outage case 270               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62276 HELSS TB 100.0 to   62277 HELENASS 100.0   circuit 1
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Outage case 271               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62276 HELSS TB 100.0 to   62284 CLANCYTB 100.0   circuit 1
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Outage case 272               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62278 MTTUNTAP 100.0 to   62280 MTTUNTIE 100.0   circuit 1
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Outage case 273               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62278 MTTUNTAP 100.0 to   62284 CLANCYTB 100.0   circuit 1
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Outage case 274               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62279 MTTUNTPA 100.0 to   62280 MTTUNTIE 100.0   circuit 1
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Outage case 275               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62279 MTTUNTPA 100.0 to   62285 CLANCYTA 100.0   circuit 1
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Outage case 276               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62280 MTTUNTIE 100.0 to   62283 MTTUNELS 100.0   circuit 1
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Outage case 277               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62284 CLANCYTB 100.0 to   62287 CLNCYTIE 100.0   circuit 1
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Outage case 278               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62285 CLANCYTA 100.0 to   62287 CLNCYTIE 100.0   circuit 1
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Outage case 279               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62286 BRDWTR T 100.0 to   62288 BRODWATR 100.0   circuit 1
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Outage case 280               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62287 CLNCYTIE 100.0 to   62289 CLANCY   100.0   circuit 1
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Outage case 281               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62290 MISSLA 1 100.0 to   62113 RESERVST 100.0   circuit 1
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Outage case 282               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62290 MISSLA 1 100.0 to   62291 CLINTN-R 100.0   circuit 1
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Outage case 283               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62290 MISSLA 1 100.0 to   62301 MISSLA 2 100.0   circuit 1
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Outage case 284               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62292 FRENCH-R 100.0 to   62091 WALDORF  100.0   circuit 1
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Outage case 285               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62293 ALBERTON 100.0 to   62294 TARKIO-R 100.0   circuit 1
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Outage case 286               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62293 ALBERTON 100.0 to   62300 HUSON-R  100.0   circuit 1
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Outage case 287               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62294 TARKIO-R 100.0 to   62295 DIAMNDMT 100.0   circuit 1
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Outage case 288               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62295 DIAMNDMT 100.0 to   62296 SUPERRMT 100.0   circuit 1
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Outage case 289               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62296 SUPERRMT 100.0 to   62297 ST REGIS 100.0   circuit 1
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Outage case 290               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62297 ST REGIS 100.0 to   62298 HAUGEN   100.0   circuit 1
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Outage case 291               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62298 HAUGEN   100.0 to   62299 SALTESE  100.0   circuit 1
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Outage case 292               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62299 SALTESE  100.0 to   62090 TAFTAUTO 100.0   circuit 1
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Outage case 293              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62301 MISSLA 2 100.0 to   62302 MISSLA 3 100.0   circuit 1

Outage case 294              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62301 MISSLA 2 100.0 to   62307 MISSLA 5 100.0   circuit 1

Outage case 295              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62303 PLAINS   115.0 to   62306 TFALCITA 115.0   circuit 1

Outage case 296              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62304 THFLPM T 115.0 to   62305 TFALLCIT 115.0   circuit 1

Outage case 297              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62304 THFLPM T 115.0 to   62310 THFALLPM 115.0   circuit 1

Outage case 298              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62305 TFALLCIT 115.0 to   62309 THFALL-R 115.0   circuit 1

Outage case 299              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62307 MISSLA 5 100.0 to   62112 MILLERCK 100.0   circuit 1

Outage case 300              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62308 MISSLA 7 161.0 to   62078 RESERVST 161.0   circuit 1

Outage case 301              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62308 MISSLA 7 161.0 to   62079 MILLERCK 161.0   circuit 1

Outage case 302              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62313 DRUMMNMT 100.0 to   62146 DRUMPM T 100.0   circuit 1

Outage case 303              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62313 DRUMMNMT 100.0 to   62147 DRMCLARK 100.0   circuit 1

Outage case 304              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48001 4LAKE TP 115.0 to   40439 FOURLKS  115.0   circuit 1

Outage case 305              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40017 ADDY     115.0 to   48071 CHEWELAH 115.0   circuit 1

Outage case 306              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40017 ADDY     115.0 to   40263 COLV BPA 115.0   circuit 1

Outage case 307              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40017 ADDY     115.0 to   48135 GIFFORD  115.0   circuit 1

Outage case 308              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40017 ADDY     115.0 to   48213 LOON LK  115.0   circuit 1

Outage case 309              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40017 ADDY     115.0 to   48223 METCHIP  115.0   circuit 1

Outage case 310              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40019 ADDY     230.0 to   40021 ADDY 2   230.0   circuit 1

Outage case 311              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40019 ADDY     230.0 to   40319 CUSICK   230.0   circuit 1

Outage case 312              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40021 ADDY 2   230.0 to   40090 BELL SO  230.0   circuit 1

Outage case 313              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40021 ADDY 2   230.0 to   40145 BOUNDARY 230.0   circuit 1

Outage case 314              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40023 AHSAHKA  115.0 to   40367 DWORSHAK 115.0   circuit 1

Outage case 315              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48009 AIRWAYHT 115.0 to   40397 FAIRCHLD 115.0   circuit 1

Outage case 316              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40029 ALBENI F 115.0 to   47027 DIAM LAK 115.0   circuit 1

Outage case 317              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40029 ALBENI F 115.0 to   40779 NEWPORTB 115.0   circuit 1

Outage case 318              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40029 ALBENI F 115.0 to   48347 PRIEST A 115.0   circuit 1

Outage case 319              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48011 APPLETAP 115.0 to   48095 DALTON2T 115.0   circuit 1

Outage case 320              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48013 APPLEWAY 115.0 to   48011 APPLETAP 115.0   circuit 1

Outage case 321              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48015 ARDEN    115.0 to   48301 ORIN     115.0   circuit 1

Outage case 322              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        47501 ARMSTRNG 115.0 to   48415 SPULMNTP 115.0   circuit 1

Outage case 323              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40061 ASHE     500.0 to   40683 LOW MON  500.0   circuit 1

Outage case 324              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40067 ATHOL    115.0 to   48017 ATHOLTAP 115.0   circuit 1

Outage case 325              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48017 ATHOLTAP 115.0 to   40953 SCARCELO 115.0   circuit 1

Outage case 326              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48019 AVONDALE 115.0 to   48356 RATHDRME 115.0   circuit 1

Outage case 327              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48025 BEACON N 230.0 to   40090 BELL SO  230.0   circuit 5

Outage case 328              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48029 BEACON S 115.0 to   40087 BELL BPA 115.0   circuit 1

Outage case 329              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48031 BEACON S 230.0 to   40090 BELL SO  230.0   circuit 4
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Outage case 330                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48031 BEACON S 230.0 to   48357 RATHDRUM 230.0   circuit 1

Outage case 331                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40087 BELL BPA 115.0 to   40113 BIGELOW  115.0   circuit 1

Outage case 332                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40087 BELL BPA 115.0 to   40255 COLBERTT 115.0   circuit 1

Outage case 333                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40087 BELL BPA 115.0 to   40281 COULEE   115.0   circuit 1

Outage case 334                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40087 BELL BPA 115.0 to   47285 INLD EMP 115.0   circuit 1

Outage case 335                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40087 BELL BPA 115.0 to   41015 SPRNGHIL 115.0   circuit 1

Outage case 336                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40087 BELL BPA 115.0 to   48449 WAIKIKIT 115.0   circuit 1

Outage case 337                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40091 BELL BPA 500.0 to   41057 TAFT     500.0   circuit 1

Outage case 338                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40088 BELL MI  230.0 to   40086 BELL NO  230.0   circuit 1

Outage case 339                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40088 BELL MI  230.0 to   40090 BELL SO  230.0   circuit 1

Outage case 340                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40088 BELL MI  230.0 to   41358 COULEES3 230.0   circuit 5

Outage case 341                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40088 BELL MI  230.0 to   47091 USK      230.0   circuit 1

Outage case 342                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40086 BELL NO  230.0 to   40909 SACHEEN  230.0   circuit 1

Outage case 343                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40086 BELL NO  230.0 to   41275 WESTBPA1 230.0   circuit 1

Outage case 344                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40090 BELL SO  230.0 to   41356 COULEES1 230.0   circuit 3

Outage case 345                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40090 BELL SO  230.0 to   40624 LANCASTR 230.0   circuit 1

Outage case 346                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48033 BELL TAP 115.0 to   40087 BELL BPA 115.0   circuit 1

Outage case 347                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48035 BENEWAH  115.0 to   48323 PLUMMER  115.0   circuit 1

Outage case 348                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48037 BENEWAH  230.0 to   48317 PINE CRK 230.0   circuit 1

Outage case 349                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48041 BIGCREEK 115.0 to   48049 BUNKRHIL 115.0   circuit 1

Outage case 350                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40113 BIGELOW  115.0 to   40483 GREEN BL 115.0   circuit 1

Outage case 351                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40113 BIGELOW  115.0 to   41089 TRENTWOD 115.0   circuit 1

Outage case 352                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48043 BLANCHRD 115.0 to   47505 HOODOO   115.0   circuit 1

Outage case 353                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48045 BLUECRK  115.0 to   48067 CDA      115.0   circuit 1

Outage case 354                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40133 BONNERS  115.0 to   41239 MOYIE T  115.0   circuit 1

Outage case 355                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40133 BONNERS  115.0 to   47194 MT HALL  115.0   circuit 1

Outage case 356                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40133 BONNERS  115.0 to   40927 SAMUELS  115.0   circuit 1

Outage case 357                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40143 BOUNDARY 115.0 to   40731 METALINE 115.0   circuit 1

Outage case 358                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40145 BOUNDARY 230.0 to   40319 CUSICK   230.0   circuit 1

Outage case 359                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40145 BOUNDARY 230.0 to   40909 SACHEEN  230.0   circuit 1

Outage case 360                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        47009 BOX CANY 115.0 to   40317 CUSICK   115.0   circuit 1

Outage case 361                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        47126 BOX PS   115.0 to   41190 BOX TAP  115.0   circuit 1

Outage case 362                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        41190 BOX TAP  115.0 to   40731 METALINE 115.0   circuit 1

Outage case 363                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        41190 BOX TAP  115.0 to   48399 SPIRIT   115.0   circuit 1

Outage case 364                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40149 BRINKENS 115.0 to   48341 POTLAT A 115.0   circuit 1

Outage case 365                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48047 BRONX    115.0 to   48293 ODEN     115.0   circuit 1

Outage case 366                Y, WAPA UGP, JUNE 2002
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    switched OUT LINE        48047 BRONX    115.0 to   48377 SANDPT A 115.0   circuit 1
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Outage case 367               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48049 BUNKRHIL 115.0 to   48315 PINE CRK 115.0   circuit 1
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Outage case 368               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48051 BURKE    115.0 to   48053 BURKAVAA 115.0   circuit 1
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Outage case 369               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48051 BURKE    115.0 to   48055 BURKAVAB 115.0   circuit 1
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Outage case 370               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48051 BURKE    115.0 to   48151 HECLA    115.0   circuit 1
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Outage case 371               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48051 BURKE    115.0 to   48217 LUCKYFTP 115.0   circuit 1
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Outage case 372               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48057 CAB GORG 115.0 to   48065 CABINETG 115.0   circuit 1
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Outage case 373               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48059 CAB GORG 230.0 to   48179 LAKEVIEW 230.0   circuit 1
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Outage case 374               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48059 CAB GORG 230.0 to   48281 NOXON    230.0   circuit 1
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Outage case 375               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48065 CABINETG 115.0 to   48077 CLRKFORK 115.0   circuit 1
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Outage case 376               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48067 CDA      115.0 to   48097 DALTONT  115.0   circuit 1
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Outage case 377               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48067 CDA      115.0 to   48349 RAMSEY   115.0   circuit 1
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Outage case 378               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40215 CHENEY   115.0 to   40439 FOURLKS  115.0   circuit 1
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Outage case 379               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48071 CHEWELAH 115.0 to   48441 VALLEY A 115.0   circuit 1
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Outage case 380               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48073 CHMBRSTP 115.0 to   47503 CHAMBERS 115.0   circuit 1
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Outage case 381               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40239 CLARKSTN 115.0 to   48253 N LEWIST 115.0   circuit 1
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Outage case 382               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40239 CLARKSTN 115.0 to   40835 POMEROY  115.0   circuit 1
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Outage case 383               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40245 CLAYTON  115.0 to   40337 DEER PRK 115.0   circuit 1
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Outage case 384               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40245 CLAYTON  115.0 to   48213 LOON LK  115.0   circuit 1
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Outage case 385               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48077 CLRKFORK 115.0 to   48293 ODEN     115.0   circuit 1
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Outage case 386               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        41194 COL FAL1 230.0 to   41195 COL FAL2 230.0   circuit 1
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Outage case 387               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        41194 COL FAL1 230.0 to   40267 CONKELLY 230.0   circuit 1
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Outage case 388               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        41194 COL FAL1 230.0 to   40557 HUNGRY H 230.0   circuit 1
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Outage case 389               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        41196 COL FAL3 230.0 to   40249 COL FALL 230.0   circuit 1
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Outage case 390               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        41196 COL FAL3 230.0 to   40267 CONKELLY 230.0   circuit 1
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Outage case 391               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        41196 COL FAL3 230.0 to   40557 HUNGRY H 230.0   circuit 1
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Outage case 392               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40247 COL FALL 115.0 to   40589 KALISPEL 115.0   circuit 1
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Outage case 393               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40247 COL FALL 115.0 to   41039 STILLWTR 115.0   circuit 1
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Outage case 394               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40249 COL FALL 230.0 to   40421 FLATHEAD 230.0   circuit 1
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Outage case 395               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48079 COLBERT  115.0 to   40255 COLBERTT 115.0   circuit 1
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Outage case 396               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40255 COLBERTT 115.0 to   40495 HALFMOON 115.0   circuit 1
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Outage case 397               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48083 COLV AVA 115.0 to   48143 GREENWDA 115.0   circuit 1
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Outage case 398               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40263 COLV BPA 115.0 to   40607 KETTLE T 115.0   circuit 1
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Outage case 399               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40263 COLV BPA 115.0 to   48399 SPIRIT   115.0   circuit 1
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Outage case 400               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40267 CONKELLY 230.0 to   45305 TRUMB CR 230.0   circuit 1
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Outage case 401               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40275 COOK M T 115.0 to   40607 KETTLE T 115.0   circuit 1
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Outage case 402               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40275 COOK M T 115.0 to   40879 REPUBLIC 115.0   circuit 1
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Outage case 403              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        46150 COUL2GPD 115.0 to   41127 WAGNERLT 115.0   circuit 1

Outage case 404              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        41357 COULEES2 230.0 to   41276 WESTBPA2 230.0   circuit 1

Outage case 405              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40311 CRESTN   115.0 to   40637 LARENE   115.0   circuit 1

Outage case 406              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40311 CRESTN   115.0 to   41127 WAGNERLT 115.0   circuit 1

Outage case 407              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40317 CUSICK   115.0 to   47254 USK      115.0   circuit 1

Outage case 408              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40319 CUSICK   230.0 to   47091 USK      230.0   circuit 1

Outage case 409              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48095 DALTON2T 115.0 to   48019 AVONDALE 115.0   circuit 1

Outage case 410              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48097 DALTONT  115.0 to   48093 DALTON A 115.0   circuit 1

Outage case 411              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48097 DALTONT  115.0 to   48356 RATHDRME 115.0   circuit 1

Outage case 412              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40337 DEER PRK 115.0 to   48235 MILAN TP 115.0   circuit 1

Outage case 413              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        47025 DELIGHT  115.0 to   48457 WASHTUNA 115.0   circuit 1

Outage case 414              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        47027 DIAM LAK 115.0 to   40907 SACHEEN  115.0   circuit 1

Outage case 415              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40348 DIXON    230.0 to   40551 HOT SPR  230.0   circuit 1

Outage case 416              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40348 DIXON    230.0 to   40867 RATTLE S 230.0   circuit 1

Outage case 417              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        47033 DOWER RD 115.0 to   48111 DOWERRDT 115.0   circuit 1

Outage case 418              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48111 DOWERRDT 115.0 to   48329 POST FLS 115.0   circuit 1

Outage case 419              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40369 DWORSHAK 500.0 to   40521 HATWAI   500.0   circuit 1

Outage case 420              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40369 DWORSHAK 500.0 to   41057 TAFT     500.0   circuit 1

Outage case 421              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48117 EASTFARM 115.0 to   48329 POST FLS 115.0   circuit 1

Outage case 422              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48119 EGRANTAP 115.0 to   40383 EGRANVIL 115.0   circuit 1

Outage case 423              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40391 ELMO     115.0 to   40589 KALISPEL 115.0   circuit 1

Outage case 424              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40421 FLATHEAD 230.0 to   45175 LION MTN 230.0   circuit 1

Outage case 425              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48125 FOURLBPA 115.0 to   40439 FOURLKS  115.0   circuit 1

Outage case 426              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48125 FOURLBPA 115.0 to   40525 HAYFORD  115.0   circuit 1

Outage case 427              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40449 GAFFNEY  115.0 to   48411 SPRAGUE  115.0   circuit 1

Outage case 428              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40451 GAR1EAST 500.0 to   40459 GARRISON 500.0   circuit 1

Outage case 429              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40453 GAR2EAST 500.0 to   40459 GARRISON 500.0   circuit 1

Outage case 430              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48131 GARDENSP 115.0 to   40525 HAYFORD  115.0   circuit 1

Outage case 431              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40457 GARRISON 230.0 to   40867 RATTLE S 230.0   circuit 1

Outage case 432              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40459 GARRISON 500.0 to   41057 TAFT     500.0   circuit 1

Outage case 433              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40459 GARRISON 500.0 to   41057 TAFT     500.0   circuit 2

Outage case 434              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48143 GREENWDA 115.0 to   48175 KETTLEAV 115.0   circuit 1

Outage case 435              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40495 HALFMOON 115.0 to   41099 TUM TUM  115.0   circuit 1

Outage case 436              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40499 HANFORD  500.0 to   40683 LOW MON  500.0   circuit 1

Outage case 437              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40513 HASKILL  230.0 to   40657 LIBBY    230.0   circuit 1

Outage case 438              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40513 HASKILL  230.0 to   45305 TRUMB CR 230.0   circuit 1

Outage case 439              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40519 HATWAI   230.0 to   48197 LOLO     230.0   circuit 1
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Outage case 440                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40519 HATWAI   230.0 to   48197 LOLO     230.0   circuit 2

Outage case 441                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40519 HATWAI   230.0 to   48249 MOSCOW   230.0   circuit 1

Outage case 442                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40519 HATWAI   230.0 to   48255 N LEWIST 230.0   circuit 1

Outage case 443                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40521 HATWAI   500.0 to   40679 LOW GRAN 500.0   circuit 1

Outage case 444                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48151 HECLA    115.0 to   48453 WALLACE  115.0   circuit 1

Outage case 445                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48153 HECLAT   115.0 to   48041 BIGCREEK 115.0   circuit 1

Outage case 446                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48155 HERN     115.0 to   48159 HUETTER  115.0   circuit 1

Outage case 447                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        47505 HOODOO   115.0 to   48403 SPIRITLT 115.0   circuit 1

Outage case 448                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        47507 HOPKINSB 115.0 to   48271 NINTHCNT 115.0   circuit 1

Outage case 449                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40551 HOT SPR  230.0 to   45175 LION MTN 230.0   circuit 1

Outage case 450                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40551 HOT SPR  230.0 to   48281 NOXON    230.0   circuit 2

Outage case 451                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40551 HOT SPR  230.0 to   41091 TROUT CR 230.0   circuit 1

Outage case 452                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40553 HOT SPR  500.0 to   41057 TAFT     500.0   circuit 1

Outage case 453                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48159 HUETTER  115.0 to   48355 RATHDRUM 115.0   circuit 1

Outage case 454                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        47285 INLD EMP 115.0 to   41089 TRENTWOD 115.0   circuit 1

Outage case 455                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40587 JOSO TAP 115.0 to   41340 NINEMI T 115.0   circuit 1

Outage case 456                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40607 KETTLE T 115.0 to   48175 KETTLEAV 115.0   circuit 1

Outage case 457                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40617 LACLEDE  115.0 to   40857 PRIEST   115.0   circuit 1

Outage case 458                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40617 LACLEDE  115.0 to   40933 SANDPONT 115.0   circuit 1

Outage case 459                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40621 LAGRANDE 230.0 to   40905 ROUNDUP  230.0   circuit 1

Outage case 460                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48179 LAKEVIEW 230.0 to   48357 RATHDRUM 230.0   circuit 1

Outage case 461                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40624 LANCASTR 230.0 to   40787 NOXONBPA 230.0   circuit 1

Outage case 462                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40637 LARENE   115.0 to   41015 SPRNGHIL 115.0   circuit 1

Outage case 463                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40655 LIBBY    115.0 to   47278 LIBBYFEC 115.0   circuit 1

Outage case 464                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40657 LIBBY    230.0 to   40787 NOXONBPA 230.0   circuit 1

Outage case 465                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        47278 LIBBYFEC 115.0 to   41097 TROY     115.0   circuit 1

Outage case 466                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48187 LIND     115.0 to   47025 DELIGHT  115.0   circuit 1

Outage case 467                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48187 LIND     115.0 to   47073 RALSTONB 115.0   circuit 1

Outage case 468                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40665 LIT GOOS 500.0 to   40679 LOW GRAN 500.0   circuit 1

Outage case 469                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40665 LIT GOOS 500.0 to   40679 LOW GRAN 500.0   circuit 2

Outage case 470                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40665 LIT GOOS 500.0 to   40683 LOW MON  500.0   circuit 1

Outage case 471                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40665 LIT GOOS 500.0 to   40683 LOW MON  500.0   circuit 2

Outage case 472                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40683 LOW MON  500.0 to   40917 SACJWA T 500.0   circuit 1

Outage case 473                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48217 LUCKYFTP 115.0 to   48153 HECLAT   115.0   circuit 1

Outage case 474                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48217 LUCKYFTP 115.0 to   48215 LUCKY F  115.0   circuit 1

Outage case 475                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48221 MARENGO  115.0 to   47073 RALSTONB 115.0   circuit 1

Outage case 476                Y, WAPA UGP, JUNE 2002
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    switched OUT LINE        41351 MCNRY S1 230.0 to   40905 ROUNDUP  230.0   circuit 1
Outage case 477               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48223 METCHIP  115.0 to   48015 ARDEN    115.0   circuit 1
Outage case 478               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        47509 MICA     115.0 to   48231 MICA TAP 115.0   circuit 1
Outage case 479               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48231 MICA TAP 115.0 to   47507 HOPKINSB 115.0   circuit 1
Outage case 480               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48235 MILAN TP 115.0 to   41099 TUM TUM  115.0   circuit 1
Outage case 481               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48239 MISSION  115.0 to   48045 BLUECRK  115.0   circuit 1
Outage case 482               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        47511 MOAB     115.0 to   48310 OPORTUNE 115.0   circuit 1
Outage case 483               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        47511 MOAB     115.0 to   48319 PLEASANT 115.0   circuit 1
Outage case 484               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        41239 MOYIE T  115.0 to   41240 MOYIE TX 115.0   circuit 1
Outage case 485               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        41239 MOYIE T  115.0 to   41169 YAAK     115.0   circuit 1
Outage case 486               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        41240 MOYIE TX 115.0 to   41241 N BENCH  115.0   circuit 1
Outage case 487               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        47194 MT HALL  115.0 to   41299 SMITHFLS 115.0   circuit 1
Outage case 488               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40779 NEWPORTB 115.0 to   47086 PINE ST  115.0   circuit 1
Outage case 489               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48258 NEWPORTT 115.0 to   48043 BLANCHRD 115.0   circuit 1
Outage case 490               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48258 NEWPORTT 115.0 to   48259 NEWPORTA 115.0   circuit 1
Outage case 491               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48258 NEWPORTT 115.0 to   47086 PINE ST  115.0   circuit 1
Outage case 492               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        41340 NINEMI T 115.0 to   41131 WALAWALA 115.0   circuit 1
Outage case 493               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        47574 NINEMIF1 115.0 to   41340 NINEMI T 115.0   circuit 1
Outage case 494               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        47572 NINEMIF2 230.0 to   45331 WALLULA  230.0   circuit 1
Outage case 495               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48281 NOXON    230.0 to   40787 NOXONBPA 230.0   circuit 1
Outage case 496               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48281 NOXON    230.0 to   48317 PINE CRK 230.0   circuit 1
Outage case 497               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40787 NOXONBPA 230.0 to   48289 NOXONCON 230.0   circuit 1
Outage case 498               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48289 NOXONCON 230.0 to   41091 TROUT CR 230.0   circuit 1
Outage case 499               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48295 ODESSA   115.0 to   40577 IRBY     115.0   circuit 1
Outage case 500               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48297 OGARA    115.0 to   48315 PINE CRK 115.0   circuit 1
Outage case 501               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48301 ORIN     115.0 to   48083 COLV AVA 115.0   circuit 1
Outage case 502               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48303 OROFINO  115.0 to   40023 AHSAHKA  115.0   circuit 1
Outage case 503               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48305 OSBURN   115.0 to   48315 PINE CRK 115.0   circuit 1
Outage case 504               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48311 OTIS     115.0 to   47511 MOAB     115.0   circuit 1
Outage case 505               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48306 OTIS     230.0 to   48031 BEACON S 230.0   circuit 1
Outage case 506               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48306 OTIS     230.0 to   48357 RATHDRUM 230.0   circuit 1
Outage case 507               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48306 OTIS     230.0 to   48357 RATHDRUM 230.0   circuit 2
Outage case 508               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48315 PINE CRK 115.0 to   48473 YELOWSTN 115.0   circuit 1
Outage case 509               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        47086 PINE ST  115.0 to   47254 USK      115.0   circuit 1
Outage case 510               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48319 PLEASANT 115.0 to   48355 RATHDRUM 115.0   circuit 1
Outage case 511               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48323 PLUMMER  115.0 to   48297 OGARA    115.0   circuit 1
Outage case 512               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40835 POMEROY  115.0 to   41131 WALAWALA 115.0   circuit 1
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Outage case 513              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48329 POST FLS 115.0 to   40855 PRAIRIEB 115.0   circuit 1

Outage case 514              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40855 PRAIRIEB 115.0 to   48349 RAMSEY   115.0   circuit 1

Outage case 515              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40857 PRIEST   115.0 to   48347 PRIEST A 115.0   circuit 1

Outage case 516              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48349 RAMSEY   115.0 to   48011 APPLETAP 115.0   circuit 1

Outage case 517              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48349 RAMSEY   115.0 to   48155 HERN     115.0   circuit 1

Outage case 518              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48351 RATHBUS1 115.0 to   48355 RATHDRUM 115.0   circuit 1

Outage case 519              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48353 RATHBUS2 115.0 to   48356 RATHDRME 115.0   circuit 1

Outage case 520              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48356 RATHDRME 115.0 to   48355 RATHDRUM 115.0   circuit 1

Outage case 521              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48356 RATHDRME 115.0 to   40953 SCARCELO 115.0   circuit 1

Outage case 522              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48363 REARDAN  115.0 to   40449 GAFFNEY  115.0   circuit 1

Outage case 523              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40927 SAMUELS  115.0 to   40965 SELLE    115.0   circuit 1

Outage case 524              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40929 SAND CRK 115.0 to   40931 SAND TP  115.0   circuit 1

Outage case 525              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40929 SAND CRK 115.0 to   48377 SANDPT A 115.0   circuit 1

Outage case 526              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40929 SAND CRK 115.0 to   40965 SELLE    115.0   circuit 1

Outage case 527              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40931 SAND TP  115.0 to   40933 SANDPONT 115.0   circuit 1

Outage case 528              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48383 SHAWNEE  115.0 to   47501 ARMSTRNG 115.0   circuit 1

Outage case 529              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48403 SPIRITLT 115.0 to   48017 ATHOLTAP 115.0   circuit 1

Outage case 530              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48403 SPIRITLT 115.0 to   48401 SPIRITLK 115.0   circuit 1

Outage case 531              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        41039 STILLWTR 115.0 to   41087 TREGO    115.0   circuit 1

Outage case 532              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48417 STMARIES 115.0 to   48297 OGARA    115.0   circuit 1

Outage case 533              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        41260 SULLIVNB 115.0 to   41115 VERA     115.0   circuit 1

Outage case 534              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        41260 SULLIVNB 115.0 to   41117 VERA TAP 115.0   circuit 1

Outage case 535              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        41089 TRENTWOD 115.0 to   41117 VERA TAP 115.0   circuit 1

Outage case 536              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        41097 TROY     115.0 to   41169 YAAK     115.0   circuit 1

Outage case 537              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48441 VALLEY A 115.0 to   48123 FORD     115.0   circuit 1

Outage case 538              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        41107 VALY WAY 115.0 to   41117 VERA TAP 115.0   circuit 1

Outage case 539              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48445 VIOLA    115.0 to   40149 BRINKENS 115.0   circuit 1

Outage case 540              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        41125 WAGNERLK 115.0 to   48469 WILBURT  115.0   circuit 1

Outage case 541              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        41127 WAGNERLT 115.0 to   48469 WILBURT  115.0   circuit 1

Outage case 542              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48453 WALLACE  115.0 to   48305 OSBURN   115.0   circuit 1

Outage case 543              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48463 WEST     230.0 to   41275 WESTBPA1 230.0   circuit 1

Outage case 544              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48463 WEST     230.0 to   41276 WESTBPA2 230.0   circuit 1

Outage case 545              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48471 WILSNCKT 115.0 to   40577 IRBY     115.0   circuit 1

Outage case 546              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        48473 YELOWSTN 115.0 to   48239 MISSION  115.0   circuit 1

Outage case 547              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        65010 AEC IPC  138.0 to   65015 AEC SCOV 138.0   circuit 1

Outage case 548              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        65015 AEC SCOV 138.0 to   65065 ANTLOP 1 138.0   circuit 1

Outage case 549              Y, WAPA UGP, JUNE 2002
    switched OUT LINE        65015 AEC SCOV 138.0 to   65070 ANTLOP 2 138.0   circuit 1
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Outage case 550                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        65025 AMPS     230.0 to   65075 ANTLOPE  230.0   circuit 1

Outage case 551                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        65075 ANTLOPE  230.0 to   65910 LOST RIV 230.0   circuit 1

Outage case 552                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        65080 ANTLOPE  161.0 to   65670 GOSHEN   161.0   circuit 1

Outage case 553                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        65095 BADWATER 230.0 to   66410 SPENCE   230.0   circuit 1

Outage case 554                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        65095 BADWATER 230.0 to   66535 THERMOPL 230.0   circuit 1

Outage case 555                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        65155 BIGGRASS 161.0 to   65860 JFRSNPHA 161.0   circuit 1

Outage case 556                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        65195 BONNEVIL 161.0 to   65485 EAGLE RK 161.0   circuit 1

Outage case 557                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        65210 BPA RIGB 161.0 to   66295 RIGBY    161.0   circuit 1

Outage case 558                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        65235 BUFFALO  230.0 to   65293 CARR DRA 230.0   circuit 1

Outage case 559                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        65235 BUFFALO  230.0 to   65875 KAYCEE   230.0   circuit 1

Outage case 560                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        65235 BUFFALO  230.0 to   66335 SHERIDAN 230.0   circuit 1

Outage case 561                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        65293 CARR DRA 230.0 to   66725 WYODAK   230.0   circuit 1

Outage case 562                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        65300 CASPERPP 230.0 to   65955 MIDWEST  230.0   circuit 1

Outage case 563                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        65450 DECKER   230.0 to   65660 GOOSE CK 230.0   circuit 1

Outage case 564                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        65450 DECKER   230.0 to   66735 WYOMONT  230.0   circuit 1

Outage case 565                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        65485 EAGLE RK 161.0 to   65670 GOSHEN   161.0   circuit 1

Outage case 566                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        65485 EAGLE RK 161.0 to   66695 WIDFALLS 161.0   circuit 1

Outage case 567                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        65560 FISHCREK 161.0 to   65670 GOSHEN   161.0   circuit 1

Outage case 568                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        65575 FRANNIE  230.0 to   65620 GARLAND  230.0   circuit 1

Outage case 569                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        65575 FRANNIE  230.0 to   66750 YELOWTLP 230.0   circuit 1

Outage case 570                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        65620 GARLAND  230.0 to   66145 OREBASIN 230.0   circuit 1

Outage case 571                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        65630 GEMST TP 161.0 to   65635 GEMSTATE 161.0   circuit 1

Outage case 572                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        65630 GEMST TP 161.0 to   66392 SOUTEAST 161.0   circuit 1

Outage case 573                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        65630 GEMST TP 161.0 to   66695 WIDFALLS 161.0   circuit 1

Outage case 574                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        65660 GOOSE CK 230.0 to   66335 SHERIDAN 230.0   circuit 1

Outage case 575                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        65660 GOOSE CK 230.0 to   66750 YELOWTLP 230.0   circuit 1

Outage case 576                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        65670 GOSHEN   161.0 to   65840 IONA     161.0   circuit 1

Outage case 577                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        65670 GOSHEN   161.0 to   65850 JEFFERSN 161.0   circuit 1

Outage case 578                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        65670 GOSHEN   161.0 to   66295 RIGBY    161.0   circuit 1

Outage case 579                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        65670 GOSHEN   161.0 to   66430 SUGARMIL 161.0   circuit 1

Outage case 580                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        65670 GOSHEN   161.0 to   66465 SWAN VAL 161.0   circuit 1

Outage case 581                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        65720 GRASS CK 230.0 to   66145 OREBASIN 230.0   circuit 1

Outage case 582                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        65720 GRASS CK 230.0 to   66535 THERMOPL 230.0   circuit 1

Outage case 583                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        65840 IONA     161.0 to   66295 RIGBY    161.0   circuit 1

Outage case 584                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        65850 JEFFERSN 161.0 to   66295 RIGBY    161.0   circuit 1

Outage case 585                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        65875 KAYCEE   230.0 to   65955 MIDWEST  230.0   circuit 1

Outage case 586                Y, WAPA UGP, JUNE 2002
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    switched OUT LINE        66295 RIGBY    161.0 to   66430 SUGARMIL 161.0   circuit 1
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Outage case 587               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        66305 RIVERTON 230.0 to   66535 THERMOPL 230.0   circuit 1
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Outage case 588               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        66392 SOUTEAST 161.0 to   66430 SUGARMIL 161.0   circuit 1
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Outage case 589               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        66540 THERPACE 115.0 to   66720 WORLAND  115.0   circuit 1
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Outage case 590               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        63003 CUSTER   230.0 to   63002 CRSOVRUM 230.0   circuit 1
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Outage case 591               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        63003 CUSTER   230.0 to   63012 ROSEBUD  230.0   circuit 1
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Outage case 592               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        63004 FT PECK  161.0 to   63011 RICHARDC 161.0   circuit 1
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Outage case 593               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        63006 HARLEM   161.0 to   63008 HAVRE    161.0   circuit 1
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Outage case 594               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        63007 HAVRE    115.0 to   63013 RUDYARD  115.0   circuit 1
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Outage case 595               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        63008 HAVRE    161.0 to   63015 VERONA   161.0   circuit 1
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Outage case 596               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        63009 MALTA UM 161.0 to   63006 HARLEM   161.0   circuit 1
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Outage case 597               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        63010 MILCTYDC 230.0 to   63012 ROSEBUD  230.0   circuit 1
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Outage case 598               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        63011 RICHARDC 161.0 to   63009 MALTA UM 161.0   circuit 1
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Outage case 599               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        63013 RUDYARD  115.0 to   63014 TIBERTAP 115.0   circuit 1
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Outage case 600               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40391 ELMO     115.0 to   62066 KERR     115.0   circuit 1
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Outage case 601               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40457 GARRISON 230.0 to   62072 OVANDO   230.0   circuit 1
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Outage case 602               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        40551 HOT SPR  230.0 to   62072 OVANDO   230.0   circuit 1
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Outage case 603               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        50822 NLYPHS   230.0 to   40145 BOUNDARY 230.0   circuit 1
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Outage case 604               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62004 ANACOND  230.0 to   40457 GARRISON 230.0   circuit 1
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Outage case 605               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62004 ANACOND  230.0 to   40457 GARRISON 230.0   circuit 2
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Outage case 606               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62012 TOWN2    500.0 to   40453 GAR2EAST 500.0   circuit 2
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Outage case 607               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62013 TOWN1    500.0 to   40451 GAR1EAST 500.0   circuit 1
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Outage case 608               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62027 SHELBY   115.0 to   63014 TIBERTAP 115.0   circuit 1
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Outage case 609               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62030 PTRSNFLT 230.0 to   65025 AMPS     230.0   circuit 1
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Outage case 610               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62051 HARDIN   230.0 to   63002 CRSOVRUM 230.0   circuit 1
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Outage case 611               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62056 HUNTLEY  230.0 to   63002 CRSOVRUM 230.0   circuit 1
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Outage case 612               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62084 DILLON S 161.0 to   65155 BIGGRASS 161.0   circuit 1
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Outage case 613               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62085 CROWCR B 115.0 to   48055 BURKAVAB 115.0   circuit 1
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Outage case 614               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        62086 THOMSON  115.0 to   48053 BURKAVAA 115.0   circuit 1
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Outage case 615               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        63008 HAVRE    161.0 to   62023 GT FALLS 161.0   circuit 1
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Outage case 616               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        66540 THERPACE 115.0 to   73197 THERMOPL 115.0   circuit 1
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Outage case 617               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        66720 WORLAND  115.0 to   73222 WORLANTP 115.0   circuit 1
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Outage case 618               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        66750 YELOWTLP 230.0 to   62045 BLGS PHA 230.0   circuit 1
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Outage case 619               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        66755 YELOWTLP 161.0 to   62061 RMRK PHA 161.0   circuit 1
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Outage case 620               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        66750 YELOWTLP 230.0 to   73229 YELLOWBR 230.0   circuit 1
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Outage case 621               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        73229 YELLOWBR 230.0 to   63001 CROS PHA 230.0   circuit 1
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Outage case 622               Y, WAPA UGP, JUNE 2002
    switched OUT LINE        60030 BLACKFT  161.0 to   65670 GOSHEN   161.0   circuit 1
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Outage case 623                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        60073 BRADY    230.0 to   65075 ANTLOPE  230.0   circuit 1

Outage case 624                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        60085 BRIDGER  345.0 to   65665 GOSHEN   345.0   circuit 1

Outage case 625                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        65665 GOSHEN   345.0 to   60190 KINPORT  345.0   circuit 1

Outage case 626                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        63015 VERONA   161.0 to   62024 RAINBOW  161.0   circuit 1

Outage case 627                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        90100 MTSBLKFT 115.0 to   62031 CUTBANK  115.0   circuit 1

Outage case 628                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        90200 MTSGFALL 100.0 to   62118 GT FALLS 100.0   circuit 1

Outage case 629                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        90300 MTSFTPCK 161.0 to   63004 FT PECK  161.0   circuit 1

Outage case 630                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        90400 MTSLVNGS 161.0 to   62108 CLYDE P  161.0   circuit 1

Outage case 631                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        90500 MTSBLGS  100.0 to   62097 BILINGS  100.0   circuit 1

Outage case 632                Y, WAPA UGP, JUNE 2002
    switched OUT LINE        90600 MTSYLWTL 230.0 to   66750 YELOWTLP 230.0   circuit 1

Outage case 633                Y, WAPA UGP, JUNE 2002
    switched OUT TRANSFORMER 62004 ANACOND  230.0 to   62005 ANACOND  161.0   circuit 1

Outage case 634                Y, WAPA UGP, JUNE 2002
    switched OUT TRANSFORMER 62004 ANACOND  230.0 to   62005 ANACOND  161.0   circuit 2

Outage case 635                Y, WAPA UGP, JUNE 2002
    switched OUT TRANSFORMER 62005 ANACOND  161.0 to   62115 ANACOND  100.0   circuit 1

Outage case 636                Y, WAPA UGP, JUNE 2002
    switched OUT TRANSFORMER 62005 ANACOND  161.0 to   62115 ANACOND  100.0   circuit 2

Outage case 637                Y, WAPA UGP, JUNE 2002
    switched OUT TRANSFORMER 62006 TAFTAUTO 115.0 to   62090 TAFTAUTO 100.0   circuit 1

Outage case 638                Y, WAPA UGP, JUNE 2002
    switched OUT TRANSFORMER 62007 KERR B   161.0 to   62066 KERR     115.0   circuit 1

Outage case 639                Y, WAPA UGP, JUNE 2002
    switched OUT TRANSFORMER 62007 KERR B   161.0 to   62066 KERR     115.0   circuit 2

Outage case 640                Y, WAPA UGP, JUNE 2002
    switched OUT TRANSFORMER 62008 KERR A   161.0 to   62066 KERR     115.0   circuit 1

Outage case 641                Y, WAPA UGP, JUNE 2002
    switched OUT TRANSFORMER 62008 KERR A   161.0 to   62066 KERR     115.0   circuit 2

Outage case 642                Y, WAPA UGP, JUNE 2002
    switched OUT TRANSFORMER 62009 RATTLE S 161.0 to   62114 MISOULA  100.0   circuit 1

Outage case 643                Y, WAPA UGP, JUNE 2002
    switched OUT TRANSFORMER 62009 RATTLE S 161.0 to   62114 MISOULA  100.0   circuit 2

Outage case 644                Y, WAPA UGP, JUNE 2002
    switched OUT TRANSFORMER 62019 WILSALL  230.0 to   62016 WILSALL  161.0   circuit 1

Outage case 645                Y, WAPA UGP, JUNE 2002
    switched OUT TRANSFORMER 62019 WILSALL  230.0 to   62016 WILSALL  161.0   circuit 2

Outage case 646                Y, WAPA UGP, JUNE 2002
    switched OUT TRANSFORMER 62022 MADISON  100.0 to   62127 MADISON    4.0   circuit 1

Outage case 647                Y, WAPA UGP, JUNE 2002
    switched OUT TRANSFORMER 62023 GT FALLS 161.0 to   62119 RAINBOW  100.0   circuit 1

Outage case 648                Y, WAPA UGP, JUNE 2002
    switched OUT TRANSFORMER 62024 RAINBOW  161.0 to   62119 RAINBOW  100.0   circuit 1

Outage case 649                Y, WAPA UGP, JUNE 2002
    switched OUT TRANSFORMER 62026 SHELBY   230.0 to   62027 SHELBY   115.0   circuit 1

Outage case 650                Y, WAPA UGP, JUNE 2002
    switched OUT TRANSFORMER 62032 RYAN     100.0 to   62039 RYAN       6.6   circuit 1

Outage case 651                Y, WAPA UGP, JUNE 2002
    switched OUT TRANSFORMER 62033 ANA BPA  115.0 to   62004 ANACOND  230.0   circuit 1

Outage case 652                Y, WAPA UGP, JUNE 2002
    switched OUT TRANSFORMER 62035 CNRDWAPA 230.0 to   62069 CNRDWAPA 115.0   circuit 1

Outage case 653                Y, WAPA UGP, JUNE 2002
    switched OUT TRANSFORMER 62036 JUDITHGP 230.0 to   62104 JUDITHGP 100.0   circuit 1

Outage case 654                Y, WAPA UGP, JUNE 2002
    switched OUT TRANSFORMER 62046 BROADVU  500.0 to   62223 BROADVU  230.0   circuit 1

Outage case 655                Y, WAPA UGP, JUNE 2002
    switched OUT TRANSFORMER 62046 BROADVU  500.0 to   62223 BROADVU  230.0   circuit 2

Outage case 656                Y, WAPA UGP, JUNE 2002
    switched OUT TRANSFORMER 62051 HARDIN   230.0 to   62080 HARDIN   115.0   circuit 1

Outage case 657                Y, WAPA UGP, JUNE 2002
    switched OUT TRANSFORMER 62052 ALKALI   230.0 to   62109 ALKALI   161.0   circuit 1

Outage case 658                Y, WAPA UGP, JUNE 2002
    switched OUT TRANSFORMER 62052 ALKALI   230.0 to   62109 ALKALI   161.0   circuit 2

Outage case 659                Y, WAPA UGP, JUNE 2002
    switched OUT TRANSFORMER 62055 BASELINE 230.0 to   62099 BASELINE 100.0   circuit 1
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Outage case 660                Y, WAPA UGP, JUNE 2002
    switched OUT TRANSFORMER 62057 COLSTRP  500.0 to   62060 COLSTRP  230.0   circuit 1

Outage case 661                Y, WAPA UGP, JUNE 2002
    switched OUT TRANSFORMER 62057 COLSTRP  500.0 to   62060 COLSTRP  230.0   circuit 2

Outage case 662                Y, WAPA UGP, JUNE 2002
    switched OUT TRANSFORMER 62060 COLSTRP  230.0 to   62081 COLSTRP  115.0   circuit 1

Outage case 663                Y, WAPA UGP, JUNE 2002
    switched OUT TRANSFORMER 62060 COLSTRP  230.0 to   62081 COLSTRP  115.0   circuit 2

Outage case 664                Y, WAPA UGP, JUNE 2002
    switched OUT TRANSFORMER 62062 RIMROCK  161.0 to   62061 RMRK PHA 161.0   circuit 1

Outage case 665                Y, WAPA UGP, JUNE 2002
    switched OUT TRANSFORMER 62062 RIMROCK  161.0 to   62096 RIMROCK  100.0   circuit 1

Outage case 666                Y, WAPA UGP, JUNE 2002
    switched OUT TRANSFORMER 62062 RIMROCK  161.0 to   62096 RIMROCK  100.0   circuit 2

Outage case 667                Y, WAPA UGP, JUNE 2002
    switched OUT TRANSFORMER 62064 BRADLEYC 161.0 to   62105 BRADLEYC 100.0   circuit 1

Outage case 668                Y, WAPA UGP, JUNE 2002
    switched OUT TRANSFORMER 62070 GT FALLS 115.0 to   62118 GT FALLS 100.0   circuit 1

Outage case 669                Y, WAPA UGP, JUNE 2002
    switched OUT TRANSFORMER 62071 GT FALLS 230.0 to   62118 GT FALLS 100.0   circuit 1

Outage case 670                Y, WAPA UGP, JUNE 2002
    switched OUT TRANSFORMER 62071 GT FALLS 230.0 to   62118 GT FALLS 100.0   circuit 2

Outage case 671                Y, WAPA UGP, JUNE 2002
    switched OUT TRANSFORMER 62076 TRIDENT  161.0 to   62021 THREERIV 100.0   circuit 1

Outage case 672                Y, WAPA UGP, JUNE 2002
    switched OUT TRANSFORMER 62077 BUTTE MT 161.0 to   62116 BUTTE MT 100.0   circuit 1

Outage case 673                Y, WAPA UGP, JUNE 2002
    switched OUT TRANSFORMER 62077 BUTTE MT 161.0 to   62116 BUTTE MT 100.0   circuit 2

Outage case 674                Y, WAPA UGP, JUNE 2002
    switched OUT TRANSFORMER 62078 RESERVST 161.0 to   62113 RESERVST 100.0   circuit 1

Outage case 675                Y, WAPA UGP, JUNE 2002
    switched OUT TRANSFORMER 62079 MILLERCK 161.0 to   62112 MILLERCK 100.0   circuit 1

Outage case 676                Y, WAPA UGP, JUNE 2002
    switched OUT TRANSFORMER 62082 BILINGS  230.0 to   62045 BLGS PHA 230.0   circuit 1

Outage case 677                Y, WAPA UGP, JUNE 2002
    switched OUT TRANSFORMER 62082 BILINGS  230.0 to   62097 BILINGS  100.0   circuit 1

Outage case 678                Y, WAPA UGP, JUNE 2002
    switched OUT TRANSFORMER 62082 BILINGS  230.0 to   62097 BILINGS  100.0   circuit 2

Outage case 679                Y, WAPA UGP, JUNE 2002
    switched OUT TRANSFORMER 62086 THOMSON  115.0 to   62000 THOMSON    6.6   circuit 1

Outage case 680                Y, WAPA UGP, JUNE 2002
    switched OUT TRANSFORMER 62089 BROADVU  100.0 to   62223 BROADVU  230.0   circuit 1

Outage case 681                Y, WAPA UGP, JUNE 2002
    switched OUT TRANSFORMER 62119 RAINBOW  100.0 to   62037 RAINBOW    6.6   circuit 1

Outage case 682                Y, WAPA UGP, JUNE 2002
    switched OUT TRANSFORMER 62120 HOLTER   100.0 to   62011 HOLTER     6.6   circuit 1

Outage case 683                Y, WAPA UGP, JUNE 2002
    switched OUT TRANSFORMER 62123 BEAGLE   100.0 to   62038 BEAGLE     6.6   circuit 1

Outage case 684                Y, WAPA UGP, JUNE 2002
    switched OUT TRANSFORMER 62205 COLRPLJE 161.0 to   62220 COLRPLJE 100.0   circuit 1

Outage case 685                Y, WAPA UGP, JUNE 2002
    switched OUT TRANSFORMER 62223 BROADVU  230.0 to   62089 BROADVU  100.0   circuit 2

Outage case 686                Y, WAPA UGP, JUNE 2002
    switched OUT TRANSFORMER 40021 ADDY 2   230.0 to   40017 ADDY     115.0   circuit 1

Outage case 687                Y, WAPA UGP, JUNE 2002
    switched OUT TRANSFORMER 40091 BELL BPA 500.0 to   40090 BELL SO  230.0   circuit 1

Outage case 688                Y, WAPA UGP, JUNE 2002
    switched OUT TRANSFORMER 40088 BELL MI  230.0 to   40087 BELL BPA 115.0   circuit 1

Outage case 689                Y, WAPA UGP, JUNE 2002
    switched OUT TRANSFORMER 40145 BOUNDARY 230.0 to   40143 BOUNDARY 115.0   circuit 1

Outage case 690                Y, WAPA UGP, JUNE 2002
    switched OUT TRANSFORMER 47126 BOX PS   115.0 to   47009 BOX CANY 115.0   circuit 1

Outage case 691                Y, WAPA UGP, JUNE 2002
    switched OUT TRANSFORMER 48059 CAB GORG 230.0 to   48057 CAB GORG 115.0   circuit 1

Outage case 692                Y, WAPA UGP, JUNE 2002
    switched OUT TRANSFORMER 41195 COL FAL2 230.0 to   40247 COL FALL 115.0   circuit 1

Outage case 693                Y, WAPA UGP, JUNE 2002
    switched OUT TRANSFORMER 40249 COL FALL 230.0 to   40247 COL FALL 115.0   circuit 1

Outage case 694                Y, WAPA UGP, JUNE 2002
    switched OUT TRANSFORMER 40369 DWORSHAK 500.0 to   41201 DWOR     100.0   circuit 1

Outage case 695                Y, WAPA UGP, JUNE 2002
    switched OUT TRANSFORMER 40459 GARRISON 500.0 to   40457 GARRISON 230.0   circuit 1

Outage case 696                Y, WAPA UGP, JUNE 2002
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    switched OUT TRANSFORMER 40521 HATWAI   500.0 to   40519 HATWAI   230.0   circuit 1
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Outage case 697                Y, WAPA UGP, JUNE 2002
    switched OUT TRANSFORMER 40553 HOT SPR  500.0 to   40551 HOT SPR  230.0   circuit 1
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Outage case 698                Y, WAPA UGP, JUNE 2002
    switched OUT TRANSFORMER 40657 LIBBY    230.0 to   40655 LIBBY    115.0   circuit 1
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Outage case 699                Y, WAPA UGP, JUNE 2002
    switched OUT TRANSFORMER 48306 OTIS     230.0 to   48311 OTIS     115.0   circuit 1
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Outage case 700                Y, WAPA UGP, JUNE 2002
    switched OUT TRANSFORMER 48317 PINE CRK 230.0 to   48315 PINE CRK 115.0   circuit 1
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Outage case 701                Y, WAPA UGP, JUNE 2002
    switched OUT TRANSFORMER 48329 POST FLS 115.0 to   48331 POSTFL15   2.4   circuit 1
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Outage case 702                Y, WAPA UGP, JUNE 2002
    switched OUT TRANSFORMER 48329 POST FLS 115.0 to   48333 POSTFLS6   2.4   circuit 1
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Outage case 703                Y, WAPA UGP, JUNE 2002
    switched OUT TRANSFORMER 48357 RATHDRUM 230.0 to   48356 RATHDRME 115.0   circuit 1
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Outage case 704                Y, WAPA UGP, JUNE 2002
    switched OUT TRANSFORMER 48357 RATHDRUM 230.0 to   48355 RATHDRUM 115.0   circuit 1
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Outage case 705                Y, WAPA UGP, JUNE 2002
    switched OUT TRANSFORMER 40909 SACHEEN  230.0 to   40907 SACHEEN  115.0   circuit 1
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Outage case 706                Y, WAPA UGP, JUNE 2002
    switched OUT TRANSFORMER 47091 USK      230.0 to   47254 USK      115.0   circuit 1
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Outage case 707                Y, WAPA UGP, JUNE 2002
    switched OUT TRANSFORMER 65075 ANTLOPE  230.0 to   65080 ANTLOPE  161.0   circuit 1
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Outage case 708                Y, WAPA UGP, JUNE 2002
    switched OUT TRANSFORMER 65080 ANTLOPE  161.0 to   65065 ANTLOP 1 138.0   circuit 1
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Outage case 709                Y, WAPA UGP, JUNE 2002
    switched OUT TRANSFORMER 65080 ANTLOPE  161.0 to   65070 ANTLOP 2 138.0   circuit 1
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Outage case 710                Y, WAPA UGP, JUNE 2002
    switched OUT TRANSFORMER 65665 GOSHEN   345.0 to   65670 GOSHEN   161.0   circuit 1
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Outage case 711                Y, WAPA UGP, JUNE 2002
    switched OUT TRANSFORMER 65665 GOSHEN   345.0 to   65685 GOSHN MP 100.0   circuit 2
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Outage case 712                Y, WAPA UGP, JUNE 2002
    switched OUT TRANSFORMER 65670 GOSHEN   161.0 to   65675 GOSHEN   115.0   circuit 1
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Outage case 713                Y, WAPA UGP, JUNE 2002
    switched OUT TRANSFORMER 65670 GOSHEN   161.0 to   65675 GOSHEN   115.0   circuit 2
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Outage case 714                Y, WAPA UGP, JUNE 2002
    switched OUT TRANSFORMER 65670 GOSHEN   161.0 to   65685 GOSHN MP 100.0   circuit 2
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Outage case 715                Y, WAPA UGP, JUNE 2002
    switched OUT TRANSFORMER 65860 JFRSNPHA 161.0 to   65850 JEFFERSN 161.0   circuit 1
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Outage case 716                Y, WAPA UGP, JUNE 2002
    switched OUT TRANSFORMER 66540 THERPACE 115.0 to   66535 THERMOPL 230.0   circuit 1
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Outage case 717                Y, WAPA UGP, JUNE 2002
    switched OUT TRANSFORMER 66750 YELOWTLP 230.0 to   66755 YELOWTLP 161.0   circuit 1
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Outage case 718                Y, WAPA UGP, JUNE 2002
    switched OUT TRANSFORMER 63002 CRSOVRUM 230.0 to   63001 CROS PHA 230.0   circuit 1
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Outage case 719                Y, WAPA UGP, JUNE 2002
    switched OUT TRANSFORMER 63008 HAVRE    161.0 to   63007 HAVRE    115.0   circuit 1
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Outage case 720                Y, WAPA UGP, JUNE 2002
    switched OUT TRANSFORMER 60192 LADD     230.0 to   40621 LAGRANDE 230.0   circuit 1
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Outage case 721                Y, WAPA UGP, JUNE 2002
    switched OUT TRANSFORMER 62009 RATTLE S 161.0 to   40867 RATTLE S 230.0   circuit 1
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Outage case 722                Y, WAPA UGP, JUNE 2002
    switched OUT TRANSFORMER 73197 THERMOPL 115.0 to   66535 THERMOPL 230.0   circuit 1
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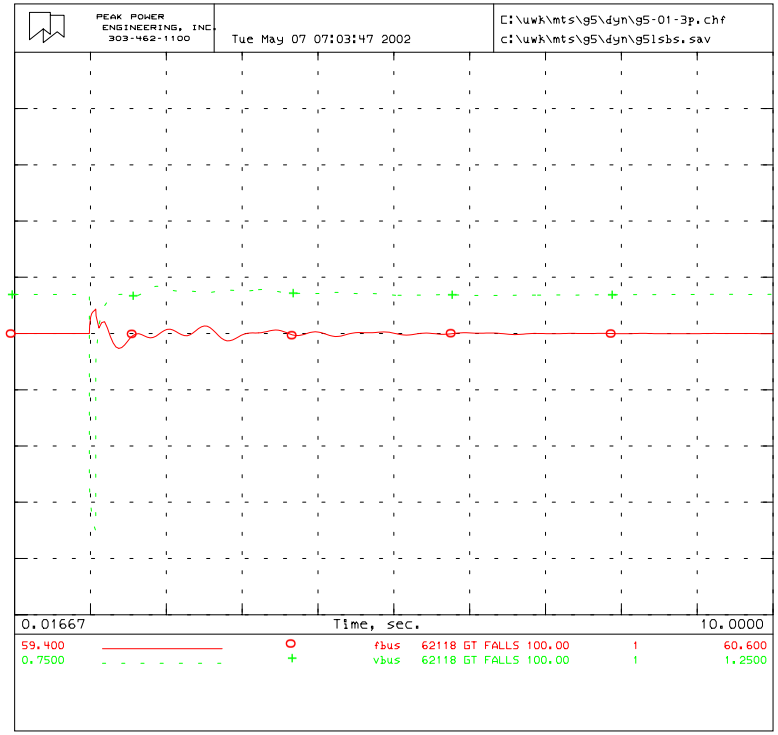
D. DYNAMIC STABILITY PLOTS

Pre-Project Cases:

Fault Location 1
Fault Location 2
Fault Location 3
Fault Location 4
Fault Location 5
Fault Location 6

Post-Project Cases:

Fault Location 1
Fault Location 2
Fault Location 3
Fault Location 4
Fault Location 5
Fault Location 6



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Clear Flt: 5 cyc, Trip Line "MTSBLKFT" 115 to "CUTBANK" 115

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HISTORY FILE BASED ON WSCC 2002 LS2B APPROVED OPERATING CASE
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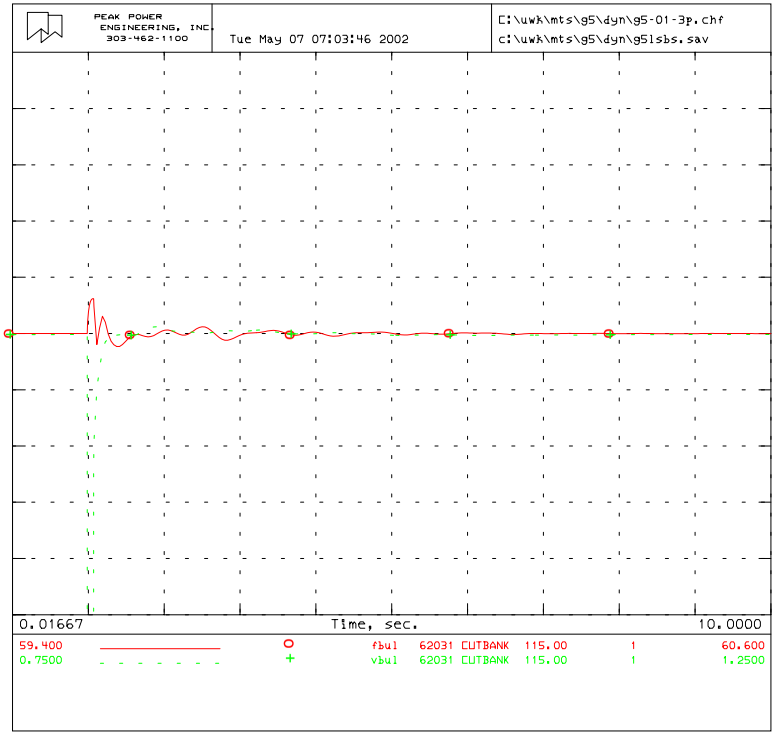

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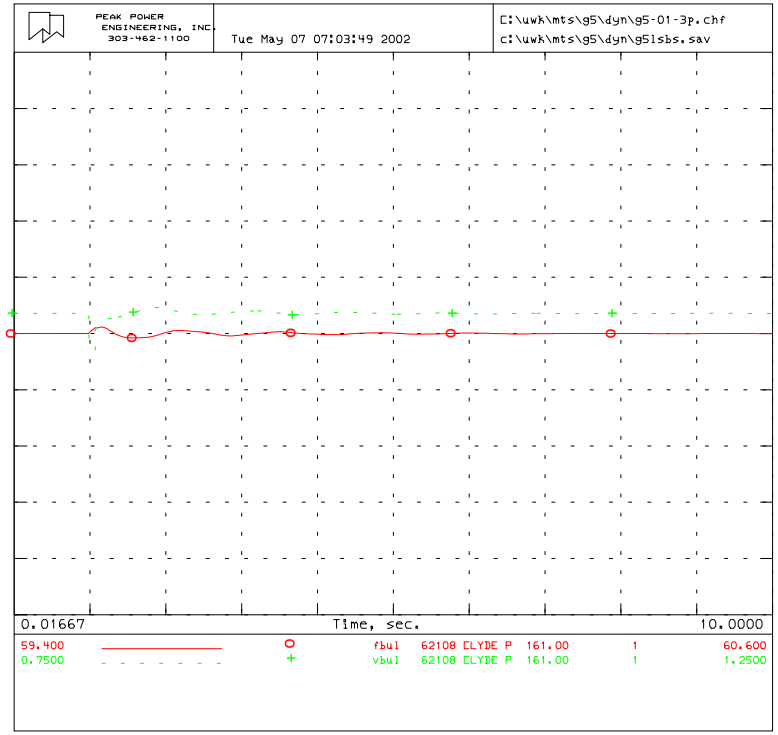

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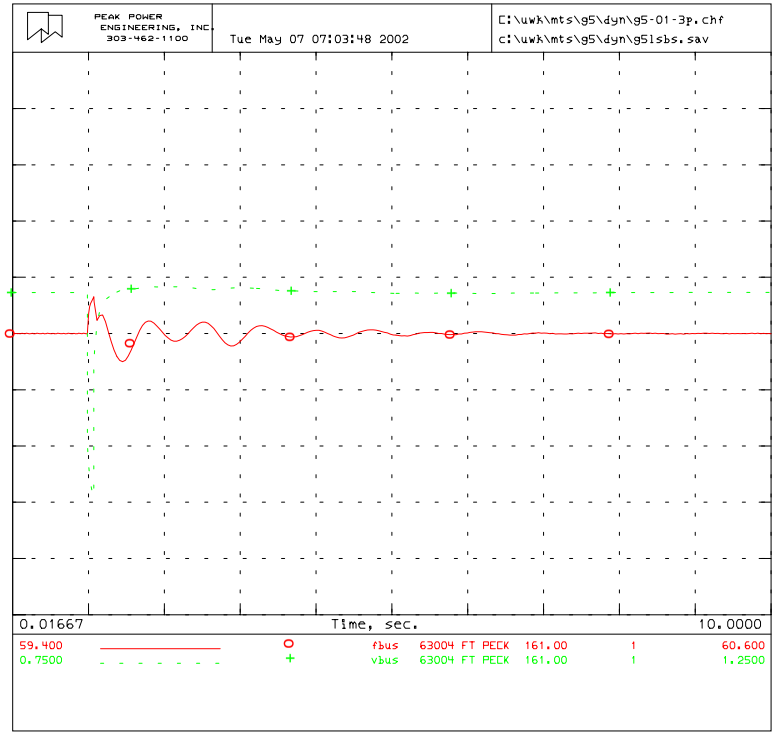

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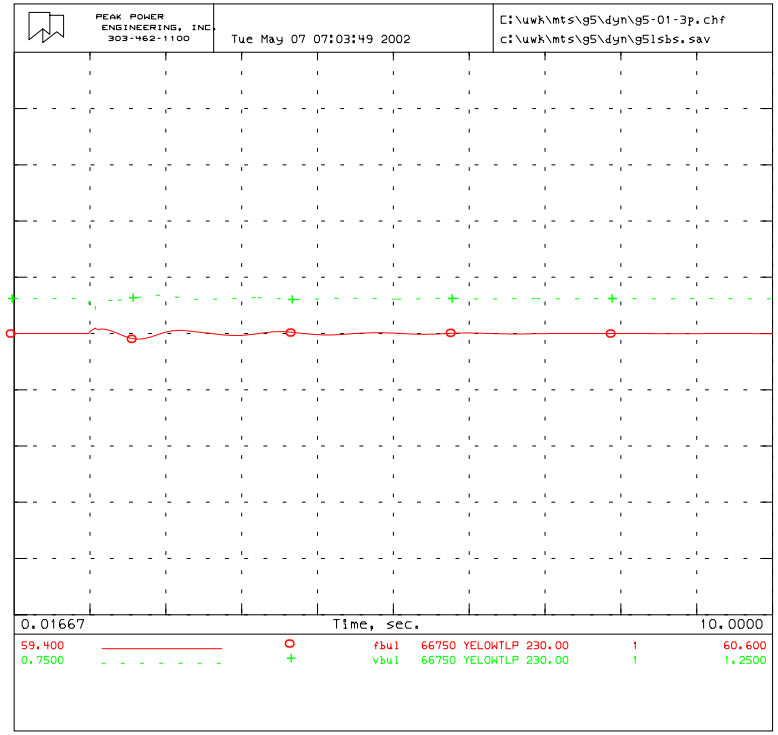

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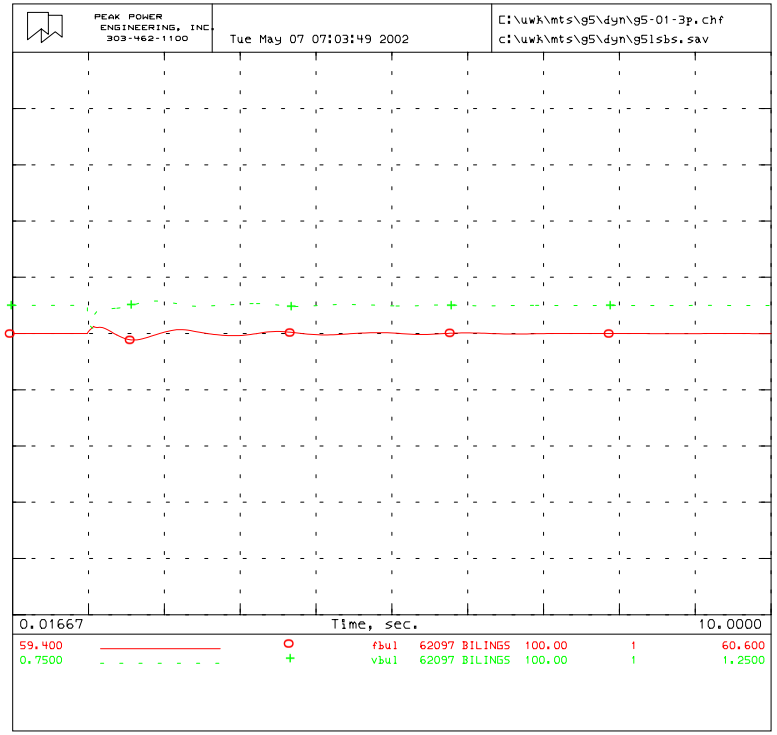

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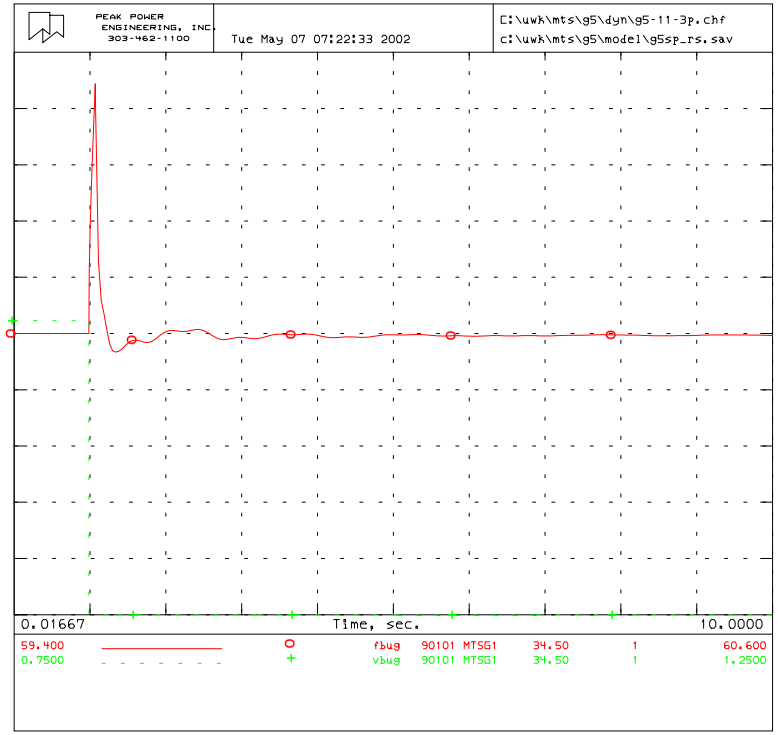

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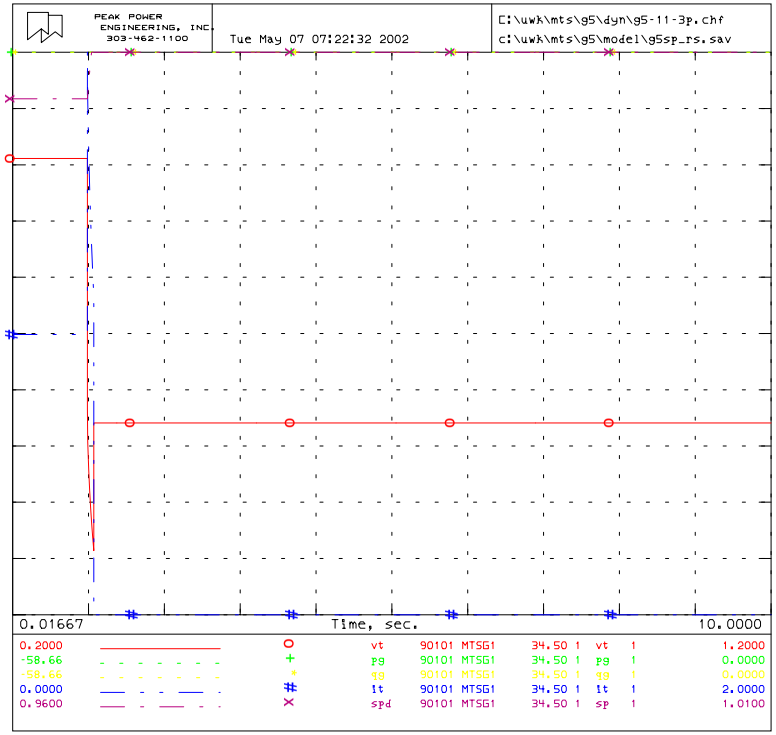

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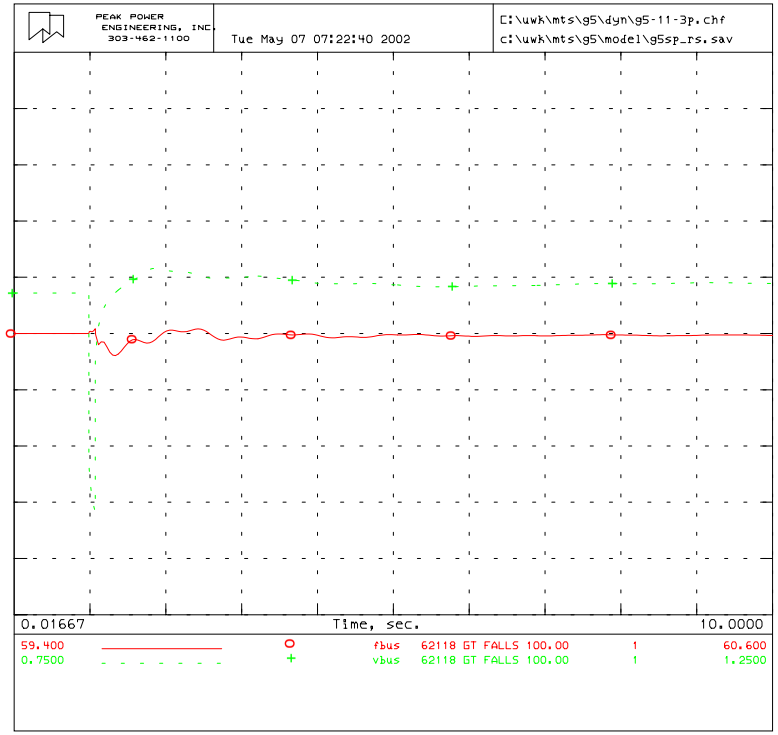

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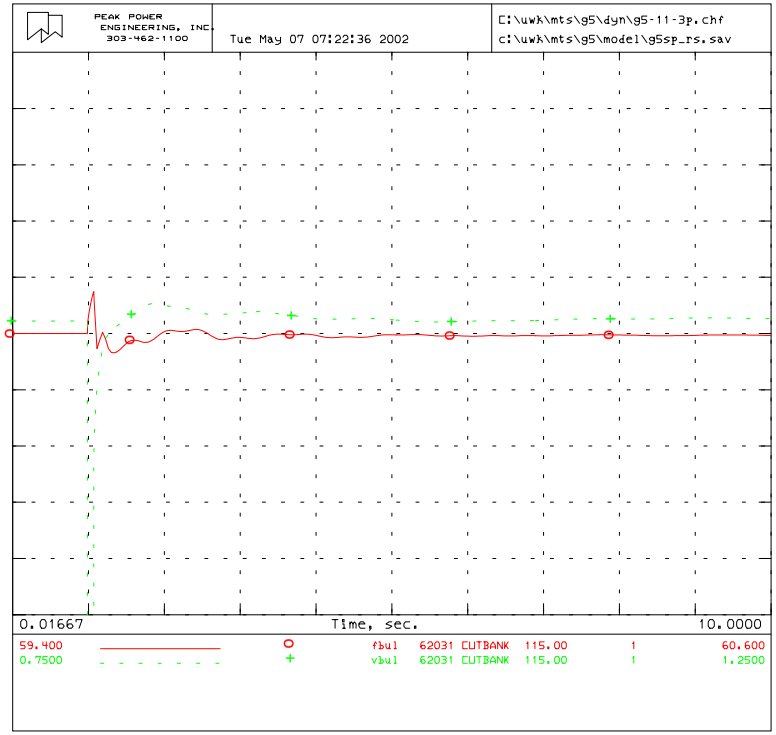

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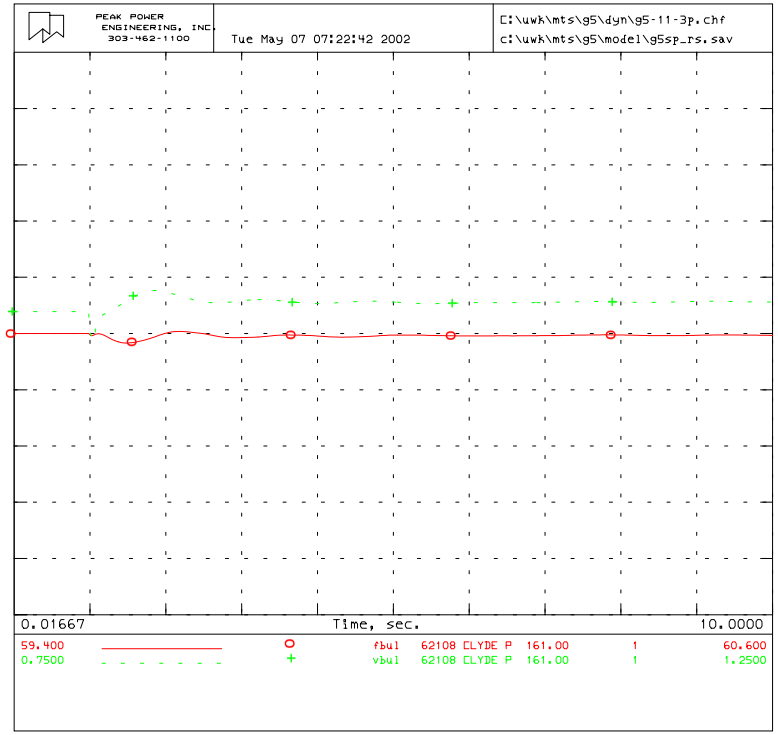

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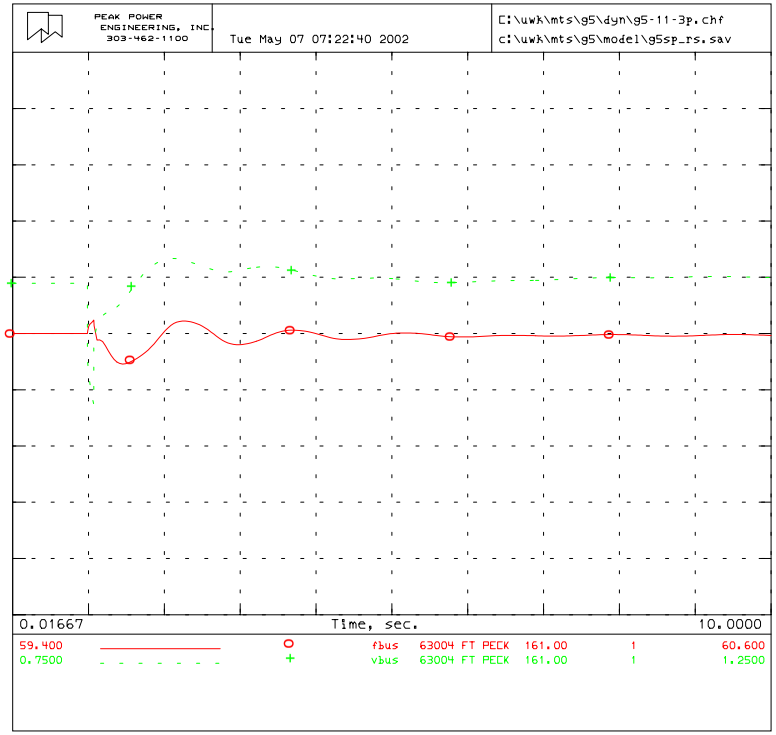

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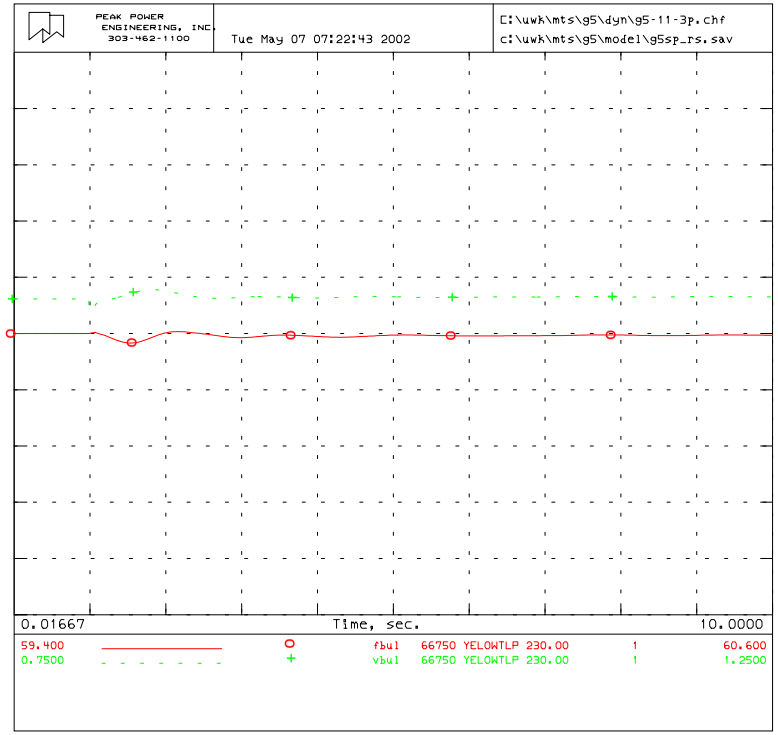

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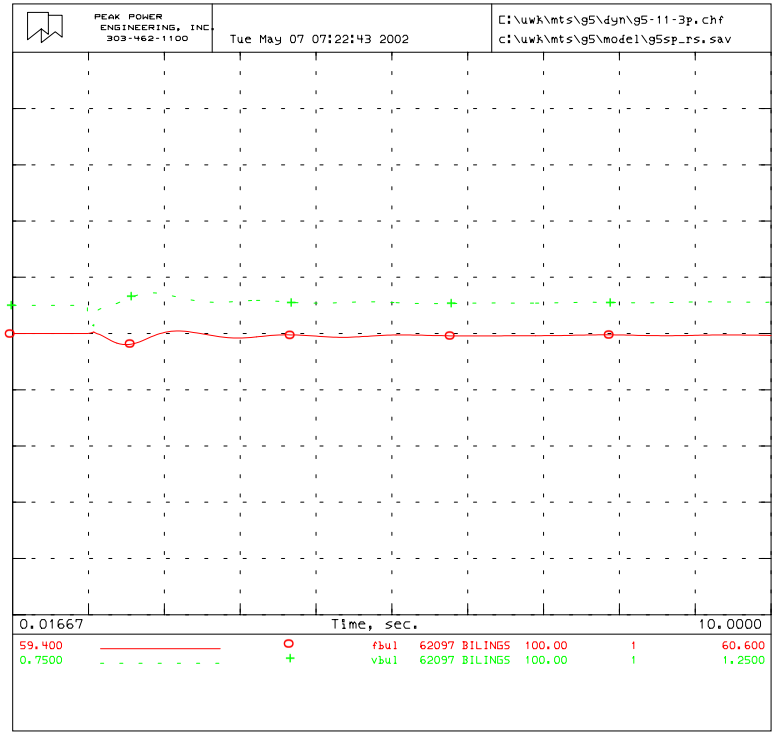

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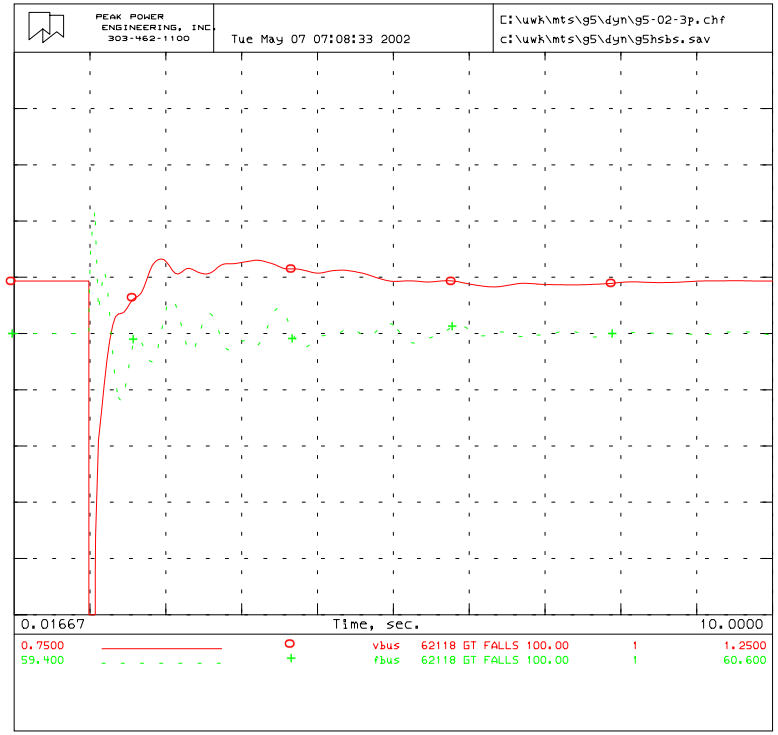

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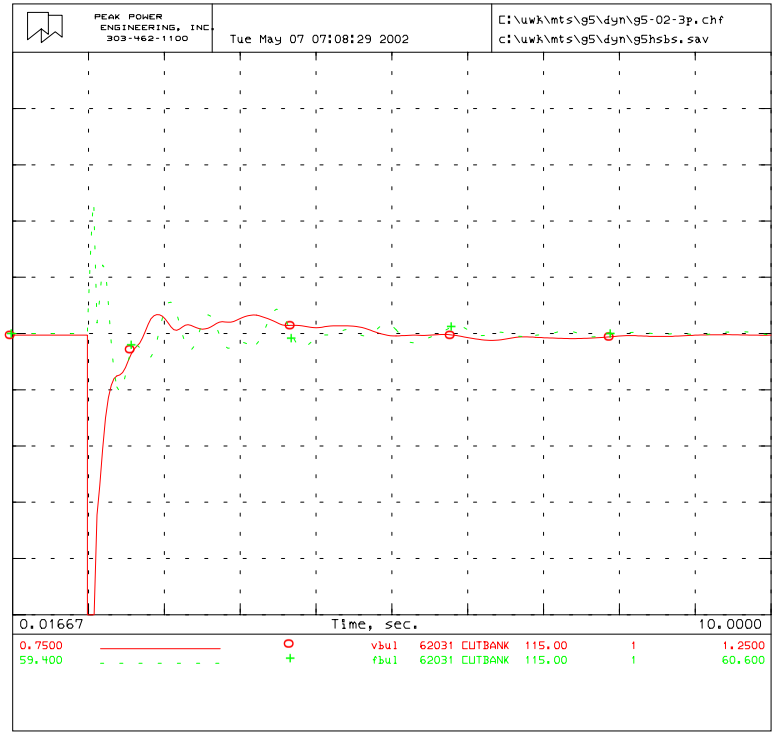

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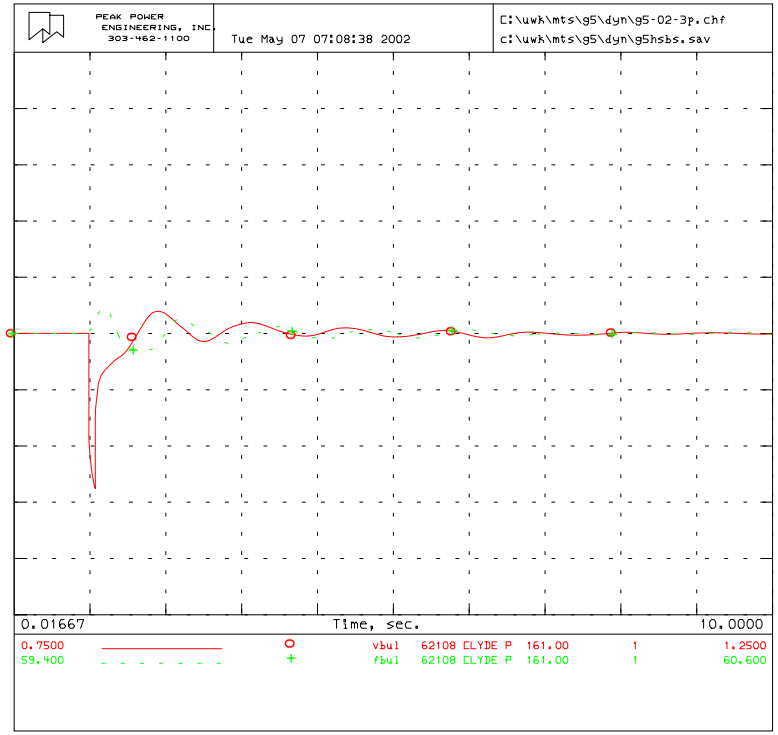

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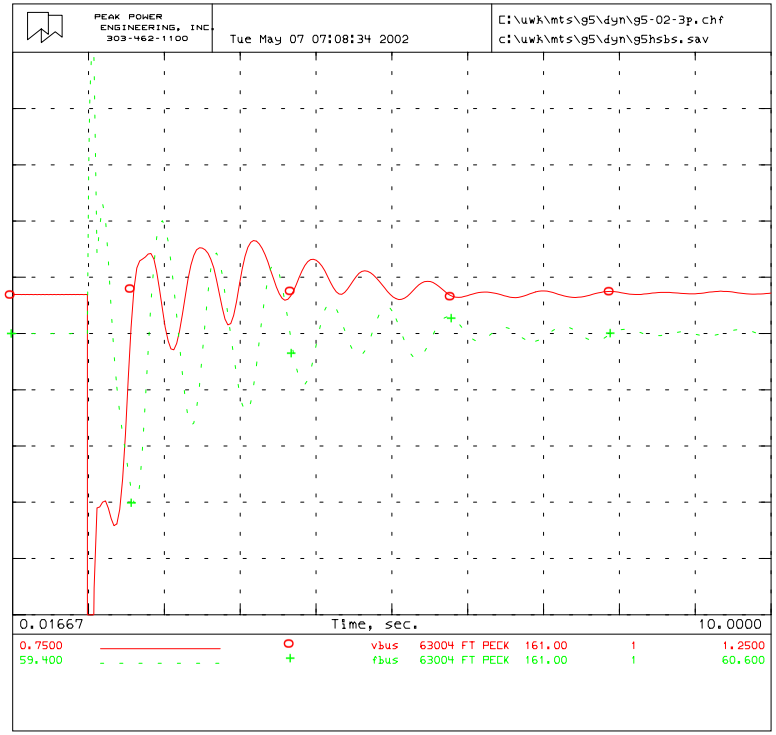

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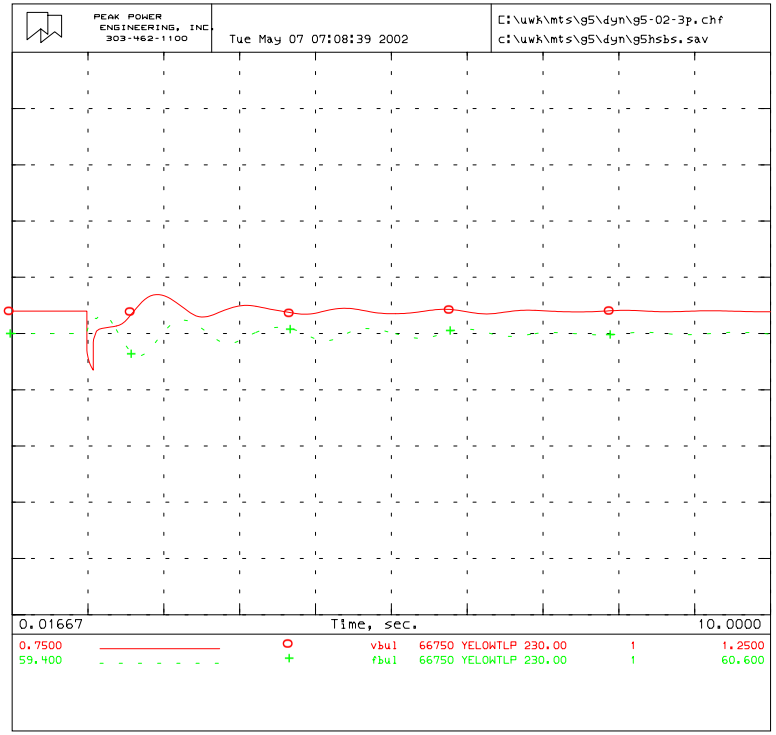

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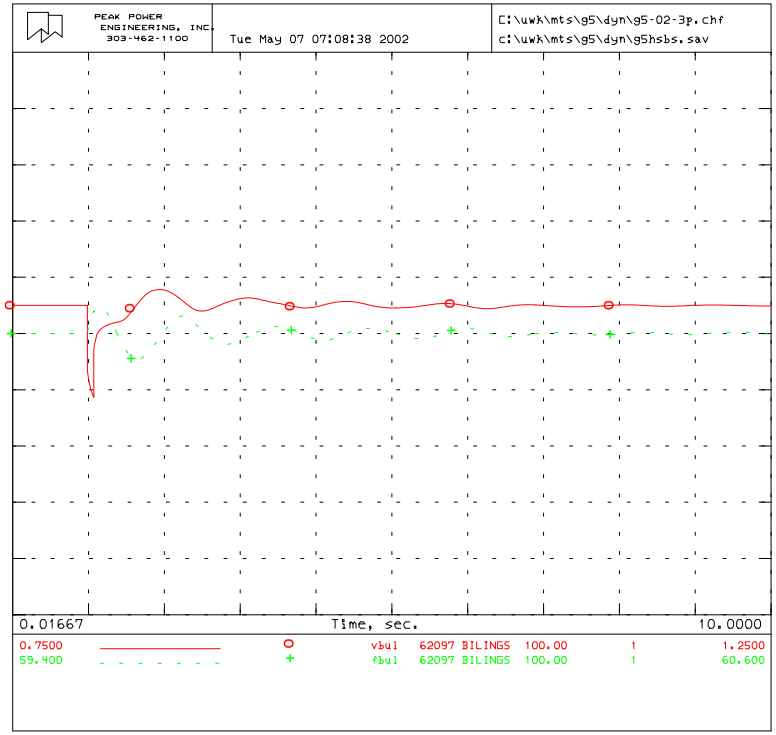

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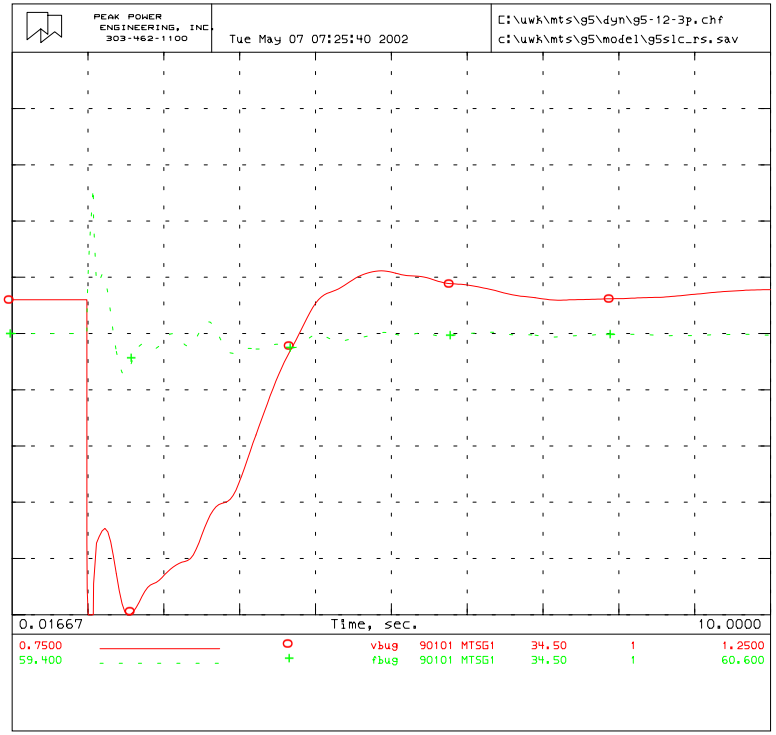

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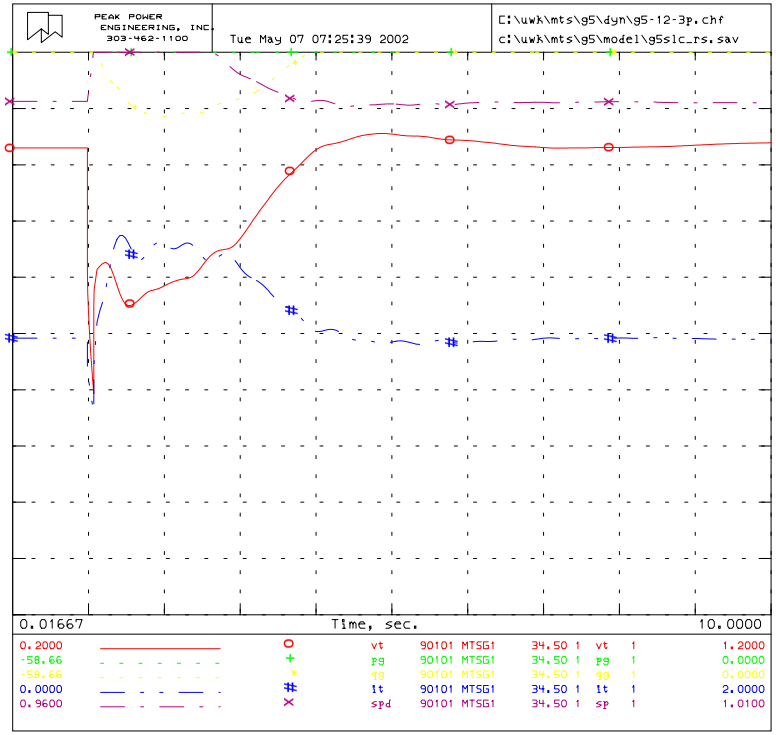

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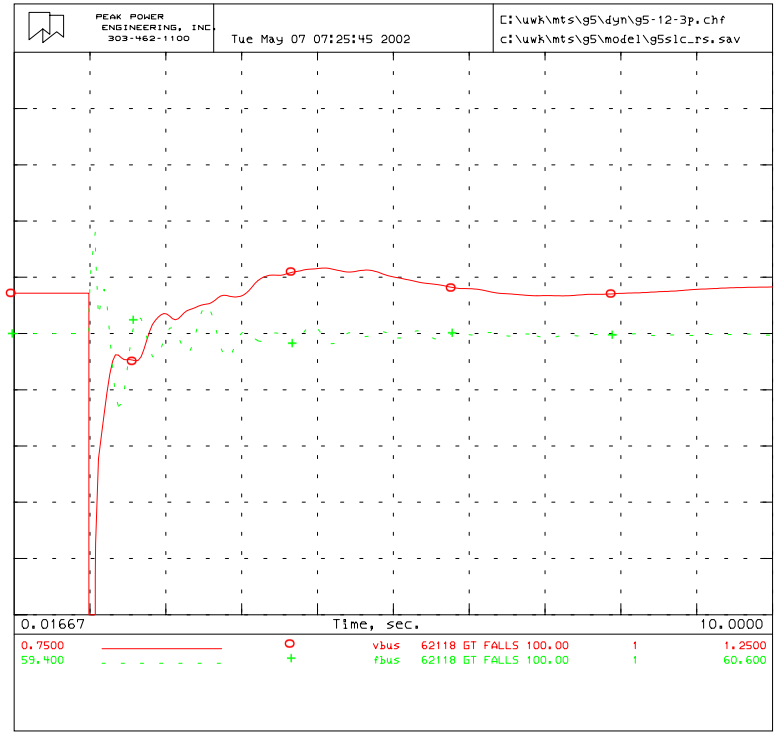

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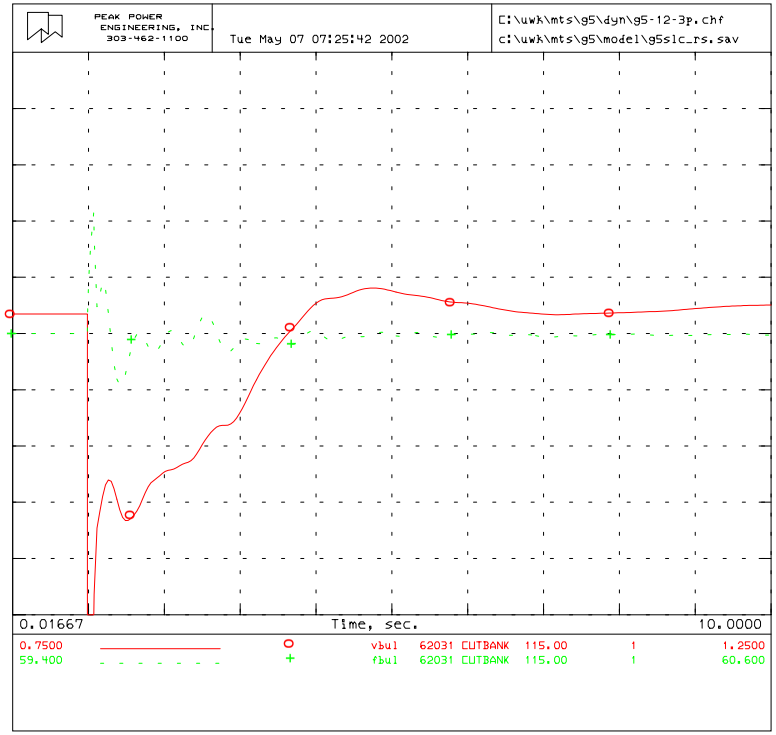

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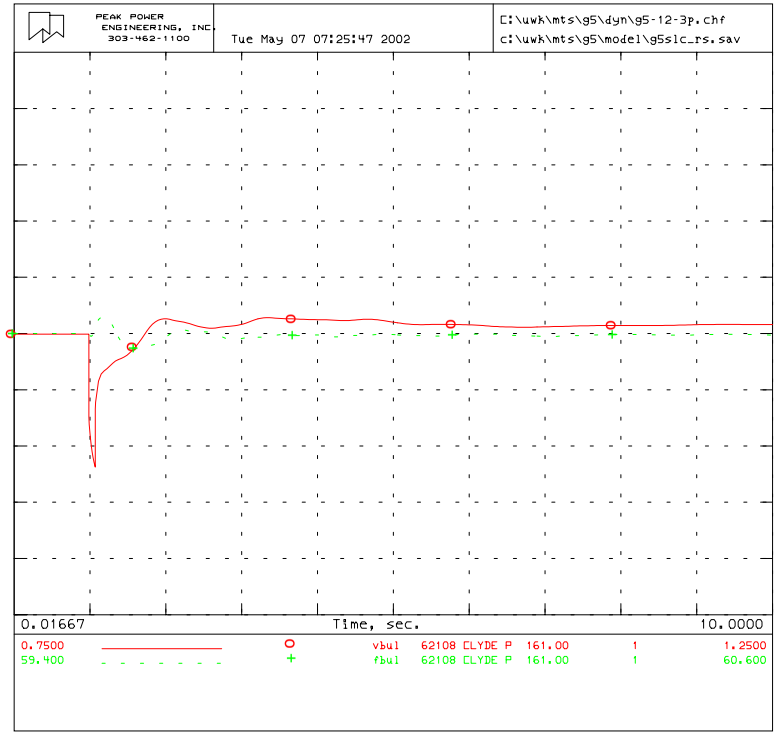

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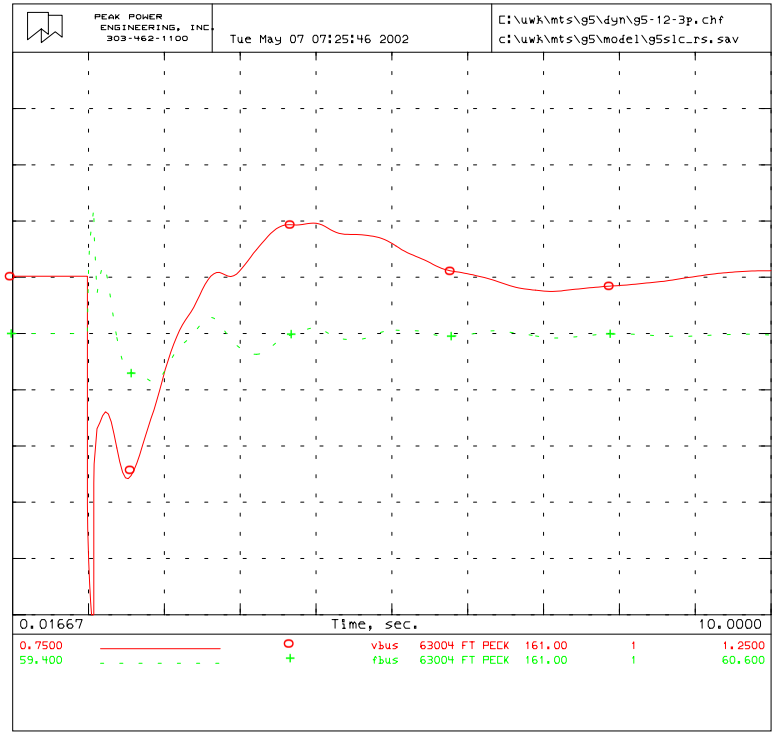

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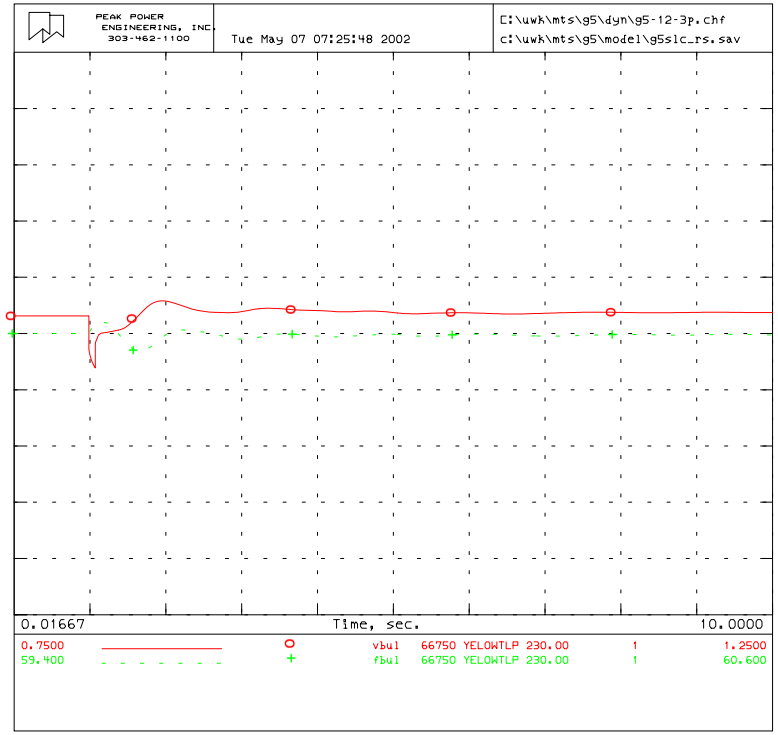

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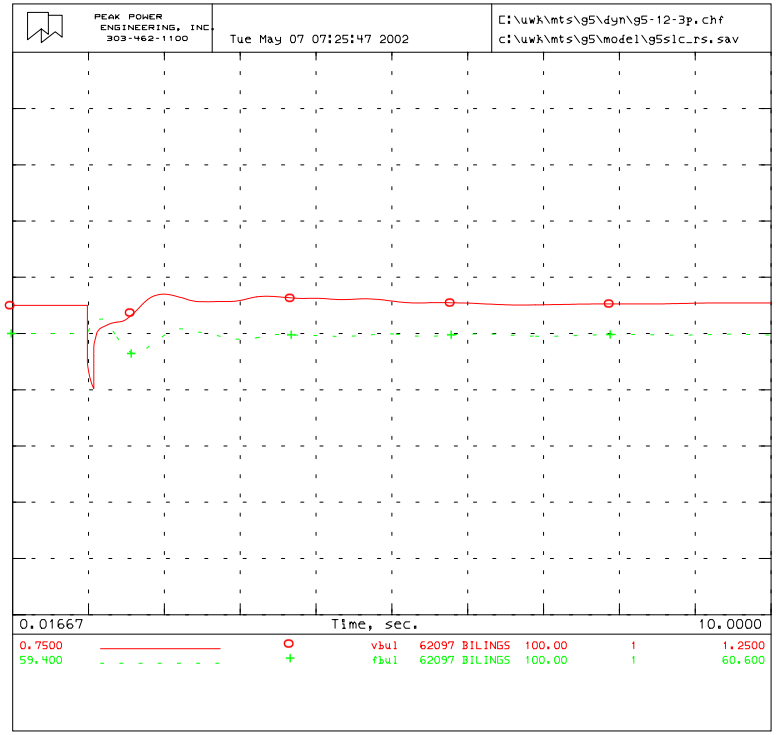

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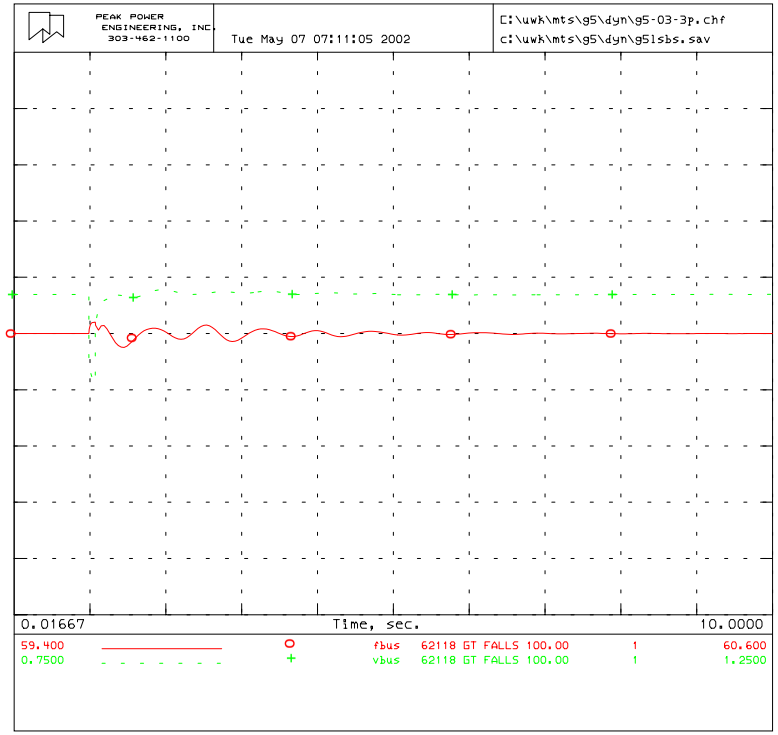

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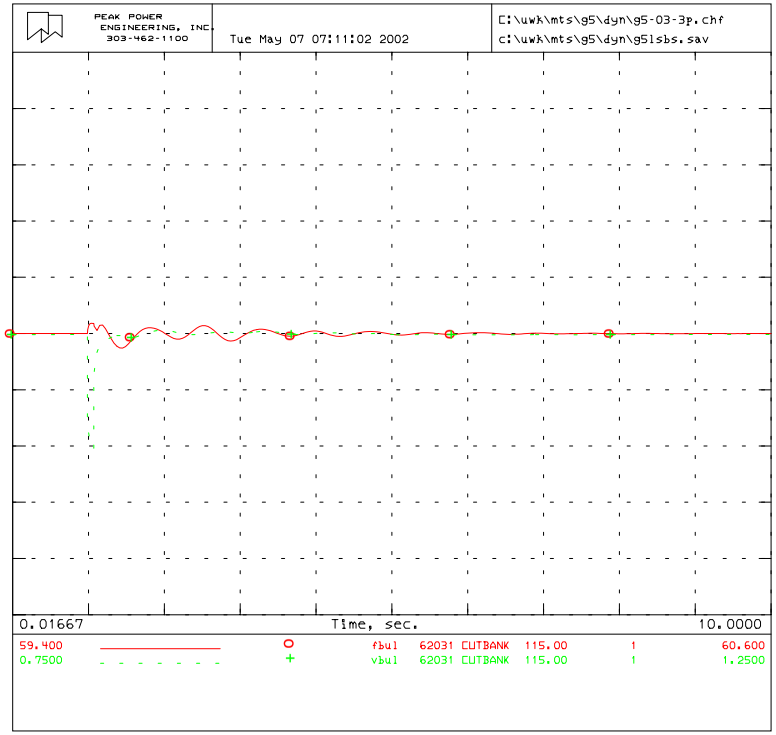

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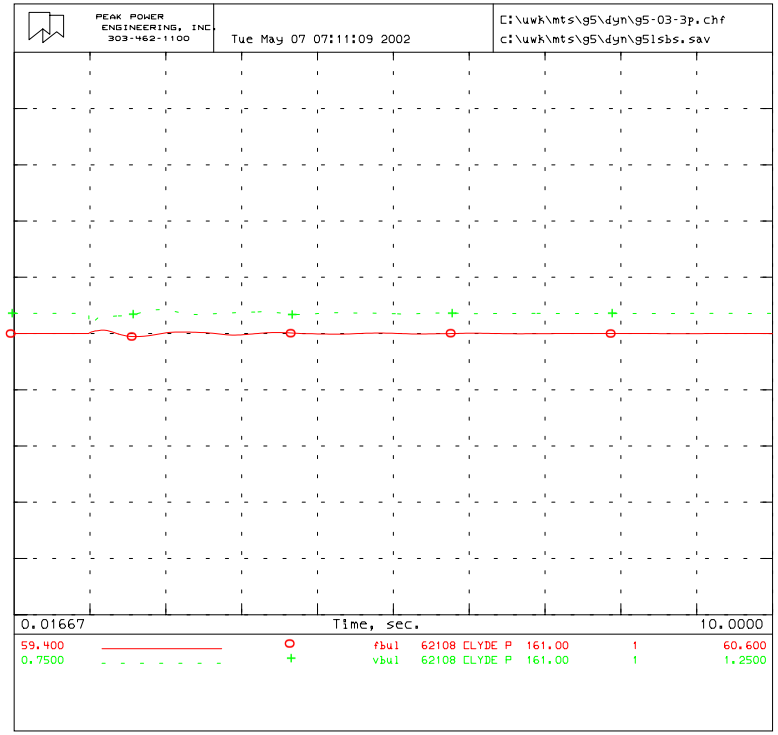

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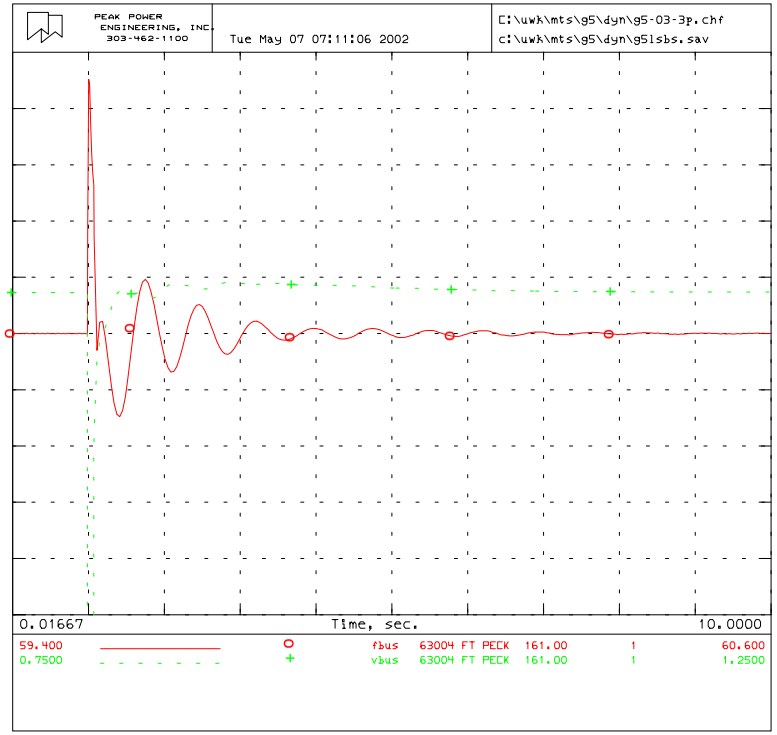

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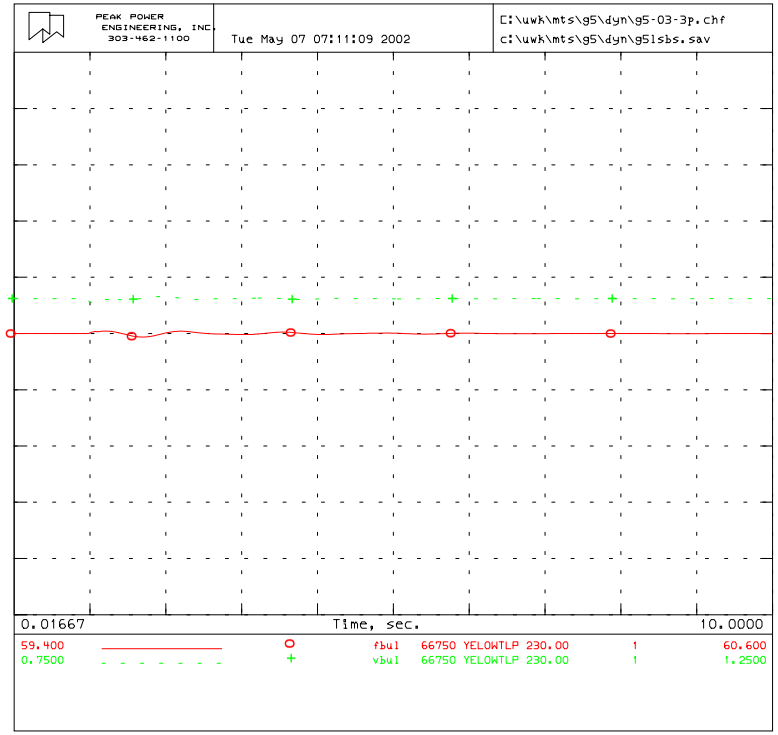
STUDY BY PEAK POWER ENGINEERING, INC.

HISTORY FILE BASED ON WSCC 2002 LS2B APPROVED OPERATING CASE
NOVEMBER 27, 2001



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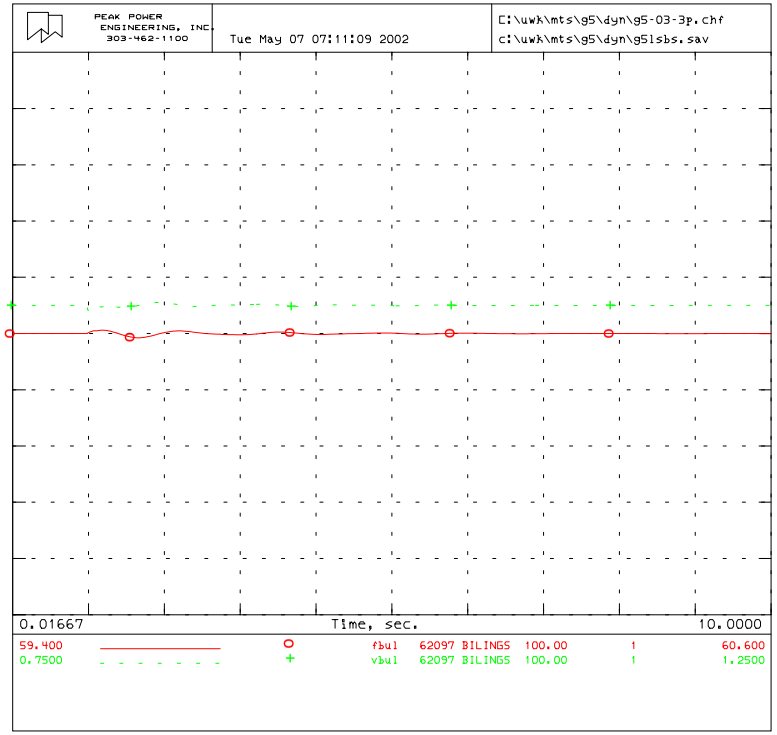

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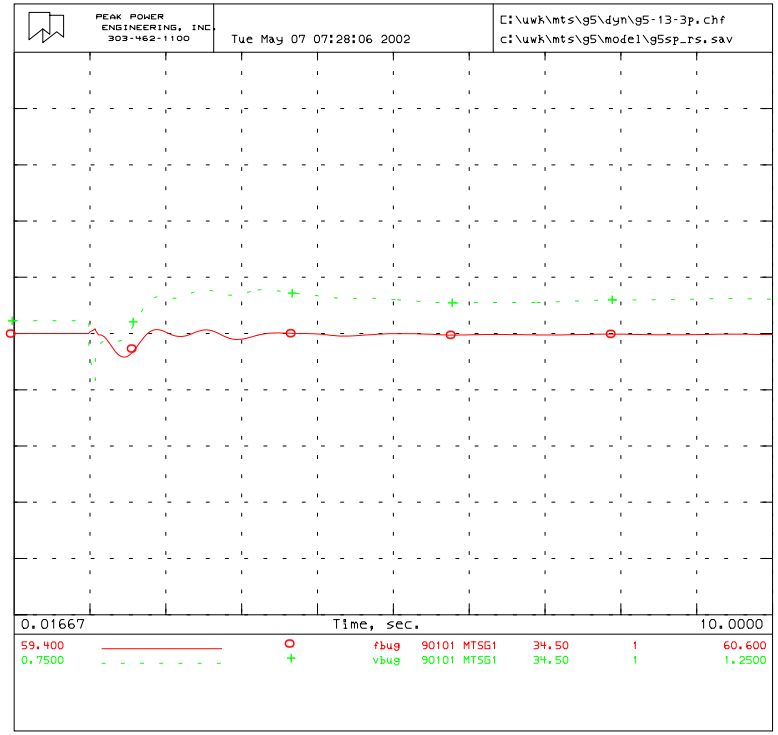

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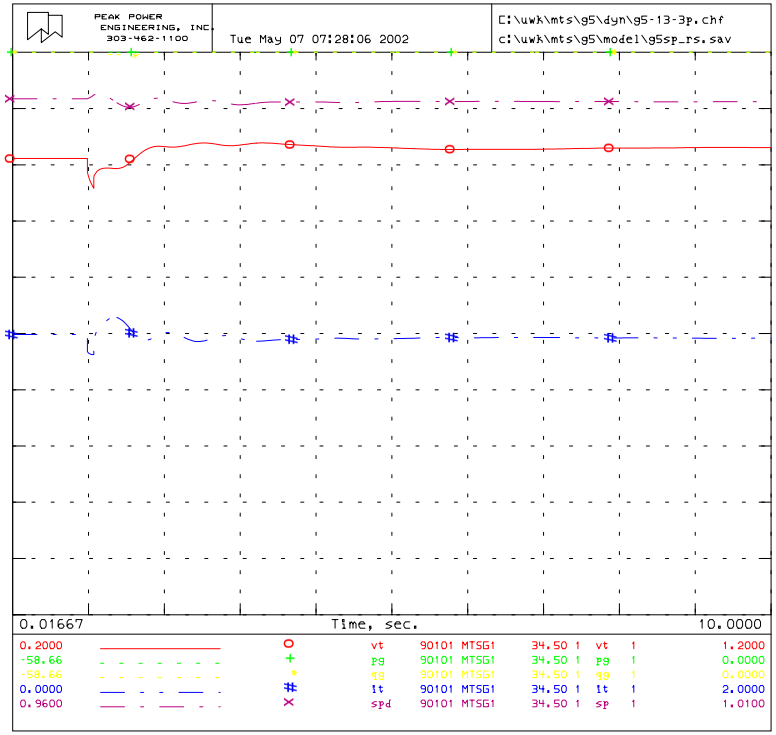

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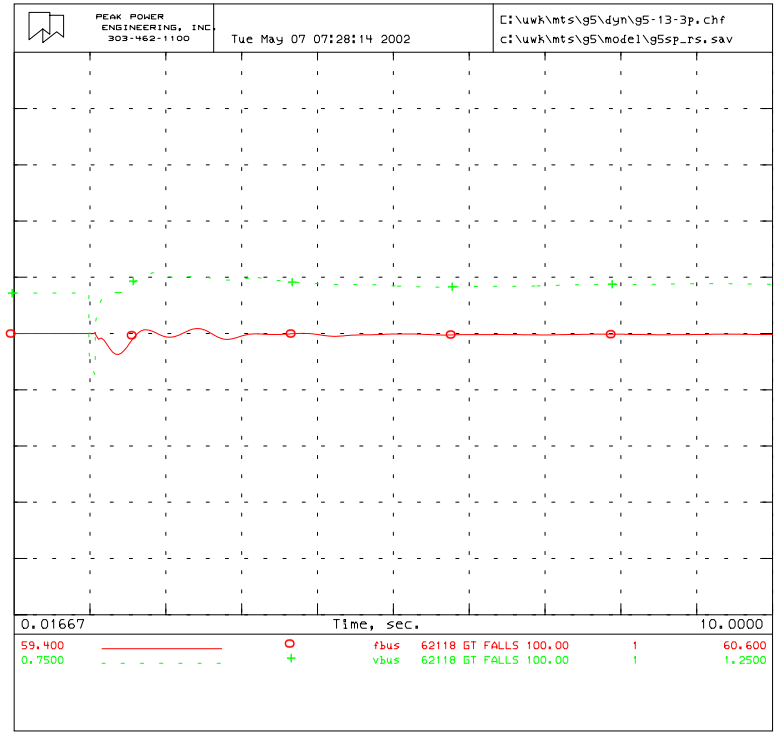

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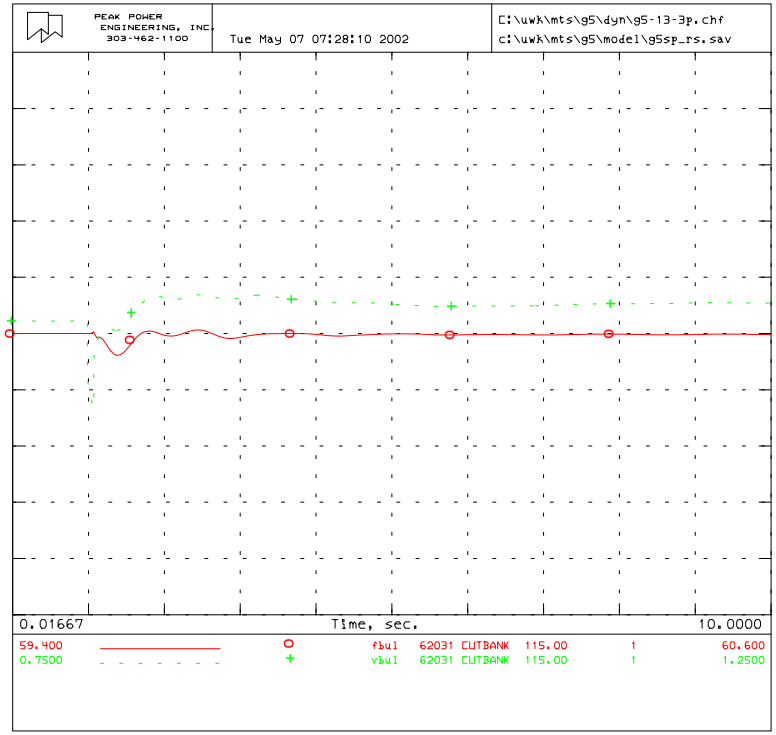

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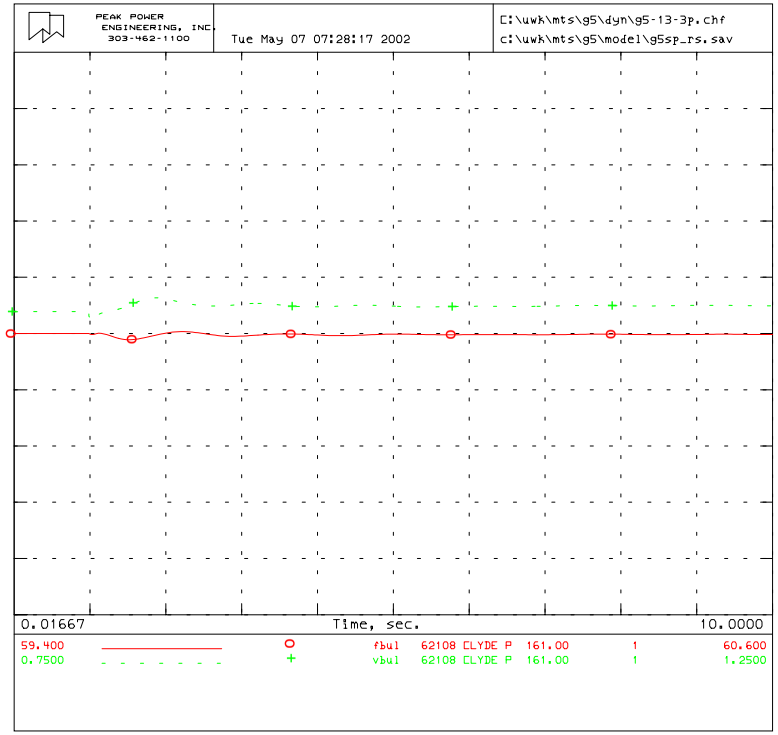

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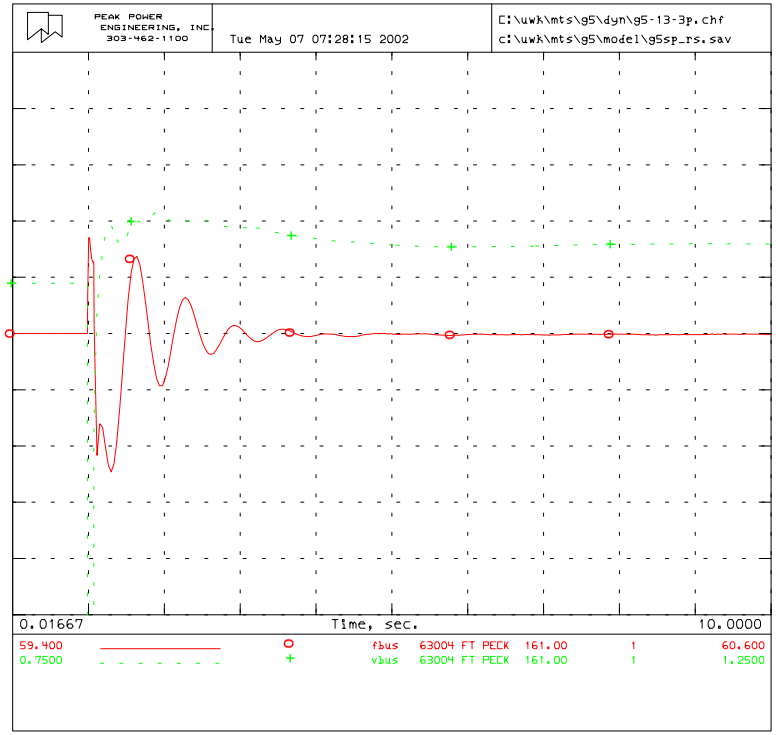

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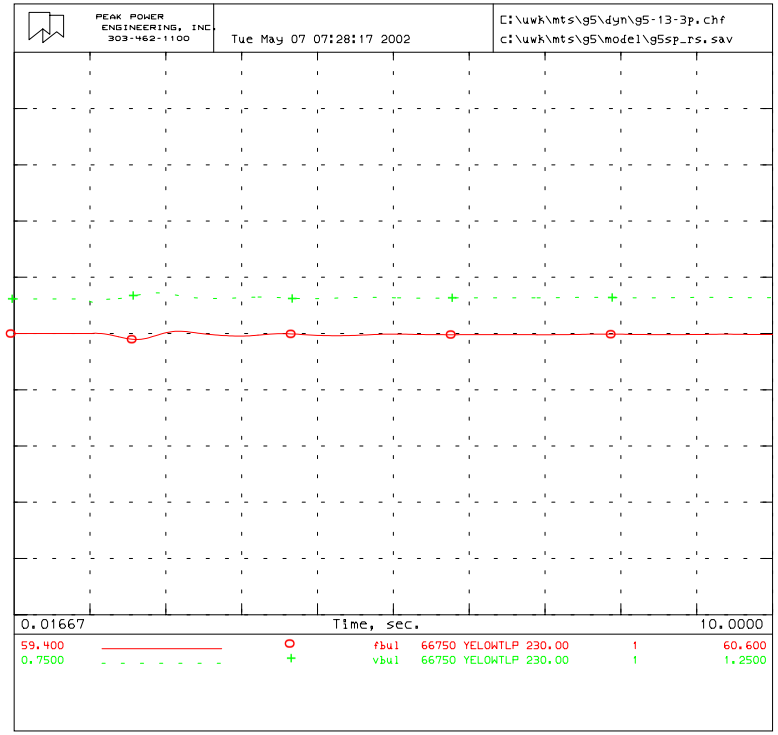

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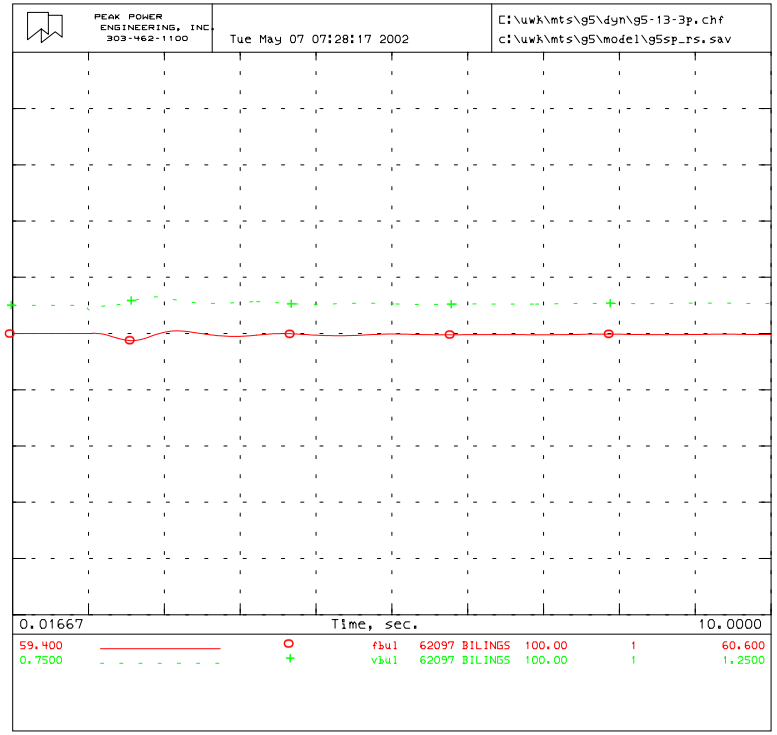

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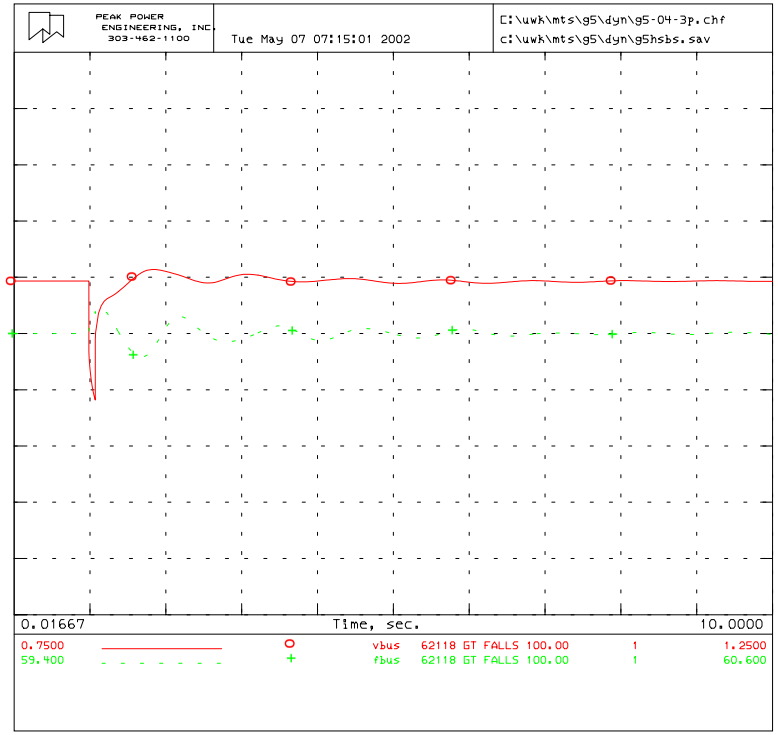

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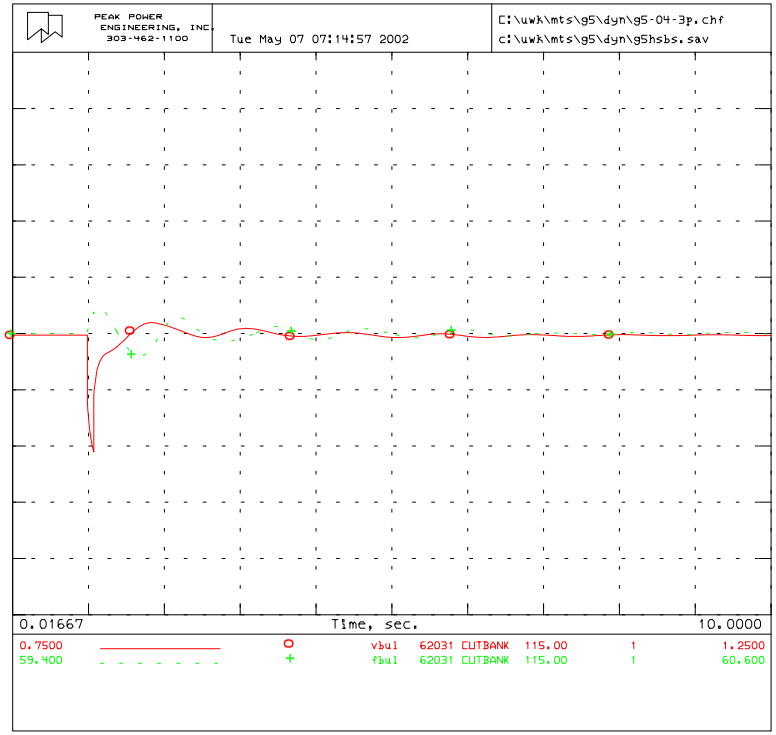

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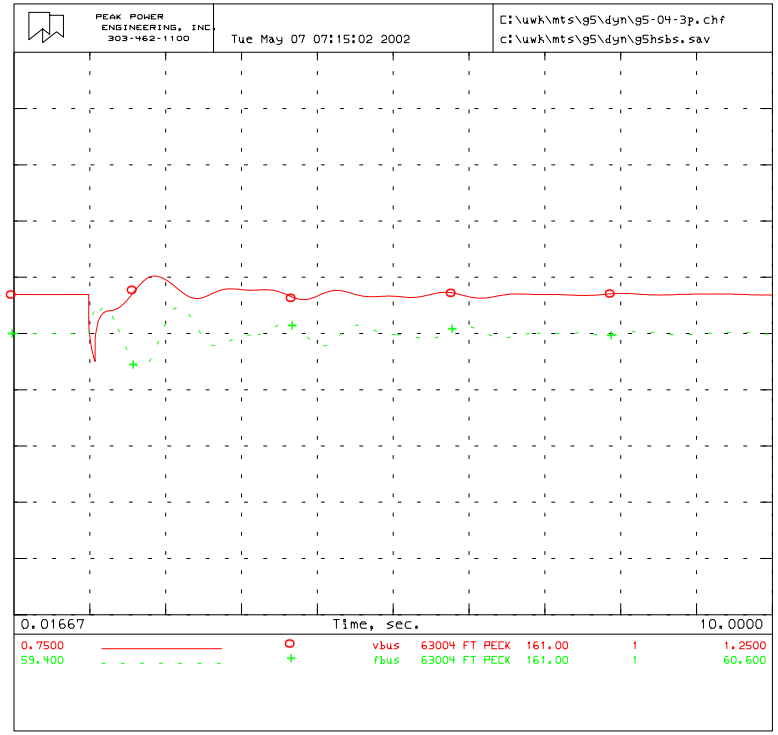

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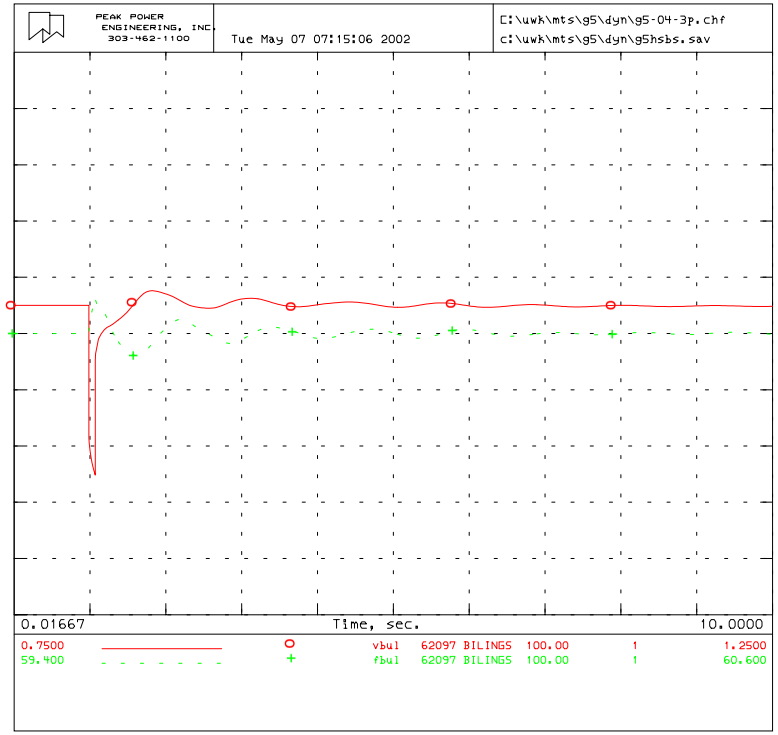

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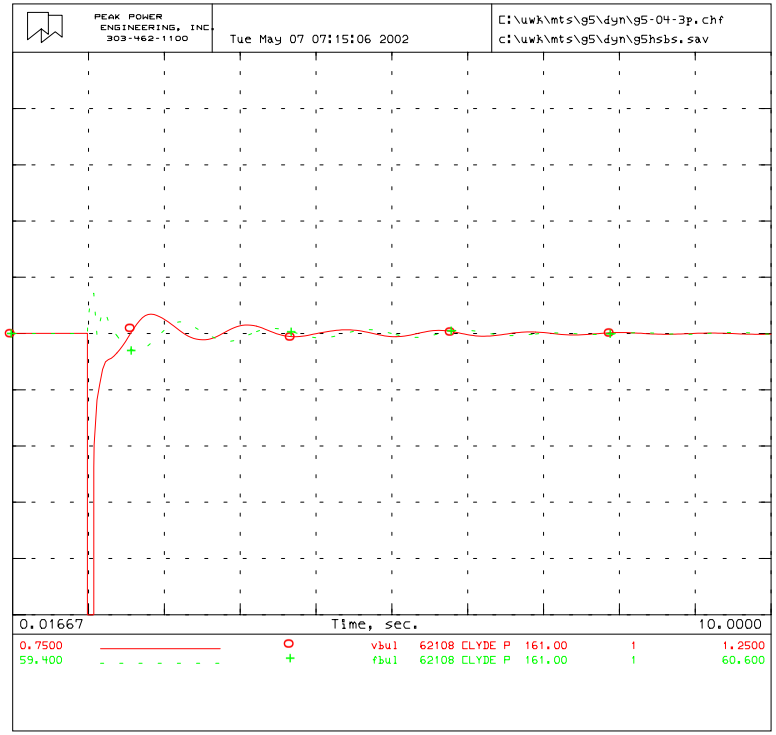

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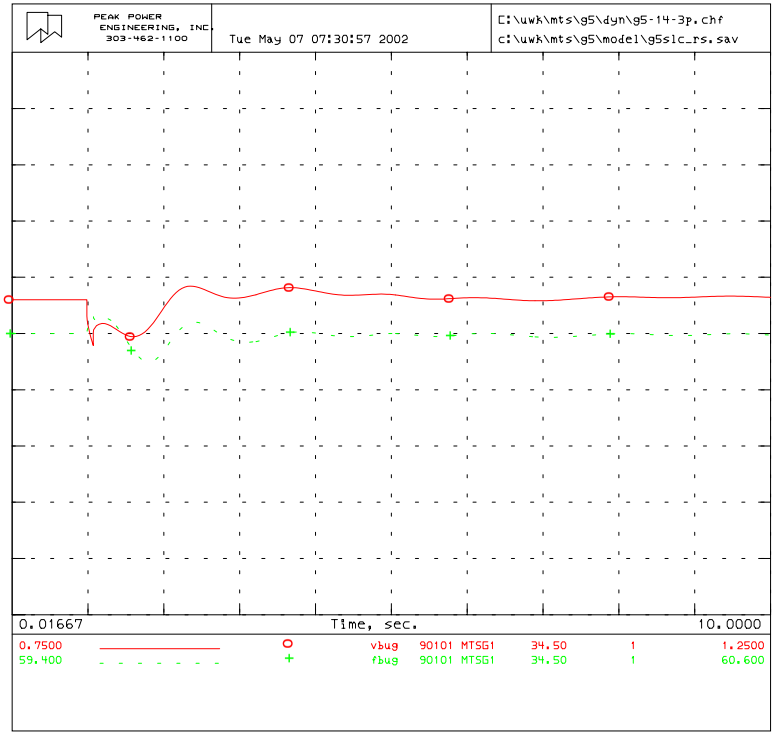

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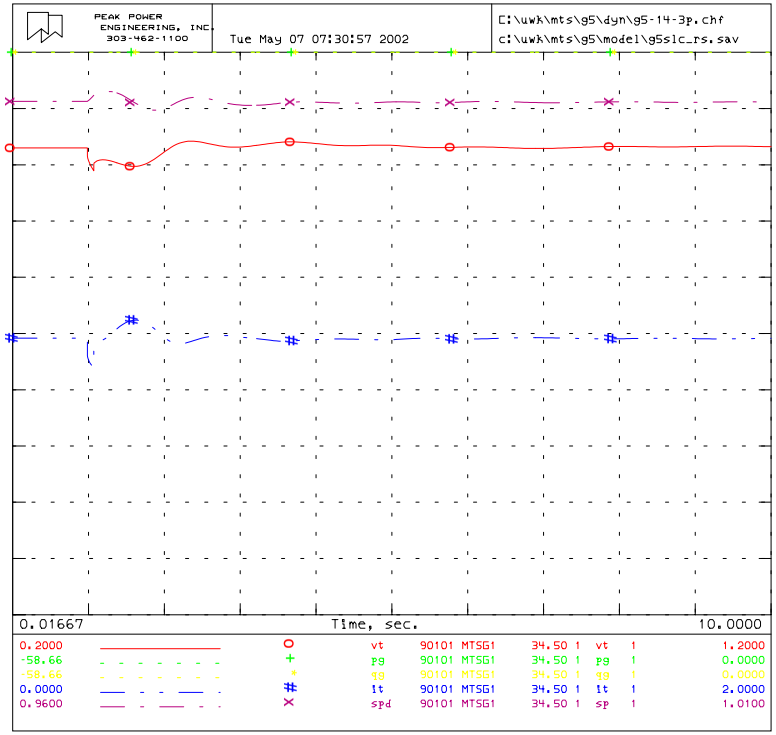

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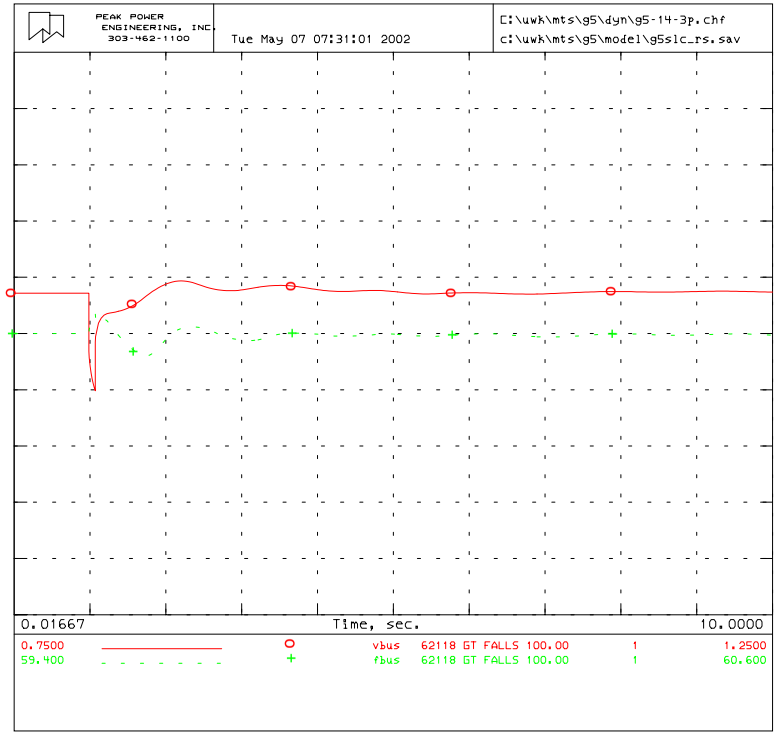

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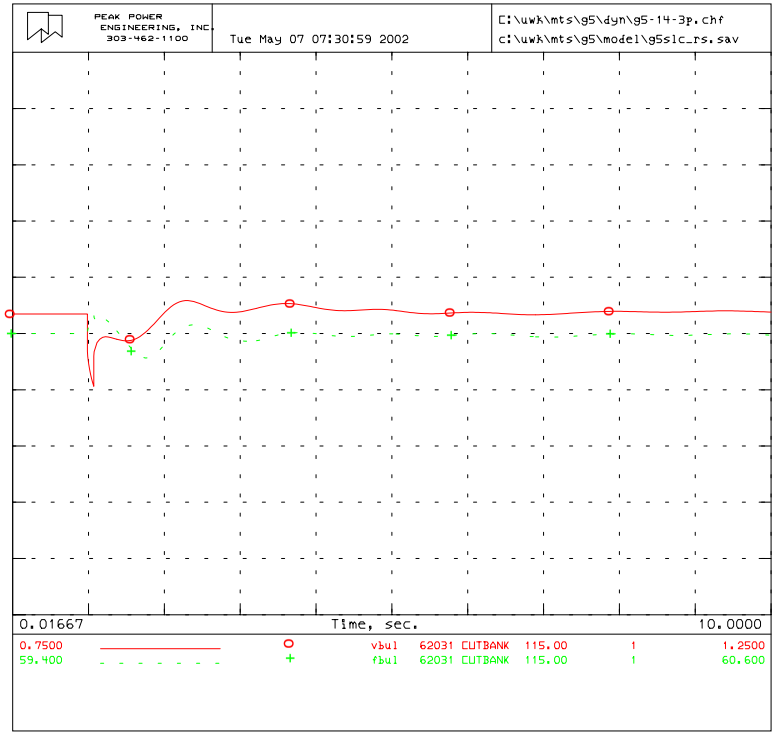

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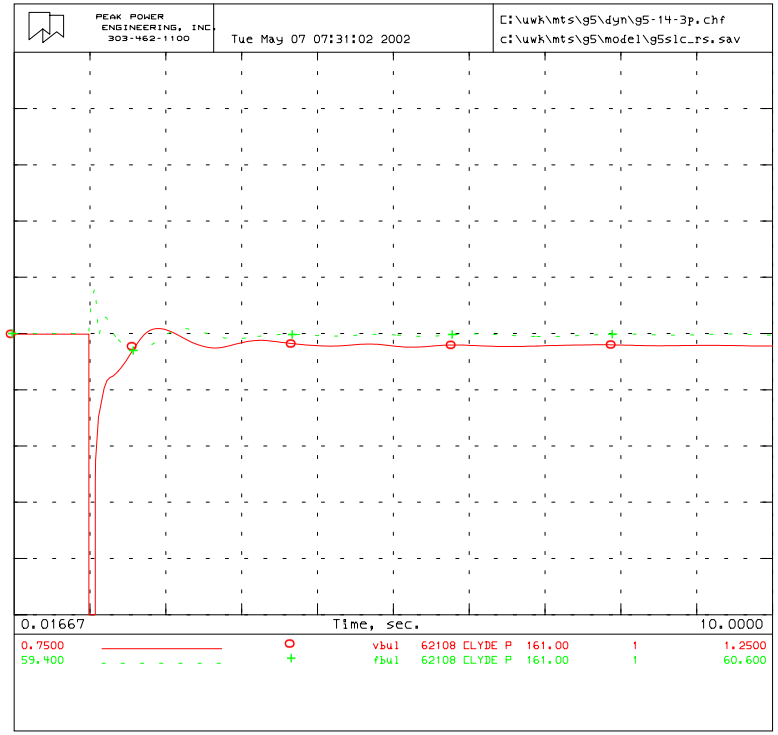

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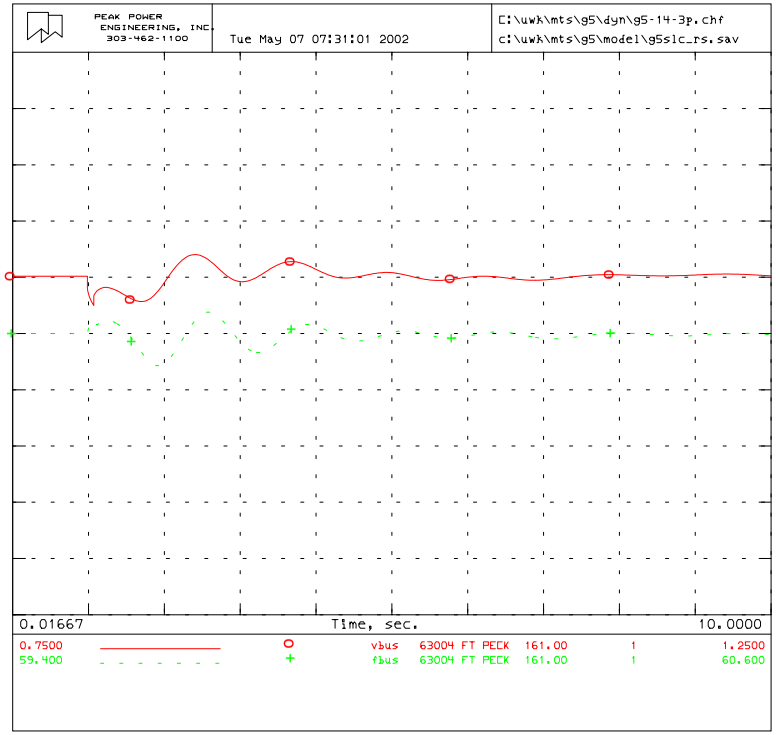

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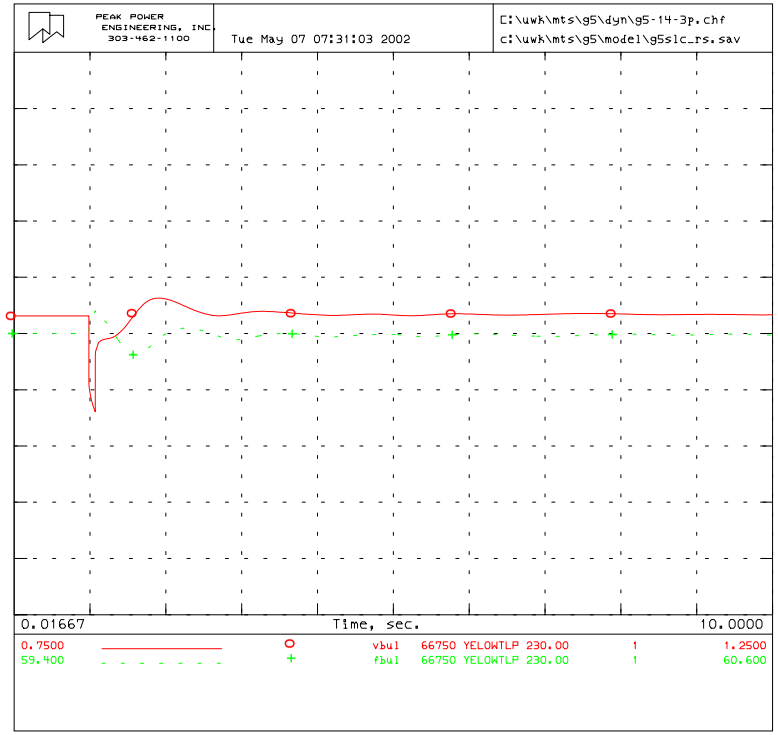

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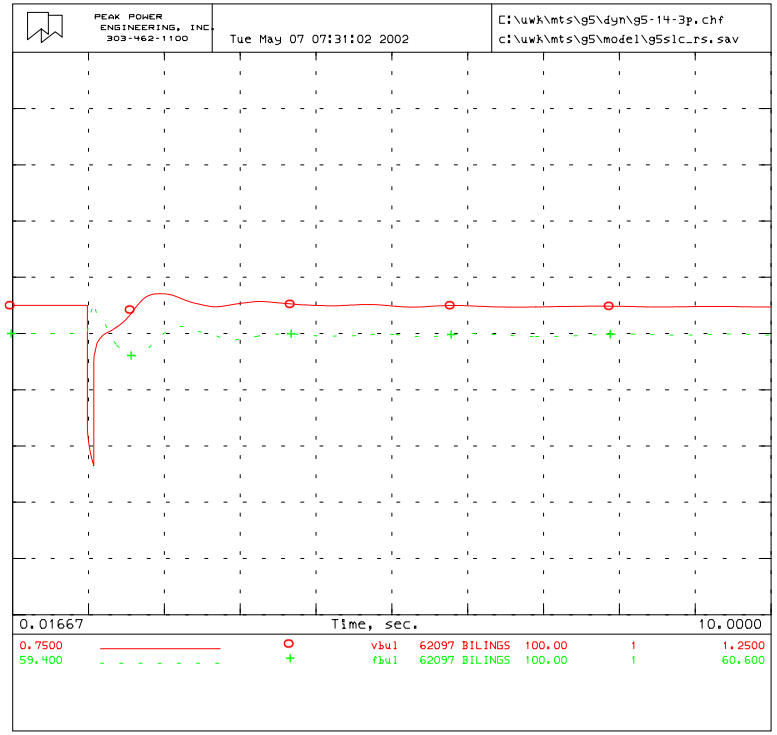

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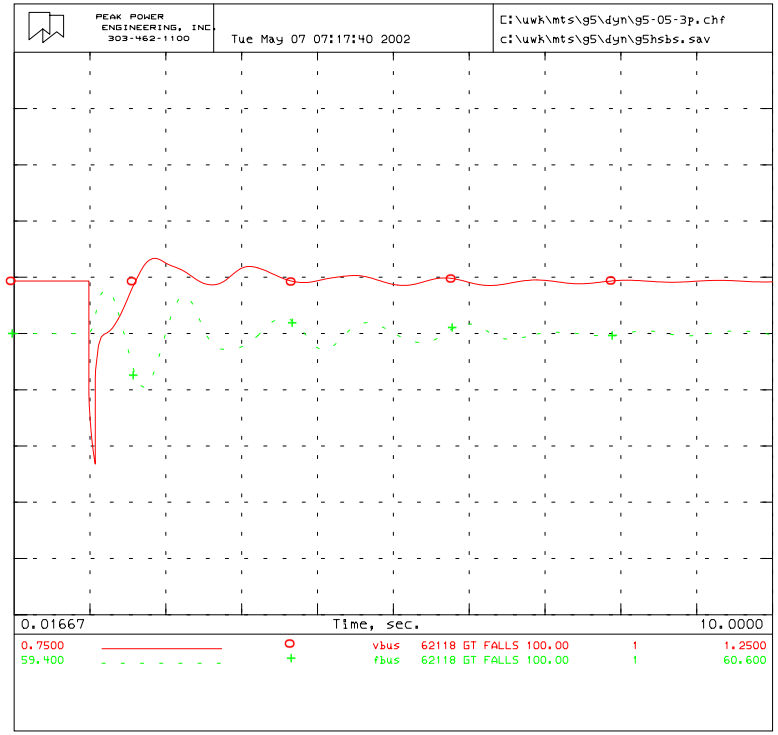

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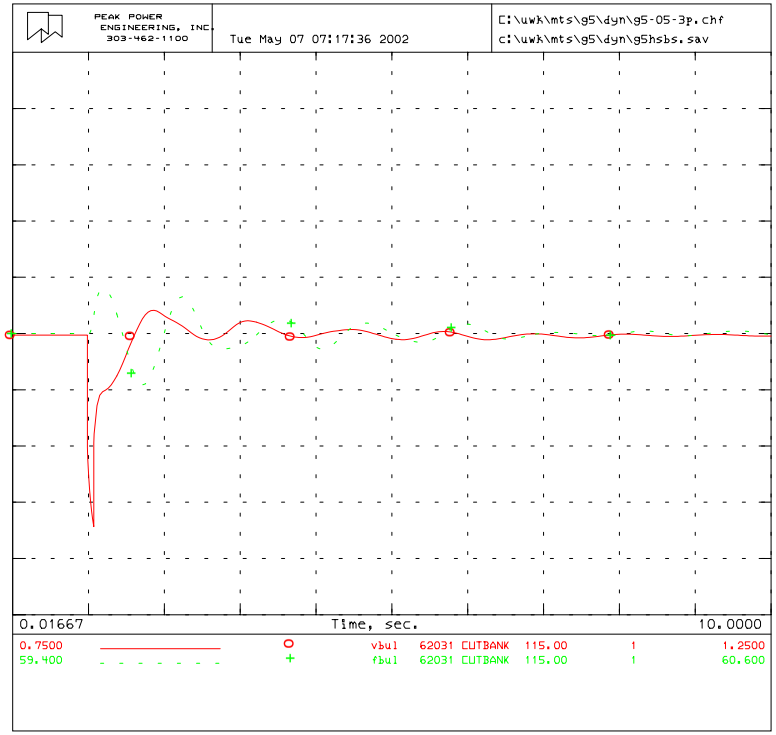

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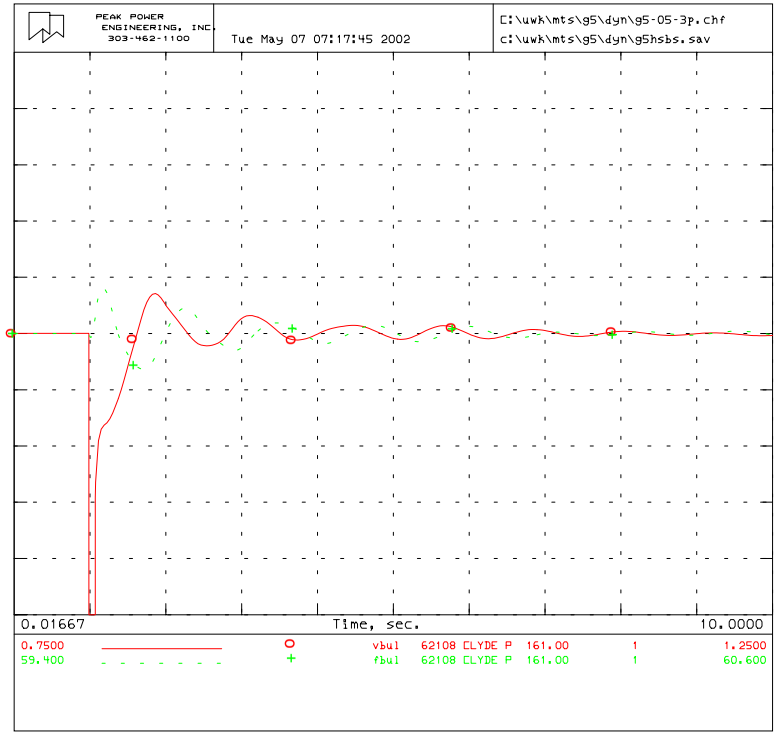

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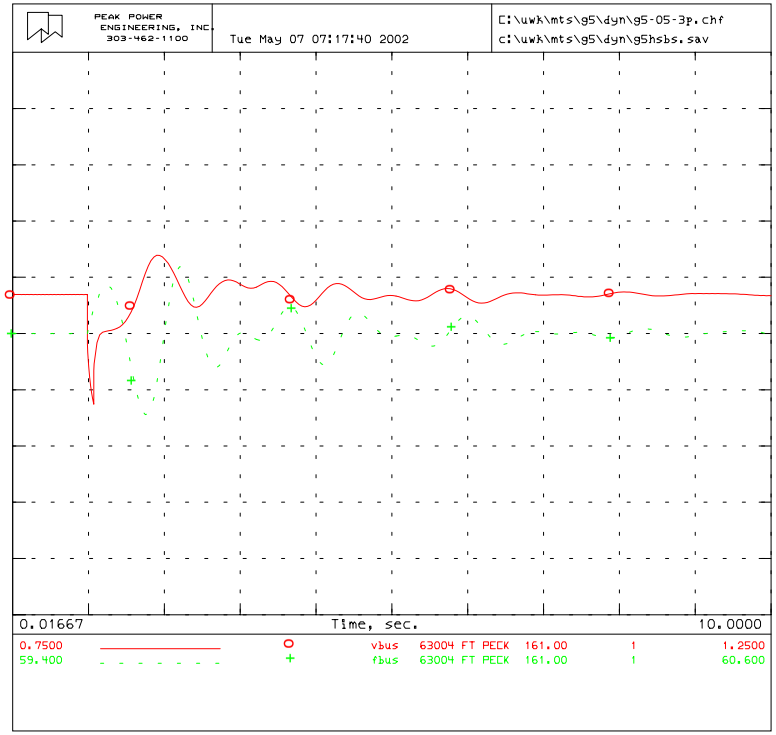

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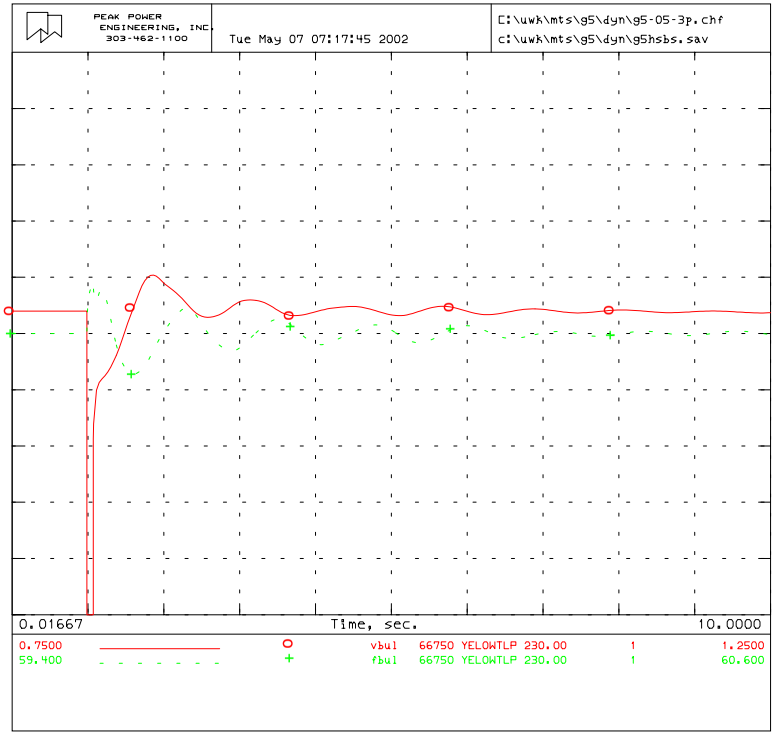

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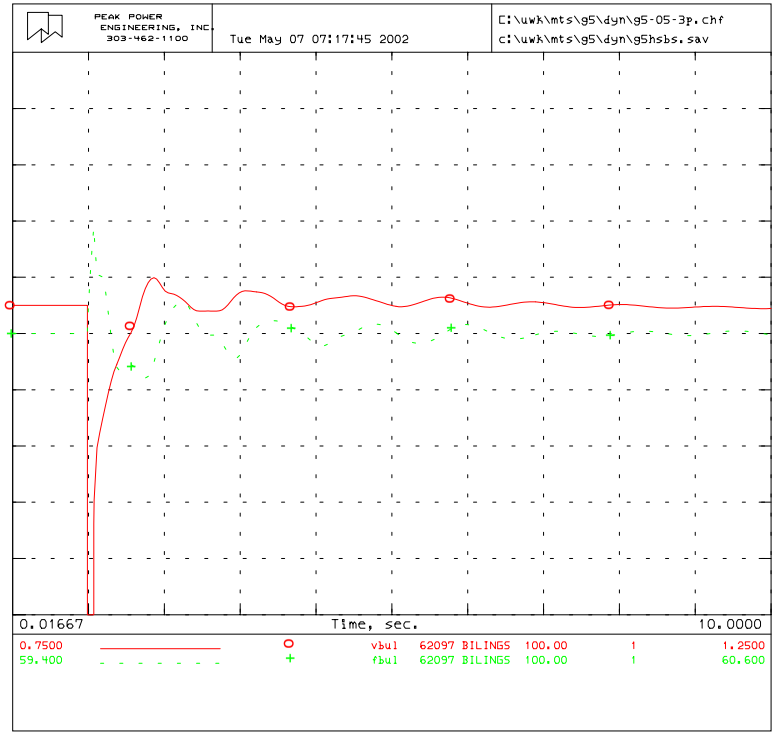

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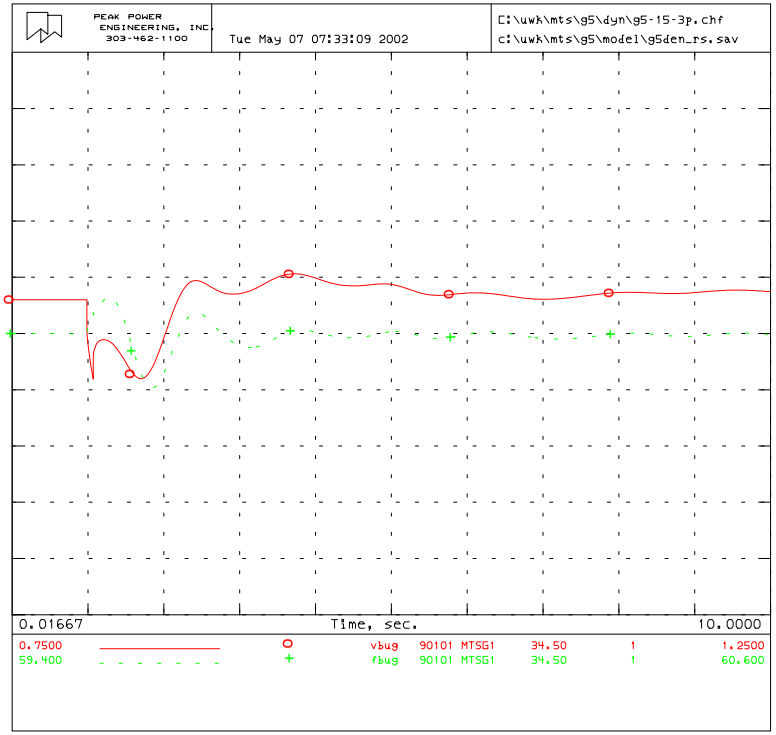

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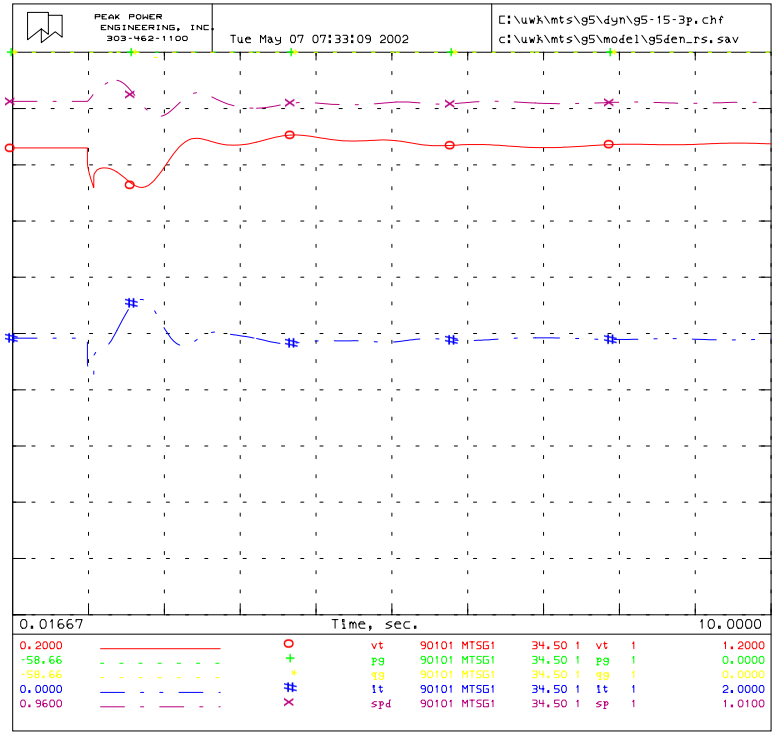

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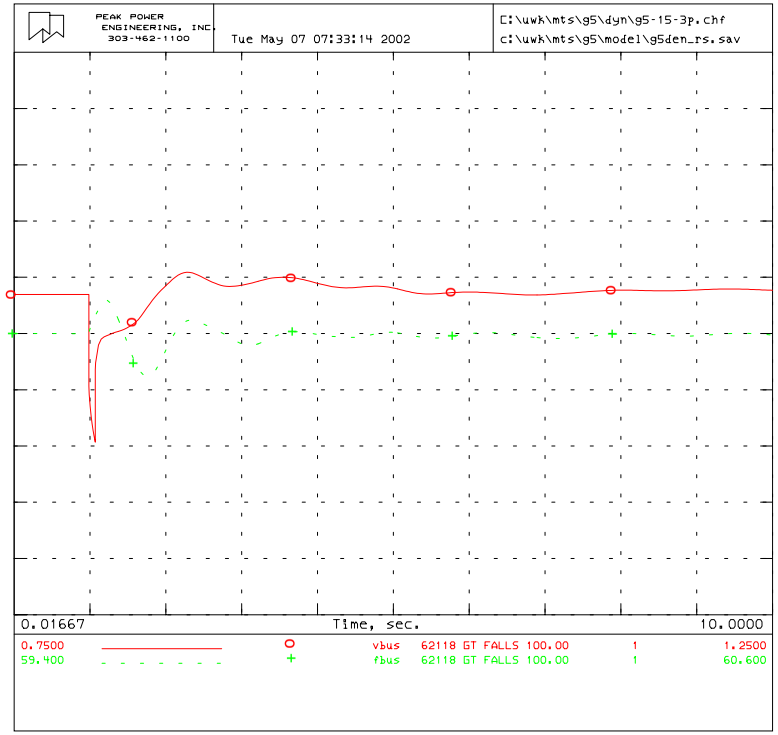

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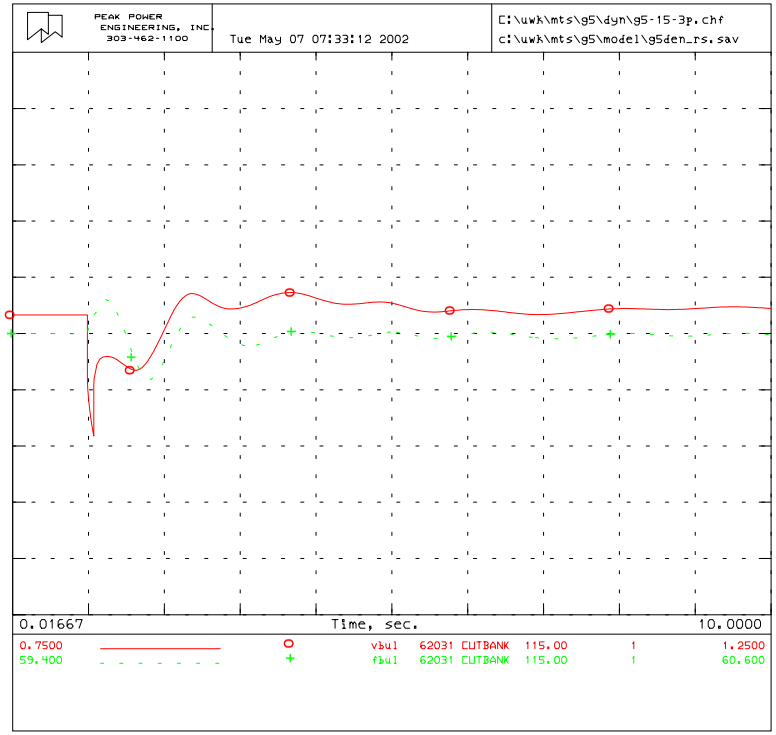

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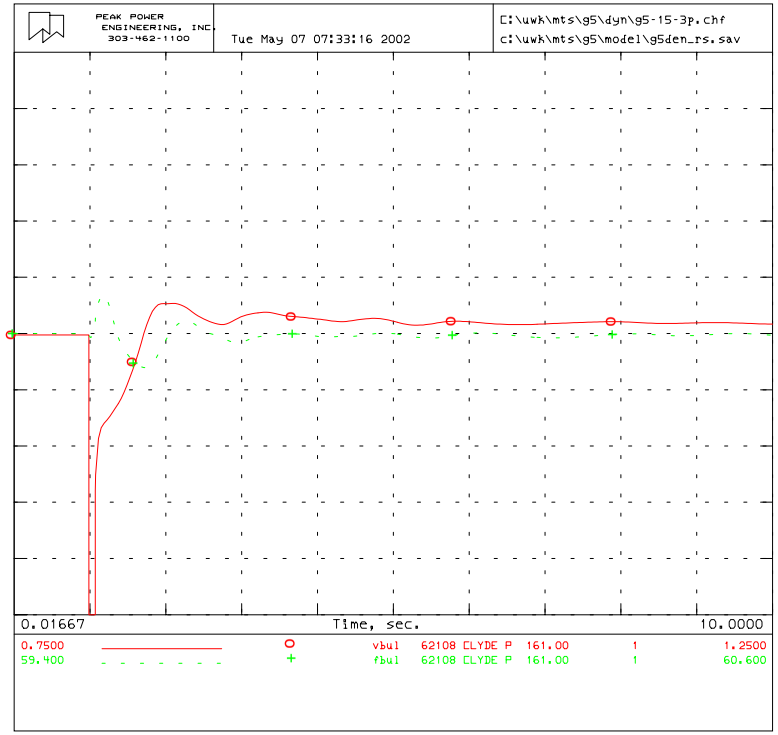

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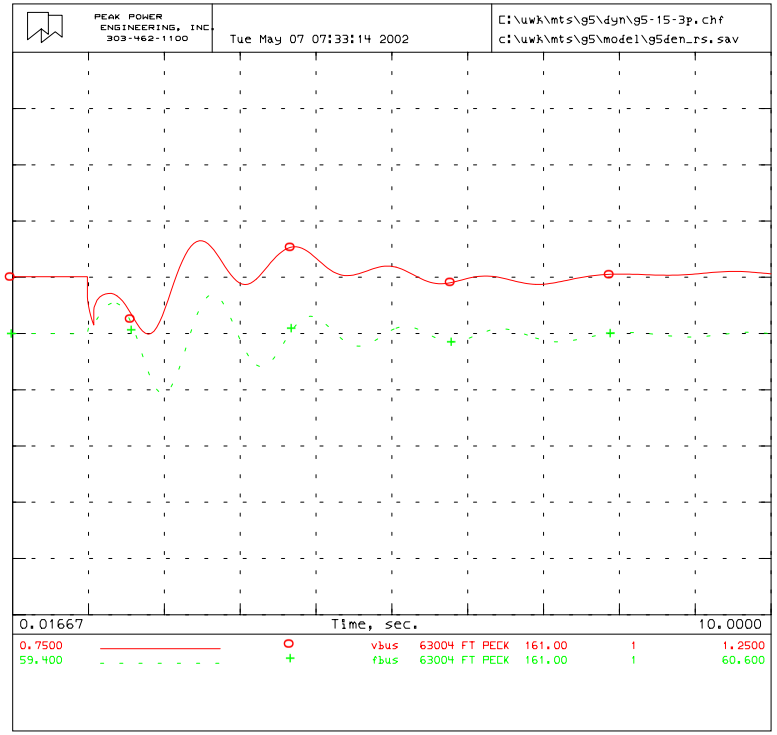

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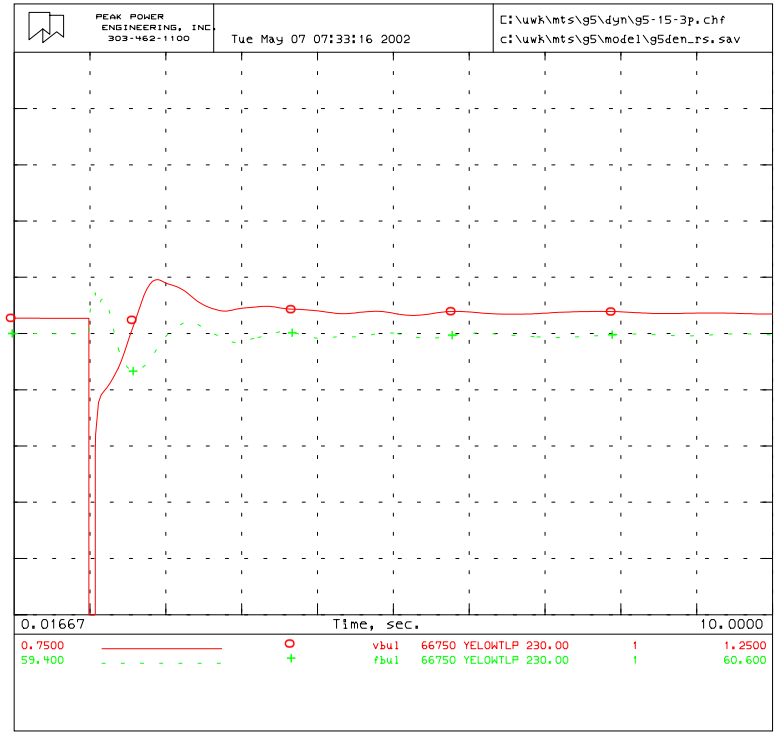

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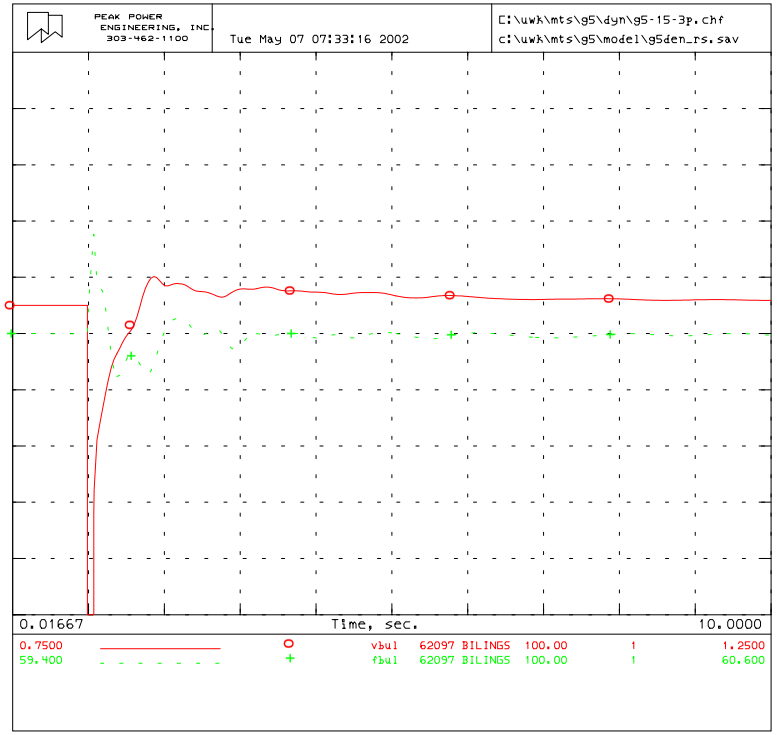

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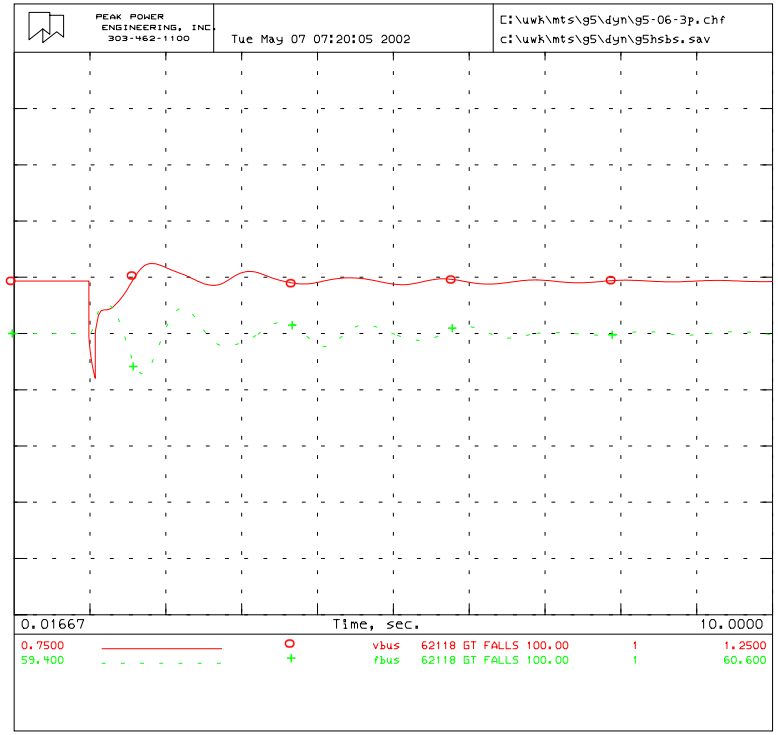

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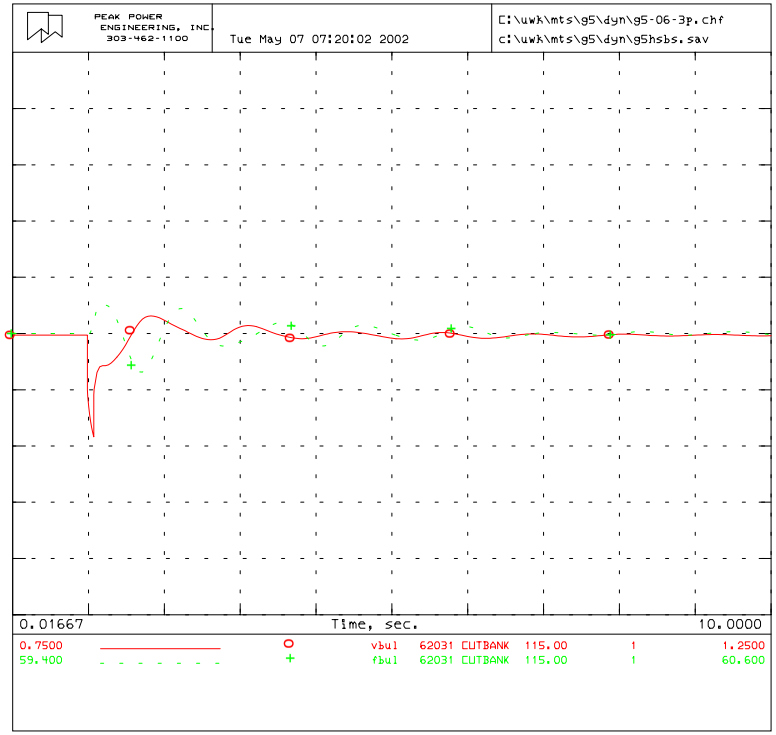

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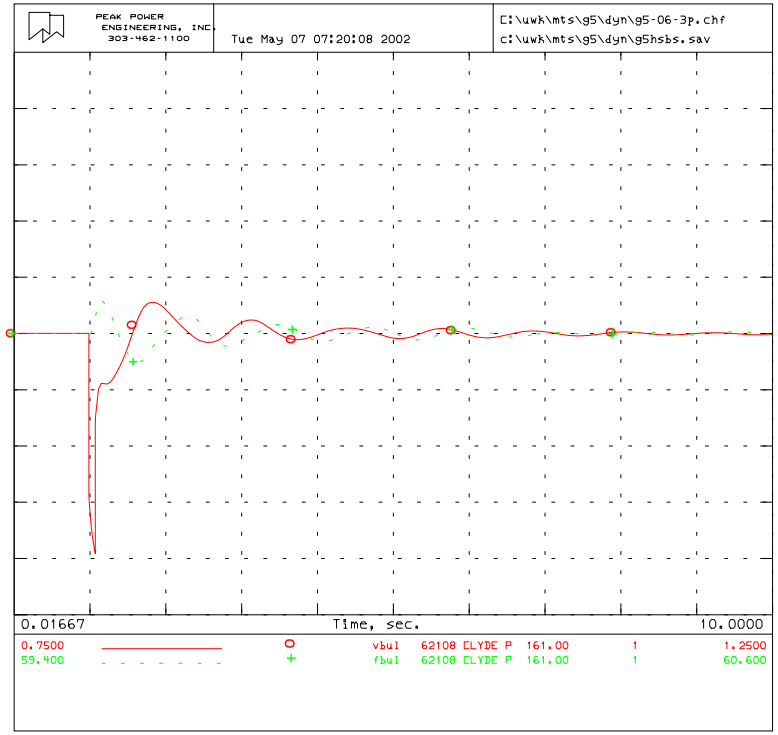

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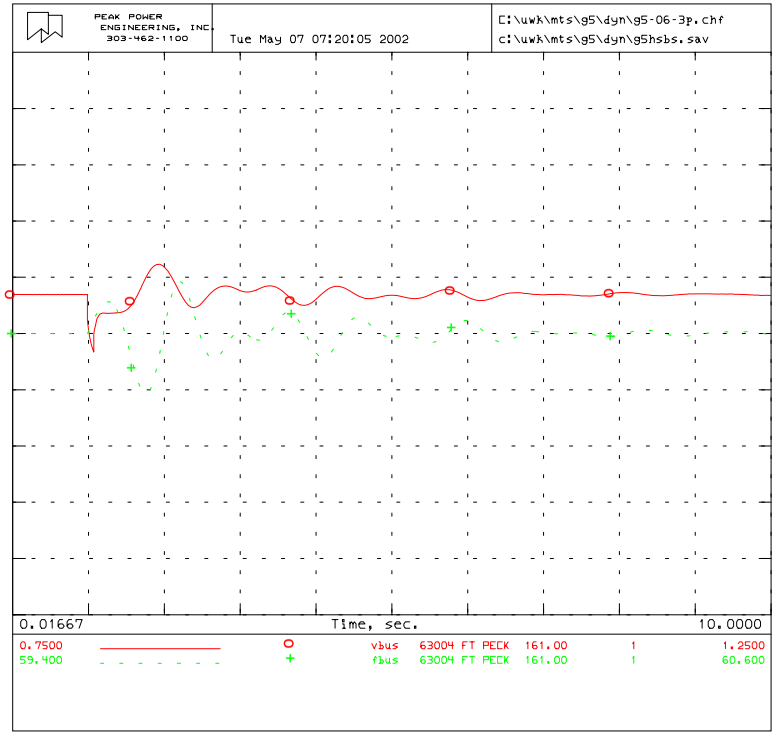

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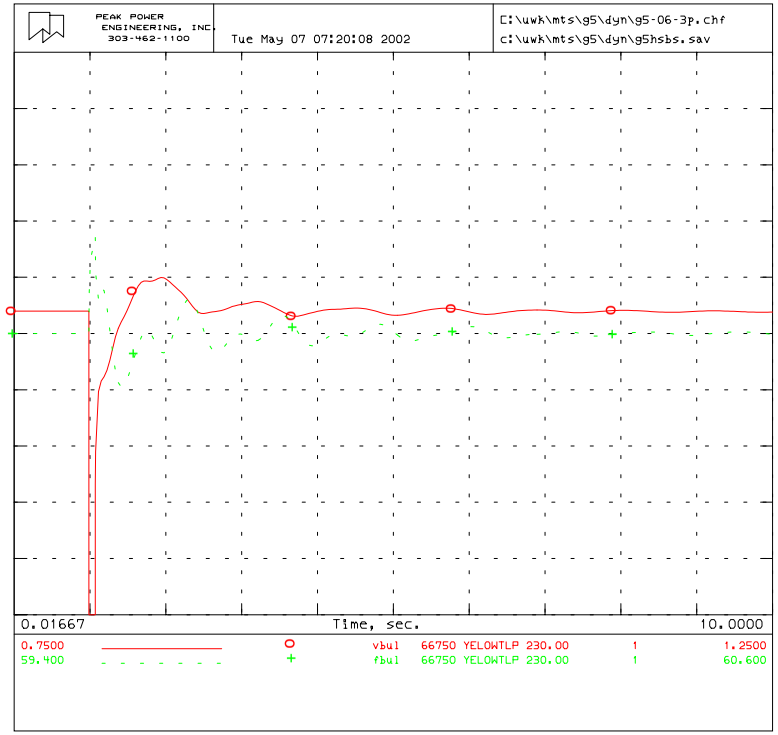

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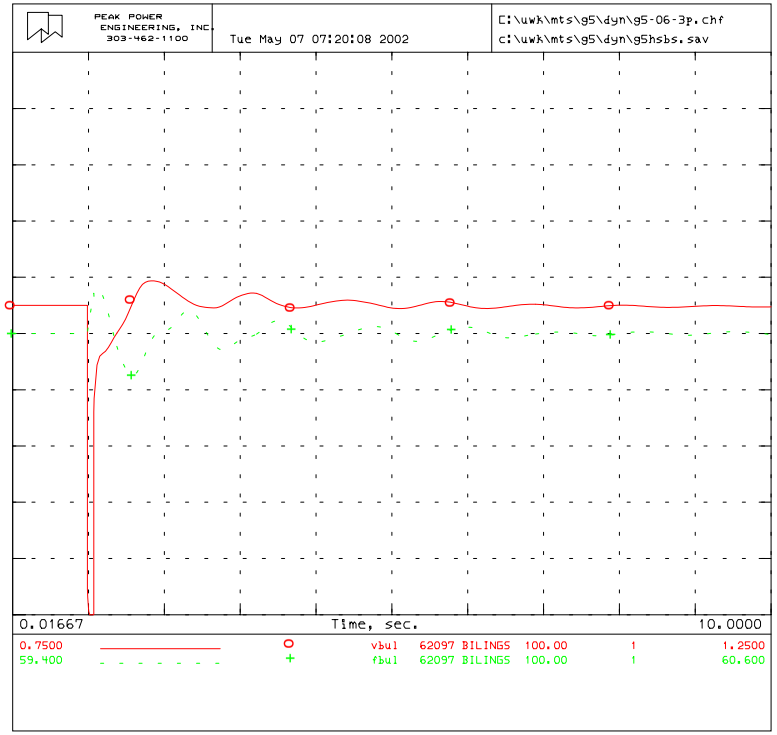

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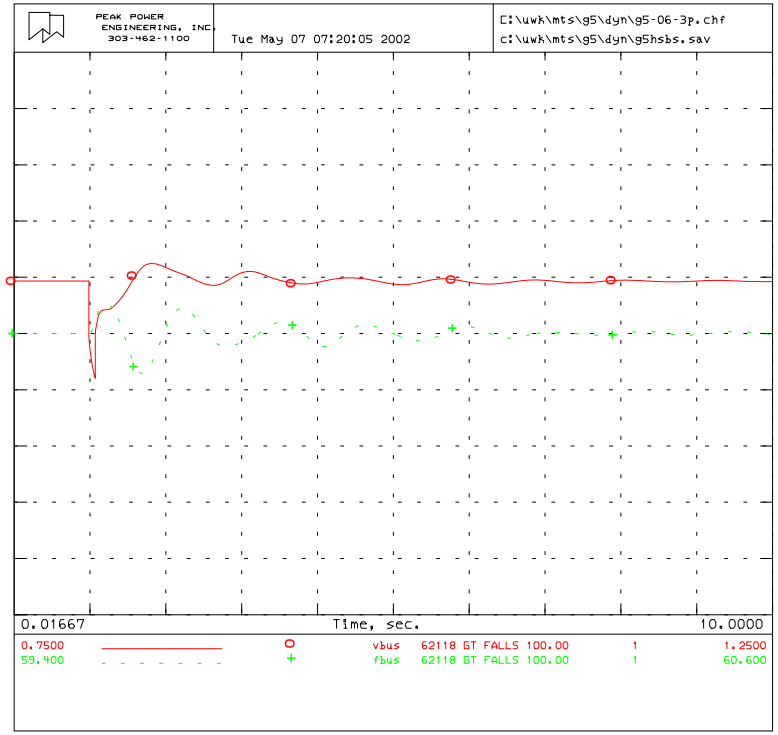

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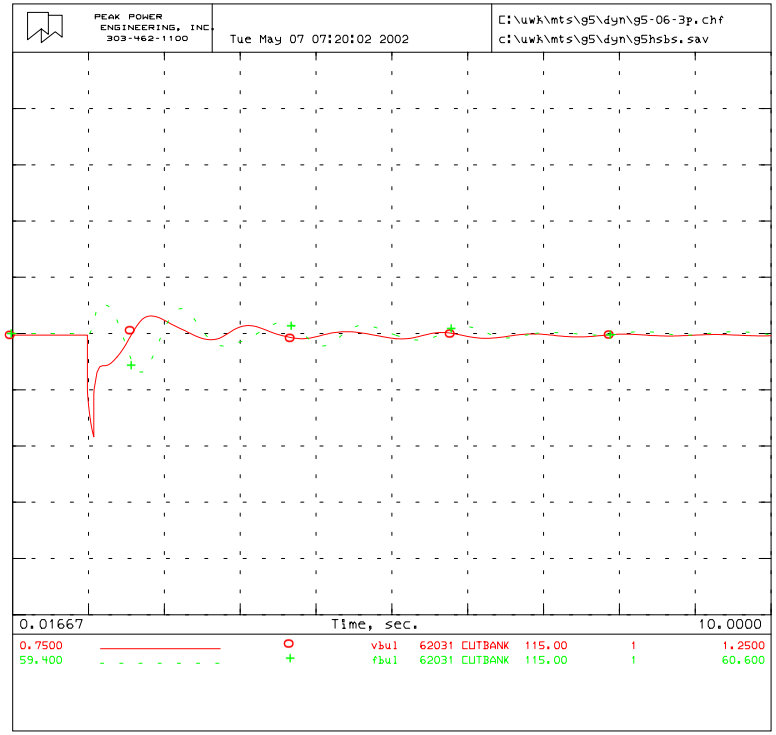

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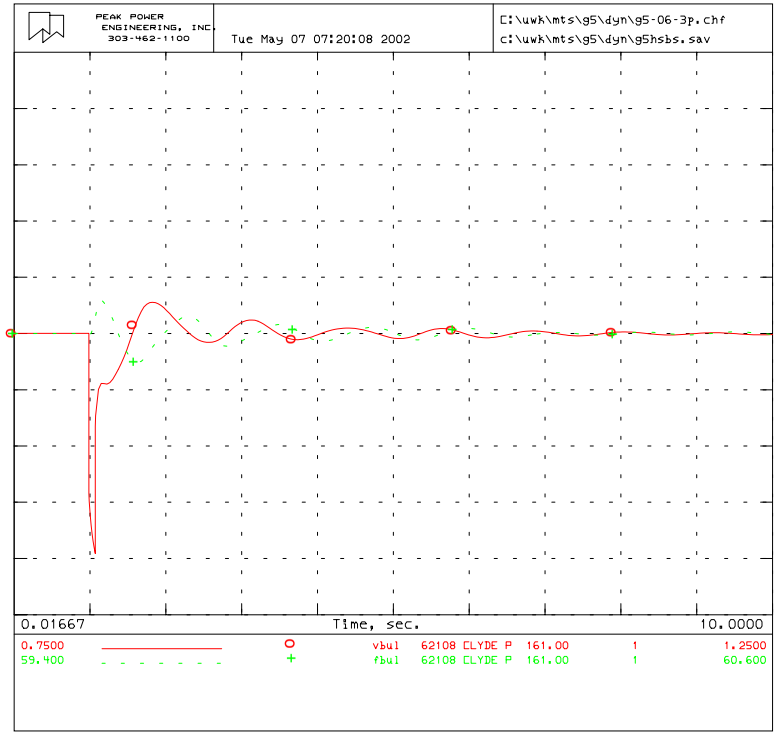

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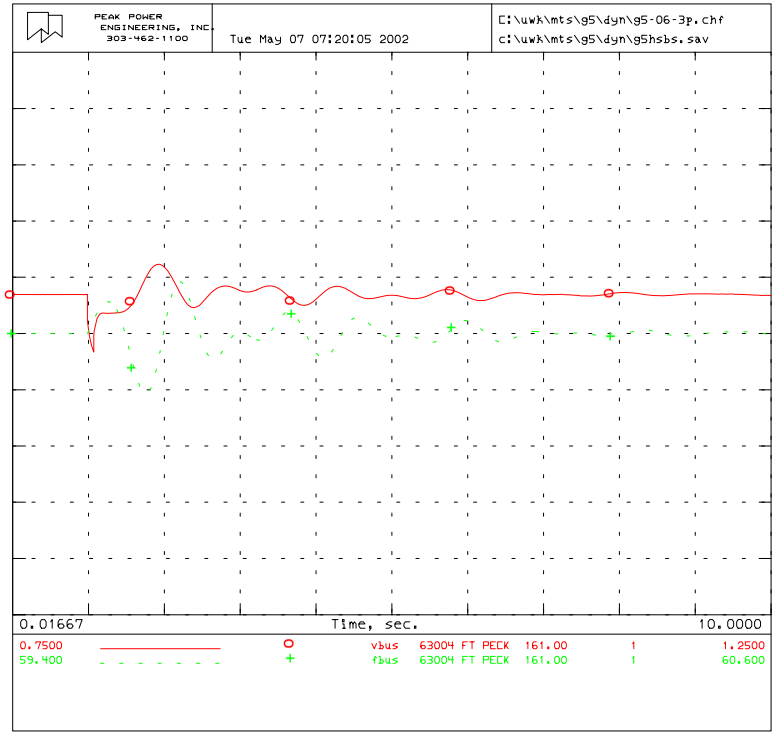

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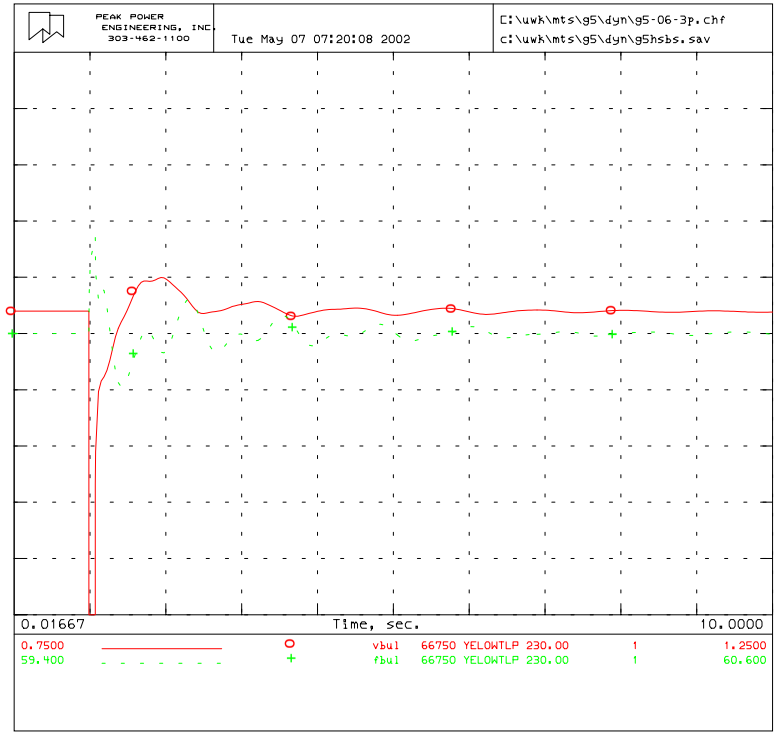

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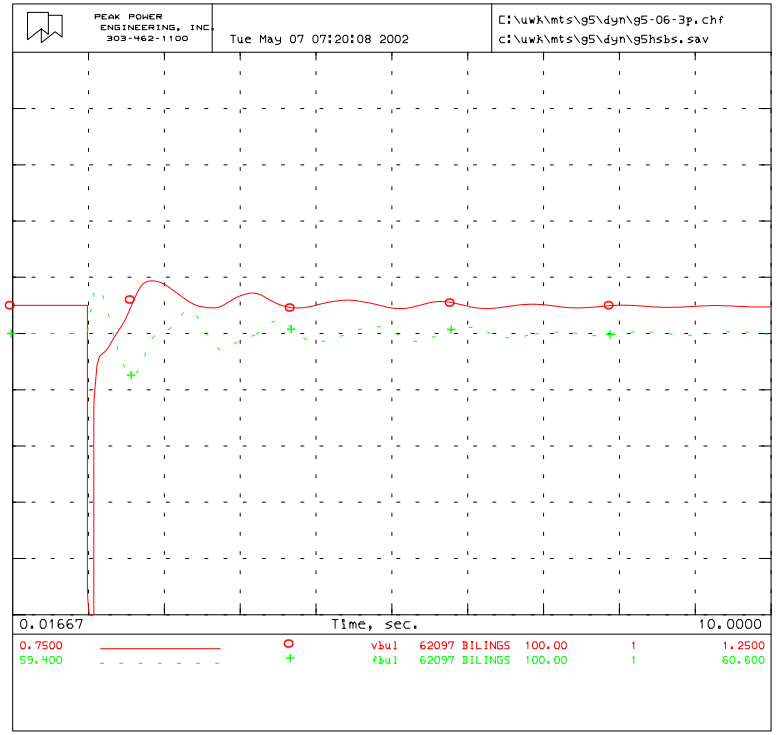

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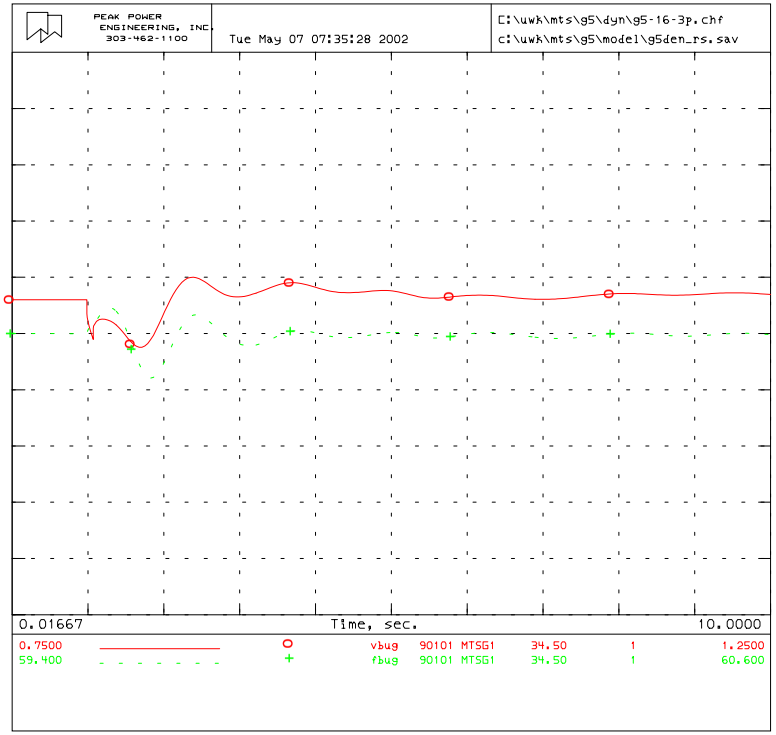

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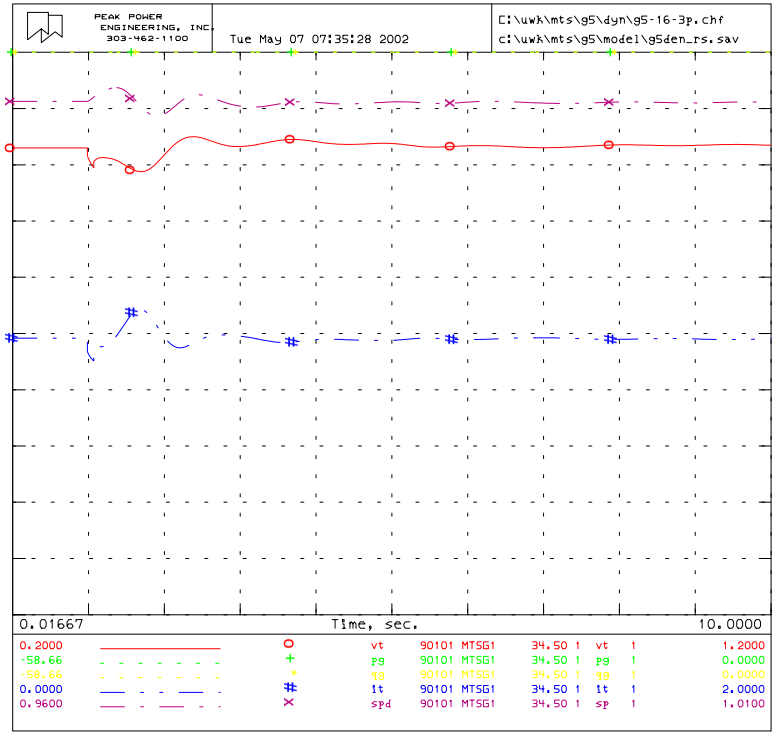

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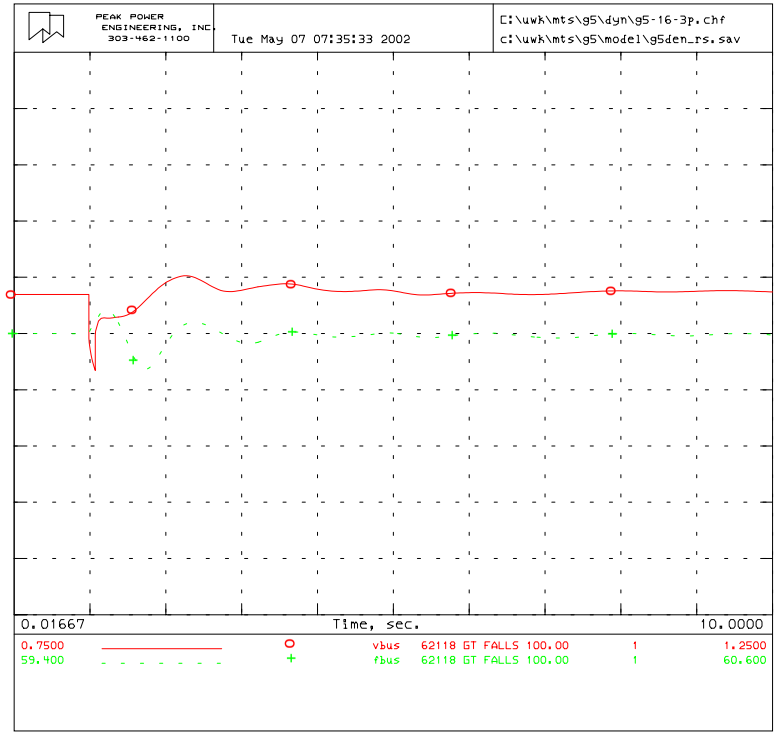

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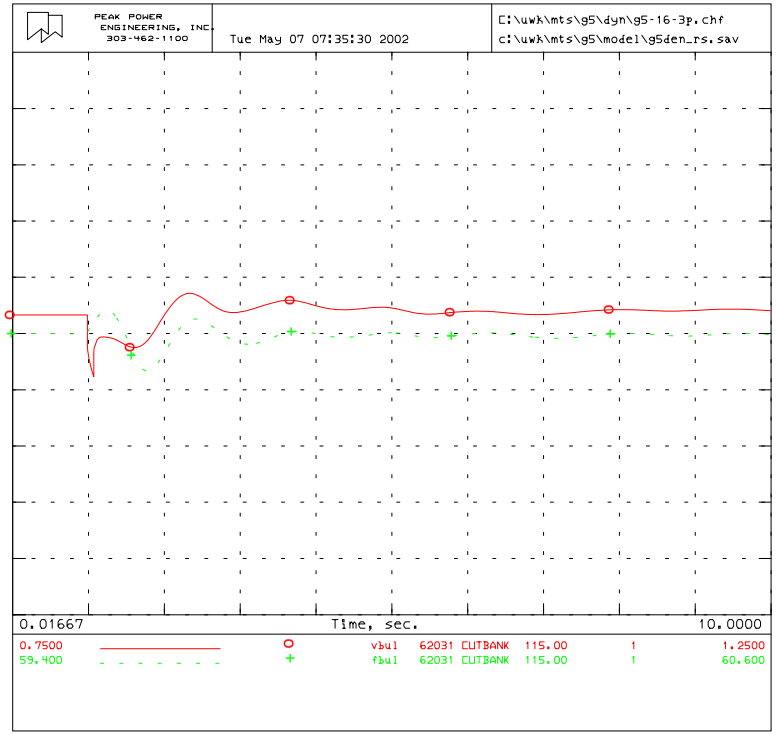

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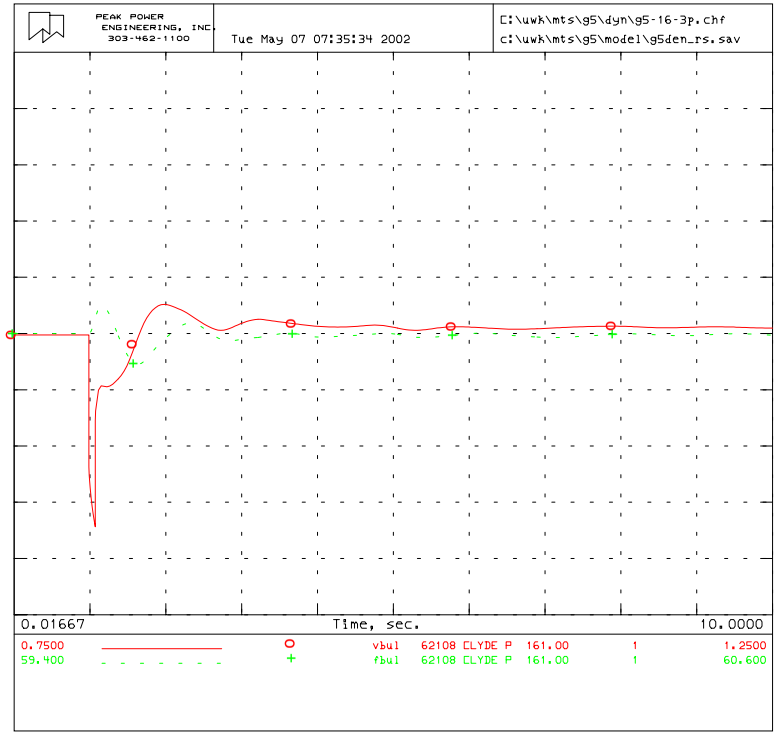

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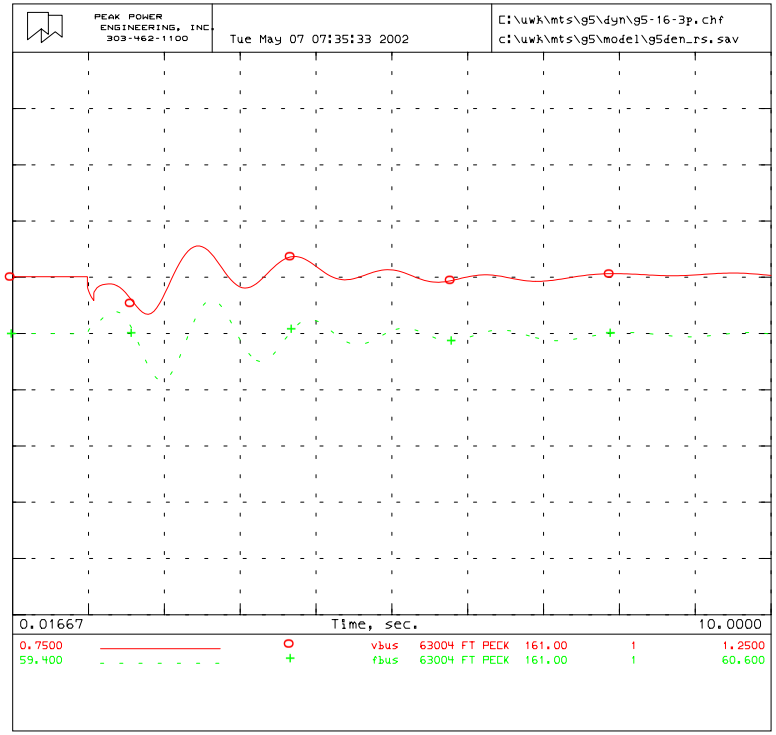

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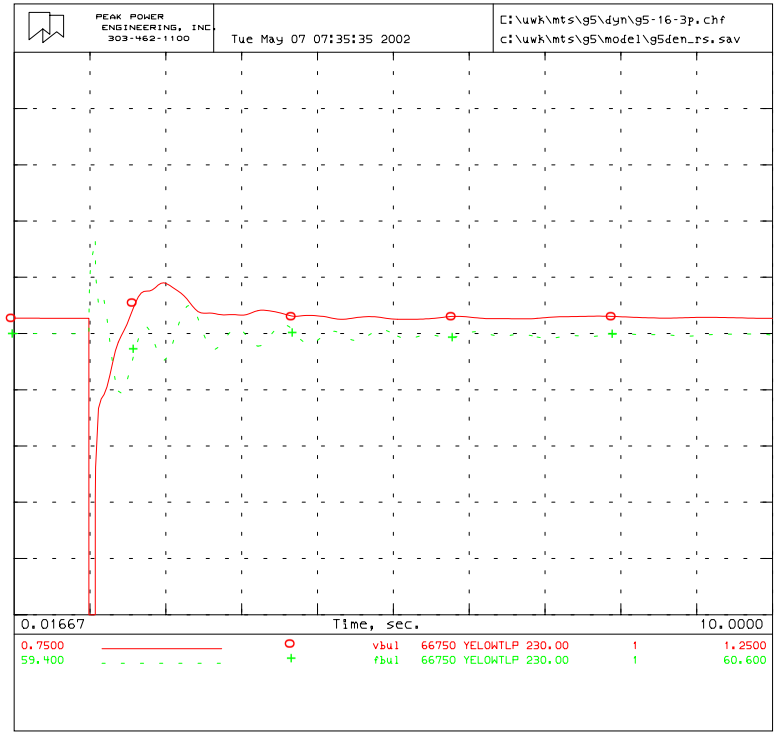

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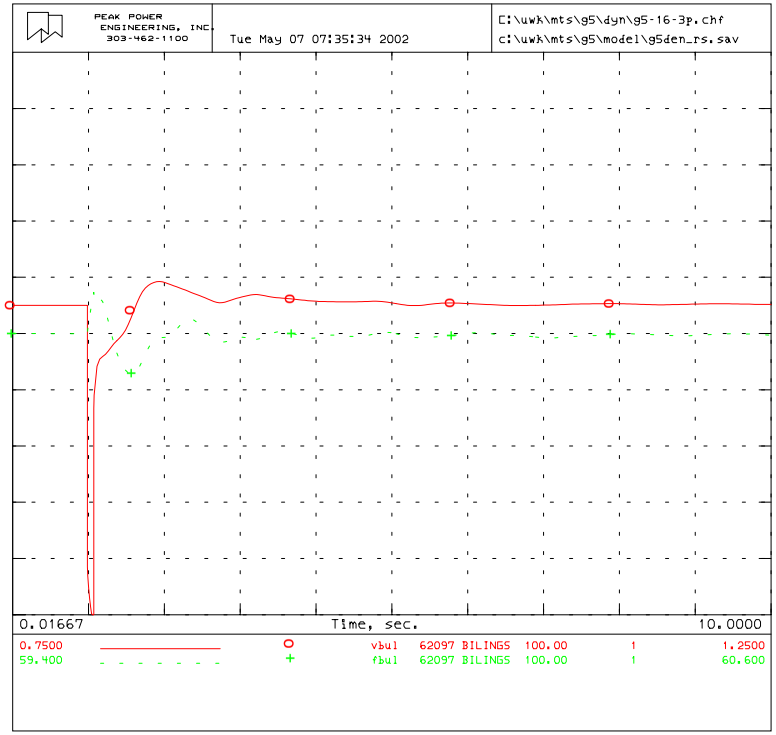

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