XCEL RFP
INITIAL SCREENING REVIEW

Prepared for

Midwest Independent System Operator

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Executive Summary

The Midwest Independent System Operator (MISO) requested that Commonwealth Associates, Inc. (CAI) perform a Special Study for the initial screening of entries into the Xcel Request for Proposals to replace approximately 1100 MW of generation currently supplied from the Prairie Island Nuclear Generating Plant (PI). This study was performed as a screening of the six proposals submitted to Xcel.

This study shows that bids 2, 5, and 6 have minor impacts on the system and will most likely result in few to no upgrades of the system. This result is intuitive since these bids are relatively close to the existing Prairie Island site in particular and also lie in the generation-rich Twin Cities area in general. The transmission system has, therefore, been designed and modified over the years to handle moving power around and out of this area. Bid 1 has the same locational benefit as bids 2, 5, and 6 but suffers from one common mode contingency problem – the simultaneous loss of the Invers Hills to Redrock and Invers Hills to Blue Lake 345 kV lines. It is likely that this deficiency can be resolved with a minimum of upgrade ranging from a special protection scheme to the separation of the 345 kV lines to avoid any credible possibility of common mode outage.

Bid 3 appears to have the greatest number of potential problems, primarily in the transmission system in the relative vicinity of the bid 3 site.

Bid 4 is an interesting case in that it creates some overload problems, but also alleviates other existing problems since it tends to reduce flows that otherwise would come from the north and west. Depending on how bid 4 is dealt with, it could conceivably be regarded as having a net transmission benefit since it can relieve more existing overloads than it causes.

TABLE OF CONTENTS

APPENDICES

1.0 Introduction

CAI was asked to determine the probable impacts of six proposed generating units (or combinations of smaller units) on transmission facilities primarily in the MAPP Reliability Region. Table 1 lists the main features of the six projects.

Table 1. List of Bidders into Xcel RFP

Bidder	Location	Interconnect Voltage (kV)	Bus Number	Summer Capacity (MW)
1	Rosemount, MN	345	60217	1,100
2	Redwing, MN	345	60105	998
3	Lee County, IL	345	35975	1,100
4	Cass County, MO	161	59225	585
5	Mankato, MN	345	60108	565
6	Rosemount, MN	345	69999	550

MISO requested that bids 4, 5, and 6 be paired up for the study so that their combined outputs would be approximately 1,100 MW. Table 2 lists the units/pairs of units that were included in the study.

Table 2. Bids and Bid Groups Studied

Bid(s)	Combined Output (MW)
Bid 1	1,100
Bid 2	998
Bid 3	1,100
Bids 4 and 5	1,150
Bids 4 and 6	1,135
Bids 5 and 6	1,115

The study used a MAPP 2004 summer peak loading power flow case as its base. From the base, six further cases were developed, one corresponding to each of the bids or bid pairs of table 2. The generation modeled in the six cases was balanced by turning off PI. The study cases were then used to determine:

- The Power Transfer Distribution Factor (PTDF) for each of the bids or bid pairs on MAPP Constrained Interfaces;
- The normal incremental transfer capability (NITC) from each of the bids or bid pairs to the PI sink;
- A list of constraints to the NITC from each bus;
- A list of constraints from each of the bids or bid pairs to the PI sink;
- A preliminary determination of electric system components needing to be upgraded to accommodate the desired MW output level for the project;
- A planning cost estimate of the transmission facility additions and modifications necessary, using typical dollar amounts for line and station upgrades, and for impacts on constrained interfaces, if any, the dollar value from the last MAPP study. (Costs will not include local, state, and federal permitting process costs.)

2.0 Model Development

Six transfer scenario cases were developed using the MAPP power flow model provided by MISO for the study, one case for each of the transfers described in table 2. In each case, the existing 1104 MW of PI generation was turned off, and the generation was replaced by one of the RFP bids. With the exception of bid 2, discussed below, any mismatch between the level of generation being turned off and the bid generation was automatically compensated by the NSP slack bus, SHERCO G32, so that the area interchange schedule would be maintained and consistent for all of the transfer scenarios.

For the bid 2 scenario, the 1104 MW of existing PI generation was replaced with 998 MW of bid 2 generation. Therefore, the output of SHERCO G32 would have had to be increased approximately 100 MW to maintain the scheduled area interchange. Since the slack bus generator was already within 50 MW of its maximum output, however, there was not enough capacity to compensate the bid 2 generation. Instead, the bid 2 case was created by adding the bid 2 generation at the PI 345 kV bus to the solved base case, turning off the old PI generation, and turning off the area interchange control. The result was that the generation disparity between bid 2 and the existing PI generation was picked up by the reference bus.

The transfer scenarios consisting of generation from bids 4, 5, and 6 also cause changes in the NSP slack bus output, but for these cases, the proposed generation level is higher than the existing generation, so the slack bus output is reduced. The reduction in generation was small (ranging from 10 to 40 MW), and results were carefully screened to filter any results that were obviously due to changes in slack bus generation.

3.0 Study Scope

A contingency list (Appendix B) was generated from the list provided by the MISO in pi_rfp.txt. The list also includes all contingencies in the monitored files 'pi_rfp.mon' and 'MAPP_constr_ifaces.mon'. Appendix B also includes the files provided by the MISO. In translating the list from PTI format to a format usable by our TRANSMISSION 2000® software, most of the commentary in the MISO file was lost. However, the contingency identification numbers in our contingency list correspond to those in the MISO files so that cross-referencing between files can be done easily.

The study monitored all facilities with a base voltage above 100 kV in: MAPP and the control areas containing bids 3 and 4; any control area that contained at least one end of a MAPP constrained interface or; any control area that contained at least one end of a facility included in the pi_rfp.mon (monitored file) or pi_rfp.txt (contingency file).

4.0 Constrained Interface Results

Appendix A shows the PTDF's of each of the source/sink pairs on the MAPP Constrained Interfaces. PTDF's that represent an *increase* in flow of three or more percent are in bold red text. If the effect of any source/sink pair was to cause flow in a

direction opposite the base case flow, the PTDF is negative. Negative PTDF's that have a magnitude of three or more percent are in bold blue text, but with the caveat that the PTDF on an interface is ambiguous[1] for flow reversal on some but not all of the elements.[2]

The following is a brief discussion of each of the transfer scenarios followed by several observations that apply to all transfers:

Bid 1
There is only one PTDF greater than three percent for this scenario – the Byron to PL Valley 345 kV line, which is a component of the Twin Cities Export Interface (TCEX). This impact is misleading, however, because the base flow on this line is negative with respect to the direction implied by the interface definition. The base flow is from the south up to PL Valley, and since bid 1 generation serves to slightly increase this northward flow, the PTDF is positive. The net effect of the transfer however, which is to reduce loading from the north to the south, should not be overlooked.

Bid 2
There is no significant effect on any of the MAPP Constrained Interfaces since this bid essentially represents a small decrease in generation at an existing source point, PI.

Bid 3
This transfer causes the most, and most significant, impacts to MAPP Constrained Interfaces. The largest impacts are on the Quad Cities West Interface, located near the bid 3 generation. Other increased loadings are the Montezuma to Bondurant and Rock Creek interfaces, although none of the interfaces exceeds its stated rating. As with bid 1, effects are also seen on TCEX (particularly the lines from Byron and Wilmarth), but once again, the effects are the result of the base flow pattern being counter to the interface definition-implied flow. Despite the positive distribution factors, the effect is actually to decrease loading from the Twin Cities area to points south and east.

Bids 4, 5 and 6
All combinations of these bids tend to show similar (beneficial) impacts on TCEX components as discussed for bids 1 and 3, above.

General
It must be reiterated that many of the impacts of Appendix A are due to reversal of flow and are not necessarily negative impacts despite the fact they are greater than three percent. For example, it can be seen in the table that the flows on the RFPBID6 to PR ISLD3 345 kV line reverses for the scenarios that include generation outside of MAPP

[1] See Cooper_S for an example.
[2] While interfaces accurately predict behavior for a wide range of cases for a particular set of on-line generators, introducing significant new generation may introduce new interfaces and eliminate the significance of old ones. For an interface consisting of multiple facilities, a change that causes each of the interface elements to experience power flow changes in opposite directions suggests that the interface may no longer be a relevant predictor of system behavior.

(bids 3 and 4). Interface definitions for the system operating as it presently is should be revisited and, possibly, redefined/re-evaluated for a system that no longer includes PI. One obvious example of the effect of reversal of flow is that it is no longer meaningful to simply sum flows on the elements of an interface to see if the interface is overloaded.

Additionally, the characteristics of voltage stability in the region will be affected by a permanent and large redistribution of generation resources.

None of the transfers that have a distribution factor greater than three percent was normally overloaded or showed any overload problems in contingency analyses, as discussed below.

5.0 Power Flow Results

5.1 Normal System Constraints

We found that there are existing normal overloads in the study's monitored set. Existing overloads make the Normal Incremental Transfer Capability (NITC) of all of the source/sink pairs, strictly speaking, zero since any transfer starts in an already-stressed system. We compensated for the existing normal overloads by taking the approach that the base case system represents the 'zero' case, and that system operators and planners are aware of the existing overload conditions. We then concentrated on what new lines might be overloaded by simply filtering out all pre-existing overloaded facilities. Using this methodology we found that several of the proposed source/sink pairs will cause new normal overloads in the system. Appendix C contains reports listing all existing overloads in the monitored set as well as normal overloads associated with each of the transfers. Table 3 summarizes the NITC of each source/sink pair, as well as the elements limiting each NITC.

Table 3. Normal Constraint Summary

Bid	Max Output (MW)	Constraining Facility	Rating (MVA)	NITC (MW)	Max Overload at Full Transfer
Bid 1	1,100	None	N/A	1,100	N/A
Bid 2	998	None	N/A	998	N/A
Bid 3	1,100	LORE 5 to 8TH ST.5 161 kV	84	940	107%
Bids 4 and 5	1,150	PRALEE 5 to BLSPS 5 161 kV	223	910	109%
Bids 4 and 6	1,135	PRALEE 5 to BLSPS 5 161 kV	223	1,010	104%
Bids 5 and 6	1,115	None	N/A	1,115	N/A

According to the owner, the LORE 5 - 8TH ST.5 161 kV line is good for 167 MVA and the conductor is good for 202 MVA.[3] The normal loading caused by bid 3 is only 91 MVA. Therefore, there are no normal system constraints for bid 3. It should be noted that the constraint to the NITC for source/sink pairs that include bid 4 is due primarily to the

[3] See discussion of in Section 6 - Economic Results.

bid 4 generation. The PRALEE 5 to BLSPS 5 161 kV line is near the bid 4 site in Missouri.

5.2 Constraint Results Under Contingency Conditions

CAI's Contingency Processor (CP) was used to find all overloaded facilities in the base case as well as all overloads associated with each of the transfer pairs (overloads are greater than 100 percent of rating 2). Comparison reports for each of the transfer scenarios with respect to the base case can be found in Appendix D. The comparison reports filter any overloads that exist in the base and in a bid scenario. Impacts associated with each transfer pair are listed in group 1. Impacts are defined as facilities that were not overloaded in the base but became so in the new generation scenario. Group 2 in the comparison report lists overloads that got worse from the base to the new transfer, and group 3 lists the overloads that were lessened by the new generation with respect to the base. The entries with an 'E' preceding them are existing overloads that changed by less than three percent. Finally, the comparison reports list any benefits created by the new generation. Benefits are defined as facilities whose base case overloads were eliminated by the proposed new generation. The spreadsheet of Appendix D titled "Summary of Potential Impacts" summarizes all potentially affected facilities in the study and indicates which transfers are involved.

Detailed power flow reports for each of the transfer scenarios can also be found in Appendix D. There are four reports for each scenario, including: a case summary giving basic information such as the power flow case used and the solve parameters; a report listing normal system overloads; an overload summary report listing all facilities that experienced overloads and the maximum overload level; and a detailed overload report listing every contingency that caused each facility to overload, ranked by overload level from worst to best.

Below is a brief discussion of the comparison results found for each transfer scenario:

Bid 1 v Base Case
Bid 1 impacts are caused by the injection of 1100 MW into the 115 kV system for the loss of the Inver Hills to Redrock and Inver Hills to Blue Lake 345 kV lines, which leaves only the Inver Hills 345/115 kV transformer and the 115 kV system connected to it to evacuate the output of the bid 1 generation.

Bid 2 v Base Case
All bid 2 impacts appear to be due to a change in output from the NSP (area 600) slack bus, Sherco.

Bid 3 v Base Case
It is assumed that all of these overloads are real since the 1100 MW of bid 3 generation is essentially identical to the 1104 MW reduction at PI. This is not to say that placing 1100 MW of generation at the Lee County bus would not practically result in a change in

generation dispatch in the real system, but such speculations are beyond the scope of this study.

Bids 4 and 5 v Base Case
The overloads in the scenarios with bid 4 generation appear to be due primarily to bid 4. There may be an alternative interconnection option that utilizes one or more 161 kV lines in the relative vicinity of the proposed site that would alleviate these overloads, but we did not commit time to finding such an option.

Bid 4 and 6 v Base Case
Same as above.

Bid 5 and 6 v Base Case
For this scenario, the slack bus output had to be reduced by approximately 10 MW to meet the scheduled interchange. Since all overloads reported in the bid 5 and 6 comparison that might feel some of this effect represented fairly large changes (greater than 3 percent), it is assumed that the minor change in slack bus generation was not enough to account for them and the overloads are real effects of the transfer. In any case, according to Xcel, the one new overload of WINBAGO5 to RUTLAND5 161 kV will be corrected by a planned upgrade.[4]

6.0 Economic Results

Cost estimates for each of the bids were determined primarily according to the introduction of new overloads caused by any bid. That is, only facilities that overloaded for a particular transfer that were not overloaded in the base case are included in the estimate. Pre-existing overloads that were eliminated by a transfer are also reported here since they have the potential to obviate planned upgrades, thereby effectively having a positive economic impact.

Some of the facilities identified as being overloaded by a transfer will be fixed by planned upgrades, the details of which are confidential at this time. Xcel has provided comments about which impacted lines are affected without any specific information about the projects that will provide mitigation. The comments are located in Table 1 of Appendix E. Any facility that Xcel has indicated can or will be upgraded is not included in the cost estimates developed for the six transfer scenarios.

A summary of the results is displayed in Table 4. Appendix E also contains a detailed breakdown of the impacts of each bid by facility, including such information as facility type, base voltage, length, and unit cost. The results of Table 4 are divided into two categories. The first category displays the total estimated cost of facilities that would be negatively impacted by a transfer, i.e., the cost to upgrade the system; the second category lists the total estimated avoidable costs, i.e., the savings from not having to upgrade the system. The analysis also showed that some pre-existing overloads were either exacerbated or improved by some transfers. These facilities are included for

[4] See discussion in Section 6 - Economic Results.

informational purposes as the 'Increased Existing Overloads' and 'Decreased Existing Overloads' tables of Appendix D.

One note of caution is that we had no accurate way to determine whether a facility identified as being overloaded would require rebuilding or just a relatively minor reconductoring or rerating. Such a determination requires detailed plan and profile information, and we did not have access to this type of information. We therefore assumed that any line overload could be mitigated by a replacement of the line's conductors. It was also assumed that overloaded transformers would have to be replaced.

These cost estimates were based on the contingency analysis, but include upgrades to increase NITC, where necessary, since all NITC-constrained facilities showed up in the contingency analysis.

Table 4. Transmission Cost Estimates

Bid	Upgrade Cost ($ x 1000)	Avoided Cost ($ x 1000)	Net Impact ($ x 1000)
1	26,804	0	**26,804**[5]
2	0	0	**0**
3	47,686	6,128	**41,558**
4 and 5	9,094	7,320	**1,774**
4 and 6	3,309	6,128	**(2,819)**
5 and 6	0	0	**0**

7.0 Conclusions

This study shows that bids 2, 5, and 6 have minor impacts on the system and will most likely result in few to no upgrades of the system. This result is intuitive since these bids are relatively close to the existing Prairie Island site in particular and also lie in the generation rich Twin Cities area in general. The transmission system has, therefore, been designed and modified over the years to handle moving power around and out of this area.

Bid 1 has the same locational benefit as bids 2, 5, and 6 but potentially causes 115 kV numerous overloads for the simultaneous loss of the Invers Hills to Redrock and Invers Hills to Blue Lake 345 kV lines. Due to the simplicity of the overload mechanism (a single known event), it is likely that this problem can be mitigated with a minimal of upgrade ranging from a special protection scheme to the separation of the 345 kV lines to avoid any credible possibility of common mode outage. Other alternatives short of upgrading the 115 kV system also exist.

Bid 3 appears to have the greatest number of potential problems, primarily in the transmission system in the relative vicinity of the bid 3 site.

[5] Assumes that the all affected 115 kV lines are upgraded. It is unlikely that this is the most cost-effective mitigation plan for this scenario.

Bid 4 is an interesting case in that it creates some overload problems, but also alleviates other existing problems since it tends to reduce flows that otherwise would come from the north and west. Depending on how bid 4 is dealt with, it could be conceivably be regarded as having a net transmission benefit since it can relieve more existing overloads than it causes.

Finally, this study must be concluded with a caveat: while the study is accurate within the bounds of the model provided, the study scope and budget allowed for only a general picture of the proposed bids. For example, the study looked only at the forecast 2004 peak summer condition while the proposed bids would not deliver power to PI until 2007. As such, any transmission or generation projects that are built before 2007 will affect how each of the proposed projects would interact with the grid. Additionally, all bids were essentially traded one-for-one with the existing PI generation without regard for the possible necessity of further generation dispatch, voltage profile changes, or interchange schedule adjustments that a redistribution of generation assets might entail (economic dispatch). We did not review the Xcel RFP or the responding bids. Consequently, we did not evaluate any commercial solutions that may be inherent in a bid. For example, as far as we know, it is possible that a bidder guarantees firm transmission and internalizes the cost of transmission improvements in the bid itself. Given the above-mentioned items, great care should be given to endorsing or rejecting one bid over another based solely on this study.

APPENDIX A

PTDF DATA

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PTDF DATA

MAPP Interface	Interface Description	Interface Rating (MW)	Interface Elements			Flow on Path (MW)							PTDF (%)					
			From	To	Ckt	Base MW	Bid 1 MW	Bid 2 MW	Bid 3 MW	Bids 4&5 MW	Bids 4&6 MW	Bids 5&6 MW	Bid 1 (1100 MW)	Bid 2 (998 MW)	Bid 3 (1100 MW)	Bids 4&5 (1150 MW)	Bids 4&6 (1135 MW)	Bids 5&6 (1115 MW)
Rock Creek 345/161 TR for Quad-Sub 91 345		448	ROCK CK3	ROCK CK5	1	240.7	241.5	240.8	298.9	246.7	246.2	240.5	0.08	0.01	5.29	0.52	0.49	(0.01)
Cascade_Creek_Crosstown 161 (FLO) King_Eau Claire		1153	CROSSTWN	CASCADE	1	4.3	10.1	5.3	48.0	27.8	20.8	6.9	0.53	0.10	3.98	2.04	1.45	0.23
EAU_CLAIRE_ARPIN 345 KV		760	EAU CL 3	ARP 345	1	272.2	281.4	273.3	19.4	158.6	169.9	254.1	0.83	0.11	(22.99)	(9.88)	(9.02)	(1.62)
ADAMS XFMR / ADAMS_HAZLTON		300	ADAMS 3	ADAMS 5	1	104.0	91.1	102.0	25.1	46.4	69.4	90.1	(1.17)	(0.20)	(7.17)	(5.01)	(3.05)	(1.24)
NDEX	North Dakota Export	1788	LELANDO3	GROTON 3	1	247.7	248.0	247.9	244.1	243.1	245.2	245.4	0.03	0.02	(0.33)	(0.40)	(0.22)	(0.21)
			LELANDO3	FTTHOMP3	1	118.7	120.4	119.3	93.7	95.1	98.3	114.2	0.15	0.06	(2.27)	(2.05)	(1.80)	(0.40)
			BIGSTON4	BLAIR 4	1	168.0	168.9	168.4	155.9	155.0	158.5	163.7	0.08	0.05	(1.10)	(1.13)	(0.84)	(0.38)
			ANTELOP3	HURON 3	1	185.4	186.1	185.7	175.0	174.9	177.2	182.5	0.07	0.03	(0.94)	(0.91)	(0.72)	(0.26)
			DRAYTON4	LETELER4	1	(262.1)	(263.4)	(262.2)	(243.2)	(241.7)	(246.7)	(256.1)	0.12	0.01	(1.72)	(1.78)	(1.36)	(0.54)
			AUDUBON4	HUBBARD4	1	52.4	51.1	51.6	69.6	70.0	66.1	57.2	(0.12)	(0.08)	1.56	1.53	1.21	0.43
			INMAN 4	WINGRIV4	1	37.5	35.8	36.4	59.5	60.4	55.1	44.0	(0.15)	(0.10)	2.00	2.00	1.56	0.59
			SULLYBT4	OAHE 4	1	(62.1)	(61.0)	(61.7)	(79.0)	(78.4)	(75.9)	(65.4)	(0.10)	(0.04)	1.54	1.41	1.21	0.30
			MORRIS 4	GRANITF4	1	14.2	14.2	14.5	13.2	10.3	13.1	11.3	0.01	0.04	(0.09)	(0.34)	(0.09)	(0.26)
			BISON 4	MAURINE4	1	14.1	14.8	14.4	3.6	4.1	5.2	12.6	0.06	0.02	(0.96)	(0.87)	(0.79)	(0.14)
			EDGELEY7	ORDWAY 7	1	(4.0)	(3.6)	(3.9)	(8.9)	(9.0)	(7.8)	(5.5)	(0.03)	(0.02)	0.45	0.43	0.33	0.13
			KERKHO 7	KERKHOT7	1	20.6	20.6	20.7	21.3	20.5	21.1	20.0	(0.00)	0.01	0.07	(0.01)	0.04	(0.05)
			LAPORTE7	BADOURA7	1	(21.2)	(21.5)	(21.4)	(16.6)	(16.6)	(17.5)	(20.0)	0.03	0.02	(0.42)	(0.40)	(0.32)	(0.11)
			CANBY 7	GRANITF7	1	15.2	15.1	15.2	17.2	16.5	16.7	15.1	(0.01)	0.00	0.18	0.11	0.13	(0.01)
			ELLENDL7	ABDNJCT7	1	8.7	9.0	8.8	3.4	3.5	4.6	7.3	0.04	0.02	(0.48)	(0.45)	(0.36)	(0.12)
			FORMAN 7	SUMMIT-7	1	(4.7)	(4.3)	(4.5)	(9.2)	(9.3)	(8.2)	(6.0)	(0.03)	(0.02)	0.42	0.40	0.31	0.12
			ALEXAND7	DGLASCO7	1	12.4	12.1	12.2	17.1	17.0	16.1	13.7	(0.03)	(0.03)	0.43	0.40	0.32	0.11
					Total	540.7	542.3	541.5	516.6	515.5	521.0	534.2	0.14	0.08	(2.20)	(2.19)	(1.74)	(0.59)
MHEX_S	Manitoba Hydro Export - South	1843	DORSEY 2	ROSEAUN2	1	942.9	940.5	942.7	977.9	980.1	971.3	953.6	(0.22)	(0.02)	3.18	3.23	2.50	0.96
			LETELER4	DRAYTON4	1	262.1	263.4	262.2	243.2	241.7	246.7	256.1	0.12	0.01	(1.72)	(1.78)	(1.36)	(0.54)
			RICHER 4	ROSEAU 4	1	103.1	102.9	103.0	105.9	106.1	105.4	103.9	(0.02)	(0.01)	0.25	0.26	0.20	0.07
					Total	1308.1	1306.8	1308.0	1327.0	1327.8	1323.4	1313.6	(0.12)	(0.02)	1.71	1.71	1.35	0.49
MHEX_N	Manitoba Hydro Export - North	50	ROSEAUN2	DORSEY 2	1	(942.9)	(940.5)	(942.7)	(977.9)	(980.1)	(971.3)	(953.6)	(0.22)	(0.02)	3.18	3.23	2.50	0.96
			DRAYTON4	LETELER4	1	(262.1)	(263.4)	(262.2)	(243.2)	(241.7)	(246.7)	(256.1)	0.12	0.01	(1.72)	(1.78)	(1.36)	(0.54)
			ROSEAU 4	RICHER 4	1	(103.1)	(102.9)	(103.0)	(105.9)	(106.1)	(105.4)	(103.9)	(0.02)	(0.01)	0.25	0.26	0.20	0.07
					Total	(1308.1)	(1306.8)	(1308.0)	(1327.0)	(1327.8)	(1323.4)	(1313.6)	(0.12)	(0.02)	1.71	1.71	1.35	0.49
Minnesota-Wisconsin Stability Interface		1280	EAU CL 3	ARP 345	1	272.2	281.4	273.3	19.4	158.6	169.8	254.1	0.83	0.11	(22.98)	(9.88)	(9.02)	(1.63)
			PR ISLD3	RFPBID6	1	187.9	112.1	177.8	(218.3)	(111.5)	(534.5)	(435.2)	(6.89)	(1.01)	(36.93)	(26.03)	(63.64)	(55.88)
					Total	460.1	393.5	451.1	(198.9)	47.0	(364.6)	(181.1)	(6.05)	(0.90)	(59.91)	(35.92)	(72.66)	(57.51)
GGS	Gerald Gentleman Station Stability Interface	1625	GENTLMN3	SWEET W3	2	309.8	309.8	309.8	314.4	315.6	316.5	308.9	0.00	0.00	0.42	0.50	0.59	(0.08)
			GENTLMN3	SWEET W3	1	371.2	371.2	371.2	376.7	378.1	379.2	370.0	0.00	0.00	0.50	0.60	0.71	(0.10)
			GENTLMN3	REDWILO3	1	333.9	334.9	334.2	308.0	309.4	307.2	335.6	0.09	0.02	(2.35)	(2.13)	(2.36)	0.15
			GENTLMN4	N.PLATT4	3	155.0	155.0	155.0	156.3	156.4	156.7	154.7	(0.00)	0.00	0.12	0.13	0.15	(0.02)
			GENTLMN4	N.PLATT4	2	155.4	155.4	155.4	156.7	156.9	157.2	155.2	(0.00)	0.00	0.12	0.13	0.15	(0.02)
			GENTLMN4	N.PLATT4	1	159.9	159.9	159.9	161.2	161.4	161.7	159.6	(0.00)	0.00	0.12	0.13	0.16	(0.02)
					Total	1485.2	1486.2	1485.5	1473.3	1477.8	1478.5	1484.0	0.09	0.03	(1.08)	(0.64)	(0.60)	(0.11)
GRIS_LNC	Grand Island to Lincoln Interface	985	MOORE 3	PAULINE3	1	(117.0)	(118.5)	(117.3)	(105.1)	(108.2)	(108.1)	(116.5)	0.13	0.02	(1.09)	(0.76)	(0.78)	(0.05)
			MCCOOL 3	GR ISLD3	1	(223.4)	(225.6)	(224.0)	(190.4)	(196.5)	(195.6)	(222.8)	0.20	0.06	(3.00)	(2.34)	(2.45)	(0.06)
			COLMB.W4	GR ISLD4	1	(141.2)	(140.7)	(141.1)	(156.0)	(154.5)	(157.4)	(138.6)	(0.05)	(0.01)	1.35	1.15	1.43	(0.24)
					Total	(481.7)	(484.7)	(482.4)	(451.5)	(459.2)	(461.2)	(477.9)	0.28	0.07	(2.74)	(1.96)	(1.80)	(0.34)
COOPER_S	Cooper South Interface	965	COOPER 3	7FAIRPT	1	94.1	95.4	94.4	44.2	17.3	11.7	99.1	0.12	0.03	(4.54)	(6.68)	(7.27)	0.44
			COOPER 3	ST JOE 3	1	81.2	83.1	81.6	9.7	(38.1)	(46.2)	88.3	0.16	0.04	(6.51)	(10.37)	(11.23)	0.64
					Total	175.4	178.5	176.0	53.9	(20.7)	(34.6)	187.4	0.28	0.06	(11.05)	(17.05)	(18.50)	1.08
WNE_WKS	Western Nebraska-Western Kansas Interface	385	GENTLMN3	REDWILO3	1	333.9	334.9	334.2	308.0	309.4	307.2	335.6	0.09	0.02	(2.35)	(2.13)	(2.36)	0.15
PRI_BYN	Prairie Island to Byron	628	PR ISLD3	RFPBID6	1	187.9	112.1	177.8	(218.3)	(111.5)	(534.5)	(435.2)	(6.89)	(1.01)	(36.93)	(26.03)	(63.64)	(55.88)
LKM_WFB		118	AIRTECH7	W FARIB7	1	2.3	11.8	3.0	(10.2)	(17.7)	(7.0)	(12.8)	0.86	0.06	(1.14)	(1.75)	(0.82)	(1.35)
FTCAL_S	Fort Calhoun South	451	S3451 3	S3459 3	1	136.6	139.4	137.0	81.1	98.1	86.1	146.9	0.25	0.04	(5.04)	(3.35)	(4.45)	0.92
			S3451 3	S3454 3	1	28.2	29.9	28.5	(11.8)	(4.8)	(14.1)	36.5	0.16	0.02	(3.64)	(2.88)	(3.73)	0.74
			S1251 5	S1297 5	1	82.1	82.6	82.2	72.1	75.2	73.1	83.9	0.05	0.01	(0.91)	(0.60)	(0.79)	0.16
					Total	246.9	251.9	247.7	141.4	168.4	145.0	267.3	0.45	0.08	(9.59)	(6.82)	(8.98)	1.83
ROCHESTER_SILVER LAKE/PRI_BYRON		186	SILVER L	ROCHSTR5	1	(7.6)	(7.3)	(7.7)	(0.2)	3.2	(2.7)	(2.4)	(0.03)	0.01	(0.68)	(0.94)	(0.43)	(0.47)
QUADCITY_W	Quad Cities West	1142	MECCORD3	E MOLIN3	1	155.4	157.4	155.6	334.4	153.9	155.6	152.2	0.17	0.02	16.26	(0.13)	0.01	(0.29)
			QUAD ;	SUB 91 3	1	367.9	370.6	368.2	592.5	372.0	373.6	364.1	0.24	0.03	20.42	0.35	0.50	(0.35)
					Total	523.4	527.9	523.8	926.8	525.9	529.2	516.2	0.42	0.05	36.68	0.22	0.51	(0.64)
Montezuma_Bondurant 345kV		505	MNTZUMA3	BONDRNT3	1	196.5	190.5	195.5	321.3	163.0	183.4	180.2	(0.54)	(0.10)	11.35	(2.91)	(1.15)	(1.46)
St. Joe _ Midway 161kV		185	ST JOE 5	MIDWAY 5	1	83.5	83.5	83.5	92.5	105.2	106.1	82.7	(0.00)	(0.00)	0.82	1.88	1.99	(0.07)
EAST_BIAS_TIES	?		INMAN 4	WINGRIV4	1	37.4	35.8	36.4	59.5	60.4	55.2	44.0	(0.15)	(0.10)	2.00	2.00	1.56	0.59
			SHEYNNE4	AUDUBON4	1	108.9	107.6	108.1	126.7	127.0	123.4	113.8	(0.12)	(0.08)	1.62	1.57	1.28	0.44
					Total	146.4	143.3	144.6	186.2	187.4	178.6	157.8	(0.27)	(0.18)	3.62	3.57	2.84	1.02
MHSPC_NORTH_TIES	Manitoba Hydro - Saskatchewan Power - North Tie Lines	?	ISLAND 7	LINE2TP7	1	37.2	37.2	37.2	37.2	37.2	37.2	37.2	-	-	-	-	-	-
			ISLAND 7	LINE1TP7	1	37.2	37.2	37.2	37.2	37.2	37.2	37.2	-	-	-	-	-	-
					Total	74.4	74.4	74.4	74.4	74.4	74.4	74.4	-	-	-	-	-	-
MHSPC_SOUTH_TIES	Manitoba Hydro - Saskatchewan Power - South Tie Lines	?	RALL 4	EBCAMPB4	1	29.8	29.8	29.8	29.2	29.1	29.3	29.6	0.00	0.00	(0.06)	(0.06)	(0.04)	(0.02)
			RESTON 4	AUBURNT4	1	(44.9)	(45.0)	(44.9)	(43.8)	(43.8)	(44.0)	(44.6)	0.01	0.00	(0.10)	(0.10)	(0.08)	(0.03)
			ROBLIN 4	YORKTON4	1	87.1	87.1	87.1	86.7	86.7	86.8	87.0	0.00	0.00	(0.04)	(0.04)	(0.03)	(0.01)
					Total	72.0	72.0	72.0	72.0	72.0	72.0	72.0	(0.00)	(0.00)	0.00	0.00	0.00	0.00
TCEX	Twin Cities Export	1350	EAU CL 3	ARP 345	1	272.2	281.4	273.3	19.5	158.5	169.9	254.0	0.84	0.11	(22.98)	(9.88)	(9.01)	(1.63)
			BYRON 3	PL VLLY3	1	(29.7)	(77.7)	(36.5)	(393.6)	(278.4)	(190.1)	(82.8)	4.36	0.68	33.08	21.62	14.14	4.76
			WILMART3	LKFLDXL3	1	(310.0)	(296.6)	(309.2)	(473.3)	(327.2)	(428.6)	(214.9)	(1.22)	(0.08)	14.85	1.50	10.45	(8.53)
					Total	(67.5)	(92.9)	(72.4)	(847.5)	(447.0)	(448.9)	(43.7)	2.30	0.49	70.90	33.00	33.60	(2.14)
MNEX	Minnesota Export	?	BLUE LK3	WILMART3	1	13.2	36.3	14.6	(159.1)	(467.4)	(110.0)	(358.7)	2.10	0.14	(15.67)	(41.79)	(10.86)	(33.35)
			AS KING3	EAU CL 3	1	296.9	313.9	299.3	71.0	193.3	199.9	277.3	1.55	0.24	(20.53)	(9.01)	(8.54)	(1.76)
			AS KING7	WILOWRV7	1	99.5	102.2	99.8	74.8	87.5	87.9	96.8	0.25	0.02	(2.25)	(1.04)	(1.02)	(0.24)
			BYRON 3	RFPBID6	1	(187.7)	(111.7)	(177.1)	218.8	111.8	(15.0)	(114.5)	(6.91)	(1.06)	(36.96)	(26.04)	(15.21)	(6.57)
			RFPBID6	PR ISLD3	1	(187.9)	(111.8)	(177.3)	218.6	111.7	535.0	435.5	(6.92)	(1.06)	(36.95)	(26.05)	(63.69)	(55.91)
			REDROCK7	GLENMONT	1	45.2	49.3	44.7	11.3	27.4	29.0	40.2	0.38	(0.05)	(3.08)	(1.55)	(1.43)	(0.45)
			AIRTECH7	W FARIB7	1	2.6	11.8	3.0	(10.5)	(17.8)	(7.2)	(12.8)	0.83	0.04	(1.19)	(1.78)	(0.86)	(1.39)
					Total	81.8	290.1	106.9	424.8	46.5	719.5	363.8	18.94	2.52	31.19	(3.07)	56.19	25.29

60217		1,100	1. Bidder 1
60105		998	2. Bidder 2
35975		1,100	3. Bidder 3
59225		585	4. Bidder 4 and Bidder 5
60108		565	5. Bidder 4 and Bidder 6
69999		550	6. Bidder 5 and Bidder 6

1,100	1. Bidder 1	1,100
998	2. Bidder 2	998
1,100	3. Bidder 3	1,100
585	4. Bidder 4 and Bidder 5	1,150
565	5. Bidder 4 and Bidder 6	1,135
550	6. Bidder 5 and Bidder 6	1,115

APPENDIX B

CONTINGENCY LIST AND UNDERLYING DATA

2002 SERIES -- FIANL (F1)2004 SUMMER PEAK MODEL
F204SUPK.SAV /SUMMER PEAK / SI
Base Case
7/23/2002

No.	Contingency		Ckt	Base kV	Area	Zone
10	005				608	657
	obranch 66780 66779 1	TRIP LINE FROM BUS 'RUNNINU869.0' TO BUS 'RUNNINST 230' CK	1	69-230	608	657
	obranch 66764 66779 1	TRIP LINE FROM BUS 'RUNNINS913.2' TO BUS 'RUNNINST 230' CK	1	13.2-230	608	657
	obranch 66753 66779 1	TRIP LINE FROM BUS 'RUNNING4 230' TO BUS 'RUNNINST 230' CK	1	230	608	657
13	001			230		
	obranch 60175 67576 1	TRIP LINE FROM BUS 'ROSEAU 4 230' TO BUS 'RICHER 4 230' CKT	1	230	600-667	601-668
	obranch 66757 60175 1	TRIP LINE FROM BUS 'MORANVI4 230' TO BUS 'ROSEAU 4 230' CK	1	230	600-608	601-657
15	003					
	obranch 66753 66757 1	TRIP LINE FROM BUS 'RUNNING4 230' TO BUS 'MORANVI4 230' CK	1	230	608	657
	obranch 66769 66793 1	TRIP LINE FROM BUS 'MORANV2913.8' TO BUS 'MORANV2T 230' C	1	13.8-230	608	657
	obranch 66757 66793 1	TRIP LINE FROM BUS 'MORANVI4 230' TO BUS 'MORANV2T 230' C	1	230	608	657
	obranch 66719 66793 1	TRIP LINE FROM BUS 'MORANVI7 115' TO BUS 'MORANV2T 230' C	1	115-230	608	657
	obranch 60175 67576 1	TRIP LINE FROM BUS 'ROSEAU 4 230' TO BUS 'RICHER 4 230' CKT	1	230	600-667	601-668
	obranch 66757 60175 1	TRIP LINE FROM BUS 'MORANVI4 230' TO BUS 'ROSEAU 4 230' CK	1	230	600-608	601-657
18	007				608	657-608
	obranch 66753 66778 1	TRIP LINE FROM BUS 'RUNNING4 230' TO BUS 'RUNNINNT 230' CK	1	230	608	657
	obranch 66753 66757 1	TRIP LINE FROM BUS 'RUNNING4 230' TO BUS 'MORANVI4 230' CK	1	230	608	657
	obranch 66753 61627 1	TRIP LINE FROM BUS 'RUNNING4 230' TO BUS 'SHANNON4 230' C	1	230	608	608-657
	obranch 66764 66779 1	TRIP LINE FROM BUS 'RUNNINS913.2' TO BUS 'RUNNINST 230' CK	1	13.2-230	608	657
	obranch 66753 66779 1	TRIP LINE FROM BUS 'RUNNING4 230' TO BUS 'RUNNINST 230' CK	1	230	608	657
	obranch 66780 66778 1	TRIP LINE FROM BUS 'RUNNINU869.0' TO BUS 'RUNNINNT 230' CK	1	69-230	608	657
	obranch 66765 66778 1	TRIP LINE FROM BUS 'RUNNINN913.2' TO BUS 'RUNNINNT 230' CK	1	13.2-230	608	657
	obranch 66780 66779 1	TRIP LINE FROM BUS 'RUNNINU869.0' TO BUS 'RUNNINST 230' CK	1	69-230	608	657
20	009 1				600	601
	obranch 60202 61488 1	TRIP LINE FROM BUS 'COON CK3 345' TO BUS 'CNCMID1Y 345' CK	1	345	600	601
	obranch 60151 60160 1	TRIP LINE FROM BUS 'MNTCELO3 345' TO BUS 'SHERCO 3 345' CK	1	345	600	601
	obranch 60160 60272 1	TRIP LINE FROM BUS 'SHERCO 3 345' TO BUS 'MPLEGV23 345' CK	1	345	600	601
	obranch 61488 60656 1	TRIP LINE FROM BUS 'CNCMID1Y 345' TO BUS 'CNCTER1934.5' CK	1	345-34.5	600	601
	obranch 61488 60203 1	TRIP LINE FROM BUS 'CNCMID1Y 345' TO BUS 'COON CK7 115' CK	1	345-115	600	601
	obranch 60272 60202 1	TRIP LINE FROM BUS 'MPLEGV23 345' TO BUS 'COON CK3 345' CK	1	345	600	601
23	009 2				600	601
	obranch 61488 60656 1	TRIP LINE FROM BUS 'CNCMID1Y 345' TO BUS 'CNCTER1934.5' CK	1	345-34.5	600	601
	obranch 60151 60114 1	TRIP LINE FROM BUS 'MNTCELO3 345' TO BUS 'ELM CRK3 345' CK	1	345	600	601
	obranch 60272 60202 1	TRIP LINE FROM BUS 'MPLEGV23 345' TO BUS 'COON CK3 345' CK	1	345	600	601
	obranch 60114 60233 1	TRIP LINE FROM BUS 'ELM CRK3 345' TO BUS 'PARKERS3 345' CK	1	345	600	601
	obranch 60160 60272 1	TRIP LINE FROM BUS 'SHERCO 3 345' TO BUS 'MPLEGV23 345' CK	1	345	600	601
	obranch 61488 60203 1	TRIP LINE FROM BUS 'CNCMID1Y 345' TO BUS 'COON CK7 115' CK	1	345-115	600	601
	obranch 60202 61488 1	TRIP LINE FROM BUS 'COON CK3 345' TO BUS 'CNCMID1Y 345' CK	1	345	600	601
25	009 3			345	600-618	601-618
	setpload 63030: 0.0	SET BUS 'DICKNSN3 345' LOAD TO 0.0 MW				
	obranch 63030 60270 1	TRIP LINE FROM BUS 'DICKNSN3 345' TO BUS 'MPLEGV13 345' CK	1	345	600-618	601-618
	setpload 63041: 0.0	SET BUS 'COAL CR4 230' LOAD TO 0.0 MW				
	setpload 63001: 604.	SET BUS 'COAL 42G22.0' LOAD TO 604.0 MW				
	setpload 63000: 338.	SET BUS 'COAL 41G22.0' LOAD TO 338.0 MW				
	obranch 63030 60202 1	TRIP LINE FROM BUS 'DICKNSN3 345' TO BUS 'COON CK3 345' CK	1	345	600-618	601-618
	obranch 60270 60233 1	TRIP LINE FROM BUS 'MPLEGV13 345' TO BUS 'PARKERS3 345' CK	1	345	600	601
28	009 4				600-618	601-618
	obranch 60272 60202 1	TRIP LINE FROM BUS 'MPLEGV23 345' TO BUS 'COON CK3 345' CK	1	345	600	601
	obranch 60160 60272 1	TRIP LINE FROM BUS 'SHERCO 3 345' TO BUS 'MPLEGV23 345' CK	1	345	600	601

No.	Contingency		Ckt	Base kV	Area	Zone
	obranch 61488 60656 1	TRIP LINE FROM BUS 'CNCMID1Y 345' TO BUS 'CNCTER1934.5' CK	1	345-34.5	600	601
	obranch 60202 61488 1	TRIP LINE FROM BUS 'COON CK3 345' TO BUS 'CNCMID1Y 345' CK	1	345	600	601
	obranch 61488 60203 1	TRIP LINE FROM BUS 'CNCMID1Y 345' TO BUS 'COON CK7 115' CK	1	345-115	600	601
	obranch 63030 60202 1	TRIP LINE FROM BUS 'DICKNSN3 345' TO BUS 'COON CK3 345' CK	1	345	600-618	601-618
30	009 5			345	600-618	601-618
	obranch 60270 60233 1	TRIP LINE FROM BUS 'MPLEGV13 345' TO BUS 'PARKERS3 345' CK	1	345	600	601
	obranch 60114 60233 1	TRIP LINE FROM BUS 'ELM CRK3 345' TO BUS 'PARKERS3 345' CK	1	345	600	601
	obranch 63030 60270 1	TRIP LINE FROM BUS 'DICKNSN3 345' TO BUS 'MPLEGV13 345' CK	1	345	600-618	601-618
33	009 6				600	601
	obranch 61488 60203 1	TRIP LINE FROM BUS 'CNCMID1Y 345' TO BUS 'COON CK7 115' CK	1	345-115	600	601
	obranch 60202 61488 1	TRIP LINE FROM BUS 'COON CK3 345' TO BUS 'CNCMID1Y 345' CK	1	345	600	601
	obranch 61488 60656 1	TRIP LINE FROM BUS 'CNCMID1Y 345' TO BUS 'CNCTER1934.5' CK	1	345-34.5	600	601
	obranch 60160 60272 1	TRIP LINE FROM BUS 'SHERCO 3 345' TO BUS 'MPLEGV23 345' CK	1	345	600	601
	obranch 60272 60202 1	TRIP LINE FROM BUS 'MPLEGV23 345' TO BUS 'COON CK3 345' CK	1	345	600	601
35	009 7				600	601
	obranch 61488 60656 1	TRIP LINE FROM BUS 'CNCMID1Y 345' TO BUS 'CNCTER1934.5' CK	1	345-34.5	600	601
	obranch 60202 61488 1	TRIP LINE FROM BUS 'COON CK3 345' TO BUS 'CNCMID1Y 345' CK	1	345	600	601
	obranch 60160 60272 1	TRIP LINE FROM BUS 'SHERCO 3 345' TO BUS 'MPLEGV23 345' CK	1	345	600	601
	obranch 60272 60202 1	TRIP LINE FROM BUS 'MPLEGV23 345' TO BUS 'COON CK3 345' CK	1	345	600	601
	obranch 61488 60203 1	TRIP LINE FROM BUS 'CNCMID1Y 345' TO BUS 'COON CK7 115' CK	1	345-115	600	601
	obranch 60114 60233 1	TRIP LINE FROM BUS 'ELM CRK3 345' TO BUS 'PARKERS3 345' CK	1	345	600	601
38	009 8				600-618	601-618
	obranch 61488 60656 1	TRIP LINE FROM BUS 'CNCMID1Y 345' TO BUS 'CNCTER1934.5' CK	1	345-34.5	600	601
	obranch 60160 60272 1	TRIP LINE FROM BUS 'SHERCO 3 345' TO BUS 'MPLEGV23 345' CK	1	345	600	601
	obranch 61488 60203 1	TRIP LINE FROM BUS 'CNCMID1Y 345' TO BUS 'COON CK7 115' CK	1	345-115	600	601
	obranch 63030 60202 1	TRIP LINE FROM BUS 'DICKNSN3 345' TO BUS 'COON CK3 345' CK	1	345	600-618	601-618
	obranch 60114 60233 1	TRIP LINE FROM BUS 'ELM CRK3 345' TO BUS 'PARKERS3 345' CK	1	345	600	601
	obranch 60272 60202 1	TRIP LINE FROM BUS 'MPLEGV23 345' TO BUS 'COON CK3 345' CK	1	345	600	601
	obranch 60202 61488 1	TRIP LINE FROM BUS 'COON CK3 345' TO BUS 'CNCMID1Y 345' CK	1	345	600	601
40	015 2			500	600	601
	obranch 60101 60198 1	TRIP LINE FROM BUS 'FORBES 2 500' TO BUS 'CHIS-N 2 500' CKT	1	500	600	601
	obranch 60197 60198 1	TRIP LINE FROM BUS 'CHIS CO2 500' TO BUS 'CHIS-N 2 500' CKT 1	1	500	600	601
43	015 1					
	obranch 61550 61624 1	TRIP LINE FROM BUS 'FORB1JCT 230' TO BUS 'FORBES 4 230' CK	1	230	608	608
	obranch 60174 60101 1	TRIP LINE FROM BUS 'ROSEAUS2 500' TO BUS 'FORBES 2 500' CK	1	500	600	601
	obranch 61552 61624 1	TRIP LINE FROM BUS 'FORB2JCT 230' TO BUS 'FORBES 4 230' CK	1	230	608	608
	obranch 60173 60174 1	TRIP LINE FROM BUS 'ROSEAUN2 500' TO BUS 'ROSEAUS2 500' C	1	500	600	601
	obranch 60101 61552 1	TRIP LINE FROM BUS 'FORBES 2 500' TO BUS 'FORB2JCT 230' CK	1	500-230	600-608	601-608
	obranch 61552 61553 1	TRIP LINE FROM BUS 'FORB2JCT 230' TO BUS 'FORB2TR934.5' CK	1	230-34.5	608	608
	obranch 60101 61550 1	TRIP LINE FROM BUS 'FORBES 2 500' TO BUS 'FORB1JCT 230' CK	1	500-230	600-608	601-608
	obranch 61550 61551 1	TRIP LINE FROM BUS 'FORB1JCT 230' TO BUS 'FORB1TR934.5' CK	1	230-34.5	608	608
	obranch 67564 60173 1	TRIP LINE FROM BUS 'DORSEY 2 500' TO BUS 'ROSEAUN2 500' CK	1	500	600-667	601-668
	obranch 60101 60198 1	TRIP LINE FROM BUS 'FORBES 2 500' TO BUS 'CHIS-N 2 500' CKT	1	500	600	601
45	020			500-115	600	601
	obranch 60197 61494 1	TRIP LINE FROM BUS 'CHIS CO2 500' TO BUS 'CHIS D2Y 115' CKT	1	500-115	600	601
	obranch 60101 60198 1	TRIP LINE FROM BUS 'FORBES 2 500' TO BUS 'CHIS-N 2 500' CKT	1	500	600	601
	obranch 60197 61493 1	TRIP LINE FROM BUS 'CHIS CO2 500' TO BUS 'CHIS D1Y 115' CKT	1	500-115	600	601
48	022 1				600	601
	obranch 60202 60251 1	TRIP LINE FROM BUS 'COON CK3 345' TO BUS 'TERMINL3 345' CK	1	345	600	601
	obranch 60221 60251 1	TRIP LINE FROM BUS 'KOLMNLK3 345' TO BUS 'TERMINL3 345' CK	1	345	600	601
	obranch 60251 61491 1	TRIP LINE FROM BUS 'TERMINL3 345' TO BUS 'TERMID2Y 345' CKT	1	345	600	601
	obranch 61492 60252 1	TRIP LINE FROM BUS 'TERMID1Y 345' TO BUS 'TERMINL7 115' CKT	1	345-115	600	601
	obranch 61491 60252 1	TRIP LINE FROM BUS 'TERMID2Y 345' TO BUS 'TERMINL7 115' CKT	1	345-115	600	601
	obranch 61492 61187 1	TRIP LINE FROM BUS 'TERMID1Y 345' TO BUS 'TERTER1934.5' CK	1	345-34.5	600	601
	obranch 60251 61492 1	TRIP LINE FROM BUS 'TERMINL3 345' TO BUS 'TERMID1Y 345' CKT	1	345	600	601

No.	Contingency		Ckt	Base kV	Area	Zone
	obranch 60202 60221 1	TRIP LINE FROM BUS 'COON CK3 345' TO BUS 'KOLMNLK3 345' CK	1	345	600	601
	obranch 60221 60222 1	TRIP LINE FROM BUS 'KOLMNLK3 345' TO BUS 'KOLMNLK7 115' CK	1	345-115	600	601
	obranch 61491 61188 1	TRIP LINE FROM BUS 'TERMID2Y 345' TO BUS 'TERTER2934.5' CK	1	345-34.5	600	601
50	022 2				600	601
	obranch 60199 61493 1	TRIP LINE FROM BUS 'CHIS CO3 345' TO BUS 'CHIS D1Y 115' CKT	1	345-115	600	601
	obranch 60197 60198 1	TRIP LINE FROM BUS 'CHIS CO2 500' TO BUS 'CHIS-N 2 500' CKT 1	1	500	600	601
	obranch 60198 60101 1	TRIP LINE FROM BUS 'CHIS-N 2 500' TO BUS 'FORBES 2 500' CKT	1	500	600	601
	obranch 60199 61494 1	TRIP LINE FROM BUS 'CHIS CO3 345' TO BUS 'CHIS D2Y 115' CKT	1	345-115	600	601
	obranch 60197 61493 1	TRIP LINE FROM BUS 'CHIS CO2 500' TO BUS 'CHIS D1Y 115' CKT	1	500-115	600	601
	obranch 60186 60199 1	TRIP LINE FROM BUS 'AS KING3 345' TO BUS 'CHIS CO3 345' CKT	1	345	600	601
	obranch 60199 60221 1	TRIP LINE FROM BUS 'CHIS CO3 345' TO BUS 'KOLMNLK3 345' CKT	1	345	600	601
	obranch 60197 61494 1	TRIP LINE FROM BUS 'CHIS CO2 500' TO BUS 'CHIS D2Y 115' CKT	1	500-115	600	601
	obranch 60221 60222 2	TRIP LINE FROM BUS 'KOLMNLK3 345' TO BUS 'KOLMNLK7 115' CK	2	345-115	600	601
	obranch 60186 60221 1	TRIP LINE FROM BUS 'AS KING3 345' TO BUS 'KOLMNLK3 345' CKT	1	345	600	601
53	022 3				600	601
	obranch 61491 61188 1	TRIP LINE FROM BUS 'TERMID2Y 345' TO BUS 'TERTER2934.5' CK	1	345-34.5	600	601
	obranch 60202 60221 1	TRIP LINE FROM BUS 'COON CK3 345' TO BUS 'KOLMNLK3 345' CK	1	345	600	601
	obranch 60251 61491 1	TRIP LINE FROM BUS 'TERMINL3 345' TO BUS 'TERMID2Y 345' CKT	1	345	600	601
	obranch 60202 60251 1	TRIP LINE FROM BUS 'COON CK3 345' TO BUS 'TERMINL3 345' CK	1	345	600	601
	obranch 61491 60252 1	TRIP LINE FROM BUS 'TERMID2Y 345' TO BUS 'TERMINL7 115' CKT	1	345-115	600	601
	obranch 60221 60222 1	TRIP LINE FROM BUS 'KOLMNLK3 345' TO BUS 'KOLMNLK7 115' CK	1	345-115	600	601
55	022 4				600	601
	obranch 60202 60221 1	TRIP LINE FROM BUS 'COON CK3 345' TO BUS 'KOLMNLK3 345' CK	1	345	600	601
	obranch 60221 60251 1	TRIP LINE FROM BUS 'KOLMNLK3 345' TO BUS 'TERMINL3 345' CK	1	345	600	601
	obranch 61492 61187 1	TRIP LINE FROM BUS 'TERMID1Y 345' TO BUS 'TERTER1934.5' CK	1	345-34.5	600	601
	obranch 60221 60222 1	TRIP LINE FROM BUS 'KOLMNLK3 345' TO BUS 'KOLMNLK7 115' CK	1	345-115	600	601
	obranch 61492 60252 1	TRIP LINE FROM BUS 'TERMID1Y 345' TO BUS 'TERMINL7 115' CKT	1	345-115	600	601
	obranch 60251 61492 1	TRIP LINE FROM BUS 'TERMINL3 345' TO BUS 'TERMID1Y 345' CKT	1	345	600	601
58	022 5				600	601
	obranch 60251 61491 1	TRIP LINE FROM BUS 'TERMINL3 345' TO BUS 'TERMID2Y 345' CKT	1	345	600	601
	obranch 61491 60252 1	TRIP LINE FROM BUS 'TERMID2Y 345' TO BUS 'TERMINL7 115' CKT	1	345-115	600	601
	obranch 60251 61492 1	TRIP LINE FROM BUS 'TERMINL3 345' TO BUS 'TERMID1Y 345' CKT	1	345	600	601
	obranch 61492 61187 1	TRIP LINE FROM BUS 'TERMID1Y 345' TO BUS 'TERTER1934.5' CK	1	345-34.5	600	601
	obranch 61491 61188 1	TRIP LINE FROM BUS 'TERMID2Y 345' TO BUS 'TERTER2934.5' CK	1	345-34.5	600	601
	obranch 60221 60251 1	TRIP LINE FROM BUS 'KOLMNLK3 345' TO BUS 'TERMINL3 345' CK	1	345	600	601
	obranch 60202 60251 1	TRIP LINE FROM BUS 'COON CK3 345' TO BUS 'TERMINL3 345' CK	1	345	600	601
	obranch 61492 60252 1	TRIP LINE FROM BUS 'TERMID1Y 345' TO BUS 'TERMINL7 115' CKT	1	345-115	600	601
60	022 6			345	600	601
	obranch 60186 60199 1	TRIP LINE FROM BUS 'AS KING3 345' TO BUS 'CHIS CO3 345' CKT	1	345	600	601
	obranch 60186 60221 1	TRIP LINE FROM BUS 'AS KING3 345' TO BUS 'KOLMNLK3 345' CKT	1	345	600	601
63	022 7				600	601
	obranch 60653 61493 1	TRIP LINE FROM BUS 'CHIS T1934.5' TO BUS 'CHIS D1Y 115' CKT 1	1	115-34.5	600	601
	obranch 60199 61494 1	TRIP LINE FROM BUS 'CHIS CO3 345' TO BUS 'CHIS D2Y 115' CKT	1	345-115	600	601
	obranch 60186 60199 1	TRIP LINE FROM BUS 'AS KING3 345' TO BUS 'CHIS CO3 345' CKT	1	345	600	601
	obranch 60221 60222 2	TRIP LINE FROM BUS 'KOLMNLK3 345' TO BUS 'KOLMNLK7 115' CK	2	345-115	600	601
	obranch 60197 60198 1	TRIP LINE FROM BUS 'CHIS CO2 500' TO BUS 'CHIS-N 2 500' CKT 1	1	500	600	601
	obranch 60199 60221 1	TRIP LINE FROM BUS 'CHIS CO3 345' TO BUS 'KOLMNLK3 345' CKT	1	345	600	601
	obranch 60654 61494 1	TRIP LINE FROM BUS 'CHIS T2934.5' TO BUS 'CHIS D2Y 115' CKT 1	1	115-34.5	600	601
	obranch 60199 61493 1	TRIP LINE FROM BUS 'CHIS CO3 345' TO BUS 'CHIS D1Y 115' CKT	1	345-115	600	601
	obranch 60198 60101 1	TRIP LINE FROM BUS 'CHIS-N 2 500' TO BUS 'FORBES 2 500' CKT	1	500	600	601
	obranch 60197 61493 1	TRIP LINE FROM BUS 'CHIS CO2 500' TO BUS 'CHIS D1Y 115' CKT	1	500-115	600	601
	obranch 60197 61494 1	TRIP LINE FROM BUS 'CHIS CO2 500' TO BUS 'CHIS D2Y 115' CKT	1	500-115	600	601
65	022 8			345-115	600	601
	obranch 60221 60222 2	TRIP LINE FROM BUS 'KOLMNLK3 345' TO BUS 'KOLMNLK7 115' CK	2	345-115	600	601
	obranch 60199 60221 1	TRIP LINE FROM BUS 'CHIS CO3 345' TO BUS 'KOLMNLK3 345' CKT	1	345	600	601

No.	Contingency		Ckt	Base kV	Area	Zone
	obranch 60186 60221 1	TRIP LINE FROM BUS 'AS KING3 345' TO BUS 'KOLMNLK3 345' CKT	1	345	600	601
68	022 9			345-115	600	601
	obranch 60221 60222 1	TRIP LINE FROM BUS 'KOLMNLK3 345' TO BUS 'KOLMNLK7 115' CK	1	345-115	600	601
	obranch 60202 60221 1	TRIP LINE FROM BUS 'COON CK3 345' TO BUS 'KOLMNLK3 345' CK	1	345	600	601
70	022 10				600	601
	obranch 60202 60251 1	TRIP LINE FROM BUS 'COON CK3 345' TO BUS 'TERMINL3 345' CK	1	345	600	601
	obranch 61491 60252 1	TRIP LINE FROM BUS 'TERMID2Y 345' TO BUS 'TERMINL7 115' CKT	1	345-115	600	601
	obranch 60251 61491 1	TRIP LINE FROM BUS 'TERMINL3 345' TO BUS 'TERMID2Y 345' CKT	1	345	600	601
	obranch 61491 61188 1	TRIP LINE FROM BUS 'TERMID2Y 345' TO BUS 'TERTER2934.5' CK	1	345-34.5	600	601
73	022 11			345-115	600	601
	obranch 60221 60222 2	TRIP LINE FROM BUS 'KOLMNLK3 345' TO BUS 'KOLMNLK7 115' CK	2	345-115	600	601
	obranch 60199 60221 1	TRIP LINE FROM BUS 'CHIS CO3 345' TO BUS 'KOLMNLK3 345' CKT	1	345	600	601
75	022 12				600	601
	obranch 60221 60251 1	TRIP LINE FROM BUS 'KOLMNLK3 345' TO BUS 'TERMINL3 345' CK	1	345	600	601
	obranch 61492 60252 1	TRIP LINE FROM BUS 'TERMID1Y 345' TO BUS 'TERMINL7 115' CKT	1	345-115	600	601
	obranch 61492 61187 1	TRIP LINE FROM BUS 'TERMID1Y 345' TO BUS 'TERTER1934.5' CK	1	345-34.5	600	601
	obranch 60251 61492 1	TRIP LINE FROM BUS 'TERMINL3 345' TO BUS 'TERMID1Y 345' CKT	1	345	600	601
78	022 13				600	601
	obranch 60199 61493 1	TRIP LINE FROM BUS 'CHIS CO3 345' TO BUS 'CHIS D1Y 115' CKT	1	345-115	600	601
	obranch 60653 61493 1	TRIP LINE FROM BUS 'CHIS T1934.5' TO BUS 'CHIS D1Y 115' CKT 1	1	115-34.5	600	601
	obranch 60197 61493 1	TRIP LINE FROM BUS 'CHIS CO2 500' TO BUS 'CHIS D1Y 115' CKT	1	500-115	600	601
80	022 14				600	601
	obranch 60199 61494 1	TRIP LINE FROM BUS 'CHIS CO3 345' TO BUS 'CHIS D2Y 115' CKT	1	345-115	600	601
	obranch 60654 61494 1	TRIP LINE FROM BUS 'CHIS T2934.5' TO BUS 'CHIS D2Y 115' CKT 1	1	115-34.5	600	601
	obranch 60197 61494 1	TRIP LINE FROM BUS 'CHIS CO2 500' TO BUS 'CHIS D2Y 115' CKT	1	500-115	600	601
83	050 2			345/115		
	setpgen 60001: pgen+ -1	CHANGE BUS 'SHERC32G24.0' GENERATION BY -133.0 MW				
	setpgen 60002: pgen+ -1	CHANGE BUS 'SHERC33G26.0' GENERATION BY -133.0 MW				
	setpgen 60000: pgen+ -1	CHANGE BUS 'SHERC31G24.0' GENERATION BY -133.0 MW				
	setpgen 39680: pgen+ 1	CHANGE BUS 'WES G2 13.8' GENERATION BY 133.0 MW				
	setpgen 39679: pgen+ 1	CHANGE BUS 'WES G1 13.8' GENERATION BY 133.0 MW				
	obranch 60304 39244 1	TRIP LINE FROM BUS 'EAU CL 3 345' TO BUS 'ARP 345 345' CKT 1	1	345	364-600	371-604
	obranch 60315 39706 1	TRIP LINE FROM BUS 'T-CRNRS7 115' TO BUS 'WIEN 115' CKT 1	1	115	366-600	366-604
	setpgen 39678: pgen+ 1	CHANGE BUS 'WES G3 20.0' GENERATION BY 133.0 MW				
85	050 3			345-161	600-364	
	setpgen 60002: pgen+ -1	CHANGE BUS 'SHERC33G26.0' GENERATION BY -133.0 MW				
	setpgen 39679: pgen+ 1	CHANGE BUS 'WES G1 13.8' GENERATION BY 133.0 MW				
	setpgen 60001: pgen+ -1	CHANGE BUS 'SHERC32G24.0' GENERATION BY -133.0 MW				
	setpgen 39678: pgen+ 1	CHANGE BUS 'WES G3 20.0' GENERATION BY 133.0 MW				
	obranch 60186 60304 1	TRIP LINE FROM BUS 'AS KING3 345' TO BUS 'EAU CL 3 345' CKT 1	1	345	600	601-604
	obranch 60304 60305 1	TRIP LINE FROM BUS 'EAU CL 3 345' TO BUS 'EAU CLA5 161' CKT	1	345-161	600	604
	setpgen 60000: pgen+ -1	CHANGE BUS 'SHERC31G24.0' GENERATION BY -133.0 MW				
	setpgen 39680: pgen+ 1	CHANGE BUS 'WES G2 13.8' GENERATION BY 133.0 MW				
	obranch 60304 39244 1	TRIP LINE FROM BUS 'EAU CL 3 345' TO BUS 'ARP 345 345' CKT 1	1	345	364-600	371-604
88	050 4					
	obranch 60315 39706 1	TRIP LINE FROM BUS 'T-CRNRS7 115' TO BUS 'WIEN 115' CKT 1	1	115	366-600	366-604
	setpgen 60002: pgen+ -1	CHANGE BUS 'SHERC33G26.0' GENERATION BY -133.0 MW				
	setpgen 60000: pgen+ -1	CHANGE BUS 'SHERC31G24.0' GENERATION BY -133.0 MW				
	obranch 60304 39244 1	TRIP LINE FROM BUS 'EAU CL 3 345' TO BUS 'ARP 345 345' CKT 1	1	345	364-600	371-604
	setpgen 39678: pgen+ 1	CHANGE BUS 'WES G3 20.0' GENERATION BY 133.0 MW				
	obranch 60186 60304 1	TRIP LINE FROM BUS 'AS KING3 345' TO BUS 'EAU CL 3 345' CKT 1	1	345	600	601-604
	setpgen 39679: pgen+ 1	CHANGE BUS 'WES G1 13.8' GENERATION BY 133.0 MW				
	obranch 60304 60305 1	TRIP LINE FROM BUS 'EAU CL 3 345' TO BUS 'EAU CLA5 161' CKT	1	345-161	600	604
	setpgen 60001: pgen+ -1	CHANGE BUS 'SHERC32G24.0' GENERATION BY -133.0 MW				

No.	Contingency		Ckt	Base kV	Area	Zone
	setpgen 39680: pgen+ 1	CHANGE BUS 'WES G2 13.8' GENERATION BY 133.0 MW				
90	050 5					
	obranch 60304 60305 1	TRIP LINE FROM BUS 'EAU CL 3 345' TO BUS 'EAU CLA5 161' CKT	1	345-161	600	604
	obranch 60186 60304 1	TRIP LINE FROM BUS 'AS KING3 345' TO BUS 'EAU CL 3 345' CKT 1	1	345	600	601-604
	setpgen 39679: pgen+ 1	CHANGE BUS 'WES G1 13.8' GENERATION BY 133.0 MW				
	setpgen 39680: pgen+ 1	CHANGE BUS 'WES G2 13.8' GENERATION BY 133.0 MW				
	obranch 60315 39706 1	TRIP LINE FROM BUS 'T-CRNRS7 115' TO BUS 'WIEN 115' CKT 1	1	115	366-600	366-604
	setpgen 39678: pgen+ 1	CHANGE BUS 'WES G3 20.0' GENERATION BY 133.0 MW				
	setpgen 60002: pgen+ -1	CHANGE BUS 'SHERC33G26.0' GENERATION BY -133.0 MW				
	obranch 39901 38342 1	TRIP LINE FROM BUS 'COC DPC 69.0' TO BUS 'COC 69 69.0' CKT 1	1	69	364	371
	setpgen 60001: pgen+ -1	CHANGE BUS 'SHERC32G24.0' GENERATION BY -133.0 MW				
	obranch 38333 68821 1	TRIP LINE FROM BUS 'HLT 69 69.0' TO BUS 'MAUSTON 69.0' CKT 1	1	69	364-680	371-680
	setpgen 60000: pgen+ -1	CHANGE BUS 'SHERC31G24.0' GENERATION BY -133.0 MW				
	obranch 60304 39244 1	TRIP LINE FROM BUS 'EAU CL 3 345' TO BUS 'ARP 345 345' CKT 1	1	345	364-600	371-604
93	050 7					
	setpgen 39679: pgen+ 1	CHANGE BUS 'WES G1 13.8' GENERATION BY 133.0 MW				
	setpgen 60002: pgen+ -1	CHANGE BUS 'SHERC33G26.0' GENERATION BY -133.0 MW				
	obranch 60186 60304 1	TRIP LINE FROM BUS 'AS KING3 345' TO BUS 'EAU CL 3 345' CKT 1	1	345	600	601-604
	obranch 60304 60305 1	TRIP LINE FROM BUS 'EAU CL 3 345' TO BUS 'EAU CLA5 161' CKT	1	345-161	600	604
	setpgen 60001: pgen+ -1	CHANGE BUS 'SHERC32G24.0' GENERATION BY -133.0 MW				
	obranch 38333 68821 1	TRIP LINE FROM BUS 'HLT 69 69.0' TO BUS 'MAUSTON 69.0' CKT 1	1	69	364-680	371-680
	setpgen 39680: pgen+ 1	CHANGE BUS 'WES G2 13.8' GENERATION BY 133.0 MW				
	setpgen 39678: pgen+ 1	CHANGE BUS 'WES G3 20.0' GENERATION BY 133.0 MW				
	obranch 39901 38342 1	TRIP LINE FROM BUS 'COC DPC 69.0' TO BUS 'COC 69 69.0' CKT 1	1	69	364	371
	setpgen 60000: pgen+ -1	CHANGE BUS 'SHERC31G24.0' GENERATION BY -133.0 MW				
	obranch 60304 39244 1	TRIP LINE FROM BUS 'EAU CL 3 345' TO BUS 'ARP 345 345' CKT 1	1	345	364-600	371-604
95	050 6					
	obranch 60304 39244 1	TRIP LINE FROM BUS 'EAU CL 3 345' TO BUS 'ARP 345 345' CKT 1	1	345	364-600	371-604
	setpgen 60002: pgen+ -1	CHANGE BUS 'SHERC33G26.0' GENERATION BY -133.0 MW				
	setpgen 60001: pgen+ -1	CHANGE BUS 'SHERC32G24.0' GENERATION BY -133.0 MW				
	setpgen 60000: pgen+ -1	CHANGE BUS 'SHERC31G24.0' GENERATION BY -133.0 MW				
	obranch 38333 68821 1	TRIP LINE FROM BUS 'HLT 69 69.0' TO BUS 'MAUSTON 69.0' CKT 1	1	69	364-680	371-680
	obranch 60315 39706 1	TRIP LINE FROM BUS 'T-CRNRS7 115' TO BUS 'WIEN 115' CKT 1	1	115	366-600	366-604
	setpgen 39678: pgen+ 1	CHANGE BUS 'WES G3 20.0' GENERATION BY 133.0 MW				
	setpgen 39679: pgen+ 1	CHANGE BUS 'WES G1 13.8' GENERATION BY 133.0 MW				
	setpgen 39680: pgen+ 1	CHANGE BUS 'WES G2 13.8' GENERATION BY 133.0 MW				
	obranch 39901 38342 1	TRIP LINE FROM BUS 'COC DPC 69.0' TO BUS 'COC 69 69.0' CKT 1	1	69	364	371
98	050 8			69/345		
	obranch 38333 68821 1	TRIP LINE FROM BUS 'HLT 69 69.0' TO BUS 'MAUSTON 69.0' CKT 1	1	69	364-680	371-680
	obranch 39901 38342 1	TRIP LINE FROM BUS 'COC DPC 69.0' TO BUS 'COC 69 69.0' CKT 1	1	69	364	371
	obranch 60304 39244 1	TRIP LINE FROM BUS 'EAU CL 3 345' TO BUS 'ARP 345 345' CKT 1	1	345	364-600	371-604
100	050 9			115/345		
	obranch 60315 39706 1	TRIP LINE FROM BUS 'T-CRNRS7 115' TO BUS 'WIEN 115' CKT 1	1	115	366-600	366-604
	obranch 60304 39244 1	TRIP LINE FROM BUS 'EAU CL 3 345' TO BUS 'ARP 345 345' CKT 1	1	345	364-600	371-604
103	050 10			345-161	600-364	
	obranch 60304 60305 1	TRIP LINE FROM BUS 'EAU CL 3 345' TO BUS 'EAU CLA5 161' CKT	1	345-161	600	604
	obranch 60186 60304 1	TRIP LINE FROM BUS 'AS KING3 345' TO BUS 'EAU CL 3 345' CKT 1	1	345	600	601-604
	obranch 60304 39244 1	TRIP LINE FROM BUS 'EAU CL 3 345' TO BUS 'ARP 345 345' CKT 1	1	345	364-600	371-604
105	050 14					
	obranch 60304 60305 1	TRIP LINE FROM BUS 'EAU CL 3 345' TO BUS 'EAU CLA5 161' CKT	1	345-161	600	604
	obranch 60304 39244 1	TRIP LINE FROM BUS 'EAU CL 3 345' TO BUS 'ARP 345 345' CKT 1	1	345	364-600	371-604
	obranch 60186 60304 1	TRIP LINE FROM BUS 'AS KING3 345' TO BUS 'EAU CL 3 345' CKT 1	1	345	600	601-604
	obranch 39901 38342 1	TRIP LINE FROM BUS 'COC DPC 69.0' TO BUS 'COC 69 69.0' CKT 1	1	69	364	371
	obranch 38333 68821 1	TRIP LINE FROM BUS 'HLT 69 69.0' TO BUS 'MAUSTON 69.0' CKT 1	1	69	364-680	371-680
108	050 1			69/345		

No.	Contingency		Ckt	Base kV	Area	Zone
	setpgen 60000: pgen+ -1	CHANGE BUS 'SHERC31G24.0' GENERATION BY -133.0 MW				
	obranch 39901 38342 1	TRIP LINE FROM BUS 'COC DPC 69.0' TO BUS 'COC 69 69.0' CKT 1	1	69	364	371
	setpgen 39680: pgen+ 1	CHANGE BUS 'WES G2 13.8' GENERATION BY 133.0 MW				
	setpgen 60002: pgen+ -1	CHANGE BUS 'SHERC33G26.0' GENERATION BY -133.0 MW				
	obranch 60304 39244 1	TRIP LINE FROM BUS 'EAU CL 3 345' TO BUS 'ARP 345 345' CKT 1	1	345	364-600	371-604
	setpgen 39679: pgen+ 1	CHANGE BUS 'WES G1 13.8' GENERATION BY 133.0 MW				
	obranch 38333 68821 1	TRIP LINE FROM BUS 'HLT 69 69.0' TO BUS 'MAUSTON 69.0' CKT 1	1	69	364-680	371-680
	setpgen 60001: pgen+ -1	CHANGE BUS 'SHERC32G24.0' GENERATION BY -133.0 MW				
	setpgen 39678: pgen+ 1	CHANGE BUS 'WES G3 20.0' GENERATION BY 133.0 MW				
110	050 11					
	obranch 60304 60305 1	TRIP LINE FROM BUS 'EAU CL 3 345' TO BUS 'EAU CLA5 161' CKT	1	345-161	600	604
	obranch 60304 39244 1	TRIP LINE FROM BUS 'EAU CL 3 345' TO BUS 'ARP 345 345' CKT 1	1	345	364-600	371-604
	obranch 60315 39706 1	TRIP LINE FROM BUS 'T-CRNRS7 115' TO BUS 'WIEN 115' CKT 1	1	115	366-600	366-604
	obranch 60186 60304 1	TRIP LINE FROM BUS 'AS KING3 345' TO BUS 'EAU CL 3 345' CKT 1	1	345	600	601-604
113	050 12					
	obranch 60304 60305 1	TRIP LINE FROM BUS 'EAU CL 3 345' TO BUS 'EAU CLA5 161' CKT	1	345-161	600	604
	obranch 60315 39706 1	TRIP LINE FROM BUS 'T-CRNRS7 115' TO BUS 'WIEN 115' CKT 1	1	115	366-600	366-604
	obranch 60186 60304 1	TRIP LINE FROM BUS 'AS KING3 345' TO BUS 'EAU CL 3 345' CKT 1	1	345	600	601-604
	obranch 39901 38342 1	TRIP LINE FROM BUS 'COC DPC 69.0' TO BUS 'COC 69 69.0' CKT 1	1	69	364	371
	obranch 38333 68821 1	TRIP LINE FROM BUS 'HLT 69 69.0' TO BUS 'MAUSTON 69.0' CKT 1	1	69	364-680	371-680
	obranch 60304 39244 1	TRIP LINE FROM BUS 'EAU CL 3 345' TO BUS 'ARP 345 345' CKT 1	1	345	364-600	371-604
115	050 13					
	obranch 38333 68821 1	TRIP LINE FROM BUS 'HLT 69 69.0' TO BUS 'MAUSTON 69.0' CKT 1	1	69	364-680	371-680
	obranch 60304 39244 1	TRIP LINE FROM BUS 'EAU CL 3 345' TO BUS 'ARP 345 345' CKT 1	1	345	364-600	371-604
	obranch 60315 39706 1	TRIP LINE FROM BUS 'T-CRNRS7 115' TO BUS 'WIEN 115' CKT 1	1	115	366-600	366-604
	obranch 39901 38342 1	TRIP LINE FROM BUS 'COC DPC 69.0' TO BUS 'COC 69 69.0' CKT 1	1	69	364	371
118	100			115	626-652	627-655
	obranch 63267 63265 1	TRIP LINE FROM BUS 'DEVIL J7 115' TO BUS 'DEVILSE7 115' CKT 1	1	115	626	627
	obranch 66431 63267 1	TRIP LINE FROM BUS 'DEVILSL7 115' TO BUS 'DEVIL J7 115' CKT 1	1	115	626-652	627-655
	obranch 63265 63266 1	TRIP LINE FROM BUS 'DEVILSE7 115' TO BUS 'RAMSEY 7 115' CKT	1	115	626	627
	obranch 63267 63268 1	TRIP LINE FROM BUS 'DEVIL J7 115' TO BUS 'DEVIL S7 115' CKT 1	1	115	626	627
120	105 1			230	652	655-659
	obranch 66426 66456 1	TRIP LINE FROM BUS 'BISMARK4 230' TO BUS 'WASHBRN4 230' C	1	230	652	655
	obranch 66456 67106 1	TRIP LINE FROM BUS 'WASHBRN4 230' TO BUS 'LELANDO4 230' C	1	230	652	655-659
	obranch 66426 66441 1	TRIP LINE FROM BUS 'BISMARK4 230' TO BUS 'GARRISN4 230' CK	1	230	652	655
123	105 2			230	652	655-659
	obranch 66426 66441 1	TRIP LINE FROM BUS 'BISMARK4 230' TO BUS 'GARRISN4 230' CK	1	230	652	655
	obranch 66441 67106 1	TRIP LINE FROM BUS 'GARRISN4 230' TO BUS 'LELANDO4 230' CK	1	230	652	655-659
125	105 3			230	652	655-659
	obranch 66456 67106 1	TRIP LINE FROM BUS 'WASHBRN4 230' TO BUS 'LELANDO4 230' C	1	230	652	655-659
	obranch 66426 66456 1	TRIP LINE FROM BUS 'BISMARK4 230' TO BUS 'WASHBRN4 230' C	1	230	652	655
128	108 1			230	652-618	
	obranch 66507 66509 1	TRIP LINE FROM BUS 'FTTHOMP4 230' TO BUS 'FTRANDL4 230' CK	1	230	652	654
	obranch 66507 66516 1	TRIP LINE FROM BUS 'FTTHOMP4 230' TO BUS 'LAKPLAT4 230' CK	1	230	652	654
	obranch 63041 63381 1	TRIP LINE FROM BUS 'COAL CR4 230' TO BUS 'UNDERWD4 230' C	1	230	618	618-627
130	108 2			230	652-618	
	obranch 66509 66516 1	TRIP LINE FROM BUS 'FTRANDL4 230' TO BUS 'LAKPLAT4 230' CK	1	230	652	654
	obranch 66507 66509 1	TRIP LINE FROM BUS 'FTTHOMP4 230' TO BUS 'FTRANDL4 230' CK	1	230	652	654
	obranch 63041 63381 1	TRIP LINE FROM BUS 'COAL CR4 230' TO BUS 'UNDERWD4 230' C	1	230	618	618-627
133	110 1			230	652	654
	obranch 66503 66530 1	TRIP LINE FROM BUS 'BLAIR 4 230' TO BUS 'WATERTN4 230' CKT	1	230	652	654
	obranch 66530 66550 1	TRIP LINE FROM BUS 'WATERTN4 230' TO BUS 'GRANITF4 230' CK	1	230	652	654
135	110 2			230	652	654
	obranch 66503 66550 1	TRIP LINE FROM BUS 'BLAIR 4 230' TO BUS 'GRANITF4 230' CKT 1	1	230	652	654

No.	Contingency		Ckt	Base kV	Area	Zone
	obranch 66530 66550 1	TRIP LINE FROM BUS 'WATERTN4 230' TO BUS 'GRANITF4 230' CK	1	230	652	654
138	111			345		
	obranch 59393 96039 1	OPEN LINE FROM BUS 'ST JOE 3 345' TO BUS '7FAIRPT 345' CKT	1	345	540-130	540-130
	obranch 64786 96039 1	OPEN LINE FROM BUS 'COOPER 3 345' TO BUS '7FAIRPT 345' CK	1	345	640-130	640-130
140	111			230	652	654
	obranch 66507 66519 1	TRIP LINE FROM BUS 'FTTHOMP4 230' TO BUS 'OAHE 4 230' CKT	1	230	652	654
	obranch 66507 66519 2	TRIP LINE FROM BUS 'FTTHOMP4 230' TO BUS 'OAHE 4 230' CKT	2	230	652	654
143	11L			115	608	608-620
	obranch 61740 62448 1	TRIP LINE FROM BUS 'GR RPDS7 115' TO BUS 'HILLCTY7 115' CKT	1	115	608	608-620
	obranch 62448 61653 1	TRIP LINE FROM BUS 'HILLCTY7 115' TO BUS 'RIVERTN7 115' CKT	1	115	608	608-620
145	120			115/345	652	654
	obranch 66504 66531 1	TRIP LINE FROM BUS 'BROOKNG7 115' TO BUS 'WATERTN7 115' C	1	115	652	654
	obranch 66529 66537 1	TRIP LINE FROM BUS 'WATERTN3 345' TO BUS 'WHITE 3 345' CKT	1	345	652	654
148	128L			115	608	608
	obranch 61697 61694 1	TRIP LINE FROM BUS 'TAC HBR7 115' TO BUS 'FINLAND7 115' CKT	1	115	608	608
	obranch 62171 61692 1	TRIP LINE FROM BUS 'FINLAND7 115' TO BUS 'SLVRBAY7 115' CKT	1			
	obranch 61694 61692 1	TRIP LINE FROM BUS 'FINLAND7 115' TO BUS 'SLVRBAY7 115' CKT	1	115	608	608
150	130 1			230-115	652	654-659
	obranch 66507 67122 1	TRIP LINE FROM BUS 'FTTHOMP4 230' TO BUS 'STORLA 4 230' CK	1	230	652	654-659
	obranch 66507 66523 1	TRIP LINE FROM BUS 'FTTHOMP4 230' TO BUS 'SIOUXFL4 230' CK	1	230	652	654
	obranch 66513 67122 1	TRIP LINE FROM BUS 'HANLON 4 230' TO BUS 'STORLA 4 230' CKT	1	230	652	654-659
	obranch 67122 67123 1	TRIP LINE FROM BUS 'STORLA 4 230' TO BUS 'STORLA 7 115' CKT	1	230-115	652	659
	obranch 66507 67122 1	TRIP LINE FROM BUS 'FTTHOMP4 230' TO BUS 'STORLA 4 230' CK	1	230	652	654-659
153	130 2			230	652	654
	obranch 66507 66523 1	TRIP LINE FROM BUS 'FTTHOMP4 230' TO BUS 'SIOUXFL4 230' CK	1	230	652	654
	obranch 66513 66398 1	TRIP LINE FROM BUS 'HANLON 4 230' TO BUS 'VFODNES4 230' CK	1	230	652	654
155	132L			115	608	608
	obranch 61679 61678 1	TRIP LINE FROM BUS 'GARY 7 115' TO BUS 'NEMADJI7 115' CKT 1	1	115	608	608
	obranch 61678 61683 1	TRIP LINE FROM BUS 'NEMADJI7 115' TO BUS 'STIN-MN7 115' CKT	1	115	608	608
158	138			115-230	640	640
	obranch 64766 65022 1	OPEN LINE FROM BUS 'CANADAY7 115' TO BUS 'CANADY Y 230' C	1	115-230	640	640
	obranch 64765 65022 1	OPEN LINE FROM BUS 'CANADAY4 230' TO BUS 'CANADY Y 230' C	1	230	640	640
	obranch 64759 64765 1	OPEN LINE FROM BUS 'C.CREEK4 230' TO BUS 'CANADAY4 230' C	1	230	640	640
160	139			230-115	640	640
	obranch 64847 65030 1	OPEN LINE FROM BUS 'HASTING4 230' TO BUS 'HASTNG Y 230' CK	1	230	640	640
	obranch 64848 65030 1	OPEN LINE FROM BUS 'HASTING7 115' TO BUS 'HASTNG Y 230' CK	1	115-230	640	640
	obranch 64839 64847 1	OPEN LINE FROM BUS 'GR ISLD4 230' TO BUS 'HASTING4 230' CK	1	230	640	640
163	13L			115	608-618	
	obranch 61654 62638 1	TRIP LINE FROM BUS 'AITKNMN7 115' TO BUS 'AITKIN 7 115' CKT 1	1	115	608	608-620
	obranch 61654 61653 1	TRIP LINE FROM BUS 'AITKNMN7 115' TO BUS 'RIVERTN7 115' CKT	1	115	608	608
	obranch 62637 62636 1	TRIP LINE FROM BUS 'KIMBRLY7 115' TO BUS 'MCGREGR7 115' C	1	115	608	620
	obranch 61655 62636 1	TRIP LINE FROM BUS 'CROMWLL7 115' TO BUS 'MCGREGR7 115'	1	115	608	608-620
	obranch 61673 62445 1	TRIP LINE FROM BUS 'ARROWHD7 115' TO BUS '4CORNRS7 115' C	1	115	608-618	608-619
	obranch 62637 62638 1	TRIP LINE FROM BUS 'KIMBRLY7 115' TO BUS 'AITKIN 7 115' CKT 1	1	115	608	620
165	140				640	640
	obranch 64733 64933 1	OPEN LINE FROM BUS 'AXTELL 3 345' TO BUS 'PAULINE3 345' CKT	1	345	640	640
	obranch 64934 65040 1	OPEN LINE FROM BUS 'PAULINE7 115' TO BUS 'PAULIN Y 345' CKT	1	115-345	640	640
	obranch 64935 65040 1	OPEN LINE FROM BUS 'PAULINE913.8' TO BUS 'PAULIN Y 345' CKT	1	13.8-345	640	640
	obranch 65040 64933 1	OPEN LINE FROM BUS 'PAULIN Y 345' TO BUS 'PAULINE3 345' CKT	1	345	640	640
168	140			230	652	654
	obranch 66507 66514 1	TRIP LINE FROM BUS 'FTTHOMP4 230' TO BUS 'HURON 4 230' CK	1	230	652	654
	obranch 66507 66514 2	TRIP LINE FROM BUS 'FTTHOMP4 230' TO BUS 'HURON 4 230' CK	2	230	652	654
170	14L			115	608	608

No.	Contingency		Ckt	Base kV	Area	Zone
	obranch 61731 61724 1	TRIP LINE FROM BUS '14L TAP7 115' TO BUS 'HIBBING7 115' CKT 1	1	115	608	608
	obranch 61731 61733 1	TRIP LINE FROM BUS '14L TAP7 115' TO BUS 'NATIONL7 115' CKT	1	115	608	608
	obranch 61737 61731 1	TRIP LINE FROM BUS 'NASHWAK7 115' TO BUS '14L TAP7 115' CK	1	115	608	608
173	150			230	652	654
	obranch 66507 66519 3	TRIP LINE FROM BUS 'FTTHOMP4 230' TO BUS 'OAHE 4 230' CKT	3	230	652	654
	obranch 66507 66519 4	TRIP LINE FROM BUS 'FTTHOMP4 230' TO BUS 'OAHE 4 230' CKT	4	230	652	654
175	15L			115	608	608
	obranch 61676 61666 1	TRIP LINE FROM BUS 'HIBBARD7 115' TO BUS 'FONDULAC 115' CK	1	115	608	608
	obranch 61665 61666 1	TRIP LINE FROM BUS 'THOMSON7 115' TO BUS 'FONDULAC 115' C	1	115	608	608
178	160 1			230	652	654
	obranch 66509 66526 1	TRIP LINE FROM BUS 'FTRANDL4 230' TO BUS 'UTICAJC4 230' CKT	1	230	652	654
	obranch 66523 66526 1	TRIP LINE FROM BUS 'SIOUXFL4 230' TO BUS 'UTICAJC4 230' CKT	1	230	652	654
	obranch 66526 66536 1	TRIP LINE FROM BUS 'UTICAJC4 230' TO BUS 'RASMUSN4 230' CK	1	230	652	654
	obranch 66509 66565 1	TRIP LINE FROM BUS 'FTRANDL4 230' TO BUS 'SIOUXCY4 230' CK	1	230	652	654
180	160 2			230	652	654
	obranch 66536 66565 1	TRIP LINE FROM BUS 'RASMUSN4 230' TO BUS 'SIOUXCY4 230' CK	1	230	652	654
	obranch 66509 66565 1	TRIP LINE FROM BUS 'FTRANDL4 230' TO BUS 'SIOUXCY4 230' CK	1	230	652	654
183	160 3			230	652	654
	obranch 66526 66536 1	TRIP LINE FROM BUS 'UTICAJC4 230' TO BUS 'RASMUSN4 230' CK	1	230	652	654
	obranch 66523 66526 1	TRIP LINE FROM BUS 'SIOUXFL4 230' TO BUS 'UTICAJC4 230' CKT	1	230	652	654
	obranch 66509 66526 1	TRIP LINE FROM BUS 'FTRANDL4 230' TO BUS 'UTICAJC4 230' CKT	1	230	652	654
185	16L			115	608	608-620
	obranch 61718 61721 1	TRIP LINE FROM BUS '16L TAP7 115' TO BUS 'ETCO 7 115' CKT 1	1	115	608	608
	obranch 61673 62447 1	TRIP LINE FROM BUS 'ARROWHD7 115' TO BUS 'BERGNTP7 115' C	1	115	608	608-620
	obranch 61718 61720 1	TRIP LINE FROM BUS '16L TAP7 115' TO BUS 'COTTNTP7 115' CKT	1	115	608	608
	obranch 61720 62452 1	TRIP LINE FROM BUS 'COTTNTP7 115' TO BUS 'COTTON 7 115' CK	1	115	608	608-620
	obranch 61720 62447 1	TRIP LINE FROM BUS 'COTTNTP7 115' TO BUS 'BERGNTP7 115' CK	1	115	608	608-620
	obranch 61718 62454 1	TRIP LINE FROM BUS '16L TAP7 115' TO BUS 'PEARY 7 115' CKT 1	1	115	608	608-620
	obranch 62454 61708 1	TRIP LINE FROM BUS 'PEARY 7 115' TO BUS 'VIRGNIA7 115' CKT 1	1	115	608	608-620
188	170			230	652	654
	obranch 66514 66530 2	TRIP LINE FROM BUS 'HURON 4 230' TO BUS 'WATERTN4 230' CK	2	230	652	654
	obranch 66514 66530 1	TRIP LINE FROM BUS 'HURON 4 230' TO BUS 'WATERTN4 230' CK	1	230	652	654
190	180 1			230	618	619-618
	obranch 63042 63049 1	TRIP LINE FROM BUS 'COAL TP4 230' TO BUS 'STANTON4 230' CK	1	230	618	619-618
	obranch 63041 63042 1	TRIP LINE FROM BUS 'COAL CR4 230' TO BUS 'COAL TP4 230' CKT	1	230	618	618-619
	obranch 63042 63044 1	TRIP LINE FROM BUS 'COAL TP4 230' TO BUS 'MCHENRY4 230' CK	1	230	618	619
193	180 2			230	618	618-619
	obranch 63041 63042 1	TRIP LINE FROM BUS 'COAL CR4 230' TO BUS 'COAL TP4 230' CKT	1	230	618	618-619
	obranch 63042 63049 1	TRIP LINE FROM BUS 'COAL TP4 230' TO BUS 'STANTON4 230' CK	1	230	618	619-618
	obranch 63041 63049 1	TRIP LINE FROM BUS 'COAL CR4 230' TO BUS 'STANTON4 230' CK	1	230	618	618
	obranch 63042 63044 1	TRIP LINE FROM BUS 'COAL TP4 230' TO BUS 'MCHENRY4 230' CK	1	230	618	619
195	190				626-652	657-655
	obranch 66772 66777 1	TRIP LINE FROM BUS 'CALEDONT 115' TO BUS 'CALEDON913.2' C	1	13.2-115	626	657
	obranch 66430 66443 1	TRIP LINE FROM BUS 'EGF IND7 115' TO BUS 'GRNDFKS7 115' CKT	1	115	652	655
	obranch 66707 66430 1	TRIP LINE FROM BUS 'CALEDON7 115' TO BUS 'EGF IND7 115' CKT	1	115	652-626	655-657
	obranch 66772 66707 1	TRIP LINE FROM BUS 'CALEDONT 115' TO BUS 'CALEDON7 115' C	1	115	626	657
	obranch 66436 66707 1	TRIP LINE FROM BUS 'FARGO 7 115' TO BUS 'CALEDON7 115' CKT	1	115	652-626	655-657
	obranch 66772 67053 1	TRIP LINE FROM BUS 'CALEDONT 115' TO BUS 'CALEDON869.0' C	1	69-115	626	657
198	200				626-652	
	obranch 63188 66923 1	TRIP LINE FROM BUS 'PICKERTY 230' TO BUS 'PICKERT869.0' CKT	1	69-230	626	657-627
	obranch 66437 66759 1	TRIP LINE FROM BUS 'GRNDFKS4 230' TO BUS 'PICKERT4 230' CK	1	230	652-626	655-657
	obranch 63188 63167 1	TRIP LINE FROM BUS 'PICKERTY 230' TO BUS 'PICKERT941.6' CKT	1	41.6-230	626	627
	obranch 66759 63188 1	TRIP LINE FROM BUS 'PICKERT4 230' TO BUS 'PICKERTY 230' CKT	1	230	626	657-627
	obranch 66444 66759 1	TRIP LINE FROM BUS 'JAMESTN4 230' TO BUS 'PICKERT4 230' CK	1	230	652-626	655-657

No.	Contingency		Ckt	Base kV	Area	Zone
200	20L			115	608	608
	obranch 61739 61781 1	TRIP LINE FROM BUS 'BLCKBRY7 115' TO BUS '20L TAP7 115' CKT	1	115	608	608
	obranch 61779 61781 1	TRIP LINE FROM BUS 'BLANDIN7 115' TO BUS '20L TAP7 115' CKT	1	115	608	608
	obranch 61740 61781 1	TRIP LINE FROM BUS 'GR RPDS7 115' TO BUS '20L TAP7 115' CKT	1	115	608	608
203	210			230	652	653-654
	obranch 66488 66519 1	TRIP LINE FROM BUS 'PHILTAP4 230' TO BUS 'OAHE 4 230' CKT 1	1	230	652	653-654
	obranch 66486 66488 1	TRIP LINE FROM BUS 'PHILIP 4 230' TO BUS 'PHILTAP4 230' CKT 1	1	230	652	653
	obranch 66484 66488 1	TRIP LINE FROM BUS 'NUNDRWD4 230' TO BUS 'PHILTAP4 230' CK	1	230	652	653
205	220				626	627-657
	obranch 63190 63360 1	TRIP LINE FROM BUS 'MAPLER2Y 345' TO BUS 'MAPLER2913.8' CK	1	13.8-345	626	627
	obranch 63198 63258 1	TRIP LINE FROM BUS 'BUFFALOY 345' TO BUS 'BUFFALO7 115' CK	1	115-345	626	627
	obranch 63358 63369 1	TRIP LINE FROM BUS 'BUFFALO3 345' TO BUS 'JAMESTN3 345' CK	1	345	626	627
	obranch 63190 66754 1	TRIP LINE FROM BUS 'MAPLER2Y 345' TO BUS 'MAPLE R4 230' CK	1	230-345	626	657-627
	obranch 66792 63190 1	TRIP LINE FROM BUS 'MAPLE R3 345' TO BUS 'MAPLER2Y 345' CK	1	345	626	657-627
	obranch 66792 63189 1	TRIP LINE FROM BUS 'MAPLE R3 345' TO BUS 'MAPLER1Y 345' CK	1	345	626	657-627
	obranch 63189 66754 1	TRIP LINE FROM BUS 'MAPLER1Y 345' TO BUS 'MAPLE R4 230' CK	1	230-345	626	657-627
	obranch 63198 63158 1	TRIP LINE FROM BUS 'BUFFALOY 345' TO BUS 'BUFFALO941.6' CK	1	41.6-345	626	627
	obranch 63358 63198 1	TRIP LINE FROM BUS 'BUFFALO3 345' TO BUS 'BUFFALOY 345' CK	1	345	626	627
	obranch 63189 63359 1	TRIP LINE FROM BUS 'MAPLER1Y 345' TO BUS 'MAPLER1913.8' CK	1	13.8-345	626	627
	obranch 66792 63358 1	TRIP LINE FROM BUS 'MAPLE R3 345' TO BUS 'BUFFALO3 345' CK	1	345	626	627-657
208	230			230-41.6	626-652	627-661
	obranch 63363 63362 1	TRIP LINE FROM BUS 'FORMAN 4 230' TO BUS 'OAKES 4 230' CKT	1	230	626	627
	obranch 63362 63162 1	TRIP LINE FROM BUS 'OAKES 4 230' TO BUS 'OAKES 941.6' CKT 1	1	230-41.6	626	627
	obranch 63363 63193 1	TRIP LINE FROM BUS 'FORMAN 4 230' TO BUS 'FORMAN Y 230' CK	1	230	626	627
	obranch 63363 63327 1	TRIP LINE FROM BUS 'FORMAN 4 230' TO BUS 'HANKSON4 230' CK	1	230	626	627
	obranch 67326 63362 1	TRIP LINE FROM BUS 'ELLENDL4 230' TO BUS 'OAKES 4 230' CKT	1	230	626-652	627-661
210	240			115-41.6	626	627-629
	obranch 63298 63262 1	TRIP LINE FROM BUS 'HOVINGJ7 115' TO BUS 'GWINNER7 115' CK	1	115	626	627-629
	obranch 63260 63261 1	TRIP LINE FROM BUS 'ENDERLN7 115' TO BUS 'LISBON 7 115' CKT	1	115	626	627
	obranch 63262 63263 1	TRIP LINE FROM BUS 'GWINNER7 115' TO BUS 'FORMN 7 115' CK	1	115	626	627
	obranch 63258 63259 1	TRIP LINE FROM BUS 'BUFFALO7 115' TO BUS 'ALICE 7 115' CKT 1	1	115	626	627
	obranch 63298 63299 1	TRIP LINE FROM BUS 'HOVINGJ7 115' TO BUS 'HOVINGJ941.6' CKT	1	115-41.6	626	629
	obranch 63261 63298 1	TRIP LINE FROM BUS 'LISBON 7 115' TO BUS 'HOVINGJ7 115' CKT	1	115	626	627-629
	obranch 63259 63260 1	TRIP LINE FROM BUS 'ALICE 7 115' TO BUS 'ENDERLN7 115' CKT	1			
213	24L			115	608	608-620
	obranch 62895 61642 1	TRIP LINE FROM BUS 'THMSTWN7 115' TO BUS 'VERNDLE7 115' C	1	115	608	608-620
	obranch 61644 61646 1	TRIP LINE FROM BUS 'DOGLAKE7 115' TO BUS 'DOGLKTP7 115' C	1	115	608	608
	obranch 61646 61645 1	TRIP LINE FROM BUS 'DOGLKTP7 115' TO BUS 'BAXTER 7 115' CK	1	115	608	608
	obranch 61646 62895 1	TRIP LINE FROM BUS 'DOGLKTP7 115' TO BUS 'THMSTWN7 115' C	1	115	608	608-620
215	250			230-115	618-626	
	obranch 63056 63047 1	TRIP LINE FROM BUS 'BALTA 4 230' TO BUS 'RAMSEY 4 230' CKT	1	230	618	619
	obranch 63266 63047 1	TRIP LINE FROM BUS 'RAMSEY 7 115' TO BUS 'RAMSEY 4 230' CK	1	115-230	626-618	627-619
	obranch 66755 63047 1	TRIP LINE FROM BUS 'PRAIRIE4 230' TO BUS 'RAMSEY 4 230' CKT	1	230	618-626	619-657
218	25L			115	608	608
	obranch 61707 61708 1	TRIP LINE FROM BUS 'MNTACT27 115' TO BUS 'VIRGNIA7 115' CKT	1	115	608	608
	obranch 61724 61706 1	TRIP LINE FROM BUS 'HIBBING7 115' TO BUS 'KEWTNTP7 115' CK	1	115	608	608
	obranch 61706 61707 1	TRIP LINE FROM BUS 'KEWTNTP7 115' TO BUS 'MNTACT27 115' C	1	115	608	608
220	260			230-115	618	619-602
	obranch 63044 63056 1	TRIP LINE FROM BUS 'MCHENRY4 230' TO BUS 'BALTA 4 230' CKT	1	230	618	619
	obranch 63044 60140 1	TRIP LINE FROM BUS 'MCHENRY4 230' TO BUS 'MCHENRY7 115' C	1	115-230	618	602-619
	obranch 63042 63044 1	TRIP LINE FROM BUS 'COAL TP4 230' TO BUS 'MCHENRY4 230' CK	1	230	618	619
223	26L			115	608	608
	obranch 61664 61656 1	TRIP LINE FROM BUS 'WRENSHL7 115' TO BUS 'MAHTOWA7 115'	1	115	608	608
	obranch 61656 61655 1	TRIP LINE FROM BUS 'MAHTOWA7 115' TO BUS 'CROMWLL7 115'	1	115	608	608

No.	Contingency		Ckt	Base kV	Area	Zone
	obranch 61665 61664 1	TRIP LINE FROM BUS 'THOMSON7 115' TO BUS 'WRENSHL7 115' C	1	115	608	608
225	27L			115	608	608
	obranch 61778 61779 1	TRIP LINE FROM BUS 'BLNDTAP7 115' TO BUS 'BLANDIN7 115' CKT	1	115	608	608
	obranch 61748 61778 1	TRIP LINE FROM BUS 'BOSWELL7 115' TO BUS 'BLNDTAP7 115' CK	1	115	608	608
228	28L			115	608	608
	obranch 61791 61780 1	TRIP LINE FROM BUS 'LAKEHD 7 115' TO BUS 'DEER RV7 115' CKT	1	115	608	608
	obranch 61782 61790 1	TRIP LINE FROM BUS '28L TAP7 115' TO BUS 'COHSSTTP 115' CKT	1	115	608	608
	obranch 61748 61782 1	TRIP LINE FROM BUS 'BOSWELL7 115' TO BUS '28L TAP7 115' CKT	1	115	608	608
	obranch 61782 61746 1	TRIP LINE FROM BUS '28L TAP7 115' TO BUS 'GREENWY7 115' CK	1	115	608	608
	obranch 61790 61791 1	TRIP LINE FROM BUS 'COHSSTTP 115' TO BUS 'LAKEHD 7 115' CK	1	115	608	608
230	300				640-652	640-653
	obranch 65002 65045 1	TRIP LINE FROM BUS 'VICTRYH7 115' TO BUS 'VICTHL Y 230' CKT	1	115-230	640	640
	obranch 65001 66573 1	TRIP LINE FROM BUS 'VICTRYH4 230' TO BUS 'STEGALL4 230' CKT	1	230	640-652	640-653
	obranch 65001 65045 1	TRIP LINE FROM BUS 'VICTRYH4 230' TO BUS 'VICTHL Y 230' CKT	1	230	640	640
	obranch 65000 65045 1	TRIP LINE FROM BUS 'VICTR10G13.8' TO BUS 'VICTHL Y 230' CKT	1	13.8-230	640	640
233	310			345	640	640
	obranch 64831 64943 1	TRIP LINE FROM BUS 'GENTLMN3 345' TO BUS 'REDWILO3 345' CK	1	345	640	640
	obranch 64831 64984 2	TRIP LINE FROM BUS 'GENTLMN3 345' TO BUS 'SWEET W3 345' C	2	345	640	640
235	320 1			230	640	640
	obranch 64832 64909 2	TRIP LINE FROM BUS 'GENTLMN4 230' TO BUS 'N.PLATT4 230' CK	2	230	640	640
	obranch 64759 64909 1	TRIP LINE FROM BUS 'C.CREEK4 230' TO BUS 'N.PLATT4 230' CKT	1	230	640	640
	obranch 64832 64909 3	TRIP LINE FROM BUS 'GENTLMN4 230' TO BUS 'N.PLATT4 230' CK	3	230	640	640
238	330			345	640-652	
	obranch 64984 66571 1	TRIP LINE FROM BUS 'SWEET W3 345' TO BUS 'GR ISLD3 345' CKT	1	345	640	640-656
	obranch 66506 66571 1	TRIP LINE FROM BUS 'FTTHOMP3 345' TO BUS 'GR ISLD3 345' CKT	1	345	652-640	654-656
240	340				640	640-641
	obranch 64839 64847 1	TRIP LINE FROM BUS 'GR ISLD4 230' TO BUS 'HASTING4 230' CKT	1	230	640	640
	obranch 64804 64941 1	TRIP LINE FROM BUS 'DONIPHN7 115' TO BUS 'PROSSER7 115' CK	1	115	640	640
	obranch 64804 64805 1	TRIP LINE FROM BUS 'DONIPHN7 115' TO BUS 'DONIPHN934.5' CK	1	34.5-115	640	640
	obranch 65271 64804 1	TRIP LINE FROM BUS 'SUB-D 7 115' TO BUS 'DONIPHN7 115' CKT	1	115	640	640-641
243	34L			115	608	608
	obranch 61708 61705 1	TRIP LINE FROM BUS 'VIRGNIA7 115' TO BUS 'BABBITT7 115' CKT	1	115	608	608
	obranch 61705 61702 1	TRIP LINE FROM BUS 'BABBITT7 115' TO BUS 'LASKIN 7 115' CKT 1	1	115	608	608
245	350			230-115	640	640
	obranch 64839 64847 1	TRIP LINE FROM BUS 'GR ISLD4 230' TO BUS 'HASTING4 230' CKT	1	230	640	640
	obranch 64848 65030 1	TRIP LINE FROM BUS 'HASTING7 115' TO BUS 'HASTNG Y 230' CK	1	115-230	640	640
	obranch 64847 65030 1	TRIP LINE FROM BUS 'HASTING4 230' TO BUS 'HASTNG Y 230' CK	1	230	640	640
248	360			230-115	640	640
	obranch 64765 65022 1	TRIP LINE FROM BUS 'CANADAY4 230' TO BUS 'CANADY Y 230' CK	1	230	640	640
	obranch 64766 65022 1	TRIP LINE FROM BUS 'CANADAY7 115' TO BUS 'CANADY Y 230' CK	1	115-230	640	640
	obranch 64765 64759 1	TRIP LINE FROM BUS 'CANADAY4 230' TO BUS 'C.CREEK4 230' CK	1	230	640	640
250	370				640	640
	obranch 64733 64933 1	TRIP LINE FROM BUS 'AXTELL 3 345' TO BUS 'PAULINE3 345' CKT	1	345	640	640
	obranch 64934 65040 1	TRIP LINE FROM BUS 'PAULINE7 115' TO BUS 'PAULIN Y 345' CKT	1	115-345	640	640
	obranch 64935 65040 1	TRIP LINE FROM BUS 'PAULINE913.8' TO BUS 'PAULIN Y 345' CKT	1	13.8-345	640	640
	obranch 64933 65040 1	TRIP LINE FROM BUS 'PAULINE3 345' TO BUS 'PAULIN Y 345' CKT	1	345	640	640
253	37L			115	608	608-620
	obranch 61735 61708 1	TRIP LINE FROM BUS 'TBIRD S7 115' TO BUS 'VIRGNIA7 115' CKT 1	1	115	608	608
	obranch 61734 62453 1	TRIP LINE FROM BUS 'IRON TP7 115' TO BUS 'IRON 7 115' CKT 1	1	115	608	608-620
	obranch 61722 61734 1	TRIP LINE FROM BUS 'FORBES 7 115' TO BUS 'IRON TP7 115' CKT	1	115	608	608
	obranch 61734 61735 1	TRIP LINE FROM BUS 'IRON TP7 115' TO BUS 'TBIRD S7 115' CKT 1	1	115	608	608
255	380			345		
	obranch 64786 96039 1	TRIP LINE FROM BUS 'COOPER 3 345' TO BUS '7FAIRPT 345' CKT	1	345	640-130	640-130

No.	Contingency		Ckt	Base kV	Area	Zone
	obranch 96039 59393 1	TRIP LINE FROM BUS '7FAIRPT 345' TO BUS 'ST JOE 3 345' CKT 1	1	345	540-130	540-130
258	390				640	640
	obranch 64796 64784 1	TRIP LINE FROM BUS 'CRESTON7 115' TO BUS 'COLMBUS7 115' C	1	115	640	640
	obranch 64796 64797 1	TRIP LINE FROM BUS 'CRESTON7 115' TO BUS 'CRESTON934.5' C	1	34.5-115	640	640
	obranch 64889 64890 1	TRIP LINE FROM BUS 'MADISON7 115' TO BUS 'MADISON934.5' CK	1	115-34.5	640	640
	obranch 64920 64889 1	TRIP LINE FROM BUS 'NORFOLK7 115' TO BUS 'MADISON7 115' CK	1	115	640	640
	obranch 64796 64797 2	TRIP LINE FROM BUS 'CRESTON7 115' TO BUS 'CRESTON934.5' C	2	34.5-115	640	640
	obranch 64783 64859 1	TRIP LINE FROM BUS 'COLMBUS4 230' TO BUS 'HOSKINS4 230' CK	1	230	640	640
	obranch 64889 64796 1	TRIP LINE FROM BUS 'MADISON7 115' TO BUS 'CRESTON7 115' CK	1	115	640	640
260	39L			115	608	608-620
	obranch 61736 61708 1	TRIP LINE FROM BUS 'T-BIRD 7 115' TO BUS 'VIRGNIA7 115' CKT 1	1	115	608	608
	obranch 61702 62451 1	TRIP LINE FROM BUS 'LASKIN 7 115' TO BUS 'LAKELND7 115' CKT	1	115	608	608-620
	obranch 62451 61736 1	TRIP LINE FROM BUS 'LAKELND7 115' TO BUS 'T-BIRD 7 115' CKT	1	115	608	608-620
263	400			161	645	645
	obranch 65401 65486 1	TRIP LINE FROM BUS 'S1201 5 161' TO BUS 'S1286 5 161' CKT 1	1	161	645	645
	obranch 65401 65420 1	TRIP LINE FROM BUS 'S1201 5 161' TO BUS 'S1220 5 161' CKT 1	1	161	645	645
265	410		1	161	645	645
	obranch 65450 65409 1	TRIP LINE FROM BUS 'S1250 5 161' TO BUS 'S1209 5 161' CKT 1	1	161	645	645
268	420			161	645	645
	obranch 65450 65411 1	TRIP LINE FROM BUS 'S1250 5 161' TO BUS 'S1211 5 161' CKT 1	1	161	645	645
	obranch 65450 65411 2	TRIP LINE FROM BUS 'S1250 5 161' TO BUS 'S1211 5 161' CKT 2	2	161	645	645
270	42L			115	608	608-620
	obranch 61688 61689 1	TRIP LINE FROM BUS 'COLBYVL7 115' TO BUS 'FRNCHRV7 115' CK	1	115	608	608
	obranch 61689 61690 1	TRIP LINE FROM BUS 'FRNCHRV7 115' TO BUS 'TWO HBR7 115' C	1	115	608	608
	obranch 61691 61692 1	TRIP LINE FROM BUS 'SLVRBYH7 115' TO BUS 'SLVRBAY7 115' CK	1	115	608	608
	obranch 62170 61691 1	TRIP LINE FROM BUS 'WALDO 7 115' TO BUS 'SLVRBYH7 115' CKT	1	115	608	608-620
	obranch 61690 62170 1	TRIP LINE FROM BUS 'TWO HBR7 115' TO BUS 'WALDO 7 115' CK	1	115	608	608-620
273	430			161	645	645
	obranch 65411 65420 1	OPEN BRANCH FROM BUS 'S1211 5 161' TO BUS 'S1220 5 161' CK	1	161	645	645
	obranch 65411 65499 1	OPEN BRANCH FROM BUS 'S1211 5 161' TO BUS 'S1299 5 161' CK	1	161	645	645
275	431			161	645	645
	obranch 65411 65420 1	OPEN BRANCH FROM BUS 'S1211 5 161' TO BUS 'S1220 5 161' CK	1	161	645	645
	obranch 65499 65486 1	OPEN BRANCH FROM BUS 'S1299 5 161' TO BUS 'S1286 5 161' CK	1	161	645	645
278	440			161	645	645
	obranch 65409 65431 2	TRIP LINE FROM BUS 'S1209 5 161' TO BUS 'S1231 5 161' CKT 2	2	161	645	645
	obranch 65409 65431 1	TRIP LINE FROM BUS 'S1209 5 161' TO BUS 'S1231 5 161' CKT 1	1	161	645	645
280	44L			115	608	608
	obranch 61725 61724 1	TRIP LINE FROM BUS '44L TAP7 115' TO BUS 'HIBBING7 115' CKT 1	1	115	608	608
	obranch 61725 61728 1	TRIP LINE FROM BUS '44L TAP7 115' TO BUS 'HIBBTAC7 115' CKT	1	115	608	608
	obranch 61725 61722 1	TRIP LINE FROM BUS '44L TAP7 115' TO BUS 'FORBES 7 115' CKT	1	115	608	608
283	450			161	645	645
	obranch 65435 65434 1	TRIP LINE FROM BUS 'S1235 5 161' TO BUS 'S1234 5 161' CKT 1	1	161	645	645
	obranch 65431 65435 1	TRIP LINE FROM BUS 'S1231 5 161' TO BUS 'S1235 5 161' CKT 1	1	161	645	645
285	451			161	645	645
	obranch 65421 65431 1	OPEN BRANCH FROM BUS 'S1221 5 161' TO BUS 'S1231 5 161' CK	1	161	645	645
	obranch 65421 65455 1	OPEN BRANCH FROM BUS 'S1221 5 161' TO BUS 'S1255 5 161' CK	1	161	645	645
288	452			161	645	645
	obranch 65426 65451 1	OPEN BRANCH FROM BUS 'S1226 5 161' TO BUS 'S1251 5 161' CK	1	161	645	645
	obranch 65426 65498 1	OPEN BRANCH FROM BUS 'S1226 5 161' TO BUS 'S1298 5 161' CK	1	161	645	645
290	453			161	645	645
	obranch 65437 65453 1	OPEN BRANCH FROM BUS 'S1237 5 161' TO BUS 'S1253 5 161' CK	1	161	645	645
	obranch 65437 65453 1	OPEN BRANCH FROM BUS 'S1237 5 161' TO BUS 'S1253 5 161' CK	1	161	645	645
293	460			345	645	645

No.	Contingency		Ckt	Base kV	Area	Zone
	obranch 65351 65359 1	TRIP LINE FROM BUS 'S3451 3 345' TO BUS 'S3459 3 345' CKT 1	1	345	645	645
	obranch 65351 65354 1	TRIP LINE FROM BUS 'S3451 3 345' TO BUS 'S3454 3 345' CKT 1	1	345	645	645
295	461			161-69	645	645
	obranch 65410 65417 1	OPEN BRANCH FROM BUS 'S1210 5 161' TO BUS 'S1217 5 161' CK	1	161	645	645
	obranch 65384 65410 1	OPEN BRANCH FROM BUS 'S1210T7T 161' TO BUS 'S1210 5 161' C	1	161	645	645
	obranch 65384 65510 1	OPEN BRANCH FROM BUS 'S1210T7T 161' TO BUS 'S910 869.0' C	1	69-161	645	645
	obranch 65410 65422 1	OPEN BRANCH FROM BUS 'S1210 5 161' TO BUS 'S1222 5 161' CK	1	161	645	645
298	462			161-69	645	645
	obranch 65410 65422 1	OPEN BRANCH FROM BUS 'S1210 5 161' TO BUS 'S1222 5 161' CK	1	161	645	645
	obranch 65410 65417 1	OPEN BRANCH FROM BUS 'S1210 5 161' TO BUS 'S1217 5 161' CK	1	161	645	645
	obranch 65384 65510 1	OPEN BRANCH FROM BUS 'S1210T7T 161' TO BUS 'S910 869.0' C	1	69-161	645	645
	obranch 65384 65410 1	OPEN BRANCH FROM BUS 'S1210T7T 161' TO BUS 'S1210 5 161' C	1	161	645	645
300	463			161-69	645	645
	obranch 65387 65417 1	OPEN BRANCH FROM BUS 'S1217T1T 161' TO BUS 'S1217 5 161' C	1	161	645	645
	obranch 65417 65410 1	OPEN BRANCH FROM BUS 'S1217 5 161' TO BUS 'S1210 5 161' CK	1	161	645	645
	obranch 65387 65517 1	OPEN BRANCH FROM BUS 'S1217T1T 161' TO BUS 'S917 869.0' C	1	69-161	645	645
	obranch 65417 65427 1	OPEN BRANCH FROM BUS 'S1217 5 161' TO BUS 'S1227 5 161' CK	1	161	645	645
303	464			161-69	645	645
	obranch 65417 65427 1	OPEN BRANCH FROM BUS 'S1217 5 161' TO BUS 'S1227 5 161' CK	1	161	645	645
	obranch 65387 65517 1	OPEN BRANCH FROM BUS 'S1217T1T 161' TO BUS 'S917 869.0' C	1	69-161	645	645
	obranch 65387 65417 1	OPEN BRANCH FROM BUS 'S1217T1T 161' TO BUS 'S1217 5 161' C	1	161	645	645
	obranch 65417 65410 1	OPEN BRANCH FROM BUS 'S1217 5 161' TO BUS 'S1210 5 161' CK	1	161	645	645
305	465			161-69	645	645
	obranch 65421 65455 1	OPEN BRANCH FROM BUS 'S1221 5 161' TO BUS 'S1255 5 161' CK	1	161	645	645
	obranch 65388 65521 1	OPEN BRANCH FROM BUS 'S1221T9T 161' TO BUS 'S921 869.0' C	1	69-161	645	645
	obranch 65421 65431 1	OPEN BRANCH FROM BUS 'S1221 5 161' TO BUS 'S1231 5 161' CK	1	161	645	645
	obranch 65388 65421 1	OPEN BRANCH FROM BUS 'S1221T9T 161' TO BUS 'S1221 5 161' C	1	161	645	645
308	466			161-69	645	645
	obranch 65421 65455 1	OPEN BRANCH FROM BUS 'S1221 5 161' TO BUS 'S1255 5 161' CK	1	161	645	645
	obranch 65388 65421 1	OPEN BRANCH FROM BUS 'S1221T9T 161' TO BUS 'S1221 5 161' C	1	161	645	645
	obranch 65388 65521 1	OPEN BRANCH FROM BUS 'S1221T9T 161' TO BUS 'S921 869.0' C	1	69-161	645	645
	obranch 65421 65431 1	OPEN BRANCH FROM BUS 'S1221 5 161' TO BUS 'S1231 5 161' CK	1	161	645	645
310	467			161	645	645
	obranch 65481 65459 1	OPEN BRANCH FROM BUS 'S1281 5 161' TO BUS 'S1259 5 161' CK	1	161	645	645
	obranch 65481 65449 1	OPEN BRANCH FROM BUS 'S1281 5 161' TO BUS 'S1249 5 161' CK	1	161	645	645
313	46L			115	608	608-620
	obranch 62175 61650 1	TRIP LINE FROM BUS 'DEWING 7 115' TO BUS 'LITTLEF7 115' CKT	1	115	608	608-620
	obranch 61651 62175 1	TRIP LINE FROM BUS 'MUDLAKE7 115' TO BUS 'DEWING 7 115' CK	1	115	608	608-620
315	48L		1	115	608	608-620
	obranch 61640 62410 1	TRIP LINE FROM BUS 'BADOURA7 115' TO BUS 'PALMRLK7 115' C	1	115	608	608-620
318	500			69-230	618-652	619-654
	obranch 63050 62427 1	TRIP LINE FROM BUS 'WILLMAR4 230' TO BUS 'WILLMAR869.0' CK	1	69-230	618	619
	obranch 66550 63050 1	TRIP LINE FROM BUS 'GRANITF4 230' TO BUS 'WILLMAR4 230' CK	1	230	618-652	619-654
320	501 1				626	657
	obranch 66763 66787 1	TRIP LINE FROM BUS 'DRAYTO1913.8' TO BUS 'DRAYTO1T 230' CK	1	13.8-230	626	657
	obranch 66705 66787 1	TRIP LINE FROM BUS 'DRAYTON7 115' TO BUS 'DRAYTO1T 230' C	1	115-230	626	657
	obranch 66752 66787 1	TRIP LINE FROM BUS 'DRAYTON4 230' TO BUS 'DRAYTO1T 230' C	1	230	626	657
323	502 2				626	657
	obranch 66752 66788 1	TRIP LINE FROM BUS 'DRAYTON4 230' TO BUS 'DRAYTO2T 230' C	1	230	626	657
	obranch 66705 66788 1	TRIP LINE FROM BUS 'DRAYTON7 115' TO BUS 'DRAYTO2T 230' C	1	115-230	626	657
	obranch 66762 66788 1	TRIP LINE FROM BUS 'DRAYTO2913.8' TO BUS 'DRAYTO2T 230' CK	1	13.8-230	626	657
325	505			115	652	605-654
	obranch 60170 66508 1	TRIP LINE FROM BUS 'MARSHAL7 115' TO BUS 'S3 7 115' CKT 1	1	115	652	605-654

No.	Contingency		Ckt	Base kV	Area	Zone
	obranch 66551 66508 1	TRIP LINE FROM BUS 'GRANITF7 115' TO BUS 'S3 7 115' CKT 1	1	115	652	654
	obranch 66552 66508 1	TRIP LINE FROM BUS 'MARS ER7 115' TO BUS 'S3 7 115' CKT 1	1	115	652	654
328	510			230-115	652	655-654
	obranch 66554 66555 1	TRIP LINE FROM BUS 'MORRIS 4 230' TO BUS 'MORRIS 7 115' CKT	1	230-115	652	655
	obranch 66553 66554 1	TRIP LINE FROM BUS 'MOORHED4 230' TO BUS 'MORRIS 4 230' CK	1	230	652	655
	obranch 66550 66554 1	TRIP LINE FROM BUS 'GRANITF4 230' TO BUS 'MORRIS 4 230' CKT	1	230	652	654-655
330	515				626	
	obranch 63236 66717 1	TRIP LINE FROM BUS 'AUDUBON7 115' TO BUS 'ULRICH 7 115' CK	1	115	626	629-657
	obranch 66781 66773 1	TRIP LINE FROM BUS 'ULRICH T 115' TO BUS 'ULRICH 941.6' CKT 1	1	41.6-115	626	657
	obranch 66717 63237 1	TRIP LINE FROM BUS 'ULRICH 7 115' TO BUS 'MAHNOMN7 115' CK	1	115	626	626-657
	obranch 66717 66781 1	TRIP LINE FROM BUS 'ULRICH 7 115' TO BUS 'ULRICH T 115' CKT 1	1	115	626	657
	obranch 66781 67039 1	TRIP LINE FROM BUS 'ULRICH T 115' TO BUS 'ULRICH 869.0' CKT 1	1	69-115	626	657
	obranch 63237 63238 1	TRIP LINE FROM BUS 'MAHNOMN7 115' TO BUS 'WINGER 7 115' C	1	115	626	626
333	51L			115	608	608-620
	obranch 61653 62176 1	TRIP LINE FROM BUS 'RIVERTN7 115' TO BUS 'MERRFLD7 115' CK	1	115	608	608-620
	obranch 62176 61648 1	TRIP LINE FROM BUS 'MERRFLD7 115' TO BUS 'PEQUOT 7 115' CK	1	115	608	608-620
335	520 1				626-608	
	obranch 66710 66716 1	TRIP LINE FROM BUS 'NARY 7 115' TO BUS 'LAPORTE7 115' CKT	1	115	626	657
	obranch 63247 63197 1	TRIP LINE FROM BUS 'CASS LK7 115' TO BUS 'CASS LKY 115' CKT	1	115	626	626
	obranch 63248 63348 1	TRIP LINE FROM BUS 'CASS N 7 115' TO BUS 'NO PIPE94.20' CKT 1	1	115-4.2	626	626
	obranch 66716 61640 1	TRIP LINE FROM BUS 'LAPORTE7 115' TO BUS 'BADOURA7 115' C	1	115	608-626	608-657
	obranch 66710 63247 1	TRIP LINE FROM BUS 'NARY 7 115' TO BUS 'CASS LK7 115' CKT 1	1	115	626	626-657
	obranch 63247 63248 1	TRIP LINE FROM BUS 'CASS LK7 115' TO BUS 'CASS N 7 115' CKT	1	115	626	626
	obranch 63197 63347 1	TRIP LINE FROM BUS 'CASS LKY 115' TO BUS 'CASS LK869.0' CKT	1	69-115	626	626
	obranch 66710 63246 1	TRIP LINE FROM BUS 'NARY 7 115' TO BUS 'BEMIDJI7 115' CKT 1	1	115	626	626-657
	obranch 63247 63349 1	TRIP LINE FROM BUS 'CASS LK7 115' TO BUS 'CASSPIP94.20' CKT	1	115-4.2	626	626
338	520 2			115-4.2	626	626
	obranch 63247 63248 1	TRIP LINE FROM BUS 'CASS LK7 115' TO BUS 'CASS N 7 115' CKT	1	115	626	626
	obranch 63247 63349 1	TRIP LINE FROM BUS 'CASS LK7 115' TO BUS 'CASSPIP94.20' CKT	1	115-4.2	626	626
	obranch 63248 63348 1	TRIP LINE FROM BUS 'CASS N 7 115' TO BUS 'NO PIPE94.20' CKT 1	1	115-4.2	626	626
340	520 3			115-69	626	626
	obranch 63247 63197 1	TRIP LINE FROM BUS 'CASS LK7 115' TO BUS 'CASS LKY 115' CKT	1	115	626	626
	obranch 63197 63347 1	TRIP LINE FROM BUS 'CASS LKY 115' TO BUS 'CASS LK869.0' CKT	1	69-115	626	626
343	525 1			115	600	603
	obranch 60117 60132 1	TRIP LINE FROM BUS 'CHERRYC7 115' TO BUS 'WSX FLS7 115' CK	1	115	600	603
	obranch 60129 60132 1	TRIP LINE FROM BUS 'SPLT RK7 115' TO BUS 'WSX FLS7 115' CKT	1	115	600	603
345	530			69-115	600-652	601-605
	obranch 60119 60853 1	TRIP LINE FROM BUS 'LKYNKTN7 115' TO BUS 'LK YANK869.0' CKT	1	69-115	600	601
	obranch 60148 60171 1	TRIP LINE FROM BUS 'MINVALY7 115' TO BUS 'LYON CO7 115' CKT	1	115	600	601
	obranch 60119 60171 1	TRIP LINE FROM BUS 'LKYNKTN7 115' TO BUS 'LYON CO7 115' CK	1	115	600	601
	obranch 60170 60171 1	TRIP LINE FROM BUS 'MARSHAL7 115' TO BUS 'LYON CO7 115' CK	1	115	652-600	605-601
348	535 1			115	626	602-657
	obranch 60134 60135 1	TRIP LINE FROM BUS 'SHEYNNE7 115' TO BUS 'CASS CO7 115' CK	1	115	626	602
	obranch 66761 60135 1	TRIP LINE FROM BUS 'MODEROW7 115' TO BUS 'CASS CO7 115' C	1	115	626	602-657
	obranch 60135 60137 1	TRIP LINE FROM BUS 'CASS CO7 115' TO BUS 'REDRIVR7 115' CK	1	115	626	602
	obranch 66761 60134 1	TRIP LINE FROM BUS 'MODEROW7 115' TO BUS 'SHEYNNE7 115'	1	115	626	602-657
350	535 2			115	626	602-657
	obranch 60135 66761 1	TRIP LINE FROM BUS 'CASS CO7 115' TO BUS 'MODEROW7 115' C	1	115	626	602-657
	obranch 60135 60137 1	TRIP LINE FROM BUS 'CASS CO7 115' TO BUS 'REDRIVR7 115' CK	1	115	626	602
	obranch 66761 60134 1	TRIP LINE FROM BUS 'MODEROW7 115' TO BUS 'SHEYNNE7 115'	1	115	626	602-657
353	545			230-41.6	626	628-627
	obranch 63314 63325 1	TRIP LINE FROM BUS 'BIGSTON4 230' TO BUS 'BROWNSV4 230' C	1	230	626	628
	obranch 63325 63125 1	TRIP LINE FROM BUS 'BROWNSV4 230' TO BUS 'BROWNSV941.6'	1	230-41.6	626	628
	obranch 63325 63327 1	TRIP LINE FROM BUS 'BROWNSV4 230' TO BUS 'HANKSON4 230' C	1	230	626	628-627

No.	Contingency		Ckt	Base kV	Area	Zone
355	550			115	626-652	
	obranch 63219 63223 1	TRIP LINE FROM BUS 'GRANTCO7 115' TO BUS 'HOOT LK7 115' CK	1	115	626	629-626
	obranch 66555 63219 1	TRIP LINE FROM BUS 'MORRIS 7 115' TO BUS 'GRANTCO7 115' CK	1	115	626-652	629-655
358	550-B			41.6-115	626	665-629
	obranch 63221 67455 1	TRIP LINE FROM BUS 'BRANDN 7 115' TO BUS 'BRANDN 941.6' CK	1	41.6-115	626	665-629
	obranch 63219 63220 1	TRIP LINE FROM BUS 'GRANTCO7 115' TO BUS 'ELBOWLK7 115' C	1	115	626	629
	obranch 63220 63221 1	TRIP LINE FROM BUS 'ELBOWLK7 115' TO BUS 'BRANDN 7 115' CK	1	115	626	629
	obranch 63221 67452 1	TRIP LINE FROM BUS 'BRANDN 7 115' TO BUS 'ALEXSS 115' CKT	1	115	626	629-665
360	551			115	600-626	
	obranch 63222 60144 1	TRIP LINE FROM BUS 'ALEXAND7 115' TO BUS 'DGLASCO7 115' CK	1	115	600-626	601-626
	obranch 67452 63222 1	TRIP LINE FROM BUS 'ALEXSS 115' TO BUS 'ALEXAND7 115' CKT	1	115	626	626-665
363	552			115	626	665
	obranch 67453 67454 1	TRIP LINE FROM BUS 'ALEXSWM 115' TO BUS 'ALEXPLDM 115' CK	1	115	626	665
	obranch 67452 67453 1	TRIP LINE FROM BUS 'ALEXSS 115' TO BUS 'ALEXSWM 115' CKT	1	115	626	665
365	553			115	626	621
	obranch 62527 62531 1	TRIP LINE FROM BUS 'ELMO 7 115' TO BUS 'INMAN 7 115' CKT 1	1	115	626	621
	obranch 62527 62752 1	TRIP LINE FROM BUS 'ELMO 7 115' TO BUS 'MLTN TP7 115' CKT 1	1	115	626	621
368	560 1			115-4.2	626	626-657
	obranch 63243 63281 1	TRIP LINE FROM BUS 'SHEVLIN7 115' TO BUS 'WILT TAP 115' CKT	1	115	626	626
	obranch 66727 63244 1	TRIP LINE FROM BUS 'RICELKT7 115' TO BUS 'ITASCA 7 115' CKT	1	115	626	626-657
	obranch 63240 63340 1	TRIP LINE FROM BUS 'MN PIPE7 115' TO BUS 'MN PIPE94.20' CKT	1	115-4.2	626	626
	obranch 63239 63241 1	TRIP LINE FROM BUS 'BAGLEY 7 115' TO BUS 'CLEARBR7 115' CK	1	115	626	626
	obranch 63244 63344 1	TRIP LINE FROM BUS 'ITASCA 7 115' TO BUS 'ITASCA 94.20' CKT 1	1	115-4.2	626	626
	obranch 63243 66727 1	TRIP LINE FROM BUS 'SHEVLIN7 115' TO BUS 'RICELKT7 115' CKT	1	115	626	626-657
	obranch 66727 66729 1	TRIP LINE FROM BUS 'RICELKT7 115' TO BUS 'RICELAK7 115' CKT	1	115	626	657
	obranch 63239 63243 1	TRIP LINE FROM BUS 'BAGLEY 7 115' TO BUS 'SHEVLIN7 115' CKT	1	115	626	626
	obranch 63241 63242 1	TRIP LINE FROM BUS 'CLEARBR7 115' TO BUS 'CLBKPIP7 115' CKT	1	115	626	626
	obranch 63239 63238 1	TRIP LINE FROM BUS 'BAGLEY 7 115' TO BUS 'WINGER 7 115' CKT	1	115	626	626
	obranch 63241 63240 1	TRIP LINE FROM BUS 'CLEARBR7 115' TO BUS 'MN PIPE7 115' CKT	1	115	626	626
370	560 2			115-4.2	626	626
	obranch 63241 63240 1	TRIP LINE FROM BUS 'CLEARBR7 115' TO BUS 'MN PIPE7 115' CKT	1	115	626	626
	obranch 63240 63340 1	TRIP LINE FROM BUS 'MN PIPE7 115' TO BUS 'MN PIPE94.20' CKT	1	115-4.2	626	626
373	560 3		1	115	626	626
	obranch 63241 63242 1	TRIP LINE FROM BUS 'CLEARBR7 115' TO BUS 'CLBKPIP7 115' CKT	1	115	626	626
375	560 4			115-4.2	626	626-657
	obranch 66727 63244 1	TRIP LINE FROM BUS 'RICELKT7 115' TO BUS 'ITASCA 7 115' CKT	1	115	626	626-657
	obranch 63244 63344 1	TRIP LINE FROM BUS 'ITASCA 7 115' TO BUS 'ITASCA 94.20' CKT 1	1	115-4.2	626	626
378	565				626	626-657
	obranch 63245 66776 1	TRIP LINE FROM BUS 'WILTON 7 115' TO BUS 'WILTON T 115' CKT	1	115	626	626-657
	obranch 66776 63145 1	TRIP LINE FROM BUS 'WILTON T 115' TO BUS 'WILTON 941.6' CKT	1	41.6-115	626	626-657
	obranch 66776 66968 1	TRIP LINE FROM BUS 'WILTON T 115' TO BUS 'WILTON 869.0' CKT	1	69-115	626	657
	obranch 63281 63243 1	TRIP LINE FROM BUS 'WILT TAP 115' TO BUS 'SHEVLIN7 115' CKT	1	115	626	626
	obranch 63246 63245 1	TRIP LINE FROM BUS 'BEMIDJI7 115' TO BUS 'WILTON 7 115' CKT	1	115	626	626
380	570 1				626	626-657
	obranch 63255 63155 2	TRIP LINE FROM BUS 'DONALDS7 115' TO BUS 'DONALDS941.6' C	2	115-41.6	626	626
	obranch 63255 66714 1	TRIP LINE FROM BUS 'DONALDS7 115' TO BUS 'WARSAW 7 115' C	1	115	626	626-657
	obranch 63255 66718 1	TRIP LINE FROM BUS 'DONALDS7 115' TO BUS 'HALMA 7 115' CKT	1	115	626	626-657
	obranch 63256 63356 2	TRIP LINE FROM BUS 'DONDPIP7 115' TO BUS 'DON PIP94.20' CKT	2	115-4.2	626	626
	obranch 63255 63155 1	TRIP LINE FROM BUS 'DONALDS7 115' TO BUS 'DONALDS941.6' C	1	115-41.6	626	626
	obranch 63256 63356 1	TRIP LINE FROM BUS 'DONDPIP7 115' TO BUS 'DON PIP94.20' CKT	1	115-4.2	626	626
	obranch 63255 63256 1	TRIP LINE FROM BUS 'DONALDS7 115' TO BUS 'DONDPIP7 115' CK	1	115	626	626
	obranch 66705 63255 1	TRIP LINE FROM BUS 'DRAYTON7 115' TO BUS 'DONALDS7 115' C	1	115	626	626-657
383	570 2			115-41.6	626	626
	obranch 63255 63155 1	TRIP LINE FROM BUS 'DONALDS7 115' TO BUS 'DONALDS941.6' C	1	115-41.6	626	626

No.	Contingency		Ckt	Base kV	Area	Zone
	obranch 63255 63155 2	TRIP LINE FROM BUS 'DONALDS7 115' TO BUS 'DONALDS941.6' C	2	115-41.6	626	626
385	575				626	657-626
	obranch 66718 66708 1	TRIP LINE FROM BUS 'HALMA 7 115' TO BUS 'KARLSTA7 115' CKT	1	115	626	657
	obranch 66785 63156 1	TRIP LINE FROM BUS 'KARLSTAT 115' TO BUS 'KARLSTD941.6' CK	1	41.6-115	626	626-657
	obranch 66785 66838 1	TRIP LINE FROM BUS 'KARLSTAT 115' TO BUS 'KARLSTA869.0' CK	1	69-115	626	657
	obranch 63254 63354 1	TRIP LINE FROM BUS 'VIKING 7 115' TO BUS 'VIK PIP94.20' CKT 1	1	115-4.2	626	626
	obranch 63255 66718 1	TRIP LINE FROM BUS 'DONALDS7 115' TO BUS 'HALMA 7 115' CKT	1	115	626	626-657
	obranch 66708 66785 1	TRIP LINE FROM BUS 'KARLSTA7 115' TO BUS 'KARLSTAT 115' CK	1	115	626	657
	obranch 66708 63254 1	TRIP LINE FROM BUS 'KARLSTA7 115' TO BUS 'VIKING 7 115' CKT	1	115	626	626-657
388	576			115-4.2	626	626-657
	obranch 63251 63252 1	TRIP LINE FROM BUS 'PLUMTAP7 115' TO BUS 'PLUMMER7 115' C	1	115	626	626
	obranch 66713 63253 1	TRIP LINE FROM BUS 'TRFALLS7 115' TO BUS 'PLUMPIP7 115' CKT	1	115	626	626-657
	obranch 63253 63353 1	TRIP LINE FROM BUS 'PLUMPIP7 115' TO BUS 'PLUMPIP94.20' CKT	1	115-4.2	626	626
	obranch 63253 63353 2	TRIP LINE FROM BUS 'PLUMPIP7 115' TO BUS 'PLUMPIP94.20' CKT	2	115-4.2	626	626
	obranch 63253 63251 1	TRIP LINE FROM BUS 'PLUMPIP7 115' TO BUS 'PLUMTAP7 115' CK	1	115	626	626
	obranch 63251 63238 1	TRIP LINE FROM BUS 'PLUMTAP7 115' TO BUS 'WINGER 7 115' CK	1	115	626	626
390	580 1				626	626-657
	obranch 63284 66724 1	TRIP LINE FROM BUS 'OSLO TN7 115' TO BUS 'ALVARAD7 115' CK	1	115	626	626-657
	obranch 66775 66774 1	TRIP LINE FROM BUS 'WARSAW T 115' TO BUS 'WARSAW 913.2' C	1	13.2-115	626	657
	obranch 66775 66714 1	TRIP LINE FROM BUS 'WARSAW T 115' TO BUS 'WARSAW 7 115' C	1	115	626	657
	obranch 66722 66714 1	TRIP LINE FROM BUS 'OSLO 7 115' TO BUS 'WARSAW 7 115' CKT	1	115	626	657
	obranch 66775 66834 1	TRIP LINE FROM BUS 'WARSAW T 115' TO BUS 'WARSAW 869.0' C	1	69-115	626	657
	obranch 66724 66725 1	TRIP LINE FROM BUS 'ALVARAD7 115' TO BUS 'WARREN 7 115' CK	1	115	626	657
	obranch 66722 63284 1	TRIP LINE FROM BUS 'OSLO 7 115' TO BUS 'OSLO TN7 115' CKT 1	1	115	626	626-657
	obranch 66714 63255 1	TRIP LINE FROM BUS 'WARSAW 7 115' TO BUS 'DONALDS7 115' C	1	115	626	626-657
	obranch 66775 62875 1	TRIP LINE FROM BUS 'WARSAW T 115' TO BUS 'WARSAW 869.0' C	1			
	obranch 66706 66722 1	TRIP LINE FROM BUS 'FALCONR7 115' TO BUS 'OSLO 7 115' CKT	1	115	626	657
393	580 2				626	657
	obranch 66775 66774 1	TRIP LINE FROM BUS 'WARSAW T 115' TO BUS 'WARSAW 913.2' C	1	13.2-115	626	657
	obranch 66775 66714 1	TRIP LINE FROM BUS 'WARSAW T 115' TO BUS 'WARSAW 7 115' C	1	115	626	657
	obranch 66775 66834 1	TRIP LINE FROM BUS 'WARSAW T 115' TO BUS 'WARSAW 869.0' C	1	69-115	626	657
395	580 3		1	115	626	657
	obranch 66723 66713 1	TRIP LINE FROM BUS 'GREENWD7 115' TO BUS 'TRFALLS7 115' C	1	115	626	657
398	585			115	626-652	
	obranch 66706 66722 1	TRIP LINE FROM BUS 'FALCONR7 115' TO BUS 'OSLO 7 115' CKT	1	115	626	657
	obranch 66443 66706 1	TRIP LINE FROM BUS 'GRNDFKS7 115' TO BUS 'FALCONR7 115' C	1	115	652-626	655-657
	obranch 66706 63249 1	TRIP LINE FROM BUS 'FALCONR7 115' TO BUS 'CRKSTON7 115' C	1	115	626	626-657
400	590			115-41.6	626	626-628
	obranch 63213 63212 1	TRIP LINE FROM BUS 'MARIETT7 115' TO BUS 'BURR 7 115' CKT 1	1	115	626	626
	obranch 63212 63210 1	TRIP LINE FROM BUS 'BURR 7 115' TO BUS 'TORONTO7 115' CKT	1	115	626	628-626
	obranch 63213 63113 1	TRIP LINE FROM BUS 'MARIETT7 115' TO BUS 'MARIETT941.6' CKT	1	115-41.6	626	626
	obranch 63212 63211 1	TRIP LINE FROM BUS 'BURR 7 115' TO BUS 'CANBY 7 115' CKT 1	1	115	626	626
	obranch 63214 63213 1	TRIP LINE FROM BUS 'BIGSTON7 115' TO BUS 'MARIETT7 115' CKT	1	115	626	626-628
403	595			115	626	628-626
	obranch 63215 63216 1	TRIP LINE FROM BUS 'HIWY12 7 115' TO BUS 'ORTONVL7 115' CKT	1	115	626	628-626
	obranch 63214 63215 1	TRIP LINE FROM BUS 'BIGSTON7 115' TO BUS 'HIWY12 7 115' CKT	1	115	626	628
405	600			115-41.6	626	626
	obranch 63250 63238 1	TRIP LINE FROM BUS 'FERTILE7 115' TO BUS 'WINGER 7 115' CKT	1	115	626	626
	obranch 63249 63250 1	TRIP LINE FROM BUS 'CRKSTON7 115' TO BUS 'FERTILE7 115' CK	1	115	626	626
	obranch 63250 63150 1	TRIP LINE FROM BUS 'FERTILE7 115' TO BUS 'FERTILE941.6' CKT	1	115-41.6	626	626
408	605			115-41.6	626	
	obranch 63233 63232 1	TRIP LINE FROM BUS 'EDGETAP7 115' TO BUS 'EDGETWN7 115' C	1	115	626	626
	obranch 62529 62530 1	TRIP LINE FROM BUS 'CMRTJCT7 115' TO BUS 'FRAZEE 7 115' CKT	1	115	626	621
	obranch 63236 62529 1	TRIP LINE FROM BUS 'AUDUBON7 115' TO BUS 'CMRTJCT7 115' C	1	115	626	621-629

No.	Contingency		Ckt	Base kV	Area	Zone
	obranch 62528 62533 1	TRIP LINE FROM BUS 'TAMARAC7 115' TO BUS 'CORMRNT7 115' C	1	115	626	621
	obranch 63234 62528 1	TRIP LINE FROM BUS 'PEL RPD7 115' TO BUS 'TAMARAC7 115' CK	1	115	626	621-626
	obranch 63223 63233 1	TRIP LINE FROM BUS 'HOOT LK7 115' TO BUS 'EDGETAP7 115' CK	1	115	626	626
	obranch 62528 63310 1	TRIP LINE FROM BUS 'TAMARAC7 115' TO BUS 'TAMARAC941.6' C	1	115-41.6	626	621-629
	obranch 62528 63310 2	TRIP LINE FROM BUS 'TAMARAC7 115' TO BUS 'TAMARAC941.6' C	2	115-41.6	626	621-629
	obranch 63233 63234 1	TRIP LINE FROM BUS 'EDGETAP7 115' TO BUS 'PEL RPD7 115' CK	1	115	626	626
410	610				626	
	obranch 63329 63191 1	TRIP LINE FROM BUS 'WAHPETN4 230' TO BUS 'WAHPET1Y 230' C	1	230	626	627-629
	obranch 63201 63229 1	TRIP LINE FROM BUS 'WAHPET2Y 230' TO BUS 'WAHPETN7 115' C	1	115-230	626	627-629
	obranch 63201 63129 1	TRIP LINE FROM BUS 'WAHPET2Y 230' TO BUS 'WAHPETN941.6' C	1	41.6-230	626	627-629
	obranch 63191 63129 1	TRIP LINE FROM BUS 'WAHPET1Y 230' TO BUS 'WAHPETN941.6' C	1	41.6-230	626	627-629
	obranch 63331 63329 1	TRIP LINE FROM BUS 'FERGSFL4 230' TO BUS 'WAHPETN4 230' C	1	230	626	627-626
	obranch 63329 63201 1	TRIP LINE FROM BUS 'WAHPETN4 230' TO BUS 'WAHPET2Y 230' C	1	230	626	627-629
	obranch 66754 63329 1	TRIP LINE FROM BUS 'MAPLE R4 230' TO BUS 'WAHPETN4 230' CK	1	230	626	627-657
	obranch 63327 63329 1	TRIP LINE FROM BUS 'HANKSON4 230' TO BUS 'WAHPETN4 230' C	1	230	626	627
	obranch 63191 63229 1	TRIP LINE FROM BUS 'WAHPET1Y 230' TO BUS 'WAHPETN7 115' C	1	115-230	626	627-629
413	615				608	608-620
	obranch 61610 61794 1	TRIP LINE FROM BUS 'BADOURA4 230' TO BUS 'BADOUJCT 115' C	1	230-115	608	608
	obranch 61610 63053 1	TRIP LINE FROM BUS 'BADOURA4 230' TO BUS 'HUBBARD4 230' C	1	230	608	608-620
	obranch 61794 61640 1	TRIP LINE FROM BUS 'BADOUJCT 115' TO BUS 'BADOURA7 115' C	1	115	608	608
	obranch 61610 61612 1	TRIP LINE FROM BUS 'BADOURA4 230' TO BUS 'RIVERTN4 230' CK	1	230	608	608
	obranch 61794 61795 1	TRIP LINE FROM BUS 'BADOUJCT 115' TO BUS 'BADOUTR913.8' C	1	115-13.8	608	608
415	616			115	608	608-620
	obranch 61673 62447 1	TRIP LINE FROM BUS 'ARROWHD7 115' TO BUS 'BERGNTP7 115' C	1	115	608	608-620
	obranch 61718 62454 1	TRIP LINE FROM BUS '16L TAP7 115' TO BUS 'PEARY 7 115' CKT 1	1	115	608	608-620
	obranch 61720 61718 1	TRIP LINE FROM BUS 'COTTNTP7 115' TO BUS '16L TAP7 115' CKT	1	115	608	608
	obranch 61720 62452 1	TRIP LINE FROM BUS 'COTTNTP7 115' TO BUS 'COTTON 7 115' CK	1	115	608	608-620
	obranch 61708 62454 1	TRIP LINE FROM BUS 'VIRGNIA7 115' TO BUS 'PEARY 7 115' CKT 1	1	115	608	608-620
	obranch 61718 61721 1	TRIP LINE FROM BUS '16L TAP7 115' TO BUS 'ETCO 7 115' CKT 1	1	115	608	608
	obranch 61720 62447 1	TRIP LINE FROM BUS 'COTTNTP7 115' TO BUS 'BERGNTP7 115' CK	1	115	608	608-620
	obranch 62446 62447 1	TRIP LINE FROM BUS 'BERGNLK7 115' TO BUS 'BERGNTP7 115' C	1	115	608	620
418	617			115	608	608-620
	obranch 62206 61646 1	TRIP LINE FROM BUS 'BAXTER 7 115' TO BUS 'DOGLKTP7 115' CK	1			
	obranch 61645 61646 1	TRIP LINE FROM BUS 'BAXTER 7 115' TO BUS 'DOGLKTP7 115' CK	1	115	608	608
	obranch 61644 61646 1	TRIP LINE FROM BUS 'DOGLAKE7 115' TO BUS 'DOGLKTP7 115' C	1	115	608	608
	obranch 62895 61646 1	TRIP LINE FROM BUS 'THMSTWN7 115' TO BUS 'DOGLKTP7 115' C	1	115	608	608-620
	obranch 61642 62895 1	TRIP LINE FROM BUS 'VERNDLE7 115' TO BUS 'THMSTWN7 115' C	1	115	608	608-620
420	620				608	608
	obranch 61576 61672 1	TRIP LINE FROM BUS 'HILTPJCT 115' TO BUS 'HILLTOP7 115' CKT	1	115	608	608
	obranch 61615 61614 1	TRIP LINE FROM BUS 'ARROWHD4 230' TO BUS '98L TAP4 230' CK	1	230	608	608
	obranch 61625 61614 1	TRIP LINE FROM BUS 'BLCKBRY4 230' TO BUS '98L TAP4 230' CKT	1	230	608	608
	obranch 61616 61576 1	TRIP LINE FROM BUS 'HILLTOP4 230' TO BUS 'HILTPJCT 115' CKT	1	230-115	608	608
	obranch 61616 61614 1	TRIP LINE FROM BUS 'HILLTOP4 230' TO BUS '98L TAP4 230' CKT 1	1	230	608	608
	obranch 61576 61577 1	TRIP LINE FROM BUS 'HILTPJCT 115' TO BUS 'HILTPTR913.8' CKT	1	115-13.8	608	608
423	625				608	608
	obranch 61558 61559 1	TRIP LINE FROM BUS 'MINT1JCT 115' TO BUS 'MINT1TR913.8' CKT	1	115-13.8	608	608
	obranch 61558 61710 1	TRIP LINE FROM BUS 'MINT1JCT 115' TO BUS 'MINNTAC7 115' CKT	1	115	608	608
	obranch 61623 61624 1	TRIP LINE FROM BUS 'MINNTAC4 230' TO BUS 'FORBES 4 230' CKT	1	230	608	608
	obranch 61623 61558 1	TRIP LINE FROM BUS 'MINNTAC4 230' TO BUS 'MINT1JCT 115' CKT	1	230-115	608	608
425	630			115	608	608
	obranch 61656 61664 1	TRIP LINE FROM BUS 'MAHTOWA7 115' TO BUS 'WRENSHL7 115'	1	115	608	608
	obranch 61664 61665 1	TRIP LINE FROM BUS 'WRENSHL7 115' TO BUS 'THOMSON7 115' C	1	115	608	608
	obranch 61655 61656 1	TRIP LINE FROM BUS 'CROMWLL7 115' TO BUS 'MAHTOWA7 115'	1	115	608	608
428	635			115	608	620-608
	obranch 62636 62637 1	TRIP LINE FROM BUS 'MCGREGR7 115' TO BUS 'KIMBRLY7 115' C	1	115	608	620

No.	Contingency		Ckt	Base kV	Area	Zone
	obranch 62637 62638 1	TRIP LINE FROM BUS 'KIMBRLY7 115' TO BUS 'AITKIN 7 115' CKT 1	1	115	608	620
	obranch 61654 62638 1	TRIP LINE FROM BUS 'AITKNMN7 115' TO BUS 'AITKIN 7 115' CKT 1	1	115	608	608-620
	obranch 61655 62636 1	TRIP LINE FROM BUS 'CROMWLL7 115' TO BUS 'MCGREGR7 115'	1	115	608	608-620
	obranch 61653 61654 1	TRIP LINE FROM BUS 'RIVERTN7 115' TO BUS 'AITKNMN7 115' CKT	1	115	608	608
430	640					
	obranch 63050 60356 C1	TRIP LINE FROM BUS 'WILLMAR4 230' TO BUS 'PAYNES 4 230' CKT C1		230	600-618	601-619
	obranch 62425 62005 C1	TRIP LINE FROM BUS 'WILLMAR7 115' TO BUS 'KERKHOT7 115' CK C1		115	626-618	621-619
	obranch 62425 62427 1	TRIP LINE FROM BUS 'WILLMAR7 115' TO BUS 'WILLMAR869.0' CK	1	69-115	618	619
433	650			115-69	600-618	601-619
	obranch 62090 60205 1	TRIP LINE FROM BUS 'PRKWOOD7 115' TO BUS 'CRKEDLK7 115' C	1	115	600-618	601-619
	obranch 62090 62132 1	TRIP LINE FROM BUS 'PRKWOOD7 115' TO BUS 'PRKWOOD869.0'	1	69-115	618	619
435	655			115-69	600-618	601-619
	obranch 62924 60206 1	TRIP LINE FROM BUS 'MEDINA 7 115' TO BUS 'CROWRVR7 115' CK	1	115	600-618	601-619
	obranch 62924 62951 1	TRIP LINE FROM BUS 'MEDINA 7 115' TO BUS 'MEDINA 869.0' CKT	1	69-115	618	619
438	660			230-69	618	619
	obranch 63043 63046 1	TRIP LINE FROM BUS 'ELK RIV4 230' TO BUS 'BUNKER 4 230' CKT	1	230	618	619
	obranch 63043 62134 2	TRIP LINE FROM BUS 'ELK RIV4 230' TO BUS 'ELKR14S869.0' CKT	2	69-230	618	619
440	665			230-69	600-618	601-619
	obranch 63043 60152 1	TRIP LINE FROM BUS 'ELK RIV4 230' TO BUS 'MNTCELO4 230' CKT	1	230	600-618	601-619
	obranch 63043 62134 1	TRIP LINE FROM BUS 'ELK RIV4 230' TO BUS 'ELKR14S869.0' CKT	1	69-230	618	619
443	670 1				600-618	601-619
	obranch 63031 60160 1	TRIP LINE FROM BUS 'BUNKER 3 345' TO BUS 'SHERCO 3 345' CK	1	345	600-618	601-619
	obranch 60160 60202 1	TRIP LINE FROM BUS 'SHERCO 3 345' TO BUS 'COON CK3 345' CK	1	345	600	601
	obranch 60160 60202 1	TRIP LINE FROM BUS 'SHERCO 3 345' TO BUS 'COON CK3 345' CK	1	345	600	601
	obranch 60202 61487 1	TRIP LINE FROM BUS 'COON CK3 345' TO BUS 'CNCMID2Y 345' CK	1	345	600	601
	obranch 63031 60202 1	TRIP LINE FROM BUS 'BUNKER 3 345' TO BUS 'COON CK3 345' CK	1	345	600-618	601-619
	obranch 63031 60160 1	TRIP LINE FROM BUS 'BUNKER 3 345' TO BUS 'SHERCO 3 345' CK	1	345	600-618	601-619
	obranch 61487 60655 1	TRIP LINE FROM BUS 'CNCMID2Y 345' TO BUS 'CNCTER2934.5' CK	1	345-34.5	600	601
	obranch 63031 60202 1	TRIP LINE FROM BUS 'BUNKER 3 345' TO BUS 'COON CK3 345' CK	1	345	600-618	601-619
	obranch 63046 63031 1	TRIP LINE FROM BUS 'BUNKER 4 230' TO BUS 'BUNKER 3 345' CKT	1	345-230	618	619
	obranch 61487 60203 1	TRIP LINE FROM BUS 'CNCMID2Y 345' TO BUS 'COON CK7 115' CK	1	345-115	600	601
445	670 2			345-230	618-600	619-601
	obranch 63046 63031 1	TRIP LINE FROM BUS 'BUNKER 4 230' TO BUS 'BUNKER 3 345' CKT	1	345-230	618	619
	obranch 63031 60202 1	TRIP LINE FROM BUS 'BUNKER 3 345' TO BUS 'COON CK3 345' CK	1	345	600-618	601-619
	obranch 63031 60160 1	TRIP LINE FROM BUS 'BUNKER 3 345' TO BUS 'SHERCO 3 345' CK	1	345	600-618	601-619
448	670 3				600	601
	obranch 60202 61487 1	TRIP LINE FROM BUS 'COON CK3 345' TO BUS 'CNCMID2Y 345' CK	1	345	600	601
	obranch 61487 60203 1	TRIP LINE FROM BUS 'CNCMID2Y 345' TO BUS 'COON CK7 115' CK	1	345-115	600	601
	obranch 60160 60202 1	TRIP LINE FROM BUS 'SHERCO 3 345' TO BUS 'COON CK3 345' CK	1	345	600	601
	obranch 61487 60655 1	TRIP LINE FROM BUS 'CNCMID2Y 345' TO BUS 'CNCTER2934.5' CK	1	345-34.5	600	601
450	675			345-230	600	601-622
	obranch 60142 60160 1	TRIP LINE FROM BUS 'BENTON 3 345' TO BUS 'SHERCO 3 345' CK	1	345	600	601
	obranch 63045 60142 1	TRIP LINE FROM BUS 'BENTON 4 230' TO BUS 'BENTON 3 345' CKT	1	345-230	600	601-622
	obranch 63045 60142 2	TRIP LINE FROM BUS 'BENTON 4 230' TO BUS 'BENTON 3 345' CKT	2	345-230	600	601-622
453	680				600-618	
	obranch 63045 60143 P2	TRIP LINE FROM BUS 'BENTON 4 230' TO BUS 'BENTON 7 115' CKT P2		115-230	600	601-622
	obranch 63045 62297 1	TRIP LINE FROM BUS 'BENTON 4 230' TO BUS 'BENTON 869.0' CKT	1	69-230	618-600	619-622
455	685			69-115	618-608	
	obranch 61655 62470 1	TRIP LINE FROM BUS 'CROMWLL7 115' TO BUS 'CROMWLL869.0' C	1	69-115	618-608	619-608
	obranch 61655 62636 1	TRIP LINE FROM BUS 'CROMWLL7 115' TO BUS 'MCGREGR7 115'	1	115	608	608-620
	obranch 61655 61656 1	TRIP LINE FROM BUS 'CROMWLL7 115' TO BUS 'MAHTOWA7 115'	1	115	608	608
458	690			115		
	obranch 62425 62005 C1	TRIP LINE FROM BUS 'WILLMAR7 115' TO BUS 'KERKHOT7 115' CK C1		115	626-618	621-619
	obranch 62006 62001 1	TRIP LINE FROM BUS 'KERKHO 7 115' TO BUS 'BENSON 7 115' CK	1	115	626	621

No.	Contingency		Ckt	Base kV	Area	Zone
	obranch 60357 62005 1	TRIP LINE FROM BUS 'MAYNARD7 115' TO BUS 'KERKHOT7 115' C	1	115	600-626	601-621
	obranch 62005 62006 1	TRIP LINE FROM BUS 'KERKHOT7 115' TO BUS 'KERKHO 7 115' CK	1	115	626	621
460	695			115	600-618	601-619
	obranch 60153 60155 1	TRIP LINE FROM BUS 'MNTCELO7 115' TO BUS 'PULASKI7 115' CK	1	115	600	601
	obranch 62925 62926 1	TRIP LINE FROM BUS 'DICKNSN7 115' TO BUS 'DCKSNSS7 115' CK	1	115	618	619
	obranch 62926 60155 1	TRIP LINE FROM BUS 'DCKSNSS7 115' TO BUS 'PULASKI7 115' CK	1	115	600-618	601-619
463	700 1			345	600	601
	obranch 60217 60236 1	TRIP LINE FROM BUS 'INVRHLS3 345' TO BUS 'REDROCK3 345' CK	1	345	600	601
	obranch 60192 60217 1	TRIP LINE FROM BUS 'BLUE LK3 345' TO BUS 'INVRHLS3 345' CKT	1	345	600	601
	obranch 60105 60192 1	TRIP LINE FROM BUS 'PR ISLD3 345' TO BUS 'BLUE LK3 345' CKT 1	1	345	600	601
465	700 2			345	600	601
	obranch 60192 60217 1	TRIP LINE FROM BUS 'BLUE LK3 345' TO BUS 'INVRHLS3 345' CKT	1	345	600	601
	obranch 60217 60236 1	TRIP LINE FROM BUS 'INVRHLS3 345' TO BUS 'REDROCK3 345' CK	1	345	600	601
468	705 1			345-115	600	601
	obranch 60192 60233 1	TRIP LINE FROM BUS 'BLUE LK3 345' TO BUS 'PARKERS3 345' CKT	1	345	600	601
	obranch 60192 60262 1	TRIP LINE FROM BUS 'BLUE LK3 345' TO BUS 'EDEN PR3 345' CKT	1	345	600	601
	obranch 60262 60263 1	TRIP LINE FROM BUS 'EDEN PR3 345' TO BUS 'EDEN PR7 115' CKT	1	115-345	600	601
470	705 2			115-345	600	601
	obranch 60262 60263 2	TRIP LINE FROM BUS 'EDEN PR3 345' TO BUS 'EDEN PR7 115' CKT	2	115-345	600	601
	obranch 60192 60233 1	TRIP LINE FROM BUS 'BLUE LK3 345' TO BUS 'PARKERS3 345' CKT	1	345	600	601
	obranch 60233 60262 1	TRIP LINE FROM BUS 'PARKERS3 345' TO BUS 'EDEN PR3 345' CK	1	345	600	601
473	705 3			115-345	600	601
	obranch 60262 60263 1	TRIP LINE FROM BUS 'EDEN PR3 345' TO BUS 'EDEN PR7 115' CKT	1	115-345	600	601
	obranch 60192 60262 1	TRIP LINE FROM BUS 'BLUE LK3 345' TO BUS 'EDEN PR3 345' CKT	1	345	600	601
475	705 4			115-345	600	601
	obranch 60262 60263 2	TRIP LINE FROM BUS 'EDEN PR3 345' TO BUS 'EDEN PR7 115' CKT	2	115-345	600	601
	obranch 60233 60262 1	TRIP LINE FROM BUS 'PARKERS3 345' TO BUS 'EDEN PR3 345' CK	1	345	600	601
478	710 1			69-115	600-618	
	obranch 62667 63021 1	TRIP LINE FROM BUS 'ST BONI7 115' TO BUS 'ST BONI869.0' CKT 1	1	69-115	600	622
	obranch 62925 62667 1	TRIP LINE FROM BUS 'DICKNSN7 115' TO BUS 'ST BONI7 115' CKT	1	115	600-618	622-619
	obranch 62667 60277 1	TRIP LINE FROM BUS 'ST BONI7 115' TO BUS 'WWACNIA7 115' CK	1	115	600	601-622
480	710 2			115-69	600-618	
	obranch 62667 60277 1	TRIP LINE FROM BUS 'ST BONI7 115' TO BUS 'WWACNIA7 115' CK	1	115	600	601-622
	obranch 62925 60206 1	TRIP LINE FROM BUS 'DICKNSN7 115' TO BUS 'CROWRVR7 115' C	1	115	600-618	601-619
	obranch 62925 62667 1	TRIP LINE FROM BUS 'DICKNSN7 115' TO BUS 'ST BONI7 115' CKT	1	115	600-618	622-619
	obranch 62667 63021 1	TRIP LINE FROM BUS 'ST BONI7 115' TO BUS 'ST BONI869.0' CKT 1	1	69-115	600	622
483	715 1			115-69	600-618	
	obranch 62975 60244 1	TRIP LINE FROM BUS 62975 TO BUS 60244 CKT 1	1	115	600-618	601-624
	obranch 60242 62668 1	TRIP LINE FROM BUS 60242 TO BUS 62668 CKT 1	1	115	600	601-622
	obranch 62668 62975 1	TRIP LINE FROM BUS 62668 TO BUS 62975 CKT 1	1	115	600-618	622-624
	obranch 62666 62672 2	TRIP LINE FROM BUS 62666 TO BUS 62672 CKT 2	2	69-115	600	622
	obranch 60200 62666 1	TRIP LINE FROM BUS 60200 TO BUS 62666 CKT 1	1	115	600	601-622
	obranch 60190 60242 1	TRIP LINE FROM BUS 60190 TO BUS 60242 CKT 1	1	115	600	601
	obranch 60244 60890 2	TRIP LINE FROM BUS 60244 TO BUS 60890 CKT 2	2	115-69	600	601
485	715 2			115-69	600-618	
	obranch 62975 60244 1	TRIP LINE FROM BUS 62975 TO BUS 60244 CKT 1	1	115	600-618	601-624
	obranch 60244 60890 2	TRIP LINE FROM BUS 60244 TO BUS 60890 CKT 2	2	115-69	600	601
	obranch 60243 60244 1	TRIP LINE FROM BUS 60243 TO BUS 60244 CKT 1	1	115	600	601
	obranch 60194 60931 1	TRIP LINE FROM BUS 60194 TO BUS 60931 CKT 1	1	69-115	600	601
	obranch 60190 60242 1	TRIP LINE FROM BUS 60190 TO BUS 60242 CKT 1	1	115	600	601
	obranch 62666 60243 1	TRIP LINE FROM BUS 62666 TO BUS 60243 CKT 1	1	115	600	601-622
	obranch 62666 62672 1	TRIP LINE FROM BUS 62666 TO BUS 62672 CKT 1	1	69-115	600	622
	obranch 60242 62668 1	TRIP LINE FROM BUS 60242 TO BUS 62668 CKT 1	1	115	600	601-622
	obranch 60243 60194 1	TRIP LINE FROM BUS 60243 TO BUS 60194 CKT 1	1	115	600	601

No.	Contingency		Ckt	Base kV	Area	Zone
	obranch 62668 62975 1	TRIP LINE FROM BUS 62668 TO BUS 62975 CKT 1	1	115	600-618	622-624
488	715 3			115-69	600	601-622
	obranch 60200 62666 1	TRIP LINE FROM BUS 60200 TO BUS 62666 CKT 1	1	115	600	601-622
	obranch 62666 62672 2	TRIP LINE FROM BUS 62666 TO BUS 62672 CKT 2	2	69-115	600	622
490	715 4			115-69	600	601-622
	obranch 60243 60194 1	TRIP LINE FROM BUS 60243 TO BUS 60194 CKT 1	1	115	600	601
	obranch 60194 60931 1	TRIP LINE FROM BUS 60194 TO BUS 60931 CKT 1	1	69-115	600	601
	obranch 62666 60243 1	TRIP LINE FROM BUS 62666 TO BUS 60243 CKT 1	1	115	600	601-622
	obranch 62666 62672 1	TRIP LINE FROM BUS 62666 TO BUS 62672 CKT 1	1	69-115	600	622
	obranch 60243 60194 1	TRIP LINE FROM BUS 60243 TO BUS 60194 CKT 1	1	115	600	601
493	715 5			115-69	600-618	
	obranch 60242 62668 1	TRIP LINE FROM BUS 'SAVAGE 7 115' TO BUS 'EGLCKTP7 115' CK	1	115	600	601-622
	obranch 62975 60244 1	TRIP LINE FROM BUS 'SHAKOPE7 115' TO BUS 'SCOTTCO7 115' C	1	115	600-618	601-624
	obranch 62668 62975 1	TRIP LINE FROM BUS 'EGLCKTP7 115' TO BUS 'SHAKOPE7 115' CK	1	115	600-618	622-624
	obranch 60190 60242 1	TRIP LINE FROM BUS 'BLK DOG7 115' TO BUS 'SAVAGE 7 115' CKT	1	115	600	601
	obranch 60244 60890 2	TRIP LINE FROM BUS 'SCOTTCO7 115' TO BUS 'SCOTTCO869.0' C	2	115-69	600	601
495	71L			115	608	608
	obranch 61673 61687 1	TRIP LINE FROM BUS 'ARROWHD7 115' TO BUS 'MIDWAY 7 115' C	1	115	608	608
	obranch 61687 61686 1	TRIP LINE FROM BUS 'MIDWAY 7 115' TO BUS '15TH AV7 115' CKT	1	115	608	608
498	720 1			115	600-618	601-619
	obranch 62924 60211 1	TRIP LINE FROM BUS 'MEDINA 7 115' TO BUS 'GLESNLK7 115' CKT	1	115	600-618	601-619
	obranch 60211 60234 2	TRIP LINE FROM BUS 'GLESNLK7 115' TO BUS 'PARKERS7 115' CK	2	115	600	601
	obranch 60211 60234 1	TRIP LINE FROM BUS 'GLESNLK7 115' TO BUS 'PARKERS7 115' CK	1	115	600	601
500	720 2			115	600-618	601-619
	obranch 62924 60211 1	TRIP LINE FROM BUS 'MEDINA 7 115' TO BUS 'GLESNLK7 115' CKT	1	115	600-618	601-619
	obranch 60211 60234 1	TRIP LINE FROM BUS 'GLESNLK7 115' TO BUS 'PARKERS7 115' CK	1	115	600	601
503	725			230-69	618	619
	obranch 63040 63048 1	TRIP LINE FROM BUS 'BLAINE 4 230' TO BUS 'RUSH CY4 230' CKT	1	230	618	619
	obranch 63040 62128 1	TRIP LINE FROM BUS 'BLAINE 4 230' TO BUS 'BLAINE 869.0' CKT 1	1	69-230	618	619
	obranch 63040 63046 1	TRIP LINE FROM BUS 'BLAINE 4 230' TO BUS 'BUNKER 4 230' CKT	1	230	618	619
505	726L		1	118	608	608
	obranch 61784 61752 1	TRIP LINE FROM BUS 'INTPHAS7 118' TO BUS 'I.FALLS7 118' CKT 1	1	118	608	608
508	735 1			115	600	604-680
	obranch 60303 69120 1	TRIP LINE FROM BUS 'LUGERV 7 115' TO BUS 'CRANDPC 115' CK	1	115	600	604-680
	obranch 60283 60298 1	TRIP LINE FROM BUS 'S109 7 115' TO BUS 'PARKFLS7 115' CKT 1	1	115	600	604
	obranch 69120 60340 1	TRIP LINE FROM BUS 'CRANDPC 115' TO BUS 'PHILIPS7 115' CKT	1	115	600	604-680
	obranch 69108 60301 1	TRIP LINE FROM BUS 'PHILDPC 115' TO BUS 'PRENTCE7 115' CKT	1	115	600	604-680
	obranch 60297 60283 1	TRIP LINE FROM BUS 'OSPREY 7 115' TO BUS 'S109 7 115' CKT 1	1	115	600	604
	obranch 60298 60303 1	TRIP LINE FROM BUS 'PARKFLS7 115' TO BUS 'LUGERV 7 115' CKT	1	115	600	604
	obranch 60340 69108 1	TRIP LINE FROM BUS 'PHILIPS7 115' TO BUS 'PHILDPC 115' CKT 1	1	115	600	604-680
510	735 2			115	600	604
	obranch 60297 60283 1	TRIP LINE FROM BUS 'OSPREY 7 115' TO BUS 'S109 7 115' CKT 1	1	115	600	604
	obranch 60283 60298 1	TRIP LINE FROM BUS 'S109 7 115' TO BUS 'PARKFLS7 115' CKT 1	1	115	600	604
513	735 3			115	600	604-680
	obranch 60298 60303 1	TRIP LINE FROM BUS 'PARKFLS7 115' TO BUS 'LUGERV 7 115' CKT	1	115	600	604
	obranch 69120 60340 1	TRIP LINE FROM BUS 'CRANDPC 115' TO BUS 'PHILIPS7 115' CKT	1	115	600	604-680
	obranch 60303 69120 1	TRIP LINE FROM BUS 'LUGERV 7 115' TO BUS 'CRANDPC 115' CK	1	115	600	604-680
	obranch 69108 60301 1	TRIP LINE FROM BUS 'PHILDPC 115' TO BUS 'PRENTCE7 115' CKT	1	115	600	604-680
	obranch 60340 69108 1	TRIP LINE FROM BUS 'PHILIPS7 115' TO BUS 'PHILDPC 115' CKT 1	1	115	600	604-680
515	740 1			161-115	600	601-622
	obranch 60106 63071 1	TRIP LINE FROM BUS 'PR ISLD5 161' TO BUS 'SPRNGCK5 161' CKT	1	161	600	601-622
	obranch 60103 60104 1	TRIP LINE FROM BUS 'CANNFLS5 161' TO BUS 'CANNFLS7 115' CK	1	115-161	600	601
	obranch 60103 63071 1	TRIP LINE FROM BUS 'CANNFLS5 161' TO BUS 'SPRNGCK5 161' C	1	161	600	601-622

No.	Contingency		Ckt	Base kV	Area	Zone
518	740 2			161-115	600	601-622
	obranch 60103 63071 1	TRIP LINE FROM BUS 'CANNFLS5 161' TO BUS 'SPRNGCK5 161' C	1	161	600	601-622
	obranch 60103 60104 1	TRIP LINE FROM BUS 'CANNFLS5 161' TO BUS 'CANNFLS7 115' CK	1	115-161	600	601
520	745			115-34.5	600	601-622
	obranch 60162 62616 1	TRIP LINE FROM BUS 'WAKEFLD7 115' TO BUS 'BIGSWAN7 115' C	1	115	600	601-622
	obranch 60156 60162 C1	TRIP LINE FROM BUS 'PYNSVIL7 115' TO BUS 'WAKEFLD7 115' CK	C1	115	600	601
	obranch 60162 60706 2	TRIP LINE FROM BUS 'WAKEFLD7 115' TO BUS 'WAKEFLD934.5' C	2	34.5-115	600	601
523	750			69-115	600-608	
	obranch 60144 60749 1	TRIP LINE FROM BUS 'DGLASCO7 115' TO BUS 'DGLAS C869.0' CK	1	69-115	600	601
	obranch 62817 60144 1	TRIP LINE FROM BUS 'LSAUKTP7 115' TO BUS 'DGLASCO7 115' CK	1	115	600	601-622
	obranch 61647 62817 1	TRIP LINE FROM BUS 'LONG PR7 115' TO BUS 'LSAUKTP7 115' CK	1	115	608-600	608-622
525	755			115	600	601-622
	obranch 60166 60153 1	TRIP LINE FROM BUS 'SALIDA 7 115' TO BUS 'MNTCELO7 115' CKT	1	115	600	601
	obranch 60166 60158 1	TRIP LINE FROM BUS 'SALIDA 7 115' TO BUS 'STCLTP 7 115' CKT 1	1	115	600	601
	obranch 60157 60158 1	TRIP LINE FROM BUS 'STCLOUD7 115' TO BUS 'STCLTP 7 115' CKT	1	115	600	601
	obranch 62815 60158 1	TRIP LINE FROM BUS 'I94PARK7 115' TO BUS 'STCLTP 7 115' CKT	1	115	600	601-622
528	756			115	600	601-622
	obranch 60162 60159 1	TRIP LINE FROM BUS 'WAKEFLD7 115' TO BUS 'STCTPW 7 115' CK	1	115	600	601
	obranch 62815 62816 1	TRIP LINE FROM BUS 'I94PARK7 115' TO BUS 'STAUGST7 115' CKT	1	115	600	622
	obranch 62816 60159 1	TRIP LINE FROM BUS 'STAUGST7 115' TO BUS 'STCTPW 7 115' CK	1	115	600	601-622
	obranch 60157 60159 1	TRIP LINE FROM BUS 'STCLOUD7 115' TO BUS 'STCTPW 7 115' CK	1	115	600	601
530	760			345	600	601
	obranch 60105 60236 1	TRIP LINE FROM BUS 'PR ISLD3 345' TO BUS 'REDROCK3 345' CKT	1	345	600	601
	obranch 60105 60236 2	TRIP LINE FROM BUS 'PR ISLD3 345' TO BUS 'REDROCK3 345' CKT	2	345	600	601
533	761L		1	115	608	608
	obranch 61684 61632 1	TRIP LINE FROM BUS 'STIN-WI7 115' TO BUS 'DAHLBRG7 115' CKT	1	115	608	608
535	762L			161	600-608	604-608
	obranch 61631 60290 1	TRIP LINE FROM BUS 'MINONG 5 161' TO BUS 'ST LAKE5 161' CKT	1	161	600-608	604-608
	obranch 61630 61631 1	TRIP LINE FROM BUS 'STINSON5 161' TO BUS 'MINONG 5 161' CKT	1	161	608	608
538	765			230-345	600-618	601-619
	obranch 60361 63048 1	TRIP LINE FROM BUS 'ROCKCR 4 230' TO BUS 'RUSH CY4 230' CK	1	230	600-618	601-619
	obranch 60236 60237 1	TRIP LINE FROM BUS 'REDROCK3 345' TO BUS 'REDROCK4 230' C	1	345-230	600	601
	obranch 63048 60237 1	TRIP LINE FROM BUS 'RUSH CY4 230' TO BUS 'REDROCK4 230' CK	1	230	600-618	601-619
540	770			161-115	600-331	601-393
	obranch 60109 60120 1	TRIP LINE FROM BUS 'WILMART5 161' TO BUS 'BLUEETA5 161' CK	1	161	600	601
	obranch 60120 34009 1	TRIP LINE FROM BUS 'BLUEETA5 161' TO BUS 'WINBAGO5 161' CK	1	161	331-600	393-601
	obranch 60109 60110 1	TRIP LINE FROM BUS 'WILMART5 161' TO BUS 'WILMART7 115' CK	1	115-161	600	601
543	775			115	600-608	
	obranch 60165 60163 1	TRIP LINE FROM BUS 'MEI INT7 115' TO BUS 'WST CLD7 115' CKT	1	115	600	601
	obranch 60165 60164 1	TRIP LINE FROM BUS 'MEI INT7 115' TO BUS 'XRDS 7 115' CKT 1	1	115	600	601
	obranch 62819 60163 1	TRIP LINE FROM BUS 'FSCHRHL7 115' TO BUS 'WST CLD7 115' CK	1	115	600	601-622
	obranch 60154 60163 1	TRIP LINE FROM BUS 'SAUK RV7 115' TO BUS 'WST CLD7 115' CKT	1	115	600	601
	obranch 61650 62819 1	TRIP LINE FROM BUS 'LITTLEF7 115' TO BUS 'FSCHRHL7 115' CKT	1	115	608-600	608-622
	obranch 60154 60157 1	TRIP LINE FROM BUS 'SAUK RV7 115' TO BUS 'STCLOUD7 115' CK	1	115	600	601
	obranch 60146 60164 1	TRIP LINE FROM BUS 'GRANCTY7 115' TO BUS 'XRDS 7 115' CKT	1	115	600	601
545	780			115	600	601
	obranch 60146 60161 1	TRIP LINE FROM BUS 'GRANCTY7 115' TO BUS 'STREGIS7 115' CK	1	115	600	601
	obranch 60143 60348 1	TRIP LINE FROM BUS 'BENTON 7 115' TO BUS 'BENCTP7 115' CKT	1	115	600	601
	obranch 60348 60143 1	TRIP LINE FROM BUS 'BENCTP7 115' TO BUS 'BENTON 7 115' CKT	1	115	600	601
	obranch 60143 60146 1	TRIP LINE FROM BUS 'BENTON 7 115' TO BUS 'GRANCTY7 115' CK	1	115	600	601
548	785				331-600	
	obranch 34003 34004 1	TRIP LINE FROM BUS 'MAGNLIA5 161' TO BUS 'ELK 5 161' CKT 1	1	161	331	393
	obranch 34005 34225 1	TRIP LINE FROM BUS 'HRN LK 5 161' TO BUS 'HERONLK869.0' CKT	1	69-161	331	394-393
	obranch 34004 34005 1	TRIP LINE FROM BUS 'ELK 5 161' TO BUS 'HRN LK 5 161' CKT 1	1	161	331	393

No.	Contingency		Ckt	Base kV	Area	Zone
	obranch 60128 34003 1	TRIP LINE FROM BUS 'SPLT RK5 161' TO BUS 'MAGNLIA5 161' CKT	1	161	331-600	393-603
	obranch 60129 60128 1	TRIP LINE FROM BUS 'SPLT RK7 115' TO BUS 'SPLT RK5 161' CKT	1	115-161	600	603
550	78L			115	608	608
	obranch 61730 61728 1	TRIP LINE FROM BUS '78L TAP7 115' TO BUS 'HIBBTAC7 115' CKT	1	115	608	608
	obranch 61730 61733 1	TRIP LINE FROM BUS '78L TAP7 115' TO BUS 'NATIONL7 115' CKT	1	115	608	608
	obranch 61730 61722 1	TRIP LINE FROM BUS '78L TAP7 115' TO BUS 'FORBES 7 115' CKT	1	115	608	608
553	790			115-230	600-652	601-654
	obranch 60147 60148 1	TRIP LINE FROM BUS 'MINVALY4 230' TO BUS 'MINVALY7 115' CKT	1	115-230	600	601
	obranch 66550 60147 1	TRIP LINE FROM BUS 'GRANITF4 230' TO BUS 'MINVALY4 230' CKT	1	230	600-652	601-654
555	795				600-652	
	obranch 60148 60149 C1	TRIP LINE FROM BUS 'MINVALY7 115' TO BUS 'MINVALT4 230' CKT	C1	115-230	600	601
	obranch 60149 60150 1	TRIP LINE FROM BUS 'MINVALT4 230' TO BUS 'MNVLTAP4 230' CK	1	230	600	601
	obranch 60150 63054 1	TRIP LINE FROM BUS 'MNVLTAP4 230' TO BUS 'PANTHER4 230' CK	1	230	600	601-622
	obranch 66550 60150 1	TRIP LINE FROM BUS 'GRANITF4 230' TO BUS 'MNVLTAP4 230' CK	1	230	600-652	601-654
	obranch 63054 60742 1	TRIP LINE FROM BUS 'PANTHER4 230' TO BUS 'PANTHER869.0' CK	1	69-230	600	601-622
558	800 1				626	626-657
	obranch 63186 63343 1	TRIP LINE FROM BUS 'WILTON Y 230' TO BUS 'WILTON1913.8' CKT	1	13.8-230	626	626
	obranch 63345 63186 1	TRIP LINE FROM BUS 'WILTON 4 230' TO BUS 'WILTON Y 230' CKT	1	230	626	626
	obranch 63186 63245 1	TRIP LINE FROM BUS 'WILTON Y 230' TO BUS 'WILTON 7 115' CKT	1	115-230	626	626
	obranch 66758 63345 1	TRIP LINE FROM BUS 'WINGER 4 230' TO BUS 'WILTON 4 230' CKT	1	230	626	626-657
560	805			115	600	601
	obranch 60224 60176 1	TRIP LINE FROM BUS 'LONG LK7 115' TO BUS 'BAYTOWN7 115' CK	1	115	600	601
	obranch 60222 60224 1	TRIP LINE FROM BUS 'KOLMNLK7 115' TO BUS 'LONG LK7 115' CK	1	115	600	601
	obranch 60187 60176 1	TRIP LINE FROM BUS 'AS KING7 115' TO BUS 'BAYTOWN7 115' CK	1	115	600	601
563	810			230-115	600-618	601-624
	obranch 60189 60190 C1	TRIP LINE FROM BUS 'BLK DOG4 230' TO BUS 'BLK DOG7 115' CKT	C1	230-115	600	601
	obranch 60189 62980 1	TRIP LINE FROM BUS 'BLK DOG4 230' TO BUS 'MCLEOD 4 230' CK	1	230	600-618	601-624
565	811			115	600	601-622
	obranch 60107 62865 1	TRIP LINE FROM BUS 'W FARIB7 115' TO BUS 'AIRTECH7 115' CKT	1	115	600	601-622
	obranch 62865 62234 1	TRIP LINE FROM BUS 'AIRTECH7 115' TO BUS 'LKMARN 7 115' CKT	1	115	600	622
568	815			115	600	601-622
	obranch 62226 60343 1	TRIP LINE FROM BUS 'FISCHER7 115' TO BUS 'WILLPIP7 115' CKT	1	115	600	601-622
	obranch 60343 62228 1	TRIP LINE FROM BUS 'WILLPIP7 115' TO BUS 'APPVLTW7 115' CKT	1	115	600	601-622
	obranch 62225 62226 1	TRIP LINE FROM BUS 'BURNVIL7 115' TO BUS 'FISCHER7 115' CKT	1	115	600	622
	obranch 62228 62227 1	TRIP LINE FROM BUS 'APPVLTW7 115' TO BUS 'JOHNCAK7 115' C	1	115	600	622
570	820			115	600	601
	obranch 60218 60271 1	TRIP LINE FROM BUS 'INVRHLS7 115' TO BUS 'RICHVLY7 115' CKT	1	115	600	601
	obranch 60247 60201 1	TRIP LINE FROM BUS 'LINDETP7 115' TO BUS 'CHEMOLT7 115' CK	1	115	600	601
	obranch 60271 60247 1	TRIP LINE FROM BUS 'RICHVLY7 115' TO BUS 'LINDETP7 115' CKT	1	115	600	601
573	825			345-161	331-600	
	obranch 60102 34018 1	TRIP LINE FROM BUS 'ADAMS 3 345' TO BUS 'HAZLTON3 345' CKT	1	345	331-600	393-601
	obranch 63032 60102 1	TRIP LINE FROM BUS 'PL VLLY3 345' TO BUS 'ADAMS 3 345' CKT 1	1	345	600	601-622
	obranch 60102 34014 1	TRIP LINE FROM BUS 'ADAMS 3 345' TO BUS 'ADAMS 5 161' CKT	1	345-161	600-331	601-393
575	830			115	600	
	obranch 60327 60328 1	TRIP LINE FROM BUS 'T RIVFL7 115' TO BUS 'RIV FLS7 115' CKT 1	1	115	600	604-600
	obranch 60238 68966 1	TRIP LINE FROM BUS 'REDROCK7 115' TO BUS 'GLENMONT 115' C	1	115	600	601-680
	obranch 60327 68966 1	TRIP LINE FROM BUS 'T RIVFL7 115' TO BUS 'GLENMONT 115' CKT	1	115	600	604-680
	obranch 60327 60330 1	TRIP LINE FROM BUS 'T RIVFL7 115' TO BUS 'CRYSTAL7 115' CKT	1	115	600	604
578	835			161	600	604
	obranch 60319 60318 1	TRIP LINE FROM BUS 'WHEATTP5 161' TO BUS 'WHEATON5 161' C	1	161	600	604
	obranch 60282 60319 1	TRIP LINE FROM BUS 'REDCDR 5 161' TO BUS 'WHEATTP5 161' CK	1	161	600	604
	obranch 60319 60320 1	TRIP LINE FROM BUS 'WHEATTP5 161' TO BUS 'HYDROLN5 161' C	1	161	600	604
580	840			161	600	604

No.	Contingency		Ckt	Base kV	Area	Zone
	obranch 60319 60318 1	TRIP LINE FROM BUS 'WHEATTP5 161' TO BUS 'WHEATON5 161' C	1	161	600	604
	obranch 60318 60368 1	TRIP LINE FROM BUS 'WHEATON5 161' TO BUS 'JEFRSRD5 161' C	1	161	600	604
583	845			115	600	604-680
	obranch 60306 60322 1	TRIP LINE FROM BUS 'HOLCOMB7 115' TO BUS 'CORNELL7 115' C	1	115	600	604
	obranch 60326 69157 1	TRIP LINE FROM BUS 'JIMFLS 7 115' TO BUS 'ANDERSN7 115' CKT	1	115	600	604-680
	obranch 69157 60322 1	TRIP LINE FROM BUS 'ANDERSN7 115' TO BUS 'CORNELL7 115' C	1	115	600	604-680
585	850				600-680	
	obranch 60312 60314 1	TRIP LINE FROM BUS 'PINE LK5 161' TO BUS 'PINELKT5 161' CKT 1	1	161	600	604
	obranch 60313 60312 1	TRIP LINE FROM BUS 'PINE LK7 115' TO BUS 'PINE LK5 161' CKT 1	1	115-161	600	604
	obranch 60329 60314 1	TRIP LINE FROM BUS 'CRYSTAL5 161' TO BUS 'PINELKT5 161' CKT	1	161	600	604
	obranch 69565 69007 1	TRIP LINE FROM BUS 'APL RVR5 161' TO BUS 'APLRVR 869.0' CKT	1	69-161	680	680-681
	obranch 69565 60314 1	TRIP LINE FROM BUS 'APL RVR5 161' TO BUS 'PINELKT5 161' CKT	1	161	600-680	604-681
588	855			115	626-652	
	obranch 66555 62003 1	TRIP LINE FROM BUS 'MORRIS 7 115' TO BUS 'JOHNJCT7 115' CKT	1	115	626-652	621-655
	obranch 63216 62003 1	TRIP LINE FROM BUS 'ORTONVL7 115' TO BUS 'JOHNJCT7 115' CK	1	115	626	621-626
	obranch 62003 62004 1	TRIP LINE FROM BUS 'JOHNJCT7 115' TO BUS 'GRACEV 7 115' CK	1	115	626	621
590	860			115-41.6	626-652	
	obranch 63218 62002 1	TRIP LINE FROM BUS 'MOROTP 7 115' TO BUS 'WALDEN 7 115' CK	1	115	626	621-626
	obranch 62001 62013 1	TRIP LINE FROM BUS 'BENSON 7 115' TO BUS 'BENSON 941.6' CK	1	41.6-115	626	621
	obranch 66555 63218 1	TRIP LINE FROM BUS 'MORRIS 7 115' TO BUS 'MOROTP 7 115' CKT	1	115	626-652	626-655
	obranch 62002 62001 1	TRIP LINE FROM BUS 'WALDEN 7 115' TO BUS 'BENSON 7 115' CK	1	115	626	621
	obranch 62001 62006 1	TRIP LINE FROM BUS 'BENSON 7 115' TO BUS 'KERKHO 7 115' CK	1	115	626	621
593	865			230-41.6	626	
	obranch 63051 63052 1	TRIP LINE FROM BUS 'HENNING4 230' TO BUS 'INMAN 4 230' CKT	1	230	626	621
	obranch 63331 63051 1	TRIP LINE FROM BUS 'FERGSFL4 230' TO BUS 'HENNING4 230' CK	1	230	626	621-626
	obranch 63051 63309 1	TRIP LINE FROM BUS 'HENNING4 230' TO BUS 'HENNING941.6' CK	1	230-41.6	626	621-629
595	866			230	626-608	621-608
	obranch 63052 63051 1	TRIP LINE FROM BUS 'INMAN 4 230' TO BUS 'HENNING4 230' CKT	1	230	626	621
	obranch 63052 61611 1	TRIP LINE FROM BUS 'INMAN 4 230' TO BUS 'WINGRIV4 230' CKT	1	230	608-626	608-621
598	867L			115	608-600	
	obranch 61647 62817 1	TRIP LINE FROM BUS 'LONG PR7 115' TO BUS 'LSAUKTP7 115' CK	1	115	608-600	608-622
	obranch 60144 62817 1	TRIP LINE FROM BUS 'DGLASCO7 115' TO BUS 'LSAUKTP7 115' CK	1	115	600	601-622
600	875 1			161	600-680	604-681
	obranch 60309 69535 1	TRIP LINE FROM BUS 'MRSHLND5 161' TO BUS 'LAC TAP5 161' CK	1	161	600-680	604-681
	obranch 69523 69535 1	TRIP LINE FROM BUS 'GENOA 5 161' TO BUS 'LAC TAP5 161' CKT	1	161	680	681
	obranch 60308 69535 1	TRIP LINE FROM BUS 'LACROSS5 161' TO BUS 'LAC TAP5 161' CKT	1	161	600-680	604-681
	obranch 60302 60308 1	TRIP LINE FROM BUS 'COULEE 5 161' TO BUS 'LACROSS5 161' CK	1	161	600	604
603	875 2			161	680-600	681-604
	obranch 69523 69535 1	TRIP LINE FROM BUS 'GENOA 5 161' TO BUS 'LAC TAP5 161' CKT	1	161	680	681
	obranch 60308 69535 1	TRIP LINE FROM BUS 'LACROSS5 161' TO BUS 'LAC TAP5 161' CKT	1	161	600-680	604-681
	obranch 60309 69535 1	TRIP LINE FROM BUS 'MRSHLND5 161' TO BUS 'LAC TAP5 161' CK	1	161	600-680	604-681
605	880			161	331-680	393-681
	obranch 69523 34021 1	TRIP LINE FROM BUS 'GENOA 5 161' TO BUS 'LANSINGW 161' CK	1	161	331-680	393-681
	obranch 69523 69527 1	TRIP LINE FROM BUS 'GENOA 5 161' TO BUS 'HARMONY5 161' CK	1	161	680	681
608	885			161	680	681
	obranch 69507 69511 1	TRIP LINE FROM BUS 'SENECA 5 161' TO BUS 'BELLCTR5 161' CKT	1	161	680	681
	obranch 69507 69523 1	TRIP LINE FROM BUS 'SENECA 5 161' TO BUS 'GENOA 5 161' CKT	1	161	680	681
610	8L			46-115	608-618	608-619
	obranch 61803 62404 1	TRIP LINE FROM BUS 'THOM46 946.0' TO BUS 'FOND DU946.0' CKT	1	46	608-618	608-619
	obranch 61665 61803 1	TRIP LINE FROM BUS 'THOMSON7 115' TO BUS 'THOM46 946.0' CK	1	46-115	608	608
613	902			161-345	635-363	638-335
	obranch 64405 64438 1	TRIP LINE FROM BUS 'SUB 91 3 345' TO BUS 'SB 91 5 161' CKT 1	1	161-345	635	638
	obranch 64405 36382 1	TRIP LINE FROM BUS 'SUB 91 3 345' TO BUS 'QUAD ; 345' CKT 1	1	345	363-635	335-638

No.	Contingency		Ckt	Base kV	Area	Zone
	obranch 64405 64404 1	TRIP LINE FROM BUS 'SUB 91 3 345' TO BUS 'DAVNPRT3 345' CKT	1	345	635	638
615	904			345-161	635	638-637
	obranch 64403 64680 1	TRIP LINE FROM BUS 'E MOLIN3 345' TO BUS 'SB39MID5 161' CKT	1	345-161	635	638-637
	obranch 64403 64400 1	TRIP LINE FROM BUS 'E MOLIN3 345' TO BUS 'MECCORD3 345' CK	1	345	635	638
	obranch 64403 64402 1	TRIP LINE FROM BUS 'E MOLIN3 345' TO BUS 'LOUISA 3 345' CKT 1	1	345	635	638
618	906			345	356-635	313-638
	obranch 64408 31435 1	TRIP LINE FROM BUS 'SUB T 3 345' TO BUS 'PALM TAP 345' CKT 1	1	345	356-635	313-638
	obranch 64408 64350 1	TRIP LINE FROM BUS 'SUB T 3 345' TO BUS 'HILLS 3 345' CKT 1	1	345	635	638
	obranch 64402 64408 1	TRIP LINE FROM BUS 'LOUISA 3 345' TO BUS 'SUB T 3 345' CKT 1	1	345	635	638
620	908 1			345	356-635	
	obranch 31435 31992 1	TRIP LINE FROM BUS 'PALM TAP 345' TO BUS 'SPENCER 345' CK	1	345	356	313-314
	obranch 64408 31435 1	TRIP LINE FROM BUS 'SUB T 3 345' TO BUS 'PALM TAP 345' CKT 1	1	345	356-635	313-638
	obranch 31992 31230 1	TRIP LINE FROM BUS 'SPENCER 345' TO BUS 'MONTGMRY 345' C	1	345	356	314
623	910			345-161	331-635	391-638
	obranch 64352 34093 1	TRIP LINE FROM BUS 'TIFFIN 3 345' TO BUS 'ARNOLD 3 345' CKT 1	1	345	331-635	391-638
	obranch 64350 64352 1	TRIP LINE FROM BUS 'HILLS 3 345' TO BUS 'TIFFIN 3 345' CKT 1	1	345	635	638
	obranch 64352 64353 1	TRIP LINE FROM BUS 'TIFFIN 3 345' TO BUS 'TIFFIN 5 161' CKT 1	1	161-345	635	638
625	911			161	331-652	391-654
	obranch 66560 34047 1	TRIP LINE FROM BUS 'CRESTON5 161' TO BUS 'ANTA TP5 161' CK	1	161	331-652	391-654
	obranch 66561 34047 1	TRIP LINE FROM BUS 'DENISON5 161' TO BUS 'ANTA TP5 161' CKT	1	161	331-652	391-654
	obranch 34047 34048 1	TRIP LINE FROM BUS 'ANTA TP5 161' TO BUS 'ANITA 5 161' CKT 1	1	161	331	391
628	916			161	331-635	
	obranch 34082 63730 1	TRIP LINE FROM BUS 'EMERYS 5 161' TO BUS 'HAMPTON5 161' CK	1	161	331-635	393-635
	obranch 63730 64239 1	TRIP LINE FROM BUS 'HAMPTON5 161' TO BUS 'FRANKLN5 161' C	1	161	635	635-637
630	917			161	331-680	
	obranch 61930 69531 1	TRIP LINE FROM BUS 'WINDSOR5 161' TO BUS 'POSTVIL5 161' CK	1	161	331-680	615-681
	obranch 34019 61930 1	TRIP LINE FROM BUS 'HAZLTON5 161' TO BUS 'WINDSOR5 161' CK	1	161	331	393-615
633	91L-99L-64L			230-115	608	608-620
	obranch 61610 63053 1	TRIP LINE FROM BUS 'BADOURA4 230' TO BUS 'HUBBARD4 230' C	1	230	608	608-620
	obranch 61610 61794 1	TRIP LINE FROM BUS 'BADOURA4 230' TO BUS 'BADOUJCT 115' C	1	230-115	608	608
	obranch 61612 61610 1	TRIP LINE FROM BUS 'RIVERTN4 230' TO BUS 'BADOURA4 230' CK	1	230	608	608
635	921 1			161	635	638
	obranch 64429 64430 1	TRIP LINE FROM BUS 'SB 74 5 161' TO BUS 'SB 76 5 161' CKT 1	1	161	635	638
	obranch 64429 64437 1	TRIP LINE FROM BUS 'SB 74 5 161' TO BUS 'SB 90 5 161' CKT 1	1	161	635	638
638	921 2			161	635	638
	obranch 64426 64410 1	TRIP LINE FROM BUS 'SB 58 5 161' TO BUS '58TAP 5 161' CKT 1	1	161	635	638
	obranch 64429 64437 1	TRIP LINE FROM BUS 'SB 74 5 161' TO BUS 'SB 90 5 161' CKT 1	1	161	635	638
	obranch 64432 64410 1	TRIP LINE FROM BUS 'SB 78 5 161' TO BUS '58TAP 5 161' CKT 1	1	161	635	638
	obranch 64429 64410 1	TRIP LINE FROM BUS 'SB 74 5 161' TO BUS '58TAP 5 161' CKT 1	1	161	635	638
640	921 3			161	635	638
	obranch 64429 64430 1	TRIP LINE FROM BUS 'SB 74 5 161' TO BUS 'SB 76 5 161' CKT 1	1	161	635	638
	obranch 64432 64410 1	TRIP LINE FROM BUS 'SB 78 5 161' TO BUS '58TAP 5 161' CKT 1	1	161	635	638
	obranch 64429 64410 1	TRIP LINE FROM BUS 'SB 74 5 161' TO BUS '58TAP 5 161' CKT 1	1	161	635	638
	obranch 64426 64410 1	TRIP LINE FROM BUS 'SB 58 5 161' TO BUS '58TAP 5 161' CKT 1	1	161	635	638
643	921 4			161	635	638
	obranch 64429 64410 1	TRIP LINE FROM BUS 'SB 74 5 161' TO BUS '58TAP 5 161' CKT 1	1	161	635	638
	obranch 64429 64437 1	TRIP LINE FROM BUS 'SB 74 5 161' TO BUS 'SB 90 5 161' CKT 1	1	161	635	638
645	921 5			161	635	638
	obranch 64429 64410 1	TRIP LINE FROM BUS 'SB 74 5 161' TO BUS '58TAP 5 161' CKT 1	1	161	635	638
	obranch 64429 64430 1	TRIP LINE FROM BUS 'SB 74 5 161' TO BUS 'SB 76 5 161' CKT 1	1	161	635	638
648	922 1			161	635	638
	obranch 64433 64428 1	TRIP LINE FROM BUS 'SB 79 5 161' TO BUS 'SB 71 5 161' CKT 1	1	161	635	638
	obranch 64438 64433 1	TRIP LINE FROM BUS 'SB 91 5 161' TO BUS 'SB 79 5 161' CKT 1	1	161	635	638

No.	Contingency		Ckt	Base kV	Area	Zone
	obranch 64428 64435 1	TRIP LINE FROM BUS 'SB 71 5 161' TO BUS 'SB 88 5 161' CKT 1	1	161	635	638
	obranch 64429 64433 1	TRIP LINE FROM BUS 'SB 74 5 161' TO BUS 'SB 79 5 161' CKT 1	1	161	635	638
	obranch 64435 64427 1	TRIP LINE FROM BUS 'SB 88 5 161' TO BUS 'SB 70 5 161' CKT 1	1	161	635	638
650	922 2			161	635	638
	obranch 64438 64433 1	TRIP LINE FROM BUS 'SB 91 5 161' TO BUS 'SB 79 5 161' CKT 1	1	161	635	638
	obranch 64433 64428 1	TRIP LINE FROM BUS 'SB 79 5 161' TO BUS 'SB 71 5 161' CKT 1	1	161	635	638
	obranch 64429 64433 1	TRIP LINE FROM BUS 'SB 74 5 161' TO BUS 'SB 79 5 161' CKT 1	1	161	635	638
	obranch 64428 64435 1	TRIP LINE FROM BUS 'SB 71 5 161' TO BUS 'SB 88 5 161' CKT 1	1	161	635	638
653	923			161	635	637-636
	obranch 64203 64201 1	TRIP LINE FROM BUS 'NW FTDG5 161' TO BUS 'WEBSTER5 161' C	1	161	635	637
	obranch 64205 64203 1	TRIP LINE FROM BUS 'FT.DODG5 161' TO BUS 'NW FTDG5 161' CK	1	161	635	637
	obranch 64230 64203 1	TRIP LINE FROM BUS 'POMEROY5 161' TO BUS 'NW FTDG5 161' C	1	161	635	637-636
655	924			161	635	637
	obranch 64250 64256 1	TRIP LINE FROM BUS 'BLKHAWK5 161' TO BUS 'UNIONTP5 161' CK	1	161	635	637
	obranch 64256 64285 1	TRIP LINE FROM BUS 'UNIONTP5 161' TO BUS 'BUTLER 5 161' CKT	1	161	635	637
658	926			161	635	637
	obranch 64255 64258 1	TRIP LINE FROM BUS 'MIDPORT5 161' TO BUS 'LUNDQST5 161' CK	1	161	635	637
	obranch 64250 64255 1	TRIP LINE FROM BUS 'BLKHAWK5 161' TO BUS 'MIDPORT5 161' CK	1	161	635	637
660	927			345	635	637
	obranch 64064 64095 1	TRIP LINE FROM BUS 'BONDRNT3 345' TO BUS 'MNTZUMA3 345' C	1	345	635	637
	obranch 64050 64192 1	TRIP LINE FROM BUS 'SE POLK3 345' TO BUS 'GDMEC 345' CKT	1	345	635	637
	obranch 64064 64080 1	TRIP LINE FROM BUS 'BONDRNT3 345' TO BUS 'SYCAMOR3 345' C	1	345	635	637
663	928			345	635	637
	obranch 64050 64056 1	TRIP LINE FROM BUS 'SE POLK3 345' TO BUS 'MADISON3 345' CK	1	345	635	637
	obranch 64056 64060 1	TRIP LINE FROM BUS 'MADISON3 345' TO BUS 'BOONVIL3 345' CK	1	345	635	637
	obranch 63871 64056 1	TRIP LINE FROM BUS 'ADAIR 3 345' TO BUS 'MADISON3 345' CKT	1	345	635	637
665	930 1			345/161	635	637
	obranch 64050 64056 1	TRIP LINE FROM BUS 'SE POLK3 345' TO BUS 'MADISON3 345'	1	345	635	637
	obranch 64051 64066 1	TRIP LINE FROM BUS 'SEPOLK 5 161' TO BUS 'S RIDGE5 161'	1	161	635	637
668	930 2			161/345	331-635	391-637
	obranch 64068 34060 1	TRIP LINE FROM BUS 'GRENFLD5 161' TO BUS 'WNTRST 5 161'	1	161	331-635	391-637
	obranch 64050 64056 1	TRIP LINE FROM BUS 'SE POLK3 345' TO BUS 'MADISON3 345'	1	345	635	637
670	931 1			345/161	635	637
	obranch 64050 64192 1	TRIP LINE FROM BUS 'SE POLK3 345' TO BUS 'GDMEC 345'	1	345	635	637
	obranch 64062 64069 1	TRIP LINE FROM BUS 'DMOINES5 161' TO BUS 'ALTONA 5 161'	1	161	635	637
673	931 2			161/345	635	637
	obranch 64067 64069 1	TRIP LINE FROM BUS 'BONDRNT5 161' TO BUS 'ALTONA 5 161'	1	161	635	637
	obranch 64050 64192 1	TRIP LINE FROM BUS 'SE POLK3 345' TO BUS 'GDMEC 345'	1	345	635	637
675	932 1			345	635	637
	obranch 64202 64080 1	TRIP LINE FROM BUS 'LEHIGH 3 345' TO BUS 'SYCAMOR3 345' CK	1	345	635	637
	obranch 64060 64080 1	TRIP LINE FROM BUS 'BOONVIL3 345' TO BUS 'SYCAMOR3 345' CK	1	345	635	637
678	932 2			115/345	331-635	391-637
	obranch 34073 34059 1	TRIP LINE FROM BUS 'GR JCT 7 115' TO BUS 'BOONE 7 115' CKT 1	1	115	331	391
	obranch 64202 64080 1	TRIP LINE FROM BUS 'LEHIGH 3 345' TO BUS 'SYCAMOR3 345' CK	1	345	635	637
680	932 3			161/345	331-635	391-637
	obranch 34058 34179 1	TRIP LINE FROM BUS 'PERRY 5 161' TO BUS 'JASPER 5 161' CKT	1	161	331	391
	obranch 64202 64080 1	TRIP LINE FROM BUS 'LEHIGH 3 345' TO BUS 'SYCAMOR3 345' CK	1	345	635	637
683	933			345-161	635	637
	obranch 64202 64200 1	TRIP LINE FROM BUS 'LEHIGH 3 345' TO BUS 'WEBSTER3 345' CK	1	345	635	637
	obranch 64200 64645 1	TRIP LINE FROM BUS 'WEBSTER3 345' TO BUS 'WEB MID5 161' CK	1	345-161	635	637
	obranch 64645 64201 1	TRIP LINE FROM BUS 'WEB MID5 161' TO BUS 'WEBSTER5 161' CK	1	161	635	637
685	934			161	331	391
	obranch 34054 34058 1	TRIP LINE FROM BUS 'GR JCT 5 161' TO BUS 'PERRY 5 161' CKT 1	1	161	331	391

No.	Contingency		Ckt	Base kV	Area	Zone
	obranch 34058 34179 1	TRIP LINE FROM BUS 'PERRY 5 161' TO BUS 'JASPER 5 161' CKT	1	161	331	391
688	936			115	331	391
	obranch 34052 34076 1	TRIP LINE FROM BUS 'AMES 7 115' TO BUS 'BNE JCT7 115' CKT 1	1	115	331	391
	obranch 34076 34059 1	TRIP LINE FROM BUS 'BNE JCT7 115' TO BUS 'BOONE 7 115' CKT	1	115	331	391
690	937			115-34.5	331	391
	obranch 34075 34158 1	TRIP LINE FROM BUS 'ELDORA 7 115' TO BUS 'ELDORA 934.5' CKT	1	115-34.5	331	391
	obranch 34169 34075 1	TRIP LINE FROM BUS 'WELSBGT7 115' TO BUS 'ELDORA 7 115' CK	1	115	331	391
	obranch 34075 34077 1	TRIP LINE FROM BUS 'ELDORA 7 115' TO BUS 'IA FALS7 115' CKT	1	115	331	391
	obranch 34169 34074 1	TRIP LINE FROM BUS 'WELSBGT7 115' TO BUS 'WELSBRG7 115' C	1	115	331	391
	obranch 34066 34169 1	TRIP LINE FROM BUS 'M-TOWN 7 115' TO BUS 'WELSBGT7 115' CK	1	115	331	391
693	938			115	331	391
	obranch 34066 34085 1	TRIP LINE FROM BUS 'M-TOWN 7 115' TO BUS 'BLRSTWN7 115' CK	1	115	331	391
	obranch 34085 34086 1	TRIP LINE FROM BUS 'BLRSTWN7 115' TO BUS 'WILMSBG7 115' C	1	115	331	391
	obranch 34085 34099 1	TRIP LINE FROM BUS 'BLRSTWN7 115' TO BUS 'PRAR CK7 115' CK	1	115	331	391
695	939			161	331	391
	obranch 34087 34089 1	TRIP LINE FROM BUS 'DYSART 5 161' TO BUS 'VINTON 5 161' CKT	1	161	331	391
	obranch 34089 34091 1	TRIP LINE FROM BUS 'VINTON 5 161' TO BUS 'ARNOLD 5 161' CKT	1	161	331	391
698	941			115-34.5	331	391
	obranch 34120 34121 1	TRIP LINE FROM BUS 'CALAMUS7 115' TO BUS 'E CALMS7 115' CK	1	115	331	391
	obranch 34099 34117 1	TRIP LINE FROM BUS 'PRAR CK7 115' TO BUS 'SUTLIFF7 115' CKT	1	115	331	391
	obranch 34117 34116 1	TRIP LINE FROM BUS 'SUTLIFF7 115' TO BUS 'W.BRCH 7 115' CKT	1	115	331	391
	obranch 34120 34142 1	TRIP LINE FROM BUS 'CALAMUS7 115' TO BUS 'CALAMUS934.5' C	1	115-34.5	331	391
	obranch 34117 34120 1	TRIP LINE FROM BUS 'SUTLIFF7 115' TO BUS 'CALAMUS7 115' CKT	1	115	331	391
700	942			115	331	391
	obranch 34131 34133 1	TRIP LINE FROM BUS 'COGGON 7 115' TO BUS 'DUNDEE 7 115' CK	1	115	331	391
	obranch 34103 34131 1	TRIP LINE FROM BUS 'MARION 7 115' TO BUS 'COGGON 7 115' CK	1	115	331	391
703	943			161	331-635	391-637
	obranch 34190 34174 1	TRIP LINE FROM BUS 'BRDGPRT5 161' TO BUS 'EICTAP 5 161' CKT	1	161	331	391
	obranch 34174 64096 1	TRIP LINE FROM BUS 'EICTAP 5 161' TO BUS 'BEACON 5 161' CKT	1	161	331-635	391-637
	obranch 34189 34190 1	TRIP LINE FROM BUS 'OTTUMWA5 161' TO BUS 'BRDGPRT5 161' C	1	161	331	391
705	946			345-161	635	638-637
	obranch 64404 64405 1	TRIP LINE FROM BUS 'DAVNPRT3 345' TO BUS 'SUB 91 3 345' CKT	1	345	635	638
	obranch 64404 64681 1	TRIP LINE FROM BUS 'DAVNPRT3 345' TO BUS 'SB56MID5 161' CK	1	345-161	635	638-637
	obranch 64404 64409 1	TRIP LINE FROM BUS 'DAVNPRT3 345' TO BUS 'WALCOTT3 345' C	1	345	635	638
708	947			345	635	638
	obranch 64402 64406 1	TRIP LINE FROM BUS 'LOUISA 3 345' TO BUS 'SUB 92 3 345' CKT 1	1	345	635	638
	obranch 64409 64406 1	TRIP LINE FROM BUS 'WALCOTT3 345' TO BUS 'SUB 92 3 345' CKT	1	345	635	638
	obranch 64406 64350 1	TRIP LINE FROM BUS 'SUB 92 3 345' TO BUS 'HILLS 3 345' CKT 1	1	345	635	638
710	948 1				331-635	
	obranch 34038 64422 1	TRIP LINE FROM BUS 'BVR CH 5 161' TO BUS 'SB 49 5 161' CKT 1	1	161	331-635	393-638
	obranch 34043 34046 1	TRIP LINE FROM BUS 'SAVANNA5 161' TO BUS 'YORK 5 161' CKT	1	161	331	393
	obranch 34044 34046 1	TRIP LINE FROM BUS 'ALBANY 5 161' TO BUS 'YORK 5 161' CKT 1	1	161	331	393
	obranch 34044 34045 1	TRIP LINE FROM BUS 'ALBANY 5 161' TO BUS 'ALBANY 6 138' CKT	1	138-161	331	393
	obranch 34038 34044 1	TRIP LINE FROM BUS 'BVR CH 5 161' TO BUS 'ALBANY 5 161' CKT	1	161	331	393
	obranch 34046 34351 1	TRIP LINE FROM BUS 'YORK 5 161' TO BUS 'YORK_8 34.5' CKT 1	1	34.5-161	331	394-393
713	948 2				331	393-394
	obranch 34044 34046 1	TRIP LINE FROM BUS 'ALBANY 5 161' TO BUS 'YORK 5 161' CKT 1	1	161	331	393
	obranch 34043 34046 1	TRIP LINE FROM BUS 'SAVANNA5 161' TO BUS 'YORK 5 161' CKT	1	161	331	393
	obranch 34038 34044 1	TRIP LINE FROM BUS 'BVR CH 5 161' TO BUS 'ALBANY 5 161' CKT	1	161	331	393
	obranch 34046 34351 1	TRIP LINE FROM BUS 'YORK 5 161' TO BUS 'YORK_8 34.5' CKT 1	1	34.5-161	331	394-393
	obranch 34044 34045 1	TRIP LINE FROM BUS 'ALBANY 5 161' TO BUS 'ALBANY 6 138' CKT	1	138-161	331	393
715	950			161	635	638
	obranch 64425 64434 1	TRIP LINE FROM BUS 'DAVNPRT5 161' TO BUS 'SB 85 5 161' CKT 1	1	161	635	638
	obranch 64434 64423 1	TRIP LINE FROM BUS 'SB 85 5 161' TO BUS 'SB 52 5 161' CKT 1	1	161	635	638

No.	Contingency		Ckt	Base kV	Area	Zone
	obranch 64415 64434 1	TRIP LINE FROM BUS 'SB 18 5 161' TO BUS 'SB 85 5 161' CKT 1	1	161	635	638
	obranch 64434 64424 1	TRIP LINE FROM BUS 'SB 85 5 161' TO BUS 'SB 53 5 161' CKT 1	1	161	635	638
718	951			161	635	638
	obranch 64426 64410 1	TRIP LINE FROM BUS 'SB 58 5 161' TO BUS '58TAP 5 161' CKT 1	1	161	635	638
	obranch 64429 64410 1	TRIP LINE FROM BUS 'SB 74 5 161' TO BUS '58TAP 5 161' CKT 1	1	161	635	638
	obranch 64432 64410 1	TRIP LINE FROM BUS 'SB 78 5 161' TO BUS '58TAP 5 161' CKT 1	1	161	635	638
720	952			161	635	638
	obranch 64418 64419 1	TRIP LINE FROM BUS 'E MOLINE 161' TO BUS 'SB 43 5 161' CKT 1	1	161	635	638
	obranch 64419 64415 1	TRIP LINE FROM BUS 'SB 43 5 161' TO BUS 'SB 18 5 161' CKT 1	1	161	635	638
723	953			161	635	638
	obranch 64418 64407 1	TRIP LINE FROM BUS 'E MOLINE 161' TO BUS 'SB 31T 5 161' CKT 1	1	161	635	638
	obranch 64416 64407 1	TRIP LINE FROM BUS 'SB 28 5 161' TO BUS 'SB 31T 5 161' CKT 1	1	161	635	638
	obranch 64407 64417 1	TRIP LINE FROM BUS 'SB 31T 5 161' TO BUS 'SB 31 5 161' CKT 1	1	161	635	638
	obranch 64414 64416 1	TRIP LINE FROM BUS 'SB 17 5 161' TO BUS 'SB 28 5 161' CKT 1	1	161	635	638
725	954			161	635	638
	obranch 64421 64420 1	TRIP LINE FROM BUS 'SB 48 5 161' TO BUS 'SB 47 5 161' CKT 1	1	161	635	638
	obranch 64418 64420 1	TRIP LINE FROM BUS 'E MOLINE 161' TO BUS 'SB 47 5 161' CKT 1	1	161	635	638
728	956			161	635	638
	obranch 64357 64362 1	TRIP LINE FROM BUS 'SB GIC 5 161' TO BUS 'SB YIC 5 161' CKT 1	1	161	635	638
	obranch 64360 64357 1	TRIP LINE FROM BUS 'SB PIC 5 161' TO BUS 'SB GIC 5 161' CKT 1	1	161	635	638
	obranch 64362 64356 1	TRIP LINE FROM BUS 'SB YIC 5 161' TO BUS 'SB EIC 5 161' CKT 1	1	161	635	638
730	957			161	635	638
	obranch 64359 64361 1	TRIP LINE FROM BUS 'SB JIC 5 161' TO BUS 'SB UIC 5 161' CKT 1	1	161	635	638
	obranch 64361 64360 1	TRIP LINE FROM BUS 'SB UIC 5 161' TO BUS 'SB PIC 5 161' CKT 1	1	161	635	638
733	958			161	331	391-393
	obranch 34129 34135 1	TRIP LINE FROM BUS 'LIBERTY5 161' TO BUS 'DUNDEE 5 161' CKT	1	161	331	391
	obranch 34028 34129 1	TRIP LINE FROM BUS 'LORE 5 161' TO BUS 'LIBERTY5 161' CKT 1	1	161	331	393-391
735	960			161	331-680	393-681
	obranch 34028 34033 1	TRIP LINE FROM BUS 'LORE 5 161' TO BUS 'TRK RIV5 161' CKT 1	1	161	331	393
	obranch 34033 69503 1	TRIP LINE FROM BUS 'TRK RIV5 161' TO BUS 'CASVILL5 161' CKT 1	1	161	331-680	393-681
738	961			161	331	393-615
	obranch 34008 61932 1	TRIP LINE FROM BUS 'FOX LK 5 161' TO BUS 'RUTLAND5 161' CKT	1	161	331	393-615
	obranch 61932 34009 1	TRIP LINE FROM BUS 'RUTLAND5 161' TO BUS 'WINBAGO5 161' C	1	161	331	393-615
740	962			161	680-331	
	obranch 69526 69527 1	TRIP LINE FROM BUS 'BVR CRK5 161' TO BUS 'HARMONY5 161' CK	1	161	680	681
	obranch 61980 69526 1	TRIP LINE FROM BUS 'RICE 5 161' TO BUS 'BVR CRK5 161' CKT 1	1	161	331-680	615-681
	obranch 34014 69526 1	TRIP LINE FROM BUS 'ADAMS 5 161' TO BUS 'BVR CRK5 161' CKT	1	161	331-680	393-681
743	97L				608	608
	obranch 61798 61611 1	OPEN LINE FROM BUS 'WINGRJCT 115' TO BUS 'WINGRIV4 230' C	1	230-115	608	608
	obranch 61798 61613 1	OPEN LINE FROM BUS 'WINGRJCT 115' TO BUS 'WINGRIV7 115' C	1	115	608	608
	obranch 61612 61611 1	TRIP LINE FROM BUS 'RIVERTN4 230' TO BUS 'WINGRIV4 230' CKT	1	230	608	608
	obranch 61798 61799 1	OPEN LINE FROM BUS 'WINGRJCT 115' TO BUS 'WINGRTR913.8' C	1	115-13.8	608	608
745	98L			230	608	608
	obranch 61614 61625 1	TRIP LINE FROM BUS '98L TAP4 230' TO BUS 'BLCKBRY4 230' CKT	1	230	608	608
	obranch 61614 61616 1	TRIP LINE FROM BUS '98L TAP4 230' TO BUS 'HILLTOP4 230' CKT 1	1	230	608	608
	obranch 61614 61615 1	TRIP LINE FROM BUS '98L TAP4 230' TO BUS 'ARROWHD4 230' CK	1	230	608	608
748	99			230-115	652	659-661
	obranch 67104 67385 1	TRIP LINE FROM BUS 'TIOGA4 4 230' TO BUS 'TIOGA4 7 115' CKT 1	1	230-115	652	659-661
	obranch 67104 67108 1	TRIP LINE FROM BUS 'TIOGA4 4 230' TO BUS 'LOGAN 4 230' CKT 1	1	230	652	659
750	999			161-138	635-357	638-357
	obranch 32415 64411 1	TRIP BRANCH FROM BUS 'GALESBRG 138' TO BUS 'GALESBR5 16	1	161-138	635-357	638-357
	obranch 32415 64411 2	TRIP BRANCH FROM BUS 'GALESBRG 138' TO BUS 'GALESBR5 16	2	161-138	635-357	638-357
	obranch 64411 64415 1	TRIP BRANCH FROM BUS 'GALESBR5 161' TO BUS 'SB 18 5 161' C	1	161	635	638

No.	Contingency		Ckt	Base kV	Area	Zone
753	9L			115	608	608
	obranch 61671 61670 1	TRIP LINE FROM BUS 'BURNETT7 115' TO BUS 'MDWLNDS7 115' C	1	115	608	608
	obranch 61668 61671 1	TRIP LINE FROM BUS 'CLOQUET7 115' TO BUS 'BURNETT7 115' CK	1	115	608	608
	obranch 61670 61663 1	TRIP LINE FROM BUS 'MDWLNDS7 115' TO BUS 'FLDWDTP7 115' C	1	115	608	608
	obranch 61663 61669 1	TRIP LINE FROM BUS 'FLDWDTP7 115' TO BUS 'FLDWOOD7 115' C	1	115	608	608
	obranch 61663 61739 1	TRIP LINE FROM BUS 'FLDWDTP7 115' TO BUS 'BLCKBRY7 115' CK	1	115	608	608
755	ALT2-01				331	
	obranch 34135 34542 1	TRIP LINE FROM BUS 'DUNDEE 5 161' TO BUS 'DUNDEE1Y 161' CK	1	161	331	391-392
	obranch 34542 34133 1	TRIP LINE FROM BUS 'DUNDEE1Y 161' TO BUS 'DUNDEE 7 115' CK	1	115-161	331	391-392
	obranch 34138 34543 1	TRIP LINE FROM BUS 'DUNDEE 869.0' TO BUS 'DUNDEE2Y 161' CK	1	69-161	331	391-392
	obranch 34135 34020 1	TRIP LINE FROM BUS 'DUNDEE 5 161' TO BUS 'HAZL S 5 161' CKT	1	161	331	393-391
	obranch 34543 34135 1	TRIP LINE FROM BUS 'DUNDEE2Y 161' TO BUS 'DUNDEE 5 161' CK	1	161	331	391-392
	obranch 34135 34129 1	TRIP LINE FROM BUS 'DUNDEE 5 161' TO BUS 'LIBERTY5 161' CKT	1	161	331	391
758	ALTW-02			115-34.5	331	391
	obranch 34133 34119 2	TRIP LINE FROM BUS 'DUNDEE 7 115' TO BUS 'DUNDEE 934.5' CK	2	115-34.5	331	391
	obranch 34133 34131 1	TRIP LINE FROM BUS 'DUNDEE 7 115' TO BUS 'COGGON 7 115' CK	1	115	331	391
	obranch 34133 34119 1	TRIP LINE FROM BUS 'DUNDEE 7 115' TO BUS 'DUNDEE 934.5' CK	1	115-34.5	331	391
760	ALTW-03			161-34.5	331	391-393
	obranch 34126 34140 1	TRIP LINE FROM BUS 'MQOKETA5 161' TO BUS 'MQOKETA934.5' C	1	161-34.5	331	391
	obranch 34126 34127 1	TRIP LINE FROM BUS 'MQOKETA5 161' TO BUS 'WYOMING5 161' C	1	161	331	391
	obranch 34126 34122 1	TRIP LINE FROM BUS 'MQOKETA5 161' TO BUS 'E CALMS5 161' CK	1	161	331	391
	obranch 34126 34030 1	TRIP LINE FROM BUS 'MQOKETA5 161' TO BUS 'SALEM 5 161' CK	1	161	331	393-391
763	ALTW-04			161-34.5	331	391
	obranch 34127 34053 1	TRIP LINE FROM BUS 'WYOMING5 161' TO BUS 'MT VERN5 161' CK	1	161	331	391
	obranch 34127 34141 1	TRIP LINE FROM BUS 'WYOMING5 161' TO BUS 'WYOMING934.5' C	1	161-34.5	331	391
	obranch 34127 34126 1	TRIP LINE FROM BUS 'WYOMING5 161' TO BUS 'MQOKETA5 161' C	1	161	331	391
765	ALTW-05			161	331	391
	obranch 34053 34109 1	TRIP LINE FROM BUS 'MT VERN5 161' TO BUS 'BERTRAM5 161' CK	1	161	331	391
	obranch 34053 34127 1	TRIP LINE FROM BUS 'MT VERN5 161' TO BUS 'WYOMING5 161' CK	1	161	331	391
768	ALTW-06			161-34.5	331	391
	obranch 34050 34167 1	TRIP LINE FROM BUS 'GU CTR 5 161' TO BUS 'GU CTR 934.5' CKT	1	161-34.5	331	391
	obranch 34050 34048 1	TRIP LINE FROM BUS 'GU CTR 5 161' TO BUS 'ANITA 5 161' CKT 1	1	161	331	391
	obranch 34049 34054 1	TRIP LINE FROM BUS 'SCRANTN5 161' TO BUS 'GR JCT 5 161' CKT	1	161	331	391
	obranch 34050 34049 1	TRIP LINE FROM BUS 'GU CTR 5 161' TO BUS 'SCRANTN5 161' CKT	1	161	331	391
770	ALTW-07			161-69	331	392-391
	obranch 34524 34064 1	TRIP LINE FROM BUS 'ANITA Y 161' TO BUS 'ANITA 869.0' CKT 1	1	161-69	331	392-391
	obranch 34048 34050 1	TRIP LINE FROM BUS 'ANITA 5 161' TO BUS 'GU CTR 5 161' CKT 1	1	161	331	391
	obranch 34048 34524 1	TRIP LINE FROM BUS 'ANITA 5 161' TO BUS 'ANITA Y 161' CKT 1	1	161	331	392-391
	obranch 34048 34047 1	TRIP LINE FROM BUS 'ANITA 5 161' TO BUS 'ANTA TP5 161' CKT 1	1	161	331	391
773	ALTW-08 1				331	391-392
	obranch 34124 34143 1	TRIP LINE FROM BUS 'DEWITT 5 161' TO BUS 'DEWITT 934.5' CKT	1	161-34.5	331	391
	obranch 34122 34126 1	TRIP LINE FROM BUS 'E CALMS5 161' TO BUS 'MQOKETA5 161' CK	1	161	331	391
	obranch 34539 34122 1	TRIP LINE FROM BUS 'E CALMSY 161' TO BUS 'E CALMS5 161' CKT	1	161	331	391-392
	obranch 34122 34124 1	TRIP LINE FROM BUS 'E CALMS5 161' TO BUS 'DEWITT 5 161' CKT	1	161	331	391
	obranch 34121 34539 1	TRIP LINE FROM BUS 'E CALMS7 115' TO BUS 'E CALMSY 161' CKT	1	115-161	331	391-392
775	ALTW-08 2			161-34.5	331	391
	obranch 34122 34124 1	TRIP LINE FROM BUS 'E CALMS5 161' TO BUS 'DEWITT 5 161' CKT	1	161	331	391
	obranch 34124 34143 1	TRIP LINE FROM BUS 'DEWITT 5 161' TO BUS 'DEWITT 934.5' CKT	1	161-34.5	331	391
778	ALTW-09			161	331-635	391-638
	obranch 34122 34123 1	TRIP LINE FROM BUS 'E CALMS5 161' TO BUS 'GR MND 5 161' CKT	1	161	331	391
	obranch 34122 64425 1	TRIP LINE FROM BUS 'E CALMS5 161' TO BUS 'DAVNPRT5 161' CK	1	161	331-635	391-638
780	ALTW-11			161	331	391
	obranch 34180 34181 1	TRIP LINE FROM BUS 'DENMARK5 161' TO BUS 'BRLGTN 5 161' CK	1	161	331	391
	obranch 34180 34181 2	TRIP LINE FROM BUS 'DENMARK5 161' TO BUS 'BRLGTN 5 161' CK	2	161	331	391

No.	Contingency		Ckt	Base kV	Area	Zone
783	ALTW-12			161	331	393-391
	obranch 34017 34139 1	TRIP LINE FROM BUS 34017 TO BUS 34139 CKT 1	1	161	331	393-391
	obranch 34082 34017 1	TRIP LINE FROM BUS 34082 TO BUS 34017 CKT 1	1	161	331	393
785	ALTW-13			161	331	393-392
	obranch 34028 34026 1	TRIP LINE FROM BUS 'LORE 5 161' TO BUS 'ASBURY 5 161' CKT 1	1	161	331	393
	obranch 34027 34508 1	TRIP LINE FROM BUS 'CNTRGRV5 161' TO BUS 'JULIAN 5 161' CKT	1	161	331	393-392
	obranch 34508 34030 1	TRIP LINE FROM BUS 'JULIAN 5 161' TO BUS 'SALEM 5 161' CKT 1	1	161	331	393-392
	obranch 34026 34027 1	TRIP LINE FROM BUS 'ASBURY 5 161' TO BUS 'CNTRGRV5 161' CK	1	161	331	393
788	ALTW-14			161	331	393
	obranch 34031 34032 1	TRIP LINE FROM BUS 'SO.GVW.5 161' TO BUS '8TH ST.5 161' CKT	1	161	331	393
	obranch 34030 34031 1	TRIP LINE FROM BUS 'SALEM 5 161' TO BUS 'SO.GVW.5 161' CKT	1	161	331	393
790	ALTW-47			161	331	393-391
	obranch 34017 34139 1	TRIP LINE FROM BUS 34017 TO BUS 34139 CKT 1	1	161	331	393-391
	obranch 34082 34017 1	TRIP LINE FROM BUS 34082 TO BUS 34017 CKT 1	1	161	331	393
793	ALTW-84			161	331	391
	obranch 34180 34181 2	TRIP LINE FROM BUS 'DENMARK5 161' TO BUS 'BRLGTN 5 161' CK	2	161	331	391
	obranch 34180 34181 1	TRIP LINE FROM BUS 'DENMARK5 161' TO BUS 'BRLGTN 5 161' CK	1	161	331	391
795	ALTW-85			161	331	393-392
	obranch 34030 34031 1	TRIP LINE FROM BUS 'SALEM 5 161' TO BUS 'SO.GVW.5 161' CKT	1	161	331	393
	obranch 34030 34508 1	TRIP LINE FROM BUS 'SALEM 5 161' TO BUS 'JULIAN 5 161' CKT 1	1	161	331	393-392
798	ALTW-86			161	331-635	393-638
	obranch 34038 34044 1	TRIP LINE FROM BUS 'BVR CH 5 161' TO BUS 'ALBANY 5 161' CKT	1	161	331	393
	obranch 34038 64422 1	TRIP LINE FROM BUS 'BVR CH 5 161' TO BUS 'SB 49 5 161' CKT 1	1	161	331-635	393-638
800	ARROWHD 6T				608	608
	obranch 61554 61615 1	TRIP LINE FROM BUS 'AWHD1JCT 115' TO BUS 'ARROWHD4 230' C	1	230-115	608	608
	obranch 61554 61673 1	TRIP LINE FROM BUS 'AWHD1JCT 115' TO BUS 'ARROWHD7 115' C	1	115	608	608
	obranch 61554 61555 1	TRIP LINE FROM BUS 'AWHD1JCT 115' TO BUS 'AWHD1TR913.8' C	1	115-13.8	608	608
803	ARROWHD 7T				608	608
	obranch 61556 61673 2	TRIP LINE FROM BUS 'AWHD2JCT 115' TO BUS 'ARROWHD7 115' C	2	115	608	608
	obranch 61556 61615 2	TRIP LINE FROM BUS 'AWHD2JCT 115' TO BUS 'ARROWHD4 230' C	2	230-115	608	608
	obranch 61556 61557 2	TRIP LINE FROM BUS 'AWHD2JCT 115' TO BUS 'AWHD2TR913.8' C	2	115-13.8	608	608
805	BADOURA 1T			230-115	608	608-620
	obranch 61610 61612 1	OPEN LINE FROM BUS 'BADOURA4 230' TO BUS 'RIVERTN4 230' C	1	230	608	608
	obranch 61610 61794 1	OPEN LINE FROM BUS 'BADOURA4 230' TO BUS 'BADOUJCT 115'	1	230-115	608	608
	obranch 61610 63053 1	OPEN LINE FROM BUS 'BADOURA4 230' TO BUS 'HUBBARD4 230'	1	230	608	608-620
808	BLAKBERY 1T				608	608
	obranch 61566 61567 1	TRIP LINE FROM BUS 'BLBY1JCT 115' TO BUS 'BLBY1TR913.8' CKT	1	115-13.8	608	608
	obranch 61566 61625 1	TRIP LINE FROM BUS 'BLBY1JCT 115' TO BUS 'BLCKBRY4 230' CK	1	230-115	608	608
	obranch 61566 61739 1	TRIP LINE FROM BUS 'BLBY1JCT 115' TO BUS 'BLCKBRY7 115' CK	1	115	608	608
810	BLAKBERY 2T				608	608
	obranch 61568 61569 2	TRIP LINE FROM BUS 'BLBY2JCT 115' TO BUS 'BLBY2TR913.8' CKT	2	115-13.8	608	608
	obranch 61568 61625 2	TRIP LINE FROM BUS 'BLBY2JCT 115' TO BUS 'BLCKBRY4 230' CK	2	230-115	608	608
	obranch 61568 61739 2	TRIP LINE FROM BUS 'BLBY2JCT 115' TO BUS 'BLCKBRY7 115' CK	2	115	608	608
813	FORBES 2T				608-600	608-601
	obranch 61550 61551 1	OPEN LINE FROM BUS 'FORB1JCT 230' TO BUS 'FORB1TR934.5' C	1	230-34.5	608	608
	obranch 61564 61722 2	TRIP LINE FROM BUS 'FORB4JCT 115' TO BUS 'FORBES 7 115' CK	2	115	608	608
	obranch 61564 61565 2	TRIP LINE FROM BUS 'FORB4JCT 115' TO BUS 'FORB4TR913.8' CK	2	115-13.8	608	608
	obranch 61550 60101 1	OPEN LINE FROM BUS 'FORB1JCT 230' TO BUS 'FORBES 2 500' CK	1	500-230	600-608	601-608
	obranch 61564 61624 2	TRIP LINE FROM BUS 'FORB4JCT 115' TO BUS 'FORBES 4 230' CK	2	230-115	608	608
	obranch 61550 61624 1	OPEN LINE FROM BUS 'FORB1JCT 230' TO BUS 'FORBES 4 230' CK	1	230	608	608
815	FORBES 3T				608-600	608-601
	obranch 61564 61565 2	TRIP LINE FROM BUS 'FORB4JCT 115' TO BUS 'FORB4TR913.8' CK	2	115-13.8	608	608
	obranch 61552 60101 1	OPEN LINE FROM BUS 'FORB2JCT 230' TO BUS 'FORBES 2 500' CK	1	500-230	600-608	601-608

No.	Contingency		Ckt	Base kV	Area	Zone
	obranch 61564 61722 2	TRIP LINE FROM BUS 'FORB4JCT 115' TO BUS 'FORBES 7 115' CK	2	115	608	608
	obranch 61552 61553 1	OPEN LINE FROM BUS 'FORB2JCT 230' TO BUS 'FORB2TR934.5' C	1	230-34.5	608	608
	obranch 61564 61624 2	TRIP LINE FROM BUS 'FORB4JCT 115' TO BUS 'FORBES 4 230' CK	2	230-115	608	608
	obranch 61552 61624 1	OPEN LINE FROM BUS 'FORB2JCT 230' TO BUS 'FORBES 4 230' CK	1	230	608	608
818	FORBES 7T-8				608-600	608-601
	obranch 61550 61551 1	TRIP LINE FROM BUS 'FORB1JCT 230' TO BUS 'FORB1TR934.5' CK	1	230-34.5	608	608
	obranch 61552 61553 1	TRIP LINE FROM BUS 'FORB2JCT 230' TO BUS 'FORB2TR934.5' CK	1	230-34.5	608	608
	obranch 61550 61624 1	TRIP LINE FROM BUS 'FORB1JCT 230' TO BUS 'FORBES 4 230' CK	1	230	608	608
	obranch 61552 61624 1	TRIP LINE FROM BUS 'FORB2JCT 230' TO BUS 'FORBES 4 230' CK	1	230	608	608
	obranch 61550 60101 1	TRIP LINE FROM BUS 'FORB1JCT 230' TO BUS 'FORBES 2 500' CK	1	500-230	600-608	601-608
	obranch 61552 60101 1	TRIP LINE FROM BUS 'FORB2JCT 230' TO BUS 'FORBES 2 500' CK	1	500-230	600-608	601-608
820	HILLTOP 1T				608	608
	obranch 61576 61616 1	TRIP LINE FROM BUS 'HILTPJCT 115' TO BUS 'HILLTOP4 230' CKT	1	230-115	608	608
	obranch 61576 61672 1	TRIP LINE FROM BUS 'HILTPJCT 115' TO BUS 'HILLTOP7 115' CKT	1	115	608	608
	obranch 61576 61577 1	TRIP LINE FROM BUS 'HILTPJCT 115' TO BUS 'HILTPTR913.8' CKT	1	115-13.8	608	608
	obranch 61614 61625 1	TRIP LINE FROM BUS '98L TAP4 230' TO BUS 'BLCKBRY4 230' CKT	1	230	608	608
	obranch 61616 61614 1	TRIP LINE FROM BUS 'HILLTOP4 230' TO BUS '98L TAP4 230' CKT 1	1	230	608	608
823	LASKIN 1T				608	608
	obranch 61574 61575 1	TRIP LINE FROM BUS 'LASKNJCT 115' TO BUS 'LASKNTR913.8' CK	1	115-13.8	608	608
	obranch 61574 61702 1	TRIP LINE FROM BUS 'LASKNJCT 115' TO BUS 'LASKIN 7 115' CKT	1	115	608	608
	obranch 61574 61701 1	TRIP LINE FROM BUS 'LASKNJCT 115' TO BUS 'LASKIN 6 138' CKT	1	138-115	608	608
825	LIL FORK 1T			118-230	608	
	obranch 66753 61751 1	TRIP LINE FROM BUS 'RUNNING4 230' TO BUS 'LITLFRK7 118' CKT	1	118-230	608	608-657
	obranch 66753 60167 1	TRIP LINE FROM BUS 'RUNNING4 230' TO BUS 'RUNSWCP4 230' C	1	230	608	601-657
828	MAPP-1		1	161	680	681
	obranch 69523 69507 1	TRIP BRANCH FROM BUS 'GENOA 5 161' TO BUS 'SENECA 5 161'	1	161	680	681
830	MAPP-10		1	345-161	600-331	601-393
	obranch 60102 34014 1	TRIP BRANCH FROM BUS 'ADAMS 3 345' TO BUS 'ADAMS 5 161' C	1	345-161	600-331	601-393
833	MAPP-12		1	345	600	601
	obranch 60186 60199 1	TRIP BRANCH FROM BUS 'AS KING3 345' TO BUS 'CHIS CO3 345' C	1	345	600	601
835	MAPP-13		1	345	600	601
	obranch 60199 60221 1	TRIP BRANCH FROM BUS 'CHIS CO3 345' TO BUS 'KOLMNLK3 345'	1	345	600	601
838	MAPP-14		1	161-345	600	616
	obranch 61950 61948 1	TRIP BRANCH FROM BUS 'BYRON 3 345' TO BUS 'BYRON 5 161' C	1	161-345	600	616
840	MAPP-15A		1	345	600	601
	obranch 60114 60233 1	TRIP BRANCH FROM BUS 'ELM CRK3 345' TO BUS 'PARKERS3 345'	1	345	600	601
843	MAPP-16		1	345	600	601
	obranch 60202 60251 1	TRIP BRANCH FROM BUS 'COON CK3 345' TO BUS 'TERMINL3 345'	1	345	600	601
845	MAPP-17			345	600-618	601-618
	obranch 63030 60270 1	TRIP BRANCH FROM BUS 'DICKNSN3 345' TO BUS 'MPLEGV13 345'	1	345	600-618	601-618
	obranch 60270 60233 1	TRIP BRANCH FROM BUS 'MPLEGV13 345' TO BUS 'PARKERS3 34	1	345	600	601
848	MAPP-181P		1	161	331-680	393-617
	obranch 34014 61984 1	TRIP BRANCH FROM BUS 'ADAMS 5 161' TO BUS 'AUSTIN 5 161' C	1	161	331-680	393-617
850	MAPP-18OP			161/345		
	obranch 34014 61984 1	TRIP BRANCH FROM BUS 'ADAMS 5 161' TO BUS 'AUSTIN 5 161' C	1	161	331-680	393-617
	obranch 60102 34018 1	TRIP BRANCH FROM BUS 'ADAMS 3 345' TO BUS 'HAZLTON3 345'	1	345	331-600	393-601
853	MAPP-19			345		
	obranch 65354 65786 1	OPEN LINE FROM BUS 'S3454 3 345' TO BUS 'WAGENER3 345' CK	1	345	645-650	645-650
	obranch 65351 63875 1	OPEN LINE FROM BUS 'S3451 3 345' TO BUS 'RAUN 3 345' CKT 1	1	345	635-645	636-645
855	MAPP-2		1	345	600	601
	obranch 60105 60236 1	TRIP BRANCH FROM BUS 'PR ISLD3 345' TO BUS 'REDROCK3 345'	1	345	600	601
858	MAPP-20		1	500-230	600-608	601-608

No.	Contingency		Ckt	Base kV	Area	Zone
	obranch 60101 61550 1	OPEN LINE FROM BUS 'FORBES 2 500' TO BUS 'FORB1JCT 230' CK	1	500-230	600-608	601-608
860	MAPP-21		1	500	600	601
	obranch 60101 60100 1	OPEN LINE FROM BUS 'FORBES 2 500' TO BUS 'FORBECA2 500' C	1	500	600	601
863	MAPP-24			230-345	640	640
	obranch 65026 64832 1	OPEN LINE FROM BUS 'G.GENT Y 345' TO BUS 'GENTLMN4 230' C	1	230-345	640	640
	obranch 64831 65026 1	OPEN LINE FROM BUS 'GENTLMN3 345' TO BUS 'G.GENT Y 345' C	1	345	640	640
865	MAPP-25		1	345	640	640
	obranch 64831 64878 1	OPEN LINE FROM BUS 'GENTLMN3 345' TO BUS 'KEYSTON3 345' C	1	345	640	640
868	MAPP-26		1	345	640	640
	obranch 64831 64943 1	OPEN LINE FROM BUS 'GENTLMN3 345' TO BUS 'REDWILO3 345' C	1	345	640	640
870	MAPP-27		1	345	640	640
	obranch 64831 64984 1	OPEN LINE FROM BUS 'GENTLMN3 345' TO BUS 'SWEET W3 345'	1	345	640	640
873	MAPP-28		2	345	640	640
	obranch 64831 64984 2	OPEN LINE FROM BUS 'GENTLMN3 345' TO BUS 'SWEET W3 345'	2	345	640	640
875	MAPP-29		1	230	640	640
	obranch 64832 64909 1	OPEN LINE FROM BUS 'GENTLMN4 230' TO BUS 'N.PLATT4 230' CK	1	230	640	640
878	MAPP-3		2	345	600	601
	obranch 60105 60236 2	TRIP BRANCH FROM BUS 'PR ISLD3 345' TO BUS 'REDROCK3 345'	2	345	600	601
880	MAPP-31		1	345	640	640-656
	obranch 66571 64984 1	OPEN LINE FROM BUS 'GR ISLD3 345' TO BUS 'SWEET W3 345' CK	1	345	640	640-656
883	MAPP-32		1	345	652-640	654-656
	obranch 66571 66506 1	OPEN LINE FROM BUS 'GR ISLD3 345' TO BUS 'FTTHOMP3 345' CK	1	345	652-640	654-656
885	MAPP-33		1	345	652	659
	obranch 67101 67105 1	OPEN LINE FROM BUS 'ANTELOP3 345' TO BUS 'LELANDO3 345' C	1	345	652	659
888	MAPP-34		1	230	667	668
	obranch 67503 67566 1	OPEN LINE FROM BUS 'DORSEY 4 230' TO BUS 'DORSEYM4 230' C	1	230	667	668
890	MAPP-35		1	230	652	654
	obranch 66507 66509 1	OPEN LINE FROM BUS 'FTTHOMP4 230' TO BUS 'FTRANDL4 230' C	1	230	652	654
893	MAPP-36		1	230	652	654
	obranch 66507 66514 1	OPEN LINE FROM BUS 'FTTHOMP4 230' TO BUS 'HURON 4 230' C	1	230	652	654
895	MAPP-37		1	230	652	654
	obranch 66507 66519 1	OPEN LINE FROM BUS 'FTTHOMP4 230' TO BUS 'OAHE 4 230' CK	1	230	652	654
898	MAPP-38		1	230	652	654
	obranch 66507 66523 1	OPEN LINE FROM BUS 'FTTHOMP4 230' TO BUS 'SIOUXFL4 230' C	1	230	652	654
900	MAPP-39		1	230	652	654
	obranch 66507 66540 1	OPEN LINE FROM BUS 'FTTHOMP4 230' TO BUS 'BIGBND14 230' C	1	230	652	654
903	MAPP-4		1	345	600	601
	obranch 60105 60192 1	TRIP BRANCH FROM BUS 'PR ISLD3 345' TO BUS 'BLUE LK3 345' C	1	345	600	601
905	MAPP-5		1	345	600	601
	obranch 60192 60108 1	TRIP BRANCH FROM BUS 'BLUE LK3 345' TO BUS 'WILMART3 345'	1	345	600	601
908	MAPP-6		1	345	600	601
	obranch 60192 60217 1	TRIP BRANCH FROM BUS 'BLUE LK3 345' TO BUS 'INVRHLS3 345'	1	345	600	601
910	MAPP-7		1	345	600	601
	obranch 60192 60233 1	TRIP BRANCH FROM BUS 'BLUE LK3 345' TO BUS 'PARKERS3 345'	1	345	600	601
913	MAPP-8		1	345	600	601
	obranch 60192 60262 1	TRIP BRANCH FROM BUS 'BLUE LK3 345' TO BUS 'EDEN PR3 345'	1	345	600	601
915	MAPP-9			345	600	
	obranch 61950 63032 1	TRIP BRANCH FROM BUS 'BYRON 3 345' TO BUS 'PL VLLY3 345' C	1	345	600	616-622
	obranch 63032 60102 1	TRIP BRANCH FROM BUS 'PL VLLY3 345' TO BUS 'ADAMS 3 345' C	1	345	600	601-622
918	MAPP-9GUID			161-345		
	obranch 69547 69549 1	TRIP LINE FROM BUS 'ROCHSTR5 161' TO BUS 'WABACO 5 161' C	1	161	680	681

No.	Contingency		Ckt	Base kV	Area	Zone
	obranch 34014 60102 1	TRIP LINE FROM BUS 'ADAMS 5 161' TO BUS 'ADAMS 3 345' CKT	1	345-161	600-331	601-393
920	MINNTAC 1T				608	608
	obranch 61558 61623 1	TRIP LINE FROM BUS 'MINT1JCT 115' TO BUS 'MINNTAC4 230' CKT	1	230-115	608	608
	obranch 61558 61710 1	TRIP LINE FROM BUS 'MINT1JCT 115' TO BUS 'MINNTAC7 115' CKT	1	115	608	608
	obranch 61623 61627 1	TRIP LINE FROM BUS 'MINNTAC4 230' TO BUS 'SHANNON4 230' CK	1	230	608	608
	obranch 61558 61559 1	TRIP LINE FROM BUS 'MINT1JCT 115' TO BUS 'MINT1TR913.8' CKT	1	115-13.8	608	608
923	MINNTAC 2T				608	608
	obranch 61623 61624 1	TRIP LINE FROM BUS 'MINNTAC4 230' TO BUS 'FORBES 4 230' CKT	1	230	608	608
	obranch 61560 61561 2	TRIP LINE FROM BUS 'MINT2JCT 115' TO BUS 'MINT2TR913.8' CKT	2	115-13.8	608	608
	obranch 61560 61623 2	TRIP LINE FROM BUS 'MINT2JCT 115' TO BUS 'MINNTAC4 230' CKT	2	230-115	608	608
	obranch 61560 61710 2	TRIP LINE FROM BUS 'MINT2JCT 115' TO BUS 'MINNTAC7 115' CKT	2	115	608	608
925	MUDLAKE 1T				608	608
	obranch 61578 61651 1	TRIP LINE FROM BUS 'MUDLKJCT 115' TO BUS 'MUDLAKE7 115' C	1	115	608	608
	obranch 61578 61617 1	TRIP LINE FROM BUS 'MUDLKJCT 115' TO BUS 'MUDLAKE4 230' C	1	230-115	608	608
	obranch 61578 61579 1	TRIP LINE FROM BUS 'MUDLKJCT 115' TO BUS 'MUDLKTR913.8' CK	1	115-13.8	608	608
928	RIVERTON 6T				608	608
	obranch 61796 61797 1	TRIP LINE FROM BUS 'RIVERJCT 115' TO BUS 'RIVERTR913.8' CKT	1	115-13.8	608	608
	obranch 61796 61612 1	TRIP LINE FROM BUS 'RIVERJCT 115' TO BUS 'RIVERTN4 230' CKT	1	230-115	608	608
	obranch 61796 61653 1	TRIP LINE FROM BUS 'RIVERJCT 115' TO BUS 'RIVERTN7 115' CKT	1	115	608	608
930	SHANNON 2T				608	608
	obranch 61785 61627 1	TRIP LINE FROM BUS 'SHAN2JCT 115' TO BUS 'SHANNON4 230' C	1	230-115	608	608
	obranch 61785 61750 1	TRIP LINE FROM BUS 'SHAN2JCT 115' TO BUS 'SHAN2TR913.8' CK	1	115-13.8	608	608
	obranch 61785 61749 1	TRIP LINE FROM BUS 'SHAN2JCT 115' TO BUS 'SHANNON7 115' C	1	115	608	608
933	SINGLE-025		1	500	600	601
	obranch 60101 60174 1	TRIP LINE FROM BUS 'FORBES 2 500' TO BUS 'ROSEAUS2 500' CK	1	500	600	601
935	SINGLE-028		1	500	600	601
	obranch 60101 60198 1	TRIP LINE FROM BUS 'FORBES 2 500' TO BUS 'CHIS-N 2 500' CKT	1	500	600	601
938	SINGLE-031		1	230	626	657
	obranch 66752 66755 1	TRIP LINE FROM BUS 'DRAYTON4 230' TO BUS 'PRAIRIE4 230' CKT	1	230	626	657
940	SINGLE-034		1	230	626-667	657-668
	obranch 66752 67557 1	TRIP LINE FROM BUS 'DRAYTON4 230' TO BUS 'LETELER4 230' CK	1	230	626-667	657-668
943	SINGLE-040		1	230	608	657
	obranch 66753 66757 1	TRIP LINE FROM BUS 'RUNNING4 230' TO BUS 'MORANVI4 230' CK	1	230	608	657
945	SINGLE-042		1	230	608	608-657
	obranch 66753 61627 1	TRIP LINE FROM BUS 'RUNNING4 230' TO BUS 'SHANNON4 230' C	1	230	608	608-657
948	SINGLE-044		1	230	600-667	601-668
	obranch 67576 60175 1	TRIP LINE FROM BUS 'RICHER 4 230' TO BUS 'ROSEAU 4 230' CKT	1	230	600-667	601-668
950	SINGLE-046			345-24	626	661-657
	obranch 67316 67315 1	TRIP LINE FROM BUS 'COYOTE 3 345' TO BUS 'COYOTE1G24.0' CK	1	345-24	626	661
	obranch 66791 67316 1	TRIP LINE FROM BUS 'CENTER 3 345' TO BUS 'COYOTE 3 345' CKT	1	345	626	657-661
953	SJLP-01			161	540	540
	obranch 59394 59392 1	OPEN LINE FROM BUS 'ST JOE 5 161' TO BUS 'MIDWAY 5 161' CKT	1	161	540	540
	obranch 59392 59391 1	OPEN LINE FROM BUS 'MIDWAY 5 161' TO BUS 'MARYVLE5 161' C	1	161	540	540
955	STINSON 1T				608-600	608-604
	obranch 61630 61631 1	TRIP LINE FROM BUS 'STINSON5 161' TO BUS 'MINONG 5 161' CKT	1	161	608	608
	obranch 61631 60290 1	TRIP LINE FROM BUS 'MINONG 5 161' TO BUS 'ST LAKE5 161' CKT	1	161	600-608	604-608
	obranch 61572 61697 1	TRIP LINE FROM BUS 'TACHBJCT 115' TO BUS 'TAC HBR7 115' CK	1	115	608	608
	obranch 61572 61573 1	TRIP LINE FROM BUS 'TACHBJCT 115' TO BUS 'TACHBTR913.8' CK	1	115-13.8	608	608
	obranch 61572 61696 1	TRIP LINE FROM BUS 'TACHBJCT 115' TO BUS 'TAC HBR6 138' CK	1	138-115	608	608
958	TACHRBR 1T				608-600	608-601
	obranch 61550 61551 1	TRIP LINE FROM BUS 'FORB1JCT 230' TO BUS 'FORB1TR934.5' CK	1	230-34.5	608	608
	obranch 61550 60101 1	TRIP LINE FROM BUS 'FORB1JCT 230' TO BUS 'FORBES 2 500' CK	1	500-230	600-608	601-608
	obranch 61550 61624 1	TRIP LINE FROM BUS 'FORB1JCT 230' TO BUS 'FORBES 4 230' CK	1	230	608	608

No.	Contingency		Ckt	Base kV	Area	Zone
960	WINGRVR 1T			230-115	608-626	608-621
	obranch 61611 61798 1	OPEN LINE FROM BUS 'WINGRIV4 230' TO BUS 'WINGRJCT 115' C	1	230-115	608	608
	obranch 61611 61612 1	OPEN LINE FROM BUS 'WINGRIV4 230' TO BUS 'RIVERTN4 230' CK	1	230	608	608
	obranch 61611 63052 1	OPEN LINE FROM BUS 'WINGRIV4 230' TO BUS 'INMAN 4 230' CKT	1	230	608-626	608-621
963	29		1	765	205-363	252-335
	obranch 22660 36260 1	OPEN BRANCH FROM BUS '05DUMONT 765' TO BUS 'WILTO; 765'	1	765	205-363	252-335
965	3720		1	345	635	638
	obranch 64400 64403 1	OPEN BRANCH FROM BUS 'MECCORD3 345' TO BUS 'E MOLIN3 34	1	345	635	638
968	FG100		1	345	365	377-378
	obranch 39547 39918 1	OPEN BRANCH FROM BUS 'MORGAN 345' TO BUS 'PLAINS 345'	1	345	365	377-378
970	FG101		1	345	356-357	321-357
	obranch 30492 32327 1	OPEN BRANCH FROM BUS 'E W FKFT 345' TO BUS 'MT VRNON 34	1	345	356-357	321-357
973	FG1011		1	345	356-635	313-638
	obranch 31435 64408 1	OPEN BRANCH FROM BUS 'PALM TAP 345' TO BUS 'SUB T 3 345'	1	345	356-635	313-638
975	FG102		1	161-138	356	321
	obranch 31026 31023 1	OPEN BRANCH FROM BUS 'MARIONSA 138' TO BUS 'MARION S 16	1	161-138	356	321
978	FG10285		1	345	364-367	371-391
	obranch 39119 39157 1	OPEN BRANCH FROM BUS 'ROE 345 345' TO BUS 'COL 345 345' C	1	345	364-367	371-391
980	FG103		1	345	356-357	321-357
	obranch 32327 30492 1	OPEN BRANCH FROM BUS 'MT VRNON 345' TO BUS 'E W FKFT 34	1	345	356-357	321-357
983	FG104		1	345	359	301
	obranch 33161 33162 1	OPEN BRANCH FROM BUS 'DUCK CRK 345' TO BUS 'TAZEWELL 34	1	345	359	301
985	FG105		1	345-161	356	314
	obranch 31230 31231 1	OPEN BRANCH FROM BUS 'MONTGMRY 345' TO BUS 'MONTGMRY	1	345-161	356	314
988	FG10574		1	345	366	366
	obranch 39785 39676 1	OPEN BRANCH FROM BUS 'ROCKY RN 345' TO BUS 'WESTON 34	1	345	366	366
990	FG106		2	138	356	317
	obranch 30266 31007 2	OPEN BRANCH FROM BUS 'CAMPBELL 138' TO BUS 'MALINE 138'	2	138	356	317
993	FG107		1	138	356	322
	obranch 31180 31558 1	OPEN BRANCH FROM BUS 'MEREDOSA 138' TO BUS 'QUINCY E 13	1	138	356	322
995	FG108		1	138	356	319
	obranch 30500 31698 1	OPEN BRANCH FROM BUS 'E.QUINCY 138' TO BUS 'S.QUINCY 138'	1	138	356	319
998	FG110		1	345	356-357	323-357
	obranch 30395 32280 1	OPEN BRANCH FROM BUS 'COFFEEN 345' TO BUS 'ROXFD IP 345'	1	345	356-357	323-357
1000	FG112		1	138	356	323
	obranch 31297 31739 1	OPEN BRANCH FROM BUS 'MURDOCK 138' TO BUS 'SIDNYCPS 13	1	138	356	323
1003	FG113		1	138-345	357	357
	obranch 32387 32388 1	OPEN BRANCH FROM BUS 'SIDNEY 345' TO BUS 'SIDNEY 138' C	1	138-345	357	357
1005	FG116		1	345	356-357	323-357
	obranch 30395 32280 1	OPEN BRANCH FROM BUS 'COFFEEN 345' TO BUS 'ROXFD IP 345'	1	345	356-357	323-357
1008	FG12003		1	161	331	393
	obranch 34030 34031 1	OPEN BRANCH FROM BUS 'SALEM 5 161' TO BUS 'SO.GVW.5 161'	1	161	331	393
1010	FG12005		1	345	331-600	393-601
	obranch 60102 34018 1	OPEN BRANCH FROM BUS 'ADAMS 3 345' TO BUS 'HAZLTON3 345	1	345	331-600	393-601
1013	FG12006		1	345	331	393-391
	obranch 34093 34018 1	OPEN BRANCH FROM BUS 'ARNOLD 3 345' TO BUS 'HAZLTON3 34	1	345	331	393-391
1015	FG12009		1	345	331	393-391
	obranch 34093 34018 1	OPEN BRANCH FROM BUS 'ARNOLD 3 345' TO BUS 'HAZLTON3 34	1	345	331	393-391
1018	FG12010		1	161	331	393-392
	obranch 34030 34508 1	OPEN BRANCH FROM BUS 'SALEM 5 161' TO BUS 'JULIAN 5 161' C	1	161	331	393-392

No.	Contingency	Ckt	Base kV	Area	Zone
1020	FG12011	1	345	331-600	393-601
	obranch 60102 34018 1 OPEN BRANCH FROM BUS 'ADAMS 3 345' TO BUS 'HAZLTON3 345	1	345	331-600	393-601
1023	FG12012	1	345	331-635	391-638
	obranch 64352 34093 1 OPEN BRANCH FROM BUS 'TIFFIN 3 345' TO BUS 'ARNOLD 3 345'	1	345	331-635	391-638
1025	FG12013	1	345	331	393
	obranch 34036 34029 1 OPEN BRANCH FROM BUS 'ROCK CK3 345' TO BUS 'SALEM 3 345'	1	345	331	393
1028	FG12015	1	345	635	637
	obranch 64202 64200 1 OPEN BRANCH FROM BUS 'LEHIGH 3 345' TO BUS 'WEBSTER3 34	1	345	635	637
1030	FG12016	1	345	331	393-391
	obranch 34018 34093 1 OPEN BRANCH FROM BUS 'HAZLTON3 345' TO BUS 'ARNOLD 3 34	1	345	331	393-391
1033	FG12018	1	345	635	637
	obranch 64064 64095 1 OPEN BRANCH FROM BUS 'BONDRNT3 345' TO BUS 'MNTZUMA3 3	1	345	635	637
1035	FG12019	1	345	331-635	393-636
	obranch 63875 34006 1 OPEN BRANCH FROM BUS 'RAUN 3 345' TO BUS 'LAKEFLD3 345'	1	345	331-635	393-636
1038	FG12023	1	345-161	331	392-391
	obranch 34557 34189 1 OPEN BRANCH FROM BUS 'OTTUMWAY 345' TO BUS 'OTTUMWA5	1	345-161	331	392-391
1040	FG12025	1	345	635	637-638
	obranch 64350 64095 1 OPEN BRANCH FROM BUS 'HILLS 3 345' TO BUS 'MNTZUMA3 345'	1	345	635	637-638
1043	FG121	1	230	356	310
	obranch 31500 31785 1 OPEN BRANCH FROM BUS 'PICKNYVL 230' TO BUS 'STJOHNAM 23	1	230	356	310
1045	FG122	1	230-138	356	321
	obranch 31924 31925 1 OPEN BRANCH FROM BUS 'W.FRKFT 230' TO BUS 'W.FRKFT 138'	1	230-138	356	321
1048	FG123	1	345	356	323
	obranch 31567 31991 1 OPEN BRANCH FROM BUS 'RAMSEY 345' TO BUS 'HOLLAND 345'	1	345	356	323
1050	FG124		345	356-357	323-357
	obranch 31993 31330 1 OPEN BRANCH FROM BUS 'XENIA 345' TO BUS 'NEWTON 345'	1	345	356	323
	obranch 32327 31993 1 OPEN BRANCH FROM BUS 'MT VRNON 345' TO BUS 'XENIA 345'	1	345	356-357	323-357
1053	FG125	1	345	356	323
	obranch 31330 30309 1 OPEN BRANCH FROM BUS 'NEWTON 345' TO BUS 'CASEY 345'	1	345	356	323
1055	FG126	1	345	356	323
	obranch 31330 30309 1 OPEN BRANCH FROM BUS 'NEWTON 345' TO BUS 'CASEY 345'	1	345	356	323
1058	FG127		345	356-357	323-357
	obranch 32327 31993 1 OPEN BRANCH FROM BUS 'MT VRNON 345' TO BUS 'XENIA 345'	1	345	356-357	323-357
	obranch 31993 31330 1 OPEN BRANCH FROM BUS 'XENIA 345' TO BUS 'NEWTON 345'	1	345	356	323
1060	FG128	1	345-138	356	311
	obranch 30648 30650 1 OPEN BRANCH FROM BUS 'GRAYSUM1 345' TO BUS 'GRAY SUM 1	1	345-138	356	311
1063	FG129	1	345	356-130	314-130
	obranch 30154 96041 1 OPEN BRANCH FROM BUS 'BLAND 345' TO BUS '7FRANKS 345'	1	345	356-130	314-130
1065	FG130	1	345	356-540	314-540
	obranch 31408 59201 1 OPEN BRANCH FROM BUS 'OVERTON 345' TO BUS 'SIBLEY 7 345'	1	345	356-540	314-540
1068	FG1307	1	500-138	151	156
	obranch 98107 98108 1 OPEN BRANCH FROM BUS '8RICHARD 500' TO BUS '4RICHARD 13	1	500-138	151	156
1070	FG131	1	345	356	314
	obranch 31230 31992 1 OPEN BRANCH FROM BUS 'MONTGMRY 345' TO BUS 'SPENCER 3	1	345	356	314
1073	FG1319	1	500	524-151	524-159
	obranch 99486 55305 1 OPEN BRANCH FROM BUS '8ANO 50 500' TO BUS 'FTSMITH8 500'	1	500	524-151	524-159
1075	FG132	1	345	356	323
	obranch 31321 31991 1 OPEN BRANCH FROM BUS 'NEOGA 345' TO BUS 'HOLLAND 345'	1	345	356	323
1078	FG133	1	345	356-130	314-130
	obranch 30154 96041 1 OPEN BRANCH FROM BUS 'BLAND 345' TO BUS '7FRANKS 345'	1	345	356-130	314-130
1080	FG134	1	138	356	317-310

No.	Contingency		Ckt	Base kV	Area	Zone
	obranch 31877 30266 1	OPEN BRANCH FROM BUS 'VENICE 2 138' TO BUS 'CAMPBELL 138	1	138	356	317-310
1083	FG1709		1	500	145	196
	obranch 14902 14906 1	OPEN BRANCH FROM BUS '8CARSON 500' TO BUS '8CLOVER 50	1	500	145	196
1085	FG22033		1	345	202	202-203
	obranch 21800 22063 1	OPEN BRANCH FROM BUS '02BEAVER 345' TO BUS '02DAV-BE 34	1	345	202	202-203
1088	FG2363		1	500	145-201	196-201
	obranch 14917 20105 1	OPEN BRANCH FROM BUS '8MT STM 500' TO BUS '01DOUBS 500'	1	500	145-201	196-201
1090	FG2861		1	345	202-205	203-251
	obranch 21455 22606 1	OPEN BRANCH FROM BUS '02BAY SH 345' TO BUS '05FOSTOR 34	1	345	202-205	203-251
1093	FG3009		1	345	363-364	335-371
	obranch 36406 39058 1	OPEN BRANCH FROM BUS 'WEMPL; B 345' TO BUS 'PAD 345 345'	1	345	363-364	335-371
1095	FG3012		1	345	364	371
	obranch 39058 39119 1	OPEN BRANCH FROM BUS 'PAD 345 345' TO BUS 'ROE 345 345' C	1	345	364	371
1098	FG3013		2	138-345	364	371
	obranch 39119 39120 2	OPEN BRANCH FROM BUS 'ROE 345 345' TO BUS 'ROE 138 138' C	2	138-345	364	371
1100	FG3014		1	345-138	364	371
	obranch 39059 39058 1	OPEN BRANCH FROM BUS 'PAD 138 138' TO BUS 'PAD 345 345' C	1	345-138	364	371
1103	FG3015		1	345	363-364	335-371
	obranch 36406 39058 1	OPEN BRANCH FROM BUS 'WEMPL; B 345' TO BUS 'PAD 345 345'	1	345	363-364	335-371
1105	FG3016			345/115		
	obranch 39244 60304 1	OPEN BRANCH FROM BUS 'ARP 345 345' TO BUS 'EAU CL 3 345' C	1	345	364-600	371-604
	obranch 60315 39706 1	OPEN BRANCH FROM BUS 'T-CRNRS7 115' TO BUS 'WIEN 115'	1	115	366-600	366-604
1108	FG3017		1	345	363-364	335-371
	obranch 36406 39058 1	OPEN BRANCH FROM BUS 'WEMPL; B 345' TO BUS 'PAD 345 345'	1	345	363-364	335-371
1110	FG3018			345	600	616-601
	obranch 69999 61950 1	OPEN BRANCH FROM BUS 'RFPBID6 345' TO BUS 'BYRON 3 345'	1	345	600	616-601
	obranch 60105 69999 1	OPEN BRANCH FROM BUS 'PR ISLD3 345' TO BUS 'RFPBID6 345'	1	345	600	601
1113	FG3020		1	345-138	364	371
	obranch 39059 39058 1	OPEN BRANCH FROM BUS 'PAD 138 138' TO BUS 'PAD 345 345' C	1	345-138	364	371
1115	FG3021		1	138	364	371
	obranch 39047 39059 1	OPEN BRANCH FROM BUS 'ROR 138 138' TO BUS 'PAD 138 138' C	1	138	364	371
1118	FG3022		1	345	367	391-367
	obranch 39157 39818 1	OPEN BRANCH FROM BUS 'COL 345 345' TO BUS 'NMA 345 345' C	1	345	367	391-367
1120	FG3024		1	138	364	371
	obranch 39047 39059 1	OPEN BRANCH FROM BUS 'ROR 138 138' TO BUS 'PAD 138 138' C	1	138	364	371
1123	FG3025		1	345	364	371
	obranch 39058 39119 1	OPEN BRANCH FROM BUS 'PAD 345 345' TO BUS 'ROE 345 345' C	1	345	364	371
1125	FG3026		1	138-345	364	371
	obranch 39120 39119 1	OPEN BRANCH FROM BUS 'ROE 138 138' TO BUS 'ROE 345 345' C	1	138-345	364	371
1128	FG3030		1	345	365-366	376-366
	obranch 38894 39785 1	OPEN BRANCH FROM BUS 'N APP 3 345' TO BUS 'ROCKY RN 345'	1	345	365-366	376-366
1130	FG3031		1	138	364-367	371-367
	obranch 39218 39821 1	OPEN BRANCH FROM BUS 'CHA 138 138' TO BUS 'FCH 138 138' C	1	138	364-367	371-367
1133	FG3118		1	345	205-356	252-323
	obranch 22653 30309 1	OPEN BRANCH FROM BUS '05BREED 345' TO BUS 'CASEY 345'	1	345	205-356	252-323
1135	FG3120		1	345	356	314
	obranch 31230 31992 1	OPEN BRANCH FROM BUS 'MONTGMRY 345' TO BUS 'SPENCER 3	1	345	356	314
1138	FG3122		1	765	205-363	252-335
	obranch 22660 36260 1	OPEN BRANCH FROM BUS '05DUMONT 765' TO BUS 'WILTO; 765'	1	765	205-363	252-335
1140	FG3123		1	765	205-363	252-335
	obranch 22660 36260 1	OPEN BRANCH FROM BUS '05DUMONT 765' TO BUS 'WILTO; 765'	1	765	205-363	252-335

No.	Contingency	Ckt	Base kV	Area	Zone
1143	FG3124	1	345	147-356	166-316
	obranch 18001 30825 1 OPEN BRANCH FROM BUS '7SHAWNEE 345' TO BUS 'JOPPA TS 34	1	345	147-356	166-316
1145	FG3125	1	138	357	357
	obranch 32388 32405 1 OPEN BRANCH FROM BUS 'SIDNEY 138' TO BUS 'MIRA TAP 138'	1	138	357	357
1148	FG3126	1	345	356	323
	obranch 30395 31445 1 OPEN BRANCH FROM BUS 'COFFEEN 345' TO BUS 'PANA 345'	1	345	356	323
1150	FG3127		345	356-363	323-335
	obranch 30395 31445 1 OPEN BRANCH FROM BUS 'COFFEEN 345' TO BUS 'PANA 345'	1	345	356	323
	obranch 31445 36343 1 OPEN BRANCH FROM BUS 'PANA 345' TO BUS 'KINCA; R 345' C	1	345	356-363	323-335
1153	FG3128	1	138	356	322
	obranch 31558 31559 1 OPEN BRANCH FROM BUS 'QUINCY E 138' TO BUS 'QUINCY S 138'	1	138	356	322
1155	FG3129	1	345-138	356	317
	obranch 31051 31053 1 OPEN BRANCH FROM BUS 'MASON 13 345' TO BUS 'MASON 2 138	1	345-138	356	317
1158	FG3130	1	345	356	316-312
	obranch 30974 31773 1 OPEN BRANCH FROM BUS 'LUTESVIL 345' TO BUS 'ST FRANC 345'	1	345	356	316-312
1160	FG3131	1	345	363	335
	obranch 36342 36348 1 OPEN BRANCH FROM BUS 'KINCA; B 345' TO BUS 'LATHA; T 345' C	1	345	363	335
1163	FG3132	1	138-345	357	357
	obranch 32388 32387 1 OPEN BRANCH FROM BUS 'SIDNEY 138' TO BUS 'SIDNEY 345' C	1	138-345	357	357
1165	FG3133	2			
	obranch 30886 31051 2 OPEN BRANCH FROM BUS 'LABADIE 345' TO BUS 'MASON 13 345'	2			
1168	FG3134	1	138	356	310
	obranch 31213 31652 1 OPEN BRANCH FROM BUS 'MISS T 3 138' TO BUS 'ROXFORD 138'	1	138	356	310
1170	FG3135		345	356-357	323-357
	obranch 32327 31993 1 OPEN BRANCH FROM BUS 'MT VRNON 345' TO BUS 'XENIA 345'	1	345	356-357	323-357
	obranch 31993 31330 1 OPEN BRANCH FROM BUS 'XENIA 345' TO BUS 'NEWTON 345'	1	345	356	323
1173	FG3136	1	345	356-363	323-335
	obranch 31445 36343 1 OPEN BRANCH FROM BUS 'PANA 345' TO BUS 'KINCA; R 345' C	1	345	356-363	323-335
1175	FG3137	1	345	356-363	323-335
	obranch 31445 36343 1 OPEN BRANCH FROM BUS 'PANA 345' TO BUS 'KINCA; R 345' C	1	345	356-363	323-335
1178	FG3138	1	345	356	314
	obranch 31088 31230 1 OPEN BRANCH FROM BUS 'MCCREDIE 345' TO BUS 'MONTGMRY	1	345	356	314
1180	FG3139		345	356-363	323-335
	obranch 30395 31445 1 OPEN BRANCH FROM BUS 'COFFEEN 345' TO BUS 'PANA 345'	1	345	356	323
	obranch 31445 36343 1 OPEN BRANCH FROM BUS 'PANA 345' TO BUS 'KINCA; R 345' C	1	345	356-363	323-335
1183	FG3140		345	356-363	323-335
	obranch 30395 31445 1 OPEN BRANCH FROM BUS 'COFFEEN 345' TO BUS 'PANA 345'	1	345	356	323
	obranch 31445 36343 1 OPEN BRANCH FROM BUS 'PANA 345' TO BUS 'KINCA; R 345' C	1	345	356-363	323-335
1185	FG3141	1	138	356	310
	obranch 31212 31652 1 OPEN BRANCH FROM BUS 'MISS T 1 138' TO BUS 'ROXFORD 138'	1	138	356	310
1188	FG3142		345	356-363	323-335
	obranch 30395 31445 1 OPEN BRANCH FROM BUS 'COFFEEN 345' TO BUS 'PANA 345'	1	345	356	323
	obranch 31445 36343 1 OPEN BRANCH FROM BUS 'PANA 345' TO BUS 'KINCA; R 345' C	1	345	356-363	323-335
1190	FG3143	1	345-138	356	310
	obranch 30214 30215 1 OPEN BRANCH FROM BUS 'CAHOKIA 345' TO BUS 'CAHOK 1 138'	1	345-138	356	310
1193	FG3144	1	345	356-130	314-130
	obranch 30154 96041 1 OPEN BRANCH FROM BUS 'BLAND 345' TO BUS '7FRANKS 345'	1	345	356-130	314-130
1195	FG3145	1	345	356	323
	obranch 30395 30386 1 OPEN BRANCH FROM BUS 'COFFEEN 345' TO BUS 'COFFEN N 34	1	345	356	323
1198	FG3146	1	345	359	301
	obranch 33161 33162 1 OPEN BRANCH FROM BUS 'DUCK CRK 345' TO BUS 'TAZEWELL 34	1	345	359	301

No.	Contingency	Ckt	Base kV	Area	Zone
1200	FG3147	1	345	359	301
	obranch 33161 33162 1 OPEN BRANCH FROM BUS 'DUCK CRK 345' TO BUS 'TAZEWELL 34	1	345	359	301
1203	FG3148	1	138	356	310-313
	obranch 31212 31764 1 OPEN BRANCH FROM BUS 'MISS T 1 138' TO BUS 'SIOUX 2 138' C	1	138	356	310-313
1205	FG3150	1	345	356	323
	obranch 30309 31330 1 OPEN BRANCH FROM BUS 'CASEY 345' TO BUS 'NEWTON 345'	1	345	356	323
1208	FG3153	1	345	356-130	314-130
	obranch 30154 96041 1 OPEN BRANCH FROM BUS 'BLAND 345' TO BUS '7FRANKS 345'	1	345	356-130	314-130
1210	FG3157		138/345	356-130	314-130
	obranch 30957 31024 1 OPEN BRANCH FROM BUS 'LKSIDE 1 138' TO BUS 'MARIES 138'	1	138	356	314
	obranch 30154 96041 1 OPEN BRANCH FROM BUS 'BLAND 345' TO BUS '7FRANKS 345'	1	345	356-130	314-130
1213	FG3172	1	138-345	357	357
	obranch 32387 32388 1 OPEN BRANCH FROM BUS 'SIDNEY 345' TO BUS 'SIDNEY 138' C	1	138-345	357	357
1215	FG3220	1	345	363	335
	obranch 36311 36373 1 OPEN BRANCH FROM BUS 'ELECT;4R 345' TO BUS 'PLANO; R 345'	1	345	363	335
1218	FG3221	1	345	363	335
	obranch 36310 36372 1 OPEN BRANCH FROM BUS 'ELECT; B 345' TO BUS 'PLANO; B 345'	1	345	363	335
1220	FG3224	1	765	205-363	252-335
	obranch 22660 36260 1 OPEN BRANCH FROM BUS '05DUMONT 765' TO BUS 'WILTO; 765'	1	765	205-363	252-335
1223	FG3226	1	765	205-363	252-335
	obranch 22660 36260 1 OPEN BRANCH FROM BUS '05DUMONT 765' TO BUS 'WILTO; 765'	1	765	205-363	252-335
1225	FG3230	1	345	363	335
	obranch 36335 36355 1 OPEN BRANCH FROM BUS 'GOODI;2R 345' TO BUS 'LOCKP; R 345'	1	345	363	335
1228	FG3236	1	345	363-365	335-376
	obranch 36420 39247 1 OPEN BRANCH FROM BUS 'ZION ; B 345' TO BUS 'ARCADN3 345'	1	345	363-365	335-376
1230	FG3237	1	345	363-365	335-376
	obranch 36421 38849 1 OPEN BRANCH FROM BUS 'ZION ; R 345' TO BUS 'PLS PR2 345' C	1	345	363-365	335-376
1233	FG3238	1	345	363	335
	obranch 36289 36389 1 OPEN BRANCH FROM BUS 'CHERR; R 345' TO BUS 'SILVE; R 345'	1	345	363	335
1235	FG3239		345/115		
	obranch 39244 60304 1 OPEN BRANCH FROM BUS 'ARP 345 345' TO BUS 'EAU CL 3 345' C	1	345	364-600	371-604
	obranch 60315 39706 1 OPEN BRANCH FROM BUS 'T-CRNRS7 115' TO BUS 'WIEN 115'	1	115	366-600	366-604
1238	FG3240	1	345	363-365	335-376
	obranch 36420 39247 1 OPEN BRANCH FROM BUS 'ZION ; B 345' TO BUS 'ARCADN3 345'	1	345	363-365	335-376
1240	FG3241	1	345	363-364	335-371
	obranch 36406 39058 1 OPEN BRANCH FROM BUS 'WEMPL; B 345' TO BUS 'PAD 345 345'	1	345	363-364	335-371
1243	FG3242	1	345	363-365	335-376
	obranch 36421 38849 1 OPEN BRANCH FROM BUS 'ZION ; R 345' TO BUS 'PLS PR2 345' C	1	345	363-365	335-376
1245	FG3243	1	345	363-364	335-371
	obranch 36406 39058 1 OPEN BRANCH FROM BUS 'WEMPL; B 345' TO BUS 'PAD 345 345'	1	345	363-364	335-371
1248	FG3258	1	345	363-635	335-638
	obranch 36382 64405 1 OPEN BRANCH FROM BUS 'QUAD ; 345' TO BUS 'SUB 91 3 345' C	1	345	363-635	335-638
1250	FG3260	1	345	363-364	335-371
	obranch 36406 39058 1 OPEN BRANCH FROM BUS 'WEMPL; B 345' TO BUS 'PAD 345 345'	1	345	363-364	335-371
1253	FG3401	1	138-345	357	357
	obranch 32386 32385 1 OPEN BRANCH FROM BUS 'BUNSONVL 138' TO BUS 'BUNSONVL 3	1	138-345	357	357
1255	FG3402	1	345	356-357	323-357
	obranch 30395 32280 1 OPEN BRANCH FROM BUS 'COFFEEN 345' TO BUS 'ROXFD IP 345'	1	345	356-357	323-357
1258	FG3403	1	138	357	357-391
	obranch 32388 32394 1 OPEN BRANCH FROM BUS 'SIDNEY 138' TO BUS 'WINDSOR 138'	1	138	357	357-391
1260	FG3404	1	345	356-357	323-357

No.	Contingency		Ckt	Base kV	Area	Zone
	obranch 30395 32280 1	OPEN BRANCH FROM BUS 'COFFEEN 345' TO BUS 'ROXFD IP 345'	1	345	356-357	323-357
1263	FG3406		1	345	356-357	310-357
	obranch 31651 32278 1	OPEN BRANCH FROM BUS 'ROXFORD 345' TO BUS 'STALLING 34	1	345	356-357	310-357
1265	FG3407		1	345	356-357	310-357
	obranch 31651 32278 1	OPEN BRANCH FROM BUS 'ROXFORD 345' TO BUS 'STALLING 34	1	345	356-357	310-357
1268	FG3408		1	345	363	335
	obranch 36342 36348 1	OPEN BRANCH FROM BUS 'KINCA; B 345' TO BUS 'LATHA; T 345' C	1	345	363	335
1270	FG3409		1	345	363	335
	obranch 36344 36348 1	OPEN BRANCH FROM BUS 'PONTI; B 345' TO BUS 'LATHA; T 345' C	1	345	363	335
1273	FG3410		1	765	205-363	252-335
	obranch 22660 36260 1	OPEN BRANCH FROM BUS '05DUMONT 765' TO BUS 'WILTO; 765'	1	765	205-363	252-335
1275	FG3411		1	138	356	323
	obranch 31618 31739 1	OPEN BRANCH FROM BUS 'RNTOUL J 138' TO BUS 'SIDNYCPS 138	1	138	356	323
1278	FG3413			345	356-357	323-357
	obranch 32327 31993 1	OPEN BRANCH FROM BUS 'MT VRNON 345' TO BUS 'XENIA 345'	1	345	356-357	323-357
	obranch 31993 31330 1	OPEN BRANCH FROM BUS 'XENIA 345' TO BUS 'NEWTON 345'	1	345	356	323
1280	FG3414		1	345	356	323
	obranch 30386 30395 1	OPEN BRANCH FROM BUS 'COFFEN N 345' TO BUS 'COFFEEN 34	1	345	356	323
1283	FG3418		1	765	205	250
	obranch 22554 22560 1	OPEN BRANCH FROM BUS '05BROADF 765' TO BUS '05BAKER 76	1	765	205	250
1285	FG3419		1	345	356-357	323-357
	obranch 30395 32280 1	OPEN BRANCH FROM BUS 'COFFEEN 345' TO BUS 'ROXFD IP 345'	1	345	356-357	323-357
1288	FG3420		1	765	205	252
	obranch 22667 22671 1	OPEN BRANCH FROM BUS '05JEFRSO 765' TO BUS '05ROCKPT 76	1	765	205	252
1290	FG3424			345	356-357	323-357
	obranch 32327 31993 1	OPEN BRANCH FROM BUS 'MT VRNON 345' TO BUS 'XENIA 345'	1	345	356-357	323-357
	obranch 31993 31330 1	OPEN BRANCH FROM BUS 'XENIA 345' TO BUS 'NEWTON 345'	1	345	356	323
1293	FG3518		1	345	365	376
	obranch 39253 39329 1	OPEN BRANCH FROM BUS 'ARCADN1 345' TO BUS 'GRANVL1 345	1	345	365	376
1295	FG3519		1	345	363-364	335-371
	obranch 36406 39058 1	OPEN BRANCH FROM BUS 'WEMPL; B 345' TO BUS 'PAD 345 345'	1	345	363-364	335-371
1298	FG3520		1	345	363-364	335-371
	obranch 36406 39058 1	OPEN BRANCH FROM BUS 'WEMPL; B 345' TO BUS 'PAD 345 345'	1	345	363-364	335-371
1300	FG3522		1	345	363-364	335-371
	obranch 36406 39058 1	OPEN BRANCH FROM BUS 'WEMPL; B 345' TO BUS 'PAD 345 345'	1	345	363-364	335-371
1303	FG3523		1	138	365	377
	obranch 38895 39545 1	OPEN BRANCH FROM BUS 'N APP 5 138' TO BUS 'LAWN RD 138'	1	138	365	377
1305	FG3524			345	365-366	
	obranch 38894 39785 1	OPEN BRANCH FROM BUS 'N APP 3 345' TO BUS 'ROCKY RN 345'	1	345	365-366	376-366
	obranch 39547 39918 1	OPEN BRANCH FROM BUS 'MORGAN 345' TO BUS 'PLAINS 345'	1	345	365	377-378
1308	FG3525		1	345	365	377-378
	obranch 39547 39918 1	OPEN BRANCH FROM BUS 'MORGAN 345' TO BUS 'PLAINS 345'	1	345	365	377-378
1310	FG3527		1	345	363-364	335-371
	obranch 36406 39058 1	OPEN BRANCH FROM BUS 'WEMPL; B 345' TO BUS 'PAD 345 345'	1	345	363-364	335-371
1313	FG3533		1	345	367-364	391-371
	obranch 39157 39176 1	OPEN BRANCH FROM BUS 'COL 345 345' TO BUS 'SFL 345 345' C	1	345	367-364	391-371
1315	FG3535		1	138-345	366	366
	obranch 39620 39630 1	OPEN BRANCH FROM BUS 'KEWAUNEE 138' TO BUS 'KEWAUNEE	1	138-345	366	366
1318	FG3613		1	345	365-366	376-366
	obranch 39359 39630 1	OPEN BRANCH FROM BUS 'N APP 1 345' TO BUS 'KEWAUNEE 345	1	345	365-366	376-366
1320	FG3617		1	138	365	377

No.	Contingency		Ckt	Base kV	Area	Zone
	obranch 38895 39545 1	OPEN BRANCH FROM BUS 'N APP 5 138' TO BUS 'LAWN RD 138'	1	138	365	377
1323	FG3618		1	138	365-366	377-366
	obranch 39567 39600 1	OPEN BRANCH FROM BUS 'N APP 4 138' TO BUS 'MASON ST 138'	1	138	365-366	377-366
1325	FG3704		1	345	635	637
	obranch 64064 64095 1	OPEN BRANCH FROM BUS 'BONDRNT3 345' TO BUS 'MNTZUMA3 3	1	345	635	637
1328	FG3707		1	345	363-364	335-371
	obranch 36406 39058 1	OPEN BRANCH FROM BUS 'WEMPL; B 345' TO BUS 'PAD 345 345'	1	345	363-364	335-371
1330	FG3710		1	345	331-600	393-601
	obranch 60102 34018 1	OPEN BRANCH FROM BUS 'ADAMS 3 345' TO BUS 'HAZLTON3 345	1	345	331-600	393-601
1333	FG3715		1	345	635	638
	obranch 64400 64403 1	OPEN BRANCH FROM BUS 'MECCORD3 345' TO BUS 'E MOLIN3 34	1	345	635	638
1335	FG3716		1	345	363-635	335-638
	obranch 36382 64405 1	OPEN BRANCH FROM BUS 'QUAD ; 345' TO BUS 'SUB 91 3 345' C	1	345	363-635	335-638
1338	FG3718		1	345	635	638
	obranch 64400 64403 1	OPEN BRANCH FROM BUS 'MECCORD3 345' TO BUS 'E MOLIN3 34	1	345	635	638
1340	FG3719		1	345	363-635	335-638
	obranch 36382 64405 1	OPEN BRANCH FROM BUS 'QUAD ; 345' TO BUS 'SUB 91 3 345' C	1	345	363-635	335-638
1343	FG3721		1	345	363-635	335-638
	obranch 36382 64405 1	OPEN BRANCH FROM BUS 'QUAD ; 345' TO BUS 'SUB 91 3 345' C	1	345	363-635	335-638
1345	FG3723		1	345	635	637-638
	obranch 64350 64095 1	OPEN BRANCH FROM BUS 'HILLS 3 345' TO BUS 'MNTZUMA3 345'	1	345	635	637-638
1348	FG3724		1	345	331	393-391
	obranch 34018 34093 1	OPEN BRANCH FROM BUS 'HAZLTON3 345' TO BUS 'ARNOLD 3 34	1	345	331	393-391
1350	FG3725		1	345	331-363	393-335
	obranch 36382 34036 1	OPEN BRANCH FROM BUS 'QUAD ; 345' TO BUS 'ROCK CK3 345'	1	345	331-363	393-335
1353	FG3727		1	345	331-600	393-601
	obranch 34006 60331 1	OPEN BRANCH FROM BUS 'LAKEFLD3 345' TO BUS 'LKFLDXL3 345	1	345	331-600	393-601
1355	FG3728		1	345	331	393-391
	obranch 34018 34093 1	OPEN BRANCH FROM BUS 'HAZLTON3 345' TO BUS 'ARNOLD 3 34	1	345	331	393-391
1358	FG4003		1	345	363	335
	obranch 36310 36362 1	OPEN BRANCH FROM BUS 'ELECT; B 345' TO BUS 'NELSO; B 345'	1	345	363	335
1360	FG4004			345-138	363-357	335-357
	obranch 36348 36342 1	OPEN BRANCH FROM BUS 'LATHA; T 345' TO BUS 'KINCA; B 345' C	1	345	363	335
	obranch 32356 32357 1	OPEN BRANCH FROM BUS 'LATHAM 345' TO BUS 'LATHAM 138'	1	138-345	357	357
	obranch 32357 32362 1	OPEN BRANCH FROM BUS 'LATHAM 138' TO BUS 'N DEC W 138'	1	138	357	357
	obranch 36348 32356 1	OPEN BRANCH FROM BUS 'LATHA; T 345' TO BUS 'LATHAM 345'	1	345	357-363	357-335
	obranch 36348 36344 1	OPEN BRANCH FROM BUS 'LATHA; T 345' TO BUS 'PONTI; B 345' C	1	345	363	335
	obranch 32356 32349 1	OPEN BRANCH FROM BUS 'LATHAM 345' TO BUS 'MAROA W 345	1	345	357	357
	obranch 32357 32359 1	OPEN BRANCH FROM BUS 'LATHAM 138' TO BUS 'LATH STP 138'	1	138	357	357
	obranch 32357 32358 1	OPEN BRANCH FROM BUS 'LATHAM 138' TO BUS 'LATH NTP 138'	1	138	357	357
1363	FG4005		1	765	205	252
	obranch 22667 22671 1	OPEN BRANCH FROM BUS '05JEFRSO 765' TO BUS '05ROCKPT 76	1	765	205	252
1365	FG4006		1	345-138	356	310
	obranch 30214 30215 1	OPEN BRANCH FROM BUS 'CAHOKIA 345' TO BUS 'CAHOK 1 138'	1	345-138	356	310
1368	FG4007			138	356	310-318
	obranch 30216 31525 1	OPEN BRANCH FROM BUS 'CAHOK 3 138' TO BUS 'POPLAR 2 138'	1	138	356	310-318
	obranch 31525 30325 1	OPEN BRANCH FROM BUS 'POPLAR 2 138' TO BUS 'CENTRAL 138	1	138	356	318
1370	FG4008			138	356	318-310
	obranch 30949 31124 1	OPEN BRANCH FROM BUS 'LEMT 2 138' TO BUS 'MER 2&3 138' C	1	138	356	318
	obranch 30216 30949 1	OPEN BRANCH FROM BUS 'CAHOK 3 138' TO BUS 'LEMT 2 138' C	1	138	356	310-318
1373	FG4009			345-138	356-357	312-357

No.	Contingency		Ckt	Base kV	Area	Zone
	obranch 31774 31773 2	OPEN BRANCH FROM BUS 'ST FRANC 138' TO BUS 'ST FRANC 345	2	345-138	356	312
	obranch 32274 32278 1	OPEN BRANCH FROM BUS 'BALDWIN 345' TO BUS 'STALLING 345'	1	345	357	357
	obranch 32279 32278 1	OPEN BRANCH FROM BUS 'STALLING 138' TO BUS 'STALLING 345'	1	138-345	357	357
	obranch 31669 31773 1	OPEN BRANCH FROM BUS 'RUSH 345' TO BUS 'ST FRANC 345'	1	345	356	312
1375	FG4011			345-161	356-362	316-362
	obranch 30849 30850 1	OPEN BRANCH FROM BUS 'KELSO 345' TO BUS 'KELSO 161' C	1	345-161	356	316
	obranch 30825 30849 1	OPEN BRANCH FROM BUS 'JOPPA TS 345' TO BUS 'KELSO 345'	1	345	356	316
	obranch 33392 33393 1	OPEN BRANCH FROM BUS 'JOPPA S 161' TO BUS 'JOPPA SR 161'	1	161	362	362
1378	FG4012			345-161	130-356	130-316
	obranch 96038 96075 1	OPEN BRANCH FROM BUS '7ESSEX 345' TO BUS '5ESSEX 161'	1	345-161	130	130
	obranch 30974 96038 1	OPEN BRANCH FROM BUS 'LUTESVIL 345' TO BUS '7ESSEX 345'	1	345	356-130	316-130
1380	FG4013		1	138	356	310-318
	obranch 30216 30949 1	OPEN BRANCH FROM BUS 'CAHOK 3 138' TO BUS 'LEMT 2 138' C	1	138	356	310-318
1383	FG4014			345	356	314
	obranch 31408 31088 1	OPEN BRANCH FROM BUS 'OVERTON 345' TO BUS 'MCCREDIE 34	1	345	356	314
	obranch 31230 31088 1	OPEN BRANCH FROM BUS 'MONTGMRY 345' TO BUS 'MCCREDIE	1	345	356	314
1385	FG4015			138	356	322
	obranch 31180 30369 1	OPEN BRANCH FROM BUS 'MEREDOSA 138' TO BUS 'CLAY JCT 13	1	138	356	322
	obranch 30369 31558 1	OPEN BRANCH FROM BUS 'CLAY JCT 138' TO BUS 'QUINCY E 138'	1	138	356	322
1388	FG4016			138	356	310-313
	obranch 31213 31755 1	OPEN BRANCH FROM BUS 'MISS T 3 138' TO BUS 'SIOUX 1 138' C	1	138	356	310-313
	obranch 31213 31652 1	OPEN BRANCH FROM BUS 'MISS T 3 138' TO BUS 'ROXFORD 138'	1	138	356	310
1390	FG4017			345	356-357	323-357
	obranch 31993 31330 1	OPEN BRANCH FROM BUS 'XENIA 345' TO BUS 'NEWTON 345'	1	345	356	323
	obranch 32327 31993 1	OPEN BRANCH FROM BUS 'MT VRNON 345' TO BUS 'XENIA 345'	1	345	356-357	323-357
1393	FG4018			161-345	515-130	515-130
	obranch 96075 52634 1	OPEN BRANCH FROM BUS '5ESSEX 161' TO BUS 'IDALIA 5 161' C	1	161	515-130	515-130
	obranch 96038 96075 1	OPEN BRANCH FROM BUS '7ESSEX 345' TO BUS '5ESSEX 161'	1	345-161	130	130
1395	FG4019			345-161	130-356	130-316
	obranch 96038 96075 1	OPEN BRANCH FROM BUS '7ESSEX 345' TO BUS '5ESSEX 161'	1	345-161	130	130
	obranch 30974 96038 1	OPEN BRANCH FROM BUS 'LUTESVIL 345' TO BUS '7ESSEX 345'	1	345	356-130	316-130
1398	FG4020		1	345	130	130
	obranch 96049 96044 1	OPEN BRANCH FROM BUS '7THOMHL 345' TO BUS '7MCCRED 34	1	345	130	130
1400	FG4022			345-138	356	316-312
	obranch 30974 31773 1	OPEN BRANCH FROM BUS 'LUTESVIL 345' TO BUS 'ST FRANC 345'	1	345	356	316-312
	obranch 31773 31774 1	OPEN BRANCH FROM BUS 'ST FRANC 345' TO BUS 'ST FRANC 138	1	345-138	356	312
1403	FG4023			345	363	335
	obranch 36342 36348 1	OPEN BRANCH FROM BUS 'KINCA; B 345' TO BUS 'LATHA; T 345' C	1	345	363	335
	obranch 36344 36348 1	OPEN BRANCH FROM BUS 'PONTI; B 345' TO BUS 'LATHA; T 345' C	1	345	363	335
1405	FG4024			345	363	335
	obranch 36344 36348 1	OPEN BRANCH FROM BUS 'PONTI; B 345' TO BUS 'LATHA; T 345' C	1	345	363	335
	obranch 36342 36348 1	OPEN BRANCH FROM BUS 'KINCA; B 345' TO BUS 'LATHA; T 345' C	1	345	363	335
1408	FG4027			345-138	356-357	310-357
	obranch 30214 32274 1	OPEN BRANCH FROM BUS 'CAHOKIA 345' TO BUS 'BALDWIN 345'	1	345	356-357	310-357
	obranch 30214 30216 1	OPEN BRANCH FROM BUS 'CAHOKIA 345' TO BUS 'CAHOK 3 138'	1	345-138	356	310
1410	FG45009		1	500	201	201
	obranch 20103 20101 1	OPEN BRANCH FROM BUS '01BLACKO 500' TO BUS '01BEDNGT 50	1	500	201	201
1413	FG45019		1	500	201	201
	obranch 20101 20105 1	OPEN BRANCH FROM BUS '01BEDNGT 500' TO BUS '01DOUBS 50	1	500	201	201
1415	FG5002		1	345	520-524	520-524
	obranch 53794 54908 1	OPEN BRANCH FROM BUS 'R.S.S.-7 345' TO BUS 'ARCADIA7 345' C	1	345	520-524	520-524
1418	FG5005		1	138-161	520-523	520-523

No.	Contingency		Ckt	Base kV	Area	Zone
	obranch 53802 54438 1	OPEN BRANCH FROM BUS 'CATOOSA4 138' TO BUS 'CATSAGR5 1	1	138-161	520-523	520-523
1420	FG5007		1	138	520-525	520-525
	obranch 54140 55814 1	OPEN BRANCH FROM BUS 'S.W.S.-4 138' TO BUS 'ANADARK4 138'	1	138	520-525	520-525
1423	FG5008		1	345	520	520
	obranch 53277 54037 1	OPEN BRANCH FROM BUS 'LYDIA 7 345' TO BUS 'VALIANT7 345' C	1	345	520	520
1425	FG5010		2	138-345	520	520
	obranch 53527 53528 2	OPEN BRANCH FROM BUS 'DIANA 4 138' TO BUS 'DIANA 7 345' C	2	138-345	520	520
1428	FG5014		1	345	526-520	526-520
	obranch 51534 54119 1	OPEN BRANCH FROM BUS 'TUCO7 345' TO BUS 'O.K.U.-7 345' CK	1	345	526-520	526-520
1430	FG5017		1	345-500	524	524
	obranch 55302 55305 1	OPEN BRANCH FROM BUS 'FTSMITH7 345' TO BUS 'FTSMITH8 500'	1	345-500	524	524
1433	FG5022		1	345	536	537
	obranch 56769 56796 1	OPEN BRANCH FROM BUS 'LANG 7 345' TO BUS 'WICHITA7 345'	1	345	536	537
1435	FG5023		1	345	541	541
	obranch 57965 57981 1	OPEN BRANCH FROM BUS 'W.GRDNR7 345' TO BUS 'LACYGNE7 3	1	345	541	541
1438	FG5029		1	345	502-520	502-520
	obranch 50045 53454 1	OPEN BRANCH FROM BUS 'DOLHILL7 345' TO BUS 'SW SHV 7 345'	1	345	502-520	502-520
1440	FG5037		1	345	520-524	520-524
	obranch 53794 55224 1	OPEN BRANCH FROM BUS 'R.S.S.-7 345' TO BUS 'MUSKOGE7 345'	1	345	520-524	520-524
1443	FG5042		1	345	520	520
	obranch 53277 54037 1	OPEN BRANCH FROM BUS 'LYDIA 7 345' TO BUS 'VALIANT7 345' C	1	345	520	520
1445	FG5046		1	138	520	520
	obranch 53770 53827 1	OPEN BRANCH FROM BUS 'PRATTV-4 138' TO BUS 'S.S.---4 138' C	1	138	520	520
1448	FG5047		1	138	520	520
	obranch 53771 53795 1	OPEN BRANCH FROM BUS 'JENKS--4 138' TO BUS 'R.S.S.-4 138' C	1	138	520	520
1450	FG5049		2			
	obranch 57968 57969 2	OPEN BRANCH FROM BUS 'STILWEL7 345' TO BUS 'STILWEL5 161'	2			
1453	FG5054		1	138	520	520
	obranch 54117 54140 1	OPEN BRANCH FROM BUS 'FTCOBNG4 138' TO BUS 'S.W.S.-4 138'	1	138	520	520
1455	FG5058		1	230	502	502
	obranch 50023 50126 1	OPEN BRANCH FROM BUS 'CARROLL6 230' TO BUS 'MESSICK6 23	1	230	502	502
1458	FG5063		1	345	520	520
	obranch 53866 53955 1	OPEN BRANCH FROM BUS 'T.NO.--7 345' TO BUS 'N.E.S.-7 345' CK	1	345	520	520
1460	FG5068		1	345	520-524	520-524
	obranch 54033 55224 1	OPEN BRANCH FROM BUS 'PITTSB-7 345' TO BUS 'MUSKOGE7 34	1	345	520-524	520-524
1463	FG5069		1	345	520-524	520-524
	obranch 54033 55224 1	OPEN BRANCH FROM BUS 'PITTSB-7 345' TO BUS 'MUSKOGE7 34	1	345	520-524	520-524
1465	FG5073		1	345	520	520
	obranch 53929 53955 1	OPEN BRANCH FROM BUS 'DELWARE7 345' TO BUS 'N.E.S.-7 345'	1	345	520	520
1468	FG5074		1	161	520	520
	obranch 53139 53187 1	OPEN BRANCH FROM BUS 'FLINTCR5 161' TO BUS 'GENTRYR5 16	1	161	520	520
1470	FG5078		1	345	520-536	520-537
	obranch 53929 56793 1	OPEN BRANCH FROM BUS 'DELWARE7 345' TO BUS 'NEOSHO 7 3	1	345	520-536	520-537
1473	FG5083		2	230	526	526
	obranch 50907 50915 2	OPEN BRANCH FROM BUS 'HARRNG6 230' TO BUS 'NICHOL6 230'	2	230	526	526
1475	FG60014		1	345	365	376
	obranch 39253 39329 1	OPEN BRANCH FROM BUS 'ARCADN1 345' TO BUS 'GRANVL1 345	1	345	365	376
1478	FG6029			345	600	616-601
	obranch 69999 61950 1	OPEN BRANCH FROM BUS 'RFPBID6 345' TO BUS 'BYRON 3 345'	1	345	600	616-601
	obranch 60105 69999 1	OPEN BRANCH FROM BUS 'PR ISLD3 345' TO BUS 'RFPBID6 345'	1	345	600	601

No.	Contingency		Ckt	Base kV	Area	Zone
1480	FG6062		1	345	600	601-604
	obranch 60186 60304 1	OPEN BRANCH FROM BUS 'AS KING3 345' TO BUS 'EAU CL 3 345'	1	345	600	601-604
1483	FG63002		1	345	363	335
	obranch 36336 36354 1	OPEN BRANCH FROM BUS 'GOODI;4B 345' TO BUS 'LOCKP; B 345'	1	345	363	335
1485	FG63007		1	765	363	335
	obranch 36255 36258 1	OPEN BRANCH FROM BUS 'COLLI; 765' TO BUS 'PLANO; 765' CK	1	765	363	335
1488	FG63008		1	345	363	335
	obranch 36335 36355 1	OPEN BRANCH FROM BUS 'GOODI;2R 345' TO BUS 'LOCKP; R 345'	1	345	363	335
1490	FG63009		1	345	363	335
	obranch 36315 36337 1	OPEN BRANCH FROM BUS 'ELWOO; R 345' TO BUS 'GOODI;1R 345	1	345	363	335
1493	FG63011		1	345	363	335-341
	obranch 36309 37649 1	OPEN BRANCH FROM BUS 'E FRA; R 345' TO BUS 'UPNOR;RP 345'	1	345	363	335-341
1495	FG63013		1	345	363	335
	obranch 36378 36336 1	OPEN BRANCH FROM BUS 'POWER; B 345' TO BUS 'GOODI;4B 345	1	345	363	335
1498	FG63014		1	345	363	335
	obranch 36379 36335 1	OPEN BRANCH FROM BUS 'POWER; R 345' TO BUS 'GOODI;2R 345	1	345	363	335
1500	FG63019		1	345	363	335
	obranch 36310 36362 1	OPEN BRANCH FROM BUS 'ELECT; B 345' TO BUS 'NELSO; B 345'	1	345	363	335
1503	FG63023		1	765	205-363	252-335
	obranch 22660 36260 1	OPEN BRANCH FROM BUS '05DUMONT 765' TO BUS 'WILTO; 765'	1	765	205-363	252-335
1505	FG63026		1	345	363	335
	obranch 36301 36357 1	OPEN BRANCH FROM BUS 'DP 46; R 345' TO BUS 'LOMBA; R 345'	1	345	363	335
1508	FG63028		1	345	331-363	393-335
	obranch 36382 34036 1	OPEN BRANCH FROM BUS 'QUAD ; 345' TO BUS 'ROCK CK3 345'	1	345	331-363	393-335
1510	FG63032		1	345	363-365	335-376
	obranch 36420 39247 1	OPEN BRANCH FROM BUS 'ZION ; B 345' TO BUS 'ARCADN3 345'	1	345	363-365	335-376
1513	FG63038		1			
	obranch 36291 36355 1	OPEN BRANCH FROM BUS 'COLLI; R 345' TO BUS 'LOCKP; R 345'	1			
1515	FG63039		1	345	363	335
	obranch 36340 36354 1	OPEN BRANCH FROM BUS 'JO 29; B 345' TO BUS 'LOCKP; B 345' C	1	345	363	335
1518	FG63040		1	345	363	335
	obranch 36300 36356 1	OPEN BRANCH FROM BUS 'DP 46; B 345' TO BUS 'LOMBA; B 345' C	1	345	363	335
1520	FG63041		1	345	363	335
	obranch 36336 36354 1	OPEN BRANCH FROM BUS 'GOODI;4B 345' TO BUS 'LOCKP; B 345'	1	345	363	335
1523	FG63050		1	345	363	335-341
	obranch 37616 36284 1	OPEN BRANCH FROM BUS 'CORDO; 345' TO BUS 'CORDO; B 345'	1	345	363	335-341
1525	FG63051		1	345	363	350-335
	obranch 36382 36368 1	OPEN BRANCH FROM BUS 'QUAD ; 345' TO BUS 'H471 ; 345' CK	1	345	363	350-335
1528	FG63052		1	345	363	335
	obranch 36301 36357 1	OPEN BRANCH FROM BUS 'DP 46; R 345' TO BUS 'LOMBA; R 345'	1	345	363	335
1530	FG63056		1	345	363	335
	obranch 36310 36372 1	OPEN BRANCH FROM BUS 'ELECT; B 345' TO BUS 'PLANO; B 345'	1	345	363	335
1533	FG63058		1	138	357	357-391
	obranch 32348 32378 1	OPEN BRANCH FROM BUS 'BROKAW 138' TO BUS 'NORMAL E 13	1	138	357	357-391
1535	FG63061		1	345	359-363	301-335
	obranch 36379 33162 1	OPEN BRANCH FROM BUS 'POWER; R 345' TO BUS 'TAZEWELL 34	1	345	359-363	301-335
1538	FG63064		1	345	363	335
	obranch 36310 36372 1	OPEN BRANCH FROM BUS 'ELECT; B 345' TO BUS 'PLANO; B 345'	1	345	363	335
1540	FG63065		1	345	363	335
	obranch 36310 36362 1	OPEN BRANCH FROM BUS 'ELECT; B 345' TO BUS 'NELSO; B 345'	1	345	363	335

No.	Contingency		Ckt	Base kV	Area	Zone
1543	FG63066		1	138	363	333
	obranch 37038 36688 1	OPEN BRANCH FROM BUS 'NELSO; B 138' TO BUS 'DIXON; B 138'	1	138	363	333
1545	FG63068		1	138-345	357	357
	obranch 32354 32352 1	OPEN BRANCH FROM BUS 'OREANA W 345' TO BUS 'OREANA 13	1	138-345	357	357
1548	FG63072		1	138	363	333
	obranch 37038 36688 1	OPEN BRANCH FROM BUS 'NELSO; B 138' TO BUS 'DIXON; B 138'	1	138	363	333
1550	FG63074		1	345	363	335
	obranch 36310 36372 1	OPEN BRANCH FROM BUS 'ELECT; B 345' TO BUS 'PLANO; B 345'	1	345	363	335
1553	FG63077		1	345	363	335
	obranch 36310 36372 1	OPEN BRANCH FROM BUS 'ELECT; B 345' TO BUS 'PLANO; B 345'	1	345	363	335
1555	FG63087		1	765	205-363	252-335
	obranch 22660 36260 1	OPEN BRANCH FROM BUS '05DUMONT 765' TO BUS 'WILTO; 765'	1	765	205-363	252-335
1558	FG63088		1	345	363	335-341
	obranch 37616 36284 1	OPEN BRANCH FROM BUS 'CORDO; 345' TO BUS 'CORDO; B 345'	1	345	363	335-341
1560	FG63089		1	345	363	350-335
	obranch 36382 36368 1	OPEN BRANCH FROM BUS 'QUAD ; 345' TO BUS 'H471 ; 345' CK	1	345	363	350-335
1563	FG63090		1	345	363	335
	obranch 36301 36357 1	OPEN BRANCH FROM BUS 'DP 46; R 345' TO BUS 'LOMBA; R 345'	1	345	363	335
1565	FG63100		1	345	363	335
	obranch 36303 36315 1	OPEN BRANCH FROM BUS 'DRESD; R 345' TO BUS 'ELWOO; R 345	1	345	363	335
1568	FG63101		1	345	363	335-341
	obranch 36311 37637 1	OPEN BRANCH FROM BUS 'ELECT;4R 345' TO BUS 'AUROR;RP 34	1	345	363	335-341
1570	FG65000		1	345	365	377-378
	obranch 39547 39918 1	OPEN BRANCH FROM BUS 'MORGAN 345' TO BUS 'PLAINS 345'	1	345	365	377-378
1573	FG65001		1	138	365	378
	obranch 39524 39543 1	OPEN BRANCH FROM BUS 'AMBERG 138' TO BUS 'NOW T 138'	1	138	365	378
1575	FG65004		1	345	364	371
	obranch 39058 39119 1	OPEN BRANCH FROM BUS 'PAD 345 345' TO BUS 'ROE 345 345' C	1	345	364	371
1578	FG65006		1	138	365-368	379-368
	obranch 38919 39885 1	OPEN BRANCH FROM BUS 'TILDEN4 138' TO BUS 'CEDARU 138'	1	138	365-368	379-368
1580	FG65009		1	345	367	391-367
	obranch 39157 39818 1	OPEN BRANCH FROM BUS 'COL 345 345' TO BUS 'NMA 345 345' C	1	345	367	391-367
1583	FG65010		2	138	364	371
	obranch 39145 39167 2	OPEN BRANCH FROM BUS 'POR 138 138' TO BUS 'COL 138 138' C	2	138	364	371
1585	FG65011		1	138	364	371
	obranch 39145 39167 1	OPEN BRANCH FROM BUS 'POR 138 138' TO BUS 'COL 138 138' C	1	138	364	371
1588	FG65012		1	345	364	371
	obranch 39176 39214 1	OPEN BRANCH FROM BUS 'SFL 345 345' TO BUS 'EDG 345 345' C	1	345	364	371
1590	FG65014		1	345	363-364	335-371
	obranch 36406 39058 1	OPEN BRANCH FROM BUS 'WEMPL; B 345' TO BUS 'PAD 345 345'	1	345	363-364	335-371
1593	FG65016		1	345	365	376
	obranch 38894 38901 1	OPEN BRANCH FROM BUS 'N APP 3 345' TO BUS 'PT BCH5 345' C	1	345	365	376
1595	FG65018		1	345	365	376
	obranch 38894 38901 1	OPEN BRANCH FROM BUS 'N APP 3 345' TO BUS 'PT BCH5 345' C	1	345	365	376
1598	FG65020		1	138-345	365	377-376
	obranch 38895 38893 1	OPEN BRANCH FROM BUS 'N APP 5 138' TO BUS 'N APP 2 345' C	1	138-345	365	377-376
1600	FG65021		1	138-345	365	377-376
	obranch 39567 39359 1	OPEN BRANCH FROM BUS 'N APP 4 138' TO BUS 'N APP 1 345' C	1	138-345	365	377-376
1603	FG65022		1	345	365	377-376
	obranch 39568 38894 1	OPEN BRANCH FROM BUS 'NAP3 NEU 345' TO BUS 'N APP 3 345'	1	345	365	377-376

No.	Contingency	Ckt	Base kV	Area	Zone
1605	FG65023	1	138-345	365	377-376
	obranch 38895 38893 1 OPEN BRANCH FROM BUS 'N APP 5 138' TO BUS 'N APP 2 345' C	1	138-345	365	377-376
1608	FG65024	1	138	366	366
	obranch 39619 39620 1 OPEN BRANCH FROM BUS 'EAST KRK 138' TO BUS 'KEWAUNEE 1	1	138	366	366
1610	FG65026	1	138	365-366	377-366
	obranch 39567 39600 1 OPEN BRANCH FROM BUS 'N APP 4 138' TO BUS 'MASON ST 138'	1	138	365-366	377-366
1613	FG65027		138	365-366	377-366
	obranch 38897 39589 2 OPEN BRANCH FROM BUS 'STILES5 138' TO BUS 'PULLIAM 138'	2	138	365-366	377-366
	obranch 39575 39589 1 OPEN BRANCH FROM BUS 'STILES4 138' TO BUS 'PULLIAM 138'	1	138	365-366	377-366
1615	FG65029	1	345	363-364	335-371
	obranch 36406 39058 1 OPEN BRANCH FROM BUS 'WEMPL; B 345' TO BUS 'PAD 345 345'	1	345	363-364	335-371
1618	FG65030	1	138	364	371
	obranch 39059 38057 1 OPEN BRANCH FROM BUS 'PAD 138 138' TO BUS 'NWT 138 138'	1	138	364	371
1620	FG65031	1	345	365	377-378
	obranch 39547 39918 1 OPEN BRANCH FROM BUS 'MORGAN 345' TO BUS 'PLAINS 345'	1	345	365	377-378
1623	FG65032	1	138	365	378
	obranch 39524 39543 1 OPEN BRANCH FROM BUS 'AMBERG 138' TO BUS 'NOW T 138'	1	138	365	378
1625	FG65034	1	345	365	376
	obranch 38894 38901 1 OPEN BRANCH FROM BUS 'N APP 3 345' TO BUS 'PT BCH5 345' C	1	345	365	376
1628	FG65035	1	345	367-364	391-371
	obranch 39157 39176 1 OPEN BRANCH FROM BUS 'COL 345 345' TO BUS 'SFL 345 345' C	1	345	367-364	391-371
1630	FG65040	1	345	365-366	376-366
	obranch 38894 39785 1 OPEN BRANCH FROM BUS 'N APP 3 345' TO BUS 'ROCKY RN 345'	1	345	365-366	376-366
1633	FG65041	3	115-345	366	366
	obranch 39785 39786 3 OPEN BRANCH FROM BUS 'ROCKY RN 345' TO BUS 'ROCKY RN 11	3	115-345	366	366
1635	FG65043	1	345	363	335
	obranch 36289 36389 1 OPEN BRANCH FROM BUS 'CHERR; R 345' TO BUS 'SILVE; R 345'	1	345	363	335
1638	FG65045	1	138	365	376
	obranch 38879 39512 1 OPEN BRANCH FROM BUS 'SGR CK4 138' TO BUS 'UNIVRSTY 138'	1	138	365	376
1640	FG65046	1	345	365-366	376-366
	obranch 38894 39785 1 OPEN BRANCH FROM BUS 'N APP 3 345' TO BUS 'ROCKY RN 345'	1	345	365-366	376-366
1643	FG65067	1	345	365	376
	obranch 38850 39471 1 OPEN BRANCH FROM BUS 'PLS PR3 345' TO BUS 'RACINE1 345'	1	345	365	376
1645	FG65068	1	345	363-365	335-376
	obranch 36420 39247 1 OPEN BRANCH FROM BUS 'ZION ; B 345' TO BUS 'ARCADN3 345'	1	345	363-365	335-376
1648	FG94	1	345	356	323
	obranch 31330 30309 1 OPEN BRANCH FROM BUS 'NEWTON 345' TO BUS 'CASEY 345'	1	345	356	323
1650	FG95	1	345	363	335
	obranch 36310 36362 1 OPEN BRANCH FROM BUS 'ELECT; B 345' TO BUS 'NELSO; B 345'	1	345	363	335
1653	FG98	1	345-161	356-362	316-362
	obranch 30825 33394 1 OPEN BRANCH FROM BUS 'JOPPA TS 345' TO BUS 'JOPPA TS 161'	1	345-161	356-362	316-362
1655	FG99	1	765	205-363	252-335
	obranch 22660 36260 1 OPEN BRANCH FROM BUS '05DUMONT 765' TO BUS 'WILTO; 765'	1	765	205-363	252-335
1658	FG9905	1	345	363-364	335-371
	obranch 36406 39058 1 OPEN BRANCH FROM BUS 'WEMPL; B 345' TO BUS 'PAD 345 345'	1	345	363-364	335-371

APPENDIX C

NORMAL SYSTEM OVERLOADS

2002 SERIES -- FIANL (F1)2004 SUMMER PEAK MODEL

F204SUPK.SAV /SUMMER PEAK / SI

Base Case

7/23/2002

Overloaded Facility										Normal System Overloads		
From	Name	To	Name	Circuit	Base kV	Area	Zone	Ratings Norm	Ratings Emer	MVA	Norm (%)	Emer (%)
34127	WYOMING5	34141	WYOMING9	1	161-34.5	331	391	18	18	33	185	185
67455	BRANDN 9	63221	BRANDN 7	1	41.6-115	626	665-629	12	12	20	170	170
62667	ST BONI7	62925	DICKNSN7	1	115	600-618	622-619	71	71	115	161	161
34124	DEWITT 5	34143	DEWITT 9	1	161-34.5	331	391	24	24	31	130	130
67541	STVITAL7	67726	DAKOTB17	1	110	667	668-667	26	26	30	116	116
21420	02BRKSID	21822	02BRGR E	1	138	202	202	98	103	105	107	102
34530	WELSBRGY	34074	WELSBRG7	1	115	331	392-391	50	50	50	100	100

Notes:

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

2002 SERIES -- FIANL (F1)2004 SUMMER PEAK MODEL

F204SUPK.SAV /SUMMER PEAK / SI

Bid 1

7/23/2002

Overloaded Facility										Normal System Overloads		
From	Name	To	Name	Circuit	Base kV	Area	Zone	Ratings			Norm	Emer
								Norm	Emer	MVA	(%)	(%)
34127	WYOMING5	34141	WYOMING9	1	161-34.5	331	391	18	18	33	185	185
67455	BRANDN 9	63221	BRANDN 7	1	41.6-115	626	665-629	12	12	20	170	170
62667	ST BONI7	62925	DICKNSN7	1	115	600-618	622-619	71	71	114	161	161
34124	DEWITT 5	34143	DEWITT 9	1	161-34.5	331	391	24	24	31	130	130
67541	STVITAL7	67726	DAKOTB17	1	110	667	668-667	26	26	30	116	116
21420	02BRKSID	21822	02BRGR E	1	138	202	202	98	103	105	107	102
34530	WELSBRGY	34074	WELSBRG7	1	115	331	392-391	50	50	50	100	100

Notes:

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

2002 SERIES -- FIANL (F1)2004 SUMMER PEAK MODEL

F204SUPK.SAV /SUMMER PEAK / SI

Bid 2

7/23/2002

Overloaded Facility										Normal System Overloads		
From	Name	To	Name	Circuit	Base kV	Area	Zone	Ratings			Norm	Emer
								Norm	Emer	MVA	(%)	(%)
34127	WYOMING5	34141	WYOMING9	1	161-34.5	331	391	18	18	33	185	185
67455	BRANDN 9	63221	BRANDN 7	1	41.6-115	626	665-629	12	12	20	170	170
62667	ST BONI7	62925	DICKNSN7	1	115	600-618	622-619	71	71	114	161	161
34124	DEWITT 5	34143	DEWITT 9	1	161-34.5	331	391	24	24	31	130	130
67541	STVITAL7	67726	DAKOTB17	1	110	667	668-667	26	26	30	116	116
21420	02BRKSID	21822	02BRGR E	1	138	202	202	98	103	105	107	102
34530	WELSBRGY	34074	WELSBRG7	1	115	331	392-391	50	50	50	100	100

Notes:

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

2002 SERIES -- FIANL (F1)2004 SUMMER PEAK MODEL

F204SUPK.SAV /SUMMER PEAK / SI

Bid 3

7/22/2002

Overloaded Facility										Normal System Overloads		
From	Name	To	Name	Circuit	Base kV	Area	Zone	Ratings			Norm	Emer
								Norm	Emer	MVA	(%)	(%)
34127	WYOMING5	34141	WYOMING9	1	161-34.5	331	391	18	18	33	185	185
67455	BRANDN 9	63221	BRANDN 7	1	41.6-115	626	665-629	12	12	20	170	170
62667	ST BONI7	62925	DICKNSN7	1	115	600-618	622-619	71	71	115	161	161
34124	DEWITT 5	34143	DEWITT 9	1	161-34.5	331	391	24	24	31	130	130
67541	STVITAL7	67726	DAKOTB17	1	110	667	668-667	26	26	30	116	116
34028	LORE 5	34032	8TH ST.5	1	161	331	393	84	84	91	108	108
21420	02BRKSID	21822	02BRGR E	1	138	202	202	98	103	105	107	102
27106	11KNOB C	27135	11POND C	1	138	211	211	143	143	145	102	102
27135	11POND C	27144	11TIPTOP	1	138	211	211	143	143	145	101	101
34530	WELSBRGY	34074	WELSBRG7	1	115	331	392-391	50	50	50	100	100
34066	M-TOWN 7	34169	WELSBGT7	1	115	331	391	97	97	97	100	100

Notes:

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

2002 SERIES -- FIANL (F1)2004 SUMMER PEAK MODEL

F204SUPK.SAV /SUMMER PEAK / SI

Bids 4 and 5

7/22/2002

Overloaded Facility										Normal System Overloads		
From	Name	To	Name	Circuit	Base kV	Area	Zone	Ratings			Norm	Emer
								Norm	Emer	MVA	(%)	(%)
34127	WYOMING5	34141	WYOMING9	1	161-34.5	331	391	18	18	33	185	185
67455	BRANDN 9	63221	BRANDN 7	1	41.6-115	626	665-629	12	12	20	170	170
62667	ST BONI7	62925	DICKNSN7	1	115	600-618	622-619	71	71	110	154	154
34124	DEWITT 5	34143	DEWITT 9	1	161-34.5	331	391	24	24	31	130	130
67541	STVITAL7	67726	DAKOTB17	1	110	667	668-667	26	26	30	115	115
34009	WINBAGO5	61932	RUTLAND5	1	161	331	393-615	84	84	88	104	104
21420	02BRKSID	21822	02BRGR E	1	138	202	202	98	103	105	107	102
34530	WELSBRGY	34074	WELSBRG7	1	115	331	392-391	50	50	50	100	100
59206	PRALEE 5	59211	BLSPS 5	1	161	540	540	223	245	237	106	97

Notes:

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

2002 SERIES -- FIANL (F1)2004 SUMMER PEAK MODEL

F204SUPK.SAV /SUMMER PEAK / SI

Bids 4 and 6

7/22/2002

Overloaded Facility										Normal System Overloads		
From	Name	To	Name	Circuit	Base kV	Area	Zone	Ratings			Norm	Emer
								Norm	Emer	MVA	(%)	(%)
34127	WYOMING5	34141	WYOMING9	1	161-34.5	331	391	18	18	33	185	185
67455	BRANDN 9	63221	BRANDN 7	1	41.6-115	626	665-629	12	12	20	170	170
62667	ST BONI7	62925	DICKNSN7	1	115	600-618	622-619	71	71	114	160	160
34124	DEWITT 5	34143	DEWITT 9	1	161-34.5	331	391	24	24	31	130	130
67541	STVITAL7	67726	DAKOTB17	1	110	667	668-667	26	26	30	116	116
21420	02BRKSID	21822	02BRGR E	1	138	202	202	98	103	105	107	102
34530	WELSBRGY	34074	WELSBRG7	1	115	331	392-391	50	50	50	100	100
59206	PRALEE 5	59211	BLSPS 5	1	161	540	540	223	245	237	106	97

Notes:

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

2002 SERIES -- FIANL (F1)2004 SUMMER PEAK MODEL

F204SUPK.SAV /SUMMER PEAK / SI

Bids 5 and 6

7/22/2002

Overloaded Facility										Normal System Overloads		
From	Name	To	Name	Circuit	Base kV	Area	Zone	Ratings			Norm	Emer
								Norm	Emer	MVA	(%)	(%)
34127	WYOMING5	34141	WYOMING9	1	161-34.5	331	391	18	18	33	185	185
67455	BRANDN 9	63221	BRANDN 7	1	41.6-115	626	665-629	12	12	20	170	170
62667	ST BONI7	62925	DICKNSN7	1	115	600-618	622-619	71	71	110	155	155
34124	DEWITT 5	34143	DEWITT 9	1	161-34.5	331	391	24	24	31	130	130
67541	STVITAL7	67726	DAKOTB17	1	110	667	668-667	26	26	30	116	116
21420	02BRKSID	21822	02BRGR E	1	138	202	202	98	103	105	107	102
34530	WELSBRGY	34074	WELSBRG7	1	115	331	392-391	50	50	50	100	100

Notes:

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

APPENDIX D

POWER FLOW REPORTS COMPARISONS AND DETAILED

Table 1. Impacts

1	2	3	4 and 5	4 and 6	5 and 6	From Bus		To Bus		Circuit	Base kV	Area	Zone	Rating1	Rating2	Length (mi)
		x				36362	NELSO; B	37632	LEECO;BP	1	345	363	335	1000.00	1000.00	12.2*
		x				36953	MAREN;RT	37119	P VAL; R	1	138	363	345	210.00	260.00	12.6*
		x				36457	ALPIN;RT	36599	CHERR; R	1	138	363	345-333	351.00	445.00	5.2*
		x				36532	BELVI; B	36606	B465 ;BT	1	138	363	345-333	290.00	330.00	0.2*
		x				38342	COC 69	39239	COC 138	1	138-69	364	371	33.00	33.00	tx
			x	x		59206	PRALEE 5	59211	BLSPS 5	1	161	540	540	223.00	245.00	3.21
		x				57968	STILWEL7	57981	LACYGNE7	1	345	541	541	1099.00	1202.00	30.8
			x	x		58036	OLATHEE5	58046	OXFORD 5	1	161	541	541	224.00	224.00	4.4
x						60217	INVRHLS3	60218	INVRHLS7	1	345-115	600	601	550.00	550.00	tx
x						60200	BLK DG27	60258	WILSON 7	2	115	600	601	167.00	167.00	4.5
x						60201	CHEMOLT7	60204	COTTAGE7	1	115	600	601	191.00	191.00	5.2
x						60201	CHEMOLT7	60247	LINDETP7	1	115	600	601	167.00	167.00	7.8
x						60204	COTTAGE7	60238	REDROCK7	1	115	600	601	191.00	191.00	7.6
x						60218	INVRHLS7	60220	INVRGRV7	1	115	600	601	371.00	371.00	1.9*
x						60218	INVRHLS7	60223	KOCHREF7	1	115	600	601	371.00	371.00	1.8
x						60223	KOCHREF7	60341	ROSEMON7	1	115	600	601	191.00	191.00	1.7
x						62227	JOHNCAK7	62228	APPVLTW7	1	115	600	622	224.00	224.00	0.2
x						62227	JOHNCAK7	62229	APPVLTE7	1	115	600	622	224.00	224.00	1.1
x						60103	CANNFLS5	63071	SPRNGCK5	1	161	600	601-622	90.00	90.00	21.8
x						60104	CANNFLS7	62235	EMPIRE 7	1	115	600	601-622	140.00	140.00	14.6
x						60200	BLK DG27	62230	PILOTKB7	1	115	600	601-622	194.00	194.00	4.6
x						60220	INVRGRV7	62230	PILOTKB7	1	115	600	601-622	239.00	239.00	5.7
x						60341	ROSEMON7	62235	EMPIRE 7	1	115	600	601-622	140.00	140.00	8.5
x						60343	WILLPIP7	62226	FISCHER7	1	115	600	601-622	224.00	224.00	0.6
x						60343	WILLPIP7	62228	APPVLTW7	1	115	600	601-622	224.00	224.00	0.38
		x	x	x		63051	HENNING4	63052	INMAN 4	1	230	626	621	143.00	143.00	3.8
		x				64403	E MOLIN3	64680	SB39MID5	1	345-161	635	638-637	500.00	500.00	tx
		x	x			34087	DYSART 5	64269	WASHBRN5	1	161	331-635	391-637	260.00	260.00	20.3

*Line lengths followed by an asterisk indicate that the length was estimated using a unit impedance of 0.7 ohm/mile.

Table 2. Existing Overloads Increased by Transfers

1	2	3	4 and 5	4 and 6	5 and 6	From Bus		To Bus		Circuit	Base kV	Area	Zone	Rating1	Rating2	Length (mi)
		x				99798	5BATEVL	99808	5CUSHMN	1	161	151	159	148.00	148.00	11.3*
			x	x		34066	M-TOWN 7	34169	WELSBGT7	1	115	331	391	97.00	97.00	27
	x		x	x	x	34028	LORE 5	34032	8TH ST.5	1	161	331	393	84.00	84.00	12.8
	x	x	x	x		34043	SAVANNA5	34046	YORK 5	1	161	331	393	84.00	84.00	8.2
		x				39122	KEG 138	39218	CHA 138	1	138	364	371	240.00	240.00	9.75
		x		x		39145	POR 138	39167	COL 138	1	138	364	371	286.00	286.00	5.66
		x		x		39145	POR 138	39167	COL 138	2	138	364	371	286.00	286.00	5.66
			x			60203	COON CK7	60253	TWIN LK7	1	115	600	601	371.00	371.00	9
		x	x	x		63219	GRANTCO7	63220	ELBOWLK7	1	115	626	629	96.00	96.00	3.6

*Line lengths followed by an asterisk indicate that the length was estimated using a unit impedance of 0.7 ohm/mile.

Table 3. Existing Overloads Decreased by Transfers

1	2	3	4 and 5	4 and 6	5 and 6	From Bus		To Bus		Circuit	Base kV	Area	Zone	Rating1	Rating2	Length (mi)
			x			27106	11KNOB C	27135	11POND C	1	138	211	211	143.00	143.00	2.4*
			x			27135	11POND C	27144	11TIPTOP	1	138	211	211	143.00	143.00	10.3*
		x				31221	MOBERLY	31409	OVERTON	1	161	356	314	142.00	142.00	20.7*
		x	x	x	x	60244	SCOTTCO7	60890	SCOTTCO8	1	115	600	601	70.00	70.00	tx
		x		x		61676	HIBBARD7	61680	WNTR ST7	1	115	608	608	144.00	144.00	3.7*
			x		x	63030	DICKNSN3	62925	DICKNSN7	1	345-115	618	618-619	448.00	448.00	tx

*Line lengths followed by an asterisk indicate that the length was estimated using a unit impedance of 0.7 ohm/mile.

Table 4. Benefits

1	2	3	4 and 5	4 and 6	5 and 6	From Bus		To Bus		Circuit	Base kV	Area	Zone	Rating1	Rating2	Length (mi)	
		x	x	x		34015	LIME CK5	34016	EMERYN	1	161	331	393	167.00	167.00	17.2*	
		x	x	x		60305	EAU CLA5	60317	WHEATON5	1	161	600	604	272.00	272.00		4.3
			x			39885	CEDARU	39892	NATIONAL	1	138	368-365	368-379	96.00	96.00	5.3*	

*Line lengths followed by an asterisk indicate that the length was estimated using a unit impedance of 0.7 ohm/mile.

2002 SERIES -- FIANL (F1)2004 SUMMER PEAK MODEL

F204SUPK.SAV /SUMMER PEAK / SI — Base Case — 7/23/2002

F204SUPK.SAV /SUMMER PEAK / SI — Bid 1 — 7/23/2002

Branches Exceeding 100% of Emergency Rating											pi_rfp				pi_rfp_bid1			
								Ratings		Cont	204SUPK.SAV /SUMMER PEAK / S				204SUPK.SAV /SUMMER PEAK / S			
											Normal	First Contingency			Normal	First Contingency		
	From Bus	To Bus		Ckt	Base kV	Area	Zone	Norm	Emer	ID	System%	Norm%	Emer%	A/B	System%	Norm%	Emer%	A/B
Group 1 New Overloads											**Not Overloaded**				**Overloaded**			
	60201 CHEMOLT7	60204	COTTAGE7	1	115	600	601	191	191	463	52.8	---	---	0 / 0	59.4	216.3	216.3	2 / 0
	60217 INVRHLS3	60218	INVRHLS7	1	345-115	600	601	550	550	463	21.4	---	---	0 / 0	33	201.3	201.3	2 / 0
	60220 INVRGRV7	62230	PILOTKB7	1	115	600	601-622	239	239	465	62.6	---	---	0 / 0	70.2	200.2	200.2	2 / 0
	60204 COTTAGE7	60238	REDROCK7	1	115	600	601	191	191	463	27.2	---	---	0 / 0	33.3	192.2	192.2	2 / 0
	60218 INVRHLS7	60223	KOCHREF7	1	115	600	601	371	371	463	66	---	---	0 / 0	76.4	184.0	184.0	2 / 0
	60200 BLK DG27	60258	WILSON 7	2	115	600	601	167	167	465	33.4	---	---	0 / 0	37.9	181.6	181.6	2 / 0
	60200 BLK DG27	62230	PILOTKB7	1	115	600	601-622	194	194	465	14.9	---	---	0 / 0	23.3	176.5	176.5	2 / 0
	62227 JOHNCAK7	62229	APPVLTE7	1	115	600	622	224	224	465	57	---	---	0 / 0	62.1	146.8	146.8	2 / 0
	60201 CHEMOLT7	60247	LINDETP7	1	115	600	601	167	167	463	28.7	---	---	0 / 0	22.6	137.0	137.0	2 / 0
	60218 INVRHLS7	60220	INVRGRV7	1	115	600	601	371	371	465	47.8	---	---	0 / 0	52.6	136.8	136.8	2 / 0
	60223 KOCHREF7	60341	ROSEMON7	1	115	600	601	191	191	463	11.1	---	---	0 / 0	17.7	121.1	121.1	2 / 0
	60103 CANNFLS5	63071	SPRNGCK5	1	161	600	601-622	90	90	463	63.8	---	---	0 / 0	47.1	105.0	105.0	1 / 1
	60104 CANNFLS7	62235	EMPIRE 7	1	115	600	601-622	140	140	463	14.6	---	---	0 / 0	29	104.4	104.4	0 / 2
	60343 WILLPIP7	62228	APPVLTW7	1	115	600	601-622	224	224	465	37	---	---	0 / 0	39.7	103.3	103.3	0 / 2
	62227 JOHNCAK7	62228	APPVLTW7	1	115	600	622	224	224	465	37	---	---	0 / 0	39.7	103.3	103.3	0 / 2
	60341 ROSEMON7	62235	EMPIRE 7	1	115	600	601-622	140	140	463	14.8	---	---	0 / 0	29.1	103.2	103.2	0 / 2
	60343 WILLPIP7	62226	FISCHER7	1	115	600	601-622	224	224	465	35.4	---	---	0 / 0	38.1	101.8	101.8	0 / 2
Group 2 Pre-existingOverload in Case1 with Increased Overloading in Case2											**Overload 1**			**<less than<**	**Overload 2**			
E	34028 LORE 5	34032	8TH ST.5	1	161	331	393	84	84	1018	58	124.6	124.6	1 / 1	59.1	126.3	126.3	1 / 1
E	62672 GLNDALE8	62666	GLNDALE7	2	115	600	622	47	47	485	63.1	112.1	112.1	2 / 0	63.7	113.6	113.6	2 / 0
E	60244 SCOTTCO7	60890	SCOTTCO8	1	115	600	601	70	70	485	63	116.1	116.1	1 / 1	63.9	117.5	117.5	1 / 1
E	61676 HIBBARD7	61680	WNTR ST7	1	115	608	608	144	144	155	84	119.0	119.0	6 / 0	84.8	120.2	120.2	6 / 0
E	34043 SAVANNA5	34046	YORK 5	1	161	331	393	84	84	795	70.1	137.9	137.9	2 / 0	70.7	138.9	138.9	2 / 0
E	60153 MNTCELO7	60166	SALIDA 7	1	115	600	601	140	140	545	75.3	157.0	157.0	2 / 0	75.8	157.8	157.8	2 / 0
E	60158 STCLTP 7	60166	SALIDA 7	1	115	600	601	139	139	545	72.3	149.9	149.9	2 / 0	72.8	150.7	150.7	2 / 0
E	60152 MNTCELO4	60151	MNTCELO3	1	230-345	600	601	336	336	450	72.1	125.1	125.1	1 / 1	72.5	125.8	125.8	1 / 1
E	34066 M-TOWN 7	34169	WELSBGT7	1	115	331	391	97	97	683	90	117.5	117.5	2 / 0	90.4	118.1	118.1	2 / 0
E	60305 EAU CLA5	60317	WHEATON5	1	161	600	604	272	272	1480	81.8	110.3	110.3	1 / 0	80.5	110.6	110.6	1 / 0
E	60749 DGLAS C8	60144	DGLASCO7	1	115	600	601	47	47	545	88.4	108.7	108.7	2 / 8	88.6	108.9	108.9	2 / 8
E	60203 COON CK7	60253	TWIN LK7	1	115	600	601	371	371	48	57.3	103.9	103.9	0 / 1	57.2	104.0	104.0	0 / 1
E	62132 PRKWOOD8	62090	PRKWOOD7	2	115	618	619	112	112	433	82.1	123.3	123.3	1 / 0	82.2	123.4	123.4	1 / 0
E	64909 N.PLATT4	65038	N.PLT9 Y	1	230	640	640	187	187	233	70.5	100.1	100.1	0 / 1	70.5	100.2	100.2	0 / 1
E	67541 STVITAL7	67726	DAKOTB17	1	110	667	668-667	26	26	15	116	119.6	119.6	***	116.1	119.7	119.7	***

Branches Exceeding 100% of Emergency Rating											pi_rfp				pi_rfp_bid1			
								Ratings		Cont	:204SUPK.SAV /SUMMER PEAK / S				204SUPK.SAV /SUMMER PEAK / S			
	From Bus		To Bus	Ckt	Base kV	Area	Zone	Norm	Emer	ID	Normal System%	First Contingency Norm%	Emer%	A/B	Normal System%	First Contingency Norm%	Emer%	A/B
Group 3 Pre-existing Overload in Case1 with Decreased Overloading in Case2											Overload 1	>=greater than or equal to>=		Overload 2				
E	27106 11KNOB C	27135	11POND C	1	138	211	211	143	143	1283	99.1	121.0	121.0	1 / 19	99	121.0	121.0	1 / 18
E	27135 11POND C	27144	11TIPTOP	1	138	211	211	143	143	1283	98.7	120.5	120.5	1 / 12	98.7	120.5	120.5	1 / 12
E	30422 CONWAY 3	31391	ORGD 1	1	138	356	318	205	205	1060	71.6	101.9	101.9	0 / 1	71.6	101.9	101.9	0 / 1
E	31051 MASON 13	31053	MASON 2	2	345-138	356	317	560	560	1155	72.6	106.3	106.3	1 / 0	72.6	106.3	106.3	1 / 0
E	31221 MOBERLY	31409	OVERTON	1	161	356	314	142	142	1398	53.4	104.9	104.9	0 / 1	53.4	104.9	104.9	0 / 1
E	31340 NIOTA	34181	BRLGTN 5	1	161	356-331	322-391	224	224	780	40.1	108.5	108.5	2 / 0	40	108.5	108.5	2 / 0
E	32277 TURKY HL	32307	E BELLVL	1	138	357	357	287	287	1373	71.1	100.4	100.4	0 / 1	71.1	100.4	100.4	0 / 1
E	34059 BOONE 7	34073	GR JCT 7	1	115	331	391	50	50	688	57.3	148.9	148.9	1 / 0	57.9	148.9	148.9	1 / 0
E	34059 BOONE 7	34076	BNE JCT7	1	115	331	391	60	60	678	89.4	121.7	121.7	1 / 2	89	121.7	121.7	1 / 2
E	34073 GR JCT 7	34529	GRJCT5Y	1	115-161	331	391-392	50	50	688	57.3	149.1	149.1	1 / 0	57.9	149.1	149.1	1 / 0
E	34529 GRJCT5Y	34054	GR JCT 5	1	161	331	392-391	50	50	688	57.2	152.5	152.5	1 / 0	57.8	152.5	152.5	1 / 0
E	39122 KEG 138	39218	CHA 138	1	138	364	371	240	240	1130	93.3	126.6	126.6	3 / 0	93.3	126.6	126.6	3 / 0
E	39145 POR 138	39167	COL 138	1	138	364	371	286	286	1583	56.3	100.5	100.5	0 / 1	56.3	100.5	100.5	0 / 1
E	39145 POR 138	39167	COL 138	2	138	364	371	286	286	1585	56.3	100.5	100.5	0 / 1	56.3	100.5	100.5	0 / 1
E	39686 WESTONWP	39676	WESTON	1	115-345	366	366	200	220	83	20.1	110.8	100.7	0 / 4	19.8	110.8	100.7	0 / 4
E	39885 CEDARU	39892	NATIONAL	1	138	368-365	368-379	96	96	1578	79.7	137.0	137.0	1 / 0	79.7	137.0	137.0	1 / 0
E	50024 CARROLL4	50023	CARROLL6	1	138-230	502	502	336	336	1438	52.4	100.9	100.9	0 / 1	52.4	100.9	100.9	0 / 1
E	53139 FLINTCR5	53194	ELMSPRR5	1	161	520	520	305	335	1468	83.9	119.6	108.9	1 / 0	83.9	119.6	108.9	1 / 0
E	60153 MNTCELO7	60151	MNTCELO3	1	115-345	600	601	336	336	23	60.9	103.1	103.1	0 / 1	61.1	103.1	103.1	0 / 1
E	60177 CHAMPLN7	60178	CHAMP T7	1	115	600	605-601	140	140	38	67.5	147.2	147.2	5 / 1	67.9	147.2	147.2	5 / 1
E	61612 RIVERTN4	61625	BLCKBRY4	1	230	608	608	327	327	40 - 935	59.3	107.2	107.2	5 / 0	59.5	107.2	107.2	5 / 0
E	61984 AUSTIN 5	63070	PL VLLY5	1	161	680-618	617-618	445	445	915	38.1	100.6	100.6	0 / 1	36.4	100.6	100.6	0 / 1
E	62132 PRKWOOD8	62090	PRKWOOD7	1	115	618	619	84	84	503	97.2	116.9	116.9	5 / 8	97.2	116.9	116.9	5 / 9
E	64909 N.PLATT4	65037	N.PLT8 Y	1	230	640	640	187	187	233	71.2	101.1	101.1	0 / 1	71.1	101.1	101.1	0 / 1
E	96049 7THOMHL	96120	5THMHIL	1	345-161	130	130	625	625	1398	44.2	102.9	102.9	0 / 1	44.2	102.9	102.9	0 / 1
E	96120 5THMHIL	96126	5MOBTAP	1	161	130	130-133	372	372	1398	69	105.5	105.5	1 / 0	69	105.5	105.5	1 / 0
E	61721 ETCO 7	61722	FORBES 7	1	115	608	608	98	98	63 - 50	74.7	101.4	101.4	0 / 5	74.8	101.3	101.3	0 / 5
E	65355 S3455 3	65337	S3455T1T	1	345	645	645	560	560	278	84.8	100.9	100.9	0 / 1	84.7	100.8	100.8	0 / 1
E	65409 S1209 5	65383	S1209T1T	1	161	645	645	124	124	285	74.1	105.3	105.3	1 / 0	74.1	105.2	105.2	1 / 0
E	63030 DICKNSN3	62925	DICKNSN7	1	345-115	618	618-619	448	448	30	73.9	108.7	108.7	1 / 0	73.9	108.4	108.4	1 / 0
E	63219 GRANTCO7	63220	ELBOWLK7	1	115	626	629	96	96	595	79.2	100.5	100.5	0 / 1	78.9	100.1	100.1	0 / 1
E	63214 BIGSTON7	63195	BIGSTONY	1	115-230	626	628	233	233	135	69.5	103.2	103.2	0 / 1	69.3	102.6	102.6	0 / 1
E	63314 BIGSTON4	63195	BIGSTONY	1	230	626	628	233	233	135	69.5	103.2	103.2	0 / 1	69.3	102.6	102.6	0 / 1
E	60194 CARVRCO7	60277	WWACNIA7	1	115	600	601	71	71	30	76.9	121.9	121.9	1 / 0	76.5	121.1	121.1	1 / 0
E	60277 WWACNIA7	62667	ST BONI7	1	115	600	601-622	71	71	30	97.5	149.2	149.2	12 / 6	97.3	148.4	148.4	11 / 7
E	62003 JOHNJCT7	63216	ORTONVL7	1	115	626	621-626	97	97	135	64.3	105.2	105.2	1 / 0	63.9	104.3	104.3	0 / 1
E	62667 ST BONI7	62925	DICKNSN7	1	115	600-618	622-619	71	71	30	161.3	240.3	240.3	***	160.9	239.0	239.0	***
E	60853 LK YANK8	60119	LKYNKTN7	2	115	600	601	15	15	345	44.4	132.6	132.6	1 / 0	44.3	131.1	131.1	1 / 0
E	34015 LIME CK5	34016	EMERYN	1	161	331	393	167	167	683	73.4	102.6	102.6	0 / 2	70.7	100.5	100.5	0 / 2

Branches Exceeding 100% of Emergency Rating								Cont	pi_rfp				pi_rfp_bid1			
						Ratings			:204SUPK.SAV /SUMMER PEAK / S				204SUPK.SAV /SUMMER PEAK / S			
									Normal	First Contingency			Normal	First Contingency		
From Bus	To Bus	Ckt	Base kV	Area	Zone	Norm	Emer	ID	System%	Norm%	Emer%	A/B	System%	Norm%	Emer%	A/B

Notes:

1. '---' = Less than the Minimum Reporting Level of 100%
2. '***' = Normal System Flow (ie - with No Outages) exceeds the Overload Criteria
3. E = Pre-existing overload that was changed by less than 3% in the new case
4. Overloads are based on 100% of Rating 2
5. Count of Contingencies Causing Overloads (A/B Stats)
   A = Serious Overload > 105%
   B = Overloaded Facility between 100% and 105% of Rated Capability

2002 SERIES -- FIANL (F1)2004 SUMMER PEAK MODEL

F204SUPK.SAV /SUMMER PEAK / SI — Base Case — 7/23/2002

F204SUPK.SAV /SUMMER PEAK / SI — Bid 2 — 7/23/2002

	Branches Exceeding 100% of Emergency Rating							Ratings		Cont	pi_rfp				pi_rfp_bid2			
											204SUPK.SAV /SUMMER PEAK / S				204SUPK.SAV /SUMMER PEAK / S			
											Normal	First Contingency			Normal	First Contingency		
	From Bus	To Bus	Ckt	Base kV	Area	Zone	Norm	Emer	ID	System%	Norm%	Emer%	A/B	System%	Norm%	Emer%	A/B
Group 1	**New Overloads**									**Not Overloaded**						**Overloaded**	
	99817 5ISES 1	99826 5MORFLD	1				223	223	1073	92.6	---	---	0 / 0	93.5	100.6	100.6	0 / 1
Group 2	**Pre-existing Overload in Case1 with Increased Overloading in Case2**									**Overload 1**			**<less than<**			**Overload 2**	
	34028 LORE 5	34032 8TH ST.5	1	161	331	393	84	84	1018	58	124.6	124.6	1 / 1	61.4	130.0	130.0	2 / 0
	34043 SAVANNA5	34046 YORK 5	1	161	331	393	84	84	795	70.1	137.9	137.9	2 / 0	71.9	141.1	141.1	2 / 0
E	60853 LK YANK8	60119 LKYNKTN7	2	115	600	601	15	15	345	44.4	132.6	132.6	1 / 0	44.6	135.1	135.1	1 / 0
E	99798 5BATEVL	99808 5CUSHMN	1				148	148	1073	95.2	105.7	105.7	1 / 8	96.4	107.1	107.1	1 / 9
E	62003 JOHNJCT7	63216 ORTONVL7	1	115	626	621-626	97	97	135	64.3	105.2	105.2	1 / 0	64.8	106.5	106.5	1 / 0
E	34066 M-TOWN 7	34169 WELSBGT7	1	115	331	391	97	97	683	90	117.5	117.5	2 / 0	91	118.7	118.7	2 / 0
E	63214 BIGSTON7	63195 BIGSTONY	1	115-230	626	628	233	233	135	69.5	103.2	103.2	0 / 1	69.9	104.2	104.2	0 / 1
E	63314 BIGSTON4	63195 BIGSTONY	1	230	626	628	233	233	135	69.5	103.2	103.2	0 / 1	69.9	104.2	104.2	0 / 1
E	63219 GRANTCO7	63220 ELBOWLK7	1	115	626	629	96	96	595	79.2	100.5	100.5	0 / 1	79.7	101.3	101.3	0 / 1
E	39145 POR 138	39167 COL 138	1	138	364	371	286	286	1583	56.3	100.5	100.5	0 / 1	56.7	101.2	101.2	0 / 1
E	39145 POR 138	39167 COL 138	2	138	364	371	286	286	1585	56.3	100.5	100.5	0 / 1	56.7	101.2	101.2	0 / 1
E	62667 ST BONI7	62925 DICKNSN7	1	115	600-618	622-619	71	71	30	161.3	240.3	240.3	***	161.2	240.9	240.9	***
E	39122 KEG 138	39218 CHA 138	1	138	364	371	240	240	1130	93.3	126.6	126.6	3 / 0	93.7	127.1	127.1	3 / 0
E	60177 CHAMPLN7	60178 CHAMP T7	1	115	600	605-601	140	140	38	67.5	147.2	147.2	5 / 1	67	147.5	147.5	5 / 1
E	60277 WWACNIA7	62667 ST BONI7	1	115	600	601-622	71	71	30	97.5	149.2	149.2	12 / 6	97.5	149.5	149.5	12 / 6
E	60749 DGLAS C8	60144 DGLASCO7	1	115	600	601	47	47	545	88.4	108.7	108.7	2 / 8	88.8	109.0	109.0	2 / 8
E	32277 TURKY HL	32307 E BELLVL	1	138	357	357	287	287	1373	71.1	100.4	100.4	0 / 1	71.3	100.7	100.7	0 / 1
E	60194 CARVRCO7	60277 WWACNIA7	1	115	600	601	71	71	30	76.9	121.9	121.9	1 / 0	76.6	122.2	122.2	1 / 0
E	30422 CONWAY 3	31391 ORGD 1	1	138	356	318	205	205	1060	71.6	101.9	101.9	0 / 1	71.9	102.1	102.1	0 / 1
E	50024 CARROLL4	50023 CARROLL6	1	138-230	502	502	336	336	1438	52.4	100.9	100.9	0 / 1	52.4	101.1	101.1	0 / 1
E	61612 RIVERTN4	61625 BLCKBRY4	1	230	608	608	327	327	40	59.3	107.2	107.2	5 / 0	58.9	107.3	107.3	5 / 0
E	61721 ETCO 7	61722 FORBES 7	1	115	608	608	98	98	63 - 50	74.7	101.4	101.4	0 / 5	74.7	101.5	101.5	0 / 5
E	65355 S3455 3	65337 S3455T1T	1	345	645	645	560	560	278	84.8	100.9	100.9	0 / 1	84.9	101.0	101.0	0 / 1
Group 3	**Pre-existing Overload in Case1 with Decreased Overloading in Case2**									**Overload 1**			**>=greater than or equal to>=**			**Overload 2**	
E	34059 BOONE 7	34073 GR JCT 7	1	115	331	391	50	50	688	57.3	148.9	148.9	1 / 0	57.4	148.9	148.9	1 / 0
E	34059 BOONE 7	34076 BNE JCT7	1	115	331	391	60	60	678	89.4	121.7	121.7	1 / 2	89.3	121.7	121.7	1 / 2
E	34073 GR JCT 7	34529 GRJCT5Y	1	115-161	331	391-392	50	50	688	57.3	149.1	149.1	1 / 0	57.4	149.1	149.1	1 / 0
E	34529 GRJCT5Y	34054 GR JCT 5	1	161	331	392-391	50	50	688	57.2	152.5	152.5	1 / 0	57.3	152.5	152.5	1 / 0
E	39686 WESTONWP	39676 WESTON	1	115-345	366	366	200	220	83	20.1	110.8	100.7	0 / 4	20.5	110.8	100.7	0 / 4
E	60153 MNTCELO7	60151 MNTCELO3	1	115-345	600	601	336	336	23	60.9	103.1	103.1	0 / 1	60.8	103.1	103.1	0 / 1

Branches Exceeding 100% of Emergency Rating										Cont	pi_rfp				pi_rfp_bid2			
								Ratings			'204SUPK.SAV /SUMMER PEAK / S				204SUPK.SAV /SUMMER PEAK / S			
	From Bus	To Bus	Ckt	Base kV	Area	Zone	Norm	Emer	ID	Normal	First Contingency			Normal	First Contingency		
										System%	Norm%	Emer%	A/B	System%	Norm%	Emer%	A/B
Group 3 Pre-existing Overload in Case1 with Decreased Overloading in Case2										**Overload 1**		**>=greater than or equal to>=**		**Overload 2**			
E	60203 COON CK7	60253	TWIN LK7	1	115	600	601	371	371	48	57.3	103.9	103.9	0 / 1	57.4	103.9	103.9	0 / 1
E	61984 AUSTIN 5	63070	PL VLLY5	1	161	680-618	617-618	445	445	915	38.1	100.6	100.6	0 / 1	37.5	100.6	100.6	0 / 1
E	62672 GLNDALE8	62666	GLNDALE7	2	115	600	622	47	47	485	63.1	112.1	112.1	2 / 0	63.1	112.1	112.1	2 / 0
E	67541 STVITAL7	67726	DAKOTB17	1	110	667	668-667	26	26	15	116	119.6	119.6	***	116	119.6	119.6	***
E	96049 7THOMHL	96120	5THMHIL	1	345-161	130	130	625	625	1398	44.2	102.9	102.9	0 / 1	44.8	102.9	102.9	0 / 1
E	53139 FLINTCR5	53194	ELMSPRR5	1	161	520	520	305	335	1468	83.9	119.6	108.9	1 / 0	83.8	119.5	108.8	1 / 0
E	62132 PRKWOOD8	62090	PRKWOOD7	1	115	618	619	84	84	503	97.2	116.9	116.9	5 / 8	97	116.8	116.8	5 / 7
E	63030 DICKNSN3	62925	DICKNSN7	1	345-115	618	618-619	448	448	30	73.9	108.7	108.7	1 / 0	73.5	108.6	108.6	1 / 0
E	31051 MASON 13	31053	MASON 2	2	345-138	356	317	560	560	1155	72.6	106.3	106.3	1 / 0	72.5	106.2	106.2	1 / 0
E	39885 CEDARU	39892	NATIONAL	1	138	368-365	368-379	96	96	1578	79.7	137.0	137.0	1 / 0	79.6	136.9	136.9	1 / 0
E	62132 PRKWOOD8	62090	PRKWOOD7	2	115	618	619	112	112	433	82.1	123.3	123.3	1 / 0	82	123.2	123.2	1 / 0
E	65409 S1209 5	65383	S1209T1T	1	161	645	645	124	124	285	74.1	105.3	105.3	1 / 0	74.1	105.2	105.2	1 / 0
E	64909 N.PLATT4	65037	N.PLT8 Y	1	230	640	640	187	187	233	71.2	101.1	101.1	0 / 1	71.2	100.8	100.8	0 / 1
E	31340 NIOTA	34181	BRLGTN 5	1	161	356-331	322-391	224	224	780	40.1	108.5	108.5	2 / 0	39.4	108.2	108.2	2 / 0
E	61676 HIBBARD7	61680	WNTR ST7	1	115	608	608	144	144	155	84	119.0	119.0	6 / 0	83.6	118.5	118.5	6 / 0
E	96120 5THMHIL	96126	5MOBTAP	1	161	130	130-133	372	372	1398	69	105.5	105.5	1 / 0	68.8	105.0	105.0	1 / 0
E	60152 MNTCELO4	60151	MNTCELO3	1	230-345	600	601	336	336	450	72.1	125.1	125.1	1 / 1	71.8	124.5	124.5	1 / 1
E	60244 SCOTTCO7	60890	SCOTTCO8	1	115	600	601	70	70	485	63	116.1	116.1	1 / 1	62.8	115.5	115.5	1 / 1
E	31221 MOBERLY	31409	OVERTON	1	161	356	314	142	142	1398	53.4	104.9	104.9	0 / 1	53	104.0	104.0	0 / 1
E	60158 STCLTP 7	60166	SALIDA 7	1	115	600	601	139	139	545	72.3	149.9	149.9	2 / 0	71.5	148.9	148.9	2 / 0
E	60153 MNTCELO7	60166	SALIDA 7	1	115	600	601	140	140	545	75.3	157.0	157.0	2 / 0	74.5	155.9	155.9	2 / 0
E	27106 11KNOB C	27135	11POND C	1	138	211	211	143	143	1283	99.1	121.0	121.0	1 / 19	97.9	119.7	119.7	1 / 11
E	27135 11POND C	27144	11TIPTOP	1	138	211	211	143	143	1283	98.7	120.5	120.5	1 / 12	97.5	119.2	119.2	1 / 11
E	34015 LIME CK5	34016	EMERYN	1	161	331	393	167	167	683	73.4	102.6	102.6	0 / 2	70.6	100.5	100.5	0 / 2
E	60305 EAU CLA5	60317	WHEATON5	1	161	600	604	272	272	1480	81.8	110.3	110.3	1 / 0	81.1	108.0	108.0	1 / 0
Group 4 Pre-existing Overload in Case1 with Overloading Eliminated in Case2										**Overloaded**					**Not Overloaded**			
	64909 N.PLATT4	65038	N.PLT9 Y	1	230	640	640	187	187	233	70.5	100.1	100.1	0 / 1	70.5	---	---	0 / 0

Notes:

1. '---' = Less than the Minimum Reporting Level of 100%
2. '***' = Normal System Flow (ie - with No Outages) exceeds the Overload Criteria
3. E = Pre-existing overload that was changed by less than 3% in the new case
4. Overloads are based on 100% of Rating 2
5. Count of Contingencies Causing Overloads (A/B Stats)
   A = Serious Overload > 105%
   B = Overloaded Facility between 100% and 105% of Rated Capability

2002 SERIES -- FIANL (F1)2004 SUMMER PEAK MODEL

F204SUPK.SAV /SUMMER PEAK / SI — Base Case — 7/23/2002

F204SUPK.SAV /SUMMER PEAK / SI — Bid 3 — 7/22/2002

Branches Exceeding 100% of Emergency Rating										pi_rfp				pi_rfp_bid3			
							Ratings		Cont	204SUPK.SAV /SUMMER PEAK / S				204SUPK.SAV /SUMMER PEAK / S			
										Normal	First Contingency			Normal	First Contingency		
	From Bus	To Bus	Ckt	Base kV	Area	Zone	Norm	Emer	ID	System%	Norm%	Emer%	A/B	System%	Norm%	Emer%	A/B
Group 1 New Overloads										**Not Overloaded**					**Overloaded**		
	36362 NELSO; B	37632 LEECO;BP	1	345	363	335	1000	1000	1233	22.2	---	---	0 / 0	94	132.5	132.5	16 / 10
	34185 POWESHK5	34191 REASNOR5	1	161	331	391	167	167	660	47.6	---	---	0 / 0	63.2	117.4	117.4	1 / 0
	34087 DYSART 5	64269 WASHBRN5	1	161	331-635	391-637	260	260	1013	58.2	---	---	0 / 0	70.1	114.9	114.9	5 / 0
	34030 SALEM 5	34508 JULIAN 5	1	161	331	393-392	202	202	1008	43.5	---	---	0 / 0	62.8	112.1	112.1	2 / 0
	34009 WINBAGO5	61932 RUTLAND5	1	161	331	393-615	84	84	1013	78.1	---	---	0 / 0	92.3	110.7	110.7	9 / 9
	34027 CNTRGRV5	34508 JULIAN 5	1	161	331	393-392	202	202	1008	41.1	---	---	0 / 0	60.3	108.2	108.2	2 / 0
	36532 BELVI; B	36606 B465 ;BT	1	138	363	345-333	290	330	1233	80.3	---	---	0 / 0	86.5	123.0	108.1	2 / 0
	60302 COULEE 5	69523 GENOA 5	1	161	600-680	604-681	240	240	603	62.4	---	---	0 / 0	71.8	106.4	106.4	1 / 0
	38342 COC 69	39239 COC 138	1	138	364	371	33	33	88	46.7	---	---	0 / 0	50.3	106.3	106.3	2 / 0
	36457 ALPIN;RT	36599 CHERR; R	1	138	363	345-333	351	445	1233	94.5	---	---	0 / 0	99.7	132.4	104.4	0 / 2
	63213 MARIETT7	63214 BIGSTON7	1	115	626	626-628	96	96	135	54.5	---	---	0 / 0	56.9	104.4	104.4	0 / 1
	64403 E MOLIN3	64680 SB39MID5	1	345-161	635	638-637	500	500	613	65.9	---	---	0 / 0	70.2	103.6	103.6	0 / 5
	63051 HENNING4	63052 INMAN 4	1	230	626	621	143	143	355	65.7	---	---	0 / 0	80.2	103.2	103.2	0 / 1
	36953 MAREN;RT	37119 P VAL; R	1	138	363	345	210	260	1233	58.2	---	---	0 / 0	68.3	126.5	102.2	0 / 2
	34043 SAVANNA5	69505 GALENA 5	1	161	331-680	393-681	126	126	795	25.1	---	---	0 / 0	43	101.9	101.9	0 / 1
	99817 5ISES 1	99826 5MORFLD	1				223	223	1073	92.6	---	---	0 / 0	94.5	101.9	101.9	0 / 1
	64418 E MOLINE	64680 SB39MID5	1	161	635	638-637	500	500	613	65	---	---	0 / 0	69.2	101.8	101.8	0 / 1
	57968 STILWEL7	57981 LACYGNE7	1	345	541	541	1099	1202	1435	71.1	---	---	0 / 0	72.4	110.4	100.9	0 / 1
Group 2 Pre-existing Overload in Case1 with Increased Overloading in Case2										**Overload 1**			**<less than<**		**Overload 2**		
	34043 SAVANNA5	34046 YORK 5	1	161	331	393	84	84	795	70.1	137.9	137.9	2 / 0	96.6	184.1	184.1	26 / 28
	60853 LK YANK8	60119 LKYNKTN7	2	115	600	601	15	15	345	44.4	132.6	132.6	1 / 0	46.5	154.0	154.0	1 / 0
	62003 JOHNJCT7	63216 ORTONVL7	1	115	626	621-626	97	97	135	64.3	105.2	105.2	1 / 0	70	117.9	117.9	2 / 0
	39145 POR 138	39167 COL 138	1	138	364	371	286	286	1583	56.3	100.5	100.5	0 / 1	62.6	111.7	111.7	1 / 0
	39145 POR 138	39167 COL 138	2	138	364	371	286	286	1585	56.3	100.5	100.5	0 / 1	62.6	111.7	111.7	1 / 0
	63214 BIGSTON7	63195 BIGSTONY	1	115-230	626	628	233	233	135	69.5	103.2	103.2	0 / 1	72.9	112.3	112.3	1 / 0
	63314 BIGSTON4	63195 BIGSTONY	1	230	626	628	233	233	135	69.5	103.2	103.2	0 / 1	72.9	112.3	112.3	1 / 0
	39122 KEG 138	39218 CHA 138	1	138	364	371	240	240	1130	93.3	126.6	126.6	3 / 0	98.5	133.8	133.8	3 / 13
	62667 ST BONI7	62925 DICKNSN7	1	115	600-618	622-619	71	71	30	161.3	240.3	240.3	***	161.4	247.3	247.3	***
	63219 GRANTCO7	63220 ELBOWLK7	1	115	626	629	96	96	595	79.2	100.5	100.5	0 / 1	84	107.3	107.3	1 / 2
	60277 WWACNIA7	62667 ST BONI7	1	115	600	601-622	71	71	30	97.5	149.2	149.2	12 / 6	97	153.0	153.0	11 / 7
	60194 CARVRCO7	60277 WWACNIA7	1	115	600	601	71	71	30	76.9	121.9	121.9	1 / 0	76.3	125.4	125.4	1 / 0
	99798 5BATEVL	99808 5CUSHMN	1				148	148	1073	95.2	105.7	105.7	1 / 8	97.9	109.1	109.1	1 / 16

	Branches Exceeding 100% of Emergency Rating									pi_rfp				pi_rfp_bid3			
								Ratings		:204SUPK.SAV /SUMMER PEAK / S				204SUPK.SAV /SUMMER PEAK / S			
	From Bus	To Bus	Ckt	Base kV	Area	Zone	Norm	Emer	Cont ID	Normal System%	First Contingency Norm%	First Contingency Emer%	First Contingency A/B	Normal System%	First Contingency Norm%	First Contingency Emer%	First Contingency A/B
E	60177 CHAMPLN7	60178 CHAMP T7	1	115	600	605-601	140	140	38	67.5	147.2	147.2	5 / 1	64	149.8	149.8	5 / 0
E	31340 NIOTA	34181 BRLGTN 5	1	161	356-331	322-391	224	224	780	40.1	108.5	108.5	2 / 0	37.8	111.1	111.1	2 / 0
E	61721 ETCO 7	61722 FORBES 7	1	115	608	608	98	98	63 - 50	74.7	101.4	101.4	0 / 5	74.1	102.7	102.7	0 / 5
E	65355 S3455 3	65337 S3455T1T	1	345	645	645	560	560	278	84.8	100.9	100.9	0 / 1	86.1	101.9	101.9	0 / 1
E	60749 DGLAS C8	60144 DGLASCO7	1	115	600	601	47	47	545	88.4	108.7	108.7	2 / 8	89.9	109.4	109.4	5 / 5
E	32277 TURKY HL	32307 E BELLVL	1	138	357	357	287	287	1373	71.1	100.4	100.4	0 / 1	71.6	101.1	101.1	0 / 1
E	60203 COON CK7	60253 TWIN LK7	1	115	600	601	371	371	48	57.3	103.9	103.9	0 / 1	57.9	104.5	104.5	0 / 1
E	50024 CARROLL4	50023 CARROLL6	1	138-230	502	502	336	336	1438	52.4	100.9	100.9	0 / 1	52.5	101.3	101.3	0 / 1
E	61612 RIVERTN4	61625 BLCKBRY4	1	230	608	608	327	327	40	59.3	107.2	107.2	5 / 0	55.8	107.4	107.4	5 / 0
E	34059 BOONE 7	34076 BNE JCT7	1	115	331	391	60	60	678	89.4	121.7	121.7	1 / 2	89.7	121.8	121.8	1 / 2
E	34529 GRJCT5Y	34054 GR JCT 5	1	161	331	392-391	50	50	688	57.2	152.5	152.5	1 / 0	55.7	152.6	152.6	1 / 0
E	30422 CONWAY 3	31391 ORGD 1	1	138	356	318	205	205	1060	71.6	101.9	101.9	0 / 1	71.7	102.0	102.0	0 / 1
E	61984 AUSTIN 5	63070 PL VLLY5	1	161	680-618	617-618	445	445	915	38.1	100.6	100.6	0 / 1	30.7	100.7	100.7	0 / 1
E	34073 GR JCT 7	34529 GRJCT5Y	1	115-161	331	391-392	50	50	688	57.3	149.1	149.1	1 / 0	55.8	149.2	149.2	1 / 0
Group 3	**Pre-existing Overload in Case1 with Decreased Overloading in Case2**									**Overload 1**		**>=greater than or equal to>=**	**Overload 2**				
E	34059 BOONE 7	34073 GR JCT 7	1	115	331	391	50	50	688	57.3	148.9	148.9	1 / 0	55.8	148.9	148.9	1 / 0
E	63030 DICKNSN3	62925 DICKNSN7	1	345-115	618	618-619	448	448	30	73.9	108.7	108.7	1 / 0	71.4	108.7	108.7	1 / 0
E	65409 S1209 5	65383 S1209T1T	1	161	645	645	124	124	285	74.1	105.3	105.3	1 / 0	74.2	105.3	105.3	1 / 0
E	96049 7THOMHL	96120 5THMHIL	1	345-161	130	130	625	625	1398	44.2	102.9	102.9	0 / 1	47.3	102.9	102.9	0 / 1
E	60153 MNTCELO7	60151 MNTCELO3	1	115-345	600	601	336	336	23	60.9	103.1	103.1	0 / 1	59.6	103.0	103.0	0 / 1
E	39686 WESTONWP	39676 WESTON	1	115-345	366	366	200	220	83 - 90	20.1	110.8	100.7	0 / 4	24.9	110.5	100.5	0 / 4
E	62672 GLNDALE8	62666 GLNDALE7	2	115	600	622	47	47	485	63.1	112.1	112.1	2 / 0	63.1	111.8	111.8	2 / 0
E	67541 STVITAL7	67726 DAKOTB17	1	110	667	668-667	26	26	15	116	119.6	119.6	***	115.6	119.3	119.3	***
E	53139 FLINTCR5	53194 ELMSPRR5	1	161	520	520	305	335	1468	83.9	119.6	108.9	1 / 0	83.7	119.2	108.6	1 / 0
E	39885 CEDARU	39892 NATIONAL	1	138	368-365	368-379	96	96	1578	79.7	137.0	137.0	1 / 0	79.3	136.5	136.5	1 / 0
E	31051 MASON 13	31053 MASON 2	2	345-138	356	317	560	560	1155	72.6	106.3	106.3	1 / 0	72.1	105.6	105.6	1 / 0
E	62132 PRKWOOD8	62090 PRKWOOD7	1	115	618	619	84	84	503	97.2	116.9	116.9	5 / 8	96.4	116.2	116.2	5 / 6
E	62132 PRKWOOD8	62090 PRKWOOD7	2	115	618	619	112	112	433	82.1	123.3	123.3	1 / 0	81.4	122.6	122.6	1 / 0
E	96120 5THMHIL	96126 5MOBTAP	1	161	130	130-133	372	372	1398	69	105.5	105.5	1 / 0	68.9	103.6	103.6	0 / 1
	31221 MOBERLY	31409 OVERTON	1	161	356	314	142	142	1398	53.4	104.9	104.9	0 / 1	52.5	101.4	101.4	0 / 1
	60152 MNTCELO4	60151 MNTCELO3	1	230-345	600	601	336	336	450	72.1	125.1	125.1	1 / 1	69.2	119.2	119.2	1 / 1
	60244 SCOTTCO7	60890 SCOTTCO8	1	115	600	601	70	70	485	63	116.1	116.1	1 / 1	60.4	110.0	110.0	1 / 0
	61676 HIBBARD7	61680 WNTR ST7	1	115	608	608	144	144	155 - 63	84	119.0	119.0	6 / 0	78.5	112.0	112.0	6 / 0
	60158 STCLTP 7	60166 SALIDA 7	1	115	600	601	139	139	545	72.3	149.9	149.9	2 / 0	65.5	140.5	140.5	1 / 1
	60153 MNTCELO7	60166 SALIDA 7	1	115	600	601	140	140	545	75.3	157.0	157.0	2 / 0	68.5	147.1	147.1	1 / 1
Group 4	**Pre-existing Overload in Case1 with Overloading Eliminated in Case2**									**Overloaded**						**Not Overloaded**	
	64909 N.PLATT4	65038 N.PLT9 Y	1	230	640	640	187	187	233	70.5	100.1	100.1	0 / 1	71	---	---	0 / 0
	64909 N.PLATT4	65037 N.PLT8 Y	1	230	640	640	187	187	233	71.2	101.1	101.1	0 / 1	71.7	---	---	0 / 0

Branches Exceeding 100% of Emergency Rating									Cont	pi_rfp				pi_rfp_bid3			
							Ratings			:204SUPK.SAV /SUMMER PEAK / S				204SUPK.SAV /SUMMER PEAK / S			
	From Bus	To Bus	Ckt	Base kV	Area	Zone	Norm	Emer	ID	Normal	First Contingency			Normal	First Contingency		
										System%	Norm%	Emer%	A/B	System%	Norm%	Emer%	A/B
Group 4 Pre-existing Overload in Case1 with Overloading Eliminated in Case2										**Overloaded**				**Not Overloaded**			
	34015 LIME CK5	34016 EMERYN	1	161	331	393	167	167	683	73.4	102.6	102.6	0 / 2	49.8	---	---	0 / 0
	60305 EAU CLA5	60317 WHEATON5	1	161	600	604	272	272	1480	81.8	110.3	110.3	1 / 0	73.9	---	---	0 / 0

Notes:

1. '---' = Less than the Minimum Reporting Level of 100%
2. '***' = Normal System Flow (ie - with No Outages) exceeds the Overload Criteria
3. E = Pre-existing overload that was changed by less than 3% in the new case
4. Overloads are based on 100% of Rating 2
5. Count of Contingencies Causing Overloads (A/B Stats)
   A = Serious Overload > 105%
   B = Overloaded Facility between 100% and 105% of Rated Capability

2002 SERIES -- FIANL (F1)2004 SUMMER PEAK MODEL

F204SUPK.SAV /SUMMER PEAK / SI — Base Case — 7/23/2002

F204SUPK.SAV /SUMMER PEAK / SI — Bids 4 and 5 — 7/22/2002

	Branches Exceeding 100% of Emergency Rating							Ratings		Cont	pi_rfp				pi_rfp_bid4and5			
											204SUPK.SAV /SUMMER PEAK / S				204SUPK.SAV /SUMMER PEAK / S			
											Normal	First Contingency			Normal	First Contingency		
	From Bus	To Bus	Ckt	Base kV	Area	Zone	Norm	Emer	ID	System%	Norm%	Emer%	A/B	System%	Norm%	Emer%	A/B
Group 1	**New Overloads**									**Not Overloaded**						**Overloaded**	
	34009 WINBAGO5	61932 RUTLAND5	1	161	331	393-615	84	84	905	78.1	---	---	0 / 0	104.2	124.4	124.4	***
	58036 OLATHEE5	58046 OXFORD 5	1	161	541	541	224	224	1435	45.6	---	---	0 / 0	56.7	104.4	104.4	0 / 1
	63051 HENNING4	63052 INMAN 4	1	230	626	621	143	143	355	65.7	---	---	0 / 0	80.7	103.6	103.6	0 / 1
	63213 MARIETT7	63214 BIGSTON7	1	115	626	626-628	96	96	135	54.5	---	---	0 / 0	56	102.4	102.4	0 / 1
	59206 PRALEE 5	59211 BLSPS 5	1	161	540	540	223	245	1435	61.9	---	---	0 / 0	106.1	111.1	101.1	***
	34087 DYSART 5	64269 WASHBRN5	1	161	331-635	391-637	260	260	1013	58.2	---	---	0 / 0	66	100.5	100.5	0 / 5
	60302 COULEE 5	69523 GENOA 5	1	161	600-680	604-681	240	240	603	62.4	---	---	0 / 0	67.3	100.3	100.3	0 / 1
	60153 MNTCELO7	60269 HASSAN 7	1	115	600	601	140	140	23	34.9	---	---	0 / 0	36	100.1	100.1	0 / 1
Group 2	**Pre-existing Overload in Case1 with Increased Overloading in Case2**									**Overload 1**			**<less than<**			**Overload 2**	
	34028 LORE 5	34032 8TH ST.5	1	161	331	393	84	84	1018	58	124.6	124.6	1 / 1	76.3	154.1	154.1	7 / 0
	60853 LK YANK8	60119 LKYNKTN7	2	115	600	601	15	15	345	44.4	132.6	132.6	1 / 0	46.1	151.1	151.1	1 / 0
	34043 SAVANNA5	34046 YORK 5	1	161	331	393	84	84	795	70.1	137.9	137.9	2 / 0	79.1	155.0	155.0	2 / 1
	62003 JOHNJCT7	63216 ORTONVL7	1	115	626	621-626	97	97	135	64.3	105.2	105.2	1 / 0	70	116.6	116.6	2 / 0
	63214 BIGSTON7	63195 BIGSTONY	1	115-230	626	628	233	233	135	69.5	103.2	103.2	0 / 1	72.5	110.9	110.9	1 / 0
	63314 BIGSTON4	63195 BIGSTONY	1	230	626	628	233	233	135	69.5	103.2	103.2	0 / 1	72.5	110.9	110.9	1 / 0
	63219 GRANTCO7	63220 ELBOWLK7	1	115	626	629	96	96	595	79.2	100.5	100.5	0 / 1	84.3	107.6	107.6	2 / 1
	34066 M-TOWN 7	34169 WELSBGT7	1	115	331	391	97	97	683	90	117.5	117.5	2 / 0	95	124.3	124.3	7 / 0
	60203 COON CK7	60253 TWIN LK7	1	115	600	601	371	371	48	57.3	103.9	103.9	0 / 1	58.6	106.9	106.9	1 / 0
E	39122 KEG 138	39218 CHA 138	1	138	364	371	240	240	1130	93.3	126.6	126.6	3 / 0	94.9	128.8	128.8	2 / 0
E	61721 ETCO 7	61722 FORBES 7	1	115	608	608	98	98	63	74.7	101.4	101.4	0 / 5	74.4	103.2	103.2	0 / 5
E	60177 CHAMPLN7	60178 CHAMP T7	1	115	600	605-601	140	140	38	67.5	147.2	147.2	5 / 1	69.9	148.7	148.7	6 / 0
E	65355 S3455 3	65337 S3455T1T	1	345	645	645	560	560	278	84.8	100.9	100.9	0 / 1	85.9	101.7	101.7	0 / 1
E	31051 MASON 13	31053 MASON 2	2	345-138	356	317	560	560	1155	72.6	106.3	106.3	1 / 0	73	106.9	106.9	1 / 0
E	31340 NIOTA	34181 BRLGTN 5	1	161	356-331	322-391	224	224	780	40.1	108.5	108.5	2 / 0	39.6	109.0	109.0	2 / 0
E	53139 FLINTCR5	53194 ELMSPRR5	1	161	520	520	305	335	1468	83.9	119.6	108.9	1 / 0	84.2	120.0	109.3	1 / 0
E	34059 BOONE 7	34076 BNE JCT7	1	115	331	391	60	60	678	89.4	121.7	121.7	1 / 2	87.2	121.8	121.8	1 / 2
E	34529 GRJCT5Y	34054 GR JCT 5	1	161	331	392-391	50	50	688	57.2	152.5	152.5	1 / 0	61.4	152.6	152.6	1 / 0
E	34073 GR JCT 7	34529 GRJCT5Y	1	115-161	331	391-392	50	50	688	57.3	149.1	149.1	1 / 0	61.5	149.2	149.2	1 / 0
Group 3	**Pre-existing Overload in Case1 with Decreased Overloading in Case2**									**Overload 1**		**>=greater than or equal to>=**				**Overload 2**	
E	30422 CONWAY 3	31391 ORGD 1	1	138	356	318	205	205	1060	71.6	101.9	101.9	0 / 1	71.7	101.9	101.9	0 / 1
E	34059 BOONE 7	34073 GR JCT 7	1	115	331	391	50	50	688	57.3	148.9	148.9	1 / 0	61.5	148.9	148.9	1 / 0
E	39686 WESTONWP	39676 WESTON	1	115-345	366	366	200	220	83	20.1	110.8	100.7	0 / 4	22.6	110.7	100.7	0 / 4

Branches Exceeding 100% of Emergency Rating										Cont	pi_rfp				pi_rfp_bid4and5			
								Ratings			'204SUPK.SAV /SUMMER PEAK / S				204SUPK.SAV /SUMMER PEAK / S			
	From Bus		To Bus	Ckt	Base kV	Area	Zone	Norm	Emer	ID	Normal	First Contingency			Normal	First Contingency		
											System%	Norm%	Emer%	A/B	System%	Norm%	Emer%	A/B
Group 3 Pre-existing Overload in Case1 with Decreased Overloading in Case2											Overload 1		>=greater than or equal to>=	Overload 2				
E	61984 AUSTIN 5	63070	PL VLLY5	1	161	680-618	617-618	445	445	915	38.1	100.6	100.6	0 / 1	30.7	100.6	100.6	0 / 1
E	96049 7THOMHL	96120	5THMHIL	1	345-161	130	130	625	625	1398	44.2	102.9	102.9	0 / 1	42.7	102.9	102.9	0 / 1
E	60749 DGLAS C8	60144	DGLASCO7	1	115	600	601	47	47	545	88.4	108.7	108.7	2 / 8	89.2	108.5	108.5	4 / 6
E	65409 S1209 5	65383	S1209T1T	1	161	645	645	124	124	285	74.1	105.3	105.3	1 / 0	74.1	105.1	105.1	1 / 0
E	50024 CARROLL4	50023	CARROLL6	1	138-230	502	502	336	336	1438	52.4	100.9	100.9	0 / 1	52.4	100.5	100.5	0 / 1
E	62132 PRKWOOD8	62090	PRKWOOD7	1	115	618	619	84	84	503	97.2	116.9	116.9	5 / 8	96.6	116.3	116.3	5 / 4
E	67541 STVITAL7	67726	DAKOTB17	1	110	667	668-667	26	26	15	116	119.6	119.6	***	115.3	119.0	119.0	***
E	61612 RIVERTN4	61625	BLCKBRY4	1	230	608	608	327	327	40	59.3	107.2	107.2	5 / 0	54.7	106.5	106.5	5 / 0
E	62132 PRKWOOD8	62090	PRKWOOD7	2	115	618	619	112	112	433	82.1	123.3	123.3	1 / 0	81.6	122.4	122.4	1 / 0
E	64909 N.PLATT4	65037	N.PLT8 Y	1	230	640	640	187	187	233	71.2	101.1	101.1	0 / 1	71.7	100.1	100.1	0 / 1
E	62672 GLNDALE8	62666	GLNDALE7	2	115	600	622	47	47	485	63.1	112.1	112.1	2 / 0	63	110.8	110.8	2 / 0
E	96120 5THMHIL	96126	5MOBTAP	1	161	130	130-133	372	372	1398	69	105.5	105.5	1 / 0	66.3	103.8	103.8	0 / 1
E	31221 MOBERLY	31409	OVERTON	1	161	356	314	142	142	1398	53.4	104.9	104.9	0 / 1	50.1	103.0	103.0	0 / 1
E	61676 HIBBARD7	61680	WNTR ST7	1	115	608	608	144	144	155	84	119.0	119.0	6 / 0	82.3	116.3	116.3	6 / 0
E	60153 MNTCELO7	60151	MNTCELO3	1	115-345	600	601	336	336	23	60.9	103.1	103.1	0 / 1	58.4	100.3	100.3	0 / 1
	27106 11KNOB C	27135	11POND C	1	138	211	211	143	143	1283	99.1	121.0	121.0	1 / 19	96.4	118.0	118.0	1 / 0
	27135 11POND C	27144	11TIPTOP	1	138	211	211	143	143	1283	98.7	120.5	120.5	1 / 12	96.1	117.5	117.5	1 / 0
	63030 DICKNSN3	62925	DICKNSN7	1	345-115	618	618-619	448	448	30	73.9	108.7	108.7	1 / 0	70.6	104.6	104.6	0 / 1
	60152 MNTCELO4	60151	MNTCELO3	1	230-345	600	601	336	336	450	72.1	125.1	125.1	1 / 1	69.9	119.8	119.8	1 / 1
	60194 CARVRCO7	60277	WWACNIA7	1	115	600	601	71	71	30	76.9	121.9	121.9	1 / 0	71.9	115.3	115.3	1 / 0
	60277 WWACNIA7	62667	ST BONI7	1	115	600	601-622	71	71	30	97.5	149.2	149.2	12 / 6	91.6	142.2	142.2	5 / 4
	62667 ST BONI7	62925	DICKNSN7	1	115	600-618	622-619	71	71	30	161.3	240.3	240.3	***	154.4	231.6	231.6	***
	60244 SCOTTCO7	60890	SCOTTCO8	1	115	600	601	70	70	485	63	116.1	116.1	1 / 1	58.1	107.0	107.0	1 / 0
	60158 STCLTP 7	60166	SALIDA 7	1	115	600	601	139	139	545	72.3	149.9	149.9	2 / 0	66.1	140.4	140.4	1 / 1
	60153 MNTCELO7	60166	SALIDA 7	1	115	600	601	140	140	545	75.3	157.0	157.0	2 / 0	69.1	147.0	147.0	2 / 0
Group 4 Pre-existing Overload in Case1 with Overloading Eliminated in Case2											Overloaded					Not Overloaded		
	64909 N.PLATT4	65038	N.PLT9 Y	1	230	640	640	187	187	233	70.5	100.1	100.1	0 / 1	71	---	---	0 / 0
	32277 TURKY HL	32307	E BELLVL	1	138	357	357	287	287	1373	71.1	100.4	100.4	0 / 1	70.8	---	---	0 / 0
	39145 POR 138	39167	COL 138	1	138	364	371	286	286	1583	56.3	100.5	100.5	0 / 1	58.4	---	---	0 / 0
	39145 POR 138	39167	COL 138	2	138	364	371	286	286	1585	56.3	100.5	100.5	0 / 1	58.4	---	---	0 / 0
	34015 LIME CK5	34016	EMERYN	1	161	331	393	167	167	683	73.4	102.6	102.6	0 / 2	55.8	---	---	0 / 0
	60305 EAU CLA5	60317	WHEATON5	1	161	600	604	272	272	1480	81.8	110.3	110.3	1 / 0	78.9	---	---	0 / 0
	39885 CEDARU	39892	NATIONAL	1	138	368-365	368-379	96	96	1578	79.7	137.0	137.0	1 / 0	79.4	---	---	0 / 0

Branches Exceeding 100% of Emergency Rating								Cont	pi_rfp				pi_rfp_bid4and5			
						Ratings			:204SUPK.SAV /SUMMER PEAK / S				204SUPK.SAV /SUMMER PEAK / S			
									Normal	First Contingency			Normal	First Contingency		
From Bus	To Bus	Ckt	Base kV	Area	Zone	Norm	Emer	ID	System%	Norm%	Emer%	A/B	System%	Norm%	Emer%	A/B

Notes:

1. '---' = Less than the Minimum Reporting Level of 100%
2. '***' = Normal System Flow (ie - with No Outages) exceeds the Overload Criteria
3. E = Pre-existing overload that was changed by less than 3% in the new case
4. Overloads are based on 100% of Rating 2
5. Count of Contingencies Causing Overloads (A/B Stats)
   A = Serious Overload > 105%
   B = Overloaded Facility between 100% and 105% of Rated Capability

2002 SERIES -- FIANL (F1)2004 SUMMER PEAK MODEL

F204SUPK.SAV /SUMMER PEAK / SI — Base Case — 7/23/2002

F204SUPK.SAV /SUMMER PEAK / SI — Bids 4 and 6 — 7/22/2002

Branches Exceeding 100% of Emergency Rating									Cont	pi_rfp				pi_rfp_bid4and6			
							Ratings			204SUPK.SAV /SUMMER PEAK / S				204SUPK.SAV /SUMMER PEAK / S			
										Normal	First Contingency			Normal	First Contingency		
	From Bus	To Bus	Ckt	Base kV	Area	Zone	Norm	Emer	ID	System%	Norm%	Emer%	A/B	System%	Norm%	Emer%	A/B
Group 1 New Overloads										**Not Overloaded**					**Overloaded**		
	58036 OLATHEE5	58046 OXFORD 5	1	161	541	541	224	224	1435	45.6	---	---	0 / 0	57	104.9	104.9	0 / 1
	34009 WINBAGO5	61932 RUTLAND5	1	161	331	393-615	84	84	1013	78.1	---	---	0 / 0	91.3	104.1	104.1	0 / 11
	63213 MARIETT7	63214 BIGSTON7	1	115	626	626-628	96	96	135	54.5	---	---	0 / 0	56.3	102.2	102.2	0 / 1
	59206 PRALEE 5	59211 BLSPS 5	1	161	540	540	223	245	1435	61.9	---	---	0 / 0	106.1	111.1	101.1	***
	63051 HENNING4	63052 INMAN 4	1	230	626	621	143	143	355	65.7	---	---	0 / 0	77.3	100.1	100.1	0 / 1
Group 2 Pre-existing Overload in Case1 with Increased Overloading in Case2										**Overload 1**			**<less than<**		**Overload 2**		
	34028 LORE 5	34032 8TH ST.5	1	161	331	393	84	84	1018	58	124.6	124.6	1 / 1	73.6	149.7	149.7	7 / 0
	60853 LK YANK8	60119 LKYNKTN7	2	115	600	601	15	15	345	44.4	132.6	132.6	1 / 0	46	148.8	148.8	1 / 0
	34043 SAVANNA5	34046 YORK 5	1	161	331	393	84	84	795	70.1	137.9	137.9	2 / 0	77.8	152.5	152.5	2 / 1
	62003 JOHNJCT7	63216 ORTONVL7	1	115	626	621-626	97	97	135	64.3	105.2	105.2	1 / 0	68.8	115.0	115.0	2 / 0
	63214 BIGSTON7	63195 BIGSTONY	1	115-230	626	628	233	233	135	69.5	103.2	103.2	0 / 1	72.1	110.1	110.1	1 / 0
	63314 BIGSTON4	63195 BIGSTONY	1	230	626	628	233	233	135	69.5	103.2	103.2	0 / 1	72.1	110.1	110.1	1 / 0
	34066 M-TOWN 7	34169 WELSBGT7	1	115	331	391	97	97	683	90	117.5	117.5	2 / 0	94.9	124.0	124.0	7 / 1
	63219 GRANTCO7	63220 ELBOWLK7	1	115	626	629	96	96	595	79.2	100.5	100.5	0 / 1	83	105.9	105.9	1 / 2
	39145 POR 138	39167 COL 138	1	138	364	371	286	286	1583	56.3	100.5	100.5	0 / 1	58.2	103.8	103.8	0 / 1
	39145 POR 138	39167 COL 138	2	138	364	371	286	286	1585	56.3	100.5	100.5	0 / 1	58.2	103.8	103.8	0 / 1
Group 3 Pre-existing Overload in Case1 with Same or Decreased Overloading in Case2										**Overload 1**			**>=greater than or equal to>=**		**Overload 2**		
	61676 HIBBARD7	61680 WNTR ST7	1	115	608	608	144	144	155	84	119.0	119.0	6 / 0	81.9	115.9	115.9	6 / 0
	60244 SCOTTCO7	60890 SCOTTCO8	1	115	600	601	70	70	485	63	116.1	116.1	1 / 1	61.3	112.1	112.1	1 / 0
	60152 MNTCELO4	60151 MNTCELO3	1	230-345	600	601	336	336	450	72.1	125.1	125.1	1 / 1	69.7	120.3	120.3	1 / 1
	60158 STCLTP 7	60166 SALIDA 7	1	115	600	601	139	139	545	72.3	149.9	149.9	2 / 0	67.1	142.5	142.5	1 / 1
	60153 MNTCELO7	60166 SALIDA 7	1	115	600	601	140	140	545	75.3	157.0	157.0	2 / 0	70.1	149.2	149.2	2 / 0
Group 4 Pre-existing Overload in Case1 with Overloading Eliminated in Case2										**Overloaded**					**Not Overloaded**		
	64909 N.PLATT4	65038 N.PLT9 Y	1	230	640	640	187	187	233	70.5	100.1	100.1	0 / 1	71.1	---	---	0 / 0
	32277 TURKY HL	32307 E BELLVL	1	138	357	357	287	287	1373	71.1	100.4	100.4	0 / 1	70.9	100.0	100.0	0 / 0
	64909 N.PLATT4	65037 N.PLT8 Y	1	230	640	640	187	187	233	71.2	101.1	101.1	0 / 1	71.8	100.0	100.0	0 / 0
	34015 LIME CK5	34016 EMERYN	1	161	331	393	167	167	683	73.4	102.6	102.6	0 / 2	59.6	---	---	0 / 0
	60305 EAU CLA5	60317 WHEATON5	1	161	600	604	272	272	1480	81.8	110.3	110.3	1 / 0	79.6	---	---	0 / 0

Branches Exceeding 100% of Emergency Rating								Cont	pi_rfp				pi_rfp_bid4and6			
						Ratings			:204SUPK.SAV /SUMMER PEAK / S				204SUPK.SAV /SUMMER PEAK / S			
									Normal	First Contingency			Normal	First Contingency		
From Bus	To Bus	Ckt	Base kV	Area	Zone	Norm	Emer	ID	System%	Norm%	Emer%	A/B	System%	Norm%	Emer%	A/B

Notes:

1. '---' = Less than the Minimum Reporting Level of 100%
2. '***' = Normal System Flow (ie - with No Outages) exceeds the Overload Criteria

4. Overloads are based on 100% of Rating 2
5. Count of Contingencies Causing Overloads (A/B Stats)
   A = Serious Overload > 105%
   B = Overloaded Facility between 100% and 105% of Rated Capability

2002 SERIES -- FIANL (F1)2004 SUMMER PEAK MODEL

F204SUPK.SAV /SUMMER PEAK / SI — Base Case — 7/23/2002

F204SUPK.SAV /SUMMER PEAK / SI — Bids 5 and 6 — 7/22/2002

	Branches Exceeding 100% of Emergency Rating							Ratings		Cont	pi_rfp				pi_rfp_bid5and6			
											204SUPK.SAV /SUMMER PEAK / S				204SUPK.SAV /SUMMER PEAK / S			
											Normal	First Contingency			Normal	First Contingency		
	From Bus	To Bus		Ckt	Base kV	Area	Zone	Norm	Emer	ID	System%	Norm%	Emer%	A/B	System%	Norm%	Emer%	A/B
Group 1	**New Overloads**										**Not Overloaded**						**Overloaded**	
	34009 WINBAGO5	61932	RUTLAND5	1	161	331	393-615	84	84	540	78.1	---	---	0 / 0	87.2	107.3	107.3	1 / 1
Group 2	**Pre-existing Overload in Case1 with Increased Overloading in Case2**										**Overload 1**			**<less than<**			**Overload 2**	
	60853 LK YANK8	60119	LKYNKTN7	2	115	600	601	15	15	345	44.4	132.6	132.6	1 / 0	44.6	136.4	136.4	1 / 0
	34028 LORE 5	34032	8TH ST.5	1	161	331	393	84	84	1018	58	124.6	124.6	1 / 1	60	127.9	127.9	1 / 1
E	60203 COON CK7	60253	TWIN LK7	1	115	600	601	371	371	48	57.3	103.9	103.9	0 / 1	58.3	106.7	106.7	1 / 0
E	62003 JOHNJCT7	63216	ORTONVL7	1	115	626	621-626	97	97	135	64.3	105.2	105.2	1 / 0	65.8	107.6	107.6	1 / 1
E	63219 GRANTCO7	63220	ELBOWLK7	1	115	626	629	96	96	595	79.2	100.5	100.5	0 / 1	80.8	102.6	102.6	0 / 1
E	34043 SAVANNA5	34046	YORK 5	1	161	331	393	84	84	795	70.1	137.9	137.9	2 / 0	71.1	139.8	139.8	2 / 0
E	63214 BIGSTON7	63195	BIGSTONY	1	115-230	626	628	233	233	135	69.5	103.2	103.2	0 / 1	70.1	104.5	104.5	0 / 1
E	63314 BIGSTON4	63195	BIGSTONY	1	230	626	628	233	233	135	69.5	103.2	103.2	0 / 1	70.1	104.5	104.5	0 / 1
E	60177 CHAMPLN7	60178	CHAMP T7	1	115	600	605-601	140	140	38	67.5	147.2	147.2	5 / 1	70.9	148.3	148.3	6 / 0
E	61721 ETCO 7	61722	FORBES 7	1	115	608	608	98	98	63 - 50	74.7	101.4	101.4	0 / 5	74.7	102.0	102.0	0 / 5
E	31340 NIOTA	34181	BRLGTN 5	1	161	356-331	322-391	224	224	780	40.1	108.5	108.5	2 / 0	40.4	108.9	108.9	2 / 0
E	39145 POR 138	39167	COL 138	1	138	364	371	286	286	1583	56.3	100.5	100.5	0 / 1	56.5	100.9	100.9	0 / 1
E	39145 POR 138	39167	COL 138	2	138	364	371	286	286	1585	56.3	100.5	100.5	0 / 1	56.5	100.9	100.9	0 / 1
E	39122 KEG 138	39218	CHA 138	1	138	364	371	240	240	1130	93.3	126.6	126.6	3 / 0	93.5	126.9	126.9	3 / 0
E	31221 MOBERLY	31409	OVERTON	1	161	356	314	142	142	1398	53.4	104.9	104.9	0 / 1	53.5	105.2	105.2	1 / 0
E	96120 5THMHIL	96126	5MOBTAP	1	161	130	130-133	372	372	1398	69	105.5	105.5	1 / 0	69	105.7	105.7	1 / 0
E	31051 MASON 13	31053	MASON 2	2	345-138	356	317	560	560	1155	72.6	106.3	106.3	1 / 0	72.6	106.4	106.4	1 / 0
Group 3	**Pre-existing Overload in Case1 with Decreased Overloading in Case2**										**Overload 1**			**>=greater than or equal to>=**			**Overload 2**	
E	32277 TURKY HL	32307	E BELLVL	1	138	357	357	287	287	1373	71.1	100.4	100.4	0 / 1	71.1	100.4	100.4	0 / 1
E	34059 BOONE 7	34073	GR JCT 7	1	115	331	391	50	50	688	57.3	148.9	148.9	1 / 0	58.2	148.9	148.9	1 / 0
E	34059 BOONE 7	34076	BNE JCT7	1	115	331	391	60	60	678	89.4	121.7	121.7	1 / 2	88.9	121.7	121.7	1 / 2
E	34066 M-TOWN 7	34169	WELSBGT7	1	115	331	391	97	97	683	90	117.5	117.5	2 / 0	90	117.5	117.5	2 / 0
E	34073 GR JCT 7	34529	GRJCT5Y	1	115-161	331	391-392	50	50	688	57.3	149.1	149.1	1 / 0	58.2	149.1	149.1	1 / 0
E	34529 GRJCT5Y	34054	GR JCT 5	1	161	331	392-391	50	50	688	57.2	152.5	152.5	1 / 0	58.1	152.5	152.5	1 / 0
E	39686 WESTONWP	39676	WESTON	1	115-345	366	366	200	220	83	20.1	110.8	100.7	0 / 4	20.4	110.8	100.7	0 / 4
E	50024 CARROLL4	50023	CARROLL6	1	138-230	502	502	336	336	1438	52.4	100.9	100.9	0 / 1	52.4	100.9	100.9	0 / 1
E	53139 FLINTCR5	53194	ELMSPRR5	1	161	520	520	305	335	1468	83.9	119.6	108.9	1 / 0	83.9	119.6	108.9	1 / 0
E	61676 HIBBARD7	61680	WNTR ST7	1	115	608	608	144	144	155	84	119.0	119.0	6 / 0	84	119.0	119.0	6 / 0
E	61984 AUSTIN 5	63070	PL VLLY5	1	161	680-618	617-618	445	445	915	38.1	100.6	100.6	0 / 1	35.5	100.6	100.6	0 / 1
E	64909 N.PLATT4	65037	N.PLT8 Y	1	230	640	640	187	187	233	71.2	101.1	101.1	0 / 1	71.1	101.1	101.1	0 / 1

Branches Exceeding 100% of Emergency Rating										pi_rfp				pi_rfp_bid5and6			
								Ratings		Cont	:204SUPK.SAV /SUMMER PEAK / S				204SUPK.SAV /SUMMER PEAK / S			
	From Bus	To Bus	Ckt	Base kV	Area	Zone	Norm	Emer	ID	Normal System%	First Contingency Norm%	Emer%	A/B	Normal System%	First Contingency Norm%	Emer%	A/B
Group 3 Pre-existing Overload in Case1 with Decreased Overloading in Case2										**Overload 1**	**>=greater than or equal to>=**			**Overload 2**			
E	64909 N.PLATT4	65038 N.PLT9 Y	1	230	640	640	187	187	233	70.5	100.1	100.1	0 / 1	70.4	100.1	100.1	0 / 1
E	65409 S1209 5	65383 S1209T1T	1	161	645	645	124	124	285	74.1	105.3	105.3	1 / 0	74.2	105.3	105.3	1 / 0
E	96049 7THOMHL	96120 5THMHIL	1	345-161	130	130	625	625	1398	44.2	102.9	102.9	0 / 1	44	102.9	102.9	0 / 1
E	30422 CONWAY 3	31391 ORGD 1	1	138	356	318	205	205	1060	71.6	101.9	101.9	0 / 1	71.6	101.8	101.8	0 / 1
E	39885 CEDARU	39892 NATIONAL	1	138	368-365	368-379	96	96	1578	79.7	137.0	137.0	1 / 0	79.7	136.9	136.9	1 / 0
E	27106 11KNOB C	27135 11POND C	1	138	211	211	143	143	1283	99.1	121.0	121.0	1 / 19	98.8	120.8	120.8	1 / 13
E	27135 11POND C	27144 11TIPTOP	1	138	211	211	143	143	1283	98.7	120.5	120.5	1 / 12	98.5	120.3	120.3	1 / 12
E	60749 DGLAS C8	60144 DGLASCO7	1	115	600	601	47	47	545	88.4	108.7	108.7	2 / 8	88.4	108.5	108.5	2 / 8
E	67541 STVITAL7	67726 DAKOTB17	1	110	667	668-667	26	26	15	116	119.6	119.6	***	115.8	119.4	119.4	***
E	62132 PRKWOOD8	62090 PRKWOOD7	1	115	618	619	84	84	503	97.2	116.9	116.9	5 / 8	97.1	116.7	116.7	5 / 8
E	65355 S3455 3	65337 S3455T1T	1	345	645	645	560	560	278	84.8	100.9	100.9	0 / 1	84.5	100.7	100.7	0 / 1
E	99798 5BATEVL	99808 5CUSHMN	1				148	148	1073	95.2	105.7	105.7	1 / 8	94.9	105.4	105.4	1 / 10
E	62132 PRKWOOD8	62090 PRKWOOD7	2	115	618	619	112	112	433	82.1	123.3	123.3	1 / 0	82	122.9	122.9	1 / 0
E	61612 RIVERTN4	61625 BLCKBRY4	1	230	608	608	327	327	40	59.3	107.2	107.2	5 / 0	57.5	106.7	106.7	5 / 0
E	60152 MNTCELO4	60151 MNTCELO3	1	230-345	600	601	336	336	450	72.1	125.1	125.1	1 / 1	72.1	124.3	124.3	1 / 1
E	62672 GLNDALE8	62666 GLNDALE7	2	115	600	622	47	47	485	63.1	112.1	112.1	2 / 0	62.9	110.9	110.9	2 / 0
E	60153 MNTCELO7	60151 MNTCELO3	1	115-345	600	601	336	336	23	60.9	103.1	103.1	0 / 1	59.8	101.6	101.6	0 / 1
E	60305 EAU CLA5	60317 WHEATON5	1	161	600	604	272	272	1480	81.8	110.3	110.3	1 / 0	81.9	108.7	108.7	1 / 0
E	60158 STCLTP 7	60166 SALIDA 7	1	115	600	601	139	139	545	72.3	149.9	149.9	2 / 0	70.7	147.1	147.1	2 / 0
	60153 MNTCELO7	60166 SALIDA 7	1	115	600	601	140	140	545	75.3	157.0	157.0	2 / 0	73.7	154.0	154.0	2 / 0
	63030 DICKNSN3	62925 DICKNSN7	1	345-115	618	618-619	448	448	30	73.9	108.7	108.7	1 / 0	72.3	105.5	105.5	1 / 0
	60244 SCOTTCO7	60890 SCOTTCO8	1	115	600	601	70	70	485	63	116.1	116.1	1 / 1	59.4	110.0	110.0	1 / 0
	60194 CARVRCO7	60277 WWACNIA7	1	115	600	601	71	71	30	76.9	121.9	121.9	1 / 0	72.5	114.9	114.9	1 / 0
	60277 WWACNIA7	62667 ST BONI7	1	115	600	601-622	71	71	30	97.5	149.2	149.2	12 / 6	92.6	141.9	141.9	7 / 3
	62667 ST BONI7	62925 DICKNSN7	1	115	600-618	622-619	71	71	30	161.3	240.3	240.3	***	155.1	230.2	230.2	***
Group 4 Pre-existing Overload in Case1 with Overloading Eliminated in Case2										**Overloaded**				**Not Overloaded**			
	34015 LIME CK5	34016 EMERYN	1	161	331	393	167	167	683	73.4	102.6	102.6	0 / 2	70.1	100.0	100.0	0 / 0

Notes:

1. '---' = Less than the Minimum Reporting Level of 100%
2. '***' = Normal System Flow (ie - with No Outages) exceeds the Overload Criteria
3. E = Pre-existing overload that was changed by less than 3% in the new case
4. Overloads are based on 100% of Rating 2
5. Count of Contingencies Causing Overloads (A/B Stats)
   A = Serious Overload > 105%
   B = Overloaded Facility between 100% and 105% of Rated Capability

Case Summary pi_rfp

Project Name	2002 SERIES -- FIANL (F1)2004 SUMMER PEAK M
Title1	F204SUPK.SAV /SUMMER PEAK / SI
Title2	Base Case
Case Date	7/23/2002

Power Flow File C:\T2000\Work\miso\pi_rfp.cft

Power Flow Controls

Area Control	☐	***SmoothStep***	☑
Remote Control	☑	***XfrmVcon***	☐
GenVar Control	☑	***XfrmFcon***	☐
Solve Method	DSOLVE		

Case Settings

Overload	☑	***VlimMin***	0.9	***RateFactor***	1
VLimit	☑	***VlimMax***	1.05	***AmpFactor***	1
VChange	☑	***VlimChange***	0.05	***RatingNumber***	2
Monitored Set	monitored	10835 Buses			

Contingency

Contingencies loaded from file M:\PROJ\MISO\286001\PFLOW\Con_MonFiles\PI_RFP.con 1

660 contingencies

2002 SERIES -- FIANL (F1)2004 SUMMER PEAK MODEL

F204SUPK.SAV /SUMMER PEAK / SI

Base Case

7/23/2002

Overloaded Facility								Normal System				Overloads	
From	Name	To	Name	Circuit	Base kV	Area	Zone	Ratings Norm	Ratings Emer	MVA	Norm (%)	Count A / B	Max (%)
62667	ST BONI7	62925	DICKNSN7	1	115	600-618	622-619	71	71	114.5	161	60 / 0	240
60153	MNTCELO7	60166	SALIDA 7	1	115	600	601	140	140	105.4	75	2 / 0	157
34529	GRJCT5Y	34054	GR JCT 5	1	161	331	392-391	50	50	28.6	57	1 / 0	153
60158	STCLTP 7	60166	SALIDA 7	1	115	600	601	139	139	100.4	72	2 / 0	150
60277	WWACNIA7	62667	ST BONI7	1	115	600	601-622	71	71	69.2	98	12 / 6	149
34073	GR JCT 7	34529	GRJCT5Y	1	115-161	331	391-392	50	50	28.6	57	1 / 0	149
34059	BOONE 7	34073	GR JCT 7	1	115	331	391	50	50	28.6	57	1 / 0	149
60177	CHAMPLN7	60178	CHAMP T7	1	115	600	605-601	140	140	94.6	68	5 / 1	147
34043	SAVANNA5	34046	YORK 5	1	161	331	393	84	84	58.9	70	2 / 0	138
39885	CEDARU	39892	NATIONAL	1	138	368-365	368-379	96	96	76.5	80	1 / 0	137
60853	LK YANK8	60119	LKYNKTN7	2	69-115	600	601	15	15	6.7	44	1 / 0	133
39122	KEG 138	39218	CHA 138	1	138	364	371	240	240	224.0	93	3 / 0	127
60152	MNTCELO4	60151	MNTCELO3	1	230-345	600	601	336	336	242.1	72	1 / 1	125
34028	LORE 5	34032	8TH ST.5	1	161	331	393	84	84	48.7	58	1 / 1	125
62132	PRKWOOD8	62090	PRKWOOD7	2	69-115	618	619	112	112	92.0	82	1 / 0	123
60194	CARVRCO7	60277	WWACNIA7	1	115	600	601	71	71	54.6	77	1 / 0	122
34059	BOONE 7	34076	BNE JCT7	1	115	331	391	60	60	53.6	89	1 / 2	122
27106	11KNOB C	27135	11POND C	1	138	211	211	143	143	141.7	99	1 / 19	121
27135	11POND C	27144	11TIPTOP	1	138	211	211	143	143	141.1	99	1 / 12	121
67541	STVITAL7	67726	DAKOTB17	1	110	667	668-667	26	26	30.2	116	18 / 0	120
61676	HIBBARD7	61680	WNTR ST7	1	115	608	608	144	144	121.0	84	6 / 0	119
34066	M-TOWN 7	34169	WELSBGT7	1	115	331	391	97	97	87.3	90	2 / 0	118
62132	PRKWOOD8	62090	PRKWOOD7	1	69-115	618	619	84	84	81.6	97	5 / 8	117
60244	SCOTTCO7	60890	SCOTTCO8	1	115-69	600	601	70	70	44.1	63	1 / 1	116
62672	GLNDALE8	62666	GLNDALE7	2	69-115	600	622	47	47	29.6	63	2 / 0	112
60305	EAU CLA5	60317	WHEATON5	1	161	600	604	272	272	222.6	82	1 / 0	110
53139	FLINTCR5	53194	ELMSPRR5	1	161	520	520	305	335	255.9	84	1 / 0	109
60749	DGLAS C8	60144	DGLASCO7	1	69-115	600	601	47	47	41.5	88	2 / 8	109
63030	DICKNSN3	62925	DICKNSN7	1	345-115	618	618-619	448	448	331.1	74	1 / 0	109
31340	NIOTA	34181	BRLGTN 5	1	161	356-331	322-391	224	224	89.8	40	2 / 0	109
61612	RIVERTN4	61625	BLCKBRY4	1	230	608	608	327	327	193.9	59	5 / 0	107
31051	MASON 13	31053	MASON 2	2	345-138	356	317	560	560	406.5	73	1 / 0	106
99798	5BATEVL	99808	5CUSHMN	1	161	151	159	148	148	140.8	95	1 / 8	106
96120	5THMHIL	96126	5MOBTAP	1	161	130	130-133	372	372	256.7	69	1 / 0	106
65409	S1209 5	65383	S1209T1T	1	161	645	645	124	124	91.9	74	1 / 0	105
62003	JOHNJCT7	63216	ORTONVL7	1	115	626	621-626	97	97	62.3	64	1 / 0	105
31221	MOBERLY	31409	OVERTON	1	161	356	314	142	142	75.9	53	0 / 1	105
60203	COON CK7	60253	TWIN LK7	1	115	600	601	371	371	212.7	57	0 / 1	104
63214	BIGSTON7	63195	BIGSTONY	1	115-230	626	628	233	233	162.0	70	0 / 1	103
63314	BIGSTON4	63195	BIGSTONY	1	230	626	628	233	233	162.0	70	0 / 1	103
60153	MNTCELO7	60151	MNTCELO3	1	115-345	600	601	336	336	204.6	61	0 / 1	103
96049	7THOMHL	96120	5THMHIL	1	345-161	130	130	625	625	276.4	44	0 / 1	103
34015	LIME CK5	34016	EMERYN	1	161	331	393	167	167	122.5	73	0 / 2	103
30422	CONWAY 3	31391	ORGD 1	1	138	356	318	205	205	146.8	72	0 / 1	102
61721	ETCO 7	61722	FORBES 7	1	115	608	608	98	98	73.2	75	0 / 5	101
64909	N.PLATT4	65037	N.PLT8 Y	1	230	640	640	187	187	133.1	71	0 / 1	101
50024	CARROLL4	50023	CARROLL6	1	138-230	502	502	336	336	176.2	52	0 / 1	101
65355	S3455 3	65337	S3455T1T	1	345	645	645	560	560	474.6	85	0 / 1	101
39686	WESTONWP	39676	WESTON	1	115-345	366	366	200	220	40.3	20	0 / 4	101
61984	AUSTIN 5	63070	PL VLLY5	1	161	680-618	617-618	445	445	169.7	38	0 / 1	101
39145	POR 138	39167	COL 138	1	138	364	371	286	286	161.0	56	0 / 1	101

Overloaded Facility								Normal System				Overloads	
From	Name	To	Name	Circuit	Base kV	Area	Zone	Ratings Norm	Ratings Emer	MVA	Norm (%)	Count A / B	Max (%)
39145	POR 138	39167	COL 138	2	138	364	371	286	286	161.0	56	0 / 1	101
63219	GRANTCO7	63220	ELBOWLK7	1	115	626	629	96	96	76.0	79	0 / 1	101
32277	TURKY HL	32307	E BELLVL	1	138	357	357	287	287	204.1	71	0 / 1	100
64909	N.PLATT4	65038	N.PLT9 Y	1	230	640	640	187	187	131.8	70	0 / 1	100
												149 / 94	240

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 -- FIANL (F1)2004 SUMMER PEAK MODEL

F204SUPK.SAV /SUMMER PEAK / SI

Base Case

7/23/2002

Overloaded Facility			Contingency								Overloads			
From	Name	To	Name	Circuit	Base kV	Area	Zone	Ratings Norm	Ratings Emer		MVA	Norm (%)	Emer (%)
62667	ST BONI7	62925	DICKNSN7	1	115	600-618	622-619	71	71	NS	115	161	161
	30 '009 5'				345	600-618	601-618				171	240	240
	845 MAPP-17				345	600-618	601-618				141	198	198
	470 '705 2'				345-115	600	601				128	180	180
	53 '022 3'					600	601				127	179	179
	48 '022 1'					600	601				126	177	177
	38 '009 8'					600-618	601-618				126	177	177
	498 '720 1'				115	600-618	601-619				124	175	175
	483 '715 1'				115-69	600-618					124	175	175
	28 '009 4'					600-618	601-618				124	174	174
	23 '009 2'					600	601				124	174	174
	35 '009 7'					600	601				123	174	174
	840 MAPP-15A			1	345	600	601				122	172	172
	475 '705 4'				345-115	600	601				121	171	171
	485 '715 2'				115-69	600-618					121	170	170
	488 '715 3'				69-115	600	622-601				120	169	169
	58 '022 5'					600	601				120	169	169
	473 '705 3'				115-345	600	601				119	168	168
	70 '022 10'					600	601				118	166	166
	843 MAPP-16			1	345	600	601				118	166	166
	55 '022 4'					600	601				117	165	165
	463 '700 1'				345	600	601				117	164	165
	493 '715 5'				115-69	600-618					117	164	164
	113 '050 12'										117	164	164
	110 '050 11'										116	164	164
	468 '705 1'				345-115	600	601				116	164	164
	525 '755 '				115	600	601-622				116	164	164
	103 '050 10'				345-161	364-600					116	164	164
	105 '050 14'										116	164	164
	460 '695 '				115	618-600	619-601				116	164	164
	68 '022 9'				345-115	600	601				116	164	164
	115 '050 13'										116	164	164
	543 '775 '				115	600-608					116	164	164
	490 '715 4'				115-69	600	601-622				116	163	163
	1235 FG3239				345/115						116	163	163
	1105 FG3016				345/115						116	163	163
	100 '050 9'				115/345						116	163	163
	1480 FG6062			1	345	600	601-604				116	163	163
	555 '795 '					600-652					116	163	163
	838 MAPP-14			1	161-345	600	616				116	163	163

Overloaded Facility				Contingency									Overloads		
From	Name	To	Name	Circuit	Base kV	Area	Zone	Ratings Norm	Ratings Emer		MVA	Norm (%)	Emer (%)
	98 '050 8'				345/69						116	163	163
	560 '805 '				115	600	601				116	163	163
	523 '750 '				115-69	608-600					113	160	160
	1353 FG3727			1	345	331-600	393-601				113	160	160
	450 '675 '				345-230	600	601-622				113	159	159
	40 '015 2'				500	600	601				113	159	159
	45 '020 '				500-115	600	601				113	159	159
	430 640 '										113	159	159
	935 'SINGLE-028'			1	500	600	601				113	159	159
	50 '022 2'					600	601				113	159	159
	318 '500'				69-230	618-652	619-654				113	159	159
	530 '760 '				345	600	601				112	158	158
	545 '780 '				115	600	601				112	157	157
	65 '022 8'				345-115	600	601				112	157	157
	93 '050 7'										112	157	157
	85 '050 3'				345-161	364-600					112	157	157
	90 '050 5'										111	157	157
	88 '050 4'										111	157	157
	108 '050 1'				69/345						111	157	157
	95 '050 6'										111	156	157
	83 '050 2'				345/115						111	156	156
											60 / 0		240
60153	MNTCELO7	60166	SALIDA 7	1	115	600	601	140	140	NS	105	75	75
	545 '780 '				115	600	601				220	157	157
	450 '675 '				345-230	600	601-622				159	113	113
											2 / 0		157
34529	GRJCT5Y	34054	GR JCT 5	1	161	331	392-391	50	50	NS	29	57	57
	688 '936 '				115	331	391				76	153	153
											1 / 0		153
60158	STCLTP 7	60166	SALIDA 7	1	115	600	601	139	139	NS	100	72	72
	545 '780 '				115	600	601				208	150	150
	450 '675 '				345-230	600	601-622				152	109	109
											2 / 0		150

Overloaded Facility		Contingency							Ratings		Overloads			
From	Name	To	Name	Circuit	Base kV	Area	Zone		Norm	Emer		MVA	Norm (%)	Emer (%)
60277	WWACNIA7	62667	ST BONI7	1	115	600	601-622		71	71	NS	69	98	98
	30 '009 5'				345	600-618	601-618					106	149	149
	845 MAPP-17				345	600-618	601-618					87	123	123
	470 '705 2'				345-115	600	601					82	115	115
	53 '022 3'					600	601					80	112	112
	48 '022 1'					600	601					79	111	111
	483 '715 1'				115-69	600-618						78	110	110
	38 '009 8'					600-618	601-618					78	110	110
	28 '009 4'					600-618	601-618					77	109	109
	23 '009 2'					600	601					76	106	107
	35 '009 7'					600	601					75	106	106
	488 '715 3'				69-115	600	622-601					75	105	105
	475 '705 4'				345-115	600	601					75	105	105
	58 '022 5'					600	601					74	104	104
	840 MAPP-15A			1	345	600	601					74	104	104
	70 '022 10'					600	601					72	102	102
	473 '705 3'				115-345	600	601					72	102	102
	843 MAPP-16			1	345	600	601					72	101	101
	55 '022 4'					600	601					72	101	101
												12 / 6		149
34073	GR JCT 7	34529	GRJCT5Y	1	115-161	331	391-392		50	50	NS	29	57	57
	688 '936 '				115	331	391					75	149	149
												1 / 0		149
34059	BOONE 7	34073	GR JCT 7	1	115	331	391		50	50	NS	29	57	57
	688 '936 '				115	331	391					74	149	149
												1 / 0		149
60177	CHAMPLN7	60178	CHAMP T7	1	115	600	605-601		140	140	NS	95	68	68
	38 '009 8'					600-618	601-618					206	147	147
	35 '009 7'					600	601					205	147	147
	30 '009 5'				345	600-618	601-618					161	115	115
	840 MAPP-15A			1	345	600	601					156	111	111
	443 '670 1'					600-618	601-619					155	111	111
	28 '009 4'					600-618	601-618					146	104	104
												5 / 1		147
34043	SAVANNA5	34046	YORK 5	1	161	331	393		84	84	NS	59	70	70
	795 ALTW-85				161	331	393-392					116	138	138
	1025 FG12013			1	345	331	393					89	106	106
												2 / 0		138
39885	CEDARU	39892	NATIONAL	1	138	368-365	368-379		96	96	NS	77	80	80
	1578 FG65006			1	138	365-368	379-368					132	137	137
												1 / 0		137
60853	LK YANK8	60119	LKYNKTN7	2	69-115	600	601		15	15	NS	7	44	44
	345 '530 '				69-115	600-652	601-605					20	133	133
												1 / 0		133

Overloaded Facility		Contingency								Overloads			
From	Name	To	Name	Circuit	Base kV	Area	Zone	Ratings Norm	Ratings Emer		MVA	Norm (%)	Emer (%)
39122	KEG 138	39218	CHA 138	1	138	364	371	240	240	NS	224	93	93
	1130 FG3031			1	138	364-367	371-367				304	127	127
	1118 FG3022			1	345	367	391-367				287	119	120
	1580 FG65009			1	345	367	391-367				287	119	120
											3 / 0		127
60152	MNTCELO4	60151	MNTCELO3	1	230-345	600	601	336	336	NS	242	72	72
	450 '675 '				345-230	600	601-622				420	125	125
	23 '009 2'					600	601				351	105	105
											1 / 1		125
34028	LORE 5	34032	8TH ST.5	1	161	331	393	84	84	NS	49	58	58
	1018 FG12010			1	161	331	393-392				105	125	125
	785 'ALTW-13 '				161	331	393-392				85	101	101
											1 / 1		125
62132	PRKWOOD8	62090	PRKWOOD7	2	69-115	618	619	112	112	NS	92	82	82
	433 '650 '				115-69	600-618	601-619				138	123	123
											1 / 0		123
60194	CARVRCO7	60277	WWACNIA7	1	115	600	601	71	71	NS	55	77	77
	30 '009 5'				345	600-618	601-618				87	122	122
											1 / 0		122
34059	BOONE 7	34076	BNE JCT7	1	115	331	391	60	60	NS	54	89	89
	678 '932 2'				115/345	331-635	391-637				73	122	122
	770 'ALTW-07 '				161-69	331	391-392				62	104	104
	625 '911 '				161	331-652	391-654				61	102	102
											1 / 2		122

Overloaded Facility		Contingency						Ratings		Overloads			
From	Name	To	Name	Circuit	Base kV	Area	Zone	Norm	Emer		MVA	Norm (%)	Emer (%)
27106	11KNOB C	27135	11POND C	1	138	211	211	143	143	NS	142	99	99
	1283	FG3418		1	765	205	250				173	121	121
	1260	FG3404		1	345	356-357	323-357				146	102	102
	1285	FG3419		1	345	356-357	323-357				146	102	102
	1255	FG3402		1	345	356-357	323-357				146	102	102
	998	FG110		1	345	356-357	323-357				146	102	102
	1005	FG116		1	345	356-357	323-357				146	102	102
	1290	FG3424			345	356-357	323-357				146	102	102
	1050	FG124			345	356-357	323-357				146	102	102
	1170	FG3135			345	356-357	323-357				146	102	102
	1390	FG4017			345	356-357	323-357				146	102	102
	1058	FG127			345	356-357	323-357				146	102	102
	1278	FG3413			345	356-357	323-357				146	102	102
	1133	FG3118		1	345	205-356	252-323				144	101	101
	1410	FG45009		1	500	201	201				144	100	100
	1210	FG3157			345/138	356-130	314-130				143	100	100
	1078	FG133		1	345	356-130	314-130				143	100	100
	1208	FG3153		1	345	356-130	314-130				143	100	100
	1193	FG3144		1	345	356-130	314-130				143	100	100
	1063	FG129		1	345	356-130	314-130				143	100	100
	640	'921 3'			161	635	638				143	100	100
											1 / 19		121
27135	11POND C	27144	11TIPTOP	1	138	211	211	143	143	NS	141	99	99
	1283	FG3418		1	765	205	250				172	121	121
	998	FG110		1	345	356-357	323-357				145	102	102
	1260	FG3404		1	345	356-357	323-357				145	102	102
	1255	FG3402		1	345	356-357	323-357				145	102	102
	1005	FG116		1	345	356-357	323-357				145	102	102
	1285	FG3419		1	345	356-357	323-357				145	102	102
	1290	FG3424			345	356-357	323-357				145	102	102
	1058	FG127			345	356-357	323-357				145	102	102
	1390	FG4017			345	356-357	323-357				145	102	102
	1050	FG124			345	356-357	323-357				145	102	102
	1170	FG3135			345	356-357	323-357				145	102	102
	1278	FG3413			345	356-357	323-357				145	102	102
	1133	FG3118		1	345	205-356	252-323				144	101	101
											1 / 12		121

Overloaded Facility		Contingency						Ratings		Overloads			
From	Name	To	Name	Circuit	Base kV	Area	Zone	Norm	Emer		MVA	Norm (%)	Emer (%)
67541	STVITAL7	67726	DAKOTB17	1	110	667	668-667	26	26	NS	30	116	116
	15 '003 '										31	120	120
	948 'SINGLE-044'			1	230	600-667	601-668				31	119	119
	13 '001 '				230						31	119	119
	18 '007 '					608	657-608				31	119	119
	943 'SINGLE-040'			1	230	608	657				31	119	119
	945 'SINGLE-042'			1	230	608	608-657				31	118	118
	950 'SINGLE-046'				345-24	626	657-661				31	118	118
	40 '015 2'				500	600	601				31	117	117
	45 '020 '				500-115	600	601				31	117	117
	935 'SINGLE-028'			1	500	600	601				31	117	117
	63 '022 7'					600	601				31	117	117
	205 '220 '					626	627-657				30	117	117
	50 '022 2'					600	601				31	117	117
	215 '250 '				115-230	626-618					30	117	117
	380 '570 1'					626	626-657				30	115	115
	818 'FORBES 7T-8'					600-608	601-608				30	114	114
	938 'SINGLE-031'			1	230	626	657				29	113	113
	940 'SINGLE-034'			1	230	626-667	657-668				28	109	109
											18 / 0		120
61676	HIBBARD7	61680	WNTR ST7	1	115	608	608	144	144	NS	121	84	84
	155 132L				115	608	608				171	119	119
	63 '022 7'					600	601				166	116	116
	50 '022 2'					600	601				166	115	115
	40 '015 2'				500	600	601				162	113	113
	935 'SINGLE-028'			1	500	600	601				162	113	113
	45 '020 '				500-115	600	601				162	113	113
											6 / 0		119
34066	M-TOWN 7	34169	WELSBGT7	1	115	331	391	97	97	NS	87	90	90
	1028 FG12015			1	345	635	637				114	117	118
	683 '933 '				345-161	635	637				114	117	118
											2 / 0		118

Overloaded Facility		Contingency							Ratings		Overloads			
From	Name	To	Name	Circuit	Base kV	Area	Zone	Norm	Emer		MVA	Norm (%)	Emer (%)
62132	PRKWOOD8	62090	PRKWOOD7	1	69-115	618	619	84	84	NS	82	97	97
	503 '725 '				69-230	618	619				98	117	117
	440 '665 '				230-69	600-618	601-619				95	113	113
	445 '670 2'				345-230	600-618	601-619				95	113	113
	450 '675 '				345-230	600	601-622				91	108	108
	538 '765 '				345-230	600-618	601-619				89	106	106
	30 '009 5'				345	600-618	601-618				85	102	102
	463 '700 1'				345	600	601				85	101	102
	435 '655 '				115-69	600-618	601-619				85	101	102
	818 'FORBES 7T-8'					600-608	601-608				85	101	101
	840 MAPP-15A			1	345	600	601				85	101	101
	453 '680 '					618-600					84	101	101
	438 '660 '				230-69	618	619				84	100	100
	443 '670 1'					600-618	601-619				84	100	100
											5 / 8		117
60244	SCOTTCO7	60890	SCOTTCO8	1	115-69	600	601	70	70	NS	44	63	63
	485 '715 2'				115-69	600-618					81	116	116
	493 '715 5'				115-69	600-618					71	102	102
											1 / 1		116
62672	GLNDALE8	62666	GLNDALE7	2	69-115	600	622	47	47	NS	30	63	63
	485 '715 2'				115-69	600-618					53	112	112
	490 '715 4'				115-69	600	601-622				52	111	111
											2 / 0		112
60305	EAU CLA5	60317	WHEATON5	1	161	600	604	272	272	NS	223	82	82
	1480 FG6062			1	345	600	601-604				300	110	110
											1 / 0		110
53139	FLINTCR5	53194	ELMSPRR5	1	161	520	520	305	335	NS	256	84	76
	1468 FG5074			1	161	520	520				365	120	109
											1 / 0		109
60749	DGLAS C8	60144	DGLASCO7	1	69-115	600	601	47	47	NS	42	88	88
	545 '780 '				115	600	601				51	109	109
	543 '775 '				115	600-608					50	107	107
	135 '110 2'				230	652	654				48	103	103
	430 640 '										48	103	103
	318 '500'				69-230	618-652	619-654				48	101	101
	935 'SINGLE-028'			1	500	600	601				47	100	101
	45 '020 '				500-115	600	601				47	100	100
	40 '015 2'				500	600	601				47	100	100
	50 '022 2'					600	601				47	100	100
	63 '022 7'					600	601				47	100	100
											2 / 8		109
63030	DICKNSN3	62925	DICKNSN7	1	345-115	618	618-619	448	448	NS	331	74	74
	30 '009 5'				345	600-618	601-618				487	109	109
											1 / 0		109

Overloaded Facility			Contingency								Overloads			
From	Name	To	Name	Circuit	Base kV	Area	Zone	Ratings Norm	Ratings Emer		MVA	Norm (%)	Emer (%)
31340	NIOTA	34181	BRLGTN 5	1	161	356-331	322-391	224	224	NS	90	40	40
	793	ALTW-84			161	331	391				243	109	109
	780	'ALTW-11 '			161	331	391				243	109	109
											2 / 0		109
61612	RIVERTN4	61625	BLCKBRY4	1	230	608	608	327	327	NS	194	59	59
	45	'020 '			500-115	600	601				351	107	107
	935	'SINGLE-028'		1	500	600	601				351	107	107
	40	'015 2'			500	600	601				351	107	107
	50	'022 2'				600	601				349	107	107
	63	'022 7'				600	601				349	107	107
											5 / 0		107
31051	MASON 13	31053	MASON 2	2	345-138	356	317	560	560	NS	406	73	73
	1155	FG3129		1	345-138	356	317				595	106	106
											1 / 0		106
99798	5BATEVL	99808	5CUSHMN	1	161	151	159	148	148	NS	141	95	95
	1073	FG1319		1	500	524-151	524-159				156	106	106
	1210	FG3157			345/138	356-130	314-130				150	101	101
	1078	FG133		1	345	356-130	314-130				150	101	101
	1208	FG3153		1	345	356-130	314-130				150	101	101
	1063	FG129		1	345	356-130	314-130				150	101	101
	1193	FG3144		1	345	356-130	314-130				150	101	101
	1423	FG5008		1	345	520	520				149	101	101
	1443	FG5042		1	345	520	520				149	101	101
	660	'927 '			345	635	637				149	101	101
											1 / 8		106
96120	5THMHIL	96126	5MOBTAP	1	161	130	130-133	372	372	NS	257	69	69
	1398	FG4020		1	345	130	130				393	106	106
											1 / 0		106
65409	S1209 5	65383	S1209T1T	1	161	645	645	124	124	NS	92	74	74
	285	'451 '			161	645	645				131	105	105
											1 / 0		105
62003	JOHNJCT7	63216	ORTONVL7	1	115	626	621-626	97	97	NS	62	64	64
	135	'110 2'			230	652	654				102	105	105
											1 / 0		105
31221	MOBERLY	31409	OVERTON	1	161	356	314	142	142	NS	76	53	53
	1398	FG4020		1	345	130	130				149	105	105
											0 / 1		105
60203	COON CK7	60253	TWIN LK7	1	115	600	601	371	371	NS	213	57	57
	48	'022 1'				600	601				385	104	104
											0 / 1		104
63214	BIGSTON7	63195	BIGSTONY	1	115-230	626	628	233	233	NS	162	70	70
	135	'110 2'			230	652	654				240	103	103
											0 / 1		103

Overloaded Facility		Contingency							Ratings		Overloads			
From	Name	To	Name	Circuit	Base kV	Area	Zone	Norm	Emer		MVA	Norm (%)	Emer (%)
63314	BIGSTON4	63195	BIGSTONY	1	230	626	628	233	233	NS	162	70	70
	135 '110 2'				230	652	654				240	103	103
											0 / 1		103
60153	MNTCELO7	60151	MNTCELO3	1	115-345	600	601	336	336	NS	205	61	61
	23 '009 2'					600	601				346	103	103
											0 / 1		103
96049	7THOMHL	96120	5THMHIL	1	345-161	130	130	625	625	NS	276	44	44
	1398 FG4020			1	345	130	130				643	103	103
											0 / 1		103
34015	LIME CK5	34016	EMERYN	1	161	331	393	167	167	NS	123	73	73
	1028 FG12015			1	345	635	637				171	103	103
	683 '933 '				345-161	635	637				171	103	103
											0 / 2		103
30422	CONWAY 3	31391	ORGD 1	1	138	356	318	205	205	NS	147	72	72
	1060 FG128			1	345-138	356	311				209	102	102
											0 / 1		102
61721	ETCO 7	61722	FORBES 7	1	115	608	608	98	98	NS	73	75	75
	63 '022 7'					600	601				99	101	101
	50 '022 2'					600	601				99	101	101
	935 'SINGLE-028'			1	500	600	601				99	101	101
	45 '020 '				500-115	600	601				99	101	101
	40 '015 2'				500	600	601				99	101	101
											0 / 5		101
64909	N.PLATT4	65037	N.PLT8 Y	1	230	640	640	187	187	NS	133	71	71
	233 '310 '				345	640	640				189	101	101
											0 / 1		101
50024	CARROLL4	50023	CARROLL6	1	138-230	502	502	336	336	NS	176	52	52
	1438 FG5029			1	345	502-520	502-520				339	101	101
											0 / 1		101
65355	S3455 3	65337	S3455T1T	1	345	645	645	560	560	NS	475	85	85
	278 '440 '				161	645	645				565	101	101
											0 / 1		101
39686	WESTONWP	39676	WESTON	1	115-345	366	366	200	220	NS	40	20	18
	88 '050 4'										222	111	101
	83 '050 2'				345/115						222	111	101
	90 '050 5'										221	111	101
	95 '050 6'										221	111	101
											0 / 4		101
61984	AUSTIN 5	63070	PL VLLY5	1	161	680-618	617-618	445	445	NS	170	38	38
	915 MAPP-9				345	600					448	101	101
											0 / 1		101
39145	POR 138	39167	COL 138	1	138	364	371	286	286	NS	161	56	56
	1583 FG65010			2	138	364	371				287	100	101
											0 / 1		101

Overloaded Facility		Contingency								Overloads			
From	Name	To	Name	Circuit	Base kV	Area	Zone	Ratings Norm	Ratings Emer		MVA	Norm (%)	Emer (%)
39145	POR 138	39167	COL 138	2	138	364	371	286	286	NS	161	56	56
	1585 FG65011			1	138	364	371				287	100	101
											0 / 1		101
63219	GRANTCO7	63220	ELBOWLK7	1	115	626	629	96	96	NS	76	79	79
	595 '866 '				230	608-626	608-621				96	101	101
											0 / 1		101
32277	TURKY HL	32307	E BELLVL	1	138	357	357	287	287	NS	204	71	71
	1373 FG4009				138-345	357-356	357-312				288	100	100
											0 / 1		100
64909	N.PLATT4	65038	N.PLT9 Y	1	230	640	640	187	187	NS	132	70	70
	233 '310 '				345	640	640				187	100	100
											0 / 1		100
											149 / 94		240.3

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

Case Summary pi_rfp_bid1

Project Name	2002 SERIES -- FIANL (F1)2004 SUMMER PEAK M
Title1	F204SUPK.SAV /SUMMER PEAK / SI
Title2	Bid 1
Case Date	7/23/2002

Power Flow File C:\T2000\Work\miso\pi_rfp_bid1.cft

Power Flow Controls

Area Control	☐	***SmoothStep***	☑
Remote Control	☑	***XfrmVcon***	☐
GenVar Control	☑	***XfrmFcon***	☐
Solve Method	DSOLVE		

Case Settings

Overload	☑	***VlimMin***	0.9	***RateFactor***	1
VLimit	☑	***VlimMax***	1.05	***AmpFactor***	1
VChange	☑	***VlimChange***	0.05	***RatingNumber***	2
Monitored Set	monitored	10835 Buses			

Contingency

Contingencies loaded from file M:\PROJ\MISO\286001\PFLOW\Con_MonFiles\PI_RFP.con 1

660 contingencies

2002 SERIES -- FIANL (F1)2004 SUMMER PEAK MODEL

F204SUPK.SAV /SUMMER PEAK / SI

Bid 1

7/23/2002

Overloaded Facility								Normal System				Overloads	
From	Name	To	Name	Circuit	Base kV	Area	Zone	Ratings Norm	Ratings Emer	MVA	Norm (%)	Count A / B	Max (%)
62667	ST BONI7	62925	DICKNSN7	1	115	600-618	622-619	71	71	114.3	161	60 / 0	239
60201	CHEMOLT7	60204	COTTAGE7	1	115	600	601	191	191	113.4	59	2 / 0	216
60217	INVRHLS3	60218	INVRHLS7	1	345-115	600	601	550	550	181.6	33	2 / 0	201
60220	INVRGRV7	62230	PILOTKB7	1	115	600	601-622	239	239	167.7	70	2 / 0	200
60204	COTTAGE7	60238	REDROCK7	1	115	600	601	191	191	63.7	33	2 / 0	192
60218	INVRHLS7	60223	KOCHREF7	1	115	600	601	371	371	283.3	76	2 / 0	184
60200	BLK DG27	60258	WILSON 7	2	115	600	601	167	167	63.3	38	2 / 0	182
60200	BLK DG27	62230	PILOTKB7	1	115	600	601-622	194	194	45.1	23	2 / 0	177
60153	MNTCELO7	60166	SALIDA 7	1	115	600	601	140	140	106.2	76	2 / 0	158
34529	GRJCT5Y	34054	GR JCT 5	1	161	331	392-391	50	50	28.9	58	1 / 0	153
60158	STCLTP 7	60166	SALIDA 7	1	115	600	601	139	139	101.2	73	2 / 0	151
34073	GR JCT 7	34529	GRJCT5Y	1	115-161	331	391-392	50	50	29.0	58	1 / 0	149
34059	BOONE 7	34073	GR JCT 7	1	115	331	391	50	50	29.0	58	1 / 0	149
60277	WWACNIA7	62667	ST BONI7	1	115	600	601-622	71	71	69.1	97	11 / 7	148
60177	CHAMPLN7	60178	CHAMP T7	1	115	600	605-601	140	140	95.1	68	5 / 1	147
62227	JOHNCAK7	62229	APPVLTE7	1	115	600	622	224	224	139.0	62	2 / 0	147
34043	SAVANNA5	34046	YORK 5	1	161	331	393	84	84	59.4	71	2 / 0	139
39885	CEDARU	39892	NATIONAL	1	138	368-365	368-379	96	96	76.5	80	1 / 0	137
60201	CHEMOLT7	60247	LINDETP7	1	115	600	601	167	167	37.7	23	2 / 0	137
60218	INVRHLS7	60220	INVRGRV7	1	115	600	601	371	371	195.2	53	2 / 0	137
60853	LK YANK8	60119	LKYNKTN7	2	69-115	600	601	15	15	6.6	44	1 / 0	131
39122	KEG 138	39218	CHA 138	1	138	364	371	240	240	224.0	93	3 / 0	127
34028	LORE 5	34032	8TH ST.5	1	161	331	393	84	84	49.7	59	1 / 1	126
60152	MNTCELO4	60151	MNTCELO3	1	230-345	600	601	336	336	243.6	72	1 / 1	126
62132	PRKWOOD8	62090	PRKWOOD7	2	69-115	618	619	112	112	92.1	82	1 / 0	123
34059	BOONE 7	34076	BNE JCT7	1	115	331	391	60	60	53.4	89	1 / 2	122
60194	CARVRCO7	60277	WWACNIA7	1	115	600	601	71	71	54.3	76	1 / 0	121
60223	KOCHREF7	60341	ROSEMON7	1	115	600	601	191	191	33.9	18	2 / 0	121
27106	11KNOB C	27135	11POND C	1	138	211	211	143	143	141.6	99	1 / 18	121
27135	11POND C	27144	11TIPTOP	1	138	211	211	143	143	141.1	99	1 / 12	121
61676	HIBBARD7	61680	WNTR ST7	1	115	608	608	144	144	122.1	85	6 / 0	120
67541	STVITAL7	67726	DAKOTB17	1	110	667	668-667	26	26	30.2	116	17 / 0	120
34066	M-TOWN 7	34169	WELSBGT7	1	115	331	391	97	97	87.7	90	2 / 0	118
60244	SCOTTCO7	60890	SCOTTCO8	1	115-69	600	601	70	70	44.7	64	1 / 1	118
62132	PRKWOOD8	62090	PRKWOOD7	1	69-115	618	619	84	84	81.7	97	5 / 9	117
62672	GLNDALE8	62666	GLNDALE7	2	69-115	600	622	47	47	29.9	64	2 / 0	114
60305	EAU CLA5	60317	WHEATON5	1	161	600	604	272	272	218.8	80	1 / 0	111
53139	FLINTCR5	53194	ELMSPRR5	1	161	520	520	305	335	255.9	84	1 / 0	109
60749	DGLAS C8	60144	DGLASCO7	1	69-115	600	601	47	47	41.6	89	2 / 8	109
31340	NIOTA	34181	BRLGTN 5	1	161	356-331	322-391	224	224	89.6	40	2 / 0	109
63030	DICKNSN3	62925	DICKNSN7	1	345-115	618	618-619	448	448	331.2	74	1 / 0	108
61612	RIVERTN4	61625	BLCKBRY4	1	230	608	608	327	327	194.5	59	5 / 0	107
31051	MASON 13	31053	MASON 2	2	345-138	356	317	560	560	406.5	73	1 / 0	106
99798	5BATEVL	99808	5CUSHMN	1	161	151	159	148	148	140.8	95	1 / 8	106
96120	5THMHIL	96126	5MOBTAP	1	161	130	130-133	372	372	256.6	69	1 / 0	106
65409	S1209 5	65383	S1209T1T	1	161	645	645	124	124	91.9	74	1 / 0	105
60103	CANNFLS5	63071	SPRNGCK5	1	161	600	601-622	90	90	42.4	47	1 / 1	105
31221	MOBERLY	31409	OVERTON	1	161	356	314	142	142	75.8	53	0 / 1	105
60104	CANNFLS7	62235	EMPIRE 7	1	115	600	601-622	140	140	40.6	29	0 / 2	104
62003	JOHNJCT7	63216	ORTONVL7	1	115	626	621-626	97	97	62.0	64	0 / 1	104
60203	COON CK7	60253	TWIN LK7	1	115	600	601	371	371	212.3	57	0 / 1	104

Overloaded Facility								Normal System				Overloads	
From	Name	To	Name	Circuit	Base kV	Area	Zone	Ratings Norm	Ratings Emer	MVA	Norm (%)	Count A / B	Max (%)
60343	WILLPIP7	62228	APPVLTW7	1	115	600	601-622	224	224	88.9	40	0 / 2	103
62227	JOHNCAK7	62228	APPVLTW7	1	115	600	622	224	224	88.9	40	0 / 2	103
60341	ROSEMON7	62235	EMPIRE 7	1	115	600	601-622	140	140	40.7	29	0 / 2	103
60153	MNTCELO7	60151	MNTCELO3	1	115-345	600	601	336	336	205.2	61	0 / 1	103
96049	7THOMHL	96120	5THMHIL	1	345-161	130	130	625	625	276.2	44	0 / 1	103
63214	BIGSTON7	63195	BIGSTONY	1	115-230	626	628	233	233	161.5	69	0 / 1	103
63314	BIGSTON4	63195	BIGSTONY	1	230	626	628	233	233	161.5	69	0 / 1	103
30422	CONWAY 3	31391	ORGD 1	1	138	356	318	205	205	146.8	72	0 / 1	102
60343	WILLPIP7	62226	FISCHER7	1	115	600	601-622	224	224	85.3	38	0 / 2	102
61721	ETCO 7	61722	FORBES 7	1	115	608	608	98	98	73.3	75	0 / 5	101
64909	N.PLATT4	65037	N.PLT8 Y	1	230	640	640	187	187	133.0	71	0 / 1	101
50024	CARROLL4	50023	CARROLL6	1	138-230	502	502	336	336	176.2	52	0 / 1	101
65355	S3455 3	65337	S3455T1T	1	345	645	645	560	560	474.3	85	0 / 1	101
39686	WESTONWP	39676	WESTON	1	115-345	366	366	200	220	39.7	20	0 / 4	101
61984	AUSTIN 5	63070	PL VLLY5	1	161	680-618	617-618	445	445	162.0	36	0 / 1	101
34015	LIME CK5	34016	EMERYN	1	161	331	393	167	167	118.0	71	0 / 2	101
39145	POR 138	39167	COL 138	1	138	364	371	286	286	161.1	56	0 / 1	101
39145	POR 138	39167	COL 138	2	138	364	371	286	286	161.1	56	0 / 1	101
32277	TURKY HL	32307	E BELLVL	1	138	357	357	287	287	204.1	71	0 / 1	100
64909	N.PLATT4	65038	N.PLT9 Y	1	230	640	640	187	187	131.7	70	0 / 1	100
63219	GRANTCO7	63220	ELBOWLK7	1	115	626	629	96	96	75.7	79	0 / 1	100
												169 / 107	239

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 -- FIANL (F1)2004 SUMMER PEAK MODEL

F204SUPK.SAV /SUMMER PEAK / SI

Bid 1

7/23/2002

Overloaded Facility			Contingency								Overloads			
From	Name	To	Name	Circuit	Base kV	Area	Zone	Ratings Norm	Ratings Emer		MVA	Norm (%)	Emer (%)
62667	ST BONI7	62925	DICKNSN7	1	115	600-618	622-619	71	71	NS	114	161	161
	30 '009 5'				345	600-618	601-618				170	239	239
	845 MAPP-17				345	600-618	601-618				140	197	197
	470 '705 2'				345-115	600	601				127	179	179
	53 '022 3'					600	601				127	179	179
	48 '022 1'					600	601				126	177	177
	38 '009 8'					600-618	601-618				126	177	177
	483 '715 1'				115-69	600-618					124	175	175
	498 '720 1'				115	600-618	601-619				124	175	175
	28 '009 4'					600-618	601-618				124	174	174
	23 '009 2'					600	601				123	174	174
	35 '009 7'					600	601				123	173	173
	840 MAPP-15A			1	345	600	601				122	171	171
	485 '715 2'				115-69	600-618					121	170	171
	475 '705 4'				345-115	600	601				121	170	170
	488 '715 3'				69-115	600	622-601				120	169	169
	58 '022 5'					600	601				120	168	168
	473 '705 3'				115-345	600	601				119	167	167
	70 '022 10'					600	601				118	166	166
	843 MAPP-16			1	345	600	601				118	166	166
	55 '022 4'					600	601				117	165	165
	493 '715 5'				115-69	600-618					116	164	164
	113 '050 12'										116	164	164
	110 '050 11'										116	164	164
	490 '715 4'				115-69	600	601-622				116	164	164
	103 '050 10'				345-161	364-600					116	164	164
	525 '755 '				115	600	601-622				116	164	164
	105 '050 14'										116	164	164
	460 '695 '				115	618-600	619-601				116	163	164
	68 '022 9'				345-115	600	601				116	163	163
	468 '705 1'				345-115	600	601				116	163	163
	115 '050 13'										116	163	163
	1235 FG3239				345/115						116	163	163
	1480 FG6062			1	345	600	601-604				116	163	163
	1105 FG3016				345/115						116	163	163
	543 '775 '				115	600-608					116	163	163
	100 '050 9'				115/345						116	163	163
	555 '795 '					600-652					116	163	163
	98 '050 8'				345/69						116	163	163
	560 '805 '				115	600	601				115	163	163

Overloaded Facility		Contingency							Ratings		Overloads		
From	Name	To	Name	Circuit	Base kV	Area	Zone	Norm	Emer		MVA	Norm (%)	Emer (%)
	838	MAPP-14		1	161-345	600	616				115	163	163
	523	'750 '			115-69	608-600					113	159	159
	1353	FG3727		1	345	331-600	393-601				113	159	159
	45	'020 '			500-115	600	601				113	159	159
	450	'675 '			345-230	600	601-622				113	159	159
	40	'015 2'			500	600	601				113	159	159
	50	'022 2'				600	601				113	159	159
	935	'SINGLE-028'		1	500	600	601				113	159	159
	430	640 '									113	158	159
	318	'500'			69-230	618-652	619-654				112	158	158
	65	'022 8'			345-115	600	601				112	157	157
	545	'780 '			115	600	601				111	157	157
	85	'050 3'			345-161	364-600					111	157	157
	93	'050 7'									111	157	157
	90	'050 5'									111	157	157
	88	'050 4'									111	157	157
	108	'050 1'			69/345						111	156	157
	95	'050 6'									111	156	156
	83	'050 2'			345/115						111	156	156
	463	'700 1'			345	600	601				106	149	149
	465	'700 2'			345	600	601				103	145	145
											60 / 0		239
60201	CHEMOLT7	60204	COTTAGE7	1	115	600	601	191	191	NS	113	59	59
	463	'700 1'			345	600	601				413	216	216
	465	'700 2'			345	600	601				411	215	215
											2 / 0		216
60217	INVRHLS3	60218	INVRHLS7	1	345-115	600	601	550	550	NS	182	33	33
	465	'700 2'			345	600	601				1107	201	201
	463	'700 1'			345	600	601				1107	201	201
											2 / 0		201
60220	INVRGRV7	62230	PILOTKB7	1	115	600	601-622	239	239	NS	168	70	70
	465	'700 2'			345	600	601				478	200	200
	463	'700 1'			345	600	601				476	199	199
											2 / 0		200
60204	COTTAGE7	60238	REDROCK7	1	115	600	601	191	191	NS	64	33	33
	463	'700 1'			345	600	601				367	192	192
	465	'700 2'			345	600	601				365	191	191
											2 / 0		192
60218	INVRHLS7	60223	KOCHREF7	1	115	600	601	371	371	NS	283	76	76
	463	'700 1'			345	600	601				683	184	184
	465	'700 2'			345	600	601				682	184	184
											2 / 0		184

Overloaded Facility		Contingency							Ratings		Overloads			
From	Name	To	Name	Circuit	Base kV	Area	Zone	Norm	Emer		MVA	Norm (%)	Emer (%)
60200	BLK DG27	60258	WILSON 7	2	115	600	601	167	167	NS	63	38	38
	465 '700 2'				345	600	601				303	182	182
	463 '700 1'				345	600	601				298	179	179
											2 / 0		182
60200	BLK DG27	62230	PILOTKB7	1	115	600	601-622	194	194	NS	45	23	23
	465 '700 2'				345	600	601				342	176	177
	463 '700 1'				345	600	601				339	175	175
											2 / 0		177
60153	MNTCELO7	60166	SALIDA 7	1	115	600	601	140	140	NS	106	76	76
	545 '780 '				115	600	601				221	158	158
	450 '675 '				345-230	600	601-622				160	114	114
											2 / 0		158
34529	GRJCT5Y	34054	GR JCT 5	1	161	331	392-391	50	50	NS	29	58	58
	688 '936 '				115	331	391				76	153	153
											1 / 0		153
60158	STCLTP 7	60166	SALIDA 7	1	115	600	601	139	139	NS	101	73	73
	545 '780 '				115	600	601				209	151	151
	450 '675 '				345-230	600	601-622				153	110	110
											2 / 0		151
34073	GR JCT 7	34529	GRJCT5Y	1	115-161	331	391-392	50	50	NS	29	58	58
	688 '936 '				115	331	391				75	149	149
											1 / 0		149
34059	BOONE 7	34073	GR JCT 7	1	115	331	391	50	50	NS	29	58	58
	688 '936 '				115	331	391				74	149	149
											1 / 0		149

Overloaded Facility		Contingency						Ratings		Overloads			
From	Name	To	Name	Circuit	Base kV	Area	Zone	Norm	Emer		MVA	Norm (%)	Emer (%)
60277	WWACNIA7	62667	ST BONI7	1	115	600	601-622	71	71	NS	69	97	97
	30 '009 5'				345	600-618	601-618				105	148	148
	845 MAPP-17				345	600-618	601-618				87	122	122
	470 '705 2'				345-115	600	601				81	114	114
	53 '022 3'					600	601				80	112	112
	48 '022 1'					600	601				79	111	111
	483 '715 1'				115-69	600-618					78	110	110
	38 '009 8'					600-618	601-618				78	110	110
	28 '009 4'					600-618	601-618				77	109	109
	23 '009 2'					600	601				75	106	106
	488 '715 3'				69-115	600	622-601				75	105	105
	35 '009 7'					600	601				75	105	105
	475 '705 4'				345-115	600	601				74	105	105
	58 '022 5'					600	601				74	104	104
	840 MAPP-15A			1	345	600	601				73	103	104
	70 '022 10'					600	601				72	102	102
	473 '705 3'				115-345	600	601				72	102	102
	843 MAPP-16			1	345	600	601				72	101	101
	55 '022 4'					600	601				72	101	101
											11 / 7		148
60177	CHAMPLN7	60178	CHAMP T7	1	115	600	605-601	140	140	NS	95	68	68
	38 '009 8'					600-618	601-618				206	147	147
	35 '009 7'					600	601				205	147	147
	30 '009 5'				345	600-618	601-618				161	115	115
	443 '670 1'					600-618	601-619				156	112	112
	840 MAPP-15A			1	345	600	601				156	112	112
	28 '009 4'					600-618	601-618				147	105	105
											5 / 1		147
62227	JOHNCAK7	62229	APPVLTE7	1	115	600	622	224	224	NS	139	62	62
	465 '700 2'				345	600	601				329	147	147
	463 '700 1'				345	600	601				327	146	146
											2 / 0		147
34043	SAVANNA5	34046	YORK 5	1	161	331	393	84	84	NS	59	71	71
	795 ALTW-85				161	331	393-392				117	139	139
	1025 FG12013			1	345	331	393				90	107	107
											2 / 0		139
39885	CEDARU	39892	NATIONAL	1	138	368-365	368-379	96	96	NS	77	80	80
	1578 FG65006			1	138	365-368	379-368				132	137	137
											1 / 0		137
60201	CHEMOLT7	60247	LINDETP7	1	115	600	601	167	167	NS	38	23	23
	463 '700 1'				345	600	601				229	137	137
	465 '700 2'				345	600	601				227	136	136
											2 / 0		137

Overloaded Facility		Contingency							Ratings		Overloads			
From	Name	To	Name	Circuit	Base kV	Area	Zone	Norm	Emer		MVA	Norm (%)	Emer (%)
60218	INVRHLS7	60220	INVRGRV7	1	115	600	601	371	371	NS	195	53	53
	465 '700 2'				345	600	601				508	137	137
	463 '700 1'				345	600	601				505	136	136
											2 / 0		137
60853	LK YANK8	60119	LKYNKTN7	2	69-115	600	601	15	15	NS	7	44	44
	345 '530 '				69-115	600-652	601-605				20	131	131
											1 / 0		131
39122	KEG 138	39218	CHA 138	1	138	364	371	240	240	NS	224	93	93
	1130 FG3031			1	138	364-367	371-367				304	127	127
	1580 FG65009			1	345	367	391-367				287	119	120
	1118 FG3022			1	345	367	391-367				287	119	120
											3 / 0		127
34028	LORE 5	34032	8TH ST.5	1	161	331	393	84	84	NS	50	59	59
	1018 FG12010			1	161	331	393-392				106	126	126
	785 'ALTW-13 '				161	331	393-392				87	103	103
											1 / 1		126
60152	MNTCELO4	60151	MNTCELO3	1	230-345	600	601	336	336	NS	244	72	72
	450 '675 '				345-230	600	601-622				423	126	126
	23 '009 2'					600	601				352	105	105
											1 / 1		126
62132	PRKWOOD8	62090	PRKWOOD7	2	69-115	618	619	112	112	NS	92	82	82
	433 '650 '				115-69	600-618	601-619				138	123	123
											1 / 0		123
34059	BOONE 7	34076	BNE JCT7	1	115	331	391	60	60	NS	53	89	89
	678 '932 2'				115/345	331-635	391-637				73	122	122
	770 'ALTW-07 '				161-69	331	391-392				62	104	104
	625 '911 '				161	331-652	391-654				61	102	102
											1 / 2		122
60194	CARVRCO7	60277	WWACNIA7	1	115	600	601	71	71	NS	54	76	76
	30 '009 5'				345	600-618	601-618				86	121	121
											1 / 0		121
60223	KOCHREF7	60341	ROSEMON7	1	115	600	601	191	191	NS	34	18	18
	463 '700 1'				345	600	601				231	121	121
	465 '700 2'				345	600	601				229	120	120
											2 / 0		121

Overloaded Facility		Contingency						Ratings		Overloads			
From	Name	To	Name	Circuit	Base kV	Area	Zone	Norm	Emer		MVA	Norm (%)	Emer (%)
27106	11KNOB C	27135	11POND C	1	138	211	211	143	143	NS	142	99	99
	1283 FG3418			1	765	205	250				173	121	121
	1005 FG116			1	345	356-357	323-357				146	102	102
	1260 FG3404			1	345	356-357	323-357				146	102	102
	998 FG110			1	345	356-357	323-357				146	102	102
	1285 FG3419			1	345	356-357	323-357				146	102	102
	1255 FG3402			1	345	356-357	323-357				146	102	102
	1290 FG3424				345	356-357	323-357				146	102	102
	1390 FG4017				345	356-357	323-357				146	102	102
	1278 FG3413				345	356-357	323-357				146	102	102
	1050 FG124				345	356-357	323-357				146	102	102
	1058 FG127				345	356-357	323-357				146	102	102
	1170 FG3135				345	356-357	323-357				146	102	102
	1133 FG3118			1	345	205-356	252-323				144	101	101
	1410 FG45009			1	500	201	201				144	100	100
	1063 FG129			1	345	356-130	314-130				143	100	100
	1078 FG133			1	345	356-130	314-130				143	100	100
	1208 FG3153			1	345	356-130	314-130				143	100	100
	1210 FG3157				345/138	356-130	314-130				143	100	100
	1193 FG3144			1	345	356-130	314-130				143	100	100
											1 / 18		121
27135	11POND C	27144	11TIPTOP	1	138	211	211	143	143	NS	141	99	99
	1283 FG3418			1	765	205	250				172	120	121
	1005 FG116			1	345	356-357	323-357				145	102	102
	1260 FG3404			1	345	356-357	323-357				145	102	102
	1255 FG3402			1	345	356-357	323-357				145	102	102
	998 FG110			1	345	356-357	323-357				145	102	102
	1285 FG3419			1	345	356-357	323-357				145	102	102
	1390 FG4017				345	356-357	323-357				145	101	102
	1170 FG3135				345	356-357	323-357				145	101	102
	1058 FG127				345	356-357	323-357				145	101	102
	1050 FG124				345	356-357	323-357				145	101	102
	1278 FG3413				345	356-357	323-357				145	101	102
	1290 FG3424				345	356-357	323-357				145	101	102
	1133 FG3118			1	345	205-356	252-323				144	101	101
											1 / 12		121
61676	HIBBARD7	61680	WNTR ST7	1	115	608	608	144	144	NS	122	85	85
	155 132L				115	608	608				173	120	120
	63 '022 7'					600	601				167	116	116
	50 '022 2'					600	601				167	116	116
	935 'SINGLE-028'			1	500	600	601				163	113	113
	40 '015 2'				500	600	601				163	113	113
	45 '020 '				500-115	600	601				163	113	113
											6 / 0		120

Overloaded Facility		Contingency							Ratings		Overloads			
From	Name	To	Name	Circuit	Base kV	Area	Zone	Norm	Emer		MVA	Norm (%)	Emer (%)
67541	STVITAL7	67726	DAKOTB17	1	110	667	668-667	26	26	NS	30	116	116
	15 '003 '										31	120	120
	13 '001 '				230						31	119	119
	948 'SINGLE-044'			1	230	600-667	601-668				31	119	119
	18 '007 '					608	657-608				31	119	119
	943 'SINGLE-040'			1	230	608	657				31	119	119
	945 'SINGLE-042'			1	230	608	608-657				31	118	119
	950 'SINGLE-046'				345-24	626	657-661				31	118	118
	40 '015 2'				500	600	601				31	117	117
	45 '020 '				500-115	600	601				31	117	117
	50 '022 2'					600	601				31	117	117
	935 'SINGLE-028'			1	500	600	601				31	117	117
	63 '022 7'					600	601				31	117	117
	205 '220 '					626	627-657				30	117	117
	380 '570 1'					626	626-657				30	115	115
	818 'FORBES 7T-8'					600-608	601-608				30	114	114
	938 'SINGLE-031'			1	230	626	657				29	113	113
	940 'SINGLE-034'			1	230	626-667	657-668				28	109	109
											17 / 0		120
34066	M-TOWN 7	34169	WELSBGT7	1	115	331	391	97	97	NS	88	90	90
	683 '933 '				345-161	635	637				115	118	118
	1028 FG12015			1	345	635	637				115	118	118
											2 / 0		118
60244	SCOTTCO7	60890	SCOTTCO8	1	115-69	600	601	70	70	NS	45	64	64
	485 '715 2'				115-69	600-618					82	117	118
	493 '715 5'				115-69	600-618					72	103	103
											1 / 1		118
62132	PRKWOOD8	62090	PRKWOOD7	1	69-115	618	619	84	84	NS	82	97	97
	503 '725 '				69-230	618	619				98	117	117
	440 '665 '				230-69	600-618	601-619				95	113	113
	445 '670 2'				345-230	600-618	601-619				95	113	113
	450 '675 '				345-230	600	601-622				91	108	108
	538 '765 '				345-230	600-618	601-619				89	106	106
	30 '009 5'				345	600-618	601-618				85	102	102
	435 '655 '				115-69	600-618	601-619				85	102	102
	818 'FORBES 7T-8'					600-608	601-608				85	101	101
	840 MAPP-15A			1	345	600	601				85	101	101
	453 '680 '					618-600					84	101	101
	438 '660 '				230-69	618	619				84	100	100
	443 '670 1'					600-618	601-619				84	100	100
	465 '700 2'				345	600	601				84	100	100
	463 '700 1'				345	600	601				84	100	100
											5 / 9		117

Overloaded Facility		Contingency							Ratings		Overloads			
From	Name	To	Name	Circuit	Base kV	Area	Zone	Norm	Emer		MVA	Norm (%)	Emer (%)
62672	GLNDALE8	62666	GLNDALE7	2	69-115	600	622	47	47	NS	30	64	64
	485 '715 2'				115-69	600-618					53	114	114
	490 '715 4'				115-69	600	601-622				53	113	113
											2 / 0		114
60305	EAU CLA5	60317	WHEATON5	1	161	600	604	272	272	NS	219	80	80
	1480 FG6062			1	345	600	601-604				301	111	111
											1 / 0		111
53139	FLINTCR5	53194	ELMSPRR5	1	161	520	520	305	335	NS	256	84	76
	1468 FG5074			1	161	520	520				365	120	109
											1 / 0		109
60749	DGLAS C8	60144	DGLASCO7	1	69-115	600	601	47	47	NS	42	89	89
	545 '780 '				115	600	601				51	109	109
	543 '775 '				115	600-608					50	107	107
	135 '110 2'				230	652	654				48	103	103
	430 640 '										48	103	103
	318 '500'				69-230	618-652	619-654				48	101	101
	935 'SINGLE-028'			1	500	600	601				47	100	100
	45 '020 '				500-115	600	601				47	100	100
	40 '015 2'				500	600	601				47	100	100
	63 '022 7'					600	601				47	100	100
	50 '022 2'					600	601				47	100	100
											2 / 8		109
31340	NIOTA	34181	BRLGTN 5	1	161	356-331	322-391	224	224	NS	90	40	40
	793 ALTW-84				161	331	391				243	108	109
	780 'ALTW-11 '				161	331	391				243	108	109
											2 / 0		109
63030	DICKNSN3	62925	DICKNSN7	1	345-115	618	618-619	448	448	NS	331	74	74
	30 '009 5'				345	600-618	601-618				486	108	108
											1 / 0		108
61612	RIVERTN4	61625	BLCKBRY4	1	230	608	608	327	327	NS	194	59	59
	935 'SINGLE-028'			1	500	600	601				350	107	107
	40 '015 2'				500	600	601				350	107	107
	45 '020 '				500-115	600	601				350	107	107
	50 '022 2'					600	601				349	107	107
	63 '022 7'					600	601				348	107	107
											5 / 0		107
31051	MASON 13	31053	MASON 2	2	345-138	356	317	560	560	NS	406	73	73
	1155 FG3129			1	345-138	356	317				595	106	106
											1 / 0		106

Overloaded Facility		Contingency								Overloads			
From Name	To	Name	Circuit	Base kV	Area	Zone	Ratings Norm	Ratings Emer		MVA	Norm (%)	Emer (%)
99798 5BATEVL	99808	5CUSHMN	1	161	151	159	148	148	NS	141	95	95
1073 FG1319			1	500	524-151	524-159				156	106	106
1210 FG3157				345/138	356-130	314-130				150	101	101
1193 FG3144			1	345	356-130	314-130				150	101	101
1208 FG3153			1	345	356-130	314-130				150	101	101
1078 FG133			1	345	356-130	314-130				150	101	101
1063 FG129			1	345	356-130	314-130				150	101	101
1443 FG5042			1	345	520	520				149	101	101
1423 FG5008			1	345	520	520				149	101	101
660 '927 '				345	635	637				149	101	101
										1 / 8		106
96120 5THMHIL	96126	5MOBTAP	1	161	130	130-133	372	372	NS	257	69	69
1398 FG4020			1	345	130	130				393	106	106
										1 / 0		106
65409 S1209 5	65383	S1209T1T	1	161	645	645	124	124	NS	92	74	74
285 '451 '				161	645	645				131	105	105
										1 / 0		105
60103 CANNFLS5	63071	SPRNGCK5	1	161	600	601-622	90	90	NS	42	47	47
463 '700 1'				345	600	601				94	105	105
465 '700 2'				345	600	601				93	103	103
										1 / 1		105
31221 MOBERLY	31409	OVERTON	1	161	356	314	142	142	NS	76	53	53
1398 FG4020			1	345	130	130				149	105	105
										0 / 1		105
60104 CANNFLS7	62235	EMPIRE 7	1	115	600	601-622	140	140	NS	41	29	29
463 '700 1'				345	600	601				146	104	104
465 '700 2'				345	600	601				145	103	103
										0 / 2		104
62003 JOHNJCT7	63216	ORTONVL7	1	115	626	621-626	97	97	NS	62	64	64
135 '110 2'				230	652	654				101	104	104
										0 / 1		104
60203 COON CK7	60253	TWIN LK7	1	115	600	601	371	371	NS	212	57	57
48 '022 1'					600	601				386	104	104
										0 / 1		104
60343 WILLPIP7	62228	APPVLTW7	1	115	600	601-622	224	224	NS	89	40	40
465 '700 2'				345	600	601				231	103	103
463 '700 1'				345	600	601				230	103	103
										0 / 2		103
62227 JOHNCAK7	62228	APPVLTW7	1	115	600	622	224	224	NS	89	40	40
465 '700 2'				345	600	601				231	103	103
463 '700 1'				345	600	601				230	103	103
										0 / 2		103

Overloaded Facility		Contingency							Ratings		Overloads			
From	Name	To	Name	Circuit	Base kV	Area	Zone	Norm	Emer		MVA	Norm (%)	Emer (%)
60341	ROSEMON7	62235	EMPIRE 7	1	115	600	601-622	140	140	NS	41	29	29
	463 '700 1'				345	600	601				145	103	103
	465 '700 2'				345	600	601				143	102	102
											0 / 2		103
60153	MNTCELO7	60151	MNTCELO3	1	115-345	600	601	336	336	NS	205	61	61
	23 '009 2'					600	601				346	103	103
											0 / 1		103
96049	7THOMHL	96120	5THMHIL	1	345-161	130	130	625	625	NS	276	44	44
	1398 FG4020			1	345	130	130				643	103	103
											0 / 1		103
63214	BIGSTON7	63195	BIGSTONY	1	115-230	626	628	233	233	NS	161	69	69
	135 '110 2'				230	652	654				239	103	103
											0 / 1		103
63314	BIGSTON4	63195	BIGSTONY	1	230	626	628	233	233	NS	161	69	69
	135 '110 2'				230	652	654				239	103	103
											0 / 1		103
30422	CONWAY 3	31391	ORGD 1	1	138	356	318	205	205	NS	147	72	72
	1060 FG128			1	345-138	356	311				209	102	102
											0 / 1		102
60343	WILLPIP7	62226	FISCHER7	1	115	600	601-622	224	224	NS	85	38	38
	465 '700 2'				345	600	601				228	102	102
	463 '700 1'				345	600	601				226	101	101
											0 / 2		102
61721	ETCO 7	61722	FORBES 7	1	115	608	608	98	98	NS	73	75	75
	50 '022 2'					600	601				99	101	101
	63 '022 7'					600	601				99	101	101
	935 'SINGLE-028'			1	500	600	601				99	101	101
	45 '020 '				500-115	600	601				99	101	101
	40 '015 2'				500	600	601				99	101	101
											0 / 5		101
64909	N.PLATT4	65037	N.PLT8 Y	1	230	640	640	187	187	NS	133	71	71
	233 '310 '				345	640	640				189	101	101
											0 / 1		101
50024	CARROLL4	50023	CARROLL6	1	138-230	502	502	336	336	NS	176	52	52
	1438 FG5029			1	345	502-520	502-520				339	101	101
											0 / 1		101
65355	S3455 3	65337	S3455T1T	1	345	645	645	560	560	NS	474	85	85
	278 '440 '				161	645	645				565	101	101
											0 / 1		101

Overloaded Facility				Contingency								Overloads			
From	Name	To	Name	Circuit	Base kV	Area	Zone	Ratings Norm	Ratings Emer		MVA	Norm (%)	Emer (%)
39686	WESTONWP	39676	WESTON	1	115-345	366	366	200	220	NS	40	20	18
	83 '050 2'				345/115						222	111	101
	88 '050 4'										222	111	101
	95 '050 6'										221	111	101
	90 '050 5'										221	111	101
											0 / 4		101
61984	AUSTIN 5	63070	PL VLLY5	1	161	680-618	617-618	445	445	NS	162	36	36
	915 MAPP-9				345	600					448	101	101
											0 / 1		101
34015	LIME CK5	34016	EMERYN	1	161	331	393	167	167	NS	118	71	71
	683 '933 '				345-161	635	637				168	100	101
	1028 FG12015			1	345	635	637				168	100	101
											0 / 2		101
39145	POR 138	39167	COL 138	1	138	364	371	286	286	NS	161	56	56
	1583 FG65010			2	138	364	371				288	101	101
											0 / 1		101
39145	POR 138	39167	COL 138	2	138	364	371	286	286	NS	161	56	56
	1585 FG65011			1	138	364	371				288	101	101
											0 / 1		101
32277	TURKY HL	32307	E BELLVL	1	138	357	357	287	287	NS	204	71	71
	1373 FG4009				138-345	357-356	357-312				288	100	100
											0 / 1		100
64909	N.PLATT4	65038	N.PLT9 Y	1	230	640	640	187	187	NS	132	70	70
	233 '310 '				345	640	640				187	100	100
											0 / 1		100
63219	GRANTCO7	63220	ELBOWLK7	1	115	626	629	96	96	NS	76	79	79
	595 '866 '				230	608-626	608-621				96	100	100
											0 / 1		100
											169 / 107		239.0

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

Case Summary pi_rfp_bid2

Project Name	2002 SERIES -- FIANL (F1)2004 SUMMER PEAK M
Title1	F204SUPK.SAV /SUMMER PEAK / SI
Title2	Bid 2
Case Date	7/23/2002

Power Flow File M:\PROJ\MISO\286001\PFLOW\ConvertedCases\pi_rfp_bid2.cft

Power Flow Controls

Area Control	☐	***SmoothStep***	☑
Remote Control	☑	***XfrmVcon***	☐
GenVar Control	☑	***XfrmFcon***	☐
Solve Method	DSOLVE		

Case Settings

Overload	☑	***VlimMin***	0.9	***RateFactor***	1
VLimit	☑	***VlimMax***	1.05	***AmpFactor***	1
VChange	☑	***VlimChange***	0.05	***RatingNumber***	2
Monitored Set	monitored	10835 Buses			

Contingency

Contingencies loaded from file M:\PROJ\MISO\286001\PFLOW\Con_MonFiles\PI_RFP.con 1

660 contingencies

2002 SERIES -- FIANL (F1)2004 SUMMER PEAK MODEL

F204SUPK.SAV /SUMMER PEAK / SI

Bid 2

7/23/2002

Overloaded Facility								Normal System				Overloads	
From	Name	To	Name	Circuit	Base kV	Area	Zone	Ratings Norm	Ratings Emer	MVA	Norm (%)	Count A / B	Max (%)
62667	ST BONI7	62925	DICKNSN7	1	115	600-618	622-619	71	71	114.5	161	58 / 0	241
60153	MNTCELO7	60166	SALIDA 7	1	115	600	601	140	140	104.3	74	2 / 0	156
34529	GRJCT5Y	34054	GR JCT 5	1	161	331	392-391	50	50	28.7	57	1 / 0	153
60277	WWACNIA7	62667	ST BONI7	1	115	600	601-622	71	71	69.2	97	12 / 6	150
34073	GR JCT 7	34529	GRJCT5Y	1	115-161	331	391-392	50	50	28.7	57	1 / 0	149
34059	BOONE 7	34073	GR JCT 7	1	115	331	391	50	50	28.7	57	1 / 0	149
60158	STCLTP 7	60166	SALIDA 7	1	115	600	601	139	139	99.3	71	2 / 0	149
60177	CHAMPLN7	60178	CHAMP T7	1	115	600	605-601	140	140	93.8	67	5 / 1	148
34043	SAVANNA5	34046	YORK 5	1	161	331	393	84	84	60.4	72	2 / 0	141
39885	CEDARU	39892	NATIONAL	1	138	368-365	368-379	96	96	76.4	80	1 / 0	137
60853	LK YANK8	60119	LKYNKTN7	2	69-115	600	601	15	15	6.7	45	1 / 0	135
34028	LORE 5	34032	8TH ST.5	1	161	331	393	84	84	51.6	61	2 / 0	130
39122	KEG 138	39218	CHA 138	1	138	364	371	240	240	224.8	94	3 / 0	127
60152	MNTCELO4	60151	MNTCELO3	1	230-345	600	601	336	336	241.2	72	1 / 1	125
62132	PRKWOOD8	62090	PRKWOOD7	2	69-115	618	619	112	112	91.8	82	1 / 0	123
60194	CARVRCO7	60277	WWACNIA7	1	115	600	601	71	71	54.4	77	1 / 0	122
34059	BOONE 7	34076	BNE JCT7	1	115	331	391	60	60	53.6	89	1 / 2	122
27106	11KNOB C	27135	11POND C	1	138	211	211	143	143	140.0	98	1 / 11	120
67541	STVITAL7	67726	DAKOTB17	1	110	667	668-667	26	26	30.2	116	18 / 0	120
27135	11POND C	27144	11TIPTOP	1	138	211	211	143	143	139.5	98	1 / 11	119
34066	M-TOWN 7	34169	WELSBGT7	1	115	331	391	97	97	88.3	91	2 / 0	119
61676	HIBBARD7	61680	WNTR ST7	1	115	608	608	144	144	120.4	84	6 / 0	119
62132	PRKWOOD8	62090	PRKWOOD7	1	69-115	618	619	84	84	81.5	97	5 / 7	117
60244	SCOTTCO7	60890	SCOTTCO8	1	115-69	600	601	70	70	44.0	63	1 / 1	116
62672	GLNDALE8	62666	GLNDALE7	2	69-115	600	622	47	47	29.7	63	2 / 0	112
60749	DGLAS C8	60144	DGLASCO7	1	69-115	600	601	47	47	41.7	89	2 / 8	109
53139	FLINTCR5	53194	ELMSPRR5	1	161	520	520	305	335	255.6	84	1 / 0	109
63030	DICKNSN3	62925	DICKNSN7	1	345-115	618	618-619	448	448	329.4	74	1 / 0	109
31340	NIOTA	34181	BRLGTN 5	1	161	356-331	322-391	224	224	88.3	39	2 / 0	108
60305	EAU CLA5	60317	WHEATON5	1	161	600	604	272	272	220.5	81	1 / 0	108
61612	RIVERTN4	61625	BLCKBRY4	1	230	608	608	327	327	192.8	59	5 / 0	107
99798	5BATEVL	99808	5CUSHMN	1	161	151	159	148	148	142.7	96	1 / 9	107
62003	JOHNJCT7	63216	ORTONVL7	1	115	626	621-626	97	97	62.9	65	1 / 0	107
31051	MASON 13	31053	MASON 2	2	345-138	356	317	560	560	405.9	72	1 / 0	106
65409	S1209 5	65383	S1209T1T	1	161	645	645	124	124	91.9	74	1 / 0	105
96120	5THMHIL	96126	5MOBTAP	1	161	130	130-133	372	372	255.9	69	1 / 0	105
63214	BIGSTON7	63195	BIGSTONY	1	115-230	626	628	233	233	162.8	70	0 / 1	104
63314	BIGSTON4	63195	BIGSTONY	1	230	626	628	233	233	162.8	70	0 / 1	104
31221	MOBERLY	31409	OVERTON	1	161	356	314	142	142	75.2	53	0 / 1	104
60203	COON CK7	60253	TWIN LK7	1	115	600	601	371	371	212.8	57	0 / 1	104
60153	MNTCELO7	60151	MNTCELO3	1	115-345	600	601	336	336	204.3	61	0 / 1	103
96049	7THOMHL	96120	5THMHIL	1	345-161	130	130	625	625	280.1	45	0 / 1	103
30422	CONWAY 3	31391	ORGD 1	1	138	356	318	205	205	147.4	72	0 / 1	102
61721	ETCO 7	61722	FORBES 7	1	115	608	608	98	98	73.2	75	0 / 5	102
63219	GRANTCO7	63220	ELBOWLK7	1	115	626	629	96	96	76.5	80	0 / 1	101
39145	POR 138	39167	COL 138	1	138	364	371	286	286	162.2	57	0 / 1	101
39145	POR 138	39167	COL 138	2	138	364	371	286	286	162.2	57	0 / 1	101
50024	CARROLL4	50023	CARROLL6	1	138-230	502	502	336	336	176.2	52	0 / 1	101
65355	S3455 3	65337	S3455T1T	1	345	645	645	560	560	475.6	85	0 / 1	101
64909	N.PLATT4	65037	N.PLT8 Y	1	230	640	640	187	187	133.2	71	0 / 1	101
32277	TURKY HL	32307	E BELLVL	1	138	357	357	287	287	204.7	71	0 / 1	101

Overloaded Facility										Normal System		Overloads	
From	Name	To	Name	Circuit	Base kV	Area	Zone	Ratings Norm	Ratings Emer	MVA	Norm (%)	Count A / B	Max (%)
39686	WESTONWP	39676	WESTON	1	115-345	366	366	200	220	41.0	21	0 / 4	101
61984	AUSTIN 5	63070	PL VLLY5	1	161	680-618	617-618	445	445	166.7	37	0 / 1	101
99817	5ISES 1	99826	5MORFLD	1	161	151	159	223	223	208.4	93	0 / 1	101
34015	LIME CK5	34016	EMERYN	1	161	331	393	167	167	117.8	71	0 / 2	101
												148 / 84	241

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 -- FIANL (F1)2004 SUMMER PEAK MODEL

F204SUPK.SAV /SUMMER PEAK / SI

Bid 2

7/23/2002

Overloaded Facility			Contingency								Overloads			
From Name		To	Name	Circuit	Base kV	Area	Zone	Ratings Norm	Ratings Emer		MVA	Norm (%)	Emer (%)
62667 ST BONI7		62925	DICKNSN7	1	115	600-618	622-619	71	71	NS	114	161	161
	30 '009 5'				345	600-618	601-618				171	241	241
	845 MAPP-17				345	600-618	601-618				141	198	198
	470 '705 2'				115-345	600	601				128	180	180
	53 '022 3'					600	601				127	178	179
	48 '022 1'					600	601				126	177	177
	38 '009 8'					600-618	601-618				126	177	177
	498 '720 1'				115	600-618	601-619				124	175	175
	483 '715 1'				115-69	600-618					124	175	175
	23 '009 2'					600	601				124	174	174
	28 '009 4'					600-618	601-618				124	174	174
	35 '009 7'					600	601				123	174	174
	840 MAPP-15A			1	345	600	601				122	172	172
	475 '705 4'				345-115	600	601				121	171	171
	485 '715 2'				69-115	600-618					120	170	170
	488 '715 3'				69-115	600	622-601				120	169	169
	58 '022 5'					600	601				120	169	169
	473 '705 3'				115-345	600	601				119	168	168
	70 '022 10'					600	601				118	166	166
	843 MAPP-16			1	345	600	601				118	166	166
	55 '022 4'					600	601				117	165	165
	493 '715 5'				115-69	600-618					117	164	164
	468 '705 1'				345-115	600	601				117	164	164
	113 '050 12'										116	164	164
	525 '755 '				115	600	601-622				116	164	164
	110 '050 11'										116	164	164
	463 '700 1'				345	600	601				116	164	164
	105 '050 14'										116	164	164
	460 '695 '				115	600-618	601-619				116	164	164
	103 '050 10'				345-161	364-600					116	164	164
	68 '022 9'				345-115	600	601				116	164	164
	543 '775 '				115	600-608					116	164	164
	115 '050 13'										116	163	163
	1480 FG6062			1	345	600	601-604				116	163	163
	1235 FG3239				115/345						116	163	163
	1105 FG3016				345/115						116	163	163
	555 '795 '					600-652					116	163	163
	100 '050 9'				345/115						116	163	163
	490 '715 4'				115-69	600	601-622				116	163	163
	838 MAPP-14			1	161-345	600	616				116	163	163

Overloaded Facility			Contingency									Overloads		
From	Name	To	Name	Circuit	Base kV	Area	Zone	Ratings Norm	Ratings Emer		MVA	Norm (%)	Emer (%)
	560	'805 '			115	600	601				116	163	163
	523	'750 '			115-69	608-600					113	159	159
	450	'675 '			345-230	600	601-622				113	159	159
	40	'015 2'			500	600	601				113	159	159
	45	'020 '			500-115	600	601				113	159	159
	935	'SINGLE-028'		1	500	600	601				113	159	159
	430	640 '									113	159	159
	50	'022 2'				600	601				113	159	159
	318	'500'			69-230	618-652	619-654				113	159	159
	530	'760 '			345	600	601				112	158	158
	545	'780 '			115	600	601				112	157	157
	65	'022 8'			345-115	600	601				112	157	157
	93	'050 7'									111	157	157
	85	'050 3'			345-161	364-600					111	157	157
	88	'050 4'									111	157	157
	90	'050 5'									111	157	157
	108	'050 1'			345/69						111	157	157
	95	'050 6'									111	156	156
	83	'050 2'			115/345						111	156	156
											58 / 0		241
60153	MNTCELO7	60166	SALIDA 7	1	115	600	601	140	140	NS	104	74	74
	545	'780 '			115	600	601				218	156	156
	450	'675 '			345-230	600	601-622				157	112	112
											2 / 0		156
34529	GRJCT5Y	34054	GR JCT 5	1	161	331	392-391	50	50	NS	29	57	57
	688	'936 '			115	331	391				76	153	153
											1 / 0		153

Overloaded Facility		Contingency							Ratings		Overloads			
From	Name	To	Name	Circuit	Base kV	Area	Zone		Norm	Emer		MVA	Norm (%)	Emer (%)
60277	WWACNIA7	62667	ST BONI7	1	115	600	601-622		71	71	NS	69	97	97
	30 '009 5'				345	600-618	601-618					106	150	150
	845 MAPP-17				345	600-618	601-618					87	123	123
	470 '705 2'				115-345	600	601					82	115	115
	53 '022 3'					600	601					79	112	112
	48 '022 1'					600	601					79	111	111
	483 '715 1'				115-69	600-618						78	110	110
	38 '009 8'					600-618	601-618					78	110	110
	28 '009 4'					600-618	601-618					77	109	109
	23 '009 2'					600	601					76	106	107
	35 '009 7'					600	601					75	106	106
	475 '705 4'				345-115	600	601					75	105	105
	488 '715 3'				69-115	600	622-601					75	105	105
	58 '022 5'					600	601					74	104	104
	840 MAPP-15A			1	345	600	601					74	104	104
	473 '705 3'				115-345	600	601					72	102	102
	70 '022 10'					600	601					72	102	102
	843 MAPP-16			1	345	600	601					72	101	101
	55 '022 4'					600	601					72	101	101
												12 / 6		150
34073	GR JCT 7	34529	GRJCT5Y	1	115-161	331	391-392		50	50	NS	29	57	57
	688 '936 '				115	331	391					75	149	149
												1 / 0		149
34059	BOONE 7	34073	GR JCT 7	1	115	331	391		50	50	NS	29	57	57
	688 '936 '				115	331	391					74	149	149
												1 / 0		149
60158	STCLTP 7	60166	SALIDA 7	1	115	600	601		139	139	NS	99	71	71
	545 '780 '				115	600	601					207	149	149
	450 '675 '				345-230	600	601-622					151	108	108
												2 / 0		149
60177	CHAMPLN7	60178	CHAMP T7	1	115	600	605-601		140	140	NS	94	67	67
	38 '009 8'					600-618	601-618					207	148	148
	35 '009 7'					600	601					206	147	147
	30 '009 5'				345	600-618	601-618					161	115	115
	840 MAPP-15A			1	345	600	601					156	112	112
	443 '670 1'					600-618	601-619					155	110	111
	28 '009 4'					600-618	601-618					145	104	104
												5 / 1		148
34043	SAVANNA5	34046	YORK 5	1	161	331	393		84	84	NS	60	72	72
	795 ALTW-85				161	331	393-392					119	141	141
	1025 FG12013			1	345	331	393					91	108	108
												2 / 0		141

Overloaded Facility		Contingency								Overloads			
From Name	To	Name	Circuit	Base kV	Area	Zone	Ratings Norm	Ratings Emer		MVA	Norm (%)	Emer (%)
39885 CEDARU	39892	NATIONAL	1	138	368-365	368-379	96	96	NS	76	80	80
1578 FG65006			1	138	365-368	379-368				131	137	137
										1 / 0		137
60853 LK YANK8	60119	LKYNKTN7	2	69-115	600	601	15	15	NS	7	45	45
345 '530 '				69-115	600-652	601-605				20	135	135
										1 / 0		135
34028 LORE 5	34032	8TH ST.5	1	161	331	393	84	84	NS	52	61	61
1018 FG12010			1	161	331	393-392				109	130	130
785 'ALTW-13 '				161	331	393-392				90	107	107
										2 / 0		130
39122 KEG 138	39218	CHA 138	1	138	364	371	240	240	NS	225	94	94
1130 FG3031			1	138	364-367	371-367				305	127	127
1118 FG3022			1	345	367	391-367				287	120	120
1580 FG65009			1	345	367	391-367				287	120	120
										3 / 0		127
60152 MNTCELO4	60151	MNTCELO3	1	230-345	600	601	336	336	NS	241	72	72
450 '675 '				345-230	600	601-622				418	125	125
23 '009 2'					600	601				351	104	104
										1 / 1		125
62132 PRKWOOD8	62090	PRKWOOD7	2	69-115	618	619	112	112	NS	92	82	82
433 '650 '				115-69	600-618	601-619				138	123	123
										1 / 0		123
60194 CARVRCO7	60277	WWACNIA7	1	115	600	601	71	71	NS	54	77	77
30 '009 5'				345	600-618	601-618				87	122	122
										1 / 0		122
34059 BOONE 7	34076	BNE JCT7	1	115	331	391	60	60	NS	54	89	89
678 '932 2'				345/115	635-331	637-391				73	122	122
770 'ALTW-07 '				161-69	331	391-392				62	104	104
625 '911 '				161	331-652	391-654				61	102	102
										1 / 2		122
27106 11KNOB C	27135	11POND C	1	138	211	211	143	143	NS	140	98	98
1283 FG3418			1	765	205	250				171	120	120
1260 FG3404			1	345	356-357	323-357				144	101	101
998 FG110			1	345	356-357	323-357				144	101	101
1255 FG3402			1	345	356-357	323-357				144	101	101
1285 FG3419			1	345	356-357	323-357				144	101	101
1005 FG116			1	345	356-357	323-357				144	101	101
1050 FG124				345	356-357	323-357				144	101	101
1390 FG4017				345	356-357	323-357				144	101	101
1290 FG3424				345	356-357	323-357				144	101	101
1170 FG3135				345	356-357	323-357				144	101	101
1058 FG127				345	356-357	323-357				144	101	101
1278 FG3413				345	356-357	323-357				144	101	101
										1 / 11		120

Overloaded Facility		Contingency							Ratings		Overloads			
From	Name	To	Name	Circuit	Base kV	Area	Zone	Norm	Emer		MVA	Norm (%)	Emer (%)
67541	STVITAL7	67726	DAKOTB17	1	110	667	668-667	26	26	NS	30	116	116
	15 '003 '										31	120	120
	13 '001 '				230						31	119	119
	948 'SINGLE-044'			1	230	600-667	601-668				31	119	119
	18 '007 '					608	657-608				31	119	119
	943 'SINGLE-040'			1	230	608	657				31	119	119
	945 'SINGLE-042'			1	230	608	608-657				31	118	118
	950 'SINGLE-046'				345-24	626	657-661				31	118	118
	935 'SINGLE-028'			1	500	600	601				30	117	117
	63 '022 7'					600	601				30	117	117
	45 '020 '				500-115	600	601				30	117	117
	50 '022 2'					600	601				30	117	117
	40 '015 2'				500	600	601				30	117	117
	205 '220 '					626	627-657				30	117	117
	215 '250 '				230-115	618-626					30	117	117
	380 '570 1'					626	626-657				30	115	115
	818 'FORBES 7T-8'					600-608	601-608				30	114	114
	938 'SINGLE-031'			1	230	626	657				29	113	113
	940 'SINGLE-034'			1	230	626-667	657-668				28	109	109
											18 / 0		120
27135	11POND C	27144	11TIPTOP	1	138	211	211	143	143	NS	139	98	98
	1283 FG3418			1	765	205	250				170	119	119
	998 FG110			1	345	356-357	323-357				144	100	101
	1005 FG116			1	345	356-357	323-357				144	100	101
	1285 FG3419			1	345	356-357	323-357				144	100	101
	1260 FG3404			1	345	356-357	323-357				144	100	101
	1255 FG3402			1	345	356-357	323-357				144	100	101
	1390 FG4017				345	356-357	323-357				143	100	100
	1170 FG3135				345	356-357	323-357				143	100	100
	1050 FG124				345	356-357	323-357				143	100	100
	1278 FG3413				345	356-357	323-357				143	100	100
	1058 FG127				345	356-357	323-357				143	100	100
	1290 FG3424				345	356-357	323-357				143	100	100
											1 / 11		119
34066	M-TOWN 7	34169	WELSBGT7	1	115	331	391	97	97	NS	88	91	91
	1028 FG12015			1	345	635	637				115	119	119
	683 '933 '				345-161	635	637				115	119	119
											2 / 0		119

Overloaded Facility		Contingency								Overloads			
From Name	To	Name	Circuit	Base kV	Area	Zone	Ratings Norm	Ratings Emer		MVA	Norm (%)	Emer (%)
61676 HIBBARD7	61680	WNTR ST7	1	115	608	608	144	144	NS	120	84	84
155 132L				115	608	608				171	118	119
63 '022 7'					600	601				166	115	115
50 '022 2'					600	601				166	115	115
40 '015 2'				500	600	601				162	112	112
935 'SINGLE-028'			1	500	600	601				162	112	112
45 '020 '				500-115	600	601				162	112	112
										6 / 0		119
62132 PRKWOOD8	62090	PRKWOOD7	1	69-115	618	619	84	84	NS	81	97	97
503 '725 '				69-230	618	619				98	117	117
440 '665 '				230-69	600-618	601-619				95	113	113
445 '670 2'				345-230	600-618	601-619				94	112	112
450 '675 '				345-230	600	601-622				90	108	108
538 '765 '				230-345	600-618	601-619				89	106	106
30 '009 5'				345	600-618	601-618				85	102	102
435 '655 '				115-69	600-618	601-619				85	101	101
818 'FORBES 7T-8'					600-608	601-608				85	101	101
840 MAPP-15A			1	345	600	601				85	101	101
453 '680 '					618-600					84	100	100
438 '660 '				230-69	618	619				84	100	100
443 '670 1'					600-618	601-619				84	100	100
										5 / 7		117
60244 SCOTTCO7	60890	SCOTTCO8	1	115-69	600	601	70	70	NS	44	63	63
485 '715 2'				69-115	600-618					81	115	116
493 '715 5'				115-69	600-618					71	101	102
										1 / 1		116
62672 GLNDALE8	62666	GLNDALE7	2	69-115	600	622	47	47	NS	30	63	63
485 '715 2'				69-115	600-618					53	112	112
490 '715 4'				115-69	600	601-622				52	111	111
										2 / 0		112
60749 DGLAS C8	60144	DGLASCO7	1	69-115	600	601	47	47	NS	42	89	89
545 '780 '				115	600	601				51	109	109
543 '775 '				115	600-608					50	107	107
430 640 '										49	104	104
135 '110 2'				230	652	654				49	103	103
318 '500'				69-230	618-652	619-654				48	102	102
935 'SINGLE-028'			1	500	600	601				47	101	101
45 '020 '				500-115	600	601				47	101	101
40 '015 2'				500	600	601				47	101	101
63 '022 7'					600	601				47	101	101
50 '022 2'					600	601				47	101	101
										2 / 8		109

Overloaded Facility		Contingency								Overloads			
From Name	To	Name	Circuit	Base kV	Area	Zone	Ratings Norm	Ratings Emer		MVA	Norm (%)	Emer (%)
53139 FLINTCR5	53194	ELMSPRR5	1	161	520	520	305	335	NS	256	84	76
1468 FG5074			1	161	520	520				364	119	109
										1 / 0		109
63030 DICKNSN3	62925	DICKNSN7	1	345-115	618	618-619	448	448	NS	329	74	74
30 '009 5'				345	600-618	601-618				487	109	109
										1 / 0		109
31340 NIOTA	34181	BRLGTN 5	1	161	356-331	322-391	224	224	NS	88	39	39
793 ALTW-84				161	331	391				242	108	108
780 'ALTW-11 '				161	331	391				242	108	108
										2 / 0		108
60305 EAU CLA5	60317	WHEATON5	1	161	600	604	272	272	NS	221	81	81
1480 FG6062			1	345	600	601-604				294	108	108
										1 / 0		108
61612 RIVERTN4	61625	BLCKBRY4	1	230	608	608	327	327	NS	193	59	59
45 '020 '				500-115	600	601				351	107	107
935 'SINGLE-028'			1	500	600	601				351	107	107
40 '015 2'				500	600	601				351	107	107
50 '022 2'					600	601				349	107	107
63 '022 7'					600	601				349	107	107
										5 / 0		107
99798 5BATEVL	99808	5CUSHMN	1	161	151	159	148	148	NS	143	96	96
1073 FG1319			1	500	524-151	524-159				159	107	107
1423 FG5008			1	345	520	520				151	102	102
1210 FG3157				345/138	356-130	314-130				151	102	102
1443 FG5042			1	345	520	520				151	102	102
660 '927 '				345	635	637				151	102	102
1208 FG3153			1	345	356-130	314-130				151	102	102
1193 FG3144			1	345	356-130	314-130				151	102	102
1078 FG133			1	345	356-130	314-130				151	102	102
1063 FG129			1	345	356-130	314-130				151	102	102
950 'SINGLE-046'				345-24	626	657-661				149	101	101
										1 / 9		107
62003 JOHNJCT7	63216	ORTONVL7	1	115	626	621-626	97	97	NS	63	65	65
135 '110 2'				230	652	654				103	107	107
										1 / 0		107
31051 MASON 13	31053	MASON 2	2	345-138	356	317	560	560	NS	406	72	72
1155 FG3129			1	345-138	356	317				595	106	106
										1 / 0		106
65409 S1209 5	65383	S1209T1T	1	161	645	645	124	124	NS	92	74	74
285 '451 '				161	645	645				130	105	105
										1 / 0		105
96120 5THMHIL	96126	5MOBTAP	1	161	130	130-133	372	372	NS	256	69	69
1398 FG4020			1	345	130	130				391	105	105
										1 / 0		105

Overloaded Facility		Contingency								Overloads			
From	Name	To	Name	Circuit	Base kV	Area	Zone	Ratings Norm	Ratings Emer		MVA	Norm (%)	Emer (%)
63214	BIGSTON7	63195	BIGSTONY	1	115-230	626	628	233	233	NS	163	70	70
	135 '110 2'				230	652	654				243	104	104
											0 / 1		104
63314	BIGSTON4	63195	BIGSTONY	1	230	626	628	233	233	NS	163	70	70
	135 '110 2'				230	652	654				243	104	104
											0 / 1		104
31221	MOBERLY	31409	OVERTON	1	161	356	314	142	142	NS	75	53	53
	1398 FG4020			1	345	130	130				148	104	104
											0 / 1		104
60203	COON CK7	60253	TWIN LK7	1	115	600	601	371	371	NS	213	57	57
	48 '022 1'					600	601				386	104	104
											0 / 1		104
60153	MNTCELO7	60151	MNTCELO3	1	115-345	600	601	336	336	NS	204	61	61
	23 '009 2'					600	601				346	103	103
											0 / 1		103
96049	7THOMHL	96120	5THMHIL	1	345-161	130	130	625	625	NS	280	45	45
	1398 FG4020			1	345	130	130				643	103	103
											0 / 1		103
30422	CONWAY 3	31391	ORGD 1	1	138	356	318	205	205	NS	147	72	72
	1060 FG128			1	345-138	356	311				209	102	102
											0 / 1		102
61721	ETCO 7	61722	FORBES 7	1	115	608	608	98	98	NS	73	75	75
	50 '022 2'					600	601				99	102	102
	63 '022 7'					600	601				100	102	102
	40 '015 2'				500	600	601				99	101	101
	45 '020 '				500-115	600	601				99	101	101
	935 'SINGLE-028'			1	500	600	601				99	101	101
											0 / 5		102
63219	GRANTCO7	63220	ELBOWLK7	1	115	626	629	96	96	NS	77	80	80
	595 '866 '				230	626-608	621-608				97	101	101
											0 / 1		101
39145	POR 138	39167	COL 138	1	138	364	371	286	286	NS	162	57	57
	1583 FG65010			2	138	364	371				290	101	101
											0 / 1		101
39145	POR 138	39167	COL 138	2	138	364	371	286	286	NS	162	57	57
	1585 FG65011			1	138	364	371				290	101	101
											0 / 1		101
50024	CARROLL4	50023	CARROLL6	1	138-230	502	502	336	336	NS	176	52	52
	1438 FG5029			1	345	502-520	502-520				340	101	101
											0 / 1		101
65355	S3455 3	65337	S3455T1T	1	345	645	645	560	560	NS	476	85	85
	278 '440 '				161	645	645				566	101	101
											0 / 1		101

Overloaded Facility		Contingency							Ratings		Overloads			
From	Name	To	Name	Circuit	Base kV	Area	Zone	Norm	Emer		MVA	Norm (%)	Emer (%)
64909	N.PLATT4	65037	N.PLT8 Y	1	230	640	640	187	187	NS	133	71	71
	233 '310 '				345	640	640				189	101	101
											0 / 1		101
32277	TURKY HL	32307	E BELLVL	1	138	357	357	287	287	NS	205	71	71
	1373 FG4009				138-345	357-356	357-312				289	101	101
											0 / 1		101
39686	WESTONWP	39676	WESTON	1	115-345	366	366	200	220	NS	41	21	19
	88 '050 4'										222	111	101
	83 '050 2'				115/345						222	111	101
	95 '050 6'										221	111	101
	90 '050 5'										221	111	101
											0 / 4		101
61984	AUSTIN 5	63070	PL VLLY5	1	161	680-618	617-618	445	445	NS	167	37	37
	915 MAPP-9				345	600					448	101	101
											0 / 1		101
99817	5ISES 1	99826	5MORFLD	1	161	151	159	223	223	NS	208	93	93
	1073 FG1319			1	500	524-151	524-159				224	101	101
											0 / 1		101
34015	LIME CK5	34016	EMERYN	1	161	331	393	167	167	NS	118	71	71
	1028 FG12015			1	345	635	637				168	100	101
	683 '933 '				345-161	635	637				168	100	101
											0 / 2		101
											148 / 84		240.9

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

Case Summary pi_rfp_bid3

Project Name	2002 SERIES -- FIANL (F1)2004 SUMMER PEAK M
Title1	F204SUPK.SAV /SUMMER PEAK / SI
Title2	Bid 3
Case Date	7/22/2002

Power Flow File M:\PROJ\MISO\286001\PFLOW\ConvertedCases\pi_rfp_bid3.cft

Power Flow Controls

Area Control	☐	***SmoothStep***	☑
Remote Control	☑	***XfrmVcon***	☐
GenVar Control	☑	***XfrmFcon***	☐
Solve Method	DSOLVE		

Case Settings

Overload	☑	***VlimMin***	0.9	***RateFactor***	1
VLimit	☑	***VlimMax***	1.05	***AmpFactor***	1
VChange	☑	***VlimChange***	0.05	***RatingNumber***	2
Monitored Set	monitored	10835 Buses			

Contingency

Contingencies loaded from file M:\PROJ\MISO\286001\PFLOW\Con_MonFiles\PI_RFP.con 1

660 contingencies

2002 SERIES -- FIANL (F1)2004 SUMMER PEAK MODEL

F204SUPK.SAV /SUMMER PEAK / SI

Bid 3

7/22/2002

Overloaded Facility								Normal System				Overloads	
From	Name	To	Name	Circuit	Base kV	Area	Zone	Ratings Norm	Ratings Emer	MVA	Norm (%)	Count A / B	Max (%)
62667	ST BONI7	62925	DICKNSN7	1	115	600-618	622-619	71	71	114.6	161	52 / 0	247
34028	LORE 5	34032	8TH ST.5	1	161	331	393	84	84	90.5	108	131 / 4	204
34043	SAVANNA5	34046	YORK 5	1	161	331	393	84	84	81.2	97	26 / 28	184
60853	LK YANK8	60119	LKYNKTN7	2	69-115	600	601	15	15	7.0	46	1 / 0	154
60277	WWACNIA7	62667	ST BONI7	1	115	600	601-622	71	71	68.9	97	11 / 7	153
34529	GRJCT5Y	34054	GR JCT 5	1	161	331	392-391	50	50	27.9	56	1 / 0	153
60177	CHAMPLN7	60178	CHAMP T7	1	115	600	605-601	140	140	89.6	64	5 / 0	150
34073	GR JCT 7	34529	GRJCT5Y	1	115-161	331	391-392	50	50	27.9	56	1 / 0	149
34059	BOONE 7	34073	GR JCT 7	1	115	331	391	50	50	27.9	56	1 / 0	149
60153	MNTCELO7	60166	SALIDA 7	1	115	600	601	140	140	95.8	68	1 / 1	147
60158	STCLTP 7	60166	SALIDA 7	1	115	600	601	139	139	91.0	65	1 / 1	141
39885	CEDARU	39892	NATIONAL	1	138	368-365	368-379	96	96	76.2	79	1 / 0	137
39122	KEG 138	39218	CHA 138	1	138	364	371	240	240	236.3	98	3 / 13	134
36362	NELSO; B	37632	LEECO;BP	1	345	363	335	1000	1000	939.7	94	16 / 10	133
34066	M-TOWN 7	34169	WELSBGT7	1	115	331	391	97	97	97.2	100	19 / 36	129
60194	CARVRCO7	60277	WWACNIA7	1	115	600	601	71	71	54.2	76	1 / 0	125
27106	11KNOB C	27135	11POND C	1	138	211	211	143	143	145.4	102	6 / 39	124
27135	11POND C	27144	11TIPTOP	1	138	211	211	143	143	144.9	101	1 / 35	124
62132	PRKWOOD8	62090	PRKWOOD7	2	69-115	618	619	112	112	91.2	81	1 / 0	123
34059	BOONE 7	34076	BNE JCT7	1	115	331	391	60	60	53.8	90	1 / 2	122
67541	STVITAL7	67726	DAKOTB17	1	110	667	668-667	26	26	30.1	116	17 / 0	119
60152	MNTCELO4	60151	MNTCELO3	1	230-345	600	601	336	336	232.4	69	1 / 1	119
62003	JOHNJCT7	63216	ORTONVL7	1	115	626	621-626	97	97	67.9	70	2 / 0	118
34185	POWESHK5	34191	REASNOR5	1	161	331	391	167	167	105.6	63	1 / 0	117
62132	PRKWOOD8	62090	PRKWOOD7	1	69-115	618	619	84	84	81.0	96	5 / 6	116
34087	DYSART 5	64269	WASHBRN5	1	161	331-635	391-637	260	260	182.3	70	5 / 0	115
63214	BIGSTON7	63195	BIGSTONY	1	115-230	626	628	233	233	169.8	73	1 / 0	112
63314	BIGSTON4	63195	BIGSTONY	1	230	626	628	233	233	169.8	73	1 / 0	112
34030	SALEM 5	34508	JULIAN 5	1	161	331	393-392	202	202	126.8	63	2 / 0	112
61676	HIBBARD7	61680	WNTR ST7	1	115	608	608	144	144	113.1	79	6 / 0	112
62672	GLNDALE8	62666	GLNDALE7	2	69-115	600	622	47	47	29.7	63	2 / 0	112
39145	POR 138	39167	COL 138	1	138	364	371	286	286	179.1	63	1 / 0	112
39145	POR 138	39167	COL 138	2	138	364	371	286	286	179.1	63	1 / 0	112
31340	NIOTA	34181	BRLGTN 5	1	161	356-331	322-391	224	224	84.7	38	2 / 0	111
34009	WINBAGO5	61932	RUTLAND5	1	161	331	393-615	84	84	77.5	92	9 / 9	111
60244	SCOTTCO7	60890	SCOTTCO8	1	115-69	600	601	70	70	42.3	60	1 / 0	110
60749	DGLAS C8	60144	DGLASCO7	1	69-115	600	601	47	47	42.3	90	5 / 5	109
99798	5BATEVL	99808	5CUSHMN	1	161	151	159	148	148	144.9	98	1 / 16	109
63030	DICKNSN3	62925	DICKNSN7	1	345-115	618	618-619	448	448	319.8	71	1 / 0	109
53139	FLINTCR5	53194	ELMSPRR5	1	161	520	520	305	335	255.2	84	1 / 0	109
34027	CNTRGRV5	34508	JULIAN 5	1	161	331	393-392	202	202	121.9	60	2 / 0	108
36532	BELVI; B	36606	B465 ;BT	1	138	363	345-333	290	330	250.8	86	2 / 0	108
61612	RIVERTN4	61625	BLCKBRY4	1	230	608	608	327	327	182.4	56	5 / 0	107
63219	GRANTCO7	63220	ELBOWLK7	1	115	626	629	96	96	80.6	84	1 / 2	107
60302	COULEE 5	69523	GENOA 5	1	161	600-680	604-681	240	240	172.4	72	1 / 0	106
38342	COC 69	39239	COC 138	1	69-138	364	371	33	33	16.6	50	2 / 0	106
31051	MASON 13	31053	MASON 2	2	345-138	356	317	560	560	403.9	72	1 / 0	106
65409	S1209 5	65383	S1209T1T	1	161	645	645	124	124	92.0	74	1 / 0	105
60203	COON CK7	60253	TWIN LK7	1	115	600	601	371	371	214.9	58	0 / 1	105
36457	ALPIN;RT	36599	CHERR; R	1	138	363	345-333	351	445	349.9	100	0 / 2	104
63213	MARIETT7	63214	BIGSTON7	1	115	626	626-628	96	96	54.6	57	0 / 1	104

Overloaded Facility								Normal System				Overloads	
From	Name	To	Name	Circuit	Base kV	Area	Zone	Ratings Norm	Ratings Emer	MVA	Norm (%)	Count A / B	Max (%)
64403	E MOLIN3	64680	SB39MID5	1	345-161	635	638-637	500	500	350.8	70	0 / 5	104
96120	5THMHIL	96126	5MOBTAP	1	161	130	130-133	372	372	256.2	69	0 / 1	104
63051	HENNING4	63052	INMAN 4	1	230	626	621	143	143	114.7	80	0 / 1	103
60153	MNTCELO7	60151	MNTCELO3	1	115-345	600	601	336	336	200.2	60	0 / 1	103
96049	7THOMHL	96120	5THMHIL	1	345-161	130	130	625	625	295.4	47	0 / 1	103
61721	ETCO 7	61722	FORBES 7	1	115	608	608	98	98	72.6	74	0 / 5	103
36953	MAREN;RT	37119	P VAL; R	1	138	363	345	210	260	143.5	68	0 / 2	102
30422	CONWAY 3	31391	ORGD 1	1	138	356	318	205	205	147.0	72	0 / 1	102
34043	SAVANNA5	69505	GALENA 5	1	161	331-680	393-681	126	126	54.2	43	0 / 1	102
65355	S3455 3	65337	S3455T1T	1	345	645	645	560	560	482.3	86	0 / 1	102
99817	5ISES 1	99826	5MORFLD	1	161	151	159	223	223	210.7	94	0 / 1	102
64418	E MOLINE	64680	SB39MID5	1	161	635	638-637	500	500	346.0	69	0 / 1	102
31221	MOBERLY	31409	OVERTON	1	161	356	314	142	142	74.5	52	0 / 1	101
50024	CARROLL4	50023	CARROLL6	1	138-230	502	502	336	336	176.3	52	0 / 1	101
32277	TURKY HL	32307	E BELLVL	1	138	357	357	287	287	205.4	72	0 / 1	101
57968	STILWEL7	57981	LACYGNE7	1	345	541	541	1099	1202	795.5	72	0 / 1	101
61984	AUSTIN 5	63070	PL VLLY5	1	161	680-618	617-618	445	445	136.4	31	0 / 1	101
39686	WESTONWP	39676	WESTON	1	115-345	366	366	200	220	49.8	25	0 / 4	101
												360 / 249	247

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 -- FIANL (F1)2004 SUMMER PEAK MODEL

F204SUPK.SAV /SUMMER PEAK / SI

Bid 3

7/22/2002

Overloaded Facility			Contingency								Overloads			
From	Name	To	Name	Circuit	Base kV	Area	Zone	Ratings Norm	Ratings Emer		MVA	Norm (%)	Emer (%)
62667	ST BONI7	62925	DICKNSN7	1	115	600-618	622-619	71	71	NS	115	161	161
	30 '009 5'				345	600-618	601-618				176	247	247
	845 MAPP-17				345	600-618	601-618				143	201	201
	470 '705 2'				115-345	600	601				131	184	184
	53 '022 3'					600	601				126	178	178
	38 '009 8'					600-618	601-618				125	177	177
	48 '022 1'					600	601				125	177	177
	498 '720 1'				115	600-618	601-619				125	176	176
	23 '009 2'					600	601				125	175	176
	35 '009 7'					600	601				124	175	175
	483 '715 1'				115-69	600-618					124	175	175
	28 '009 4'					600-618	601-618				123	173	173
	840 MAPP-15A			1	345	600	601				123	173	173
	475 '705 4'				345-115	600	601				121	171	171
	488 '715 3'				115-69	600	601-622				120	169	169
	58 '022 5'					600	601				120	169	169
	473 '705 3'				115-345	600	601				119	168	168
	485 '715 2'				115-69	600-618					119	167	167
	468 '705 1'				345-115	600	601				118	167	167
	70 '022 10'					600	601				118	166	167
	843 MAPP-16			1	345	600	601				118	166	166
	493 '715 5'				115-69	600-618					117	165	165
	55 '022 4'					600	601				117	165	165
	525 '755 '				115	600	601-622				116	164	164
	1035 FG12019			1	345	331-635	393-636				116	164	164
	500 '720 2'				115	600-618	601-619				116	164	164
	68 '022 9'				345-115	600	601				116	164	164
	543 '775 '				115	600-608					116	164	164
	460 '695 '				115	618-600	619-601				116	164	164
	435 '655 '				115-69	600-618	601-619				116	164	164
	555 '795 '					600-652					116	164	164
	560 '805 '				115	600	601				116	163	163
	563 '810 '				230-115	600-618	601-624				116	163	163
	63 '022 7'					600	601				113	160	160
	523 '750 '				115-69	608-600					113	160	160
	205 '220 '					626	627-657				113	160	160
	450 '675 '				345-230	600	601-622				113	159	159
	40 '015 2'				500	600	601				113	159	159
	45 '020 '				500-115	600	601				113	159	159
	935 'SINGLE-028'			1	500	600	601				113	159	159

Overloaded Facility	Contingency								Overloads		
From Name	To	Name	Circuit	Base kV	Area	Zone	Ratings Norm	Emer	MVA	Norm (%)	Emer (%)
430 640 '									112	158	158
318 '500'				69-230	618-652	619-654			112	158	158
50 '022 2'					600	601			112	158	158
545 '780 '				115	600	601			112	158	158
905 MAPP-5			1	345	600	601			111	157	157
65 '022 8'				345-115	600	601			111	156	156
108 '050 1'				69/345					110	155	155
85 '050 3'				345-161	364-600				110	155	155
93 '050 7'									110	155	155
90 '050 5'									110	154	154
88 '050 4'									110	154	154
83 '050 2'				345/115					110	154	154
95 '050 6'									109	154	154
									52 / 0		247

Overloaded Facility		Contingency						Ratings		Overloads			
From	Name	To	Name	Circuit	Base kV	Area	Zone	Norm	Emer		MVA	Norm (%)	Emer (%)
34028	LORE 5	34032	8TH ST.5	1	161	331	393	84	84	NS	91	108	108
	1018	FG12010		1	161	331	393-392				171	204	204
	785	'ALTW-13 '			161	331	393-392				152	181	181
	1013	FG12006		1	345	331	393-391				127	151	151
	1030	FG12016		1	345	331	393-391				127	151	151
	1015	FG12009		1	345	331	393-391				127	151	151
	1355	FG3728		1	345	331	393-391				127	151	151
	1348	FG3724		1	345	331	393-391				127	151	151
	1093	FG3009		1	345	363-364	335-371				116	138	138
	1108	FG3017		1	345	363-364	335-371				116	138	138
	1328	FG3707		1	345	363-364	335-371				116	138	138
	1250	FG3260		1	345	363-364	335-371				116	138	138
	1295	FG3519		1	345	363-364	335-371				116	138	138
	1240	FG3241		1	345	363-364	335-371				116	138	138
	1310	FG3527		1	345	363-364	335-371				116	138	138
	1245	FG3243		1	345	363-364	335-371				116	138	138
	1615	FG65029		1	345	363-364	335-371				116	138	138
	1103	FG3015		1	345	363-364	335-371				116	138	138
	1298	FG3520		1	345	363-364	335-371				116	138	138
	1590	FG65014		1	345	363-364	335-371				116	138	138
	1300	FG3522		1	345	363-364	335-371				116	138	138
	1658	FG9905		1	345	363-364	335-371				116	138	138
	623	'910 '			345-161	635-331	638-391				114	136	136
	1023	FG12012		1	345	331-635	391-638				114	136	136
	90	'050 5'									103	122	122
	95	'050 6'									102	122	122
	88	'050 4'									102	121	121
	660	'927 '			345	635	637				101	120	120
	83	'050 2'			345/115						101	120	120
	1358	FG4003		1	345	363	335				100	119	119
	1540	FG63065		1	345	363	335				100	119	119
	1650	FG95		1	345	363	335				100	119	119
	1500	FG63019		1	345	363	335				100	119	119
	1335	FG3716		1	345	363-635	335-638				98	117	117
	1343	FG3721		1	345	363-635	335-638				98	117	117
	1248	FG3258		1	345	363-635	335-638				98	117	117
	1340	FG3719		1	345	363-635	335-638				98	117	117
	1123	FG3025		1	345	364	371				98	116	116
	1575	FG65004		1	345	364	371				98	116	116
	1095	FG3012		1	345	364	371				98	116	116
	613	'902 '			161-345	635-363	638-335				97	116	116
	950	'SINGLE-046'			345-24	626	657-661				97	116	116
	708	'947 '			345	635	638				97	115	115
	63	'022 7'				600	601				97	115	115

Overloaded Facility		Contingency							Overloads		
From Name	To	Name	Circuit	Base kV	Area	Zone	Ratings Norm	Ratings Emer	MVA	Norm (%)	Emer (%)
	50 '022 2'				600	601			97	115	115
	45 '020 '			500-115	600	601			97	115	115
	85 '050 3'			345-161	364-600				97	115	115
	40 '015 2'			500	600	601			97	115	115
	935 'SINGLE-028'		1	500	600	601			97	115	115
	93 '050 7'								97	115	115
	108 '050 1'			69/345					96	115	115
	683 '933 '			345-161	635	637			96	115	115
	1028 FG12015		1	345	635	637			96	115	115
	1033 FG12018		1	345	635	637			96	114	114
	1325 FG3704		1	345	635	637			96	114	114
	1100 FG3014		1	345-138	364	371			96	114	114
	1113 FG3020		1	345-138	364	371			96	114	114
	828 MAPP-1		1	161	680	681			95	113	113
	1635 FG65043		1	345	363	335			95	113	113
	1233 FG3238		1	345	363	335			95	113	113
	695 '939 '			161	331	391			94	112	112
	1035 FG12019		1	345	331-635	393-636			94	112	112
	763 'ALTW-04 '			161-34.5	331	391			94	112	112
	580 '840 '			161	600	604			94	112	112
	1333 FG3715		1	345	635	638			94	112	112
	135 '110 2'			230	652	654			94	112	112
	965 3720		1	345	635	638			94	112	112
	1338 FG3718		1	345	635	638			94	112	112
	900 MAPP-39		1	230	652	654			94	112	112
	618 '906 '			345	356-635	313-638			94	112	112
	1643 FG65067		1	345	365	376			93	111	111
	1128 FG3030		1	345	365-366	376-366			93	111	111
	1305 FG3524			345	365-366				93	111	111
	1630 FG65040		1	345	365-366	376-366			93	111	111
	700 '942 '			115	331	391			93	111	111
	1640 FG65046		1	345	365-366	376-366			93	111	111
	133 '110 1'			230	652	654			93	111	111
	205 '220 '				626	627-657			93	110	110
	110 '050 11'								92	110	110
	680 '932 3'			161/345	331-635	391-637			92	110	110
	678 '932 2'			115/345	331-635	391-637			92	110	110
	1118 FG3022		1	345	367	391-367			92	110	110
	1580 FG65009		1	345	367	391-367			92	110	110
	1040 FG12025		1	345	635	637-638			92	110	110
	1345 FG3723		1	345	635	637-638			92	110	110
	640 '921 3'			161	635	638			92	110	110
	675 '932 1'			345	635	637			92	110	110
	605 '880 '			161	680-331	681-393			92	110	110

Overloaded Facility		Contingency							Overloads		
From	Name	To	Name	Circuit	Base kV	Area	Zone	Ratings Norm Emer	MVA	Norm (%)	Emer (%)
	30	'009 5'			345	600-618	601-618		92	110	110
	775	'ALTW-08 2'			161-34.5	331	391		92	109	110
	905	MAPP-5		1	345	600	601		92	109	109
	23	'009 2'				600	601		92	109	109
	705	'946 '			345-161	635	638-637		92	109	109
	715	'950 '			161	635	638		92	109	109
	1130	FG3031		1	138	364-367	371-367		92	109	109
	703	'943 '			161	331-635	391-637		92	109	109
	188	'170 '			230	652	654		92	109	109
	978	FG10285		1	345	364-367	371-391		92	109	109
	1383	FG4014			345	356	314		92	109	109
	100	'050 9'			345/115				91	109	109
	1105	FG3016			115/345				91	109	109
	1235	FG3239			115/345				91	109	109
	758	'ALTW-02 '			115-34.5	331	391		91	109	109
	570	'820 '			115	600	601		90	107	107
	380	'570 1'				626	626-657		89	107	107
	615	'904 '			345-161	635	638-637		89	106	106
	1070	FG131		1	345	356	314		89	106	106
	1135	FG3120		1	345	356	314		89	106	106
	620	'908 1'			345	356-635			89	106	106
	608	'885 '			161	680	681		89	106	106
	740	'962 '			161	331-680			89	106	106
	1538	FG63064		1	345	363	335		89	106	106
	1530	FG63056		1	345	363	335		89	106	106
	545	'780 '			115	600	601		89	106	106
	1553	FG63077		1	345	363	335		89	106	106
	1550	FG63074		1	345	363	335		89	106	106
	1218	FG3221		1	345	363	335		89	106	106
	485	'715 2'			115-69	600-618			89	106	106
	483	'715 1'			115-69	600-618			89	106	106
	460	'695 '			115	618-600	619-601		89	106	106
	493	'715 5'			115-69	600-618			89	106	106
	568	'815 '			115	600	601-622		89	106	106
	105	'050 14'							89	106	106
	760	'ALTW-03 '			161-34.5	331	391-393		89	106	106
	348	'535 1'			115	626	602-657		89	105	106
	603	'875 2'			161	600-680	604-681		89	105	106
	1628	FG65035		1	345	367-364	391-371		88	105	105
	1313	FG3533		1	345	367-364	391-371		88	105	105
	915	MAPP-9			345	600			88	105	105
	543	'775 '			115	600-608			88	105	105
	1478	FG6029			345	600	616-601		88	105	105
	1110	FG3018			345	600	601-616		88	105	105

Overloaded Facility			Contingency							Overloads		
From	Name	To	Name	Circuit	Base kV	Area	Zone	Ratings Norm	Ratings Emer	MVA	Norm (%)	Emer (%)
	98 '050 8'				69/345					88	105	105
	1230 FG3237			1	345	363-365	335-376			87	103	103
	1243 FG3242			1	345	363-365	335-376			87	103	103
	600 '875 1'				161	600-680	604-681			86	102	102
										131 / 4		204

Overloaded Facility		Contingency						Ratings		Overloads			
From	Name	To	Name	Circuit	Base kV	Area	Zone	Norm	Emer		MVA	Norm (%)	Emer (%)
34043	SAVANNA5	34046	YORK 5	1	161	331	393	84	84	NS	81	97	97
	795	ALTW-85			161	331	393-392				155	184	184
	1025	FG12013		1	345	331	393				122	146	146
	1008	FG12003		1	161	331	393				105	125	125
	788	'ALTW-14 '			161	331	393				101	120	120
	1300	FG3522		1	345	363-364	335-371				96	114	114
	1298	FG3520		1	345	363-364	335-371				96	114	114
	1093	FG3009		1	345	363-364	335-371				96	114	114
	1240	FG3241		1	345	363-364	335-371				96	114	114
	1245	FG3243		1	345	363-364	335-371				96	114	114
	1328	FG3707		1	345	363-364	335-371				96	114	114
	1615	FG65029		1	345	363-364	335-371				96	114	114
	1590	FG65014		1	345	363-364	335-371				96	114	114
	1658	FG9905		1	345	363-364	335-371				96	114	114
	1310	FG3527		1	345	363-364	335-371				96	114	114
	1295	FG3519		1	345	363-364	335-371				96	114	114
	1250	FG3260		1	345	363-364	335-371				96	114	114
	1103	FG3015		1	345	363-364	335-371				96	114	114
	1108	FG3017		1	345	363-364	335-371				96	114	114
	1355	FG3728		1	345	331	393-391				95	114	114
	1015	FG12009		1	345	331	393-391				95	114	114
	1030	FG12016		1	345	331	393-391				95	114	114
	1348	FG3724		1	345	331	393-391				95	114	114
	1013	FG12006		1	345	331	393-391				95	114	114
	1023	FG12012		1	345	331-635	391-638				94	111	112
	623	'910 '			345-161	635-331	638-391				94	111	112
	773	'ALTW-08 1'				331	391-392				91	109	109
	90	'050 5'									88	104	104
	775	'ALTW-08 2'			161-34.5	331	391				87	104	104
	95	'050 6'									87	104	104
	88	'050 4'									87	104	104
	83	'050 2'			345/115						87	103	103
	660	'927 '			345	635	637				87	103	103
	760	'ALTW-03 '			161-34.5	331	391-393				87	103	103
	1500	FG63019		1	345	363	335				86	103	103
	1650	FG95		1	345	363	335				86	103	103
	1358	FG4003		1	345	363	335				86	103	103
	1540	FG63065		1	345	363	335				86	103	103
	1123	FG3025		1	345	364	371				85	101	102
	1575	FG65004		1	345	364	371				85	101	102
	1095	FG3012		1	345	364	371				85	101	102
	708	'947 '			345	635	638				85	101	101
	950	'SINGLE-046'			345-24	626	657-661				85	101	101
	85	'050 3'			345-161	364-600					84	101	101

Overloaded Facility		Contingency							Ratings		Overloads		
From	Name	To	Name	Circuit	Base kV	Area	Zone		Norm	Emer		Norm	Emer
											MVA	(%)	(%)
	93	'050 7'									84	101	101
	108	'050 1'			69/345						84	100	101
	63	'022 7'				600	601				84	100	100
	1113	FG3020		1	345-138	364	371				84	100	100
	45	'020 '			500-115	600	601				84	100	100
	935	'SINGLE-028'		1	500	600	601				84	100	100
	50	'022 2'				600	601				84	100	100
	1100	FG3014		1	345-138	364	371				84	100	100
	40	'015 2'			500	600	601				84	100	100
	683	'933 '			345-161	635	637				84	100	100
	1028	FG12015		1	345	635	637				84	100	100
											26 / 28		184
60853	LK YANK8	60119	LKYNKTN7	2	69-115	600	601	15	15	NS	7	46	46
	345	'530 '			69-115	600-652	601-605				23	154	154
											1 / 0		154
60277	WWACNIA7	62667	ST BONI7	1	115	600	601-622	71	71	NS	69	97	97
	30	'009 5'			345	600-618	601-618				109	153	153
	845	MAPP-17			345	600-618	601-618				88	124	124
	470	'705 2'			115-345	600	601				84	118	118
	53	'022 3'				600	601				79	111	111
	48	'022 1'				600	601				78	110	110
	483	'715 1'			115-69	600-618					78	109	109
	38	'009 8'				600-618	601-618				77	109	109
	28	'009 4'				600-618	601-618				77	108	108
	23	'009 2'				600	601				76	107	107
	35	'009 7'				600	601				75	106	106
	475	'705 4'			345-115	600	601				75	105	105
	488	'715 3'			115-69	600	601-622				74	104	104
	840	MAPP-15A		1	345	600	601				74	104	104
	58	'022 5'				600	601				74	104	104
	468	'705 1'			345-115	600	601				72	102	102
	70	'022 10'				600	601				72	101	102
	473	'705 3'			115-345	600	601				72	101	102
	843	MAPP-16		1	345	600	601				72	101	101
											11 / 7		153
34529	GRJCT5Y	34054	GR JCT 5	1	161	331	392-391	50	50	NS	28	56	56
	688	'936 '			115	331	391				76	153	153
											1 / 0		153

Overloaded Facility		Contingency							Ratings		Overloads			
From	Name	To	Name	Circuit	Base kV	Area	Zone		Norm	Emer		MVA	Norm (%)	Emer (%)
60177	CHAMPLN7	60178	CHAMP T7	1	115	600	605-601		140	140	NS	90	64	64
	38 '009 8'					600-618	601-618					210	150	150
	35 '009 7'					600	601					209	149	150
	30 '009 5'				345	600-618	601-618					164	117	117
	840 MAPP-15A			1	345	600	601					159	114	114
	443 '670 1'					600-618	601-619					150	107	107
												5 / 0		150
34073	GR JCT 7	34529	GRJCT5Y	1	115-161	331	391-392		50	50	NS	28	56	56
	688 '936 '				115	331	391					75	149	149
												1 / 0		149
34059	BOONE 7	34073	GR JCT 7	1	115	331	391		50	50	NS	28	56	56
	688 '936 '				115	331	391					74	149	149
												1 / 0		149
60153	MNTCELO7	60166	SALIDA 7	1	115	600	601		140	140	NS	96	68	68
	545 '780 '				115	600	601					206	147	147
	450 '675 '				345-230	600	601-622					146	105	105
												1 / 1		147
60158	STCLTP 7	60166	SALIDA 7	1	115	600	601		139	139	NS	91	65	65
	545 '780 '				115	600	601					195	141	141
	450 '675 '				345-230	600	601-622					140	101	101
												1 / 1		141
39885	CEDARU	39892	NATIONAL	1	138	368-365	368-379		96	96	NS	76	79	79
	1578 FG65006			1	138	365-368	379-368					131	137	137
												1 / 0		137
39122	KEG 138	39218	CHA 138	1	138	364	371		240	240	NS	236	98	98
	1130 FG3031			1	138	364-367	371-367					321	134	134
	1580 FG65009			1	345	367	391-367					298	124	124
	1118 FG3022			1	345	367	391-367					298	124	124
	978 FG10285			1	345	364-367	371-391					248	103	103
	1635 FG65043			1	345	363	335					244	102	102
	1233 FG3238			1	345	363	335					244	102	102
	1113 FG3020			1	345-138	364	371					243	101	101
	1100 FG3014			1	345-138	364	371					243	101	101
	795 ALTW-85				161	331	393-392					242	101	101
	1350 FG3725			1	345	331-363	393-335					241	100	100
	1013 FG12006			1	345	331	393-391					240	100	100
	1348 FG3724			1	345	331	393-391					240	100	100
	1508 FG63028			1	345	331-363	393-335					241	100	100
	1015 FG12009			1	345	331	393-391					240	100	100
	1355 FG3728			1	345	331	393-391					240	100	100
	1030 FG12016			1	345	331	393-391					240	100	100
												3 / 13		134

Overloaded Facility		Contingency						Ratings		Overloads			
From	Name	To	Name	Circuit	Base kV	Area	Zone	Norm	Emer		MVA	Norm (%)	Emer (%)
36362	NELSO; B	37632	LEECO;BP	1	345	363	335	1000	1000	NS	940	94	94
	1635	FG65043		1	345	363	335				1325	132	133
	1233	FG3238		1	345	363	335				1325	132	133
	1295	FG3519		1	345	363-364	335-371				1197	120	120
	1298	FG3520		1	345	363-364	335-371				1197	120	120
	1245	FG3243		1	345	363-364	335-371				1197	120	120
	1590	FG65014		1	345	363-364	335-371				1197	120	120
	1615	FG65029		1	345	363-364	335-371				1197	120	120
	1658	FG9905		1	345	363-364	335-371				1197	120	120
	1240	FG3241		1	345	363-364	335-371				1197	120	120
	1328	FG3707		1	345	363-364	335-371				1197	120	120
	1093	FG3009		1	345	363-364	335-371				1197	120	120
	1310	FG3527		1	345	363-364	335-371				1197	120	120
	1103	FG3015		1	345	363-364	335-371				1197	120	120
	1108	FG3017		1	345	363-364	335-371				1197	120	120
	1250	FG3260		1	345	363-364	335-371				1197	120	120
	1300	FG3522		1	345	363-364	335-371				1197	120	120
	95	'050	6'								1040	104	104
	90	'050	5'								1040	104	104
	83	'050	2'		345/115						1036	104	104
	88	'050	4'								1035	104	104
	1575	FG65004		1	345	364	371				1014	101	101
	1123	FG3025		1	345	364	371				1014	101	101
	1095	FG3012		1	345	364	371				1014	101	101
	93	'050	7'								1005	100	101
	85	'050	3'		345-161	364-600					1005	100	101
	108	'050	1'		69/345						1005	100	101
											16 / 10		133

Overloaded Facility		Contingency						Ratings		Overloads			
From	Name	To	Name	Circuit	Base kV	Area	Zone	Norm	Emer		MVA	Norm (%)	Emer (%)
34066	M-TOWN 7	34169	WELSBGT7	1	115	331	391	97	97	NS	97	100	100
	1028	FG12015		1	345	635	637				125	129	129
	683	'933 '			345-161	635	637				125	129	129
	1355	FG3728		1	345	331	393-391				112	116	116
	1013	FG12006		1	345	331	393-391				112	116	116
	1348	FG3724		1	345	331	393-391				112	116	116
	1015	FG12009		1	345	331	393-391				112	116	116
	1030	FG12016		1	345	331	393-391				112	116	116
	680	'932 3'			161/345	331-635	391-637				104	107	107
	678	'932 2'			115/345	331-635	391-637				103	106	106
	573	'825 '			345-161	331-600					103	106	106
	675	'932 1'			345	635	637				103	106	106
	95	'050 6'									102	106	106
	90	'050 5'									103	106	106
	88	'050 4'									102	106	106
	83	'050 2'			345/115						102	105	106
	1010	FG12005		1	345	331-600	393-601				102	105	105
	1020	FG12011		1	345	331-600	393-601				102	105	105
	850	MAPP-18OP			161/345						102	105	105
	1330	FG3710		1	345	331-600	393-601				102	105	105
	93	'050 7'									101	104	104
	85	'050 3'			345-161	364-600					101	104	104
	108	'050 1'			69/345						101	104	104
	950	'SINGLE-046'			345-24	626	657-661				100	103	103
	655	'924 '			161	635	637				99	103	103
	795	ALTW-85			161	331	393-392				99	102	102
	935	'SINGLE-028'		1	500	600	601				99	102	102
	50	'022 2'				600	601				99	102	102
	63	'022 7'				600	601				99	102	102
	45	'020 '			500-115	600	601				99	102	102
	40	'015 2'			500	600	601				99	102	102
	1310	FG3527		1	345	363-364	335-371				99	102	102
	1295	FG3519		1	345	363-364	335-371				99	102	102
	1245	FG3243		1	345	363-364	335-371				99	102	102
	1590	FG65014		1	345	363-364	335-371				99	102	102
	1328	FG3707		1	345	363-364	335-371				99	102	102
	1300	FG3522		1	345	363-364	335-371				99	102	102
	1615	FG65029		1	345	363-364	335-371				99	102	102
	1658	FG9905		1	345	363-364	335-371				99	102	102
	1250	FG3260		1	345	363-364	335-371				99	102	102
	1298	FG3520		1	345	363-364	335-371				99	102	102
	1240	FG3241		1	345	363-364	335-371				99	102	102
	1103	FG3015		1	345	363-364	335-371				99	102	102
	1035	FG12019		1	345	331-635	393-636				99	102	102

Overloaded Facility			Contingency									Overloads		
From	Name	To	Name	Circuit	Base kV	Area	Zone	Ratings Norm	Ratings Emer			MVA	Norm (%)	Emer (%)
	1093	FG3009		1	345	363-364	335-371					99	102	102
	1108	FG3017		1	345	363-364	335-371					99	102	102
	660	'927 '			345	635	637					99	102	102
	1325	FG3704		1	345	635	637					98	101	102
	1033	FG12018		1	345	635	637					98	101	102
	135	'110 2'			230	652	654					98	101	101
	1038	FG12023		1	345-161	331	392-391					98	101	101
	900	MAPP-39		1	230	652	654					98	101	101
	30	'009 5'			345	600-618	601-618					98	101	101
	623	'910 '			345-161	635-331	638-391					98	101	101
	1023	FG12012		1	345	331-635	391-638					98	101	101
	580	'840 '			161	600	604					98	101	101
												19 / 36		129
60194	CARVRCO7	60277	WWACNIA7	1	115	600	601	71	71	NS		54	76	76
	30	'009 5'			345	600-618	601-618					89	125	125
												1 / 0		125

Overloaded Facility		Contingency						Ratings		Overloads			
From	Name	To	Name	Circuit	Base kV	Area	Zone	Norm	Emer		MVA	Norm (%)	Emer (%)
27106	11KNOB C	27135	11POND C	1	138	211	211	143	143	NS	145	102	102
	1283	FG3418		1	765	205	250				177	124	124
	1260	FG3404		1	345	356-357	323-357				150	105	105
	998	FG110		1	345	356-357	323-357				150	105	105
	1255	FG3402		1	345	356-357	323-357				150	105	105
	1005	FG116		1	345	356-357	323-357				150	105	105
	1285	FG3419		1	345	356-357	323-357				150	105	105
	1050	FG124			345	356-357	323-357				150	105	105
	1278	FG3413			345	356-357	323-357				150	105	105
	1058	FG127			345	356-357	323-357				150	105	105
	1390	FG4017			345	356-357	323-357				150	105	105
	1290	FG3424			345	356-357	323-357				150	105	105
	1170	FG3135			345	356-357	323-357				150	105	105
	1133	FG3118		1	345	205-356	252-323				148	104	104
	95	'050 6'									147	103	103
	1410	FG45009		1	500	201	201				147	103	103
	90	'050 5'									147	103	103
	83	'050 2'			345/115						147	103	103
	88	'050 4'									147	103	103
	1063	FG129		1	345	356-130	314-130				147	103	103
	1078	FG133		1	345	356-130	314-130				147	103	103
	1193	FG3144		1	345	356-130	314-130				147	103	103
	1208	FG3153		1	345	356-130	314-130				147	103	103
	1210	FG3157			138/345	356-130	314-130				147	103	103
	85	'050 3'			345-161	364-600					147	103	103
	93	'050 7'									147	103	103
	108	'050 1'			69/345						147	103	103
	543	'775 '			115	600-608					147	103	103
	348	'535 1'			115	626	602-657				147	103	103
	1423	FG5008		1	345	520	520				144	101	101
	1443	FG5042		1	345	520	520				144	101	101
	1160	FG3131		1	345	363	335				144	101	101
	1268	FG3408		1	345	363	335				144	101	101
	1135	FG3120		1	345	356	314				144	101	101
	1360	FG4004			345-138	363-357	335-357				144	100	101
	1070	FG131		1	345	356	314				144	101	101
	620	'908 1'			345	356-635					144	101	101
	1403	FG4023			345	363	335				144	100	100
	1405	FG4024			345	363	335				144	100	100
	63	'022 7'				600	601				143	100	100
	50	'022 2'				600	601				143	100	100
	580	'840 '			161	600	604				143	100	100
	1073	FG1319		1	500	524-151	524-159				143	100	100
	45	'020 '			500-115	600	601				143	100	100

Overloaded Facility		Contingency							Overloads		
From	Name	To	Name	Circuit	Base kV	Area	Zone	Ratings Norm Emer		Norm	Emer
									MVA	(%)	(%)
	40	'015 2'			500	600	601		143	100	100
	935	'SINGLE-028'		1	500	600	601		143	100	100
	1653	FG98		1	345-161	356-362	316-362		143	100	100
									6 / 39		124
27135	11POND C	27144	11TIPTOP	1	138	211	211	143 143	NS 145	101	101
	1283	FG3418		1	765	205	250		177	123	124
	1255	FG3402		1	345	356-357	323-357		150	105	105
	998	FG110		1	345	356-357	323-357		150	105	105
	1005	FG116		1	345	356-357	323-357		150	105	105
	1260	FG3404		1	345	356-357	323-357		150	105	105
	1285	FG3419		1	345	356-357	323-357		150	105	105
	1278	FG3413			345	356-357	323-357		149	104	104
	1170	FG3135			345	356-357	323-357		149	104	104
	1390	FG4017			345	356-357	323-357		149	104	104
	1290	FG3424			345	356-357	323-357		149	104	104
	1058	FG127			345	356-357	323-357		149	104	104
	1050	FG124			345	356-357	323-357		149	104	104
	1133	FG3118		1	345	205-356	252-323		148	103	103
	90	'050 5'							147	103	103
	95	'050 6'							147	103	103
	88	'050 4'							147	103	103
	1410	FG45009		1	500	201	201		147	103	103
	83	'050 2'			345/115				147	103	103
	1078	FG133		1	345	356-130	314-130		147	103	103
	1208	FG3153		1	345	356-130	314-130		147	103	103
	1210	FG3157			138/345	356-130	314-130		147	103	103
	1193	FG3144		1	345	356-130	314-130		147	103	103
	1063	FG129		1	345	356-130	314-130		147	103	103
	543	'775 '			115	600-608			146	102	102
	85	'050 3'			345-161	364-600			146	102	102
	108	'050 1'			69/345				146	102	102
	1423	FG5008		1	345	520	520		143	100	100
	1443	FG5042		1	345	520	520		143	100	100
	1070	FG131		1	345	356	314		143	100	100
	1135	FG3120		1	345	356	314		143	100	100
	1268	FG3408		1	345	363	335		143	100	100
	620	'908 1'			345	356-635			143	100	100
	1160	FG3131		1	345	363	335		143	100	100
	1403	FG4023			345	363	335		143	100	100
	1405	FG4024			345	363	335		143	100	100
	1360	FG4004			345-138	363-357	335-357		143	100	100
									1 / 35		124

Overloaded Facility	Contingency							Ratings		Overloads			
From Name	To	Name	Circuit	Base kV	Area	Zone	Norm	Emer		MVA	Norm (%)	Emer (%)
62132 PRKWOOD8	62090	PRKWOOD7	2	69-115	618	619	112	112	NS	91	81	81
433 '650 '				115-69	600-618	601-619				137	123	123
										1 / 0		123
34059 BOONE 7	34076	BNE JCT7	1	115	331	391	60	60	NS	54	90	90
678 '932 2'				115/345	331-635	391-637				73	122	122
770 'ALTW-07 '				161-69	331	392-391				62	104	104
625 '911 '				161	331-652	391-654				61	102	102
										1 / 2		122
67541 STVITAL7	67726	DAKOTB17	1	110	667	668-667	26	26	NS	30	116	116
15 '003 '										31	119	119
13 '001 '				230						31	119	119
948 'SINGLE-044'			1	230	600-667	601-668				31	119	119
18 '007 '					608	657-608				31	119	119
943 'SINGLE-040'			1	230	608	657				31	118	118
945 'SINGLE-042'			1	230	608	608-657				31	118	118
950 'SINGLE-046'				345-24	626	657-661				31	118	118
205 '220 '					626	627-657				30	117	117
40 '015 2'				500	600	601				30	117	117
935 'SINGLE-028'			1	500	600	601				30	117	117
45 '020 '				500-115	600	601				30	117	117
215 '250 '				230-115	618-626					30	117	117
50 '022 2'					600	601				30	117	117
380 '570 1'					626	626-657				30	114	114
818 'FORBES 7T-8'					608-600	608-601				30	114	114
938 'SINGLE-031'			1	230	626	657				29	113	113
940 'SINGLE-034'			1	230	626-667	657-668				28	109	109
										17 / 0		119
60152 MNTCELO4	60151	MNTCELO3	1	230-345	600	601	336	336	NS	232	69	69
450 '675 '				345-230	600	601-622				400	119	119
23 '009 2'					600	601				346	103	103
										1 / 1		119
62003 JOHNJCT7	63216	ORTONVL7	1	115	626	621-626	97	97	NS	68	70	70
135 '110 2'				230	652	654				114	118	118
410 '610 '					626					104	107	107
										2 / 0		118
34185 POWESHK5	34191	REASNOR5	1	161	331	391	167	167	NS	106	63	63
660 '927 '				345	635	637				196	117	117
										1 / 0		117

Overloaded Facility		Contingency									Overloads			
From	Name	To	Name	Circuit	Base kV	Area	Zone	Ratings Norm	Ratings Emer		MVA	Norm (%)	Emer (%)
62132	PRKWOOD8	62090	PRKWOOD7	1	69-115	618	619	84	84	NS	81	96	96
	503 '725 '				69-230	618	619				98	116	116
	440 '665 '				230-69	600-618	601-619				95	113	113
	445 '670 2'				345-230	600-618	601-619				94	112	112
	450 '675 '				345-230	600	601-622				89	106	107
	538 '765 '				345-230	600-618	601-619				88	105	105
	465 '700 2'				345	600	601				86	102	102
	30 '009 5'				345	600-618	601-618				85	102	102
	463 '700 1'				345	600	601				85	101	101
	435 '655 '				115-69	600-618	601-619				85	101	101
	840 MAPP-15A			1	345	600	601				84	100	101
	818 'FORBES 7T-8'					608-600	608-601				84	100	100
											5 / 6		116
34087	DYSART 5	64269	WASHBRN5	1	161	331-635	391-637	260	260	NS	182	70	70
	1348 FG3724			1	345	331	393-391				299	115	115
	1355 FG3728			1	345	331	393-391				299	115	115
	1030 FG12016			1	345	331	393-391				299	115	115
	1015 FG12009			1	345	331	393-391				299	115	115
	1013 FG12006			1	345	331	393-391				299	115	115
											5 / 0		115
63214	BIGSTON7	63195	BIGSTONY	1	115-230	626	628	233	233	NS	170	73	73
	135 '110 2'				230	652	654				262	112	112
											1 / 0		112
63314	BIGSTON4	63195	BIGSTONY	1	230	626	628	233	233	NS	170	73	73
	135 '110 2'				230	652	654				262	112	112
											1 / 0		112
34030	SALEM 5	34508	JULIAN 5	1	161	331	393-392	202	202	NS	127	63	63
	1008 FG12003			1	161	331	393				227	112	112
	788 'ALTW-14 '				161	331	393				220	109	109
											2 / 0		112
61676	HIBBARD7	61680	WNTR ST7	1	115	608	608	144	144	NS	113	79	79
	63 '022 7'					600	601				161	112	112
	50 '022 2'					600	601				161	112	112
	155 132L				115	608	608				159	111	111
	935 'SINGLE-028'			1	500	600	601				158	109	110
	40 '015 2'				500	600	601				158	109	109
	45 '020 '				500-115	600	601				158	109	109
											6 / 0		112
62672	GLNDALE8	62666	GLNDALE7	2	69-115	600	622	47	47	NS	30	63	63
	485 '715 2'				115-69	600-618					53	112	112
	490 '715 4'				69-115	600	622-601				52	111	111
											2 / 0		112

Overloaded Facility		Contingency							Ratings		Overloads			
From	Name	To	Name	Circuit	Base kV	Area	Zone	Norm	Emer		MVA	Norm (%)	Emer (%)
39145	POR 138	39167	COL 138	1	138	364	371	286	286	NS	179	63	63
	1583 FG65010			2	138	364	371				320	112	112
											1 / 0		112
39145	POR 138	39167	COL 138	2	138	364	371	286	286	NS	179	63	63
	1585 FG65011			1	138	364	371				320	112	112
											1 / 0		112
31340	NIOTA	34181	BRLGTN 5	1	161	356-331	322-391	224	224	NS	85	38	38
	780 'ALTW-11 '				161	331	391				249	111	111
	793 ALTW-84				161	331	391				249	111	111
											2 / 0		111
34009	WINBAGO5	61932	RUTLAND5	1	161	331	393-615	84	84	NS	78	92	92
	1355 FG3728			1	345	331	393-391				93	111	111
	1348 FG3724			1	345	331	393-391				93	111	111
	1013 FG12006			1	345	331	393-391				93	111	111
	1030 FG12016			1	345	331	393-391				93	111	111
	1015 FG12009			1	345	331	393-391				93	111	111
	573 '825 '				345-161	331-600					90	107	107
	1020 FG12011			1	345	331-600	393-601				88	105	105
	1010 FG12005			1	345	331-600	393-601				88	105	105
	1330 FG3710			1	345	331-600	393-601				88	105	105
	850 MAPP-18OP				161/345						88	105	105
	1023 FG12012			1	345	331-635	391-638				87	103	103
	623 '910 '				345-161	635-331	638-391				87	103	103
	63 '022 7'					600	601				85	101	102
	45 '020 '				500-115	600	601				85	101	101
	40 '015 2'				500	600	601				85	101	101
	935 'SINGLE-028'			1	500	600	601				85	101	101
	50 '022 2'					600	601				85	101	101
	135 '110 2'				230	652	654				84	100	101
											9 / 9		111
60244	SCOTTCO7	60890	SCOTTCO8	1	115-69	600	601	70	70	NS	42	60	60
	485 '715 2'				115-69	600-618					77	110	110
											1 / 0		110

Overloaded Facility		Contingency							Ratings		Overloads			
From	Name	To	Name	Circuit	Base kV	Area	Zone	Norm	Emer		MVA	Norm (%)	Emer (%)
60749	DGLAS C8	60144	DGLASCO7	1	69-115	600	601	47	47	NS	42	90	90
	545 '780 '				115	600	601				51	109	109
	430 640 '										51	109	109
	543 '775 '				115	600-608					51	108	108
	318 '500'				69-230	618-652	619-654				51	108	108
	135 '110 2'				230	652	654				50	106	106
	935 'SINGLE-028'			1	500	600	601				49	104	104
	50 '022 2'					600	601				49	104	104
	40 '015 2'				500	600	601				49	104	104
	45 '020 '				500-115	600	601				49	104	104
	63 '022 7'					600	601				49	104	104
											5 / 5		109
99798	5BATEVL	99808	5CUSHMN	1	161	151	159	148	148	NS	145	98	98
	1073 FG1319			1	500	524-151	524-159				161	109	109
	660 '927 '				345	635	637				155	104	104
	1423 FG5008			1	345	520	520				154	104	104
	1210 FG3157				138/345	356-130	314-130				154	104	104
	1443 FG5042			1	345	520	520				154	104	104
	1193 FG3144			1	345	356-130	314-130				154	104	104
	1063 FG129			1	345	356-130	314-130				154	104	104
	1078 FG133			1	345	356-130	314-130				154	104	104
	1208 FG3153			1	345	356-130	314-130				154	104	104
	950 'SINGLE-046'				345-24	626	657-661				152	102	102
	900 MAPP-39			1	230	652	654				149	101	101
	1468 FG5074			1	161	520	520				149	101	101
	1375 FG4011				161-345	362-356	362-316				149	101	101
	95 '050 6'										149	100	100
	90 '050 5'										149	100	100
	88 '050 4'										148	100	100
	83 '050 2'				345/115						148	100	100
											1 / 16		109
63030	DICKNSN3	62925	DICKNSN7	1	345-115	618	618-619	448	448	NS	320	71	71
	30 '009 5'				345	600-618	601-618				487	109	109
											1 / 0		109
53139	FLINTCR5	53194	ELMSPRR5	1	161	520	520	305	335	NS	255	84	76
	1468 FG5074			1	161	520	520				364	119	109
											1 / 0		109
34027	CNTRGRV5	34508	JULIAN 5	1	161	331	393-392	202	202	NS	122	60	60
	1008 FG12003			1	161	331	393				219	108	108
	788 'ALTW-14 '				161	331	393				212	105	105
											2 / 0		108

Overloaded Facility		Contingency							Ratings		Overloads			
From	Name	To	Name	Circuit	Base kV	Area	Zone		Norm	Emer		MVA	Norm (%)	Emer (%)
36532	BELVI; B	36606	B465 ;BT	1	138	363	345-333		290	330	NS	251	86	76
	1233	FG3238		1	345	363	335					357	123	108
	1635	FG65043		1	345	363	335					357	123	108
												2 / 0		108
61612	RIVERTN4	61625	BLCKBRY4	1	230	608	608		327	327	NS	182	56	56
	40	'015 2'			500	600	601					351	107	107
	935	'SINGLE-028'		1	500	600	601					351	107	107
	45	'020 '			500-115	600	601					351	107	107
	50	'022 2'				600	601					350	107	107
	63	'022 7'				600	601					349	107	107
												5 / 0		107
63219	GRANTCO7	63220	ELBOWLK7	1	115	626	629		96	96	NS	81	84	84
	595	'866 '			230	626-608	621-608					103	107	107
	593	'865 '			230-41.6	626						101	105	105
	365	'553 '			115	626	621					99	103	103
												1 / 2		107
60302	COULEE 5	69523	GENOA 5	1	161	600-680	604-681		240	240	NS	172	72	72
	603	'875 2'			161	600-680	604-681					255	106	106
												1 / 0		106
38342	COC 69	39239	COC 138	1	69-138	364	371		33	33	NS	17	50	50
	88	'050 4'										35	106	106
	83	'050 2'			345/115							35	105	105
												2 / 0		106
31051	MASON 13	31053	MASON 2	2	345-138	356	317		560	560	NS	404	72	72
	1155	FG3129		1	345-138	356	317					592	106	106
												1 / 0		106
65409	S1209 5	65383	S1209T1T	1	161	645	645		124	124	NS	92	74	74
	285	'451 '			161	645	645					131	105	105
												1 / 0		105
60203	COON CK7	60253	TWIN LK7	1	115	600	601		371	371	NS	215	58	58
	48	'022 1'				600	601					388	104	105
												0 / 1		105
36457	ALPIN;RT	36599	CHERR; R	1	138	363	345-333		351	445	NS	350	100	79
	1233	FG3238		1	345	363	335					465	132	104
	1635	FG65043		1	345	363	335					465	132	104
												0 / 2		104
63213	MARIETT7	63214	BIGSTON7	1	115	626	626-628		96	96	NS	55	57	57
	135	'110 2'			230	652	654					100	104	104
												0 / 1		104

Overloaded Facility		Contingency							Ratings		Overloads			
From	Name	To	Name	Circuit	Base kV	Area	Zone	Norm	Emer		MVA	Norm (%)	Emer (%)
64403	E MOLIN3	64680	SB39MID5	1	345-161	635	638-637	500	500	NS	351	70	70
	613 '902 '				161-345	635-363	638-335				518	104	104
	1248 FG3258			1	345	363-635	335-638				500	100	100
	1343 FG3721			1	345	363-635	335-638				500	100	100
	1340 FG3719			1	345	363-635	335-638				500	100	100
	1335 FG3716			1	345	363-635	335-638				500	100	100
											0 / 5		104
96120	5THMHIL	96126	5MOBTAP	1	161	130	130-133	372	372	NS	256	69	69
	1398 FG4020			1	345	130	130				385	104	104
											0 / 1		104
63051	HENNING4	63052	INMAN 4	1	230	626	621	143	143	NS	115	80	80
	355 '550 '				115	626-652					148	103	103
											0 / 1		103
60153	MNTCELO7	60151	MNTCELO3	1	115-345	600	601	336	336	NS	200	60	60
	23 '009 2'					600	601				346	103	103
											0 / 1		103
96049	7THOMHL	96120	5THMHIL	1	345-161	130	130	625	625	NS	295	47	47
	1398 FG4020			1	345	130	130				643	103	103
											0 / 1		103
61721	ETCO 7	61722	FORBES 7	1	115	608	608	98	98	NS	73	74	74
	63 '022 7'					600	601				101	103	103
	50 '022 2'					600	601				101	103	103
	45 '020 '				500-115	600	601				100	102	103
	935 'SINGLE-028'			1	500	600	601				100	102	103
	40 '015 2'				500	600	601				100	102	103
											0 / 5		103
36953	MAREN;RT	37119	P VAL; R	1	138	363	345	210	260	NS	143	68	55
	1635 FG65043			1	345	363	335				266	127	102
	1233 FG3238			1	345	363	335				266	127	102
											0 / 2		102
30422	CONWAY 3	31391	ORGD 1	1	138	356	318	205	205	NS	147	72	72
	1060 FG128			1	345-138	356	311				209	102	102
											0 / 1		102
34043	SAVANNA5	69505	GALENA 5	1	161	331-680	393-681	126	126	NS	54	43	43
	795 ALTW-85				161	331	393-392				128	102	102
											0 / 1		102
65355	S3455 3	65337	S3455T1T	1	345	645	645	560	560	NS	482	86	86
	278 '440 '				161	645	645				571	102	102
											0 / 1		102
99817	5ISES 1	99826	5MORFLD	1	161	151	159	223	223	NS	211	94	94
	1073 FG1319			1	500	524-151	524-159				227	102	102
											0 / 1		102

Overloaded Facility		Contingency								Overloads			
From	Name	To	Name	Circuit	Base kV	Area	Zone	Ratings Norm	Ratings Emer		MVA	Norm (%)	Emer (%)
64418	E MOLINE	64680	SB39MID5	1	161	635	638-637	500	500	NS	346	69	69
	613 '902 '				161-345	635-363	638-335				509	102	102
											0 / 1		102
31221	MOBERLY	31409	OVERTON	1	161	356	314	142	142	NS	75	52	52
	1398 FG4020			1	345	130	130				144	101	101
											0 / 1		101
50024	CARROLL4	50023	CARROLL6	1	138-230	502	502	336	336	NS	176	52	52
	1438 FG5029			1	345	502-520	502-520				340	101	101
											0 / 1		101
32277	TURKY HL	32307	E BELLVL	1	138	357	357	287	287	NS	205	72	72
	1373 FG4009				345-138	356-357	312-357				290	101	101
											0 / 1		101
57968	STILWEL7	57981	LACYGNE7	1	345	541	541	1099	1202	NS	796	72	66
	1435 FG5023			1	345	541	541				1213	110	101
											0 / 1		101
61984	AUSTIN 5	63070	PL VLLY5	1	161	680-618	617-618	445	445	NS	136	31	31
	915 MAPP-9				345	600					448	101	101
											0 / 1		101
39686	WESTONWP	39676	WESTON	1	115-345	366	366	200	220	NS	50	25	23
	95 '050 6'										221	111	101
	90 '050 5'										221	111	101
	83 '050 2'				345/115						221	110	100
	88 '050 4'										221	110	100
											0 / 4		101
											360 / 249		247.3

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

Case Summary pi_rfp_bid4and5

Project Name	2002 SERIES -- FIANL (F1)2004 SUMMER PEAK M
Title1	F204SUPK.SAV /SUMMER PEAK / SI
Title2	Bids 4 and 5
Case Date	7/22/2002

Power Flow File M:\PROJ\MISO\286001\PFLOW\ConvertedCases\pi_rfp_bid4and5.cft

Power Flow Controls

Area Control	☐	***SmoothStep***	☑
Remote Control	☑	***XfrmVcon***	☐
GenVar Control	☑	***XfrmFcon***	☐
Solve Method	DSOLVE		

Case Settings

Overload	☑	***VlimMin***	0.9	***RateFactor***	1
VLimit	☑	***VlimMax***	1.05	***AmpFactor***	1
VChange	☑	***VlimChange***	0.05	***RatingNumber***	2
Monitored Set	monitored	10835 Buses			

Contingency

Contingencies loaded from file M:\PROJ\MISO\286001\PFLOW\Con_MonFiles\PI_RFP.con 1

660 contingencies

2002 SERIES -- FIANL (F1)2004 SUMMER PEAK MODEL

F204SUPK.SAV /SUMMER PEAK / SI

Bids 4 and 5

7/22/2002

Overloaded Facility								Normal System				Overloads	
From	Name	To	Name	Circuit	Base kV	Area	Zone	Ratings Norm	Ratings Emer	MVA	Norm (%)	Count A / B	Max (%)
62667	ST BONI7	62925	DICKNSN7	1	115	600-618	622-619	71	71	109.7	154	56 / 0	232
34043	SAVANNA5	34046	YORK 5	1	161	331	393	84	84	66.4	79	2 / 1	155
34028	LORE 5	34032	8TH ST.5	1	161	331	393	84	84	64.1	76	7 / 0	154
34529	GRJCT5Y	34054	GR JCT 5	1	161	331	392-391	50	50	30.7	61	1 / 0	153
60853	LK YANK8	60119	LKYNKTN7	2	69-115	600	601	15	15	6.9	46	1 / 0	151
34073	GR JCT 7	34529	GRJCT5Y	1	115-161	331	391-392	50	50	30.8	62	1 / 0	149
34059	BOONE 7	34073	GR JCT 7	1	115	331	391	50	50	30.8	62	1 / 0	149
60177	CHAMPLN7	60178	CHAMP T7	1	115	600	605-601	140	140	97.9	70	6 / 0	149
60153	MNTCELO7	60166	SALIDA 7	1	115	600	601	140	140	96.7	69	2 / 0	147
60277	WWACNIA7	62667	ST BONI7	1	115	600	601-622	71	71	65.1	92	5 / 4	142
60158	STCLTP 7	60166	SALIDA 7	1	115	600	601	139	139	91.9	66	1 / 1	140
39122	KEG 138	39218	CHA 138	1	138	364	371	240	240	227.8	95	2 / 0	129
34009	WINBAGO5	61932	RUTLAND5	1	161	331	393-615	84	84	87.6	104	76 / 41	124
34066	M-TOWN 7	34169	WELSBGT7	1	115	331	391	97	97	92.2	95	7 / 0	124
62132	PRKWOOD8	62090	PRKWOOD7	2	69-115	618	619	112	112	91.4	82	1 / 0	122
34059	BOONE 7	34076	BNE JCT7	1	115	331	391	60	60	52.3	87	1 / 2	122
60152	MNTCELO4	60151	MNTCELO3	1	230-345	600	601	336	336	234.8	70	1 / 1	120
67541	STVITAL7	67726	DAKOTB17	1	110	667	668-667	26	26	30.0	115	18 / 0	119
27106	11KNOB C	27135	11POND C	1	138	211	211	143	143	137.9	96	1 / 0	118
27135	11POND C	27144	11TIPTOP	1	138	211	211	143	143	137.4	96	1 / 0	118
62003	JOHNJCT7	63216	ORTONVL7	1	115	626	621-626	97	97	67.9	70	2 / 0	117
61676	HIBBARD7	61680	WNTR ST7	1	115	608	608	144	144	118.5	82	6 / 0	116
62132	PRKWOOD8	62090	PRKWOOD7	1	69-115	618	619	84	84	81.2	97	5 / 4	116
60194	CARVRCO7	60277	WWACNIA7	1	115	600	601	71	71	51.0	72	1 / 0	115
63214	BIGSTON7	63195	BIGSTONY	1	115-230	626	628	233	233	168.9	72	1 / 0	111
63314	BIGSTON4	63195	BIGSTONY	1	230	626	628	233	233	168.9	72	1 / 0	111
62672	GLNDALE8	62666	GLNDALE7	2	69-115	600	622	47	47	29.6	63	2 / 0	111
53139	FLINTCR5	53194	ELMSPRR5	1	161	520	520	305	335	256.9	84	1 / 0	109
31340	NIOTA	34181	BRLGTN 5	1	161	356-331	322-391	224	224	88.6	40	2 / 0	109
60749	DGLAS C8	60144	DGLASCO7	1	69-115	600	601	47	47	41.9	89	4 / 6	109
63219	GRANTCO7	63220	ELBOWLK7	1	115	626	629	96	96	80.9	84	2 / 1	108
60244	SCOTTCO7	60890	SCOTTCO8	1	115-69	600	601	70	70	40.7	58	1 / 0	107
31051	MASON 13	31053	MASON 2	2	345-138	356	317	560	560	408.7	73	1 / 0	107
60203	COON CK7	60253	TWIN LK7	1	115	600	601	371	371	217.3	59	1 / 0	107
61612	RIVERTN4	61625	BLCKBRY4	1	230	608	608	327	327	178.9	55	5 / 0	107
65409	S1209 5	65383	S1209T1T	1	161	645	645	124	124	91.8	74	1 / 0	105
63030	DICKNSN3	62925	DICKNSN7	1	345-115	618	618-619	448	448	316.2	71	0 / 1	105
58036	OLATHEE5	58046	OXFORD 5	1	161	541	541	224	224	127.0	57	0 / 1	104
96120	5THMHIL	96126	5MOBTAP	1	161	130	130-133	372	372	246.5	66	0 / 1	104
63051	HENNING4	63052	INMAN 4	1	230	626	621	143	143	115.4	81	0 / 1	104
61721	ETCO 7	61722	FORBES 7	1	115	608	608	98	98	73.0	74	0 / 5	103
31221	MOBERLY	31409	OVERTON	1	161	356	314	142	142	71.1	50	0 / 1	103
96049	7THOMHL	96120	5THMHIL	1	345-161	130	130	625	625	266.9	43	0 / 1	103
63213	MARIETT7	63214	BIGSTON7	1	115	626	626-628	96	96	53.7	56	0 / 1	102
30422	CONWAY 3	31391	ORGD 1	1	138	356	318	205	205	147.0	72	0 / 1	102
65355	S3455 3	65337	S3455T1T	1	345	645	645	560	560	480.9	86	0 / 1	102
99798	5BATEVL	99808	5CUSHMN	1	161	151	159	148	148	135.5	92	0 / 1	101
59206	PRALEE 5	59211	BLSPS 5	1	161	540	540	223	245	236.7	106	0 / 1	101
39686	WESTONWP	39676	WESTON	1	115-345	366	366	200	220	45.1	23	0 / 4	101
61984	AUSTIN 5	63070	PL VLLY5	1	161	680-618	617-618	445	445	136.4	31	0 / 1	101
34087	DYSART 5	64269	WASHBRN5	1	161	331-635	391-637	260	260	171.5	66	0 / 5	101

Overloaded Facility								Normal System				Overloads	
From	Name	To	Name	Circuit	Base kV	Area	Zone	Ratings Norm	Ratings Emer	MVA	Norm (%)	Count A / B	Max (%)
50024	CARROLL4	50023	CARROLL6	1	138-230	502	502	336	336	176.0	52	0 / 1	101
60153	MNTCELO7	60151	MNTCELO3	1	115-345	600	601	336	336	196.1	58	0 / 1	100
60302	COULEE 5	69523	GENOA 5	1	161	600-680	604-681	240	240	161.5	67	0 / 1	100
60153	MNTCELO7	60269	HASSAN 7	1	115	600	601	140	140	50.4	36	0 / 1	100
64909	N.PLATT4	65037	N.PLT8 Y	1	230	640	640	187	187	134.0	72	0 / 1	100
												227 / 92	232

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 -- FIANL (F1)2004 SUMMER PEAK MODEL

F204SUPK.SAV /SUMMER PEAK / SI

Bids 4 and 5

7/22/2002

Overloaded Facility			Contingency								Overloads			
From	Name	To	Name	Circuit	Base kV	Area	Zone	Ratings Norm	Ratings Emer		MVA	Norm (%)	Emer (%)
62667	ST BONI7	62925	DICKNSN7	1	115	600-618	622-619	71	71	NS	110	154	154
	30 '009 5'				345	600-618	601-618				164	232	232
	845 MAPP-17				345	600-618	601-618				135	191	191
	53 '022 3'					600	601				123	173	173
	470 '705 2'				115-345	600	601				122	172	172
	48 '022 1'					600	601				122	171	171
	38 '009 8'					600-618	601-618				122	171	171
	28 '009 4'					600-618	601-618				120	168	168
	498 '720 1'				115	600-618	601-619				120	168	168
	23 '009 2'					600	601				118	167	167
	483 '715 1'				115-69	600-618					118	167	167
	35 '009 7'					600	601				118	166	167
	840 MAPP-15A			1	345	600	601				117	164	164
	475 '705 4'				345-115	600	601				116	164	164
	58 '022 5'					600	601				115	162	162
	488 '715 3'				115-69	600	601-622				115	161	161
	473 '705 3'				115-345	600	601				114	161	161
	70 '022 10'					600	601				113	160	160
	485 '715 2'				115-69	600-618					113	159	159
	843 MAPP-16			1	345	600	601				113	159	159
	55 '022 4'					600	601				113	159	159
	493 '715 5'				115-69	600-618					112	157	157
	460 '695 '				115	618-600	619-601				112	157	157
	68 '022 9'				345-115	600	601				111	157	157
	525 '755 '				115	600	601-622				111	157	157
	468 '705 1'				345-115	600	601				111	157	157
	543 '775 '				115	600-608					111	157	157
	60 '022 6'				345	600	601				111	157	157
	555 '795 '					600-652					111	156	156
	563 '810 '				230-115	600-618	601-624				111	156	156
	560 '805 '				115	600	601				111	156	156
	113 '050 12'										111	156	156
	500 '720 2'				115	600-618	601-619				111	156	156
	103 '050 10'				345-161	364-600					111	156	156
	110 '050 11'										111	156	156
	105 '050 14'										111	156	156
	435 '655 '				115-69	600-618	601-619				111	156	156
	205 '220 '					626	627-657				108	153	153
	523 '750 '				115-69	608-600					108	153	153
	63 '022 7'					600	601				108	153	153

Overloaded Facility		Contingency								Overloads		
From	Name	To	Name	Circuit	Base kV	Area	Zone	Ratings Norm	Emer		Norm MVA	Emer (%)
	450	'675 '			345-230	600	601-622				108	152	152
	50	'022 2'				600	601				108	152	152
	45	'020 '			500-115	600	601				108	152	152
	40	'015 2'			500	600	601				108	152	152
	935	'SINGLE-028'		1	500	600	601				108	152	152
	430	640 '									107	151	151
	318	'500'			69-230	618-652	619-654				107	151	151
	65	'022 8'			345-115	600	601				107	151	151
	545	'780 '			115	600	601				107	151	151
	85	'050 3'			345-161	364-600					106	149	149
	93	'050 7'									106	149	149
	108	'050 1'			69/345						106	149	149
	90	'050 5'									106	149	149
	88	'050 4'									106	149	149
	95	'050 6'									105	149	149
	83	'050 2'			345/115						105	149	149
	905	MAPP-5		1	345	600	601				101	142	142
											56 / 0		232
34043	SAVANNA5	34046	YORK 5	1	161	331	393	84	84	NS	66	79	79
	795	ALTW-85			161	331	393-392				130	155	155
	1025	FG12013		1	345	331	393				100	119	119
	1008	FG12003		1	161	331	393				88	105	105
											2 / 1		155
34028	LORE 5	34032	8TH ST.5	1	161	331	393	84	84	NS	64	76	76
	1018	FG12010		1	161	331	393-392				129	154	154
	785	'ALTW-13 '			161	331	393-392				110	131	131
	1015	FG12009		1	345	331	393-391				93	111	111
	1013	FG12006		1	345	331	393-391				93	111	111
	1348	FG3724		1	345	331	393-391				93	111	111
	1030	FG12016		1	345	331	393-391				93	111	111
	1355	FG3728		1	345	331	393-391				93	111	111
											7 / 0		154
34529	GRJCT5Y	34054	GR JCT 5	1	161	331	392-391	50	50	NS	31	61	61
	688	'936 '			115	331	391				76	153	153
											1 / 0		153
60853	LK YANK8	60119	LKYNKTN7	2	69-115	600	601	15	15	NS	7	46	46
	345	'530 '			69-115	600-652	601-605				23	151	151
											1 / 0		151
34073	GR JCT 7	34529	GRJCT5Y	1	115-161	331	391-392	50	50	NS	31	62	62
	688	'936 '			115	331	391				75	149	149
											1 / 0		149
34059	BOONE 7	34073	GR JCT 7	1	115	331	391	50	50	NS	31	62	62
	688	'936 '			115	331	391				74	149	149
											1 / 0		149

Overloaded Facility		Contingency						Ratings		Overloads			
From Name	To	Name	Circuit	Base kV	Area	Zone	Norm	Emer		MVA	Norm (%)	Emer (%)
60177 CHAMPLN7	60178	CHAMP T7	1	115	600	605-601	140	140	NS	98	70	70
38 '009 8'					600-618	601-618				208	149	149
35 '009 7'					600	601				207	148	148
30 '009 5'				345	600-618	601-618				162	116	116
443 '670 1'					600-618	601-619				160	114	114
840 MAPP-15A			1	345	600	601				158	113	113
28 '009 4'					600-618	601-618				151	108	108
										6 / 0		149
60153 MNTCELO7	60166	SALIDA 7	1	115	600	601	140	140	NS	97	69	69
545 '780 '				115	600	601				206	147	147
450 '675 '				345-230	600	601-622				147	105	105
										2 / 0		147
60277 WWACNIA7	62667	ST BONI7	1	115	600	601-622	71	71	NS	65	92	92
30 '009 5'				345	600-618	601-618				101	142	142
845 MAPP-17				345	600-618	601-618				83	116	116
470 '705 2'				115-345	600	601				77	108	108
53 '022 3'					600	601				76	107	107
48 '022 1'					600	601				75	106	106
38 '009 8'					600-618	601-618				74	105	105
28 '009 4'					600-618	601-618				74	104	104
483 '715 1'				115-69	600-618					73	103	103
23 '009 2'					600	601				71	100	100
										5 / 4		142
60158 STCLTP 7	60166	SALIDA 7	1	115	600	601	139	139	NS	92	66	66
545 '780 '				115	600	601				195	140	140
450 '675 '				345-230	600	601-622				141	101	101
										1 / 1		140
39122 KEG 138	39218	CHA 138	1	138	364	371	240	240	NS	228	95	95
1130 FG3031			1	138	364-367	371-367				309	129	129
1118 FG3022			1	345	367	391-367				290	121	121
										2 / 0		129

Overloaded Facility		Contingency						Ratings		Overloads			
From	Name	To	Name	Circuit	Base kV	Area	Zone	Norm	Emer		MVA	Norm (%)	Emer (%)
34009	WINBAGO5	61932	RUTLAND5	1	161	331	393-615	84	84	NS	88	104	104
	905	MAPP-5		1	345	600	601				104	124	124
	540	'770 '			161-115	331-600	393-601				99	118	118
	1015	FG12009		1	345	331	393-391				99	118	118
	1013	FG12006		1	345	331	393-391				99	118	118
	1355	FG3728		1	345	331	393-391				99	118	118
	1030	FG12016		1	345	331	393-391				99	118	118
	1348	FG3724		1	345	331	393-391				99	118	118
	573	'825 '			345-161	331-600					96	114	114
	63	'022 7'				600	601				96	114	114
	50	'022 2'				600	601				96	114	114
	45	'020 '			500-115	600	601				95	114	114
	40	'015 2'			500	600	601				95	114	114
	935	'SINGLE-028'		1	500	600	601				95	114	114
	135	'110 2'			230	652	654				94	112	112
	623	'910 '			345-161	635-331	638-391				94	112	112
	1023	FG12012		1	345	331-635	391-638				94	112	112
	133	'110 1'			230	652	654				94	112	112
	1028	FG12015		1	345	635	637				93	111	111
	683	'933 '			345-161	635	637				93	111	111
	1330	FG3710		1	345	331-600	393-601				93	111	111
	1010	FG12005		1	345	331-600	393-601				93	111	111
	1020	FG12011		1	345	331-600	393-601				93	111	111
	850	MAPP-18OP			161/345						92	109	109
	918	MAPP-9GUID			345-161						90	108	108
	463	'700 1'			345	600	601				90	107	107
	795	ALTW-85			161	331	393-392				90	107	107
	555	'795 '				600-652					89	106	107
	410	'610 '				626					89	107	107
	205	'220 '				626	627-657				89	106	107
	548	'785 '				331-600					89	106	106
	620	'908 1'			345	356-635					89	106	106
	88	'050 4'									89	106	106
	1103	FG3015		1	345	363-364	335-371				89	106	106
	1300	FG3522		1	345	363-364	335-371				89	106	106
	1070	FG131		1	345	356	314				89	106	106
	1310	FG3527		1	345	363-364	335-371				89	106	106
	1298	FG3520		1	345	363-364	335-371				89	106	106
	1135	FG3120		1	345	356	314				89	106	106
	1240	FG3241		1	345	363-364	335-371				89	106	106
	1093	FG3009		1	345	363-364	335-371				89	106	106
	1250	FG3260		1	345	363-364	335-371				89	106	106
	1245	FG3243		1	345	363-364	335-371				89	106	106
	1295	FG3519		1	345	363-364	335-371				89	106	106

Overloaded Facility		Contingency							Overloads		
From Name	To	Name	Circuit	Base kV	Area	Zone	Ratings Norm	Emer	MVA	Norm (%)	Emer (%)
1108 FG3017			1	345	363-364	335-371			89	106	106
1328 FG3707			1	345	363-364	335-371			89	106	106
1350 FG3725			1	345	331-363	393-335			89	106	106
90 '050 5'									89	106	106
580 '840 '				161	600	604			89	106	106
53 '022 3'					600	601			89	106	106
618 '906 '				345	356-635	313-638			89	106	106
1508 FG63028			1	345	331-363	393-335			89	106	106
973 FG1011			1	345	356-635	313-638			89	106	106
48 '022 1'					600	601			89	106	106
318 '500'				69-230	618-652	619-654			89	106	106
830 MAPP-10			1	345-161	600-331	601-393			89	106	106
430 640 '									89	106	106
1363 FG4005			1	765	205	252			89	106	106
1288 FG3420			1	765	205	252			89	106	106
1025 FG12013			1	345	331	393			89	106	106
303 '464 '				161-69	645	645			89	106	106
83 '050 2'				345/115					89	106	106
300 '463 '				69-161	645	645			89	106	106
308 '466 '				161-69	645	645			89	106	106
193 '180 2'				230	618	619-618			89	106	106
1040 FG12025			1	345	635	637-638			89	106	106
295 '461 '				161-69	645	645			89	106	106
593 '865 '				230-41.6	626				89	106	106
1345 FG3723			1	345	635	637-638			89	106	106
305 '465 '				161-69	645	645			89	106	106
298 '462 '				161-69	645	645			89	106	106
868 MAPP-26			1	345	640	640			89	105	106
95 '050 6'									89	105	105
168 '140 '				230	652	654			89	105	105
23 '009 2'					600	601			89	105	105
595 '866 '				230	626-608	621-608			88	105	105
663 '928 '				345	635	637			88	105	105
998 FG110			1	345	356-357	323-357			87	103	103
1255 FG3402			1	345	356-357	323-357			87	103	103
880 MAPP-31			1	345	640	640-656			87	103	103
1285 FG3419			1	345	356-357	323-357			87	103	103
1260 FG3404			1	345	356-357	323-357			87	103	103
1005 FG116			1	345	356-357	323-357			87	103	103
543 '775 '				115	600-608				87	103	103
1423 FG5008			1	345	520	520			87	103	103
848 MAPP-181P			1	161	331-680	393-617			87	103	103
1443 FG5042			1	345	520	520			87	103	103
608 '885 '				161	680	681			87	103	103

Overloaded Facility		Contingency							Overloads		
From Name	To	Name	Circuit	Base kV	Area	Zone	Ratings Norm	Emer		Norm	Emer
									MVA	(%)	(%)
	1435	FG5023	1	345	541	541			87	103	103
	450	'675 '		345-230	600	601-622			87	103	103
	678	'932 2'		115/345	331-635	391-637			87	103	103
	183	'160 3'		230	652	654			86	103	103
	238	'330 '		345	640-652				86	103	103
	105	'050 14'							86	103	103
	1073	FG1319	1	500	524-151	524-159			86	103	103
	1235	FG3239		115/345					86	103	103
	100	'050 9'		345/115					86	103	103
	853	MAPP-19		345					86	103	103
	180	'160 2'		230	652	654			86	103	103
	1105	FG3016		115/345					86	103	103
	828	MAPP-1	1	161	680	681			86	103	103
	545	'780 '		115	600	601			86	103	103
	680	'932 3'		161/345	331-635	391-637			86	103	103
	1283	FG3418	1	765	205	250			86	103	103
	113	'050 12'							86	103	103
	130	'108 2'		230	652-618				86	103	103
	605	'880 '		161	680-331	681-393			86	103	103
	128	'108 1'		230	652-618				86	102	102
	898	MAPP-38	1	230	652	654			86	102	102
	98	'050 8'		69/345					86	102	102
	940	'SINGLE-034'	1	230	626-667	657-668			85	102	102
	115	'050 13'							85	102	102
	950	'SINGLE-046'		345-24	626	657-661			85	101	101
	145	'120 '		115/345	652	654			85	101	101
	178	'160 1'		230	652	654			85	101	101
	153	'130 2'		230	652	654			84	100	101
	1325	FG3704	1	345	635	637			84	100	100
	1033	FG12018	1	345	635	637			84	100	100
									76 / 41		124
34066 M-TOWN 7	34169	WELSBGT7	1	115	331	391	97	97	NS	92	95	95
	1028	FG12015	1	345	635	637			121	124	124
	683	'933 '		345-161	635	637			121	124	124
	1015	FG12009	1	345	331	393-391			104	107	107
	1013	FG12006	1	345	331	393-391			104	107	107
	1030	FG12016	1	345	331	393-391			104	107	107
	1355	FG3728	1	345	331	393-391			104	107	107
	1348	FG3724	1	345	331	393-391			104	107	107
									7 / 0		124
62132 PRKWOOD8	62090	PRKWOOD7	2	69-115	618	619	112	112	NS	91	82	82
	433	'650 '		115-69	600-618	601-619				137	122	122
										1 / 0		122

Overloaded Facility		Contingency						Ratings		Overloads			
From	Name	To	Name	Circuit	Base kV	Area	Zone	Norm	Emer		MVA	Norm (%)	Emer (%)
34059	BOONE 7	34076	BNE JCT7	1	115	331	391	60	60	NS	52	87	87
	678 '932 2'				115/345	331-635	391-637				73	122	122
	770 'ALTW-07 '				161-69	331	392-391				62	103	103
	625 '911 '				161	331-652	391-654				60	100	100
											1 / 2		122
60152	MNTCELO4	60151	MNTCELO3	1	230-345	600	601	336	336	NS	235	70	70
	450 '675 '				345-230	600	601-622				402	120	120
	23 '009 2'					600	601				343	102	102
											1 / 1		120
67541	STVITAL7	67726	DAKOTB17	1	110	667	668-667	26	26	NS	30	115	115
	15 '003 '										31	119	119
	13 '001 '				230						31	119	119
	948 'SINGLE-044'			1	230	600-667	601-668				31	119	119
	18 '007 '					608	657-608				31	119	119
	943 'SINGLE-040'			1	230	608	657				31	118	118
	945 'SINGLE-042'			1	230	608	608-657				31	118	118
	950 'SINGLE-046'				345-24	626	657-661				31	118	118
	205 '220 '					626	627-657				30	117	117
	935 'SINGLE-028'			1	500	600	601				30	117	117
	40 '015 2'				500	600	601				30	117	117
	45 '020 '				500-115	600	601				30	117	117
	63 '022 7'					600	601				30	117	117
	50 '022 2'					600	601				30	117	117
	215 '250 '				230-115	618-626					30	117	117
	380 '570 1'					626	626-657				30	114	114
	818 'FORBES 7T-8'					608-600	608-601				30	114	114
	938 'SINGLE-031'			1	230	626	657				29	113	113
	940 'SINGLE-034'			1	230	626-667	657-668				28	109	109
											18 / 0		119
27106	11KNOB C	27135	11POND C	1	138	211	211	143	143	NS	138	96	96
	1283 FG3418			1	765	205	250				169	118	118
											1 / 0		118
27135	11POND C	27144	11TIPTOP	1	138	211	211	143	143	NS	137	96	96
	1283 FG3418			1	765	205	250				168	118	118
											1 / 0		118
62003	JOHNJCT7	63216	ORTONVL7	1	115	626	621-626	97	97	NS	68	70	70
	135 '110 2'				230	652	654				113	117	117
	410 '610 '					626					104	107	107
											2 / 0		117

Overloaded Facility		Contingency								Overloads			
From Name	To	Name	Circuit	Base kV	Area	Zone	Ratings Norm	Ratings Emer		MVA	Norm (%)	Emer (%)
61676 HIBBARD7	61680	WNTR ST7	1	115	608	608	144	144	NS	118	82	82
155 132L				115	608	608				168	116	116
63 '022 7'					600	601				167	116	116
50 '022 2'					600	601				167	116	116
935 'SINGLE-028'			1	500	600	601				163	113	113
45 '020 '				500-115	600	601				163	113	113
40 '015 2'				500	600	601				163	113	113
										6 / 0		116
62132 PRKWOOD8	62090	PRKWOOD7	1	69-115	618	619	84	84	NS	81	97	97
503 '725 '				69-230	618	619				98	116	116
440 '665 '				230-69	600-618	601-619				95	113	113
445 '670 2'				345-230	600-618	601-619				94	112	112
450 '675 '				345-230	600	601-622				90	107	107
538 '765 '				345-230	600-618	601-619				88	105	105
463 '700 1'				345	600	601				85	102	102
435 '655 '				115-69	600-618	601-619				85	101	101
30 '009 5'				345	600-618	601-618				85	101	101
818 'FORBES 7T-8'					608-600	608-601				84	101	101
										5 / 4		116
60194 CARVRCO7	60277	WWACNIA7	1	115	600	601	71	71	NS	51	72	72
30 '009 5'				345	600-618	601-618				82	115	115
										1 / 0		115
63214 BIGSTON7	63195	BIGSTONY	1	115-230	626	628	233	233	NS	169	72	72
135 '110 2'				230	652	654				258	111	111
										1 / 0		111
63314 BIGSTON4	63195	BIGSTONY	1	230	626	628	233	233	NS	169	72	72
135 '110 2'				230	652	654				258	111	111
										1 / 0		111
62672 GLNDALE8	62666	GLNDALE7	2	69-115	600	622	47	47	NS	30	63	63
485 '715 2'				115-69	600-618					52	111	111
490 '715 4'				69-115	600	622-601				52	110	110
										2 / 0		111
53139 FLINTCR5	53194	ELMSPRR5	1	161	520	520	305	335	NS	257	84	77
1468 FG5074			1	161	520	520				366	120	109
										1 / 0		109
31340 NIOTA	34181	BRLGTN 5	1	161	356-331	322-391	224	224	NS	89	40	40
793 ALTW-84				161	331	391				244	109	109
780 'ALTW-11 '				161	331	391				244	109	109
										2 / 0		109

Overloaded Facility		Contingency							Ratings		Overloads			
From	Name	To	Name	Circuit	Base kV	Area	Zone	Norm	Emer		MVA	Norm (%)	Emer (%)
60749	DGLAS C8	60144	DGLASCO7	1	69-115	600	601	47	47	NS	42	89	89
	545 '780 '				115	600	601				51	109	109
	430 640 '										51	108	108
	543 '775 '				115	600-608					50	107	107
	318 '500'				69-230	618-652	619-654				50	107	107
	135 '110 2'				230	652	654				49	105	105
	935 'SINGLE-028'			1	500	600	601				48	103	103
	50 '022 2'					600	601				48	103	103
	45 '020 '				500-115	600	601				48	103	103
	63 '022 7'					600	601				48	103	103
	40 '015 2'				500	600	601				48	103	103
											4 / 6		109
63219	GRANTCO7	63220	ELBOWLK7	1	115	626	629	96	96	NS	81	84	84
	595 '866 '				230	626-608	621-608				103	108	108
	593 '865 '				230-41.6	626					101	105	105
	365 '553 '				115	626	621				99	104	104
											2 / 1		108
60244	SCOTTCO7	60890	SCOTTCO8	1	115-69	600	601	70	70	NS	41	58	58
	485 '715 2'				115-69	600-618					75	107	107
											1 / 0		107
31051	MASON 13	31053	MASON 2	2	345-138	356	317	560	560	NS	409	73	73
	1155 FG3129			1	345-138	356	317				599	107	107
											1 / 0		107
60203	COON CK7	60253	TWIN LK7	1	115	600	601	371	371	NS	217	59	59
	48 '022 1'					600	601				397	107	107
											1 / 0		107
61612	RIVERTN4	61625	BLCKBRY4	1	230	608	608	327	327	NS	179	55	55
	40 '015 2'				500	600	601				348	106	107
	45 '020 '				500-115	600	601				348	106	107
	935 'SINGLE-028'			1	500	600	601				348	106	107
	50 '022 2'					600	601				346	106	106
	63 '022 7'					600	601				346	106	106
											5 / 0		107
65409	S1209 5	65383	S1209T1T	1	161	645	645	124	124	NS	92	74	74
	285 '451 '				161	645	645				130	105	105
											1 / 0		105
63030	DICKNSN3	62925	DICKNSN7	1	345-115	618	618-619	448	448	NS	316	71	71
	30 '009 5'				345	600-618	601-618				469	105	105
											0 / 1		105
58036	OLATHEE5	58046	OXFORD 5	1	161	541	541	224	224	NS	127	57	57
	1435 FG5023			1	345	541	541				234	104	104
											0 / 1		104

Overloaded Facility	Contingency									Overloads			
From Name	To	Name	Circuit	Base kV	Area	Zone	Ratings Norm	Ratings Emer		MVA	Norm (%)	Emer (%)
96120 5THMHIL	96126	5MOBTAP	1	161	130	130-133	372	372	NS	246	66	66
1398 FG4020			1	345	130	130				386	104	104
										0 / 1		104
63051 HENNING4	63052	INMAN 4	1	230	626	621	143	143	NS	115	81	81
355 '550 '				115	626-652					148	104	104
										0 / 1		104
61721 ETCO 7	61722	FORBES 7	1	115	608	608	98	98	NS	73	74	74
63 '022 7'					600	601				101	103	103
50 '022 2'					600	601				101	103	103
45 '020 '				500-115	600	601				101	103	103
40 '015 2'				500	600	601				101	103	103
935 'SINGLE-028'			1	500	600	601				101	103	103
										0 / 5		103
31221 MOBERLY	31409	OVERTON	1	161	356	314	142	142	NS	71	50	50
1398 FG4020			1	345	130	130				146	103	103
										0 / 1		103
96049 7THOMHL	96120	5THMHIL	1	345-161	130	130	625	625	NS	267	43	43
1398 FG4020			1	345	130	130				643	103	103
										0 / 1		103
63213 MARIETT7	63214	BIGSTON7	1	115	626	626-628	96	96	NS	54	56	56
135 '110 2'				230	652	654				98	102	102
										0 / 1		102
30422 CONWAY 3	31391	ORGD 1	1	138	356	318	205	205	NS	147	72	72
1060 FG128			1	345-138	356	311				209	102	102
										0 / 1		102
65355 S3455 3	65337	S3455T1T	1	345	645	645	560	560	NS	481	86	86
278 '440 '				161	645	645				569	102	102
										0 / 1		102
99798 5BATEVL	99808	5CUSHMN	1	161	151	159	148	148	NS	136	92	92
1073 FG1319			1	500	524-151	524-159				150	101	101
										0 / 1		101
59206 PRALEE 5	59211	BLSPS 5	1	161	540	540	223	245	NS	237	106	97
1435 FG5023			1	345	541	541				248	111	101
										0 / 1		101
39686 WESTONWP	39676	WESTON	1	115-345	366	366	200	220	NS	45	23	21
83 '050 2'				345/115						221	111	101
88 '050 4'										221	111	101
95 '050 6'										221	111	101
90 '050 5'										221	111	101
										0 / 4		101
61984 AUSTIN 5	63070	PL VLLY5	1	161	680-618	617-618	445	445	NS	136	31	31
915 MAPP-9				345	600					448	101	101
										0 / 1		101

Overloaded Facility		Contingency							Overloads			
From Name	To	Name	Circuit	Base kV	Area	Zone	Ratings Norm	Ratings Emer		MVA	Norm (%)	Emer (%)
34087 DYSART 5	64269	WASHBRN5	1	161	331-635	391-637	260	260	NS	172	66	66
1355 FG3728			1	345	331	393-391				261	100	101
1348 FG3724			1	345	331	393-391				261	100	101
1013 FG12006			1	345	331	393-391				261	100	101
1030 FG12016			1	345	331	393-391				261	100	101
1015 FG12009			1	345	331	393-391				261	100	101
										0 / 5		101
50024 CARROLL4	50023	CARROLL6	1	138-230	502	502	336	336	NS	176	52	52
1438 FG5029			1	345	502-520	502-520				338	101	101
										0 / 1		101
60153 MNTCELO7	60151	MNTCELO3	1	115-345	600	601	336	336	NS	196	58	58
23 '009 2'					600	601				337	100	100
										0 / 1		100
60302 COULEE 5	69523	GENOA 5	1	161	600-680	604-681	240	240	NS	161	67	67
603 '875 2'				161	600-680	604-681				241	100	100
										0 / 1		100
60153 MNTCELO7	60269	HASSAN 7	1	115	600	601	140	140	NS	50	36	36
23 '009 2'					600	601				140	100	100
										0 / 1		100
64909 N.PLATT4	65037	N.PLT8 Y	1	230	640	640	187	187	NS	134	72	72
233 '310 '				345	640	640				187	100	100
										0 / 1		100
										227 / 92		231.6

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

Case Summary pi_rfp_bid4and6

Project Name	2002 SERIES -- FIANL (F1)2004 SUMMER PEAK M
Title1	F204SUPK.SAV /SUMMER PEAK / SI
Title2	Bids 4 and 6
Case Date	7/22/2002

Power Flow File M:\PROJ\MISO\286001\PFLOW\ConvertedCases\pi_rfp_bid4and6.cft

Power Flow Controls

Area Control	☐	***SmoothStep***	☑
Remote Control	☑	***XfrmVcon***	☐
GenVar Control	☑	***XfrmFcon***	☐
Solve Method	DSOLVE		

Case Settings

Overload	☑	***VlimMin***	0.9	***RateFactor***	1
VLimit	☑	***VlimMax***	1.05	***AmpFactor***	1
VChange	☑	***VlimChange***	0.05	***RatingNumber***	2
Monitored Set	monitored	10835 Buses			

Contingency

Contingencies loaded from file M:\PROJ\MISO\286001\PFLOW\Con_MonFiles\PI_RFP.con 1

660 contingencies

2002 SERIES -- FIANL (F1)2004 SUMMER PEAK MODEL

F204SUPK.SAV /SUMMER PEAK / SI

Bids 4 and 6

7/22/2002

Overloaded Facility								Normal System				Overloads	
From	Name	To	Name	Circuit	Base kV	Area	Zone	Ratings Norm	Ratings Emer	MVA	Norm (%)	Count A / B	Max (%)
62667	ST BONI7	62925	DICKNSN7	1	115	600-618	622-619	71	71	113.7	160	58 / 0	242
34529	GRJCT5Y	34054	GR JCT 5	1	161	331	392-391	50	50	30.0	60	1 / 0	153
34043	SAVANNA5	34046	YORK 5	1	161	331	393	84	84	65.3	78	2 / 1	153
34028	LORE 5	34032	8TH ST.5	1	161	331	393	84	84	61.8	74	7 / 0	150
60277	WWACNIA7	62667	ST BONI7	1	115	600	601-622	71	71	68.3	96	9 / 7	149
34073	GR JCT 7	34529	GRJCT5Y	1	115-161	331	391-392	50	50	30.1	60	1 / 0	149
60153	MNTCELO7	60166	SALIDA 7	1	115	600	601	140	140	98.2	70	2 / 0	149
34059	BOONE 7	34073	GR JCT 7	1	115	331	391	50	50	30.1	60	1 / 0	149
60853	LK YANK8	60119	LKYNKTN7	2	69-115	600	601	15	15	6.9	46	1 / 0	149
60177	CHAMPLN7	60178	CHAMP T7	1	115	600	605-601	140	140	92.6	66	5 / 1	148
60158	STCLTP 7	60166	SALIDA 7	1	115	600	601	139	139	93.3	67	1 / 1	143
39885	CEDARU	39892	NATIONAL	1	138	368-365	368-379	96	96	76.2	79	1 / 0	137
39122	KEG 138	39218	CHA 138	1	138	364	371	240	240	227.3	95	3 / 0	129
34066	M-TOWN 7	34169	WELSBGT7	1	115	331	391	97	97	92.1	95	7 / 1	124
62132	PRKWOOD8	62090	PRKWOOD7	2	69-115	618	619	112	112	91.4	82	1 / 0	123
60194	CARVRCO7	60277	WWACNIA7	1	115	600	601	71	71	53.7	76	1 / 0	122
34059	BOONE 7	34076	BNE JCT7	1	115	331	391	60	60	52.7	88	1 / 2	122
60152	MNTCELO4	60151	MNTCELO3	1	230-345	600	601	336	336	234.4	70	1 / 1	120
67541	STVITAL7	67726	DAKOTB17	1	110	667	668-667	26	26	30.0	116	18 / 0	119
27106	11KNOB C	27135	11POND C	1	138	211	211	143	143	138.2	97	1 / 0	118
27135	11POND C	27144	11TIPTOP	1	138	211	211	143	143	137.7	96	1 / 0	118
62132	PRKWOOD8	62090	PRKWOOD7	1	69-115	618	619	84	84	81.2	97	5 / 5	116
61676	HIBBARD7	61680	WNTR ST7	1	115	608	608	144	144	118.0	82	6 / 0	116
62003	JOHNJCT7	63216	ORTONVL7	1	115	626	621-626	97	97	66.7	69	2 / 0	115
60244	SCOTTCO7	60890	SCOTTCO8	1	115-69	600	601	70	70	42.9	61	1 / 0	112
62672	GLNDALE8	62666	GLNDALE7	2	69-115	600	622	47	47	29.6	63	2 / 0	112
63214	BIGSTON7	63195	BIGSTONY	1	115-230	626	628	233	233	168.0	72	1 / 0	110
63314	BIGSTON4	63195	BIGSTONY	1	230	626	628	233	233	168.0	72	1 / 0	110
53139	FLINTCR5	53194	ELMSPRR5	1	161	520	520	305	335	256.9	84	1 / 0	109
60749	DGLAS C8	60144	DGLASCO7	1	69-115	600	601	47	47	42.1	90	4 / 6	109
31340	NIOTA	34181	BRLGTN 5	1	161	356-331	322-391	224	224	87.9	39	2 / 0	109
63030	DICKNSN3	62925	DICKNSN7	1	345-115	618	618-619	448	448	322.0	72	1 / 0	108
61612	RIVERTN4	61625	BLCKBRY4	1	230	608	608	327	327	184.1	56	5 / 0	107
31051	MASON 13	31053	MASON 2	2	345-138	356	317	560	560	408.6	73	1 / 0	107
63219	GRANTCO7	63220	ELBOWLK7	1	115	626	629	96	96	79.7	83	1 / 2	106
65409	S1209 5	65383	S1209T1T	1	161	645	645	124	124	91.8	74	1 / 0	105
58036	OLATHEE5	58046	OXFORD 5	1	161	541	541	224	224	127.7	57	0 / 1	105
34009	WINBAGO5	61932	RUTLAND5	1	161	331	393-615	84	84	76.7	91	0 / 11	104
60203	COON CK7	60253	TWIN LK7	1	115	600	601	371	371	213.6	58	0 / 1	104
39145	POR 138	39167	COL 138	1	138	364	371	286	286	166.3	58	0 / 1	104
39145	POR 138	39167	COL 138	2	138	364	371	286	286	166.3	58	0 / 1	104
96120	5THMHIL	96126	5MOBTAP	1	161	130	130-133	372	372	246.5	66	0 / 1	104
96049	7THOMHL	96120	5THMHIL	1	345-161	130	130	625	625	268.7	43	0 / 1	103
31221	MOBERLY	31409	OVERTON	1	161	356	314	142	142	71.0	50	0 / 1	103
61721	ETCO 7	61722	FORBES 7	1	115	608	608	98	98	73.0	74	0 / 5	103
63213	MARIETT7	63214	BIGSTON7	1	115	626	626-628	96	96	54.1	56	0 / 1	102
30422	CONWAY 3	31391	ORGD 1	1	138	356	318	205	205	147.0	72	0 / 1	102
60153	MNTCELO7	60151	MNTCELO3	1	115-345	600	601	336	336	199.4	59	0 / 1	102
65355	S3455 3	65337	S3455T1T	1	345	645	645	560	560	482.4	86	0 / 1	102
99798	5BATEVL	99808	5CUSHMN	1	161	151	159	148	148	135.9	92	0 / 1	102
59206	PRALEE 5	59211	BLSPS 5	1	161	540	540	223	245	236.7	106	0 / 1	101

Overloaded Facility										Normal System		Overloads	
From	Name	To	Name	Circuit	Base kV	Area	Zone	Ratings Norm	Ratings Emer	MVA	Norm (%)	Count A / B	Max (%)
39686	WESTONWP	39676	WESTON	1	115-345	366	366	200	220	44.6	22	0 / 4	101
50024	CARROLL4	50023	CARROLL6	1	138-230	502	502	336	336	176.0	52	0 / 1	101
61984	AUSTIN 5	63070	PL VLLY5	1	161	680-618	617-618	445	445	154.2	35	0 / 1	101
63051	HENNING4	63052	INMAN 4	1	230	626	621	143	143	110.5	77	0 / 1	100
												157 / 63	242

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 -- FIANL (F1)2004 SUMMER PEAK MODEL

F204SUPK.SAV /SUMMER PEAK / SI

Bids 4 and 6

7/22/2002

Overloaded Facility			Contingency								Overloads			
From	Name	To	Name	Circuit	Base kV	Area	Zone	Ratings Norm	Ratings Emer		MVA	Norm (%)	Emer (%)
62667	ST BONI7	62925	DICKNSN7	1	115	600-618	622-619	71	71	NS	114	160	160
	30 '009 5'				345	600-618	601-618				172	242	242
	845 MAPP-17				345	600-618	601-618				141	198	198
	470 '705 2'				115-345	600	601				128	180	180
	53 '022 3'					600	601				126	177	177
	38 '009 8'					600-618	601-618				125	176	176
	48 '022 1'					600	601				125	176	176
	498 '720 1'				115	600-618	601-619				124	174	174
	483 '715 1'				115-69	600-618					123	174	174
	23 '009 2'					600	601				123	173	173
	35 '009 7'					600	601				123	173	173
	28 '009 4'					600-618	601-618				123	173	173
	840 MAPP-15A			1	345	600	601				121	171	171
	475 '705 4'				345-115	600	601				120	170	170
	488 '715 3'				115-69	600	601-622				119	168	168
	58 '022 5'					600	601				119	167	168
	485 '715 2'				115-69	600-618					119	167	167
	473 '705 3'				115-345	600	601				118	166	166
	70 '022 10'					600	601				117	165	165
	843 MAPP-16			1	345	600	601				117	165	165
	468 '705 1'				345-115	600	601				116	164	164
	55 '022 4'					600	601				116	164	164
	493 '715 5'				115-69	600-618					116	163	163
	525 '755 '				115	600	601-622				115	163	163
	460 '695 '				115	618-600	619-601				115	163	163
	68 '022 9'				345-115	600	601				115	162	162
	543 '775 '				115	600-608					115	162	162
	1035 FG12019			1	345	331-635	393-636				115	162	162
	555 '795 '					600-652					115	162	162
	463 '700 1'				345	600	601				115	162	162
	500 '720 2'				115	600-618	601-619				115	162	162
	435 '655 '				115-69	600-618	601-619				115	162	162
	113 '050 12'										115	162	162
	560 '805 '				115	600	601				115	162	162
	110 '050 11'										115	162	162
	838 MAPP-14			1	161-345	600	616				115	162	162
	103 '050 10'				345-161	364-600					115	162	162
	105 '050 14'										115	162	162
	63 '022 7'					600	601				113	158	159
	205 '220 '					626	627-657				112	158	158

Overloaded Facility		Contingency							Ratings		Overloads		
From	Name	To	Name	Circuit	Base kV	Area	Zone		Norm	Emer		Norm	Emer
											MVA	(%)	(%)
	530	'760 '			345	600	601				112	158	158
	523	'750 '			115-69	608-600					112	158	158
	450	'675 '			345-230	600	601-622				112	158	158
	45	'020 '			500-115	600	601				112	158	158
	40	'015 2'			500	600	601				112	158	158
	935	'SINGLE-028'		1	500	600	601				112	158	158
	50	'022 2'				600	601				112	157	157
	430	640 '									112	157	157
	905	MAPP-5		1	345	600	601				111	157	157
	318	'500'			69-230	618-652	619-654				111	157	157
	545	'780 '			115	600	601				111	156	156
	65	'022 8'			345-115	600	601				110	156	156
	85	'050 3'			345-161	364-600					110	155	155
	93	'050 7'									110	155	155
	108	'050 1'			69/345						110	155	155
	88	'050 4'									110	155	155
	90	'050 5'									110	155	155
	83	'050 2'			345/115						110	154	154
	95	'050 6'									110	154	154
											58 / 0		242
34529	GRJCT5Y	34054	GR JCT 5	1	161	331	392-391	50	50	NS	30	60	60
	688	'936 '			115	331	391				76	153	153
											1 / 0		153
34043	SAVANNA5	34046	YORK 5	1	161	331	393	84	84	NS	65	78	78
	795	ALTW-85			161	331	393-392				128	153	153
	1025	FG12013		1	345	331	393				98	117	117
	1008	FG12003		1	161	331	393				87	103	103
											2 / 1		153
34028	LORE 5	34032	8TH ST.5	1	161	331	393	84	84	NS	62	74	74
	1018	FG12010		1	161	331	393-392				126	150	150
	785	'ALTW-13 '			161	331	393-392				106	127	127
	1013	FG12006		1	345	331	393-391				88	105	105
	1348	FG3724		1	345	331	393-391				88	105	105
	1030	FG12016		1	345	331	393-391				88	105	105
	1015	FG12009		1	345	331	393-391				88	105	105
	1355	FG3728		1	345	331	393-391				88	105	105
											7 / 0		150

Overloaded Facility	Contingency							Ratings		Overloads			
From Name	To	Name	Circuit	Base kV	Area	Zone	Norm	Emer		MVA	Norm (%)	Emer (%)
60277 WWACNIA7	62667	ST BONI7	1	115	600	601-622	71	71	NS	68	96	96
	30 '009 5'			345	600-618	601-618				106	149	149
	845 MAPP-17			345	600-618	601-618				87	122	122
	470 '705 2'			115-345	600	601				82	115	115
	53 '022 3'				600	601				78	110	111
	48 '022 1'				600	601				78	110	110
	483 '715 1'			115-69	600-618					77	109	109
	38 '009 8'				600-618	601-618				77	108	108
	28 '009 4'				600-618	601-618				76	108	108
	23 '009 2'				600	601				75	105	105
	35 '009 7'				600	601				74	104	105
	475 '705 4'			345-115	600	601				74	104	104
	488 '715 3'			115-69	600	601-622				74	104	104
	840 MAPP-15A		1	345	600	601				73	103	103
	58 '022 5'				600	601				73	103	103
	70 '022 10'				600	601				71	101	101
	473 '705 3'			115-345	600	601				71	101	101
										9 / 7		149
34073 GR JCT 7	34529	GRJCT5Y	1	115-161	331	391-392	50	50	NS	30	60	60
	688 '936 '			115	331	391				75	149	149
										1 / 0		149
60153 MNTCELO7	60166	SALIDA 7	1	115	600	601	140	140	NS	98	70	70
	545 '780 '			115	600	601				209	149	149
	450 '675 '			345-230	600	601-622				149	107	107
										2 / 0		149
34059 BOONE 7	34073	GR JCT 7	1	115	331	391	50	50	NS	30	60	60
	688 '936 '			115	331	391				74	149	149
										1 / 0		149
60853 LK YANK8	60119	LKYNKTN7	2	69-115	600	601	15	15	NS	7	46	46
	345 '530 '			69-115	600-652	601-605				22	149	149
										1 / 0		149
60177 CHAMPLN7	60178	CHAMP T7	1	115	600	605-601	140	140	NS	93	66	66
	38 '009 8'				600-618	601-618				207	148	148
	35 '009 7'				600	601				206	147	147
	30 '009 5'			345	600-618	601-618				162	116	116
	840 MAPP-15A		1	345	600	601				157	112	112
	443 '670 1'				600-618	601-619				153	109	109
	28 '009 4'				600-618	601-618				144	103	103
										5 / 1		148
60158 STCLTP 7	60166	SALIDA 7	1	115	600	601	139	139	NS	93	67	67
	545 '780 '			115	600	601				198	142	143
	450 '675 '			345-230	600	601-622				143	103	103
										1 / 1		143

Overloaded Facility		Contingency							Ratings		Overloads			
From	Name	To	Name	Circuit	Base kV	Area	Zone	Norm	Emer		MVA	Norm (%)	Emer (%)
39885	CEDARU	39892	NATIONAL	1	138	368-365	368-379	96	96	NS	76	79	79
	1578 FG65006			1	138	365-368	379-368				131	137	137
											1 / 0		137
39122	KEG 138	39218	CHA 138	1	138	364	371	240	240	NS	227	95	95
	1130 FG3031			1	138	364-367	371-367				309	129	129
	1580 FG65009			1	345	367	391-367				290	121	121
	1118 FG3022			1	345	367	391-367				290	121	121
											3 / 0		129
34066	M-TOWN 7	34169	WELSBGT7	1	115	331	391	97	97	NS	92	95	95
	683 '933 '				345-161	635	637				120	124	124
	1028 FG12015			1	345	635	637				120	124	124
	1355 FG3728			1	345	331	393-391				102	106	106
	1030 FG12016			1	345	331	393-391				102	106	106
	1015 FG12009			1	345	331	393-391				102	106	106
	1348 FG3724			1	345	331	393-391				102	106	106
	1013 FG12006			1	345	331	393-391				102	106	106
	680 '932 3'				161/345	331-635	391-637				97	100	100
											7 / 1		124
62132	PRKWOOD8	62090	PRKWOOD7	2	69-115	618	619	112	112	NS	91	82	82
	433 '650 '				115-69	600-618	601-619				137	123	123
											1 / 0		123
60194	CARVRCO7	60277	WWACNIA7	1	115	600	601	71	71	NS	54	76	76
	30 '009 5'				345	600-618	601-618				87	122	122
											1 / 0		122
34059	BOONE 7	34076	BNE JCT7	1	115	331	391	60	60	NS	53	88	88
	678 '932 2'				115/345	331-635	391-637				73	122	122
	770 'ALTW-07 '				161-69	331	392-391				62	103	103
	625 '911 '				161	331-652	391-654				60	101	101
											1 / 2		122
60152	MNTCELO4	60151	MNTCELO3	1	230-345	600	601	336	336	NS	234	70	70
	450 '675 '				345-230	600	601-622				404	120	120
	23 '009 2'					600	601				345	103	103
											1 / 1		120

Overloaded Facility		Contingency						Ratings		Overloads			
From	Name	To	Name	Circuit	Base kV	Area	Zone	Norm	Emer		MVA	Norm (%)	Emer (%)
67541	STVITAL7	67726	DAKOTB17	1	110	667	668-667	26	26	NS	30	116	116
	15 '003 '										31	119	119
	13 '001 '				230						31	119	119
	948 'SINGLE-044'			1	230	600-667	601-668				31	119	119
	18 '007 '					608	657-608				31	119	119
	943 'SINGLE-040'			1	230	608	657				31	118	118
	945 'SINGLE-042'			1	230	608	608-657				31	118	118
	950 'SINGLE-046'				345-24	626	657-661				31	118	118
	205 '220 '					626	627-657				30	117	117
	45 '020 '				500-115	600	601				30	117	117
	63 '022 7'					600	601				30	117	117
	935 'SINGLE-028'			1	500	600	601				30	117	117
	40 '015 2'				500	600	601				30	117	117
	50 '022 2'					600	601				30	117	117
	215 '250 '				230-115	618-626					30	117	117
	380 '570 1'					626	626-657				30	114	114
	818 'FORBES 7T-8'					608-600	608-601				30	114	114
	938 'SINGLE-031'			1	230	626	657				29	113	113
	940 'SINGLE-034'			1	230	626-667	657-668				28	109	109
											18 / 0		119
27106	11KNOB C	27135	11POND C	1	138	211	211	143	143	NS	138	97	97
	1283 FG3418			1	765	205	250				169	118	118
											1 / 0		118
27135	11POND C	27144	11TIPTOP	1	138	211	211	143	143	NS	138	96	96
	1283 FG3418			1	765	205	250				168	118	118
											1 / 0		118
62132	PRKWOOD8	62090	PRKWOOD7	1	69-115	618	619	84	84	NS	81	97	97
	503 '725 '				69-230	618	619				98	116	116
	440 '665 '				230-69	600-618	601-619				95	113	113
	445 '670 2'				345-230	600-618	601-619				94	112	112
	450 '675 '				345-230	600	601-622				90	107	107
	538 '765 '				345-230	600-618	601-619				89	106	106
	465 '700 2'				345	600	601				86	102	102
	30 '009 5'				345	600-618	601-618				85	101	101
	435 '655 '				115-69	600-618	601-619				85	101	101
	818 'FORBES 7T-8'					608-600	608-601				84	101	101
	840 MAPP-15A			1	345	600	601				84	100	100
											5 / 5		116

Overloaded Facility		Contingency									Overloads			
From Name	To	Name	Circuit	Base kV	Area	Zone	Ratings Norm	Ratings Emer		MVA	Norm (%)	Emer (%)
61676 HIBBARD7	61680	WNTR ST7	1	115	608	608	144	144	NS	118	82	82
155 132L				115	608	608				167	116	116
63 '022 7'					600	601				166	115	115
50 '022 2'					600	601				165	115	115
45 '020 '				500-115	600	601				162	112	112
40 '015 2'				500	600	601				162	112	112
935 'SINGLE-028'			1	500	600	601				162	112	112
										6 / 0		116
62003 JOHNJCT7	63216	ORTONVL7	1	115	626	621-626	97	97	NS	67	69	69
135 '110 2'				230	652	654				112	115	115
410 '610 '					626					102	105	105
										2 / 0		115
60244 SCOTTCO7	60890	SCOTTCO8	1	115-69	600	601	70	70	NS	43	61	61
485 '715 2'				115-69	600-618					78	112	112
										1 / 0		112
62672 GLNDALE8	62666	GLNDALE7	2	69-115	600	622	47	47	NS	30	63	63
485 '715 2'				115-69	600-618					52	112	112
490 '715 4'				69-115	600	622-601				52	111	111
										2 / 0		112
63214 BIGSTON7	63195	BIGSTONY	1	115-230	626	628	233	233	NS	168	72	72
135 '110 2'				230	652	654				257	110	110
										1 / 0		110
63314 BIGSTON4	63195	BIGSTONY	1	230	626	628	233	233	NS	168	72	72
135 '110 2'				230	652	654				257	110	110
										1 / 0		110
53139 FLINTCR5	53194	ELMSPRR5	1	161	520	520	305	335	NS	257	84	77
1468 FG5074			1	161	520	520				366	120	109
										1 / 0		109
60749 DGLAS C8	60144	DGLASCO7	1	69-115	600	601	47	47	NS	42	90	90
545 '780 '				115	600	601				51	109	109
543 '775 '				115	600-608					51	108	108
430 640 '										50	107	107
318 '500'				69-230	618-652	619-654				50	106	106
135 '110 2'				230	652	654				49	105	105
935 'SINGLE-028'			1	500	600	601				48	103	103
40 '015 2'				500	600	601				48	103	103
45 '020 '				500-115	600	601				48	103	103
50 '022 2'					600	601				48	103	103
63 '022 7'					600	601				48	103	103
										4 / 6		109
31340 NIOTA	34181	BRLGTN 5	1	161	356-331	322-391	224	224	NS	88	39	39
780 'ALTW-11 '				161	331	391				243	109	109
793 ALTW-84				161	331	391				243	109	109
										2 / 0		109

Overloaded Facility	Contingency									Overloads			
From Name	To	Name	Circuit	Base kV	Area	Zone	Ratings Norm	Ratings Emer		MVA	Norm (%)	Emer (%)
63030 DICKNSN3	62925	DICKNSN7	1	345-115	618	618-619	448	448	NS	322	72	72
30 '009 5'				345	600-618	601-618				482	108	108
										1 / 0		108
61612 RIVERTN4	61625	BLCKBRY4	1	230	608	608	327	327	NS	184	56	56
45 '020 '				500-115	600	601				350	107	107
935 'SINGLE-028'			1	500	600	601				350	107	107
40 '015 2'				500	600	601				350	107	107
50 '022 2'					600	601				349	107	107
63 '022 7'					600	601				348	106	107
										5 / 0		107
31051 MASON 13	31053	MASON 2	2	345-138	356	317	560	560	NS	409	73	73
1155 FG3129			1	345-138	356	317				598	107	107
										1 / 0		107
63219 GRANTCO7	63220	ELBOWLK7	1	115	626	629	96	96	NS	80	83	83
595 '866 '				230	626-608	621-608				102	106	106
593 '865 '				230-41.6	626					99	103	103
365 '553 '				115	626	621				98	102	102
										1 / 2		106
65409 S1209 5	65383	S1209T1T	1	161	645	645	124	124	NS	92	74	74
285 '451 '				161	645	645				130	105	105
										1 / 0		105
58036 OLATHEE5	58046	OXFORD 5	1	161	541	541	224	224	NS	128	57	57
1435 FG5023			1	345	541	541				235	105	105
										0 / 1		105
34009 WINBAGO5	61932	RUTLAND5	1	161	331	393-615	84	84	NS	77	91	91
1355 FG3728			1	345	331	393-391				87	104	104
1348 FG3724			1	345	331	393-391				87	104	104
1013 FG12006			1	345	331	393-391				87	104	104
1015 FG12009			1	345	331	393-391				87	104	104
1030 FG12016			1	345	331	393-391				87	104	104
573 '825 '				345-161	331-600					85	101	101
63 '022 7'					600	601				84	100	100
935 'SINGLE-028'			1	500	600	601				84	100	100
40 '015 2'				500	600	601				84	100	100
50 '022 2'					600	601				84	100	100
45 '020 '				500-115	600	601				84	100	100
										0 / 11		104
60203 COON CK7	60253	TWIN LK7	1	115	600	601	371	371	NS	214	58	58
48 '022 1'					600	601				386	104	104
										0 / 1		104
39145 POR 138	39167	COL 138	1	138	364	371	286	286	NS	166	58	58
1583 FG65010			2	138	364	371				297	104	104
										0 / 1		104

Overloaded Facility		Contingency								Overloads			
From Name	To	Name	Circuit	Base kV	Area	Zone	Ratings Norm	Ratings Emer		MVA	Norm (%)	Emer (%)
39145 POR 138	39167	COL 138	2	138	364	371	286	286	NS	166	58	58
1585 FG65011			1	138	364	371				297	104	104
										0 / 1		104
96120 5THMHIL	96126	5MOBTAP	1	161	130	130-133	372	372	NS	247	66	66
1398 FG4020			1	345	130	130				385	104	104
										0 / 1		104
96049 7THOMHL	96120	5THMHIL	1	345-161	130	130	625	625	NS	269	43	43
1398 FG4020			1	345	130	130				643	103	103
										0 / 1		103
31221 MOBERLY	31409	OVERTON	1	161	356	314	142	142	NS	71	50	50
1398 FG4020			1	345	130	130				146	103	103
										0 / 1		103
61721 ETCO 7	61722	FORBES 7	1	115	608	608	98	98	NS	73	74	74
63 '022 7'					600	601				101	103	103
50 '022 2'					600	601				101	103	103
45 '020 '				500-115	600	601				100	102	102
935 'SINGLE-028'			1	500	600	601				100	102	102
40 '015 2'				500	600	601				100	102	102
										0 / 5		103
63213 MARIETT7	63214	BIGSTON7	1	115	626	626-628	96	96	NS	54	56	56
135 '110 2'				230	652	654				98	102	102
										0 / 1		102
30422 CONWAY 3	31391	ORGD 1	1	138	356	318	205	205	NS	147	72	72
1060 FG128			1	345-138	356	311				209	102	102
										0 / 1		102
60153 MNTCELO7	60151	MNTCELO3	1	115-345	600	601	336	336	NS	199	59	59
23 '009 2'					600	601				342	102	102
										0 / 1		102
65355 S3455 3	65337	S3455T1T	1	345	645	645	560	560	NS	482	86	86
278 '440 '				161	645	645				570	102	102
										0 / 1		102
99798 5BATEVL	99808	5CUSHMN	1	161	151	159	148	148	NS	136	92	92
1073 FG1319			1	500	524-151	524-159				150	102	102
										0 / 1		102
59206 PRALEE 5	59211	BLSPS 5	1	161	540	540	223	245	NS	237	106	97
1435 FG5023			1	345	541	541				248	111	101
										0 / 1		101
39686 WESTONWP	39676	WESTON	1	115-345	366	366	200	220	NS	45	22	20
83 '050 2'				345/115						221	111	101
88 '050 4'										221	111	101
95 '050 6'										221	111	101
90 '050 5'										221	111	101
										0 / 4		101

Overloaded Facility		Contingency								Overloads			
From	Name	To	Name	Circuit	Base kV	Area	Zone	Ratings Norm	Ratings Emer		MVA	Norm (%)	Emer (%)
50024	CARROLL4	50023	CARROLL6	1	138-230	502	502	336	336	NS	176	52	52
	1438 FG5029			1	345	502-520	502-520				338	101	101
											0 / 1		101
61984	AUSTIN 5	63070	PL VLLY5	1	161	680-618	617-618	445	445	NS	154	35	35
	915 MAPP-9				345	600					448	101	101
											0 / 1		101
63051	HENNING4	63052	INMAN 4	1	230	626	621	143	143	NS	111	77	77
	355 '550 '				115	626-652					143	100	100
											0 / 1		100
											157 / 63		241.6

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

Case Summary pi_rfp_bid5and6

Project Name	2002 SERIES -- FIANL (F1)2004 SUMMER PEAK M
Title1	F204SUPK.SAV /SUMMER PEAK / SI
Title2	Bids 5 and 6
Case Date	7/22/2002

Power Flow File M:\PROJ\MISO\286001\PFLOW\ConvertedCases\pi_rfp_bid5and6.cft

Power Flow Controls

Area Control	☐	***SmoothStep***	☑
Remote Control	☑	***XfrmVcon***	☐
GenVar Control	☑	***XfrmFcon***	☐
Solve Method	DSOLVE		

Case Settings

Overload	☑	***VlimMin***	0.9	***RateFactor***	1
VLimit	☑	***VlimMax***	1.05	***AmpFactor***	1
VChange	☑	***VlimChange***	0.05	***RatingNumber***	2
Monitored Set	monitored	10835 Buses			

Contingency

Contingencies loaded from file M:\PROJ\MISO\286001\PFLOW\Con_MonFiles\PI_RFP.con 1

660 contingencies

2002 SERIES -- FIANL (F1)2004 SUMMER PEAK MODEL

F204SUPK.SAV /SUMMER PEAK / SI

Bids 5 and 6

7/22/2002

Overloaded Facility								Normal System				Overloads	
From	Name	To	Name	Circuit	Base kV	Area	Zone	Ratings Norm	Ratings Emer	MVA	Norm (%)	Count A / B	Max (%)
62667	ST BONI7	62925	DICKNSN7	1	115	600-618	622-619	71	71	110.1	155	62 / 0	230
60153	MNTCELO7	60166	SALIDA 7	1	115	600	601	140	140	103.2	74	2 / 0	154
34529	GRJCT5Y	34054	GR JCT 5	1	161	331	392-391	50	50	29.1	58	1 / 0	153
34073	GR JCT 7	34529	GRJCT5Y	1	115-161	331	391-392	50	50	29.1	58	1 / 0	149
34059	BOONE 7	34073	GR JCT 7	1	115	331	391	50	50	29.1	58	1 / 0	149
60177	CHAMPLN7	60178	CHAMP T7	1	115	600	605-601	140	140	99.2	71	6 / 0	148
60158	STCLTP 7	60166	SALIDA 7	1	115	600	601	139	139	98.3	71	2 / 0	147
60277	WWACNIA7	62667	ST BONI7	1	115	600	601-622	71	71	65.7	93	7 / 3	142
34043	SAVANNA5	34046	YORK 5	1	161	331	393	84	84	59.7	71	2 / 0	140
39885	CEDARU	39892	NATIONAL	1	138	368-365	368-379	96	96	76.5	80	1 / 0	137
60853	LK YANK8	60119	LKYNKTN7	2	69-115	600	601	15	15	6.7	45	1 / 0	136
34028	LORE 5	34032	8TH ST.5	1	161	331	393	84	84	50.4	60	1 / 1	128
39122	KEG 138	39218	CHA 138	1	138	364	371	240	240	224.5	94	3 / 0	127
60152	MNTCELO4	60151	MNTCELO3	1	230-345	600	601	336	336	242.1	72	1 / 1	124
62132	PRKWOOD8	62090	PRKWOOD7	2	69-115	618	619	112	112	91.9	82	1 / 0	123
34059	BOONE 7	34076	BNE JCT7	1	115	331	391	60	60	53.4	89	1 / 2	122
27106	11KNOB C	27135	11POND C	1	138	211	211	143	143	141.4	99	1 / 13	121
27135	11POND C	27144	11TIPTOP	1	138	211	211	143	143	140.8	98	1 / 12	120
67541	STVITAL7	67726	DAKOTB17	1	110	667	668-667	26	26	30.1	116	18 / 0	119
61676	HIBBARD7	61680	WNTR ST7	1	115	608	608	144	144	120.9	84	6 / 0	119
34066	M-TOWN 7	34169	WELSBGT7	1	115	331	391	97	97	87.3	90	2 / 0	118
62132	PRKWOOD8	62090	PRKWOOD7	1	69-115	618	619	84	84	81.5	97	5 / 8	117
60194	CARVRCO7	60277	WWACNIA7	1	115	600	601	71	71	51.5	72	1 / 0	115
62672	GLNDALE8	62666	GLNDALE7	2	69-115	600	622	47	47	29.6	63	2 / 0	111
60244	SCOTTCO7	60890	SCOTTCO8	1	115-69	600	601	70	70	41.6	59	1 / 0	110
31340	NIOTA	34181	BRLGTN 5	1	161	356-331	322-391	224	224	90.5	40	2 / 0	109
53139	FLINTCR5	53194	ELMSPRR5	1	161	520	520	305	335	255.9	84	1 / 0	109
60305	EAU CLA5	60317	WHEATON5	1	161	600	604	272	272	222.7	82	1 / 0	109
60749	DGLAS C8	60144	DGLASCO7	1	69-115	600	601	47	47	41.6	88	2 / 8	109
62003	JOHNJCT7	63216	ORTONVL7	1	115	626	621-626	97	97	63.8	66	1 / 1	108
34009	WINBAGO5	61932	RUTLAND5	1	161	331	393-615	84	84	73.3	87	1 / 1	107
60203	COON CK7	60253	TWIN LK7	1	115	600	601	371	371	216.2	58	1 / 0	107
61612	RIVERTN4	61625	BLCKBRY4	1	230	608	608	327	327	188.2	58	5 / 0	107
31051	MASON 13	31053	MASON 2	2	345-138	356	317	560	560	406.7	73	1 / 0	106
96120	5THMHIL	96126	5MOBTAP	1	161	130	130-133	372	372	256.6	69	1 / 0	106
63030	DICKNSN3	62925	DICKNSN7	1	345-115	618	618-619	448	448	323.8	72	1 / 0	106
99798	5BATEVL	99808	5CUSHMN	1	161	151	159	148	148	140.5	95	1 / 10	105
65409	S1209 5	65383	S1209T1T	1	161	645	645	124	124	92.0	74	1 / 0	105
31221	MOBERLY	31409	OVERTON	1	161	356	314	142	142	76.0	53	1 / 0	105
63214	BIGSTON7	63195	BIGSTONY	1	115-230	626	628	233	233	163.3	70	0 / 1	105
63314	BIGSTON4	63195	BIGSTONY	1	230	626	628	233	233	163.3	70	0 / 1	105
96049	7THOMHL	96120	5THMHIL	1	345-161	130	130	625	625	274.8	44	0 / 1	103
63219	GRANTCO7	63220	ELBOWLK7	1	115	626	629	96	96	77.5	81	0 / 1	103
61721	ETCO 7	61722	FORBES 7	1	115	608	608	98	98	73.2	75	0 / 5	102
30422	CONWAY 3	31391	ORGD 1	1	138	356	318	205	205	146.8	72	0 / 1	102
60153	MNTCELO7	60151	MNTCELO3	1	115-345	600	601	336	336	201.1	60	0 / 1	102
64909	N.PLATT4	65037	N.PLT8 Y	1	230	640	640	187	187	132.9	71	0 / 1	101
39145	POR 138	39167	COL 138	1	138	364	371	286	286	161.7	57	0 / 1	101
39145	POR 138	39167	COL 138	2	138	364	371	286	286	161.7	57	0 / 1	101
50024	CARROLL4	50023	CARROLL6	1	138-230	502	502	336	336	176.1	52	0 / 1	101
39686	WESTONWP	39676	WESTON	1	115-345	366	366	200	220	40.8	20	0 / 4	101

Overloaded Facility										Normal System		Overloads	
From	Name	To	Name	Circuit	Base kV	Area	Zone	Ratings Norm	Ratings Emer	MVA	Norm (%)	Count A / B	Max (%)
65355	S3455 3	65337	S3455T1T	1	345	645	645	560	560	473.4	85	0 / 1	101
61984	AUSTIN 5	63070	PL VLLY5	1	161	680-618	617-618	445	445	158.0	35	0 / 1	101
32277	TURKY HL	32307	E BELLVL	1	138	357	357	287	287	204.0	71	0 / 1	100
64909	N.PLATT4	65038	N.PLT9 Y	1	230	640	640	187	187	131.6	70	0 / 1	100
												150 / 83	230

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 -- FIANL (F1)2004 SUMMER PEAK MODEL

F204SUPK.SAV /SUMMER PEAK / SI

Bids 5 and 6

7/22/2002

Overloaded Facility			Contingency								Overloads			
From	Name	To	Name	Circuit	Base kV	Area	Zone	Ratings Norm	Ratings Emer		MVA	Norm (%)	Emer (%)
62667	ST BONI7	62925	DICKNSN7	1	115	600-618	622-619	71	71	NS	110	155	155
	30 '009 5'				345	600-618	601-618				163	230	230
	845 MAPP-17				345	600-618	601-618				135	191	191
	53 '022 3'					600	601				123	174	174
	48 '022 1'					600	601				122	172	173
	38 '009 8'					600-618	601-618				122	172	172
	470 '705 2'				115-345	600	601				122	172	172
	28 '009 4'					600-618	601-618				120	169	169
	498 '720 1'				115	600-618	601-619				120	169	169
	483 '715 1'				115-69	600-618					119	167	167
	23 '009 2'					600	601				119	167	167
	35 '009 7'					600	601				118	167	167
	840 MAPP-15A			1	345	600	601				117	165	165
	475 '705 4'				345-115	600	601				117	164	164
	58 '022 5'					600	601				116	163	163
	488 '715 3'				115-69	600	601-622				115	162	162
	473 '705 3'				115-345	600	601				115	162	162
	485 '715 2'				115-69	600-618					115	161	161
	70 '022 10'					600	601				114	161	161
	55 '022 4'					600	601				114	160	160
	843 MAPP-16			1	345	600	601				114	160	160
	68 '022 9'				345-115	600	601				112	158	158
	525 '755 '				115	600	601-622				112	158	158
	113 '050 12'										112	158	158
	493 '715 5'				115-69	600-618					112	158	158
	460 '695 '				115	618-600	619-601				112	158	158
	110 '050 11'										112	158	158
	105 '050 14'										112	158	158
	103 '050 10'				345-161	364-600					112	158	158
	543 '775 '				115	600-608					112	157	157
	115 '050 13'										112	157	157
	1235 FG3239				115/345						112	157	157
	1105 FG3016				115/345						112	157	157
	100 '050 9'				345/115						112	157	157
	60 '022 6'				345	600	601				112	157	157
	1480 FG6062			1	345	600	601-604				112	157	157
	560 '805 '				115	600	601				111	157	157
	555 '795 '					600-652					111	157	157
	838 MAPP-14			1	161-345	600	616				111	157	157
	98 '050 8'				69/345						111	157	157

Overloaded Facility			Contingency								Overloads			
From	Name	To	Name	Circuit	Base kV	Area	Zone	Ratings Norm	Ratings Emer		MVA	Norm (%)	Emer (%)
	468	'705 1'			345-115	600	601				111	157	157
	530	'760 '			345	600	601				109	154	154
	63	'022 7'				600	601				109	154	154
	205	'220 '				626	627-657				109	154	154
	50	'022 2'				600	601				109	153	153
	523	'750 '			115-69	608-600					109	153	153
	450	'675 '			345-230	600	601-622				109	153	153
	45	'020 '			500-115	600	601				108	153	153
	40	'015 2'			500	600	601				108	153	153
	935	'SINGLE-028'		1	500	600	601				108	153	153
	1353	FG3727		1	345	331-600	393-601				108	152	153
	430	640 '									108	152	152
	318	'500'			69-230	618-652	619-654				108	152	152
	65	'022 8'			345-115	600	601				108	152	152
	545	'780 '			115	600	601				107	151	151
	93	'050 7'									107	151	151
	85	'050 3'			345-161	364-600					107	151	151
	90	'050 5'									107	151	151
	88	'050 4'									107	151	151
	108	'050 1'			69/345						107	151	151
	95	'050 6'									107	150	150
	83	'050 2'			345/115						107	150	150
	905	MAPP-5		1	345	600	601				103	146	146
											62 / 0		230
60153	MNTCELO7	60166	SALIDA 7	1	115	600	601	140	140	NS	103	74	74
	545	'780 '			115	600	601				216	154	154
	450	'675 '			345-230	600	601-622				156	111	111
											2 / 0		154
34529	GRJCT5Y	34054	GR JCT 5	1	161	331	392-391	50	50	NS	29	58	58
	688	'936 '			115	331	391				76	153	153
											1 / 0		153
34073	GR JCT 7	34529	GRJCT5Y	1	115-161	331	391-392	50	50	NS	29	58	58
	688	'936 '			115	331	391				75	149	149
											1 / 0		149
34059	BOONE 7	34073	GR JCT 7	1	115	331	391	50	50	NS	29	58	58
	688	'936 '			115	331	391				74	149	149
											1 / 0		149

Overloaded Facility		Contingency							Ratings		Overloads			
From	Name	To	Name	Circuit	Base kV	Area	Zone		Norm	Emer		MVA	Norm (%)	Emer (%)
60177	CHAMPLN7	60178	CHAMP T7	1	115	600	605-601		140	140	NS	99	71	71
	38 '009 8'					600-618	601-618					208	148	148
	35 '009 7'					600	601					207	148	148
	30 '009 5'				345	600-618	601-618					162	116	116
	443 '670 1'					600-618	601-619					161	115	115
	840 MAPP-15A			1	345	600	601					157	112	112
	28 '009 4'					600-618	601-618					153	109	109
												6 / 0		148
60158	STCLTP 7	60166	SALIDA 7	1	115	600	601		139	139	NS	98	71	71
	545 '780 '				115	600	601					204	147	147
	450 '675 '				345-230	600	601-622					149	107	107
												2 / 0		147
60277	WWACNIA7	62667	ST BONI7	1	115	600	601-622		71	71	NS	66	93	93
	30 '009 5'				345	600-618	601-618					101	142	142
	845 MAPP-17				345	600-618	601-618					83	117	117
	53 '022 3'					600	601					77	108	108
	470 '705 2'				115-345	600	601					76	108	108
	48 '022 1'					600	601					76	107	107
	38 '009 8'					600-618	601-618					75	106	106
	28 '009 4'					600-618	601-618					75	105	105
	483 '715 1'				115-69	600-618						74	104	104
	23 '009 2'					600	601					72	101	101
	35 '009 7'					600	601					71	100	100
												7 / 3		142
34043	SAVANNA5	34046	YORK 5	1	161	331	393		84	84	NS	60	71	71
	795 ALTW-85				161	331	393-392					117	140	140
	1025 FG12013			1	345	331	393					90	107	107
												2 / 0		140
39885	CEDARU	39892	NATIONAL	1	138	368-365	368-379		96	96	NS	76	80	80
	1578 FG65006			1	138	365-368	379-368					131	137	137
												1 / 0		137
60853	LK YANK8	60119	LKYNKTN7	2	69-115	600	601		15	15	NS	7	45	45
	345 '530 '				69-115	600-652	601-605					20	136	136
												1 / 0		136
34028	LORE 5	34032	8TH ST.5	1	161	331	393		84	84	NS	50	60	60
	1018 FG12010			1	161	331	393-392					107	128	128
	785 'ALTW-13 '				161	331	393-392					88	105	105
												1 / 1		128
39122	KEG 138	39218	CHA 138	1	138	364	371		240	240	NS	224	94	94
	1130 FG3031			1	138	364-367	371-367					305	127	127
	1580 FG65009			1	345	367	391-367					287	120	120
	1118 FG3022			1	345	367	391-367					287	120	120
												3 / 0		127

Overloaded Facility		Contingency						Ratings		Overloads			
From	Name	To	Name	Circuit	Base kV	Area	Zone	Norm	Emer		MVA	Norm (%)	Emer (%)
60152	MNTCELO4	60151	MNTCELO3	1	230-345	600	601	336	336	NS	242	72	72
	450 '675 '				345-230	600	601-622				418	124	124
	23 '009 2'					600	601				349	104	104
											1 / 1		124
62132	PRKWOOD8	62090	PRKWOOD7	2	69-115	618	619	112	112	NS	92	82	82
	433 '650 '				115-69	600-618	601-619				138	123	123
											1 / 0		123
34059	BOONE 7	34076	BNE JCT7	1	115	331	391	60	60	NS	53	89	89
	678 '932 2'				115/345	331-635	391-637				73	122	122
	770 'ALTW-07 '				161-69	331	392-391				62	104	104
	625 '911 '				161	331-652	391-654				61	102	102
											1 / 2		122
27106	11KNOB C	27135	11POND C	1	138	211	211	143	143	NS	141	99	99
	1283 FG3418			1	765	205	250				173	121	121
	1260 FG3404			1	345	356-357	323-357				146	102	102
	1255 FG3402			1	345	356-357	323-357				146	102	102
	998 FG110			1	345	356-357	323-357				146	102	102
	1005 FG116			1	345	356-357	323-357				146	102	102
	1285 FG3419			1	345	356-357	323-357				146	102	102
	1290 FG3424				345	356-357	323-357				145	102	102
	1390 FG4017				345	356-357	323-357				145	102	102
	1050 FG124				345	356-357	323-357				145	102	102
	1058 FG127				345	356-357	323-357				145	102	102
	1170 FG3135				345	356-357	323-357				145	102	102
	1278 FG3413				345	356-357	323-357				145	102	102
	1133 FG3118			1	345	205-356	252-323				144	101	101
	1410 FG45009			1	500	201	201				143	100	100
											1 / 13		121
27135	11POND C	27144	11TIPTOP	1	138	211	211	143	143	NS	141	98	98
	1283 FG3418			1	765	205	250				172	120	120
	1255 FG3402			1	345	356-357	323-357				145	101	101
	998 FG110			1	345	356-357	323-357				145	101	101
	1005 FG116			1	345	356-357	323-357				145	101	101
	1260 FG3404			1	345	356-357	323-357				145	101	101
	1285 FG3419			1	345	356-357	323-357				145	101	101
	1290 FG3424				345	356-357	323-357				145	101	101
	1058 FG127				345	356-357	323-357				145	101	101
	1278 FG3413				345	356-357	323-357				145	101	101
	1050 FG124				345	356-357	323-357				145	101	101
	1170 FG3135				345	356-357	323-357				145	101	101
	1390 FG4017				345	356-357	323-357				145	101	101
	1133 FG3118			1	345	205-356	252-323				144	100	100
											1 / 12		120

Overloaded Facility		Contingency								Overloads			
From	Name	To	Name	Circuit	Base kV	Area	Zone	Ratings Norm	Ratings Emer		MVA	Norm (%)	Emer (%)
67541	STVITAL7	67726	DAKOTB17	1	110	667	668-667	26	26	NS	30	116	116
	15	'003 '									31	119	119
	948	'SINGLE-044'		1	230	600-667	601-668				31	119	119
	13	'001 '			230						31	119	119
	18	'007 '				608	657-608				31	119	119
	943	'SINGLE-040'		1	230	608	657				31	118	119
	945	'SINGLE-042'		1	230	608	608-657				31	118	118
	950	'SINGLE-046'			345-24	626	657-661				31	118	118
	935	'SINGLE-028'		1	500	600	601				30	117	117
	40	'015 2'			500	600	601				30	117	117
	205	'220 '				626	627-657				30	117	117
	50	'022 2'				600	601				30	117	117
	63	'022 7'				600	601				30	117	117
	45	'020 '			500-115	600	601				30	117	117
	215	'250 '			230-115	618-626					30	117	117
	380	'570 1'				626	626-657				30	115	115
	818	'FORBES 7T-8'				608-600	608-601				30	114	114
	938	'SINGLE-031'		1	230	626	657				29	113	113
	940	'SINGLE-034'		1	230	626-667	657-668				28	109	109
											18 / 0		119
61676	HIBBARD7	61680	WNTR ST7	1	115	608	608	144	144	NS	121	84	84
	155	132L			115	608	608				171	119	119
	63	'022 7'				600	601				167	116	116
	50	'022 2'				600	601				167	116	116
	45	'020 '			500-115	600	601				163	113	113
	40	'015 2'			500	600	601				163	113	113
	935	'SINGLE-028'		1	500	600	601				163	113	113
											6 / 0		119
34066	M-TOWN 7	34169	WELSBGT7	1	115	331	391	97	97	NS	87	90	90
	1028	FG12015		1	345	635	637				114	118	118
	683	'933 '			345-161	635	637				114	118	118
											2 / 0		118

Overloaded Facility		Contingency									Overloads			
From	Name	To	Name	Circuit	Base kV	Area	Zone	Ratings Norm	Ratings Emer		MVA	Norm (%)	Emer (%)
62132	PRKWOOD8	62090	PRKWOOD7	1	69-115	618	619	84	84	NS	82	97	97
	503 '725 '				69-230	618	619				98	117	117
	440 '665 '				230-69	600-618	601-619				95	113	113
	445 '670 2'				345-230	600-618	601-619				94	112	112
	450 '675 '				345-230	600	601-622				90	108	108
	538 '765 '				345-230	600-618	601-619				89	106	106
	435 '655 '				115-69	600-618	601-619				85	101	101
	465 '700 2'				345	600	601				85	101	101
	30 '009 5'				345	600-618	601-618				85	101	101
	818 'FORBES 7T-8'					608-600	608-601				85	101	101
	463 '700 1'				345	600	601				84	101	101
	840 MAPP-15A			1	345	600	601				84	100	100
	453 '680 '					600-618					84	100	100
	438 '660 '				230-69	618	619				84	100	100
											5 / 8		117
60194	CARVRCO7	60277	WWACNIA7	1	115	600	601	71	71	NS	51	72	72
	30 '009 5'				345	600-618	601-618				82	115	115
											1 / 0		115
62672	GLNDALE8	62666	GLNDALE7	2	69-115	600	622	47	47	NS	30	63	63
	485 '715 2'				115-69	600-618					52	111	111
	490 '715 4'				69-115	600	622-601				52	110	110
											2 / 0		111
60244	SCOTTCO7	60890	SCOTTCO8	1	115-69	600	601	70	70	NS	42	59	59
	485 '715 2'				115-69	600-618					77	110	110
											1 / 0		110
31340	NIOTA	34181	BRLGTN 5	1	161	356-331	322-391	224	224	NS	91	40	40
	793 ALTW-84				161	331	391				244	109	109
	780 'ALTW-11 '				161	331	391				244	109	109
											2 / 0		109
53139	FLINTCR5	53194	ELMSPRR5	1	161	520	520	305	335	NS	256	84	76
	1468 FG5074			1	161	520	520				365	120	109
											1 / 0		109
60305	EAU CLA5	60317	WHEATON5	1	161	600	604	272	272	NS	223	82	82
	1480 FG6062			1	345	600	601-604				296	109	109
											1 / 0		109

Overloaded Facility		Contingency									Overloads			
From	Name	To	Name	Circuit	Base kV	Area	Zone	Ratings Norm	Ratings Emer		MVA	Norm (%)	Emer (%)
60749	DGLAS C8	60144	DGLASCO7	1	69-115	600	601	47	47	NS	42	88	88
	545 '780 '				115	600	601				51	108	109
	543 '775 '				115	600-608					50	107	107
	430 640 '										49	104	104
	318 '500'				69-230	618-652	619-654				48	103	103
	135 '110 2'				230	652	654				48	103	103
	935 'SINGLE-028'			1	500	600	601				47	101	101
	40 '015 2'				500	600	601				47	101	101
	45 '020 '				500-115	600	601				47	101	101
	50 '022 2'					600	601				47	101	101
	63 '022 7'					600	601				47	101	101
											2 / 8		109
62003	JOHNJCT7	63216	ORTONVL7	1	115	626	621-626	97	97	NS	64	66	66
	135 '110 2'				230	652	654				104	108	108
	410 '610 '					626					98	101	101
											1 / 1		108
34009	WINBAGO5	61932	RUTLAND5	1	161	331	393-615	84	84	NS	73	87	87
	540 '770 '				161-115	331-600	393-601				90	107	107
	905 MAPP-5			1	345	600	601				86	102	102
											1 / 1		107
60203	COON CK7	60253	TWIN LK7	1	115	600	601	371	371	NS	216	58	58
	48 '022 1'					600	601				396	107	107
											1 / 0		107
61612	RIVERTN4	61625	BLCKBRY4	1	230	608	608	327	327	NS	188	58	58
	40 '015 2'				500	600	601				349	107	107
	935 'SINGLE-028'			1	500	600	601				349	107	107
	45 '020 '				500-115	600	601				349	107	107
	50 '022 2'					600	601				347	106	106
	63 '022 7'					600	601				347	106	106
											5 / 0		107
31051	MASON 13	31053	MASON 2	2	345-138	356	317	560	560	NS	407	73	73
	1155 FG3129			1	345-138	356	317				596	106	106
											1 / 0		106
96120	5THMHIL	96126	5MOBTAP	1	161	130	130-133	372	372	NS	257	69	69
	1398 FG4020			1	345	130	130				393	106	106
											1 / 0		106
63030	DICKNSN3	62925	DICKNSN7	1	345-115	618	618-619	448	448	NS	324	72	72
	30 '009 5'				345	600-618	601-618				473	106	106
											1 / 0		106

Overloaded Facility		Contingency									Overloads			
From	Name	To	Name	Circuit	Base kV	Area	Zone	Ratings Norm	Ratings Emer		MVA	Norm (%)	Emer (%)
99798	5BATEVL	99808	5CUSHMN	1	161	151	159	148	148	NS	141	95	95
	1073 FG1319			1	500	524-151	524-159				156	105	105
	1110 FG3018				345	600	601-616				150	101	101
	1478 FG6029				345	600	616-601				150	101	101
	1210 FG3157				138/345	356-130	314-130				149	101	101
	1208 FG3153			1	345	356-130	314-130				149	101	101
	1078 FG133			1	345	356-130	314-130				149	101	101
	1063 FG129			1	345	356-130	314-130				149	101	101
	1193 FG3144			1	345	356-130	314-130				149	101	101
	1423 FG5008			1	345	520	520				149	101	101
	1443 FG5042			1	345	520	520				149	101	101
	660 '927 '				345	635	637				149	101	101
											1 / 10		105
65409	S1209 5	65383	S1209T1T	1	161	645	645	124	124	NS	92	74	74
	285 '451 '				161	645	645				131	105	105
											1 / 0		105
31221	MOBERLY	31409	OVERTON	1	161	356	314	142	142	NS	76	53	53
	1398 FG4020			1	345	130	130				149	105	105
											1 / 0		105
63214	BIGSTON7	63195	BIGSTONY	1	115-230	626	628	233	233	NS	163	70	70
	135 '110 2'				230	652	654				243	104	105
											0 / 1		105
63314	BIGSTON4	63195	BIGSTONY	1	230	626	628	233	233	NS	163	70	70
	135 '110 2'				230	652	654				243	104	105
											0 / 1		105
96049	7THOMHL	96120	5THMHIL	1	345-161	130	130	625	625	NS	275	44	44
	1398 FG4020			1	345	130	130				643	103	103
											0 / 1		103
63219	GRANTCO7	63220	ELBOWLK7	1	115	626	629	96	96	NS	78	81	81
	595 '866 '				230	626-608	621-608				99	103	103
											0 / 1		103
61721	ETCO 7	61722	FORBES 7	1	115	608	608	98	98	NS	73	75	75
	50 '022 2'					600	601				100	102	102
	63 '022 7'					600	601				100	102	102
	40 '015 2'				500	600	601				100	102	102
	935 'SINGLE-028'			1	500	600	601				100	102	102
	45 '020 '				500-115	600	601				100	102	102
											0 / 5		102
30422	CONWAY 3	31391	ORGD 1	1	138	356	318	205	205	NS	147	72	72
	1060 FG128			1	345-138	356	311				209	102	102
											0 / 1		102
60153	MNTCELO7	60151	MNTCELO3	1	115-345	600	601	336	336	NS	201	60	60
	23 '009 2'					600	601				341	102	102
											0 / 1		102

Overloaded Facility		Contingency								Overloads			
From	Name	To	Name	Circuit	Base kV	Area	Zone	Ratings Norm	Ratings Emer		MVA	Norm (%)	Emer (%)
64909	N.PLATT4	65037	N.PLT8 Y	1	230	640	640	187	187	NS	133	71	71
	233 '310 '				345	640	640				189	101	101
											0 / 1		101
39145	POR 138	39167	COL 138	1	138	364	371	286	286	NS	162	57	57
	1583 FG65010			2	138	364	371				289	101	101
											0 / 1		101
39145	POR 138	39167	COL 138	2	138	364	371	286	286	NS	162	57	57
	1585 FG65011			1	138	364	371				289	101	101
											0 / 1		101
50024	CARROLL4	50023	CARROLL6	1	138-230	502	502	336	336	NS	176	52	52
	1438 FG5029			1	345	502-520	502-520				339	101	101
											0 / 1		101
39686	WESTONWP	39676	WESTON	1	115-345	366	366	200	220	NS	41	20	19
	83 '050 2'				345/115						222	111	101
	88 '050 4'										222	111	101
	95 '050 6'										221	111	101
	90 '050 5'										221	111	101
											0 / 4		101
65355	S3455 3	65337	S3455T1T	1	345	645	645	560	560	NS	473	85	85
	278 '440 '				161	645	645				564	101	101
											0 / 1		101
61984	AUSTIN 5	63070	PL VLLY5	1	161	680-618	617-618	445	445	NS	158	35	35
	915 MAPP-9				345	600					448	101	101
											0 / 1		101
32277	TURKY HL	32307	E BELLVL	1	138	357	357	287	287	NS	204	71	71
	1373 FG4009				345-138	356-357	312-357				288	100	100
											0 / 1		100
64909	N.PLATT4	65038	N.PLT9 Y	1	230	640	640	187	187	NS	132	70	70
	233 '310 '				345	640	640				187	100	100
											0 / 1		100
											150 / 83		230.2

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

APPENDIX E

COST ESTIMATES WITH UNIT COSTS

BID 1 COST ESTIMATE

Impacts

From #	From Name	To #	To Name	Circuit	Base kV	Type	Quantity	Units	Code	Cost ($ x 1000) Unit	Cost ($ x 1000) Total
60103	CANNFLS5	63071	SPRNGCK5	1	161	Line	21.8	miles	161R1c954	285	6,213
60104	CANNFLS7	62235	EMPIRE 7	1	115	Line	14.6	miles	138R1c795	225	3,285
60200	BLK DG27	60258	WILSON 7	2	115	Line	4.5	miles	138R1c795	225	1,013
60200	BLK DG27	62230	PILOTKB7	1	115	Line	4.6	miles	138R1c795	225	1,035
60201	CHEMOLT7	60204	COTTAGE7	1	115	Line	5.2	miles	138R1c795	225	1,170
60201	CHEMOLT7	60247	LINDETP7	1	115	Line	7.8	miles	138R1c795	225	1,755
60204	COTTAGE7	60238	REDROCK7	1	115	Line	7.6	miles	138R1c795	225	1,710
60217	INVRHLS3	60218	INVRHLS7	1	345-115	tx	1	ea	MS345/138	5700	5,700
60218	INVRHLS7	60220	INVRGRV7	1	115	Line	1.9	miles	138R1c795	225	428
60218	INVRHLS7	60223	KOCHREF7	1	115	Line	1.8	miles	138R1c795	225	405
60220	INVRGRV7	62230	PILOTKB7	1	115	Line	5.7	miles	138R1c795	225	1,283
60223	KOCHREF7	60341	ROSEMON7	1	115	Line	1.7	miles	138R1c795	225	383
60341	ROSEMON7	62235	EMPIRE 7	1	115	Line	8.5	miles	138R1c795	225	1,913
60343	WILLPIP7	62226	FISCHER7	1	115	Line	0.6	miles	138R1c795	225	135
60343	WILLPIP7	62228	APPVLTW7	1	115	Line	0.38	miles	138R1c795	225	86
62227	JOHNCAK7	62228	APPVLTW7	1	115	Line	0.2	miles	138R1c795	225	45
62227	JOHNCAK7	62229	APPVLTE7	1	115	Line	1.1	miles	138R1c795	225	248
									Estimated Cost to Upgrade		**26,804**

Benefits

None

BID 2 COST ESTIMATE

Impacts

From #	From Name	To #	To Name	Circuit	Base kV	Type	Quantity	Units	Code	Cost ($ x 1000) Unit	Total
No upgrades necessary											
									Estimated Cost to Upgrade		**0**

Benefits

None

BID 3 COST ESTIMATE

Impacts

From #	From Name	To #	To Name	Circuit	Base kV	Type	Quantity	Units	Code	Cost ($ x 1000) Unit	Total
64403	E MOLIN3	64680	SB39MID5	1	345-161	tx	1	ea	MS345/161	6200	6,200
57968	STILWEL7	57981	LACYGNE7	1	345	Line	30.8	miles	345N1c954	600	18,480
36362	NELSO; B	37632	LEECO;BP	1	345	Line	12.2	miles	345N1c954	600	7,320
63051	HENNING4	63052	INMAN 4	1	230	Line	3.8	miles	138R1c795	225	855
34087	DYSART 5	64269	WASHBRN5	1	161	Line	20.3	miles	161R1c954	285	5,786
36457	ALPIN;RT	36599	CHERR; R	1	138	Line	5.2	miles	138R1c795	225	1,170
36532	BELVI; B	36606	B465 ;BT	1	138	Line	0.2	miles	138R1c795	5700	1,140
36953	MAREN;RT	37119	P VAL; R	1	138	Line	12.6	miles	138R1c795	225	2,835
38342	COC 69	39239	COC 138	1	138-69	tx	1	ea	MS138/69	3900	3,900
									Estimated Cost to Upgrade		**47,686**

Benefits

From #	From Name	To #	To Name	Circuit	Base kV	Type	Quantity	Units	Code	Cost ($ x 1000) Unit	Total
34015	LIME CK5	34016	EMERYN	1	161	Line	17.2	miles	161R1c954	285	4,902
60305	EAU CLA5	60317	WHEATON5	1	161	Line	4.3	miles	161R1c954	285	1,226
									Estimated Avoided Costs		**6,128**

Total Transmission Impact (Upgrade-Avoided) **41,558**

BIDS 4 AND 5 COST ESTIMATE

Impacts

From #	From Name	To #	To Name	Circuit	Base kV	Type	Quantity	Units	Code	Cost ($ x 1000) Unit	Total
63051	HENNING4	63052	INMAN 4	1	230	Line	3.8	miles	230R1c954	300	1,140
34087	DYSART 5	64269	WASHBRN5	1	161	Line	20.3	miles	161R1c954	285	5,786
58036	OLATHEE5	58046	OXFORD 5	1	161	Line	4.4	miles	161R1c954	285	1,254
59206	PRALEE 5	59211	BLSPS 5	1	161	Line	3.21	miles	161R1c954	285	915
									Estimated Cost to Upgrade		**9,094**

Benefits

From #	From Name	To #	To Name	Circuit	Base kV	Type	Quantity	Units	Code	Cost ($ x 1000) Unit	Total
34015	LIME CK5	34016	EMERYN	1	161	Line	17.2	miles	161R1c954	285	4,902
60305	EAU CLA5	60317	WHEATON5	1	161	Line	4.3	miles	161R1c954	285	1,226
39885	CEDARU	39892	NATIONAL	1	138	Line	5.3	miles	138R1c795	225	1,193
									Estimated Avoided Costs		**7,320**
									Total Transmission Impact (Upgrade-Avoided)		**1,774**

BIDS 4 AND 6 COST ESTIMATE

Impacts

From #	From Name	To #	To Name	Circuit	Base kV	Type	Quantity	Units	Code	Cost ($ x 1000) Unit	Total
63051	HENNING4	63052	INMAN 4	1	230	Line	3.8	miles	230R1c954	300	1,140
58036	OLATHEE5	58046	OXFORD 5	1	161	Line	4.4	miles	161R1c954	285	1,254
59206	PRALEE 5	59211	BLSPS 5	1	161	Line	3.21	miles	161R1c954	285	915
									Estimated Cost to Upgrade		**3,309**

Benefits

From #	From Name	To #	To Name	Circuit	Base kV	Type	Quantity	Units	Code	Cost ($ x 1000) Unit	Total
34015	LIME CK5	34016	EMERYN	1	161	Line	17.2	miles	161R1c954	285	4,902
60305	EAU CLA5	60317	WHEATON5	1	161	Line	4.3	miles	161R1c954	285	1,226
									Estimated Avoided Costs		**6,128**

Total Transmission Impact (Upgrade-Avoided) **(2,819)**

BIDS 5 AND 6 COST ESTIMATE

Impacts

From #	From Name	To #	To Name	Circuit	Base kV	Type	Quantity	Units	Code	Cost ($ x 1000) Unit	Total
No upgrades necessary											
									Estimated Cost to Upgrade		**0**

Benefits

None

Table F-5
Unit Cost Estimate Table

Code	Description	Unit Cost $x1000 Cost	Units
Transmission Line Unit Costs		Unit Cost Estimate	
138N1c795	138 kV New Line, S/C no underbuild, 795 ACSR	300	$/mi
138N1c954	138 kV New Line, S/C no underbuild, 954 ACSR	315	$/mi
138N1Uc954	138 kV New Line with distr. Underbuild, 954 ACSR	413	$/mi
138N2c795	138 kV New Line, D/C no underbuild, 795 ACSR	450	$/mi
138N2c954	138 kV New Line, D/C no underbuild, 954 ACSR	480	$/mi
138NRC1c795	138 kV New River Crossing, 795 ACSR	1650	ea
138R1c795	138 kV Reconductor S/C line with 795 ACSR	225	$/mi
138R1cb477	138 kV Reconductor S/C line with bundled 477 ACSR	285	$/mi
138UV1c477	Existing 69 kV to 138 kV Upgrade S/C line with existing 477 ACSR	188	$/mi
161N2c954	161 kV New Line, D/C no underbuild, 954 ACSR	495	$/mi
161R1c954	161 kV Reconductor S/C line with 954 ACSR	285	$/mi
230R1c954	161 kV Reconductor S/C line with 954 ACSR	300	$/mi
345N1c954	345 kV New Line no underbuild, 2-954 ACSR	600	$/mi
345NRC2c954	345 kV New River Crossing, 2-954 ACSR	2250	ea
69LS1200	69 kV Upgrade Line Switch to 1200A	7.5	ea
69N1c477	69 kV New Line with no underbuild, 477 ACSR	225	$/mi
69N1Uc477	69 kV New Line with distr. underbuild, 477 ACSR	300	$/mi
69N1Uc795	69 kV New Line with distr. underbuild, 795 ACSR	323	$/mi
69N2c477	69 kV New Line, D/C with no underbuild, 477 ACSR	345	$/mi
69R1c336	69 kV Reconductor S/C line with 336 ACSR	135	$/mi
69R1c477	69 kV Reconductor S/C line with 477 ACSR	150	$/mi
69R1c795	69 kV Reconductor S/C line with 795 ACSR	195	$/mi
69U1c336	69 kV Upgrade Line for 95^{o}C/100^{o}C Cond. Temp	45	$/mi
69U1c477	69 kV Upgrade Line for 95^{o}C/100^{o}C Cond. Temp	45	$/mi
MS138/69	Modify Subst: Add 138/69 kV Transfmr	3900	ea
MS161/138	Modify Subst: Add 138/161 kV Transfmr	4800	ea
MS345/138	Modify Subst: Add 345/138 kV Transfmr	5700	ea
MS345/161	Modify Subst: Add 345/161 kV Transfmr	6200	ea