TRI-STATE
Generation and Transmission
Association, Inc.

System Impact/Facilities Study Report

Burlington / Limon Generation Expansion

Prepare By:
Frank McElvain
David Gustad
System Planning
29 April 2003

Executive Summary

The generation department of Tri-State Generation and Transmission Association, Inc. requested a system impact and facilities study for a proposed expansion of the generation facilities at Burlington and Lincoln. The Burlington Generating Station, located near Burlington, Colorado, is presently comprised of two combustion turbine units, rated 50 MW in the summer and 60 MW in the winter. The proposed expansion at Burlington would include a steam turbine addition, rated at 50 MW, converting the Burlington plant site into a combined-cycle facility. The Lincoln Generating Station, located near Limon, Colorado, is presently comprised of two 70 MW simple-cycle natural gas generators. The proposed expansion at Lincoln would also include a steam turbine addition, rated at 80 MW, also converting the Lincoln plant site into a combined-cycle facility.

The total generation addition proposed is 130 MW. This combined system impact and facilities study report documents the system impacts of the combined 130 MW addition as well as the system impact of each of the proposed additions individually; and recommends facilities to mitigate the impacts.

The total cost of mitigating system impacts associated with the addition of both generation expansion proposals is approximately $11.1 million (2003 dollars), detailed in Table 1, below:

Table 1
System Additions Required
Burlington / Lincoln Generation Expansion

Facility	**Estimated Cost** (2003 Dollars)
Reconductor Burlington-Wray 115 kV Line	$ 2,526,807
Uprate Beaver Creek-Big Sandy 115 kV Line	$ 2,484,136
Uprate Lincoln-Midway 230 kV Line	$ 2,354,044
45 MVAr Capacitor Addition at or near Vernon Tap	$ 1,425,116
7.5 MVAr Capacitor Addition at Joes	$ 237,519
Construct a Big Sandy-Lincoln 115 kV Line	$ 87,407
Burlington 230 kV Breaker Additions (2)	$ 1,522,658
Big Sandy 115 kV Breaker Addition (1)	$ 487,706
Total	**$11,125,394**

Two conditions apply to the costs in Table 1, above:

1. The new generation at Burlington must be interconnected to the 230 kV bus at Burlington, not the 115 kV bus, as is the case with the existing generation. If the new generation is interconnected to the 115 kV bus, there is a need to add additional permanent 230/115 kV transformer capacity at Burlington. This will add approximately $1.15 million for the 167 MVA transformer plus $1.5 million for three additional 115 kV breakers at Burlington while offsetting the need for one 230 kV breaker at Burlington (at a cost of $760,000). Presently, a second 230/115 kV transformer is located at Burlington, but it is designated to be a regional spare transformer, and could be moved to another location in an emergency. The incremental impact of interconnecting the new Burlington generation to the 115 kV bus is approximately $1.85 million.

2. The new generation at Lincoln must be interconnected to the 115 kV bus at Big Sandy Substation, approximately 1 mile away from the Lincoln Generating Station. If the new generation is interconnected to the 230 kV bus at Lincoln, as is the case with the existing generation, there is a need to add additional 230/115 kV transformer capacity at Big Sandy. This will add approximately $1.15 million for the 167 MVA transformer, $760,000 for an additional 230 kV breaker at Big Sandy and $760,000 for an additional 230 kV breaker at Lincoln. The need for a one-mile 115 kV line from Big Sandy to Lincoln would be avoided, however. The incremental impact of interconnecting the new Lincoln generation to the 230 kV bus at Lincoln is approximately $2.7 million.

If only the proposed Burlington Generation expansion is added, the required system investment can be reduced to approximately $7.0 million. The details of the required system investment are shown in Table 2, below. Condition 1, above also applies to the costs noted in Table 2.

Table 2
System Additions Required
Burlington Generation Expansion

Facility	**Estimated Cost** (2003 Dollars)
Reconductor Burlington-Wray 115 kV Line	$ 2,526,807
Uprate Beaver Creek-Big Sandy 115 kV Line	$ 2,484,136
15 MVAr Capacitor Addition at or near Vernon Tap	$ 475,039
Burlington 230 kV Breaker Additions (2)	$ 1,522,658
Total	**$ 7,008,640**

If only the proposed Lincoln Generation expansion is added, the required system investment can be reduced to approximately $8.9 million. Table 3, below, summarizes the details of the required system investment. Condition 2, above also applies to the costs noted in Table 3.

Table 3
System Additions Required
Lincoln Generation Expansion

Facility	Estimated Cost (2003 Dollars)
Reconductor Burlington-Wray 115 kV Line	$ 2,526,807
Uprate Beaver Creek-Big Sandy 115 kV Line	$ 2,484,136
Uprate Lincoln-Midway 230 kV Line	$ 2,354,044
22.5 MVAr Capacitor Addition at or near Vernon Tap	$ 712,558
7.5 MVAr Capacitor Addition at Joes	$ 237,519
Construct a Big Sandy-Lincoln 115 kV Line	$ 87,407
Big Sandy 115 kV Breaker Addition (1)	$ 487,706
Total	**$ 8,890,178**

Two additional reliability cautions are noted for the Burlington and Lincoln Generating Stations. At Burlington, 115 kV breaker 466 is a common failure mode for generating units one and two. If breaker 466 were to be required to trip for a fault and fail to trip, both units one and two would trip due to backup relaying. This would be particularly critical with a combined-cycle plant because units one and two would be the source of steam for unit three. A trip of units one and two would cause a trip of unit three. Therefore, the failure of 115 kV breaker 466 could result in an outage of all three units at Burlington.

To mitigate the common failure mode and improve plant reliability, it is recommended that the breaker position of either unit one or two be swapped with either the Wray 115 kV line or the Waanibe 115 kV line. With the swap, there will not be any common failure modes that cause an outage of more than one generator at Burlington.

The reliability concern at Lincoln is that 230 kV breaker 682 is a common failure mode for units one and two. In similar fashion to the reliability concern at Burlington, the failure of this breaker to trip when necessary could cause an outage of both units one and two at Lincoln. A trip of units one and two will, in turn, cause a trip of unit three because unit three will lose its source of steam.

Reliability is improved if none of the units at a plant share a circuit breaker in either a ring bus or breaker-and-a-half scheme. It is preferred from a reliability and a cost perspective that unit three be interconnected to the Big Sandy 115 kV bus. However, if unit three must be interconnected to the Lincoln 230 kV bus, there will be three generation sources into the bus and only two outlets and, therefore, in a ring bus arrangement, two of the units will need to share a breaker. It is more important that units 1 and 2 do not share a breaker so that unit three will have a source of steam for most of the common failure modes. Unit three sharing a breaker with either unit one or two is preferred to units one and two sharing a breaker. The Lincoln switchyard could also be converted into a breaker-and-a-half arrangement to mitigate any of the units sharing a breaker.

Study Objective

The generation branch of Tri-State Generation and Transmission Association, Inc. requested a system impact and facilities study for a proposed expansion of the generation facilities at Burlington and Lincoln. The Burlington Generating Station, located near Burlington, Colorado, is presently comprised of two combustion turbine units, rated 50 MW in the summer and 60 MW in the winter. The proposed expansion at Burlington would include a steam turbine addition, rated at 50 MW, converting the Burlington plant site into a two-on-one combined-cycle facility. The Lincoln Generating Station, located near Limon, Colorado, is presently comprised of two 70 MW simple-cycle natural gas generators. The proposed expansion at Lincoln would also include a steam turbine addition, rated at 80 MW, also converting the Lincoln plant site into a two-on-one combined-cycle facility. Table 4, below, outlines the existing and proposed generation capacities:

Table 4
Existing and Proposed Generation at Burlington and Lincoln

Location	Existing	Proposed	Total
Burlington	100MW	50MW	150MW
Lincoln	140MW	80MW	220MW
Total	240MW	130MW	370MW

This combined system impact and facilities study report documents the system impacts of the combined 130 MW proposed generation addition at Burlington and Lincoln, in addition to the system impact of each of the proposed additions individually; and recommends facility investments to mitigate the impacts.

Study Methodology

The system representation for the study work was modeled in a 2007 Heavy Summer case and a 2008 Light Spring case to capture system problems associated both with peak loading and light loading conditions. These cases were used to create several base cases to capture different scheduling scenarios for the proposed generation and to identify the required system additions. The originating cases serve to develop a baseline from which to measure the incremental impact of the proposed generation additions.

The base cases included the proposed generation with schedules to either the south, west or north to capture any problems that could occur in extreme operating scenarios. The loads in these general locations were scaled up to receive the new generation, and the interarea transfers were altered accordingly if necessary. Analysis was performed in the PSS/E power flow program, version 29.0. The results and output reports were created utilizing an in house IPLAN automation program known as *Regionout*.

In addition to a system normal analysis, a contingency analysis was completed for each originating case and each base case that included all single contingency outages in the study area (See Appendix C pp. 1, 2). Critical contingencies, those contingencies in the study area that produced criteria violations that were new or incremental impacts in at least one scenario, were identified. These simulations provided the information necessary to compare criteria violations with the proposed generation additions with criteria violations that exist prior to the addition of the proposed generation.

Criteria

System normal criteria require that bus voltages be within the range of 0.95 to 1.05 per unit. Transmission line flows must be less than 80 percent of its continuous rating, and transformer flows must be less than 100 percent of its maximum nameplate rating. System adjustments including shunt capacitor switching, generator voltage regulation, or LTC tap adjustments are allowed in system normal simulations. Area interchange and phase shifter adjustments are also permitted.

Single contingency outage criteria require that bus voltages be within the range of 0.90 and 1.10 per unit. Furthermore, the voltage magnitude at a bus during a single contingency outage cannot drop by more than 0.05 per unit from the system normal case. Transmission lines and transformers flows must be less than 100 percent of their continuous ratings. All system adjustments were enabled in the outage simulations.

Tri-State system planning reliability criteria are consistent with the North American Electric Reliability Council (NERC) and the Western Electricity Coordinating Council (WECC) system reliability criteria.

Originating Cases

To determine system behavior during peak loading periods, a 2007 Heavy Summer Case was utilized. The case, known as 07HS1AP, was acquired from WECC. This case included the proposed Gladstone-Walsenburg 230 kV line and Smokey Hill-Midway 345kV lines. The proposed Lamar DC tie was scheduled East to West at 210 MW, the Stegall DC tie was scheduled East to West at 100 MW, and the Sidney DC tie was scheduled East to West at 196 MW. The pertinent path flows (MW) can be found in Table 5 below. Several base cases were developed from the originating cases to examine the effects of scheduling the proposed generation to different parts of the network.

To determine system behavior during light loading periods, a 2008 Light Spring Case was utilized. The case, known as 08LSP1P, was acquired from WECC. This case included the proposed Gladstone-Walsenburg 230 kV line and Smokey Hill-Midway 345kV lines. The Stegall DC tie was scheduled East to West at 80 MW, and the Sidney DC tie was scheduled East to West at 180 MW. The primary difference in system representation between the two originating cases utilized in this study is that the light load case does not have the proposed Lamar DC tie modeled. This originating case was altered by reducing the load in zone 752 of the study area by 50% prior to the development of base cases. The pertinent path flows (MW) can also be found in Table 5 below. Several cases were made to examine the effects of extreme loading conditions, as described below. The methods for creating these cases were recorded in text files[1] that are available upon request.

The primary zone of interest in the cases is zone 752, generally the northeastern part of Colorado. The control areas monitored for criteria violations were 70 (Xcel) and 73 (WAPA – Rocky Mountain).

Table 5
Path Flow Levels

Path	**2007HS Flow Level** (MW)	**2008LSP Flow Level** (MW)	**Limit**[2] (MW)
TOT1A	251	7	650
TOT2A	175	425	690[3]
TOT2A`	354	576	690
TOT3	1255	1105	1588
TOT5	817	362	1675
TOT7	559	583	890

Results

The results of the study indicate that the addition of generation at Burlington and/or Lincoln cause incremental violations of reliability criteria. The adverse system impacts created by the addition of the proposed generation are summarized below. Detailed results are listed in tables contained in Appendix A[4].

Burlington and Lincoln Generation Additions

For the proposed generation additions at both Burlington and Lincoln, the results of the study are as follows:

[1] These text files are known as IDEV files. They act as macros in the PSS/E program.
[2] Path limits are dynamic and dependent on actual system conditions. Listed are maximum limits.
[3] The actual Tot 2A limit is 690 minus net local load in southwestern Colorado.
[4] Appendix A contains System Impact Summary Reports. Appendix B contains Capacitor Voltage Correction Reports. Appendix C contains the pertinant System Impact Diagrams.

- The Big Sandy 230/115 kV autotransformer is at risk of overloading during an outage of the Lincoln-Midway 230 kV line.
- The Lincoln-Midway 230 kV line is at risk of overloading during an outage of the Burlington-Wray 115 kV line. Loading as high as 102% are possible.
- The Beaver Creek-Big Sandy 115 kV line is at risk of overloading during an outage of the Lincoln-Midway 230 kV line. The most sever overload is 150% of a 109 MVA rating during light load conditions.
- The Burlington-Wray 115 kV line is at risk of overloading during an outage of the Lincoln-Midway 230 kV line. The most severe overload is 177 MVA (888 amperes) during light load conditions.
- Excessive voltage deviations occur between Burlington and Wray during an outage of the Lincoln-Midway 230 kV line.
- Excessive voltage deviations are created between Beaver Creek and Big Sandy during an outage of the Lincoln-Midway 230 kV line.

Burlington Generation Addition
For the proposed generation addition at just Burlington, the study results are as follows:

- The Beaver Creek-Big Sandy 115 kV line is at risk of overloading during an outage of the Lincoln-Midway 230 kV line. The most sever overload is 110% of a 109 MVA rating during light load conditions.
- The Burlington-Wray 115 kV line is at risk of overloading during an outage of the Lincoln-Midway 230 kV line. The most severe overload is 124 MVA (622 amperes) during light load conditions.
- Excessive voltage deviations occur between Burlington and Wray during an outage of the Lincoln-Midway 230 kV line.

Lincoln Generation Addition
For the proposed generation addition at just Lincoln, the study results are as follows:

- The Beaver Creek-Big Sandy 115 kV line is at risk of overloading during an outage of the Lincoln-Midway 230 kV line. The most sever overload is 132% of a 109 MVA rating during light load conditions.
- The Burlington-Wray 115 kV line is at risk of overloading during an outage of the Lincoln-Midway 230 kV line. The most severe overload is 131 MVA (657 amperes) during light load conditions.
- The Lincoln–Midway 230 kV line is heavily loaded (above 80%) during system normal conditions.
- Excessive voltage deviations occur between Burlington and Wray during an outage of the Lincoln-Midway 230 kV line.
- Excessive voltage deviations are created between Beaver Creek and Big Sandy during an outage of the Lincoln-Midway 230 kV line.

Criteria Violations Not Mitigated

For the various generation additions and schedules, criteria violations were identified but not identified as caused by the addition of the proposed generation. Those violations are addressed below:

- In the light spring case and both generator additions, the North Canon City–Victor 69 kV line overloads. This was deemed to be caused by scaling the loads in southern Colorado to accept the proposed new generation, not to the generation addition level itself.
- Overloads between Beaver Creek and Fort Morgan were ignored because Western intends to upgrade this line to a 185 MVA rating utilizing 477 ACSS conductor. There may be a need for Tri-State to participate in an upgrade from Fort Morgan to Bijou. However, for the moment, overloads west of Beaver Creek were ignored.
- The Archer-Cheyenne 115 kV line loaded to 89 percent of an 80 MVA rating during system normal conditions in the heavy summer case when the proposed new generation was scheduled to the north. This was not deemed to be caused by the proposed new generation.
- The Brighton Northwest-Sand Creek 115 kV line loaded to 81 percent of an 85 MVA rating during system normal conditions in the light spring case when the proposed new generation was scheduled to the north. This was not deemed to be caused by the proposed new generation.
- The California-North 115 kV line loaded to 82 percent of a 150 MVA rating during system normal conditions in the light spring case when the proposed new generation was scheduled to the west. This was not deemed to be caused by the proposed new generation.
- The Archer-Stegall 230 kV line loaded to 85 percent of a 319 MVA rating during system normal conditions in the light spring case. This was deemed to not be caused by the proposed new generation.

Conclusions

The addition of the proposed generation Burlington and/or Lincoln cause incremental violations of reliability criteria, and the violations can be mitigated with system upgrades and modifications. The addition of the proposed new generation at both locations will require a transmission investment of as little as $11.1 million and as much as $15.6 million (See Appendix D). The lower cost includes approximately one mile of new 115 kV transmission line right-of-way. Other system modifications can be accomplished on existing transmission facilities and within existing substations.

The addition of the proposed Burlington generation also creates incremental violations of reliability criteria, and the violations can be mitigated with system upgrades and modifications. The impacts of the Burlington generation addition will require a transmission investment of as little as $7.0 million and as much as $8.9 million. All modifications can be accomplished on existing transmission facilities and within existing substations.

The addition of the proposed Lincoln generation also creates incremental violations of reliability criteria, and the violations can be mitigated with system upgrades and modifications. The impacts of the Lincoln generation addition will require a transmission investment of as little as $8.9 million and as much as $11.5 million. The lower cost includes approximately one mile of new 115 kV transmission line right-of-way. Other system modifications can be accomplished on existing transmission facilities and within existing substations.

Burlington substation presently has two 230/115 kV autotransformers, number 1 rated at 100 MVA and number 2 rated at 167 MVA. The second transformer was energized at Burlington as a spare unit, capable of being relocated to other substations in the region as needed. Spare transformers stay in better operating condition when they are energized, and Burlington was chosen because it is somewhat centralized to other substations that may need the spare transformer in an emergency. If the proposed third generating unit at Burlington is interconnected to the 115 kV bus, there is a need for a permanent second 230/115 kV transformer at Burlington. The will cause the existing second transformer to be redesignated as permanent, relocated to another location, or require three 230/115 kV transformers to be located at Burlington.

The existing generation at Burlington has a common failure mode involving 115 kV breaker 466 (See Appendix E). If breaker 466 fails to clear a fault, backup relaying could clear both generators. If breaker positions are not modified with the addition of a steam turbine, as proposed, this common mode failure would also trip unit three, since unit three utilizes steam from units one and two. Therefore, the failure of 115 kV breaker 466 could result in an outage of all three units at Burlington.

The existing generation at Lincoln also has a common failure mode, involving 230 kV breaker 682 (see Appendix E). If breaker 682 fails to clear a fault, backup relaying could clear both generators. Loss of units one and two will, in turn, cause the loss of unit three because unit three will lose its source of steam.

Since the proposed generation includes the addition of dynamic VArs in the region, the incremental excessive voltage deviations identified in the study should be capable of being allayed by lower-cost capacitor additions instead of by additional dynamic sources. This issue was not investigated in detail.

Recommendations
The recommendations to mitigate the negative system impacts caused by the addition of the proposed generation at Burlington and Lincoln at the lowest possible costs are as follows. The approximate cost of the recommendations below is $11.1 million, in 2003 dollars.

- Interconnect the proposed Burlington steam turbine to the 230kV bus at Burlington.
- Interconnect the proposed Lincoln steam turbine to the 115 kV bus at Big Sandy with a one mile 115 kV line from Lincoln to Big Sandy.
- Uprate the Lincoln – Midway 230 kV line from a maximum conductor temperature of 50^{oC} to 75^{oC}, raising the rating from 843 Amps to 1285 Amps.
- Uprate the Beaver Creek – Big Sandy 115 kV line to a maximum conductor temperature of 100^{oC}. (Note: This line is owned and operated by Western, and they will determine what measures need to be taken to mitigate this overload.)
- Reconductor the Burlington – Wray 115 kV line with 556.6 MCM Dove ACSR conductor at a maximum conductor temperature of 100^{oC}.
- Install a 45 MVAr capacitor at or near Vernon Tap.
- Install a 7.5 MVAr capacitor at Joes substation.
- Swap breaker positions at Burlington so that the existing generating units do not share a 115 kV breaker. The costs for this recommendation are not included in the cost estimates.
- Swap breaker positions at Lincoln so that the existing generating units do not share a 230 kV breaker. The costs for this recommendation are not included in the cost estimates.

The recommendations associated with the addition of just the proposed Burlington generation are as follows. The approximate cost of the recommendations below is $7.0 million, in 2003 dollars.

- Interconnect the proposed Burlington steam turbine to the 230kV bus at Burlington.
- Uprate the Beaver Creek–Big Sandy 115 kV line to a maximum conductor temperature of 100^{oC}. (Note: This line is owned and operated by Western, and they will determine what measures need to be taken to mitigate this overload.)
- Reconductor the Burlington – Wray 115 kV line with 556.6 MCM Dove ACSR conductor at a maximum conductor temperature of 100^{oC}.
- Install a 15 MVAr capacitor at or near Vernon Tap.
- Swap breaker positions at Burlington so that the existing generating units do not share a 115 kV breaker. The costs for this recommendation are not included in the cost estimates.

The recommendations associated with the addition of just the proposed Lincoln generation are as follows. The approximate cost of the recommendations below is $8.9 million, in 2003 dollars.

- Interconnect the proposed Lincoln steam turbine to the 115 kV bus at Big Sandy with a one mile 115 kV line from Lincoln to Big Sandy.
- Uprate the Beaver Creek–Big Sandy 115 kV line to a maximum conductor temperature of 100°C. (Note: This line is owned and operated by Western, and they will determine what measures need to be taken to mitigate this overload.)
- Reconductor the Burlington – Wray 115 kV line with 556.6 MCM Dove ACSR conductor at a maximum conductor temperature of 100°C.
- Install a 22.5 MVAr capacitor at or near Vernon Tap.
- Install a 7.5 MVAr capacitor at Joes substation.
- Swap breaker positions at Lincoln so that the existing generating units do not share a 230 kV breaker. The costs for this recommendation are not included in the cost estimates.

TRI-STATE Generation and Transmission Association, Inc.

Appendix A: System Impact Summary Reports

Existing System

2007 Heavy Summer

Tot 3 = 1255 MW

System Condition	Low Voltages	Overloads (MVA Ratings noted in parenthesis)
Normal (No outages)	Fort Garland 69 kV = 0.94 p.u. Saguache 69 kV = 0.95 p.u.	Adena-Beaver Creek 115 kV = 83% (85) Beaver Creek-East Fort Morgan 115 kV = 89% (122) Carter Lake-Flatiron 115 kV = 88% (80) Curecanti-Morrow Point 230 kV = 86% (182) East Ft Morgan Tap-Ft Morgan West 115 kV = 103% (80) Quaker2-Quaker Tap 115 kV = 94% (86) LaJunta 115/69 kV Transformer = 102% (25)
Adena-Beaver Creek 115 kV Line	None	Beaver Creek-East Fort Morgan 115 kV = 114% (122) Bijou Tap-Ft. Morgan West 115 kV = 109% (80)
Adena-Hoyt 115 kV Line Outage	None	East Ft Morgan Tap-Ft Morgan West 115 kV = 139% (80)
Beaver Creek 115 kV Tie Line Outage	None	Beaver Creek (TriState-Western) 115 kV = 101% (200)
Beaver Ck-CPP 115 kV Circuit 1	None	Beaver Creek-Brush CPP 115 kV #2 = 117% (187)
Beaver Ck-CPP 115 kV Circuit 2	None	Beaver Creek-Brush CPP 115 kV #1 = 135% (162)
Beaver Creek-Brush Tap 115 kV Line Outage	Bijou Tap 115 kV = 0.11 pu deviation Brush Tap 115 kV = 0.15 pu dev. Ft Morgan buses = 0.13 pu deviation Long Meadow = 0.06 pu deviation Orchard area = 0.08 pu deviation	Adena-Beaver Creek 115 kV = 139% (85) Adena-Hoyt 115 kV = 139% (109) Hoyt-Long Meadow 115 kV = 183% (40) Kiowa Creek-Wiggins 115 kV = 109% (60) Long Meadow-Wiggins 115 kV = 118% (60)
Beaver Creek-Messex 115 kV Line Outage	Galien 115 kV = 0.05 pu deviation Messex 115 kV = 0.09 pu deviation Sterling 115 kV = 0.06 pu deviation	No new or more severe overloads.
Big Sandy 230/115 kV Transformer	Big Sandy 115 kV= 0.07 pu deviation Limon 115 kV = 0.07 pu deviation	No new or more severe overloads.
Bonny Creek-Burlington 115 kV Line Outage	Bonny Creek 115 kV = 0.08 pu dev. Idalia 115 kV = 0.06 pu deviation Sagebrush = 0.08 pu deviation	No new or more severe overloads.
Galien-Sterling 115 kV Line Outage	Fleming 115 kV = 0.05 pu deviation Galien 115 kV = 0.06 pu deviation	No new or more severe overloads.
Kersey Tap-Weld 115 kV Line Outage	Lost Creek 115 kV = 0.05 pu dev Prospect 115 kV = 0.05 pu deviation	No new or more severe overloads.
North Yuma 230/115 kV Transformer	North Yuma 115 kV = 0.09 pu dev Robb 115 kV = 0.05 pu deviation Vernon 115 kV = 0.05 pu deviation	No new or more severe overloads.
North Yuma-Sidney 230 kV Line Outage	None	Sidney 230/115 kV Transformer = 105% (167)
North Yuma-Red Willow 115 kV Line Outage	Red Willow 115 kV = 0.12 pu dev Wages 115 kV = 0.08 pu deviation Wauneta 115 kV = 0.05 pu deviation	No new or more severe overloads.
Peetz-Sidney 115 kV Line Outage	Peetz 115 kV = 0.06 pu deviation	No new or more severe overloads.
Sandhill-Wray 115 kV Line Outage	Alvin 115 kV = 0.07 pu deviation Sandhill 115 kV = 0.09 pu deviation Wauneta 115 kV = 0.05 pu deviation	Red Willow-Wages 115 kV = 113% (55)

The above table is not suitable for determining operating procedures as not all criteria violations are listed. Only the most severe occurrences are listed to determine overall system impact.

Burlington / Limon Expanded

2007 Heavy Summer, Scheduled to the North

Tot 3 = 1216 MW

System Condition	Low Voltages	Overloads (MVA Ratings noted in parenthesis)
Normal (No outages)	Fort Garland 69 kV = 0.94 p.u. Saguache 69 kV = 0.95 p.u.	Adena-Beaver Creek 115 kV = 89% (85) **Archer-Cheyenne 115 kV = 89% (80)** Beaver Creek-East Fort Morgan 115 kV = 93% (122) Carter Lake-Flatiron 115 kV = 85% (80) Curecanti-Morrow Point 230 kV = 86% (182) East Ft Morgan Tap-Ft Morgan West 115 kV = 108% (80) Quaker2-Quaker Tap 115 kV = 94% (86) LaJunta 115/69 kV Transformer = 102% (25)
Adena-Beaver Creek 115 kV Line Outage	None	Beaver Creek-East Fort Morgan 115 kV = **120%** (122) Bijou Tap-Ft. Morgan West 115 kV = **117%** (80) East Ft Morgan Tap-Ft Morgan West 115 kV = **149%** (80)
Beaver Ck-CPP 115 kV Circuit 1	None	Beaver Creek-Brush CPP 115 kV #2 = 117% (187)
Beaver Ck-CPP 115 kV Circuit 2	None	Beaver Creek-Brush CPP 115 kV #1 = 135% (162)
Beaver Creek-Brush Tap 115 kV Line Outage	Bijou Tap 115 kV = 0.11 pu deviation Brush Tap 115 kV = **0.16** pu dev. Ft Morgan buses = **0.14** pu deviation Long Meadow = 0.06 pu deviation Orchard area = **0.09** pu deviation	Adena-Beaver Creek 115 kV = **147%** (85) Adena-Hoyt 115 kV = 113% (109) Hoyt-Long Meadow 115 kV = **189%** (40) Kiowa Creek-Wiggins 115 kV = **113%** (60) Long Meadow-Wiggins 115 kV = **122%** (60)
Beaver Creek-Messex 115 kV Line Outage	Galien 115 kV = 0.05 pu deviation Messex 115 kV = 0.08 pu deviation Sterling 115 kV = 0.05 pu deviation	No new or more severe overloads.
Big Sandy 230/115 kV Transformer	Big Sandy 115 kV= 0.07 pu deviation Limon 115 kV = 0.07 pu deviation	No new or more severe overloads.
Bonny Creek-Burlington 115 kV Line Outage	Bonny Creek 115 kV = 0.08 pu dev. Idalia 115 kV = 0.06 pu deviation Sagebrush = 0.08 pu deviation	No new or more severe overloads.
Galien-Sterling 115 kV Line Outage	Fleming 115 kV = 0.05 pu deviation Galien 115 kV = 0.06 pu deviation	No new or more severe overloads.
Kersey Tap-Weld 115 kV Line Outage	Lost Creek 115 kV = 0.05 pu dev Prospect 115 kV = **0.06** pu deviation	No new or more severe overloads.
Lincoln Tap-Midway 230 kV Line Outage	**Idalia 115 kV = 0.06 pu deviation** **Vernon Tap = 0.06 pu deviation**	**Beaver Creek-Big Sandy 115 kV = 134% (109)** **Burlington-Idalia 115 kV = 120% (146)** **Vernon Tap-Wray 115 kV = 144% (95)**
North Yuma 230/115 kV Transformer	North Yuma 115 kV = **0.10** pu dev Robb 115 kV = 0.05 pu deviation Vernon 115 kV = 0.05 pu deviation	No new or more severe overloads.
North Yuma-Red Willow 115 kV Line Outage	Red Willow 115 kV = 0.12 pu dev Wages 115 kV = 0.08 pu deviation Wauneta 115 kV = 0.05 pu deviation	No new or more severe overloads.
Peetz-Sidney 115 kV Line Outage	Peetz 115 kV = 0.06 pu deviation	No new or more severe overloads.
Sandhill-Wray 115 kV Line Outage	Alvin 115 kV = 0.07 pu deviation Sandhill 115 kV = 0.09 pu deviation	Red Willow-Wages 115 kV = 116% (55)

The above table is not suitable for determining operating procedures as not all criteria violations are listed. Only the most severe occurrences are listed to determine overall system impact.

Burlington / Limon Expanded

2007 Heavy Summer, Scheduled to the South

Tot 3 = 1243 MW

System Condition	Low Voltages	Overloads (MVA Ratings noted in parenthesis)
Normal (No outages)	**Cripple Creek 69 kV = 0.95 p.u.** Fort Garland 69 kV = 0.94 p.u. **P P Mine 69 kV = 0.95 p.u.** Saguache 69 kV = 0.95 p.u.	Adena-Beaver Creek 115 kV = 89% (85) Beaver Creek-East Fort Morgan 115 kV = 91% (122) Carter Lake-Flatiron 115 kV = 88% (80) Curecanti-Morrow Point 230 kV = 86% (182) East Ft Morgan Tap-Ft Morgan West 115 kV = 106% (80) Quaker2-Quaker Tap 115 kV = 94% (86) LaJunta 115/69 kV Transformer = 114% (25)
Adena-Beaver Creek 115 kV Line Outage	None	Beaver Creek-East Fort Morgan 115 kV = **117%** (122) Bijou Tap-Ft. Morgan West 115 kV = **113%** (80) East Ft Morgan Tap-Ft Morgan West 115 kV = **145%** (80)
Beaver Ck-CPP 115 kV Circuit 1	None	Beaver Creek-Brush CPP 115 kV #2 = 118% (187)
Beaver Ck-CPP 115 kV Circuit 2	None	Beaver Creek-Brush CPP 115 kV #1 = 135% (162)
Beaver Creek-Brush Tap 115 kV Line Outage	Bijou Tap 115 kV = 0.11 pu deviation Brush Tap 115 kV = **0.16** pu dev. Ft Morgan buses = **0.13** pu deviation Long Meadow = 0.06 pu deviation Orchard area = **0.09** pu deviation	Adena-Beaver Creek 115 kV = **143%** (85) Adena-Hoyt 115 kV = 110% (109) Hoyt-Long Meadow 115 kV = **187%** (40) Kiowa Creek-Wiggins 115 kV = **111%** (60) Long Meadow-Wiggins 115 kV = **121%** (60)
Beaver Creek-Messex 115 kV Line Outage	Galien 115 kV = 0.05 pu deviation Messex 115 kV = **0.09** pu deviation Sterling 115 kV = **0.06** pu deviation	No new or more severe overloads.
Big Sandy 230/115 kV Transformer	Big Sandy 115 kV= 0.07 pu deviation Limon 115 kV = 0.07 pu deviation	No new or more severe overloads.
Bonny Creek-Burlington 115 kV Line Outage	Bonny Creek 115 kV = 0.08 pu dev. Idalia 115 kV = 0.06 pu deviation Sagebrush = 0.08 pu deviation	No new or more severe overloads.
Galien-Sterling 115 kV Line Outage	Fleming 115 kV = 0.05 pu deviation Galien 115 kV = 0.06 pu deviation	No new or more severe overloads.
Kersey Tap-Weld 115 kV Line Outage	Lost Creek 115 kV = 0.05 pu dev Prospect 115 kV = **0.05** pu deviation	No new or more severe overloads.
Lincoln Tap-Midway 230 kV Line Outage	**Idalia 115 kV = 0.06 pu deviation** **Vernon Tap = 0.06 pu deviation**	**Beaver Creek-Big Sandy 115 kV = 134% (109)** **Burlington-Idalia 115 kV = 120% (146)** **Vernon Tap-Wray 115 kV = 145% (95)**
Messex-Sterling 115 kV Line Outage	Galien 115 kV = 0.05 pu deviation Sterling 115 kV = 0.05 pu deviation	No new or more severe overloads.
North Yuma 230/115 kV Transformer	North Yuma 115 kV = **0.10** pu dev Robb 115 kV = 0.05 pu deviation Vernon 115 kV = 0.05 pu deviation	No new or more severe overloads.
North Yuma-Red Willow 115 kV Line Outage	Red Willow 115 kV = 0.12 pu dev Wages 115 kV = 0.08 pu deviation Wauneta 115 kV = 0.05 pu deviation	No new or more severe overloads.
North Yuma-Sidney 230 kV Line Outage	None	Sidney 230/115 kV Transformer = 105% (167)
Peetz-Sidney 115 kV Line Outage	Peetz 115 kV = 0.06 pu deviation	No new or more severe overloads.
Sandhill-Wray 115 kV Line Outage	Alvin 115 kV = 0.07 pu deviation Sandhill 115 kV = 0.09 pu deviation	Red Willow-Wages 115 kV = 115% (55)

The above table is not suitable for determining operating procedures as not all criteria violations are listed. Only the most severe occurrences are listed to determine overall system impact.

Burlington / Limon Expanded

2007 Heavy Summer, Scheduled to the West

Tot 3 = 1246 MW

System Condition	Low Voltages	Overloads (MVA Ratings noted in parenthesis)
Normal (No outages)	Fort Garland 69 kV = 0.94 p.u. Saguache 69 kV = 0.95 p.u.	Adena-Beaver Creek 115 kV = 87% (85) Beaver Creek-East Fort Morgan 115 kV = 92% (122) Carter Lake-Flatiron 115 kV = 88% (80) Curecanti-Morrow Point 230 kV = 86% (182) East Ft Morgan Tap-Ft Morgan West 115 kV = 106% (80) Quaker2-Quaker Tap 115 kV = 96% (86) LaJunta 115/69 kV Transformer = 102% (25)
Adena-Beaver Creek 115 kV Line Outage	None	Beaver Creek-East Fort Morgan 115 kV = **117%** (122) Bijou Tap-Ft. Morgan West 115 kV = **113%** (80) East Ft Morgan Tap-Ft Morgan West 115 kV = **146%** (80)
Beaver Ck-CPP 115 kV Circuit 1	None	Beaver Creek-Brush CPP 115 kV #2 = 117% (187)
Beaver Ck-CPP 115 kV Circuit 2	None	Beaver Creek-Brush CPP 115 kV #1 = 135% (162)
Beaver Creek-Brush Tap 115 kV Line Outage	Bijou Tap 115 kV = 0.11 pu deviation Brush Tap 115 kV = **0.16** pu dev. Ft Morgan buses = **0.13** pu deviation Long Meadow = 0.06 pu deviation Orchard area = **0.09** pu deviation	Adena-Beaver Creek 115 kV = **144%** (85) Adena-Hoyt 115 kV = 110% (109) Hoyt-Long Meadow 115 kV = **188%** (40) Kiowa Creek-Wiggins 115 kV = **112%** (60) Long Meadow-Wiggins 115 kV = **121%** (60)
Beaver Creek-Messex 115 kV Line Outage	Galien 115 kV = 0.05 pu deviation Messex 115 kV = **0.09** pu deviation Sterling 115 kV = **0.06** pu deviation	No new or more severe overloads.
Big Sandy 230/115 kV Transformer	Big Sandy 115 kV= 0.07 pu deviation Limon 115 kV = 0.07 pu deviation	No new or more severe overloads.
Bonny Creek-Burlington 115 kV Line Outage	Bonny Creek 115 kV = 0.08 pu dev. Idalia 115 kV = 0.06 pu deviation Sagebrush = 0.08 pu deviation	No new or more severe overloads.
Galien-Sterling 115 kV Line Outage	Fleming 115 kV = **0.10** pu deviation Galien 115 kV = **0.10** pu deviation	No new or more severe overloads.
Kersey Tap-Weld 115 kV Line Outage	Lost Creek 115 kV = 0.05 pu dev Prospect 115 kV = **0.05** pu deviation	No new or more severe overloads.
Lincoln Tap-Midway 230 kV Line Outage	**Idalia 115 kV = 0.06 pu deviation** **Vernon Tap = 0.06 pu deviation**	**Beaver Creek-Big Sandy 115 kV = 134% (109)** **Burlington-Idalia 115 kV = 120% (146)** **Vernon Tap-Wray 115 kV = 145% (95)**
Messex-Sterling 115 kV Line Outage	Galien 115 kV = **0.10** pu deviation Sterling 115 kV = **0.10** pu deviation	No new or more severe overloads.
North Yuma 230/115 kV Transformer	North Yuma 115 kV = **0.10** pu dev Robb 115 kV = 0.05 pu deviation Vernon 115 kV = 0.05 pu deviation	No new or more severe overloads.
North Yuma-Red Willow 115 kV Line Outage	Red Willow 115 kV = 0.12 pu dev Wages 115 kV = 0.07 pu deviation Wauneta 115 kV = 0.05 pu deviation	No new or more severe overloads.
North Yuma-Sidney 230 kV Line Outage	None	Sidney 230/115 kV Transformer = 105% (167)
Peetz-Sidney 115 kV Line Outage	Peetz 115 kV = 0.06 pu deviation	No new or more severe overloads.
Sandhill-Wray 115 kV Line Outage	Alvin 115 kV = 0.07 pu deviation Sandhill 115 kV = 0.09 pu deviation	Red Willow-Wages 115 kV = 115% (55)

The above table is not suitable for determining operating procedures as not all criteria violations are listed. Only the most severe occurrences are listed to determine overall system impact.

Burlington Expansion

2007 Heavy Summer; Scheduled to the North

Tot 3 = **1235** MW

System Condition	Low Voltages	Overloads (MVA Ratings noted in parenthesis)
Normal (No outages)	Fort Garland 69 kV = 0.94 p.u. Saguache 69 kV = 0.95 p.u.	Adena-Beaver Creek 115 kV = **86**% (85) **Archer-Cheyenne 115 kV = 82% (80)** Beaver Creek-East Ft. Morgan 115 kV = **90**% (122) Carter Lake-Flatiron 115 kV = **86**% (80) Curecanti-Morrow Point 230 kV = 86% (182) East Ft Morgan Tap-Ft Morgan West 115 kV = **105**% (80) Quaker2-Quaker Tap 115 kV = 94% (86) LaJunta 115/69 kV Transformer = 102% (25)
Adena-Beaver Creek 115 kV Line	None	Beaver Creek-East Ft. Morgan 115 kV = **116**% (122) Bijou Tap-Ft. Morgan West 115 kV = **112**% (80) East Ft Morgan Tap-Ft Morgan West 115 kV = **144**% (80)
Beaver Ck-CPP 115 kV Circuit 1	None	Beaver Creek-Brush CPP 115 kV #2 = **118**% (187)
Beaver Ck-CPP 115 kV Circuit 2	None	Beaver Creek-Brush CPP 115 kV #1 = **134**% (162)
Beaver Creek-Brush Tap 115 kV Line Outage	Bijou Tap 115 kV = 0.11 pu deviation Brush Tap 115 kV = **0.16** pu dev. Ft Morgan Buses = 0.13 pu deviation Long Meadow = 0.06 pu deviation Orchard Area **0.09** pu deviation	Adena-Beaver Creek 115 kV = **142**% (85) Adena-Hoyt 115 kV = 109% (109) Hoyt-Long Meadow 115 kV = **186**% (40) Kiowa Creek-Wiggins 115 kV = **110**% (60) Long Meadow-Wiggins 115 kV = **120**% (60)
Beaver Ck-Messex 115 kV Line Outage	Messex 115 kV = 0.08 pu deviation Sterling 115 kV = 0.05 pu deviation	No new or more severe overloads.
Big Sandy 115/230 kV Transformer	Big Sandy 115 kV = 0.07pu deviation **Limon 115 kV = 0.07pu deviation**	No new or more severe overloads.
Bonny Creek-Burlington 115 kV Line Outage	Bonny Creek 115 kV = 0.08 pu dev. Idalia 115 kV = 0.06 pu deviation Sagebrush = 0.08 pu deviation	No new or more severe overloads.
Galien-Sterling 115 kV Line Outage	Fleming 115 kV = 0.05 pu deviation Galien 115 kV = 0.06 pu deviation	No new or more severe overloads.
Kersey Tap-Weld 115 kV Line Outage	Lost Creek 115 kV = 0.05 pu dev Prospect 115 kV = 0.05 pu deviation	No new or more severe overloads.
Lincoln Tap-Midway 230 kV Line Outage	**None**	**Vernon Tap-Wray 115 kV = 106% (95)**
North Yuma 230/115 kV Transformer	North Yuma = **0.10** pu dev. Robb = 0.05 pu deviation Vernon LM = 0.05 pu deviation	No new or more severe overloads.
North Yuma-Red Willow 115 kV Line Outage	Red Willow 115 kV = 0.12 pu dev Wages 115 kV = 0.08 pu deviation Wauneta 115 kV = 0.05 pu deviation	No new or more severe overloads.
North Yuma-Sidney 230 kV Line Outage	**None**	Sidney 230/115 kV Transformer = **106**% (167)
Peetz-Sidney 115 kV Line Outage	Peetz 115 kV = 0.06 pu deviation	No new or more severe overloads.
Sandhill-Wray 115 kV Line Outage	Alvin 115 kV = 0.07 pu deviation Sandhill 115 kV = 0.09 pu deviation Wauneta 115 kV = 0.05 pu deviation	Red Willow-Wages 115 kV = **115**% (55)

The above table is not suitable for determining operating procedures as not all criteria violations are listed. Only the most severe occurrences are listed to determine overall system impact.

Burlington Expansion

2007 Heavy Summer; Scheduled to the South

Tot 3 = **1242** MW

System Condition	Low Voltages	Overloads (MVA Ratings noted in parenthesis)
Normal (No outages)	Fort Garland 69 kV = 0.95 p.u. Saguache 69 kV = 0.95 p.u.	Adena-Beaver Creek 115 kV = **85**% (85) Beaver Creek-East Ft. Morgan 115 kV = **90**% (122) Carter Lake-Flatiron 115 kV = 88% (80) Curecanti-Morrow Point 230 kV = 86% (182) East Ft Morgan Tap-Ft Morgan West 115 kV = **104**% (80) Quaker2-Quaker Tap 115 kV = 94% (86) LaJunta 115/69 kV Transformer = **106**% (25)
Adena-Beaver Creek 115 kV Line	None	Beaver Creek-East Ft. Morgan 115 kV = **115**% (122) Bijou Tap-Ft. Morgan West 115 kV = **111**% (80) East Ft Morgan Tap-Ft Morgan West 115 kV = **143**% (80)
Beaver Ck-CPP 115 kV Circuit 1	None	Beaver Creek-Brush CPP 115 kV #2 = **118**% (187)
Beaver Ck-CPP 115 kV Circuit 2	None	Beaver Creek-Brush CPP 115 kV #1 = 135% (162)
Beaver Creek-Brush Tap 115 kV Line Outage	Bijou Tap 115 kV = 0.11 pu deviation Brush Tap 115 kV = 0.15 pu dev. Ft Morgan Buses = 0.13 pu deviation Long Meadow = 0.06 pu deviation Orchard Area = 0.08 pu deviation	Adena-Beaver Creek 115 kV = **141**% (85) Adena-Hoyt 115 kV = 108% (109) Hoyt-Long Meadow 115 kV = **185**% (40) Kiowa Creek-Wiggins 115 kV = **110**% (60) Long Meadow-Wiggins 115 kV = **119**% (60)
Beaver Creek-Messex 115 kV Line Outage	Galien 115 kV = 0.05 pu deviation Messex 115 kV = 0.09 pu deviation Sterling 115 kV = 0.06 pu deviation	No new or more severe overloads.
Big Sandy 115/230 kV Transformer	Big Sandy 115 kV = 0.07pu deviation **Limon 115 kV = 0.07pu deviation**	No new or more severe overloads.
Bonny Creek-Burlington 115 kV Line Outage	Bonny Creek 115 kV = 0.08 pu dev. Idalia 115 kV = 0.06 pu deviation Sagebrush = 0.08 pu deviation	No new or more severe overloads.
Galien-Sterling 115 kV Line Outage	Fleming 115 kV = 0.05 pu deviation Galien 115 kV = 0.06 pu deviation	No new or more severe overloads.
Kersey Tap-Weld 115 kV Line Outage	Lost Creek 115 kV = 0.05 pu dev Prospect 115 kV = 0.05 pu deviation	No new or more severe overloads.
Lincoln-Midway 230 kV Line Outage	**None**	**Vernon Tap-Wray 115 kV = 106% (95)**
North Yuma 230/115 kV Transformer	North Yuma = **0.10** pu dev. Robb = 0.05 pu deviation Vernon LM = 0.05 pu deviation	No new or more severe overloads.
North Yuma-Red Willow 115 kV Line Outage	Red Willow 115 kV = 0.12 pu dev Wages 115 kV = 0.08 pu deviation Wauneta 115 kV = 0.05 pu deviation	No new or more severe overloads.
North Yuma-Sidney 230 kV Line Outage	**None**	Sidney 230/115 kV Transformer = 105% (167)
Peetz-Sidney 115 kV Line Outage	Peetz 115 kV = 0.06 pu deviation	No new or more severe overloads.
Sandhill-Wray 115 kV Line Outage	Alvin 115 kV = 0.07 pu deviation Sandhill 115 kV = 0.09 pu deviation Wauneta 115 kV = 0.05 pu deviation	Red Willow-Wages 115 kV = **115**% (55)

The above table is not suitable for determining operating procedures as not all criteria violations are listed. Only the most severe occurrences are listed to determine overall system impact.

Burlington Expansion

2007 Heavy Summer; Scheduled to the West

Tot 3 = **1243** MW

System Condition	Low Voltages	Overloads (MVA Ratings noted in parenthesis)
Normal (No outages)	Fort Garland 69 kV = 0.94 p.u. Saguache 69 kV = 0.95 p.u.	Adena-Beaver Creek 115 kV = **85**% (85) Beaver Creek-East Ft. Morgan 115 kV = **90**% (122) Carter Lake-Flatiron 115 kV = 88% (80) Curecanti-Morrow Point 230 kV = 86% (182) East Ft Morgan Tap-Ft Morgan West 115 kV = **104**% (80) Quaker2-Quaker Tap 115 kV = **95**% (86) LaJunta 115/69 kV Transformer = 102% (25)
Adena-Beaver Creek 115 kV Line	None	Beaver Creek-East Ft. Morgan 115 kV = **115**% (122) Bijou Tap-Ft. Morgan West 115 kV = **111**% (80) East Ft Morgan Tap-Ft Morgan West 115 kV = **143**% (80)
Beaver Ck-CPP 115 kV Circuit 1	None	Beaver Creek-Brush CPP 115 kV #2 = **118**% (187)
Beaver Ck-CPP 115 kV Circuit 2	None	Beaver Creek-Brush CPP 115 kV #1 = 134% (162)
Beaver Creek-Brush Tap 115 kV Line Outage	Bijou Tap 115 kV = 0.11 pu deviation Brush Tap 115 kV = **0.16** pu dev. Ft Morgan Buses = 0.13 pu deviation Long Meadow = 0.06 pu deviation Orchard Area = **0.09** pu deviation	Adena-Beaver Creek 115 kV = **141**% (85) Adena-Hoyt 115 kV = 108% (109) Hoyt-Long Meadow 115 kV = **185**% (40) Kiowa Creek-Wiggins 115 kV = **110**% (60) Long Meadow-Wiggins 115 kV = **119**% (60)
Beaver Creek-Messex 115 kV Line Outage	Galien 115 kV = 0.05 pu deviation Messex 115 kV = 0.09 pu deviation Sterling 115 kV = 0.06 pu deviation	No new or more severe overloads.
Big Sandy 115/230 kV Transformer	Big Sandy 115 kV = 0.07pu deviation **Limon 115 kV = 0.07pu deviation**	No new or more severe overloads.
Bonny Creek-Burlington 115 kV Line Outage	Bonny Creek 115 kV = 0.08 pu dev. Idalia 115 kV = 0.06 pu deviation Sagebrush = 0.08 pu deviation	No new or more severe overloads.
Galien-Sterling 115 kV Line Outage	Fleming 115 kV = 0.05 pu deviation Galien 115 kV = 0.06 pu deviation	No new or more severe overloads.
Kersey Tap-Weld 115 kV Line Outage	Lost Creek 115 kV = 0.05 pu dev Prospect 115 kV = 0.05 pu deviation	No new or more severe overloads.
Lincoln-Midway 230 kV Line	**None**	**Vernon Tap-Wray 115 kV = 106% (95)**
North Yuma 230/115 kV Transformer	North Yuma = **0.10** pu dev. Robb = 0.05 pu deviation Vernon LM = 0.05 pu deviation	No new or more severe overloads.
North Yuma-Red Willow 115 kV Line Outage	Red Willow 115 kV = 0.12 pu dev Wages 115 kV = 0.08 pu deviation Wauneta 115 kV = 0.05 pu deviation	No new or more severe overloads.
North Yuma-Sidney 230 kV Line Outage	**None**	Sidney 230/115 kV Transformer = 105% (167)
Peetz-Sidney 115 kV Line Outage	Peetz 115 kV = 0.06 pu deviation	No new or more severe overloads.
Sandhill-Wray 115 kV Line Outage	Alvin 115 kV = 0.07 pu deviation Sandhill 115 kV = 0.09 pu deviation Wauneta 115 kV = 0.05 pu deviation	Red Willow-Wages 115 kV = **115**% (55)

The above table is not suitable for determining operating procedures as not all criteria violations are listed. Only the most severe occurrences are listed to determine overall system impact.

Limon Expansion

2007 Heavy Summer; Scheduled to the North

Tot 3 = **1228** MW

System Condition	Low Voltages	Overloads (MVA Ratings noted in parenthesis)
Normal (No outages)	Fort Garland 69 kV = 0.94 p.u. Saguache 69 kV = 0.95 p.u.	Adena-Beaver Creek 115 kV = **86**% (85) **Archer-Cheyenne 115 kV = 85% (80)** Beaver Creek-East Ft. Morgan 115 kV = **91**% (122) Carter Lake-Flatiron 115 kV = **86**% (80) Curecanti-Morrow Point 230 kV = 86% (182) East Ft Morgan Tap-Ft Morgan West 115 kV = **106**% (80) Quaker2-Quaker Tap 115 kV = 94% (86) LaJunta 115/69 kV Transformer = 102% (25)
Adena-Beaver Creek 115 kV Line	None	Beaver Creek-East Ft. Morgan 115 kV = **117**% (122) Bijou Tap-Ft. Morgan West 115 kV = **113**% (80) East Ft Morgan Tap-Ft Morgan West 115 kV = **145**% (80)
Beaver Ck-CPP 115 kV Circuit 1	None	Beaver Creek-Brush CPP 115 kV #2 = **118**% (187)
Beaver Ck-CPP 115 kV Circuit 2	None	Beaver Creek-Brush CPP 115 kV #1 = 134% (162)
Beaver Creek-Brush Tap 115 kV Line Outage	Bijou Tap 115 kV = 0.11 pu deviation Brush Tap 115 kV = **0.16** pu dev. Ft Morgan Buses = **0.14** pu deviation Long Meadow = 0.06 pu deviation Orchard Area = **0.09** pu deviation	Adena-Beaver Creek 115 kV = **143**% (85) Adena-Hoyt 115 kV = 110% (109) Hoyt-Long Meadow 115 kV = **186**% (40) Kiowa Creek-Wiggins 115 kV = **111**% (60) Long Meadow-Wiggins 115 kV = **120**% (60)
Beaver Creek-Messex 115 kV Line Outage	Galien 115 kV = 0.05 pu deviation Messex 115 kV = 0.08 pu deviation Sterling 115 kV = 0.05 pu deviation	No new or more severe overloads.
Big Sandy 115/230 kV Transformer	Big Sandy 115 kV = 0.07pu deviation **Limon 115 kV = 0.07pu deviation**	No new or more severe overloads.
Bonny Creek-Burlington 115 kV Line Outage	Bonny Creek 115 kV = 0.08 pu dev. Idalia 115 kV = 0.06 pu deviation Sagebrush = 0.08 pu deviation	No new or more severe overloads.
Galien-Sterling 115 kV Line Outage	Fleming 115 kV = 0.05 pu deviation Galien 115 kV = 0.06 pu deviation	No new or more severe overloads.
Kersey Tap-Weld 115 kV Line Outage	Lost Creek 115 kV = 0.05 pu dev Prospect 115 kV = 0.05 pu deviation	No new or more severe overloads.
Lincoln-Midway 230 kV Line Outage	**None**	**Big Sandy-Last Chance 115 kV = 115% (109)** **Last Chance-South Woodrow 115 kV = 100% (109)** **Vernon Tap-Wray 115 kV = 112% (95)**
North Yuma 230/115 kV Transformer	North Yuma = **0.10** pu dev. Robb = 0.05 pu deviation Vernon LM = 0.05 pu deviation	No new or more severe overloads.
North Yuma-Red Willow 115 kV Line Outage	Red Willow 115 kV = 0.12 pu dev Wages 115 kV = 0.08 pu deviation Wauneta 115 kV = 0.05 pu deviation	No new or more severe overloads.
North Yuma-Sidney 230 kV Line Outage	**None**	Sidney 230/115 kV Transformer = **106**% (167)
Peetz-Sidney 115 kV Line Outage	Peetz 115 kV = 0.06 pu deviation	No new or more severe overloads.
Sandhill-Wray 115 kV Line Outage	Alvin 115 kV = 0.07 pu deviation Sandhill 115 kV = 0.09 pu deviation Wauneta 115 kV = 0.05 pu deviation	Red Willow-Wages 115 kV = **114**% (55)

The above table is not suitable for determining operating procedures as not all criteria violations are listed. Only the most severe occurrences are listed to determine overall system impact.

Limon Expansion

2007 Heavy Summer; Scheduled to the South

Tot 3 = **1243** MW

System Condition	Low Voltages	Overloads (MVA Ratings noted in parenthesis)
Normal (No outages)	Fort Garland 69 kV = 0.94 p.u. Saguache 69 kV = 0.95 p.u.	Adena-Beaver Creek 115 kV = **85**% (85) Beaver Creek-East Ft. Morgan 115 kV = **90**% (122) Carter Lake-Flatiron 115 kV = 88% (80) Curecanti-Morrow Point 230 kV = 86% (182) East Ft Morgan Tap-Ft Morgan West 115 kV = **104**% (80) Quaker2-Quaker Tap 115 kV = **94**% (86) LaJunta 115/69 kV Transformer = **109**% (25)
Adena-Beaver Creek 115 kV Line	None	Beaver Creek-East Ft. Morgan 115 kV = **115**% (122) Bijou Tap-Ft. Morgan West 115 kV = **111**% (80) East Ft Morgan Tap-Ft Morgan West 115 kV = **143**% (80)
Beaver Ck-CPP 115 kV Circuit 1	None	Beaver Creek-Brush CPP 115 kV #2 = **118**% (187)
Beaver Ck-CPP 115 kV Circuit 2	None	Beaver Creek-Brush CPP 115 kV #1 = 135% (162)
Beaver Creek-Brush Tap 115 kV Line Outage	Bijou Tap 115 kV = 0.11 pu deviation Brush Tap 115 kV = **0.15** pu dev. Ft Morgan Buses = 0.13 pu deviation Long Meadow = 0.06 pu deviation Orchard 115 kV = 0.08 pu deviation	Adena-Beaver Creek 115 kV = **141**% (85) Adena-Hoyt 115 kV = 108% (109) Hoyt-Long Meadow 115 kV = **185**% (40) Kiowa Creek-Wiggins 115 kV = **110**% (60) Long Meadow-Wiggins 115 kV = **119**% (60)
Beaver Creek-Messex 115 kV Line Outage	Galien 115 kV = 0.05 pu deviation Messex 115 kV = 0.09 pu deviation Sterling 115 kV = 0.06 pu deviation	No new or more severe overloads.
Big Sandy 115/230 kV Transformer	Big Sandy 115 kV = 0.07pu deviation **Limon 115 kV = 0.07pu deviation**	No new or more severe overloads.
Bonny Creek-Burlington 115 kV Line Outage	Bonny Creek 115 kV = 0.08 pu dev. Idalia 115 kV = 0.06 pu deviation Sagebrush = 0.08 pu deviation	No new or more severe overloads.
Galien-Sterling 115 kV Line Outage	Fleming 115 kV = 0.05 pu deviation Galien 115 kV = 0.06 pu deviation	No new or more severe overloads.
Kersey Tap-Weld 115 kV Line Outage	Lost Creek 115 kV = 0.05 pu dev Prospect 115 kV = 0.05 pu deviation	No new or more severe overloads.
Lincoln Tap-Midway 230 kV Line Outage	**None**	**Big Sandy-Last Chance 115 kV = 115% (109)** **Last Chance-South Woodrow 115 kV = 100% (109)** **Vernon Tap-Wray 115 kV = 113% (95)**
North Yuma 230/115 kV Transformer	North Yuma = **0.10** pu dev. Robb = 0.05 pu deviation Vernon LM = 0.05 pu deviation	No new or more severe overloads.
North Yuma-Red Willow 115 kV Line Outage	Red Willow 115 kV = 0.12 pu dev Wages 115 kV = 0.08 pu deviation Wauneta 115 kV = 0.05 pu deviation	No new or more severe overloads.
North Yuma-Sidney 230 kV Line Outage	**None**	Sidney 230/115 kV Transformer = **106**% (167)
Peetz-Sidney 115 kV Line Outage	Peetz 115 kV = 0.06 pu deviation	No new or more severe overloads.
Sandhill-Wray 115 kV Line Outage	Alvin 115 kV = 0.07 pu deviation Sandhill 115 kV = 0.09 pu deviation Wauneta 115 kV = 0.05 pu deviation	Red Willow-Wages 115 kV = **114**% (55)

The above table is not suitable for determining operating procedures as not all criteria violations are listed. Only the most severe occurrences are listed to determine overall system impact.

Limon Expansion

2007 Heavy Summer; Scheduled to the West

Tot 3 = **1245** MW

System Condition	Low Voltages	Overloads (MVA Ratings noted in parenthesis)
Normal (No outages)	Fort Garland 69 kV = 0.95 p.u. Saguache 69 kV = 0.95 p.u.	Adena-Beaver Creek 115 kV = **85**% (85) Beaver Creek-East Ft. Morgan 115 kV = **90**% (122) Carter Lake-Flatiron 115 kV = 88% (80) Curecanti-Morrow Point 230 kV = 86% (182) East Ft Morgan Tap-Ft Morgan West 115 kV = **105**% (80) Quaker2-Quaker Tap 115 kV = **95**% (86) LaJunta 115/69 kV Transformer = 102% (25)
Adena-Beaver Creek 115 kV Line Outage	None	Beaver Creek-East Ft. Morgan 115 kV = **116**% (122) Bijou Tap-Ft. Morgan West 115 kV = **112**% (80) East Ft Morgan Tap-Ft Morgan West 115 kV = **144**% (80)
Beaver Ck-CPP 115 kV Circuit 1	None	Beaver Creek-Brush CPP 115 kV #2 = **118**% (187)
Beaver Ck-CPP 115 kV Circuit 2	None	Beaver Creek-Brush CPP 115 kV #1 = 134% (162)
Beaver Creek-Brush Tap 115 kV Line Outage	Bijou Tap 115 kV = 0.11 pu deviation Brush Tap 115 kV = **0.16** pu dev. Ft Morgan Buses = 0.13 pu deviation Long Meadow = 0.06 pu deviation Orchard Area = **0.09** pu deviation	Adena-Beaver Creek 115 kV = **142**% (85) Adena-Hoyt 115 kV = 108% (109) Hoyt-Long Meadow 115 kV = **186**% (40) Kiowa Creek-Wiggins 115 kV = **110**% (60) Long Meadow-Wiggins 115 kV = **120**% (60)
Beaver Creek-Messex 115 kV Line Outage	Galien 115 kV = 0.05 pu deviation Messex 115 kV = 0.09 pu deviation Sterling 115 kV = 0.06 pu deviation	No new or more severe overloads.
Big Sandy 115/230 kV Transformer	Big Sandy 115 kV = 0.07pu deviation **Limon 115 kV = 0.07pu deviation**	No new or more severe overloads.
Bonny Creek-Burlington 115 kV Line Outage	Bonny Creek 115 kV = 0.08 pu dev. Idalia 115 kV = 0.06 pu deviation Sagebrush = 0.08 pu deviation	No new or more severe overloads.
Galien-Sterling 115 kV Line Outage	Fleming 115 kV = 0.05 pu deviation Galien 115 kV = 0.06 pu deviation	No new or more severe overloads.
Kersey Tap-Weld 115 kV Line Outage	Lost Creek 115 kV = 0.05 pu dev Prospect 115 kV = 0.05 pu deviation	No new or more severe overloads.
Lincoln Tap-Midway 230 kV Line Outage	**None**	**Big Sandy-Last Chance 115 kV = 115% (109)** **Last Chance-South Woodrow 115 kV = 100% (109)** **Vernon Tap-Wray 115 kV = 113% (95)**
North Yuma 230/115 kV Transformer	North Yuma = **0.10** pu dev. Robb = 0.05 pu deviation Vernon LM = 0.05 pu deviation	No new or more severe overloads.
North Yuma-Red Willow 115 kV Line Outage	Red Willow 115 kV = 0.12 pu dev Wages 115 kV = 0.08 pu deviation Wauneta 115 kV = 0.05 pu deviation	No new or more severe overloads.
North Yuma-Sidney 230 kV Line Outage	**None**	Sidney 230/115 kV Transformer = **106**% (167)
Peetz-Sidney 115 kV Line Outage	Peetz 115 kV = 0.06 pu deviation	No new or more severe overloads.
Sandhill-Wray 115 kV Line Outage	Alvin 115 kV = 0.07 pu deviation Sandhill 115 kV = 0.09 pu deviation Wauneta 115 kV = 0.05 pu deviation	Red Willow-Wages 115 kV = **114**% (55)

The above table is not suitable for determining operating procedures as not all criteria violations are listed. Only the most severe occurrences are listed to determine overall system impact.

Existing System

2008 Light Spring

Tot 3 = 1105 MW

System Condition	Low Voltages	Overloads (MVA Ratings noted in parenthesis)
Normal (No outages)	Cripple Creek 69 kV = 0.94 p.u. P P Mine 69 kV = 0.95 p.u. Victor 69 kV = 0.95 p.u.	No new or more severe overloads.
Adena-Beaver Creek 115 kV Line	None	Bijou Tap-Ft. Morgan West 115 kV = 107% (80)
Adena-Hoyt 115 kV Line Outage	None	East Ft Morgan Tap-Ft Morgan West 115 kV = 139% (80)
Beaver Creek 115 kV Tie Line Outage	None	No new or more severe overloads.
Beaver Ck-CPP 115 kV Circuit 1	None	Beaver Creek-Brush CPP 115 kV #2 = 104% (187)
Beaver Ck-CPP 115 kV Circuit 2	None	Beaver Creek-Brush CPP 115 kV #1 = 119% (162)
Beaver Creek-Brush Tap 115 kV	None	Hoyt-Long Meadow 115 kV = 107% (40)
Beaver Creek-Messex 115 kV	None	No new or more severe overloads.
Big Sandy 230/115 kV Transformer	None	No new or more severe overloads.
Bonny Creek-Burlington 115 kV	None	No new or more severe overloads.
Burlington 230/115 kV Transformer	None	No new or more severe overloads.
Galien-Sterling 115 kV Line Outage	None	No new or more severe overloads.
Kersey Tap-Weld 115 kV Line Outage	None	No new or more severe overloads.
North Yuma 230/115 kV	None	No new or more severe overloads.
North Yuma-Red Willow 115 kV Line	None	No new or more severe overloads.
Peetz-Sidney 115 kV Line Outage	None	No new or more severe overloads.
Sandhill-Wray 115 kV Line Outage	None	No new or more severe overloads.

The above table is not suitable for determining operating procedures as not all criteria violations are listed. Only the most severe occurrences are listed to determine overall system impact.

Burlington / Limon Expanded

2008 Light Spring, Scheduled North

Tot 3 = 1141 MW

System Condition	Low Voltages	Overloads (MVA Ratings noted in parenthesis)
Normal (No outages)	Cripple Creek 69 kV = 0.94 p.u. P P Mine 69 kV = 0.94 p.u. Victor 69 kV = 0.95 p.u.	**Archer-Stegall 230 kV Line = 85% (319)** **Bijou Tap-Ft. Morgan West 115 kV = 82% (80)** **Brighton NW-Sand Creek 115 kV = 81% (85)** **Lincoln Tap-Midway 230 kV = 91% (336)**
Adena-Beaver Creek 115 kV Line	None	**Bijou Tap-Ft. Morgan West 115 kV = 122% (80)**
Adena-Hoyt 115 kV Line Outage	None	No new or more severe overloads.
Beaver Creek 115 kV Tie Line Outage	None	No new or more severe overloads.
Beaver Ck-CPP 115 kV Circuit 1	None	Beaver Creek-Brush CPP 115 kV #2 = **105%** (187)
Beaver Ck-CPP 115 kV Circuit 2	None	Beaver Creek-Brush CPP 115 kV #1 = **120%** (162)
Beaver Creek-Brush Tap 115 kV	None	Hoyt-Long Meadow 115 kV = **115%** (40)
Beaver Creek-Messex 115 kV	None	No new or more severe overloads.
Big Sandy 230/115 kV Transformer	None	No new or more severe overloads.
Big Sandy-Burlington 230 kV	None	**Vernon Tap-Wray 115 kV = 104% (95)**
Bonny Creek-Burlington 115 kV	None	No new or more severe overloads.
Burlington 230/115 kV Transformer	None	No new or more severe overloads.
Galien-Sterling 115 kV Line Outage	None	No new or more severe overloads.
Kersey Tap-Weld 115 kV Line Outage	None	No new or more severe overloads.
Lincoln-Midway 230 kV Line	**Joes Area 115 kV = 0.07 pu dev** **Sagebrush 115 kV = 0.05 pu dev** **Vernon Area 115 kV = 0.05 pu dev** **South Woodrow = 0.06 pu dev**	**Big Sandy 230/115 kV = 104% (167)** **Big Sandy-Beaver Creek 115 kV = 149% (109)** **Burlington-Idalia 115 kV = 120% (146)** **Vernon Tap-Wray 115 kV = 169% (95)**
North Yuma 230/115 kV	None	No new or more severe overloads.
North Yuma-Red Willow 115 kV Line	None	No new or more severe overloads.
Peetz-Sidney 115 kV Line Outage	None	No new or more severe overloads.
Sandhill-Wray 115 kV Line Outage	None	No new or more severe overloads.

The above table is not suitable for determining operating procedures as not all criteria violations are listed. Only the most severe occurrences are listed to determine overall system impact.

Burlington / Limon Expanded

2008 Light Spring, Scheduled South

Tot 3 = 1228 MW

System Condition	Low Voltages	Overloads (MVA Ratings noted in parenthesis)
Normal (No outages)	Cripple Creek 69 kV = **0.92** p.u. P P Mine 69 kV = **0.92** p.u. Victor 69 kV = **0.92** p.u.	**Archer-Stegall 230 kV Line = 83% (319)** **Lincoln Tap-Midway 230 kV = 96% (336)** **N. Canon City-Victor 69 kV = 104% (24)**
Adena-Beaver Creek 115 kV Line	None	**Bijou Tap-Ft. Morgan West 115 kV = 113% (80)**
Adena-Hoyt 115 kV Line Outage	None	No new or more severe overloads.
Beaver Creek 115 kV Tie Line Outage	None	No new or more severe overloads.
Beaver Ck-CPP 115 kV Circuit 1	None	Beaver Creek-Brush CPP 115 kV #2 = **105%** (187)
Beaver Ck-CPP 115 kV Circuit 2	None	Beaver Creek-Brush CPP 115 kV #1 = **120%** (162)
Beaver Creek-Brush Tap 115 kV	None	Hoyt-Long Meadow 115 kV = **111%** (40)
Beaver Creek-Messex 115 kV	None	No new or more severe overloads.
Big Sandy 230/115 kV Transformer	None	No new or more severe overloads.
Big Sandy-Burlington 230 kV	None	**Vernon Tap-Wray 115 kV = 107% (95)**
Bonny Creek-Burlington 115 kV	None	**Lincoln Tap-Midway 230 kV = 102% (336)**
Burlington 230/115 kV Transformer	None	No new or more severe overloads.
Galien-Sterling 115 kV Line Outage	None	No new or more severe overloads.
Kersey Tap-Weld 115 kV Line Outage	None	No new or more severe overloads.
Lincoln-Midway 230 kV Line	**Joes Area 115 kV = 0.06 pu dev** **Sagebrush 115 kV = 0.06 pu dev** **Vernon Area 115 kV = 0.07 pu dev** **South Woodrow = 0.06 pu dev**	**Big Sandy 230/115 kV = 105% (167)** **Big Sandy-Beaver Creek 115 kV = 149% (109)** **Burlington-Idalia 115 kV = 121% (146)** **Vernon Tap-Wray 115 kV = 171% (95)**
North Yuma 230/115 kV	None	No new or more severe overloads.
North Yuma-Red Willow 115 kV Line	None	No new or more severe overloads.
Peetz-Sidney 115 kV Line Outage	None	No new or more severe overloads.
Sandhill-Wray 115 kV Line Outage	None	No new or more severe overloads.

The above table is not suitable for determining operating procedures as not all criteria violations are listed. Only the most severe occurrences are listed to determine overall system impact.

Burlington / Limon Expanded

2008 Light Spring, Scheduled West

Tot 3 = 1234 MW

System Condition	Low Voltages	Overloads (MVA Ratings noted in parenthesis)
Normal (No outages)	Cripple Creek 69 kV = **0.94** p.u. P P Mine 69 kV = **0.95** p.u. Victor 69 kV = **0.95** p.u.	**Archer-Stegall 230 kV Line = 84% (319)** **Lincoln Tap-Midway 230 kV = 93% (336)** **California-North 115 kV = 82% (150)**
Adena-Beaver Creek 115 kV Line	None	**Bijou Tap-Ft. Morgan West 115 kV = 115% (80)**
Adena-Hoyt 115 kV Line Outage	None	No new or more severe overloads.
Beaver Creek 115 kV Tie Line Outage	None	No new or more severe overloads.
Beaver Ck-CPP 115 kV Circuit 1	None	Beaver Creek-Brush CPP 115 kV #2 = **105%** (187)
Beaver Ck-CPP 115 kV Circuit 2	None	Beaver Creek-Brush CPP 115 kV #1 = **120%** (162)
Beaver Creek-Brush Tap 115 kV	None	Hoyt-Long Meadow 115 kV = **113%** (40)
Beaver Creek-Messex 115 kV	None	No new or more severe overloads.
Big Sandy 230/115 kV Transformer	None	No new or more severe overloads.
Big Sandy-Burlington 230 kV	None	**Vernon Tap-Wray 115 kV = 107% (95)**
Bonny Creek-Burlington 115 kV	None	**Lincoln Tap-Midway 230 kV = 100% (336)**
Burlington 230/115 kV Transformer	None	No new or more severe overloads.
Galien-Sterling 115 kV Line Outage	None	No new or more severe overloads.
Kersey Tap-Weld 115 kV Line Outage	None	No new or more severe overloads.
Lincoln-Midway 230 kV Line	**Joes Area 115 kV = 0.07 pu dev** **Sagebrush 115 kV = 0.06 pu dev** **Vernon Area 115 kV = 0.07 pu dev** **South Woodrow = 0.06 pu dev**	**Big Sandy 230/115 kV = 105% (167)** **Big Sandy-Beaver Creek 115 kV = 150% (109)** **Burlington-Idalia 115 kV = 121% (146)** **Vernon Tap-Wray 115 kV = 171% (95)**
North Yuma 230/115 kV	None	No new or more severe overloads.
North Yuma-Red Willow 115 kV Line	None	No new or more severe overloads.
Peetz-Sidney 115 kV Line Outage	None	No new or more severe overloads.
Sandhill-Wray 115 kV Line Outage	None	No new or more severe overloads.

The above table is not suitable for determining operating procedures as not all criteria violations are listed. Only the most severe occurrences are listed to determine overall system impact.

Burlington Expansion

2008 Light Spring; Scheduled to the North

Tot 3 = **1159** MW

System Condition	Low Voltages	Overloads (MVA Ratings noted in parenthesis)
Normal (No outages)	Cripple Creek 69 kV = 0.94 pu PPMine 69 kV = 0.95 pu Victor 69 kV = 0.95 pu	**Archer-Stegall 230 kV = 84% (319)**
Adena-Beaver Creek 115 kV Line	None	Bijou Tap-Ft. Morgan West 115 kV = **117**% (80**)**
Adena-Hoyt 115 kV Line Outage	None	No new or more severe overloads.
Beaver Creek 115 kV Tie Line Outage	None	No new or more severe overloads.
Beaver Ck-CPP 115 kV Circuit 1	None	Beaver Creek-Brush CPP 115 kV #2 = **105**% (187)
Beaver Ck-CPP 115 kV Circuit 2	None	Beaver Creek-Brush CPP 115 kV #1 = **120**% (162)
Beaver Ck-Brush Tap 115 kV Line	**Brush Tap 115 kV = 0.05 pu dev.**	Hoyt-Long Meadow 115 kV = **112**% (40)
Beaver Ck-Messex 115 kV Line Outage	**None**	No new or more severe overloads.
Big Sandy 115/230 kV Transformer	**None**	No new or more severe overloads.
Bonny Creek-Burlington 115 kV	None	No new or more severe overloads.
Galien-Sterling 115 kV Line Outage	**None**	No new or more severe overloads.
Kersey Tap-Weld 115 kV Line Outage	**None**	No new or more severe overloads.
Lincoln-Midway 230 kV Line Outage	**None**	**Big Sandy-Last Chance 115 kV = 110% (109)** **Beaver Creek-Gary 115 kV = 102% (109)** **Gary-Woodrow 115 kV = 103% (109)** **Last Chance-South Woodrow 115 kV = 104% (109)** **South Woodrow-Woodrow 115 kV = 103% (109)** **Vernon Tap-Wray 115 kV = 129% (95)**
North Yuma 230/115 kV	**None**	No new or more severe overloads.
North Yuma-Red Willow 115 kV Line	**None**	No new or more severe overloads.
North Yuma-Sidney 230 kV Line Outage	**None**	No new or more severe overloads.
Peetz-Sidney 115 kV Line Outage	**None**	No new or more severe overloads.
Sandhill-Wray 115 kV Line Outage	**None**	No new or more severe overloads.

The above table is not suitable for determining operating procedures as not all criteria violations are listed. Only the most severe occurrences are listed to determine overall system impact.

Burlington Expansion

2008 Light Spring; Scheduled to the South

Tot 3 = **1227** MW

System Condition	Low Voltages	Overloads (MVA Ratings noted in parenthesis)
Normal (No outages)	Cripple Creek 69 kV = **0.91** pu PPMine 69 kV = **0.91** pu Victor 69 kV = **0.92** pu	**Archer-Stegall 230 kV = 83% (319)** **North Canon-Victor 69 kV = 97% (24)**
Adena-Beaver Creek 115 kV Line	None	Bijou Tap-Ft. Morgan West 115 kV = **111**% (80**)**
Adena-Hoyt 115 kV Line Outage	None	No new or more severe overloads.
Beaver Creek 115 kV Tie Line Outage	None	No new or more severe overloads.
Beaver Ck-CPP 115 kV Circuit 1	None	Beaver Creek-Brush CPP 115 kV #2 = **105**% (187)
Beaver Ck-CPP 115 kV Circuit 2	None	Beaver Creek-Brush CPP 115 kV #1 = **120**% (162)
Beaver Ck-Brush Tap 115 kV Line	None	Hoyt-Long Meadow 115 kV = **109**% (40)
Beaver Ck-Messex 115 kV Line Outage	None	No new or more severe overloads.
Big Sandy 115/230 kV Transformer	None	No new or more severe overloads.
Bonny Creek-Burlington 115 kV	None	No new or more severe overloads.
Galien-Sterling 115 kV Line Outage	None	No new or more severe overloads.
Kersey Tap-Weld 115 kV Line Outage	None	No new or more severe overloads.
Lincoln-Midway 230 kV Line Outage	**None**	**Big Sandy-Last Chance 115 kV = 110% (109)** **Beaver Creek-Gary 115 kV = 103% (109)** **Gary-Woodrow 115 kV = 103% (109)** **Last Chance-South Woodrow 115 kV = 104% (109)** **South Woodrow-Woodrow 115 kV = 104% (109)** **Vernon Tap-Wray 115 kV = 131% (95)**
North Yuma 230/115 kV	None	No new or more severe overloads.
North Yuma-Red Willow 115 kV Line	None	No new or more severe overloads.
North Yuma-Sidney 230 kV Line Outage	**None**	No new or more severe overloads.
Peetz-Sidney 115 kV Line Outage	None	No new or more severe overloads.
Sandhill-Wray 115 kV Line Outage	None	No new or more severe overloads.

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Burlington Expansion

2008 Light Spring; Scheduled to the West

Tot 3 = **1231** MW

System Condition	Low Voltages	Overloads (MVA Ratings noted in parenthesis)
Normal (No outages)	Cripple Creek 69 kV = 0.95 pu PPMine 69 kV = 0.95 pu	**Archer-Stegall 230 kV = 83% (319)** **California 1-North 542 115 kV = 81% (150)**
Adena-Beaver Creek 115 kV Line	None	Bijou Tap-Ft. Morgan West 115 kV = **112**% (80**)**
Adena-Hoyt 115 kV Line Outage	None	No new or more severe overloads
Beaver Creek 115 kV Tie Line Outage	None	No new or more severe overloads
Beaver Ck-CPP 115 kV Circuit 1	None	Beaver Creek-Brush CPP 115 kV #2 = **105**% (187)
Beaver Ck-CPP 115 kV Circuit 2	None	Beaver Creek-Brush CPP 115 kV #1 = **120**% (162)
Beaver Ck-Brush Tap 115 kV Line	None	Hoyt-Long Meadow 115 kV = **110**% (40)
Beaver Ck-Messex 115 kV Line Outage	None	No new or more severe overloads.
Big Sandy 115/230 kV Transformer	None	No new or more severe overloads.
Bonny Creek-Burlington 115 kV	None	No new or more severe overloads.
Galien-Sterling 115 kV Line Outage	None	No new or more severe overloads.
Kersey Tap-Weld 115 kV Line Outage	None	No new or more severe overloads.
Lincoln Tap-Midway 230 kV Line Outage	**None**	**Big Sandy-Last Chance 115 kV = 110% (109)** **Beaver Creek-Gary 115 kV = 103% (109)** **Gary-Woodrow 115 kV = 103% (109)** **Last Chance-South Woodrow 115 kV = 104% (109)** **South Woodrow-Woodrow 115 kV = 104% (109)** **Vernon Tap-Wray 115 kV = 131% (95)**
North Yuma 230/115 kV	None	No new or more severe overloads.
North Yuma-Red Willow 115 kV Line	None	No new or more severe overloads.
North Yuma-Sidney 230 kV Line Outage	**None**	No new or more severe overloads
Peetz-Sidney 115 kV Line Outage	None	No new or more severe overloads.
Sandhill-Wray 115 kV Line Outage	None	No new or more severe overloads

The above table is not suitable for determining operating procedures as not all criteria violations are listed. Only the most severe occurrences are listed to determine overall system impact.

Limon Expansion

2008 Light Spring; Scheduled to the North

Tot 3 = **1152** MW

System Condition	Low Voltages	Overloads (MVA Ratings noted in parenthesis)
Normal (No outages)	Cripple Creek 69 kV = 0.94 pu PPMine 69 kV = 0.95 pu Victor 69 kV = 0.95 pu	**Archer-Stegall 230 kV = 84% (319)** **Lincoln Tap-Midway 230 kV = 84% (336)**
Adena-Beaver Creek 115 kV Line	None	Bijou Tap-Ft. Morgan West 115 kV = **118**% (80**)**
Adena-Hoyt 115 kV Line Outage	None	No new or more severe overloads.
Beaver Creek 115 kV Tie Line Outage	None	No new or more severe overloads.
Beaver Ck-CPP 115 kV Circuit 1	None	Beaver Creek-Brush CPP 115 kV #2 = **105**% (187)
Beaver Ck-CPP 115 kV Circuit 2	None	Beaver Creek-Brush CPP 115 kV #1 = **120**% (162)
Beaver Ck-Brush Tap 115 kV Line	**Brush Tap 115 kV = 0.05 pu dev.**	Hoyt-Long Meadow 115 kV = **113**% (40)
Beaver Ck-Messex 115 kV Line Outage	None	No new or more severe overloads.
Big Sandy 115/230 kV Transformer	**None**	No new or more severe overloads.
Bonny Creek-Burlington 115 kV	None	No new or more severe overloads.
Galien-Sterling 115 kV Line Outage	None	No new or more severe overloads.
Kersey Tap-Weld 115 kV Line Outage	None	No new or more severe overloads.
Lincoln-Midway 230 kV Line Outage	**Idalia 115 kV = 0.05pu deviation** **Vernon Tap 115 kV = 0.05pu dev.**	**Big Sandy-Last Chance 115 kV = 131% (109)** **Beaver Creek-Gary 115 kV = 124% (109)** **Gary-Woodrow 115 kV = 124% (109)** **Last Chance-South Woodrow 115 kV = 125% (109)** **South Woodrow-Woodrow 115 kV = 125% (109)** **Vernon Tap-Wray 115 kV = 136% (95)**
North Yuma 230/115 kV	None	No new or more severe overloads.
North Yuma-Red Willow 115 kV Line	None	No new or more severe overloads.
North Yuma-Sidney 230 kV Line Outage	**None**	No new or more severe overloads.
Peetz-Sidney 115 kV Line Outage	None	No new or more severe overloads.
Sandhill-Wray 115 kV Line Outage	None	No new or more severe overloads.

The above table is not suitable for determining operating procedures as not all criteria violations are listed. Only the most severe occurrences are listed to determine overall system impact.

Limon Expansion

2008 Light Spring; Scheduled to the South

Tot 3 = **1228** MW

System Condition	Low Voltages	Overloads (MVA Ratings noted in parenthesis)
Normal (No outages)	Cripple Creek 69 kV = **0.92** pu PPMine 69 kV = **0.92** pu Victor 69 kV = **0.92** pu	**Archer-Stegall 230 kV = 83% (319)** **Lincoln Tap-Midway 230 kV = 88% (336)** **North Conon-Victor 69 kV = 99% (24)**
Adena-Beaver Creek 115 kV Line	None	Bijou Tap-Ft. Morgan West 115 kV = **111**% (80**)**
Adena-Hoyt 115 kV Line Outage	None	No new or more severe overloads.
Beaver Creek 115 kV Tie Line Outage	None	No new or more severe overloads.
Beaver Ck-CPP 115 kV Circuit 1	None	Beaver Creek-Brush CPP 115 kV #2 = **104**% (187)
Beaver Ck-CPP 115 kV Circuit 2	None	Beaver Creek-Brush CPP 115 kV #1 = **120**% (162)
Beaver Ck-Brush Tap 115 kV Line	None	Hoyt-Long Meadow 115 kV = **109**% (40)
Beaver Ck-Messex 115 kV Line Outage	**None**	No new or more severe overloads.
Big Sandy 115/230 kV Transformer	**None**	No new or more severe overloads.
Bonny Creek-Burlington 115 kV	None	No new or more severe overloads.
Burlington 115 kV Tie Line Outage	None	No new or more severe overloads.
Galien-Sterling 115 kV Line Outage	**None**	No new or more severe overloads.
Kersey Tap-Weld 115 kV Line Outage	**None**	No new or more severe overloads.
Lincoln-Midway 230 kV Line Outage	**Idalia 115 kV = 0.05pu deviation** **Vernon Tap 115 kV = 0.06pu dev.**	**Big Sandy-Last Chance 115 kV = 132% (109)** **Beaver Creek-Gary 115 kV = 124% (109)** **Gary-Woodrow 115 kV = 125% (109)** **Last Chance-South Woodrow 115 kV = 126% (109)** **South Woodrow-Woodrow 115 kV = 125% (109)** **Vernon Tap-Wray 115 kV = 138% (95)**
North Yuma 230/115 kV	**None**	No new or more severe overloads.
North Yuma-Red Willow 115 kV Line	**None**	No new or more severe overloads.
North Yuma-Sidney 230 kV Line Outage	**None**	No new or more severe overloads.
Peetz-Sidney 115 kV Line Outage	**None**	No new or more severe overloads.
Sandhill-Wray 115 kV Line Outage	**None**	No new or more severe overloads.

The above table is not suitable for determining operating procedures as not all criteria violations are listed. Only the most severe occurrences are listed to determine overall system impact.

Limon Expansion

2008 Light Spring; Scheduled to the West

Tot 3 = **1233** MW

System Condition	Low Voltages	Overloads (MVA Ratings noted in parenthesis)
Normal (No outages)	Cripple Creek 69 kV = 0.94 pu PPMine 69 kV = 0.95 pu Victor 69 kV = 0.95 pu	**Archer-Stegall 230 kV = 83% (319)** **Lincoln Tap-Midway 230 kV = 85% (336)** **California 1-North 452 115 kV = 81% (150)**
Adena-Beaver Creek 115 kV Line	None	Bijou Tap-Ft. Morgan West 115 kV = **113**% (80**)**
Adena-Hoyt 115 kV Line Outage	None	No new or more severe overloads.
Beaver Creek 115 kV Tie Line Outage	None	No new or more severe overloads.
Beaver Ck-CPP 115 kV Circuit 1	None	Beaver Creek-Brush CPP 115 kV #2 = **104**% (187)
Beaver Ck-CPP 115 kV Circuit 2	None	Beaver Creek-Brush CPP 115 kV #1 = **120**% (162)
Beaver Ck-Brush Tap 115 kV Line	None	Hoyt-Long Meadow 115 kV = **111**% (40)
Beaver Ck-Messex 115 kV Line Outage	None	No new or more severe overloads.
Big Sandy 115/230 kV Transformer	**None**	No new or more severe overloads.
Bonny Creek-Burlington 115 kV	None	No new or more severe overloads.
Galien-Sterling 115 kV Line Outage	None	No new or more severe overloads.
Kersey Tap-Weld 115 kV Line Outage	None	No new or more severe overloads.
Lincoln-Midway 230 kV Line	**Idalia 115 kV = 0.05pu deviation** **Joes 115 kV = 0.05pu deviation** **Vernon Tap 115 kV = 0.06pu dev.**	**Big Sandy-Last Chance 115 kV = 132% (109)** **Beaver Creek-Gary 115 kV = 124% (109)** **Gary-Woodrow 115 kV = 125% (109)** **Last Chance-South Woodrow 115 kV = 126% (109)** **South Woodrow-Woodrow 115 kV = 125% (109)** **Vernon Tap-Wray 115 kV = 138% (95)**
North Yuma 230/115 kV	None	No new or more severe overloads.
North Yuma-Red Willow 115 kV Line	None	No new or more severe overloads.
North Yuma-Sidney 230 kV Line Outage	**None**	No new or more severe overloads.
Peetz-Sidney 115 kV Line Outage	None	No new or more severe overloads.
Sandhill-Wray 115 kV Line Outage	None	No new or more severe overloads.

The above table is not suitable for determining operating procedures as not all criteria violations are listed. Only the most severe occurrences are listed to determine overall system impact.

Appendix B: Capacitor Voltage Correction Reports

2007HS Voltage Deviation Switched Shunt Correction Report

In order to alleviate the voltage deviation problems created by adding generation at both the Burlington and Lincoln substations, shunt capacitor banks were added at Joes, Sagebrush, and Vernon Tap substations, and the Lincoln – Midway 230 kV line outage was taken. This case is saved as the 07westbothcaps save case.

The capacitors at these locations were first allowed to adjust to the exact capacitance necessary to eliminate the voltage deviations in the study area. These results were checked by fixing the capacitors to the closest typical value in multiples of 7.5 MVAR. Below are three reports showing (a) that no voltage deviations exist with the shunt capacitors in service, (b) the nominal amount of shunt capacitance that was necessary, and (c) the actual VAR flow from the shunt capacitors.

The capacitors that are needed in this case are 22.5 MVAR at Vernon Tap and 7.5 MVAR at Joes substations.

```
BUSES WITH VOLTAGE DIFFERING BY MORE THAN 0.05000 PU:
                          IN WORKING CASE    IN N:\davgus\Burl-LimonGenAdd\Cases\working.sav
 X------ BUS -------X  VOLTAGE   ANGLE     VOLTAGE   ANGLE    DELTA VLT  ANGLE

                                    * NONE *


 BUSES WITH SWITCHED SHUNTS DIFFERING BY MORE THAN   0.0 MVAR:
                         IN WORKING CASE     IN N:\davgus\Burl-LimonGenAdd\Cases\working.sav
 X------ BUS -------X     MW     MVAR       MW     MVAR   DELTA MW   %     MVAR    %
 73094 [JOES     115]     0.0     7.5       NO SW SHUNT       0.0   0.0    -7.5 100.0
 73174 [SAGEBRSH 115]     0.0     0.0       NO SW SHUNT       0.0   0.0     0.0   0.0
 73206 [VERNONTP 115]     0.0    22.5       NO SW SHUNT       0.0   0.0   -22.5 100.0


<========================= BUS DATA ========================>
  FROM              AREA  VOLT            GEN     LOAD    SHUNT
  BUS      NAME     ZONE PU/KV  ANGLE  MW/MVAR  MW/MVAR MW/MVAR
 ===== ============ ==== ===== ======  =======  ======= =======

 73174 SAGEBRSH 115  73  0.954   89.1      0.0      3.0     0.0
                    752  109.7             0.0      1.0     0.0

 73094 JOES     115  73  0.973   82.1      0.0     10.2     0.0
                    752  111.9             0.0      3.4    -7.1

 73206 VERNONTP 115  73  0.951   76.6      0.0      4.7     0.0
                    752  109.4             0.0      1.5   -20.4
```

2007HS Voltage Deviation Switched Shunt Correction Report

In order to alleviate the voltage deviation problems created by adding generation at both the Burlington substation, shunt capacitor banks were added at Joes, Sagebrush, and Vernon Tap substations, and the Lincoln – Midway 230 kV line outage was taken. This case is saved as the 07westburlcaps save case.

The capacitors at these locations were first allowed to adjust to the exact capacitance necessary to eliminate the voltage deviations in the study area. These results were checked by fixing the capacitors to the closest typical value in multiples of 7.5 MVAR. Below are three reports showing (a) that no voltage deviations exist with the shunt capacitors in service, (b) the nominal amount of shunt capacitance that was necessary, and (c) the actual VAR flow from the shunt capacitors.

No capacitors are needed in this case.

```
BUSES WITH VOLTAGE DIFFERING BY MORE THAN 0.05000 PU:
                        IN WORKING CASE    IN N:\davgus\Burl-LimonGenAdd\Cases\working.sav
 X------ BUS -------X  VOLTAGE   ANGLE     VOLTAGE   ANGLE    DELTA VLT  ANGLE

                                    * NONE *

BUSES WITH SWITCHED SHUNTS DIFFERING BY MORE THAN   0.0 MVAR:
                      IN WORKING CASE     IN N:\davgus\Burl-LimonGenAdd\Cases\working.sav
 X------ BUS -------X     MW     MVAR       MW     MVAR   DELTA MW   %     MVAR    %
 73094 [JOES     115]     0.0     0.0       NO SW SHUNT       0.0   0.0     0.0   0.0
 73174 [SAGEBRSH 115]     0.0     0.0       NO SW SHUNT       0.0   0.0     0.0   0.0
 73206 [VERNONTP 115]     0.0     0.0       NO SW SHUNT       0.0   0.0     0.0   0.0


<========================= BUS DATA ========================>
  FROM              AREA  VOLT            GEN     LOAD    SHUNT
  BUS      NAME     ZONE PU/KV  ANGLE   MW/MVAR  MW/MVAR MW/MVAR
 ===== ============ ==== ===== ======  =======  ======= =======

 73174 SAGEBRSH 115  73  0.967   81.9      0.0      3.0     0.0
                    752  111.2             0.0      1.0     0.0

 73094 JOES     115  73  0.969   76.3      0.0     10.2     0.0
                    752  111.4             0.0      3.4     0.0

 73206 VERNONTP 115  73  0.955   73.0      0.0      4.7     0.0
                    752  109.8             0.0      1.5     0.0
```

2007HS Voltage Deviation Switched Shunt Correction Report

In order to alleviate the voltage deviation problems created by adding generation at both the Lincoln substation, shunt capacitor banks were added at Joes, Sagebrush, and Vernon Tap substations, and the Lincoln – Midway 230 kV line outage was taken. This case is saved as the 07westlimcaps save case.

The capacitors at these locations were first allowed to adjust to the exact capacitance necessary to eliminate the voltage deviations in the study area. These results were checked by fixing the capacitors to the closest typical value in multiples of 7.5 MVAR. Below are three reports showing (a) that no voltage deviations exist with the shunt capacitors in service, (b) the nominal amount of shunt capacitance that was necessary, and (c) the actual VAR flow from the shunt capacitors.

No capacitors are needed in this case.

```
BUSES WITH VOLTAGE DIFFERING BY MORE THAN 0.05000 PU:
                       IN WORKING CASE    IN N:\davgus\Burl-LimonGenAdd\Cases\working.sav
 X------ BUS -------X  VOLTAGE   ANGLE     VOLTAGE   ANGLE    DELTA VLT  ANGLE

                                  * NONE *

 BUSES WITH SWITCHED SHUNTS DIFFERING BY MORE THAN   0.0 MVAR:
                      IN WORKING CASE     IN N:\davgus\Burl-LimonGenAdd\Cases\working.sav
 X------ BUS -------X     MW     MVAR       MW     MVAR   DELTA MW   %     MVAR    %
 73094 [JOES     115]     0.0     0.0       NO SW SHUNT       0.0   0.0     0.0   0.0
 73174 [SAGEBRSH 115]     0.0     0.0       NO SW SHUNT       0.0   0.0     0.0   0.0
 73206 [VERNONTP 115]     0.0     0.0       NO SW SHUNT       0.0   0.0     0.0   0.0


<========================= BUS DATA ========================>
  FROM               AREA  VOLT            GEN      LOAD     SHUNT
  BUS      NAME      ZONE PU/KV  ANGLE   MW/MVAR  MW/MVAR MW/MVAR
 ===== ============ ==== ===== ======  =======  ======= =======

 73174 SAGEBRSH 115  73  0.957   83.5      0.0      3.0     0.0
                    752  110.0             0.0      1.0     0.0

 73094 JOES     115  73  0.951   79.8      0.0     10.2     0.0
                    752  109.4             0.0      3.4     0.0

 73206 VERNONTP 115  73  0.947   73.8      0.0      4.7     0.0
                    752  108.9             0.0      1.5     0.0
```

2008LSP Voltage Deviation Switched Shunt Correction Report

In order to alleviate the voltage deviation problems created by adding generation at both the Burlington and Lincoln substations, shunt capacitor banks were added at Joes, Sagebrush, and Vernon Tap substations, and the Lincoln – Midway 230 kV line outage was taken. This case is saved as the 08westbothcaps save case.

The capacitors at these locations were first allowed to adjust to the exact capacitance necessary to eliminate the voltage deviations in the study area. These results were checked by fixing the capacitors to the closest typical value in multiples of 7.5 MVAR. Below are three reports showing (a) that any voltage deviations that exist with the shunt capacitors in service are within a voltage error tolerance of 0.00001 per unit, (b) the nominal amount of shunt capacitance that was necessary, and (c) the actual VAR flow from the shunt capacitors.

The capacitors that are needed in this case are 45 MVAR at Vernon Tap and 7.5 MVAR at Joes substations.

```
BUSES WITH VOLTAGE DIFFERING BY MORE THAN 0.05000 PU:
                          IN WORKING CASE    IN N:\davgus\Burl-LimonGenAdd\Cases\working.sav
 X------ BUS -------X  VOLTAGE   ANGLE     VOLTAGE   ANGLE    DELTA VLT  ANGLE
 73125 [LSCHANCE 115]  0.97888  100.33     1.02889   74.00     0.05001  -26.33

BUSES WITH SWITCHED SHUNTS DIFFERING BY MORE THAN   0.0 MVAR:
                        IN WORKING CASE     IN N:\davgus\Burl-LimonGenAdd\Cases\working.sav
 X------ BUS -------X     MW     MVAR       MW     MVAR   DELTA MW   %     MVAR    %
 73094 [JOES     115]     0.0     7.5       NO SW SHUNT       0.0   0.0    -7.5 100.0
 73174 [SAGEBRSH 115]     0.0     0.0       NO SW SHUNT       0.0   0.0     0.0   0.0
 73206 [VERNONTP 115]     0.0    45.0       NO SW SHUNT       0.0   0.0   -45.0 100.0

←======================= BUS DATA =======================→
  FROM               AREA  VOLT            GEN     LOAD    SHUNT
  BUS      NAME      ZONE PU/KV  ANGLE  MW/MVAR  MW/MVAR MW/MVAR
 ===== ============ ==== ===== ======  =======  ======= =======

 73174 SAGEBRSH 115  73  0.992  107.2      0.0      1.1     0.0
                    752  114.1              0.0      0.3     0.0

 73094 JOES     115  73  0.998   98.8      0.0      3.6     0.0
                    752  114.8              0.0      1.2    -7.5

 73206 VERNONTP 115  73  1.004   92.6      0.0      3.3     0.0
                    752  115.5              0.0      1.1   -45.4
```

2008LSP Voltage Deviation Switched Shunt Correction Report

In order to alleviate the voltage deviation problems created by adding generation at the Burlington substation, shunt capacitor banks were added at Joes, Sagebrush, and Vernon Tap substations, and the Lincoln – Midway 230 kV line outage was taken. This case is saved as the 08westburlcaps save case.

The capacitors at these locations were first allowed to adjust to the exact capacitance necessary to eliminate the voltage deviations in the study area. These results were checked by fixing the capacitors to the closest typical value in multiples of 7.5 MVAR. Below are three reports showing (a) that no voltage deviations exist with the shunt capacitors in service, (b) the nominal amount of shunt capacitance that was necessary, and (c) the actual VAR flow from the shunt capacitors.

The capacitor that is needed in this case is 15 MVAR at Vernon Tap substation.

```
BUSES WITH VOLTAGE DIFFERING BY MORE THAN 0.05000 PU:
                       IN WORKING CASE    IN N:\davgus\Burl-LimonGenAdd\Cases\working.sav
 X------ BUS -------X  VOLTAGE   ANGLE     VOLTAGE   ANGLE    DELTA VLT  ANGLE
```

- NONE *

```
 BUSES WITH SWITCHED SHUNTS DIFFERING BY MORE THAN   0.0 MVAR:
                      IN WORKING CASE     IN N:\davgus\Burl-LimonGenAdd\Cases\working.sav
 X------ BUS -------X     MW     MVAR       MW     MVAR   DELTA MW   %     MVAR    %
 73094 [JOES     115]     0.0     0.0       NO SW SHUNT       0.0   0.0     0.0   0.0
 73174 [SAGEBRSH 115]     0.0     0.0       NO SW SHUNT       0.0   0.0     0.0   0.0
 73206 [VERNONTP 115]     0.0    15.0       NO SW SHUNT       0.0   0.0   -15.0 100.0

←======================= BUS DATA ========================→
  FROM              AREA  VOLT            GEN     LOAD    SHUNT
  BUS      NAME     ZONE PU/KV  ANGLE  MW/MVAR  MW/MVAR MW/MVAR
 ===== ============ ==== ===== ======  =======  ======= =======

 73174 SAGEBRSH 115  73  1.002  100.4      0.0      1.1     0.0
                    752  115.3              0.0      0.3     0.0

 73094 JOES     115  73  0.995   93.2      0.0      3.6     0.0
                    752  114.5              0.0      1.2     0.0

 73206 VERNONTP 115  73  1.001   89.3      0.0      3.3     0.0
                    752  115.1              0.0      1.1   -15.0
```

2008LSP Voltage Deviation Switched Shunt Correction Report

In order to alleviate the voltage deviation problems created by adding generation at the Lincoln substation, shunt capacitor banks were added at Joes, Sagebrush, and Vernon Tap substations, and the Lincoln – Midway 230 kV line outage was taken. This case is saved as the 08westlimcaps save case.

The capacitors at these locations were first allowed to adjust to the exact capacitance necessary to eliminate the voltage deviations in the study area. These results were checked by fixing the capacitors to the closest typical value in multiples of 7.5 MVAR. Below are three reports showing (a) that no voltage deviations exist with the shunt capacitors in service, (b) the nominal amount of shunt capacitance that was necessary, and (c) the actual VAR flow from the shunt capacitors.

The capacitors that are needed in this case are 22.5 MVAR at Vernon Tap and 7.5 MVAR at Joes substations.

```
BUSES WITH VOLTAGE DIFFERING BY MORE THAN 0.05000 PU:
                          IN WORKING CASE    IN N:\davgus\Burl-LimonGenAdd\Cases\working.sav
 X------ BUS -------X  VOLTAGE   ANGLE     VOLTAGE   ANGLE    DELTA VLT  ANGLE
```

- NONE *

```
BUSES WITH SWITCHED SHUNTS DIFFERING BY MORE THAN   0.0 MVAR:
                       IN WORKING CASE     IN N:\davgus\Burl-LimonGenAdd\Cases\working.sav
 X------ BUS -------X     MW     MVAR       MW     MVAR   DELTA MW   %     MVAR    %
 73094 [JOES     115]     0.0     7.5       NO SW SHUNT       0.0   0.0    -7.5 100.0
 73174 [SAGEBRSH 115]     0.0     0.0       NO SW SHUNT       0.0   0.0     0.0   0.0
 73206 [VERNONTP 115]     0.0    22.5       NO SW SHUNT       0.0   0.0   -22.5 100.0

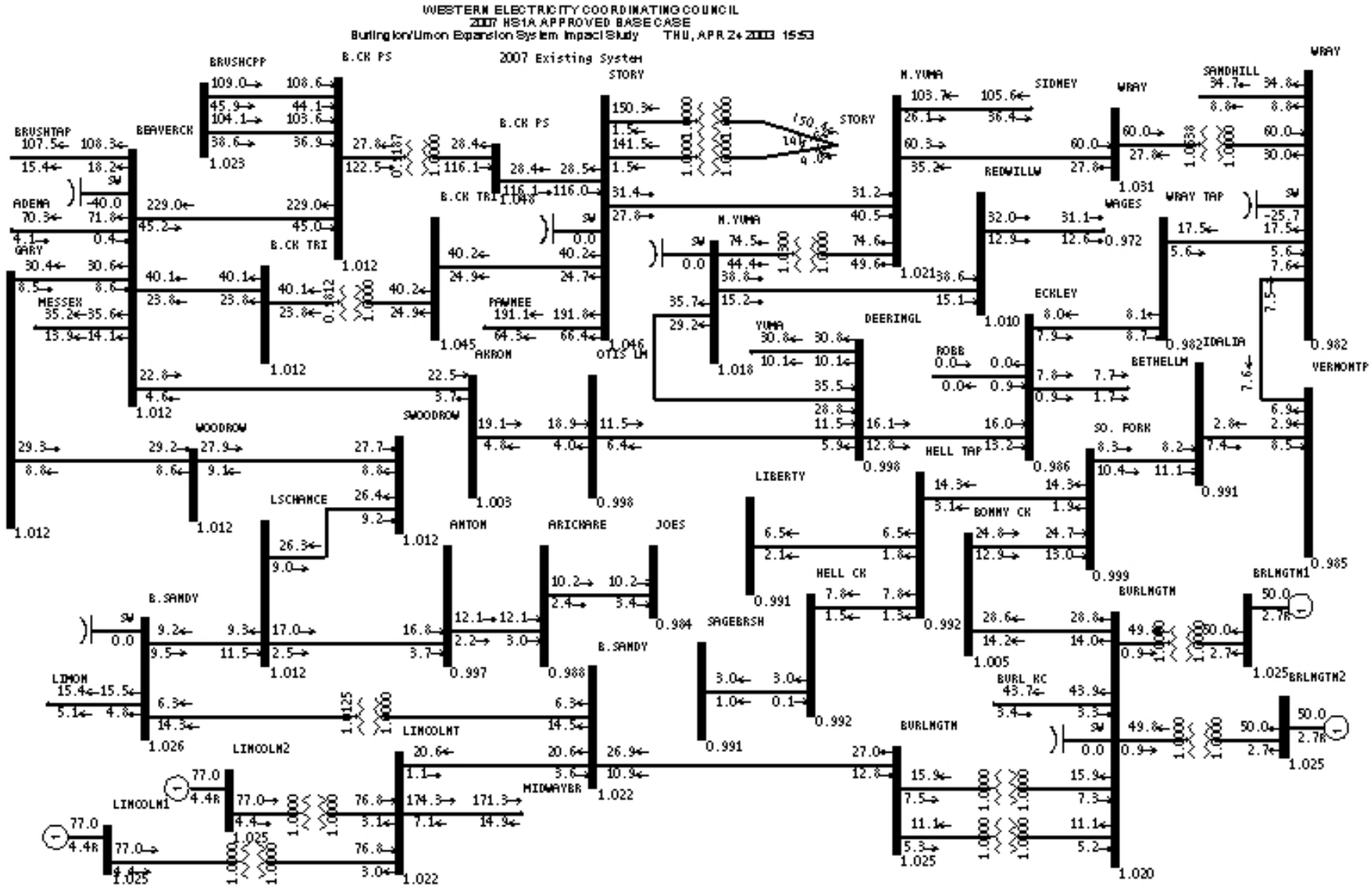
←======================= BUS DATA =======================→
  FROM              AREA  VOLT            GEN     LOAD    SHUNT
  BUS      NAME     ZONE PU/KV  ANGLE   MW/MVAR  MW/MVAR MW/MVAR
 ===== ============ ==== ===== ======  =======  ======= =======

 73174 SAGEBRSH 115  73  1.000  101.7      0.0      1.1     0.0
                    752  115.0             0.0      0.3     0.0

 73094 JOES     115  73  1.014   95.8      0.0      3.6     0.0
                    752  116.6             0.0      1.2    -7.7

 73206 VERNONTP 115  73  1.003   90.0      0.0      3.3     0.0
                    752  115.3             0.0      1.1   -22.6
```

Appendix C: System Impact Diagrams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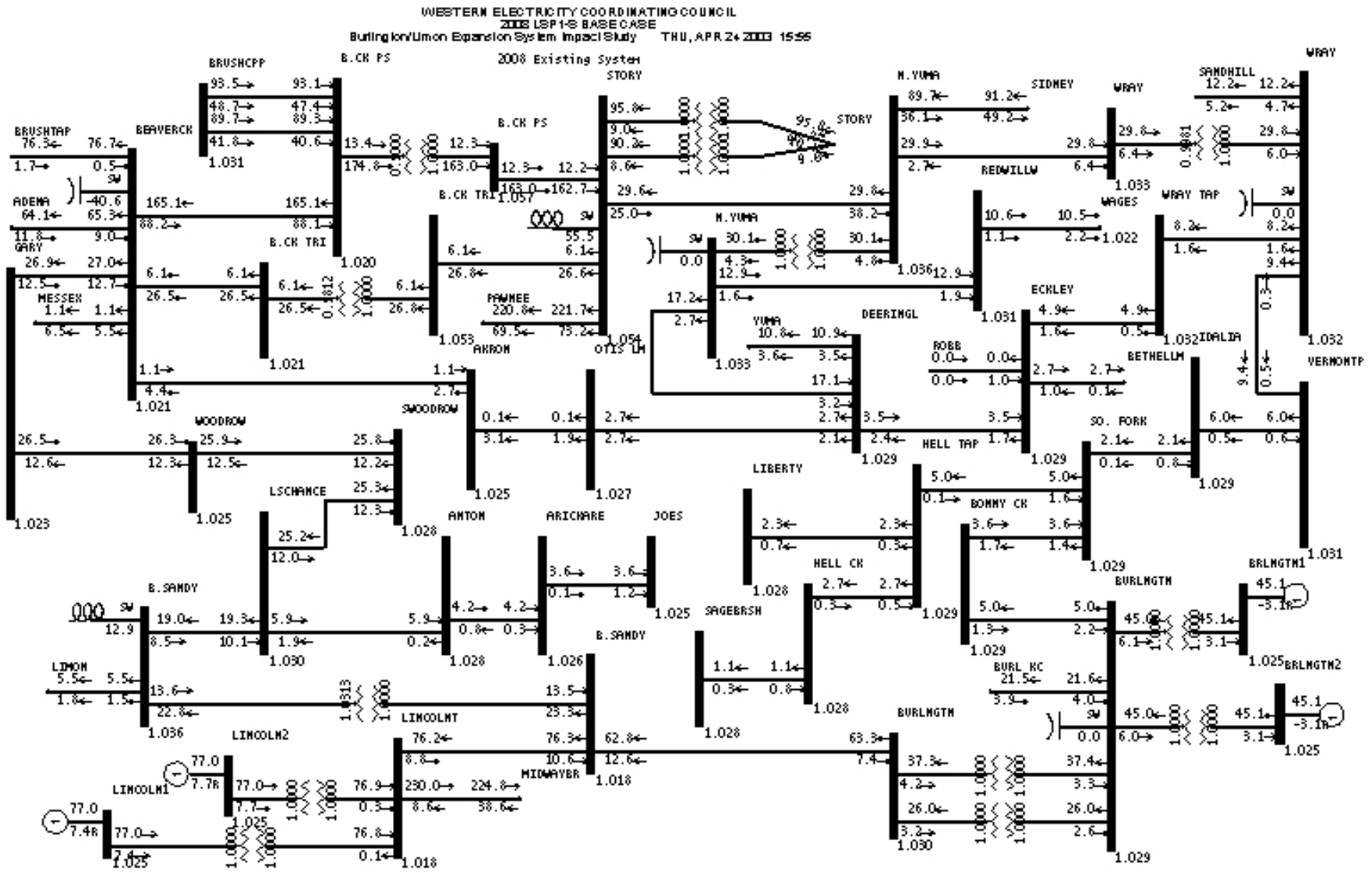
2007 HS1A APPROVED BASE CASE
Burlington/Limon Expansion System Impact Study THU, APR 24 2003 15:53
2007 Existing System
BRUSHCPP
B.CK PS
STORY
N.YUMA
SIDNEY
WRAY
SANDHILL
BRUSHTAP
BEAVERCK
B.CK TRI
REDWILLW
WAGES
WRAY TAP
ADEMA
GARY
MESSEX
PAWNEE
AKRON
OTIS LM
YUMA
DEERINGL
ECKLEY
ROBB
IDALIA
BETHELLM
VERNONTP
WOODROW
LSCHANCE
ANTON
ARICHARE
JOES
HELL TAP
SO. FORK
LIBERTY
BONNY CK
HELL CK
BURLNGTN
BRLNGTN1
BRLNGTN2
BURL_KC
B.SANDY
SAGEBRSH
LIMON
LINCOLNT
LINCOLN2
LINCOLN1
MIDWAYBR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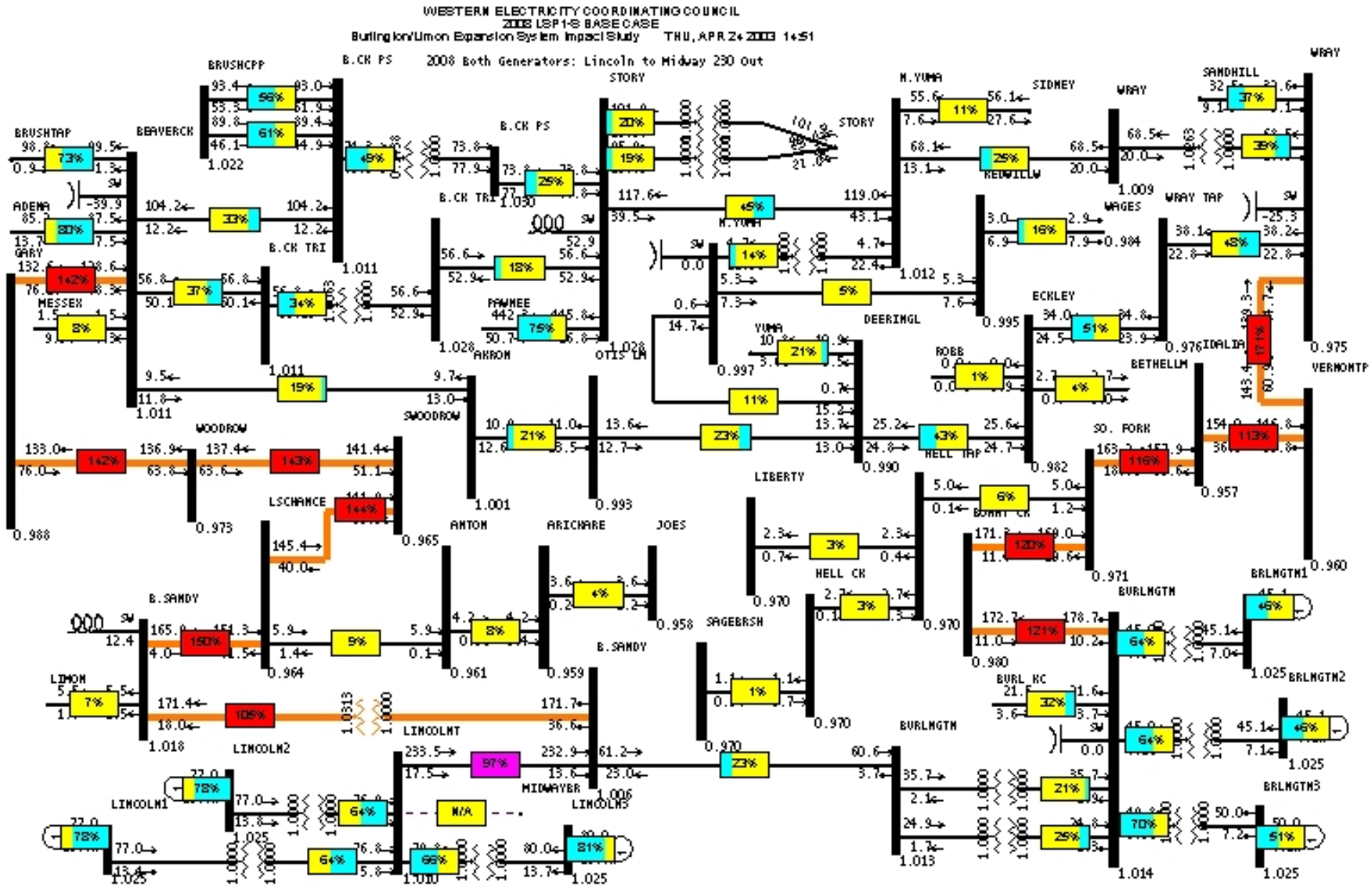
Burlington/Limon Expansion System Impact Study THU, APR 24 2003 15:56
2008 Existing System
BRUSHCPP
B.CK PS
STORY
N.YUMA
SIDNEY
WRAY
SANDHILL
BRUSHTAP
BEAVERCK
ADEMA
GARY
MESSEX
B.CK TRI
PAWNEE
AKRON
OTIS LM
YUMA
DEERINGL
REDWILLW
WAGES
WRAY TAP
ECKLEY
ROBB
IDALIA
BETHELLM
VERMONTP
WOODROW
LSCHANCE
ANTON
ARICNARE
JOES
SWOODROW
LIBERTY
HELL TAP
HELL CK
BONNY CK
SO. FORK
B.SANDY
SAGEBRSH
BURLNGTN
BRLNGTM1
BRLNGTM2
BURL HC
LIMON
LINCOLNT
LINCOLN1
LINCOLN2
MIDWAYBR


WESTERN ELECTRICITY COORDINATING COUNCIL
2008 LSP1-S BASE CASE
Burlington/Limon Expansion System Impact Study THU, APR 24 2003 14:51
2008 Both Generators: Lincoln to Midway 230 Out
BRUSHCPP
B.CK PS
STORY
BRUSHTAP
BEAVERCK
ADENA
GARY
MESSEN
B.CK TRI
PAWNEE
AKRON
OTIS LA
N.YUMA
SIDNEY
WRAY
SANDHILL
REDWILLW
WAGES
WRAY TAP
YUMA
DEERINGL
ECKLEY
IDALIA
VERMONTP
ROBB
BETHELLM
SO. FORK
HELL TAP
WOODROW
SWOODROW
LSCHANCE
ANTON
ARICHARE
JOES
LIBERTY
BONNY CK
HELL CK
B.SANDY
SAGEBRSH
BURLNGTN
BURLNGTM1
BURLNGTM2
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MIDWAYBR
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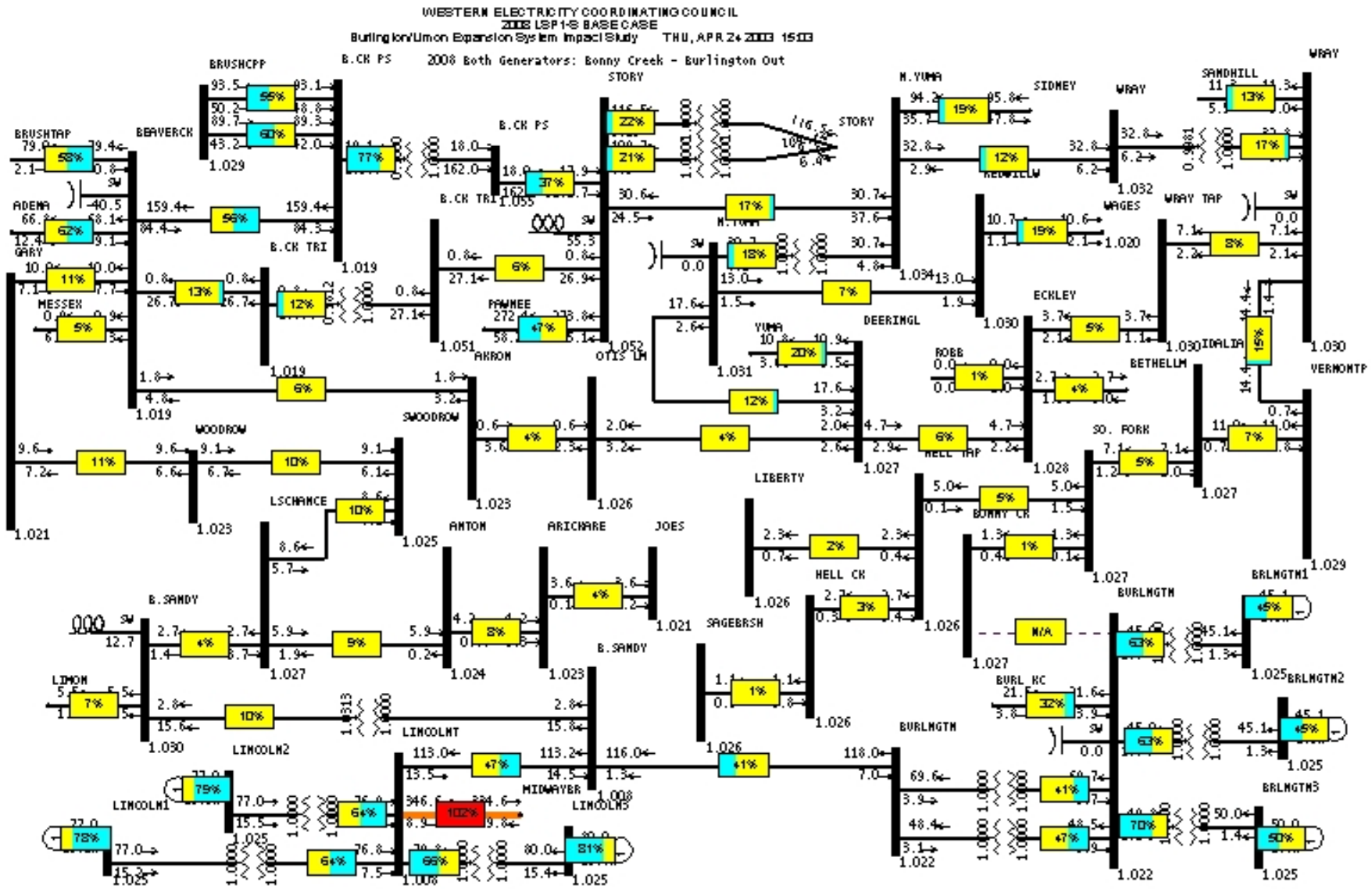
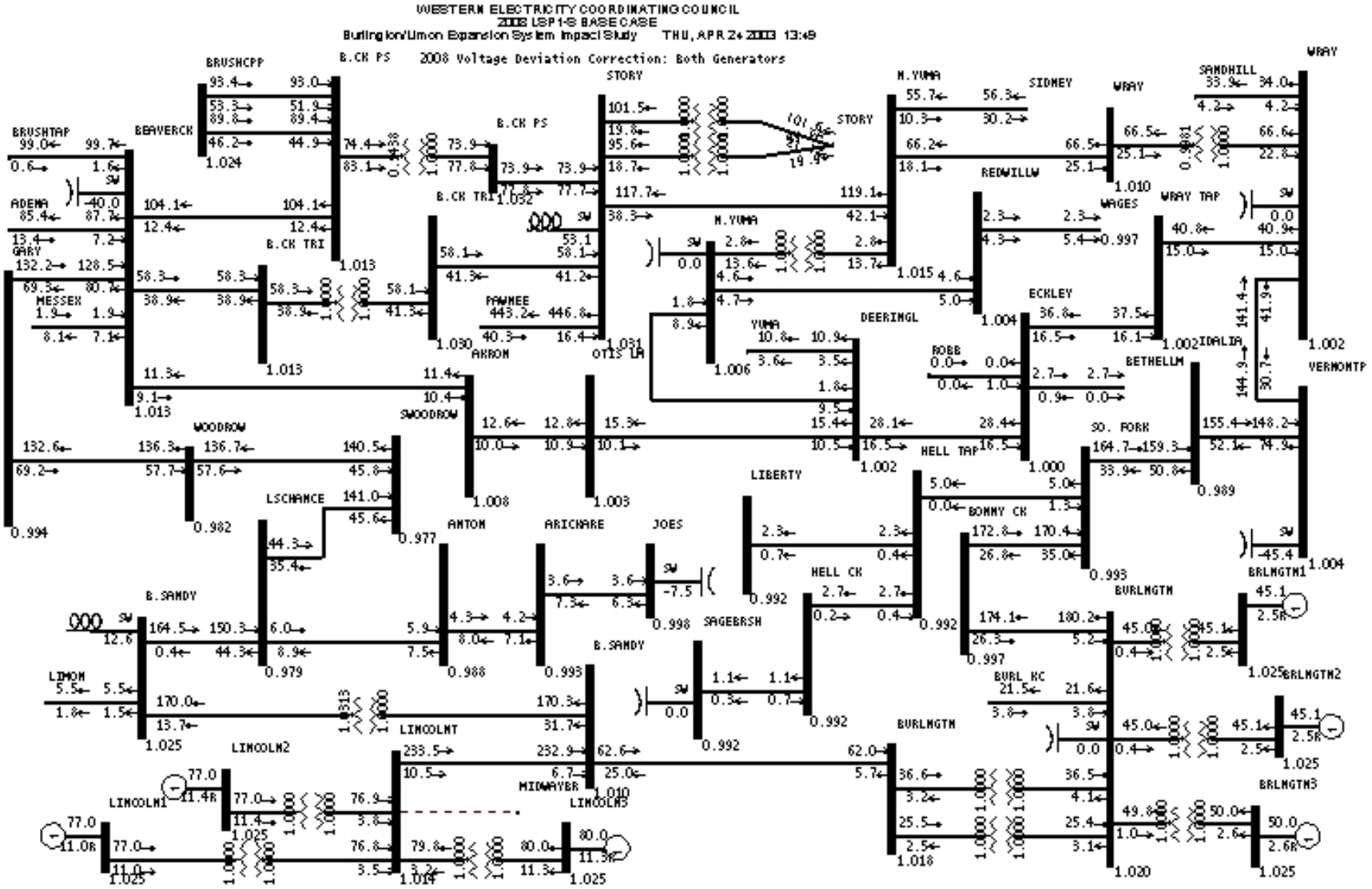
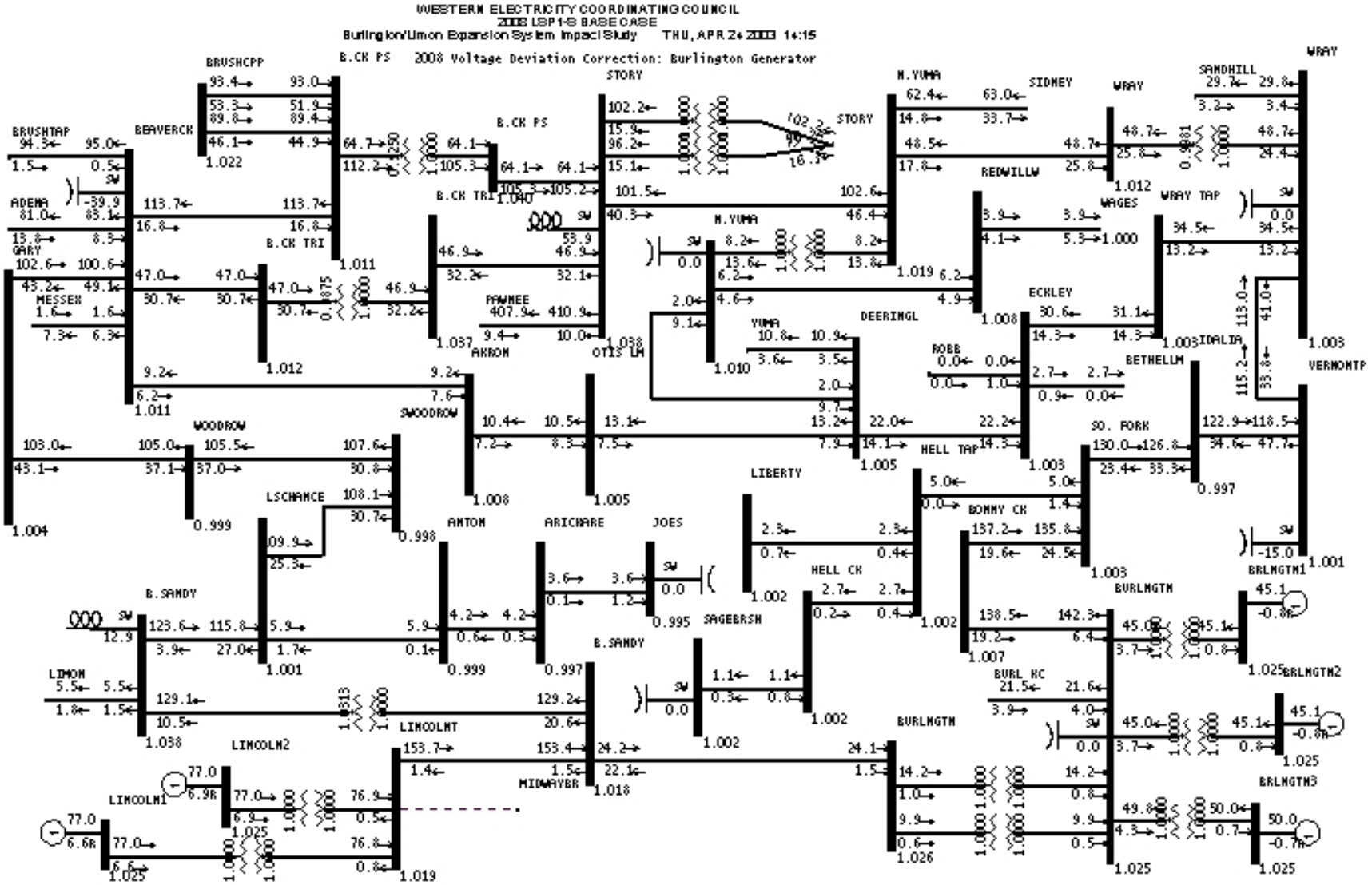

WESTERN ELECTRICITY COORDINATING COUNCIL
2008 LSP1-S BASE CASE
Burlington/Limon Expansion System Impact Study THU, APR 24 2003 15:03
2008 Both Generators: Bonny Creek - Burlington Out
BRUSHCPP
B.CK PS
STORY
N.YUMA
SIDNEY
WRAY
SANDHILL
BRUSHTAP
BEAVERCK
B.CK TRI
WAGES
WRAY TAP
ADEMA
GARY
MESSEX
PAWNEE
AKRON
OTIS LM
YUMA
DEERINGL
ECKLEY
ROBB
IDALIA
BETHELLM
VERMONTP
WOODROW
SWOODROW
LSCHANCE
ANTON
ARICHARE
JOES
LIBERTY
BONNY CK
SO. FORK
HELL TAP
HELL CK
B.SANDY
SAGEBRSH
LIMON
LINCOLN2
LINCOLNT
LINCOLN1
LINCOLN3
MIDWAYBR
BURLNGTN
BURL KC
BRLNGTN1
BRLNGTN2
BRLNGTN3
N/A


WESTERN ELECTRICITY COORDINATING COUNCIL
2008 LSP1-S BASE CASE
Burlington/Limon Expansion System Impact Study THU, APR 24 2003 13:49
2008 Voltage Deviation Correction: Both Generators
BRUSHCPP
B.CK PS
STORY
N.YUMA
SIDNEY
WRAY
SANDHILL
BRUSHTAP
BEAVERCK
B.CK TRI
REDWILLW
WAGES
WRAY TAP
ADEMA
GARY
MESSEX
PAWNEE
AKRON
OTIS LA
YUMA
DEERINGL
ECKLEY
ROBB
IDALIA
BETHELLM
VERMONTP
WOODROW
SWOODROW
LSCHANCE
ANTON
ARICNARE
JOES
LIBERTY
HELL TAP
SO. FORK
BONNY CK
HELL CK
SAGEBRSH
BURLMGTN
BRLMGTM1
BRLMGTM2
BRLMGTM3
B.SANDY
LIMON
LINCOLNT
LINCOLN2
LINCOLN1
MIDWAYBR
LINCOLN3


WESTERN ELECTRICITY COORDINATING COUNCIL
2008 LSP1-S BASE CASE
Burlington/Limon Expansion System Impact Study THU, APR 24 2003 14:15
2008 Voltage Deviation Correction: Burlington Generator
BRUSHCPP
B.CK PS
STORY
N.YUMA
SIDNEY
WRAY
SANDHILL
BRUSHTAP
BEAVERCK
REDWILLW
WAGES
WRAY TAP
ADEMA
GARY
B.CK TRI
N.YUMA
ECKLEY
MESSEX
PAWNEE
YUMA
DEERINGL
ROBB
IDALIA
BETHELLM
AKRON
OTIS LM
SO. FORK
VERMONTP
WOODROW
SWOODROW
HELL TAP
LSCHANCE
LIBERTY
BONNY CK
ANTON
ARICHARE
JOES
HELL CK
BURLNGTN
B.SANDY
SAGEBRSH
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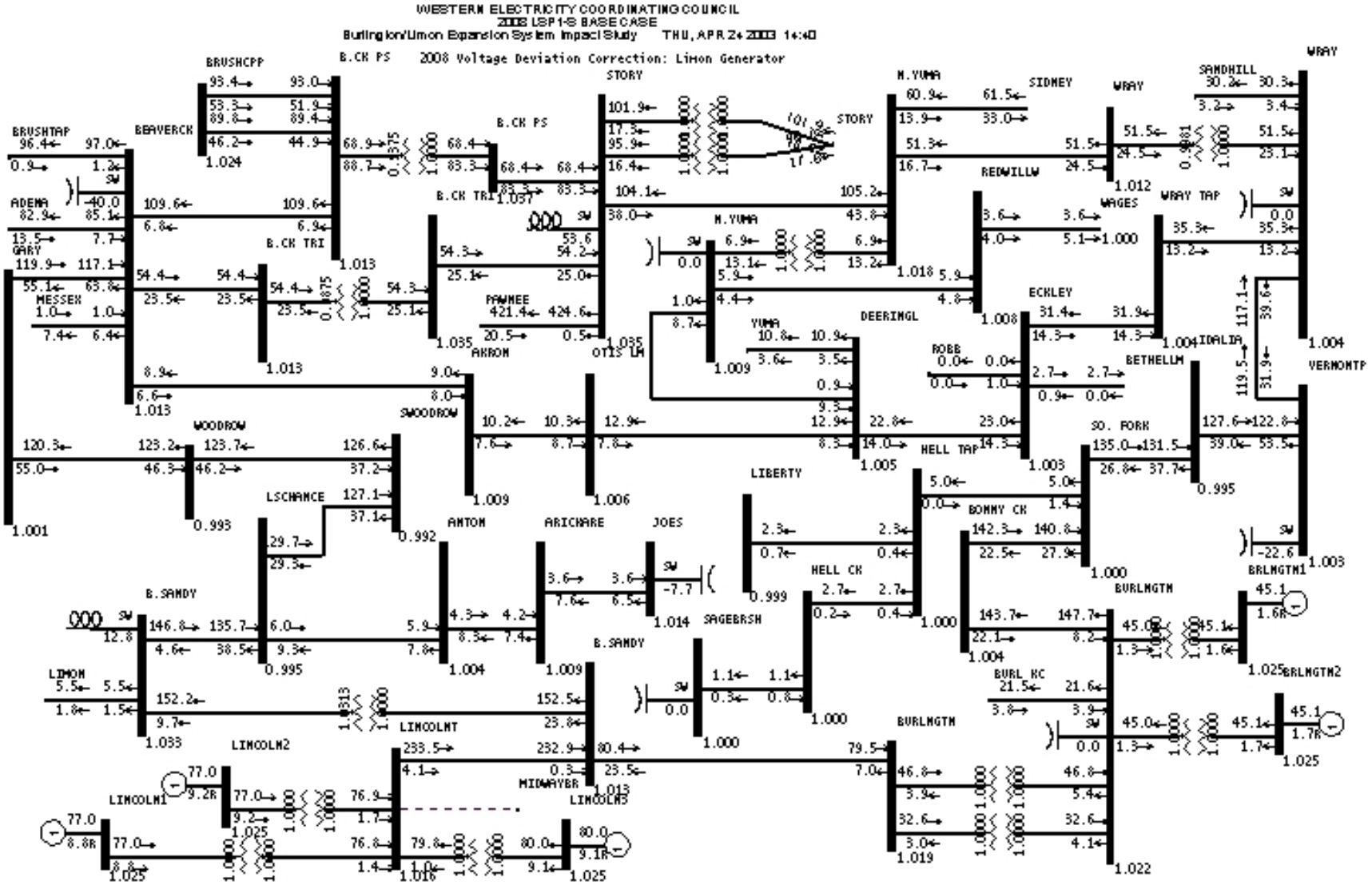
LINCOLN1
BRLNGTM3


WESTERN ELECTRICITY COORDINATING COUNCIL
2008 LSP1-S BASE CASE
Burlington/Limon Expansion System Impact Study THU, APR 24 2003 14:40
2008 Voltage Deviation Correction: Limon Generator
BRUSHCPP
B.CK PS
STORY
N.YUMA
SIDNEY
WRAY
SANDHILL
BRUSHTAP
BEAVERCK
B.CK TRI
REDWILLW
WAGES
WRAY TAP
ADEMA
GARY
MESSEX
PAWNEE
YUMA
DEERINGL
ECKLEY
IDALIA
BETHELLM
VERMONTP
ROBB
SO. FORK
AKRON
OTIS LM
WOODROW
LSCHANCE
ANTON
ARICHARE
JOES
LIBERTY
HELL TAP
BONNY CK
HELL CK
BURLNGTN
BRLNGTN1
BRLNGTN2
B.SANDY
SAGEBRSH
BURL KC
LIMON
LINCOLNT
LINCOLN2
LINCOLN1
MIDWAYBR
LINCOLN3

Appendix D: Details of Planning Level Cost Estimates

Burlington/Lincoln Generation Expansion Cost Estimates
(2003 Dollars)

Option 1: Interconnections at
Burlington 115 kV / Lincoln 230 kV

Facility	Length (miles)	Size (MVAr)	Size (MVA)	Number	2003 $
Uprate Lincoln-Midway 230 kV Line from 50C to 75C:	78.08				$ 2,354,044
Uprate Beaver Creek-Big Sandy 115 kV Line to 100C:	66.25				$ 2,484,136
Reconductor Burlington-Wray 115 kV with Dove:	51.81				$ 2,526,807
Construct new 115 kV from Lincoln to Big Sandy:	0.00				$ -
Connect unit three to Burlington 115 kV:					$ -
Connect unit three to Lincoln 230 kV:					$ -
230/115 kV Autotransformer Addition at Burlington:			167.00		$ 1,146,427
230/115 kV Autotransformer Addition at Big Sandy:			167.00		$ 1,146,427
Capacitor Addition at Vernon Tap or Idalia 115 kV:		45.00			$ 1,425,116
Capacitor Addition at Joes 115 kV:		7.50			$ 237,519
Burlington 230 kV Breaker Additions:				1.00	$ 761,329
Big Sandy 230 kV Breaker Additions:				1.00	$ 761,329
Lincoln 230 kV Breaker Additions:				1.00	$ 761,329
Burlington 115 kV Breaker Additions:				3.00	$ 1,463,119
Big Sandy 115 kV Breaker Additions:				1.00	$ 487,706
Total					**$15,555,289**

Option 2: Interconnections at
Burlington 230 kV / Big Sandy 115 kV

Facility	Length (miles)	Size (MVAr)	Size (MVA)	Number	2003 $
Uprate Lincoln-Midway 230 kV Line from 50C to 75C:	78.08				$ 2,354,044
Uprate Beaver Creek-Big Sandy 115 kV Line to 100C:	66.25				$ 2,484,136
Reconductor Burlington-Wray 115 kV with Dove:	51.81				$ 2,526,807
Construct new 115 kV from Lincoln to Big Sandy:	1.00				$ 87,407
Connect unit three to Burlington 230 kV:					$ -
Connect unit three to Lincoln 115 kV:					$ -
230/115 kV Autotransformer Addition at Burlington:			0.00		$ -
230/115 kV Autotransformer Addition at Big Sandy:			0.00		$ -
Capacitor Addition at Vernon Tap or Idalia 115 kV:		45.00			$ 1,425,116
Capacitor Addition at Joes 115 kV:		7.50			$ 237,519
Burlington 230 kV Breaker Additions:				2.00	$ 1,522,658
Big Sandy 230 kV Breaker Additions:				0.00	$ -
Lincoln 230 kV Breaker Additions:				0.00	$ -
Burlington 115 kV Breaker Additions:				0.00	$ -
Big Sandy 115 kV Breaker Additions:				1.00	$ 487,706
Total					**$11,125,394**

Burlington Generation Expansion Cost Estimates
(2003 Dollars)

Option 3: Interconnection at Burlington 115 kV

Facility	Length (miles)	Size (MVAr)	Size (MVA)	Number	2003 $
Uprate Lincoln-Midway 230 kV Line from 50C to 75C:	0.00				$ -
Uprate Beaver Creek-Big Sandy 115 kV Line to 100C:	66.25				$ 2,484,136
Reconductor Burlington-Wray 115 kV with Dove:	51.81				$ 2,526,807
Construct new 115 kV from Lincoln to Big Sandy:	0.00				$ -
Connect unit three to Burlington 115 kV:					$ -
No Lincoln Addition:					$ -
230/115 kV Autotransformer Addition at Burlington:			167.00		$ 1,146,427
230/115 kV Autotransformer Addition at Big Sandy:			0.00		$ -
Capacitor Addition at Vernon Tap or Idalia 115 kV:		15.00			$ 475,039
Capacitor Addition at Joes 115 kV:		0.00			$ -
Burlington 230 kV Breaker Additions:				1.00	$ 761,329
Big Sandy 230 kV Breaker Additions:				0.00	$ -
Lincoln 230 kV Breaker Additions:				0.00	$ -
Burlington 115 kV Breaker Additions:				3.00	$ 1,463,119
Big Sandy 115 kV Breaker Additions:				0.00	$ -
Total					**$ 8,856,857**

Option 4: Interconnection at Burlington 230 kV

Facility	Length (miles)	Size (MVAr)	Size (MVA)	Number	2003 $
Uprate Lincoln-Midway 230 kV Line from 50C to 75C:	0.00				$ -
Uprate Beaver Creek-Big Sandy 115 kV Line to 100C:	66.25				$ 2,484,136
Reconductor Burlington-Wray 115 kV with Dove:	51.81				$ 2,526,807
Construct new 115 kV from Lincoln to Big Sandy:	0.00				$ -
Connect unit three to Burlington 230 kV:					$ -
No Lincoln Addition:					$ -
230/115 kV Autotransformer Addition at Burlington:			0.00		$ -
230/115 kV Autotransformer Addition at Big Sandy:			0.00		$ -
Capacitor Addition at Vernon Tap or Idalia 115 kV:		15.00			$ 475,039
Capacitor Addition at Joes 115 kV:		0.00			$ -
Burlington 230 kV Breaker Additions:				2.00	$ 1,522,658
Big Sandy 230 kV Breaker Additions:				0.00	$ -
Lincoln 230 kV Breaker Additions:				0.00	$ -
Burlington 115 kV Breaker Additions:				0.00	$ -
Big Sandy 115 kV Breaker Additions:				0.00	$ -
Total					**$ 7,008,640**

Lincoln Generation Expansion Cost Estimates
(2003 Dollars)

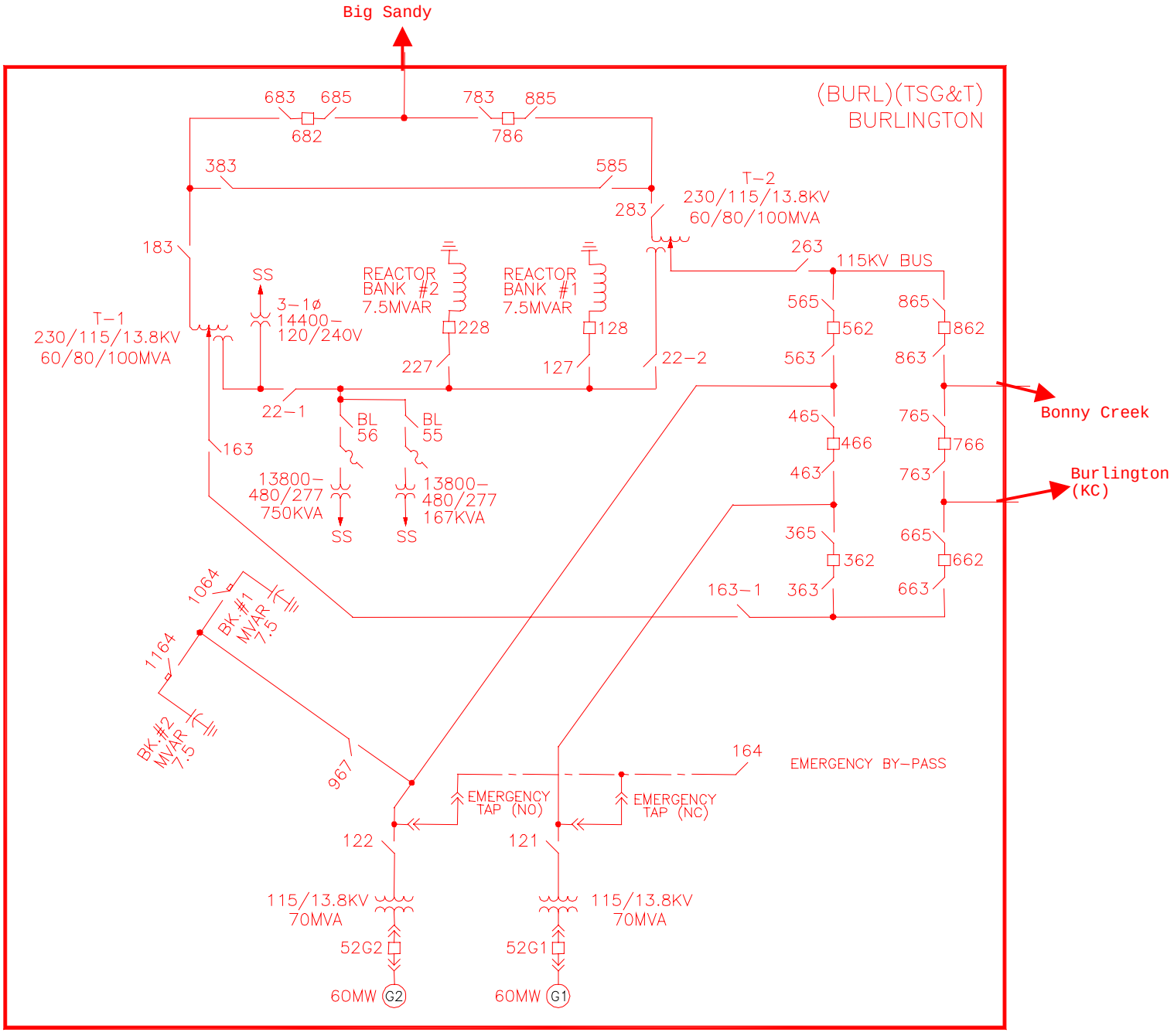
Option 5: Interconnection at Lincoln 230 kV

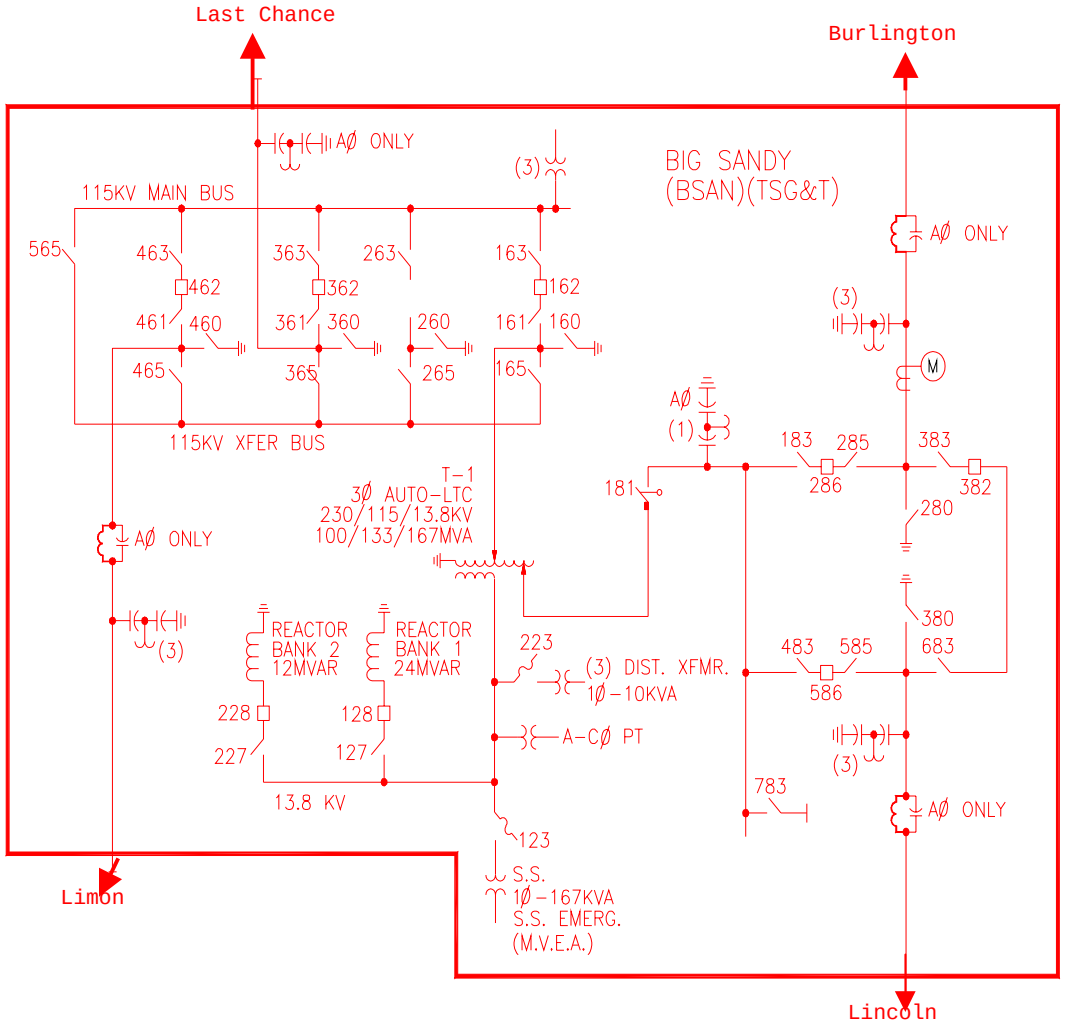
Facility	Length (miles)	Size (MVAr)	Size (MVA)	Number	2003 $
Uprate Lincoln-Midway 230 kV Line from 50C to 75C:	78.08				$ 2,354,044
Uprate Beaver Creek-Big Sandy 115 kV Line to 100C:	66.25				$ 2,484,136
Reconductor Burlington-Wray 115 kV with Dove:	51.81				$ 2,526,807
Construct new 115 kV from Lincoln to Big Sandy:	0.00				$ -
No Burlington Addition:					$ -
Connect unit three to Lincoln 230 kV:					$ -
230/115 kV Autotransformer Addition at Burlington:			0.00		$ -
230/115 kV Autotransformer Addition at Big Sandy:			167.00		$ 1,146,427
Capacitor Addition at Vernon Tap or Idalia 115 kV:		22.50			$ 712,558
Capacitor Addition at Joes 115 kV:		7.50			$ 237,519
Burlington 230 kV Breaker Additions:				0.00	$ -
Big Sandy 230 kV Breaker Additions:				1.00	$ 761,329
Lincoln 230 kV Breaker Additions:				1.00	$ 761,329
Burlington 115 kV Breaker Additions:				0.00	$ -
Big Sandy 115 kV Breaker Additions:				1.00	$ 487,706
Total					**$11,471,856**

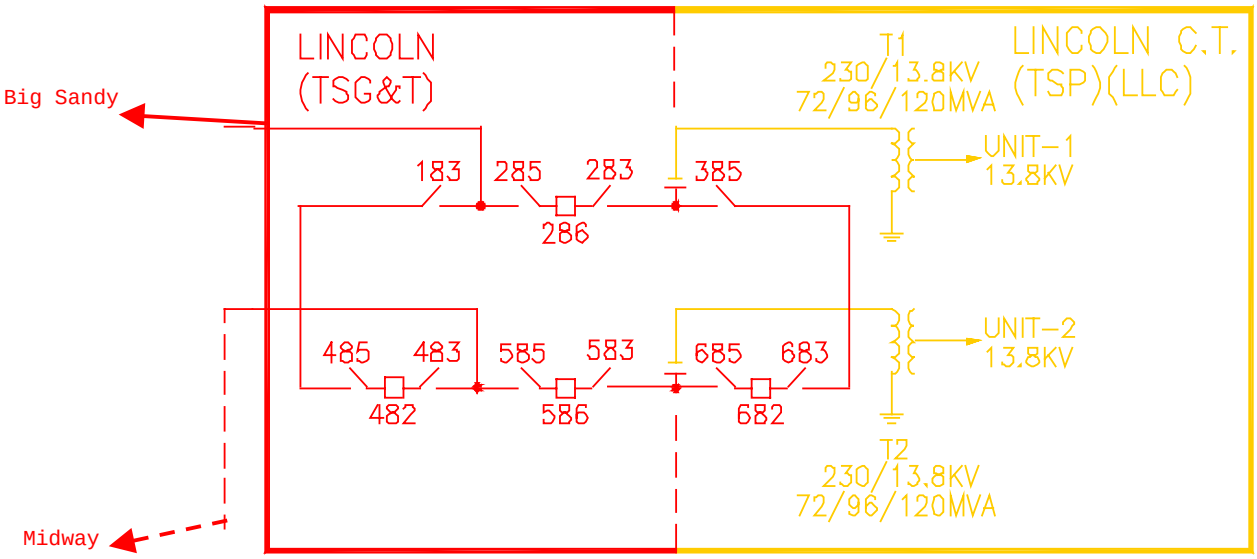
Option 6: Interconnection at Big Sandy 115 kV

Facility	Length (miles)	Size (MVAr)	Size (MVA)	Number	2003 $
Uprate Lincoln-Midway 230 kV Line from 50C to 75C:	78.08				$ 2,354,044
Uprate Beaver Creek-Big Sandy 115 kV Line to 100C:	66.25				$ 2,484,136
Reconductor Burlington-Wray 115 kV with Dove:	51.81				$ 2,526,807
Construct new 115 kV from Lincoln to Big Sandy:	1.00				$ 87,407
No Burlington Addition:					$ -
Connect unit three to Lincoln 115 kV:					$ -
230/115 kV Autotransformer Addition at Burlington:			0.00		$ -
230/115 kV Autotransformer Addition at Big Sandy:			0.00		$ -
Capacitor Addition at Vernon Tap or Idalia 115 kV:		22.50			$ 712,558
Capacitor Addition at Joes 115 kV:		7.50			$ 237,519
Burlington 230 kV Breaker Additions:				0.00	$ -
Big Sandy 230 kV Breaker Additions:				0.00	$ -
Lincoln 230 kV Breaker Additions:				0.00	$ -
Burlington 115 kV Breaker Additions:				0.00	$ -
Big Sandy 115 kV Breaker Additions:				1.00	$ 487,706
Total					**$ 8,890,178**

Appendix E: Substation Diagrams


Big Sandy
(BURL)(TSG&T)
BURLINGTON
683
685
682
783
885
786
383
585
T-2
230/115/13.8KV
60/80/100MVA
283
183
263
115KV BUS
SS
3-1ø
14400-
120/240V
REACTOR
BANK #2
7.5MVAR
REACTOR
BANK #1
7.5MVAR
228
128
T-1
230/115/13.8KV
60/80/100MVA
227
127
22-2
565
562
865
862
563
863
22-1
BL
56
BL
55
Bonny Creek
465
466
765
766
163
13800-
480/277
750KVA
13800-
480/277
167KVA
SS
SS
463
763
Burlington
(KC)
365
362
665
662
1064
BK.#1
MVAR
7.5
163-1
363
663
1164
BK.#2
MVAR
7.5
967
164
EMERGENCY BY-PASS
EMERGENCY
TAP (NO)
EMERGENCY
TAP (NC)
122
121
115/13.8KV
70MVA
115/13.8KV
70MVA
52G2
52G1
60MW G2
60MW G1


Last Chance
Burlington
BIG SANDY
(BSAN)(TSG&T)
115KV MAIN BUS
115KV XFER BUS
AØ ONLY
(3)
565
463
462
461
460
465
363
362
361
360
365
263
260
265
163
162
161
160
165
T-1
3Ø AUTO-LTC
230/115/13.8KV
100/133/167MVA
AØ
(1)
181
183
285
286
383
382
280
380
683
483
585
586
783
REACTOR
BANK 2
12MVAR
REACTOR
BANK 1
24MVAR
228
227
128
127
13.8 KV
223
(3) DIST. XFMR.
1Ø-10KVA
A-CØ PT
123
S.S.
1Ø-167KVA
S.S. EMERG.
(M.V.E.A.)
M
Limon
Lincoln


Big Sandy
LINCOLN
(TSG&T)
LINCOLN C.T.
(TSP)(LLC)
T1
230/13.8KV
72/96/120MVA
UNIT-1
13.8KV
183
285
283
385
286
485
483
585
583
685
683
482
586
682
UNIT-2
13.8KV
T2
230/13.8KV
72/96/120MVA
Midway

Appendix F: 2007 HS Zone 752 Case Data

WESTERN ELECTRICITY COORDINATING COUNCIL
2007 HS1A APPROVED BASE CASE

BUS DATA

BUS#	NAME	BSKV	CODE	LOADS	VOLT	ANGLE	S	H	U	N	T	AREA	ZONE	OWNER
73003	AKRON	115.00	1	1	1.0032	62.3	0.0			0.0		73	752	73
73005	ALVIN	115.00	1	1	0.9645	59.0	0.0			0.0		73	752	73
73006	ANTON	115.00	1	1	0.9969	59.1	0.0			0.0		73	752	73
73007	ARAPASUB	115.00	1	1	1.0089	59.8	0.0			0.0		73	752	73
73010	ARICKARE	115.00	1	1	0.9885	58.5	0.0			0.0		73	752	73
73013	B.CK PS	115.00	1	1	1.0122	64.2	0.0			0.0		73	752	65
73014	B.CK PS	230.00	1	0	1.0479	65.1	0.0			0.0		73	752	65
73015	B.CK TRI	115.00	1	0	1.0124	64.1	0.0			0.0		73	752	73
73016	B.CK TRI	230.00	1	0	1.0451	65.1	0.0			0.0		73	752	73
73017	B.SANDY	115.00	1	0	1.0260	59.3	0.0			0.0		73	752	26
73018	B.SANDY	230.00	1	0	1.0220	59.5	0.0			0.0		73	752	26
73020	BEAVERCK	115.00	1	0	1.0123	64.1	0.0			0.0		73	752	26
73023	BIJOUTAP	115.00	1	2	0.9763	57.7	0.0			0.0		73	752	73
73025	BONNY CK	115.00	1	1	1.0048	60.8	0.0			0.0		73	752	73
73030	BRIGHTNW	115.00	1	1	0.9738	48.7	0.0			0.0		73	752	73
73031	BRUSHTAP	115.00	1	2	1.0004	62.6	0.0			0.0		73	752	73
73034	BURL PSC	115.00	1	1	1.0169	61.3	0.0			0.0		73	752	65
73035	BURLNGTN	115.00	1	0	1.0202	61.8	0.0			0.0		73	752	26
73036	BURLNGTN	230.00	1	0	1.0249	61.2	0.0			0.0		73	752	26
73047	DEERINGL	115.00	1	0	0.9985	60.6	0.0			0.0		73	752	26
73053	ECKLEY	115.00	1	1	0.9858	60.3	0.0			0.0		73	752	73
73059	FLEMING	115.00	1	2	0.9563	59.2	0.0			0.0		73	752	73
73063	FRENCHCK	115.00	1	2	0.9528	58.2	0.0			0.0		73	752	73
73065	GARY	115.00	1	1	1.0119	63.1	0.0			0.0		73	752	73
73080	HAXTUN	115.00	1	2	0.9533	58.6	0.0			0.0		73	752	73
73083	HELL CK	115.00	1	1	0.9920	59.6	0.0			0.0		73	752	73
73084	HELL TAP	115.00	1	0	0.9925	59.6	0.0			0.0		73	752	26
73088	HOYT	115.00	1	1	0.9803	56.5	0.0			0.0		73	752	73
73091	IDALIA	115.00	1	1	0.9911	60.3	0.0			0.0		73	752	73
73094	JOES	115.00	1	1	0.9838	58.1	0.0			0.0		73	752	73
73095	KERSEYTP	115.00	1	1	0.9827	52.8	0.0			0.0		73	752	73
73097	KIOWA CK	115.00	1	0	0.9753	56.1	0.0			0.0		73	752	26
73103	L.MEADOW	115.00	1	1	0.9770	56.3	0.0			0.0		73	752	73
73110	LIBERTY	115.00	1	1	0.9914	59.5	0.0			0.0		73	752	73
73117	LOST CK	115.00	1	1	0.9800	53.8	0.0			0.0		73	752	73
73125	LSCHANCE	115.00	1	1	1.0125	60.5	0.0			0.0		73	752	26
73136	MESSEX	115.00	1	1	0.9924	62.6	0.0			0.0		73	752	73
73142	N.YUMA	115.00	1	0	1.0176	61.4	0.0			0.0		73	752	26
73143	N.YUMA	230.00	1	0	1.0207	64.2	0.0			0.0		73	752	26
73147	ORCHARD	115.00	1	1	0.9753	56.1	0.0			0.0		73	752	73
73150	PEETZ	115.00	1	1	0.9898	64.4	0.0			0.0		73	752	26
73158	PROSPEC	115.00	1	0	0.9805	53.8	0.0			0.0		73	752	26
73159	PROSPVAL	115.00	1	1	0.9729	52.8	0.0			0.0		73	752	73
73166	REDWILLW	115.00	1	1	1.0104	60.8	0.0			0.0		73	752	73
73174	SAGEBRSH	115.00	1	1	0.9910	59.4	0.0			0.0		73	752	73

BUS DATA (CONT.)

BUS#	NAME	BSKV	CODE	LOADS	VOLT	ANGLE	S H U N T	AREA	ZONE	OWNER
73175	SANDHILL	115.00	1	1	0.9742	60.1	0.0 0.0	73	752	73
73184	SMOKYHLW	115.00	1	1	1.0150	59.8	0.0 0.0	73	752	73
73185	SO. FORK	115.00	1	1	0.9994	60.5	0.0 0.0	73	752	73
73191	STERLING	115.00	1	2	0.9637	60.5	0.0 0.0	73	752	73
73192	STORY	230.00	1	0	1.0457	65.2	0.0 0.0	73	752	26
73193	STORY	345.00	1	0	1.0464	66.2	0.0 0.0	73	752	26
73194	SWOODROW	115.00	1	1	1.0120	61.2	0.0 0.0	73	752	73
73206	VERNONTP	115.00	1	1	0.9849	60.6	0.0 0.0	73	752	26
73207	WAANIBE	115.00	1	1	1.0080	59.8	0.0 0.0	73	752	73
73208	WAGES	115.00	1	1	0.9718	59.2	0.0 0.0	73	752	73
73209	WANIBETP	115.00	1	0	1.0113	60.0	0.0 0.0	73	752	26
73210	WAUNETA	115.00	1	1	0.9611	58.7	0.0 0.0	73	752	73
73213	WIGGINS	115.00	1	1	0.9754	56.1	0.0 0.0	73	752	73
73221	WOODROW	115.00	1	1	1.0118	62.2	0.0 0.0	73	752	73
73223	WRAY	115.00	1	0	0.9820	60.9	0.0 0.0	73	752	26
73224	WRAY	230.00	1	0	1.0309	62.6	0.0 0.0	73	752	26
73225	WRAY TAP	115.00	1	0	0.9820	60.9	0.0 0.0	73	752	26
73230	YUMA	115.00	1	2	0.9965	60.5	0.0 0.0	73	752	73
73302	BRLNGTN1	13.800	2	0	1.0250	66.0	0.0 0.0	73	752	26
73303	BRLNGTN2	13.800	2	0	1.0250	66.0	0.0 0.0	73	752	26
73304	CRETESWT	115.00	1	0	0.9646	59.0	0.0 0.0	73	752	26
73305	EFMORGTP	115.00	1	0	0.9819	59.7	0.0 0.0	73	752	26
73309	BRLNGTN3	13.800	-2	0	1.0202	61.8	0.0 0.0	73	752	26
73310	FME	115.00	1	1	0.9812	59.6	0.0 0.0	73	752	26
73311	FMS	115.00	1	1	0.9796	59.2	0.0 0.0	73	752	26
73318	LIMON	115.00	1	1	1.0239	59.1	0.0 0.0	73	752	73
73326	ROBB	115.00	1	0	0.9862	60.3	0.0 0.0	73	752	73
73331	WRAYWAPA	115.00	1	2	0.9820	60.9	0.0 0.0	73	752	73
73370	LOSTCKTP	115.00	1	0	0.9800	53.8	0.0 0.0	73	752	73
73371	BETHELLM	115.00	1	0	0.9821	60.0	0.0 0.0	73	752	26
73372	OTIS LM	115.00	1	1	0.9982	61.0	0.0 0.0	73	752	73
73374	VERNONLM	115.00	1	1	0.9774	59.7	0.0 0.0	73	752	73
73377	EXCEL	115.00	1	1	0.9796	59.2	0.0 0.0	73	752	26
73378	FMN	115.00	1	1	0.9819	59.7	0.0 0.0	73	752	73
73379	FMWEST	115.00	1	1	0.9796	59.2	0.0 0.0	73	752	26
73464	ADENA	115.00	1	1	0.9930	60.1	0.0 0.0	73	752	73
73478	GALIEN	115.00	1	1	0.9595	59.8	0.0 0.0	73	752	73
73485	BURL KC	115.00	1	1	1.0181	61.5	0.0 0.0	73	752	73
73493	SANDCRK	115.00	1	0	0.9741	52.9	0.0 0.0	73	752	26
73501	RINNVALL	115.00	1	1	0.9785	47.2	0.0 0.0	73	752	73
73502	DACONO	115.00	1	1	0.9764	47.3	0.0 0.0	73	752	73
73503	ERIE TAP	115.00	1	0	0.9756	47.8	0.0 0.0	73	752	73
73531	LINCOLNT	230.00	1	0	1.0220	59.3	0.0 0.0	73	752	73
73532	LINCOLN1	13.800	2	0	1.0250	64.8	0.0 0.0	73	752	73
73533	LINCOLN2	13.800	2	0	1.0250	64.8	0.0 0.0	73	752	73
73535	LINCOLN3	13.800	-2	0	1.0220	59.3	0.0 0.0	73	752	73

LOAD DATA

BUS#	NAME	BSKV	ID	CD	ST	PSI	MVA-LOAD		CUR-LOAD		Y - LOAD		AREA	ZONE	OWNER
73003	AKRON	115	TS	1	1	1.000	3.4	1.1	0.0	0.0	0.0	0.0	73	752	73
73005	ALVIN	115	TS	1	1	1.000	13.0	4.3	0.0	0.0	0.0	0.0	73	752	73
73006	ANTON	115	TS	1	1	1.000	4.7	1.5	0.0	0.0	0.0	0.0	73	752	73
73007	ARAPASUB	115	TS	1	1	1.000	0.3	0.1	0.0	0.0	0.0	0.0	73	752	73
73010	ARICKARE	115	TS	1	1	1.000	1.9	0.6	0.0	0.0	0.0	0.0	73	752	73
73013	B.CK PS	115	PS	1	1	1.000	11.0	3.6	0.0	0.0	0.0	0.0	73	752	65
73023	BIJOUTAP	115	PS	1	1	1.000	0.8	0.3	0.0	0.0	0.0	0.0	73	752	65
73023	BIJOUTAP	115	TS	1	1	1.000	7.5	2.5	0.0	0.0	0.0	0.0	73	752	73
73025	BONNY CK	115	TS	1	1	1.000	3.8	1.3	0.0	0.0	0.0	0.0	73	752	73
73030	BRIGHTNW	115	TS	1	1	1.000	6.2	2.0	0.0	0.0	0.0	0.0	73	752	73
73031	BRUSHTAP	115	PS	1	1	1.000	6.3	2.1	0.0	0.0	0.0	0.0	73	752	65
73031	BRUSHTAP	115	TS	1	1	1.000	4.0	1.3	0.0	0.0	0.0	0.0	73	752	73
73034	BURL PSC	115	PS	1	1	1.000	0.8	0.3	0.0	0.0	0.0	0.0	73	752	65
73053	ECKLEY	115	TS	1	1	1.000	16.2	5.3	0.0	0.0	0.0	0.0	73	752	73
73059	FLEMING	115	MU	1	1	1.000	0.7	0.2	0.0	0.0	0.0	0.0	73	752	67
73059	FLEMING	115	TS	1	1	1.000	1.1	0.4	0.0	0.0	0.0	0.0	73	752	73
73063	FRENCHCK	115	MU	1	1	1.000	4.6	1.5	0.0	0.0	0.0	0.0	73	752	67
73063	FRENCHCK	115	TS	1	1	1.000	10.9	3.6	0.0	0.0	0.0	0.0	73	752	73
73065	GARY	115	TS	1	1	1.000	1.1	0.4	0.0	0.0	0.0	0.0	73	752	73
73080	HAXTUN	115	MU	1	1	1.000	1.8	0.6	0.0	0.0	0.0	0.0	73	752	67
73080	HAXTUN	115	TS	1	1	1.000	5.7	1.9	0.0	0.0	0.0	0.0	73	752	73
73083	HELL CK	115	TS	1	1	1.000	4.8	1.6	0.0	0.0	0.0	0.0	73	752	73
73088	HOYT	115	TS	1	1	1.000	2.8	0.9	0.0	0.0	0.0	0.0	73	752	73
73091	IDALIA	115	TS	1	1	1.000	11.1	3.6	0.0	0.0	0.0	0.0	73	752	73
73094	JOES	115	TS	1	1	1.000	10.2	3.4	0.0	0.0	0.0	0.0	73	752	73
73095	KERSEYTP	115	TS	1	1	1.000	35.3	11.6	0.0	0.0	0.0	0.0	73	752	73
73103	L.MEADOW	115	TS	1	1	1.000	2.6	0.9	0.0	0.0	0.0	0.0	73	752	73
73110	LIBERTY	115	TS	1	1	1.000	6.5	2.1	0.0	0.0	0.0	0.0	73	752	73
73117	LOST CK	115	TS	1	1	1.000	1.2	0.4	0.0	0.0	0.0	0.0	73	752	73
73125	LSCHANCE	115	TS	1	1	1.000	0.0	0.0	0.0	0.0	0.0	0.0	73	752	73
73136	MESSEX	115	TS	1	1	1.000	1.7	0.5	0.0	0.0	0.0	0.0	73	752	73
73147	ORCHARD	115	TS	1	1	1.000	8.7	2.9	0.0	0.0	0.0	0.0	73	752	73
73150	PEETZ	115	PS	1	1	1.000	0.5	0.2	0.0	0.0	0.0	0.0	73	752	65
73159	PROSPVAL	115	TS	1	1	1.000	6.1	2.0	0.0	0.0	0.0	0.0	73	752	73
73166	REDWILLW	115	TS	1	1	1.000	6.6	2.2	0.0	0.0	0.0	0.0	73	752	73
73174	SAGEBRSH	115	TS	1	1	1.000	3.0	1.0	0.0	0.0	0.0	0.0	73	752	73
73175	SANDHILL	115	TS	1	1	1.000	13.0	4.3	0.0	0.0	0.0	0.0	73	752	73
73184	SMOKYHLW	115	TS	1	1	1.000	7.4	2.5	0.0	0.0	0.0	0.0	73	752	73
73185	SO. FORK	115	TS	1	1	1.000	2.1	0.7	0.0	0.0	0.0	0.0	73	752	73
73191	STERLING	115	PS	1	1	1.000	28.8	9.5	0.0	0.0	0.0	0.0	73	752	65
73191	STERLING	115	TS	1	1	1.000	30.8	10.1	0.0	0.0	0.0	0.0	73	752	73
73194	SWOODROW	115	TS	1	1	1.000	1.3	0.4	0.0	0.0	0.0	0.0	73	752	73
73207	WAANIBE	115	TS	1	1	1.000	25.3	8.3	0.0	0.0	0.0	0.0	73	752	73
73208	WAGES	115	TS	1	1	1.000	16.2	5.3	0.0	0.0	0.0	0.0	73	752	73
73210	WAUNETA	115	TS	1	1	1.000	14.6	4.8	0.0	0.0	0.0	0.0	73	752	73
73213	WIGGINS	115	TS	1	1	1.000	5.1	1.7	0.0	0.0	0.0	0.0	73	752	73
73221	WOODROW	115	TS	1	1	1.000	1.3	0.4	0.0	0.0	0.0	0.0	73	752	73
73230	YUMA	115	MU	1	1	1.000	4.9	1.6	0.0	0.0	0.0	0.0	73	752	67

LOAD DATA (CONT.)

BUS#	NAME	BSKV	ID	CD	ST	PSI	MVA-LOAD		CUR-LOAD		Y - LOAD		AREA	ZONE	OWNER
73230	YUMA	115	TS	1	1	1.000	25.9	8.5	0.0	0.0	0.0	0.0	73	752	73
73310	FME	115	MU	1	1	1.000	11.1	3.7	0.0	0.0	0.0	0.0	73	752	67
73311	FMS	115	MU	1	1	1.000	10.4	3.4	0.0	0.0	0.0	0.0	73	752	67
73318	LIMON	115	TS	1	1	1.000	15.4	5.1	0.0	0.0	0.0	0.0	73	752	73
73331	WRAYWAPA	115	MU	1	1	1.000	4.1	1.4	0.0	0.0	0.0	0.0	73	752	67
73331	WRAYWAPA	115	TS	1	1	1.000	5.3	1.8	0.0	0.0	0.0	0.0	73	752	73
73372	OTIS LM	115	TS	1	1	1.000	7.4	2.4	0.0	0.0	0.0	0.0	73	752	73
73374	VERNONLM	115	TS	1	1	1.000	7.7	2.5	0.0	0.0	0.0	0.0	73	752	73
73377	EXCEL	115	MU	1	1	1.000	8.7	2.9	0.0	0.0	0.0	0.0	73	752	67
73378	FMN	115	TS	1	1	1.000	4.4	1.4	0.0	0.0	0.0	0.0	73	752	73
73379	FMWEST	115	MU	1	1	1.000	6.3	2.1	0.0	0.0	0.0	0.0	73	752	67
73464	ADENA	115	TS	1	1	1.000	2.2	0.7	0.0	0.0	0.0	0.0	73	752	73
73478	GALIEN	115	TS	1	1	1.000	6.9	2.3	0.0	0.0	0.0	0.0	73	752	73
73501	RINNVALL	115	TS	1	1	1.000	17.1	5.6	0.0	0.0	0.0	0.0	73	752	73
73502	DACONO	115	TS	1	1	1.000	14.0	4.6	0.0	0.0	0.0	0.0	73	752	73

GENERATING PLANT DATA

BUS#	NAME	BSKV	COD	MCNS	PGEN	QGEN	QMAX	QMIN	VSCHED	VACT.	PCT Q	REMOTE
73302	BRLNGTN113.8		2	1	50.0	2.7	16.0	-16.0	1.0250	1.0250	100.0	
73303	BRLNGTN213.8		2	1	50.0	2.7	16.0	-16.0	1.0250	1.0250	100.0	
73309	BRLNGTN313.8		-2	1	0.0	0.0	0.0	0.0	1.0250	1.0202	100.0	
73532	LINCOLN113.8		2	1	77.0	4.4	25.0	-15.0	1.0250	1.0250	100.0	
73533	LINCOLN213.8		2	1	77.0	4.4	25.0	-15.0	1.0250	1.0250	100.0	
73535	LINCOLN313.8		-2	1	0.0	0.0	0.0	0.0	1.0250	1.0220	100.0	

GENERATOR UNIT DATA

BUS#	NAME	BSKV	CD	ID	ST	PGEN	QGEN	QMAX	QMIN	PMAX	PMIN	OWN	FRACT	OWN	FRACT	MBASE	Z	S	O	R	C	E	X	T	R	A	N	GENTAP
73302	BRLNGTN113.8		2	1	1	50.0	2.7	16.0	-16.0	60.0	0.0	73	1.000			100.0	0.0000	1.0000										
73303	BRLNGTN213.8		2	1	1	50.0	2.7	16.0	-16.0	60.0	0.0	73	1.000			100.0	0.0000	1.0000										
73309	BRLNGTN313.8		-2	1	0	50.0	0.0	15.0	-15.0	50.0	0.0	26	1.000			100.0	0.0000	1.0000										
73532	LINCOLN113.8		2	1	1	77.0	4.4	25.0	-15.0	77.0	0.0	73	1.000			100.0	0.0000	1.0000										
73533	LINCOLN213.8		2	1	1	77.0	4.4	25.0	-15.0	77.0	0.0	73	1.000			100.0	0.0000	1.0000										
73535	LINCOLN313.8		-2	1	0	80.0	0.0	25.0	-15.0	80.0	0.0	73	1.000			100.0	0.0000	1.0000										

SWITCHED SHUNT DATA

BUS#	MOD	VHI	VLO	SHUNT	X-------X	X-------X	X-------X	X-------X	REMOTE	VSC	NAME
73017	1	1.0500	0.9800	0.00	1: -12.00	1: -24.00					
73020	0	1.0500	0.9800	39.00	1: -10.00	1: 13.00	1: 26.00				
73035	1	1.0500	0.9800	0.00	2: -7.50	2: 7.50					
73142	1	1.0500	1.0000	0.00	1: -24.00						
73184	1	1.0400	0.9900	15.00	1: 7.50	1: 7.50					
73191	0	1.0300	0.9800	7.50	1: 7.50						
73192	1	1.0500	0.9800	0.00	1: -25.00	1: -25.00					
73223	1	1.0500	0.9800	26.60	2: -12.00	2: 6.80	1: 13.00				

BRANCH DATA

X------FROM------X			X-------TO-------X							Z	S						
BUS#	NAME	BSKV	BUS#	NAME	BSKV	CKT	LINE R	LINE X	CHRGING	I	T	RATEA	RATEB	RATEC	LENGTH	OWN1	FRAC1
70005	BRUSHCPP	115*	73013	B.CK PS	115	1	0.00437	0.01578	0.00246		1	162.0	162.0	162.0	0.0	65	1.000
70005	BRUSHCPP	115*	73013	B.CK PS	115	2	0.00345	0.01498	0.00250		1	187.0	187.0	187.0	0.0	65	1.000
70311	PAWNEE	230	73192	STORY	230*	1	0.00189	0.01447	0.03156		1	576.0	576.0	576.0	0.0	94	1.000
73003	AKRON	115*	73020	BEAVERCK	115	1	0.06480	0.13320	0.01560		1	84.9	0.0	0.0	22.2	26	1.000
73003	AKRON	115	73372	OTIS LM	115*	1	0.05040	0.10360	0.01220		1	84.9	0.0	0.0	17.3	26	1.000
73005	ALVIN	115	73175	SANDHILL	115*	1	0.02330	0.09030	0.01160		1	95.0	0.0	0.0	15.6	26	1.000
73005	ALVIN	115	73210	WAUNETA	115*	1	0.02660	0.06220	0.00680		1	67.0	0.0	0.0	10.0	26	1.000
73005	ALVIN	115	73304	CRETESWT	115*	1	0.00850	0.03280	0.00420		1	95.0	0.0	0.0	5.7	26	1.000
73006	ANTON	115	73010	ARICKARE	115*	1	0.04760	0.09770	0.01000		1	55.0	0.0	0.0	14.5	26	1.000
73006	ANTON	115	73125	LSCHANCE	115*	1	0.06480	0.15160	0.01660		1	67.0	0.0	0.0	24.3	26	1.000
73007	ARAPASUB	115	73207	WAANIBE	115*	1	0.06130	0.13900	0.01620		1	67.0	0.0	0.0	23.0	26	1.000
73010	ARICKARE	115	73094	JOES	115*	1	0.02170	0.08380	0.01080		1	95.0	0.0	0.0	14.5	26	1.000
73013	B.CK PS	115	73020	BEAVERCK	115*	1	0.00000	0.00030	0.00000		1	319.0	319.0	319.0	0.0	26	1.000
73014	B.CK PS	230	73192	STORY	230*	1	0.00030	0.00200	0.00180		1	413.5	0.0	0.0	0.5	26	1.000
73015	B.CK TRI	115	73020	BEAVERCK	115*	1	0.00000	0.00030	0.00000		1	200.0	0.0	0.0	0.0	26	1.000
73016	B.CK TRI	230	73192	STORY	230*	1	0.00030	0.00200	0.00180		1	413.5	0.0	0.0	0.1	26	1.000
73017	B.SANDY	115	73125	LSCHANCE	115*	1	0.05500	0.17950	0.02260		1	109.0	0.0	0.0	30.3	26	1.000
73017	B.SANDY	115	73318	LIMON	115*	1	0.00660	0.02280	0.00280		1	85.1	0.0	0.0	3.9	26	1.000
73018	B.SANDY	230	73036	BURLNGTN	230*	1	0.01520	0.11860	0.23418		1	281.0	0.0	0.0	80.5	26	1.000
73018	B.SANDY	230	73531	LINCOLNT	230*	1	0.00119	0.01190	0.02457		1	239.0	239.0	239.0	8.5	26	1.000
73020	BEAVERCK	115	73031	BRUSHTAP	115*	1	0.00700	0.02690	0.00360		1	122.1	122.0	122.0	0.8	26	1.000
73020	BEAVERCK	115	73065	GARY	115*	1	0.01650	0.05370	0.00680		1	109.0	0.0	0.0	9.3	26	1.000
73020	BEAVERCK	115	73136	MESSEX	115*	1	0.02360	0.08290	0.01060		1	121.7	0.0	0.0	14.7	26	1.000
73020	BEAVERCK	115*	73464	ADENA	115	1	0.03040	0.09910	0.01240		1	85.1	0.0	0.0	17.0	26	1.000
73023	BIJOUTAP	115	73097	KIOWA CK	115*	1	0.01440	0.05530	0.00720		1	121.7	0.0	0.0	8.7	26	1.000
73023	BIJOUTAP	115	73379	FMWEST	115*	1	0.01150	0.04460	0.00580		1	80.0	0.0	0.0	6.2	26	1.000
73025	BONNY CK	115	73035	BURLNGTN	115*	1	0.01940	0.07058	0.00848		1	146.0	0.0	0.0	11.8	26	1.000
73025	BONNY CK	115*	73185	SO. FORK	115	1	0.00760	0.02767	0.00332		1	146.0	0.0	0.0	4.6	26	1.000
73030	BRIGHTNW	115	73493	SANDCRK	115*	1	0.04055	0.13207	0.01658		1	85.1	0.0	0.0	25.0	26	1.000
73030	BRIGHTNW	115	73503	ERIE TAP	115*	1	0.01086	0.03528	0.00444		1	85.1	0.0	0.0	0.0	26	1.000
73031	BRUSHTAP	115	73305	EFMORGTP	115*	1	0.01360	0.05240	0.00680		1	121.7	0.0	0.0	12.0	26	1.000
73034	BURL PSC	115	73209	WANIBETP	115*	1	0.02933	0.06057	0.00711		1	67.0	0.0	0.0	10.0	26	1.000
73034	BURL PSC	115	73485	BURL KC	115*	1	0.00585	0.01209	0.00142		1	67.0	0.0	0.0	2.0	26	1.000
73035	BURLNGTN	115	73485	BURL KC	115*	1	0.00568	0.01173	0.00138		1	67.0	0.0	0.0	1.9	26	1.000
73047	DEERINGL	115	73053	ECKLEY	115*	1	0.02950	0.06050	0.00700		1	84.9	0.0	0.0	10.1	26	1.000
73047	DEERINGL	115	73142	N.YUMA	115*	1	0.01397	0.04912	0.00640		1	146.0	0.0	0.0	8.5	26	1.000
73047	DEERINGL	115	73230	YUMA	115*	1	0.00422	0.00680	0.00066		1	55.0	0.0	0.0	1.0	26	1.000
73047	DEERINGL	115	73372	OTIS LM	115*	1	0.02360	0.04840	0.00560		1	84.9	0.0	0.0	8.1	26	1.000
73049	DELCAMIN	115*	73501	RINNVALL	115	1	0.00790	0.03228	0.00387		1	174.3	0.0	0.0	0.0	26	1.000
73053	ECKLEY	115	73225	WRAY TAP	115*	1	0.04130	0.08480	0.01000		1	84.9	0.0	0.0	14.1	26	1.000
73053	ECKLEY	115	73326	ROBB	115*	1	0.03950	0.08160	0.00960		1	67.0	0.0	0.0	13.5	26	1.000
73053	ECKLEY	115*	73371	BETHELLM	115	1	0.03510	0.07250	0.00860		1	67.0	0.0	0.0	12.0	26	1.000
73059	FLEMING	115	73080	HAXTUN	115*	1	0.01890	0.06610	0.00840		1	121.7	0.0	0.0	11.5	26	1.000
73059	FLEMING	115	73478	GALIEN	115*	1	0.01844	0.06461	0.00835		1	80.0	0.0	0.0	11.1	26	1.000
73063	FRENCHCK	115	73080	HAXTUN	115*	1	0.02670	0.09330	0.01200		1	121.7	0.0	0.0	16.2	26	1.000
73063	FRENCHCK	115	73210	WAUNETA	115*	1	0.02740	0.10290	0.01280		1	80.0	0.0	0.0	18.0	26	1.000
73065	GARY	115	73221	WOODROW	115*	1	0.01640	0.05350	0.00680		1	109.0	0.0	0.0	9.3	26	1.000

BRANCH DATA (CONT.)

X------FROM------X			X-------TO-------X							Z	S						
BUS#	NAME	BSKV	BUS#	NAME	BSKV	CKT	LINE R	LINE X	CHRGING	I	T	RATEA	RATEB	RATEC	LENGTH	OWN1	FRAC1
73083	HELL CK	115	73084	HELL TAP	115*	1	0.00350	0.01360	0.00180		1	95.0	0.0	0.0	2.4	26	1.000
73083	HELL CK	115	73174	SAGEBRSH	115*	1	0.02230	0.08610	0.01100		1	95.0	0.0	0.0	14.9	26	1.000
73084	HELL TAP	115	73110	LIBERTY	115*	1	0.00750	0.02910	0.00380		1	95.0	0.0	0.0	5.0	26	1.000
73084	HELL TAP	115	73185	SO. FORK	115*	1	0.02840	0.10970	0.01400		1	95.0	0.0	0.0	30.0	26	1.000
73088	HOYT	115	73103	L.MEADOW	115*	1	0.02970	0.04940	0.00500		1	40.0	0.0	0.0	7.2	26	1.000
73088	HOYT	115*	73464	ADENA	115	1	0.02680	0.08700	0.01100		1	109.0	0.0	0.0	15.0	26	1.000
73088	HOYT	115*	73493	SANDCRK	115	1	0.03235	0.10533	0.01322		1	109.0	0.0	0.0	16.0	26	1.000
73091	IDALIA	115	73185	SO. FORK	115*	1	0.01872	0.06190	0.00800		1	146.0	0.0	0.0	10.7	26	1.000
73091	IDALIA	115	73206	VERNONTP	115*	1	0.02641	0.08730	0.01120		1	146.0	0.0	0.0	15.1	26	1.000
73095	KERSEYTP	115	73158	PROSPEC	115*	1	0.01170	0.04510	0.00580		1	109.0	0.0	0.0	7.9	26	1.000
73095	KERSEYTP	115	73211	WELD LM	115*	1	0.03230	0.12400	0.01620		1	121.7	0.0	0.0	21.6	26	1.000
73097	KIOWA CK	115	73147	ORCHARD	115*	1	0.00000	0.00030	0.00000		1	121.7	0.0	0.0	0.1	26	1.000
73097	KIOWA CK	115	73158	PROSPEC	115*	1	0.02000	0.09000	0.01000		1	121.7	0.0	0.0	16.3	26	1.000
73097	KIOWA CK	115	73213	WIGGINS	115*	1	0.02000	0.04000	0.00480		1	59.6	0.0	0.0	7.4	26	1.000
73103	L.MEADOW	115	73213	WIGGINS	115*	1	0.02000	0.04000	0.00400		1	59.6	0.0	0.0	5.9	26	1.000
73108	LAR.RIVR	345	73193	STORY	345*	1	0.00543	0.08428	1.50066		1	956.1	0.0	0.0	169.0	26	1.000
73117	LOST CK	115	73370	LOSTCKTP	115*	1	0.00000	0.00030	0.00000		1	5.0	0.0	0.0	4.1	26	1.000
73125	LSCHANCE	115	73194	SWOODROW	115*	1	0.01440	0.04690	0.00600		1	109.0	0.0	0.0	8.1	26	1.000
73136	MESSEX	115	73191	STERLING	115*	1	0.03500	0.12310	0.01580		1	121.7	0.0	0.0	21.4	26	1.000
73142	N.YUMA	115*	73166	REDWILLW	115	1	0.00750	0.02900	0.00371		1	174.0	0.0	0.0	5.0	26	1.000
73143	N.YUMA	230	73180	SIDNEY	230*	1	0.01540	0.11750	0.23640		1	566.0	0.0	0.0	80.4	26	1.000
73143	N.YUMA	230	73192	STORY	230*	1	0.00939	0.06685	0.13136		1	281.0	0.0	0.0	45.2	26	1.000
73143	N.YUMA	230	73224	WRAY	230*	1	0.00639	0.04540	0.08920		1	281.0	0.0	0.0	30.7	26	1.000
73150	PEETZ	115	73179	SIDNEY	115*	1	0.03250	0.09630	0.01200		1	109.0	0.0	0.0	39.2	26	1.000
73150	PEETZ	115	73191	STERLING	115*	1	0.04460	0.13220	0.01640		1	85.1	0.0	0.0	22.7	26	1.000
73158	PROSPEC	115*	73370	LOSTCKTP	115	1	0.03000	0.05000	0.00500		1	59.6	0.0	0.0	8.1	26	1.000
73159	PROSPVAL	115*	73493	SANDCRK	115	1	0.01000	0.03000	0.00529		1	124.0	124.0	0.0	6.6	26	1.000
73166	REDWILLW	115	73208	WAGES	115*	1	0.07320	0.11806	0.01140		1	55.0	0.0	0.0	17.0	26	1.000
73175	SANDHILL	115	73223	WRAY	115*	1	0.01110	0.04280	0.00548		1	95.0	0.0	0.0	7.4	26	1.000
73184	SMOKYHLW	115	73209	WANIBETP	115*	1	0.01620	0.03780	0.00420		1	67.0	0.0	0.0	6.1	26	1.000
73191	STERLING	115	73478	GALIEN	115*	1	0.01336	0.04679	0.00605		1	80.0	0.0	0.0	19.4	26	1.000
73194	SWOODROW	115	73221	WOODROW	115*	1	0.01670	0.05440	0.00680		1	109.0	0.0	0.0	9.4	26	1.000
73196	TERRY	115	73503	ERIE TAP	115*	1	0.02534	0.08232	0.01036		1	85.1	0.0	0.0	0.0	26	1.000
73206	VERNONTP	115	73223	WRAY	115*	1	0.01570	0.05520	0.00720		1	95.0	0.0	0.0	9.6	26	1.000
73207	WAANIBE	115	73209	WANIBETP	115*	1	0.00800	0.01810	0.00220		1	67.0	0.0	0.0	3.0	26	1.000
73208	WAGES	115	73210	WAUNETA	115*	1	0.03180	0.07430	0.00820		1	67.0	0.0	0.0	11.9	26	1.000
73223	WRAY	115	73225	WRAY TAP	115*	1	0.00070	0.00280	0.00040		1	95.0	0.0	0.0	0.5	26	1.000
73225	WRAY TAP	115	73331	WRAYWAPA	115*	1	0.00000	0.00030	0.00000		1	85.0	0.0	0.0	2.0	26	1.000
73305	EFMORGTP	115	73310	FME	115*	1	0.00450	0.00670	0.00000		1	60.0	0.0	0.0	3.1	26	1.000
73305	EFMORGTP	115	73378	FMN	115*	1	0.00000	0.00030	0.00000		1	60.0	0.0	0.0	6.9	26	1.000
73305	EFMORGTP	115	73379	FMWEST	115*	1	0.00250	0.00980	0.00120		1	80.0	0.0	0.0	2.9	26	1.000
73311	FMS	115*	73377	EXCEL	115	1	0.00000	0.00030	0.00000		1	60.0	0.0	0.0	3.4	26	1.000
73311	FMS	115	73379	FMWEST	115*	1	0.00000	0.00030	0.00000		1	60.0	0.0	0.0	3.0	26	1.000
73371	BETHELLM	115	73374	VERNONLM	115*	1	0.03750	0.07740	0.00900		1	67.0	0.0	0.0	12.9	26	1.000
73413	MIDWAYBR	230*	73531	LINCOLNT	230	1	0.01011	0.10140	0.20943		1	239.0	0.0	0.0	70.1	73	1.000
73501	RINNVALL	115*	73502	DACONO	115	1	0.00483	0.01972	0.00236		1	174.3	0.0	0.0	0.0	26	1.000
73502	DACONO	115	73503	ERIE TAP	115*	1	0.00731	0.02988	0.00358		1	174.3	0.0	0.0	0.0	26	1.000

LINE SHUNT DATA

X------FROM------X			X-------TO-------X						
BUS#	NAME	BSKV	BUS#	NAME	BSKV	CKT	LINE G,B (FROM)	LINE G,B (TO)	ST
73108	LAR.RIVR	345	73193	STORY	345	1	0.0000 -0.3000	0.0000 0.0000	1

2 WINDING XFRMER
IMPEDANCE DATA

X------FROM------X			X-------TO-------X				XFRMER	C	C											
BUS#	NAME	BSKV	BUS#	NAME	BSKV	CKT	NAME	Z	M	R 1-2	X 1-2	W1BASE	MAG1	MAG2	RATA	RATB	RATC	TBL	NOMINAL R,X	OWN	FRACT
73013	B.CK PS	115	73014	B.CK PS	230	1	B.CK PS	2	1	0.00450	0.04960	100.0	0.0000	0.0000	224	0	0	0		26	1.000
73015	B.CK TRI	115	73016	B.CK TRI	230	1	B.CK TRI	2	1	0.00450	0.04960	100.0	0.0000	0.0000	224	0	0	0		26	1.000
73017	B.SANDY	115	73018	B.SANDY	230	1	B.SANDY	2	1	0.00100	0.06100	100.0	0.0000	0.0000	167	0	0	0		77	1.000
73035	BURLNGTN	115	73036	BURLNGTN	230	1	BURLNGTN	2	1	0.00360	0.09940	100.0	0.0000	0.0000	100	0	0	0		73	1.000
73035	BURLNGTN	115	73036	BURLNGTN	230	2	BURLNGTN	2	1	0.00187	0.06927	100.0	0.0000	0.0000	167	0	0	0		73	1.000
73035	BURLNGTN	115	73302	BRLNGTN113.8		1	BRLNGTN1	2	1	0.00720	0.15130	100.0	0.0000	0.0000	70	0	0	0		73	1.000
73035	BURLNGTN	115	73303	BRLNGTN213.8		1	BRLNGTN2	2	1	0.00710	0.15100	100.0	0.0000	0.0000	70	0	0	0		73	1.000
73035	BURLNGTN	115	73309	BRLNGTN313.8		1	BRLNGTN3	2	1	0.00710	0.15100	100.0	0.0000	0.0000	70	0	0	0		73	1.000
73142	N.YUMA	115	73143	N.YUMA	230	1	N.YUMA	2	1	0.00120	0.06800	100.0	0.0000	0.0000	167	0	0	0		26	1.000
73192	STORY	230	73193	STORY	345	1	STORY	2	1	0.00020	0.01290	100.0	0.0000	0.0000	500	0	0	0		26	1.000
73192	STORY	230	73193	STORY	345	2	STORY	2	1	0.00020	0.01370	100.0	0.0000	0.0000	500	0	0	0		26	1.000
73223	WRAY	115	73224	WRAY	230	1	WRAY	2	1	0.00150	0.04670	100.0	0.0000	0.0000	186	0	0	0		26	1.000
73531	LINCOLNT	230	73532	LINCOLN113.8		1	LINCOLN1	2	1	0.00283	0.13060	100.0	0.0000	0.0000	120	0	0	0		65	1.000
73531	LINCOLNT	230	73533	LINCOLN213.8		1	LINCOLN2	2	1	0.00287	0.13112	100.0	0.0000	0.0000	120	0	0	0		65	1.000
73531	LINCOLNT	230	73535	LINCOLN313.8		1	LINCOLN3	2	1	0.00283	0.13060	100.0	0.0000	0.0000	120	0	0	0		65	1.000

2 WINDING XFRMER
TAP & CONTROL DATA

X------FROM------X			X-------TO-------X				S	M	W	C										X--CONTROLLED BUS-X		
BUS#	NAME	BSKV	BUS#	NAME	BSKV	CKT	T	T	1	W	WINDV1	NOMV1	ANGLE	WINDV2	NOMV2	CN	RMAX	RMIN	VMAX	VMIN	NTPS	BUS#	NAME	BSKV
73013	B.CK PS	115	73014	B.CK PS	230	1	1	F	F	2	105.66	115.0	0.0	230.00	230.0	1	126.50	103.50	1.0200	1.0100	33	-73013	B.CK PS	115
73015	B.CK TRI	115	73016	B.CK TRI	230	1	1	F	F	2	112.84	115.0	0.0	230.00	230.0	1	126.50	103.50	1.0400	1.0000	33	-73015	B.CK TRI	115
73017	B.SANDY	115	73018	B.SANDY	230	1	1	F	F	2	116.44	115.0	0.0	230.00	230.0	1	126.50	103.50	1.0400	1.0000	33	-73017	B.SANDY	115
73035	BURLNGTN	115	73036	BURLNGTN	230	1	1	F	F	2	115.00	115.0	0.0	230.00	230.0	0	1.1000	0.9000	1.1000	0.9000	33			
73035	BURLNGTN	115	73036	BURLNGTN	230	2	1	F	F	2	115.00	115.0	0.0	230.00	230.0	0	1.1000	0.9000	1.1000	0.9000	33			
73035	BURLNGTN	115	73302	BRLNGTN113.8		1	1	F	F	2	115.00	115.0	0.0	13.800	13.80	0	1.1000	0.9000	1.1000	0.9000	33			
73035	BURLNGTN	115	73303	BRLNGTN213.8		1	1	F	F	2	115.00	115.0	0.0	13.800	13.80	0	1.1000	0.9000	1.1000	0.9000	33			
73035	BURLNGTN	115	73309	BRLNGTN313.8		1	1	F	F	2	115.00	115.0	0.0	13.800	13.80	0	1.1000	0.9000	1.1000	0.9000	33			
73142	N.YUMA	115	73143	N.YUMA	230	1	1	F	F	2	118.45	115.0	0.0	230.00	230.0	0	1.1000	0.9000	1.1000	0.9000	33			
73192	STORY	230	73193	STORY	345	1	1	F	F	2	230.00	230.0	0.0	345.00	345.0	0	1.1000	0.9000	1.1000	0.9000	33			
73192	STORY	230	73193	STORY	345	2	1	F	F	2	230.00	230.0	0.0	345.00	345.0	0	1.1000	0.9000	1.1000	0.9000	33			
73223	WRAY	115	73224	WRAY	230	1	1	T	T	2	244.66	230.0	0.0	115.00	115.0	1	257.60	188.60	1.0400	1.0000	33	-73224	WRAY	230
73531	LINCOLNT	230	73532	LINCOLN113.8		1	1	F	F	2	230.00	230.0	0.0	13.800	13.80	0	1.1000	0.9000	1.1000	0.9000	33			
73531	LINCOLNT	230	73533	LINCOLN213.8		1	1	F	F	2	230.00	230.0	0.0	13.800	13.80	0	1.1000	0.9000	1.1000	0.9000	33			
73531	LINCOLNT	230	73535	LINCOLN313.8		1	1	F	F	2	230.00	230.0	0.0	13.800	13.80	0	1.1000	0.9000	1.1000	0.9000	33			

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3 WINDING XFRMER
IMPEDANCE DATA
  XFRMER  X--WINDING 1 BUS-X X--WINDING 2 BUS-X X--WINDING 3 BUS-X     S C
   NAME    BUS# NAME    BSKV  BUS# NAME    BSKV  BUS# NAME    BSKV CKT T Z   R 1-2    X 1-2    R 2-3    X 2-3    R 3-1    X 3-1  OWNR FRACT

                                  * NONE *

3 WINDING XFRMER
WINDING DATA
  XFRMER  X---WINDING BUS--X  S C C C                                                                                STAR POINT BUS
   NAME    BUS# NAME    BSKV  T W Z M  R WNDNG  X WNDNG  WBASE WIND V NOM V  ANGLE RATA RATB RATC    MAG1   MAG2 VOLTAGE  NGLE TBL  NOMINAL R,X

                                  * NONE *

3 WINDING XFRMER
CONTROL DATA
  XFRMER  X--WINDING 1 BUS-X C C                                    X--CONTROLLED BUS-X                  X------- NOMINAL IMPEDANCES ------X
   NAME    BUS# NAME    BSKV W Z CN  RMAX   RMIN   VMAX   VMIN  NTPS   BUS# NAME    BSKV    CR      CX   TBL   R 1-2    X 1-2    R 3-1    X 3-1

                                  * NONE *

TRANSFORMER Z
CORRECTION DATA
 IMPEDANCE CORRECTION TABLE  1 IS A FUNCTION OF TRANSFORMER TURNS RATIO
 ENTRY 1      2      3      4
 RA 0.8750 1.0000 1.0250 1.1750
 *F 1.1200 1.0000 0.9790 0.8950

 IMPEDANCE CORRECTION TABLE  2 IS A FUNCTION OF TRANSFORMER TURNS RATIO
 ENTRY 1      2      3
 RA 0.9000 1.0000 1.1000
 *F 1.3000 1.0000 0.8300

 IMPEDANCE CORRECTION TABLE  4 IS A FUNCTION OF TRANSFORMER PHASE SHIFT ANGLE
 ENTRY 1      2      3      4      5      6      7      8      9     10     11
 AN  -45.0  -36.0  -27.0  -18.0   -9.0    0.0    9.0   18.0   27.0   36.0   45.0
 *F 1.7430 1.4280 1.2670 1.1570 1.0740 1.0000 1.1380 1.3050 1.4980 1.7190 1.9720

 IMPEDANCE CORRECTION TABLE  5 IS A FUNCTION OF TRANSFORMER PHASE SHIFT ANGLE
 ENTRY 1      2      3      4      5      6      7      8      9     10     11
 AN  -45.0  -36.0  -27.0  -18.0   -9.0    0.0    9.0   18.0   27.0   36.0   45.0
 *F 1.7250 1.4180 1.2600 1.1530 1.0730 1.0000 1.1350 1.3000 1.4890 1.7050 1.9520

 IMPEDANCE CORRECTION TABLE  6 IS A FUNCTION OF TRANSFORMER PHASE SHIFT ANGLE
 ENTRY 1      2      3
 AN  -45.0    0.0   45.0
 *F 2.0730 1.0000 2.0730
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TRANSFORMER Z
CORRECTION DATA (CONT.)
 IMPEDANCE CORRECTION TABLE  7 IS A FUNCTION OF TRANSFORMER PHASE SHIFT ANGLE
 ENTRY 1      2      3      4      5      6      7      8      9     10     11
 AN  -58.3  -46.6  -35.0  -23.3  -11.6    0.0   11.7   23.3   35.0   46.6   58.3
 *F 1.5420 1.3170 1.2110 1.1630 1.1130 1.0000 1.0200 1.0880 1.2000 1.3520 1.5390

 IMPEDANCE CORRECTION TABLE  9 IS A FUNCTION OF TRANSFORMER PHASE SHIFT ANGLE
 ENTRY 1      2      3      4      5      6      7      8      9
 AN  -40.0  -30.0  -20.0  -10.0    0.0   10.0   20.0   30.0   40.0
 *F 1.4000 1.3000 1.2000 1.1000 1.0000 1.1000 1.2000 1.3000 1.4000

 IMPEDANCE CORRECTION TABLE 10 IS A FUNCTION OF TRANSFORMER PHASE SHIFT ANGLE
 ENTRY 1      2      3      4      5      6      7      8      9
 AN  -36.0  -27.0  -18.0   -9.0    0.0    9.0   18.0   27.0   36.0
 *F 1.6400 1.3600 1.1600 1.0400 1.0000 1.0400 1.1600 1.3600 1.6400

 IMPEDANCE CORRECTION TABLE 11 IS A FUNCTION OF TRANSFORMER PHASE SHIFT ANGLE
 ENTRY 1      2      3      4      5      6      7      8      9     10     11
 AN  -34.0  -27.2  -20.4  -13.6   -6.8    0.0    6.8   13.6   20.4   27.2   34.0
 *F 2.0110 1.6750 1.3930 1.1790 1.0450 1.0000 1.0450 1.1790 1.3930 1.6750 2.0110

 IMPEDANCE CORRECTION TABLE 13 IS A FUNCTION OF TRANSFORMER PHASE SHIFT ANGLE
 ENTRY 1      2      3      4      5      6      7      8      9     10     11
 AN  -40.0  -35.0  -30.0  -20.0  -10.0    0.0   10.0   20.0   30.0   35.0   40.0
 *F 1.6100 1.5340 1.4580 1.3050 1.1530 1.0000 1.1530 1.3050 1.4580 1.5340 1.6100

 IMPEDANCE CORRECTION TABLE 20 IS A FUNCTION OF TRANSFORMER PHASE SHIFT ANGLE
 ENTRY 1      2      3      4      5      6      7      8      9     10     11
 AN  -45.0  -36.0  -27.0  -18.0   -9.0    0.0    9.0   18.0   27.0   36.0   45.0
 *F 1.7860 1.5030 1.2930 1.1260 1.0320 1.0000 1.0320 1.1260 1.2930 1.5030 1.7860

MULTI-SECTION
LINE DATA
 X----- MULTI-SECTION LINE GROUPING ----X X------------ LINE SECTIONS ------------X
 X----- FROM -----X X------ TO ------X ID X----- FROM -----X X------ T0 ------X CKT

                                     * NONE *

DC LINE DATA

                                     * NONE *

FACTS CONTROL
DEVICE DATA
 FD# X- SENDING BUS --X X- TERMINAL BUS -X MODE  PDES   QDES  V SET SHNTMX BRDGMX  VTMAX  VTMIN VSRMAX ISRMAX  LINE X OWNER VSREF SET1 SET2

                                     * NONE *
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AREA DATA

AREA	BUS#	NAME	BSKV	PGEN	PMAX	PMIN	INTERCHANGE	TOLER	BUSES	LOADS	DC BUSES
10 NEW MEXI	11114	NEWMANG	313.8	74.8	101.0	30.0	-494.7	1.0	848	321	0
14 ARIZONA	15903	AGUAFR	318.0	149.9	183.0	26.0	2796.2	1.0	545	264	0
18 NEVADA	18259	CLARK 9	13.8	54.7	85.3	32.0	-1118.1	1.0	348	187	0
19 WAPA L.C	19023	HOOVERA	316.5	98.9	130.0	0.0	3221.1	1.0	111	22	0
20 MEXICO-C	20008	PJZ-U8	21.0	217.5	261.0	0.0	200.0	1.0	179	140	0
21 IMPERIAL	21030	ELSTM 4	13.8	72.5	80.0	0.0	157.1	1.0	76	21	0
22 SANDIEGO	22788	SOUTHBY	320.0	164.9	174.0	0.0	-2436.5	1.0	254	115	0
24 SOCALIF	24004	ALAMT4 G	18.0	282.4	320.0	0.0	-4981.5	1.0	585	131	0
26 LADWP	26004	CASTAI1G	18.0	38.7	212.0	0.0	-2091.8	1.0	116	21	6
30 PG AND E	30000	PTSB 7	20.0	362.0	710.0	0.0	-2080.0	1.0	2844	1567	0
40 NORTHWES	40298	COULEE24	15.0	724.6	822.0	0.0	4009.0	1.0	2976	1726	6
50 B.C.HYDR	50499	GMS G5	13.8	196.4	261.0	0.0	2500.0	1.0	1114	428	0
52 AQUILA	52163	WAN-G3	14.4	106.8	113.5	0.0	-100.0	1.0	264	66	0
54 ALBERTA	54143	BRAZ#1	913.7	56.7	160.0	0.0	-400.0	1.0	1054	521	0
60 IDAHO	60100	BRWNL 5	13.8	117.7	275.0	0.0	527.0	1.0	168	67	0
62 MONTANA	62048	COLSTP 3	26.0	782.4	823.0	0.0	1193.0	1.0	307	200	0
63 WAPA U.M	63005	FT PECK	113.8	45.7	61.8	0.0	66.0	1.0	15	17	0
64 SIERRA	64119	TRACY G	313.8	72.4	113.0	0.0	-483.0	1.0	260	122	0
65 PACE	66055	NAUGT G	118.0	47.8*	167.0	73.0	-927.1	1.0	591	286	0
70 PSCOLORA	70105	CHEROK3	20.0	101.1	165.0	50.0	-1260.6	1.0	523	369	0
73 WAPA R.M	73129	MBPP-1	24.0	525.0	550.0	0.0	1703.9	1.0	632	367	0
					SUMMATION:		0.0				

INTER-AREA
TRANSFER DATA

X--FROM AREA-X	X---TO AREA--X	ID	PTRANS	PTOTAL	DESINT
10 [NEW MEXI]	14 [ARIZONA]	0	-492.9		
10 [NEW MEXI]	19 [WAPA L.C]	0	-41.8		
10 [NEW MEXI]	70 [PSCOLORA]	0	0.0		
10 [NEW MEXI]	73 [WAPA R.M]	0	40.0	-494.7	-494.7
14 [ARIZONA]	10 [NEW MEXI]	0	492.9		
14 [ARIZONA]	19 [WAPA L.C]	0	-1504.8		
14 [ARIZONA]	21 [IMPERIAL]	0	251.6		
14 [ARIZONA]	22 [SANDIEGO]	0	711.3		
14 [ARIZONA]	22 [SANDIEGO]	1	-3.0		
14 [ARIZONA]	24 [SOCALIF]	0	1674.6		
14 [ARIZONA]	26 [LADWP]	0	1288.6		
14 [ARIZONA]	65 [PACE]	0	-115.0	2796.2	2796.2
18 [NEVADA]	19 [WAPA L.C]	0	-758.0		
18 [NEVADA]	24 [SOCALIF]	0	-79.1		
18 [NEVADA]	26 [LADWP]	0	-231.0		
18 [NEVADA]	65 [PACE]	0	-50.0	-1118.1	-1118.1
19 [WAPA L.C]	10 [NEW MEXI]	0	41.8		
19 [WAPA L.C]	14 [ARIZONA]	0	1504.8		
19 [WAPA L.C]	18 [NEVADA]	0	758.0		
19 [WAPA L.C]	24 [SOCALIF]	0	551.4		
19 [WAPA L.C]	26 [LADWP]	0	473.3		
19 [WAPA L.C]	65 [PACE]	0	250.0		
19 [WAPA L.C]	73 [WAPA R.M]	0	-358.2	3221.1	3221.1
20 [MEXICO-C]	22 [SANDIEGO]	0	200.0	200.0	200.0
21 [IMPERIAL]	14 [ARIZONA]	0	-251.6		
21 [IMPERIAL]	22 [SANDIEGO]	0	-110.3		
21 [IMPERIAL]	24 [SOCALIF]	0	519.0	157.1	157.1
22 [SANDIEGO]	14 [ARIZONA]	0	-711.3		
22 [SANDIEGO]	14 [ARIZONA]	1	3.0		
22 [SANDIEGO]	20 [MEXICO-C]	0	-200.0		
22 [SANDIEGO]	21 [IMPERIAL]	0	110.3		
22 [SANDIEGO]	24 [SOCALIF]	0	-1638.5	-2436.5	-2436.5
24 [SOCALIF]	14 [ARIZONA]	0	-1674.6		
24 [SOCALIF]	18 [NEVADA]	0	79.1		
24 [SOCALIF]	19 [WAPA L.C]	0	-551.4		
24 [SOCALIF]	21 [IMPERIAL]	0	-519.0		
24 [SOCALIF]	22 [SANDIEGO]	0	1638.5		
24 [SOCALIF]	26 [LADWP]	0	-1941.1		
24 [SOCALIF]	30 [PG AND E]	0	-2000.0		
24 [SOCALIF]	64 [SIERRA]	0	-13.0	-4981.5	-4981.5

INTER-AREA
TRANSFER DATA (CONT.)

X--FROM AREA-X	X---TO AREA--X	ID	PTRANS	PTOTAL	DESINT
26 [LADWP]	14 [ARIZONA]	0	-1288.6		
26 [LADWP]	18 [NEVADA]	0	231.0		
26 [LADWP]	19 [WAPA L.C]	0	-473.3		
26 [LADWP]	24 [SOCALIF]	0	1941.1		
26 [LADWP]	40 [NORTHWES]	0	-2523.0		
26 [LADWP]	40 [NORTHWES]	1	-77.0		
26 [LADWP]	64 [SIERRA]	0	0.0		
26 [LADWP]	65 [PACE]	0	98.0	-2091.8	-2091.8
30 [PG AND E]	24 [SOCALIF]	0	2000.0		
30 [PG AND E]	40 [NORTHWES]	0	-4080.0		
30 [PG AND E]	64 [SIERRA]	0	0.0	-2080.0	-2080.0
40 [NORTHWES]	26 [LADWP]	0	2523.0		
40 [NORTHWES]	26 [LADWP]	1	77.0		
40 [NORTHWES]	30 [PG AND E]	0	4080.0		
40 [NORTHWES]	50 [B.C.HYDR]	0	-2000.0		
40 [NORTHWES]	52 [AQUILA]	0	0.0		
40 [NORTHWES]	60 [IDAHO]	0	369.0		
40 [NORTHWES]	62 [MONTANA]	0	-1221.0		
40 [NORTHWES]	64 [SIERRA]	0	181.0	4009.0	4009.0
50 [B.C.HYDR]	40 [NORTHWES]	0	2000.0		
50 [B.C.HYDR]	52 [AQUILA]	0	100.0		
50 [B.C.HYDR]	54 [ALBERTA]	0	400.0	2500.0	2500.0
52 [AQUILA]	40 [NORTHWES]	0	0.0		
52 [AQUILA]	50 [B.C.HYDR]	0	-100.0	-100.0	-100.0
54 [ALBERTA]	50 [B.C.HYDR]	0	-400.0	-400.0	-400.0
60 [IDAHO]	40 [NORTHWES]	0	-369.0		
60 [IDAHO]	64 [SIERRA]	0	205.0		
60 [IDAHO]	65 [PACE]	0	691.0	527.0	527.0
62 [MONTANA]	40 [NORTHWES]	0	1221.0		
62 [MONTANA]	63 [WAPA U.M]	0	-138.0		
62 [MONTANA]	65 [PACE]	0	110.0	1193.0	1193.0
63 [WAPA U.M]	62 [MONTANA]	0	138.0		
63 [WAPA U.M]	73 [WAPA R.M]	0	-72.0	66.0	66.0
64 [SIERRA]	24 [SOCALIF]	0	13.0		
64 [SIERRA]	26 [LADWP]	0	0.0		
64 [SIERRA]	30 [PG AND E]	0	0.0		
64 [SIERRA]	40 [NORTHWES]	0	-181.0		

```
INTER-AREA
TRANSFER DATA (CONT.)
 X--FROM AREA-X X---TO AREA--X ID  PTRANS  PTOTAL  DESINT
  64 [SIERRA  ]  60 [IDAHO   ]  0  -205.0
  64 [SIERRA  ]  65 [PACE    ]  0  -110.0  -483.0  -483.0

  65 [PACE    ]  14 [ARIZONA ]  0   115.0
  65 [PACE    ]  18 [NEVADA  ]  0    50.0
  65 [PACE    ]  19 [WAPA L.C]  0  -250.0
  65 [PACE    ]  26 [LADWP   ]  0   -98.0
  65 [PACE    ]  60 [IDAHO   ]  0  -691.0
  65 [PACE    ]  62 [MONTANA ]  0  -110.0
  65 [PACE    ]  64 [SIERRA  ]  0   110.0
  65 [PACE    ]  73 [WAPA R.M]  0   -53.1  -927.1  -927.1

  70 [PSCOLORA]  10 [NEW MEXI]  0     0.0
  70 [PSCOLORA]  73 [WAPA R.M]  0 -1260.6 -1260.6 -1260.6

  73 [WAPA R.M]  10 [NEW MEXI]  0   -40.0
  73 [WAPA R.M]  19 [WAPA L.C]  0   358.2
  73 [WAPA R.M]  63 [WAPA U.M]  0    72.0
  73 [WAPA R.M]  65 [PACE    ]  0    53.1
  73 [WAPA R.M]  70 [PSCOLORA]  0  1260.6  1703.9  1703.9

ZONE DATA
 X-- ZONE --X BUSES     LOADS  DC BUSES
 752 ZONEEC      91        63         0
```

OWNER DATA

X--	OWNER	-X BUSES	LOADS	MACHINES	BRANCHES	DC BUSES	FACTS DEVS	VSC DC
1	NON	0	173	41	417	12	0	0
2	APS	177	97	49	153	0	0	0
3	AEP	27	16	7	38	0	0	0
4	DSW	111	28	24	184	0	0	0
5	EMA	1	0	0	1	0	0	0
7	PAC	507	238	61	680	0	0	0
8	UAMP	63	30	14	80	0	0	0
9		3	3	3	0	0	0	0
10	BCH	1114	428	134	1461	0	0	0
11	IPC	154	52	58	222	0	0	0
13	PPL	242	163	30	332	0	0	0
14	BPA	724	215	38	1043	0	0	0
15	SCL	40	28	21	71	0	0	0
16	IID	76	21	32	97	0	0	0
17	N2	0	0	0	14	0	0	0
18	N3	16	32	0	2	0	0	0
19	N8	48	34	0	47	0	0	0
20	N4	55	34	0	104	0	0	0
21	N6	13	7	0	10	0	0	0
22	N5	10	3	0	11	0	0	0
23	N9	198	67	68	262	0	0	0
24	N1	8	9	0	5	0	0	0
25	N7	0	0	0	1	0	0	0
26	WALM	185	27	2	550	0	0	0
27	WAUC	21	0	4	7	0	0	0
28	NWA	8	6	0	11	0	0	0
29	AVA	268	140	54	365	0	0	0
30	PSE	477	330	39	592	0	0	0
31	DOE	5	5	0	7	0	0	0
32	PG	330	157	41	392	0	0	0
33	EWE	48	33	9	52	0	0	0
34	SPD	122	77	7	138	0	0	0
35	GPD	85	40	22	105	0	0	0
36	CPD	20	8	31	43	0	0	0
37	INL	16	35	0	0	0	0	0
38	TCL	147	61	17	187	0	0	0
39	WPS	1	2	3	1	0	0	0
40	USN	5	5	0	1	0	0	0
41	CLP	3	9	0	1	0	0	0
42	CLA	14	12	0	17	0	0	0
43	COE	45	0	132	82	0	0	0
44	PDO	12	6	4	11	0	0	0
45	WPD	3	3	0	1	0	0	0
46	DPD	15	11	10	17	0	0	0
47	CCP	6	12	0	5	0	0	0
48	GH	9	9	1	8	0	0	0
49	CLK	67	45	1	75	0	0	0
50	NPR	116	0	147	64	0	0	0

OWNER DATA (CONT.)

X-- OWNER -X	BUSES	LOADS	MACHINES	BRANCHES	DC BUSES	FACTS DEVS	VSC DC
51 EMP	9	10	1	3	0	0	0
52 BBE	266	82	27	332	0	0	0
53 KEC	1	11	0	1	0	0	0
54 LEW	29	18	5	28	0	0	0
55 CCC	9	13	0	5	0	0	0
56 SUB	5	7	0	5	0	0	0
57 HAR	7	6	0	6	0	0	0
58 SDS	0	2	0	0	0	0	0
59 SPP	260	122	28	323	0	0	0
60 BHPL	98	64	17	131	0	0	0
61 ROS	3	3	0	6	0	0	0
62 DWR	51	3	52	49	0	0	0
63 SMD	98	33	28	121	0	0	0
64 COT	9	0	2	9	0	0	0
65 PSC	451	206	53	417	0	0	0
66 WP	57	38	7	66	0	0	0
67 ATL	0	21	0	0	0	0	0
68 IM	17	16	0	17	0	0	0
69 PPLG	17	4	19	2	0	0	0
71 TS	0	8	0	0	0	0	0
72 NMPP	0	0	0	2	0	0	0
73 TRI	200	166	15	36	0	0	0
74 SCE	559	112	253	725	0	0	0
76 AIES	1054	521	194	1316	0	0	0
77 WAUM	20	14	1	18	0	0	0
78 MPC	261	169	0	400	0	0	0
79 TEP	137	72	16	182	0	0	0
80 SRP	140	50	49	230	0	0	0
81 LAD	116	21	39	164	0	0	0
85 MFR	1	3	0	2	0	0	0
86 KLI	0	2	0	1	0	0	0
87 UEC	0	0	0	1	0	0	0
90 PGE	2149	1323	161	2894	0	0	0
91 R2	0	0	0	3	0	0	0
92 NCP	27	9	12	16	0	0	0
93 PRP	11	19	0	5	0	0	0
94 BASI	23	26	2	22	0	0	0
95 CSU	48	25	13	27	0	0	0
97 BKB	0	0	0	30	0	0	0
98 BHP	0	0	0	2	0	0	0
99 BOR	0	0	0	3	0	0	0
100 CEC	0	10	0	1	0	0	0
101 CHW	0	1	0	1	0	0	0
102 FAB	2	2	0	2	0	0	0
103 TCE	0	0	0	11	0	0	0
104 ICE	0	4	0	0	0	0	0
105 LEC	0	9	0	5	0	0	0
106 NLI	5	15	0	0	0	0	0

OWNER DATA (CONT.)

X-- OWNER -X	BUSES	LOADS	MACHINES	BRANCHES	DC BUSES	FACTS DEVS	VSC DC
107 MDR	1	3	0	0	0	0	0
108 PLM	0	1	0	0	0	0	0
109 R6	0	0	0	1	0	0	0
110 OTC	4	4	0	1	0	0	0
111 CFE	198	140	34	337	0	0	0
112	24	0	4	7	0	0	0
113 CUC	4	0	6	1	0	0	0
115	0	8	0	0	0	0	0
125 EPE	213	94	17	269	0	0	0
126 LAC	19	8	6	21	0	0	0
127 PGT	102	37	9	56	0	0	0
128 US	1	1	0	0	0	0	0
129 PN2	443	157	1	499	0	0	0
130 PN1	29	10	9	47	0	0	0
131 NTU	2	2	0	0	0	0	0
132 SPS	2	2	0	1	0	0	0
133 TNP	18	10	1	25	0	0	0
134 MID	55	33	27	81	0	0	0
135 MWD	26	0	58	30	0	0	0
136 SDG	254	115	59	395	0	0	0
137 TID	42	19	8	54	0	0	0
300 CUST	249	74	286	275	0	0	0
301 CSC	39	0	4	6	0	0	0
312 WASN	47	15	34	78	0	0	0
313 RDG	58	31	8	64	0	0	0
318	0	0	0	7	0	0	0
319	0	0	0	4	0	0	0
338	0	0	0	4	0	0	0
345	0	0	0	1	0	0	0
401 BPD	22	23	1	12	0	0	0
402 BRE	5	14	0	1	0	0	0
403 CLT	4	4	2	1	0	0	0
404 COR	4	8	0	2	0	0	0
405 CPI	3	13	0	0	0	0	0
406 CPU	0	0	0	1	0	0	0
407 CRP	5	8	0	0	0	0	0
408 DEC	10	9	0	11	0	0	0
409 ELM	3	4	0	0	0	0	0
411 FRK	9	12	0	6	0	0	0
412 KLI	5	8	1	4	0	0	0
414 LKV	3	3	0	0	0	0	0
416 MCM	4	7	0	0	0	0	0
417 MEC	0	4	0	2	0	0	0
418 MN3	3	6	0	0	0	0	0
419 OKP	11	11	0	13	0	0	0
420 OPL	22	10	0	27	0	0	0
423 TIL	4	9	0	0	0	0	0
424 UMT	3	9	0	2	0	0	0

OWNER DATA (CONT.)

X--	OWNER	-X	BUSES	LOADS	MACHINES	BRANCHES	DC BUSES	FACTS DEVS	VSC DC
435	MN1		0	2	0	0	0	0	0
438	PACP		1	6	0	0	0	0	0
439	PAN		0	2	0	0	0	0	0
440	PEN		0	7	0	0	0	0	0
441	SEC		3	4	0	0	0	0	0
443	VID		3	3	0	0	0	0	0
444	BLC		0	5	0	0	0	0	0
445	CNE		0	4	0	0	0	0	0
446	FLT		3	7	0	0	0	0	0
447	FOR		1	3	0	0	0	0	0
448	RAT		2	0	0	0	0	0	0
449	CCN		2	3	0	0	0	0	0
450	MSV		0	2	0	0	0	0	0
451	FPLE		0	0	12	0	0	0	0
452	HPP		4	2	0	4	0	0	0
453	ESI		2	0	1	1	0	0	0
454	WASC		8	9	2	3	0	0	0
455	CREA		3	7	0	1	0	0	0
456	SUVL		3	6	0	0	0	0	0
458	FRED		0	0	2	3	0	0	0
460	TACG		7	3	5	7	0	0	0
461	KFAL		7	0	0	7	0	0	0
463	TRCB		6	1	3	6	0	0	0
464	GOLD		2	0	2	3	0	0	0
465	DUKE		4	2	3	4	0	0	0
467			6	0	6	6	0	0	0
468			4	1	5	4	0	0	0
469			7	0	6	7	0	0	0
470			0	0	3	0	0	0	0
471			3	0	2	3	0	0	0
473	MORR		1	0	1	0	0	0	0
474	KLAM		0	0	2	0	0	0	0
475			1	0	1	0	0	0	0
476	PMOR		2	0	0	0	0	0	0
620	MASI		1	1	0	0	0	0	0
621	MGLE		1	0	0	0	0	0	0
622	MSRE		1	1	0	0	0	0	0
623	MBRE		1	0	0	0	0	0	0
624	MFE		1	0	0	0	0	0	0
625	MYVE		3	0	0	0	0	0	0
626	MDNR		2	0	0	0	0	0	0
627	MUSF		1	0	0	0	0	0	0
629	MBGI		1	0	0	0	0	0	0
630	MMT1		1	0	0	0	0	0	0
631	MABE		2	0	0	0	0	0	0
632	MMSE		4	0	0	0	0	0	0
633	MTFE		1	0	0	0	0	0	0
999			0	0	0	1	0	0	0

Appendix G: 2008 LSP Zone 752 Case Data

WESTERN ELECTRICITY COORDINATING COUNCIL
2008 LSP1-S BASE CASE

BUS DATA

BUS#	NAME	BSKV	CODE	LOADS	VOLT	ANGLE	S	H	U	N	T	AREA	ZONE	OWNER
73003	AKRON	115.00	1	1	1.0247	74.8	0.0			0.0		73	752	73
73005	ALVIN	115.00	1	1	1.0233	74.3	0.0			0.0		73	752	73
73006	ANTON	115.00	1	1	1.0275	71.1	0.0			0.0		73	752	73
73007	ARAPASUB	115.00	1	1	1.0237	73.3	0.0			0.0		73	752	73
73010	ARICKARE	115.00	1	1	1.0258	70.9	0.0			0.0		73	752	73
73013	B.CK PS	115.00	1	1	1.0205	75.1	0.0			0.0		73	752	65
73014	B.CK PS	230.00	1	0	1.0569	75.1	0.0			0.0		73	752	65
73015	B.CK TRI	115.00	1	0	1.0208	75.0	0.0			0.0		73	752	73
73016	B.CK TRI	230.00	1	0	1.0532	75.1	0.0			0.0		73	752	73
73017	B.SANDY	115.00	1	0	1.0356	69.5	0.0			0.0		73	752	26
73018	B.SANDY	230.00	1	0	1.0179	69.0	0.0			0.0		73	752	26
73020	BEAVERCK	115.00	1	0	1.0207	75.0	0.0			0.0		73	752	26
73023	BIJOUTAP	115.00	1	2	1.0051	69.8	0.0			0.0		73	752	73
73025	BONNY CK	115.00	1	1	1.0289	74.3	0.0			0.0		73	752	73
73030	BRIGHTNW	115.00	1	1	1.0094	59.5	0.0			0.0		73	752	73
73031	BRUSHTAP	115.00	1	2	1.0158	73.9	0.0			0.0		73	752	73
73034	BURL PSC	115.00	1	1	1.0277	74.2	0.0			0.0		73	752	65
73035	BURLNGTN	115.00	1	0	1.0286	74.5	0.0			0.0		73	752	26
73036	BURLNGTN	230.00	1	0	1.0305	73.1	0.0			0.0		73	752	26
73047	DEERINGL	115.00	1	0	1.0291	74.8	0.0			0.0		73	752	26
73053	ECKLEY	115.00	1	1	1.0292	74.6	0.0			0.0		73	752	73
73059	FLEMING	115.00	1	2	1.0098	74.6	0.0			0.0		73	752	73
73063	FRENCHCK	115.00	1	2	1.0145	74.2	0.0			0.0		73	752	73
73065	GARY	115.00	1	1	1.0230	74.1	0.0			0.0		73	752	73
73080	HAXTUN	115.00	1	2	1.0115	74.4	0.0			0.0		73	752	73
73083	HELL CK	115.00	1	1	1.0285	73.9	0.0			0.0		73	752	73
73084	HELL TAP	115.00	1	0	1.0285	73.9	0.0			0.0		73	752	26
73088	HOYT	115.00	1	1	1.0063	68.0	0.0			0.0		73	752	73
73091	IDALIA	115.00	1	1	1.0292	74.3	0.0			0.0		73	752	73
73094	JOES	115.00	1	1	1.0245	70.7	0.0			0.0		73	752	73
73095	KERSEYTP	115.00	1	1	1.0062	64.1	0.0			0.0		73	752	73
73097	KIOWA CK	115.00	1	0	1.0042	68.1	0.0			0.0		73	752	26
73103	L.MEADOW	115.00	1	1	1.0052	68.0	0.0			0.0		73	752	73
73110	LIBERTY	115.00	1	1	1.0282	73.9	0.0			0.0		73	752	73
73117	LOST CK	115.00	1	1	1.0057	65.4	0.0			0.0		73	752	73
73125	LSCHANCE	115.00	1	1	1.0296	71.6	0.0			0.0		73	752	26
73136	MESSEX	115.00	1	1	1.0156	75.1	0.0			0.0		73	752	73
73142	N.YUMA	115.00	1	0	1.0328	75.2	0.0			0.0		73	752	26
73143	N.YUMA	230.00	1	0	1.0361	76.3	0.0			0.0		73	752	26
73147	ORCHARD	115.00	1	1	1.0042	68.1	0.0			0.0		73	752	73
73150	PEETZ	115.00	1	1	1.0115	77.5	0.0			0.0		73	752	26
73158	PROSPEC	115.00	1	0	1.0058	65.4	0.0			0.0		73	752	26
73159	PROSPVAL	115.00	1	1	1.0050	64.1	0.0			0.0		73	752	73
73166	REDWILLW	115.00	1	1	1.0314	75.0	0.0			0.0		73	752	73
73174	SAGEBRSH	115.00	1	1	1.0284	73.8	0.0			0.0		73	752	73

BUS DATA (CONT.)

BUS#	NAME	BSKV	CODE	LOADS	VOLT	ANGLE	S H U N T	AREA	ZONE	OWNER
73175	SANDHILL	115.00	1	1	1.0288	74.6	0.0 0.0	73	752	73
73184	SMOKYHLW	115.00	1	1	1.0292	73.5	0.0 0.0	73	752	73
73185	SO. FORK	115.00	1	1	1.0290	74.2	0.0 0.0	73	752	73
73191	STERLING	115.00	1	2	1.0067	75.2	0.0 0.0	73	752	73
73192	STORY	230.00	1	0	1.0538	75.1	0.0 0.0	73	752	26
73193	STORY	345.00	1	0	1.0551	75.8	0.0 0.0	73	752	26
73194	SWOODROW	115.00	1	1	1.0276	72.4	0.0 0.0	73	752	73
73206	VERNONTP	115.00	1	1	1.0307	74.6	0.0 0.0	73	752	26
73207	WAANIBE	115.00	1	1	1.0257	73.5	0.0 0.0	73	752	73
73208	WAGES	115.00	1	1	1.0219	74.4	0.0 0.0	73	752	73
73209	WANIBETP	115.00	1	0	1.0270	73.7	0.0 0.0	73	752	26
73210	WAUNETA	115.00	1	1	1.0199	74.2	0.0 0.0	73	752	73
73213	WIGGINS	115.00	1	1	1.0045	68.0	0.0 0.0	73	752	73
73221	WOODROW	115.00	1	1	1.0253	73.2	0.0 0.0	73	752	73
73223	WRAY	115.00	1	0	1.0322	74.9	0.0 0.0	73	752	26
73224	WRAY	230.00	1	0	1.0335	75.6	0.0 0.0	73	752	26
73225	WRAY TAP	115.00	1	0	1.0321	74.8	0.0 0.0	73	752	26
73230	YUMA	115.00	1	2	1.0284	74.8	0.0 0.0	73	752	73
73302	BRLNGTN1	13.800	2	0	1.0250	78.2	0.0 0.0	73	752	26
73303	BRLNGTN2	13.800	2	0	1.0250	78.2	0.0 0.0	73	752	26
73304	CRETESWT	115.00	1	0	1.0233	74.3	0.0 0.0	73	752	26
73305	EFMORGTP	115.00	1	0	1.0081	71.7	0.0 0.0	73	752	26
73309	BRLNGTN3	13.800	-2	0	1.0286	74.5	0.0 0.0	73	752	26
73310	FME	115.00	1	1	1.0078	71.7	0.0 0.0	73	752	26
73311	FMS	115.00	1	1	1.0071	71.4	0.0 0.0	73	752	26
73318	LIMON	115.00	1	1	1.0348	69.4	0.0 0.0	73	752	73
73326	ROBB	115.00	1	0	1.0296	74.6	0.0 0.0	73	752	73
73331	WRAYWAPA	115.00	1	2	1.0321	74.8	0.0 0.0	73	752	73
73370	LOSTCKTP	115.00	1	0	1.0057	65.4	0.0 0.0	73	752	73
73371	BETHELLM	115.00	1	0	1.0287	74.5	0.0 0.0	73	752	26
73372	OTIS LM	115.00	1	1	1.0273	74.8	0.0 0.0	73	752	73
73374	VERNONLM	115.00	1	1	1.0274	74.4	0.0 0.0	73	752	73
73377	EXCEL	115.00	1	1	1.0071	71.4	0.0 0.0	73	752	26
73378	FMN	115.00	1	1	1.0081	71.7	0.0 0.0	73	752	73
73379	FMWEST	115.00	1	1	1.0071	71.4	0.0 0.0	73	752	26
73464	ADENA	115.00	1	1	1.0115	71.3	0.0 0.0	73	752	73
73478	GALIEN	115.00	1	1	1.0078	74.9	0.0 0.0	73	752	73
73485	BURL KC	115.00	1	1	1.0279	74.3	0.0 0.0	73	752	73
73493	SANDCRK	115.00	1	0	1.0053	64.2	0.0 0.0	73	752	26
73501	RINNVALL	115.00	1	1	1.0146	57.7	0.0 0.0	73	752	73
73502	DACONO	115.00	1	1	1.0131	57.9	0.0 0.0	73	752	73
73503	ERIE TAP	115.00	1	0	1.0116	58.3	0.0 0.0	73	752	73
73531	LINCOLNT	230.00	1	0	1.0182	68.5	0.0 0.0	73	752	73
73532	LINCOLN1	13.800	2	0	1.0250	74.0	0.0 0.0	73	752	73
73533	LINCOLN2	13.800	2	0	1.0250	74.1	0.0 0.0	73	752	73
73535	LINCOLN3	13.800	-2	0	1.0182	68.5	0.0 0.0	73	752	73

LOAD DATA

BUS#	NAME	BSKV	ID	CD	ST	PSI	MVA-LOAD		CUR-LOAD		Y - LOAD		AREA	ZONE	OWNER
73003	AKRON	115	TS	1	1	1.000	1.2	0.4	0.0	0.0	0.0	0.0	73	752	73
73005	ALVIN	115	TS	1	1	1.000	4.6	1.5	0.0	0.0	0.0	0.0	73	752	73
73006	ANTON	115	TS	1	1	1.000	1.6	0.5	0.0	0.0	0.0	0.0	73	752	73
73007	ARAPASUB	115	TS	1	1	1.000	3.0	1.0	0.0	0.0	0.0	0.0	73	752	73
73010	ARICKARE	115	TS	1	1	1.000	0.7	0.2	0.0	0.0	0.0	0.0	73	752	73
73013	B.CK PS	115	PS	1	1	1.000	3.9	1.3	0.0	0.0	0.0	0.0	73	752	65
73023	BIJOUTAP	115	PS	1	1	1.000	0.3	0.1	0.0	0.0	0.0	0.0	73	752	65
73023	BIJOUTAP	115	TS	1	1	1.000	2.6	0.9	0.0	0.0	0.0	0.0	73	752	73
73025	BONNY CK	115	TS	1	1	1.000	1.3	0.4	0.0	0.0	0.0	0.0	73	752	73
73030	BRIGHTNW	115	TS	1	1	1.000	2.1	0.7	0.0	0.0	0.0	0.0	73	752	73
73031	BRUSHTAP	115	PS	1	1	1.000	2.2	0.7	0.0	0.0	0.0	0.0	73	752	65
73031	BRUSHTAP	115	TS	1	1	1.000	1.4	0.5	0.0	0.0	0.0	0.0	73	752	73
73034	BURL PSC	115	PS	1	1	1.000	0.3	0.1	0.0	0.0	0.0	0.0	73	752	65
73053	ECKLEY	115	TS	1	1	1.000	5.7	1.9	0.0	0.0	0.0	0.0	73	752	73
73059	FLEMING	115	MU	1	1	1.000	0.2	0.1	0.0	0.0	0.0	0.0	73	752	67
73059	FLEMING	115	TS	1	1	1.000	0.4	0.1	0.0	0.0	0.0	0.0	73	752	73
73063	FRENCHCK	115	MU	1	1	1.000	1.6	0.5	0.0	0.0	0.0	0.0	73	752	67
73063	FRENCHCK	115	TS	1	1	1.000	3.8	1.3	0.0	0.0	0.0	0.0	73	752	73
73065	GARY	115	TS	1	1	1.000	0.4	0.1	0.0	0.0	0.0	0.0	73	752	73
73080	HAXTUN	115	MU	1	1	1.000	0.7	0.2	0.0	0.0	0.0	0.0	73	752	67
73080	HAXTUN	115	TS	1	1	1.000	2.0	0.7	0.0	0.0	0.0	0.0	73	752	73
73083	HELL CK	115	TS	1	1	1.000	1.7	0.6	0.0	0.0	0.0	0.0	73	752	73
73088	HOYT	115	TS	1	1	1.000	1.0	0.3	0.0	0.0	0.0	0.0	73	752	73
73091	IDALIA	115	TS	1	1	1.000	3.9	1.3	0.0	0.0	0.0	0.0	73	752	73
73094	JOES	115	TS	1	1	1.000	3.6	1.2	0.0	0.0	0.0	0.0	73	752	73
73095	KERSEYTP	115	TS	1	1	1.000	13.9	4.6	0.0	0.0	0.0	0.0	73	752	73
73103	L.MEADOW	115	TS	1	1	1.000	0.9	0.3	0.0	0.0	0.0	0.0	73	752	73
73110	LIBERTY	115	TS	1	1	1.000	2.3	0.7	0.0	0.0	0.0	0.0	73	752	73
73117	LOST CK	115	TS	1	1	1.000	0.4	0.1	0.0	0.0	0.0	0.0	73	752	73
73125	LSCHANCE	115	TS	1	1	1.000	0.0	0.0	0.0	0.0	0.0	0.0	73	752	73
73136	MESSEX	115	TS	1	1	1.000	0.6	0.2	0.0	0.0	0.0	0.0	73	752	73
73147	ORCHARD	115	TS	1	1	1.000	3.0	1.0	0.0	0.0	0.0	0.0	73	752	73
73150	PEETZ	115	PS	1	1	1.000	0.2	0.1	0.0	0.0	0.0	0.0	73	752	65
73159	PROSPVAL	115	TS	1	1	1.000	2.1	0.7	0.0	0.0	0.0	0.0	73	752	73
73166	REDWILLW	115	TS	1	1	1.000	2.3	0.8	0.0	0.0	0.0	0.0	73	752	73
73174	SAGEBRSH	115	TS	1	1	1.000	1.1	0.3	0.0	0.0	0.0	0.0	73	752	73
73175	SANDHILL	115	TS	1	1	1.000	4.6	1.5	0.0	0.0	0.0	0.0	73	752	73
73184	SMOKYHLW	115	TS	1	1	1.000	2.6	0.9	0.0	0.0	0.0	0.0	73	752	73
73185	SO. FORK	115	TS	1	1	1.000	0.7	0.2	0.0	0.0	0.0	0.0	73	752	73
73191	STERLING	115	PS	1	1	1.000	10.2	3.4	0.0	0.0	0.0	0.0	73	752	65
73191	STERLING	115	TS	1	1	1.000	10.8	3.6	0.0	0.0	0.0	0.0	73	752	73
73194	SWOODROW	115	TS	1	1	1.000	0.5	0.2	0.0	0.0	0.0	0.0	73	752	73
73207	WAANIBE	115	TS	1	1	1.000	8.9	2.9	0.0	0.0	0.0	0.0	73	752	73
73208	WAGES	115	TS	1	1	1.000	5.7	1.9	0.0	0.0	0.0	0.0	73	752	73
73210	WAUNETA	115	TS	1	1	1.000	5.1	1.7	0.0	0.0	0.0	0.0	73	752	73
73213	WIGGINS	115	TS	1	1	1.000	1.8	0.6	0.0	0.0	0.0	0.0	73	752	73
73221	WOODROW	115	TS	1	1	1.000	0.5	0.1	0.0	0.0	0.0	0.0	73	752	73
73230	YUMA	115	MU	1	1	1.000	1.8	0.6	0.0	0.0	0.0	0.0	73	752	67

LOAD DATA (CONT.)

BUS#	NAME	BSKV	ID	CD	ST	PSI	MVA-LOAD		CUR-LOAD		Y - LOAD		AREA	ZONE	OWNER
73230	YUMA	115	TS	1	1	1.000	9.1	3.0	0.0	0.0	0.0	0.0	73	752	73
73310	FME	115	MU	1	1	1.000	4.0	1.3	0.0	0.0	0.0	0.0	73	752	67
73311	FMS	115	MU	1	1	1.000	3.7	1.2	0.0	0.0	0.0	0.0	73	752	67
73318	LIMON	115	TS	1	1	1.000	5.5	1.8	0.0	0.0	0.0	0.0	73	752	73
73331	WRAYWAPA	115	MU	1	1	1.000	1.5	0.5	0.0	0.0	0.0	0.0	73	752	67
73331	WRAYWAPA	115	TS	1	1	1.000	1.9	0.6	0.0	0.0	0.0	0.0	73	752	73
73372	OTIS LM	115	TS	1	1	1.000	2.6	0.9	0.0	0.0	0.0	0.0	73	752	73
73374	VERNONLM	115	TS	1	1	1.000	2.7	0.9	0.0	0.0	0.0	0.0	73	752	73
73377	EXCEL	115	MU	1	1	1.000	3.1	1.0	0.0	0.0	0.0	0.0	73	752	67
73378	FMN	115	TS	1	1	1.000	1.5	0.5	0.0	0.0	0.0	0.0	73	752	73
73379	FMWEST	115	MU	1	1	1.000	2.2	0.7	0.0	0.0	0.0	0.0	73	752	67
73464	ADENA	115	TS	1	1	1.000	0.8	0.3	0.0	0.0	0.0	0.0	73	752	73
73478	GALIEN	115	TS	1	1	1.000	2.4	0.8	0.0	0.0	0.0	0.0	73	752	73
73501	RINNVALL	115	TS	1	1	1.000	6.1	2.0	0.0	0.0	0.0	0.0	73	752	73
73502	DACONO	115	TS	1	1	1.000	5.1	1.7	0.0	0.0	0.0	0.0	73	752	73

GENERATING PLANT DATA

BUS#	NAME	BSKV	COD	MCNS	PGEN	QGEN	QMAX	QMIN	VSCHED	VACT.	PCT Q	REMOTE
73302	BRLNGTN113.8		2	1	45.1	-3.1	16.0	-16.0	1.0250	1.0250	100.0	
73303	BRLNGTN213.8		2	1	45.1	-3.1	16.0	-16.0	1.0250	1.0250	100.0	
73309	BRLNGTN313.8		-2	1	0.0	0.0	0.0	0.0	1.0250	1.0286	100.0	
73532	LINCOLN113.8		2	1	77.0	7.4	25.0	-15.0	1.0250	1.0250	100.0	
73533	LINCOLN213.8		2	1	77.0	7.7	25.0	-15.0	1.0250	1.0250	100.0	
73535	LINCOLN313.8		-2	1	0.0	0.0	0.0	0.0	1.0250	1.0182	100.0	

GENERATOR UNIT DATA

BUS#	NAME	BSKV	CD	ID	ST	PGEN	QGEN	QMAX	QMIN	PMAX	PMIN	OWN	FRACT	OWN	FRACT	MBASE	Z	S	O	R	C	E	X	T	R	A	N	GENTAP
73302	BRLNGTN113.8		2	1	1	45.1	-3.1	16.0	-16.0	60.0	0.0	73	1.000			100.0	0.0000	1.0000										
73303	BRLNGTN213.8		2	1	1	45.1	-3.1	16.0	-16.0	60.0	0.0	73	1.000			100.0	0.0000	1.0000										
73309	BRLNGTN313.8		-2	1	0	50.0	0.0	15.0	-15.0	50.0	0.0	26	1.000			100.0	0.0000	1.0000										
73532	LINCOLN113.8		2	1	1	77.0	7.4	25.0	-15.0	77.0	0.0	73	1.000			100.0	0.0000	1.0000										
73533	LINCOLN213.8		2	1	1	77.0	7.7	25.0	-15.0	77.0	0.0	73	1.000			100.0	0.0000	1.0000										
73535	LINCOLN313.8		-2	1	0	80.0	0.0	25.0	-15.0	80.0	0.0	73	1.000			100.0	0.0000	1.0000										

SWITCHED SHUNT DATA

BUS#	MOD	VHI	VLO	SHUNT	X-------X	X-------X	X-------X	X-------X	REMOTE	VSC	NAME
73017	1	1.0500	0.9800	-12.00	1: -12.00	1: -24.00					
73020	1	1.0350	0.9650	39.00	1: -10.00	1: 13.00	1: 26.00				
73035	1	1.0500	0.9800	0.00	2: -7.50	2: 7.50					
73142	1	1.0500	1.0000	0.00	1: -24.00						
73184	1	1.0400	0.9900	7.50	1: 7.50	1: 7.50					
73191	0	1.0300	0.9800	0.00	1: 7.50						
73192	1	1.0350	0.9650	-50.00	1: -25.00	1: -25.00					
73223	1	1.0500	0.9800	0.00	2: -12.00	2: 6.80	1: 13.00				

BRANCH DATA

X------FROM------X			X-------TO-------X							Z	S										
BUS#	NAME	BSKV	BUS#	NAME	BSKV	CKT	LINE R	LINE X	CHRGING	I	T	RATEA	RATEB	RATEC	LENGTH	OWN1	FRAC1	OWN2	FRAC2	OWN3	FRAC3
70005	BRUSHCPP	115*	73013	B.CK PS	115	1	0.00437	0.01578	0.00246		1	162.0	162.0	162.0	0.0	65	1.000				
70005	BRUSHCPP	115*	73013	B.CK PS	115	2	0.00345	0.01498	0.00250		1	187.0	187.0	187.0	0.0	65	1.000				
70311	PAWNEE	230	73192	STORY	230*	1	0.00189	0.01447	0.03156		1	576.0	576.0	576.0	0.0	94	1.000				
73003	AKRON	115*	73020	BEAVERCK	115	1	0.06480	0.13320	0.01560		1	84.9	0.0	0.0	22.2	26	1.000				
73003	AKRON	115	73372	OTIS LM	115*	1	0.05040	0.10360	0.01220		1	84.9	0.0	0.0	17.3	26	1.000				
73005	ALVIN	115	73175	SANDHILL	115*	1	0.02330	0.09030	0.01160		1	95.0	0.0	0.0	15.6	26	1.000				
73005	ALVIN	115	73210	WAUNETA	115*	1	0.02660	0.06220	0.00680		1	67.0	0.0	0.0	10.0	26	1.000				
73005	ALVIN	115	73304	CRETESWT	115*	1	0.00850	0.03280	0.00420		1	95.0	0.0	0.0	5.7	26	1.000				
73006	ANTON	115	73010	ARICKARE	115*	1	0.04760	0.09770	0.01000		1	55.0	0.0	0.0	14.5	26	1.000				
73006	ANTON	115	73125	LSCHANCE	115*	1	0.06480	0.15160	0.01660		1	67.0	0.0	0.0	24.3	26	1.000				
73007	ARAPASUB	115	73207	WAANIBE	115*	1	0.06130	0.13900	0.01620		1	67.0	0.0	0.0	23.0	26	1.000				
73010	ARICKARE	115	73094	JOES	115*	1	0.02170	0.08380	0.01080		1	95.0	0.0	0.0	14.5	26	1.000				
73013	B.CK PS	115	73020	BEAVERCK	115*	1	0.00000	0.00030	0.00000		1	319.0	0.0	0.0	0.0	26	1.000				
73014	B.CK PS	230	73192	STORY	230*	1	0.00030	0.00200	0.00180		1	413.5	0.0	0.0	0.5	26	1.000				
73015	B.CK TRI	115	73020	BEAVERCK	115*	1	0.00000	0.00030	0.00000		1	200.0	0.0	0.0	0.0	26	1.000				
73016	B.CK TRI	230	73192	STORY	230*	1	0.00030	0.00200	0.00180		1	413.5	0.0	0.0	0.1	26	1.000				
73017	B.SANDY	115	73125	LSCHANCE	115*	1	0.05500	0.17950	0.02260		1	109.0	0.0	0.0	30.3	26	1.000				
73017	B.SANDY	115	73318	LIMON	115*	1	0.00660	0.02280	0.00280		1	85.1	0.0	0.0	3.9	26	1.000				
73018	B.SANDY	230	73036	BURLNGTN	230*	1	0.01520	0.11860	0.23418		1	281.0	0.0	0.0	80.5	26	1.000				
73018	B.SANDY	230	73531	LINCOLNT	230*	1	0.00119	0.01190	0.02457		1	239.0	0.0	0.0	8.5	26	1.000				
73020	BEAVERCK	115	73031	BRUSHTAP	115*	1	0.00700	0.02690	0.00360		1	135.0	0.0	0.0	0.8	26	1.000				
73020	BEAVERCK	115	73065	GARY	115*	1	0.01650	0.05370	0.00680		1	109.0	0.0	0.0	9.3	26	1.000				
73020	BEAVERCK	115	73136	MESSEX	115*	1	0.02360	0.08290	0.01060		1	121.7	0.0	0.0	14.7	26	1.000				
73020	BEAVERCK	115*	73464	ADENA	115	1	0.03040	0.09910	0.01240		1	109.0	0.0	0.0	17.0	26	1.000				
73023	BIJOUTAP	115	73097	KIOWA CK	115*	1	0.01440	0.05530	0.00720		1	121.7	0.0	0.0	8.7	26	1.000				
73023	BIJOUTAP	115	73379	FMWEST	115*	1	0.01150	0.04460	0.00580		1	80.0	0.0	0.0	6.2	26	1.000				
73025	BONNY CK	115	73035	BURLNGTN	115*	1	0.01940	0.07058	0.00848		1	146.0	0.0	0.0	11.8	26	1.000				
73025	BONNY CK	115*	73185	SO. FORK	115	1	0.00760	0.02767	0.00332		1	146.0	0.0	0.0	4.6	26	1.000				
73030	BRIGHTNW	115	73493	SANDCRK	115*	1	0.04055	0.13207	0.01658		1	85.1	0.0	0.0	25.0	26	1.000				
73030	BRIGHTNW	115	73503	ERIE TAP	115*	1	0.01086	0.03528	0.00444		1	85.1	0.0	0.0	0.0	26	1.000				
73031	BRUSHTAP	115	73305	EFMORGTP	115*	1	0.01360	0.05240	0.00680		1	121.7	0.0	0.0	12.0	26	1.000				
73034	BURL PSC	115	73209	WANIBETP	115*	1	0.02933	0.06057	0.00711		1	67.0	0.0	0.0	10.0	26	1.000				
73034	BURL PSC	115	73485	BURL KC	115*	1	0.00585	0.01209	0.00142		1	67.0	0.0	0.0	2.0	26	1.000				
73035	BURLNGTN	115	73485	BURL KC	115*	1	0.00568	0.01173	0.00138		1	67.0	0.0	0.0	1.9	26	1.000				
73047	DEERINGL	115	73053	ECKLEY	115*	1	0.02950	0.06050	0.00700		1	84.9	0.0	0.0	10.1	26	1.000				
73047	DEERINGL	115	73142	N.YUMA	115*	1	0.01397	0.04912	0.00640		1	146.0	0.0	0.0	8.5	26	1.000				
73047	DEERINGL	115	73230	YUMA	115*	1	0.00422	0.00680	0.00066		1	55.0	0.0	0.0	1.0	26	1.000				
73047	DEERINGL	115	73372	OTIS LM	115*	1	0.02360	0.04840	0.00560		1	84.9	0.0	0.0	8.1	26	1.000				
73049	DELCAMIN	115*	73501	RINNVALL	115	1	0.00790	0.03228	0.00387		1	174.3	0.0	0.0	0.0	26	1.000				
73053	ECKLEY	115	73225	WRAY TAP	115*	1	0.04130	0.08480	0.01000		1	84.9	0.0	0.0	14.1	26	1.000				
73053	ECKLEY	115	73326	ROBB	115*	1	0.03950	0.08160	0.00960		1	67.0	0.0	0.0	13.5	26	1.000				
73053	ECKLEY	115*	73371	BETHELLM	115	1	0.03510	0.07250	0.00860		1	67.0	0.0	0.0	12.0	26	1.000				
73059	FLEMING	115	73080	HAXTUN	115*	1	0.01890	0.06610	0.00840		1	121.7	0.0	0.0	11.5	26	1.000				
73059	FLEMING	115	73478	GALIEN	115*	1	0.01844	0.06461	0.00835		1	80.0	0.0	0.0	11.1	26	1.000				
73063	FRENCHCK	115	73080	HAXTUN	115*	1	0.02670	0.09330	0.01200		1	121.7	0.0	0.0	16.2	26	1.000				
73063	FRENCHCK	115	73210	WAUNETA	115*	1	0.02740	0.10290	0.01280		1	80.0	0.0	0.0	18.0	26	1.000				
73065	GARY	115	73221	WOODROW	115*	1	0.01640	0.05350	0.00680		1	109.0	0.0	0.0	9.3	26	1.000				

BRANCH DATA (CONT.)

X------FROM------X			X-------TO-------X							Z	S										
BUS#	NAME	BSKV	BUS#	NAME	BSKV	CKT	LINE R	LINE X	CHRGING	I	T	RATEA	RATEB	RATEC	LENGTH	OWN1	FRAC1	OWN2	FRAC2	OWN3	FRAC3
73083	HELL CK	115	73084	HELL TAP	115*	1	0.00350	0.01360	0.00180		1	95.0	0.0	0.0	2.4	26	1.000				
73083	HELL CK	115	73174	SAGEBRSH	115*	1	0.02230	0.08610	0.01100		1	95.0	0.0	0.0	14.9	26	1.000				
73084	HELL TAP	115	73110	LIBERTY	115*	1	0.00750	0.02910	0.00380		1	95.0	0.0	0.0	5.0	26	1.000				
73084	HELL TAP	115	73185	SO. FORK	115*	1	0.02840	0.10970	0.01400		1	95.0	0.0	0.0	30.0	26	1.000				
73088	HOYT	115	73103	L.MEADOW	115*	1	0.02970	0.04940	0.00500		1	40.0	0.0	0.0	7.2	26	1.000				
73088	HOYT	115*	73464	ADENA	115	1	0.02680	0.08700	0.01100		1	109.0	0.0	0.0	15.0	26	1.000				
73088	HOYT	115*	73493	SANDCRK	115	1	0.03235	0.10533	0.01322		1	109.0	0.0	0.0	16.0	26	1.000				
73091	IDALIA	115	73185	SO. FORK	115*	1	0.01872	0.06190	0.00800		1	146.0	0.0	0.0	10.7	26	1.000				
73091	IDALIA	115	73206	VERNONTP	115*	1	0.02641	0.08730	0.01120		1	146.0	0.0	0.0	15.1	26	1.000				
73095	KERSEYTP	115	73158	PROSPEC	115*	1	0.01170	0.04510	0.00580		1	109.0	0.0	0.0	7.9	26	1.000				
73095	KERSEYTP	115	73211	WELD LM	115*	1	0.03230	0.12400	0.01620		1	121.7	0.0	0.0	21.6	26	1.000				
73097	KIOWA CK	115	73147	ORCHARD	115*	1	0.00000	0.00030	0.00000		1	121.7	0.0	0.0	0.1	26	1.000				
73097	KIOWA CK	115	73158	PROSPEC	115*	1	0.02000	0.09000	0.01000		1	121.7	0.0	0.0	16.3	26	1.000				
73097	KIOWA CK	115	73213	WIGGINS	115*	1	0.02000	0.04000	0.00480		1	59.6	0.0	0.0	7.4	26	1.000				
73103	L.MEADOW	115	73213	WIGGINS	115*	1	0.02000	0.04000	0.00400		1	59.6	0.0	0.0	5.9	26	1.000				
73108	LAR.RIVR	345	73193	STORY	345*	1	0.00543	0.08428	1.50066		1	956.1	0.0	0.0	169.0	26	1.000				
73117	LOST CK	115	73370	LOSTCKTP	115*	1	0.00000	0.00030	0.00000		1	5.0	0.0	0.0	4.1	26	1.000				
73125	LSCHANCE	115	73194	SWOODROW	115*	1	0.01440	0.04690	0.00600		1	109.0	0.0	0.0	8.1	26	1.000				
73136	MESSEX	115	73191	STERLING	115*	1	0.03500	0.12310	0.01580		1	121.7	0.0	0.0	21.4	26	1.000				
73142	N.YUMA	115*	73166	REDWILLW	115	1	0.00750	0.02900	0.00371		1	174.0	0.0	0.0	5.0	26	1.000				
73143	N.YUMA	230	73180	SIDNEY	230*	1	0.01540	0.11750	0.23640		1	566.0	0.0	0.0	80.4	26	1.000				
73143	N.YUMA	230	73192	STORY	230*	1	0.00939	0.06685	0.13136		1	281.0	0.0	0.0	45.2	26	1.000				
73143	N.YUMA	230	73224	WRAY	230*	1	0.00639	0.04540	0.08920		1	281.0	0.0	0.0	30.7	26	1.000				
73150	PEETZ	115	73179	SIDNEY	115*	1	0.03250	0.09630	0.01200		1	109.0	0.0	0.0	39.2	26	1.000				
73150	PEETZ	115	73191	STERLING	115*	1	0.04460	0.13220	0.01640		1	85.1	0.0	0.0	22.7	26	1.000				
73158	PROSPEC	115*	73370	LOSTCKTP	115	1	0.03000	0.05000	0.00500		1	59.6	0.0	0.0	8.1	26	1.000				
73159	PROSPVAL	115*	73493	SANDCRK	115	1	0.01000	0.03000	0.00529		1	124.0	124.0	0.0	6.6	26	1.000				
73166	REDWILLW	115	73208	WAGES	115*	1	0.07320	0.11806	0.01140		1	55.0	0.0	0.0	17.0	26	1.000				
73175	SANDHILL	115	73223	WRAY	115*	1	0.01110	0.04280	0.00548		1	95.0	0.0	0.0	7.4	26	1.000				
73184	SMOKYHLW	115	73209	WANIBETP	115*	1	0.01620	0.03780	0.00420		1	67.0	0.0	0.0	6.1	26	1.000				
73191	STERLING	115	73478	GALIEN	115*	1	0.01336	0.04679	0.00605		1	80.0	0.0	0.0	19.4	26	1.000				
73194	SWOODROW	115	73221	WOODROW	115*	1	0.01670	0.05440	0.00680		1	109.0	0.0	0.0	9.4	26	1.000				
73196	TERRY	115	73503	ERIE TAP	115*	1	0.02534	0.08232	0.01036		1	85.1	0.0	0.0	0.0	26	1.000				
73206	VERNONTP	115	73223	WRAY	115*	1	0.01570	0.05520	0.00720		1	95.0	0.0	0.0	9.6	26	1.000				
73207	WAANIBE	115	73209	WANIBETP	115*	1	0.00800	0.01810	0.00220		1	67.0	0.0	0.0	3.0	26	1.000				
73208	WAGES	115	73210	WAUNETA	115*	1	0.03180	0.07430	0.00820		1	67.0	0.0	0.0	11.9	26	1.000				
73223	WRAY	115	73225	WRAY TAP	115*	1	0.00070	0.00280	0.00040		1	95.0	0.0	0.0	0.5	26	1.000				
73225	WRAY TAP	115	73331	WRAYWAPA	115*	1	0.00000	0.00030	0.00000		1	85.0	0.0	0.0	2.0	26	1.000				
73305	EFMORGTP	115	73310	FME	115*	1	0.00450	0.00670	0.00000		1	60.0	0.0	0.0	3.1	26	1.000				
73305	EFMORGTP	115	73378	FMN	115*	1	0.00000	0.00030	0.00000		1	60.0	0.0	0.0	6.9	26	1.000				
73305	EFMORGTP	115	73379	FMWEST	115*	1	0.00250	0.00980	0.00120		1	121.0	0.0	0.0	2.9	26	1.000				
73311	FMS	115*	73377	EXCEL	115	1	0.00000	0.00030	0.00000		1	60.0	0.0	0.0	3.4	26	1.000				
73311	FMS	115	73379	FMWEST	115*	1	0.00000	0.00030	0.00000		1	60.0	0.0	0.0	3.0	26	1.000				
73371	BETHELLM	115	73374	VERNONLM	115*	1	0.03750	0.07740	0.00900		1	67.0	0.0	0.0	12.9	26	1.000				
73413	MIDWAYBR	230*	73531	LINCOLNT	230	1	0.01011	0.10140	0.20943		1	239.0	0.0	0.0	70.1	73	1.000				
73501	RINNVALL	115*	73502	DACONO	115	1	0.00483	0.01972	0.00236		1	174.3	0.0	0.0	0.0	26	1.000				
73502	DACONO	115	73503	ERIE TAP	115*	1	0.00731	0.02988	0.00358		1	174.3	0.0	0.0	0.0	26	1.000				

LINE SHUNT DATA

X------FROM------X			X-------TO-------X						
BUS#	NAME	BSKV	BUS#	NAME	BSKV	CKT	LINE G,B (FROM)	LINE G,B (TO)	ST
73108	LAR.RIVR	345	73193	STORY	345	1	0.0000 -0.3000	0.0000 0.0000	1

2 WINDING XFRMER
IMPEDANCE DATA

X------FROM------X			X-------TO-------X				XFRMER	C	C												
BUS#	NAME	BSKV	BUS#	NAME	BSKV	CKT	NAME	Z	M	R 1-2	X 1-2	W1BASE	MAG1	MAG2	RATA	RATB	RATC	TBL	NOMINAL R,X	OWN	FRACT
73013	B.CK PS	115	73014	B.CK PS	230	1	B.CK PS	2	1	0.00450	0.04960	100.0	0.0000	0.0000	224	0	0	0		26	1.000
73015	B.CK TRI	115	73016	B.CK TRI	230	1	B.CK TRI	2	1	0.00450	0.04960	100.0	0.0000	0.0000	224	0	0	0		26	1.000
73017	B.SANDY	115	73018	B.SANDY	230	1	B.SANDY	2	1	0.00100	0.06100	100.0	0.0000	0.0000	167	0	0	0		77	1.000
73035	BURLNGTN	115	73036	BURLNGTN	230	1	BURLNGTN	2	1	0.00360	0.09940	100.0	0.0000	0.0000	100	0	0	0		73	1.000
73035	BURLNGTN	115	73036	BURLNGTN	230	2	BURLNGTN	2	1	0.00187	0.06927	100.0	0.0000	0.0000	167	0	0	0		73	1.000
73035	BURLNGTN	115	73302	BRLNGTN113.8		1	BRLNGTN1	2	1	0.00720	0.15130	100.0	0.0000	0.0000	70	0	0	0		73	1.000
73035	BURLNGTN	115	73303	BRLNGTN213.8		1	BRLNGTN2	2	1	0.00710	0.15100	100.0	0.0000	0.0000	70	0	0	0		73	1.000
73035	BURLNGTN	115	73309	BRLNGTN313.8		1	BRLNGTN3	2	1	0.00710	0.15100	100.0	0.0000	0.0000	70	0	0	0		73	1.000
73142	N.YUMA	115	73143	N.YUMA	230	1	N.YUMA	2	1	0.00120	0.06800	100.0	0.0000	0.0000	167	0	0	0		26	1.000
73192	STORY	230	73193	STORY	345	1	STORY	2	1	0.00020	0.01290	100.0	0.0000	0.0000	500	0	0	0		26	1.000
73192	STORY	230	73193	STORY	345	2	STORY	2	1	0.00020	0.01370	100.0	0.0000	0.0000	500	0	0	0		26	1.000
73223	WRAY	115	73224	WRAY	230	1	WRAY	2	1	0.00150	0.04670	100.0	0.0000	0.0000	186	0	0	0		26	1.000
73531	LINCOLNT	230	73532	LINCOLN113.8		1	LINCOLN1	2	1	0.00283	0.13060	100.0	0.0000	0.0000	120	0	0	0		65	1.000
73531	LINCOLNT	230	73533	LINCOLN213.8		1	LINCOLN2	2	1	0.00223	0.13112	100.0	0.0000	0.0000	120	0	0	0		65	1.000
73531	LINCOLNT	230	73535	LINCOLN313.8		1	LINCOLN3	2	1	0.00283	0.13060	100.0	0.0000	0.0000	120	0	0	0		65	1.000

2 WINDING XFRMER
TAP & CONTROL DATA

X------FROM------X			X-------TO-------X				S	M	W	C										X--CONTROLLED BUS-X		
BUS#	NAME	BSKV	BUS#	NAME	BSKV	CKT	T	T	1	W	WINDV1	NOMV1	ANGLE	WINDV2	NOMV2	CN	RMAX	RMIN	VMAX	VMIN	NTPS	BUS# NAME	BSKV	CR
CX																								
73013	B.CK PS	115	73014	B.CK PS	230	1	1	F	F	2	103.50	115.0	0.0	230.00	230.0	1	126.50	103.50	1.0200	1.0100	33	-73013 B.CK PS	115	
73015	B.CK TRI	115	73016	B.CK TRI	230	1	1	F	F	2	112.84	115.0	0.0	230.00	230.0	1	126.50	103.50	1.0400	1.0000	33	-73015 B.CK TRI	115	
73017	B.SANDY	115	73018	B.SANDY	230	1	1	F	F	2	118.59	115.0	0.0	230.00	230.0	1	126.50	103.50	1.0400	1.0000	33	-73017 B.SANDY	115	
73035	BURLNGTN	115	73036	BURLNGTN	230	1	1	F	F	2	115.00	115.0	0.0	230.00	230.0	0	1.1000	0.9000	1.1000	0.9000	33			
73035	BURLNGTN	115	73036	BURLNGTN	230	2	1	F	F	2	115.00	115.0	0.0	230.00	230.0	0	1.1000	0.9000	1.1000	0.9000	33			
73035	BURLNGTN	115	73302	BRLNGTN113.8		1	1	F	F	2	115.00	115.0	0.0	13.800	13.80	0	1.1000	0.9000	1.1000	0.9000	33			
73035	BURLNGTN	115	73303	BRLNGTN213.8		1	1	F	F	2	115.00	115.0	0.0	13.800	13.80	0	1.1000	0.9000	1.1000	0.9000	33			
73035	BURLNGTN	115	73309	BRLNGTN313.8		1	1	F	F	2	115.00	115.0	0.0	13.800	13.80	0	1.1000	0.9000	1.1000	0.9000	33			
73142	N.YUMA	115	73143	N.YUMA	230	1	1	F	F	2	115.00	115.0	0.0	230.00	230.0	0	1.1000	0.9000	1.1000	0.9000	33			
73192	STORY	230	73193	STORY	345	1	1	F	F	2	230.00	230.0	0.0	345.00	345.0	0	1.1000	0.9000	1.1000	0.9000	33			
73192	STORY	230	73193	STORY	345	2	1	F	F	2	230.00	230.0	0.0	345.00	345.0	0	1.1000	0.9000	1.1000	0.9000	33			
73223	WRAY	115	73224	WRAY	230	1	1	T	T	2	229.57	230.0	0.0	115.00	115.0	1	257.60	188.60	1.0400	1.0000	33	-73224 WRAY	230	
73531	LINCOLNT	230	73532	LINCOLN113.8		1	1	F	F	2	230.00	230.0	0.0	13.800	13.80	0	1.1000	0.9000	1.1000	0.9000	33			
73531	LINCOLNT	230	73533	LINCOLN213.8		1	1	F	F	2	230.00	230.0	0.0	13.800	13.80	0	1.1000	0.9000	1.1000	0.9000	33			
73531	LINCOLNT	230	73535	LINCOLN313.8		1	1	F	F	2	230.00	230.0	0.0	13.800	13.80	0	1.1000	0.9000	1.1000	0.9000	33			

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3 WINDING XFRMER
IMPEDANCE DATA
  XFRMER  X--WINDING 1 BUS-X X--WINDING 2 BUS-X X--WINDING 3 BUS-X     S C
   NAME    BUS# NAME    BSKV  BUS# NAME    BSKV  BUS# NAME    BSKV CKT T Z   R 1-2    X 1-2    R 2-3    X 2-3    R 3-1    X 3-1  OWNR FRACT

                                  * NONE *

3 WINDING XFRMER
WINDING DATA
  XFRMER  X---WINDING BUS--X  S C C C                                                                          STAR POINT BUS
   NAME    BUS# NAME    BSKV  T W Z M  R WNDNG  X WNDNG  WBASE WIND V NOM V  ANGLE RATA RATB RATC  MAG1  MAG2  VOLTAGE  ANGLE TBL   NOMINAL R,X

                                  * NONE *

3 WINDING XFRMER
CONTROL DATA
  XFRMER  X--WINDING 1 BUS-X C C                                    X--CONTROLLED BUS-X                  X------- NOMINAL IMPEDANCES ------X
   NAME    BUS# NAME    BSKV W Z CN  RMAX   RMIN   VMAX   VMIN  NTPS   BUS# NAME    BSKV    CR      CX   TBL   R 1-2    X 1-2    R 3-1    X 3-1

                                  * NONE *

TRANSFORMER Z
CORRECTION DATA
 IMPEDANCE CORRECTION TABLE  1 IS A FUNCTION OF TRANSFORMER TURNS RATIO
 ENTRY 1      2      3      4
 RA 0.8750 1.0000 1.0250 1.1750
 *F 1.1200 1.0000 0.9790 0.8950

 IMPEDANCE CORRECTION TABLE  2 IS A FUNCTION OF TRANSFORMER TURNS RATIO
 ENTRY 1      2      3
 RA 0.9000 1.0000 1.1000
 *F 1.3000 1.0000 0.8300

 IMPEDANCE CORRECTION TABLE  4 IS A FUNCTION OF TRANSFORMER PHASE SHIFT ANGLE
 ENTRY 1      2      3      4      5      6      7      8      9     10     11
 AN  -45.0  -36.0  -27.0  -18.0   -9.0    0.0    9.0   18.0   27.0   36.0   45.0
 *F 1.7430 1.4280 1.2670 1.1570 1.0740 1.0000 1.1380 1.3050 1.4980 1.7190 1.9720

 IMPEDANCE CORRECTION TABLE  5 IS A FUNCTION OF TRANSFORMER PHASE SHIFT ANGLE
 ENTRY 1      2      3      4      5      6      7      8      9     10     11
 AN  -45.0  -36.0  -27.0  -18.0   -9.0    0.0    9.0   18.0   27.0   36.0   45.0
 *F 1.7250 1.4180 1.2600 1.1530 1.0730 1.0000 1.1350 1.3000 1.4890 1.7050 1.9520

 IMPEDANCE CORRECTION TABLE  6 IS A FUNCTION OF TRANSFORMER PHASE SHIFT ANGLE
 ENTRY 1      2      3
 AN  -45.0    0.0   45.0
 *F 2.0730 1.0000 2.0730
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TRANSFORMER Z
CORRECTION DATA (CONT.)
 IMPEDANCE CORRECTION TABLE  7 IS A FUNCTION OF TRANSFORMER PHASE SHIFT ANGLE
 ENTRY 1      2      3      4      5      6      7      8      9     10     11
 AN  -58.3  -46.6  -35.0  -23.3  -11.6    0.0   11.7   23.3   35.0   46.6   58.3
 *F 1.5420 1.3170 1.2110 1.1630 1.1130 1.0000 1.0200 1.0880 1.2000 1.3520 1.5390

 IMPEDANCE CORRECTION TABLE  9 IS A FUNCTION OF TRANSFORMER PHASE SHIFT ANGLE
 ENTRY 1      2      3      4      5      6      7      8      9
 AN  -40.0  -30.0  -20.0  -10.0    0.0   10.0   20.0   30.0   40.0
 *F 1.4000 1.3000 1.2000 1.1000 1.0000 1.1000 1.2000 1.3000 1.4000

 IMPEDANCE CORRECTION TABLE 10 IS A FUNCTION OF TRANSFORMER PHASE SHIFT ANGLE
 ENTRY 1      2      3      4      5      6      7      8      9
 AN  -36.0  -27.0  -18.0   -9.0    0.0    9.0   18.0   27.0   36.0
 *F 1.6400 1.3600 1.1600 1.0400 1.0000 1.0400 1.1600 1.3600 1.6400

 IMPEDANCE CORRECTION TABLE 11 IS A FUNCTION OF TRANSFORMER PHASE SHIFT ANGLE
 ENTRY 1      2      3      4      5      6      7      8      9     10     11
 AN  -34.0  -27.2  -20.4  -13.6   -6.8    0.0    6.8   13.6   20.4   27.2   34.0
 *F 2.0110 1.6750 1.3930 1.1790 1.0450 1.0000 1.0450 1.1790 1.3930 1.6750 2.0110

 IMPEDANCE CORRECTION TABLE 13 IS A FUNCTION OF TRANSFORMER PHASE SHIFT ANGLE
 ENTRY 1      2      3      4      5      6      7      8      9     10     11
 AN  -40.0  -35.0  -30.0  -20.0  -10.0    0.0   10.0   20.0   30.0   35.0   40.0
 *F 1.6100 1.5340 1.4580 1.3050 1.1530 1.0000 1.1530 1.3050 1.4580 1.5340 1.6100

 IMPEDANCE CORRECTION TABLE 20 IS A FUNCTION OF TRANSFORMER PHASE SHIFT ANGLE
 ENTRY 1      2      3      4      5      6      7      8      9     10     11
 AN  -45.0  -36.0  -27.0  -18.0   -9.0    0.0    9.0   18.0   27.0   36.0   45.0
 *F 1.7860 1.5030 1.2930 1.1260 1.0320 1.0000 1.0320 1.1260 1.2930 1.5030 1.7860

MULTI-SECTION
LINE DATA
 X----- MULTI-SECTION LINE GROUPING ----X X------------ LINE SECTIONS ------------X
 X----- FROM -----X X------ TO ------X ID X----- FROM -----X X------ T0 ------X CKT

                                    * NONE *

DC LINE DATA

                                    * NONE *

FACTS CONTROL
DEVICE DATA
 FD# X- SENDING BUS --X X- TERMINAL BUS -X MODE  PDES   QDES  V SET SHNTMX BRDGMX  VTMAX  VTMIN VSRMAX ISRMAX  LINE X OWNER VSREF  SET1  SET2

                                    * NONE *
```

AREA DATA

AREA	BUS#	NAME	BSKV	PGEN	PMAX	PMIN	INTERCHANGE	TOLER	BUSES	LOADS	DC BUSES
10 NEW MEXI	11114	NEWMANG	313.8	78.8	101.0	30.0	-336.6	1.0	845	320	0
14 ARIZONA	15903	AGUAFR	318.0	173.9	183.0	26.0	1766.9	1.0	545	264	0
18 NEVADA	18259	CLARK 9	13.8	38.9	85.3	32.0	-781.3	1.0	348	187	0
19 WAPA L.C	19023	HOOVERA	316.5	116.6	130.0	0.0	2738.3	1.0	111	22	0
20 MEXICO-C	20008	PJZ-U8	21.0	238.3	261.0	0.0	0.0	1.0	179	140	0
21 IMPERIAL	21030	ELSTM 4	13.8	61.4	80.0	0.0	187.0	1.0	82	21	0
22 SANDIEGO	22788	SOUTHBY	320.0	154.6	174.0	0.0	-1528.0	1.0	256	115	0
24 SOCALIF	24004	ALAMT4 G	18.0	74.8	320.0	0.0	-6325.6	1.0	585	131	0
26 LADWP	26004	CASTAI1G	18.0	73.7	212.0	0.0	-2214.5	1.0	118	21	6
30 PG AND E	30000	PTSB 7	20.0	295.4	710.0	0.0	-1680.0	1.0	2840	1565	0
40 NORTHWES	40296	COULEE2	215.0	451.7	822.0	0.0	4719.6	1.0	2969	1717	6
50 B.C.HYDR	50499	GMS G5	13.8	39.5	261.0	0.0	230.0	1.0	1116	428	0
52 AQUILA	52163	WAN-G3	14.4	112.2	113.5	0.0	70.0	1.0	264	66	0
54 ALBERTA	54143	BRAZ#1	913.7	82.2	160.0	0.0	200.0	1.0	1065	530	0
60 IDAHO	60100	BRWNL 5	13.8	111.3	275.0	0.0	1350.0	1.0	168	67	0
62 MONTANA	62048	COLSTP 3	26.0	733.0	823.0	0.0	787.0	1.0	307	200	0
63 WAPA U.M	63005	FT PECK	113.8	37.2	61.8	0.0	85.0	1.0	15	17	0
64 SIERRA	64119	TRACY G	313.8	55.6	113.0	0.0	-217.0	1.0	260	122	0
65 PACE	66055	NAUGT G	118.0	53.9*	167.0	73.0	512.2	1.0	591	286	0
70 PSCOLORA	70105	CHEROK3	20.0	161.1	165.0	50.0	-884.3	1.0	521	371	0
73 WAPA R.M	73129	MBPP-1	24.0	309.6	550.0	0.0	1321.3	1.0	633	366	0
					SUMMATION:		0.0				

INTER-AREA
TRANSFER DATA

X--FROM AREA-X	X---TO AREA--X	ID	PTRANS	PTOTAL	DESINT
10 [NEW MEXI]	14 [ARIZONA]	0	-362.8		
10 [NEW MEXI]	19 [WAPA L.C]	0	-13.8		
10 [NEW MEXI]	70 [PSCOLORA]	0	0.0		
10 [NEW MEXI]	73 [WAPA R.M]	0	40.0	-336.6	-336.6
14 [ARIZONA]	10 [NEW MEXI]	0	362.8		
14 [ARIZONA]	19 [WAPA L.C]	0	-1487.5		
14 [ARIZONA]	21 [IMPERIAL]	0	226.6		
14 [ARIZONA]	22 [SANDIEGO]	0	156.4		
14 [ARIZONA]	22 [SANDIEGO]	1	-2.0		
14 [ARIZONA]	24 [SOCALIF]	0	1378.1		
14 [ARIZONA]	26 [LADWP]	0	1247.5		
14 [ARIZONA]	65 [PACE]	0	-115.0	1766.9	1766.9
18 [NEVADA]	19 [WAPA L.C]	0	-632.0		
18 [NEVADA]	24 [SOCALIF]	0	-53.3		
18 [NEVADA]	26 [LADWP]	0	4.0		
18 [NEVADA]	65 [PACE]	0	-100.0	-781.3	-781.3
19 [WAPA L.C]	10 [NEW MEXI]	0	13.8		
19 [WAPA L.C]	14 [ARIZONA]	0	1487.5		
19 [WAPA L.C]	18 [NEVADA]	0	632.0		
19 [WAPA L.C]	24 [SOCALIF]	0	385.6		
19 [WAPA L.C]	26 [LADWP]	0	327.6		
19 [WAPA L.C]	65 [PACE]	0	250.0		
19 [WAPA L.C]	73 [WAPA R.M]	0	-358.2	2738.3	2738.3
20 [MEXICO-C]	22 [SANDIEGO]	0	0.0	0.0	0.0
21 [IMPERIAL]	14 [ARIZONA]	0	-226.6		
21 [IMPERIAL]	22 [SANDIEGO]	0	-105.4		
21 [IMPERIAL]	24 [SOCALIF]	0	519.0	187.0	187.0
22 [SANDIEGO]	14 [ARIZONA]	0	-156.4		
22 [SANDIEGO]	14 [ARIZONA]	1	2.0		
22 [SANDIEGO]	20 [MEXICO-C]	0	0.0		
22 [SANDIEGO]	21 [IMPERIAL]	0	105.4		
22 [SANDIEGO]	24 [SOCALIF]	0	-1479.0	-1528.0	-1528.0
24 [SOCALIF]	14 [ARIZONA]	0	-1378.1		
24 [SOCALIF]	18 [NEVADA]	0	53.3		
24 [SOCALIF]	19 [WAPA L.C]	0	-385.6		
24 [SOCALIF]	21 [IMPERIAL]	0	-519.0		
24 [SOCALIF]	22 [SANDIEGO]	0	1479.0		
24 [SOCALIF]	26 [LADWP]	0	-2562.2		
24 [SOCALIF]	30 [PG AND E]	0	-3000.0		
24 [SOCALIF]	64 [SIERRA]	0	-13.0	-6325.6	-6325.6

INTER-AREA
TRANSFER DATA (CONT.)

X--FROM AREA-X	X---TO AREA--X	ID	PTRANS	PTOTAL	DESINT
26 [LADWP]	14 [ARIZONA]	0	-1247.5		
26 [LADWP]	18 [NEVADA]	0	-4.0		
26 [LADWP]	19 [WAPA L.C]	0	-327.6		
26 [LADWP]	24 [SOCALIF]	0	2562.2		
26 [LADWP]	40 [NORTHWES]	0	-2990.0		
26 [LADWP]	40 [NORTHWES]	1	-105.6		
26 [LADWP]	64 [SIERRA]	0	0.0		
26 [LADWP]	65 [PACE]	0	-102.0	-2214.5	-2214.5
30 [PG AND E]	24 [SOCALIF]	0	3000.0		
30 [PG AND E]	40 [NORTHWES]	0	-4680.0		
30 [PG AND E]	64 [SIERRA]	0	0.0	-1680.0	-1680.0
40 [NORTHWES]	26 [LADWP]	0	2990.0		
40 [NORTHWES]	26 [LADWP]	1	105.6		
40 [NORTHWES]	30 [PG AND E]	0	4680.0		
40 [NORTHWES]	50 [B.C.HYDR]	0	-500.0		
40 [NORTHWES]	60 [IDAHO]	0	-1812.0		
40 [NORTHWES]	62 [MONTANA]	0	-902.0		
40 [NORTHWES]	64 [SIERRA]	0	158.0	4719.6	4719.6
50 [B.C.HYDR]	40 [NORTHWES]	0	500.0		
50 [B.C.HYDR]	52 [AQUILA]	0	-70.0		
50 [B.C.HYDR]	54 [ALBERTA]	0	-200.0	230.0	230.0
52 [AQUILA]	50 [B.C.HYDR]	0	70.0	70.0	70.0
54 [ALBERTA]	50 [B.C.HYDR]	0	200.0	200.0	200.0
60 [IDAHO]	40 [NORTHWES]	0	1812.0		
60 [IDAHO]	64 [SIERRA]	0	0.0		
60 [IDAHO]	65 [PACE]	0	-462.0	1350.0	1350.0
62 [MONTANA]	40 [NORTHWES]	0	902.0		
62 [MONTANA]	63 [WAPA U.M]	0	-157.0		
62 [MONTANA]	65 [PACE]	0	42.0	787.0	787.0
63 [WAPA U.M]	62 [MONTANA]	0	157.0		
63 [WAPA U.M]	73 [WAPA R.M]	0	-72.0	85.0	85.0
64 [SIERRA]	24 [SOCALIF]	0	13.0		
64 [SIERRA]	26 [LADWP]	0	0.0		
64 [SIERRA]	30 [PG AND E]	0	0.0		
64 [SIERRA]	40 [NORTHWES]	0	-158.0		
64 [SIERRA]	60 [IDAHO]	0	0.0		
64 [SIERRA]	65 [PACE]	0	-72.0	-217.0	-217.0

INTER-AREA
TRANSFER DATA (CONT.)

X--FROM AREA-X	X---TO AREA--X	ID	PTRANS	PTOTAL	DESINT
65 [PACE]	14 [ARIZONA]	0	115.0		
65 [PACE]	18 [NEVADA]	0	100.0		
65 [PACE]	19 [WAPA L.C]	0	-250.0		
65 [PACE]	26 [LADWP]	0	102.0		
65 [PACE]	60 [IDAHO]	0	462.0		
65 [PACE]	62 [MONTANA]	0	-42.0		
65 [PACE]	64 [SIERRA]	0	72.0		
65 [PACE]	73 [WAPA R.M]	0	-46.8	512.2	512.2
70 [PSCOLORA]	10 [NEW MEXI]	0	0.0		
70 [PSCOLORA]	73 [WAPA R.M]	0	-884.3	-884.3	-884.3
73 [WAPA R.M]	10 [NEW MEXI]	0	-40.0		
73 [WAPA R.M]	19 [WAPA L.C]	0	358.2		
73 [WAPA R.M]	63 [WAPA U.M]	0	72.0		
73 [WAPA R.M]	65 [PACE]	0	46.8		
73 [WAPA R.M]	70 [PSCOLORA]	0	884.3	1321.3	1321.3

ZONE DATA

X-- ZONE --X	BUSES	LOADS	DC BUSES
752 ZONEEC	91	63	0

OWNER DATA

X-- OWNER -X	BUSES	LOADS	MACHINES	BRANCHES	DC BUSES	FACTS DEVS	VSC DC
1 NON	0	150	45	459	12	0	0
2 APS	179	102	61	199	0	0	0
3 AEP	29	16	7	40	0	0	0
4 DSW	135	49	24	191	0	0	0
5 EMA	1	0	0	1	0	0	0
7 PAC	509	238	61	680	0	0	0
8 UAMP	63	30	14	80	0	0	0
9 CSC	3	3	3	0	0	0	0
10 BCH	1116	428	135	1463	0	0	0
11 IPC	154	52	58	223	0	0	0
12 R1	7	0	0	0	0	0	0
13 PPL	242	163	29	331	0	0	0
14 BPA	712	211	37	1040	0	0	0
15 SCL	41	29	21	69	0	0	0
16 IID	82	21	33	104	0	0	0
17 N2	0	0	0	13	0	0	0
18 N3	16	32	0	2	0	0	0
19 N8	49	34	0	47	0	0	0
20 N4	55	34	0	104	0	0	0
21 N6	13	7	0	10	0	0	0
22 N5	10	3	0	11	0	0	0
23 N9	197	67	68	262	0	0	0

OWNER DATA (CONT.)

X--	OWNER	-X	BUSES	LOADS	MACHINES	BRANCHES	DC BUSES	FACTS DEVS	VSC DC
24	N1		8	9	0	5	0	0	0
25	N7		0	0	0	1	0	0	0
26	WALM		185	27	2	550	0	0	0
27	WAUC		21	0	4	7	0	0	0
28	NWA		8	6	0	11	0	0	0
29	AVA		268	110	51	362	0	0	0
30	PSE		477	330	39	592	0	0	0
31	DOE		5	5	0	7	0	0	0
32	PG		333	159	42	399	0	0	0
33	EWE		48	33	9	52	0	0	0
34	SPD		121	77	7	138	0	0	0
35	GPD		84	40	22	105	0	0	0
36	CPD		20	8	31	38	0	0	0
37	INL		16	41	0	0	0	0	0
38	TCL		147	61	17	185	0	0	0
39	WPS		1	2	3	1	0	0	0
40	USN		5	5	0	1	0	0	0
41	CLP		3	9	0	1	0	0	0
42	CLA		14	12	0	17	0	0	0
43	COE		45	0	132	84	0	0	0
44	PDO		12	6	4	11	0	0	0
45	WPD		3	3	0	1	0	0	0
46	DPD		15	11	10	17	0	0	0
47	CCP		6	12	0	5	0	0	0
48	GH		9	9	0	8	0	0	0
49	CLK		67	45	1	75	0	0	0
50	NPR		111	0	146	47	0	0	0
51	EMP		10	10	1	3	0	0	0
52	BBE		266	85	27	333	0	0	0
53	KEC		1	15	0	1	0	0	0
54	LEW		29	18	4	28	0	0	0
55	CCC		9	13	0	5	0	0	0
56	SUB		5	7	0	5	0	0	0
57	HAR		7	6	0	6	0	0	0
58	SDS		0	2	0	0	0	0	0
59	SPP		260	122	28	323	0	0	0
60	BHPL		98	64	17	131	0	0	0
61	ROS		3	3	0	5	0	0	0
62	DWR		51	3	52	47	0	0	0
63	SMD		98	33	27	120	0	0	0
64	COT		9	0	2	9	0	0	0
65	PSC		435	204	58	417	0	0	0
66	WP		72	41	2	89	0	0	0
67	ATL		0	21	0	0	0	0	0
68	IM		17	16	0	17	0	0	0
69	PPLG		17	4	19	2	0	0	0
70	R7		0	0	0	1	0	0	0
71	TS		0	9	0	0	0	0	0

OWNER DATA (CONT.)

X-- OWNER -X	BUSES	LOADS	MACHINES	BRANCHES	DC BUSES	FACTS DEVS	VSC DC
73 TRI	200	166	15	37	0	0	0
74 SCE	559	112	244	726	0	0	0
76 AIES	1065	530	195	1338	0	0	0
77 WAUM	20	14	1	18	0	0	0
78 MPC	261	169	0	400	0	0	0
79 TEP	132	67	13	175	0	0	0
80 SRP	139	49	53	227	0	0	0
81 LAD	118	21	39	168	0	0	0
85 MFR	1	3	0	2	0	0	0
86 KLI	0	2	0	1	0	0	0
87 UEC	0	0	0	1	0	0	0
90 PGE	2147	1323	161	2820	0	0	0
91 R2	0	0	0	3	0	0	0
92 NCP	27	9	12	16	0	0	0
93 PRP	11	19	0	4	0	0	0
94 BASI	29	25	7	28	0	0	0
95 CSU	48	25	13	27	0	0	0
97 BKB	0	0	0	30	0	0	0
98 BHP	0	0	0	2	0	0	0
99 BOR	0	0	0	3	0	0	0
100 CEC	0	17	0	1	0	0	0
101 CHW	0	2	0	1	0	0	0
102 FAB	2	0	0	2	0	0	0
103 TCE	0	0	0	11	0	0	0
104 ICE	0	7	0	0	0	0	0
105 LEC	0	10	0	5	0	0	0
106 NLI	5	16	0	0	0	0	0
107 MDR	1	4	0	0	0	0	0
108 PLM	0	1	0	0	0	0	0
109 R6	0	0	0	1	0	0	0
110 OTC	4	4	0	1	0	0	0
111 CFE	198	140	34	337	0	0	0
112	0	0	0	3	0	0	0
113 CUC	4	0	6	1	0	0	0
115	0	8	0	0	0	0	0
125 EPE	213	94	17	269	0	0	0
126 LAC	16	7	3	17	0	0	0
127 PGT	102	37	9	56	0	0	0
128 US	1	1	0	0	0	0	0
129 PN2	438	157	1	495	0	0	0
130 PN1	31	10	12	52	0	0	0
131 NTU	2	2	0	0	0	0	0
132 SPS	2	2	0	1	0	0	0
133 TNP	21	10	1	30	0	0	0
134 MID	55	33	27	80	0	0	0
135 MWD	26	0	58	30	0	0	0
136 SDG	256	115	58	401	0	0	0
137 TID	42	19	8	54	0	0	0

OWNER DATA (CONT.)

X-- OWNER -X	BUSES	LOADS	MACHINES	BRANCHES	DC BUSES	FACTS DEVS	VSC DC
300 CUST	248	74	270	237	0	0	0
301 CSC	33	0	0	0	0	0	0
308	0	0	0	4	0	0	0
311	0	0	0	1	0	0	0
312 WASN	47	15	35	79	0	0	0
313 RDG	58	31	8	64	0	0	0
318	0	0	0	7	0	0	0
319	0	0	0	4	0	0	0
338	0	0	0	4	0	0	0
345	0	0	0	1	0	0	0
401 BPD	22	23	1	12	0	0	0
402 BRE	5	14	0	1	0	0	0
403 CLT	4	4	2	1	0	0	0
404 COR	4	8	0	2	0	0	0
405 CPI	3	13	0	0	0	0	0
406 CPU	0	0	0	1	0	0	0
407 CRP	5	8	0	0	0	0	0
408 DEC	10	9	0	11	0	0	0
409 ELM	3	4	0	0	0	0	0
411 FRK	11	12	0	6	0	0	0
412 KLI	5	8	1	4	0	0	0
414 LKV	3	3	0	0	0	0	0
416 MCM	4	7	0	0	0	0	0
417 MEC	0	4	0	2	0	0	0
418 MN3	3	6	0	0	0	0	0
419 OKP	11	11	0	13	0	0	0
420 OPL	22	10	0	27	0	0	0
423 TIL	4	9	0	0	0	0	0
424 UMT	3	9	0	2	0	0	0
435 MN1	0	2	0	0	0	0	0
438 PACP	1	6	0	0	0	0	0
439 PAN	0	2	0	0	0	0	0
440 PEN	0	7	0	0	0	0	0
441 SEC	3	4	0	0	0	0	0
443 VID	3	3	0	0	0	0	0
444 BLC	0	5	0	0	0	0	0
445 CNE	0	4	0	0	0	0	0
446 FLT	3	7	0	0	0	0	0
447 FOR	1	3	0	0	0	0	0
448 RAT	2	0	0	0	0	0	0
449 CCN	2	3	0	0	0	0	0
450 MSV	0	2	0	0	0	0	0
451 FPLE	0	0	12	0	0	0	0
452 HPP	4	0	0	4	0	0	0
453 ESI	2	0	1	1	0	0	0
454 WASC	8	9	2	3	0	0	0
455 CREA	4	7	0	1	0	0	0
456 SUVL	3	6	0	0	0	0	0

OWNER DATA (CONT.)

X-- OWNER -X	BUSES	LOADS	MACHINES	BRANCHES	DC BUSES	FACTS DEVS	VSC DC
458 FRED	0	0	2	3	0	0	0
460 TACG	7	3	5	7	0	0	0
461 KFAL	7	0	0	7	0	0	0
463 TRCB	6	1	3	6	0	0	0
464 GOLD	2	0	2	3	0	0	0
465 DUKE	4	2	3	4	0	0	0
467	6	0	6	6	0	0	0
468	4	0	5	4	0	0	0
469	7	0	0	7	0	0	0
470	0	0	3	0	0	0	0
473 MORR	1	0	1	0	0	0	0
474 KLAM	0	0	2	0	0	0	0
476 PMOR	2	0	0	0	0	0	0
620 MASI	1	1	0	0	0	0	0
621 MGLE	1	0	0	0	0	0	0
622 MSRE	1	1	0	0	0	0	0
623 MBRE	1	0	0	0	0	0	0
624 MFE	1	0	0	0	0	0	0
625 MYVE	3	0	0	0	0	0	0
626 MDNR	2	1	0	0	0	0	0
627 MUSF	1	0	0	0	0	0	0
629 MBGI	1	0	0	0	0	0	0
630 MMT1	1	0	0	0	0	0	0
631 MABE	2	0	0	0	0	0	0
632 MMSE	4	0	0	0	0	0	0
633 MTFE	1	0	0	0	0	0	0
999	0	0	0	1	0	0	0