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July 25, 2013

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RECEIVED

JUL 26 2013

PUBLIC SERVICE  
COMMISSION

Re: *In the Matter of: The Application of  
Big Rivers Electric Corporation for a General  
Adjustment in Rates*, PSC Case No. 2012-00535

Dear Mr. Derouen:

Enclosed are an original and ten copies of Big Rivers Electric Corporation's responses to the Commission Staff's fourth request for information in the above referenced matter. I certify that on this date, a copy of this letter and a copy of the responses were served on the persons listed on the attached service list by first class mail, postage prepaid.

Sincerely,

TAK

Tyson Kamuf

TAK/ej  
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**BIG RIVERS ELECTRIC CORPORATION**

**APPLICATION OF BIG RIVERS ELECTRIC CORPORATION  
FOR A GENERAL ADJUSTMENT IN RATES  
CASE NO. 2012-00535**

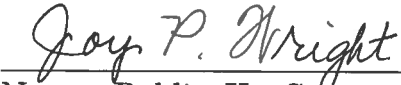
**VERIFICATION**

I, Robert W. Berry, verify, state, and affirm that I prepared or supervised the preparation of the data responses filed with this Verification, and that those data responses are true and accurate to the best of my knowledge, information, and belief formed after a reasonable inquiry.

  
Robert W. Berry

COMMONWEALTH OF KENTUCKY )  
COUNTY OF HENDERSON )

SUBSCRIBED AND SWORN TO before me by Robert W. Berry on this  
the 25 day of July, 2013.

  
Notary Public, Ky. State at Large  
My Commission Expires \_\_\_\_\_

Notary Public, Kentucky State-At-Large  
My Commission Expires: July 3, 2014  
ID 421951

**BIG RIVERS ELECTRIC CORPORATION**

**APPLICATION OF BIG RIVERS ELECTRIC CORPORATION  
FOR A GENERAL ADJUSTMENT IN RATES  
CASE NO. 2012-00535**

**VERIFICATION**

I, John Wolfram, verify, state, and affirm that I prepared or supervised the preparation of the data responses filed with this Verification, and that those data responses are true and accurate to the best of my knowledge, information, and belief formed after a reasonable inquiry.

  
\_\_\_\_\_  
John Wolfram

COMMONWEALTH OF KENTUCKY     )  
COUNTY OF JEFFERSON         )

SUBSCRIBED AND SWORN TO before me by John Wolfram on this the 24 day  
of July, 2013.

  
\_\_\_\_\_  
Notary Public, Ky. State at Large  
My Commission Expires 4-21-16

<p><b>SAMUEL WEISSINGER</b> Notary Public State at Large Kentucky My Commission Expires April 21, 2016</p>
--

**BIG RIVERS ELECTRIC CORPORATION**  
**APPLICATION OF BIG RIVERS ELECTRIC CORPORATION**  
**FOR A GENERAL ADJUSTMENT IN RATES**  
**CASE NO. 2012-00535**

**Response to Commission Staff's Fourth Request  
for Information dated July 22, 2013**

**July 29, 2013**

1    *Item 1) Refer to Exhibit Wolfram-5 of the application and Exhibit Wolfram-5.3*  
2    *filed on June 24, 2013. Because Big Rivers' environmental surcharge allocates costs*  
3    *based on a percentage of revenue, Exhibit Wolfram-5 of the application reflects an*  
4    *additional \$404,795 of environmental surcharge costs for the Rural class and a*  
5    *reduction of \$142,833 and \$261,962 for the Large Industrial and Smelter classes,*  
6    *respectively. These amounts appear in the Variance column. The amounts net to zero*  
7    *as they reflect a shifting of the environmental costs between rate classes and therefore*  
8    *have no impact on the total overall base rate increase. In Exhibit Wolfram-5.3, an*  
9    *additional \$672,632 of environmental surcharge costs is shown for the Rural class and*  
10    *reductions to the Large Industrial and Smelter classes of environmental surcharge costs*  
11    *are shown of \$26,666 and \$64,696, respectively. These variance amounts do not net to*  
12    *zero and therefore result in an additional \$581 ,270 increase to the total base rate*  
13    *increase (i.e., Exhibit Wolfram-6.3 filed on June 24, 2013 shows a total increase of*  
14    *\$68,613,284; however, the base rate increase reflected in Exhibit Wolfram-5.3 totals*  
15    *\$68,032,013).*

16        *a. Confirm that the environmental surcharge variance amounts in Exhibit Wolfram-*  
17        *5.3 should net to zero. If this cannot be confirmed, explain fully why a base rate*  
18        *increase should reflect an increase in environmental surcharge revenues and*  
19        *provide supporting calculations for all environmental surcharge amounts included*

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1       *in Exhibit Wolfram-5.3.*

2       *b. If the variance amounts should net to zero, provide a revised Exhibit Wolfram 5.3*  
3       *in both hard copy and Excel spreadsheet format with the formulas intact and*  
4       *unprotected. Include with your response supporting calculations for the*  
5       *environmental surcharge amounts included in the revised exhibit.*

6  
7       **Response)**

8       a. The environmental surcharge ("ES") variance amounts in Exhibit Wolfram-5.3  
9       should *not* net to zero, because the share of Environmental Compliance Plan ("ECP")  
10       costs borne by Off-System Sales ("OSS") is not reflected in the exhibit. Pursuant to  
11       the existing ES tariff (approved in the Commission's October 1, 2012, order in Case  
12       No. 2012-00063), the total ECP costs are "jurisdictionalized" or split between the  
13       native load sales (i.e. Rurals, Large Industrials, and Smelters) and OSS, on the basis  
14       of total adjusted revenues. The increase to base rates affects the split, as shown in the  
15       table on the next page. This data is drawn directly from the Big Rivers Financial  
16       Model.

17               The total projected amount of jurisdictional billing increase associated with  
18       the ES and resulting from the proposed base rate increase is \$581,270.

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**Total Test Period ES Revenues (\$)**

<b>Rate Class</b>	<b>Without Base Rate Adjustment</b>	<b>With Base Rate Adjustment</b>	<b>Variance</b>
Rurals	8,815,889	9,488,521	672,632
Large Industrials	2,944,366	2,917,700	(26,666)
Smelter	8,971,731	8,907,035	(64,696)
Total Jurisdictional	20,731,985	21,313,256	581,270
Off System Sales	3,633,367	3,052,097	(581,270)
<b>Total</b>	<b>24,365,352</b>	<b>24,365,352</b>	<b>-</b>

Note that the Total ES revenue variance nets to zero but the jurisdictional ES revenue variance does not.

The total revenue deficiency in this case is \$68,614,632. In the base rate design, the incremental ES revenues of \$581,270 are counted towards making up this revenue deficiency. It is appropriate to do so because the incremental ES revenues are driven entirely by the proposed adjustment to base rates. If the \$581,270 were not counted towards the revenue deficiency (or alternatively, if the incremental ES revenues were adjusted out of the revenue deficiency calculation), the proposed



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for Information dated July 22, 2013**

**July 29, 2013**

1 demand charges for the Rural and Large Industrial rate classes would have to be  
2 increased further, in order to generate an additional \$581,207 and achieve Big Rivers'  
3 revenue requirement in full.

4 In the application as originally filed, the ES amounts included in Exhibit  
5 Wolfram-5 were based on estimates that did not properly account for the decrease in  
6 the OSS share of total ECP costs. The jurisdictional variance amounts incorrectly  
7 netted to zero. This was corrected in PSC 2-36, for which the ES amounts were drawn  
8 directly from the Big Rivers Financial Model. Also please see the response to PSC 2-  
9 40 (a)(3).

10 b. Not applicable.

11

12 **Witness)** John Wolfram

**BIG RIVERS ELECTRIC CORPORATION**  
**APPLICATION OF BIG RIVERS ELECTRIC CORPORATION**  
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**CASE NO. 2012-00535**

**Response to Commission Staff's Fourth Request  
for Information dated July 22, 2013**

**July 29, 2013**

1    **Item 2) *Provide the load at which the Hawesville smelter owned by Century***  
2    ***Aluminum can operate and Big Rivers not be required by MISO to operate the Coleman***  
3    ***Station ("Coleman") for reliability purposes.***

4

5    **Response)**

6    The maximum Century Load without the Coleman plant operating was identified as 338 MW  
7    under system intact and N-1 condition, and a 200MVar Capacitor Bank installed at Century.  
8    It is possible that Century could install a special protection scheme (SPS) which would allow  
9    Century to import 482 MW with the Coleman Plant idled. The SPS would consist of  
10   protective relays that would reduce the Century load when a specific transmission line  
11   exceeds its rated capacity. Certain transmission line outages will force Century to reduce its  
12   load to levels of 132 MW to 230 MW depending on which specific transmission line is out of  
13   service. Please see the redacted version of the MISO Attachment Y report for additional  
14   details.

15

16   **Witness) Robert W. Berry**

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**Attachment Y Study**  
**Coleman Units 1, 2 & 3: 443 MW Coal**  
**28 Month Suspension 9/01/2013 – 1/1/2016**

# **ATTACHMENT Y STUDY REPORT**

July 18, 2013

DRAFT

**PUBLIC/REDACTED**

## **EXECUTIVE SUMMARY**

The completed Attachment Y Notification of Potential Generation Resource/SCU change of Status (Attachment Y Notice) submitted by Big Rivers Electric Cooperation (BREC) on May 24, 2013. The request was for suspension of units 1, 2 & 3 from September 1, 2013 to January1, 2016.

After being reviewed for Transmission System reliability impacts as provided for under Section 38.2.7 of the MISO Open Access Transmission, Energy and Operating Reserve Markets Tariff (Tariff), MISO determined that potential reliability issues exist that would require the need for Coleman Units 1, 2 and 3 to enter into an System Support Resource (SSR) Agreement if a mitigation plan is not developed and implemented prior to the potential unit change of status.

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## I. INTRODUCTION

The completed Attachment Y Notification of Potential Generation Resource/SCU change of Status (Attachment Y Notice) submitted by Big Rivers Electric Cooperation (BREC) on May 24, 2013. The request was for suspension of units 1, 2 & 3 from September 1, 2013 to January 1, 2016.

After being reviewed for Transmission System reliability impacts as provided for under Section 38.2.7 of the MISO Open Access Transmission, Energy and Operating Reserve Markets Tariff (Tariff), MISO determined that potential reliability issues exist that would require the need for Coleman Units 1, 2 and 3 to enter into an System Support Resource (SSR) Agreement if a mitigation plan is not developed and implemented prior to the potential unit change of status.

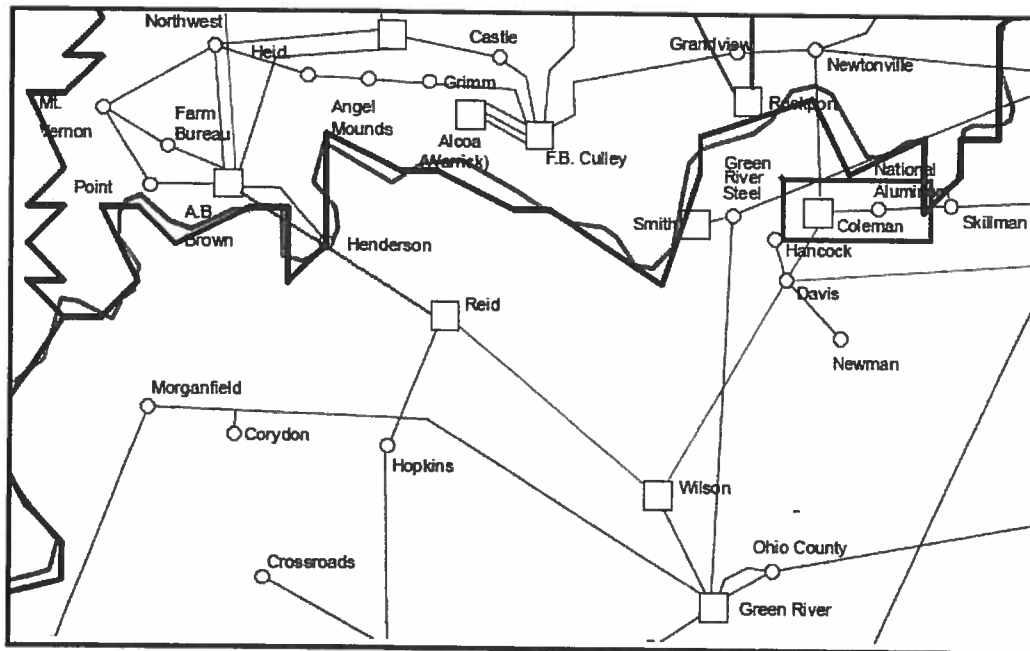


Figure 1: General Location of the Coleman Plant in Northern Kentucky

## II. STUDY OBJECTIVES

The purpose of this study was to assess the reliability impacts from the suspension of the Coleman Station coal generation located in Hawesville, Kentucky. The operator of the Coleman generating station, Big Rivers Electric Cooperation (BRPS), submitted an Attachment Y notification to MISO for the consideration of suspending the generating station effective from September 1, 2013 to January 1, 2016.

### III. MODELS AND ASSUMPTIONS

Corresponding to the anticipated suspension of the Coleman Units 1, 2, & 3 the following power system analysis source models were used for the study:

- 2014 Summer Peak
- 2014 Summer Peak with Stressed 2000MW MISO – TVA transfer
- 2017 Summer Peak
- 2017 Shoulder

The Attachment Y study models were created following the MISO Transmission Planning Business Practice Manual (BPM-020-r8) Section 6.2.2. This includes creating a set of models from each source model in which the units being studied are at full generation or taken out of service.

#### a. Model Assumptions

1. Load Sensitivity to Century Aluminium Plant (485 MW)

#### b. Transmission Projects

1. LGEE / KU Matanzas 161 kV Substation The new Matanzas 161 kV Substation has an anticipated in-service date of December 1, 2012. This new substation will be included in the 2014 and 2017 models since the substation will be in-service during the time Coleman Generation is unavailable.

### c. Table of Models

n	Model	Coleman 1,2,3	Century Aluminum	Contingency Categories
1	2014SP	off	off	B, C1, C2, C5
2	2014SP	off	on	B, C1, C2, C5
3	2014SP	on	off	B, C1, C2, C5
4	2014SP	on	on	B, C1, C2, C5
5	2017SH	off	off	B, C1, C2, C3, C5
6	2017SH	off	on	B, C1, C2, C3, C5
7	2017SH	on	off	B, C1, C2, C3, C5
8	2017SH	on	on	B, C1, C2, C3, C5
9	2017SP	off	off	B, C1, C2, C5
10	2017SP	off	on	B, C1, C2, C5
11	2017SP	on	off	B, C1, C2, C5
12	2017SP	on	on	B, C1, C2, C5
13	2014SP Stressed	on	on	B, C1, C2, C5
14	2014SP Stressed	off	on at 338MW, with 200MVar cap bank at Coleman 161kV bus	B, C1, C2, C5

## IV. STUDY CRITERIA AND METHODOLOGY

Siemens PTI's Power System Simulator for Engineering (PSS/E) and Managing and Utilizing System Transmission (MUST) were used to perform AC contingency analysis.

Two phases of study have been studied. In phase 1, the system impact of Coleman generating units were evaluated by comparing the contingency analysis study result of the before Coleman suspension and after Coleman suspension case. The models were solved with automatic control of Load Tap Changers (LTCs), phase shifters, DC taps, switched shunts enabled (regulating), and area interchange disabled. The results are compared to determine if there were any criteria violations due to the change in the status for the unit(s).

Since reliability issues have been identified in Phase 1 study, and Coleman Units are identified as required SSR units, Phase 2 study was performed to evaluate the potential alternative to mitigate the reliability issue caused by Coleman generating units' suspension. In this case, the potential reduction of Century Load was evaluated.

### a. Applicable Transmission Planning Criteria

#### MISO Transmission Owners

AMIL Transmission Planning Criteria applied for the thermal analysis:



- For Category A contingencies, all thermal loadings exceeding 100% of the normal rating for AMIL System
- For Category B and C contingencies, all thermal loadings exceeding 100% of the emergency rating for AMIL System

AMIL Transmission Planning Criteria applied for the voltage analysis:

- For Category A contingencies, all substation voltages less than 95% or above 105%
- For Category B and C contingencies, all substation voltages less than 90% or above 110%

BREC Transmission Planning Criteria applied for the thermal analysis:

- For Category A contingencies, all thermal loadings exceeding 100% of the normal rating for BREC System
- For Category B and C contingencies, all thermal loadings exceeding 100% of the emergency rating for BREC System

BREC Transmission Planning Criteria applied for the voltage analysis:

- For Category A contingencies, all substation voltages less than 95% or above 105%
- For Category B and C contingencies, all substation voltages less than 92% or above 105%

DEI Transmission Planning Criteria applied for the thermal analysis:

- For Category A contingencies, all thermal loadings exceeding 100% of the normal rating for DEI System
- For Category B and C contingencies, all thermal loadings exceeding 100% of the emergency rating for BREC System

DEI Transmission Planning Criteria applied for the voltage analysis:

- For Category A contingencies, >100 kV substation voltages less than 95% or above 105%
- For Category B and C contingencies, >100 kV substation voltages less than 90% or above 105%

HE Transmission Planning Criteria applied for the thermal analysis:

- For Category A contingencies, all thermal loadings exceeding 100% of the normal rating for HE System
- For Category B and C contingencies, all thermal loadings exceeding 100% of the emergency rating for HE System

HE Transmission Planning Criteria applied for the voltage analysis:

- For Category A contingencies, >100 kV substation voltages less than 95% or above 105%
- For Category B and C contingencies, >100 kV substation voltages less than 90% or above 110%

SIGE Transmission Planning Criteria applied for the thermal analysis:

- For Category A contingencies, all thermal loadings exceeding 100% of the normal rating for SIGE System
- For Category B and C contingencies, all thermal loadings exceeding 100% of the emergency rating for SIGE System

SIGE Transmission Planning Criteria applied for the voltage analysis:

- For Category A contingencies, >100 kV substation voltages less than 95% or above 105%
- For Category B and C contingencies, >100 kV substation voltages less than 95% or above 105%

SIPC Transmission Planning Criteria applied for the thermal analysis:

- For Category A contingencies, all thermal loadings exceeding 100% of the normal rating for SIGE System
- For Category B and C contingencies, all thermal loadings exceeding 100% of the emergency rating for SIGE System

SIPC Transmission Planning Criteria applied for the voltage analysis:

- For Category A contingencies, >100 kV substation voltages less than 91% or above 105%
- For Category B and C contingencies, >100 kV substation voltages less than 91% or above 105%

### **Non-MISO Transmission Owners**

LGEE Transmission Planning Criteria applied for the thermal analysis:

- For Category A contingencies, all thermal loadings exceeding 100% of the normal rating for LGEE System
- For Category B and C contingencies, all thermal loadings exceeding 100% of the emergency rating for LGEE System

LGEE Transmission Planning Criteria applied for the voltage analysis:

- For Category A contingencies, >100 kV substation voltages less than 95% or above 105%
- For Category B and C contingencies, >100 kV substation voltages less than 90% or above 110%

TVA Transmission Planning Criteria applied for the thermal analysis:

- For Category A contingencies, all thermal loadings exceeding 100% of the normal rating for TVA System
- For Category B and C contingencies, all thermal loadings exceeding 100% of the emergency rating for TVA System

TVA Transmission Planning Criteria applied for the voltage analysis:

- For Category A contingencies, >100 kV substation voltages less than 95% or above 105%
- For Category B and C contingencies, >100 kV substation voltages less than 90% or above 110%

AECI Transmission Planning Criteria applied for the thermal analysis:

- For Category A contingencies, all thermal loadings exceeding 100% of the normal rating for AECI System
- For Category B and C contingencies, all thermal loadings exceeding 100% of the emergency rating for AECI System

AECI Transmission Planning Criteria applied for the voltage analysis:

- For Category A contingencies, >100 kV substation voltages less than 95% or above 105%
- For Category B and C contingencies, >100 kV substation voltages less than 90% or above 110%

Under category C contingencies, for the valid thermal and voltage violations as specified above, generation re-dispatch, system reconfiguration, and/or load shedding will be considered if applicable.

## **b. MISO Transmission Planning BPM - SSR Criteria**

As specified in MISO BPM-020-r7, the SSR criteria for determining if an identified facility is impacted by the generator's change of status will be:

- Under system intact and contingent events, branch thermal violations are only valid if the flow increase on the element in the “after” retirement scenario is equal to or greater than:
  - a) 5% of the “to-be-retired” unit(s) MW amount (i.e. 5% Power Transfer Distribution Factor (PTDF)) for a “base” violation compared with the “before” retirement scenario, or
  - b) 3% of the “to-be-retired” unit(s) amount (i.e. 3% Outage Transfer Distribution Factor (OTDF)) for a “contingency” violation compared with the “before” retirement scenario.
- Under system intact and contingent events, high and low voltage violations are only valid if the change in voltage is greater than 1% as compared to the “before” retirement voltage calculation.

## **c. Contingencies**

A subset of the MISO Transmission Expansion Plan (MTEP) contingencies in the central region was used for AC contingency analysis. Additional contingencies from TVA, LG&E, and AECI were included in this analysis to provide coverage for events on those adjacent transmission systems.

The following North American Electric Reliability Corporation (NERC) Categories of contingencies were evaluated:

1. Category A when the system is under normal conditions.
2. Category B contingencies resulting in the loss of a single element.
3. Category C contingencies resulting in the loss of two or more (multiple) elements.
4. Maintenance outage condition with forced outage during shoulder load conditions.

# **V. STUDY RESULTS**

## **a. Phase 1 Study Results**

### **1 Branch Results (Appendix A Table 1a)**

Table 1a in Appendix A shows contingent conditions causing branch criteria violations without Coleman Units 1 & 2 & 3 and the improvements resulting from the operation of Coleman Units 1 & 2 & 3. Contingent events causing branch violations include NERC Categories B, C1, C2, and C3. While the study scenario with Century Aluminum off does indicate fewer constraints, there remain a few thermal loading issues resulting from Category C contingencies that exist in the MISO Transmission system even with the load removed.

### **2 Voltage Results (Appendix A Table 1b)**

Significant voltage criteria violations associated with the suspension of Coleman Units 1, 2, & 3 and continued operation of Century Aluminum were identified when compared to the continued

availability of the units. Table 1 in Appendix A shows contingent conditions causing criteria violations without Coleman Units 1, 2, & 3 and the improvements resulting from the operation of Coleman Units 1, 2, & 3. Contingent events causing voltage criteria violations include NERC Categories B, C1, C2, and C3. The acceptable post-contingency voltage range is between 0.92 per unit to 1.05 per unit. Therefore, voltages less than 0.92 or greater than 1.05 per unit are a criteria violation. If Century Aluminum were to cease operations, with a load of 0 MVA, the voltage issues within the MISO would be eliminated.

## **b. Phase 2 Study Results**

### **1 FCITC Transfer Study**

FCITC studies were performed to determine the maximum Century Loading without causing transmission system violation.

Three scenarios were studied to determine the maximum Century Loading

- 2014 summer peak
- 2017 summer shoulder
- 2014 summer peak with stressed 2000MW MISO-TVA transfer

The Stressed 2014 summer peak scenario was identified as the worst scenario. The maximum Century Loading was identified as 338MW under system intact and N-1 condition, 200MVar Capacitor Bank at Coleman 161kV bus is required to mitigate voltage violations. The most limiting element is Newtonville – Coleman 161 kV branch and the most critical contingency is [REDACTED].

The Prior-outage scenario was evaluated using the 2014 summer peak stressed case, the maximum Century Loading was identified as 132MW under prior outage of [REDACTED]. The most limiting element is Newtonville – Coleman 161 kV branch and the most critical contingency is [REDACTED]. The results are available at Appendix B.

### **2 Voltage Analysis (PV analysis) on C3 Contingency Event**

The C3 contingency events was studied and the not-converged (blow up) event was selected for PV analysis. The double outage of [REDACTED] was identified causing voltage collapse.

PV analysis was performed to identify the maximum century loading before the voltage collapse. Figure below shows the PV curve of the transfer from AMIL to Century Load. The maximum Century Load before voltage collapse was identified as 230MW.

The study assumptions are summarized as follows,

- Study case: 2014 Summer Peak with 2000MW transfer from MISO to TVA
- C3 Contingency: [REDACTED]
- Capacitor Bank: 200Mvar Capbank at Coleman 161kV bus
- Transfer: AMIL to Century Load

Figure 2 below shows the PV curve of power transfer from AMIL to Century Load against bus voltage of Coleman 161kV bus, Skillman 161kV bus and Davis 161kV bus under [REDACTED]. The maximum Century Load before voltage collapse was identified as 230MW.

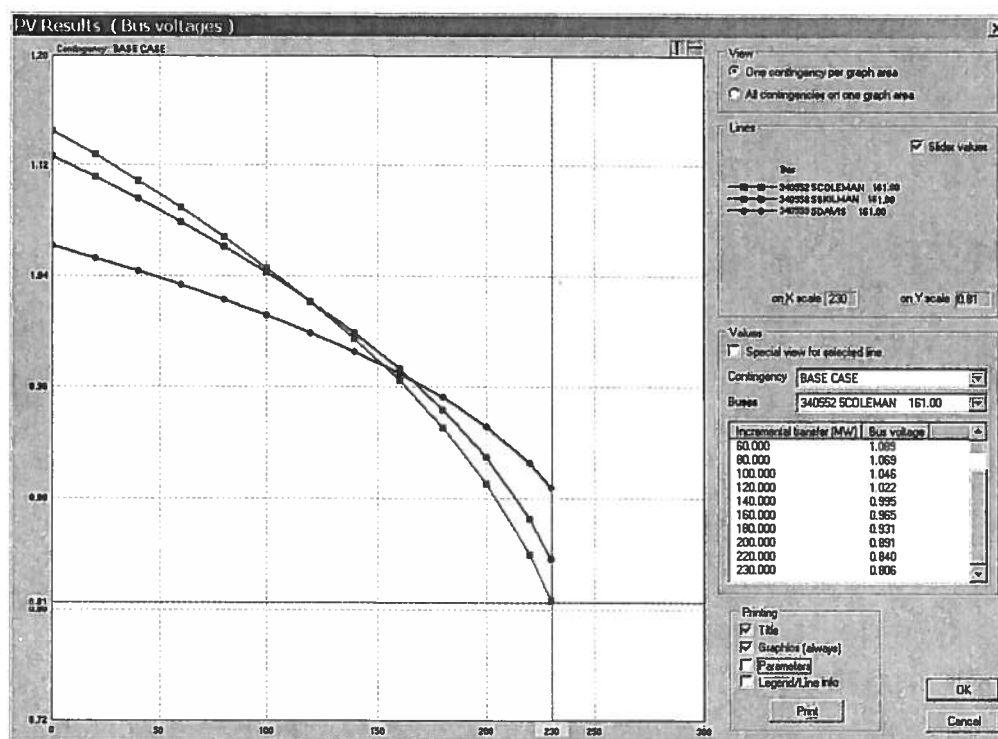


Figure 2: PV Curve on Dbl Contingency of [REDACTED]

## VI. CONCLUSION

The study results indicate that potential reliability issues exist which would require the need for Coleman Units 1, 2 and 3 to enter into an SSR Agreement if a mitigation plan is not developed and implemented prior to the potential unit change of status, in accordance with Section 38.2.7 of the MISO Open Access Transmission, Energy & Operating Reserve Markets Tariff ("Tariff"). In addition to determining if reliability issues result from the suspension, further analysis was performed to identify the areas that are subject to allocation of the SSR costs. The areas identified for the cost allocation are Big Rivers Electric Corporation (BREC) and Southern Illinois Gas & Electric (SIGE).

The reduction of Century Load is identified as a potential alternative to avoid entering Coleman SSR agreement. The reductions are summarized as follows,

### *Century Load Maximum Loading Study Result*

- System intact condition
  - Maximum Century Loading: 338MW
  - Most limiting element/Critical contingency
    - Newtonville – Coleman 161/ [REDACTED]
- Prior outage condition
  - Maximum Century Loading: 132MW
  - Most limiting prior outage
    - [REDACTED]
  - Most limiting element/Critical contingency under prior outage
    - Newtonville – Coleman 161 / [REDACTED]
- Voltage Collapse
  - Maximum Century Loading: 230MW
  - Most limiting C3 Contingency
    - [REDACTED]

## VII. SSR AGREEMENT COST ALLOCATION

MISO utilizes a load shed methodology to determine the reliability benefits to each MISO Local Balancing Area (LBA) of operation, without the SSR unit(s). Although load shed is not permitted for NERC Category A or B events, this methodology determines the load shed amount needed to relieve all Category B reliability issues and the most severe Category C reliability issues identified, as a proxy for the reliability benefit of the SSR unit operation. The potential SSR Agreement LBA shares that were calculated for this Attachment Y-2 study are included below in Table 2.

**Table 2: SSR Agreement LBA Shares**

LBA	Load Shed (MW)	LBA Share
BREC	1504	99.5%
SIGE	7	.5%
Total	1511	100.00%

## VIII. ANALYSIS OF ALTERNATIVES

### c. New Generation or Generation Redispatch

No new dispatchable generation is currently planned for the impacted region.

### d. System Reconfiguration and Operation Guidelines

Currently no operating procedures are available that would address specific contingency events to maintain transmission loading within limits

#### **e. Demand Response or Load Curtailment**

FCITC studies were performed to determine the maximum Century Loading without causing transmission system violation.

Three scenarios were studied to determine the maximum Century Loading

- 2014 summer peak
- 2017 summer shoulder
- 2014 summer peak with stressed 2000MW MISO-TVA transfer

The Stressed 2014 summer peak scenario was identified as the worst scenario. The maximum Century Loading was identified as 338MW under system intact and N-1 condition, 200MVar Capacitor Bank at Coleman 161kV bus is required to mitigate voltage violations. The most limiting element is Newtonville – Coleman 161 kV branch and the most critical contingency is [REDACTED].

The Prior-outage scenario was evaluated using the 2014 summer peak stressed case, the maximum Century Loading was identified as 132MW under prior outage of [REDACTED]. The most limiting element is Newtonville – Coleman 161 kV branch and the most critical contingency is [REDACTED].

The results are available at Appendix B.

The C3 contingency events were studied and the not-converged (blow up) event was selected for PV analysis. [REDACTED] was identified causing voltage collapse.

PV analysis was performed to identify the maximum century loading before the voltage collapse. Figure below shows the PV curve of the transfer from AMIL to Century Load. The maximum Century Load before voltage collapse was identified as 230MW.

#### **f. Transmission Projects**

BREC has not identified transmission upgrades that would be completed to alleviate the loading during the period of suspension. The loading is closely aligned with the local industrial load and mitigation by load curtailment is preferred during the suspension period.

## **IX. SUMMARY OF POTENTIAL SOLUTION**

The suspension period is from 2013 – 2016 and the unit is planned to return to service. This will forego any need for transmission upgrades since the load may be adequately managed by curtailment of industrial load.

Curtailment of load via demand response is one of the alternatives to relieve transmission system overload. Century load would need to be reduced to mitigate potential constraints. The maximum Century loading is 338MW under system intact conditions, 132MW under prior outage of

[REDACTED] due to thermal loading and 230MW under prior outage of [REDACTED]to avoid potential voltage collapse.

A special protection scheme on Newtonsville to Coleman 161kV may provide automated post-contingent response to relieve the system constraints. While the Century plant may operate at 480MW under system intact conditions, curtailment of Century load to 230MW in following the contingent loss of [REDACTED] would be needed to avoid potential voltage collapse. Century Load will be reduced to 132MW at the outage of [REDACTED]. SPS may also be required in other branches with different settings.

## **X. APPENDICES**

### **Appendix A: Steady-State AC Contingency Results**

Table 1a: Branch Results

Table 1b: Voltage Results

### **Appendix B: FCITC Study Results**

Table 2a: 2014SP FCITC

Table 2b: 2017SH FCITC

Table 2c: 2014SP Stressed FCITC

Table 2d: 2014SP Stressed FCITC under Double Outage Condition

Table 2e: PSS/e verification on 2014SP Stressed Scenario



Table 1a: Branch Results

MISO Coleman Units 1, 2, & 3 Attachment Y-2 Study - Compare Branch Results  
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Model	Contingency Description	Limiting Element		Type	Rating	Coleman 1, 2, & 3 OFF			Coleman 1, 2, & 3 ON			Unit Impact			MISO Comments
		From bus	To bus			Cont MVA	Base Flow	Loading %	Cont MVA	Base Flow	Loading %	MWOff-MWOn	PIDF (> 5%)	OTDF (> 5%)	
2014SP	[REDACTED CONTINGENCY]	248435 07NMTVL1	161 253580 10NTVL16	161 1	LN	335	335.0	239.6	100.0	#N/A	#N/A	#N/A	#N/A	#N/A	
2014SP	[REDACTED CONTINGENCY]	248435 07NMTVL1	161 340552 SCOLEMAN	161 1	LN	335	335.0	239.6	100.0	#N/A	#N/A	#N/A	#N/A	#N/A	
2014SP	[REDACTED CONTINGENCY]	248435 07NMTVL1	161 253580 10NTVL16	161 1	LN	335	335.3	239.6	100.1	#N/A	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SP	[REDACTED CONTINGENCY]	248435 07NMTVL1	161 340552 SCOLEMAN	161 1	LN	335	335.3	239.6	100.1	#N/A	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SP	[REDACTED CONTINGENCY]	248435 07NMTVL1	161 253580 10NTVL16	161 1	LN	335	491.0	239.6	146.6	#N/A	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SP	[REDACTED CONTINGENCY]	248435 07NMTVL1	161 340552 SCOLEMAN	161 1	LN	335	491.0	239.6	146.6	#N/A	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SP	[REDACTED CONTINGENCY]	248642 07MIDWAY	69.0 248861 07TRY_69	69.0 1	LN	35	35.9	25.6	102.7	#N/A	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SP	[REDACTED CONTINGENCY]	248435 07NMTVL1	161 253580 10NTVL16	161 1	LN	335	491.0	239.6	146.6	#N/A	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SP	[REDACTED CONTINGENCY]	248435 07NMTVL1	161 340552 SCOLEMAN	161 1	LN	335	491.0	239.6	146.6	#N/A	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SP	[REDACTED CONTINGENCY]	248642 07MIDWAY	69.0 248861 07TRY_69	69.0 1	LN	35	35.9	25.6	102.7	#N/A	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SP	[REDACTED CONTINGENCY]	248435 07NMTVL1	161 253580 10NTVL16	161 1	LN	335	491.0	239.6	146.6	#N/A	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SP	[REDACTED CONTINGENCY]	248435 07NMTVL1	161 340552 SCOLEMAN	161 1	LN	335	491.0	239.6	146.6	#N/A	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SP	[REDACTED CONTINGENCY]	248642 07MIDWAY	69.0 248861 07TRY_69	69.0 1	LN	35	35.9	25.6	102.7	#N/A	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SP	[REDACTED CONTINGENCY]	253580 10NTVL16	161 253581 10NTVL13	138 T5	TR	176	217.4	91.9	123.5	#N/A	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SP	[REDACTED CONTINGENCY]	248435 07NMTVL1	161 253580 10NTVL16	161 1	LN	335	491.0	239.6	146.6	#N/A	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SP	[REDACTED CONTINGENCY]	248435 07NMTVL1	161 340552 SCOLEMAN	161 1	LN	335	491.0	239.6	146.6	#N/A	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SP	[REDACTED CONTINGENCY]	248642 07MIDWAY	69.0 248861 07TRY_69	69.0 1	LN	35	35.9	25.6	102.7	#N/A	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SP	[REDACTED CONTINGENCY]	248435 07NMTVL1	161 253580 10NTVL16	161 1	LN	335	335.3	239.6	100.1	#N/A	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SP	[REDACTED CONTINGENCY]	248435 07NMTVL1	161 340552 SCOLEMAN	161 1	LN	335	335.3	239.6	100.1	#N/A	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SP	[REDACTED CONTINGENCY]	248435 07NMTVL1	161 253580 10NTVL16	161 1	LN	335	491.0	239.6	146.6	#N/A	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SP	[REDACTED CONTINGENCY]	248435 07NMTVL1	161 340552 SCOLEMAN	161 1	LN	335	491.0	239.6	146.6	#N/A	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SP	[REDACTED CONTINGENCY]	248642 07MIDWAY	69.0 248861 07TRY_69	69.0 1	LN	35	35.9	25.6	102.7	#N/A	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SP	[REDACTED CONTINGENCY]	324094 2TRTLE CRK	789.0 324562 2HARS57	69.0 1	LN	35	37.8	13.3	106.0	#N/A	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SP	[REDACTED CONTINGENCY]	324543 2FOUR M	69.0 324688 2PINEVI	69.0 1	LN	32	33.6	15.4	105.0	#N/A	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SPCentoff	[REDACTED CONTINGENCY]	249631 08THRTN	230 991964 THORNTWN	1.00 1	TR	69.9	87.3	48.7	125.0	#N/A	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SPCentoff	[REDACTED CONTINGENCY]	250310 08BRINGH	69.0 250451 08FLORAJ	69.0 1	LN	34	37.4	3.0	110.0	#N/A	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SPCentoff	[REDACTED CONTINGENCY]	250321 08BURROW	69.0 250790 08ROCKFL	69.0 1	LN	34	47.6	8.1	139.9	#N/A	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SPCentoff	[REDACTED CONTINGENCY]	250411 08FFWSTJ	69.0 250457 08FRAB B	69.0 1	LN	100.3	112.0	57.8	111.7	#N/A	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SPCentoff	[REDACTED CONTINGENCY]	250451 08FLORAJ	69.0 250790 08ROCKFL	69.0 1	LN	34	43.6	4.5	128.2	#N/A	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SPCentoff	[REDACTED CONTINGENCY]	250457 08FRAB B	69.0 250683 08MIDFO	69.0 1	LN	45	87.1	31.3	193.6	#N/A	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SPCentoff	[REDACTED CONTINGENCY]	250608 08KOK HP	69.0 250610 08KOHAI	69.0 1	LN	45	129.0	10.3	286.6	#N/A	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SPCentoff	[REDACTED CONTINGENCY]	250608 08KOK HP	69.0 250614 08KOSE	69.0 1	LN	65	69.7	44.0	107.2	#N/A	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SPCentoff	[REDACTED CONTINGENCY]	250610 08KOHAI	69.0 250798 08RUSIAV	69.0 1	LN	45	129.5	10.3	287.9	#N/A	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SPCentoff	[REDACTED CONTINGENCY]	250625 08LAF	69.0 250948 08WVMONI	69.0 1	LN	45	66.9	18.0	148.6	#N/A	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SPCentoff	[REDACTED CONTINGENCY]	250683 08MIDFO	69.0 250795 08ROSSVL	69.0 1	LN	44	52.7	6.1	119.8	#N/A	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SPCentoff	[REDACTED CONTINGENCY]	250683 08MIDFO	69.0 250798 08RUSIAV	69.0 1	LN	44	150.2	9.6	341.3	#N/A	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SPCentoff	[REDACTED CONTINGENCY]	250795 08ROSSVL	69.0 250948 08WVMONI	69.0 1	LN	45	65.9	17.0	146.5	#N/A	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SPCentoff	[REDACTED CONTINGENCY]	250847 08THRTN	69.0 991964 THORNTWN	1.00 1	TR	69.9	84.1	47.2	120.4	#N/A	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SP	[REDACTED CONTINGENCY]	248435 07NMTVL1	161 253580 10NTVL16	161 1	LN	335	342.6	248.6	102.3	#N/A	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SP	[REDACTED CONTINGENCY]	248435 07NMTVL1	161 340552 SCOLEMAN	161 1	LN	335	342.6	248.6	102.3	#N/A	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SP	[REDACTED CONTINGENCY]	248435 07NMTVL1	161 253580 10NTVL16	161 1	LN	335	354.5	248.6	105.8	#N/A	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SP	[REDACTED CONTINGENCY]	248435 07NMTVL1	161 340552 SCOLEMAN	161 1	LN	335	354.5	248.6	105.8	#N/A	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SP	[REDACTED CONTINGENCY]	248435 07NMTVL1	161 253580 10NTVL16	161 1	LN	335	497.6	248.6	148.5	#N/A	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SP	[REDACTED CONTINGENCY]	248435 07NMTVL1	161 340552 SCOLEMAN	161 1	LN	335	497.7	248.6	148.6	#N/A	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SP	[REDACTED CONTINGENCY]	248642 07MIDWAY	69.0 248861 07TRY_69	69.0 1	LN	35	35.8	24.9	102.3	#N/A	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SP	[REDACTED CONTINGENCY]	248435 07NMTVL1	161 253580 10NTVL16	161 1	LN	335	497.6	248.6	148.5	#N/A	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SP	[REDACTED CONTINGENCY]	248435 07NMTVL1	161 340552 SCOLEMAN	161 1	LN	335	497.7	248.6	148.6	#N/A	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SP	[REDACTED CONTINGENCY]	248642 07MIDWAY	69.0 248861 07TRY_69	69.0 1	LN	35	35.8	24.9	102.3	#N/A	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SP	[REDACTED CONTINGENCY]	253510 10NE13	138 253511 10NE69	69.0 T2	TR	72	72.0	70.4	100.0	#N/A	#N/A	#N/A	#N/A	#N/A	
2017SP	[REDACTED CONTINGENCY]	248435 07NMTVL1	161 253580 10NTVL16	161 1	LN	335	497.6	248.6	148.5	#N/A	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SP	[REDACTED CONTINGENCY]	248435 07NMTVL1	161 340552 SCOLEMAN	161 1	LN	335	497.7	248.6	148.6	#N/A	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SP	[REDACTED CONTINGENCY]	248642 07MIDWAY	69.0 248861 07TRY_69	69.0 1	LN	35	35.8	24.9	102.3	#N/A	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SP	[REDACTED CONTINGENCY]	248807 07DOGWOOD	69.0 248808 07MAUKPT	69.0 1	LN	25	27.5	26.5	109.9	#N/A	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SP	[REDACTED CONTINGENCY]	248807 07DOGWOOD	69.0 248808 07MAUKPT	69.0 1	LN	25	27.5	26.5	109.9	#N/A	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SP	[REDACTED CONTINGENCY]	248435 07NMTVL1	161 253580 10NTVL16	161 1	LN	335	354.5	248.6	105.8	#N/A	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SP	[REDACTED CONTINGENCY]	248435 07NMTVL1	161 340552 SCOLEMAN	161 1	LN	335	354.5	248.6	105.8	#N/A	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SP	[REDACTED CONTINGENCY]	248435 07NMTVL1	161 253580 10NTVL16	161 1	LN	335	497.6	248.6	148.5	#N/A	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SP	[REDACTED CONTINGENCY]	248435 07NMTVL1	161 340552 SCOLEMAN	161 1	LN	335	497.7	248.6	148.6	#N/A	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension

Table 1a: Branch Results

MISO Coleman Units 1, 2, & 3 Attachment Y-2 Study - Compare Branch Results  
 CONFIDENTIAL / CEII - DO NOT RELEASE

Model	Contingency Description	Limiting Element		Type	Rating	Coleman 1, 2, & 3 OFF			Coleman 1,2, & 3 ON			Unit Impact			MISO Comments
		From bus	To bus			Cont	Base Flow	Loading %	Cont	Base Flow	Loading %	MW/OL-MW/en	PTDF (> 5%)	OTDF (> 3%)	
2017SP	[REDACTED CONTINGENCY]	248642 07MIDWAY	69.0 248861 07TRY_69.0 1	LN	35	35.8	24.9	102.3	#N/A	#N/A	#N/A	#N/A		#N/A	Violation caused by suspension
2017SP	[REDACTED CONTINGENCY]	362186 2WATAUGA HP	69.0 362167 2ELIZABETHTN69.0 1	LN	58.4	62.7	61.4	107.3	#N/A	#N/A	#N/A	#N/A		#N/A	Violation caused by suspension
2017SPCentoff	[REDACTED CONTINGENCY]	248807 07DOGWOOD	69.0 248808 07MAUKPT 69.0 1	LN	25	28.2	27.2	112.8	#N/A	#N/A	#N/A	#N/A		#N/A	Violation caused by suspension
2017SPCentoff	[REDACTED CONTINGENCY]	248807 07DOGWOOD	69.0 248808 07MAUKPT 69.0 1	LN	25	28.2	27.2	112.8	#N/A	#N/A	#N/A	#N/A		#N/A	Violation caused by suspension
2017SPCentoff	[REDACTED CONTINGENCY]	362124 2LOVELLTN	69.0 362496 2WATTROAD TN69.0 1	LN	58.4	62.2	61.2	106.5	#N/A	#N/A	#N/A	#N/A		#N/A	Violation caused by suspension
2017SPCentoff	[REDACTED CONTINGENCY]	362124 2LOVELLTN	69.0 362496 2WATTROAD TN69.0 1	LN	58.4	60.0	61.2	102.8	#N/A	#N/A	#N/A	#N/A		#N/A	Violation caused by suspension
2017SPCentoff	[REDACTED CONTINGENCY]	362124 2LOVELLTN	69.0 362496 2WATTROAD TN69.0 1	LN	58.4	62.2	61.2	106.5	#N/A	#N/A	#N/A	#N/A		#N/A	Violation caused by suspension
2017SH	[REDACTED CONTINGENCY]	347946 4PANA	138 348788 4SCHRAMCY TP 138 1	LN	202	232.8	38.0	115.2	219.4	35.0	108.6	13.4	3.0248307		Violation made worse by suspension
2017SH	[REDACTED CONTINGENCY]	348067 7RAMSEY	345 348068 4RAMSEY CIPS 138 1	TR	382	388.9	94.9	101.8	371.0	95.6	97.1	17.9	4.0406321		Violation caused by suspension
2017SH	[REDACTED CONTINGENCY]	348067 7RAMSEY	345 348068 4RAMSEY CIPS 138 1	TR	382	388.3	94.9	101.7	370.5	95.6	97.0	17.8	4.0180587		Violation caused by suspension
2017SH	[REDACTED CONTINGENCY]	248435 07NWTVL1	161 253580 10NTVL16 161 1	LN	335	434.2	133.5	129.6	#N/A	#N/A	#N/A	#N/A		#N/A	Violation caused by suspension
2017SH	[REDACTED CONTINGENCY]	248435 07NWTVL1	161 340552 5COLEMAN 161 1	LN	335	434.4	133.6	129.7	#N/A	#N/A	#N/A	#N/A		#N/A	Violation caused by suspension
2017SH	[REDACTED CONTINGENCY]	248642 07MIDWAY	69.0 248861 07TRY_69.0 1	LN	35	37.1	24.6	106.0	#N/A	#N/A	#N/A	#N/A		#N/A	Violation caused by suspension
2017SH	[REDACTED CONTINGENCY]	324578 2HRDSTB	69.0 324769 2WALKRUK 69.0 1	LN	28	29.0	11.0	103.4	#N/A	#N/A	#N/A	#N/A		#N/A	Violation caused by suspension
2017SH	[REDACTED CONTINGENCY]	324628 2MARI S	69.0 324629 2MARONKU 69.0 1	LN	28	28.4	19.6	101.5	#N/A	#N/A	#N/A	#N/A		#N/A	Violation caused by suspension
2017SH	[REDACTED CONTINGENCY]	362124 2LOVELLTN	69.0 362496 2WATTROAD TN69.0 1	LN	58.4	61.6	62.7	105.5	#N/A	#N/A	#N/A	#N/A		#N/A	Violation caused by suspension
2017SH	[REDACTED CONTINGENCY]	325077 5COLEMAN TAP	161 325078 5PADUCAH PRI 161 1	LN	245	251.4	181.2	102.6	236.0	172.3	96.3	15.4	3.476298		Violation caused by suspension
2017SH	[REDACTED CONTINGENCY]	340618 5LIVING	161 360016 5MARSHALL KY 161 1	LN	223	238.1	63.0	106.8	214.2	56.1	96.1	23.9	5.3950339		Violation caused by suspension
2017SH	[REDACTED CONTINGENCY]	340618 5LIVING	161 360326 5BARKLEY HP 161 1	LN	223	281.2	92.6	126.1	250.2	79.5	112.2	31.0	6.9977427		Violation made worse by suspension
2017SH	[REDACTED CONTINGENCY]	362124 2LOVELLTN	69.0 362496 2WATTROAD TN69.0 1	LN	58.4	61.7	62.7	105.6	#N/A	#N/A	#N/A	#N/A		#N/A	Violation caused by suspension
2017SH	[REDACTED CONTINGENCY]	362124 2LOVELLTN	69.0 362496 2WATTROAD TN69.0 1	LN	58.4	61.7	62.7	105.6	#N/A	#N/A	#N/A	#N/A		#N/A	Violation caused by suspension
2017SH	[REDACTED CONTINGENCY]	362124 2LOVELLTN	69.0 362496 2WATTROAD TN69.0 1	LN	58.4	61.7	62.7	105.6	#N/A	#N/A	#N/A	#N/A		#N/A	Violation caused by suspension
2017SH	[REDACTED CONTINGENCY]	325077 5COLEMAN TAP	161 325078 5PADUCAH PRI 161 1	LN	245	248.9	181.2	101.6	233.5	172.3	95.3	15.4	3.476298		Violation caused by suspension
2017SH	[REDACTED CONTINGENCY]	340618 5LIVING	161 360016 5MARSHALL KY 161 1	LN	223	232.5	63.0	104.3	#N/A	#N/A	#N/A	#N/A		#N/A	Violation caused by suspension
2017SH	[REDACTED CONTINGENCY]	340618 5LIVING	161 360326 5BARKLEY HP 161 1	LN	223	274.7	92.6	123.2	243.6	79.5	109.2	31.1	7.020316		Violation made worse by suspension
2017SH	[REDACTED CONTINGENCY]	362186 2WATAUGA HP	69.0 362167 2ELIZABETHTN69.0 1	LN	58.4	60.6	61.6	103.8	#N/A	#N/A	#N/A	#N/A		#N/A	Violation caused by suspension
2017SHCentoff	[REDACTED CONTINGENCY]	348774 7BALDWIN	345 348776 7TURKEY HILL 345 1	LN	956	1177.0	693.4	123.1	1161.5	692.2	121.5	15.5	3.4988713		Violation made worse by suspension
2017SHCentoff	[REDACTED CONTINGENCY]	348728 4W MT VERN W	138 348827 7W MT VERNON 345 1	TR	448	465.3	250.7	103.9	451.7	249.1	100.8	13.6	3.0699774		Violation made worse by suspension
2017SHCentoff	[REDACTED CONTINGENCY]	347016 4EFFGHIMNW	138 347024 4EFFGHIM 138 1	LN	263	293.2	60.8	111.5	279.5	60.2	106.3	13.7	3.0925508		Violation made worse by suspension
2017SHCentoff	[REDACTED CONTINGENCY]	347016 4EFFGHIMNW	138 347024 4EFFGHIM 138 1	LN	263	293.5	60.8	111.6	279.7	60.2	106.4	13.8	3.1151242		Violation made worse by suspension
2017SHCentoff	[REDACTED CONTINGENCY]	347946 4PANA	138 348788 4SCHRAMCY TP 138 1	LN	202	236.0	39.5	116.9	220.2	35.8	109.0	15.8	3.5665914		Violation made worse by suspension
2017SHCentoff	[REDACTED CONTINGENCY]	348730 4MIDWAY E	138 348786 4SCHRAMCY TP 138 1	LN	202	266.3	73.5	131.8	251.0	70.2	124.2	15.3	3.4537246		Violation made worse by suspension
2017SHCentoff	[REDACTED CONTINGENCY]	347946 4PANA	138 348068 4RAMSEY CIPS 138 1	LN	264	266.4	44.5	100.9	251.3	44.8	95.2	15.1	3.4085779		Violation caused by suspension
2017SHCentoff	[REDACTED CONTINGENCY]	348067 7RAMSEY	345 348068 4RAMSEY CIPS 138 1	TR	382	390.9	95.5	102.3	370.2	96.0	96.9	20.7	4.6726862		Violation caused by suspension
2017SHCentoff	[REDACTED CONTINGENCY]	347946 4PANA	138 348068 4RAMSEY CIPS 138 1	LN	264	266.3	44.5	100.9	251.2	44.8	95.1	15.1	3.4085779		Violation caused by suspension
2017SHCentoff	[REDACTED CONTINGENCY]	348067 7RAMSEY	345 348068 4RAMSEY CIPS 138 1	TR	382	390.4	95.5	102.2	369.6	96.0	96.8	20.8	4.6852596		Violation caused by suspension
2017SHCentoff	[REDACTED CONTINGENCY]	348774 7BALDWIN	345 348776 7TURKEY HILL 345 1	LN	956	1054.9	693.4	110.3	1039.9	692.2	108.8	15.0	3.3860045		Violation made worse by suspension
2017SHCentoff	[REDACTED CONTINGENCY]	348774 7BALDWIN	345 348775 4BALDWIN 138 1	TR	448	470.3	293.8	105.0	456.3	287.1	101.8	14.0	3.1602709		Violation made worse by suspension
2017SHCentoff	[REDACTED CONTINGENCY]	350204 4CAMPBELLHIL	138 350205 5CAMPBELLHIL 161 1	TR	224	323.8	25.8	144.5	295.9	22.6	132.1	27.9	6.2979684		Violation made worse by suspension
2017SHCentoff	[REDACTED CONTINGENCY]	300061 5BOONE	161 300493 2BOONE 69.0 1	TR	112	126.0	92.7	112.5	111.6	92.8	99.7	14.4	3.2505643		Violation caused by suspension
2017SHCentoff	[REDACTED CONTINGENCY]	324512 2EDDY P	69.0 324693 2PRINCE 69.0 1	LN	64	67.8	32.1	106.0	#N/A	#N/A	#N/A	#N/A		#N/A	Violation caused by suspension
2017SHCentoff	[REDACTED CONTINGENCY]	324512 2EDDY P	69.0 362916 2KY DAM 69.0 1	LN	70	71.5	35.8	102.1	#N/A	#N/A	#N/A	#N/A		#N/A	Violation caused by suspension
2017SHCentoff	[REDACTED CONTINGENCY]	360103 5PHIPPS B NP	161 360705 5JSEV C34 TP 161 3	LN	472.1	492.1	319.4	104.2	478.7	314.4	101.4	13.4	3.0248307		Violation made worse by suspension
2017SHCentoff	[REDACTED CONTINGENCY]	362124 2LOVELLTN	69.0 362496 2WATTROAD TN69.0 1	LN	58.4	61.6	62.7	105.5	#N/A	#N/A	#N/A	#N/A		#N/A	Violation caused by suspension
2017SHCentoff	[REDACTED CONTINGENCY]	340618 5LIVING	161 360016 5MARSHALL KY 161 1	LN	223	224.2	59.3	100.5	#N/A	#N/A	#N/A	#N/A		#N/A	Violation caused by suspension
2017SHCentoff	[REDACTED CONTINGENCY]	340618 5LIVING	161 360326 5BARKLEY HP 161 1	LN	223	261.8	83.9	117.4	230.1	70.6	103.2	31.7	7.1557562		Violation made worse by suspension
2017SHCentoff	[REDACTED CONTINGENCY]	362124 2LOVELLTN	69.0 362496 2WATTROAD TN69.0 1	LN	58.4	63.9	62.7	109.5	#N/A	#N/A	#N/A	#N/A		#N/A	Violation caused by suspension
2017SHCentoff	[REDACTED CONTINGENCY]	362124 2LOVELLTN	69.0 362496 2WATTROAD TN69.0 1	LN	58.4	61.7	62.7	105.7	#N/A	#N/A	#N/A	#N/A		#N/A	Violation caused by suspension
2017SHCentoff	[REDACTED CONTINGENCY]	340618 5LIVING	161 360326 5BARKLEY HP 161 1	LN	223	255.3	83.9	114.5	223.6	70.6	100.3	31.7	7.1557562		Violation made worse by suspension
2017SHCentoff	[REDACTED CONTINGENCY]	362124 2LOVELLTN	69.0 362496 2WATTROAD TN69.0 1	LN	58.4	61.7	62.7	105.7	#N/A	#N/A	#N/A	#N/A		#N/A	Violation caused by suspension

Table 1b: Voltage Results

**MISO Coleman Units 1, 2, & 3 Attachment Y-2 Study - Compare Voltage Results**  
**CONFIDENTIAL / CEII - DO NOT RELEASE**

Model	Contingency Description	Limiting Element							Coleman 1, 2, & 3 OFF			Coleman 1, 2, & 3 ON			Unit Impact	MISO Comments
		Bus #	Bus Name	KV	Area	Zone	Low Limit	Upp Limit	Cont Volt	Base Volt	Viol	Cont Volt	Base Volt	Viol	Volt-Von (>0.01)	
2014SP	[REDACTED CONTINGENCY]	248435	07NWTVL1	161	207	1207	0.9	1.1	0.8516	0.9693	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SP	[REDACTED CONTINGENCY]	248887	07NWTNVL	161	207	1207	0.9	1.1	0.873	0.9793	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SP	[REDACTED CONTINGENCY]	340552	5COLEMAN	161	314	1314	0.92	1.05	0.8125	0.9607	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SP	[REDACTED CONTINGENCY]	340557	5HANGCO	161	314	1314	0.92	1.05	0.8214	0.9669	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SP	[REDACTED CONTINGENCY]	340558	5SKILMAN	161	314	1314	0.92	1.05	0.8487	0.9798	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SP	[REDACTED CONTINGENCY]	340559	5DAVIS	161	314	1314	0.92	1.05	0.9081	0.9855	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SP	[REDACTED CONTINGENCY]	340564	5NATAL	161	314	1314	0.92	1.05	0.8235	0.97	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SP	[REDACTED CONTINGENCY]	340565	5NEWMAN	161	314	1314	0.92	1.05	0.8958	0.9743	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SP	[REDACTED CONTINGENCY]	340621	5COLEEHV	161	314	1314	0.92	1.05	0.8171	0.9676	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SP	[REDACTED CONTINGENCY]	248435	07NWTVL1	161	207	1207	0.9	1.1	0.8516	0.9693	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SP	[REDACTED CONTINGENCY]	248887	07NWTNVL	161	207	1207	0.9	1.1	0.873	0.9793	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SP	[REDACTED CONTINGENCY]	340552	5COLEMAN	161	314	1314	0.92	1.05	0.8125	0.9607	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SP	[REDACTED CONTINGENCY]	340557	5HANGCO	161	314	1314	0.92	1.05	0.8214	0.9669	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SP	[REDACTED CONTINGENCY]	340558	5SKILMAN	161	314	1314	0.92	1.05	0.8487	0.9798	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SP	[REDACTED CONTINGENCY]	340559	5DAVIS	161	314	1314	0.92	1.05	0.9081	0.9855	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SP	[REDACTED CONTINGENCY]	340563	7COLEMAN	345	314	1314	0.92	1.05	0.8171	0.9928	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SP	[REDACTED CONTINGENCY]	340564	5NATAL	161	314	1314	0.92	1.05	0.8235	0.97	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SP	[REDACTED CONTINGENCY]	340565	5NEWMAN	161	314	1314	0.92	1.05	0.8958	0.9743	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SP	[REDACTED CONTINGENCY]	340621	5COLEEHV	161	314	1314	0.92	1.05	0.8171	0.9676	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SP	[REDACTED CONTINGENCY]	248435	07NWTVL1	161	207	1207	0.9	1.1	0.8516	0.9693	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SP	[REDACTED CONTINGENCY]	248887	07NWTNVL	161	207	1207	0.9	1.1	0.873	0.9793	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SP	[REDACTED CONTINGENCY]	340552	5COLEMAN	161	314	1314	0.92	1.05	0.8125	0.9607	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SP	[REDACTED CONTINGENCY]	340557	5HANGCO	161	314	1314	0.92	1.05	0.8214	0.9669	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SP	[REDACTED CONTINGENCY]	340558	5SKILMAN	161	314	1314	0.92	1.05	0.8487	0.9798	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SP	[REDACTED CONTINGENCY]	340559	5DAVIS	161	314	1314	0.92	1.05	0.9081	0.9855	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SP	[REDACTED CONTINGENCY]	340563	7COLEMAN	345	314	1314	0.92	1.05	0.8171	0.9928	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SP	[REDACTED CONTINGENCY]	340564	5NATAL	161	314	1314	0.92	1.05	0.8235	0.97	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SP	[REDACTED CONTINGENCY]	340565	5NEWMAN	161	314	1314	0.92	1.05	0.8958	0.9743	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SP	[REDACTED CONTINGENCY]	340621	5COLEEHV	161	314	1314	0.92	1.05	0.8171	0.9676	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SP	[REDACTED CONTINGENCY]	340559	5DAVIS	161	314	1314	0.92	1.05	0.9029	0.9855	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SP	[REDACTED CONTINGENCY]	340565	5NEWMAN	161	314	1314	0.92	1.05	0.8905	0.9743	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SP	[REDACTED CONTINGENCY]	340559	5DAVIS	161	314	1314	0.92	1.05	0.9028	0.9855	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SP	[REDACTED CONTINGENCY]	340565	5NEWMAN	161	314	1314	0.92	1.05	0.8905	0.9743	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SP	[REDACTED CONTINGENCY]	340559	5DAVIS	161	314	1314	0.92	1.05	0.9028	0.9855	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SP	[REDACTED CONTINGENCY]	340565	5NEWMAN	161	314	1314	0.92	1.05	0.8905	0.9743	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SP	[REDACTED CONTINGENCY]	248431	07BRISTW	161	207	1207	0.9	1.1	0.846	1.0033	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SP	[REDACTED CONTINGENCY]	248435	07NWTVL1	161	207	1207	0.9	1.1	0.7325	0.9693	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SP	[REDACTED CONTINGENCY]	248865	07TRY161	161	207	1207	0.9	1.1	0.7926	0.9907	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SP	[REDACTED CONTINGENCY]	248887	07NWTNVL	161	207	1207	0.9	1.1	0.7605	0.9793	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SP	[REDACTED CONTINGENCY]	340552	5COLEMAN	161	314	1314	0.92	1.05	0.6378	0.9607	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SP	[REDACTED CONTINGENCY]	248435	07NWTVL1	161	207	1207	0.9	1.1	0.8516	0.9693	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SP	[REDACTED CONTINGENCY]	248887	07NWTNVL	161	207	1207	0.9	1.1	0.873	0.9793	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SP	[REDACTED CONTINGENCY]	340552	5COLEMAN	161	314	1314	0.92	1.05	0.8125	0.9607	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SP	[REDACTED CONTINGENCY]	340557	5HANGCO	161	314	1314	0.92	1.05	0.8214	0.9669	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SP	[REDACTED CONTINGENCY]	340558	5SKILMAN	161	314	1314	0.92	1.05	0.8487	0.9798	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension

Table 1b: Voltage Results

**MISO Coleman Units 1, 2, & 3 Attachment Y-2 Study - Compare Voltage Results**  
**CONFIDENTIAL / CEII - DO NOT RELEASE**

Model	Contingency Description	Limiting Element							Coleman 1, 2, & 3 OFF			Coleman 1,2, & 3 ON			Unit Impact	MISO Comments
		Bus #	Bus Name	KV	Area	Zone	Low Limit	Up Limit	Cont Volt	Base Volt	Viol	Cont Volt	Base Volt	Viol	Volt-Von (>0.01)	
2014SP	[REDACTED CONTINGENCY]	340559	5DAVIS	161	314	1314	0.92	1.05	0.9081	0.9855	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SP	[REDACTED CONTINGENCY]	340564	5NATAL	161	314	1314	0.92	1.05	0.8236	0.97	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SP	[REDACTED CONTINGENCY]	340565	5NEWMAN	161	314	1314	0.92	1.05	0.8959	0.9743	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SP	[REDACTED CONTINGENCY]	340621	5COLEEHV	161	314	1314	0.92	1.05	0.8172	0.9676	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SP	[REDACTED CONTINGENCY]	340566	5MEADE	161	314	1314	0.92	1.05	0.8775	0.9851	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SP	[REDACTED CONTINGENCY]	340616	5N.HARD	161	314	1314	0.92	1.05	0.8616	0.9957	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SP	[REDACTED CONTINGENCY]	340566	5MEADE	161	314	1314	0.92	1.05	0.8775	0.9851	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SP	[REDACTED CONTINGENCY]	340616	5N.HARD	161	314	1314	0.92	1.05	0.8616	0.9957	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SP	[REDACTED CONTINGENCY]	340559	5DAVIS	161	314	1314	0.92	1.05	0.9031	0.9855	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SP	[REDACTED CONTINGENCY]	340565	5NEWMAN	161	314	1314	0.92	1.05	0.8907	0.9743	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SP	[REDACTED CONTINGENCY]	248435	07NWTVL1	161	207	1207	0.9	1.1	0.8516	0.9693	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SP	[REDACTED CONTINGENCY]	248887	07NWTNVL	161	207	1207	0.9	1.1	0.873	0.9793	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SP	[REDACTED CONTINGENCY]	340552	5COLEMAN	161	314	1314	0.92	1.05	0.8125	0.9607	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SP	[REDACTED CONTINGENCY]	340557	5SHANCO	161	314	1314	0.92	1.05	0.8214	0.9669	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SP	[REDACTED CONTINGENCY]	340558	5SKILMAN	161	314	1314	0.92	1.05	0.8487	0.9798	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SP	[REDACTED CONTINGENCY]	340559	5DAVIS	161	314	1314	0.92	1.05	0.9081	0.9855	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SP	[REDACTED CONTINGENCY]	340563	7COLEMAN	345	314	1314	0.92	1.05	0.8171	0.9928	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SP	[REDACTED CONTINGENCY]	340564	5NATAL	161	314	1314	0.92	1.05	0.8235	0.97	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SP	[REDACTED CONTINGENCY]	340565	5NEWMAN	161	314	1314	0.92	1.05	0.8958	0.9743	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SP	[REDACTED CONTINGENCY]	340621	5COLEEHV	161	314	1314	0.92	1.05	0.8171	0.9676	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SP	[REDACTED CONTINGENCY]	324139	5DORCHST	161	363	379	0.9	1.1	0.8832	1.0034	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2014SP	[REDACTED CONTINGENCY]	324149	5IMBODEN	161	363	379	0.9	1.1	0.8724	1.0025	L	1.1048	1.003	H	-0.232	Violation caused by suspension
2014SP	[REDACTED CONTINGENCY]	324157	5POCK N	161	363	379	0.9	1.1	0.8677	1.0048	L	1.111	1.0053	H	-0.243	Violation caused by suspension
2014SP	[REDACTED CONTINGENCY]	324158	5POCKET	161	363	379	0.9	1.1	0.8677	1.0047	L	1.111	1.0052	H	-0.243	Violation caused by suspension
2014SPCentoff	[REDACTED CONTINGENCY]	324310	4SPENC	138	363	380	0.9	1.1	0.8823	0.9699	L	0.8718	0.9699	L	0.011	Pre-exsting
2017SP	[REDACTED CONTINGENCY]	248435	07NWTVL1	161	207	1207	0.9	1.1	0.8482	0.9696	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SP	[REDACTED CONTINGENCY]	248887	07NWTNVL	161	207	1207	0.9	1.1	0.8697	0.979	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SP	[REDACTED CONTINGENCY]	340552	5COLEMAN	161	314	1314	0.92	1.05	0.8085	0.9602	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SP	[REDACTED CONTINGENCY]	340557	5SHANCO	161	314	1314	0.92	1.05	0.8173	0.9662	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SP	[REDACTED CONTINGENCY]	340558	5SKILMAN	161	314	1314	0.92	1.05	0.8454	0.9791	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SP	[REDACTED CONTINGENCY]	340559	5DAVIS	161	314	1314	0.92	1.05	0.9049	0.984	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SP	[REDACTED CONTINGENCY]	340564	5NATAL	161	314	1314	0.92	1.05	0.8197	0.9694	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SP	[REDACTED CONTINGENCY]	340565	5NEWMAN	161	314	1314	0.92	1.05	0.8928	0.973	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SP	[REDACTED CONTINGENCY]	340621	5COLEEHV	161	314	1314	0.92	1.05	0.8132	0.967	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SP	[REDACTED CONTINGENCY]	248435	07NWTVL1	161	207	1207	0.9	1.1	0.8482	0.9696	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SP	[REDACTED CONTINGENCY]	248887	07NWTNVL	161	207	1207	0.9	1.1	0.8697	0.979	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SP	[REDACTED CONTINGENCY]	340552	5COLEMAN	161	314	1314	0.92	1.05	0.8085	0.9602	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SP	[REDACTED CONTINGENCY]	340557	5SHANCO	161	314	1314	0.92	1.05	0.8173	0.9662	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SP	[REDACTED CONTINGENCY]	340558	5SKILMAN	161	314	1314	0.92	1.05	0.8454	0.9791	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SP	[REDACTED CONTINGENCY]	340559	5DAVIS	161	314	1314	0.92	1.05	0.9049	0.984	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SP	[REDACTED CONTINGENCY]	340563	7COLEMAN	345	314	1314	0.92	1.05	0.8132	0.9921	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SP	[REDACTED CONTINGENCY]	340564	5NATAL	161	314	1314	0.92	1.05	0.8197	0.9694	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SP	[REDACTED CONTINGENCY]	340565	5NEWMAN	161	314	1314	0.92	1.05	0.8928	0.973	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SP	[REDACTED CONTINGENCY]	340621	5COLEEHV	161	314	1314	0.92	1.05	0.8132	0.967	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SP	[REDACTED CONTINGENCY]	248435	07NWTVL1	161	207	1207	0.9	1.1	0.8482	0.9696	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SP	[REDACTED CONTINGENCY]	253581	10NTVL13	138	210	1210	0.95	1.05	0.9354	0.9903	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SP	[REDACTED CONTINGENCY]	340552	5COLEMAN	161	314	1314	0.92	1.05	0.8085	0.9602	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SP	[REDACTED CONTINGENCY]	340557	5SHANCO	161	314	1314	0.92	1.05	0.8173	0.9662	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SP	[REDACTED CONTINGENCY]	340558	5SKILMAN	161	314	1314	0.92	1.05	0.8454	0.9791	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension



Table 1b: Voltage Results

**MISO Coleman Units 1, 2, & 3 Attachment Y-2 Study - Compare Voltage Results**  
**CONFIDENTIAL / CEII - DO NOT RELEASE**

Model	Contingency Description	Limiting Element							Coleman 1, 2, & 3 OFF			Coleman 1,2, & 3 ON			Unit Impact	MISO Comments
		Bus #	Bus Name	KV	Area	Zone	Low Limit	Up Limit	Cont Volt	Base Volt	Viol	Cont Volt	Base Volt	Viol	Volt-Von (>0.01)	
2017SP	[REDACTED CONTINGENCY]	340559	5DAVIS	161	314	1314	0.92	1.05	0.9049	0.984	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SP	[REDACTED CONTINGENCY]	340563	7COLEMAN	345	314	1314	0.92	1.05	0.8132	0.9921	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SP	[REDACTED CONTINGENCY]	340564	5NATAL	161	314	1314	0.92	1.05	0.8197	0.9694	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SP	[REDACTED CONTINGENCY]	340565	5NEWMAN	161	314	1314	0.92	1.05	0.8928	0.973	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SP	[REDACTED CONTINGENCY]	340621	5COLEEHV	161	314	1314	0.92	1.05	0.8132	0.967	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SP	[REDACTED CONTINGENCY]	340559	5DAVIS	161	314	1314	0.92	1.05	0.8924	0.984	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SP	[REDACTED CONTINGENCY]	340565	5NEWMAN	161	314	1314	0.92	1.05	0.88	0.973	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SP	[REDACTED CONTINGENCY]	340559	5DAVIS	161	314	1314	0.92	1.05	0.8923	0.984	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SP	[REDACTED CONTINGENCY]	340565	5NEWMAN	161	314	1314	0.92	1.05	0.88	0.973	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SP	[REDACTED CONTINGENCY]	253580	10NTVL16	161	210	1210	0.95	1.05	0.9349	0.9697	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SP	[REDACTED CONTINGENCY]	340559	5DAVIS	161	314	1314	0.92	1.05	0.8923	0.984	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SP	[REDACTED CONTINGENCY]	340565	5NEWMAN	161	314	1314	0.92	1.05	0.88	0.973	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SP	[REDACTED CONTINGENCY]	340559	5DAVIS	161	314	1314	0.92	1.05	0.8923	0.984	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SP	[REDACTED CONTINGENCY]	340565	5NEWMAN	161	314	1314	0.92	1.05	0.88	0.973	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SP	[REDACTED CONTINGENCY]	340559	5DAVIS	161	314	1314	0.92	1.05	0.8923	0.984	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SP	[REDACTED CONTINGENCY]	340565	5NEWMAN	161	314	1314	0.92	1.05	0.88	0.973	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SP	[REDACTED CONTINGENCY]	248431	07BRISTW	161	207	1207	0.9	1.1	0.8436	1.0012	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SP	[REDACTED CONTINGENCY]	248435	07NWTVL1	161	207	1207	0.9	1.1	0.7285	0.9696	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SP	[REDACTED CONTINGENCY]	248865	07TRY161	161	207	1207	0.9	1.1	0.7892	0.9896	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SP	[REDACTED CONTINGENCY]	248887	07NWTNVL	161	207	1207	0.9	1.1	0.7568	0.979	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SP	[REDACTED CONTINGENCY]	340552	5COLEMAN	161	314	1314	0.92	1.05	0.6327	0.9602	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SP	[REDACTED CONTINGENCY]	248435	07NWTVL1	161	207	1207	0.9	1.1	0.8482	0.9696	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SP	[REDACTED CONTINGENCY]	248887	07NWTNVL	161	207	1207	0.9	1.1	0.8697	0.979	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SP	[REDACTED CONTINGENCY]	340552	5COLEMAN	161	314	1314	0.92	1.05	0.8085	0.9602	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SP	[REDACTED CONTINGENCY]	340557	5HANCO	161	314	1314	0.92	1.05	0.8174	0.9662	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SP	[REDACTED CONTINGENCY]	340558	5SKILMAN	161	314	1314	0.92	1.05	0.8455	0.9791	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SP	[REDACTED CONTINGENCY]	340559	5DAVIS	161	314	1314	0.92	1.05	0.9049	0.984	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SP	[REDACTED CONTINGENCY]	340564	5NATAL	161	314	1314	0.92	1.05	0.8198	0.9694	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SP	[REDACTED CONTINGENCY]	340565	5NEWMAN	161	314	1314	0.92	1.05	0.8928	0.973	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SP	[REDACTED CONTINGENCY]	340621	5COLEEHV	161	314	1314	0.92	1.05	0.8132	0.967	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SP	[REDACTED CONTINGENCY]	340566	5MEADE	161	314	1314	0.92	1.05	0.8653	0.9846	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SP	[REDACTED CONTINGENCY]	340616	5N.HARD	161	314	1314	0.92	1.05	0.8484	0.9956	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SP	[REDACTED CONTINGENCY]	253580	10NTVL16	161	210	1210	0.95	1.05	0.9367	0.9697	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SP	[REDACTED CONTINGENCY]	253580	10NTVL16	161	210	1210	0.95	1.05	0.9367	0.9697	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SP	[REDACTED CONTINGENCY]	340566	5MEADE	161	314	1314	0.92	1.05	0.8654	0.9846	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SP	[REDACTED CONTINGENCY]	340616	5N.HARD	161	314	1314	0.92	1.05	0.8484	0.9956	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SP	[REDACTED CONTINGENCY]	340559	5DAVIS	161	314	1314	0.92	1.05	0.8952	0.984	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SP	[REDACTED CONTINGENCY]	340565	5NEWMAN	161	314	1314	0.92	1.05	0.8829	0.973	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SP	[REDACTED CONTINGENCY]	248435	07NWTVL1	161	207	1207	0.9	1.1	0.8482	0.9696	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SP	[REDACTED CONTINGENCY]	248887	07NWTNVL	161	207	1207	0.9	1.1	0.8697	0.979	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SP	[REDACTED CONTINGENCY]	340552	5COLEMAN	161	314	1314	0.92	1.05	0.8085	0.9602	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SP	[REDACTED CONTINGENCY]	340557	5HANCO	161	314	1314	0.92	1.05	0.8173	0.9662	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SP	[REDACTED CONTINGENCY]	340558	5SKILMAN	161	314	1314	0.92	1.05	0.8454	0.9791	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SP	[REDACTED CONTINGENCY]	340559	5DAVIS	161	314	1314	0.92	1.05	0.9049	0.984	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SP	[REDACTED CONTINGENCY]	340563	7COLEMAN	345	314	1314	0.92	1.05	0.8132	0.9921	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SP	[REDACTED CONTINGENCY]	340564	5NATAL	161	314	1314	0.92	1.05	0.8197	0.9694	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SP	[REDACTED CONTINGENCY]	340565	5NEWMAN	161	314	1314	0.92	1.05	0.8928	0.973	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SP	[REDACTED CONTINGENCY]	340621	5COLEEHV	161	314	1314	0.92	1.05	0.8132	0.967	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SP	[REDACTED CONTINGENCY]	360430	5SHARRIMAN TN	161	347	1368	0.9	1.1	0.7649	1.0426	L	0.7822	1.0427	L	-0.017	Pre-existing

Table 1b: Voltage Results

**MISO Coleman Units 1, 2, & 3 Attachment Y-2 Study - Compare Voltage Results**  
**CONFIDENTIAL / CEII - DO NOT RELEASE**

Model	Contingency Description	Limiting Element							Coleman 1, 2, & 3 OFF			Coleman 1,2, & 3 ON			Unit Impact	MISO Comments
		Bus #	Bus Name	KV	Area	Zone	Low Limit	Upp Limit	Cont Volt	Base Volt	Viol	Cont Volt	Base Volt	Viol	Volt-Von (>0.01)	
2017SP	[REDACTED CONTINGENCY]	361099	5BLAIR RD TP	161	347	1368	0.9	1.1	0.7641	1.0477	L	0.7815	1.0477	L	-0.017	Pre-existing
2017SP	[REDACTED CONTINGENCY]	361146	5BLAIR RD TN	161	347	1368	0.9	1.1	0.7638	1.0474	L	0.7812	1.0474	L	-0.017	Pre-existing
2017SP	[REDACTED CONTINGENCY]	360430	5HARRIMAN TN	161	347	1368	0.9	1.1	0.6888	1.0426	L	0.7309	1.0427	L	-0.042	Pre-existing
2017SP	[REDACTED CONTINGENCY]	361099	5BLAIR RD TP	161	347	1368	0.9	1.1	0.6889	1.0477	L	0.7311	1.0477	L	-0.042	Pre-existing
2017SP	[REDACTED CONTINGENCY]	361146	5BLAIR RD TN	161	347	1368	0.9	1.1	0.6885	1.0474	L	0.7307	1.0474	L	-0.042	Pre-existing
2017SP	[REDACTED CONTINGENCY]	361383	5W OAK RIDGT	161	347	1368	0.9	1.1	0.689	1.0479	L	0.7312	1.0479	L	-0.042	Pre-existing
2017SP	[REDACTED CONTINGENCY]	360430	5HARRIMAN TN	161	347	1368	0.9	1.1	0.6979	1.0426	L	0.7309	1.0427	L	-0.033	Pre-existing
2017SP	[REDACTED CONTINGENCY]	360692	5ROANE B#2	161	347	1368	0.9	1.1	0.6981	1.0479	L	0.7312	1.0479	L	-0.033	Pre-existing
2017SP	[REDACTED CONTINGENCY]	361099	5BLAIR RD TP	161	347	1368	0.9	1.1	0.6981	1.0477	L	0.7311	1.0477	L	-0.033	Pre-existing
2017SP	[REDACTED CONTINGENCY]	361146	5BLAIR RD TN	161	347	1368	0.9	1.1	0.6976	1.0474	L	0.7307	1.0474	L	-0.033	Pre-existing
2017SP	[REDACTED CONTINGENCY]	361383	5W OAK RIDGT	161	347	1368	0.9	1.1	0.6981	1.0479	L	0.7312	1.0479	L	-0.033	Pre-existing
2017SPCentoff	[REDACTED CONTINGENCY]	360430	5HARRIMAN TN	161	347	1368	0.9	1.1	0.7308	1.0426	L	0.6782	1.0426	L	0.053	Pre-existing
2017SPCentoff	[REDACTED CONTINGENCY]	361099	5BLAIR RD TP	161	347	1368	0.9	1.1	0.731	1.0477	L	0.6784	1.0477	L	0.053	Pre-existing
2017SPCentoff	[REDACTED CONTINGENCY]	361146	5BLAIR RD TN	161	347	1368	0.9	1.1	0.7306	1.0474	L	0.6779	1.0474	L	0.053	Pre-existing
2017SPCentoff	[REDACTED CONTINGENCY]	361383	5W OAK RIDGT	161	347	1368	0.9	1.1	0.731	1.0479	L	0.6784	1.0479	L	0.053	Pre-existing
2017SPCentoff	[REDACTED CONTINGENCY]	360430	5HARRIMAN TN	161	347	1368	0.9	1.1	0.7556	1.0426	L	0.7821	1.0426	L	-0.027	Pre-existing
2017SPCentoff	[REDACTED CONTINGENCY]	361099	5BLAIR RD TP	161	347	1368	0.9	1.1	0.7548	1.0477	L	0.7814	1.0477	L	-0.027	Pre-existing
2017SPCentoff	[REDACTED CONTINGENCY]	361146	5BLAIR RD TN	161	347	1368	0.9	1.1	0.7544	1.0474	L	0.781	1.0474	L	-0.027	Pre-existing
2017SPCentoff	[REDACTED CONTINGENCY]	360430	5HARRIMAN TN	161	347	1368	0.9	1.1	0.7308	1.0426	L	0.6782	1.0426	L	0.053	Pre-existing
2017SPCentoff	[REDACTED CONTINGENCY]	361099	5BLAIR RD TP	161	347	1368	0.9	1.1	0.731	1.0477	L	0.6784	1.0477	L	0.053	Pre-existing
2017SPCentoff	[REDACTED CONTINGENCY]	361146	5BLAIR RD TN	161	347	1368	0.9	1.1	0.7306	1.0474	L	0.6779	1.0474	L	0.053	Pre-existing
2017SPCentoff	[REDACTED CONTINGENCY]	361383	5W OAK RIDGT	161	347	1368	0.9	1.1	0.731	1.0479	L	0.6784	1.0479	L	0.053	Pre-existing
2017SPCentoff	[REDACTED CONTINGENCY]	361364	5WEAVER GA	161	347	1367	0.9	1.1	0.5784	1.0104	L	0.5537	1.0104	L	0.025	Pre-existing
2017SH	[REDACTED CONTINGENCY]	340566	5MEADE	161	314	1314	0.92	1.05	0.9011	0.9887	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SH	[REDACTED CONTINGENCY]	340616	5N.HARD	161	314	1314	0.92	1.05	0.8889	0.998	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SH	[REDACTED CONTINGENCY]	248435	07NWTVL1	161	207	1207	0.9	1.1	0.8438	0.9768	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SH	[REDACTED CONTINGENCY]	248865	07TRY161	161	207	1207	0.9	1.1	0.8832	0.9902	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SH	[REDACTED CONTINGENCY]	248887	07NWTNVL	161	207	1207	0.9	1.1	0.8622	0.9831	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SH	[REDACTED CONTINGENCY]	340552	5COLEMAN	161	314	1314	0.92	1.05	0.8062	0.9699	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SH	[REDACTED CONTINGENCY]	340557	5SHANCO	161	314	1314	0.92	1.05	0.8109	0.9696	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SH	[REDACTED CONTINGENCY]	340558	5SKILMAN	161	314	1314	0.92	1.05	0.8386	0.9824	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SH	[REDACTED CONTINGENCY]	340559	5DAVIS	161	314	1314	0.92	1.05	0.9048	0.9902	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SH	[REDACTED CONTINGENCY]	340563	7COLEMAN	345	314	1314	0.92	1.05	0.8062	0.9931	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SH	[REDACTED CONTINGENCY]	340564	5NATAL	161	314	1314	0.92	1.05	0.8128	0.9724	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SH	[REDACTED CONTINGENCY]	340565	5NEWMAN	161	314	1314	0.92	1.05	0.8933	0.9798	L	#N/A	#N/A	#N/A	#N/A	Violation caused by suspension
2017SH	[REDACTED CONTINGENCY]	360430	5HARRIMAN TN	161	347	1368	0.9	1.1	0.757	1.0422	L	0.7804	1.0424	L	-0.023	Pre-existing
2017SH	[REDACTED CONTINGENCY]	361099	5BLAIR RD TP	161	347	1368	0.9	1.1	0.7562	1.0473	L	0.7797	1.0474	L	-0.024	Pre-existing
2017SH	[REDACTED CONTINGENCY]	361146	5BLAIR RD TN	161	347	1368	0.9	1.1	0.7558	1.047	L	0.7793	1.0472	L	-0.024	Pre-existing
2017SH	[REDACTED CONTINGENCY]	360430	5HARRIMAN TN	161	347	1368	0.9	1.1	0.757	1.0422	L	0.7803	1.0424	L	-0.023	Pre-existing
2017SH	[REDACTED CONTINGENCY]	361099	5BLAIR RD TP	161	347	1368	0.9	1.1	0.7562	1.0473	L	0.7796	1.0474	L	-0.023	Pre-existing
2017SH	[REDACTED CONTINGENCY]	361146	5BLAIR RD TN	161	347	1368	0.9	1.1	0.7558	1.047	L	0.7793	1.0472	L	-0.024	Pre-existing
2017SHCentoff	[REDACTED CONTINGENCY]	324310	4SPENC	138	363	380	0.9	1.1	0.8782	0.9682	L	0.8646	0.9682	L	0.014	Pre-existing
2017SHCentoff	[REDACTED CONTINGENCY]	360430	5HARRIMAN TN	161	347	1368	0.9	1.1	0.757	1.0422	L	0.7803	1.0423	L	-0.023	Pre-existing
2017SHCentoff	[REDACTED CONTINGENCY]	361099	5BLAIR RD TP	161	347	1368	0.9	1.1	0.7562	1.0473	L	0.7796	1.0474	L	-0.023	Pre-existing
2017SHCentoff	[REDACTED CONTINGENCY]	361146	5BLAIR RD TN	161	347	1368	0.9	1.1	0.7558	1.047	L	0.7793	1.0471	L	-0.024	Pre-existing
2017SHCentoff	[REDACTED CONTINGENCY]	360033	8UNION MS	500	347	1356	0.9	1.1	0.8606	1.0475	L	0.8793	1.0476	L	-0.019	Pre-existing
2017SHCentoff	[REDACTED CONTINGENCY]	360430	5HARRIMAN TN	161	347	1368	0.9	1.1	0.757	1.0422	L	0.7803	1.0423	L	-0.023	Pre-existing
2017SHCentoff	[REDACTED CONTINGENCY]	361099	5BLAIR RD TP	161	347	1368	0.9	1.1	0.7562	1.0473	L	0.7796	1.0474	L	-0.023	Pre-existing
2017SHCentoff	[REDACTED CONTINGENCY]	361146	5BLAIR RD TN	161	347	1368	0.9	1.1	0.7558	1.047	L	0.7793	1.0471	L	-0.024	Pre-existing

Table 2a: 2014SP FCITC(Century Load is modeled as 10MW initial value)

From	To	Transfer Level	AC FCITC	DC FCITC	Delta FCITC	Limiting Constraint	Contingency	Moore	Pre-shift	Post-shift	Rating	AC TDF	DC TDF	LODF	PTDF
AMIL	LD CENTURY	1000.0	331.9	367.0	-35.1	L:248435 07NMTVL1 161 340552 SCOLEMAN 161 1	[REDACTED]	1162	111.0	334.7	335.0	0.67398	0.64514	-	0.36806
							[REDACTED]								
							[REDACTED]								
							[REDACTED]								
			331.9	367.0	-35.1	L:248435 07NMTVL1 161 340552 SCOLEMAN 161 1	[REDACTED]	1164	111.0	334.7	335.0	0.67398	0.64514	-	0.36806
							[REDACTED]								
							[REDACTED]								
							[REDACTED]								
			331.9	367.0	-35.1	L:248435 07NMTVL1 161 340552 SCOLEMAN 161 1	[REDACTED]	2598	111.0	334.7	335.0	0.67398	0.64514	-	0.36806
							[REDACTED]								
							[REDACTED]								
			543.8	630.5	-86.6	L:340552 SCOLEMAN 161 340621 SCOLESHV 161 2	[REDACTED]	2414	49.9	334.8	335.0	0.52388	-0.52289	-	-0.33043
							[REDACTED]								
							[REDACTED]								
			543.8	630.6	-86.9	L:340552 SCOLEMAN 161 340621 SCOLESHV 161 2	[REDACTED]	1188	49.4	335.0	335.0	0.52512	-0.52289	-	-0.33043
							[REDACTED]								

Table 2b: 2017SH FCITC(Century Load is modeled as 10MW initial value)

From	To	Transfer Level	AC FCITC	DC FCITC	Delta FCITC	Limiting Constraint	Contingency	Moore	Pre-shift	Post-shift	Rating	AC TDF	DC TDF	LODF	PTDF
AMIL	LD CENTURY	1000.0	361.5	463.4	-82.2	L:248435 07NMTVL1 161 340552 SCOLEMAN 161 1	[REDACTED]	2591	72.8	334.3	335.0	0.68488	0.63341	-	0.33698
							[REDACTED]								
			481.3	719.6	-238.4	L:340551 SREID 161 340559 SDAVIS 161 1	[REDACTED]	2591	172.4	335.4	335.0	0.33873	0.22198	-	0.10687
							[REDACTED]								
			662.0	750.8	-88.8	L:248435 07NMTVL1 161 340552 SCOLEMAN 161 1	[REDACTED]	1158	72.7	334.7	335.0	0.39583	0.38043	-	0.33698
							[REDACTED]								
							[REDACTED]								
			662.0	750.8	-88.8	L:248435 07NMTVL1 161 340552 SCOLEMAN 161 1	[REDACTED]	2590	72.7	334.7	335.0	0.39583	0.38043	-	0.33698
							[REDACTED]								
							[REDACTED]								
			544.0	855.6	-311.6	L:340557 SHANCO 161 340559 SDAVIS 161 1	[REDACTED]	2591	79.0	265.6	265.0	0.34287	-0.22198	-	-0.10687
							[REDACTED]								

Table 2c: 2014SP Stressed FCITC (Century Load is modeled as 10MW as Initial value)

From	To	Transfe r Level	AC FCITC	DC FCITC	Delta FCITC	Limiting Constraint	Contingency	Moore	PreShift t	PostShift	Rating	AC TDV	DC TDV	LODF	PDV
AMIL	LD CENTURY	1000.0	507.5	518.7	-41.2	L:248435 07RWTVL1 161 340552 SCOLEMAN 161 1	[REDACTED]	1167	123.2	334.6	335.0	0.68752	0.64547	-	0.36848
							[REDACTED]								
							[REDACTED]								
							[REDACTED]								
			307.5	348.7	-41.2	L:248435 07RWTVL1 161 340552 SCOLEMAN 161 1	[REDACTED]	2607	123.2	334.6	335.0	0.68752	0.64547	-	0.36848
							[REDACTED]								
							[REDACTED]								
			307.5	348.7	-41.2	L:248435 07RWTVL1 161 340552 SCOLEMAN 161 1	[REDACTED]	1168	123.2	334.6	335.0	0.68752	0.64547	-	0.36848
							[REDACTED]								
							[REDACTED]								
			542.7	630.3	-87.6	L:340552 SCOLEMAN 161 340621 SCOLEMAN 161 2	[REDACTED]	2423	49.9	334.6	335.0	0.52468	-0.52289	-	-0.33021
							[REDACTED]								
							[REDACTED]								
			541.7	630.6	-88.9	L:340552 SCOLEMAN 161 340621 SCOLEMAN 161 2	[REDACTED]	1193	49.4	334.1	335.0	0.52558	-0.52289	-	-0.33021
							[REDACTED]								

Table 2d: 2014SP Stressed FCITC under Double Outage Condition(Century Load is modeled as 10MW as Initial value)  
(to Capture Prior-outage Impact)

From	To	Transfe r Level	AC FCITC	DC FCITC	Delta FCITC	Limiting Constraint	Contingency	Moore	PreShift t	PostShift	Rating	AC TDV	DC TDV	LODF	PDV
AMIL	LD CENTURY	1000.0	122.2	121.2	0.9	L:248435 07RWTVL1 161 340552 SCOLEMAN 161 1	[REDACTED]	209	252.5	334.9	335.0	0.67894	0.82009	-	0.36849
							[REDACTED]								
							[REDACTED]								
			183.2	172.1	11.1	L:248435 07RWTVL1 161 340552 SCOLEMAN 161 1	[REDACTED]	533	263.6	335.0	335.0	0.38952	0.45046	-	0.36849
							[REDACTED]								
							[REDACTED]								
			197.1	187.3	9.9	L:248435 07RWTVL1 161 340552 SCOLEMAN 161 1	[REDACTED]	161	255.0	335.0	335.0	0.40555	0.46281	-	0.36849
							[REDACTED]								
							[REDACTED]								
			177.7	202.0	-24.3	L:340551 SREID 161 340559 SDAVIS 161 1	[REDACTED]	4	232.9	335.3	335.0	0.57636	0.58200	-	0.10449
							[REDACTED]								
							[REDACTED]								
			Not Conn	277.2	-277.2	L:340557 SHANCO 161 340559 SDAVIS 161 1	[REDACTED]	4	*****	*****	*****	*****	-0.58200	-	-0.10449
							[REDACTED]								
							[REDACTED]								



Table 2e: PSS/e Verification on 2014SP Stressed Case on the outage of BERC\_B3

	Century Load (MW)	P	Q	S	Z	MVA-Rating	V p.u.	V kv	I- rating	Current Loading%
Coleman	318	306.9	105.5	324.5271	1142.097196	335	1.019	164.059	1201.354	95.07%
Newtonsville	318	310.1	87.5	322.2084	1142.909792	335	1.011	162.771	1201.354	95.14%
Coleman	338	319.3	96	333.4194	1181.507757	335	1.012	162.932	1201.354	98.35%
Newtonsville	338	322.8	76.7	331.7872	1182.736096	335	1.006	161.966	1201.354	98.45%
Coleman	348	325.5	91.3	338.062	1201.521295	335	1.009	162.449	1201.354	100.01%
Newtonsville	348	329.1	71.2	336.7139	1202.689634	335	1.004	161.644	1201.354	100.11%

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

**BIG RIVERS ELECTRIC CORPORATION**  
**APPLICATION OF BIG RIVERS ELECTRIC CORPORATION**  
**FOR A GENERAL ADJUSTMENT IN RATES**  
**CASE NO. 2012-00535**

**Response to Commission Staff's Fourth Request  
for Information dated July 22, 2013**

**July 29, 2013**

1    **Item 3)** *To the extent that MISC requires that Big Rivers operate Coleman for*  
2    *reliability purposes, provide the level of System Support Resource ("SSR") costs that result*  
3    *from Big Rivers' negotiations with MISO regarding an SSR agreement.*

4

5    **Response)**

6    Big Rivers will not begin SSR negotiations with MISO until the first week of August. Big  
7    Rivers will provide this information as it becomes available.

8

9    **Witness)** Robert W. Berry