

**Phase II 210s04**

# Case Summary

# Case210s04

*Project Name*            2002 SERIES, NERC/MMWG BASE CASE LIBRARY  
*Title1*                    2004 Summer - CT4&5 Add KPE  
*Title2*                    All Phase II Transmission and Spurlock2/Dale1 On-Lin  
*Case Date*                2/12/2003

*Power Flow File*        M:\PROJ\Kypsc\267003\300\_Calculations\301\_PFlow\_Results\case210s04.cft

## Power Flow Controls

<i>Area Control</i>	<input type="checkbox"/>	<i>SmoothStep</i>	<input checked="" type="checkbox"/>
<i>Remote Control</i>	<input checked="" type="checkbox"/>	<i>XfrmVcon</i>	<input type="checkbox"/>
<i>GenVar Control</i>	<input checked="" type="checkbox"/>	<i>XfrmFcon</i>	<input type="checkbox"/>
<i>Solve Method</i>	NSOLVE		

## Case Settings

<i>Overload</i>	<input checked="" type="checkbox"/>	<i>VlimMin</i>	0.9	<i>RateFactor</i>	1
<i>VLimit</i>	<input checked="" type="checkbox"/>	<i>VlimMax</i>	1.05	<i>AmpFactor</i>	1
<i>VChange</i>	<input checked="" type="checkbox"/>	<i>VlimChange</i>	0.05	<i>RatingNumber</i>	2
<i>Monitored Set</i>	monitor		309 Buses		

## Contingency

<i>Use Existing Contingencies from Tables</i>	203 Buses
230 contingencies	

Area	Area Name	Zone	Zone Name	Contingency Buses	Monitored Buses
147	TVA	167	TVA_EAST	0	1
				0	1
205	AEP	254	AEP-KP	0	1
				0	1
208	CIN	280	CGE	1	0
				1	0
209	DPL	209	DPL	1	0
				1	0
211	LGEE	211	LGEE	109	166
				109	166
220	EKPC	220	EKPC	92	141
				92	141
				203	309

## 2002 SERIES, NERC/MMWG BASE CASE LIBRARY

2004 Summer - CT45 Add KPE

All Phase II Transmission and Spurlock2/Dale1 On-Line

2/12/2003

<u>Overloaded Facility</u>										<u>Normal System Overloads</u>		
From	Name	To	Name	Circuit	Base kV	Area	Zone	Ratings		MVA	Norm (%)	Emer (%)
								Norm	Emer			
24070	05MOREHE	27348	11RODBRN	1	69	205-211	254-211	33	38	34	102	88
26959	11AOSMTH	27383	11SPENC	1	69	211	211	48	59	49	101	82
27347	11RODBRN	27348	11RODBRN	1	138-69	211	211	33	40	33	101	83

**Notes:**

1. Overloads are based on 100% of Rating 1
2. Normal System Conditions - No Outages
3. Minimum Reporting Level is 100%

## 2002 SERIES, NERC/MMWG BASE CASE LIBRARY

2004 Summer - CT45 Add KPE

All Phase II Transmission and Spurlock2/Dale1 On-Line

2/12/2003

Overloaded Facility								Normal System				Overloads	
From	Name	To	Name	Circuit	Base kV	Area	Zone	Ratings		MVA	Norm (%)	Count	Max
								Norm	Emer			A / B	(%)
27347	11RODBRN	27348	11RODBRN	1	138-69	211	211	33	40	33.3	101	3 / 0	147
27117	11FAWKES	27339	11RICH S	1	69	211	211	72	72	44.1	61	3 / 0	140
26986	11BEREA	27221	11LK REB	1	69	211	211	72	72	53.1	74	2 / 0	138
27117	11FAWKES	27272	11N.MADS	1	69	211	211	56	56	29.2	52	1 / 0	129
27037	11CLARK	27397	11SYLVAN	1	69	211	211	73	90	55.6	76	3 / 0	122
27221	11LK REB	27340	11RICHMO	1	69	211	211	56	56	19.3	35	1 / 0	121
27113	11FARMER	27264	11MORH W	1	69	211	211	48	48	35.0	73	1 / 0	120
27115	11FAWK T	27231	11LR TAP	1	138	211	211	163	163	35.3	22	2 / 0	115
27358	11SALT L	27383	11SPENC	1	69	211	211	22	22	12.8	58	3 / 0	114
29230	20BOONST	29282	20DALE	1	138	220	220	252	252	142.8	57	1 / 0	113
26959	11AOSMTH	27383	11SPENC	1	69	211	211	48	59	48.6	101	4 / 0	111
27116	11FAWKES	27117	11FAWKES	1	138-69	211	211	143	171	117.4	82	2 / 0	109
27220	11LK REB	27231	11LR TAP	1	138	211	211	149	171	119.7	80	1 / 0	108
27220	11LK REB	27221	11LK REB	1	138-69	211	211	149	171	119.3	80	1 / 0	107
27229	11LOUDON	27228	11LOUD B	1	138-69	211	211	112	129	90.6	81	1 / 0	105
27112	11FARMER	27113	11FARMER	1	138-69	211	211	40	48	30.8	77	0 / 1	105
27330	11PRKRSE	27452	11WINCHS	1	69	211	211	72	79	28.7	40	0 / 2	104
27345	11ROCKWE	27452	11WINCHS	1	69	211	211	63	63	43.4	69	0 / 1	104
27382	11SPENC	27383	11SPENC	1	138-69	211	211	72	79	46.9	65	0 / 1	103
27194	11KENTON	29575	20SPURLK	2	138	211-220	211-220	227	280	148.8	66	0 / 1	102
29203	20BKR LN	29360	20HOLLWJ	1	69	220	220	57	69	9.6	17	0 / 2	101
												29 / 8	147

**Notes:**

- Overloads are based on 100% of Rating 2
- NS = Normal System Conditions (No Outages)
- Minimum Reporting Level is 100%
- Statistical Information (A/B Stats and Maximum Overload)
  - A = Serious Overload > 105%
  - B = Overloaded Facility between 100% and 105% of Rated Capability

## 2002 SERIES, NERC/MMWG BASE CASE LIBRARY

2004 Summer - CT45 Add KPE

All Phase II Transmission and Spurlock2/Dale1 On-Line

2/12/2003

<u>Undervoltage</u>					<u>Normal System</u>	<u>Voltage Violations</u>	
<u>Bus</u>	<u>Name</u>	<u>Base kV</u>	<u>Area</u>	<u>Zone</u>	<u>Voltage (pu)</u>	<u>A / B</u>	<u>Min (pu)</u>
29212	20BTYV D	69	220	220	0.9863	1 / 0	0.8395
27449	11WIL D2	69	211	211	1.0008	1 / 0	0.8431
29478	20OAKD J	69	220	220	0.9785	1 / 0	0.8492
29232	20BOONVJ	69	220	220	0.9756	1 / 0	0.8608
29313	20FAYETT	138	220	220	0.9968	1 / 0	0.8698
27210	11LEBN I	69	211	211	0.9782	1 / 0	0.8708
29468	20NEWBY1	69	220	220	1.0049	1 / 0	0.8772
29537	20S FORK	69	220	220	0.9760	0 / 1	0.8878
29315	20FAYETT	69	220	220	1.0108	0 / 2	0.8921
29406	20LNCSTR	69	220	220	0.9913	0 / 1	0.8931
29327	20GARRCO	69	220	220	0.9887	0 / 1	0.8940
29205	20BALLRD	69	220	220	0.9726	0 / 2	0.8982
29596	20TGOOCH	69	220	220	0.9755	0 / 1	0.8989
29237	20BOURNE	69	220	220	0.9835	0 / 1	0.8991
27067	11DANVIL	138	211	211	0.9940	0 / 1	0.8992
						7 / 10	0.8395
<b>Notes:</b>							
1. Minimum Voltage Limit 0.90 (pu)							
2. NS = Normal System Conditions (No Outages)							
3. Maximum Reporting Level is 90%							
4. Statistical Information (A/B Stats and Minimum Voltage)							
A = Serious Undervoltage < 0.88 (pu)							
B = Low Voltages between 0.88 and 0.90 (pu)							

## 2002 SERIES, NERC/MMWG BASE CASE LIBRARY

2004 Summer - CT45 Add KPE

All Phase II Transmission and Spurlock2/Dale1 On-Line

2/12/2003

<u>Overvoltage</u>					<u>Normal System</u>	<u>Voltage Violations</u>	
<u>Bus</u>	<u>Name</u>	<u>Base kV</u>	<u>Area</u>	<u>Zone</u>	<u>Voltage (pu)</u>	<u>A / B</u>	<u>Max (pu)</u>
29406	20LNCSTR	69	220	220	0.9913	0 / 1	1.0561
29540	20S OAKH	161	220	220	1.0338	0 / 1	1.0516
						0 / 2	1.0561

**Notes:**

1. Maximum Voltage Limit is 1.05 (pu)
2. NS = Normal System Conditions (No Outages)
3. Minimum Reporting Level for Over Voltages is 105%
4. Statistical Information (A/B Stats and Maximum Voltage)
  - A = Serious Overvoltage > 1.07 (pu)
  - B = High Voltages between 1.05 and 1.07 (pu)

## 2002 SERIES, NERC/MMWG BASE CASE LIBRARY

2004 Summer - CT45 Add KPE

All Phase II Transmission and Spurlock2/Dale1 On-Line

2/12/2003

VChange Bus Name	Base kV	Area	Zone	Normal System Voltage (pu)	Voltage Violations	
					A / B	Max (pu)
27449 11WIL D2	69	211	211	1.0008	1 / 0	-0.1577
29212 20BTYV D	69	220	220	0.9863	1 / 0	-0.1468
29478 20OAKD J	69	220	220	0.9785	1 / 0	-0.1293
29468 20NEWBY1	69	220	220	1.0049	1 / 0	-0.1277
29313 20FAYETT	138	220	220	0.9968	1 / 0	-0.1270
29315 20FAYETT	69	220	220	1.0108	2 / 0	-0.1187
29232 20BOONVJ	69	220	220	0.9756	1 / 0	-0.1148
27016 11BUENA	69	211	211	1.0260	1 / 0	-0.1114
27210 11LEBN I	69	211	211	0.9782	1 / 0	-0.1074
29470 20NEWBY2	69	220	220	1.0082	1 / 0	-0.1069
27076 11DIXDAM	69	211	211	1.0370	1 / 0	-0.1041
29406 20LNCSTR	69	220	220	0.9913	1 / 0	-0.0982
27067 11DANVIL	138	211	211	0.9940	1 / 0	-0.0948
29327 20GARRCO	69	220	220	0.9887	1 / 0	-0.0947
27016 11BUENA	69	211	211	1.0260	1 / 0	-0.0940
29291 20DAVIS	69	220	220	0.9973	2 / 0	-0.0940
27136 11GARRD	69	211	211	1.0076	1 / 0	-0.0907
29537 20S FORK	69	220	220	0.9760	1 / 0	-0.0882
29237 20BOURNE	69	220	220	0.9835	1 / 0	-0.0844
29233 20BOONSB	138	220	220	1.0210	1 / 0	-0.0826
29237 20BOURNE	69	220	220	0.9835	1 / 0	-0.0824
27068 11DANVIL	69	211	211	1.0001	2 / 0	-0.0778
29596 20TGOOCH	69	220	220	0.9755	1 / 0	-0.0766
27136 11GARRD	69	211	211	1.0076	1 / 0	-0.0754
29205 20BALLRD	69	220	220	0.9726	1 / 0	-0.0744
29580 20STANTN	69	220	220	0.9982	1 / 0	-0.0744
26972 11ATOKA	69	211	211	0.9987	2 / 0	-0.0743
29205 20BALLRD	69	220	220	0.9726	1 / 0	-0.0736
26999 11BOONSB	69	211	211	1.0360	2 / 0	-0.0735
27450 11WILMOR	69	211	211	1.0087	1 / 0	-0.0732
27000 11BOYLE	69	211	211	0.9980	2 / 0	-0.0723
29205 20BALLRD	69	220	220	0.9726	1 / 0	-0.0719
29411 20LAURLD	161	220	220	1.0029	0 / 1	-0.0688
29325 20FRNCHB	69	220	220	0.9784	0 / 1	-0.0682
29407 20LAURHY	13.8	220	220	0.9839	0 / 1	-0.0675
27220 11LK REB	138	211	211	1.0023	0 / 1	-0.0672
29436 20MARIBJ	69	220	220	0.9800	0 / 1	-0.0670
27065 11DANV 1	69	211	211	0.9976	0 / 2	-0.0668
27167 11HARR T	69	211	211	1.0081	0 / 1	-0.0664
27168 11HARRDS	69	211	211	1.0081	0 / 1	-0.0664
27450 11WILMOR	69	211	211	1.0087	0 / 1	-0.0653
29623 20WBBEREA	138	220	220	1.0028	0 / 1	-0.0652
29288 20DALE4	13.8	220	220	1.0468	0 / 1	-0.0642
27247 11MERCRCR	138	211	211	1.0071	0 / 1	-0.0639
27055 11CRAB O	69	211	211	0.9872	0 / 1	-0.0631
29260 20CLAYCJ	69	220	220	0.9966	0 / 1	-0.0622
29203 20BKR LN	69	220	220	0.9867	0 / 1	-0.0620
29510 20POWELL	69	220	220	0.9984	0 / 1	-0.0615
29580 20STANTN	69	220	220	0.9982	0 / 1	-0.0614
29327 20GARRCO	69	220	220	0.9887	0 / 1	-0.0611
29625 20WBBEREA	69	220	220	0.9982	0 / 1	-0.0605
29625 20WBBEREA	69	220	220	0.9982	0 / 1	-0.0603
29515 20PULASK	161	220	220	1.0131	0 / 1	-0.0601



VChange		Base kV	Area	Zone	Normal System Voltage (pu)	Voltage Violations	
Bus	Name					A / B	Max (pu)
29368	20HUNTFJ	69	220	220	0.9667	0 / 1	-0.0588
29626	20WBER J	69	220	220	0.9979	0 / 1	-0.0583
29368	20HUNTFJ	69	220	220	0.9667	0 / 1	-0.0581
29626	20WBER J	69	220	220	0.9979	0 / 1	-0.0581
29195	20ALCAN	69	220	220	0.9957	0 / 1	-0.0579
29195	20ALCAN	69	220	220	0.9957	0 / 1	-0.0577
29347	20HARGTJ	69	220	220	0.9988	0 / 1	-0.0574
29510	20POWELL	69	220	220	0.9984	0 / 1	-0.0569
29368	20HUNTFJ	69	220	220	0.9667	0 / 1	-0.0568
29580	20STANTN	69	220	220	0.9982	0 / 1	-0.0568
29360	20HOLLWJ	69	220	220	0.9838	0 / 1	-0.0563
29512	20PPG J	69	220	220	0.9952	0 / 1	-0.0561
27067	11DANVIL	138	211	211	0.9940	0 / 1	-0.0560
29511	20PPG	69	220	220	0.9952	0 / 1	-0.0559
29512	20PPG J	69	220	220	0.9952	0 / 1	-0.0558
29511	20PPG	69	220	220	0.9952	0 / 1	-0.0557
29238	20BOWEN	69	220	220	0.9985	0 / 1	-0.0549
26959	11AOSMTH	69	211	211	1.0209	0 / 1	-0.0548
26986	11BEREA	69	211	211	0.9966	0 / 1	-0.0541
29408	20LAURLC	161	220	220	0.9859	0 / 1	-0.0541
27221	11LK REB	69	211	211	1.0128	0 / 2	-0.0536
29605	20THLNKJ	69	220	220	0.9983	0 / 1	-0.0536
29605	20THLNKJ	69	220	220	0.9983	0 / 1	-0.0534
29238	20BOWEN	69	220	220	0.9985	0 / 1	-0.0532
29260	20CLAYCJ	69	220	220	0.9966	0 / 1	-0.0531
29508	20POWELL	138	220	220	1.0007	0 / 1	-0.0526
27339	11RICH S	69	211	211	1.0018	0 / 1	-0.0524
29408	20LAURLC	161	220	220	0.9859	0 / 1	-0.0521
27368	11SHAKRT	69	211	211	1.0281	0 / 1	-0.0519
29516	20PULASK	69	220	220	1.0046	0 / 1	-0.0516
27055	11CRAB O	69	211	211	0.9872	0 / 1	-0.0514
27272	11N.MADS	69	211	211	1.0073	0 / 1	-0.0505
29260	20CLAYCJ	69	220	220	0.9966	0 / 1	-0.0503
29488	20PARIS	138	220	220	0.9937	0 / 1	-0.0502
29237	20BOURNE	69	220	220	0.9835	0 / 1	0.0543
29406	20LNCSTR	69	220	220	0.9913	0 / 1	0.0648

38 / 59 -0.1577

**Notes:**

1. Voltage Change Limit is 0.05 (pu)
2. NS = Normal System Conditions (No Outages)
3. Minimum Reporting Level is 5%
4. Statistical Information (A/B Stats and Maximum Voltage Change)
  - A = Serious Voltage Change > 0.07 (pu)
  - B = Excessive Voltage Change between 0.05 and 0.07 (pu)

## 2002 SERIES, NERC/MMWG BASE CASE LIBRARY

2004 Summer - CT45 Add KPE

All Phase II Transmission and Spurlock2/Dale1 On-Line

2/12/2003

Contingency	Overloaded Facility								Overloads		
	From Name	To Name	Ckt	Base kV	Area	Zone	Norm	Emer	MVA	Norm (%)	Emer (%)
95	outage of 27036 11CLARK to 27037 11CLARK		1	138-69	211	211					
	26959 11AOSMTH	27383 11SPENC	1	69	211	211	48	59	65.7	137	111
110	outage of 27111 11FARM T to 27112 11FARMER		1	138	211	211					
	27347 11RODBRN	27348 11RODBRN	1	138-69	211	211	33	40	48.6	147	122
	27358 11SALT L	27383 11SPENC	1	69	211	211	22	22	24.4	111	111
115	outage of 27111 11FARM T to 27382 11SPENC		1	138	211	211					
	27358 11SALT L	27383 11SPENC	1	69	211	211	22	22	25.1	114	114
117	outage of 27112 11FARMER to 27113 11FARMER		1	138-69	211	211					
	27347 11RODBRN	27348 11RODBRN	1	138-69	211	211	33	40	48.6	147	122
	27358 11SALT L	27383 11SPENC	1	69	211	211	22	22	24.4	111	111
125	outage of 27116 11FAWKES to 27117 11FAWKES		1	138-69	211	211					
	27221 11LK REB	27340 11RICHMO	1	69	211	211	56	56	67.6	121	121
	26986 11BEREA	27221 11LK REB	1	69	211	211	72	72	78.1	108	109
	27220 11LK REB	27231 11LR TAP	1	138	211	211	149	171	184.1	124	108
	27220 11LK REB	27221 11LK REB	1	138-69	211	211	149	171	183.1	123	107
157	outage of 27220 11LK REB to 27221 11LK REB		1	138-69	211	211					
	27116 11FAWKES	27117 11FAWKES	1	138-69	211	211	143	171	185.5	130	109
	27117 11FAWKES	27339 11RICH S	1	69	211	211	72	72	76.0	106	106
160	outage of 27220 11LK REB to 27231 11LR TAP		1	138	211	211					
	27116 11FAWKES	27117 11FAWKES	1	138-69	211	211	143	171	185.5	130	109
	27117 11FAWKES	27339 11RICH S	1	69	211	211	72	72	76.0	106	106
162	outage of 27229 11LOUDON to 27227 11LOUD A		1	138-69	211	211					
	27229 11LOUDON	27228 11LOUD B	1	138-69	211	211	112	129	135.9	121	105
172	outage of 27347 11RODBRN to 27348 11RODBRN		1	138-69	211	211					
	27113 11FARMER	27264 11MORH W	1	69	211	211	48	48	57.5	120	120
	27112 11FARMER	27113 11FARMER	1	138-69	211	211	40	48	50.2	126	105
180	outage of 27382 11SPENC to 27383 11SPENC		2	138-69	211	211					
	27382 11SPENC	27383 11SPENC	1	138-69	211	211	72	79	81.6	113	103
200	outage of 26986 11BEREA to 27221 11LK REB		1	69	211	211					
	27117 11FAWKES	27339 11RICH S	1	69	211	211	72	72	100.7	140	140
205	outage of 26999 11BOONSB to 27451 11WINC S		EQ	69	211	211					
	27037 11CLARK	27397 11SYLVAN	1	69	211	211	73	90	100.2	137	111
	26959 11AOSMTH	27383 11SPENC	1	69	211	211	48	59	62.0	129	105
242	outage of 27113 11FARMER to 27264 11MORH W		1	69	211	211					
	27347 11RODBRN	27348 11RODBRN	1	138-69	211	211	33	40	58.9	178	147
247	outage of 27117 11FAWKES to 27339 11RICH S		1	69	211	211					
	26986 11BEREA	27221 11LK REB	1	69	211	211	72	72	99.7	138	138
260	outage of 27170 11HIGB A to 27449 11WIL D2		1	69	211	211					
	27117 11FAWKES	27272 11N.MADS	1	69	211	211	56	56	72.0	129	129
322	outage of 27229 11LOUDON to 29202 20AVON		1	138	211-220	211-220					
	27075 NONAME	27300 11PARIS	1	69	211	211	56	56	68.5	122	122
	27345 11ROCKWE	27452 11WINCHS	1	69	211	211	63	63	65.4	104	104
325	outage of 27231 11LR TAP to 29616 20UN CTY		1	138	211-220	211-220					
	27115 11FAWK T	27231 11LR TAP	1	138	211	211	163	163	185.1	114	114
340	outage of 29201 20AVON to 29202 20AVON		1	345-138	220	220					
	29230 20BOONST	29282 20DALE	1	138	220	220	252	252	284.9	113	113
417	outage of 29202 20AVON to 29313 20FAYETT		1	138	220	220					
	29203 20BKR LN	29360 20HOLLWJ	1	69	220	220	57	69	69.8	122	101
422	outage of 29230 20BOONST to 29233 20BOONSB		1	138	220	220					
	27037 11CLARK	27397 11SYLVAN	1	69	211	211	73	90	110.2	151	122

Contingency	Overloaded Facility										Overloads		
	From Name	To Name	Ckt	Base kV	Area	Zone	Ratings		MVA	Norm (%)	Emer (%)		
							Norm	Emer					
	26959 11AOSMTH	27383 11SPENC	1	69	211	211	48	59	65.1	136	110		
	27330 11PRKRSE	27452 11WINCHS	1	69	211	211	72	79	82.5	115	104		
445	outage of 29313 20FAYETT to 29315 20FAYETT		1	138-69	220	220							
	29203 20BKR LN	29360 20HOLLWJ	1	69	220	220	57	69	69.8	122	101		
465	outage of 29397 20JKSMIT to 29616 20UN CTY		1	138	220	220							
	27115 11FAWK T	27231 11LR TAP	1	138	211	211	163	163	187.3	115	115		
595	outage of 29233 20BOONSB to 26999 11BOONSB		1	138-69	220-211	220-211							
	27037 11CLARK	27397 11SYLVAN	1	69	211	211	73	90	110.2	151	122		
	26959 11AOSMTH	27383 11SPENC	1	69	211	211	48	59	65.1	136	110		
	27330 11PRKRSE	27452 11WINCHS	1	69	211	211	72	79	82.5	115	104		
607	outage of 27197 11KENTON to 29575 20SPURLK		1	138	211-220	211-220							
	27194 11KENTON	29575 20SPURLK	2	138	211-220	211-220	227	280	285.0	126	102		

**Notes:**

1. Overloads are based on 100% of Rating 2

## 2002 SERIES, NERC/MMWG BASE CASE LIBRARY

2004 Summer - CT45 Add KPE

All Phase II Transmission and Spurlock2/Dale1 On-Line

2/12/2003

Overloaded Facility	Contingency									Overloads		
	From	Name	To	Name	Circuit	Base kV	Area	Zone	Ratings Norm Emer	Norm MVA	Emer (%)	Emer (%)
27347 11RODBRN	27348	11RODBRN			1	138-69	211	211	33 40	NS	33	101 83
	242	outage of 27113 11FARMER to 27264 11MORH			1	69	211	211			59	178 147
	110	outage of 27111 11FARM T to 27112 11FARMER			1	138	211	211			49	147 122
	117	outage of 27112 11FARMER to 27113 11FARME			1	138-69	211	211			49	147 122
											3 / 0	147
27117 11FAWKES	27339	11RICH S			1	69	211	211	72 72	NS	44	61 61
	200	outage of 26986 11BEREA to 27221 11LK REB			1	69	211	211			101	140 140
	157	outage of 27220 11LK REB to 27221 11LK REB			1	138-69	211	211			76	106 106
	160	outage of 27220 11LK REB to 27231 11LR TAP			1	138	211	211			76	106 106
											3 / 0	140
26986 11BEREA	27221	11LK REB			1	69	211	211	72 72	NS	53	74 74
	247	outage of 27117 11FAWKES to 27339 11RICH S			1	69	211	211			100	138 138
	125	outage of 27116 11FAWKES to 27117 11FAWKE			1	138-69	211	211			78	108 109
											2 / 0	138
27117 11FAWKES	27272	11N.MADS			1	69	211	211	56 56	NS	29	52 52
	260	outage of 27170 11HIGB A to 27449 11WIL D2			1	69	211	211			72	129 129
											1 / 0	129
27037 11CLARK	27397	11SYLVAN			1	69	211	211	73 90	NS	56	76 62
	595	outage of 29233 20BOONSB to 26999 11BOONS			1	138-69	220-211	220-211			110	151 122
	422	outage of 29230 20BOONST to 29233 20BOONS			1	138	220	220			110	151 122
	205	outage of 26999 11BOONSB to 27451 11WINC S EQ				69	211	211			100	137 111
											3 / 0	122
27221 11LK REB	27340	11RICHMO			1	69	211	211	56 56	NS	19	35 35
	125	outage of 27116 11FAWKES to 27117 11FAWKE			1	138-69	211	211			68	121 121
											1 / 0	121
27113 11FARMER	27264	11MORH W			1	69	211	211	48 48	NS	35	73 73
	172	outage of 27347 11RODBRN to 27348 11RODBR			1	138-69	211	211			58	120 120
											1 / 0	120
27115 11FAWK T	27231	11LR TAP			1	138	211	211	163 163	NS	35	22 22
	465	outage of 29397 20JKSMIT to 29616 20UN CTY			1	138	220	220			187	115 115
	325	outage of 27231 11LR TAP to 29616 20UN CTY			1	138	211-220	211-220			185	114 114
											2 / 0	115
27358 11SALT L	27383	11SPENC			1	69	211	211	22 22	NS	13	58 58
	115	outage of 27111 11FARM T to 27382 11SPENC			1	138	211	211			25	114 114
	110	outage of 27111 11FARM T to 27112 11FARMER			1	138	211	211			24	111 111
	117	outage of 27112 11FARMER to 27113 11FARME			1	138-69	211	211			24	111 111
											3 / 0	114
29230 20BOONST	29282	20DALE			1	138	220	220	252 252	NS	143	57 57
	340	outage of 29201 20AVON to 29202 20AVON			1	345-138	220	220			285	113 113
											1 / 0	113

<b>Overloaded Facility</b>		<b>Contingency</b>								<b>Overloads</b>				
<b>From</b>	<b>Name</b>	<b>To</b>	<b>Name</b>	<b>Circuit</b>	<b>Base kV</b>	<b>Area</b>	<b>Zone</b>	<b>Ratings</b>		<b>Norm</b>	<b>Emer</b>	<b>MVA</b>	<b>(%)</b>	<b>(%)</b>
								<b>Norm</b>	<b>Emer</b>					
26959	11AOSMTH	27383	11SPENC		1	69	211	211	48	59	NS	49	101	82
	95	outage of 27036 11CLARK to 27037 11CLARK		1	138-69	211	211					66	137	111
	422	outage of 29230 20BOONST to 29233 20BOONS		1	138	220	220					65	136	110
	595	outage of 29233 20BOONSB to 26999 11BOONS		1	138-69	220-211	220-211					65	136	110
	205	outage of 26999 11BOONSB to 27451 11WINC S EQ			69	211	211					62	129	105
												4 / 0		111
27116	11FAWKES	27117	11FAWKES		1	138-69	211	211	143	171	NS	117	82	69
	157	outage of 27220 11LK REB to 27221 11LK REB		1	138-69	211	211					185	130	109
	160	outage of 27220 11LK REB to 27231 11LR TAP		1	138	211	211					185	130	109
												2 / 0		109
27220	11LK REB	27231	11LR TAP		1	138	211	211	149	171	NS	120	80	70
	125	outage of 27116 11FAWKES to 27117 11FAWKE		1	138-69	211	211					184	124	108
												1 / 0		108
27220	11LK REB	27221	11LK REB		1	138-69	211	211	149	171	NS	119	80	70
	125	outage of 27116 11FAWKES to 27117 11FAWKE		1	138-69	211	211					183	123	107
												1 / 0		107
27229	11LOUDON	27228	11LOUD B		1	138-69	211	211	112	129	NS	91	81	70
	162	outage of 27229 11LOUDON to 27227 11LOUD A		1	138-69	211	211					136	121	105
												1 / 0		105
27112	11FARMER	27113	11FARMER		1	138-69	211	211	40	48	NS	31	77	64
	172	outage of 27347 11RODBRN to 27348 11RODBR		1	138-69	211	211					50	126	105
												0 / 1		105
27330	11PRKRSE	27452	11WINCHS		1	69	211	211	72	79	NS	29	40	36
	595	outage of 29233 20BOONSB to 26999 11BOONS		1	138-69	220-211	220-211					82	115	104
	422	outage of 29230 20BOONST to 29233 20BOONS		1	138	220	220					82	115	104
												0 / 2		104
27345	11ROCKWE	27452	11WINCHS		1	69	211	211	63	63	NS	43	69	69
	322	outage of 27229 11LOUDON to 29202 20AVON		1	138	211-220	211-220					65	104	104
												0 / 1		104
27382	11SPENC	27383	11SPENC		1	138-69	211	211	72	79	NS	47	65	59
	180	outage of 27382 11SPENC to 27383 11SPENC		2	138-69	211	211					82	113	103
												0 / 1		103
27194	11KENTON	29575	20SPURLK		2	138	211-220	211-220	227	280	NS	149	66	53
	607	outage of 27197 11KENTON to 29575 20SPURLK		1	138	211-220	211-220					285	126	102
												0 / 1		102
29203	20BKR LN	29360	20HOLLWJ		1	69	220	220	57	69	NS	10	17	14
	417	outage of 29202 20AVON to 29313 20FAYETT		1	138	220	220					70	122	101
	445	outage of 29313 20FAYETT to 29315 20FAYETT		1	138-69	220	220					70	122	101
												0 / 2		101

<u>Overloaded Facility</u>		<u>Contingency</u>								<u>Overloads</u>		
From	Name	To	Name	Circuit	Base kV	Area	Zone	Ratings		Norm	Emer	
								Norm	Emer	MVA	(%)	(%)
										29 / 8		147.2

**Notes:**

1. Overloads are based on 100% of Rating 2
2. NS = Normal System Conditions (No Outages)
3. Minimum Reporting Level is 100%
4. Statistical Information (A/B Stats and Maximum Overload)
  - A = Serious Overload > 105%
  - B = Overloaded Facility between 100% and 105% of Rated Capability

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2004 Summer - CT45 Add KPE

All Phase II Transmission and Spurlock2/Dale1 On-Line

2/12/2003

**Contingency**

Description	Ckt	kV	Zone	Area	Voltage Violations				Not Solved
					Over load	UnderV	OverV	Change	
82 outage of 27010 11BRWN P to 27247 11MERCRCR	1	138	211	211	0	0	0	2	
95 outage of 27036 11CLARK to 27037 11CLARK	1	138-69	211	211	1	0	0	0	
105 outage of 27067 11DANVIL to 27068 11DANVIL	1	138-69	211	211	0	0	0	4	
107 outage of 27067 11DANVIL to 27247 11MERCRCR	1	138	211	211	0	1	0	5	
110 outage of 27111 11FARM T to 27112 11FARMER	1	138	211	211	2	0	0	0	
115 outage of 27111 11FARM T to 27382 11SPENC	1	138	211	211	1	0	0	0	
117 outage of 27112 11FARMER to 27113 11FARMER	1	138-69	211	211	2	0	0	0	
125 outage of 27116 11FAWKES to 27117 11FAWKES	1	138-69	211	211	4	0	0	0	
157 outage of 27220 11LK REB to 27221 11LK REB	1	138-69	211	211	2	0	0	1	
160 outage of 27220 11LK REB to 27231 11LR TAP	1	138	211	211	2	0	0	2	
162 outage of 27229 11LOUDON to 27227 11LOUD A	1	138-69	211	211	1	0	0	0	
172 outage of 27347 11RODBRN to 27348 11RODBRN	1	138-69	211	211	2	0	0	0	
180 outage of 27382 11SPENC to 27383 11SPENC	2	138-69	211	211	1	0	0	0	
195 outage of 26959 11AOSMTH to 27383 11SPENC	1	69	211	211	0	0	0	1	
200 outage of 26986 11BEREA to 27221 11LK REB	1	69	211	211	1	0	0	1	
205 outage of 26999 11BOONSB to 27451 11WINC S	EQ	69	211	211	2	0	0	0	
207 outage of 27016 11BUENA to 27076 11DIXDAM	1	69	211	211	0	0	0	3	
232 outage of 27076 11DIXDAM to 27436 11WC-DD	1	69	211	211	0	0	0	5	
235 outage of 27076 11DIXDAM to 27450 11WILMOR	1	69	211	211	0	0	0	1	
242 outage of 27113 11FARMER to 27264 11MORH W	1	69	211	211	1	0	0	0	
247 outage of 27117 11FAWKES to 27339 11RICH S	1	69	211	211	1	0	0	1	
255 outage of 27167 11HARR T to 27420 11W CLIF	1	69	211	211	0	0	0	2	
260 outage of 27170 11HIGB A to 27449 11WIL D2	1	69	211	211	1	1	0	2	
267 outage of 27210 11LEBN I to 27213 11LEBNON	1	69	211	211	0	1	0	1	
297 outage of 27368 11SHAKRT to 27420 11W CLIF	1	69	211	211	0	0	0	1	
312 outage of 26990 11BKR LN to 29203 20BKR LN	1	138-69	211-220	211-220	0	0	0	2	
322 outage of 27229 11LOUDON to 29202 20AVON	1	138	211-220	211-220	2	0	0	0	
325 outage of 27231 11LR TAP to 29616 20UN CTY	1	138	211-220	211-220	1	0	0	0	
340 outage of 29201 20AVON to 29202 20AVON	1	345-138	220	220	1	0	0	0	
372 outage of 29271 20COOPER to 29411 20LAURLD	1	161	220	220	0	0	0	3	
377 outage of 29271 20COOPER to 29540 20S OAKH	1	161	220	220	0	0	3	0	
392 outage of 29408 20LAURLC to 29411 20LAURLD	1	161	220	220	0	0	0	1	
407 outage of 29515 20PULASK to 29517 20PULASJ	1	161	220	220	0	0	0	2	
410 outage of 29528 20RUSSEL to 29540 20S OAKH	1	161	220	220	0	0	2	0	
417 outage of 29202 20AVON to 29313 20FAYETT	1	138	220	220	1	2	0	3	
422 outage of 29230 20BOONST to 29233 20BOONSB	1	138	220	220	3	0	0	2	
425 outage of 29230 20BOONST to 29282 20DALE	1	138	220	220	0	0	0	1	
442 outage of 29312 20FAWKES to 29623 20WBEREA	1	138	220	220	0	0	0	7	

**Contingency**

Description	Ckt	kV	Zone	Area	Over load	Voltage Violations			Not Solved
						UnderV	OverV	Change	
445 outage of 29313 20FAYETT to 29315 20FAYETT	1	138-69	220	220	1	1	0	2	
462 outage of 29397 20JKSMIT to 29508 20POWELL	1	138	220	220	0	0	0	5	
465 outage of 29397 20JKSMIT to 29616 20UN CTY	1	138	220	220	1	0	0	0	
472 outage of 29488 20PARIS to 29490 20PARISJ	1	138	220	220	0	0	0	1	
475 outage of 29508 20POWELL to 29510 20POWELL	1	138-69	220	220	0	0	0	4	
477 outage of 29623 20WBBERA to 29625 20WBBERE	1	138-69	220	220	0	0	0	6	
487 outage of 29205 20BALLRD to 29237 20BOURNE	1	69	220	220	0	1	0	3	
490 outage of 29212 20BTYV D to 29215 20BEATTY	1	69	220	220	0	4	0	4	
497 outage of 29237 20BOURNE to 29470 20NEWBY2	1	69	220	220	0	2	0	3	
532 outage of 29283 20DALE to 29468 20NEWBY1	1	69	220	220	0	4	0	4	
535 outage of 29283 20DALE to 29470 20NEWBY2	1	69	220	220	0	0	0	4	
537 outage of 29325 20FRNCHB to 29361 20HOPE	1	69	220	220	0	0	0	2	
540 outage of 29327 20GARRCO to 29406 20LNCSTR	1	69	220	220	0	0	1	2	
580 outage of 29510 20POWELL to 29580 20STANTN	1	69	220	220	0	0	0	3	
595 outage of 29233 20BOONSB to 26999 11BOONSB	1	138-69	220-211	220-211	3	0	0	1	
602 outage of 26648 09STUART to 29573 20SPURLK	1	345	209-220	209-220	0	0	0	0	F
605 outage of 26367 08ZIMER to 29573 20SPURLK	1	345	280-220	208-220	0	0	0	0	F
607 outage of 27197 11KENTON to 29575 20SPURLK	1	138	211-220	211-220	1	0	0	0	
<b>Totals:</b>					38	17	6	97	2

**Notes:**

1. Overloads are based on 100% of Rating 2
2. Undervoltage Limit is 0.90 (pu)
3. Overvoltage Limit is 1.05 (pu)
4. Voltage Change Limit is 0.05 (pu)

**Not Solved Codes:**

- D - Diverged
- I - Interrupted
- F - Failed, One or More Contingency  
Commands Failed in PFlow



## 2002 SERIES, NERC/MMWG BASE CASE LIBRARY

2004 Summer - CT45 Add KPE

All Phase II Transmission and Spurlock2/Dale1 On-Line

2/12/2003

No.	Contingency	Ckt	Base kV	Area	Zone
10	outage of 26950 11ALCALD to 27008 11BRWN N	1	345	211	211
12	outage of 27008 11BRWN N to 27009 11BRWN N	1	345-138	211	211
15	outage of 27008 11BRWN N to 27162 11HARDN	1	345	211	211
17	outage of 27008 11BRWN N to 27427 11W LEXN	1	345	211	211
20	outage of 26951 11ALCALD to 27095 11ELIHU	1	161	211	211
22	outage of 26962 11ARNOLD to 27074 11DELVIN	1	161	211	211
25	outage of 27074 11DELVIN to 27444 11WI TAP	1	161	211	211
27	outage of 27095 11ELIHU to 27096 11ELIHU	1	161-69	211	211
30	outage of 27095 11ELIHU to 27096 11ELIHU	2	161-69	211	211
32	outage of 27230 11LR TAP to 27231 11LR TAP	1	161-138	211	211
35	outage of 27230 11LR TAP to 27444 11WI TAP	1	161	211	211
37	outage of 27425 11W IRVI to 27444 11WI TAP	1	161	211	211
40	outage of 26947 11ADAMS to 27412 11TYRONE	1	138	211	211
42	outage of 26977 11BARDST to 26978 11BARDST	1	138-69	211	211
45	outage of 26977 11BARDST to 27011 11BRWNCT	1	138	211	211
47	outage of 26977 11BARDST to 27276 11NELSON	1	138	211	211
50	outage of 26990 11BKR LN to 27009 11BRWN N	1	138	211	211
52	outage of 26990 11BKR LN to 27172 11HIGBY	1	138	211	211
55	outage of 26998 11BONNIE to 27211 11LEBN W	1	138	211	211
57	outage of 27009 11BRWN N to 27011 11BRWNCT	1	138	211	211
60	outage of 27009 11BRWN N to 27012 11BRWNT1	1	138	211	211
62	outage of 27009 11BRWN N to 27013 11BRWNT2	1	138	211	211
65	outage of 27009 11BRWN N to 27040 11CLAYSM	1	138	211	211
67	outage of 27009 11BRWN N to 27172 11HIGBY	1	138	211	211
70	outage of 27009 11BRWN N to 27312 11PISGAH	1	138	211	211
72	outage of 27009 11BRWN N to 27412 11TYRONE	1	138	211	211
75	outage of 27010 11BRWN P to 27012 11BRWNT1	1	138	211	211
77	outage of 27010 11BRWN P to 27013 11BRWNT2	1	138	211	211
80	outage of 27010 11BRWN P to 27116 11FAWKES	1	138	211	211
82	outage of 27010 11BRWN P to 27247 11MERCRCR	1	138	211	211
85	outage of 27010 11BRWN P to 27419 11W CLIF	1	138	211	211
87	outage of 27010 11BRWN P to 27419 11W CLIF	2	138	211	211
90	outage of 27011 11BRWNCT to 27012 11BRWNT1	1	138	211	211
92	outage of 27011 11BRWNCT to 27013 11BRWNT2	1	138	211	211
95	outage of 27036 11CLARK to 27037 11CLARK	1	138-69	211	211
97	outage of 27036 11CLARK to 27116 11FAWKES	1	138	211	211
100	outage of 27036 11CLARK to 27382 11SPENC	1	138	211	211
102	outage of 27040 11CLAYSM to 27172 11HIGBY	1	138	211	211
105	outage of 27067 11DANVIL to 27068 11DANVIL	1	138-69	211	211
107	outage of 27067 11DANVIL to 27247 11MERCRCR	1	138	211	211
110	outage of 27111 11FARM T to 27112 11FARMER	1	138	211	211

No.	Contingency	Ckt	Base kV	Area	Zone
112	outage of 27111 11FARM T to 27369 11SHARKE	1	138	211	211
115	outage of 27111 11FARM T to 27382 11SPENC	1	138	211	211
117	outage of 27112 11FARMER to 27113 11FARMER	1	138-69	211	211
120	outage of 27115 11FAWK T to 27116 11FAWKES	1	138	211	211
122	outage of 27115 11FAWK T to 27231 11LR TAP	1	138	211	211
125	outage of 27116 11FAWKES to 27117 11FAWKES	1	138-69	211	211
127	outage of 27122 11FFRT E to 27412 11TYRONE	1	138	211	211
130	outage of 27141 11GODDRD to 27347 11RODBRN	1	138	211	211
132	outage of 27172 11HIGBY to 27170 11HIGB A	1	138-69	211	211
135	outage of 27172 11HIGBY to 27171 11HIGB B	1	138-69	211	211
137	outage of 27172 11HIGBY to 27207 11LANSDW	1	138	211	211
140	outage of 27172 11HIGBY to 27337 11REYNOL	1	138	211	211
142	outage of 27186 11IBM N to 27229 11LOUDON	1	138	211	211
145	outage of 27211 11LEBN W to 27212 11LEBNON	1	138	211	211
147	outage of 27212 11LEBNON to 27213 11LEBNON	1	138-69	211	211
150	outage of 27212 11LEBNON to 27213 11LEBNON	2	138-69	211	211
152	outage of 27212 11LEBNON to 27243 11MARION	1	138	211	211
155	outage of 27212 11LEBNON to 27247 11MERCRCR	1	138	211	211
157	outage of 27220 11LK REB to 27221 11LK REB	1	138-69	211	211
160	outage of 27220 11LK REB to 27231 11LR TAP	1	138	211	211
162	outage of 27229 11LOUDON to 27227 11LOUD A	1	138-69	211	211
165	outage of 27229 11LOUDON to 27228 11LOUD B	1	138-69	211	211
167	outage of 27312 11PISGAH to 27313 11PISGAH	1	138-69	211	211
170	outage of 27312 11PISGAH to 27428 11W LEXN	1	138	211	211
172	outage of 27347 11RODBRN to 27348 11RODBRN	1	138-69	211	211
175	outage of 27347 11RODBRN to 27369 11SHARKE	1	138	211	211
177	outage of 27382 11SPENC to 27383 11SPENC	1	138-69	211	211
180	outage of 27382 11SPENC to 27383 11SPENC	2	138-69	211	211
182	outage of 27412 11TYRONE to 27413 11TYRONE	1	138-69	211	211
185	outage of 27419 11W CLIF to 27420 11W CLIF	1	138-69	211	211
187	outage of 27419 11W CLIF to 27420 11W CLIF	2	138-69	211	211
190	outage of 27419 11W CLIF to 27436 11WC-DD	1	138-69	211	211
192	outage of 26959 11AOSMTH to 27129 11FOGG P	EQ	69	211	211
195	outage of 26959 11AOSMTH to 27383 11SPENC	1	69	211	211
197	outage of 26972 11ATOKA to 27068 11DANVIL	1	69	211	211
200	outage of 26986 11BEREA to 27221 11LK REB	1	69	211	211
202	outage of 26986 11BEREA to 27339 11RICH S	EQ	69	211	211
205	outage of 26999 11BOONSB to 27451 11WINC S	EQ	69	211	211
207	outage of 27016 11BUENA to 27076 11DIXDAM	1	69	211	211
210	outage of 27026 11CARON to 27225 11LONDON	1	69	211	211
212	outage of 27030 11CAVE R to 27113 11FARMER	1	69	211	211
215	outage of 27030 11CAVE R to 27358 11SALT L	1	69	211	211
217	outage of 27037 11CLARK to 27129 11FOGG P	1	69	211	211
220	outage of 27037 11CLARK to 27397 11SYLVAN	1	69	211	211
222	outage of 27046 11CMPGEK to 27225 11LONDON	1	69	211	211

No.	Contingency	Ckt	Base kV	Area	Zone
225	outage of 27050 11CORBIN to 27396 11SWEETH	1	69	211	211
227	outage of 27065 11DANV 1 to 27203 11KYSTHO	EQ	69	211	211
230	outage of 27068 11DANVIL to 27168 11HARRDS	1	69	211	211
232	outage of 27076 11DIXDAM to 27436 11WC-DD	1	69	211	211
235	outage of 27076 11DIXDAM to 27450 11WILMOR	1	69	211	211
237	outage of 27082 11E BERN to 27306 11PINEHL	1	69	211	211
240	outage of 27082 11E BERN to 27314 11PITTSB	1	69	211	211
242	outage of 27113 11FARMER to 27264 11MORH W	1	69	211	211
245	outage of 27117 11FAWKES to 27272 11N.MADS	1	69	211	211
247	outage of 27117 11FAWKES to 27339 11RICH S	1	69	211	211
250	outage of 27117 11FAWKES to 27340 11RICHMO	1	69	211	211
252	outage of 27167 11HARR T to 27168 11HARRDS	1	69	211	211
255	outage of 27167 11HARR T to 27420 11W CLIF	1	69	211	211
257	outage of 27170 11HIGB A to 27391 11STONWL	1	69	211	211
260	outage of 27170 11HIGB A to 27449 11WIL D2	1	69	211	211
262	outage of 27178 11HOPEWL to 27396 11SWEETH	1	69	211	211
265	outage of 27203 11KYSTHO to 27420 11W CLIF	1	69	211	211
267	outage of 27210 11LEBN I to 27213 11LEBNON	1	69	211	211
270	outage of 27213 11LEBNON to 27385 11SPRNGF	1	69	211	211
272	outage of 27221 11LK REB to 27340 11RICHMO	1	69	211	211
275	outage of 27221 11LK REB to 27429 11WACO	1	69	211	211
277	outage of 27225 11LONDON to 27314 11PITTSB	1	69	211	211
280	outage of 27271 11N.CORB to 27396 11SWEETH	1	69	211	211
282	outage of 27272 11N.MADS to 27449 11WIL D2	EQ	69	211	211
285	outage of 27330 11PRKRSE to 27397 11SYLVAN	1	69	211	211
287	outage of 27330 11PRKRSE to 27452 11WINCHS	1	69	211	211
290	outage of 27338 11RICE T to 27429 11WACO	1	69	211	211
292	outage of 27358 11SALT L to 27383 11SPENC	1	69	211	211
295	outage of 27359 11SALVIS to 27368 11SHAKRT	1	69	211	211
297	outage of 27368 11SHAKRT to 27420 11W CLIF	1	69	211	211
300	outage of 27420 11W CLIF to 27436 11WC-DD	1	69	211	211
302	outage of 27074 11DELVIN to 29213 20BTYVL	1	161	211-220	211-220
305	outage of 27074 11DELVIN to 29346 20GRNHLJ	1	161	211-220	211-220
307	outage of 27095 11ELIHU to 29271 20COOPER	1	161	211-220	211-220
310	outage of 27243 11MARION to 29437 20MARION	1	138-161	211-220	211-220
312	outage of 26990 11BKR LN to 29203 20BKR LN	1	138-69	211-220	211-220
315	outage of 27115 11FAWK T to 29312 20FAWKES	1	138	211-220	211-220
317	outage of 27116 11FAWKES to 29312 20FAWKES	1	138	211-220	211-220
320	outage of 27116 11FAWKES to 29312 20FAWKES	2	138	211-220	211-220
322	outage of 27229 11LOUDON to 29202 20AVON	1	138	211-220	211-220
325	outage of 27231 11LR TAP to 29616 20UN CTY	1	138	211-220	211-220
327	outage of 26982 11BEATTY to 29215 20BEATTY	1	69	211-220	211-220
330	outage of 27082 11E BERN to 29300 20EBRNST	1	69	211-220	211-220
332	outage of 27110 11FARLEY to 29536 20SCORBN	1	69	211-220	211-220
335	outage of 27117 11FAWKES to 29280 20CROOKJ	1	69	211-220	211-220

No.	Contingency	Ckt	Base kV	Area	Zone
337	outage of 27178 11HOPEWL to 29410 20LAURLC	1	69	211-220	211-220
340	outage of 29201 20AVON to 29202 20AVON	1	345-138	220	220
342	outage of 29201 20AVON to 29573 20SPURLK	1	345	220	220
345	outage of 29201 20AVON to 29651 20KPE345	1	345	220	220
350	outage of 29573 20SPURLK to 29575 20SPURLK	2	345-138	220	220
352	outage of 29575 20SPURLK to 29573 20SPURLK	1	138-345	220	220
355	outage of 29651 20KPE345 to 29652 20KPE138	1	345-138	220	220
357	outage of 29213 20BTYVL to 29215 20BEATTY	1	161-69	220	220
360	outage of 29213 20BTYVL to 29507 20POWELL	1	161	220	220
362	outage of 29271 20COOPER to 29272 20COOPER	1	161-69	220	220
370	outage of 29271 20COOPER to 29292 20DENNY	1	161	220	220
372	outage of 29271 20COOPER to 29411 20LAURLD	1	161	220	220
375	outage of 29271 20COOPER to 29517 20PULASJ	1	161	220	220
377	outage of 29271 20COOPER to 29540 20S OAKH	1	161	220	220
380	outage of 29292 20DENNY to 29293 20DENNY	1	161-69	220	220
382	outage of 29308 20FALLRK to 29310 20FALLRK	1	161-69	220	220
385	outage of 29308 20FALLRK to 29613 20TYNER	1	161	220	220
387	outage of 29346 20GRNHLJ to 29613 20TYNER	1	161	220	220
390	outage of 29408 20LAURLC to 29410 20LAURLC	1	161-69	220	220
392	outage of 29408 20LAURLC to 29411 20LAURLD	1	161	220	220
395	outage of 29408 20LAURLC to 29503 20PITTSB	1	161	220	220
400	outage of 29418 20LIBERT to 29517 20PULASJ	1	161	220	220
402	outage of 29503 20PITTSB to 29613 20TYNER	1	161	220	220
405	outage of 29507 20POWELL to 29508 20POWELL	1	161-138	220	220
407	outage of 29515 20PULASK to 29517 20PULASJ	1	161	220	220
410	outage of 29528 20RUSSEL to 29540 20S OAKH	1	161	220	220
412	outage of 29613 20TYNER to 29615 20TYNER	1	161-69	220	220
415	outage of 29202 20AVON to 29230 20BOONST	1	138	220	220
417	outage of 29202 20AVON to 29313 20FAYETT	1	138	220	220
420	outage of 29202 20AVON to 29490 20PARISJ	1	138	220	220
422	outage of 29230 20BOONST to 29233 20BOONSB	1	138	220	220
425	outage of 29230 20BOONST to 29282 20DALE	1	138	220	220
430	outage of 29282 20DALE to 29397 20JKSMIT	1	138	220	220
432	outage of 29282 20DALE to 29603 20TFJ	1	138	220	220
435	outage of 29283 20DALE to 29282 20DALE	1	69-138	220	220
437	outage of 29312 20FAWKES to 29397 20JKSMIT	1	138	220	220
440	outage of 29312 20FAWKES to 29603 20TFJ	1	138	220	220
442	outage of 29312 20FAWKES to 29623 20WBBEREA	1	138	220	220
445	outage of 29313 20FAYETT to 29315 20FAYETT	1	138-69	220	220
447	outage of 29375 20JACKVJ to 29490 20PARISJ	1	138	220	220
462	outage of 29397 20JKSMIT to 29508 20POWELL	1	138	220	220
465	outage of 29397 20JKSMIT to 29616 20UN CTY	1	138	220	220
467	outage of 29397 20JKSMIT to 29652 20KPE138	1	138	220	220
470	outage of 29397 20JKSMIT to 29652 20KPE138	2	138	220	220
472	outage of 29488 20PARIS to 29490 20PARISJ	1	138	220	220

No.	Contingency	Ckt	Base kV	Area	Zone
475	outage of 29508 20POWELL to 29510 20POWELL	1	138-69	220	220
477	outage of 29623 20WBBEREA to 29625 20WBBEREA	1	138-69	220	220
480	outage of 29195 20ALCAN to 29512 20PPG J	1	69	220	220
482	outage of 29195 20ALCAN to 29625 20WBBEREA	1	69	220	220
485	outage of 29196 20ANNVLJ to 29615 20TYNER	1	69	220	220
487	outage of 29205 20BALLRD to 29237 20BOURNE	1	69	220	220
490	outage of 29212 20BTYV D to 29215 20BEATTY	1	69	220	220
492	outage of 29215 20BEATTY to 29648 20ZACHAR	1	69	220	220
495	outage of 29222 20BLEV T to 29361 20HOPE	1	69	220	220
497	outage of 29237 20BOURNE to 29470 20NEWBY2	1	69	220	220
500	outage of 29238 20BOWEN to 29355 20HIGHHRK	1	69	220	220
502	outage of 29238 20BOWEN to 29510 20POWELL	1	69	220	220
505	outage of 29243 20BRONSJ to 29272 20COOPER	1	69	220	220
507	outage of 29260 20CLAYCJ to 29347 20HARGTJ	1	69	220	220
510	outage of 29260 20CLAYCJ to 29580 20STANTN	1	69	220	220
512	outage of 29272 20COOPER to 29566 20SOMERS	1	69	220	220
515	outage of 29272 20COOPER to 29566 20SOMERS	2	69	220	220
517	outage of 29280 20CROOKJ to 29352 20HICK P	1	69	220	220
527	outage of 29283 20DALE to 29366 20HUNT1	1	69	220	220
530	outage of 29283 20DALE to 29367 20HUNT2	1	69	220	220
532	outage of 29283 20DALE to 29468 20NEWBY1	1	69	220	220
535	outage of 29283 20DALE to 29470 20NEWBY2	1	69	220	220
537	outage of 29325 20FRNCHB to 29361 20HOPE	1	69	220	220
540	outage of 29327 20GARRCO to 29406 20LNCSTR	1	69	220	220
542	outage of 29352 20HICK P to 29511 20PPG	1	69	220	220
545	outage of 29355 20HIGHHRK to 29547 20SANDLK	1	69	220	220
547	outage of 29361 20HOPE to 29377 20JEFFVL	1	69	220	220
550	outage of 29366 20HUNT1 to 29556 20SIDEV	1	69	220	220
552	outage of 29367 20HUNT2 to 29398 20JKSMIT	1	69	220	220
555	outage of 29377 20JEFFVL to 29510 20POWELL	1	69	220	220
557	outage of 29398 20JKSMIT to 29607 20TRAPP	1	69	220	220
560	outage of 29401 20KEAVY to 29403 20KEAVJ2	1	69	220	220
562	outage of 29402 20KEAVJ1 to 29410 20LAURLC	1	69	220	220
565	outage of 29402 20KEAVJ1 to 29501 20PINEGJ	1	69	220	220
567	outage of 29403 20KEAVJ2 to 29410 20LAURLC	1	69	220	220
570	outage of 29403 20KEAVJ2 to 29536 20SCORBN	1	69	220	220
572	outage of 29406 20LNCSTR to 29468 20NEWBY1	1	69	220	220
575	outage of 29446 20MCKEE to 29615 20TYNER	1	69	220	220
577	outage of 29501 20PINEGJ to 29631 20W LOND	1	69	220	220
580	outage of 29510 20POWELL to 29580 20STANTN	1	69	220	220
582	outage of 29511 20PPG to 29512 20PPG J	1	69	220	220
585	outage of 29537 20S FORK to 29615 20TYNER	1	69	220	220
587	outage of 29605 20THLNKJ to 29626 20WBBER J	1	69	220	220
590	outage of 29625 20WBBEREA to 29626 20WBBER J	1	69	220	220
592	outage of 29503 20PITTSB to 27314 11PITTSB	1	161-69	220-211	220-211

No.	Contingency	Ckt	Base kV	Area	Zone
595	outage of 29233 20BOONSB to 26999 11BOONSB	1	138-69	220-211	220-211
597	outage of 29397 20JKSMIT to 27382 11SPENC	1	138	220-211	220-211
602	outage of 26648 09STUART to 29573 20SPURLK	1	345	209-220	209-220
605	outage of 26367 08ZIMER to 29573 20SPURLK	1	345	208-220	280-220
607	outage of 27197 11KENTON to 29575 20SPURLK	1	138	211-220	211-220
610	outage of 29372 20INLAND to 29575 20SPURLK	1	138	220	220
612	outage of 29440 20MAYSJV to 29575 20SPURLK	1	138	220	220
615	outage of 29521 20RENAKR to 29575 20SPURLK	1	138	220	220
617	outage of 29575 20SPURLK to 29585 20S PARK	1	138	220	220

**Case 300s04**

# Case Summary

# Case300s04

*Project Name* 2002 SERIES, NERC/MMWG BASE CASE LIBRARY  
*Title1* 2004 Summer - CT4&5 & Gilbert  
*Title2* New Transmission and Cooper2/Love Off-Line  
*Case Date* 2/12/2003

*Power Flow File* M:\PROJ\Kypsc\267003\300\_Calculations\301\_PFlow\_Results\Case300s04.cft

## Power Flow Controls

<i>Area Control</i>	<input type="checkbox"/>	<i>SmoothStep</i>	<input checked="" type="checkbox"/>
<i>Remote Control</i>	<input checked="" type="checkbox"/>	<i>XfrmVcon</i>	<input type="checkbox"/>
<i>GenVar Control</i>	<input checked="" type="checkbox"/>	<i>XfrmFcon</i>	<input type="checkbox"/>
<i>Solve Method</i>	NSOLVE		

## Case Settings

<i>Overload</i>	<input checked="" type="checkbox"/>	<i>VlimMin</i>	0.9	<i>RateFactor</i>	1
<i>VLimit</i>	<input checked="" type="checkbox"/>	<i>VlimMax</i>	1.05	<i>AmpFactor</i>	1
<i>VChange</i>	<input checked="" type="checkbox"/>	<i>VlimChange</i>	0.05	<i>RatingNumber</i>	2
<i>Monitored Set</i>	monitor	321 Buses			

## Contingency

<i>Contingencies loaded from file M:\PROJ\Kypsc\267003\300_Calculations\301_PFlow_Results\Case300s</i>	
230 contingencies	



Area	Area Name	Zone	Zone Name	Contingency Buses	Monitored Buses		
147	TVA	167	TVA_EAST	0	1		
				0	1		
205	AEP	254	AEP-KP	0	1		
				0	1		
208	CIN	280	CGE	1	4		
				286	CGE GENS	0	2
						1	6
209	DPL	209	DPL	1	5		
				1	5		
211	LGEE	211	LGEE	109	166		
				109	166		
220	EKPC	220	EKPC	92	142		
				92	142		
				203	321		

## 2002 SERIES, NERC/MMWG BASE CASE LIBRARY

2004 Summer - CT45 Gilbert

New Transmission and Cooper2/Love Off-Line

2/12/2003

<u>Overloaded Facility</u>										<u>Normal System Overloads</u>		
From	Name	To	Name	Circuit	Base kV	Area	Zone	Ratings		MVA	Norm (%)	Emer (%)
								Norm	Emer			
27347	11RODBRN	27348	11RODBRN	1	138-69	211	211	33	40	34	104	86

**Notes:**

1. Overloads are based on 100% of Rating 1
2. Normal System Conditions - No Outages
3. Minimum Reporting Level is 100%

## 2002 SERIES, NERC/MMWG BASE CASE LIBRARY

2004 Summer - CT45 Gilbert

New Transmission and Cooper2/Love Off-Line

2/12/2003

Overloaded Facility								Normal System				Overloads	
From	Name	To	Name	Circuit	Base kV	Area	Zone	Ratings Norm	Emer	MVA	Norm (%)	Count A / B	Max (%)
27117	11FAWKES	27339	11RICH S	1	69	211	211	72	72	45.9	64	3 / 0	140
27347	11RODBRN	27348	11RODBRN	1	138-69	211	211	33	40	34.5	104	3 / 0	140
26986	11BEREA	27221	11LK REB	1	69	211	211	72	72	51.2	71	1 / 1	139
27117	11FAWKES	27272	11N.MADS	1	69	211	211	56	56	18.8	33	1 / 0	129
27194	11KENTON	29575	20SPURLK	2	138	211-220	211-220	227	280	167.9	74	1 / 0	113
27037	11CLARK	27397	11SYLVAN	1	69	211	211	73	90	47.0	64	2 / 1	112
27221	11LK REB	27340	11RICHMO	1	69	211	211	56	56	15.2	27	1 / 0	110
27113	11FARMER	27264	11MORH W	1	69	211	211	48	48	28.8	60	1 / 0	110
27115	11FAWK T	27231	11LR TAP	1	138	211	211	163	163	54.0	33	2 / 0	108
26959	11AOSMTH	27383	11SPENC	1	69	211	211	48	59	46.8	98	2 / 2	107
27112	11FARMER	27113	11FARMER	1	138-69	211	211	40	48	30.2	76	0 / 1	105
27116	11FAWKES	27117	11FAWKES	1	138-69	211	211	143	171	112.6	79	0 / 2	103
27229	11LOUDON	27228	11LOUD B	1	138-69	211	211	112	129	88.5	79	0 / 1	103
27220	11LK REB	27231	11LR TAP	1	138	211	211	149	171	111.7	75	0 / 1	102
29203	20BKR LN	29360	20HOLLWJ	1	69	220	220	57	69	11.3	20	0 / 2	101
27220	11LK REB	27221	11LK REB	1	138-69	211	211	149	171	111.3	75	0 / 1	101
												17 / 12	140

**Notes:**

- Overloads are based on 100% of Rating 2
- NS = Normal System Conditions (No Outages)
- Minimum Reporting Level is 100%
- Statistical Information (A/B Stats and Maximum Overload)
  - A = Serious Overload > 105%
  - B = Overloaded Facility between 100% and 105% of Rated Capability

## 2002 SERIES, NERC/MMWG BASE CASE LIBRARY

2004 Summer - CT45 Gilbert

New Transmission and Cooper2/Love Off-Line

2/12/2003

<u>Undervoltage</u>		Base kV	Area	Zone	Normal System Voltage (pu)	<u>Voltage Violations</u>	
Bus	Name					A / B	Min (pu)
29212	20BTYV D	69	220	220	0.9806	1 / 0	0.8254
29478	20OAKD J	69	220	220	0.9723	1 / 0	0.8353
27449	11WIL D2	69	211	211	0.9996	1 / 0	0.8377
29468	20NEWBY1	69	220	220	0.9957	1 / 0	0.8379
29232	20BOONVJ	69	220	220	0.9689	1 / 0	0.8471
27210	11LEBN I	69	211	211	0.9666	1 / 0	0.8532
29406	20LNCSTR	69	220	220	0.9782	1 / 0	0.8546
29327	20GARRCO	69	220	220	0.9753	1 / 0	0.8558
29596	20TGOOCH	69	220	220	0.9600	1 / 1	0.8622
29313	20FAYETT	138	220	220	0.9944	1 / 0	0.8687
29537	20S FORK	69	220	220	0.9685	1 / 0	0.8745
29205	20BALLRD	69	220	220	0.9681	0 / 3	0.8885
29237	20BOURNE	69	220	220	0.9791	0 / 2	0.8894
29315	20FAYETT	69	220	220	1.0082	0 / 2	0.8910
29470	20NEWBY2	69	220	220	1.0032	0 / 1	0.8916
27067	11DANVIL	138	211	211	0.9911	0 / 1	0.8974
29368	20HUNTFJ	69	220	220	0.9617	0 / 2	0.8984
						11 / 12	0.8254
<b>Notes:</b>							
1. Minimum Voltage Limit 0.90 (pu)							
2. NS = Normal System Conditions (No Outages)							
3. Maximum Reporting Level is 90%							
4. Statistical Information (A/B Stats and Minimum Voltage)							
A = Serious Undervoltage < 0.88 (pu)							
B = Low Voltages between 0.88 and 0.90 (pu)							

**2002 SERIES, NERC/MMWG BASE CASE LIBRARY**

2004 Summer - CT45 Gilbert

New Transmission and Cooper2/Love Off-Line

2/12/2003

<b>Overvoltage</b>					<b>Normal System</b>	<b>Voltage Violations</b>		
<b>Bus Name</b>	<b>Base kV</b>	<b>Area</b>	<b>Zone</b>		<b>Voltage (pu)</b>	<b>A / B</b>	<b>Max (pu)</b>	
29406 20LNCSTR	69	220	220		0.9782	0 / 1	1.0508	
<b>Notes:</b>							0 / 1	1.0508
<ol style="list-style-type: none"> <li>1. Maximum Voltage Limit is 1.05 (pu)</li> <li>2. NS = Normal System Conditions (No Outages)</li> <li>3. Minimum Reporting Level for Over Voltages is 105%</li> <li>4. Statistical Information (A/B Stats and Maximum Voltage) <ul style="list-style-type: none"> <li>A = Serious Overvoltage &gt; 1.07 (pu)</li> <li>B = High Voltages between 1.05 and 1.07 (pu)</li> </ul> </li> </ol>								

## 2002 SERIES, NERC/MMWG BASE CASE LIBRARY

2004 Summer - CT45 Gilbert

New Transmission and Cooper2/Love Off-Line

2/12/2003

VChange Bus Name	Base kV	Area	Zone	Normal System Voltage (pu)	Voltage Violations	
					A / B	Max (pu)
27449 11WIL D2	69	211	211	0.9996	1 / 0	-0.1618
29468 20NEWBY1	69	220	220	0.9957	1 / 0	-0.1578
29212 20BTYV D	69	220	220	0.9806	1 / 0	-0.1552
29478 20OAKD J	69	220	220	0.9723	1 / 0	-0.1369
29313 20FAYETT	138	220	220	0.9944	1 / 0	-0.1257
29406 20LNCSTR	69	220	220	0.9782	1 / 0	-0.1236
29232 20BOONVJ	69	220	220	0.9689	1 / 0	-0.1217
29327 20GARRCO	69	220	220	0.9753	1 / 0	-0.1195
27016 11BUENA	69	211	211	1.0241	1 / 0	-0.1193
29315 20FAYETT	69	220	220	1.0082	2 / 0	-0.1172
27210 11LEBN I	69	211	211	0.9666	1 / 0	-0.1134
29470 20NEWBY2	69	220	220	1.0032	1 / 0	-0.1116
27076 11DIXDAM	69	211	211	1.0359	1 / 0	-0.1078
29596 20TGOOCH	69	220	220	0.9600	1 / 0	-0.0978
27016 11BUENA	69	211	211	1.0241	1 / 0	-0.0974
27136 11GARRD	69	211	211	1.0040	1 / 0	-0.0969
29537 20S FORK	69	220	220	0.9685	1 / 0	-0.0939
27067 11DANVIL	138	211	211	0.9911	1 / 0	-0.0937
29291 20DAVIS	69	220	220	0.9955	2 / 0	-0.0934
29237 20BOURNE	69	220	220	0.9791	1 / 0	-0.0897
29237 20BOURNE	69	220	220	0.9791	1 / 0	-0.0877
29233 20BOONSB	138	220	220	1.0164	1 / 0	-0.0830
29205 20BALLRD	69	220	220	0.9681	1 / 0	-0.0796
29205 20BALLRD	69	220	220	0.9681	1 / 0	-0.0788
27136 11GARRD	69	211	211	1.0040	1 / 0	-0.0778
27068 11DANVIL	69	211	211	0.9976	2 / 0	-0.0771
29205 20BALLRD	69	220	220	0.9681	1 / 0	-0.0770
29580 20STANTN	69	220	220	0.9921	1 / 0	-0.0762
27450 11WILMOR	69	211	211	1.0074	1 / 0	-0.0759
29327 20GARRCO	69	220	220	0.9753	1 / 0	-0.0753
26999 11BOONSB	69	211	211	1.0310	2 / 0	-0.0737
26972 11ATOKA	69	211	211	0.9962	2 / 0	-0.0736
27247 11MERCRCR	138	211	211	1.0040	1 / 0	-0.0726
29623 20WBEREA	138	220	220	0.9971	1 / 0	-0.0721
27000 11BOYLE	69	211	211	0.9955	2 / 0	-0.0716
27220 11LK REB	138	211	211	0.9978	0 / 1	-0.0682
27167 11HARR T	69	211	211	1.0063	0 / 1	-0.0678
27168 11HARRDS	69	211	211	1.0063	0 / 1	-0.0678
27055 11CRAB O	69	211	211	0.9802	0 / 1	-0.0669
27065 11DANV 1	69	211	211	0.9952	0 / 2	-0.0661
27450 11WILMOR	69	211	211	1.0074	0 / 1	-0.0658
29325 20FRNCHB	69	220	220	0.9745	0 / 1	-0.0658
29625 20WBEREA	69	220	220	0.9901	0 / 1	-0.0651
29625 20WBEREA	69	220	220	0.9901	0 / 1	-0.0649
29203 20BKR LN	69	220	220	0.9862	0 / 1	-0.0645
29436 20MARIBJ	69	220	220	0.9760	0 / 1	-0.0643
29626 20WBER J	69	220	220	0.9890	0 / 1	-0.0640
27067 11DANVIL	138	211	211	0.9911	0 / 1	-0.0636
29260 20CLAYCJ	69	220	220	0.9903	0 / 1	-0.0636
29368 20HUNTFJ	69	220	220	0.9617	0 / 1	-0.0633
29626 20WBER J	69	220	220	0.9890	0 / 1	-0.0628
29368 20HUNTFJ	69	220	220	0.9617	0 / 1	-0.0627
29605 20THLNKJ	69	220	220	0.9870	0 / 1	-0.0626

VChange		Base kV	Area	Zone	Normal System Voltage (pu)	Voltage Violations	
Bus	Name					A / B	Max (pu)
29626	20WBER J	69	220	220	0.9890	0 / 1	-0.0626
29195	20ALCAN	69	220	220	0.9879	0 / 1	-0.0621
29605	20THLNKJ	69	220	220	0.9870	0 / 1	-0.0621
29195	20ALCAN	69	220	220	0.9879	0 / 1	-0.0618
29368	20HUNTFJ	69	220	220	0.9617	0 / 1	-0.0613
29515	20PULASK	161	220	220	0.9878	0 / 1	-0.0609
29512	20PPG J	69	220	220	0.9874	0 / 1	-0.0602
29511	20PPG	69	220	220	0.9874	0 / 1	-0.0601
29596	20TGOOCH	69	220	220	0.9600	0 / 1	-0.0601
29512	20PPG J	69	220	220	0.9874	0 / 1	-0.0599
29511	20PPG	69	220	220	0.9874	0 / 1	-0.0598
29347	20HARGTJ	69	220	220	0.9924	0 / 1	-0.0588
29360	20HOLLWJ	69	220	220	0.9830	0 / 1	-0.0584
29605	20THLNKJ	69	220	220	0.9870	0 / 1	-0.0577
29605	20THLNKJ	69	220	220	0.9870	0 / 1	-0.0575
29510	20POWELL	69	220	220	0.9923	0 / 1	-0.0569
29580	20STANTN	69	220	220	0.9921	0 / 1	-0.0566
27068	11DANVIL	69	211	211	0.9976	0 / 1	-0.0553
29406	20LNCSTR	69	220	220	0.9782	0 / 1	-0.0551
26959	11AOSMTH	69	211	211	1.0153	0 / 1	-0.0550
29510	20POWELL	69	220	220	0.9923	0 / 1	-0.0548
29580	20STANTN	69	220	220	0.9921	0 / 1	-0.0546
26986	11BEREA	69	211	211	0.9908	0 / 1	-0.0542
27221	11LK REB	69	211	211	1.0070	0 / 2	-0.0536
29508	20POWELL	138	220	220	0.9972	0 / 1	-0.0535
27339	11RICH S	69	211	211	0.9962	0 / 1	-0.0532
29327	20GARRCO	69	220	220	0.9753	0 / 1	-0.0531
26972	11ATOKA	69	211	211	0.9962	0 / 1	-0.0529
27055	11CRAB O	69	211	211	0.9802	0 / 1	-0.0527
29338	20GRNBRJ	69	220	220	0.9788	0 / 1	-0.0526
29338	20GRNBRJ	69	220	220	0.9788	0 / 1	-0.0524
29516	20PULASK	69	220	220	0.9793	0 / 1	-0.0524
29346	20GRNHLJ	161	220	220	0.9701	0 / 1	-0.0523
27368	11SHAKRT	69	211	211	1.0273	0 / 1	-0.0521
27000	11BOYLE	69	211	211	0.9955	0 / 1	-0.0516
29440	20MAYSVJ	138	220	220	1.0240	0 / 1	-0.0516
29615	20TYNER	69	220	220	0.9743	0 / 1	-0.0512
29238	20BOWEN	69	220	220	0.9930	0 / 1	-0.0511
29310	20FALLRK	69	220	220	0.9877	0 / 1	-0.0508
29310	20FALLRK	69	220	220	0.9877	0 / 1	-0.0507
27203	11KYSTHO	69	211	211	1.0111	0 / 1	-0.0505
27272	11N.MADS	69	211	211	1.0028	0 / 1	-0.0505
29615	20TYNER	69	220	220	0.9743	0 / 1	-0.0505
29488	20PARIS	138	220	220	0.9915	0 / 1	-0.0504
29238	20BOWEN	69	220	220	0.9930	0 / 1	-0.0502
29237	20BOURNE	69	220	220	0.9791	0 / 1	0.0529
29406	20LNCSTR	69	220	220	0.9782	1 / 0	0.0726

42 / 66 -0.1618

**Notes:**

1. Voltage Change Limit is 0.05 (pu)
2. NS = Normal System Conditions (No Outages)
3. Minimum Reporting Level is 5%
4. Statistical Information (A/B Stats and Maximum Voltage Change)
  - A = Serious Voltage Change > 0.07 (pu)
  - B = Excessive Voltage Change between 0.05 and 0.07 (pu)

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Contingency	Overloaded Facility									Overloads		
	From Name	To Name	Ckt	Base kV	Area	Zone	Ratings		MVA	Norm (%)	Emer (%)	
							Norm	Emer				
95	outage of 27036 11CLARK to 27037 11CLARK		1	138-69	211	211						
	26959 11AOSMTH	27383 11SPENC	1	69	211	211	48	59	61.6	128	105	
110	outage of 27111 11FARM T to 27112 11FARMER		1	138	211	211						
	27347 11RODBRN	27348 11RODBRN	1	138-69	211	211	33	40	49.4	150	124	
117	outage of 27112 11FARMER to 27113 11FARMER		1	138-69	211	211						
	27347 11RODBRN	27348 11RODBRN	1	138-69	211	211	33	40	49.4	150	124	
125	outage of 27116 11FAWKES to 27117 11FAWKES		1	138-69	211	211						
	27221 11LK REB	27340 11RICHMO	1	69	211	211	56	56	61.7	110	110	
	26986 11BEREA	27221 11LK REB	1	69	211	211	72	72	75.2	104	105	
	27220 11LR REB	27231 11LR TAP	1	138	211	211	149	171	173.7	117	102	
	27220 11LK REB	27221 11LK REB	1	138-69	211	211	149	171	172.8	116	101	
132	outage of 27172 11HIGBY to 27170 11HIGB A		1	138-69	211	211						
	26956 NONAME	27304 11PICADO	1	69	211	211	95	95	97.7	103	103	
157	outage of 27220 11LK REB to 27221 11LK REB		1	138-69	211	211						
	27117 11FAWKES	27339 11RICH S	1	69	211	211	72	72	75.9	105	105	
	27116 11FAWKES	27117 11FAWKES	1	138-69	211	211	143	171	176.4	123	103	
160	outage of 27220 11LK REB to 27231 11LR TAP		1	138	211	211						
	27117 11FAWKES	27339 11RICH S	1	69	211	211	72	72	75.9	105	105	
	27116 11FAWKES	27117 11FAWKES	1	138-69	211	211	143	171	176.4	123	103	
162	outage of 27229 11LOUDON to 27227 11LOUD A		1	138-69	211	211						
	27229 11LOUDON	27228 11LOUD B	1	138-69	211	211	112	129	132.6	118	103	
172	outage of 27347 11RODBRN to 27348 11RODBRN		1	138-69	211	211						
	27113 11FARMER	27264 11MORH W	1	69	211	211	48	48	52.7	110	110	
	27112 11FARMER	27113 11FARMER	1	138-69	211	211	40	48	50.2	125	105	
200	outage of 26986 11BEREA to 27221 11LK REB		1	69	211	211						
	27117 11FAWKES	27339 11RICH S	1	69	211	211	72	72	100.7	140	140	
205	outage of 26999 11BOONSB to 27451 11WINC S		EQ	69	211	211						
	26959 11AOSMTH	27383 11SPENC	1	69	211	211	48	59	59.7	124	101	
	27037 11CLARK	27397 11SYLVAN	1	69	211	211	73	90	90.3	124	100	
242	outage of 27113 11FARMER to 27264 11MORH W		1	69	211	211						
	27347 11RODBRN	27348 11RODBRN	1	138-69	211	211	33	40	55.9	169	140	
247	outage of 27117 11FAWKES to 27339 11RICH S		1	69	211	211						
	26986 11BEREA	27221 11LK REB	1	69	211	211	72	72	99.7	139	139	
260	outage of 27170 11HIGB A to 27449 11WIL D2		1	69	211	211						
	27117 11FAWKES	27272 11N.MADS	1	69	211	211	56	56	72.1	129	129	
322	outage of 27229 11LOUDON to 29202 20AVON		1	138	211-220	211-220						
	27075 NONAME	27300 11PARIS	1	69	211	211	56	56	65.0	116	116	
325	outage of 27231 11LR TAP to 29616 20UN CTY		1	138	211-220	211-220						
	27115 11FAWK T	27231 11LR TAP	1	138	211	211	163	163	174.0	107	107	
417	outage of 29202 20AVON to 29313 20FAYETT		1	138	220	220						
	29203 20BKR LN	29360 20HOLLWJ	1	69	220	220	57	69	69.8	122	101	
422	outage of 29230 20BOONST to 29233 20BOONSB		1	138	220	220						
	27037 11CLARK	27397 11SYLVAN	1	69	211	211	73	90	100.5	138	112	
	26959 11AOSMTH	27383 11SPENC	1	69	211	211	48	59	62.9	131	107	
445	outage of 29313 20FAYETT to 29315 20FAYETT		1	138-69	220	220						
	29203 20BKR LN	29360 20HOLLWJ	1	69	220	220	57	69	69.8	122	101	
465	outage of 29397 20JKSMIT to 29616 20UN CTY		1	138	220	220						
	27115 11FAWK T	27231 11LR TAP	1	138	211	211	163	163	176.2	108	108	
595	outage of 29233 20BOONSB to 26999 11BOONSB		1	138-69	220-211	220-211						
	27037 11CLARK	27397 11SYLVAN	1	69	211	211	73	90	100.5	138	112	



Contingency	Overloaded Facility										Overloads		
	From Name		To Name		Ckt	Base kV	Area	Zone	Ratings		MVA	Norm (%)	Emer (%)
									Norm	Emer			
	26959	11AOSMTH	27383	11SPENC	1	69	211	211	48	59	62.9	131	107
607	outage of 27197 11KENTON to 29575 20SPURLK				1	138	211-220	211-220					
	27194	11KENTON	29575	20SPURLK	2	138	211-220	211-220	227	280	316.8	140	113

**Notes:**

1. Overloads are based on 100% of Rating 2

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Overloaded Facility	Contingency									Overloads			
	From	Name	To	Name	Circuit	Base kV	Area	Zone	Ratings Norm Emer	NS	Norm MVA	Emer (%)	Emer (%)
27117	11FAWKES	27339	11RICH S		1	69	211	211	72 72	NS	46	64	64
		200	outage of 26986 11BEREA to 27221 11LK REB		1	69	211	211			101	140	140
		157	outage of 27220 11LK REB to 27221 11LK REB		1	138-69	211	211			76	105	105
		160	outage of 27220 11LK REB to 27231 11LR TAP		1	138	211	211			76	105	105
											3 / 0		140
27347	11RODBRN	27348	11RODBRN		1	138-69	211	211	33 40	NS	34	104	86
		242	outage of 27113 11FARMER to 27264 11MORH		1	69	211	211			56	169	140
		110	outage of 27111 11FARM T to 27112 11FARMER		1	138	211	211			49	150	124
		117	outage of 27112 11FARMER to 27113 11FARME		1	138-69	211	211			49	150	124
											3 / 0		140
26986	11BEREA	27221	11LK REB		1	69	211	211	72 72	NS	51	71	71
		247	outage of 27117 11FAWKES to 27339 11RICH S		1	69	211	211			100	139	139
		125	outage of 27116 11FAWKES to 27117 11FAWKE		1	138-69	211	211			75	104	105
											1 / 1		139
27117	11FAWKES	27272	11N.MADS		1	69	211	211	56 56	NS	19	33	33
		260	outage of 27170 11HIGB A to 27449 11WIL D2		1	69	211	211			72	129	129
											1 / 0		129
27194	11KENTON	29575	20SPURLK		2	138	211-220	211-220	227 280	NS	168	74	60
		607	outage of 27197 11KENTON to 29575 20SPURLK		1	138	211-220	211-220			317	140	113
											1 / 0		113
27037	11CLARK	27397	11SYLVAN		1	69	211	211	73 90	NS	47	64	52
		595	outage of 29233 20BOONSB to 26999 11BOONS		1	138-69	220-211	220-211			101	138	112
		422	outage of 29230 20BOONST to 29233 20BOONS		1	138	220	220			101	138	112
		205	outage of 26999 11BOONSB to 27451 11WINC S EQ			69	211	211			90	124	100
											2 / 1		112
27221	11LK REB	27340	11RICHMO		1	69	211	211	56 56	NS	15	27	27
		125	outage of 27116 11FAWKES to 27117 11FAWKE		1	138-69	211	211			62	110	110
											1 / 0		110
27113	11FARMER	27264	11MORH W		1	69	211	211	48 48	NS	29	60	60
		172	outage of 27347 11RODBRN to 27348 11RODBR		1	138-69	211	211			53	110	110
											1 / 0		110
27115	11FAWK T	27231	11LR TAP		1	138	211	211	163 163	NS	54	33	33
		465	outage of 29397 20JKSMIT to 29616 20UN CTY		1	138	220	220			176	108	108
		325	outage of 27231 11LR TAP to 29616 20UN CTY		1	138	211-220	211-220			174	107	107
											2 / 0		108

<b>Overloaded Facility</b>		<b>Contingency</b>								<b>Overloads</b>			
From	Name	To	Name	Circuit	Base kV	Area	Zone	Ratings		NS	Norm	Emer	
								Norm	Emer		MVA	(%)	(%)
26959	11AOSMTH	27383	11SPENC	1	69	211	211	48	59	NS	47	98	79
	595 outage of 29233 20BOONSB to 26999 11BOONS			1	138-69	220-211	220-211				63	131	107
	422 outage of 29230 20BOONST to 29233 20BOONS			1	138	220	220				63	131	107
	95 outage of 27036 11CLARK to 27037 11CLARK			1	138-69	211	211				62	128	105
	205 outage of 26999 11BOONSB to 27451 11WINC S EQ				69	211	211				60	124	101
											2 / 2		107
27112	11FARMER	27113	11FARMER	1	138-69	211	211	40	48	NS	30	76	63
	172 outage of 27347 11RODBRN to 27348 11RODBR			1	138-69	211	211				50	125	105
											0 / 1		105
27116	11FAWKES	27117	11FAWKES	1	138-69	211	211	143	171	NS	113	79	66
	160 outage of 27220 11LK REB to 27231 11LR TAP			1	138	211	211				176	123	103
	157 outage of 27220 11LK REB to 27221 11LK REB			1	138-69	211	211				176	123	103
											0 / 2		103
27229	11LOUDON	27228	11LOUD B	1	138-69	211	211	112	129	NS	89	79	69
	162 outage of 27229 11LOUDON to 27227 11LOUD A			1	138-69	211	211				133	118	103
											0 / 1		103
27220	11LK REB	27231	11LR TAP	1	138	211	211	149	171	NS	112	75	65
	125 outage of 27116 11FAWKES to 27117 11FAWKE			1	138-69	211	211				174	117	102
											0 / 1		102
29203	20BKR LN	29360	20HOLLWJ	1	69	220	220	57	69	NS	11	20	16
	417 outage of 29202 20AVON to 29313 20FAYETT			1	138	220	220				70	122	101
	445 outage of 29313 20FAYETT to 29315 20FAYETT			1	138-69	220	220				70	122	101
											0 / 2		101
27220	11LK REB	27221	11LK REB	1	138-69	211	211	149	171	NS	111	75	65
	125 outage of 27116 11FAWKES to 27117 11FAWKE			1	138-69	211	211				173	116	101
											0 / 1		101
											17 / 12		139.9

**Notes:**

- Overloads are based on 100% of Rating 2
- NS = Normal System Conditions (No Outages)
- Minimum Reporting Level is 100%
- Statistical Information (A/B Stats and Maximum Overload)
  - A = Serious Overload > 105%
  - B = Overloaded Facility between 100% and 105% of Rated Capability

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**Contingency**

Description	Ckt	kV	Zone	Area	Voltage Violations				Not Solved
					Over load	UnderV	OverV	Change	
82 outage of 27010 11BRWN P to 27247 11MERC R	1	138	211	211	0	0	0	5	
95 outage of 27036 11CLARK to 27037 11CLARK	1	138-69	211	211	1	0	0	0	
105 outage of 27067 11DANVIL to 27068 11DANVIL	1	138-69	211	211	0	0	0	4	
107 outage of 27067 11DANVIL to 27247 11MERC R	1	138	211	211	0	1	0	5	
110 outage of 27111 11FARM T to 27112 11FARMER	1	138	211	211	1	0	0	0	
117 outage of 27112 11FARMER to 27113 11FARMER	1	138-69	211	211	1	0	0	0	
125 outage of 27116 11FAWKES to 27117 11FAWKES	1	138-69	211	211	4	0	0	0	
132 outage of 27172 11HIGBY to 27170 11HIGB A	1	138-69	211	211	1	0	0	0	
157 outage of 27220 11LK REB to 27221 11LK REB	1	138-69	211	211	2	0	0	1	
160 outage of 27220 11LK REB to 27231 11LR TAP	1	138	211	211	2	0	0	2	
162 outage of 27229 11LOUDON to 27227 11LOUD A	1	138-69	211	211	1	0	0	0	
172 outage of 27347 11RODBRN to 27348 11RODBRN	1	138-69	211	211	2	0	0	0	
195 outage of 26959 11AOSMTH to 27383 11SPENC	1	69	211	211	0	0	0	1	
200 outage of 26986 11BEREA to 27221 11LK REB	1	69	211	211	1	0	0	1	
205 outage of 26999 11BOONSB to 27451 11WINC S	EQ	69	211	211	2	0	0	0	
207 outage of 27016 11BUENA to 27076 11DIXDAM	1	69	211	211	0	0	0	3	
232 outage of 27076 11DIXDAM to 27436 11WC-DD	1	69	211	211	0	0	0	5	
235 outage of 27076 11DIXDAM to 27450 11WILMOR	1	69	211	211	0	0	0	1	
242 outage of 27113 11FARMER to 27264 11MORH W	1	69	211	211	1	0	0	0	
247 outage of 27117 11FAWKES to 27339 11RICH S	1	69	211	211	1	0	0	1	
255 outage of 27167 11HARR T to 27420 11W CLIF	1	69	211	211	0	0	0	2	
260 outage of 27170 11HIGB A to 27449 11WIL D2	1	69	211	211	1	1	0	2	
265 outage of 27203 11KYSTHO to 27420 11W CLIF	1	69	211	211	0	0	0	1	
267 outage of 27210 11LEBN I to 27213 11LEBNON	1	69	211	211	0	1	0	1	
297 outage of 27368 11SHAKRT to 27420 11W CLIF	1	69	211	211	0	0	0	1	
305 outage of 27074 11DELVIN to 29346 20GRNHLJ	1	161	211-220	211-220	0	0	0	4	
312 outage of 26990 11BKR LN to 29203 20BKR LN	1	138-69	211-220	211-220	0	0	0	2	
322 outage of 27229 11LOUDON to 29202 20AVON	1	138	211-220	211-220	1	0	0	0	
325 outage of 27231 11LR TAP to 29616 20UN CTY	1	138	211-220	211-220	1	0	0	0	
387 outage of 29346 20GRNHLJ to 29613 20TYNER	1	161	220	220	0	0	0	3	
407 outage of 29515 20PULASK to 29517 20PULASJ	1	161	220	220	0	0	0	2	
417 outage of 29202 20AVON to 29313 20FAYETT	1	138	220	220	1	2	0	3	
422 outage of 29230 20BOONST to 29233 20BOONSB	1	138	220	220	2	0	0	2	
442 outage of 29312 20FAWKES to 29623 20WBBEREA	1	138	220	220	0	0	0	7	
445 outage of 29313 20FAYETT to 29315 20FAYETT	1	138-69	220	220	1	1	0	2	
462 outage of 29397 20JKSMIT to 29508 20POWELL	1	138	220	220	0	0	0	4	
465 outage of 29397 20JKSMIT to 29616 20UN CTY	1	138	220	220	1	0	0	0	
472 outage of 29488 20PARIS to 29490 20PARISJ	1	138	220	220	0	0	0	1	

**Contingency**

Description	Ckt	kV	Zone	Area	Voltage Violations				Not Solved
					Over load	UnderV	OverV	Change	
475 outage of 29508 20POWELL to 29510 20POWELL	1	138-69	220	220	0	0	0	3	
477 outage of 29623 20WBBEREA to 29625 20WBBERE	1	138-69	220	220	0	0	0	6	
487 outage of 29205 20BALLRD to 29237 20BOURNE	1	69	220	220	0	2	0	3	
490 outage of 29212 20BTYV D to 29215 20BEATTY	1	69	220	220	0	4	0	4	
497 outage of 29237 20BOURNE to 29470 20NEWBY2	1	69	220	220	0	3	0	3	
532 outage of 29283 20DALE to 29468 20NEWBY1	1	69	220	220	0	4	0	4	
535 outage of 29283 20DALE to 29470 20NEWBY2	1	69	220	220	0	3	0	4	
537 outage of 29325 20FRNCHB to 29361 20HOPE	1	69	220	220	0	0	0	2	
540 outage of 29327 20GARRCO to 29406 20LNCSTR	1	69	220	220	0	1	1	3	
572 outage of 29406 20LNCSTR to 29468 20NEWBY1	1	69	220	220	0	0	0	2	
580 outage of 29510 20POWELL to 29580 20STANTN	1	69	220	220	0	0	0	3	
587 outage of 29605 20THLNKJ to 29626 20WBBER J	1	69	220	220	0	0	0	1	
590 outage of 29625 20WBBEREA to 29626 20WBBER J	1	69	220	220	0	0	0	2	
595 outage of 29233 20BOONSB to 26999 11BOONSB	1	138-69	220-211	220-211	2	0	0	1	
607 outage of 27197 11KENTON to 29575 20SPURLK	1	138	211-220	211-220	1	0	0	0	
612 outage of 29440 20MAYSJV to 29575 20SPURLK	1	138	220	220	0	0	0	1	
<b>Totals:</b>					31	23	1	108	0

**Notes:**

1. Overloads are based on 100% of Rating 2
2. Undervoltage Limit is 0.90 (pu)
3. Overvoltage Limit is 1.05 (pu)
4. Voltage Change Limit is 0.05 (pu)

**Not Solved Codes:**

- D - Diverged  
I - Interrupted  
F - Failed, One or More Contingency  
Commands Failed in PFlow

## 2002 SERIES, NERC/MMWG BASE CASE LIBRARY

2004 Summer - CT45 Gilbert

New Transmission and Cooper2/Love Off-Line

2/12/2003

No.	Contingency	Ckt	Base kV	Area	Zone
10	outage of 26950 11ALCALD to 27008 11BRWN N	1	345	211	211
12	outage of 27008 11BRWN N to 27009 11BRWN N	1	345-138	211	211
15	outage of 27008 11BRWN N to 27162 11HARDN	1	345	211	211
17	outage of 27008 11BRWN N to 27427 11W LEXN	1	345	211	211
20	outage of 26951 11ALCALD to 27095 11ELIHU	1	161	211	211
22	outage of 26962 11ARNOLD to 27074 11DELVIN	1	161	211	211
25	outage of 27074 11DELVIN to 27444 11WI TAP	1	161	211	211
27	outage of 27095 11ELIHU to 27096 11ELIHU	1	161-69	211	211
30	outage of 27095 11ELIHU to 27096 11ELIHU	2	161-69	211	211
32	outage of 27230 11LR TAP to 27231 11LR TAP	1	161-138	211	211
35	outage of 27230 11LR TAP to 27444 11WI TAP	1	161	211	211
37	outage of 27425 11W IRVI to 27444 11WI TAP	1	161	211	211
40	outage of 26947 11ADAMS to 27412 11TYRONE	1	138	211	211
42	outage of 26977 11BARDST to 26978 11BARDST	1	138-69	211	211
45	outage of 26977 11BARDST to 27011 11BRWNCT	1	138	211	211
47	outage of 26977 11BARDST to 27276 11NELSON	1	138	211	211
50	outage of 26990 11BKR LN to 27009 11BRWN N	1	138	211	211
52	outage of 26990 11BKR LN to 27172 11HIGBY	1	138	211	211
55	outage of 26998 11BONNIE to 27211 11LEBN W	1	138	211	211
57	outage of 27009 11BRWN N to 27011 11BRWNCT	1	138	211	211
60	outage of 27009 11BRWN N to 27012 11BRWNT1	1	138	211	211
62	outage of 27009 11BRWN N to 27013 11BRWNT2	1	138	211	211
65	outage of 27009 11BRWN N to 27040 11CLAYSM	1	138	211	211
67	outage of 27009 11BRWN N to 27172 11HIGBY	1	138	211	211
70	outage of 27009 11BRWN N to 27312 11PISGAH	1	138	211	211
72	outage of 27009 11BRWN N to 27412 11TYRONE	1	138	211	211
75	outage of 27010 11BRWN P to 27012 11BRWNT1	1	138	211	211
77	outage of 27010 11BRWN P to 27013 11BRWNT2	1	138	211	211
80	outage of 27010 11BRWN P to 27116 11FAWKES	1	138	211	211
82	outage of 27010 11BRWN P to 27247 11MERCRCR	1	138	211	211
85	outage of 27010 11BRWN P to 27419 11W CLIF	1	138	211	211
87	outage of 27010 11BRWN P to 27419 11W CLIF	2	138	211	211
90	outage of 27011 11BRWNCT to 27012 11BRWNT1	1	138	211	211
92	outage of 27011 11BRWNCT to 27013 11BRWNT2	1	138	211	211
95	outage of 27036 11CLARK to 27037 11CLARK	1	138-69	211	211
97	outage of 27036 11CLARK to 27116 11FAWKES	1	138	211	211
100	outage of 27036 11CLARK to 27382 11SPENC	1	138	211	211
102	outage of 27040 11CLAYSM to 27172 11HIGBY	1	138	211	211
105	outage of 27067 11DANVIL to 27068 11DANVIL	1	138-69	211	211
107	outage of 27067 11DANVIL to 27247 11MERCRCR	1	138	211	211
110	outage of 27111 11FARM T to 27112 11FARMER	1	138	211	211

No.	Contingency	Ckt	Base kV	Area	Zone
112	outage of 27111 11FARM T to 27369 11SHARKE	1	138	211	211
115	outage of 27111 11FARM T to 27382 11SPENC	1	138	211	211
117	outage of 27112 11FARMER to 27113 11FARMER	1	138-69	211	211
120	outage of 27115 11FAWK T to 27116 11FAWKES	1	138	211	211
122	outage of 27115 11FAWK T to 27231 11LR TAP	1	138	211	211
125	outage of 27116 11FAWKES to 27117 11FAWKES	1	138-69	211	211
127	outage of 27122 11FFRT E to 27412 11TYRONE	1	138	211	211
130	outage of 27141 11GODDRD to 27347 11RODBRN	1	138	211	211
132	outage of 27172 11HIGBY to 27170 11HIGB A	1	138-69	211	211
135	outage of 27172 11HIGBY to 27171 11HIGB B	1	138-69	211	211
137	outage of 27172 11HIGBY to 27207 11LANSDW	1	138	211	211
140	outage of 27172 11HIGBY to 27337 11REYNOL	1	138	211	211
142	outage of 27186 11IBM N to 27229 11LOUDON	1	138	211	211
145	outage of 27211 11LEBN W to 27212 11LEBNON	1	138	211	211
147	outage of 27212 11LEBNON to 27213 11LEBNON	1	138-69	211	211
150	outage of 27212 11LEBNON to 27213 11LEBNON	2	138-69	211	211
152	outage of 27212 11LEBNON to 27243 11MARION	1	138	211	211
155	outage of 27212 11LEBNON to 27247 11MERCRCR	1	138	211	211
157	outage of 27220 11LK REB to 27221 11LK REB	1	138-69	211	211
160	outage of 27220 11LK REB to 27231 11LR TAP	1	138	211	211
162	outage of 27229 11LOUDON to 27227 11LOUD A	1	138-69	211	211
165	outage of 27229 11LOUDON to 27228 11LOUD B	1	138-69	211	211
167	outage of 27312 11PISGAH to 27313 11PISGAH	1	138-69	211	211
170	outage of 27312 11PISGAH to 27428 11W LEXN	1	138	211	211
172	outage of 27347 11RODBRN to 27348 11RODBRN	1	138-69	211	211
175	outage of 27347 11RODBRN to 27369 11SHARKE	1	138	211	211
177	outage of 27382 11SPENC to 27383 11SPENC	1	138-69	211	211
180	outage of 27382 11SPENC to 27383 11SPENC	2	138-69	211	211
182	outage of 27412 11TYRONE to 27413 11TYRONE	1	138-69	211	211
185	outage of 27419 11W CLIF to 27420 11W CLIF	1	138-69	211	211
187	outage of 27419 11W CLIF to 27420 11W CLIF	2	138-69	211	211
190	outage of 27419 11W CLIF to 27436 11WC-DD	1	138-69	211	211
192	outage of 26959 11AOSMTH to 27129 11FOGG P	EQ	69	211	211
195	outage of 26959 11AOSMTH to 27383 11SPENC	1	69	211	211
197	outage of 26972 11ATOKA to 27068 11DANVIL	1	69	211	211
200	outage of 26986 11BEREA to 27221 11LK REB	1	69	211	211
202	outage of 26986 11BEREA to 27339 11RICH S	EQ	69	211	211
205	outage of 26999 11BOONSB to 27451 11WINC S	EQ	69	211	211
207	outage of 27016 11BUENA to 27076 11DIXDAM	1	69	211	211
210	outage of 27026 11CARON to 27225 11LONDON	1	69	211	211
212	outage of 27030 11CAVE R to 27113 11FARMER	1	69	211	211
215	outage of 27030 11CAVE R to 27358 11SALT L	1	69	211	211
217	outage of 27037 11CLARK to 27129 11FOGG P	1	69	211	211
220	outage of 27037 11CLARK to 27397 11SYLVAN	1	69	211	211
222	outage of 27046 11CMPGEK to 27225 11LONDON	1	69	211	211

No.	Contingency	Ckt	Base kV	Area	Zone
225	outage of 27050 11CORBIN to 27396 11SWEETH	1	69	211	211
227	outage of 27065 11DANV 1 to 27203 11KYSTHO	EQ	69	211	211
230	outage of 27068 11DANVIL to 27168 11HARRDS	1	69	211	211
232	outage of 27076 11DIXDAM to 27436 11WC-DD	1	69	211	211
235	outage of 27076 11DIXDAM to 27450 11WILMOR	1	69	211	211
237	outage of 27082 11E BERN to 27306 11PINEHL	1	69	211	211
240	outage of 27082 11E BERN to 27314 11PITTSB	1	69	211	211
242	outage of 27113 11FARMER to 27264 11MORH W	1	69	211	211
245	outage of 27117 11FAWKES to 27272 11N.MADS	1	69	211	211
247	outage of 27117 11FAWKES to 27339 11RICH S	1	69	211	211
250	outage of 27117 11FAWKES to 27340 11RICHMO	1	69	211	211
252	outage of 27167 11HARR T to 27168 11HARRDS	1	69	211	211
255	outage of 27167 11HARR T to 27420 11W CLIF	1	69	211	211
257	outage of 27170 11HIGB A to 27391 11STONWL	1	69	211	211
260	outage of 27170 11HIGB A to 27449 11WIL D2	1	69	211	211
262	outage of 27178 11HOPEWL to 27396 11SWEETH	1	69	211	211
265	outage of 27203 11KYSTHO to 27420 11W CLIF	1	69	211	211
267	outage of 27210 11LEBN I to 27213 11LEBNON	1	69	211	211
270	outage of 27213 11LEBNON to 27385 11SPRNGF	1	69	211	211
272	outage of 27221 11LK REB to 27340 11RICHMO	1	69	211	211
275	outage of 27221 11LK REB to 27429 11WACO	1	69	211	211
277	outage of 27225 11LONDON to 27314 11PITTSB	1	69	211	211
280	outage of 27271 11N.CORB to 27396 11SWEETH	1	69	211	211
282	outage of 27272 11N.MADS to 27449 11WIL D2	EQ	69	211	211
285	outage of 27330 11PRKRSE to 27397 11SYLVAN	1	69	211	211
287	outage of 27330 11PRKRSE to 27452 11WINCHS	1	69	211	211
290	outage of 27338 11RICE T to 27429 11WACO	1	69	211	211
292	outage of 27358 11SALT L to 27383 11SPENC	1	69	211	211
295	outage of 27359 11SALVIS to 27368 11SHAKRT	1	69	211	211
297	outage of 27368 11SHAKRT to 27420 11W CLIF	1	69	211	211
300	outage of 27420 11W CLIF to 27436 11WC-DD	1	69	211	211
302	outage of 27074 11DELVIN to 29213 20BTYVL	1	161	211-220	211-220
305	outage of 27074 11DELVIN to 29346 20GRNHLJ	1	161	211-220	211-220
307	outage of 27095 11ELIHU to 29271 20COOPER	1	161	211-220	211-220
310	outage of 27243 11MARION to 29437 20MARION	1	138-161	211-220	211-220
312	outage of 26990 11BKR LN to 29203 20BKR LN	1	138-69	211-220	211-220
315	outage of 27115 11FAWK T to 29312 20FAWKES	1	138	211-220	211-220
317	outage of 27116 11FAWKES to 29312 20FAWKES	1	138	211-220	211-220
320	outage of 27116 11FAWKES to 29312 20FAWKES	2	138	211-220	211-220
322	outage of 27229 11LOUDON to 29202 20AVON	1	138	211-220	211-220
325	outage of 27231 11LR TAP to 29616 20UN CTY	1	138	211-220	211-220
327	outage of 26982 11BEATTY to 29215 20BEATTY	1	69	211-220	211-220
330	outage of 27082 11E BERN to 29300 20EBRNST	1	69	211-220	211-220
332	outage of 27110 11FARLEY to 29536 20SCORBN	1	69	211-220	211-220
335	outage of 27117 11FAWKES to 29280 20CROOKJ	1	69	211-220	211-220



No.	Contingency	Ckt	Base kV	Area	Zone
337	outage of 27178 11HOPEWL to 29410 20LAURLC	1	69	211-220	211-220
340	outage of 29201 20AVON to 29202 20AVON	1	345-138	220	220
342	outage of 29201 20AVON to 29573 20SPURLK	1	345	220	220
345	outage of 29201 20AVON to 29651 20KPE345	1	345	220	220
350	outage of 29573 20SPURLK to 29575 20SPURLK	2	345-138	220	220
352	outage of 29575 20SPURLK to 29573 20SPURLK	1	138-345	220	220
355	outage of 29651 20KPE345 to 29652 20KPE138	1	345-138	220	220
357	outage of 29213 20BTYVL to 29215 20BEATTY	1	161-69	220	220
360	outage of 29213 20BTYVL to 29507 20POWELL	1	161	220	220
362	outage of 29271 20COOPER to 29272 20COOPER	1	161-69	220	220
370	outage of 29271 20COOPER to 29292 20DENNY	1	161	220	220
372	outage of 29271 20COOPER to 29411 20LAURLD	1	161	220	220
375	outage of 29271 20COOPER to 29517 20PULASJ	1	161	220	220
377	outage of 29271 20COOPER to 29540 20S OAKH	1	161	220	220
380	outage of 29292 20DENNY to 29293 20DENNY	1	161-69	220	220
382	outage of 29308 20FALLRK to 29310 20FALLRK	1	161-69	220	220
385	outage of 29308 20FALLRK to 29613 20TYNER	1	161	220	220
387	outage of 29346 20GRNHLJ to 29613 20TYNER	1	161	220	220
390	outage of 29408 20LAURLC to 29410 20LAURLC	1	161-69	220	220
392	outage of 29408 20LAURLC to 29411 20LAURLD	1	161	220	220
395	outage of 29408 20LAURLC to 29503 20PITTSB	1	161	220	220
400	outage of 29418 20LIBERT to 29517 20PULASJ	1	161	220	220
402	outage of 29503 20PITTSB to 29613 20TYNER	1	161	220	220
405	outage of 29507 20POWELL to 29508 20POWELL	1	161-138	220	220
407	outage of 29515 20PULASK to 29517 20PULASJ	1	161	220	220
410	outage of 29528 20RUSSEL to 29540 20S OAKH	1	161	220	220
412	outage of 29613 20TYNER to 29615 20TYNER	1	161-69	220	220
415	outage of 29202 20AVON to 29230 20BOONST	1	138	220	220
417	outage of 29202 20AVON to 29313 20FAYETT	1	138	220	220
420	outage of 29202 20AVON to 29490 20PARISJ	1	138	220	220
422	outage of 29230 20BOONST to 29233 20BOONSB	1	138	220	220
425	outage of 29230 20BOONST to 29282 20DALE	1	138	220	220
430	outage of 29282 20DALE to 29397 20JKSMIT	1	138	220	220
432	outage of 29282 20DALE to 29603 20TFJ	1	138	220	220
435	outage of 29283 20DALE to 29282 20DALE	1	69-138	220	220
437	outage of 29312 20FAWKES to 29397 20JKSMIT	1	138	220	220
440	outage of 29312 20FAWKES to 29603 20TFJ	1	138	220	220
442	outage of 29312 20FAWKES to 29623 20WBBEREA	1	138	220	220
445	outage of 29313 20FAYETT to 29315 20FAYETT	1	138-69	220	220
447	outage of 29375 20JACKVJ to 29490 20PARISJ	1	138	220	220
462	outage of 29397 20JKSMIT to 29508 20POWELL	1	138	220	220
465	outage of 29397 20JKSMIT to 29616 20UN CTY	1	138	220	220
467	outage of 29397 20JKSMIT to 29652 20KPE138	1	138	220	220
470	outage of 29397 20JKSMIT to 29652 20KPE138	2	138	220	220
472	outage of 29488 20PARIS to 29490 20PARISJ	1	138	220	220

No.	Contingency	Ckt	Base kV	Area	Zone
475	outage of 29508 20POWELL to 29510 20POWELL	1	138-69	220	220
477	outage of 29623 20WBBEREA to 29625 20WBBEREA	1	138-69	220	220
480	outage of 29195 20ALCAN to 29512 20PPG J	1	69	220	220
482	outage of 29195 20ALCAN to 29625 20WBBEREA	1	69	220	220
485	outage of 29196 20ANNVLJ to 29615 20TYNER	1	69	220	220
487	outage of 29205 20BALLRD to 29237 20BOURNE	1	69	220	220
490	outage of 29212 20BTYV D to 29215 20BEATTY	1	69	220	220
492	outage of 29215 20BEATTY to 29648 20ZACHAR	1	69	220	220
495	outage of 29222 20BLEV T to 29361 20HOPE	1	69	220	220
497	outage of 29237 20BOURNE to 29470 20NEWBY2	1	69	220	220
500	outage of 29238 20BOWEN to 29355 20HIGHHRK	1	69	220	220
502	outage of 29238 20BOWEN to 29510 20POWELL	1	69	220	220
505	outage of 29243 20BRONSJ to 29272 20COOPER	1	69	220	220
507	outage of 29260 20CLAYCJ to 29347 20HARGTJ	1	69	220	220
510	outage of 29260 20CLAYCJ to 29580 20STANTN	1	69	220	220
512	outage of 29272 20COOPER to 29566 20SOMERS	1	69	220	220
515	outage of 29272 20COOPER to 29566 20SOMERS	2	69	220	220
517	outage of 29280 20CROOKJ to 29352 20HICK P	1	69	220	220
527	outage of 29283 20DALE to 29366 20HUNT1	1	69	220	220
530	outage of 29283 20DALE to 29367 20HUNT2	1	69	220	220
532	outage of 29283 20DALE to 29468 20NEWBY1	1	69	220	220
535	outage of 29283 20DALE to 29470 20NEWBY2	1	69	220	220
537	outage of 29325 20FRNCHB to 29361 20HOPE	1	69	220	220
540	outage of 29327 20GARRCO to 29406 20LNCSTR	1	69	220	220
542	outage of 29352 20HICK P to 29511 20PPG	1	69	220	220
545	outage of 29355 20HIGHHRK to 29547 20SANDLK	1	69	220	220
547	outage of 29361 20HOPE to 29377 20JEFFVL	1	69	220	220
550	outage of 29366 20HUNT1 to 29556 20SIDEV	1	69	220	220
552	outage of 29367 20HUNT2 to 29398 20JKSMIT	1	69	220	220
555	outage of 29377 20JEFFVL to 29510 20POWELL	1	69	220	220
557	outage of 29398 20JKSMIT to 29607 20TRAPP	1	69	220	220
560	outage of 29401 20KEAVY to 29403 20KEAVJ2	1	69	220	220
562	outage of 29402 20KEAVJ1 to 29410 20LAURLC	1	69	220	220
565	outage of 29402 20KEAVJ1 to 29501 20PINEGJ	1	69	220	220
567	outage of 29403 20KEAVJ2 to 29410 20LAURLC	1	69	220	220
570	outage of 29403 20KEAVJ2 to 29536 20SCORBN	1	69	220	220
572	outage of 29406 20LNCSTR to 29468 20NEWBY1	1	69	220	220
575	outage of 29446 20MCKEE to 29615 20TYNER	1	69	220	220
577	outage of 29501 20PINEGJ to 29631 20W LOND	1	69	220	220
580	outage of 29510 20POWELL to 29580 20STANTN	1	69	220	220
582	outage of 29511 20PPG to 29512 20PPG J	1	69	220	220
585	outage of 29537 20S FORK to 29615 20TYNER	1	69	220	220
587	outage of 29605 20THLNKJ to 29626 20WBER J	1	69	220	220
590	outage of 29625 20WBBEREA to 29626 20WBER J	1	69	220	220
592	outage of 29503 20PITTSB to 27314 11PITTSB	1	161-69	220-211	220-211

No.	Contingency	Ckt	Base kV	Area	Zone
595	outage of 29233 20BOONSB to 26999 11BOONSB	1	138-69	220-211	220-211
597	outage of 29397 20JKSMIT to 27382 11SPENC	1	138	220-211	220-211
602	outage of 26648 09STUART to 29573 20SPURLK	1	345	209-220	209-220
605	outage of 26367 08ZIMER to 29573 20SPURLK	1	345	208-220	280-220
607	outage of 27197 11KENTON to 29575 20SPURLK	1	138	211-220	211-220
610	outage of 29372 20INLAND to 29575 20SPURLK	1	138	220	220
612	outage of 29440 20MAYSJV to 29575 20SPURLK	1	138	220	220
615	outage of 29521 20RENAKR to 29575 20SPURLK	1	138	220	220
617	outage of 29575 20SPURLK to 29585 20S PARK	1	138	220	220



# Case Summary

# case310s04

*Project Name* 2002 SERIES, NERC/MMWG BASE CASE LIBRARY  
*Title1* 2004 Summer - CT4&5 & Gilbert  
*Title2* External Dispatch and Gilbert/268MW  
*Case Date* 2/12/2003

*Power Flow File* M:\PROJKypsc\267003\300\_Calculations\301\_PFlow\_Results\case310s04.cft

## Power Flow Controls

<i>Area Control</i>	<input type="checkbox"/>	<i>SmoothStep</i>	<input checked="" type="checkbox"/>
<i>Remote Control</i>	<input checked="" type="checkbox"/>	<i>XfrmVcon</i>	<input type="checkbox"/>
<i>GenVar Control</i>	<input checked="" type="checkbox"/>	<i>XfrmFcon</i>	<input type="checkbox"/>
<i>Solve Method</i>	NSOLVE		

## Case Settings

<i>Overload</i>	<input checked="" type="checkbox"/>	<i>VlimMin</i>	0.9	<i>RateFactor</i>	1
<i>VLimit</i>	<input checked="" type="checkbox"/>	<i>VlimMax</i>	1.05	<i>AmpFactor</i>	1
<i>VChange</i>	<input checked="" type="checkbox"/>	<i>VlimChange</i>	0.05	<i>RatingNumber</i>	2
<i>Monitored Set</i>	monitor	321 Buses			

## Contingency

<i>Contingencies loaded from file M:\PROJKypsc\267003\300_Calculations\301_PFlow_Results\Case300s</i>	
230 contingencies	

Area	Area Name	Zone	Zone Name	Contingency Buses	Monitored Buses
147	TVA	167	TVA_EAST	0	1
				0	1
205	AEP	254	AEP-KP	0	1
				0	1
208	CIN	280	CGE	1	4
		286	CGE GENS	0	2
				1	6
209	DPL	209	DPL	1	5
				1	5
211	LGEE	211	LGEE	109	166
				109	166
220	EKPC	220	EKPC	92	142
				92	142
				203	321

## 2002 SERIES, NERC/MMWG BASE CASE LIBRARY

2004 Summer - CT45 Gilbert

External Dispatch and Gilbert/268MW

2/12/2003

Area	Name		Scheduled		Load MW	Loss MW	Shunt MW	Generation MW	Slack Bus Generator		
			Export MW	Mis- Match					Bus	Name	Slack MW
142	DUK	Ref.	-282	0	20140	462.8	14	20335	11096	COWANS	53
		New	-326	0	20140	461.1	14	20289			51
		Chg.	-44	0	0	-1.7	0	-46			-2
146	SOCO	Ref.	1302	0	46262	901.9	38	48503	15100	1GASTON	861
		New	1257	0	46262	904.9	38	48461			863
		Chg.	-45	0	0	3.0	0	-42			2
205	AEP	Ref.	-854	0	23573	666.5	0	23386	22987	05SPORN	500
		New	-899	0	23573	669.8	0	23344			502
		Chg.	-45	0	0	3.3	0	-42			2
208	CIN	Ref.	283	0	11900	380.6	0	12564	25895	08BCKJD	187
		New	239	0	11900	380.0	0	12519			186
		Chg.	-44	0	0	-0.6	0	-45			-1
220	EKPC	Ref.	-112	-268	1948	74.9	0	2179	29569	20SPLK2	527
		New	156	0	1948	78.7	0	2183			531
		Chg.	268	268	0	3.8	0	4			4
356	AMRN	Ref.	-911	0	11769	217.5	15	11091	31400	OSAGE	166
		New	-956	0	11769	216.4	15	11045			164
		Chg.	-45	0	0	-1.1	0	-46			-2
401	FPL	Ref.	-4613	0	20770	514.6	0	16672	40363	CAPECA	401
		New	-4658	0	20770	517.3	0	16630			402
		Chg.	-45	0	0	2.7	0	-42			2

Reference Case : M:\PROJ\Kypsc\267003\300\_Calculations\301\_PFlow\_Results\case3

Transfer Case (New): M:\PROJ\Kypsc\267003\300\_Calculations\301\_PFlow\_Results\Cas

## 2002 SERIES, NERC/MMWG BASE CASE LIBRARY

2004 Summer - CT45 Gilbert

External Dispatch and Gilbert/268MW

2/12/2003

<u>Overloaded Facility</u>										<u>Normal System Overloads</u>		
From	Name	To	Name	Circuit	Base kV	Area	Zone	Ratings		MVA	Norm (%)	Emer (%)
								Norm	Emer			
27347	11RODBRN	27348	11RODBRN	1	138-69	211	211	33	40	34	103	85

**Notes:**

1. Overloads are based on 100% of Rating 1
2. Normal System Conditions - No Outages
3. Minimum Reporting Level is 100%



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2004 Summer - CT45 Gilbert

External Dispatch and Gilbert/268MW

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Overloaded Facility								Normal System				Overloads	
From	Name	To	Name	Circuit	Base kV	Area	Zone	Ratings		MVA	Norm (%)	Count	Max (%)
								Norm	Emer			A / B	
27117	11FAWKES	27339	11RICH S	1	69	211	211	72	72	45.8	64	1 / 2	140
27347	11RODBRN	27348	11RODBRN	1	138-69	211	211	33	40	34.0	103	3 / 0	139
26986	11BEREA	27221	11LK REB	1	69	211	211	72	72	51.3	71	1 / 1	139
27117	11FAWKES	27272	11N.MADS	1	69	211	211	56	56	19.5	35	1 / 0	129
27037	11CLARK	27397	11SYLVAN	1	69	211	211	73	90	47.1	65	2 / 1	112
27194	11KENTON	29575	20SPURLK	2	138	211-220	211-220	227	280	165.5	73	1 / 0	112
27221	11LK REB	27340	11RICHMO	1	69	211	211	56	56	15.5	28	1 / 0	109
27113	11FARMER	27264	11MORH W	1	69	211	211	48	48	28.9	60	1 / 0	109
26959	11AOSMTH	27383	11SPENC	1	69	211	211	48	59	46.6	97	2 / 2	106
27115	11FAWK T	27231	11LR TAP	1	138	211	211	163	163	50.9	31	0 / 2	104
27112	11FARMER	27113	11FARMER	1	138-69	211	211	40	48	30.0	75	0 / 1	104
27229	11LOUDON	27228	11LOUD B	1	138-69	211	211	112	129	88.0	79	0 / 1	102
27116	11FAWKES	27117	11FAWKES	1	138-69	211	211	143	171	111.0	78	0 / 2	102
29203	20BKR LN	29360	20HOLLWJ	1	69	220	220	57	69	11.5	20	0 / 2	101
27220	11LK REB	27231	11LR TAP	1	138	211	211	149	171	110.4	74	0 / 1	100
												13 / 15	140

**Notes:**

- Overloads are based on 100% of Rating 2
- NS = Normal System Conditions (No Outages)
- Minimum Reporting Level is 100%
- Statistical Information (A/B Stats and Maximum Overload)
  - A = Serious Overload > 105%
  - B = Overloaded Facility between 100% and 105% of Rated Capability

## 2002 SERIES, NERC/MMWG BASE CASE LIBRARY

2004 Summer - CT45 Gilbert

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Undervoltage Bus Name	Base kV	Area	Zone	Normal System Voltage (pu)	Voltage Violations	
					A / B	Min (pu)
27449 11WIL D2	69	211	211	1.0009	1 / 0	0.8413
29212 20BTYV D	69	220	220	0.9892	1 / 0	0.8438
29478 20OAKD J	69	220	220	0.9818	1 / 0	0.8535
29232 20BOONVJ	69	220	220	0.9791	1 / 0	0.8650
29313 20FAYETT	138	220	220	0.9956	1 / 0	0.8694
27210 11LEBN I	69	211	211	0.9786	1 / 0	0.8703
29468 20NEWBY1	69	220	220	1.0050	1 / 0	0.8770
29315 20FAYETT	69	220	220	1.0093	0 / 2	0.8917
29537 20S FORK	69	220	220	0.9798	0 / 1	0.8918
29406 20LNCSTR	69	220	220	0.9932	0 / 1	0.8930
29327 20GARRCO	69	220	220	0.9908	0 / 1	0.8938
29205 20BALLRD	69	220	220	0.9740	0 / 2	0.8978
29237 20BOURNE	69	220	220	0.9846	0 / 1	0.8987
29596 20TGOOCH	69	220	220	0.9779	0 / 1	0.8988
27067 11DANVIL	138	211	211	0.9942	0 / 1	0.8992
					7 / 10	0.8413
<b>Notes:</b>						
1. Minimum Voltage Limit 0.90 (pu)						
2. NS = Normal System Conditions (No Outages)						
3. Maximum Reporting Level is 90%						
4. Statistical Information (A/B Stats and Minimum Voltage)						
A = Serious Undervoltage < 0.88 (pu)						
B = Low Voltages between 0.88 and 0.90 (pu)						

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2004 Summer - CT45 Gilbert

External Dispatch and Gilbert/268MW

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<b>Overvoltage</b>					<b>Normal System</b>	<b>Voltage Violations</b>	
<b>Bus Name</b>	<b>Base kV</b>	<b>Area</b>	<b>Zone</b>	<b>Normal System Voltage (pu)</b>	<b>A / B Max (pu)</b>		
29406 20LNCSTR	69	220	220	0.9932	0 / 1	1.0531	
29540 20S OAKH	161	220	220	1.0341	0 / 1	1.0512	
						0 / 2	1.0531
<b>Notes:</b>							
1. Maximum Voltage Limit is 1.05 (pu)							
2. NS = Normal System Conditions (No Outages)							
3. Minimum Reporting Level for Over Voltages is 105%							
4. Statistical Information (A/B Stats and Maximum Voltage)							
A = Serious Overvoltage > 1.07 (pu)							
B = High Voltages between 1.05 and 1.07 (pu)							

## 2002 SERIES, NERC/MMWG BASE CASE LIBRARY

2004 Summer - CT45 Gilbert

External Dispatch and Gilbert/268MW

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VChange Bus Name	Base kV	Area	Zone	Normal System Voltage (pu)	Voltage Violations	
					A / B	Max (pu)
27449 11WIL D2	69	211	211	1.0009	1 / 0	-0.1596
29212 20BTYV D	69	220	220	0.9892	1 / 0	-0.1454
29478 20OAKD J	69	220	220	0.9818	1 / 0	-0.1283
29468 20NEWBY1	69	220	220	1.0050	1 / 0	-0.1280
29313 20FAYETT	138	220	220	0.9956	1 / 0	-0.1262
29315 20FAYETT	69	220	220	1.0093	2 / 0	-0.1176
29232 20BOONVJ	69	220	220	0.9791	1 / 0	-0.1141
27016 11BUENA	69	211	211	1.0261	1 / 0	-0.1107
27210 11LEBN I	69	211	211	0.9786	1 / 0	-0.1083
29470 20NEWBY2	69	220	220	1.0077	1 / 0	-0.1068
27076 11DIXDAM	69	211	211	1.0369	1 / 0	-0.1040
29406 20LNCSTR	69	220	220	0.9932	1 / 0	-0.1002
29327 20GARRCO	69	220	220	0.9908	1 / 0	-0.0970
27067 11DANVIL	138	211	211	0.9942	1 / 0	-0.0950
27016 11BUENA	69	211	211	1.0261	1 / 0	-0.0941
29291 20DAVIS	69	220	220	0.9966	1 / 0	-0.0938
29291 20DAVIS	69	220	220	0.9966	1 / 0	-0.0937
27136 11GARRD	69	211	211	1.0078	1 / 0	-0.0902
29537 20S FORK	69	220	220	0.9798	1 / 0	-0.0880
29237 20BOURNE	69	220	220	0.9846	1 / 0	-0.0859
29237 20BOURNE	69	220	220	0.9846	1 / 0	-0.0840
29233 20BOONSB	138	220	220	1.0181	1 / 0	-0.0830
29596 20GOOCH	69	220	220	0.9779	1 / 0	-0.0791
27068 11DANVIL	69	211	211	1.0004	2 / 0	-0.0781
29580 20STANTN	69	220	220	0.9961	1 / 0	-0.0763
29205 20BALLRD	69	220	220	0.9740	1 / 0	-0.0762
27136 11GARRD	69	211	211	1.0078	1 / 0	-0.0755
29205 20BALLRD	69	220	220	0.9740	1 / 0	-0.0754
26972 11ATOKA	69	211	211	0.9990	2 / 0	-0.0745
29205 20BALLRD	69	220	220	0.9740	1 / 0	-0.0737
26999 11BOONSB	69	211	211	1.0327	2 / 0	-0.0736
27450 11WILMOR	69	211	211	1.0084	1 / 0	-0.0731
27000 11BOYLE	69	211	211	0.9983	2 / 0	-0.0725
27220 11LK REB	138	211	211	1.0005	0 / 1	-0.0671
27065 11DANV 1	69	211	211	0.9978	0 / 2	-0.0669
29325 20FRNCHB	69	220	220	0.9777	0 / 1	-0.0664
29411 20LAURLD	161	220	220	1.0038	0 / 1	-0.0663
27167 11HARR T	69	211	211	1.0082	0 / 1	-0.0662
27168 11HARRDS	69	211	211	1.0082	0 / 1	-0.0662
27450 11WILMOR	69	211	211	1.0084	0 / 1	-0.0656
29407 20LAURHY	13.8	220	220	0.9848	0 / 1	-0.0650
29436 20MARIBJ	69	220	220	0.9792	0 / 1	-0.0650
29203 20BKR LN	69	220	220	0.9873	0 / 1	-0.0640
29260 20CLAYCJ	69	220	220	0.9942	0 / 1	-0.0639
27247 11MERCRCR	138	211	211	1.0073	0 / 1	-0.0637
29623 20WBBEREA	138	220	220	1.0009	0 / 1	-0.0637
29327 20GARRCO	69	220	220	0.9908	0 / 1	-0.0630
27055 11CRAB O	69	211	211	0.9880	0 / 1	-0.0626
29368 20HUNTFJ	69	220	220	0.9681	0 / 1	-0.0606
29368 20HUNTFJ	69	220	220	0.9681	0 / 1	-0.0599
29347 20HARGTJ	69	220	220	0.9964	0 / 1	-0.0589
29515 20PULASK	161	220	220	1.0138	0 / 1	-0.0589
29368 20HUNTFJ	69	220	220	0.9681	0 / 1	-0.0586

VChange Bus Name	Base kV	Area	Zone	Normal System Voltage (pu)	Voltage Violations	
					A / B	Max (pu)
29625 20WBEREA	69	220	220	0.9955	0 / 1	-0.0583
29625 20WBEREA	69	220	220	0.9955	0 / 1	-0.0581
29360 20HOLLWJ	69	220	220	0.9840	0 / 1	-0.0579
29510 20POWELL	69	220	220	0.9964	0 / 1	-0.0567
29580 20STANTN	69	220	220	0.9961	0 / 1	-0.0565
29626 20WBER J	69	220	220	0.9953	0 / 1	-0.0564
29626 20WBER J	69	220	220	0.9953	0 / 1	-0.0562
27067 11DANVIL	138	211	211	0.9942	0 / 1	-0.0557
29195 20ALCAN	69	220	220	0.9931	0 / 1	-0.0555
29195 20ALCAN	69	220	220	0.9931	0 / 1	-0.0553
26959 11AOSMTH	69	211	211	1.0167	0 / 1	-0.0546
26986 11BEREA	69	211	211	0.9939	0 / 1	-0.0543
29512 20PPG J	69	220	220	0.9925	0 / 1	-0.0538
29511 20PPG	69	220	220	0.9925	0 / 1	-0.0536
29512 20PPG J	69	220	220	0.9925	0 / 1	-0.0536
29511 20PPG	69	220	220	0.9925	0 / 1	-0.0534
27221 11LK REB	69	211	211	1.0102	0 / 2	-0.0527
27339 11RICH S	69	211	211	0.9992	0 / 1	-0.0527
29408 20LAURLC	161	220	220	0.9875	0 / 1	-0.0522
27368 11SHAKRT	69	211	211	1.0282	0 / 1	-0.0521
29605 20THLNKJ	69	220	220	0.9954	0 / 1	-0.0520
29605 20THLNKJ	69	220	220	0.9954	0 / 1	-0.0519
29288 20DALE4	13.8	220	220	1.0442	0 / 1	-0.0517
27055 11CRAB O	69	211	211	0.9880	0 / 1	-0.0514
29516 20PULASK	69	220	220	1.0058	0 / 1	-0.0509
29440 20MAYSVJ	138	220	220	1.0240	0 / 1	-0.0505
29408 20LAURLC	161	220	220	0.9875	0 / 1	-0.0503
29488 20PARIS	138	220	220	0.9927	0 / 1	-0.0503
29238 20BOWEN	69	220	220	0.9974	0 / 1	-0.0502
29596 20TGOOCH	69	220	220	0.9779	0 / 1	-0.0502
27272 11N.MADS	69	211	211	1.0054	0 / 1	-0.0501
29237 20BOURNE	69	220	220	0.9846	0 / 1	0.0507
29406 20LNCSTR	69	220	220	0.9932	0 / 1	0.0599

38 / 55 -0.1596

**Notes:**

1. Voltage Change Limit is 0.05 (pu)
2. NS = Normal System Conditions (No Outages)
3. Minimum Reporting Level is 5%
4. Statistical Information (A/B Stats and Maximum Voltage Change)
  - A = Serious Voltage Change > 0.07 (pu)
  - B = Excessive Voltage Change between 0.05 and 0.07 (pu)

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Contingency	Overloaded Facility									Overloads		
	From Name	To Name	Ckt	Base kV	Area	Zone	Ratings		MVA	Norm (%)	Emer (%)	
							Norm	Emer				
95	outage of 27036 11CLARK to 27037 11CLARK		1	138-69	211	211						
	26959 11AOSMTH	27383 11SPENC	1	69	211	211	48	59	61.5	128	104	
110	outage of 27111 11FARM T to 27112 11FARMER		1	138	211	211						
	27347 11RODBRN	27348 11RODBRN	1	138-69	211	211	33	40	48.8	148	122	
117	outage of 27112 11FARMER to 27113 11FARMER		1	138-69	211	211						
	27347 11RODBRN	27348 11RODBRN	1	138-69	211	211	33	40	48.8	148	122	
125	outage of 27116 11FAWKES to 27117 11FAWKES		1	138-69	211	211						
	27221 11LK REB	27340 11RICHMO	1	69	211	211	56	56	61.2	109	109	
	26986 11BEREA	27221 11LK REB	1	69	211	211	72	72	75.0	104	104	
	27220 11LK REB	27231 11LR TAP	1	138	211	211	149	171	171.4	115	100	
132	outage of 27172 11HIGBY to 27170 11HIGB A		1	138-69	211	211						
	26956 NONAME	27304 11PICADO	1	69	211	211	95	95	97.1	102	102	
157	outage of 27220 11LK REB to 27221 11LK REB		1	138-69	211	211						
	27117 11FAWKES	27339 11RICH S	1	69	211	211	72	72	75.4	105	105	
	27116 11FAWKES	27117 11FAWKES	1	138-69	211	211	143	171	173.7	121	102	
160	outage of 27220 11LK REB to 27231 11LR TAP		1	138	211	211						
	27117 11FAWKES	27339 11RICH S	1	69	211	211	72	72	75.4	105	105	
	27116 11FAWKES	27117 11FAWKES	1	138-69	211	211	143	171	173.7	121	102	
162	outage of 27229 11LOUDON to 27227 11LOUD A		1	138-69	211	211						
	27229 11LOUDON	27228 11LOUD B	1	138-69	211	211	112	129	131.9	118	102	
172	outage of 27347 11RODBRN to 27348 11RODBRN		1	138-69	211	211						
	27113 11FARMER	27264 11MORH W	1	69	211	211	48	48	52.4	109	109	
	27112 11FARMER	27113 11FARMER	1	138-69	211	211	40	48	49.7	124	104	
200	outage of 26986 11BEREA to 27221 11LK REB		1	69	211	211						
	27117 11FAWKES	27339 11RICH S	1	69	211	211	72	72	100.7	140	140	
205	outage of 26999 11BOONSB to 27451 11WINC S		EQ	69	211	211						
	26959 11AOSMTH	27383 11SPENC	1	69	211	211	48	59	59.5	124	101	
	27037 11CLARK	27397 11SYLVAN	1	69	211	211	73	90	90.5	124	101	
242	outage of 27113 11FARMER to 27264 11MORH W		1	69	211	211						
	27347 11RODBRN	27348 11RODBRN	1	138-69	211	211	33	40	55.5	168	139	
247	outage of 27117 11FAWKES to 27339 11RICH S		1	69	211	211						
	26986 11BEREA	27221 11LK REB	1	69	211	211	72	72	99.7	138	139	
260	outage of 27170 11HIGB A to 27449 11WIL D2		1	69	211	211						
	27117 11FAWKES	27272 11N.MADS	1	69	211	211	56	56	72.0	129	129	
322	outage of 27229 11LOUDON to 29202 20AVON		1	138	211-220	211-220						
	27075 NONAME	27300 11PARIS	1	69	211	211	56	56	63.7	114	114	
325	outage of 27231 11LR TAP to 29616 20UN CTY		1	138	211-220	211-220						
	27115 11FAWK T	27231 11LR TAP	1	138	211	211	163	163	166.9	102	102	
417	outage of 29202 20AVON to 29313 20FAYETT		1	138	220	220						
	29203 20BKR LN	29360 20HOLLWJ	1	69	220	220	57	69	69.8	122	101	
422	outage of 29230 20BOONST to 29233 20BOONSB		1	138	220	220						
	27037 11CLARK	27397 11SYLVAN	1	69	211	211	73	90	100.7	138	112	
	26959 11AOSMTH	27383 11SPENC	1	69	211	211	48	59	62.6	130	106	
445	outage of 29313 20FAYETT to 29315 20FAYETT		1	138-69	220	220						
	29203 20BKR LN	29360 20HOLLWJ	1	69	220	220	57	69	69.8	122	101	
465	outage of 29397 20JKSMIT to 29616 20UN CTY		1	138	220	220						
	27115 11FAWK T	27231 11LR TAP	1	138	211	211	163	163	169.1	104	104	
595	outage of 29233 20BOONSB to 26999 11BOONSB		1	138-69	220-211	220-211						
	27037 11CLARK	27397 11SYLVAN	1	69	211	211	73	90	100.7	138	112	
	26959 11AOSMTH	27383 11SPENC	1	69	211	211	48	59	62.6	130	106	

Contingency	Overloaded Facility									Overloads		
	From Name	To Name	Ckt	Base kV	Area	Zone	Ratings		MVA	Norm (%)	Emer (%)	
							Norm	Emer				
607 outage of 27197 11KENTON to 29575 20SPURLK			1	138	211-220	211-220						
	27194 11KENTON	29575 20SPURLK	2	138	211-220	211-220	227	280	312.3	138	112	

**Notes:**

1. Overloads are based on 100% of Rating 2

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Overloaded Facility		Contingency								Overloads			
From	Name	To	Name	Circuit	Base kV	Area	Zone	Ratings		Norm	Emer	Emer	
								Norm	Emer	MVA	(%)	(%)	
27117	11FAWKES	27339	11RICH S	1	69	211	211	72	72	NS	46	64	64
	200 outage of 26986 11BEREA to 27221 11LK REB			1	69	211	211				101	140	140
	157 outage of 27220 11LK REB to 27221 11LK REB			1	138-69	211	211				75	105	105
	160 outage of 27220 11LK REB to 27231 11LR TAP			1	138	211	211				75	105	105
											1 / 2		140
27347	11RODBRN	27348	11RODBRN	1	138-69	211	211	33	40	NS	34	103	85
	242 outage of 27113 11FARMER to 27264 11MORH			1	69	211	211				55	168	139
	110 outage of 27111 11FARM T to 27112 11FARMER			1	138	211	211				49	148	122
	117 outage of 27112 11FARMER to 27113 11FARME			1	138-69	211	211				49	148	122
											3 / 0		139
26986	11BEREA	27221	11LK REB	1	69	211	211	72	72	NS	51	71	71
	247 outage of 27117 11FAWKES to 27339 11RICH S			1	69	211	211				100	138	139
	125 outage of 27116 11FAWKES to 27117 11FAWKE			1	138-69	211	211				75	104	104
											1 / 1		139
27117	11FAWKES	27272	11N.MADS	1	69	211	211	56	56	NS	19	35	35
	260 outage of 27170 11HIGB A to 27449 11WIL D2			1	69	211	211				72	129	129
											1 / 0		129
27037	11CLARK	27397	11SYLVAN	1	69	211	211	73	90	NS	47	65	52
	595 outage of 29233 20BOONSB to 26999 11BOONS			1	138-69	220-211	220-211				101	138	112
	422 outage of 29230 20BOONST to 29233 20BOONS			1	138	220	220				101	138	112
	205 outage of 26999 11BOONSB to 27451 11WINC S EQ				69	211	211				90	124	101
											2 / 1		112
27194	11KENTON	29575	20SPURLK	2	138	211-220	211-220	227	280	NS	165	73	59
	607 outage of 27197 11KENTON to 29575 20SPURLK			1	138	211-220	211-220				312	138	112
											1 / 0		112
27221	11LK REB	27340	11RICHMO	1	69	211	211	56	56	NS	15	28	28
	125 outage of 27116 11FAWKES to 27117 11FAWKE			1	138-69	211	211				61	109	109
											1 / 0		109
27113	11FARMER	27264	11MORH W	1	69	211	211	48	48	NS	29	60	60
	172 outage of 27347 11RODBRN to 27348 11RODBR			1	138-69	211	211				52	109	109
											1 / 0		109
26959	11AOSMTH	27383	11SPENC	1	69	211	211	48	59	NS	47	97	79
	422 outage of 29230 20BOONST to 29233 20BOONS			1	138	220	220				63	130	106
	595 outage of 29233 20BOONSB to 26999 11BOONS			1	138-69	220-211	220-211				63	130	106
	95 outage of 27036 11CLARK to 27037 11CLARK			1	138-69	211	211				61	128	104
	205 outage of 26999 11BOONSB to 27451 11WINC S EQ				69	211	211				59	124	101
											2 / 2		106



<b>Overloaded Facility</b>		<b>Contingency</b>								<b>Overloads</b>			
<b>From</b>	<b>Name</b>	<b>To</b>	<b>Name</b>	<b>Circuit</b>	<b>Base kV</b>	<b>Area</b>	<b>Zone</b>	<b>Ratings</b>		<b>NS</b>	<b>Norm MVA</b>	<b>Emer (%)</b>	<b>Emer (%)</b>
								<b>Norm</b>	<b>Emer</b>				
27115	11FAWK T	27231	11LR TAP	1	138	211	211	163	163	NS	51	31	31
	465 outage of 29397 20JKSMIT to 29616 20UN CTY			1	138	220	220				169	104	104
	325 outage of 27231 11LR TAP to 29616 20UN CTY			1	138	211-220	211-220				167	102	102
											0 / 2		104
27112	11FARMER	27113	11FARMER	1	138-69	211	211	40	48	NS	30	75	63
	172 outage of 27347 11RODBRN to 27348 11RODBR			1	138-69	211	211				50	124	104
											0 / 1		104
27229	11LOUDON	27228	11LOUD B	1	138-69	211	211	112	129	NS	88	79	68
	162 outage of 27229 11LOUDON to 27227 11LOUD A			1	138-69	211	211				132	118	102
											0 / 1		102
27116	11FAWKES	27117	11FAWKES	1	138-69	211	211	143	171	NS	111	78	65
	160 outage of 27220 11LK REB to 27231 11LR TAP			1	138	211	211				174	121	102
	157 outage of 27220 11LK REB to 27221 11LK REB			1	138-69	211	211				174	121	102
											0 / 2		102
29203	20BKR LN	29360	20HOLLWJ	1	69	220	220	57	69	NS	12	20	17
	445 outage of 29313 20FAYETT to 29315 20FAYETT			1	138-69	220	220				70	122	101
	417 outage of 29202 20AVON to 29313 20FAYETT			1	138	220	220				70	122	101
											0 / 2		101
27220	11LK REB	27231	11LR TAP	1	138	211	211	149	171	NS	110	74	65
	125 outage of 27116 11FAWKES to 27117 11FAWKE			1	138-69	211	211				171	115	100
											0 / 1		100
											13 / 15		139.8

**Notes:**

1. Overloads are based on 100% of Rating 2
2. NS = Normal System Conditions (No Outages)
3. Minimum Reporting Level is 100%
4. Statistical Information (A/B Stats and Maximum Overload)
  - A = Serious Overload > 105%
  - B = Overloaded Facility between 100% and 105% of Rated Capability

## 2002 SERIES, NERC/MMWG BASE CASE LIBRARY

2004 Summer - CT45 Gilbert

External Dispatch and Gilbert/268MW

2/12/2003

**Contingency**

Description	Ckt	kV	Zone	Area	Over load	Voltage Violations			Not Solved
						UnderV	OverV	Change	
82 outage of 27010 11BRWN P to 27247 11MERCRCR	1	138	211	211	0	0	0	2	
95 outage of 27036 11CLARK to 27037 11CLARK	1	138-69	211	211	1	0	0	0	
105 outage of 27067 11DANVIL to 27068 11DANVIL	1	138-69	211	211	0	0	0	4	
107 outage of 27067 11DANVIL to 27247 11MERCRCR	1	138	211	211	0	1	0	5	
110 outage of 27111 11FARM T to 27112 11FARMER	1	138	211	211	1	0	0	0	
117 outage of 27112 11FARMER to 27113 11FARMER	1	138-69	211	211	1	0	0	0	
125 outage of 27116 11FAWKES to 27117 11FAWKES	1	138-69	211	211	3	0	0	0	
132 outage of 27172 11HIGBY to 27170 11HIGB A	1	138-69	211	211	1	0	0	0	
157 outage of 27220 11LK REB to 27221 11LK REB	1	138-69	211	211	2	0	0	1	
160 outage of 27220 11LK REB to 27231 11LR TAP	1	138	211	211	2	0	0	2	
162 outage of 27229 11LOUDON to 27227 11LOUD A	1	138-69	211	211	1	0	0	0	
172 outage of 27347 11RODBRN to 27348 11RODBRN	1	138-69	211	211	2	0	0	0	
195 outage of 26959 11AOSMTH to 27383 11SPENC	1	69	211	211	0	0	0	1	
200 outage of 26986 11BEREA to 27221 11LK REB	1	69	211	211	1	0	0	1	
205 outage of 26999 11BOONSB to 27451 11WINC S	EQ	69	211	211	2	0	0	0	
207 outage of 27016 11BUENA to 27076 11DIXDAM	1	69	211	211	0	0	0	3	
232 outage of 27076 11DIXDAM to 27436 11WC-DD	1	69	211	211	0	0	0	5	
235 outage of 27076 11DIXDAM to 27450 11WILMOR	1	69	211	211	0	0	0	1	
242 outage of 27113 11FARMER to 27264 11MORH W	1	69	211	211	1	0	0	0	
247 outage of 27117 11FAWKES to 27339 11RICH S	1	69	211	211	1	0	0	1	
255 outage of 27167 11HARR T to 27420 11W CLIF	1	69	211	211	0	0	0	2	
260 outage of 27170 11HIGB A to 27449 11WIL D2	1	69	211	211	1	1	0	2	
267 outage of 27210 11LEBN I to 27213 11LEBNON	1	69	211	211	0	1	0	1	
297 outage of 27368 11SHAKRT to 27420 11W CLIF	1	69	211	211	0	0	0	1	
312 outage of 26990 11BKR LN to 29203 20BKR LN	1	138-69	211-220	211-220	0	0	0	2	
322 outage of 27229 11LOUDON to 29202 20AVON	1	138	211-220	211-220	1	0	0	0	
325 outage of 27231 11LR TAP to 29616 20UN CTY	1	138	211-220	211-220	1	0	0	0	
372 outage of 29271 20COOPER to 29411 20LAURLD	1	161	220	220	0	0	0	3	
377 outage of 29271 20COOPER to 29540 20S OAKH	1	161	220	220	0	0	3	0	
392 outage of 29408 20LAURLC to 29411 20LAURLD	1	161	220	220	0	0	0	1	
407 outage of 29515 20PULASK to 29517 20PULASJ	1	161	220	220	0	0	0	2	
410 outage of 29528 20RUSSEL to 29540 20S OAKH	1	161	220	220	0	0	2	0	
417 outage of 29202 20AVON to 29313 20FAYETT	1	138	220	220	1	2	0	3	
422 outage of 29230 20BOONST to 29233 20BOONSB	1	138	220	220	2	0	0	2	
425 outage of 29230 20BOONST to 29282 20DALE	1	138	220	220	0	0	0	1	
442 outage of 29312 20FAWKES to 29623 20WBBEREA	1	138	220	220	0	0	0	7	
445 outage of 29313 20FAYETT to 29315 20FAYETT	1	138-69	220	220	1	1	0	2	
465 outage of 29397 20JKSMIT to 29616 20UN CTY	1	138	220	220	1	0	0	0	

**Contingency**

Description	Ckt	kV	Zone	Area	Over load	Voltage Violations			Not Solved
						UnderV	OverV	Change	
472 outage of 29488 20PARIS to 29490 20PARISJ	1	138	220	220	0	0	0	1	
475 outage of 29508 20POWELL to 29510 20POWELL	1	138-69	220	220	0	0	0	3	
477 outage of 29623 20WBBEREA to 29625 20WBBERE	1	138-69	220	220	0	0	0	6	
487 outage of 29205 20BALLRD to 29237 20BOURNE	1	69	220	220	0	1	0	3	
490 outage of 29212 20BTYV D to 29215 20BEATTY	1	69	220	220	0	4	0	4	
497 outage of 29237 20BOURNE to 29470 20NEWBY2	1	69	220	220	0	2	0	3	
532 outage of 29283 20DALE to 29468 20NEWBY1	1	69	220	220	0	4	0	4	
535 outage of 29283 20DALE to 29470 20NEWBY2	1	69	220	220	0	0	0	4	
537 outage of 29325 20FRNCHB to 29361 20HOPE	1	69	220	220	0	0	0	2	
540 outage of 29327 20GARRCO to 29406 20LNCSTR	1	69	220	220	0	0	1	3	
580 outage of 29510 20POWELL to 29580 20STANTN	1	69	220	220	0	0	0	3	
595 outage of 29233 20BOONSB to 26999 11BOONSB	1	138-69	220-211	220-211	2	0	0	1	
607 outage of 27197 11KENTON to 29575 20SPURLK	1	138	211-220	211-220	1	0	0	0	
612 outage of 29440 20MAYSJV to 29575 20SPURLK	1	138	220	220	0	0	0	1	
<b>Totals:</b>					30	17	6	93	0

**Notes:**

1. Overloads are based on 100% of Rating 2
2. Undervoltage Limit is 0.90 (pu)
3. Overvoltage Limit is 1.05 (pu)
4. Voltage Change Limit is 0.05 (pu)

**Not Solved Codes:**

- D - Diverged
- I - Interrupted
- F - Failed, One or More Contingency  
Commands Failed in PFlow

## 2002 SERIES, NERC/MMWG BASE CASE LIBRARY

2004 Summer - CT45 Gilbert

External Dispatch and Gilbert/268MW

2/12/2003

No.	Contingency	Ckt	Base kV	Area	Zone
10	outage of 26950 11ALCALD to 27008 11BRWN N	1	345	211	211
12	outage of 27008 11BRWN N to 27009 11BRWN N	1	345-138	211	211
15	outage of 27008 11BRWN N to 27162 11HARDN	1	345	211	211
17	outage of 27008 11BRWN N to 27427 11W LEXN	1	345	211	211
20	outage of 26951 11ALCALD to 27095 11ELIHU	1	161	211	211
22	outage of 26962 11ARNOLD to 27074 11DELVIN	1	161	211	211
25	outage of 27074 11DELVIN to 27444 11WI TAP	1	161	211	211
27	outage of 27095 11ELIHU to 27096 11ELIHU	1	161-69	211	211
30	outage of 27095 11ELIHU to 27096 11ELIHU	2	161-69	211	211
32	outage of 27230 11LR TAP to 27231 11LR TAP	1	161-138	211	211
35	outage of 27230 11LR TAP to 27444 11WI TAP	1	161	211	211
37	outage of 27425 11W IRVI to 27444 11WI TAP	1	161	211	211
40	outage of 26947 11ADAMS to 27412 11TYRONE	1	138	211	211
42	outage of 26977 11BARDST to 26978 11BARDST	1	138-69	211	211
45	outage of 26977 11BARDST to 27011 11BRWNCT	1	138	211	211
47	outage of 26977 11BARDST to 27276 11NELSON	1	138	211	211
50	outage of 26990 11BKR LN to 27009 11BRWN N	1	138	211	211
52	outage of 26990 11BKR LN to 27172 11HIGBY	1	138	211	211
55	outage of 26998 11BONNIE to 27211 11LEBN W	1	138	211	211
57	outage of 27009 11BRWN N to 27011 11BRWNCT	1	138	211	211
60	outage of 27009 11BRWN N to 27012 11BRWNT1	1	138	211	211
62	outage of 27009 11BRWN N to 27013 11BRWNT2	1	138	211	211
65	outage of 27009 11BRWN N to 27040 11CLAYSM	1	138	211	211
67	outage of 27009 11BRWN N to 27172 11HIGBY	1	138	211	211
70	outage of 27009 11BRWN N to 27312 11PISGAH	1	138	211	211
72	outage of 27009 11BRWN N to 27412 11TYRONE	1	138	211	211
75	outage of 27010 11BRWN P to 27012 11BRWNT1	1	138	211	211
77	outage of 27010 11BRWN P to 27013 11BRWNT2	1	138	211	211
80	outage of 27010 11BRWN P to 27116 11FAWKES	1	138	211	211
82	outage of 27010 11BRWN P to 27247 11MERCRCR	1	138	211	211
85	outage of 27010 11BRWN P to 27419 11W CLIF	1	138	211	211
87	outage of 27010 11BRWN P to 27419 11W CLIF	2	138	211	211
90	outage of 27011 11BRWNCT to 27012 11BRWNT1	1	138	211	211
92	outage of 27011 11BRWNCT to 27013 11BRWNT2	1	138	211	211
95	outage of 27036 11CLARK to 27037 11CLARK	1	138-69	211	211
97	outage of 27036 11CLARK to 27116 11FAWKES	1	138	211	211
100	outage of 27036 11CLARK to 27382 11SPENC	1	138	211	211
102	outage of 27040 11CLAYSM to 27172 11HIGBY	1	138	211	211
105	outage of 27067 11DANVIL to 27068 11DANVIL	1	138-69	211	211
107	outage of 27067 11DANVIL to 27247 11MERCRCR	1	138	211	211
110	outage of 27111 11FARM T to 27112 11FARMER	1	138	211	211

No.	Contingency	Ckt	Base kV	Area	Zone
112	outage of 27111 11FARM T to 27369 11SHARKE	1	138	211	211
115	outage of 27111 11FARM T to 27382 11SPENC	1	138	211	211
117	outage of 27112 11FARMER to 27113 11FARMER	1	138-69	211	211
120	outage of 27115 11FAWK T to 27116 11FAWKES	1	138	211	211
122	outage of 27115 11FAWK T to 27231 11LR TAP	1	138	211	211
125	outage of 27116 11FAWKES to 27117 11FAWKES	1	138-69	211	211
127	outage of 27122 11FFRT E to 27412 11TYRONE	1	138	211	211
130	outage of 27141 11GODDRD to 27347 11RODBRN	1	138	211	211
132	outage of 27172 11HIGBY to 27170 11HIGB A	1	138-69	211	211
135	outage of 27172 11HIGBY to 27171 11HIGB B	1	138-69	211	211
137	outage of 27172 11HIGBY to 27207 11LANSDW	1	138	211	211
140	outage of 27172 11HIGBY to 27337 11REYNOL	1	138	211	211
142	outage of 27186 11IBM N to 27229 11LOUDON	1	138	211	211
145	outage of 27211 11LEBN W to 27212 11LEBNON	1	138	211	211
147	outage of 27212 11LEBNON to 27213 11LEBNON	1	138-69	211	211
150	outage of 27212 11LEBNON to 27213 11LEBNON	2	138-69	211	211
152	outage of 27212 11LEBNON to 27243 11MARION	1	138	211	211
155	outage of 27212 11LEBNON to 27247 11MERCER	1	138	211	211
157	outage of 27220 11LK REB to 27221 11LK REB	1	138-69	211	211
160	outage of 27220 11LK REB to 27231 11LR TAP	1	138	211	211
162	outage of 27229 11LOUDON to 27227 11LOUD A	1	138-69	211	211
165	outage of 27229 11LOUDON to 27228 11LOUD B	1	138-69	211	211
167	outage of 27312 11PISGAH to 27313 11PISGAH	1	138-69	211	211
170	outage of 27312 11PISGAH to 27428 11W LEXN	1	138	211	211
172	outage of 27347 11RODBRN to 27348 11RODBRN	1	138-69	211	211
175	outage of 27347 11RODBRN to 27369 11SHARKE	1	138	211	211
177	outage of 27382 11SPENC to 27383 11SPENC	1	138-69	211	211
180	outage of 27382 11SPENC to 27383 11SPENC	2	138-69	211	211
182	outage of 27412 11TYRONE to 27413 11TYRONE	1	138-69	211	211
185	outage of 27419 11W CLIF to 27420 11W CLIF	1	138-69	211	211
187	outage of 27419 11W CLIF to 27420 11W CLIF	2	138-69	211	211
190	outage of 27419 11W CLIF to 27436 11WC-DD	1	138-69	211	211
192	outage of 26959 11AOSMTH to 27129 11FOGG P	EQ	69	211	211
195	outage of 26959 11AOSMTH to 27383 11SPENC	1	69	211	211
197	outage of 26972 11ATOKA to 27068 11DANVIL	1	69	211	211
200	outage of 26986 11BEREA to 27221 11LK REB	1	69	211	211
202	outage of 26986 11BEREA to 27339 11RICH S	EQ	69	211	211
205	outage of 26999 11BOONSB to 27451 11WINC S	EQ	69	211	211
207	outage of 27016 11BUENA to 27076 11DIXDAM	1	69	211	211
210	outage of 27026 11CARON to 27225 11LONDON	1	69	211	211
212	outage of 27030 11CAVE R to 27113 11FARMER	1	69	211	211
215	outage of 27030 11CAVE R to 27358 11SALT L	1	69	211	211
217	outage of 27037 11CLARK to 27129 11FOGG P	1	69	211	211
220	outage of 27037 11CLARK to 27397 11SYLVAN	1	69	211	211
222	outage of 27046 11CMPGEK to 27225 11LONDON	1	69	211	211

No.	Contingency	Ckt	Base kV	Area	Zone
225	outage of 27050 11CORBIN to 27396 11SWEETH	1	69	211	211
227	outage of 27065 11DANV 1 to 27203 11KYSTHO	EQ	69	211	211
230	outage of 27068 11DANVIL to 27168 11HARRDS	1	69	211	211
232	outage of 27076 11DIXDAM to 27436 11WC-DD	1	69	211	211
235	outage of 27076 11DIXDAM to 27450 11WILMOR	1	69	211	211
237	outage of 27082 11E BERN to 27306 11PINEHL	1	69	211	211
240	outage of 27082 11E BERN to 27314 11PITTSB	1	69	211	211
242	outage of 27113 11FARMER to 27264 11MORH W	1	69	211	211
245	outage of 27117 11FAWKES to 27272 11N.MADS	1	69	211	211
247	outage of 27117 11FAWKES to 27339 11RICH S	1	69	211	211
250	outage of 27117 11FAWKES to 27340 11RICHMO	1	69	211	211
252	outage of 27167 11HARR T to 27168 11HARRDS	1	69	211	211
255	outage of 27167 11HARR T to 27420 11W CLIF	1	69	211	211
257	outage of 27170 11HIGB A to 27391 11STONWL	1	69	211	211
260	outage of 27170 11HIGB A to 27449 11WIL D2	1	69	211	211
262	outage of 27178 11HOPEWL to 27396 11SWEETH	1	69	211	211
265	outage of 27203 11KYSTHO to 27420 11W CLIF	1	69	211	211
267	outage of 27210 11LEBN I to 27213 11LEBNON	1	69	211	211
270	outage of 27213 11LEBNON to 27385 11SPRNGF	1	69	211	211
272	outage of 27221 11LK REB to 27340 11RICHMO	1	69	211	211
275	outage of 27221 11LK REB to 27429 11WACO	1	69	211	211
277	outage of 27225 11LONDON to 27314 11PITTSB	1	69	211	211
280	outage of 27271 11N.CORB to 27396 11SWEETH	1	69	211	211
282	outage of 27272 11N.MADS to 27449 11WIL D2	EQ	69	211	211
285	outage of 27330 11PRKRSE to 27397 11SYLVAN	1	69	211	211
287	outage of 27330 11PRKRSE to 27452 11WINCHS	1	69	211	211
290	outage of 27338 11RICE T to 27429 11WACO	1	69	211	211
292	outage of 27358 11SALT L to 27383 11SPENC	1	69	211	211
295	outage of 27359 11SALVIS to 27368 11SHAKRT	1	69	211	211
297	outage of 27368 11SHAKRT to 27420 11W CLIF	1	69	211	211
300	outage of 27420 11W CLIF to 27436 11WC-DD	1	69	211	211
302	outage of 27074 11DELVIN to 29213 20BTYVL	1	161	211-220	211-220
305	outage of 27074 11DELVIN to 29346 20GRNHLJ	1	161	211-220	211-220
307	outage of 27095 11ELIHU to 29271 20COOPER	1	161	211-220	211-220
310	outage of 27243 11MARION to 29437 20MARION	1	138-161	211-220	211-220
312	outage of 26990 11BKR LN to 29203 20BKR LN	1	138-69	211-220	211-220
315	outage of 27115 11FAWK T to 29312 20FAWKES	1	138	211-220	211-220
317	outage of 27116 11FAWKES to 29312 20FAWKES	1	138	211-220	211-220
320	outage of 27116 11FAWKES to 29312 20FAWKES	2	138	211-220	211-220
322	outage of 27229 11LOUDON to 29202 20AVON	1	138	211-220	211-220
325	outage of 27231 11LR TAP to 29616 20UN CTY	1	138	211-220	211-220
327	outage of 26982 11BEATTY to 29215 20BEATTY	1	69	211-220	211-220
330	outage of 27082 11E BERN to 29300 20EBRNST	1	69	211-220	211-220
332	outage of 27110 11FARLEY to 29536 20SCORBN	1	69	211-220	211-220
335	outage of 27117 11FAWKES to 29280 20CROOKJ	1	69	211-220	211-220

No.	Contingency	Ckt	Base kV	Area	Zone
337	outage of 27178 11HOPEWL to 29410 20LAURLC	1	69	211-220	211-220
340	outage of 29201 20AVON to 29202 20AVON	1	345-138	220	220
342	outage of 29201 20AVON to 29573 20SPURLK	1	345	220	220
345	outage of 29201 20AVON to 29651 20KPE345	1	345	220	220
350	outage of 29573 20SPURLK to 29575 20SPURLK	2	345-138	220	220
352	outage of 29575 20SPURLK to 29573 20SPURLK	1	138-345	220	220
355	outage of 29651 20KPE345 to 29652 20KPE138	1	345-138	220	220
357	outage of 29213 20BTYVL to 29215 20BEATTY	1	161-69	220	220
360	outage of 29213 20BTYVL to 29507 20POWELL	1	161	220	220
362	outage of 29271 20COOPER to 29272 20COOPER	1	161-69	220	220
370	outage of 29271 20COOPER to 29292 20DENNY	1	161	220	220
372	outage of 29271 20COOPER to 29411 20LAURLD	1	161	220	220
375	outage of 29271 20COOPER to 29517 20PULASJ	1	161	220	220
377	outage of 29271 20COOPER to 29540 20S OAKH	1	161	220	220
380	outage of 29292 20DENNY to 29293 20DENNY	1	161-69	220	220
382	outage of 29308 20FALLRK to 29310 20FALLRK	1	161-69	220	220
385	outage of 29308 20FALLRK to 29613 20TYNER	1	161	220	220
387	outage of 29346 20GRNHLJ to 29613 20TYNER	1	161	220	220
390	outage of 29408 20LAURLC to 29410 20LAURLC	1	161-69	220	220
392	outage of 29408 20LAURLC to 29411 20LAURLD	1	161	220	220
395	outage of 29408 20LAURLC to 29503 20PITTSB	1	161	220	220
400	outage of 29418 20LIBERT to 29517 20PULASJ	1	161	220	220
402	outage of 29503 20PITTSB to 29613 20TYNER	1	161	220	220
405	outage of 29507 20POWELL to 29508 20POWELL	1	161-138	220	220
407	outage of 29515 20PULASK to 29517 20PULASJ	1	161	220	220
410	outage of 29528 20RUSSEL to 29540 20S OAKH	1	161	220	220
412	outage of 29613 20TYNER to 29615 20TYNER	1	161-69	220	220
415	outage of 29202 20AVON to 29230 20BOONST	1	138	220	220
417	outage of 29202 20AVON to 29313 20FAYETT	1	138	220	220
420	outage of 29202 20AVON to 29490 20PARISJ	1	138	220	220
422	outage of 29230 20BOONST to 29233 20BOONSB	1	138	220	220
425	outage of 29230 20BOONST to 29282 20DALE	1	138	220	220
430	outage of 29282 20DALE to 29397 20JKSMIT	1	138	220	220
432	outage of 29282 20DALE to 29603 20TFJ	1	138	220	220
435	outage of 29283 20DALE to 29282 20DALE	1	69-138	220	220
437	outage of 29312 20FAWKES to 29397 20JKSMIT	1	138	220	220
440	outage of 29312 20FAWKES to 29603 20TFJ	1	138	220	220
442	outage of 29312 20FAWKES to 29623 20WBBEREA	1	138	220	220
445	outage of 29313 20FAYETT to 29315 20FAYETT	1	138-69	220	220
447	outage of 29375 20JACKVJ to 29490 20PARISJ	1	138	220	220
462	outage of 29397 20JKSMIT to 29508 20POWELL	1	138	220	220
465	outage of 29397 20JKSMIT to 29616 20UN CTY	1	138	220	220
467	outage of 29397 20JKSMIT to 29652 20KPE138	1	138	220	220
470	outage of 29397 20JKSMIT to 29652 20KPE138	2	138	220	220
472	outage of 29488 20PARIS to 29490 20PARISJ	1	138	220	220

No.	Contingency	Ckt	Base kV	Area	Zone
475	outage of 29508 20POWELL to 29510 20POWELL	1	138-69	220	220
477	outage of 29623 20WBBEREA to 29625 20WBBEREA	1	138-69	220	220
480	outage of 29195 20ALCAN to 29512 20PPG J	1	69	220	220
482	outage of 29195 20ALCAN to 29625 20WBBEREA	1	69	220	220
485	outage of 29196 20ANNVLJ to 29615 20TYNER	1	69	220	220
487	outage of 29205 20BALLRD to 29237 20BOURNE	1	69	220	220
490	outage of 29212 20BTYV D to 29215 20BEATTY	1	69	220	220
492	outage of 29215 20BEATTY to 29648 20ZACHAR	1	69	220	220
495	outage of 29222 20BLEV T to 29361 20HOPE	1	69	220	220
497	outage of 29237 20BOURNE to 29470 20NEWBY2	1	69	220	220
500	outage of 29238 20BOWEN to 29355 20HIGHHRK	1	69	220	220
502	outage of 29238 20BOWEN to 29510 20POWELL	1	69	220	220
505	outage of 29243 20BRONSJ to 29272 20COOPER	1	69	220	220
507	outage of 29260 20CLAYCJ to 29347 20HARGTJ	1	69	220	220
510	outage of 29260 20CLAYCJ to 29580 20STANTN	1	69	220	220
512	outage of 29272 20COOPER to 29566 20SOMERS	1	69	220	220
515	outage of 29272 20COOPER to 29566 20SOMERS	2	69	220	220
517	outage of 29280 20CROOKJ to 29352 20HICK P	1	69	220	220
527	outage of 29283 20DALE to 29366 20HUNT1	1	69	220	220
530	outage of 29283 20DALE to 29367 20HUNT2	1	69	220	220
532	outage of 29283 20DALE to 29468 20NEWBY1	1	69	220	220
535	outage of 29283 20DALE to 29470 20NEWBY2	1	69	220	220
537	outage of 29325 20FRNCHB to 29361 20HOPE	1	69	220	220
540	outage of 29327 20GARRCO to 29406 20LNCSTR	1	69	220	220
542	outage of 29352 20HICK P to 29511 20PPG	1	69	220	220
545	outage of 29355 20HIGHHRK to 29547 20SANDLK	1	69	220	220
547	outage of 29361 20HOPE to 29377 20JEFFVL	1	69	220	220
550	outage of 29366 20HUNT1 to 29556 20SIDEV	1	69	220	220
552	outage of 29367 20HUNT2 to 29398 20JKSMIT	1	69	220	220
555	outage of 29377 20JEFFVL to 29510 20POWELL	1	69	220	220
557	outage of 29398 20JKSMIT to 29607 20TRAPP	1	69	220	220
560	outage of 29401 20KEAVY to 29403 20KEAVJ2	1	69	220	220
562	outage of 29402 20KEAVJ1 to 29410 20LAURLC	1	69	220	220
565	outage of 29402 20KEAVJ1 to 29501 20PINEGJ	1	69	220	220
567	outage of 29403 20KEAVJ2 to 29410 20LAURLC	1	69	220	220
570	outage of 29403 20KEAVJ2 to 29536 20SCORBN	1	69	220	220
572	outage of 29406 20LNCSTR to 29468 20NEWBY1	1	69	220	220
575	outage of 29446 20MCKEE to 29615 20TYNER	1	69	220	220
577	outage of 29501 20PINEGJ to 29631 20W LOND	1	69	220	220
580	outage of 29510 20POWELL to 29580 20STANTN	1	69	220	220
582	outage of 29511 20PPG to 29512 20PPG J	1	69	220	220
585	outage of 29537 20S FORK to 29615 20TYNER	1	69	220	220
587	outage of 29605 20THLNKJ to 29626 20WBER J	1	69	220	220
590	outage of 29625 20WBBEREA to 29626 20WBER J	1	69	220	220
592	outage of 29503 20PITTSB to 27314 11PITTSB	1	161-69	220-211	220-211



No.	Contingency	Ckt	Base kV	Area	Zone
595	outage of 29233 20BOONSB to 26999 11BOONSB	1	138-69	220-211	220-211
597	outage of 29397 20JKSMIT to 27382 11SPENC	1	138	220-211	220-211
602	outage of 26648 09STUART to 29573 20SPURLK	1	345	209-220	209-220
605	outage of 26367 08ZIMER to 29573 20SPURLK	1	345	208-220	280-220
607	outage of 27197 11KENTON to 29575 20SPURLK	1	138	211-220	211-220
610	outage of 29372 20INLAND to 29575 20SPURLK	1	138	220	220
612	outage of 29440 20MAYSJV to 29575 20SPURLK	1	138	220	220
615	outage of 29521 20RENAKR to 29575 20SPURLK	1	138	220	220
617	outage of 29575 20SPURLK to 29585 20S PARK	1	138	220	220



# Case Summary

# Case410s04

*Project Name*            2002 SERIES, NERC/MMWG BASE CASE LIBRARY  
*Title1*                    2004 Summer - CT4&5 & Gilbert  
*Title2*                    New Transmission-Gilbert/268 MW, KPE/540 MW  
*Case Date*              2/13/2003

*Power Flow File*        M:\PROJKypsc\267003\300\_Calculations\301\_PFlow\_Results\Case410s04.cft

## Power Flow Controls

<i>Area Control</i>	<input type="checkbox"/>	<i>SmoothStep</i>	<input checked="" type="checkbox"/>
<i>Remote Control</i>	<input checked="" type="checkbox"/>	<i>XfrmVcon</i>	<input type="checkbox"/>
<i>GenVar Control</i>	<input checked="" type="checkbox"/>	<i>XfrmFcon</i>	<input type="checkbox"/>
<i>Solve Method</i>	NSOLVE		

## Case Settings

<i>Overload</i>	<input checked="" type="checkbox"/>	<i>VlimMin</i>	0.9	<i>RateFactor</i>	1
<i>VLimit</i>	<input checked="" type="checkbox"/>	<i>VlimMax</i>	1.05	<i>AmpFactor</i>	1
<i>VChange</i>	<input checked="" type="checkbox"/>	<i>VlimChange</i>	0.05	<i>RatingNumber</i>	2
<i>Monitored Set</i>	monitor		321 Buses		

## Contingency

Contingencies loaded from file M:\PROJKypsc\267003\300\_Calculations\301\_PFlow\_Results\Case300s  
230 contingencies

Area	Area Name	Zone	Zone Name	Contingency Buses	Monitored Buses		
147	TVA	167	TVA_EAST	0	1		
				0	1		
205	AEP	254	AEP-KP	0	1		
				0	1		
208	CIN	280	CGE	1	4		
				286	CGE GENS	0	2
						1	6
209	DPL	209	DPL	1	5		
				1	5		
211	LGEE	211	LGEE	109	166		
				109	166		
220	EKPC	220	EKPC	92	142		
				92	142		
				203	321		

## 2002 SERIES, NERC/MMWG BASE CASE LIBRARY

2004 Summer - CT45 Gilbert

New Transmission-Gilbert/268 MW, KPE/540 MW

2/13/2003

Area	Name		Scheduled		Load MW	Loss MW	Shunt MW	Generation MW	Slack Bus Generator		
			Export MW	Mis- Match					Bus	Name	Slack MW
142	DUK	Ref.	-282	0	20140	462.8	14	20335	11096	COWANS	53
		New	-416	0	20140	458.3	14	20197			48
		Chg.	-134	0	0	-4.4	0	-138			-5
146	SOCO	Ref.	1302	0	46262	901.9	38	48503	15100	1GASTON	861
		New	1167	0	46262	911.4	38	48378			868
		Chg.	-135	0	0	9.5	0	-126			7
205	AEP	Ref.	-854	0	23573	666.5	0	23386	22987	05SPORN	500
		New	-989	0	23573	675.2	0	23259			505
		Chg.	-135	0	0	8.7	0	-126			6
208	CIN	Ref.	283	0	11900	380.6	0	12564	25895	08BCKJD	187
		New	149	0	11900	379.8	0	12429			184
		Chg.	-134	0	0	-0.8	0	-135			-3
220	EKPC	Ref.	-112	-808	1948	74.9	0	2719	29569	20SPLK2	527
		New	696	0	1948	87.7	0	2732			540
		Chg.	808	808	0	12.8	0	13			13
356	AMRN	Ref.	-911	0	11769	217.5	15	11091	31400	OSAGE	166
		New	-1046	0	11769	214.8	15	10953			161
		Chg.	-135	0	0	-2.7	0	-138			-5
401	FPL	Ref.	-4613	0	20770	514.6	0	16672	40363	CAPECA	401
		New	-4748	0	20770	522.9	0	16545			406
		Chg.	-135	0	0	8.2	0	-127			5

Reference Case : M:\PROJ\Kypsc\267003\300\_Calculations\301\_PFlow\_Results\case3

Transfer Case (New):

## 2002 SERIES, NERC/MMWG BASE CASE LIBRARY

2004 Summer - CT45 Gilbert

New Transmission-Gilbert/268 MW, KPE/540 MW

2/13/2003

<u>Overloaded Facility</u>										<u>Normal System Overloads</u>		
From	Name	To	Name	Circuit	Base kV	Area	Zone	Ratings		MVA	Norm (%)	Emer (%)
								Norm	Emer			
24070	05MOREHE	27348	11RODBRN	1	69	205-211	254-211	33	38	36	109	95
27347	11RODBRN	27348	11RODBRN	1	138-69	211	211	33	40	35	106	87
26959	11AOSMTH	27383	11SPENC	1	69	211	211	48	59	49	102	83

**Notes:**

1. Overloads are based on 100% of Rating 1
2. Normal System Conditions - No Outages
3. Minimum Reporting Level is 100%

## 2002 SERIES, NERC/MMWG BASE CASE LIBRARY

2004 Summer - CT45 Gilbert

New Transmission-Gilbert/268 MW, KPE/540 MW

2/13/2003

Overloaded Facility								Normal System				Overloads	
From	Name	To	Name	Circuit	Base kV	Area	Zone	Ratings		MVA	Norm (%)	Count	Max
								Norm	Emer			A / B	(%)
27347	11RODBRN	27348	11RODBRN	1	138-69	211	211	33	40	34.8	106	3 / 0	152
27117	11FAWKES	27339	11RICH S	1	69	211	211	72	72	44.1	61	3 / 0	140
26986	11BEREA	27221	11LK REB	1	69	211	211	72	72	53.1	74	2 / 0	138
27117	11FAWKES	27272	11N.MADS	1	69	211	211	56	56	30.3	54	1 / 0	129
27037	11CLARK	27397	11SYLVAN	1	69	211	211	73	90	56.4	77	3 / 0	124
27113	11FARMER	27264	11MORH W	1	69	211	211	48	48	35.9	75	1 / 0	124
27221	11LK REB	27340	11RICHMO	1	69	211	211	56	56	19.5	35	1 / 0	122
27115	11FAWK T	27231	11LR TAP	1	138	211	211	163	163	35.8	22	2 / 0	118
29230	20BOONST	29282	20DALE	1	138	220	220	252	252	138.5	55	1 / 0	113
26959	11AOSMTH	27383	11SPENC	1	69	211	211	48	59	49.2	102	4 / 0	112
27358	11SALT L	27383	11SPENC	1	69	211	211	22	22	12.7	58	3 / 0	112
27116	11FAWKES	27117	11FAWKES	1	138-69	211	211	143	171	118.8	83	2 / 0	110
27194	11KENTON	29575	20SPURLK	2	138	211-220	211-220	227	280	162.1	71	1 / 0	109
27220	11LK REB	27231	11LR TAP	1	138	211	211	149	171	120.9	81	1 / 0	109
27220	11LK REB	27221	11LK REB	1	138-69	211	211	149	171	120.5	81	1 / 0	108
27112	11FARMER	27113	11FARMER	1	138-69	211	211	40	48	31.8	79	1 / 0	108
27229	11LOUDON	27228	11LOUD B	1	138-69	211	211	112	129	92.7	83	1 / 0	108
27330	11PRKRSE	27452	11WINCHS	1	69	211	211	72	79	29.5	41	2 / 0	106
27345	11ROCKWE	27452	11WINCHS	1	69	211	211	63	63	45.0	71	1 / 0	105
27382	11SPENC	27383	11SPENC	1	138-69	211	211	72	79	47.1	65	0 / 1	104
27229	11LOUDON	29202	20AVON	1	138	211-220	211-220	287	302	276.2	96	0 / 4	103
29203	20BKR LN	29360	20HOLLWJ	1	69	220	220	57	69	9.3	16	0 / 2	101
27271	11N.CORB	27396	11SWEETH	1	69	211	211	72	72	27.4	38	0 / 1	101
27338	11RICE T	27429	11WACO	1	69	211	211	47	47	18.2	39	0 / 2	101
												34 / 10	152

**Notes:**

- Overloads are based on 100% of Rating 2
- NS = Normal System Conditions (No Outages)
- Minimum Reporting Level is 100%
- Statistical Information (A/B Stats and Maximum Overload)
  - A = Serious Overload > 105%
  - B = Overloaded Facility between 100% and 105% of Rated Capability

## 2002 SERIES, NERC/MMWG BASE CASE LIBRARY

2004 Summer - CT45 Gilbert

New Transmission-Gilbert/268 MW, KPE/540 MW

2/13/2003

<u>Undervoltage</u>					<u>Normal System</u>	<u>Voltage Violations</u>	
<u>Bus</u>	<u>Name</u>	<u>Base kV</u>	<u>Area</u>	<u>Zone</u>	<u>Voltage (pu)</u>	<u>A / B</u>	<u>Min (pu)</u>
29212	20BTYV D	69	220	220	0.9851	1 / 0	0.8380
27449	11WIL D2	69	211	211	1.0010	1 / 0	0.8440
29478	20OAKD J	69	220	220	0.9772	1 / 0	0.8478
29232	20BOONVJ	69	220	220	0.9743	1 / 0	0.8594
29313	20FAYETT	138	220	220	0.9984	1 / 0	0.8700
27210	11LEBN I	69	211	211	0.9778	1 / 0	0.8708
29468	20NEWBY1	69	220	220	1.0048	1 / 0	0.8773
29537	20S FORK	69	220	220	0.9747	0 / 1	0.8864
29315	20FAYETT	69	220	220	1.0125	0 / 2	0.8923
29406	20LNCSTR	69	220	220	0.9906	0 / 1	0.8932
29327	20GARRCO	69	220	220	0.9880	0 / 1	0.8941
29205	20BALLRD	69	220	220	0.9722	0 / 2	0.8981
29237	20BOURNE	69	220	220	0.9832	0 / 1	0.8990
29596	20TGOOCH	69	220	220	0.9748	0 / 1	0.8990
27067	11DANVIL	138	211	211	0.9939	0 / 1	0.8991
						7 / 10	0.8380
<b>Notes:</b>							
1. Minimum Voltage Limit 0.90 (pu)							
2. NS = Normal System Conditions (No Outages)							
3. Maximum Reporting Level is 90%							
4. Statistical Information (A/B Stats and Minimum Voltage)							
A = Serious Undervoltage < 0.88 (pu)							
B = Low Voltages between 0.88 and 0.90 (pu)							



## 2002 SERIES, NERC/MMWG BASE CASE LIBRARY

2004 Summer - CT45 Gilbert

New Transmission-Gilbert/268 MW, KPE/540 MW

2/13/2003

<b>Overvoltage</b>					<b>Normal System</b>	<b>Voltage Violations</b>	
<b>Bus Name</b>	<b>Base kV</b>	<b>Area</b>	<b>Zone</b>		<b>Voltage (pu)</b>	<b>A / B</b>	<b>Max (pu)</b>
29406	20LNCSTR	69	220	220	0.9906	0 / 1	1.0560
29540	20S OAKH	161	220	220	1.0338	0 / 1	1.0516
						0 / 2	1.0560
<b>Notes:</b>							
1. Maximum Voltage Limit is 1.05 (pu)							
2. NS = Normal System Conditions (No Outages)							
3. Minimum Reporting Level for Over Voltages is 105%							
4. Statistical Information (A/B Stats and Maximum Voltage)							
A = Serious Overvoltage > 1.07 (pu)							
B = High Voltages between 1.05 and 1.07 (pu)							

## 2002 SERIES, NERC/MMWG BASE CASE LIBRARY

2004 Summer - CT45 Gilbert

New Transmission-Gilbert/268 MW, KPE/540 MW

2/13/2003

VChange Bus Name	Base kV	Area	Zone	Normal System Voltage (pu)	Voltage Violations	
					A / B	Max (pu)
27449 11WIL D2	69	211	211	1.0010	1 / 0	-0.1570
29212 20BTYV D	69	220	220	0.9851	1 / 0	-0.1471
29478 20OAKD J	69	220	220	0.9772	1 / 0	-0.1294
29313 20FAYETT	138	220	220	0.9984	1 / 0	-0.1284
29468 20NEWBY1	69	220	220	1.0048	1 / 0	-0.1275
29315 20FAYETT	69	220	220	1.0125	2 / 0	-0.1202
29232 20BOONVJ	69	220	220	0.9743	1 / 0	-0.1149
27016 11BUENA	69	211	211	1.0259	1 / 0	-0.1119
29470 20NEWBY2	69	220	220	1.0083	1 / 0	-0.1071
27210 11LEBN I	69	211	211	0.9778	1 / 0	-0.1070
27076 11DIXDAM	69	211	211	1.0369	1 / 0	-0.1040
29406 20LNCSTR	69	220	220	0.9906	1 / 0	-0.0974
29291 20DAVIS	69	220	220	0.9984	2 / 0	-0.0949
27067 11DANVIL	138	211	211	0.9939	1 / 0	-0.0948
27016 11BUENA	69	211	211	1.0259	1 / 0	-0.0940
29327 20GARRCO	69	220	220	0.9880	1 / 0	-0.0939
27136 11GARRD	69	211	211	1.0074	1 / 0	-0.0912
29537 20S FORK	69	220	220	0.9747	1 / 0	-0.0883
29237 20BOURNE	69	220	220	0.9832	1 / 0	-0.0842
29233 20BOONSB	138	220	220	1.0222	1 / 0	-0.0834
29237 20BOURNE	69	220	220	0.9832	1 / 0	-0.0822
27068 11DANVIL	69	211	211	1.0000	2 / 0	-0.0778
29596 20TGOOCH	69	220	220	0.9748	1 / 0	-0.0758
27136 11GARRD	69	211	211	1.0074	1 / 0	-0.0753
26972 11ATOKA	69	211	211	0.9985	1 / 0	-0.0742
26999 11BOONSB	69	211	211	1.0371	2 / 0	-0.0742
26972 11ATOKA	69	211	211	0.9985	1 / 0	-0.0741
29205 20BALLRD	69	220	220	0.9722	1 / 0	-0.0741
27450 11WILMOR	69	211	211	1.0088	1 / 0	-0.0733
29205 20BALLRD	69	220	220	0.9722	1 / 0	-0.0733
29580 20STANTN	69	220	220	0.9980	1 / 0	-0.0730
27000 11BOYLE	69	211	211	0.9978	2 / 0	-0.0722
29205 20BALLRD	69	220	220	0.9722	1 / 0	-0.0716
29411 20LAURLD	161	220	220	1.0026	1 / 0	-0.0704
29407 20LAURHY	13.8	220	220	0.9836	0 / 1	-0.0691
29325 20FRNCHB	69	220	220	0.9782	0 / 1	-0.0683
29436 20MARIBJ	69	220	220	0.9799	0 / 1	-0.0671
27220 11LK REB	138	211	211	1.0027	0 / 1	-0.0670
27065 11DANV 1	69	211	211	0.9974	0 / 2	-0.0666
27167 11HARR T	69	211	211	1.0080	0 / 1	-0.0665
27168 11HARRDS	69	211	211	1.0080	0 / 1	-0.0665
29623 20WBAREA	138	220	220	1.0033	0 / 1	-0.0655
27450 11WILMOR	69	211	211	1.0088	0 / 1	-0.0651
29288 20DALE4	13.8	220	220	1.0478	0 / 1	-0.0648
27247 11MERC R	138	211	211	1.0069	0 / 1	-0.0641
27055 11CRAB O	69	211	211	0.9868	0 / 1	-0.0634
29510 20POWELL	69	220	220	0.9983	0 / 1	-0.0617
29580 20STANTN	69	220	220	0.9980	0 / 1	-0.0615
29260 20CLAYCJ	69	220	220	0.9966	0 / 1	-0.0610
29625 20WBAREA	69	220	220	0.9987	0 / 1	-0.0609
29625 20WBAREA	69	220	220	0.9987	0 / 1	-0.0607
29327 20GARRCO	69	220	220	0.9880	0 / 1	-0.0605
29515 20PULASK	161	220	220	1.0130	0 / 1	-0.0605

VChange		Base kV	Area	Zone	Normal System Voltage (pu)	Voltage Violations	
Bus	Name					A / B	Max (pu)
29203	20BKR LN	69	220	220	0.9867	0 / 1	-0.0595
29626	20WBER J	69	220	220	0.9984	0 / 1	-0.0587
29626	20WBER J	69	220	220	0.9984	0 / 1	-0.0585
29195	20ALCAN	69	220	220	0.9963	0 / 1	-0.0584
29368	20HUNTFJ	69	220	220	0.9662	0 / 1	-0.0584
29510	20POWELL	69	220	220	0.9983	0 / 1	-0.0584
29580	20STANTN	69	220	220	0.9980	0 / 1	-0.0582
29195	20ALCAN	69	220	220	0.9963	0 / 1	-0.0581
29368	20HUNTFJ	69	220	220	0.9662	0 / 1	-0.0577
29512	20PPG J	69	220	220	0.9958	0 / 1	-0.0566
29368	20HUNTFJ	69	220	220	0.9662	0 / 1	-0.0564
29511	20PPG	69	220	220	0.9957	0 / 1	-0.0564
29512	20PPG J	69	220	220	0.9958	0 / 1	-0.0564
27067	11DANVIL	138	211	211	0.9939	0 / 1	-0.0563
29347	20HARGTJ	69	220	220	0.9989	0 / 1	-0.0563
29511	20PPG	69	220	220	0.9957	0 / 1	-0.0561
29408	20LAURLC	161	220	220	0.9852	0 / 1	-0.0553
29238	20BOWEN	69	220	220	0.9982	0 / 1	-0.0549
26959	11AOSMTH	69	211	211	1.0219	0 / 1	-0.0546
29238	20BOWEN	69	220	220	0.9982	0 / 1	-0.0543
29360	20HOLLWJ	69	220	220	0.9840	0 / 1	-0.0540
26986	11BEREA	69	211	211	0.9971	0 / 1	-0.0539
29508	20POWELL	138	220	220	1.0005	0 / 1	-0.0538
29605	20THLNKJ	69	220	220	0.9988	0 / 1	-0.0538
29605	20THLNKJ	69	220	220	0.9988	0 / 1	-0.0537
27221	11LK REB	69	211	211	1.0133	0 / 1	-0.0536
27221	11LK REB	69	211	211	1.0133	0 / 1	-0.0535
29408	20LAURLC	161	220	220	0.9852	0 / 1	-0.0534
29260	20CLAYCJ	69	220	220	0.9966	0 / 1	-0.0532
27339	11RICH S	69	211	211	1.0023	0 / 1	-0.0524
27368	11SHAKRT	69	211	211	1.0281	0 / 1	-0.0519
29516	20PULASK	69	220	220	1.0044	0 / 1	-0.0519
29260	20CLAYCJ	69	220	220	0.9966	0 / 1	-0.0515
27055	11CRAB O	69	211	211	0.9868	0 / 1	-0.0513
29605	20THLNKJ	69	220	220	0.9988	0 / 1	-0.0511
29488	20PARIS	138	220	220	0.9949	0 / 1	-0.0508
29605	20THLNKJ	69	220	220	0.9988	0 / 1	-0.0506
27068	11DANVIL	69	211	211	1.0000	0 / 1	-0.0504
27272	11N.MADS	69	211	211	1.0078	0 / 1	-0.0502
27300	11PARIS	69	211	211	1.0185	0 / 1	-0.0502
29626	20WBER J	69	220	220	0.9984	0 / 1	-0.0502
29237	20BOURNE	69	220	220	0.9832	0 / 1	0.0553
29406	20LNCSTR	69	220	220	0.9906	0 / 1	0.0654

39 / 63 -0.1570

**Notes:**

1. Voltage Change Limit is 0.05 (pu)
2. NS = Normal System Conditions (No Outages)
3. Minimum Reporting Level is 5%
4. Statistical Information (A/B Stats and Maximum Voltage Change)
  - A = Serious Voltage Change > 0.07 (pu)
  - B = Excessive Voltage Change between 0.05 and 0.07 (pu)

## 2002 SERIES, NERC/MMWG BASE CASE LIBRARY

2004 Summer - CT45 Gilbert

New Transmission-Gilbert/268 MW, KPE/540 MW

2/13/2003

Contingency	Overloaded Facility										Overloads		
	From Name	To Name	Ckt	Base kV	Area	Zone	Ratings		MVA	Norm (%)	Emer (%)		
							Norm	Emer					
32	outage of 27230 11LR TAP to 27231 11LR TAP		1	161-138	211	211							
	27338 11RICE T	27429 11WACO	1	69	211	211	47	47	47.2	100	101		
35	outage of 27230 11LR TAP to 27444 11WI TAP		1	161	211	211							
	27338 11RICE T	27429 11WACO	1	69	211	211	47	47	47.2	100	100		
95	outage of 27036 11CLARK to 27037 11CLARK		1	138-69	211	211							
	26959 11AOSMTH	27383 11SPENC	1	69	211	211	48	59	66.3	138	112		
110	outage of 27111 11FARM T to 27112 11FARMER		1	138	211	211							
	27347 11RODBRN	27348 11RODBRN	1	138-69	211	211	33	40	50.6	153	126		
	27358 11SALT L	27383 11SPENC	1	69	211	211	22	22	24.7	112	112		
115	outage of 27111 11FARM T to 27382 11SPENC		1	138	211	211							
	27358 11SALT L	27383 11SPENC	1	69	211	211	22	22	24.6	112	112		
117	outage of 27112 11FARMER to 27113 11FARMER		1	138-69	211	211							
	27347 11RODBRN	27348 11RODBRN	1	138-69	211	211	33	40	50.6	153	126		
	27358 11SALT L	27383 11SPENC	1	69	211	211	22	22	24.7	112	112		
125	outage of 27116 11FAWKES to 27117 11FAWKES		1	138-69	211	211							
	27221 11LK REB	27340 11RICHMO	1	69	211	211	56	56	68.3	122	122		
	26986 11BEREA	27221 11LK REB	1	69	211	211	72	72	78.4	109	109		
	27220 11LK REB	27231 11LR TAP	1	138	211	211	149	171	186.1	125	109		
	27220 11LK REB	27221 11LK REB	1	138-69	211	211	149	171	185.1	124	108		
157	outage of 27220 11LK REB to 27221 11LK REB		1	138-69	211	211							
	27116 11FAWKES	27117 11FAWKES	1	138-69	211	211	143	171	187.5	131	110		
	27117 11FAWKES	27339 11RICH S	1	69	211	211	72	72	76.2	106	106		
160	outage of 27220 11LK REB to 27231 11LR TAP		1	138	211	211							
	27116 11FAWKES	27117 11FAWKES	1	138-69	211	211	143	171	187.5	131	110		
	27117 11FAWKES	27339 11RICH S	1	69	211	211	72	72	76.2	106	106		
162	outage of 27229 11LOUDON to 27227 11LOUD A		1	138-69	211	211							
	27229 11LOUDON	27228 11LOUD B	1	138-69	211	211	112	129	138.9	124	108		
172	outage of 27347 11RODBRN to 27348 11RODBRN		1	138-69	211	211							
	27113 11FARMER	27264 11MORH W	1	69	211	211	48	48	59.4	124	124		
	27112 11FARMER	27113 11FARMER	1	138-69	211	211	40	48	51.9	130	108		
180	outage of 27382 11SPENC to 27383 11SPENC		2	138-69	211	211							
	27382 11SPENC	27383 11SPENC	1	138-69	211	211	72	79	82.0	114	104		
200	outage of 26986 11BEREA to 27221 11LK REB		1	69	211	211							
	27117 11FAWKES	27339 11RICH S	1	69	211	211	72	72	100.6	140	140		
205	outage of 26999 11BOONSB to 27451 11WINC S		EQ	69	211	211							
	27037 11CLARK	27397 11SYLVAN	1	69	211	211	73	90	101.4	139	113		
	26959 11AOSMTH	27383 11SPENC	1	69	211	211	48	59	62.7	131	106		
242	outage of 27113 11FARMER to 27264 11MORH W		1	69	211	211							
	27347 11RODBRN	27348 11RODBRN	1	138-69	211	211	33	40	61.0	185	152		
247	outage of 27117 11FAWKES to 27339 11RICH S		1	69	211	211							
	26986 11BEREA	27221 11LK REB	1	69	211	211	72	72	99.7	138	138		
260	outage of 27170 11HIGB A to 27449 11WIL D2		1	69	211	211							
	27117 11FAWKES	27272 11N.MADS	1	69	211	211	56	56	72.0	128	129		
277	outage of 27225 11LONDON to 27314 11PITTSB		1	69	211	211							
	27271 11N.CORB	27396 11SWEETH	1	69	211	211	72	72	72.4	101	101		
322	outage of 27229 11LOUDON to 29202 20AVON		1	138	211-220	211-220							
	27075 NONAME	27300 11PARIS	1	69	211	211	56	56	70.1	125	125		
	27345 11ROCKWE	27452 11WINCHS	1	69	211	211	63	63	66.4	105	105		
325	outage of 27231 11LR TAP to 29616 20UN CTY		1	138	211-220	211-220							
	27115 11FAWK T	27231 11LR TAP	1	138	211	211	163	163	189.3	116	116		

Contingency	Overloaded Facility									Overloads		
	From Name	To Name	Ckt	Base kV	Area	Zone	Ratings		MVA	Norm (%)	Emer (%)	
							Norm	Emer				
340	outage of 29201 20AVON to 29202 20AVON		1	345-138	220	220						
	29230 20BOONST	29282 20DALE	1	138	220	220	252	252	283.4	112	113	
417	outage of 29202 20AVON to 29313 20FAYETT		1	138	220	220						
	29203 20BKR LN	29360 20HOLLWJ	1	69	220	220	57	69	69.8	122	101	
	27229 11LOUDON	29202 20AVON	1	138	211-220	211-220	287	302	303.7	106	101	
420	outage of 29202 20AVON to 29490 20PARISJ		1	138	220	220						
	27229 11LOUDON	29202 20AVON	1	138	211-220	211-220	287	302	304.5	106	101	
422	outage of 29230 20BOONST to 29233 20BOONSB		1	138	220	220						
	27037 11CLARK	27397 11SYLVAN	1	69	211	211	73	90	111.3	152	124	
	26959 11AOSMTH	27383 11SPENC	1	69	211	211	48	59	65.8	137	112	
	27330 11PRKRSE	27452 11WINCHS	1	69	211	211	72	79	83.6	116	106	
445	outage of 29313 20FAYETT to 29315 20FAYETT		1	138-69	220	220						
	29203 20BKR LN	29360 20HOLLWJ	1	69	220	220	57	69	69.8	122	101	
	27229 11LOUDON	29202 20AVON	1	138	211-220	211-220	287	302	303.8	106	101	
465	outage of 29397 20JKSMIT to 29616 20UN CTY		1	138	220	220						
	27115 11FAWK T	27231 11LR TAP	1	138	211	211	163	163	191.5	117	118	
472	outage of 29488 20PARIS to 29490 20PARISJ		1	138	220	220						
	27229 11LOUDON	29202 20AVON	1	138	211-220	211-220	287	302	310.9	108	103	
595	outage of 29233 20BOONSB to 26999 11BOONSB		1	138-69	220-211	220-211						
	27037 11CLARK	27397 11SYLVAN	1	69	211	211	73	90	111.3	152	124	
	26959 11AOSMTH	27383 11SPENC	1	69	211	211	48	59	65.8	137	112	
	27330 11PRKRSE	27452 11WINCHS	1	69	211	211	72	79	83.6	116	106	
607	outage of 27197 11KENTON to 29575 20SPURLK		1	138	211-220	211-220						
	27194 11KENTON	29575 20SPURLK	2	138	211-220	211-220	227	280	306.0	135	109	

**Notes:**

1. Overloads are based on 100% of Rating 2

## 2002 SERIES, NERC/MMWG BASE CASE LIBRARY

2004 Summer - CT45 Gilbert

New Transmission-Gilbert/268 MW, KPE/540 MW

2/13/2003

## Contingency

Description	Ckt	kV	Zone	Area	Over load	Voltage Violations			Not Solved
						UnderV	OverV	Change	
32 outage of 27230 11LR TAP to 27231 11LR TAP	1	161-138	211	211	1	0	0	0	
35 outage of 27230 11LR TAP to 27444 11WI TAP	1	161	211	211	1	0	0	0	
82 outage of 27010 11BRWN P to 27247 11MERCRCR	1	138	211	211	0	0	0	3	
95 outage of 27036 11CLARK to 27037 11CLARK	1	138-69	211	211	1	0	0	0	
105 outage of 27067 11DANVIL to 27068 11DANVIL	1	138-69	211	211	0	0	0	4	
107 outage of 27067 11DANVIL to 27247 11MERCRCR	1	138	211	211	0	1	0	5	
110 outage of 27111 11FARM T to 27112 11FARMER	1	138	211	211	2	0	0	0	
115 outage of 27111 11FARM T to 27382 11SPENC	1	138	211	211	1	0	0	0	
117 outage of 27112 11FARMER to 27113 11FARMER	1	138-69	211	211	2	0	0	0	
125 outage of 27116 11FAWKES to 27117 11FAWKES	1	138-69	211	211	4	0	0	0	
157 outage of 27220 11LK REB to 27221 11LK REB	1	138-69	211	211	2	0	0	1	
160 outage of 27220 11LK REB to 27231 11LR TAP	1	138	211	211	2	0	0	2	
162 outage of 27229 11LOUDON to 27227 11LOUD A	1	138-69	211	211	1	0	0	0	
172 outage of 27347 11RODBRN to 27348 11RODBRN	1	138-69	211	211	2	0	0	0	
180 outage of 27382 11SPENC to 27383 11SPENC	2	138-69	211	211	1	0	0	0	
195 outage of 26959 11AOSMTH to 27383 11SPENC	1	69	211	211	0	0	0	1	
200 outage of 26986 11BEREA to 27221 11LK REB	1	69	211	211	1	0	0	1	
205 outage of 26999 11BOONSB to 27451 11WINC S	EQ	69	211	211	2	0	0	0	
207 outage of 27016 11BUENA to 27076 11DIXDAM	1	69	211	211	0	0	0	3	
232 outage of 27076 11DIXDAM to 27436 11WC-DD	1	69	211	211	0	0	0	5	
235 outage of 27076 11DIXDAM to 27450 11WILMOR	1	69	211	211	0	0	0	1	
242 outage of 27113 11FARMER to 27264 11MORH W	1	69	211	211	1	0	0	0	
247 outage of 27117 11FAWKES to 27339 11RICH S	1	69	211	211	1	0	0	1	
255 outage of 27167 11HARR T to 27420 11W CLIF	1	69	211	211	0	0	0	2	
260 outage of 27170 11HIGB A to 27449 11WIL D2	1	69	211	211	1	1	0	2	
267 outage of 27210 11LEBN I to 27213 11LEBNON	1	69	211	211	0	1	0	1	
277 outage of 27225 11LONDON to 27314 11PITTSB	1	69	211	211	1	0	0	0	
297 outage of 27368 11SHAKRT to 27420 11W CLIF	1	69	211	211	0	0	0	1	
312 outage of 26990 11BKR LN to 29203 20BKR LN	1	138-69	211-220	211-220	0	0	0	2	
322 outage of 27229 11LOUDON to 29202 20AVON	1	138	211-220	211-220	2	0	0	0	
325 outage of 27231 11LR TAP to 29616 20UN CTY	1	138	211-220	211-220	1	0	0	0	
340 outage of 29201 20AVON to 29202 20AVON	1	345-138	220	220	1	0	0	0	
372 outage of 29271 20COOPER to 29411 20LAURLD	1	161	220	220	0	0	0	3	
377 outage of 29271 20COOPER to 29540 20S OAKH	1	161	220	220	0	0	3	0	
392 outage of 29408 20LAURLC to 29411 20LAURLD	1	161	220	220	0	0	0	1	
407 outage of 29515 20PULASK to 29517 20PULASJ	1	161	220	220	0	0	0	2	
410 outage of 29528 20RUSSEL to 29540 20S OAKH	1	161	220	220	0	0	2	0	
417 outage of 29202 20AVON to 29313 20FAYETT	1	138	220	220	2	2	0	3	

**Contingency**

Description	Ckt	kV	Zone	Area	Over load	Voltage Violations			Not Solved
						UnderV	OverV	Change	
420 outage of 29202 20AVON to 29490 20PARISJ	1	138	220	220	1	0	0	0	
422 outage of 29230 20BOONST to 29233 20BOONSB	1	138	220	220	3	0	0	2	
425 outage of 29230 20BOONST to 29282 20DALE	1	138	220	220	0	0	0	1	
442 outage of 29312 20FAWKES to 29623 20WBEREA	1	138	220	220	0	0	0	7	
445 outage of 29313 20FAYETT to 29315 20FAYETT	1	138-69	220	220	2	1	0	2	
462 outage of 29397 20JKSMIT to 29508 20POWELL	1	138	220	220	0	0	0	5	
465 outage of 29397 20JKSMIT to 29616 20UN CTY	1	138	220	220	1	0	0	0	
472 outage of 29488 20PARIS to 29490 20PARISJ	1	138	220	220	1	0	0	2	
475 outage of 29508 20POWELL to 29510 20POWELL	1	138-69	220	220	0	0	0	4	
477 outage of 29623 20WBEREA to 29625 20WBERE	1	138-69	220	220	0	0	0	6	
487 outage of 29205 20BALLRD to 29237 20BOURNE	1	69	220	220	0	1	0	3	
490 outage of 29212 20BTYV D to 29215 20BEATTY	1	69	220	220	0	4	0	4	
497 outage of 29237 20BOURNE to 29470 20NEWBY2	1	69	220	220	0	2	0	3	
532 outage of 29283 20DALE to 29468 20NEWBY1	1	69	220	220	0	4	0	4	
535 outage of 29283 20DALE to 29470 20NEWBY2	1	69	220	220	0	0	0	4	
537 outage of 29325 20FRNCHB to 29361 20HOPE	1	69	220	220	0	0	0	2	
540 outage of 29327 20GARRCO to 29406 20LNCSTR	1	69	220	220	0	0	1	2	
580 outage of 29510 20POWELL to 29580 20STANTN	1	69	220	220	0	0	0	3	
587 outage of 29605 20THLNKJ to 29626 20WBER J	1	69	220	220	0	0	0	1	
590 outage of 29625 20WBEREA to 29626 20WBER J	1	69	220	220	0	0	0	2	
595 outage of 29233 20BOONSB to 26999 11BOONSB	1	138-69	220-211	220-211	3	0	0	1	
607 outage of 27197 11KENTON to 29575 20SPURLK	1	138	211-220	211-220	1	0	0	0	
<b>Totals:</b>					45	17	6	102	0

**Notes:**

1. Overloads are based on 100% of Rating 2
2. Undervoltage Limit is 0.90 (pu)
3. Overvoltage Limit is 1.05 (pu)
4. Voltage Change Limit is 0.05 (pu)

**Not Solved Codes:**

- D - Diverged
- I - Interrupted
- F - Failed, One or More Contingency Commands Failed in PFlow

## 2002 SERIES, NERC/MMWG BASE CASE LIBRARY

2004 Summer - CT45 Gilbert

New Transmission-Gilbert/268 MW, KPE/540 MW

2/13/2003

Overloaded Facility	Contingency									Overloads			
	From	Name	To	Name	Circuit	Base kV	Area	Zone	Ratings Norm Emer	NS	Norm MVA	Emer (%)	Emer (%)
27347 11RODBRN	27348	11RODBRN			1	138-69	211	211	33 40	NS	35	106	87
	242	outage of 27113 11FARMER to 27264 11MORH			1	69	211	211			61	185	152
	110	outage of 27111 11FARM T to 27112 11FARMER			1	138	211	211			51	153	126
	117	outage of 27112 11FARMER to 27113 11FARME			1	138-69	211	211			51	153	126
											3 / 0		152
27117 11FAWKES	27339	11RICH S			1	69	211	211	72 72	NS	44	61	61
	200	outage of 26986 11BEREA to 27221 11LK REB			1	69	211	211			101	140	140
	157	outage of 27220 11LK REB to 27221 11LK REB			1	138-69	211	211			76	106	106
	160	outage of 27220 11LK REB to 27231 11LR TAP			1	138	211	211			76	106	106
											3 / 0		140
26986 11BEREA	27221	11LK REB			1	69	211	211	72 72	NS	53	74	74
	247	outage of 27117 11FAWKES to 27339 11RICH S			1	69	211	211			100	138	138
	125	outage of 27116 11FAWKES to 27117 11FAWKE			1	138-69	211	211			78	109	109
											2 / 0		138
27117 11FAWKES	27272	11N.MADS			1	69	211	211	56 56	NS	30	54	54
	260	outage of 27170 11HIGB A to 27449 11WIL D2			1	69	211	211			72	128	129
											1 / 0		129
27037 11CLARK	27397	11SYLVAN			1	69	211	211	73 90	NS	56	77	63
	595	outage of 29233 20BOONSB to 26999 11BOONS			1	138-69	220-211	220-211			111	152	124
	422	outage of 29230 20BOONST to 29233 20BOONS			1	138	220	220			111	152	124
	205	outage of 26999 11BOONSB to 27451 11WINC S EQ				69	211	211			101	139	113
											3 / 0		124
27113 11FARMER	27264	11MORH W			1	69	211	211	48 48	NS	36	75	75
	172	outage of 27347 11RODBRN to 27348 11RODBR			1	138-69	211	211			59	124	124
											1 / 0		124
27221 11LK REB	27340	11RICHMO			1	69	211	211	56 56	NS	20	35	35
	125	outage of 27116 11FAWKES to 27117 11FAWKE			1	138-69	211	211			68	122	122
											1 / 0		122
27115 11FAWK T	27231	11LR TAP			1	138	211	211	163 163	NS	36	22	22
	465	outage of 29397 20JKSMIT to 29616 20UN CTY			1	138	220	220			192	117	118
	325	outage of 27231 11LR TAP to 29616 20UN CTY			1	138	211-220	211-220			189	116	116
											2 / 0		118
29230 20BOONST	29282	20DALE			1	138	220	220	252 252	NS	139	55	55
	340	outage of 29201 20AVON to 29202 20AVON			1	345-138	220	220			283	112	113
											1 / 0		113



Overloaded Facility	Contingency									Overloads			
	From	Name	To	Name	Circuit	Base kV	Area	Zone	Ratings Norm Emer	NS	Norm MVA	Emer (%)	Emer (%)
26959	11AOSMTH	27383	11SPENC		1	69	211	211	48 59	NS	49	102	83
	95	outage of 27036	11CLARK	to 27037	1	138-69	211	211			66	138	112
	422	outage of 29230	20BOONST	to 29233	1	138	220	220			66	137	112
	595	outage of 29233	20BOONSB	to 26999	1	138-69	220-211	220-211			66	137	112
	205	outage of 26999	11BOONSB	to 27451	1	69	211	211			63	131	106
											4 / 0		112
27358	11SALT L	27383	11SPENC		1	69	211	211	22 22	NS	13	58	58
	110	outage of 27111	11FARM T	to 27112	1	138	211	211			25	112	112
	117	outage of 27112	11FARMER	to 27113	1	138-69	211	211			25	112	112
	115	outage of 27111	11FARM T	to 27382	1	138	211	211			25	112	112
											3 / 0		112
27116	11FAWKES	27117	11FAWKES		1	138-69	211	211	143 171	NS	119	83	69
	160	outage of 27220	11LK REB	to 27231	1	138	211	211			188	131	110
	157	outage of 27220	11LK REB	to 27221	1	138-69	211	211			188	131	110
											2 / 0		110
27194	11KENTON	29575	20SPURLK		2	138	211-220	211-220	227 280	NS	162	71	58
	607	outage of 27197	11KENTON	to 29575	1	138	211-220	211-220			306	135	109
											1 / 0		109
27220	11LK REB	27231	11LR TAP		1	138	211	211	149 171	NS	121	81	71
	125	outage of 27116	11FAWKES	to 27117	1	138-69	211	211			186	125	109
											1 / 0		109
27220	11LK REB	27221	11LK REB		1	138-69	211	211	149 171	NS	121	81	70
	125	outage of 27116	11FAWKES	to 27117	1	138-69	211	211			185	124	108
											1 / 0		108
27112	11FARMER	27113	11FARMER		1	138-69	211	211	40 48	NS	32	79	66
	172	outage of 27347	11RODBRN	to 27348	1	138-69	211	211			52	130	108
											1 / 0		108
27229	11LOUDON	27228	11LOUD B		1	138-69	211	211	112 129	NS	93	83	72
	162	outage of 27229	11LOUDON	to 27227	1	138-69	211	211			139	124	108
											1 / 0		108
27330	11PRKRSE	27452	11WINCHS		1	69	211	211	72 79	NS	30	41	37
	422	outage of 29230	20BOONST	to 29233	1	138	220	220			84	116	106
	595	outage of 29233	20BOONSB	to 26999	1	138-69	220-211	220-211			84	116	106
											2 / 0		106
27345	11ROCKWE	27452	11WINCHS		1	69	211	211	63 63	NS	45	71	71
	322	outage of 27229	11LOUDON	to 29202	1	138	211-220	211-220			66	105	105
											1 / 0		105
27382	11SPENC	27383	11SPENC		1	138-69	211	211	72 79	NS	47	65	60
	180	outage of 27382	11SPENC	to 27383	2	138-69	211	211			82	114	104
											0 / 1		104

Overloaded Facility	Contingency									Overloads				
	From	Name	To	Name	Circuit	Base kV	Area	Zone	Ratings		NS	MVA	Norm (%)	Emer (%)
									Norm	Emer				
27229	11LOUDON	29202	20AVON		1	138	211-220	211-220	287	302				
	472	outage of 29488	20PARIS	to 29490	20PARISJ	1	138	220	220			311	108	103
	420	outage of 29202	20AVON	to 29490	20PARISJ	1	138	220	220			304	106	101
	445	outage of 29313	20FAYETT	to 29315	20FAYETT	1	138-69	220	220			304	106	101
	417	outage of 29202	20AVON	to 29313	20FAYETT	1	138	220	220			304	106	101
											0 / 4		103	
29203	20BKR LN	29360	20HOLLWJ		1	69	220	220	57	69	NS	9	16	13
	417	outage of 29202	20AVON	to 29313	20FAYETT	1	138	220	220			70	122	101
	445	outage of 29313	20FAYETT	to 29315	20FAYETT	1	138-69	220	220			70	122	101
											0 / 2		101	
27271	11N.CORB	27396	11SWEETH		1	69	211	211	72	72	NS	27	38	38
	277	outage of 27225	11LONDON	to 27314	11PITTSB	1	69	211	211			72	101	101
											0 / 1		101	
27338	11RICE T	27429	11WACO		1	69	211	211	47	47	NS	18	39	39
	32	outage of 27230	11LR TAP	to 27231	11LR TAP	1	161-138	211	211			47	100	101
	35	outage of 27230	11LR TAP	to 27444	11WI TAP	1	161	211	211			47	100	100
											0 / 2		101	
											34 / 10		152.4	

**Notes:**

1. Overloads are based on 100% of Rating 2
2. NS = Normal System Conditions (No Outages)
3. Minimum Reporting Level is 100%
4. Statistical Information (A/B Stats and Maximum Overload)
  - A = Serious Overload > 105%
  - B = Overloaded Facility between 100% and 105% of Rated Capability

## 2002 SERIES, NERC/MMWG BASE CASE LIBRARY

2004 Summer - CT45 Gilbert

New Transmission-Gilbert/268 MW, KPE/540 MW

2/13/2003

No.	Contingency	Ckt	Base kV	Area	Zone
10	outage of 26950 11ALCALD to 27008 11BRWN N	1	345	211	211
12	outage of 27008 11BRWN N to 27009 11BRWN N	1	345-138	211	211
15	outage of 27008 11BRWN N to 27162 11HARDN	1	345	211	211
17	outage of 27008 11BRWN N to 27427 11W LEXN	1	345	211	211
20	outage of 26951 11ALCALD to 27095 11ELIHU	1	161	211	211
22	outage of 26962 11ARNOLD to 27074 11DELVIN	1	161	211	211
25	outage of 27074 11DELVIN to 27444 11WI TAP	1	161	211	211
27	outage of 27095 11ELIHU to 27096 11ELIHU	1	161-69	211	211
30	outage of 27095 11ELIHU to 27096 11ELIHU	2	161-69	211	211
32	outage of 27230 11LR TAP to 27231 11LR TAP	1	161-138	211	211
35	outage of 27230 11LR TAP to 27444 11WI TAP	1	161	211	211
37	outage of 27425 11W IRVI to 27444 11WI TAP	1	161	211	211
40	outage of 26947 11ADAMS to 27412 11TYRONE	1	138	211	211
42	outage of 26977 11BARDST to 26978 11BARDST	1	138-69	211	211
45	outage of 26977 11BARDST to 27011 11BRWNCT	1	138	211	211
47	outage of 26977 11BARDST to 27276 11NELSON	1	138	211	211
50	outage of 26990 11BKR LN to 27009 11BRWN N	1	138	211	211
52	outage of 26990 11BKR LN to 27172 11HIGBY	1	138	211	211
55	outage of 26998 11BONNIE to 27211 11LEBN W	1	138	211	211
57	outage of 27009 11BRWN N to 27011 11BRWNCT	1	138	211	211
60	outage of 27009 11BRWN N to 27012 11BRWNT1	1	138	211	211
62	outage of 27009 11BRWN N to 27013 11BRWNT2	1	138	211	211
65	outage of 27009 11BRWN N to 27040 11CLAYSM	1	138	211	211
67	outage of 27009 11BRWN N to 27172 11HIGBY	1	138	211	211
70	outage of 27009 11BRWN N to 27312 11PISGAH	1	138	211	211
72	outage of 27009 11BRWN N to 27412 11TYRONE	1	138	211	211
75	outage of 27010 11BRWN P to 27012 11BRWNT1	1	138	211	211
77	outage of 27010 11BRWN P to 27013 11BRWNT2	1	138	211	211
80	outage of 27010 11BRWN P to 27116 11FAWKES	1	138	211	211
82	outage of 27010 11BRWN P to 27247 11MERCRCR	1	138	211	211
85	outage of 27010 11BRWN P to 27419 11W CLIF	1	138	211	211
87	outage of 27010 11BRWN P to 27419 11W CLIF	2	138	211	211
90	outage of 27011 11BRWNCT to 27012 11BRWNT1	1	138	211	211
92	outage of 27011 11BRWNCT to 27013 11BRWNT2	1	138	211	211
95	outage of 27036 11CLARK to 27037 11CLARK	1	138-69	211	211
97	outage of 27036 11CLARK to 27116 11FAWKES	1	138	211	211
100	outage of 27036 11CLARK to 27382 11SPENC	1	138	211	211
102	outage of 27040 11CLAYSM to 27172 11HIGBY	1	138	211	211
105	outage of 27067 11DANVIL to 27068 11DANVIL	1	138-69	211	211
107	outage of 27067 11DANVIL to 27247 11MERCRCR	1	138	211	211
110	outage of 27111 11FARM T to 27112 11FARMER	1	138	211	211

No.	Contingency	Ckt	Base kV	Area	Zone
112	outage of 27111 11FARM T to 27369 11SHARKE	1	138	211	211
115	outage of 27111 11FARM T to 27382 11SPENC	1	138	211	211
117	outage of 27112 11FARMER to 27113 11FARMER	1	138-69	211	211
120	outage of 27115 11FAWK T to 27116 11FAWKES	1	138	211	211
122	outage of 27115 11FAWK T to 27231 11LR TAP	1	138	211	211
125	outage of 27116 11FAWKES to 27117 11FAWKES	1	138-69	211	211
127	outage of 27122 11FFRT E to 27412 11TYRONE	1	138	211	211
130	outage of 27141 11GODDRD to 27347 11RODBRN	1	138	211	211
132	outage of 27172 11HIGBY to 27170 11HIGB A	1	138-69	211	211
135	outage of 27172 11HIGBY to 27171 11HIGB B	1	138-69	211	211
137	outage of 27172 11HIGBY to 27207 11LANSDW	1	138	211	211
140	outage of 27172 11HIGBY to 27337 11REYNOL	1	138	211	211
142	outage of 27186 11IBM N to 27229 11LOUDON	1	138	211	211
145	outage of 27211 11LEBN W to 27212 11LEBNON	1	138	211	211
147	outage of 27212 11LEBNON to 27213 11LEBNON	1	138-69	211	211
150	outage of 27212 11LEBNON to 27213 11LEBNON	2	138-69	211	211
152	outage of 27212 11LEBNON to 27243 11MARION	1	138	211	211
155	outage of 27212 11LEBNON to 27247 11MERC R	1	138	211	211
157	outage of 27220 11LK REB to 27221 11LK REB	1	138-69	211	211
160	outage of 27220 11LK REB to 27231 11LR TAP	1	138	211	211
162	outage of 27229 11LOUDON to 27227 11LOUD A	1	138-69	211	211
165	outage of 27229 11LOUDON to 27228 11LOUD B	1	138-69	211	211
167	outage of 27312 11PISGAH to 27313 11PISGAH	1	138-69	211	211
170	outage of 27312 11PISGAH to 27428 11W LEXN	1	138	211	211
172	outage of 27347 11RODBRN to 27348 11RODBRN	1	138-69	211	211
175	outage of 27347 11RODBRN to 27369 11SHARKE	1	138	211	211
177	outage of 27382 11SPENC to 27383 11SPENC	1	138-69	211	211
180	outage of 27382 11SPENC to 27383 11SPENC	2	138-69	211	211
182	outage of 27412 11TYRONE to 27413 11TYRONE	1	138-69	211	211
185	outage of 27419 11W CLIF to 27420 11W CLIF	1	138-69	211	211
187	outage of 27419 11W CLIF to 27420 11W CLIF	2	138-69	211	211
190	outage of 27419 11W CLIF to 27436 11WC-DD	1	138-69	211	211
192	outage of 26959 11AOSMTH to 27129 11FOGG P	EQ	69	211	211
195	outage of 26959 11AOSMTH to 27383 11SPENC	1	69	211	211
197	outage of 26972 11ATOKA to 27068 11DANVIL	1	69	211	211
200	outage of 26986 11BEREA to 27221 11LK REB	1	69	211	211
202	outage of 26986 11BEREA to 27339 11RICH S	EQ	69	211	211
205	outage of 26999 11BOONSB to 27451 11WINC S	EQ	69	211	211
207	outage of 27016 11BUENA to 27076 11DIXDAM	1	69	211	211
210	outage of 27026 11CARON to 27225 11LONDON	1	69	211	211
212	outage of 27030 11CAVE R to 27113 11FARMER	1	69	211	211
215	outage of 27030 11CAVE R to 27358 11SALT L	1	69	211	211
217	outage of 27037 11CLARK to 27129 11FOGG P	1	69	211	211
220	outage of 27037 11CLARK to 27397 11SYLVAN	1	69	211	211
222	outage of 27046 11CMPGEK to 27225 11LONDON	1	69	211	211

No.	Contingency	Ckt	Base kV	Area	Zone
225	outage of 27050 11CORBIN to 27396 11SWEETH	1	69	211	211
227	outage of 27065 11DANV 1 to 27203 11KYSTHO	EQ	69	211	211
230	outage of 27068 11DANVIL to 27168 11HARRDS	1	69	211	211
232	outage of 27076 11DIXDAM to 27436 11WC-DD	1	69	211	211
235	outage of 27076 11DIXDAM to 27450 11WILMOR	1	69	211	211
237	outage of 27082 11E BERN to 27306 11PINEHL	1	69	211	211
240	outage of 27082 11E BERN to 27314 11PITTSB	1	69	211	211
242	outage of 27113 11FARMER to 27264 11MORH W	1	69	211	211
245	outage of 27117 11FAWKES to 27272 11N.MADS	1	69	211	211
247	outage of 27117 11FAWKES to 27339 11RICH S	1	69	211	211
250	outage of 27117 11FAWKES to 27340 11RICHMO	1	69	211	211
252	outage of 27167 11HARR T to 27168 11HARRDS	1	69	211	211
255	outage of 27167 11HARR T to 27420 11W CLIF	1	69	211	211
257	outage of 27170 11HIGB A to 27391 11STONWL	1	69	211	211
260	outage of 27170 11HIGB A to 27449 11WIL D2	1	69	211	211
262	outage of 27178 11HOPEWL to 27396 11SWEETH	1	69	211	211
265	outage of 27203 11KYSTHO to 27420 11W CLIF	1	69	211	211
267	outage of 27210 11LEBN I to 27213 11LEBNON	1	69	211	211
270	outage of 27213 11LEBNON to 27385 11SPRNGF	1	69	211	211
272	outage of 27221 11LK REB to 27340 11RICHMO	1	69	211	211
275	outage of 27221 11LK REB to 27429 11WACO	1	69	211	211
277	outage of 27225 11LONDON to 27314 11PITTSB	1	69	211	211
280	outage of 27271 11N.CORB to 27396 11SWEETH	1	69	211	211
282	outage of 27272 11N.MADS to 27449 11WIL D2	EQ	69	211	211
285	outage of 27330 11PRKRSE to 27397 11SYLVAN	1	69	211	211
287	outage of 27330 11PRKRSE to 27452 11WINCHS	1	69	211	211
290	outage of 27338 11RICE T to 27429 11WACO	1	69	211	211
292	outage of 27358 11SALT L to 27383 11SPENC	1	69	211	211
295	outage of 27359 11SALVIS to 27368 11SHAKRT	1	69	211	211
297	outage of 27368 11SHAKRT to 27420 11W CLIF	1	69	211	211
300	outage of 27420 11W CLIF to 27436 11WC-DD	1	69	211	211
302	outage of 27074 11DELVIN to 29213 20BTYVL	1	161	211-220	211-220
305	outage of 27074 11DELVIN to 29346 20GRNHLJ	1	161	211-220	211-220
307	outage of 27095 11ELIHU to 29271 20COOPER	1	161	211-220	211-220
310	outage of 27243 11MARION to 29437 20MARION	1	138-161	211-220	211-220
312	outage of 26990 11BKR LN to 29203 20BKR LN	1	138-69	211-220	211-220
315	outage of 27115 11FAWK T to 29312 20FAWKES	1	138	211-220	211-220
317	outage of 27116 11FAWKES to 29312 20FAWKES	1	138	211-220	211-220
320	outage of 27116 11FAWKES to 29312 20FAWKES	2	138	211-220	211-220
322	outage of 27229 11LOUDON to 29202 20AVON	1	138	211-220	211-220
325	outage of 27231 11LR TAP to 29616 20UN CTY	1	138	211-220	211-220
327	outage of 26982 11BEATTY to 29215 20BEATTY	1	69	211-220	211-220
330	outage of 27082 11E BERN to 29300 20EBRNST	1	69	211-220	211-220
332	outage of 27110 11FARLEY to 29536 20SCORBN	1	69	211-220	211-220
335	outage of 27117 11FAWKES to 29280 20CROOKJ	1	69	211-220	211-220

No.	Contingency	Ckt	Base kV	Area	Zone
337	outage of 27178 11HOPEWL to 29410 20LAURLC	1	69	211-220	211-220
340	outage of 29201 20AVON to 29202 20AVON	1	345-138	220	220
342	outage of 29201 20AVON to 29573 20SPURLK	1	345	220	220
345	outage of 29201 20AVON to 29651 20KPE345	1	345	220	220
350	outage of 29573 20SPURLK to 29575 20SPURLK	2	345-138	220	220
352	outage of 29575 20SPURLK to 29573 20SPURLK	1	138-345	220	220
355	outage of 29651 20KPE345 to 29652 20KPE138	1	345-138	220	220
357	outage of 29213 20BTYVL to 29215 20BEATTY	1	161-69	220	220
360	outage of 29213 20BTYVL to 29507 20POWELL	1	161	220	220
362	outage of 29271 20COOPER to 29272 20COOPER	1	161-69	220	220
370	outage of 29271 20COOPER to 29292 20DENNY	1	161	220	220
372	outage of 29271 20COOPER to 29411 20LAURLD	1	161	220	220
375	outage of 29271 20COOPER to 29517 20PULASJ	1	161	220	220
377	outage of 29271 20COOPER to 29540 20S OAKH	1	161	220	220
380	outage of 29292 20DENNY to 29293 20DENNY	1	161-69	220	220
382	outage of 29308 20FALLRK to 29310 20FALLRK	1	161-69	220	220
385	outage of 29308 20FALLRK to 29613 20TYNER	1	161	220	220
387	outage of 29346 20GRNHLJ to 29613 20TYNER	1	161	220	220
390	outage of 29408 20LAURLC to 29410 20LAURLC	1	161-69	220	220
392	outage of 29408 20LAURLC to 29411 20LAURLD	1	161	220	220
395	outage of 29408 20LAURLC to 29503 20PITTSB	1	161	220	220
400	outage of 29418 20LIBERT to 29517 20PULASJ	1	161	220	220
402	outage of 29503 20PITTSB to 29613 20TYNER	1	161	220	220
405	outage of 29507 20POWELL to 29508 20POWELL	1	161-138	220	220
407	outage of 29515 20PULASK to 29517 20PULASJ	1	161	220	220
410	outage of 29528 20RUSSEL to 29540 20S OAKH	1	161	220	220
412	outage of 29613 20TYNER to 29615 20TYNER	1	161-69	220	220
415	outage of 29202 20AVON to 29230 20BOONST	1	138	220	220
417	outage of 29202 20AVON to 29313 20FAYETT	1	138	220	220
420	outage of 29202 20AVON to 29490 20PARISJ	1	138	220	220
422	outage of 29230 20BOONST to 29233 20BOONSB	1	138	220	220
425	outage of 29230 20BOONST to 29282 20DALE	1	138	220	220
430	outage of 29282 20DALE to 29397 20JKSMIT	1	138	220	220
432	outage of 29282 20DALE to 29603 20TFJ	1	138	220	220
435	outage of 29283 20DALE to 29282 20DALE	1	69-138	220	220
437	outage of 29312 20FAWKES to 29397 20JKSMIT	1	138	220	220
440	outage of 29312 20FAWKES to 29603 20TFJ	1	138	220	220
* 442	outage of 29312 20FAWKES to 29623 20WBEREA	1	138	220	220
445	outage of 29313 20FAYETT to 29315 20FAYETT	1	138-69	220	220
447	outage of 29375 20JACKVJ to 29490 20PARISJ	1	138	220	220
462	outage of 29397 20JKSMIT to 29508 20POWELL	1	138	220	220
465	outage of 29397 20JKSMIT to 29616 20UN CTY	1	138	220	220
467	outage of 29397 20JKSMIT to 29652 20KPE138	1	138	220	220
470	outage of 29397 20JKSMIT to 29652 20KPE138	2	138	220	220
472	outage of 29488 20PARIS to 29490 20PARISJ	1	138	220	220

No.	Contingency	Ckt	Base kV	Area	Zone
475	outage of 29508 20POWELL to 29510 20POWELL	1	138-69	220	220
477	outage of 29623 20WBBEREA to 29625 20WBBEREA	1	138-69	220	220
480	outage of 29195 20ALCAN to 29512 20PPG J	1	69	220	220
482	outage of 29195 20ALCAN to 29625 20WBBEREA	1	69	220	220
485	outage of 29196 20ANNVLJ to 29615 20TYNER	1	69	220	220
487	outage of 29205 20BALLRD to 29237 20BOURNE	1	69	220	220
490	outage of 29212 20BTYV D to 29215 20BEATTY	1	69	220	220
492	outage of 29215 20BEATTY to 29648 20ZACHAR	1	69	220	220
495	outage of 29222 20BLEV T to 29361 20HOPE	1	69	220	220
497	outage of 29237 20BOURNE to 29470 20NEWBY2	1	69	220	220
500	outage of 29238 20BOWEN to 29355 20HIGHHRK	1	69	220	220
502	outage of 29238 20BOWEN to 29510 20POWELL	1	69	220	220
505	outage of 29243 20BRONSJ to 29272 20COOPER	1	69	220	220
507	outage of 29260 20CLAYCJ to 29347 20HARGTJ	1	69	220	220
510	outage of 29260 20CLAYCJ to 29580 20STANTN	1	69	220	220
512	outage of 29272 20COOPER to 29566 20SOMERS	1	69	220	220
515	outage of 29272 20COOPER to 29566 20SOMERS	2	69	220	220
517	outage of 29280 20CROOKJ to 29352 20HICK P	1	69	220	220
527	outage of 29283 20DALE to 29366 20HUNT1	1	69	220	220
530	outage of 29283 20DALE to 29367 20HUNT2	1	69	220	220
532	outage of 29283 20DALE to 29468 20NEWBY1	1	69	220	220
535	outage of 29283 20DALE to 29470 20NEWBY2	1	69	220	220
537	outage of 29325 20FRNCHB to 29361 20HOPE	1	69	220	220
540	outage of 29327 20GARRCO to 29406 20LNCSTR	1	69	220	220
542	outage of 29352 20HICK P to 29511 20PPG	1	69	220	220
545	outage of 29355 20HIGHHRK to 29547 20SANDLK	1	69	220	220
547	outage of 29361 20HOPE to 29377 20JEFFVL	1	69	220	220
550	outage of 29366 20HUNT1 to 29556 20SIDEV	1	69	220	220
552	outage of 29367 20HUNT2 to 29398 20JKSMIT	1	69	220	220
555	outage of 29377 20JEFFVL to 29510 20POWELL	1	69	220	220
557	outage of 29398 20JKSMIT to 29607 20TRAPP	1	69	220	220
560	outage of 29401 20KEAVY to 29403 20KEAVJ2	1	69	220	220
562	outage of 29402 20KEAVJ1 to 29410 20LAURLC	1	69	220	220
565	outage of 29402 20KEAVJ1 to 29501 20PINEGJ	1	69	220	220
567	outage of 29403 20KEAVJ2 to 29410 20LAURLC	1	69	220	220
570	outage of 29403 20KEAVJ2 to 29536 20SCORBN	1	69	220	220
572	outage of 29406 20LNCSTR to 29468 20NEWBY1	1	69	220	220
575	outage of 29446 20MCKEE to 29615 20TYNER	1	69	220	220
577	outage of 29501 20PINEGJ to 29631 20W LOND	1	69	220	220
580	outage of 29510 20POWELL to 29580 20STANTN	1	69	220	220
582	outage of 29511 20PPG to 29512 20PPG J	1	69	220	220
585	outage of 29537 20S FORK to 29615 20TYNER	1	69	220	220
587	outage of 29605 20THLNKJ to 29626 20WBER J	1	69	220	220
590	outage of 29625 20WBBEREA to 29626 20WBER J	1	69	220	220
592	outage of 29503 20PITTSB to 27314 11PITTSB	1	161-69	220-211	220-211

No.	Contingency	Ckt	Base kV	Area	Zone
595	outage of 29233 20BOONSB to 26999 11BOONSB	1	138-69	220-211	220-211
597	outage of 29397 20JKSMIT to 27382 11SPENC	1	138	220-211	220-211
602	outage of 26648 09STUART to 29573 20SPURLK	1	345	209-220	209-220
605	outage of 26367 08ZIMER to 29573 20SPURLK	1	345	208-220	280-220
607	outage of 27197 11KENTON to 29575 20SPURLK	1	138	211-220	211-220
610	outage of 29372 20INLAND to 29575 20SPURLK	1	138	220	220
612	outage of 29440 20MAYSJV to 29575 20SPURLK	1	138	220	220
615	outage of 29521 20RENAKR to 29575 20SPURLK	1	138	220	220
617	outage of 29575 20SPURLK to 29585 20S PARK	1	138	220	220