# System Impact Study
# Request # GI-2012-3
# FINAL REPORT

60 MW Wind Generation Facility Expansion at Spring Canyon

PSCo Transmission Planning
**December 3, 2013**

## Executive Summary

On May 22, 2012, Public Service Company of Colorado (PSCo) Transmission received a generation request to determine the feasibility of interconnecting a 60 MW wind generation expansion to the existing 60 MW Spring Canyon Energy wind generation facility located at the jointly owned Spring Canyon Substation in Logan County Colorado. Generation from the expansion will be supplied to the PSCo Balancing Authority (BA). The Customer requested a primary Point of Interconnection (POI) on the 230 kV bus at the existing Spring Canyon Substation. No alternative POI was requested. During the System Impact Study (SIS) scoping meeting, held on June 26th, 2013, the Customer revised the initially proposed a commercial operation date of December 1, 2013 to December 31, 2014 with an assumed back-feed (for site energization) date of June 30, 2014.

The purpose of this report is to provide the final results of the SIS for the 60 MW Wind Generation Facility Expansion at Spring Canyon. The results of each transient stability run were analyzed to determine whether any violation of transient voltage dip criteria, violation of transient frequency dip, or loss of generator synchronism occurred in the Western Electricity Coordinating Council (WECC) system before or after the generation project was interconnected. Since a detailed model for the project was provided, a case was studied for both an equivalent and a detailed model of the project to see if any differences occurred. As was expected, the two models responded to system disturbances in a virtually identical manner.

The transient stability analysis found **no criteria violations** in the pre-project or post-project cases for any of the studied outages in either the summer or the winter case. Therefore, this project is determined to cause no violations and to produce no adverse impacts for existing violations related to the transient behavior of the WECC system. The following list tabulates the results obtained for every benchmark case, season, and disturbance combination analyzed:

- No machines lost synchronism with the system

- No transient voltage dip violations were observed
- No transient frequency dip violations were observe

## Background

Public Service Company of Colorado (PSCo) Transmission Planning received a generation request to determine the feasibility of interconnecting a 60 MW wind generation expansion to the existing 60 MW Spring Canyon Energy wind generation facility. The Customer's project facility would consist of thirty-five (35) GE 1.7 MW wind turbines and would be located immediately adjacent to the existing Spring Canyon Energy Facility, near Peetz, Colorado, in Logan County. Generation from the expansion will be supplied to the PSCo Balancing Authority (BA) and for this study was delivered to PSCo native load customers. Since execution of the study agreement, Platte River Power Authority (PRPA) has indicated they have executed a Power Purchase Agreement (PPA) with the Customer. While PRPA is in the PSCo BA, either the Customer or PRPA is responsible for indicating to PSCo what the new load sink it to be. The Customer requested a primary Point of Interconnection (POI) on the 230 kV bus at the existing Spring Canyon Substation. No alternative POI was requested. An Interconnected Feasibility Study Report was completed in June, 2013. During the System Impact Study (SIS) scoping meeting, held on June 26th, 2013, the Customer revised the initially proposed a commercial operation date of December 1, 2013 to December 31, 2014 with an assumed back-feed (for site energization) date of June 30, 2014.This report presents the transient stability study process and results for the System Impact Study.

## Study Scope and Analysis

The System Impact Study evaluated the transmission impacts associated with the proposed generation expansion. It consisted of a stability analysis only. Power flow and short circuit analyses were conducted in the feasibility study and published in the report dated June 12, 2013. The stability analysis identified any dynamic or transient stability problems associated with the new generation.

PSCo adheres to NERC and WECC Reliability Criteria, as well as internal Company criteria for planning studies. During system intact conditions, criteria are to maintain transmission system bus voltages between 0.95 and 1.05 per unit of nominal, and steady-state power flows below the thermal ratings of all facilities. Per the Rocky Mountain Area Voltage Coordination Guidelines[1], PSCo tries to maintain a transmission system voltage profile ranging from 1.02 – 1.03 per unit at regulating buses and 1.0 – 1.03 per unit at non-regulating buses. Following a single contingency, transmission

[1] The Voltage Coordination Guidelines Subcommittee of the Colorado Coordinated Planning Group developed these guidelines. The subcommittee consisted of representatives from major Colorado utilities including Colorado Springs Utilities, Platte River Power Authority, Tri-State Generation and Transmission, Public Service Company of Colorado, and Western Area Power Administration-Rocky Mountain Region. Other major utilities outside of Colorado were involved in the development of these guidelines.

system steady state bus voltages must remain within 0.90 per unit to 1.05 per unit, and power flows within 100% of the facilities' continuous thermal ratings.

Transient stability criteria require that all generating machines remain in synchronism and all power swings should be well damped. Also, transient voltage performance should meet the following criteria:

- Following fault clearing for single contingencies, voltage may not dip more than 25% of the pre-fault voltage at load buses, more than 30% at non-load buses, or more than 20% for more than 20 cycles at any bus.
- Following fault clearing for double contingencies, voltage may not dip more than 30% of the pre-fault voltage at any bus or more than 20% for more than 40 cycles at any bus.

Wind plants are required to remain in service during a three-phase fault lasting up to 9 cycles. They should also remain in service following single line to ground faults with delayed clearing.

For this project, potential affected parties include Western Area Power Administration (WAPA), Platte River Power Authority (PRPA) and Tri-State Generation & Transmission (TSGT). PSCo has coordinated and cooperated on its study assessment through e-mail and phone correspondence and has also forwarded a copy of this feasibility study report to the affected parties.

**Voltage Regulation and Reactive Power Capability**

Interconnection Customers are required to interconnect the Large Generating Facilities with Public Service of Colorado's (PSCo) Transmission System in conformance to the *Xcel Energy Interconnection Guidelines for Transmission Interconnected Producer-Owned Generation Greater Than 20 MW* (available at http://www.xcelenergy.com/staticfiles/xe/Regulatory/Transmission-Interconnection-Guidelines-Great-20MW.pdf). Accordingly, the following voltage regulation and reactive power capability requirements (at the POI) are applicable to this interconnection request:

- The wind plant shall maintain the power factor at the POI within the range of 0.95 leading to 0.95 lagging for the full MW operating range of the facility, if the System Impact Study demonstrates that this power factor requirement is necessary to ensure safety or reliability.
- During system intact conditions, criteria are to maintain transmission system bus voltages between 0.95 and 1.05 per unit of nominal. Following a single contingency, transmission system steady state bus voltages must remain within 0.90 per unit to 1.05 per unit.
- To ensure reliable operation, the interconnecting generation should adhere to the Rocky Mountain Area Voltage Coordination Guidelines for the Northeast

Colorado Region 7; per the guidelines, PSCo tries to maintain an ideal transmission system voltage profile ranging from 1.02 – 1.03 per unit at regulating buses and 1.0 – 1.03 per unit at non-regulating buses.

- The impact of the wind generating facility on the reactive power schedules of nearby generating units may need to be mitigated by the developer if system studies demonstrate that the proposed wind generating facility causes nearby generating units to generate or absorb reactive power for voltage control[2]. It is understood that reactive power reserve must be maintained on generating units to allow them to dynamically regulate voltage for extreme system conditions.
- The wind plant is required to demonstrate to the satisfaction of PSCo System Operations prior to the commercial in-service date that it can safely and reliably operate within required power factor and voltage ranges.
- It is the responsibility of the project developer to determine what type of equipment (DVAR, added switched capacitors, SVC, reactors, etc.), the ratings (MVAR, voltage--34.5 kV or 230 kV), and the locations of those facilities to meet the power factor and voltage range standards.
- PSCo requires the Developer to provide a single point of contact to coordinate compliance with the power factor and voltage regulation at the POI. The reactive flow at the end of the line near the POI will need to be controlled according to the Interconnection Guidelines.

## Study Process

Two study base cases were selected and tuned for this study: a WECC summer peak base case modeling 2013 conditions, 13hs2a.sav, and a WECC light winter base case modeling 2013-14 winter conditions, 14lw1a.sav. All studies were performed using the GE PSLF/PSDS v.18.0_01 software package. NERC Category B & C contingencies were considered as part of the analysis. For each study basecase, two post-project cases were created. One post-project case for each basecase scenario included the detailed Spring Canyon expansion project model provided by the interconnection customer, and the other post-project case modeled an equivalent model per WECC wind model equivalencing guidelines. The following changes were made to each study case in tuning and preparing it for the transient stability study:

- ✓ Added Archer-Ault 230kV line model to case
- ✓ Increased Lamar DC tie model to approximately maximum imports of 200 MW
- ✓ Increased existing Spring Canyon generation to maximum output of 60 MW
- ✓ Adjusted various generation in Colorado to increase TOT3 flow
- ✓ Deleted isolated buses and fine-tuned remote regulation settings

[2] The Rocky Mountain Area Voltage Coordination Guidelines (July 2006), page 8 of 34, Item 6, states that "Static VAR sources (switched shunt capacitors, reactors) should be operated to control the voltage profile before relying on LTC or generator VAR output, and should be used in such a manner to keep LTC transformers near their nominal tap range and to keep reactive margin on generating equipment. The rationale for this goal is that the generator is a dynamic reactive source that can provide high-speed reactive support to the transmission system after a disturbance that results in low voltages, or conversely are in a position to reduce voltages after a contingency that results in high voltages. Keeping transformers near their mid-tap range also allows for maximum response to either boost or reduce voltages following a disturbance."

- ✓ For post-project cases, modeled new generation at full output and offset generation in southern Colorado (Lamar DC tie, Comanche, etc.)

In addition, the following changes and assumptions were made in the process of initializing and testing the dynamic models for the study:

- ✓ Fine-tuned generator output and voltage schedules to eliminate most unsteady initial conditions and improve accuracy of transient stability results
- ✓ In the absence of more detailed dynamic models for back-to-back AC-DC-AC ties, modeled constant-current positive or negative loads equal to the DC flows in the power flow case for Miles City, Rapid City, Sidney, Stegall, and Lamar; also modeled DC blocking for low voltage as occurring when bus voltage dropped below 0.85 pu, and restoring when voltage recovered above 0.85 pu

## Disturbances Studied

Sixteen transient stability disturbances were simulated for each study case and season:

A. NERC/WECC Category B Disturbances

(Three-phase, close-in faults at * with normal clearing of 5 cycles)

1. Sidney* – Sidney DC 230kV Line
2. Sidney* – Stegall 230kV Line
3. Spring Canyon* – Sidney 230kV Line
4. Spring Canyon* – North Yuma 230kV Line
5. North Yuma* – Story 230kV Line
6. North Yuma* – Wray 230kV Line
11. Stegall* – Dave Johnston 230kV Line
12. Stegall* – LRS 230kV Line
13. Stegall* – Archer 230kV Line
14. Story* – LRS 345kV Line
15. Story* – Pawnee* 230kV Line

B. NERC/WECC Category C Disturbances

(Single-line-to-ground, close-in faults at * with stuck breaker causing delayed clearing of 21 cycles)

7. Sidney* – Spring Canyon 230kV Line
8. North Yuma* – Spring Canyon 230kV Line
8a. North Yuma 230*/115kV Transformer
9. North Yuma* – Story 230kV Line
10. North Yuma* – Wray 230kV Line

## Study Results

The transient stability analysis for the GI-2012-3 Spring Canyon 60 MW Expansion System Impact Study simulated each of the 16 disturbances listed for each of the six

study cases (two seasons, each with one pre-project and two post-project scenarios). The results of each transient stability run were then analyzed to determine whether any violation of transient voltage dip criteria, violation of transient frequency dip, or loss of generator synchronism occurred in the WECC system before or after the proposed generation project was interconnected. As noted previously, since a detailed model for the project was provided, a case was studied for both an equivalent and a detailed model of the project to see if any differences occurred. As was expected, the two models responded to system disturbances in a virtually identical manner, and no significant differences in results were observed.

This Spring Canyon Expansion transient stability analysis found no criteria violations in the pre-project or post-project cases for any of the studied outages for either the summer or the winter scenario. Therefore, this project is determined to cause no violations and to produce no adverse impacts for existing violations related to the transient behavior of the WECC system. In other words, the following results were obtained for every benchmark case, season, and disturbance combination analyzed:

- ✓ No machines lost synchronism with the system
- ✓ No transient voltage dip violations were observed
- ✓ No transient frequency dip violations were observed

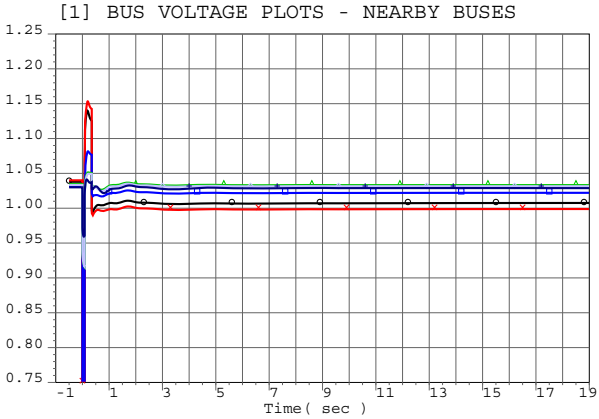
Transient stability plots showing key bus voltages, bus frequencies, generator terminal voltages, generator shaft speeds or angles, and WECC Path flows for each of the disturbances run for each study scenario have been created and are documented in Appendix A.

# Appendix

A. Transient Stability Plots

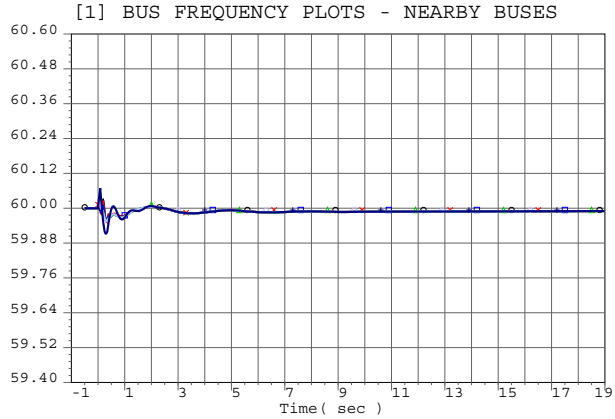
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



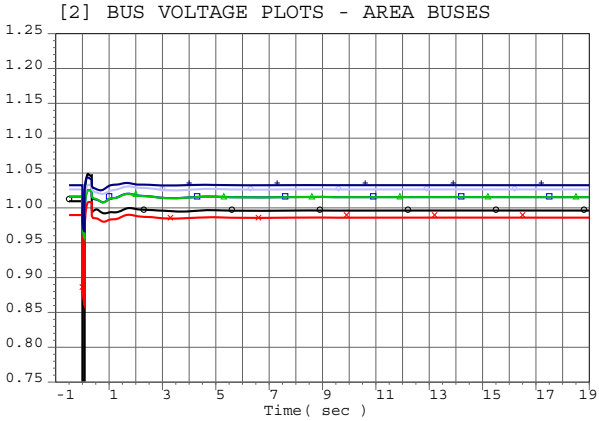

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 vbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 vbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



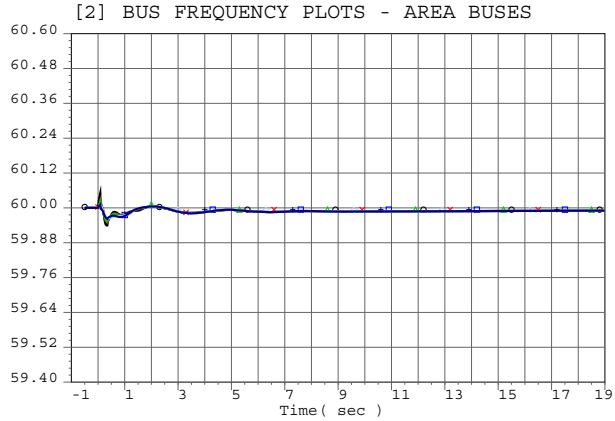

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 fbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 fbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



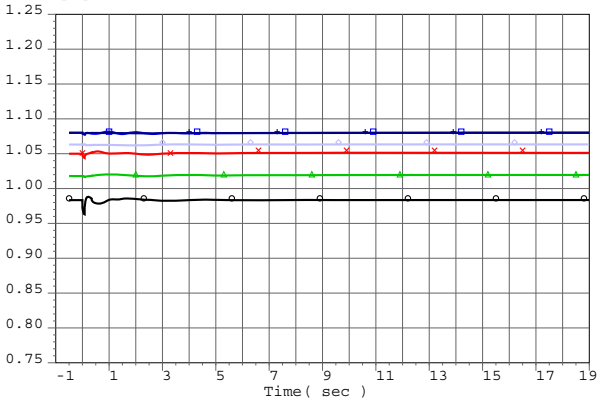

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 vbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



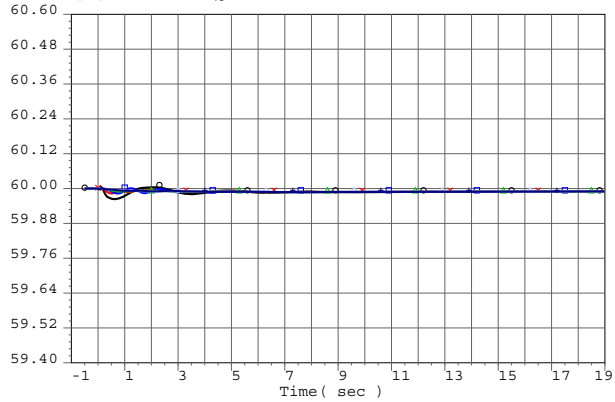

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 fbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 vbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 vbus | 14021 | BALNORTH 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 fbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 fbus | 14021 | BALNORTH 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013 HS2-OP BASE CASE
NOVEMBER 30, 2012



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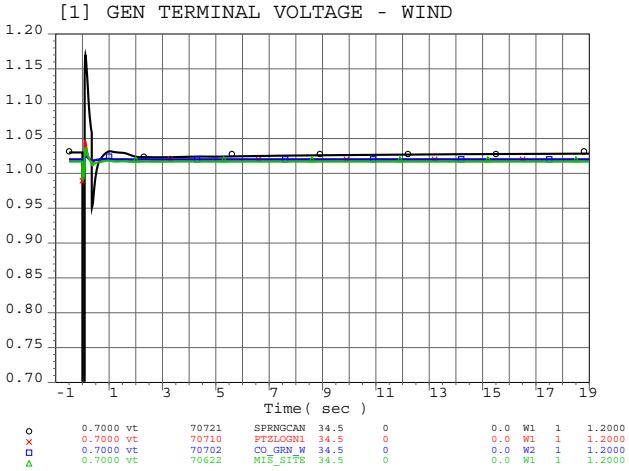
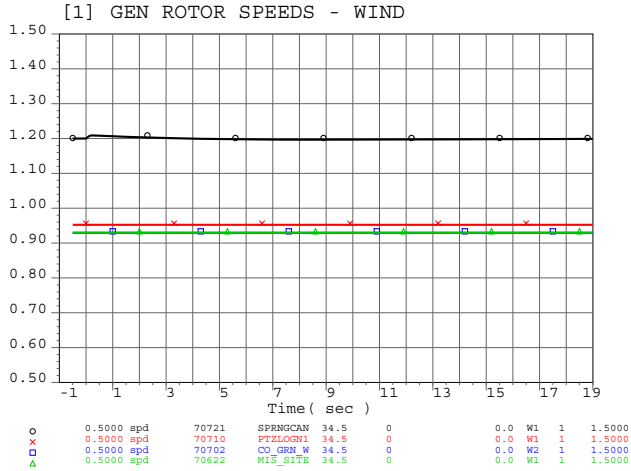
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



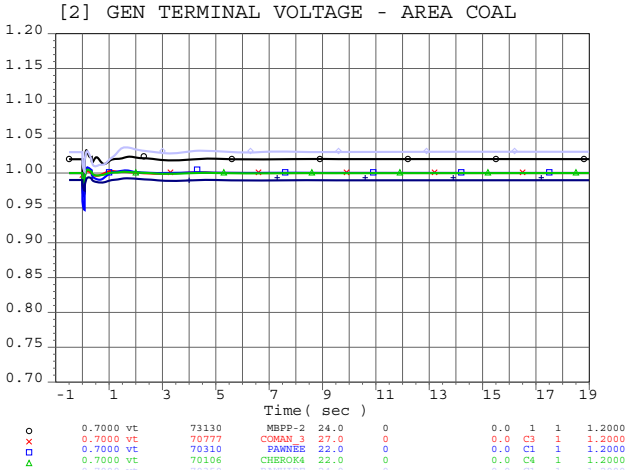

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| × | 0.7000 vt | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| □ | 0.7000 vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| △ | 0.7000 vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



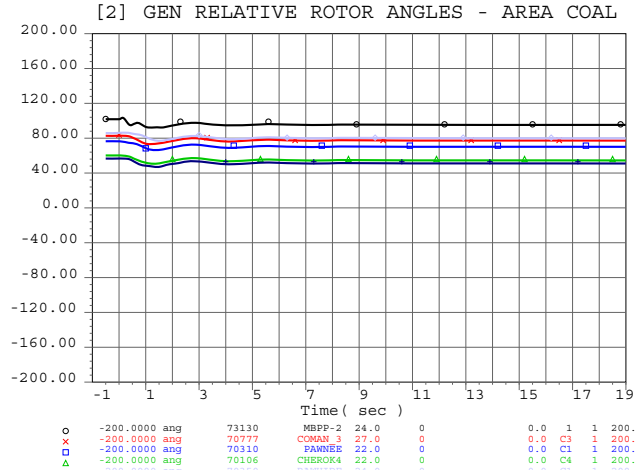

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.5000 spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| × | 0.5000 spd | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| □ | 0.5000 spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| △ | 0.5000 spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



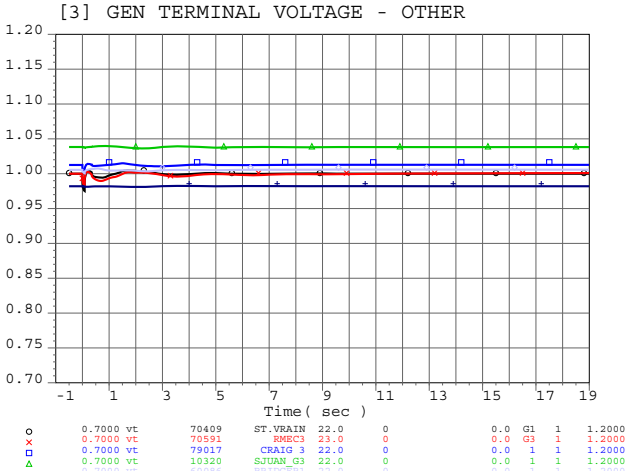

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| × | 0.7000 vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| □ | 0.7000 vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| △ | 0.7000 vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| + | 0.7000 vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



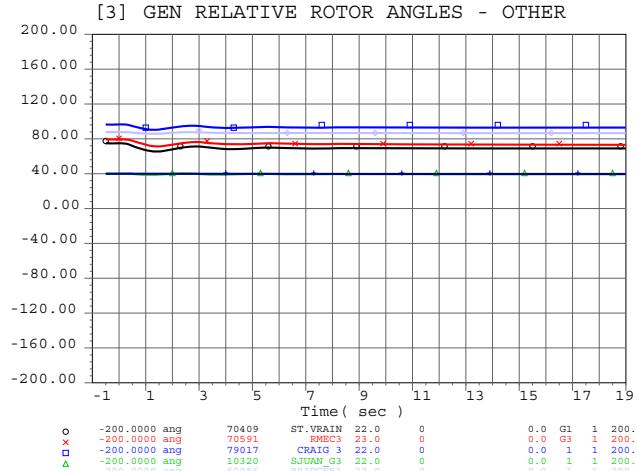

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| × | -200.0000 ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| □ | -200.0000 ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| △ | -200.0000 ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| + | -200.0000 ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| × | 0.7000 vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| □ | 0.7000 vt | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| △ | 0.7000 vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 60186 | MIDWAY4 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| + | 0.7000 vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| × | -200.0000 ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| □ | -200.0000 ang | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| △ | -200.0000 ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 60186 | MIDWAY4 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| + | -200.0000 ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |

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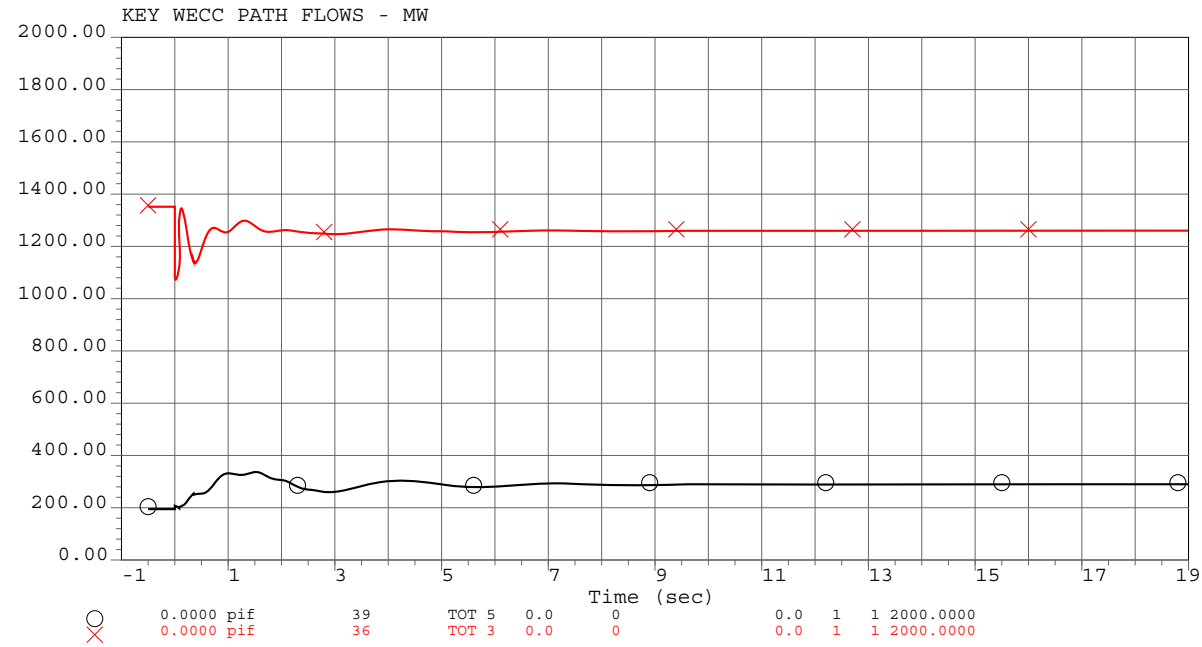
2013 HS2-OP BASE CASE
NOVEMBER 30, 2012

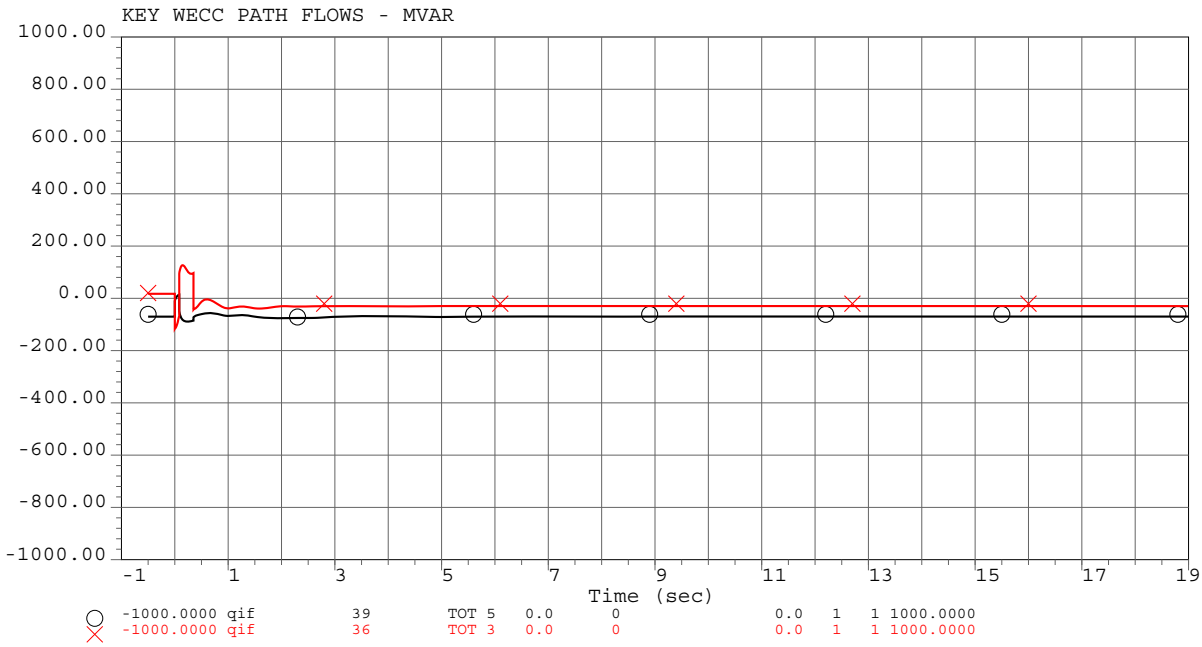


SC2_Sum_Base_v0_01_Sidney!-SidneyDC_230_3ph_B.chf

.

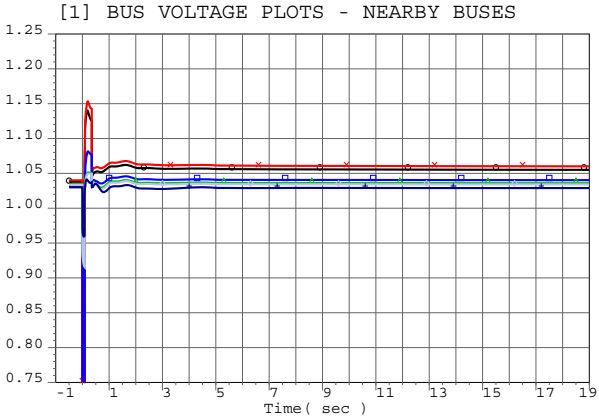
Tue Nov 26 12:29:00 2013


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

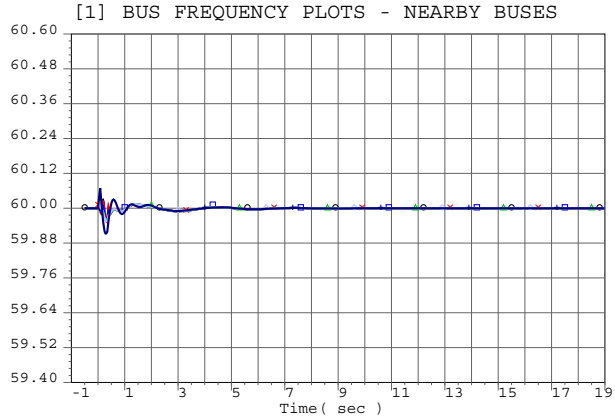
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



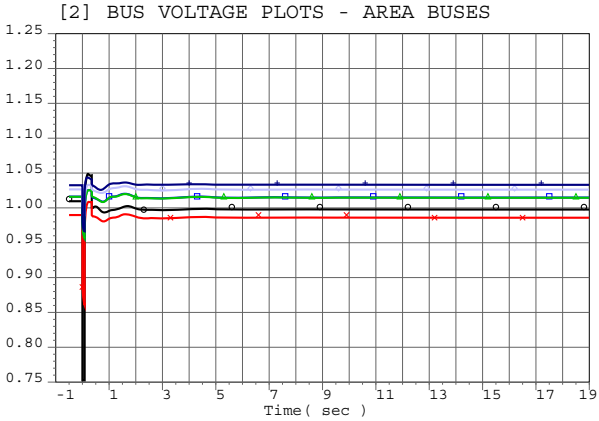

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



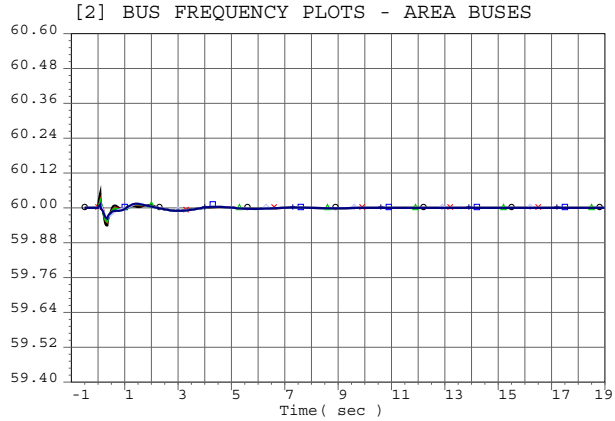

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



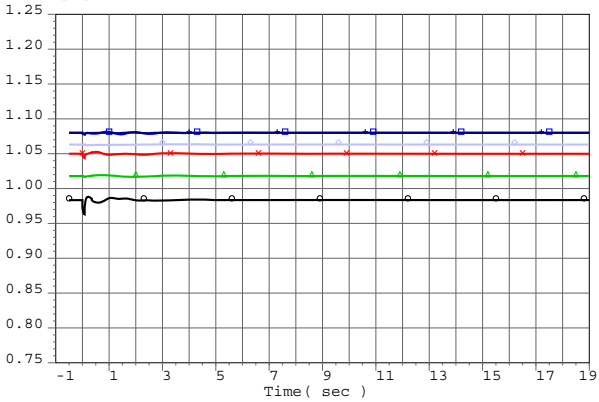

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



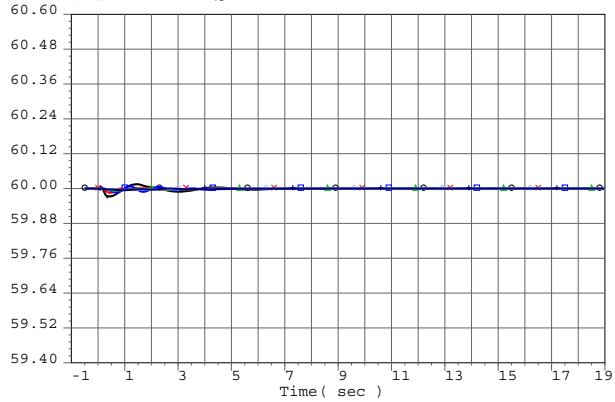

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 14021 | BALNORTH 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 14021 | BALNORTH 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013 HS2-OP BASE CASE
NOVEMBER 30, 2012



SC2_Sum_Base_v0_02_Sidney!-Stegall_230_3ph_B.chf

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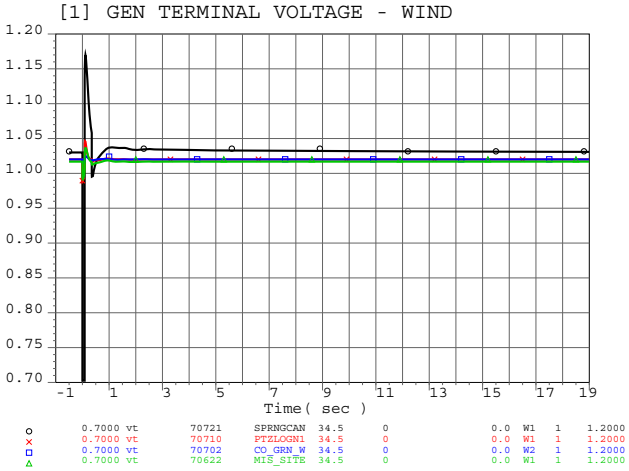
Tue Nov 26 12:29:08 2013

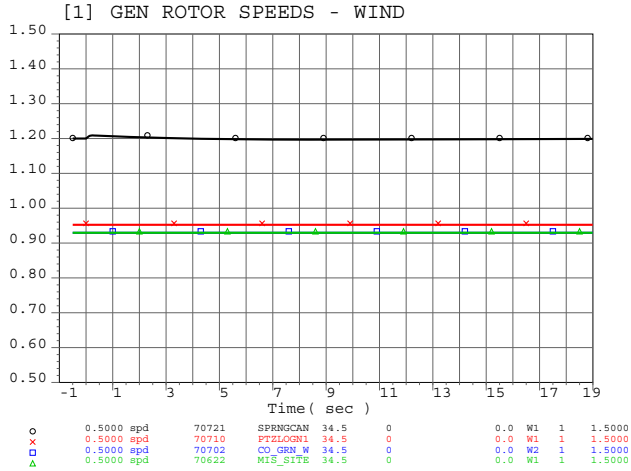
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



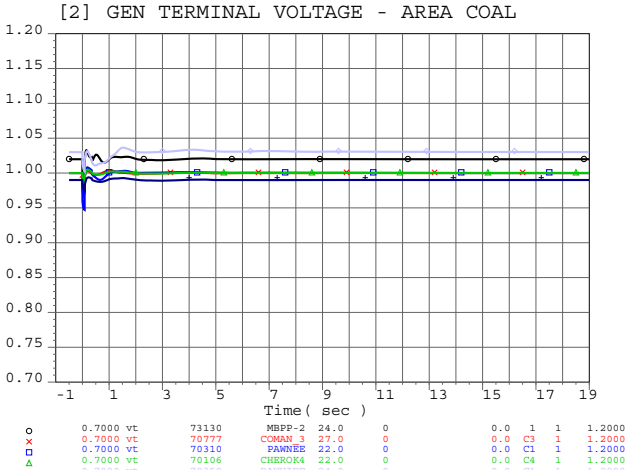

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| × | 0.7000 vt | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| □ | 0.7000 vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| △ | 0.7000 vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



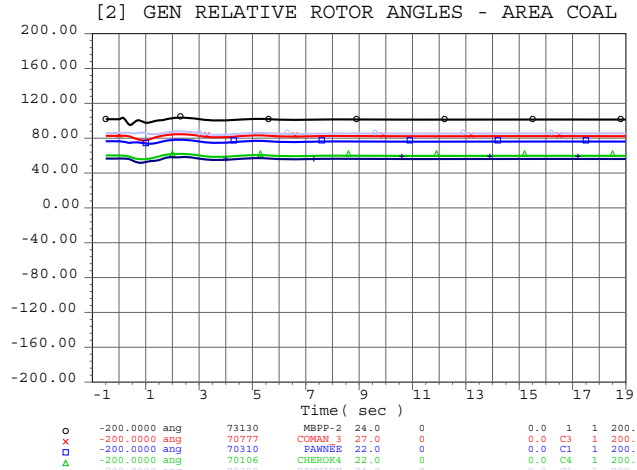

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.5000 spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| × | 0.5000 spd | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| □ | 0.5000 spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| △ | 0.5000 spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



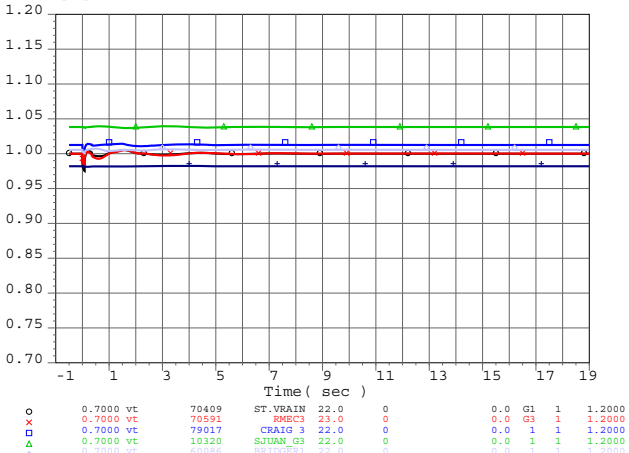

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| × | 0.7000 vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| □ | 0.7000 vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| △ | 0.7000 vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| + | 0.7000 vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



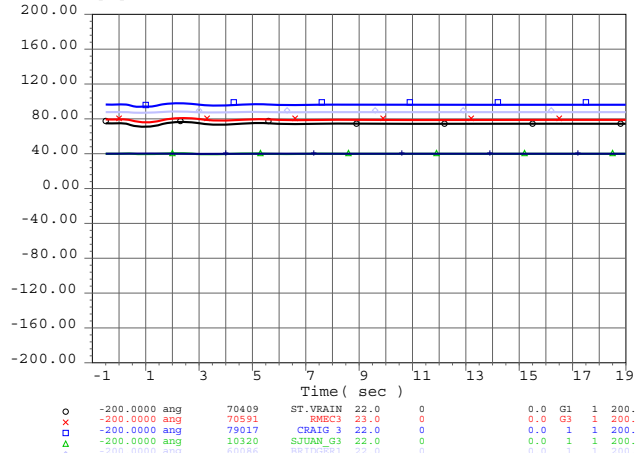

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| × | -200.0000 ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| □ | -200.0000 ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| △ | -200.0000 ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| + | -200.0000 ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| × | 0.7000 vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| □ | 0.7000 vt | 79017 | CRAIG_3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| △ | 0.7000 vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 60186 | MIDWAY4 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| + | 0.7000 vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| × | -200.0000 ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| □ | -200.0000 ang | 79017 | CRAIG_3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| △ | -200.0000 ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 60186 | MIDWAY4 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| + | -200.0000 ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013 HS2-OP BASE CASE
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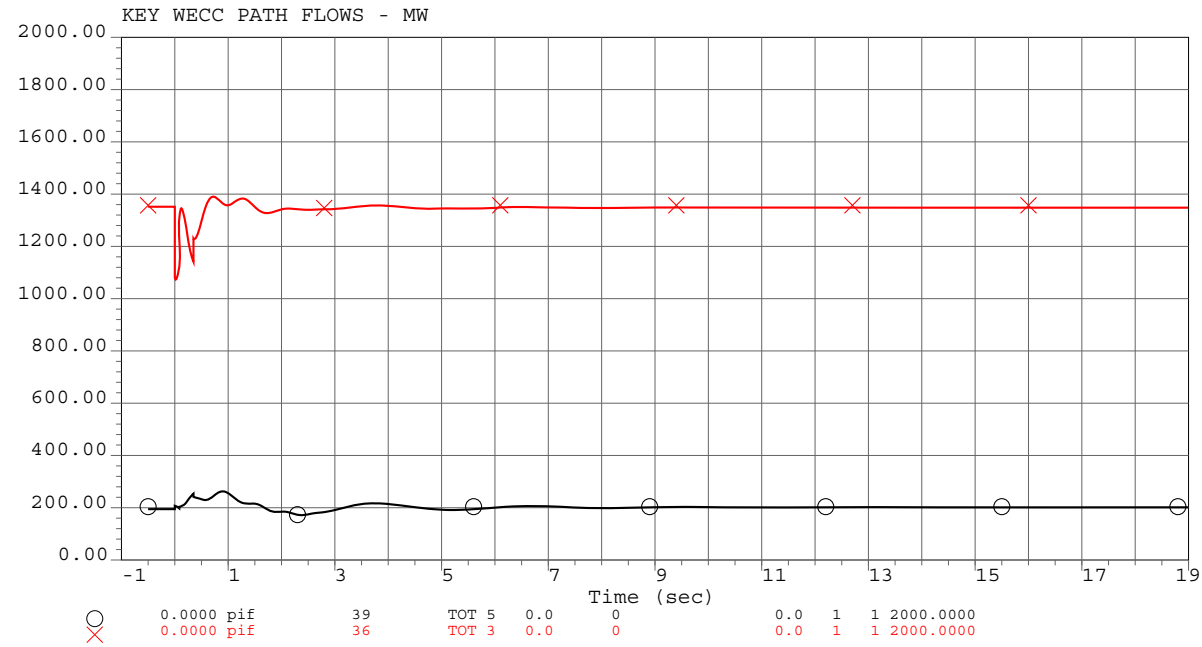
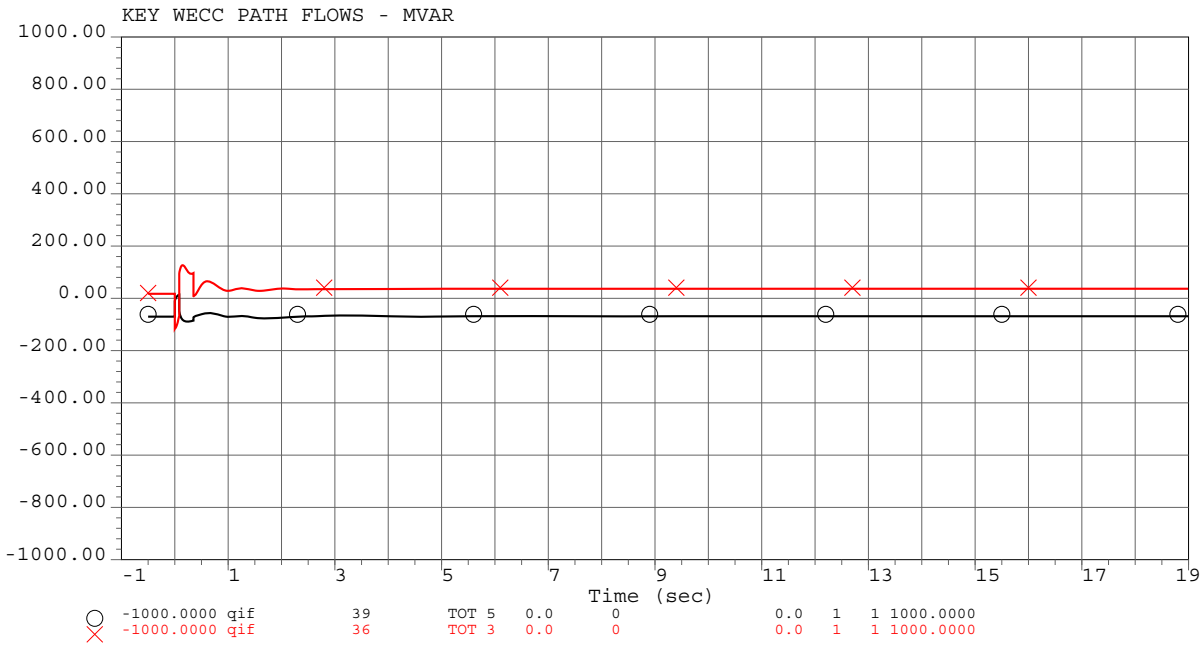
SC2_Sum_Base_v0_02_Sidney!-Stegall_230_3ph_B.chf

.

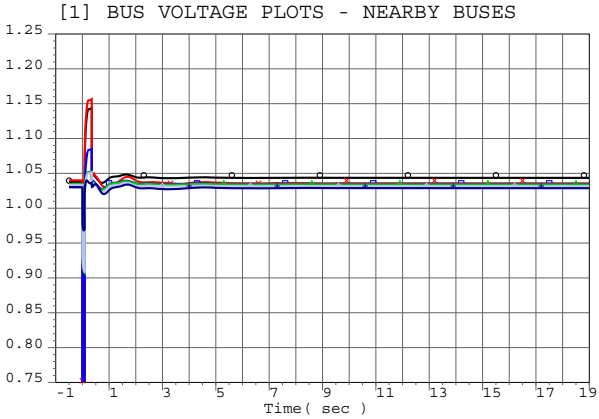
Tue Nov 26 12:29:08 2013


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

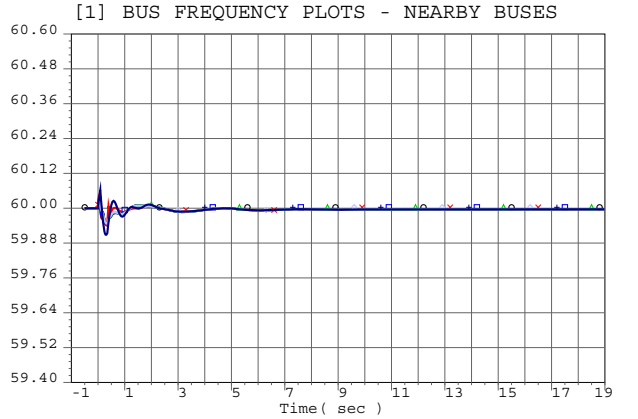
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



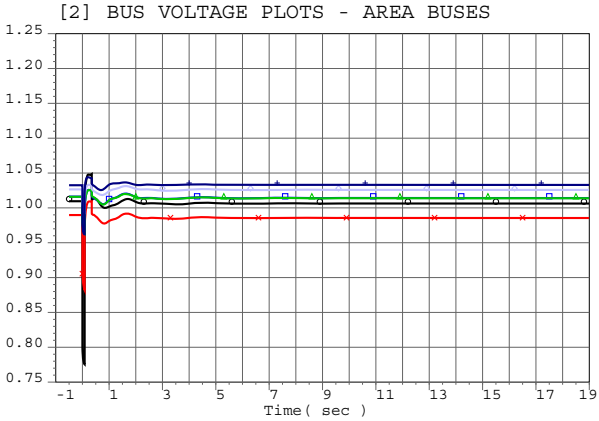

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



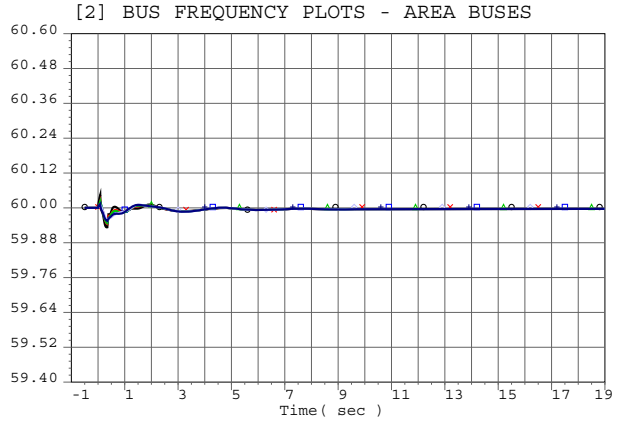

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



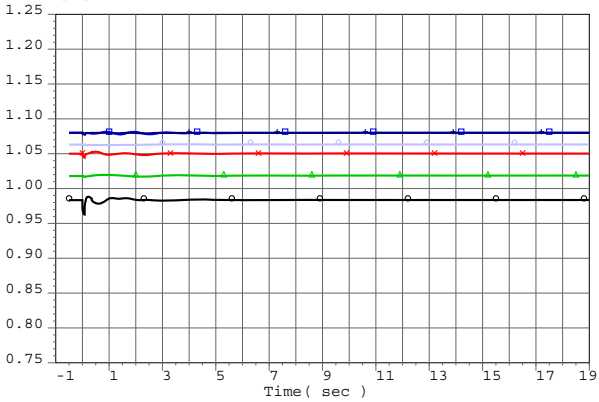

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



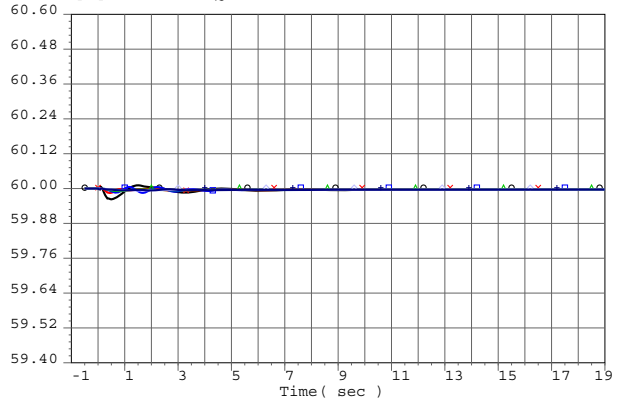

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 14021 | BALNORTH 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 14021 | BALNORTH 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013 HS2-OP BASE CASE
NOVEMBER 30, 2012



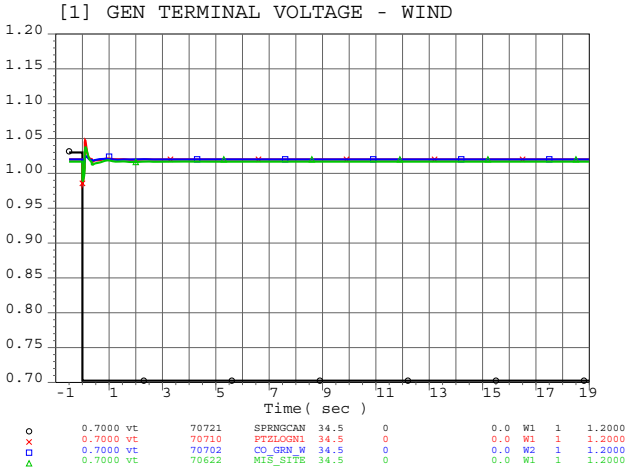
SC2_Sum_Base_v0_03_SprCan!-Sidney_230_3ph_B.chf

.

Tue Nov 26 12:29:16 2013

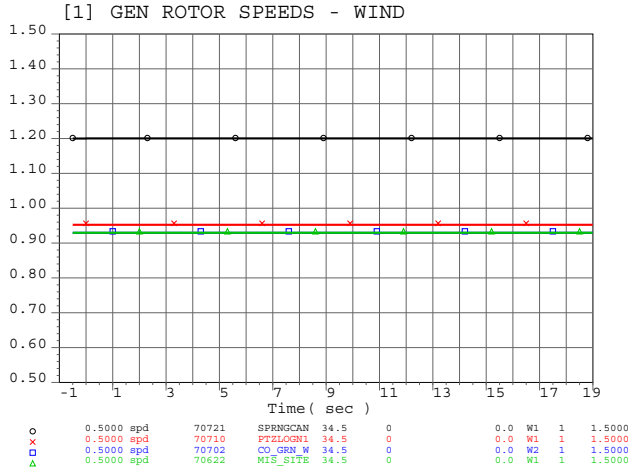
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



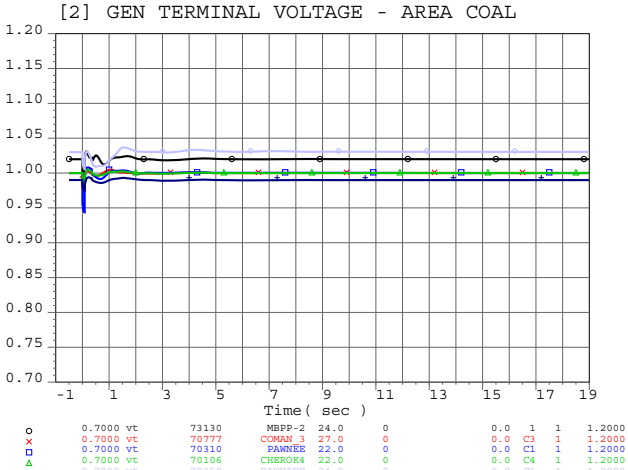

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| × | 0.7000 vt | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| □ | 0.7000 vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| △ | 0.7000 vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



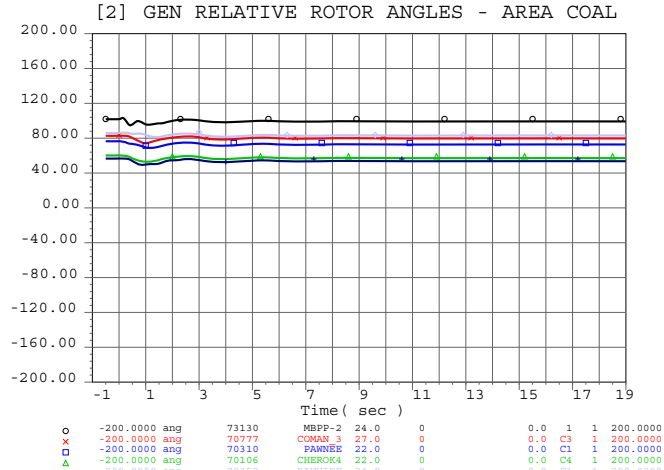

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.5000 spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| × | 0.5000 spd | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| □ | 0.5000 spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| △ | 0.5000 spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



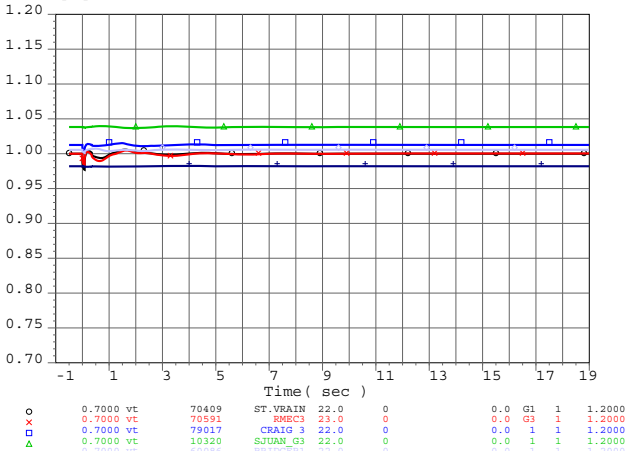

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| × | 0.7000 vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| □ | 0.7000 vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| △ | 0.7000 vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| + | 0.7000 vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



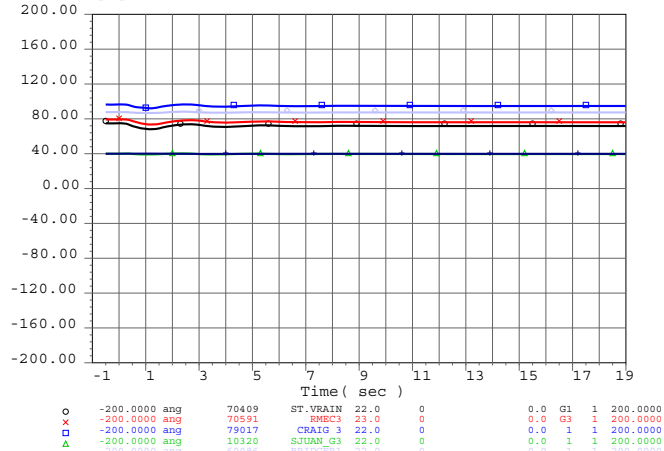

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| × | -200.0000 ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| □ | -200.0000 ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| △ | -200.0000 ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| + | -200.0000 ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| × | 0.7000 vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| □ | 0.7000 vt | 79017 | CRAIG_3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| △ | 0.7000 vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 60186 | NUCLEA4 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| + | 0.7000 vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| × | -200.0000 ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| □ | -200.0000 ang | 79017 | CRAIG_3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| △ | -200.0000 ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 60186 | NUCLEA4 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| + | -200.0000 ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013 HS2-OP BASE CASE
NOVEMBER 30, 2012



SC2_Sum_Base_v0_03_SprCan!-Sidney_230_3ph_B.chf

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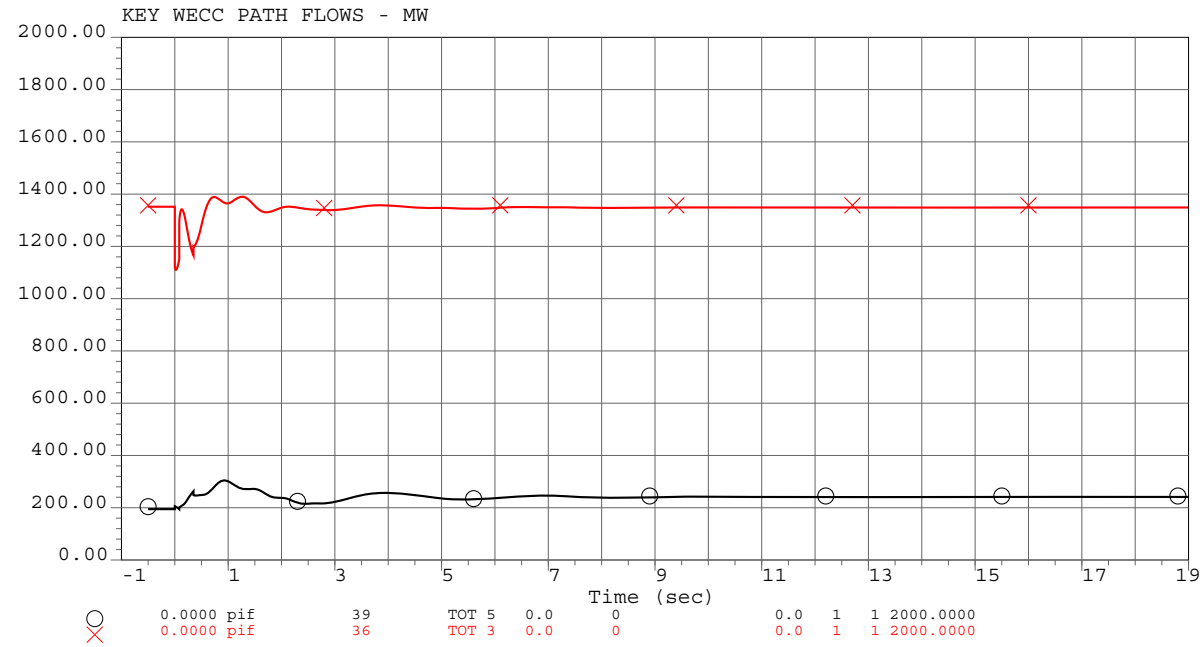
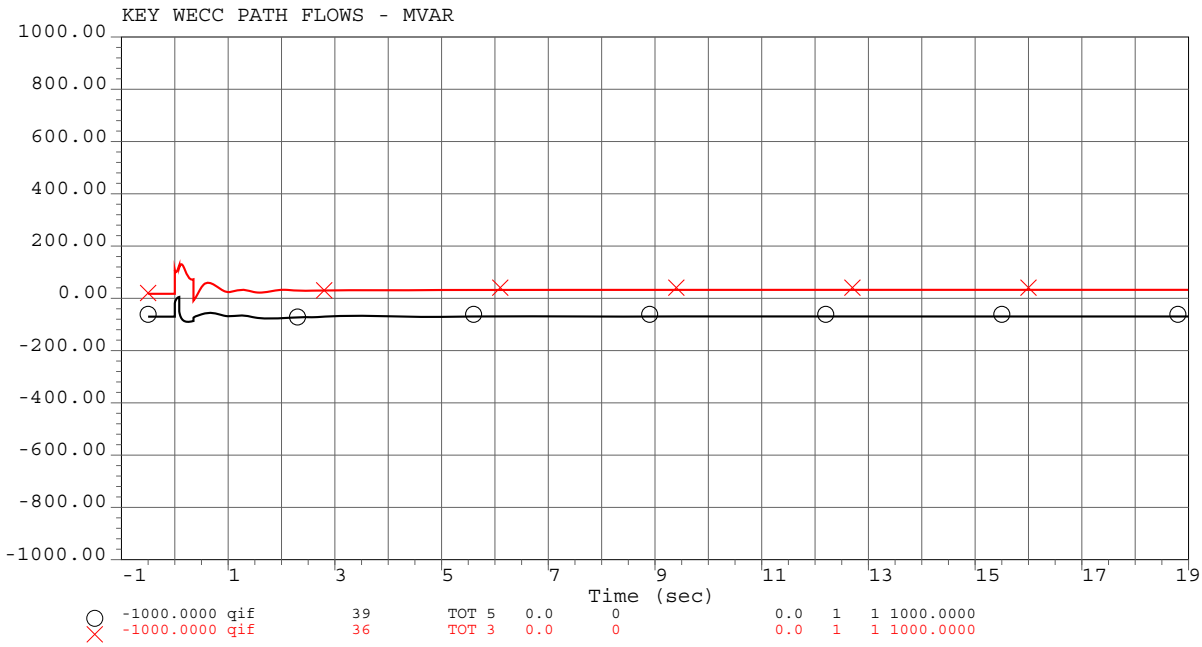
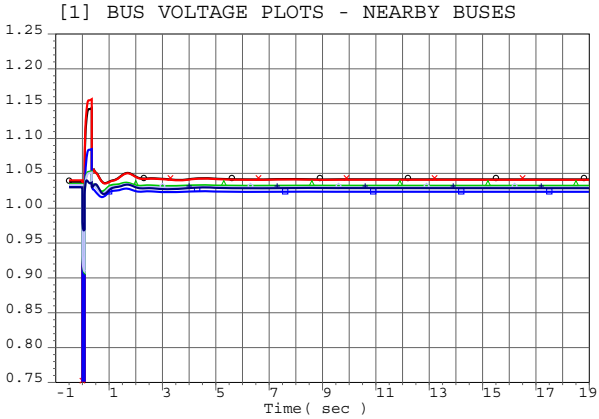
Tue Nov 26 12:29:16 2013


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

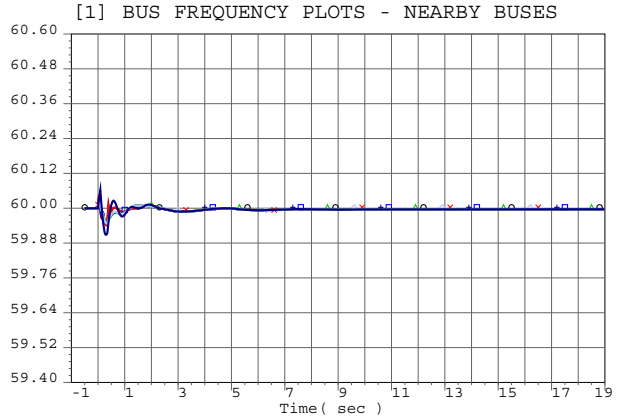
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



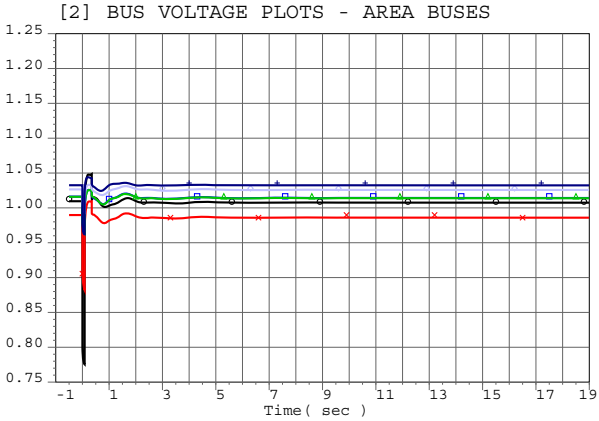

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



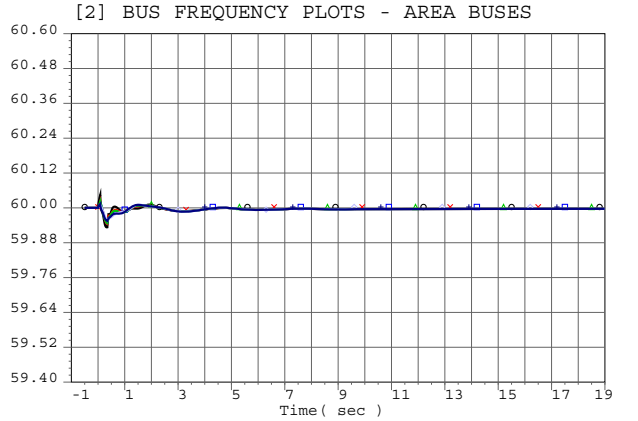

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



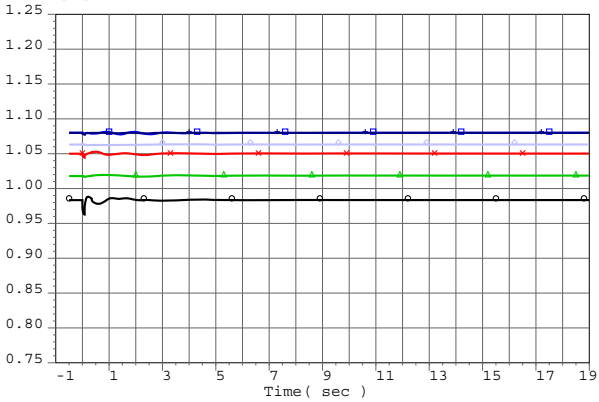

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



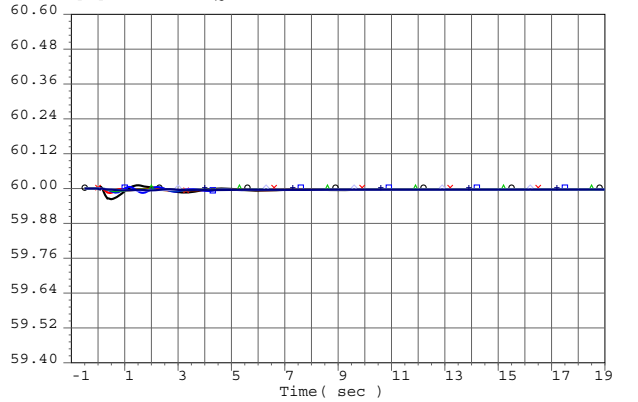

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 14021 | BALNORTH 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 14021 | BALNORTH 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013 HS2-OP BASE CASE
NOVEMBER 30, 2012



SC2_Sum_Base_v0_04_SprCan!-NYuma_230_3ph_B.chf

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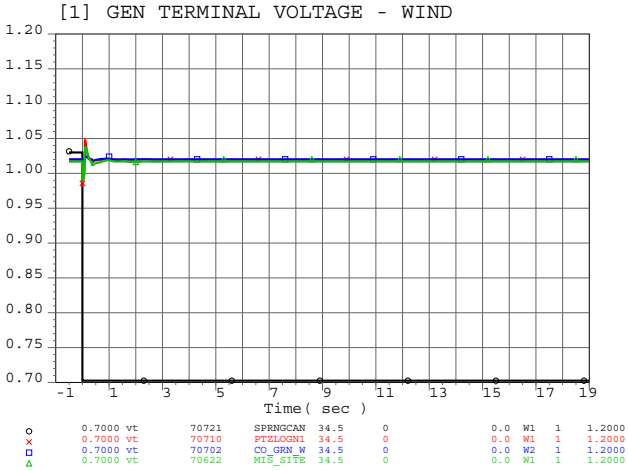
Tue Nov 26 12:29:23 2013

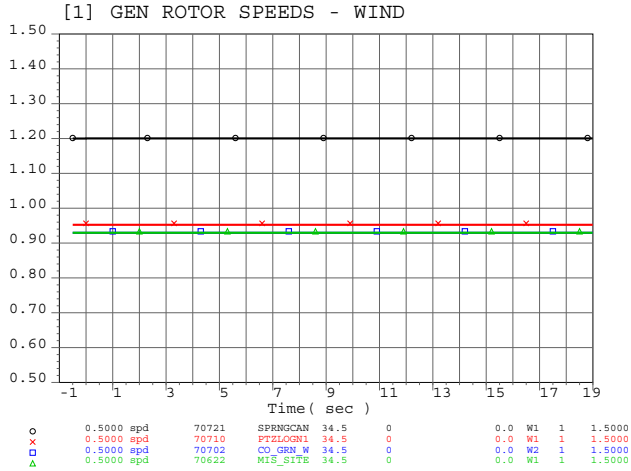
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



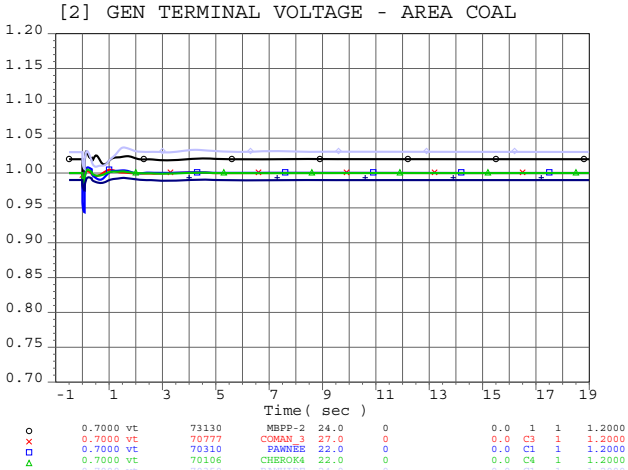

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| × | 0.7000 vt | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| □ | 0.7000 vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| △ | 0.7000 vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



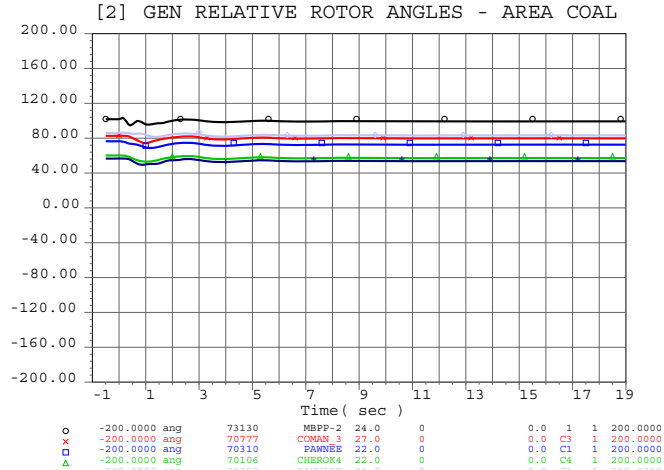

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.5000 spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| × | 0.5000 spd | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| □ | 0.5000 spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| △ | 0.5000 spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



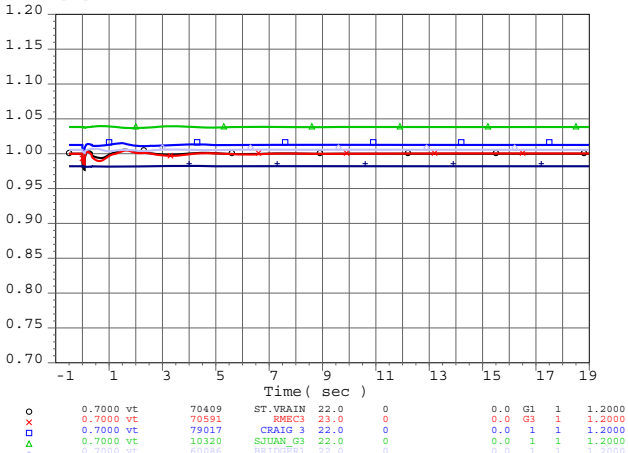

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| × | 0.7000 vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| □ | 0.7000 vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| △ | 0.7000 vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| + | 0.7000 vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



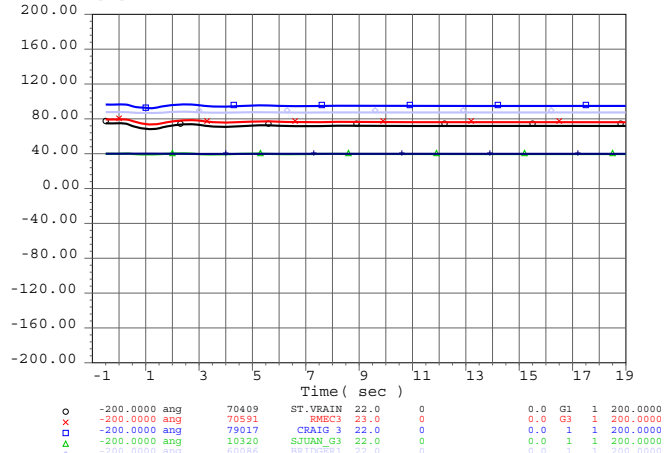

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| × | -200.0000 ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| □ | -200.0000 ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| △ | -200.0000 ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| + | -200.0000 ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| × | 0.7000 vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| □ | 0.7000 vt | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| △ | 0.7000 vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 60186 | NUCLEA4 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| + | 0.7000 vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| × | -200.0000 ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| □ | -200.0000 ang | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| △ | -200.0000 ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 60186 | NUCLEA4 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| + | -200.0000 ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |

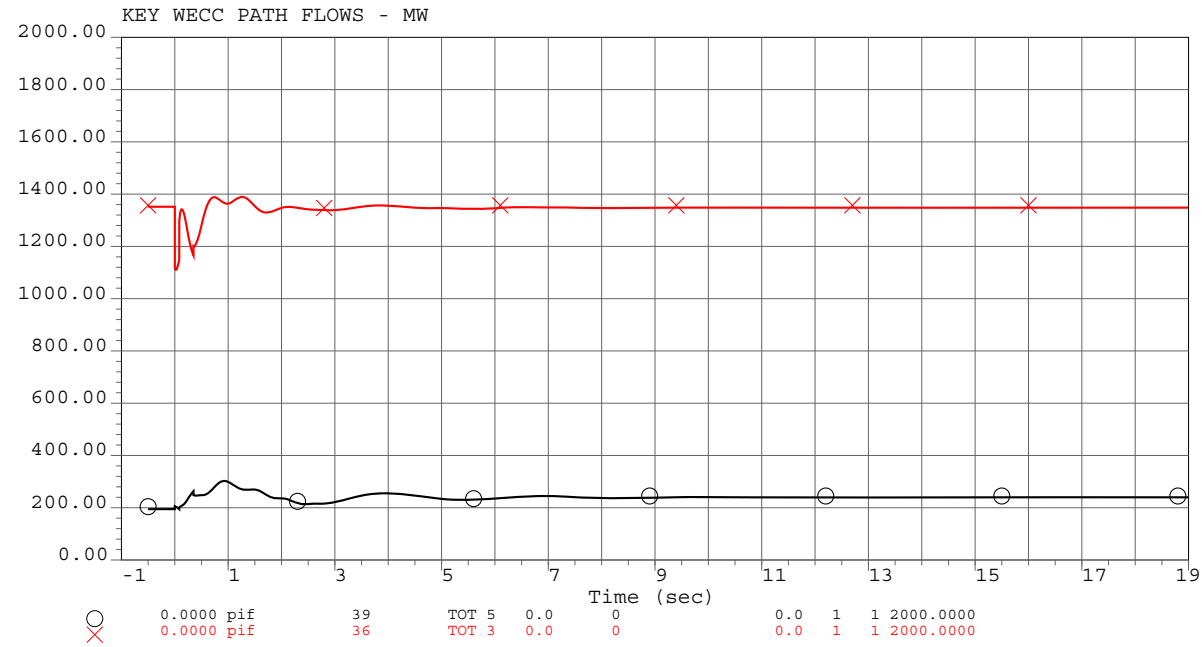
WESTERN ELECTRICITY COORDINATING COUNCIL
2013 HS2-OP BASE CASE
NOVEMBER 30, 2012

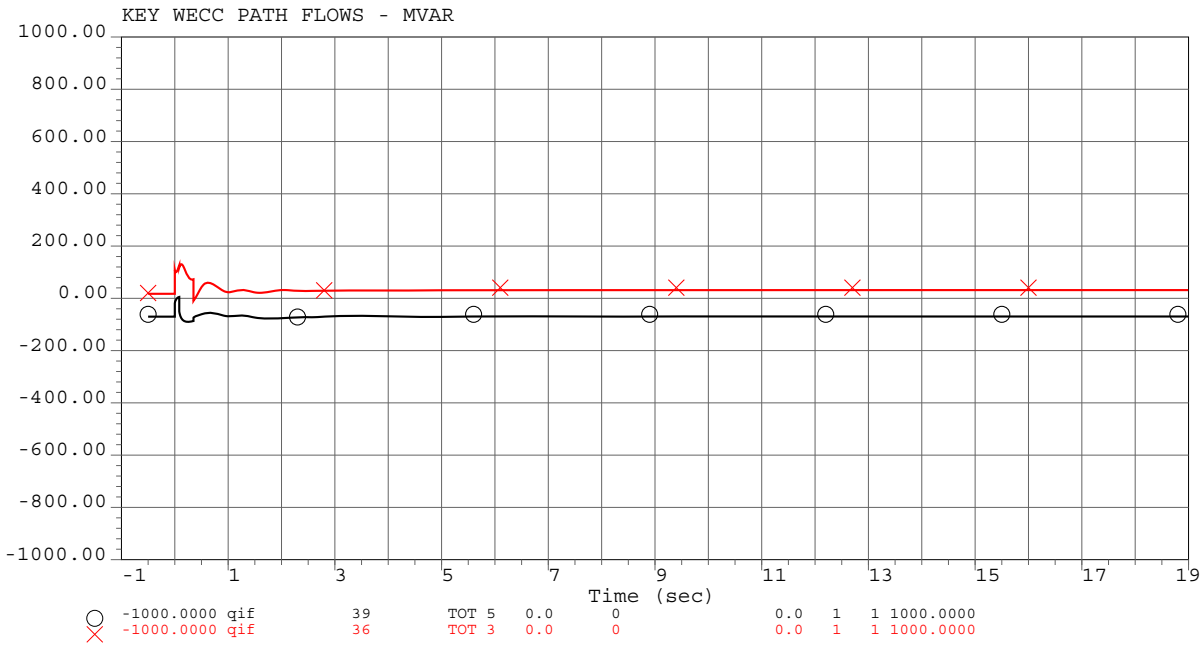


SC2_Sum_Base_v0_04_SprCan!-NYuma_230_3ph_B.chf

.

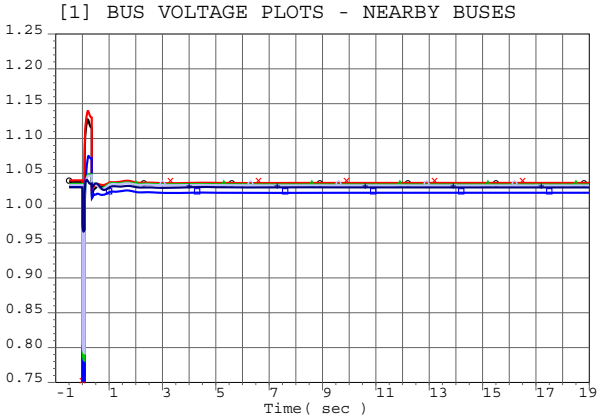
Tue Nov 26 12:29:23 2013


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

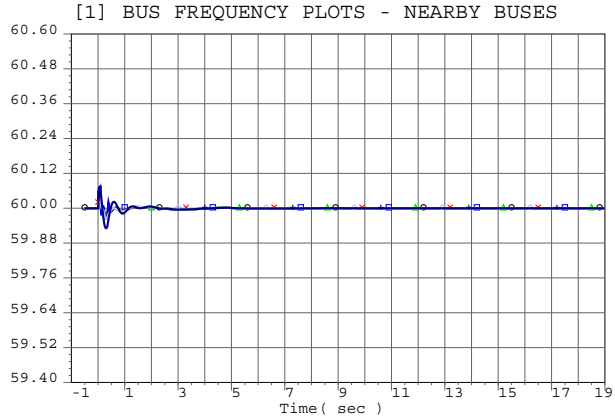
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



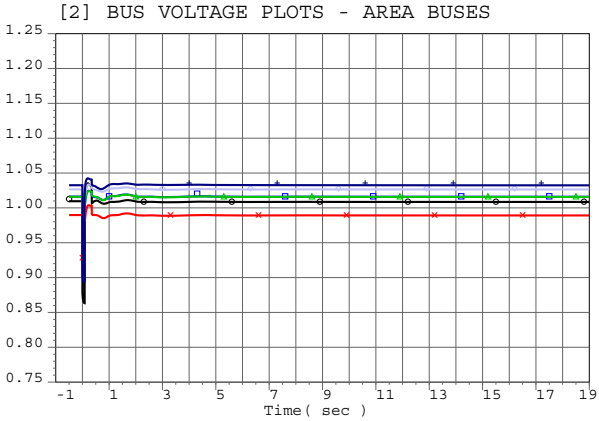

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



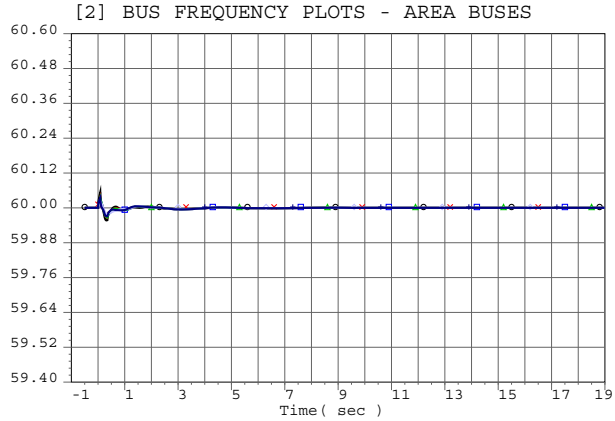

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



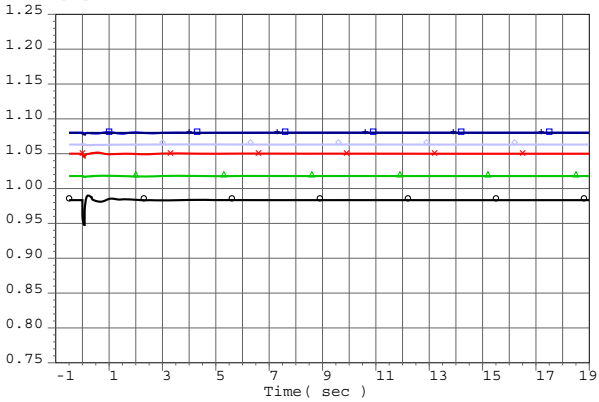

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



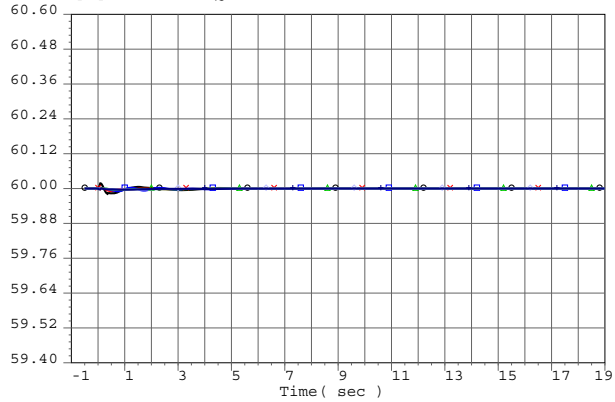

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 14021 | BALNORTH 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 14021 | BALNORTH 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013 HS2-OP BASE CASE
NOVEMBER 30, 2012



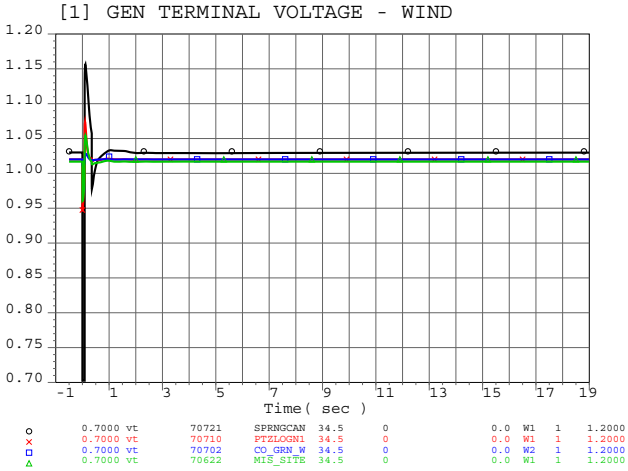
SC2_Sum_Base_v0_05_NYuma!-Story_230_3ph_B.chf

.

Tue Nov 26 12:29:31 2013

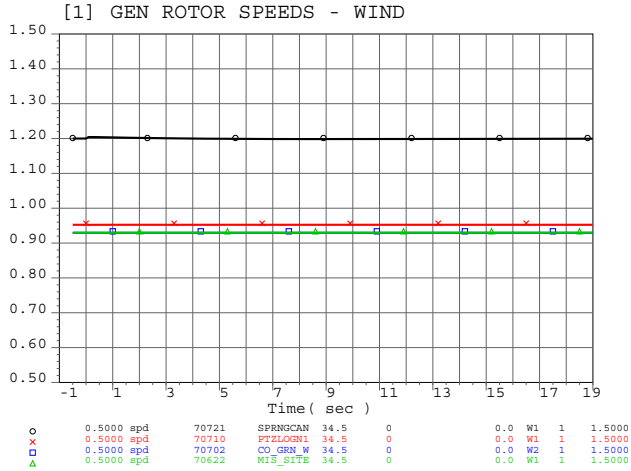
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



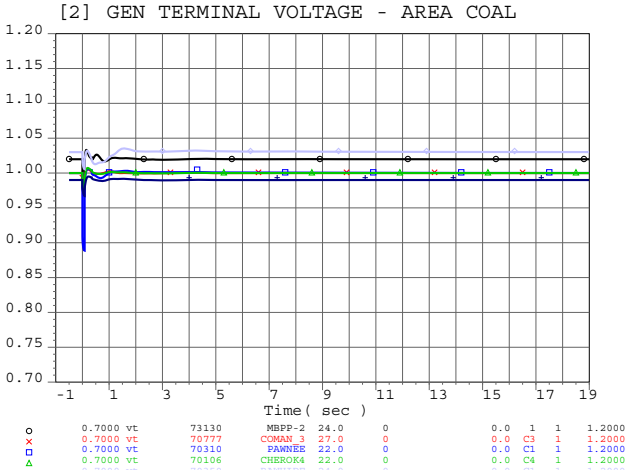

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| × | 0.7000 vt | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| □ | 0.7000 vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| △ | 0.7000 vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



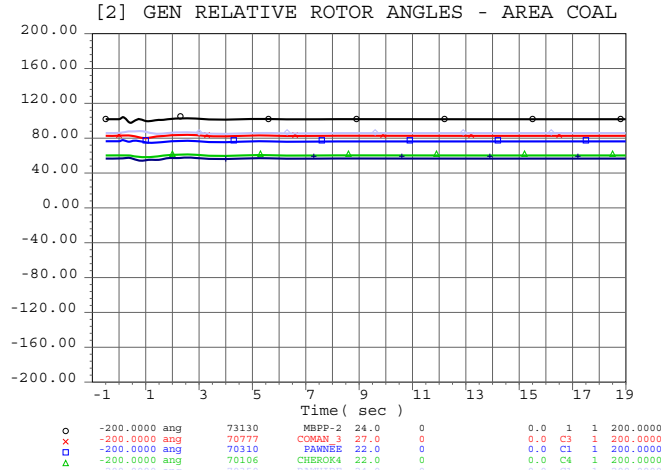

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.5000 spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| × | 0.5000 spd | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| □ | 0.5000 spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| △ | 0.5000 spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



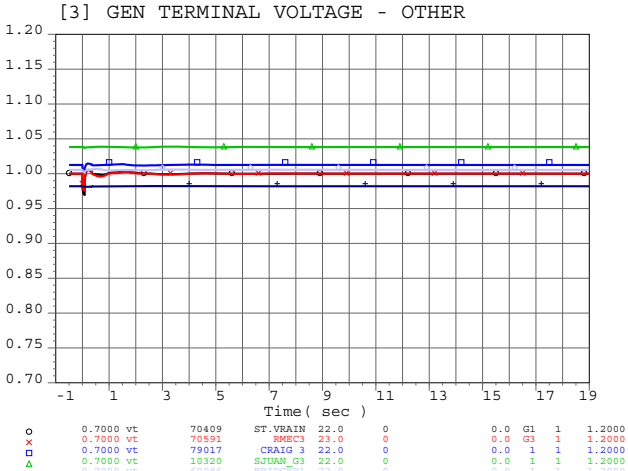

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| × | 0.7000 vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| □ | 0.7000 vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| △ | 0.7000 vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| + | 0.7000 vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



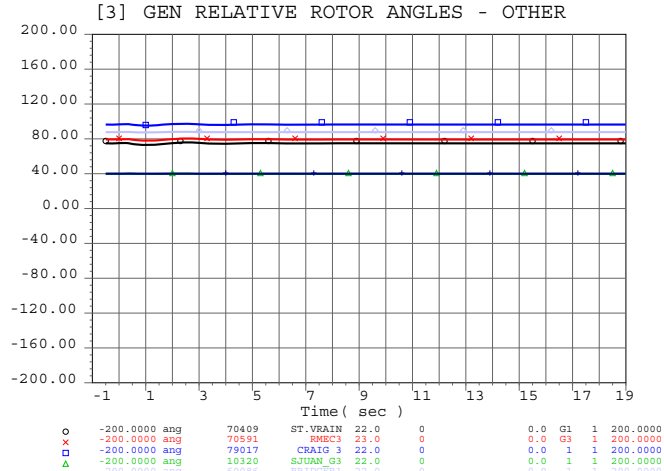

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| × | -200.0000 ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| □ | -200.0000 ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| △ | -200.0000 ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| + | -200.0000 ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER

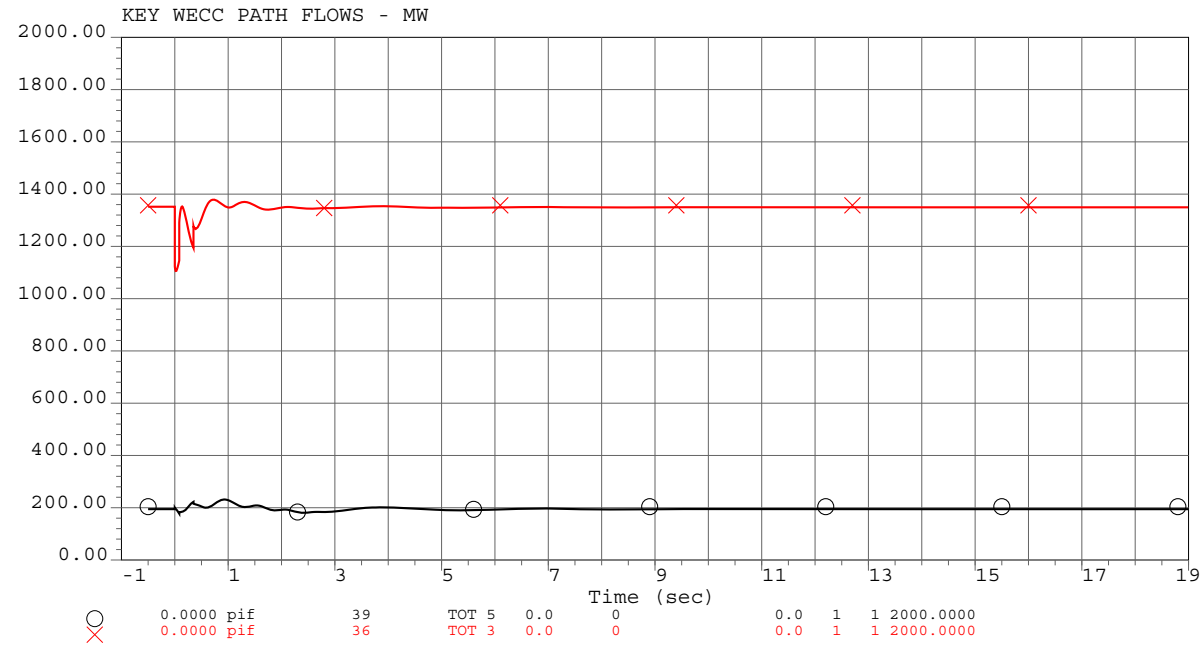


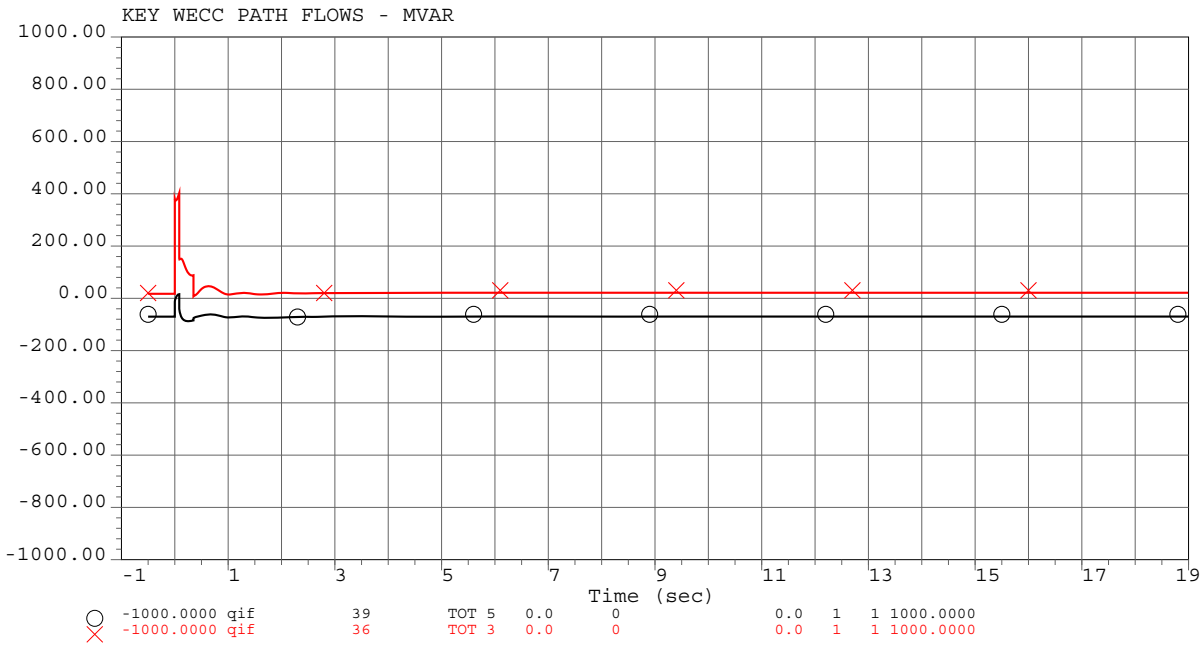

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| × | 0.7000 vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| □ | 0.7000 vt | 79017 | CRAIG_3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| △ | 0.7000 vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 60186 | MIDWAY4 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| + | 0.7000 vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER



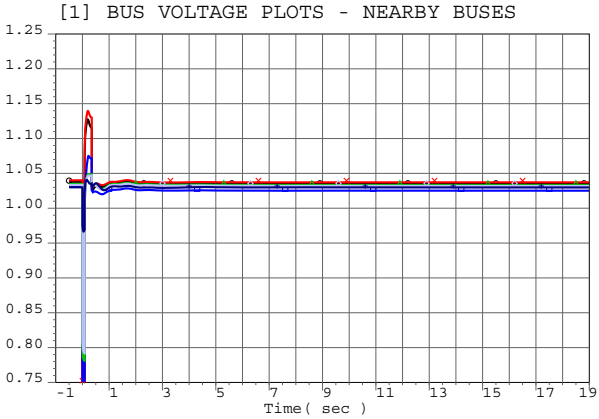

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| × | -200.0000 ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| □ | -200.0000 ang | 79017 | CRAIG_3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| △ | -200.0000 ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 60186 | MIDWAY4 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| + | -200.0000 ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

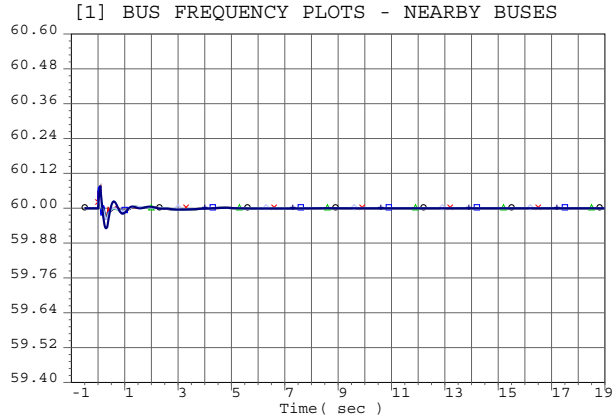
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



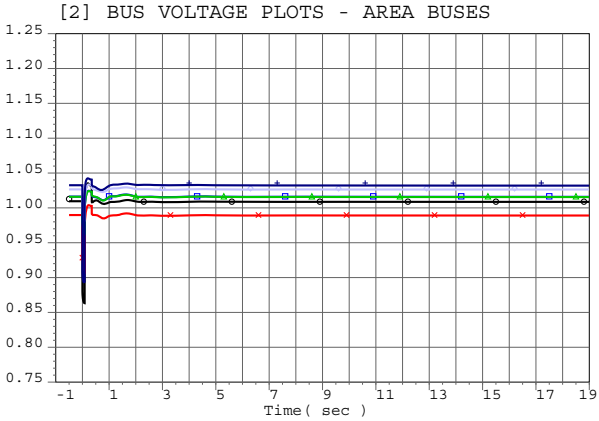

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



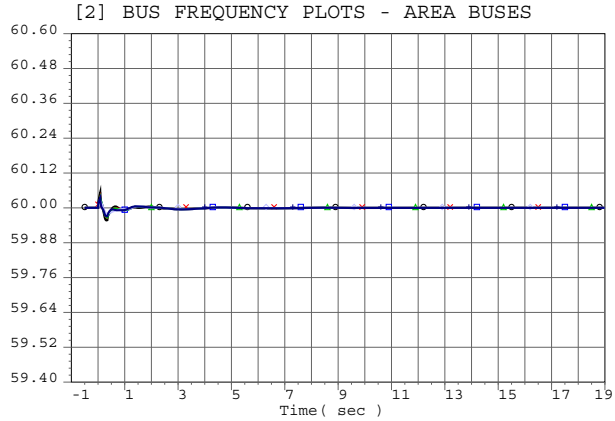

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



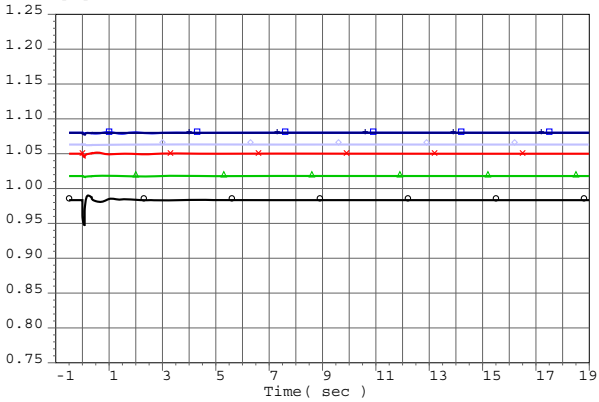

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



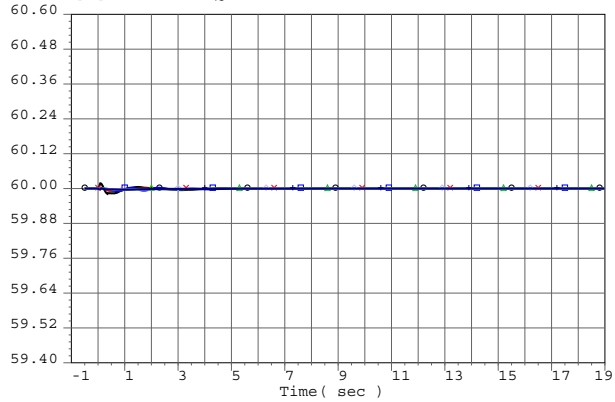

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 14021 | BALNORTH 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 14021 | BALNORTH 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013 HS2-OP BASE CASE
NOVEMBER 30, 2012



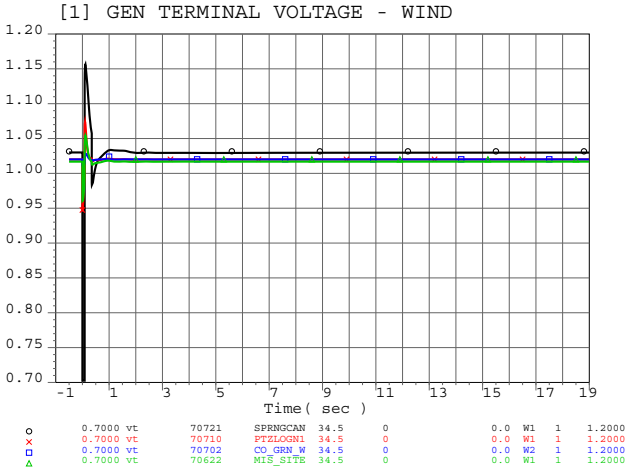
SC2_Sum_Base_v0_06_NYuma!-Wray_230_3ph_B.chf

.

Tue Nov 26 12:29:39 2013

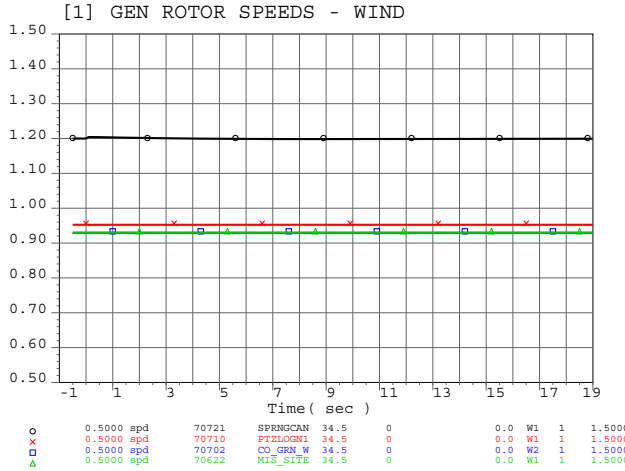
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



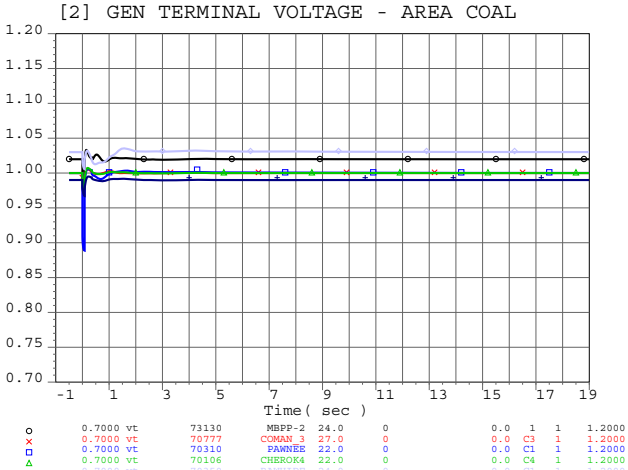

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| × | 0.7000 vt | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| □ | 0.7000 vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| △ | 0.7000 vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



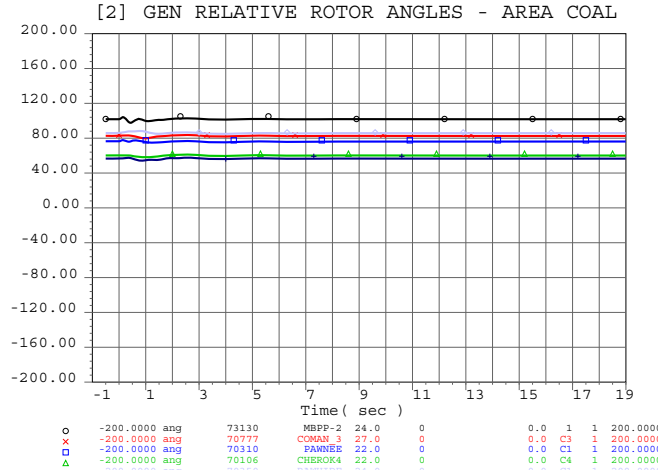

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.5000 spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| × | 0.5000 spd | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| □ | 0.5000 spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| △ | 0.5000 spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



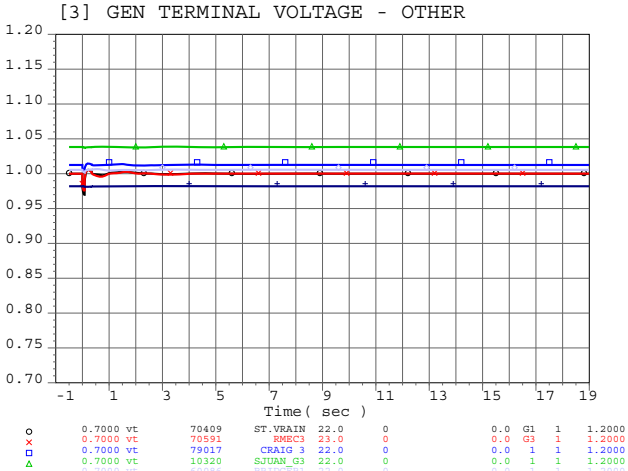

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| × | 0.7000 vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| □ | 0.7000 vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| △ | 0.7000 vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| + | 0.7000 vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



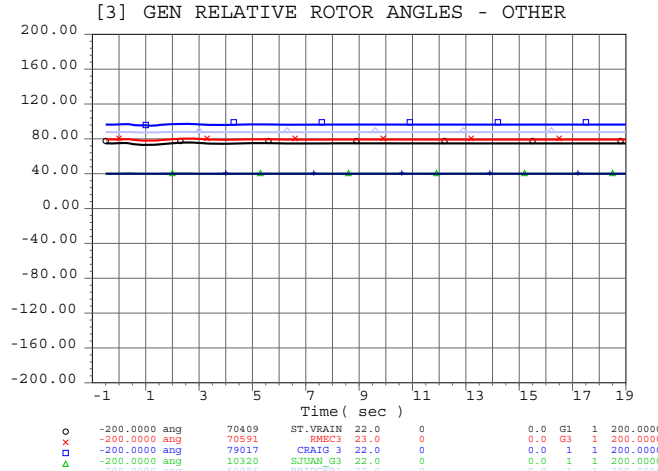

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| × | -200.0000 ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| □ | -200.0000 ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| △ | -200.0000 ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| + | -200.0000 ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER

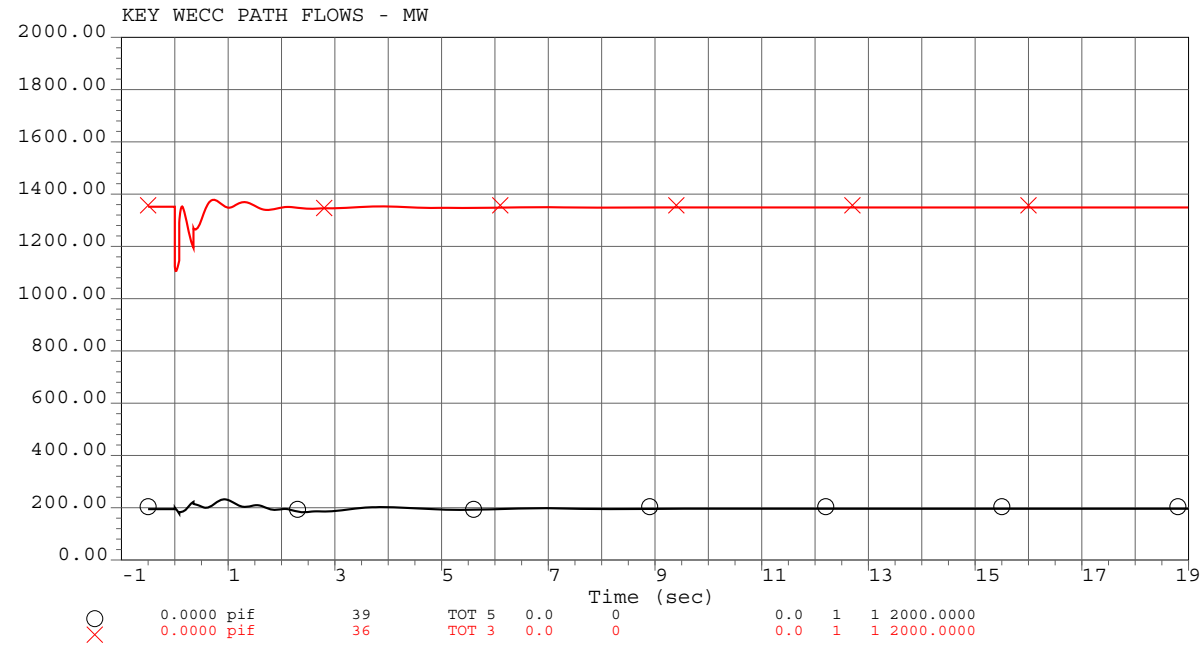


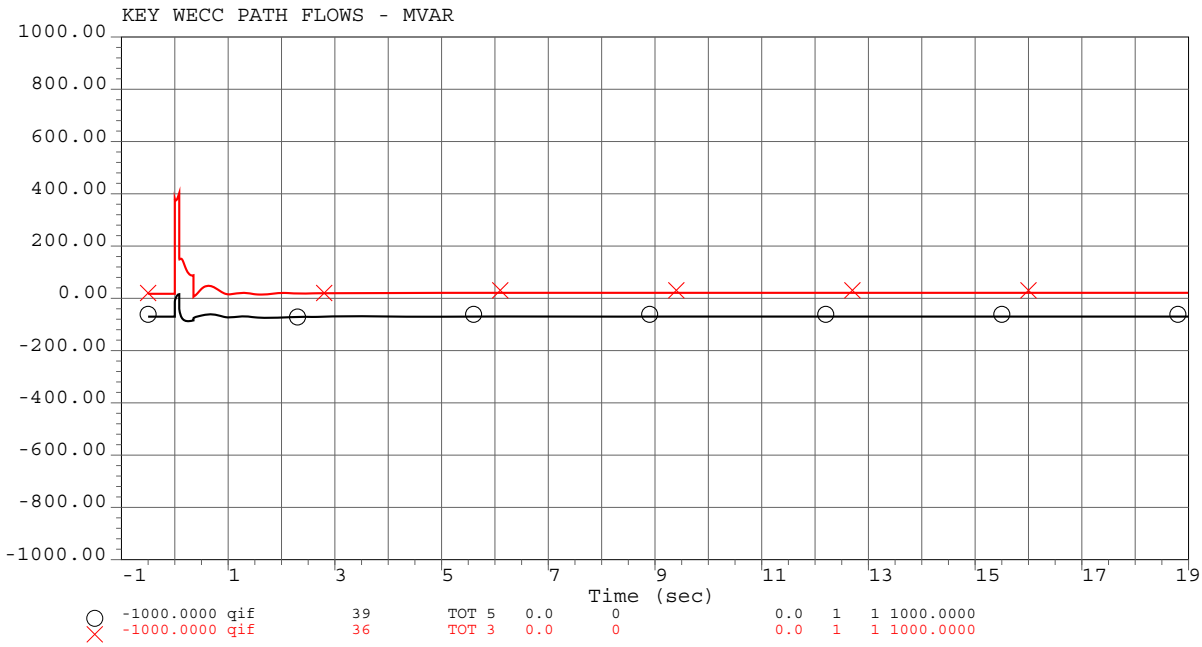

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| × | 0.7000 vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| □ | 0.7000 vt | 79017 | CRAIG_3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| △ | 0.7000 vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 60186 | MIDWAY4 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| + | 0.7000 vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER



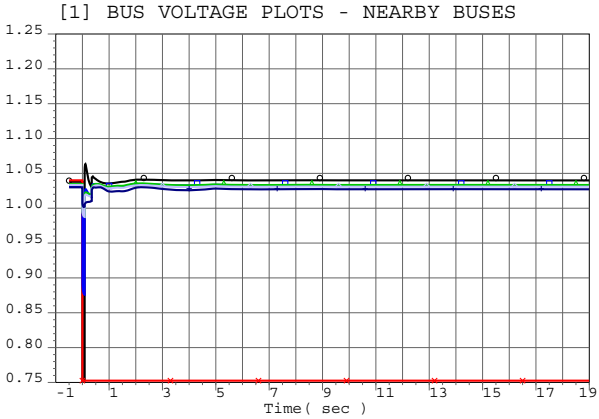

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| × | -200.0000 ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| □ | -200.0000 ang | 79017 | CRAIG_3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| △ | -200.0000 ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 60186 | MIDWAY4 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| + | -200.0000 ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

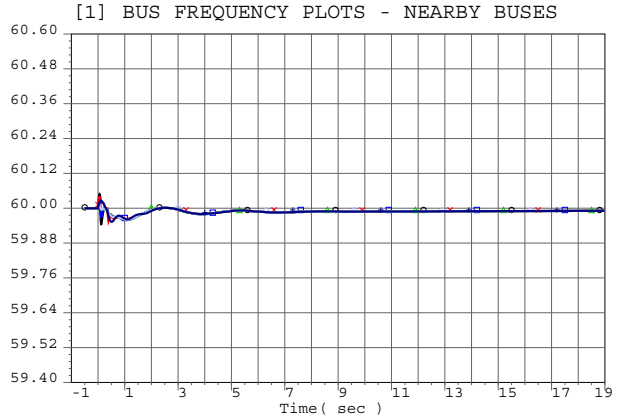
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



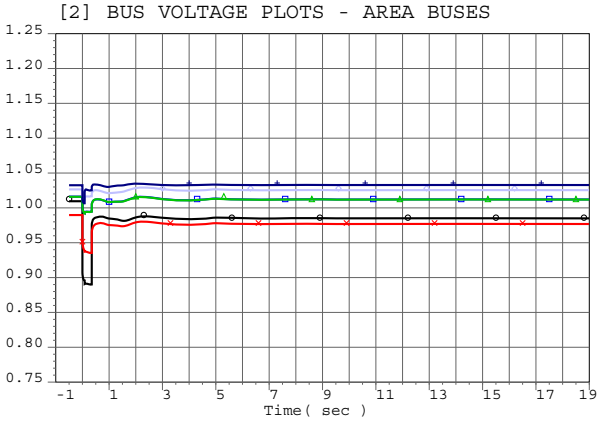

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 73188 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



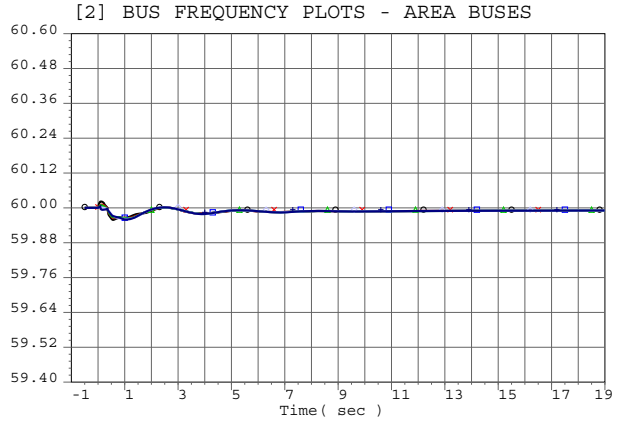

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 73188 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



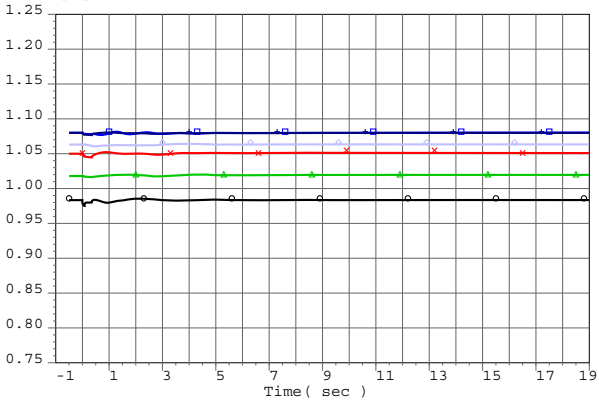

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



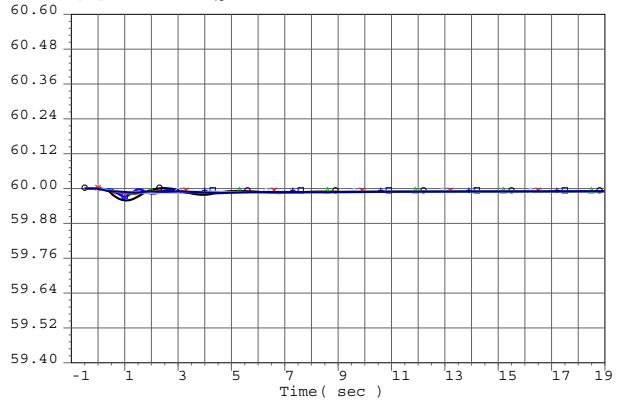

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 14021 | BALNVERD 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 14021 | BALNVERD 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013 HS2-OP BASE CASE
NOVEMBER 30, 2012



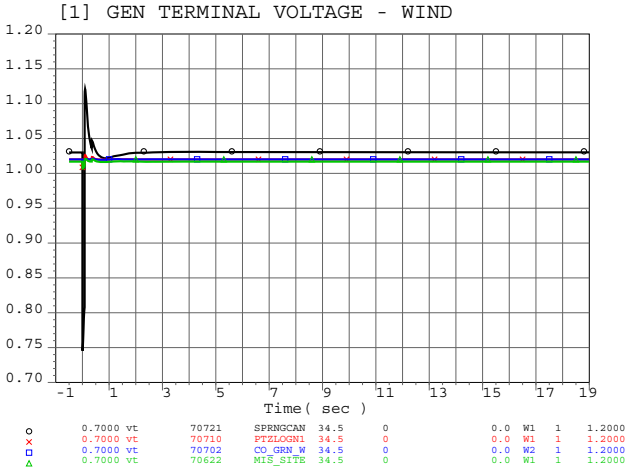
SC2_Sum_Base_v0_07_Sidney!-SprCan_230_SLG_C.chf

.

Tue Nov 26 12:29:47 2013

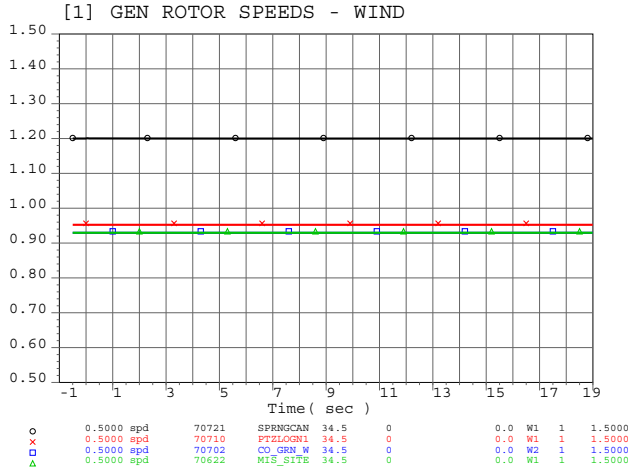
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



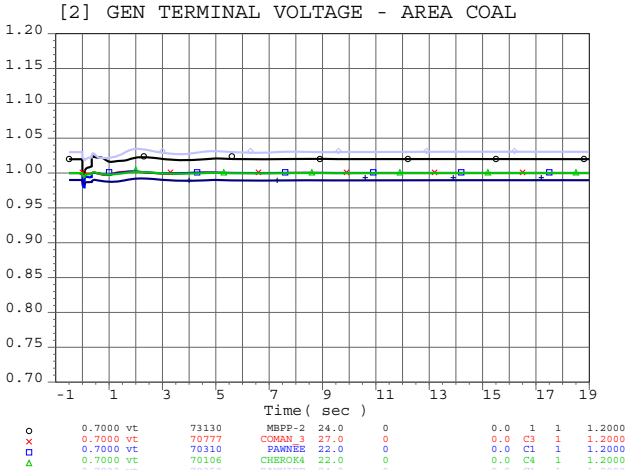

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| × | 0.7000 vt | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| □ | 0.7000 vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| △ | 0.7000 vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



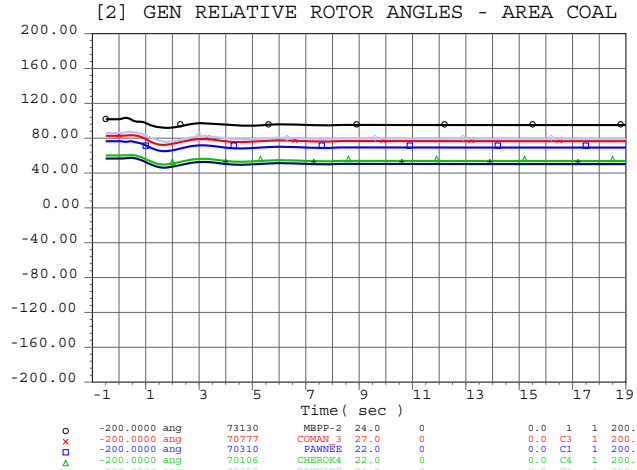

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.5000 spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| × | 0.5000 spd | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| □ | 0.5000 spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| △ | 0.5000 spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



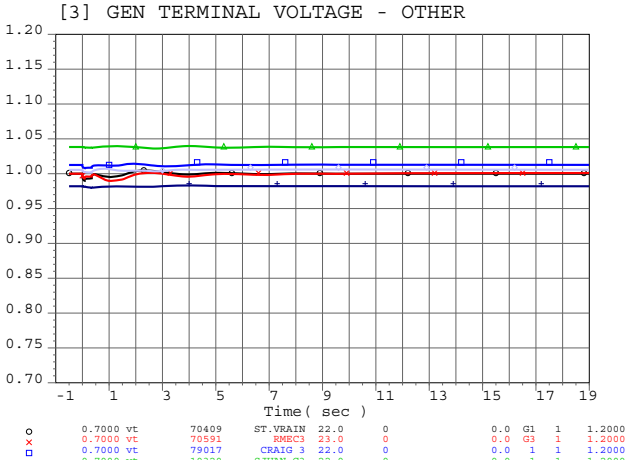

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| × | 0.7000 vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| □ | 0.7000 vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| △ | 0.7000 vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| + | 0.7000 vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



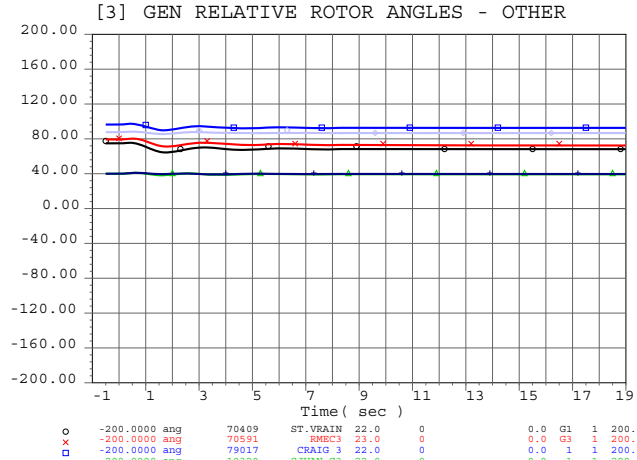

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| × | -200.0000 ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| □ | -200.0000 ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| △ | -200.0000 ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| + | -200.0000 ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| × | 0.7000 vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| □ | 0.7000 vt | 79017 | CRAIG_3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| △ | 0.7000 vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 60186 | NUCLEA4 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| + | 0.7000 vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| × | -200.0000 ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| □ | -200.0000 ang | 79017 | CRAIG_3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| △ | -200.0000 ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 60186 | NUCLEA4 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| + | -200.0000 ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |

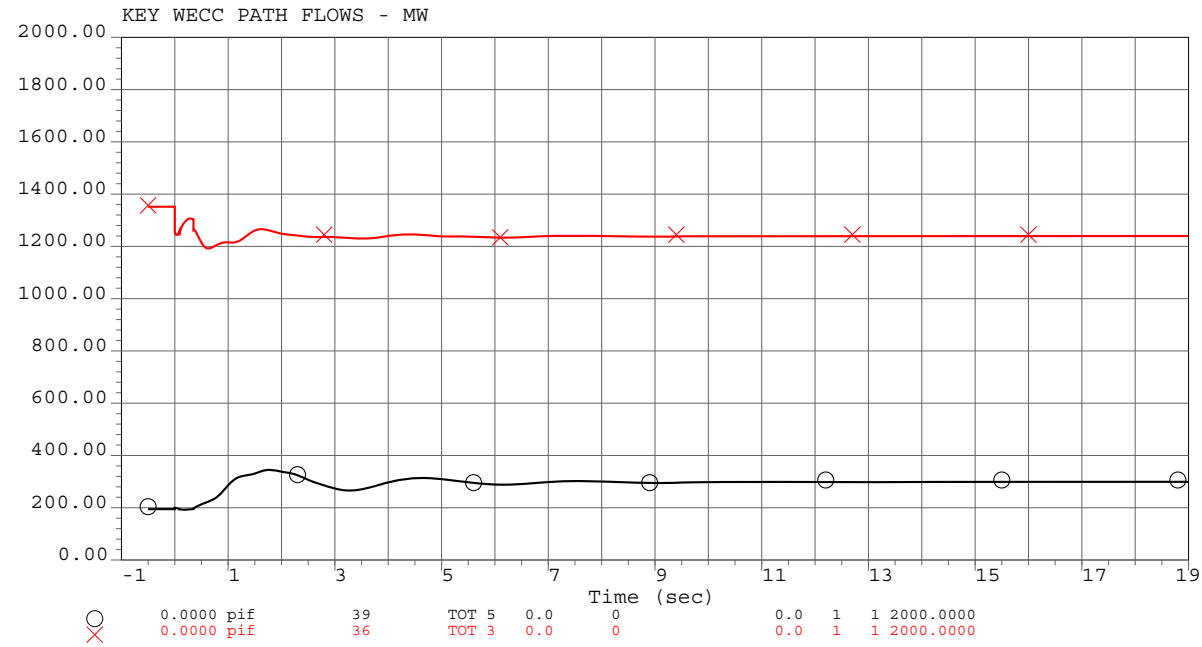
WESTERN ELECTRICITY COORDINATING COUNCIL
2013 HS2-OP BASE CASE
NOVEMBER 30, 2012

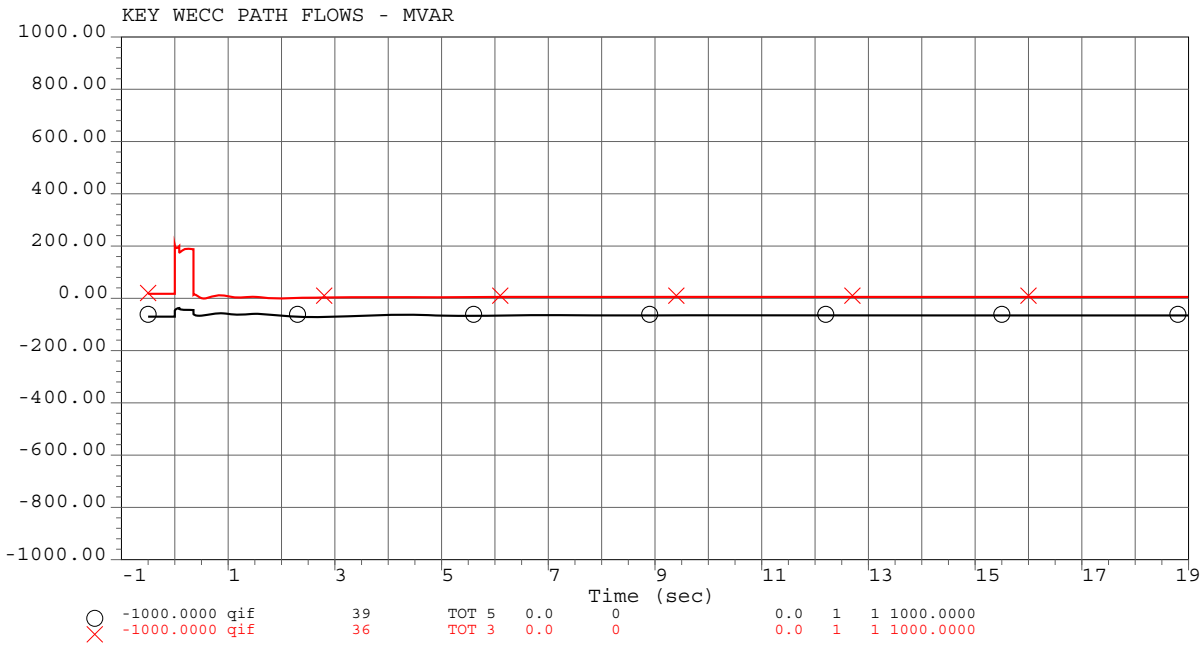


SC2_Sum_Base_v0_07_Sidney!-SprCan_230_SLG_C.chf

.

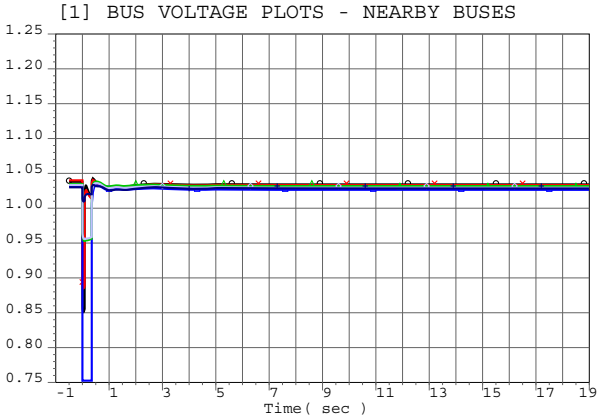
Tue Nov 26 12:29:47 2013


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

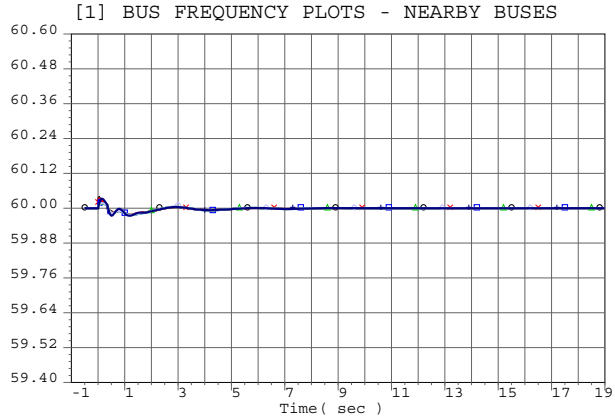
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



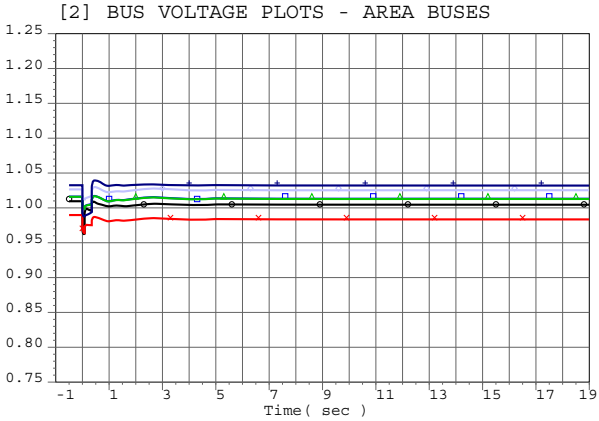

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



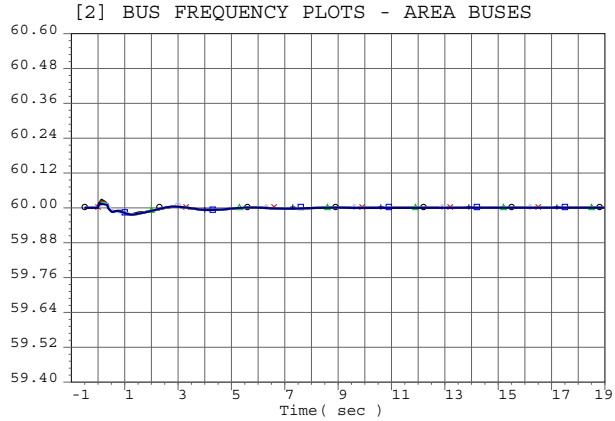

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



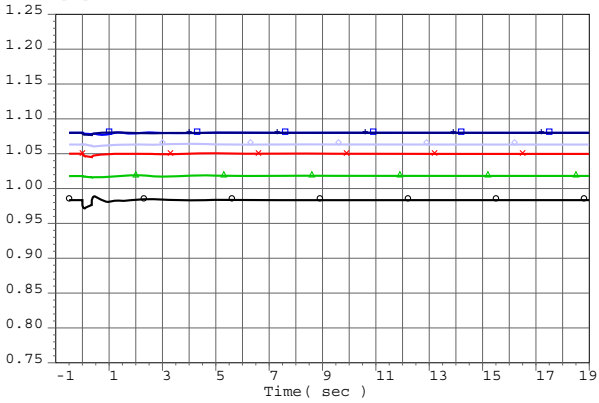

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



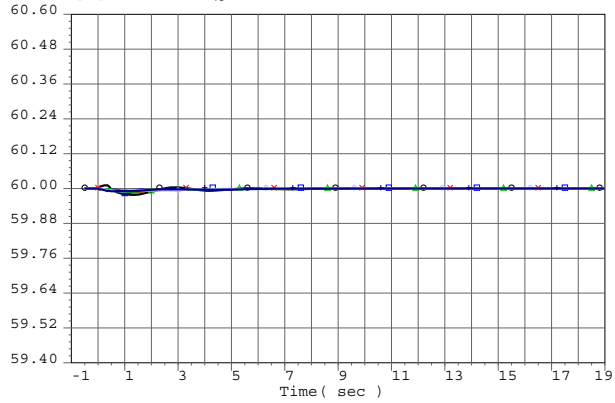

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 14021 | BALDWIN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 14021 | BALDWIN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013 HS2-OP BASE CASE
NOVEMBER 30, 2012



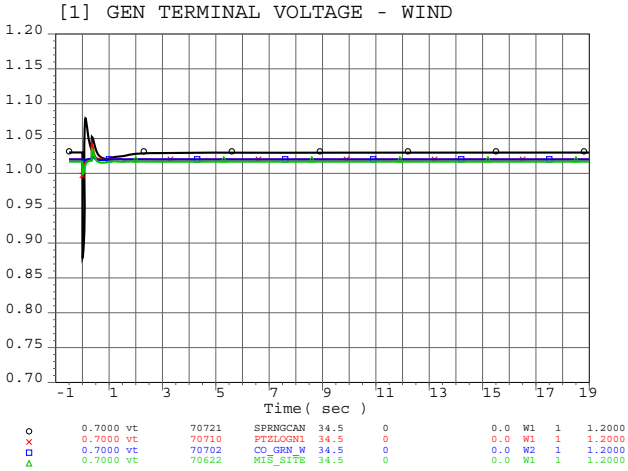
SC2_Sum_Base_v0_08_NYuma!-SprCan_230_SLG_C.chf

.

Tue Nov 26 12:29:54 2013

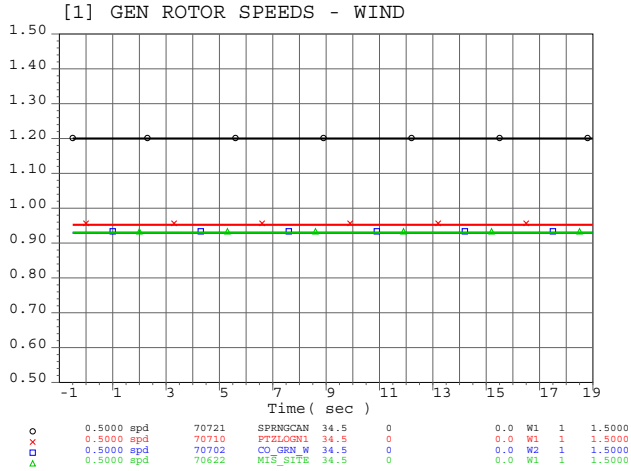
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



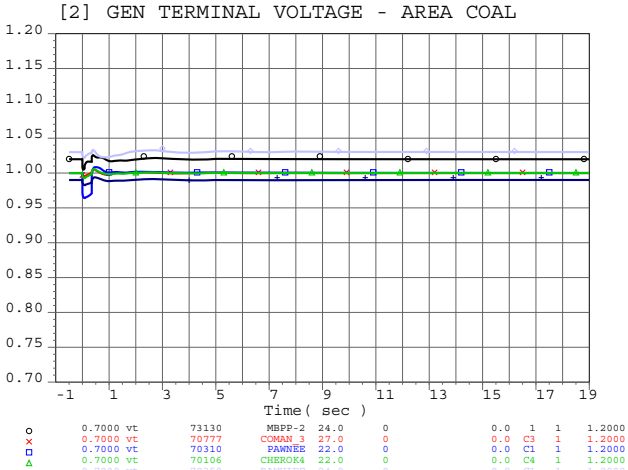

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| × | 0.7000 vt | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| □ | 0.7000 vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| △ | 0.7000 vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



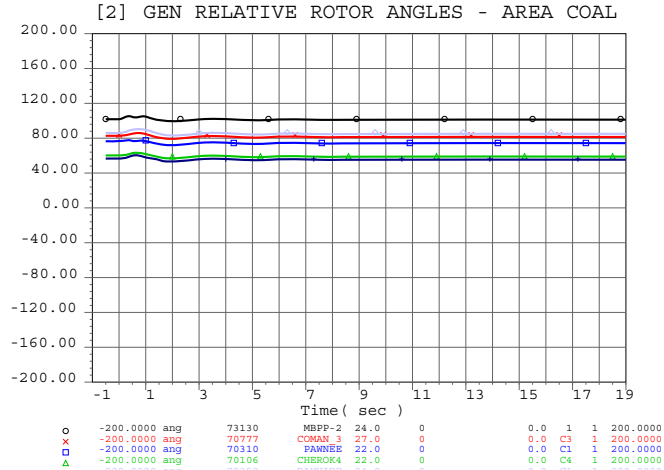

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.5000 spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| × | 0.5000 spd | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| □ | 0.5000 spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| △ | 0.5000 spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



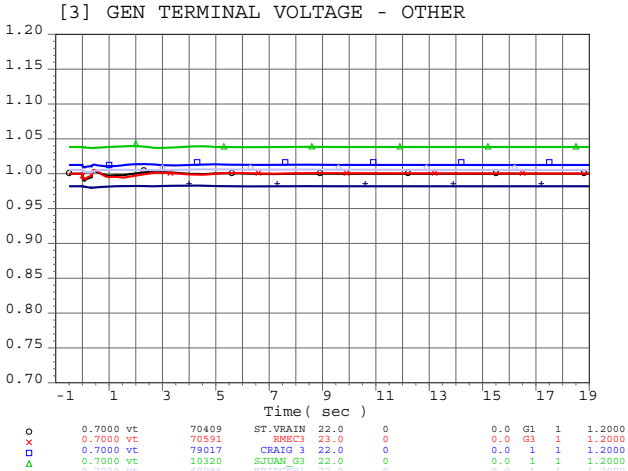

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| × | 0.7000 vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| □ | 0.7000 vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| △ | 0.7000 vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| + | 0.7000 vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



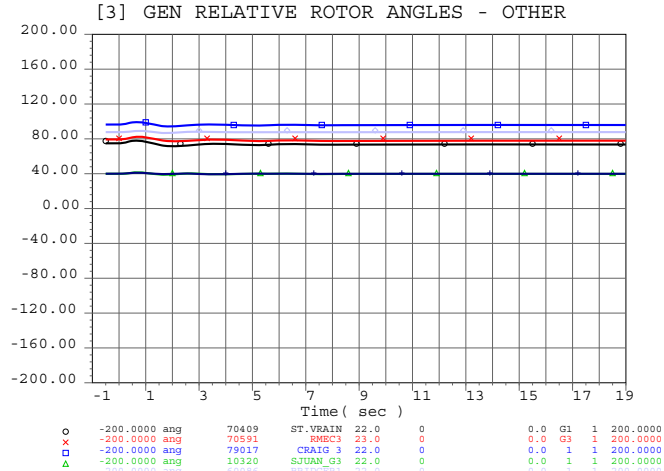

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| × | -200.0000 ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| □ | -200.0000 ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| △ | -200.0000 ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| + | -200.0000 ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| × | 0.7000 vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| □ | 0.7000 vt | 79017 | CRAIG_3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| △ | 0.7000 vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 60186 | MIDWAY4 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| + | 0.7000 vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| × | -200.0000 ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| □ | -200.0000 ang | 79017 | CRAIG_3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| △ | -200.0000 ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 60186 | MIDWAY4 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| + | -200.0000 ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |

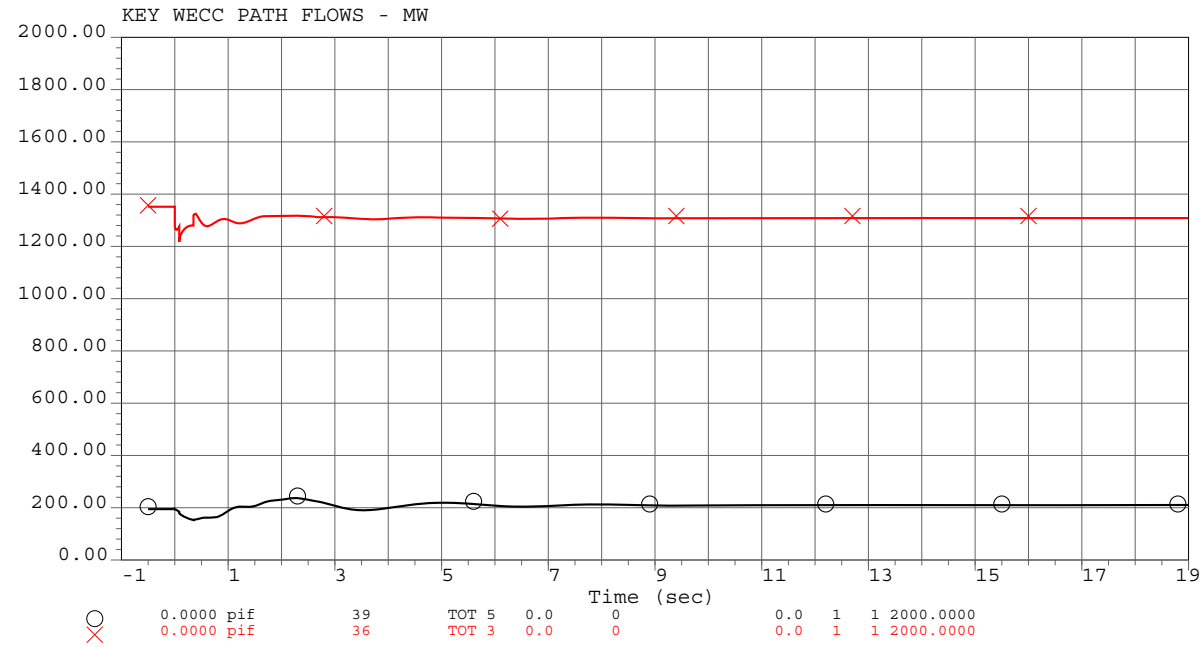
WESTERN ELECTRICITY COORDINATING COUNCIL
2013 HS2-OP BASE CASE
NOVEMBER 30, 2012

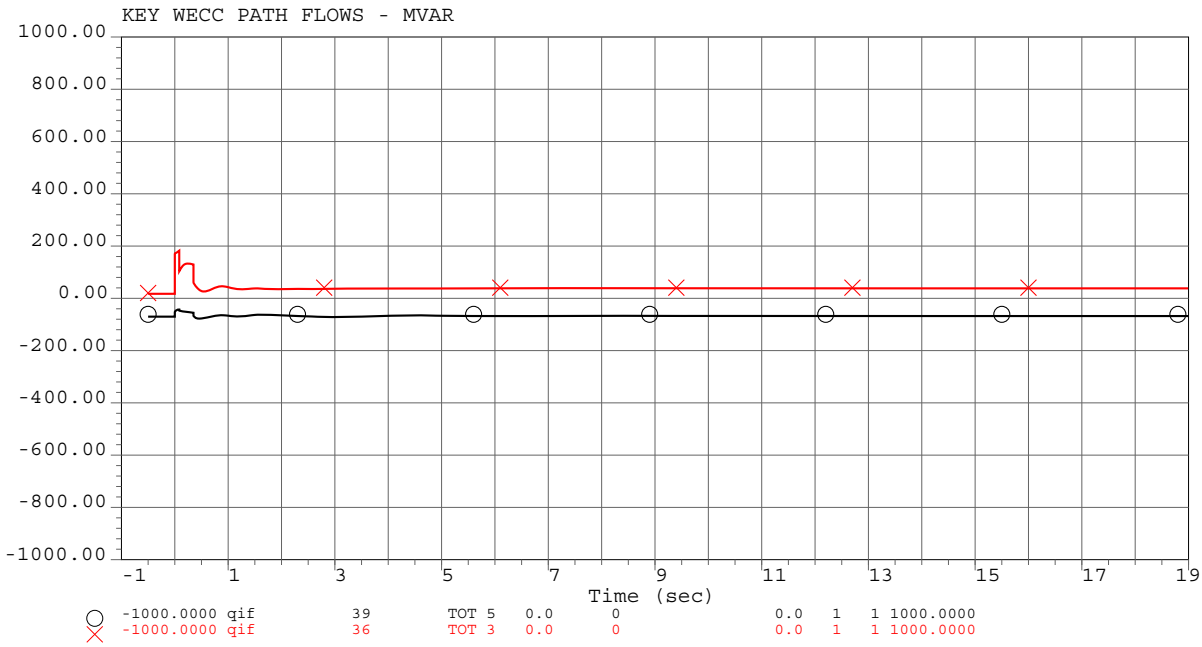


SC2_Sum_Base_v0_08_NYuma!-SprCan_230_SLG_C.chf

.

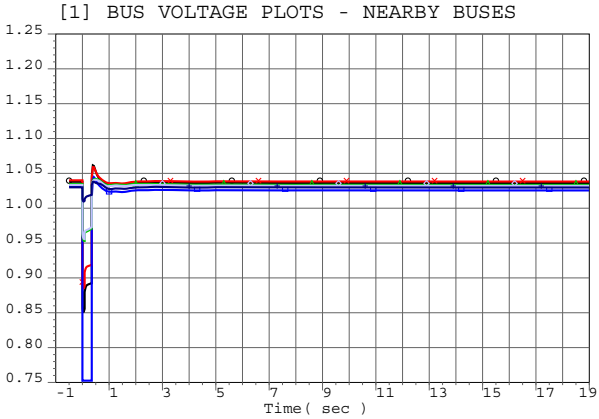
Tue Nov 26 12:29:54 2013


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

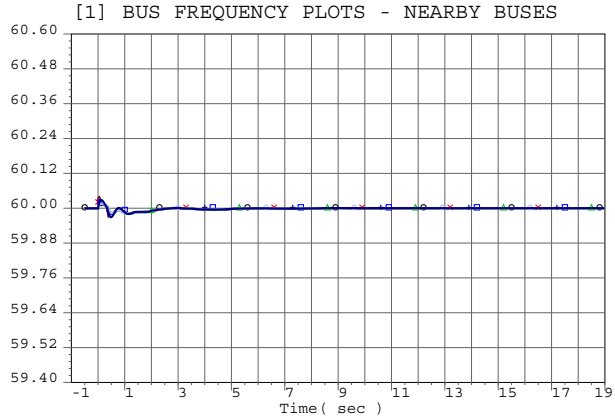
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



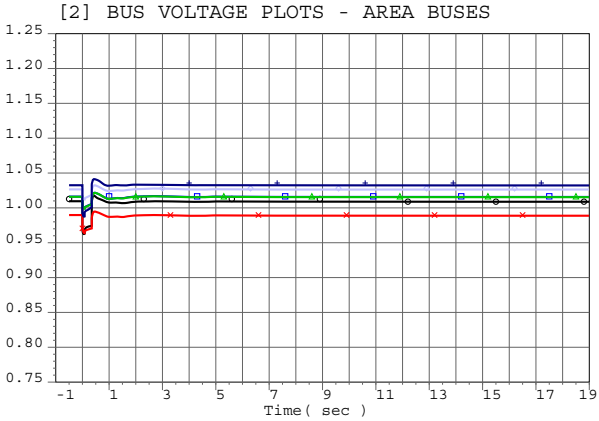

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



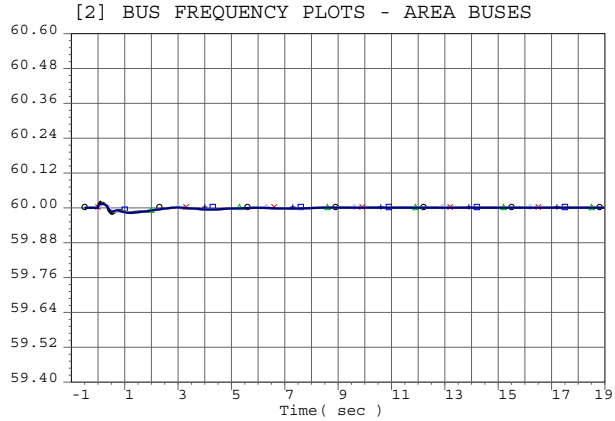

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



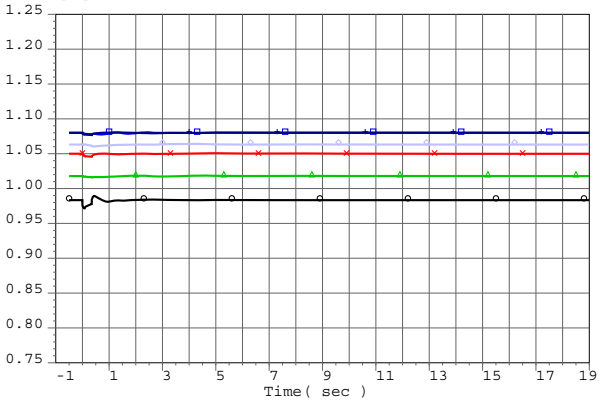

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



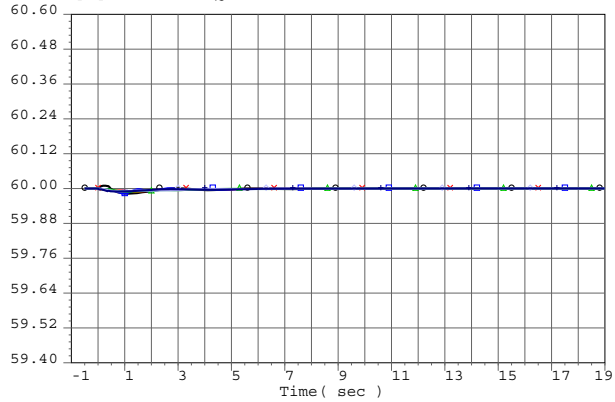

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 14021 | BALDWIN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 14021 | BALDWIN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013 HS2-OP BASE CASE
NOVEMBER 30, 2012



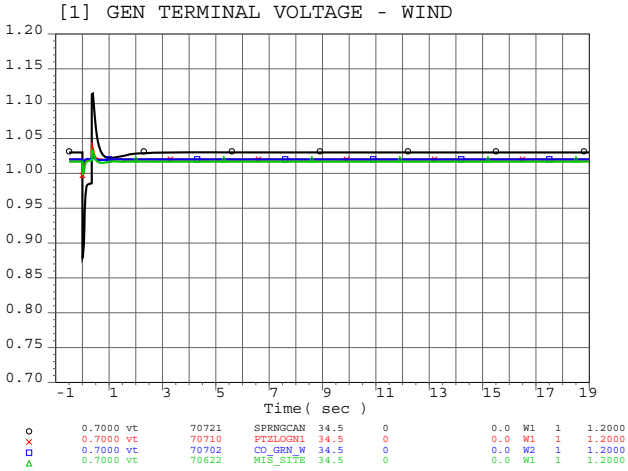
SC2_Sum_Base_v0_08a_NYuma230!-115Xfmr_SLG_C.chf

.

Tue Nov 26 12:30:03 2013

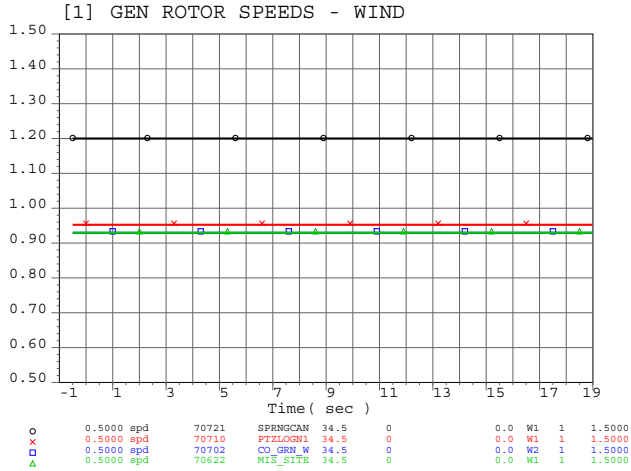
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



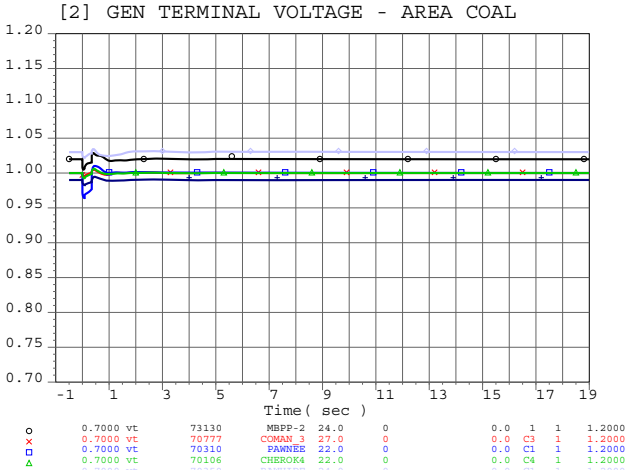

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| × | 0.7000 vt | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| □ | 0.7000 vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| △ | 0.7000 vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



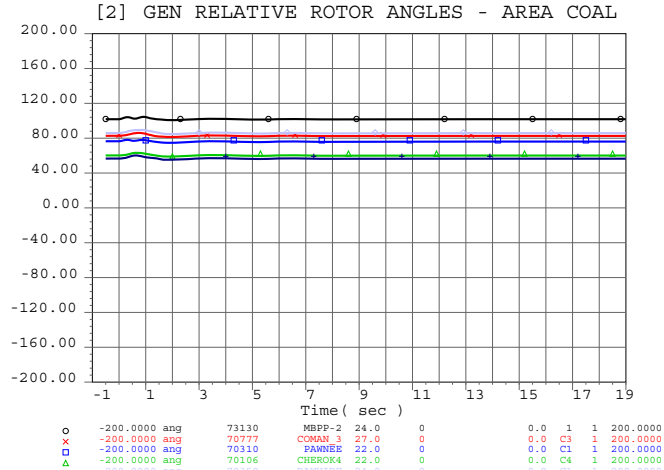

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.5000 spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| × | 0.5000 spd | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| □ | 0.5000 spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| △ | 0.5000 spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



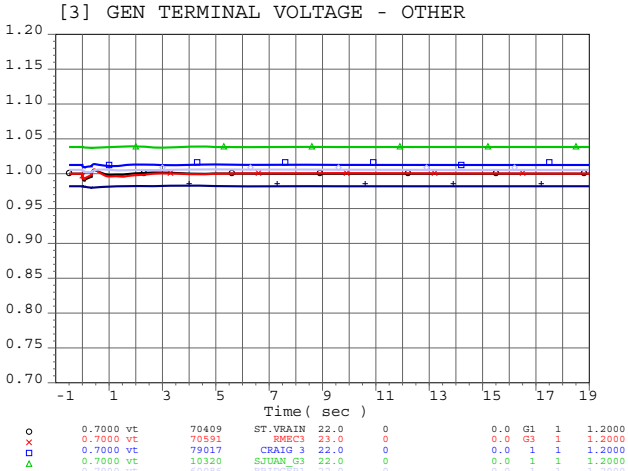

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| × | 0.7000 vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| □ | 0.7000 vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| △ | 0.7000 vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| + | 0.7000 vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



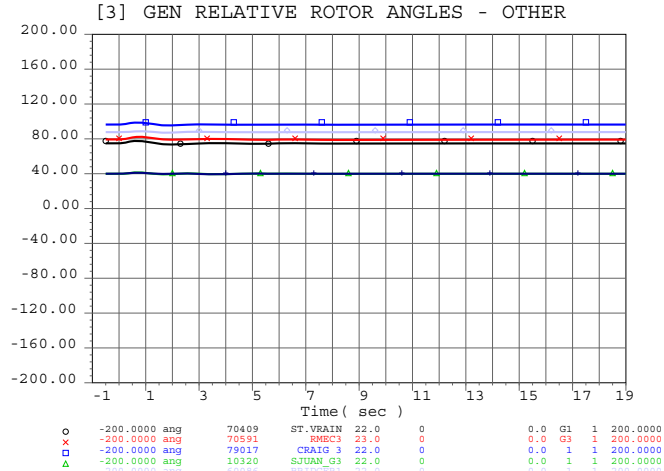

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| × | -200.0000 ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| □ | -200.0000 ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| △ | -200.0000 ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| + | -200.0000 ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| × | 0.7000 vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| □ | 0.7000 vt | 79017 | CRAIG_3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| △ | 0.7000 vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 60186 | NUCLEA4 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| + | 0.7000 vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| × | -200.0000 ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| □ | -200.0000 ang | 79017 | CRAIG_3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| △ | -200.0000 ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 60186 | NUCLEA4 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| + | -200.0000 ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |

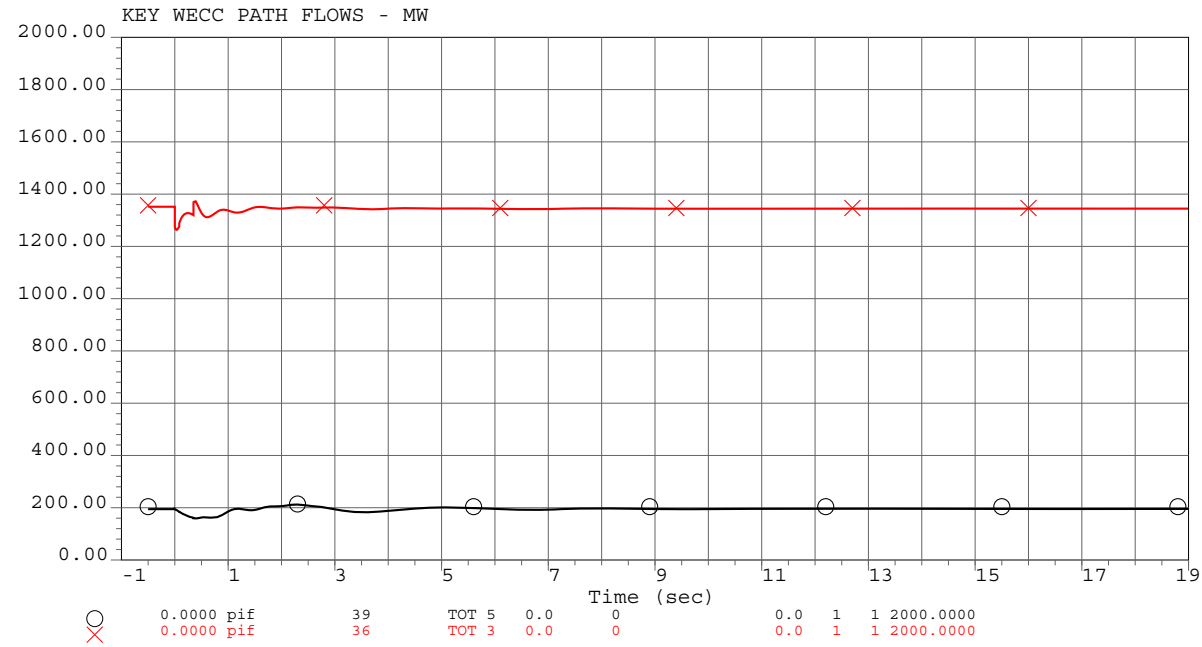
WESTERN ELECTRICITY COORDINATING COUNCIL
2013 HS2-OP BASE CASE
NOVEMBER 30, 2012

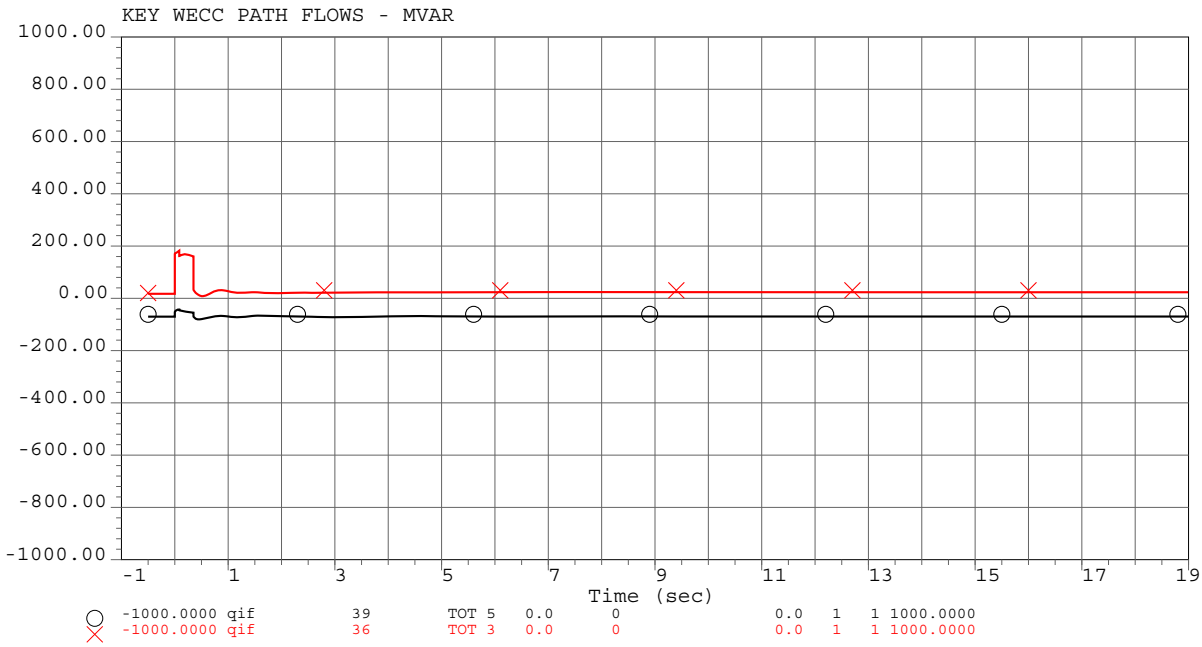


SC2_Sum_Base_v0_08a_NYuma230!-115Xfmr_SLG_C.chf

.

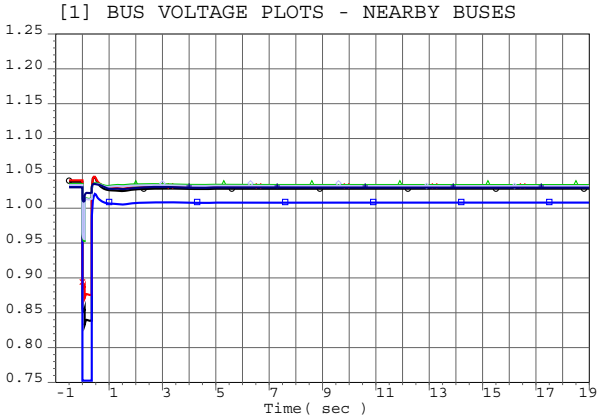
Tue Nov 26 12:30:03 2013


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

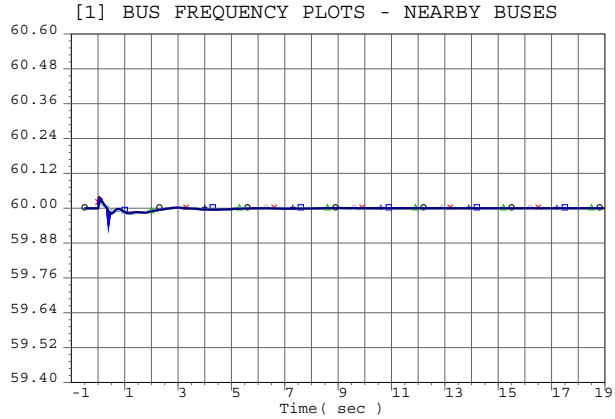
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



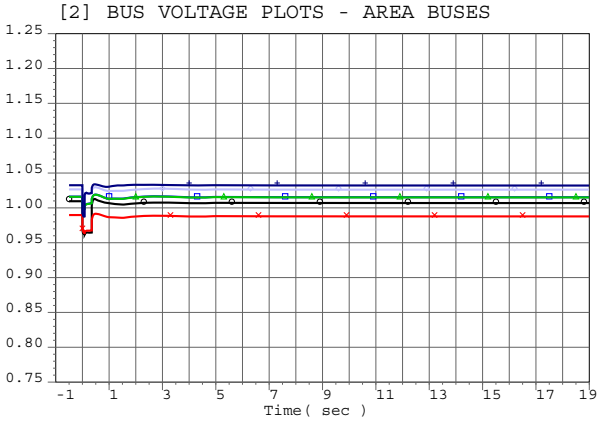

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



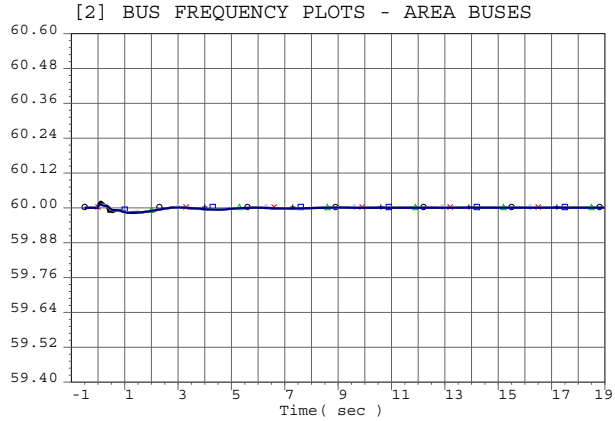

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



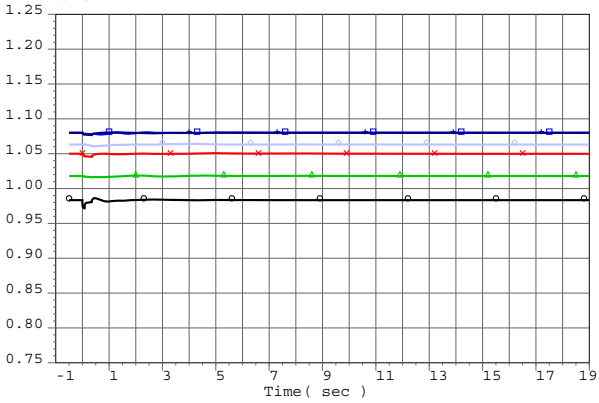

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



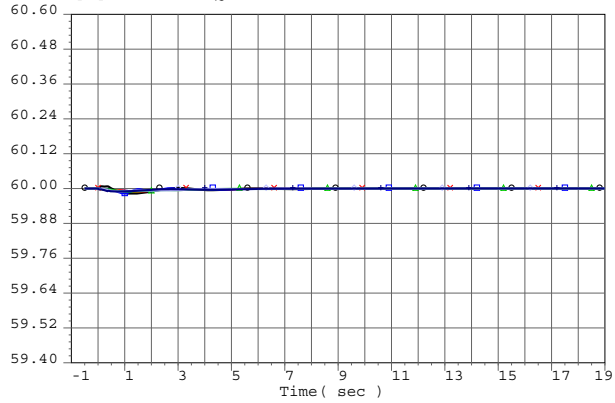

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 14021 | BALOVRDN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 14021 | BALOVRDN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013 HS2-OP BASE CASE
NOVEMBER 30, 2012



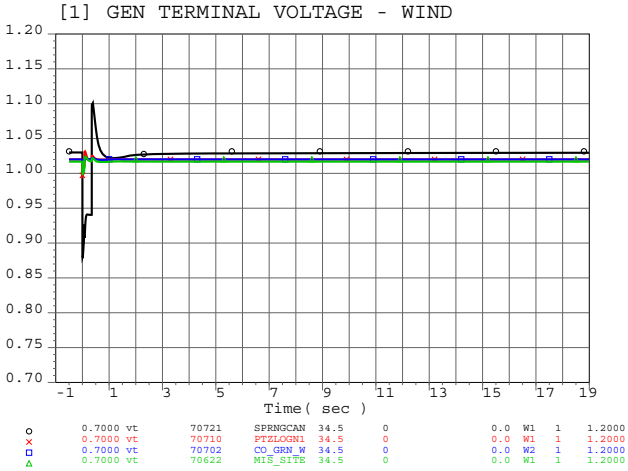
SC2_Sum_Base_v0_09_NYuma!-Story_230_SLG_C.chf

.

Tue Nov 26 12:30:10 2013

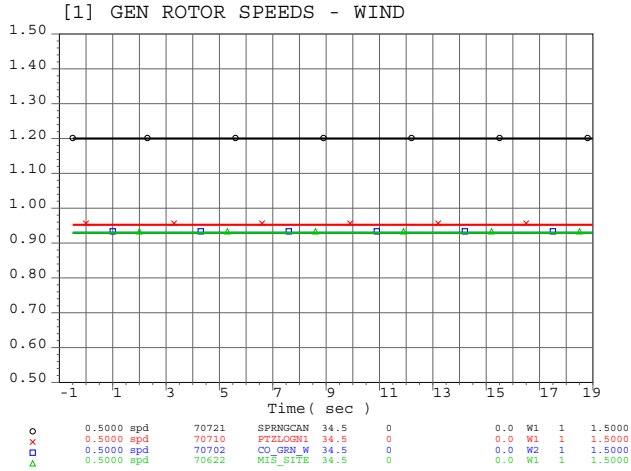
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



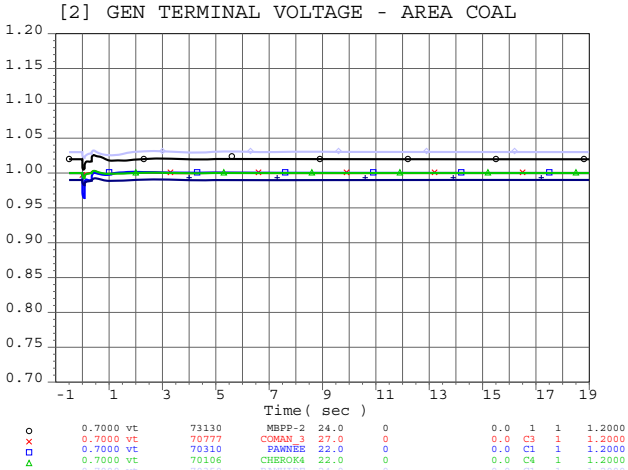

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| × | 0.7000 vt | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| □ | 0.7000 vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| △ | 0.7000 vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



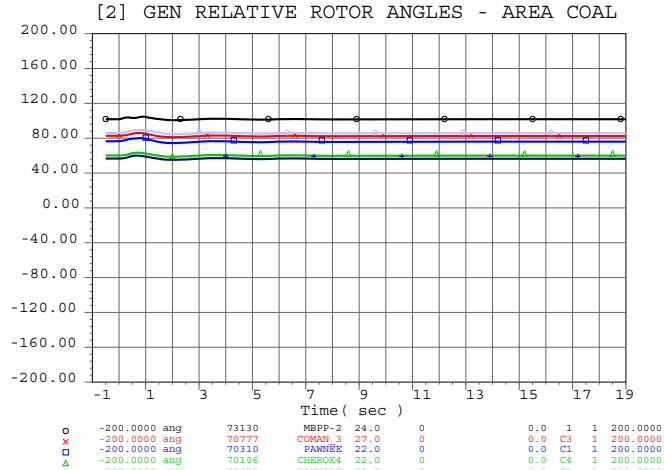

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.5000 spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| × | 0.5000 spd | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| □ | 0.5000 spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| △ | 0.5000 spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



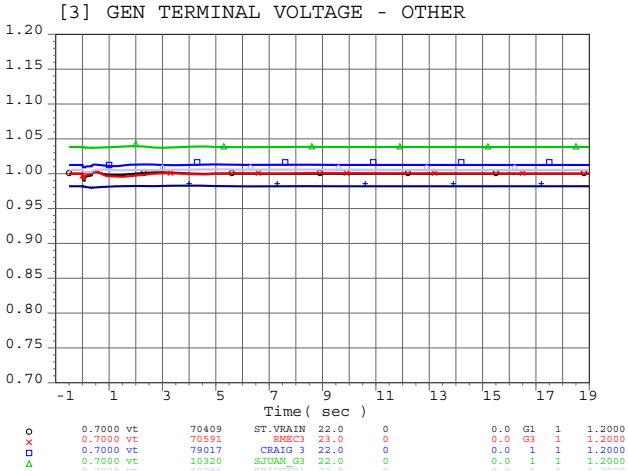

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| × | 0.7000 vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| □ | 0.7000 vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| △ | 0.7000 vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| + | 0.7000 vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



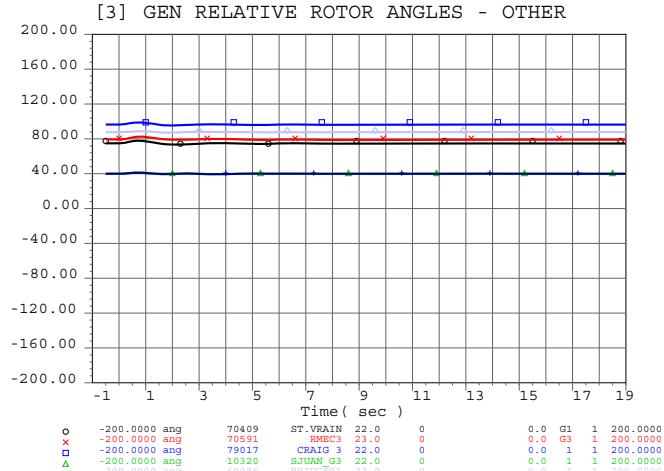

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| × | -200.0000 ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| □ | -200.0000 ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| △ | -200.0000 ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| + | -200.0000 ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| × | 0.7000 vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| □ | 0.7000 vt | 79017 | CRAIG_3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| △ | 0.7000 vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 60186 | MIDWAY4 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| + | 0.7000 vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| × | -200.0000 ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| □ | -200.0000 ang | 79017 | CRAIG_3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| △ | -200.0000 ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 60186 | MIDWAY4 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| + | -200.0000 ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013 HS2-OP BASE CASE
NOVEMBER 30, 2012



SC2_Sum_Base_v0_09_NYuma!-Story_230_SLG_C.chf

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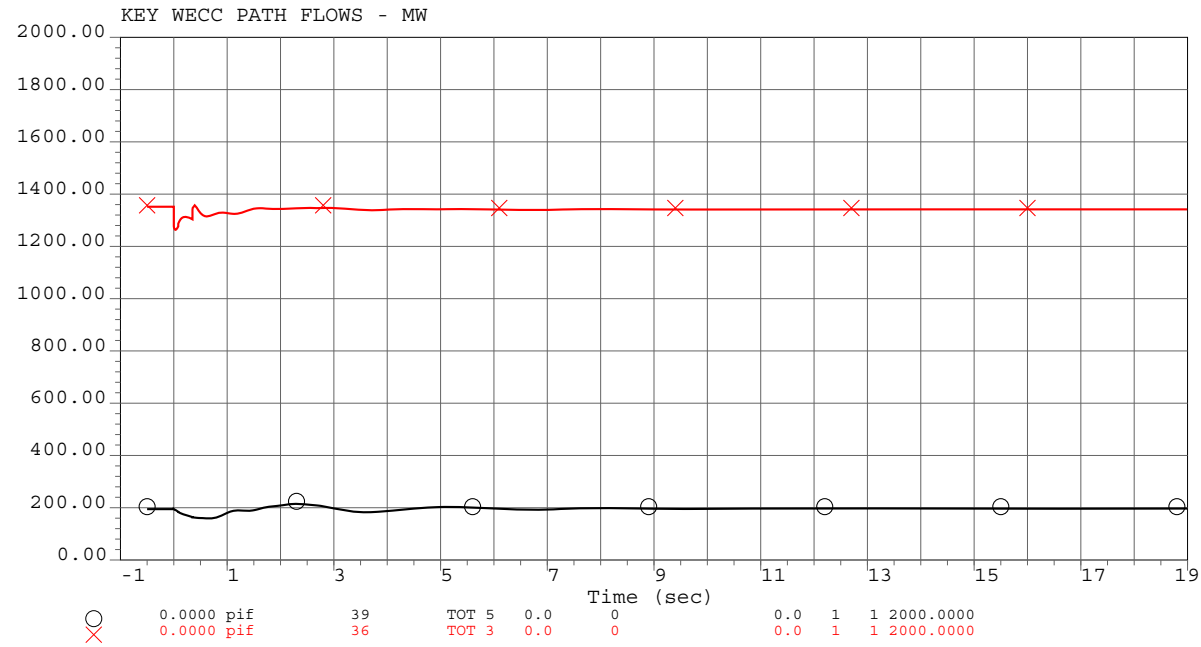
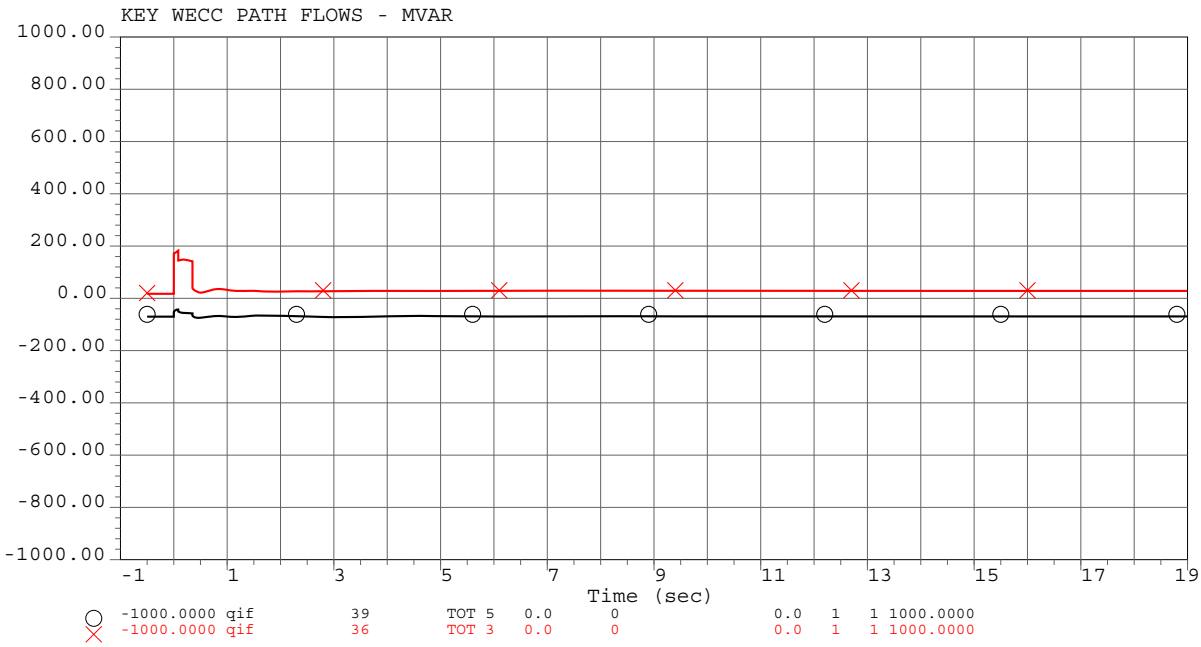
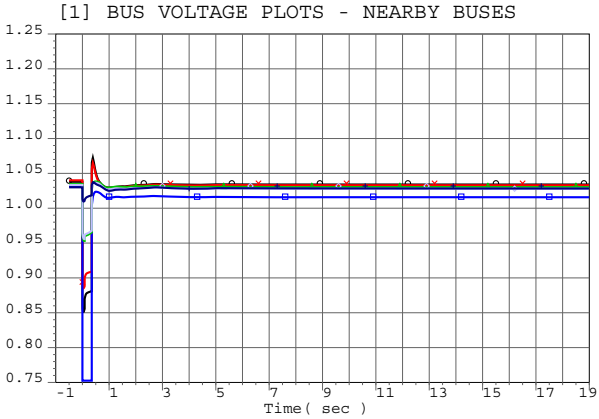
Tue Nov 26 12:30:10 2013


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

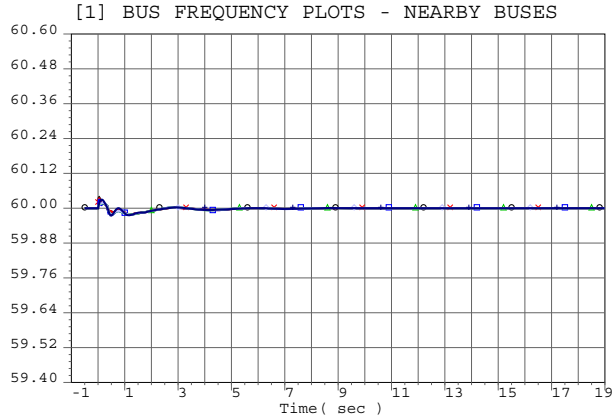
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



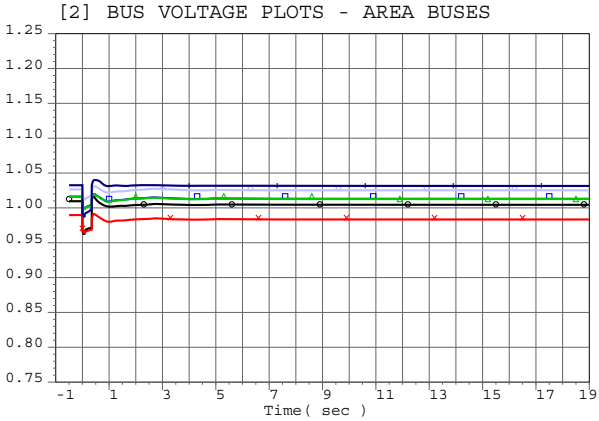

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



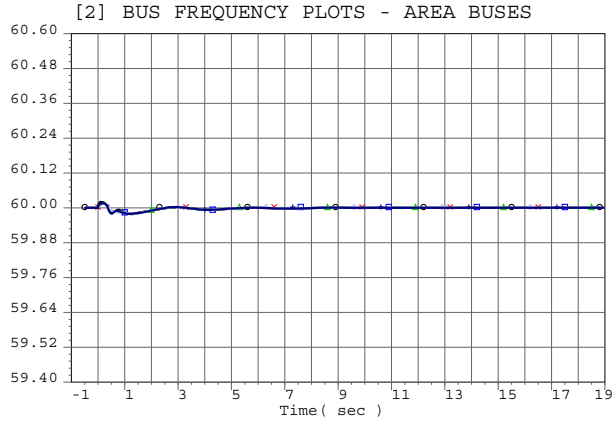

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



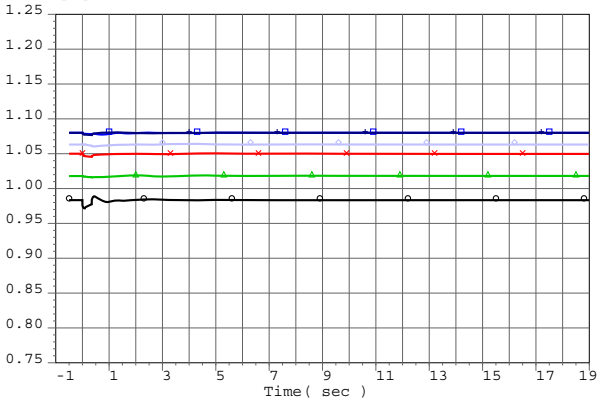

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



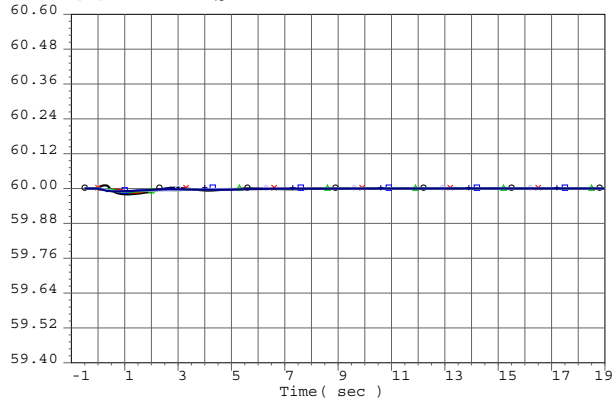

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 14021 | BALNORTH 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 14021 | BALNORTH 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013 HS2-OP BASE CASE
NOVEMBER 30, 2012



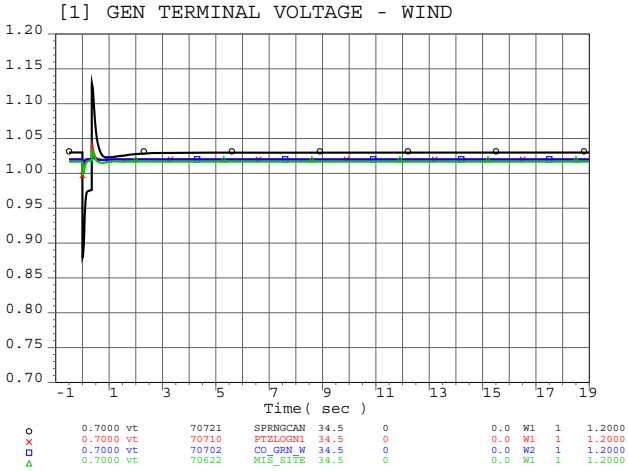
SC2_Sum_Base_v0_10_NYuma!-Wray_230_SLG_C.chf

.

Tue Nov 26 12:31:23 2013

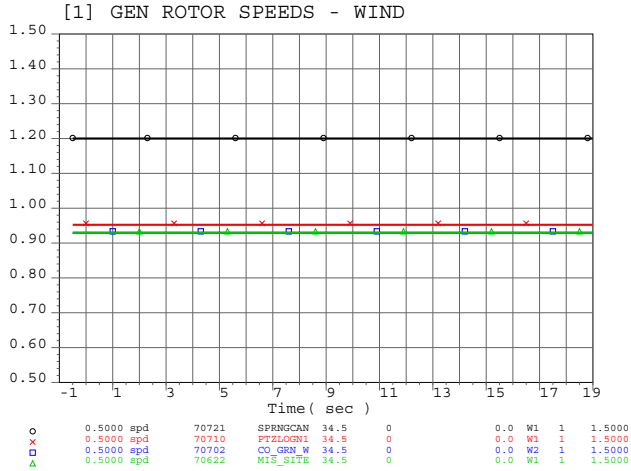
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



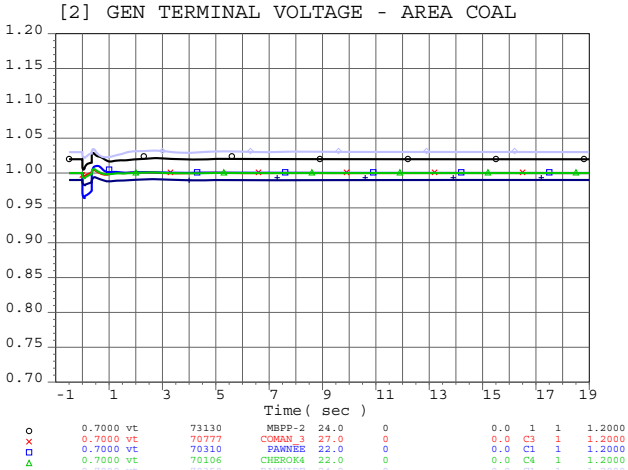

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| × | 0.7000 vt | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| □ | 0.7000 vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| △ | 0.7000 vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



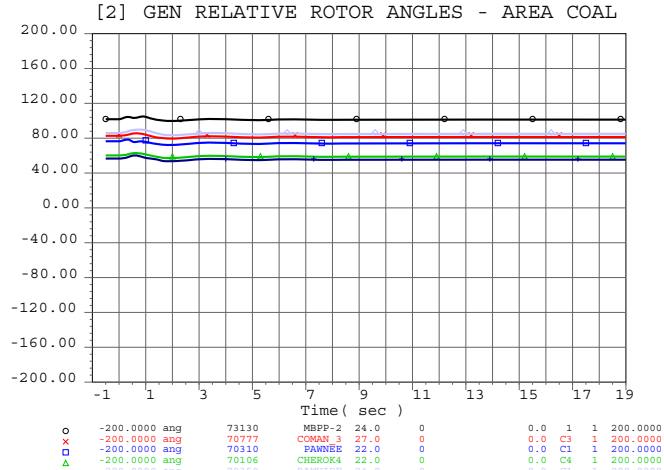

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.5000 spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| × | 0.5000 spd | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| □ | 0.5000 spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| △ | 0.5000 spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



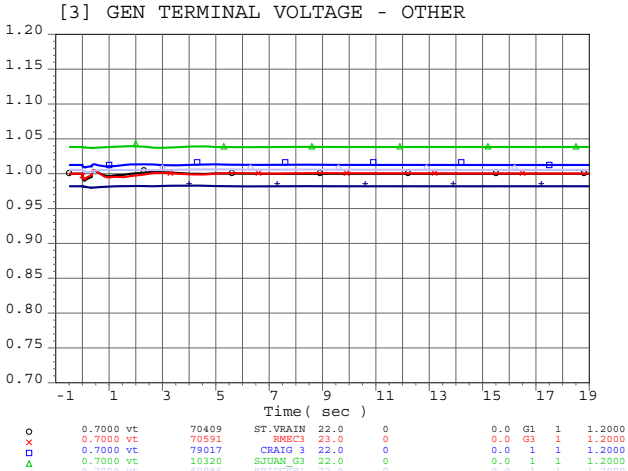

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| × | 0.7000 vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| □ | 0.7000 vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| △ | 0.7000 vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| + | 0.7000 vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



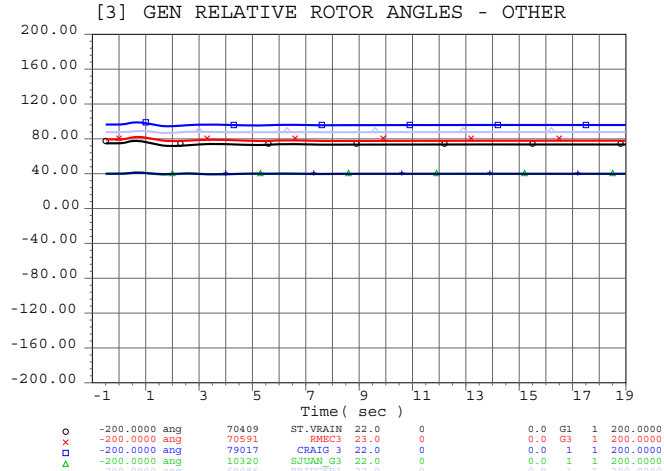

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| × | -200.0000 ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| □ | -200.0000 ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| △ | -200.0000 ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| + | -200.0000 ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| × | 0.7000 vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| □ | 0.7000 vt | 79017 | CRAIG_3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| △ | 0.7000 vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 60186 | NUCLEA4 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| + | 0.7000 vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| × | -200.0000 ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| □ | -200.0000 ang | 79017 | CRAIG_3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| △ | -200.0000 ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 60186 | NUCLEA4 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| + | -200.0000 ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013 HS2-OP BASE CASE
NOVEMBER 30, 2012



SC2_Sum_Base_v0_10_NYuma!-Wray_230_SLG_C.chf

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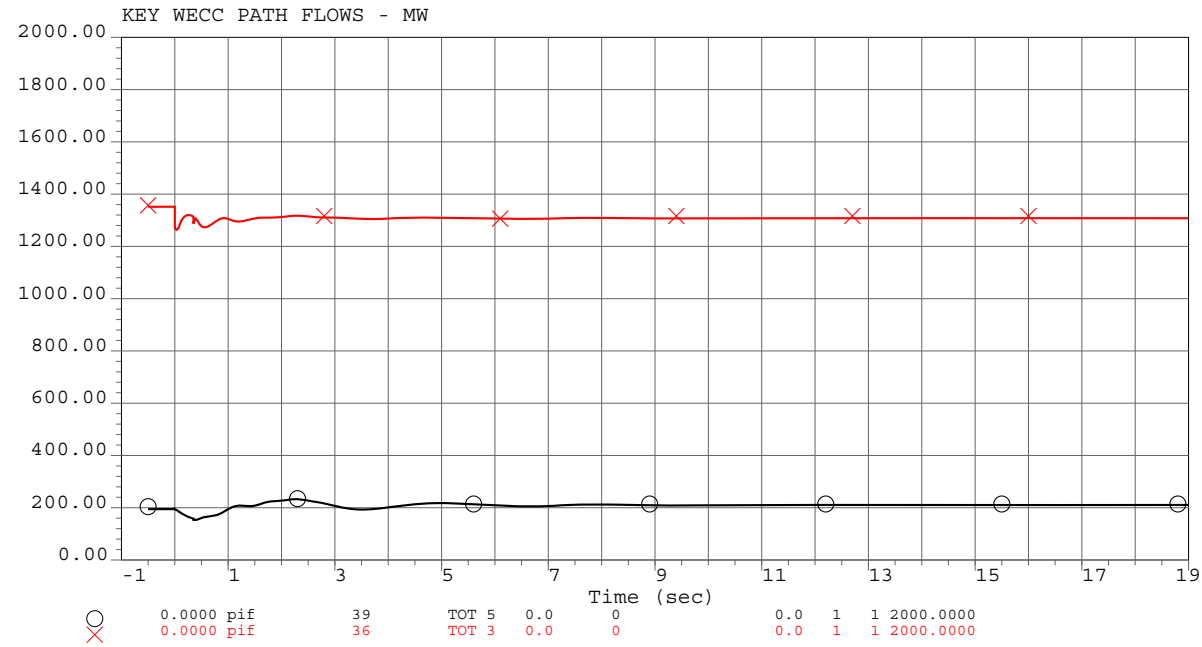
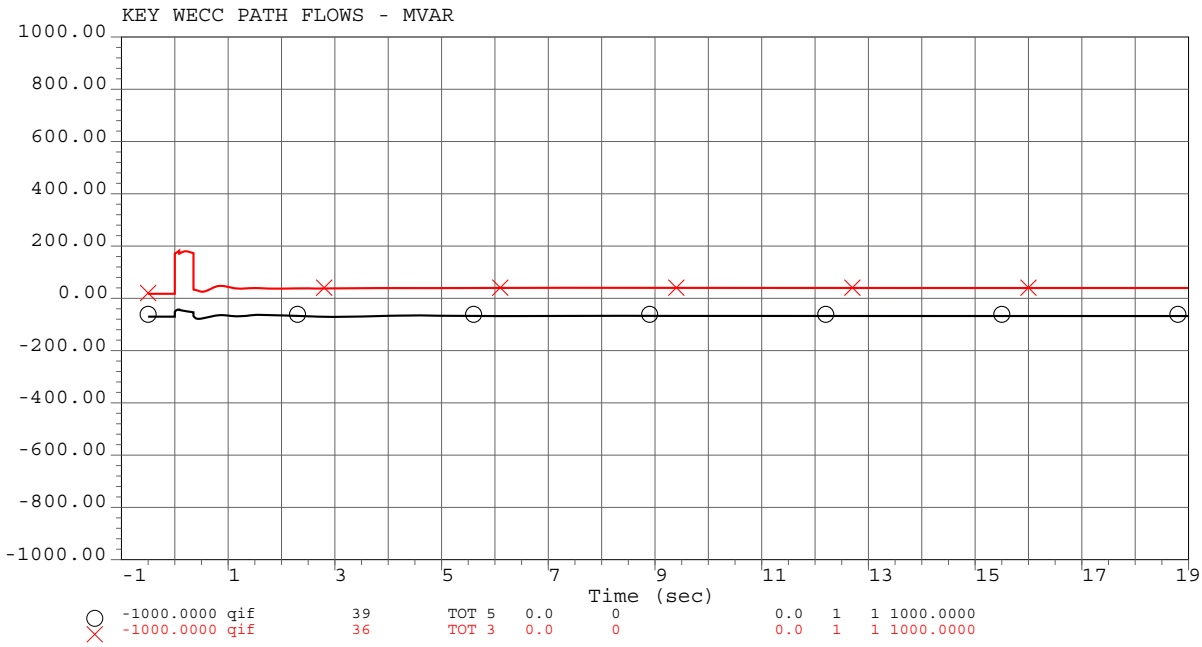
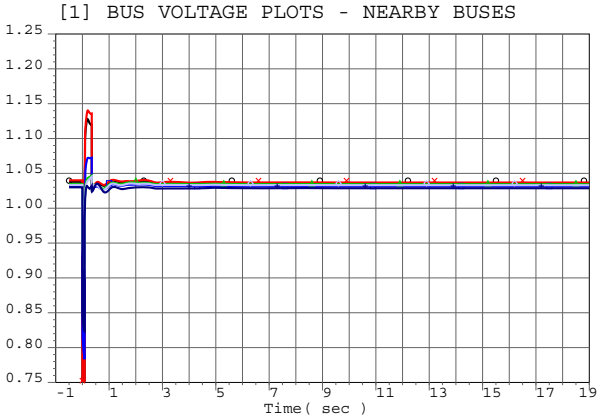
Tue Nov 26 12:31:23 2013


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

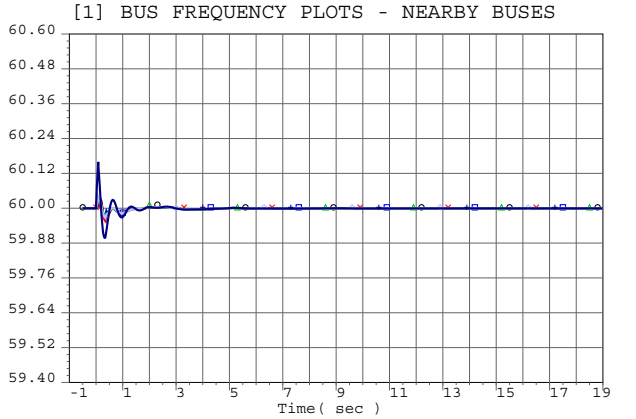
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



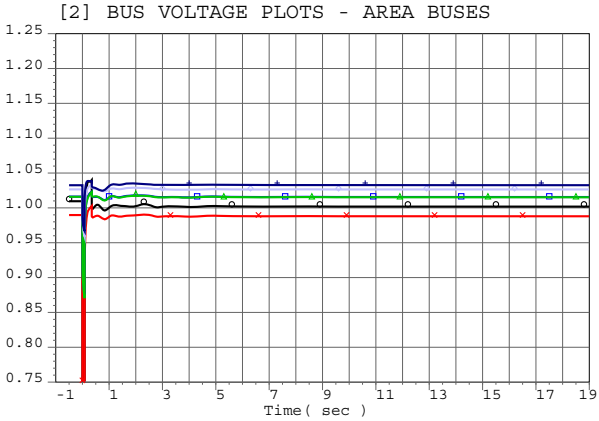

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| o | 0.7500 | vbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| x | 0.7500 | vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



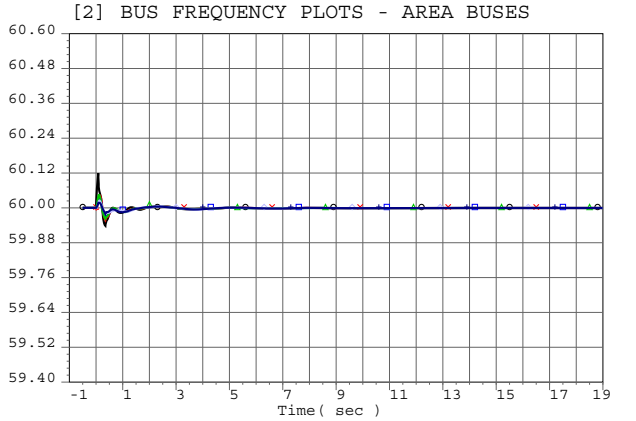

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| o | 59.4000 | fbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| x | 59.4000 | fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



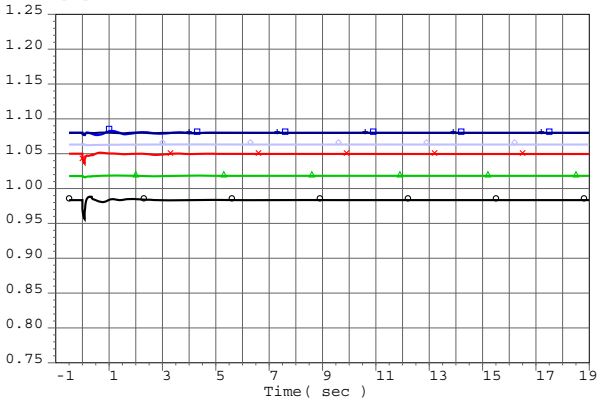

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| o | 0.7500 | vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| x | 0.7500 | vbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



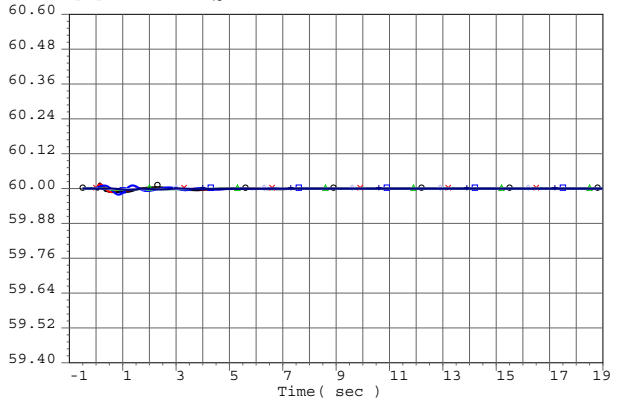

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| o | 59.4000 | fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| x | 59.4000 | fbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| o | 0.7500 | vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| x | 0.7500 | vbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 14021 | BALNORTH 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| o | 59.4000 | fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| x | 59.4000 | fbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 14021 | BALNORTH 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013 HS2-OP BASE CASE
NOVEMBER 30, 2012



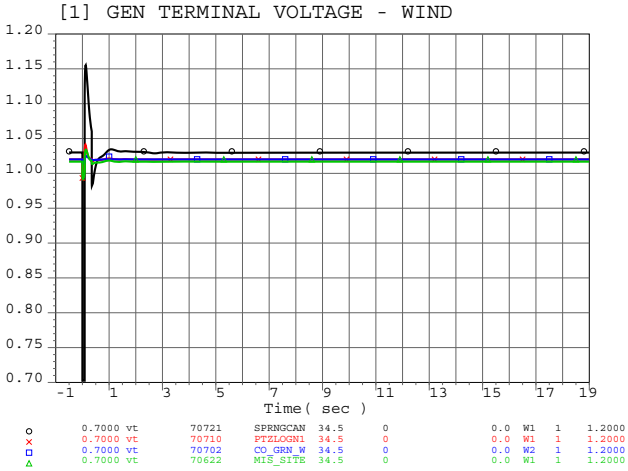
SC2_Sum_Base_v0_11_Stegall!-DJnstn_230_3ph_B.chf

.

Tue Nov 26 12:31:32 2013

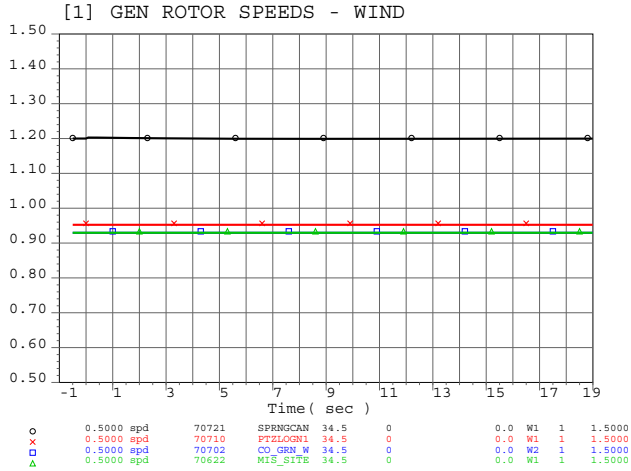
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



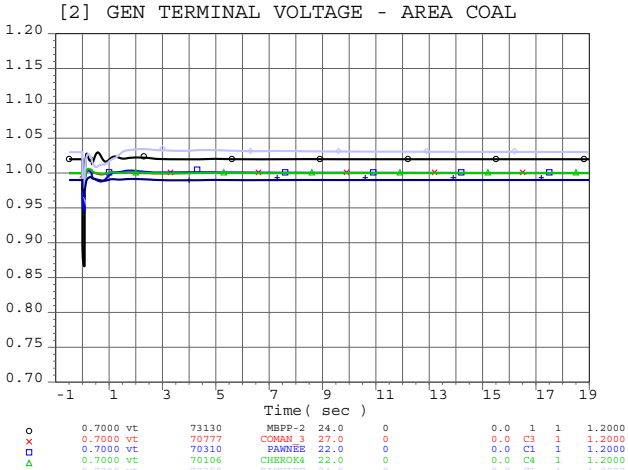

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| × | 0.7000 vt | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| □ | 0.7000 vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| △ | 0.7000 vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



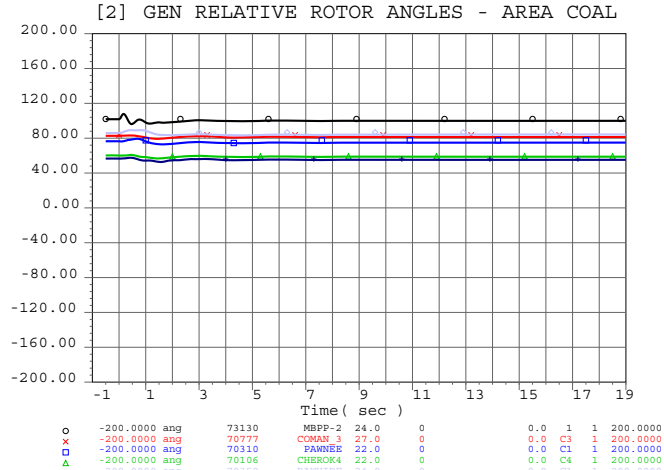

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.5000 spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| × | 0.5000 spd | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| □ | 0.5000 spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| △ | 0.5000 spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



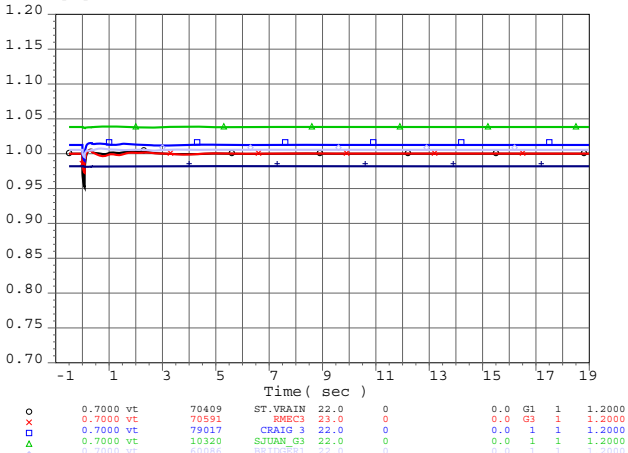

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| × | 0.7000 vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| □ | 0.7000 vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| △ | 0.7000 vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| + | 0.7000 vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



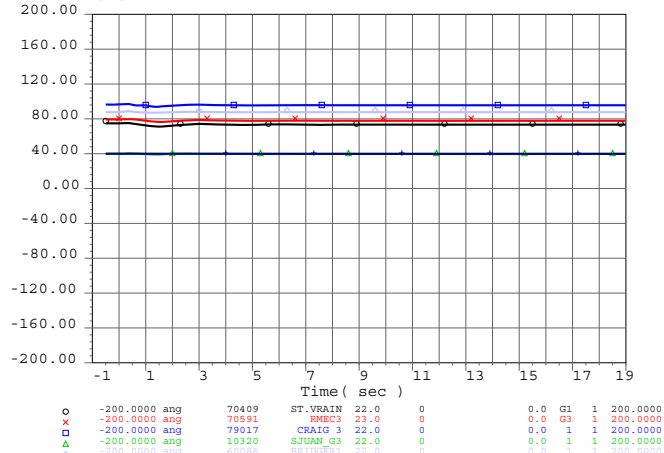

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| × | -200.0000 ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| □ | -200.0000 ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| △ | -200.0000 ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| + | -200.0000 ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER

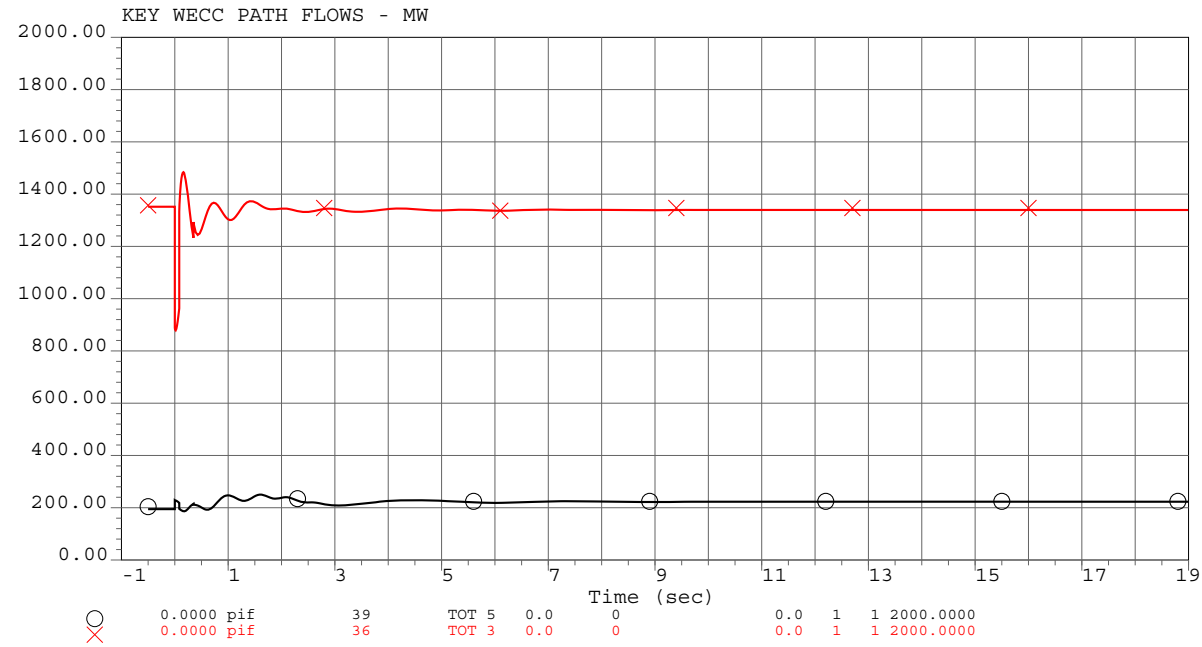


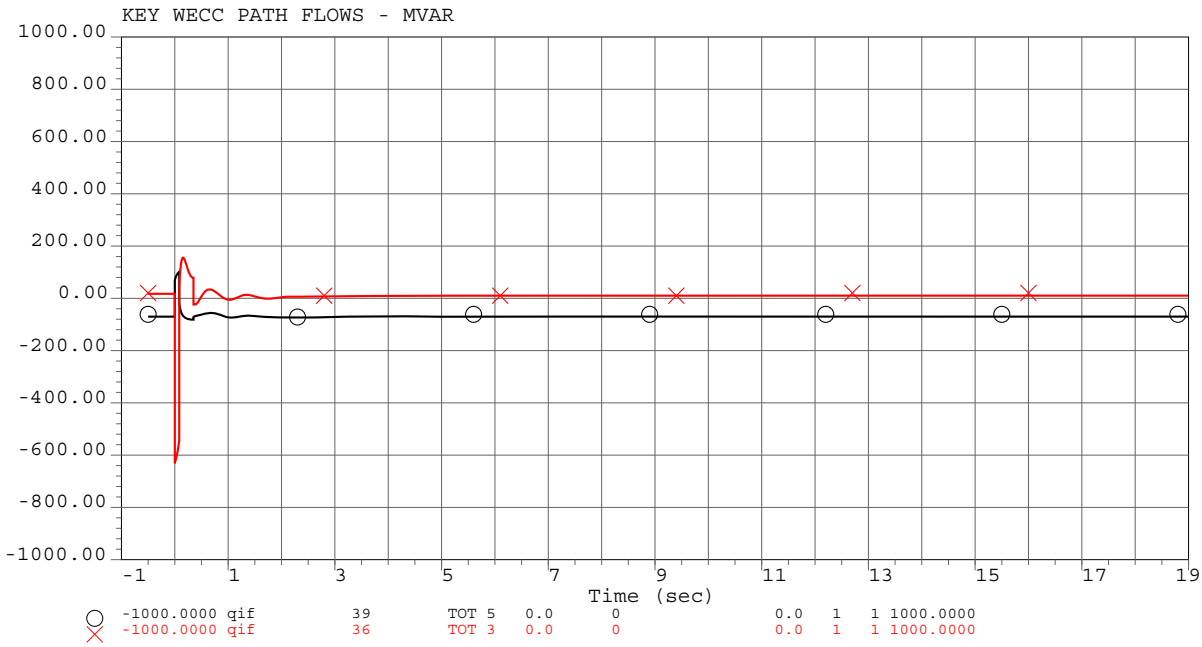

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| × | 0.7000 vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| □ | 0.7000 vt | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| △ | 0.7000 vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 60186 | MIDWAY4 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| + | 0.7000 vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER



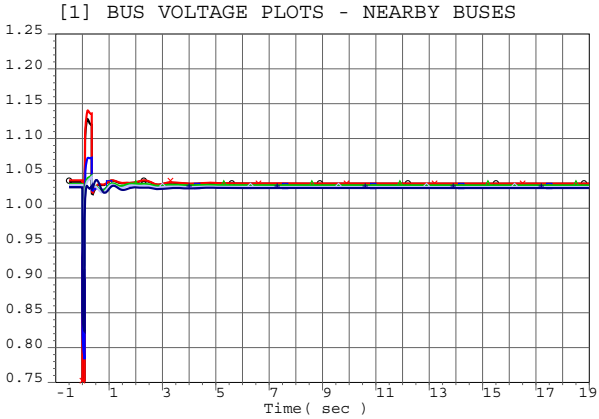

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| × | -200.0000 ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| □ | -200.0000 ang | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| △ | -200.0000 ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 60186 | MIDWAY4 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| + | -200.0000 ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

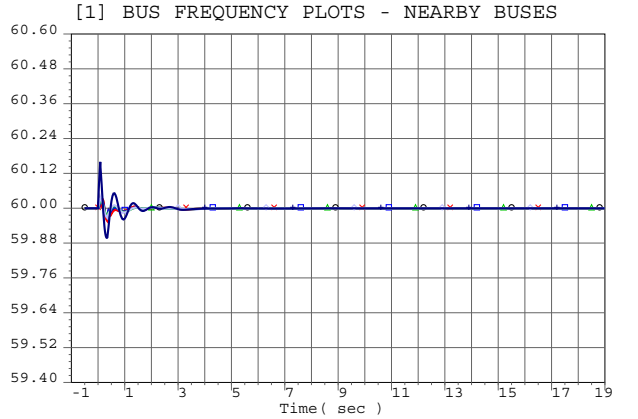
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



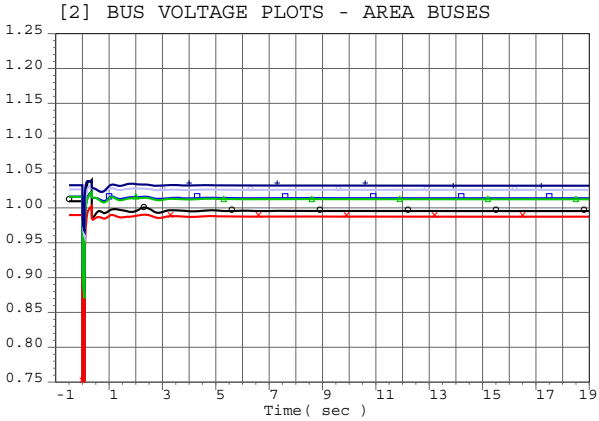

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



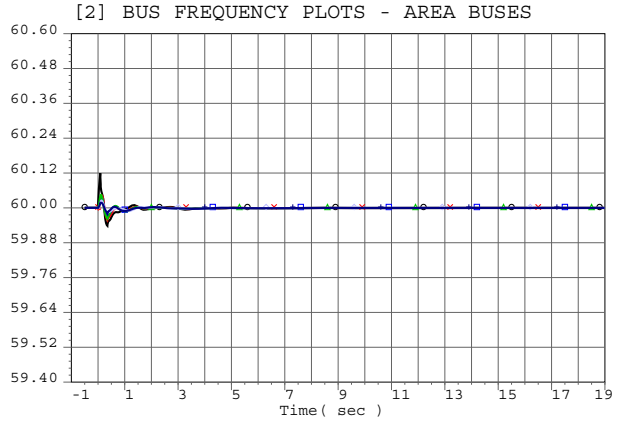

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



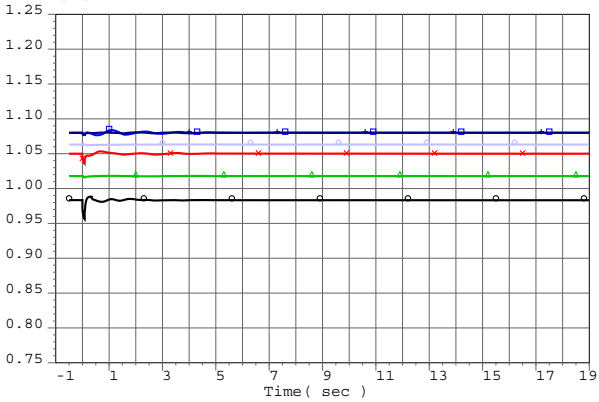

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



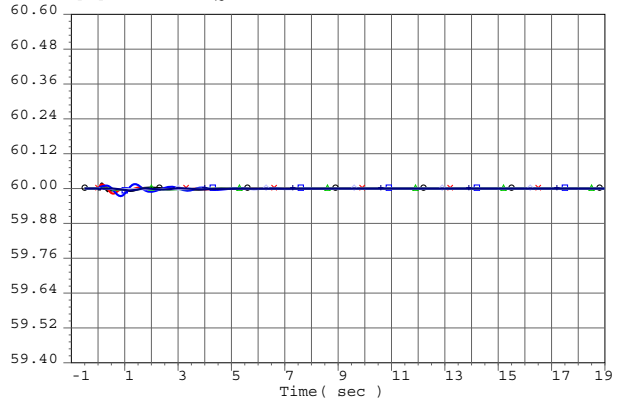

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 14021 | BALONNE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 14021 | BALONNE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013 HS2-OP BASE CASE
NOVEMBER 30, 2012



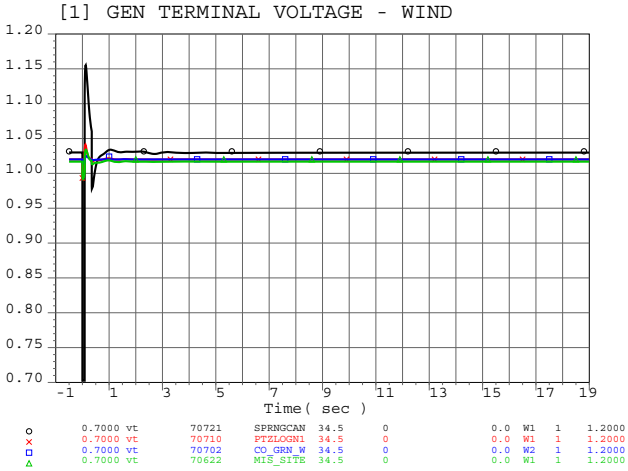
SC2_Sum_Base_v0_12_Stegall!-LRS_230_3ph_B.chf

.

Tue Nov 26 12:31:40 2013

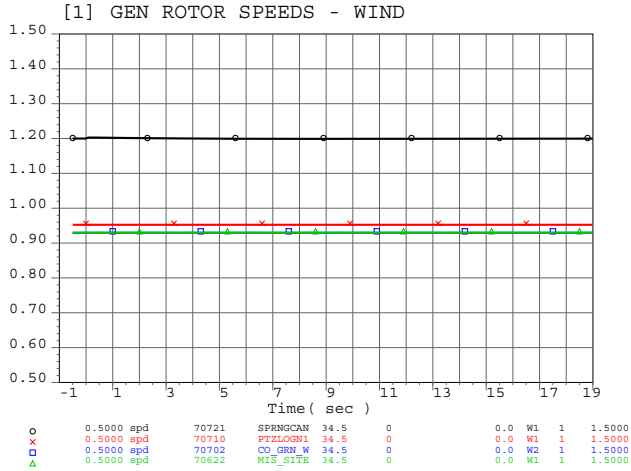
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



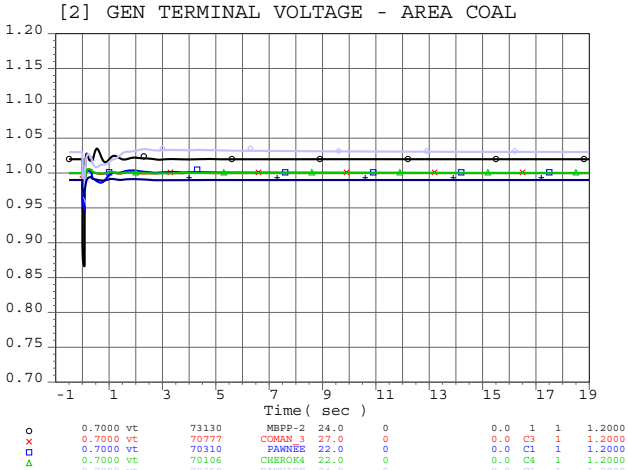

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| × | 0.7000 vt | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| □ | 0.7000 vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| △ | 0.7000 vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



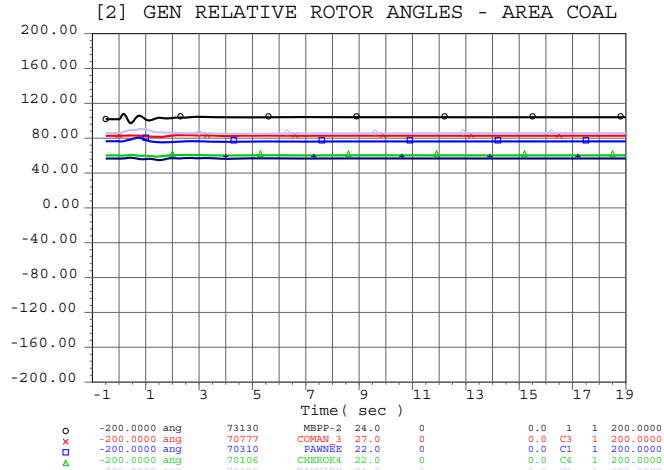

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.5000 spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| × | 0.5000 spd | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| □ | 0.5000 spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| △ | 0.5000 spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



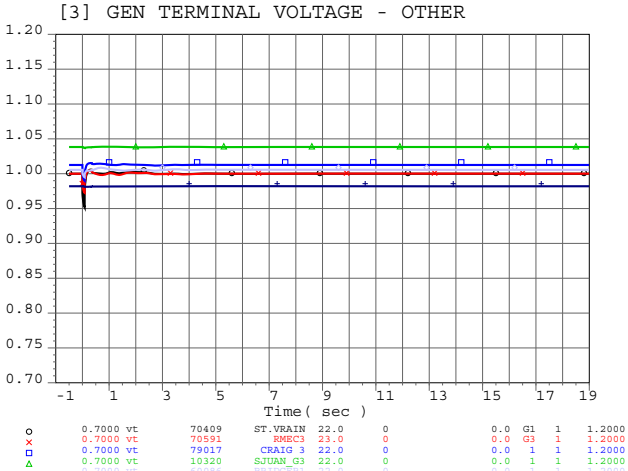

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| × | 0.7000 vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| □ | 0.7000 vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| △ | 0.7000 vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| + | 0.7000 vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



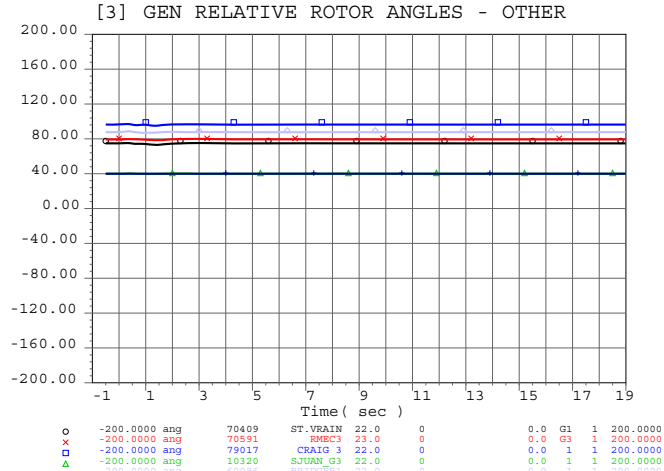

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| × | -200.0000 ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| □ | -200.0000 ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| △ | -200.0000 ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| + | -200.0000 ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER

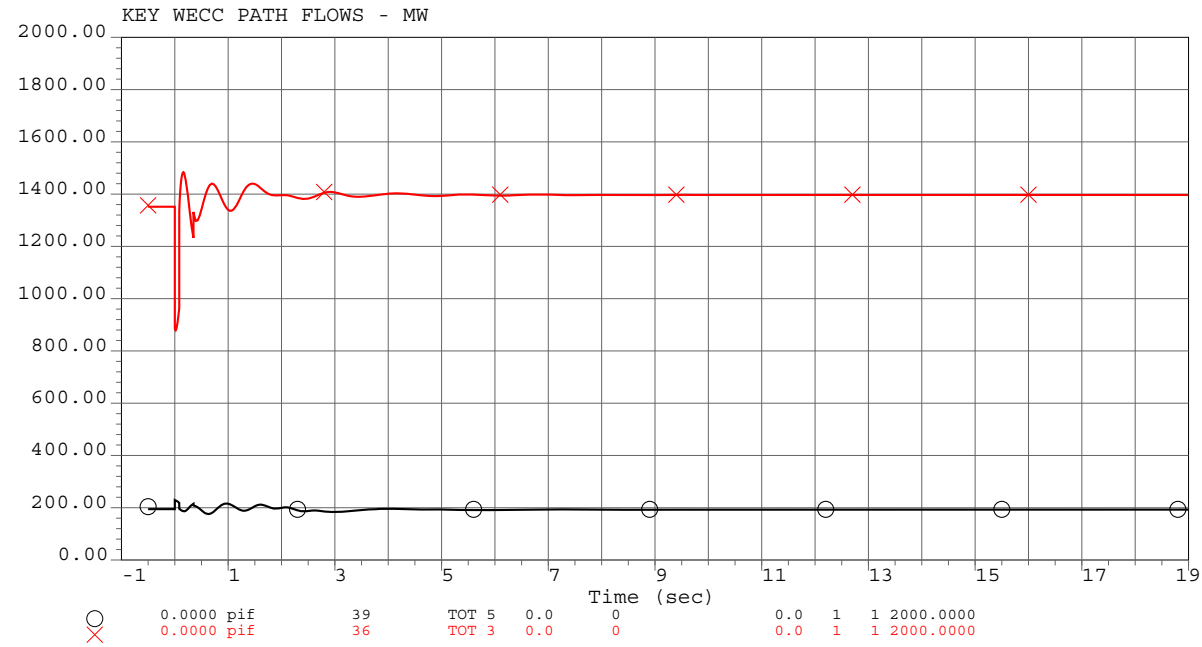


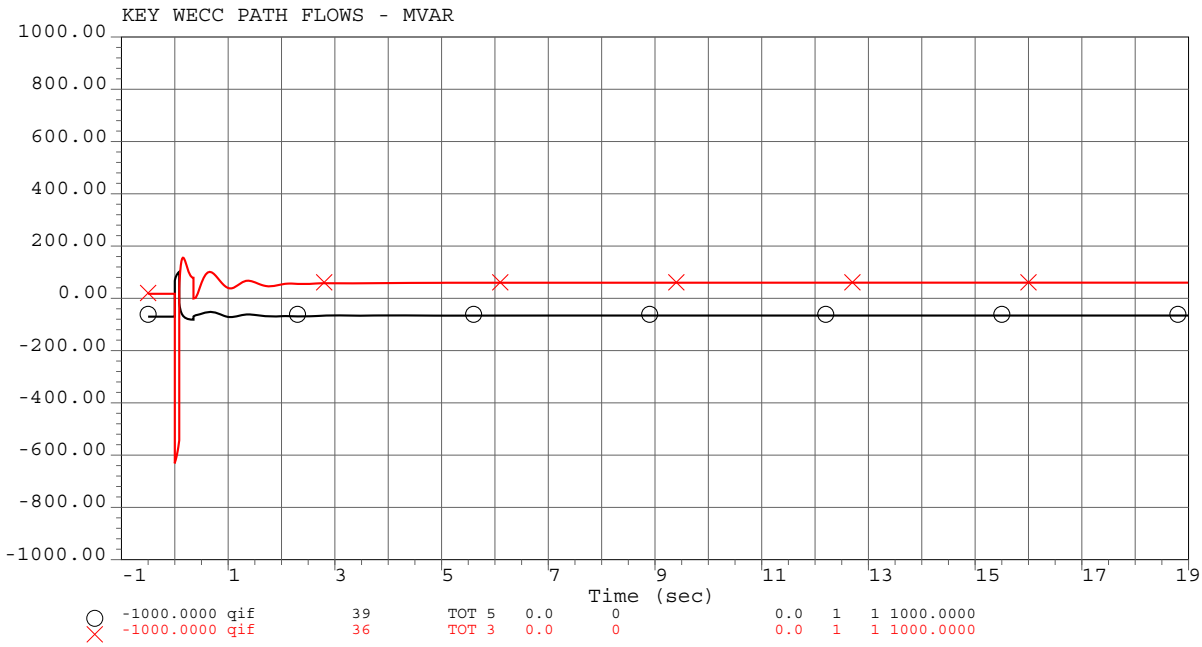

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| × | 0.7000 vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| □ | 0.7000 vt | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| △ | 0.7000 vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 60186 | NUCLEA4 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| + | 0.7000 vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER



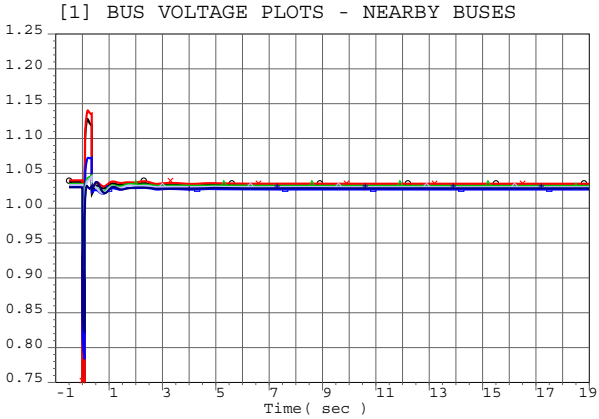

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| × | -200.0000 ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| □ | -200.0000 ang | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| △ | -200.0000 ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 60186 | NUCLEA4 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| + | -200.0000 ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

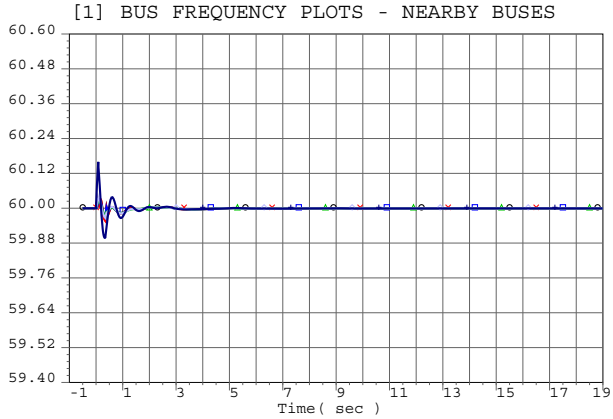
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



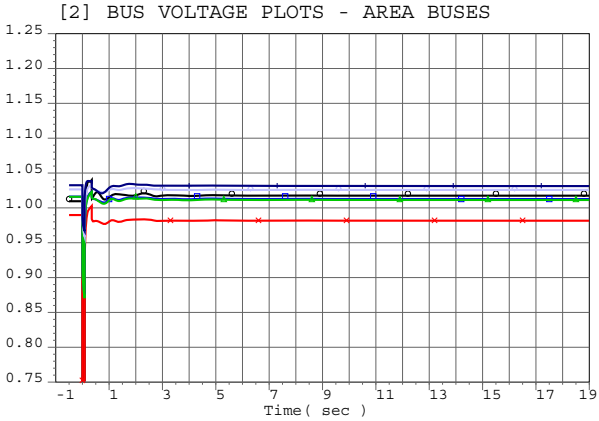

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| o | 0.7500 | vbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| x | 0.7500 | vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



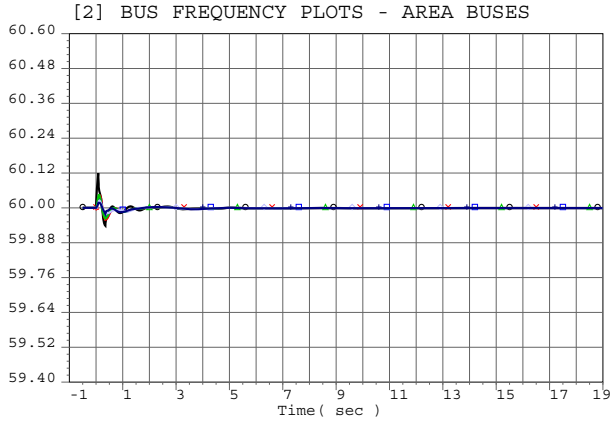

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| o | 59.4000 | fbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| x | 59.4000 | fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



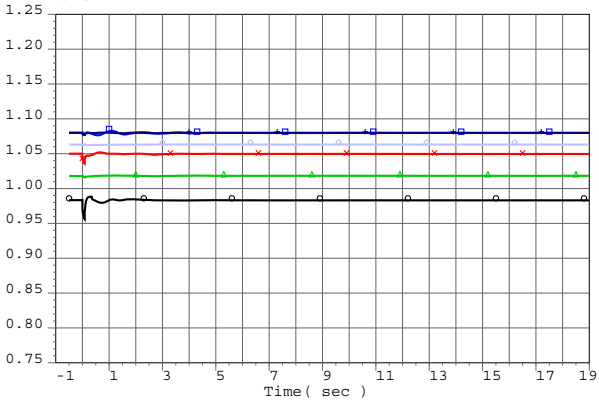

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| o | 0.7500 | vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| x | 0.7500 | vbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



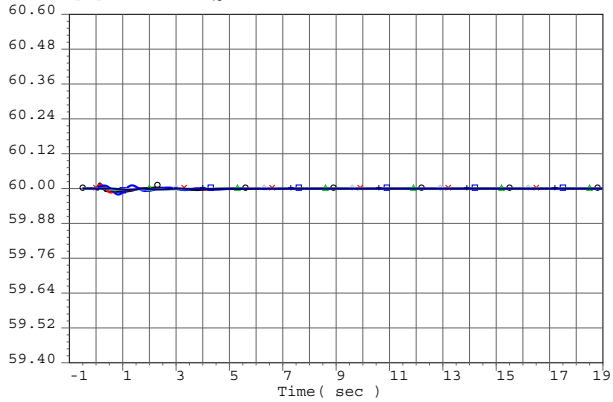

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| o | 59.4000 | fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| x | 59.4000 | fbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| o | 0.7500 | vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| x | 0.7500 | vbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 14021 | BALNVERD 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| o | 59.4000 | fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| x | 59.4000 | fbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 14021 | BALNVERD 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013 HS2-OP BASE CASE
NOVEMBER 30, 2012



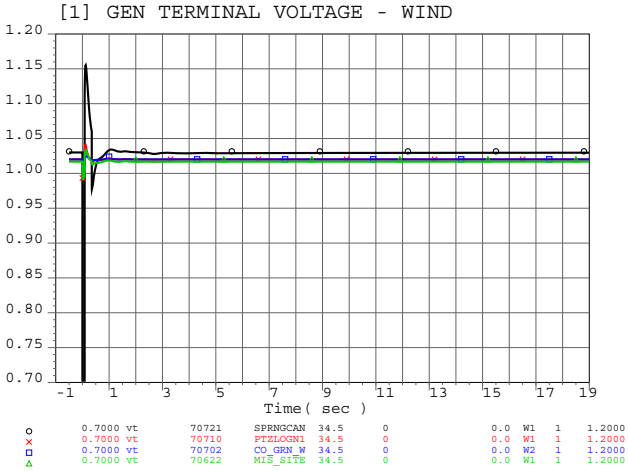
SC2_Sum_Base_v0_13_Stegall!-Archer_230_3ph_B.chf

.

Tue Nov 26 12:31:48 2013

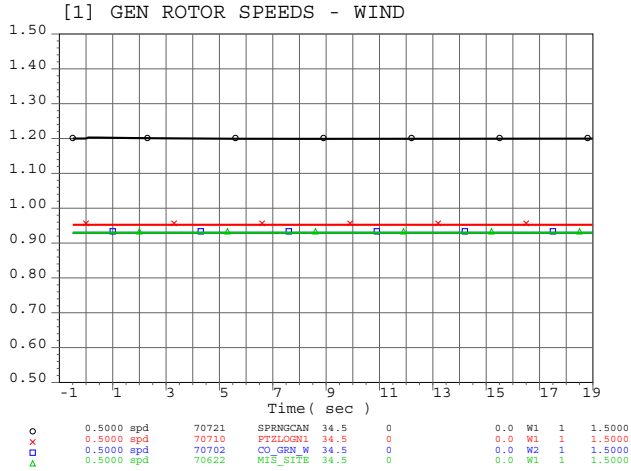
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



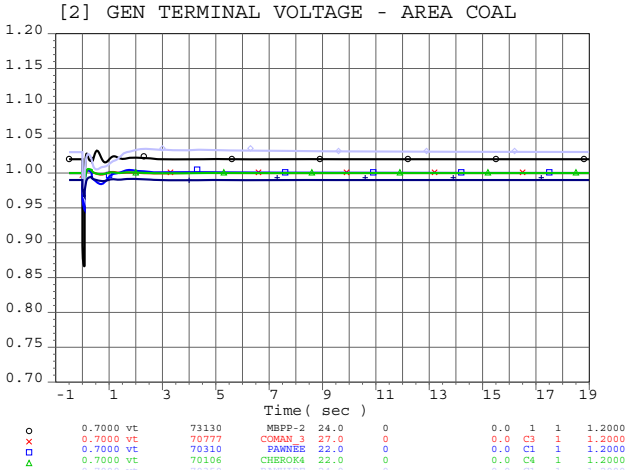

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| × | 0.7000 vt | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| □ | 0.7000 vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| △ | 0.7000 vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



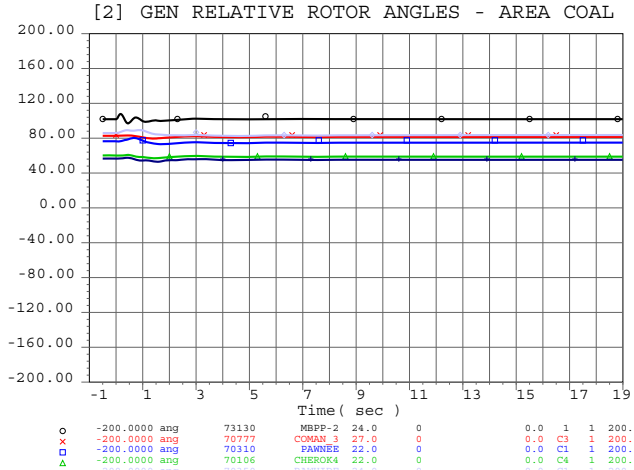

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.5000 spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| × | 0.5000 spd | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| □ | 0.5000 spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| △ | 0.5000 spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



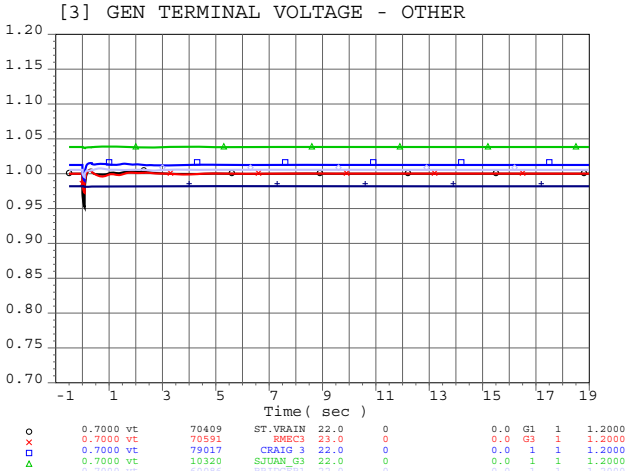

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| × | 0.7000 vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| □ | 0.7000 vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| △ | 0.7000 vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| + | 0.7000 vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



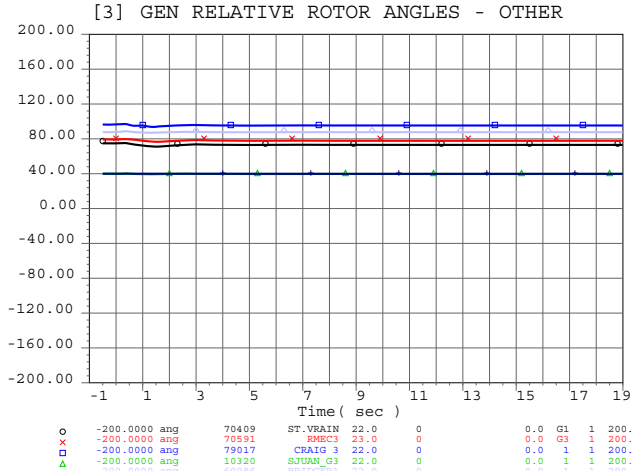

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| × | -200.0000 ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| □ | -200.0000 ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| △ | -200.0000 ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| + | -200.0000 ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER

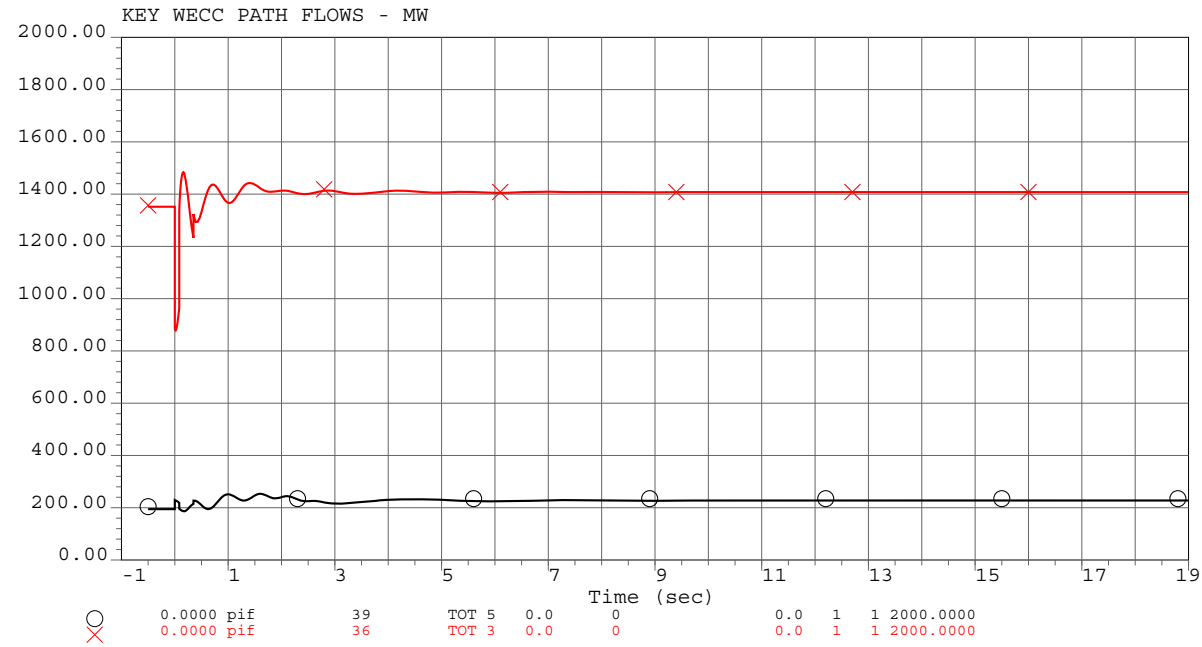


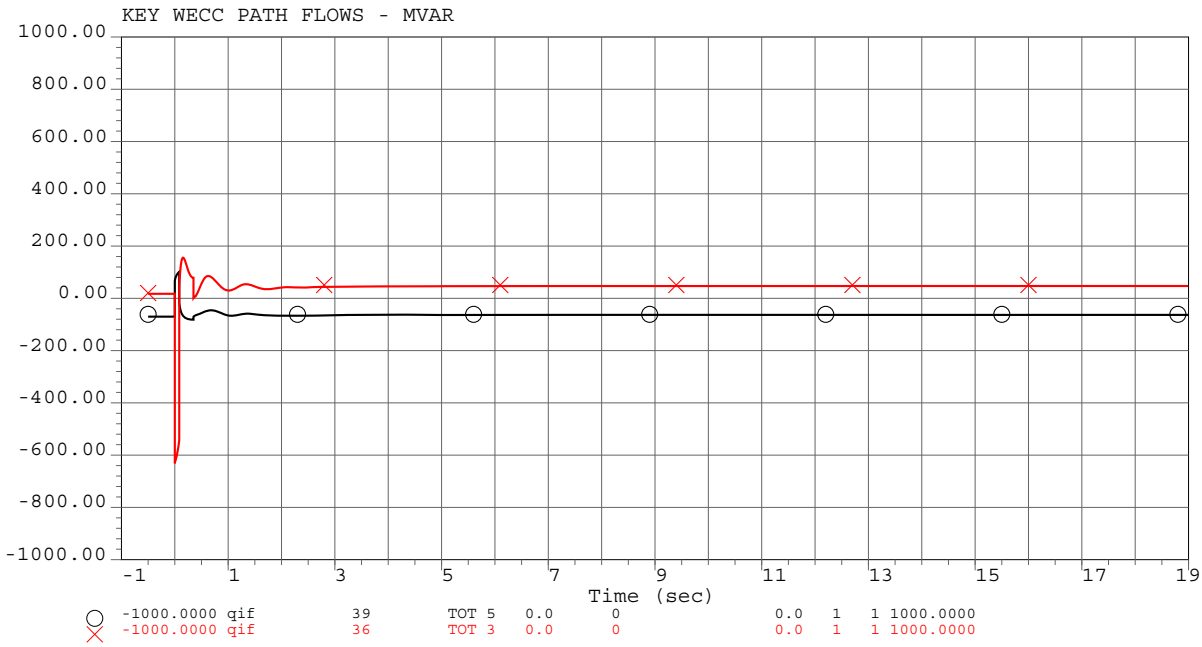

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| × | 0.7000 vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| □ | 0.7000 vt | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| △ | 0.7000 vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 60186 | NU_UNIT4 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| + | 0.7000 vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER



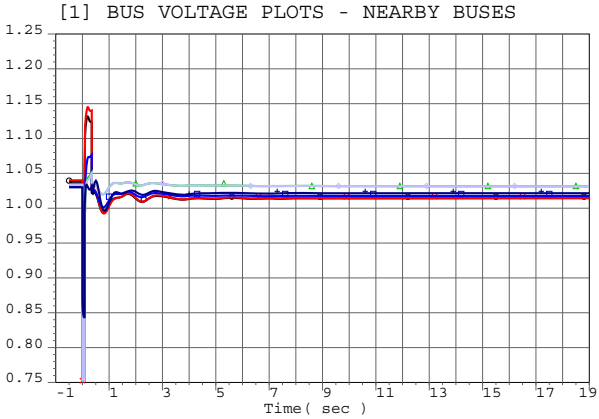

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| × | -200.0000 ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| □ | -200.0000 ang | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| △ | -200.0000 ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 60186 | NU_UNIT4 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| + | -200.0000 ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

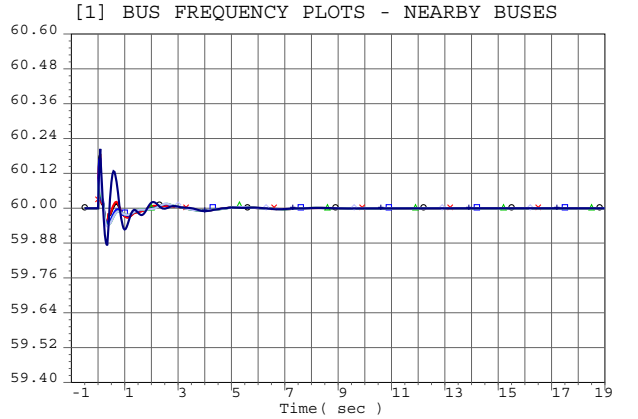
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



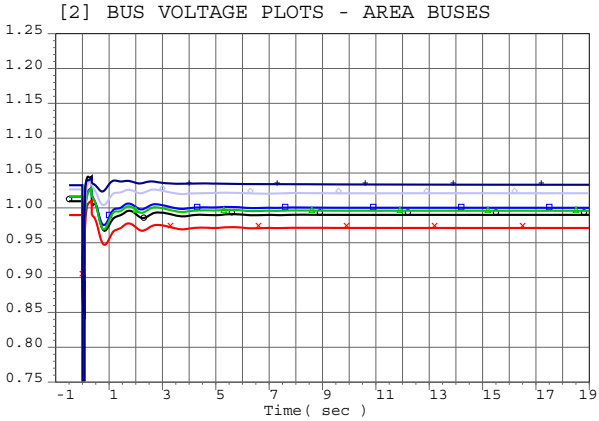

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



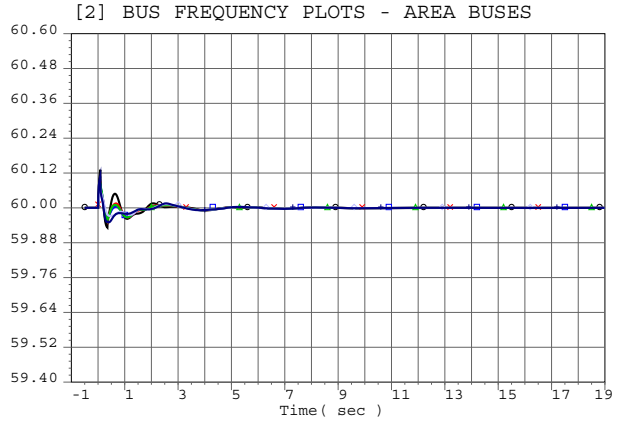

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



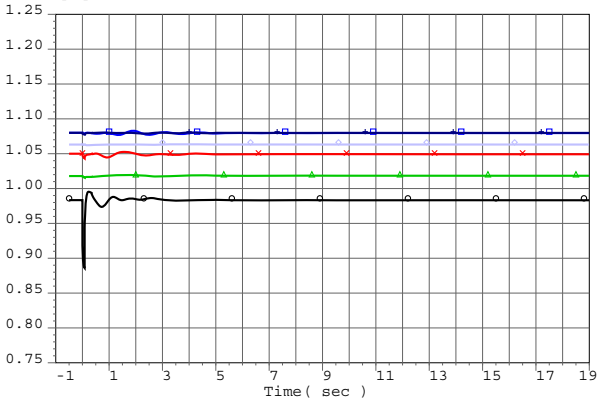

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



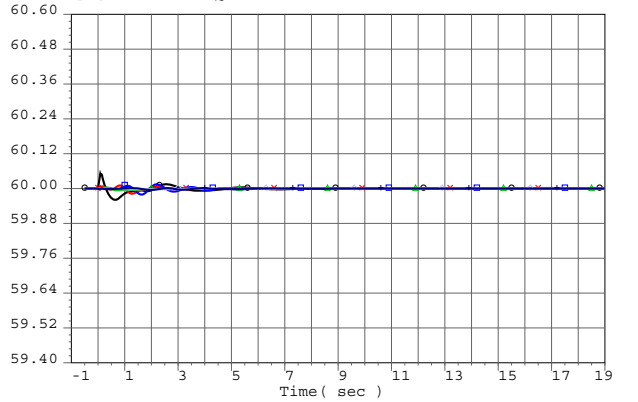

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 14021 | BALNORTH 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 14021 | BALNORTH 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013 HS2-OP BASE CASE
NOVEMBER 30, 2012



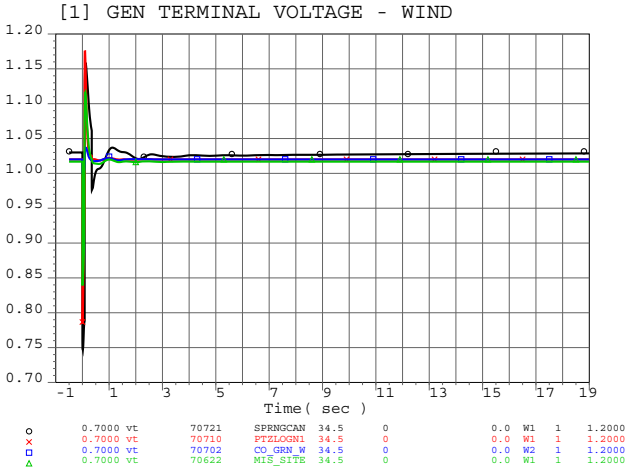
SC2_Sum_Base_v0_14_Story!-LRS_345_3ph_B.chf

.

Tue Nov 26 12:31:56 2013

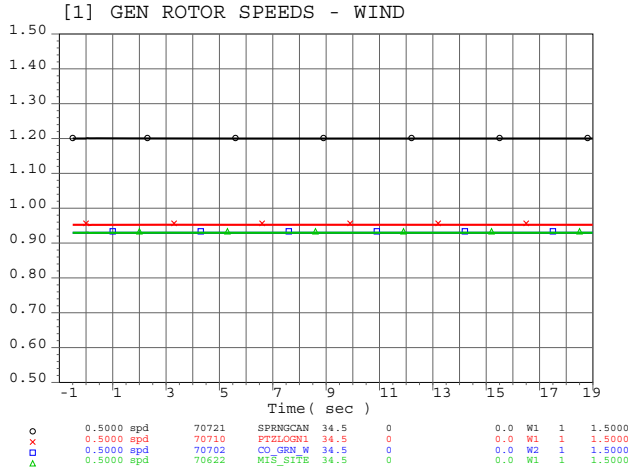
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



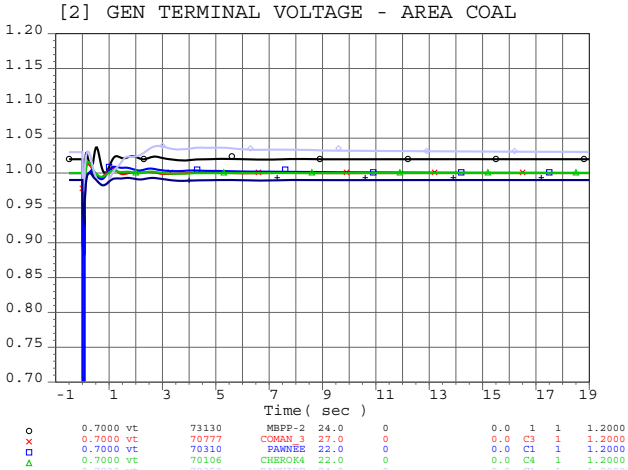

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 | vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| × | 0.7000 | vt | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| □ | 0.7000 | vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| △ | 0.7000 | vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



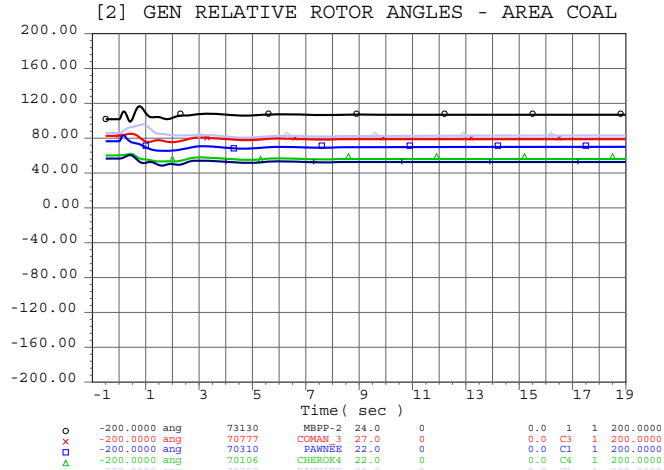

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.5000 | spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| × | 0.5000 | spd | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| □ | 0.5000 | spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| △ | 0.5000 | spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



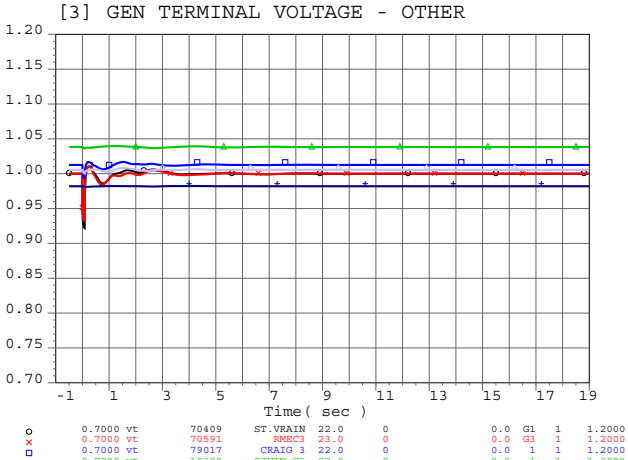

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 | vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| × | 0.7000 | vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| □ | 0.7000 | vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| △ | 0.7000 | vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| ◇ | 0.7000 | vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| + | 0.7000 | vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



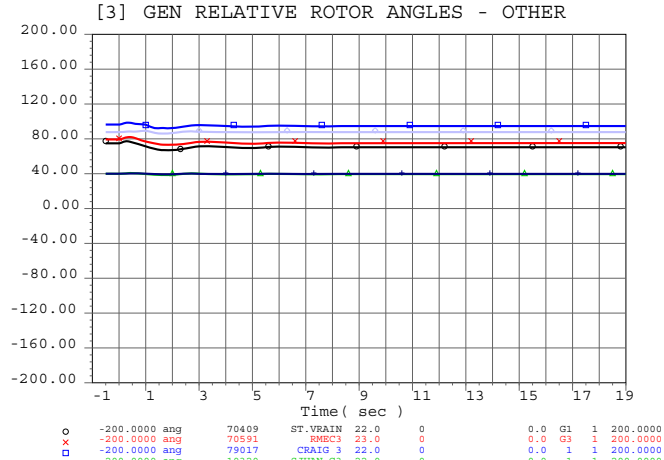

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 | ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| × | -200.0000 | ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| □ | -200.0000 | ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| △ | -200.0000 | ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| ◇ | -200.0000 | ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| + | -200.0000 | ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 | vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| × | 0.7000 | vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| □ | 0.7000 | vt | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| △ | 0.7000 | vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| ◇ | 0.7000 | vt | 60186 | NUCLEA4 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| + | 0.7000 | vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 | ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| × | -200.0000 | ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| □ | -200.0000 | ang | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| △ | -200.0000 | ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| ◇ | -200.0000 | ang | 60186 | NUCLEA4 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| + | -200.0000 | ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |

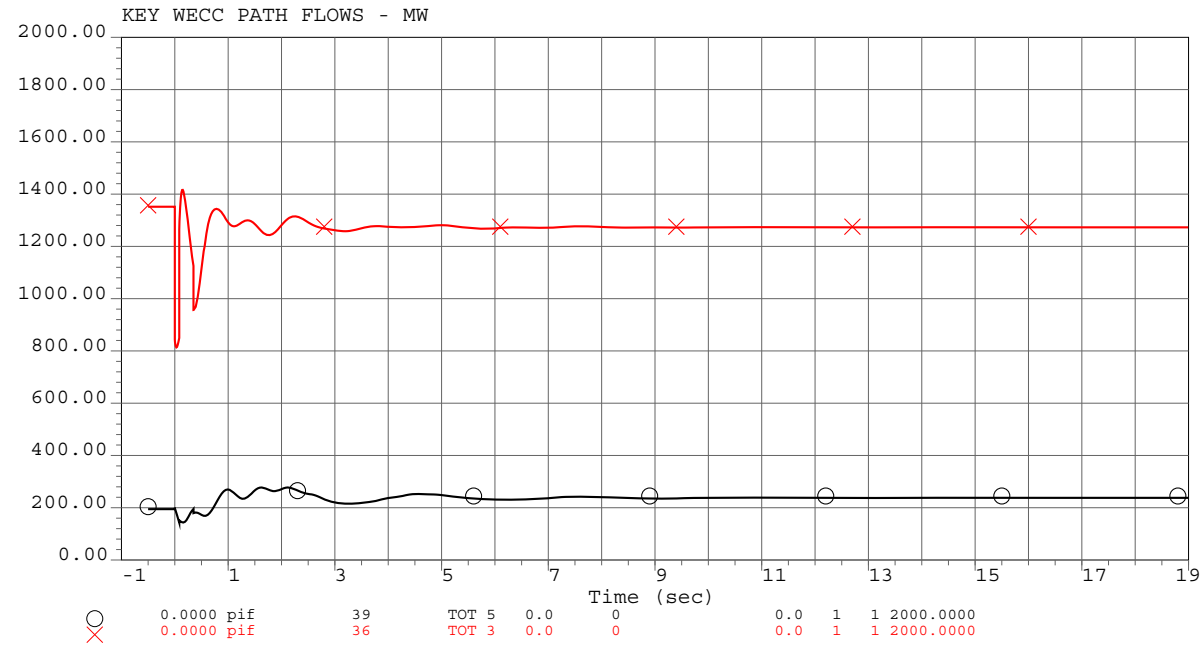
WESTERN ELECTRICITY COORDINATING COUNCIL
2013 HS2-OP BASE CASE
NOVEMBER 30, 2012

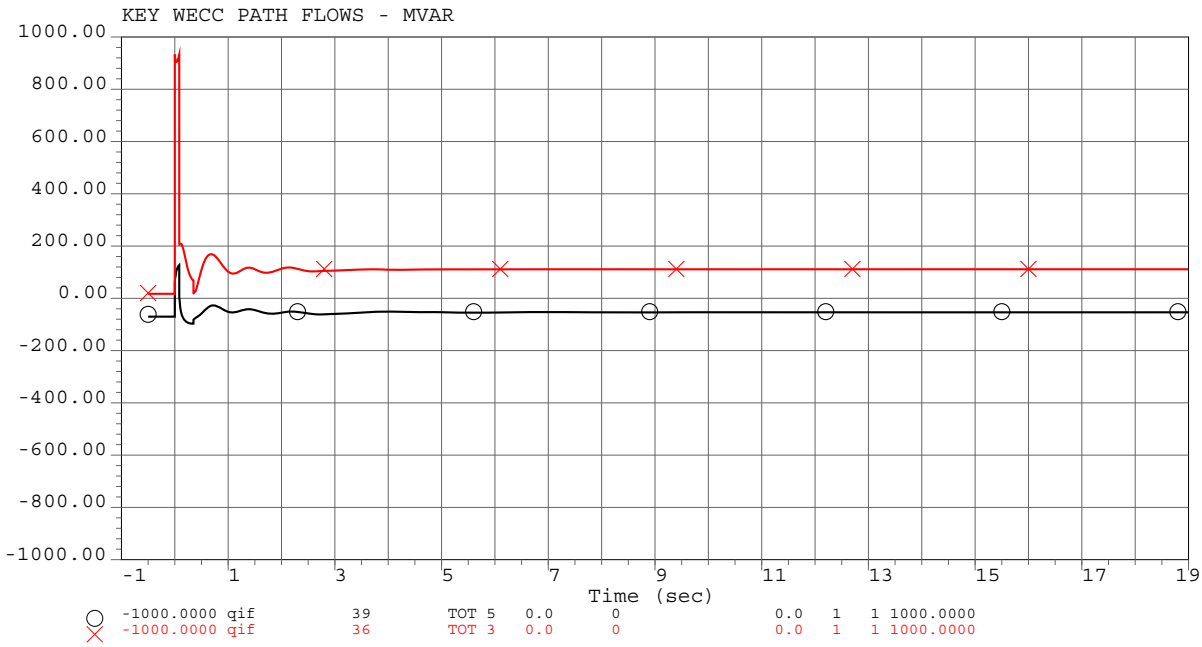


SC2_Sum_Base_v0_14_Story!-LRS_345_3ph_B.chf

.

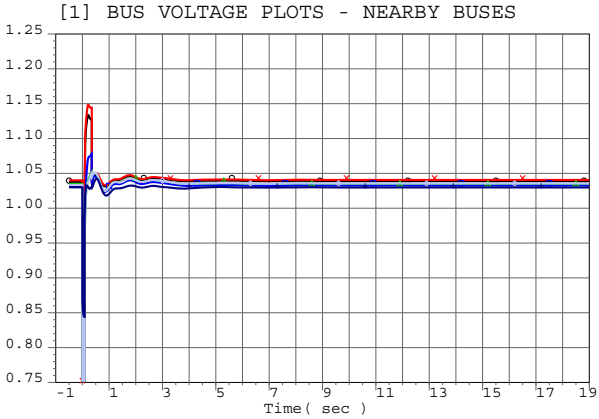
Tue Nov 26 12:31:56 2013


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

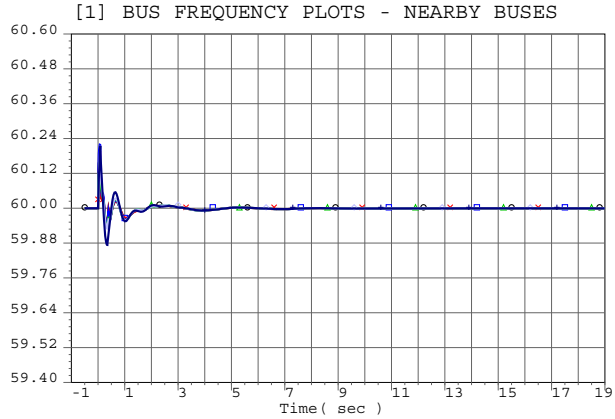
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



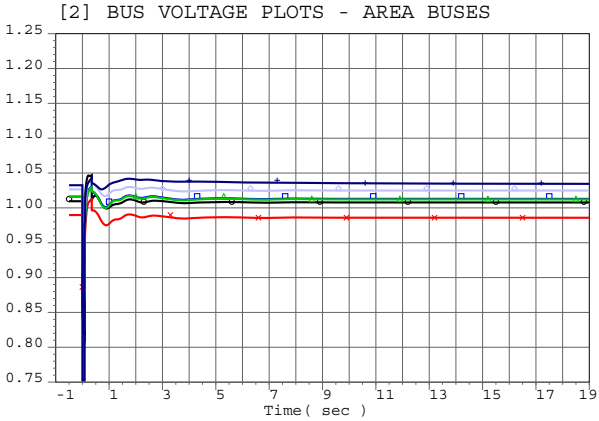

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



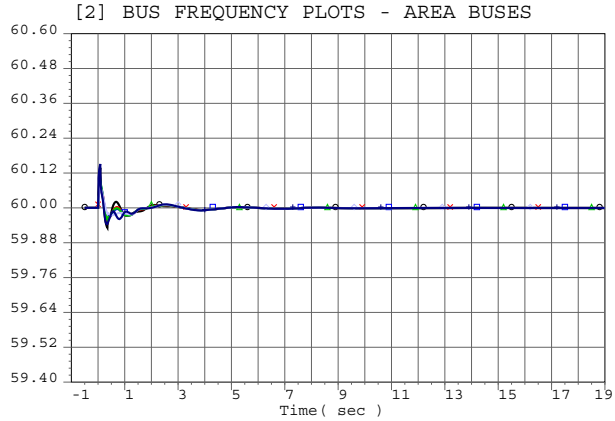

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



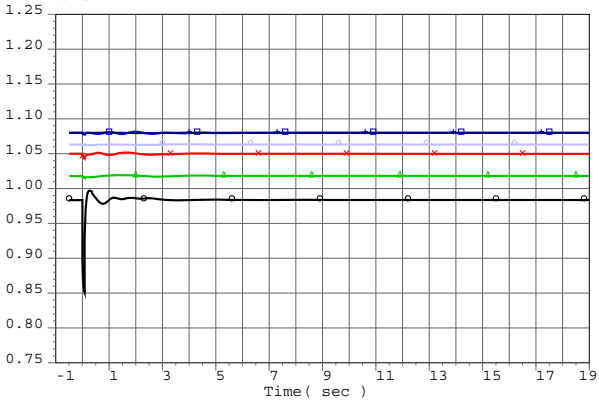

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



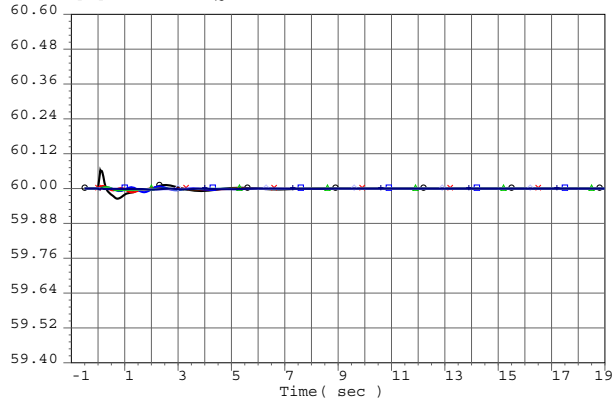

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 14021 | BALNORTH 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 14021 | BALNORTH 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013 HS2-OP BASE CASE
NOVEMBER 30, 2012



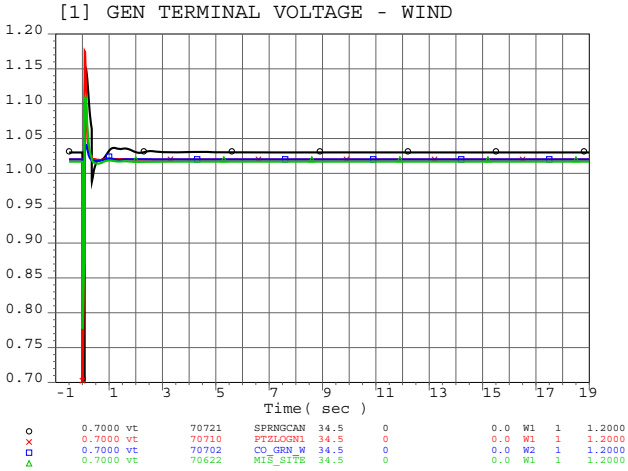
SC2_Sum_Base_v0_15_Story!-Pawnee_230_3ph_B.chf

.

Tue Nov 26 12:33:08 2013

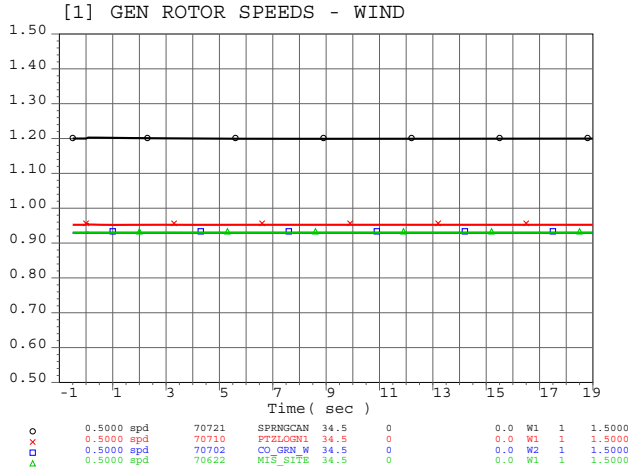
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



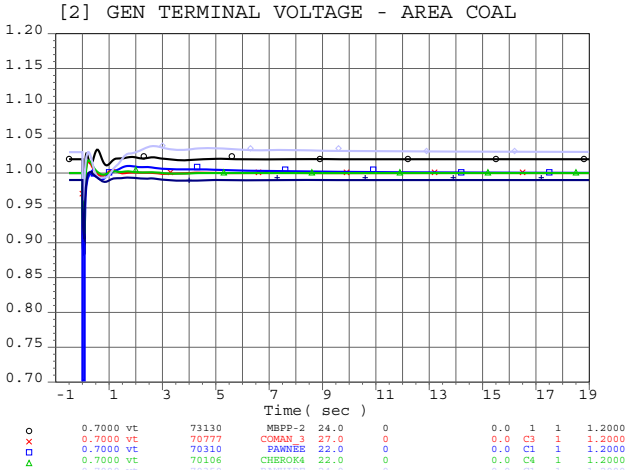

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| × | 0.7000 vt | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| □ | 0.7000 vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| △ | 0.7000 vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



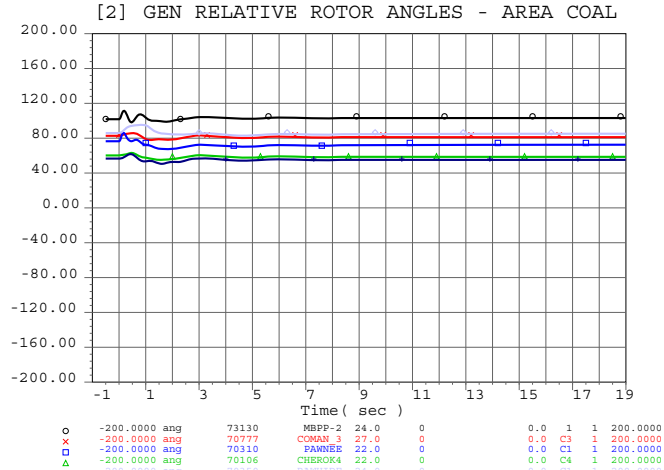

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.5000 spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| × | 0.5000 spd | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| □ | 0.5000 spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| △ | 0.5000 spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



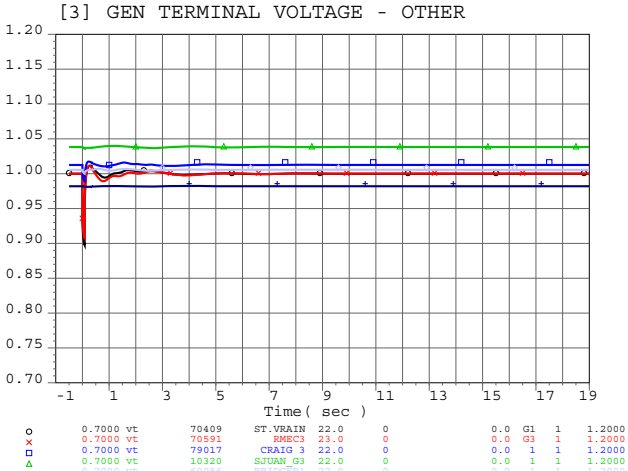

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| × | 0.7000 vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| □ | 0.7000 vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| △ | 0.7000 vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| + | 0.7000 vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



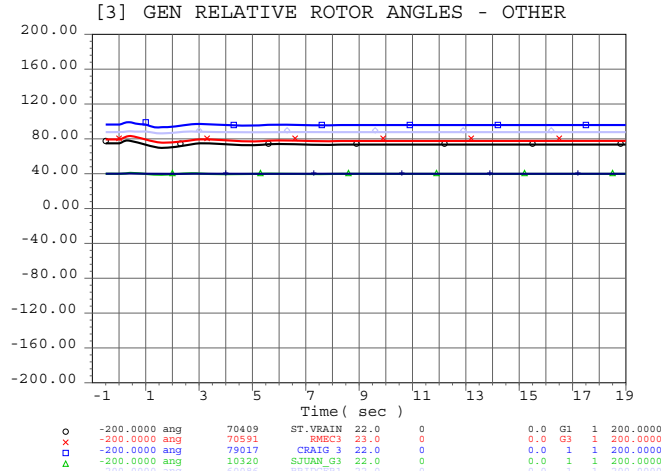

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| × | -200.0000 ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| □ | -200.0000 ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| △ | -200.0000 ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| + | -200.0000 ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER

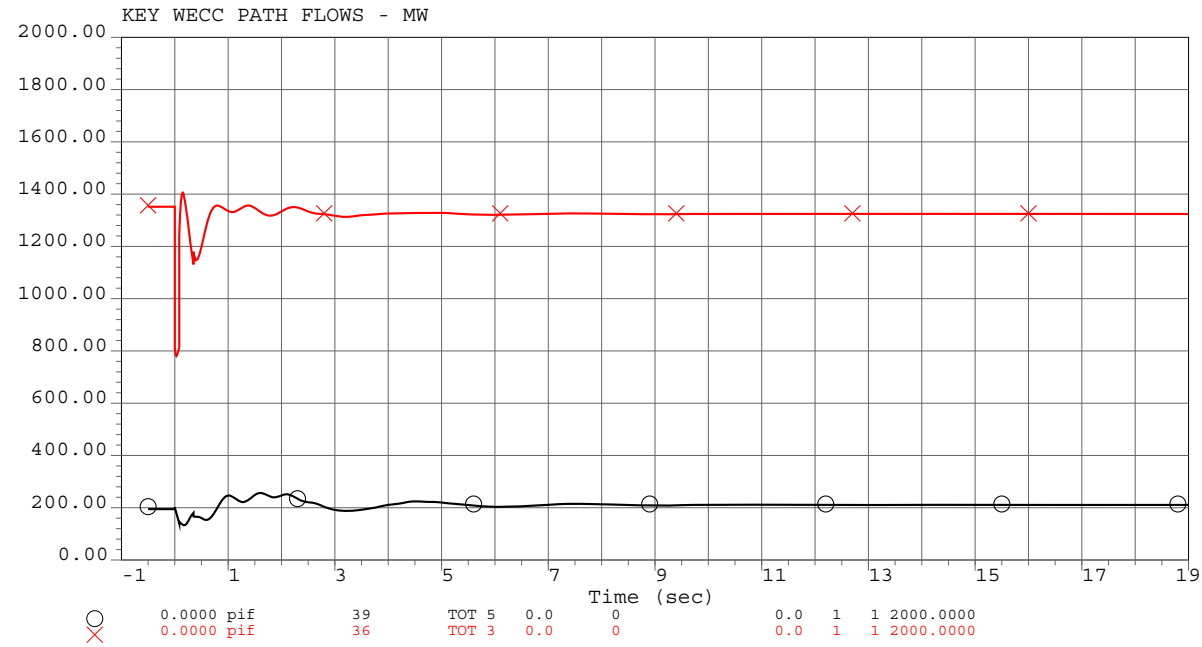


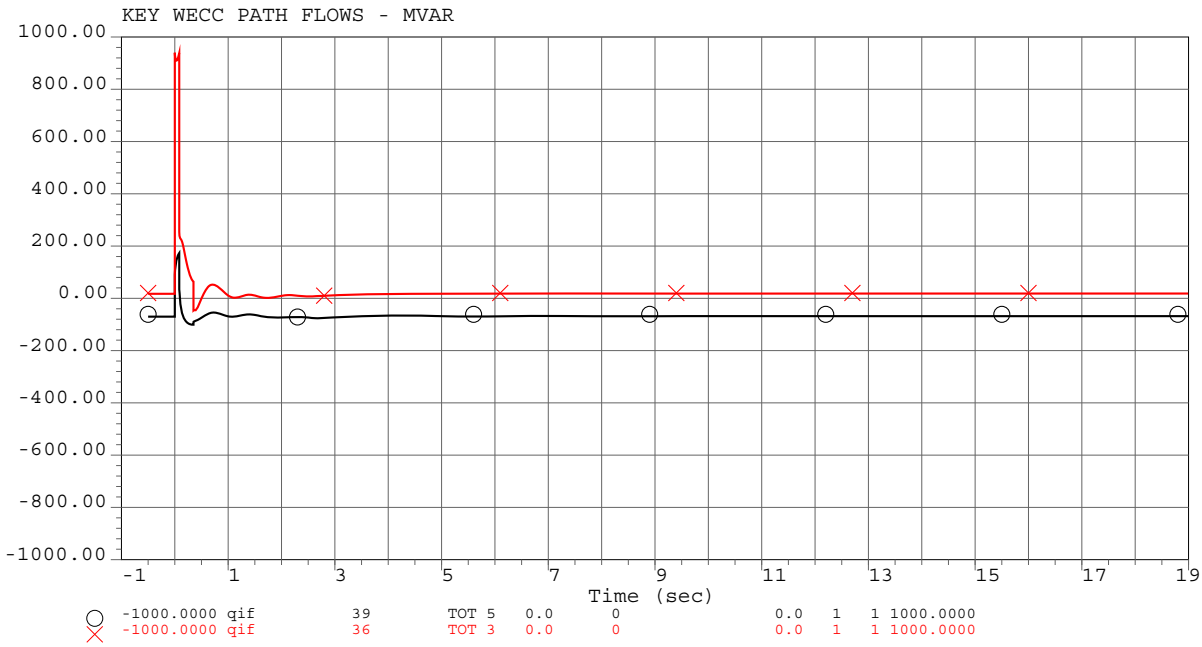

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| × | 0.7000 vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| □ | 0.7000 vt | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| △ | 0.7000 vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 60186 | NUCLEA4 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| + | 0.7000 vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER



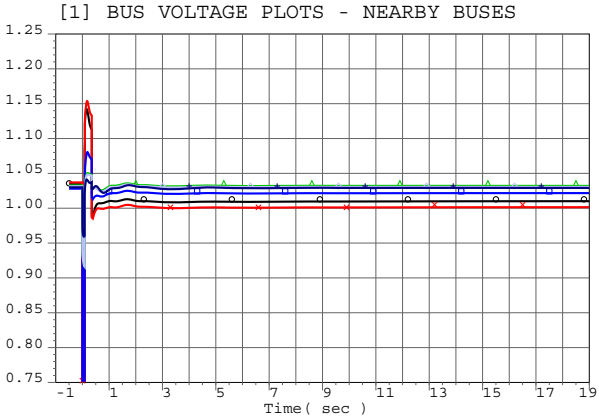

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| × | -200.0000 ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| □ | -200.0000 ang | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| △ | -200.0000 ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 60186 | NUCLEA4 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| + | -200.0000 ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

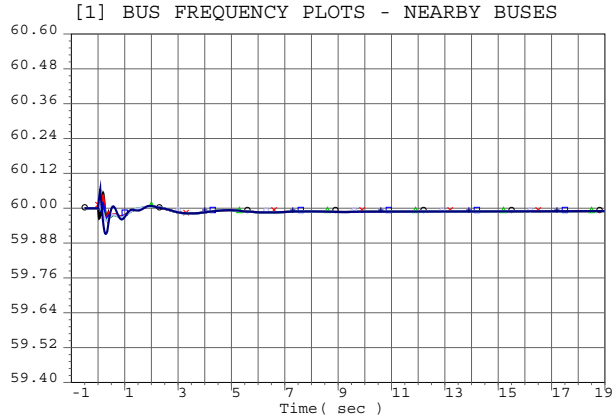
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



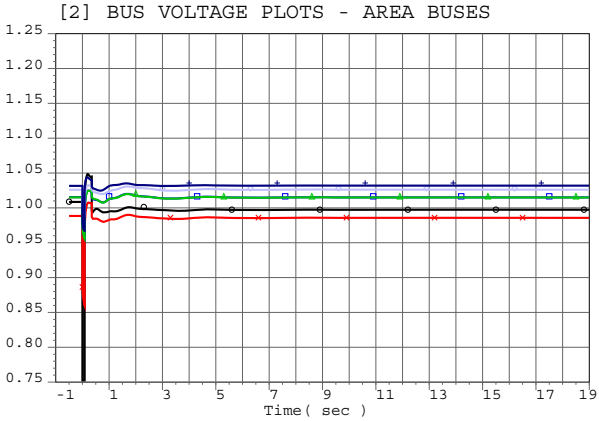

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



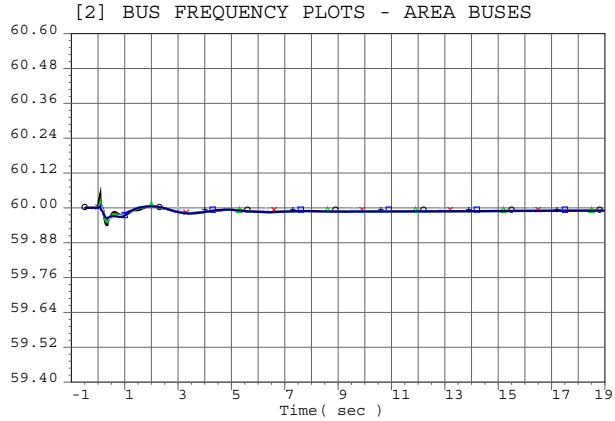

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



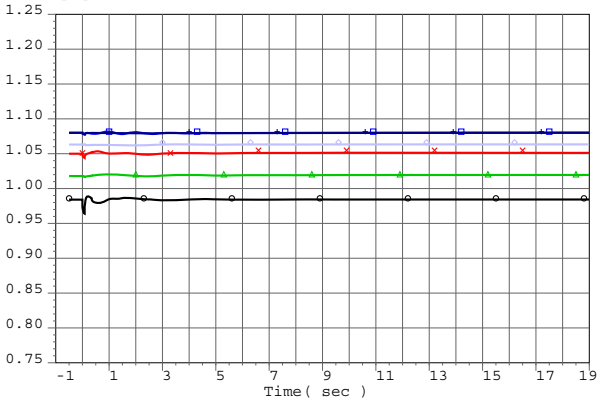

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



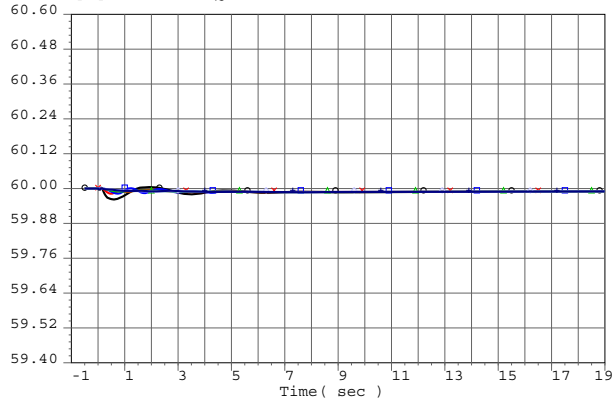

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 14021 | BALNORTH 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 14021 | BALNORTH 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013 HS2-OP BASE CASE
NOVEMBER 30, 2012



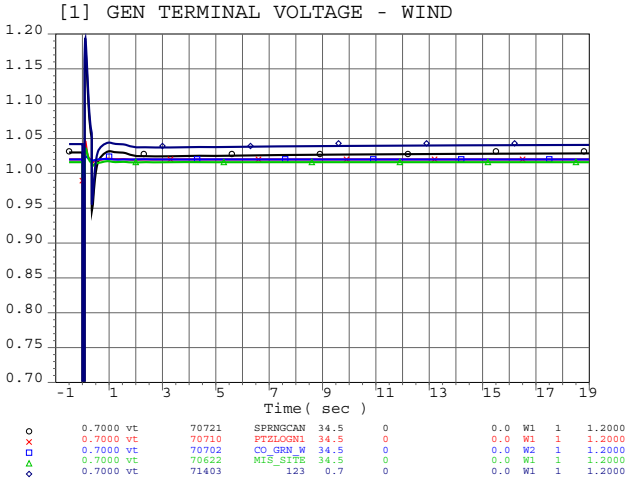
SC2_Sum_PstDet_v0_01_Sidney!-SidneyDC_230_3ph_B.chf

.

Tue Nov 26 12:33:16 2013

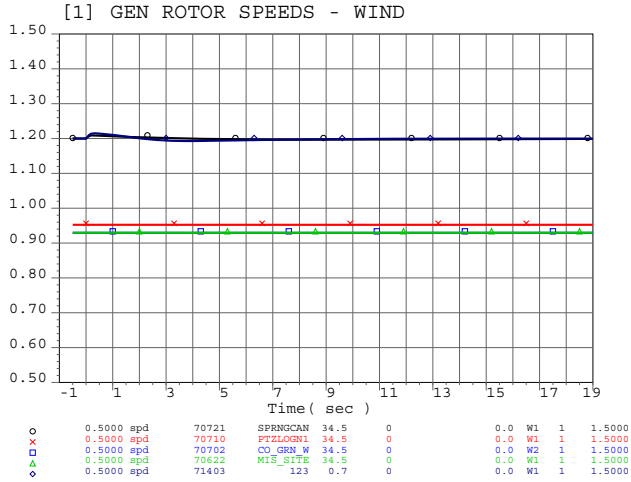
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



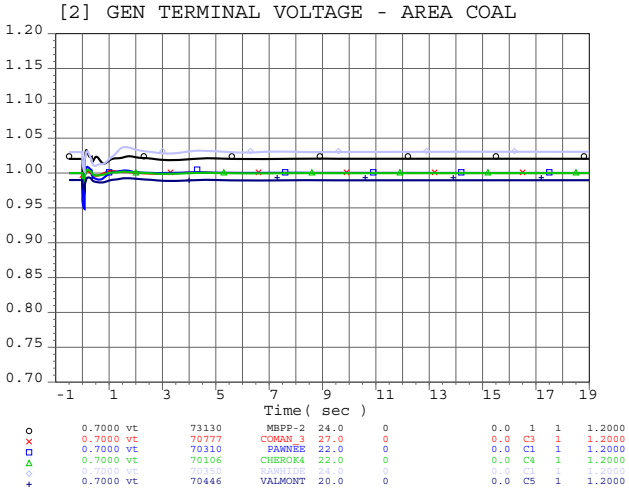

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| × | 0.7000 vt | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| □ | 0.7000 vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| △ | 0.7000 vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 71403 | 123 | 0.7 | 0 | 0.0 | W1 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



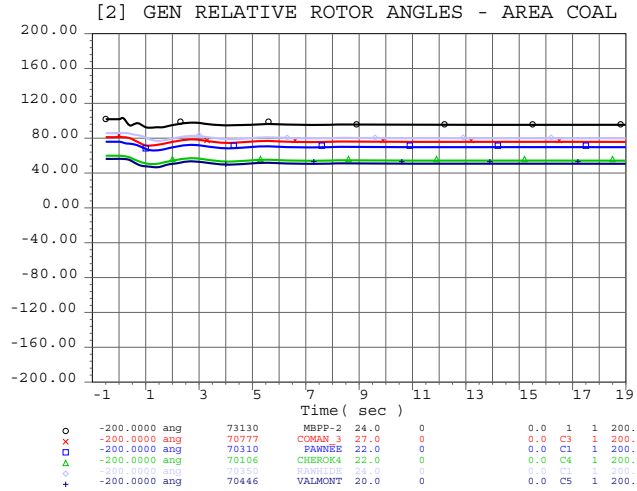

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.5000 spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| × | 0.5000 spd | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| □ | 0.5000 spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| △ | 0.5000 spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| ◇ | 0.5000 spd | 71403 | 123 | 0.7 | 0 | 0.0 | W1 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



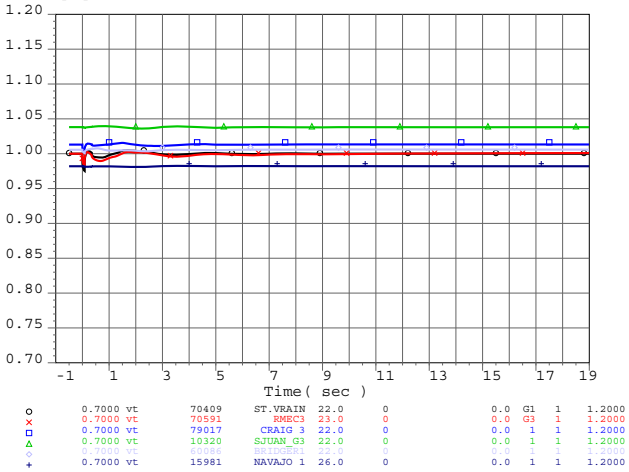

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| × | 0.7000 vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| □ | 0.7000 vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| △ | 0.7000 vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| + | 0.7000 vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



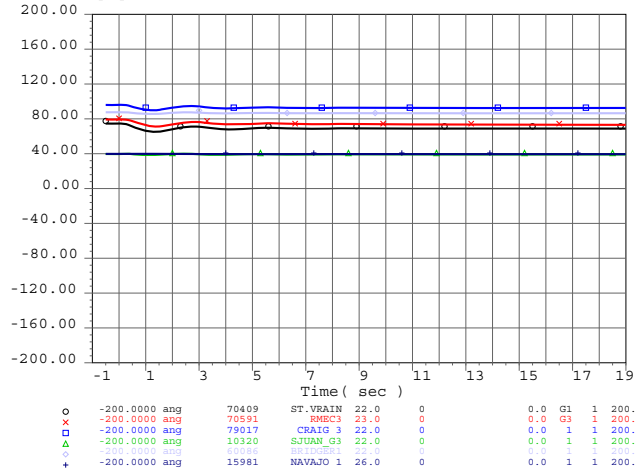

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| × | -200.0000 ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| □ | -200.0000 ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| △ | -200.0000 ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| + | -200.0000 ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| × | 0.7000 vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| □ | 0.7000 vt | 79017 | CRAIG_3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| △ | 0.7000 vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 60186 | MIDWAY4 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| + | 0.7000 vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| × | -200.0000 ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| □ | -200.0000 ang | 79017 | CRAIG_3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| △ | -200.0000 ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 60186 | MIDWAY4 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| + | -200.0000 ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |

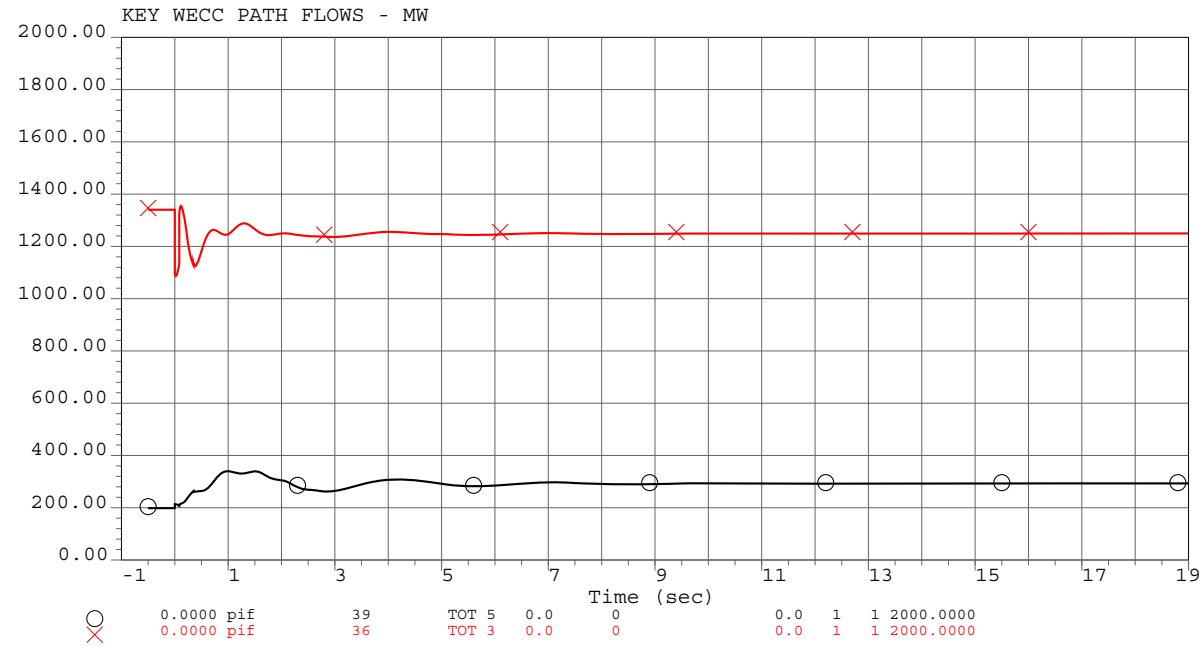
WESTERN ELECTRICITY COORDINATING COUNCIL
2013 HS2-OP BASE CASE
NOVEMBER 30, 2012

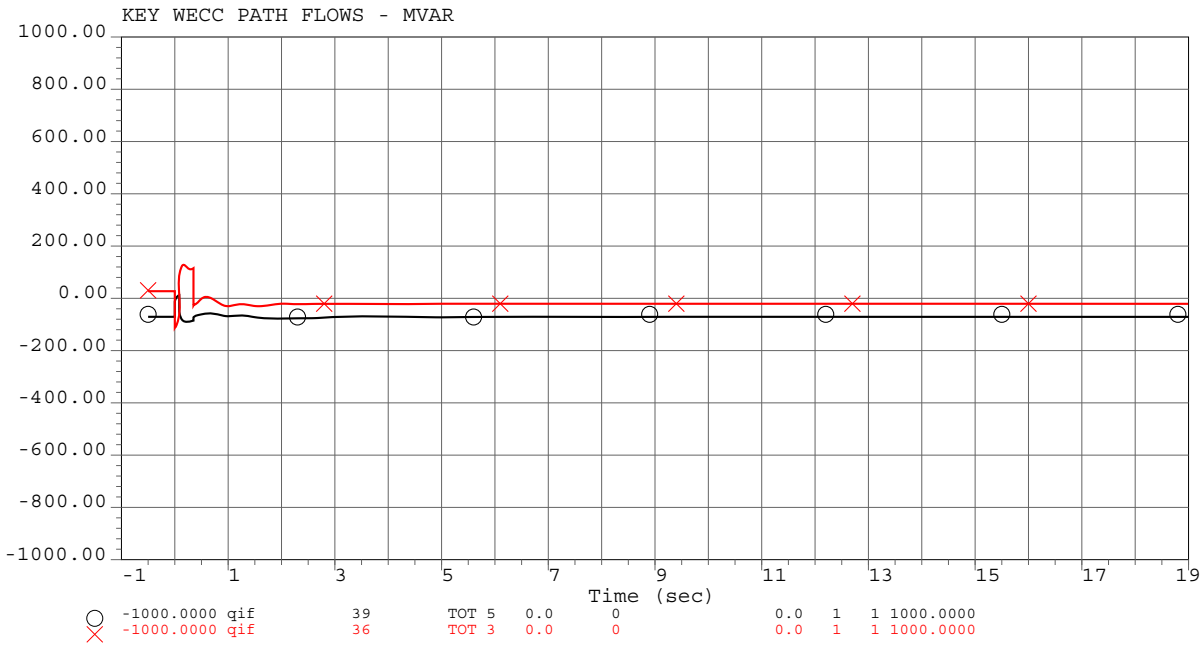


SC2_Sum_PstDet_v0_01_Sidney!-SidneyDC_230_3ph_B.chf

.

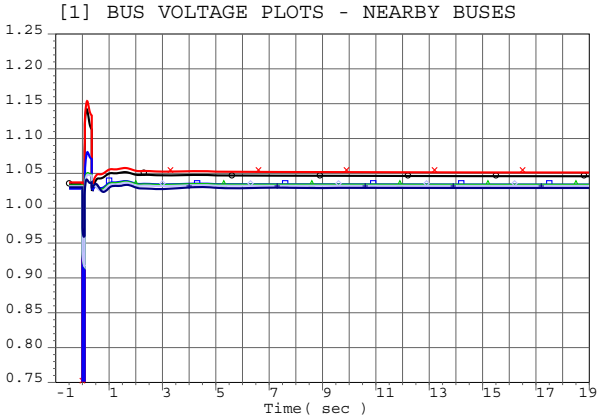
Tue Nov 26 12:33:16 2013


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

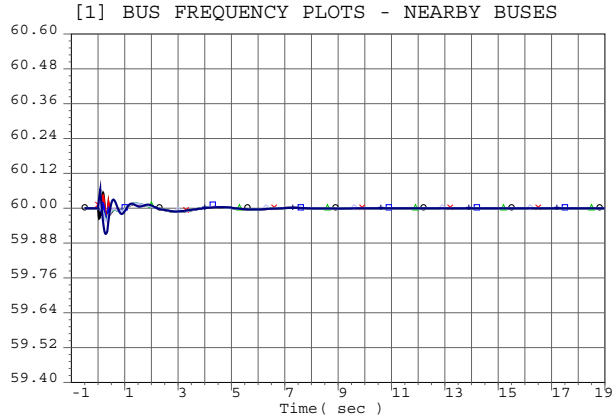
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



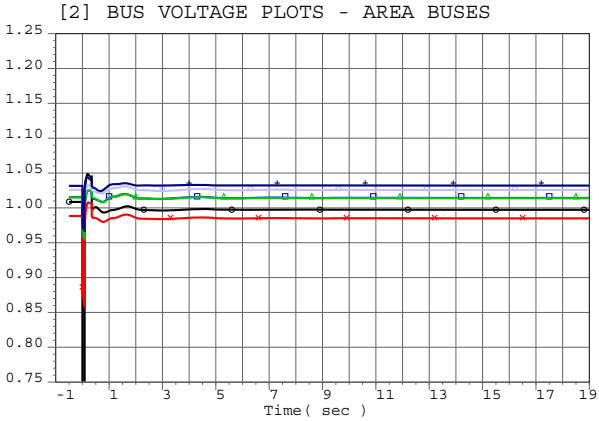

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



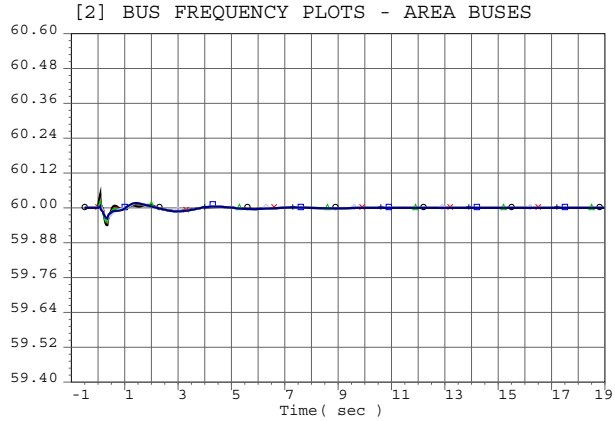

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



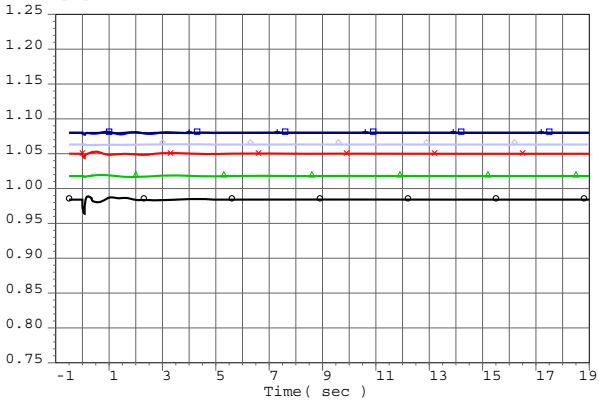

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



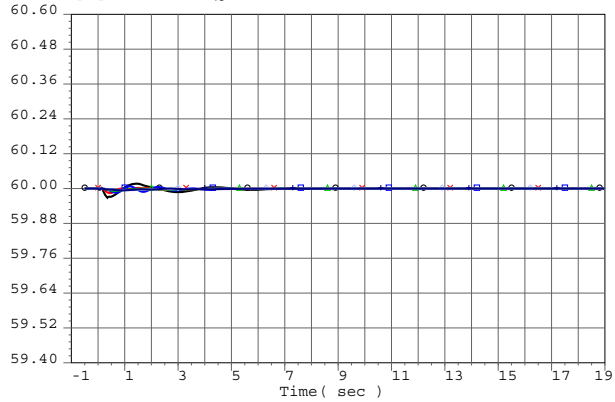

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 14021 | BALNORTH 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 14021 | BALNORTH 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013 HS2-OP BASE CASE
NOVEMBER 30, 2012



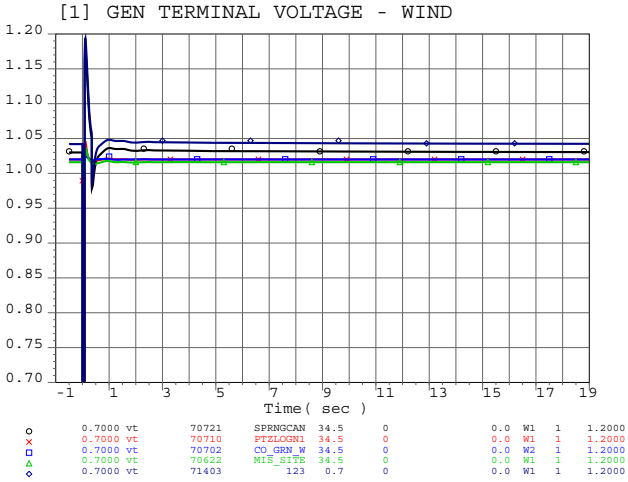
SC2_Sum_PstDet_v0_02_Sidney!-Stegall_230_3ph_B.chf

.

Tue Nov 26 12:33:24 2013

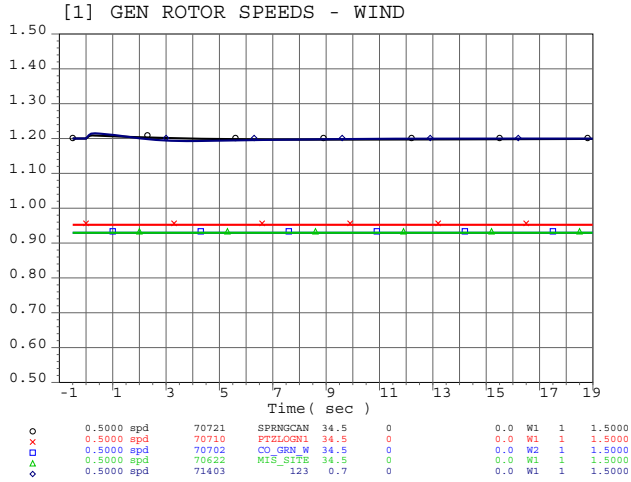
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



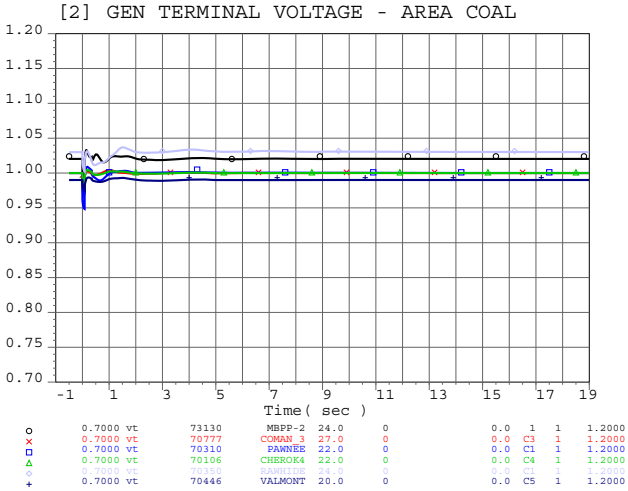

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 | vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| × | 0.7000 | vt | 70710 | PTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| □ | 0.7000 | vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| △ | 0.7000 | vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| ◇ | 0.7000 | vt | 71403 | 123 | 0.7 | 0 | 0.0 | W1 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



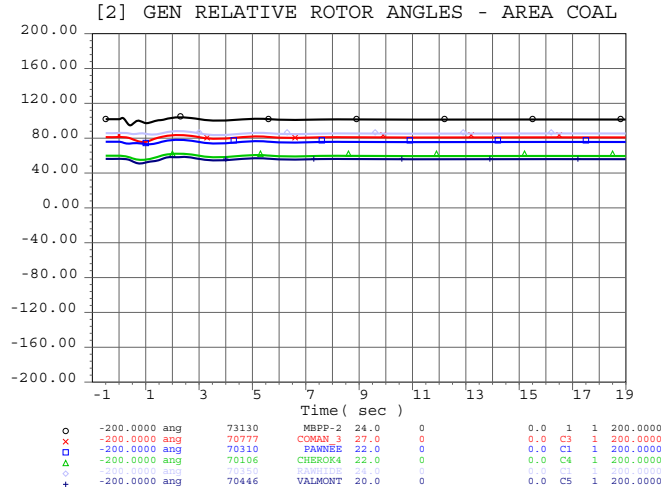

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.5000 | spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| × | 0.5000 | spd | 70710 | PTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| □ | 0.5000 | spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| △ | 0.5000 | spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| ◇ | 0.5000 | spd | 71403 | 123 | 0.7 | 0 | 0.0 | W1 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



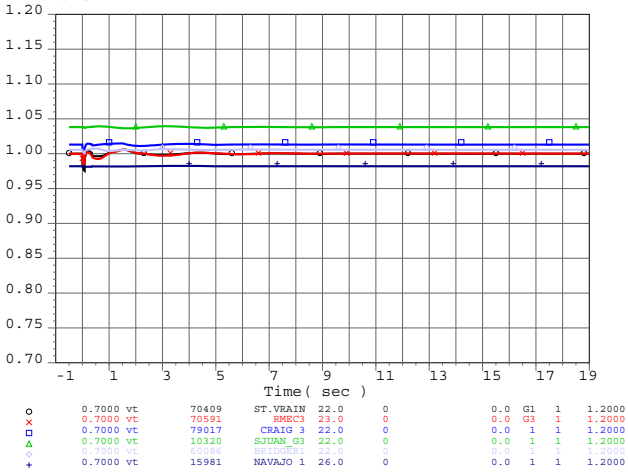

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 | vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| × | 0.7000 | vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| □ | 0.7000 | vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| △ | 0.7000 | vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| ◇ | 0.7000 | vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| + | 0.7000 | vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



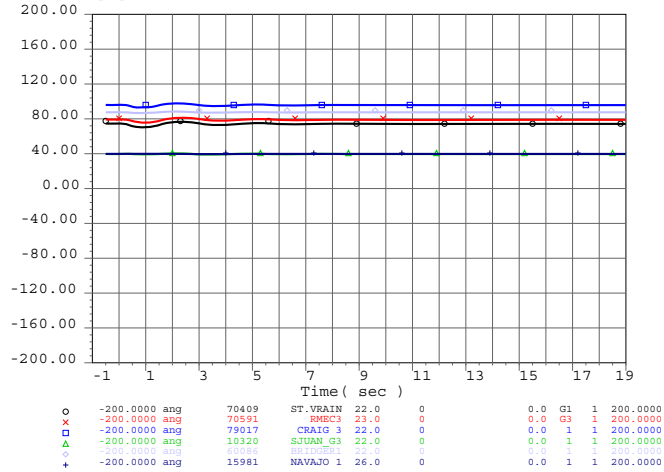

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 | ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| × | -200.0000 | ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| □ | -200.0000 | ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| △ | -200.0000 | ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| ◇ | -200.0000 | ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| + | -200.0000 | ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER




| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 | vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| × | 0.7000 | vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| □ | 0.7000 | vt | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| △ | 0.7000 | vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| ◇ | 0.7000 | vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| + | 0.7000 | vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER




| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 | ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| × | -200.0000 | ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| □ | -200.0000 | ang | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| △ | -200.0000 | ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| ◇ | -200.0000 | ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| + | -200.0000 | ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |

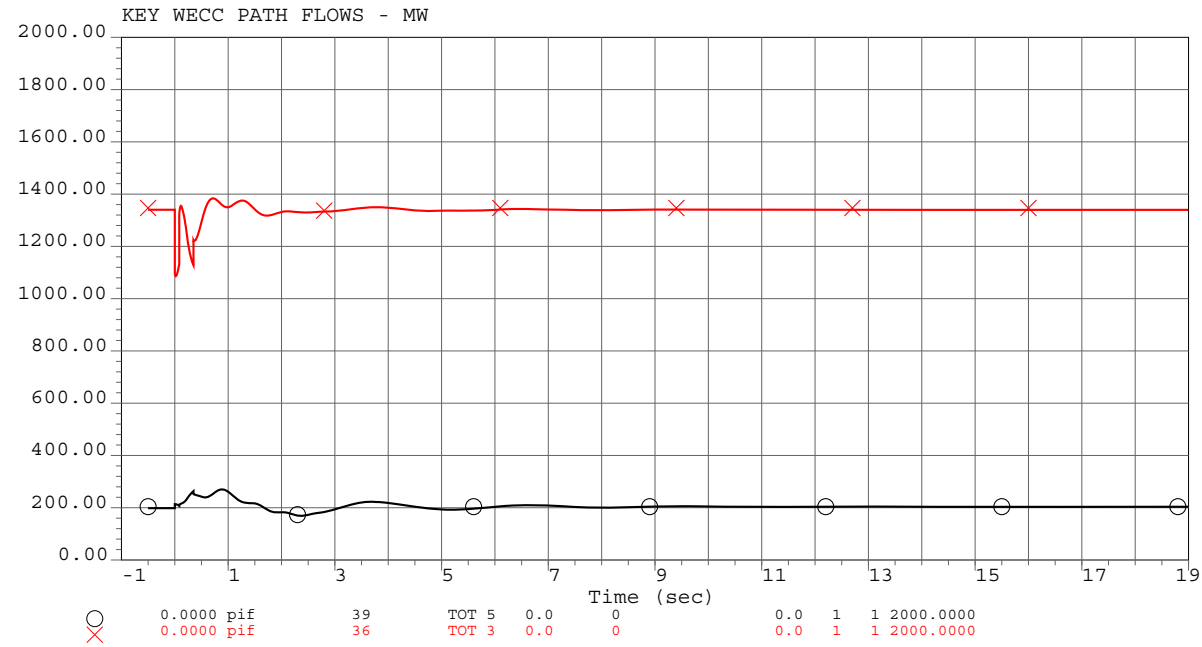
WESTERN ELECTRICITY COORDINATING COUNCIL
2013 HS2-OP BASE CASE
NOVEMBER 30, 2012

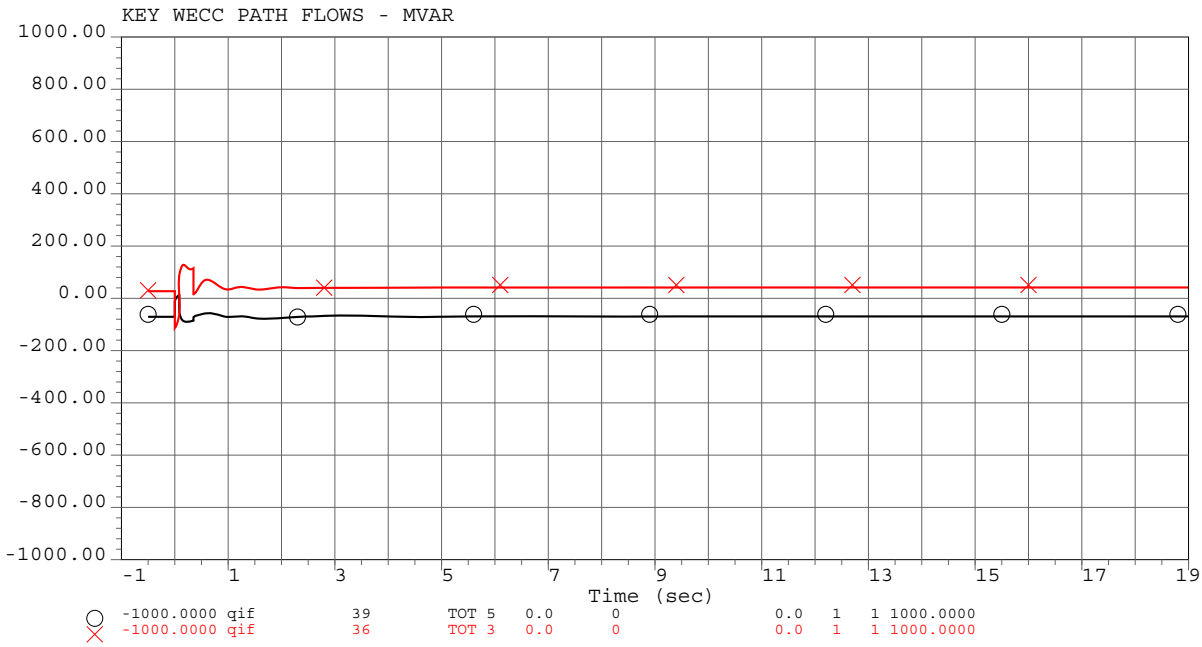


SC2_Sum_PstDet_v0_02_Sidney!-Stegall_230_3ph_B.chf

.

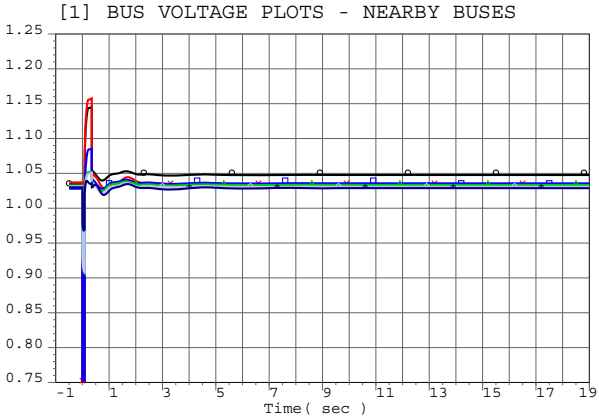
Tue Nov 26 12:33:24 2013


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

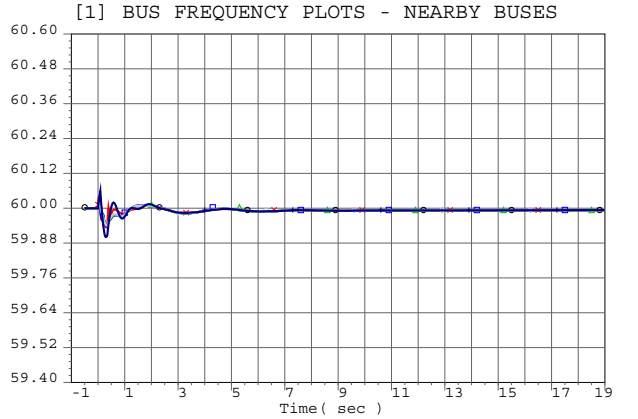
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



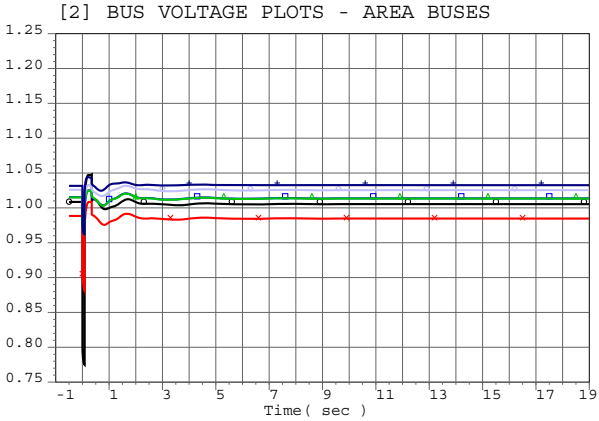

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



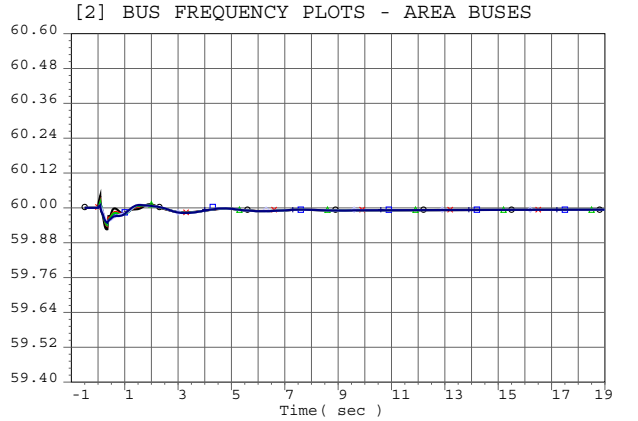

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



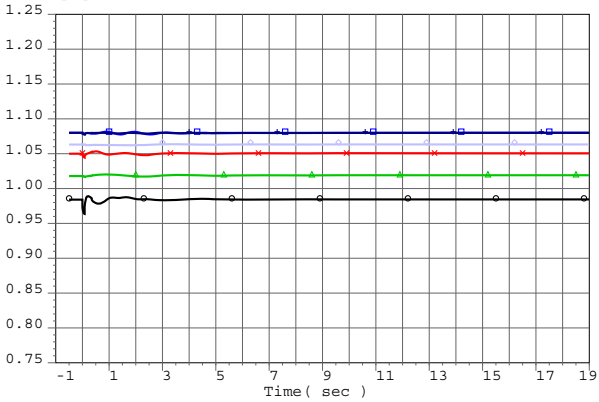

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



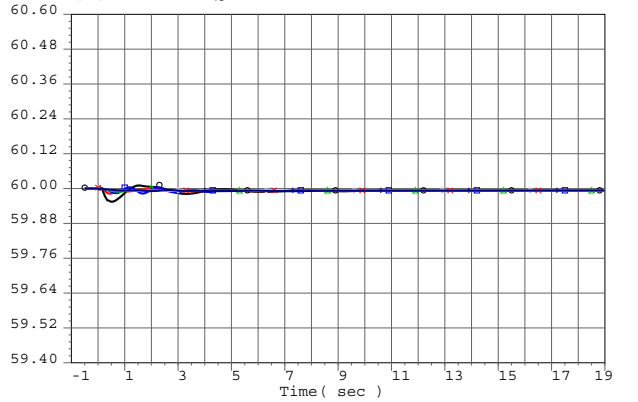

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 14021 | BALNORTH 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 14021 | BALNORTH 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013 HS2-OP BASE CASE
NOVEMBER 30, 2012



SC2_Sum_PstDet_v0_03_SprCan!-Sidney_230_3ph_B.chf

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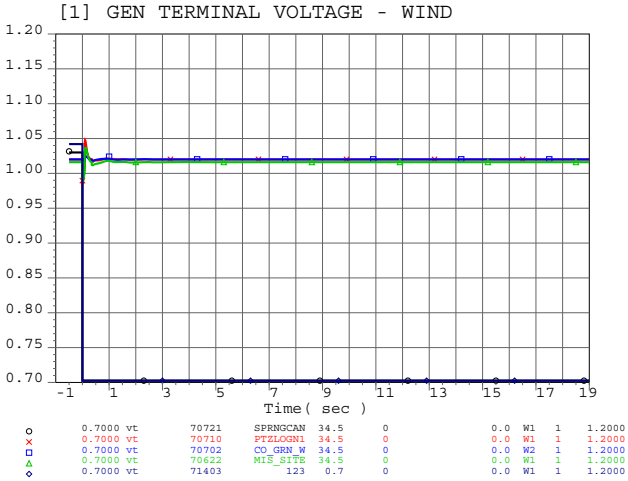
Tue Nov 26 12:33:32 2013

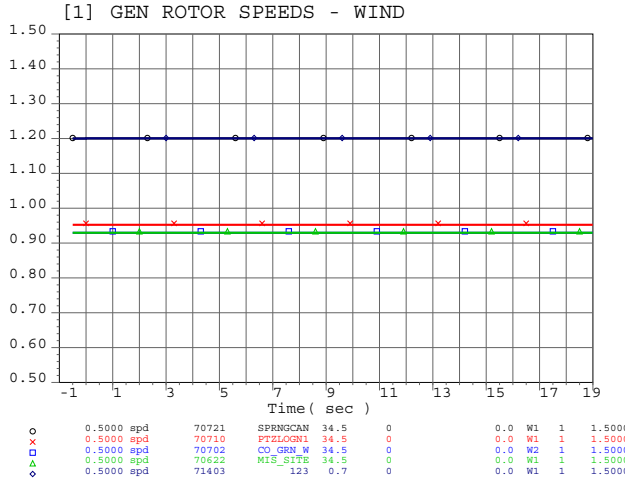
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



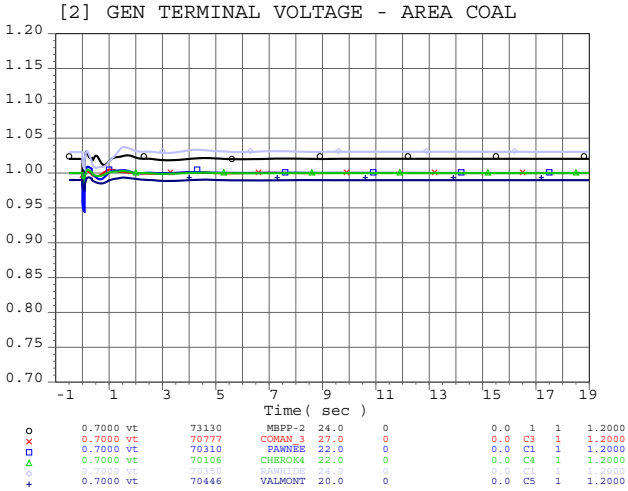

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| × | 0.7000 vt | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| □ | 0.7000 vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| △ | 0.7000 vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 71403 | 123 | 0.7 | 0 | 0.0 | W1 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



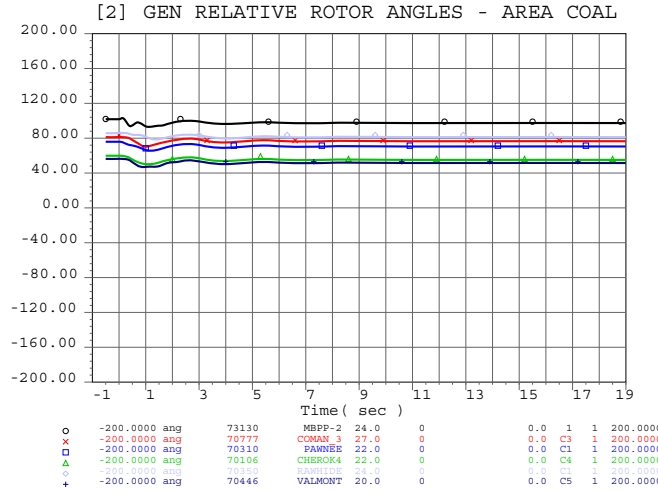

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.5000 spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| × | 0.5000 spd | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| □ | 0.5000 spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| △ | 0.5000 spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| ◇ | 0.5000 spd | 71403 | 123 | 0.7 | 0 | 0.0 | W1 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



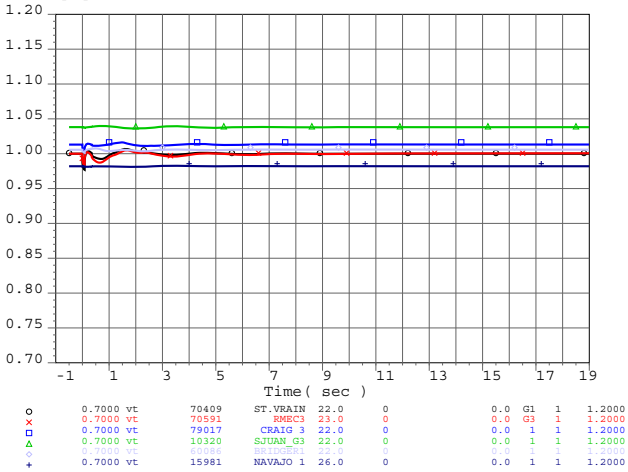

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| × | 0.7000 vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| □ | 0.7000 vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| △ | 0.7000 vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| + | 0.7000 vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



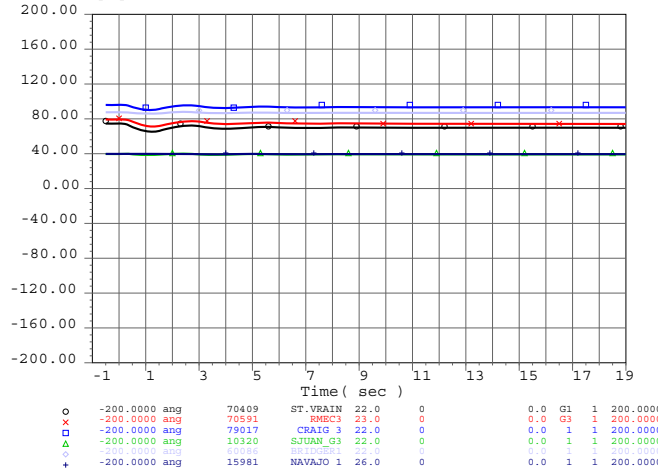

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| × | -200.0000 ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| □ | -200.0000 ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| △ | -200.0000 ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| + | -200.0000 ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| × | 0.7000 vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| □ | 0.7000 vt | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| △ | 0.7000 vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 60186 | NUCLEA4 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| + | 0.7000 vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| × | -200.0000 ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| □ | -200.0000 ang | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| △ | -200.0000 ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 60186 | NUCLEA4 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| + | -200.0000 ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |

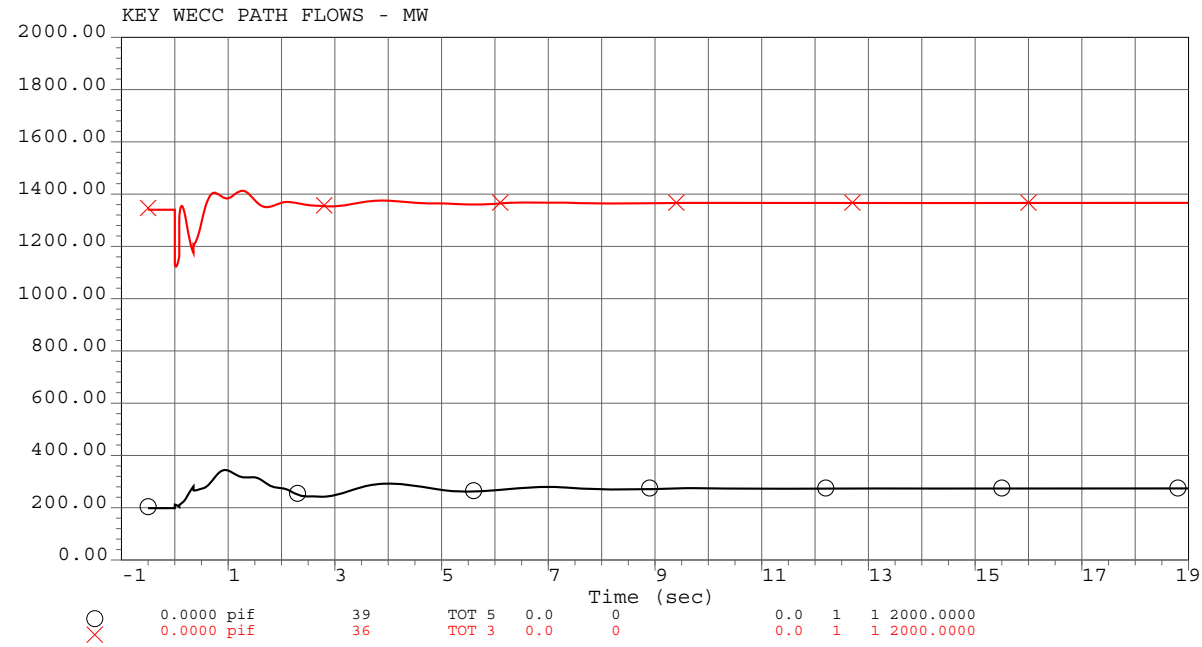
WESTERN ELECTRICITY COORDINATING COUNCIL
2013 HS2-OP BASE CASE
NOVEMBER 30, 2012

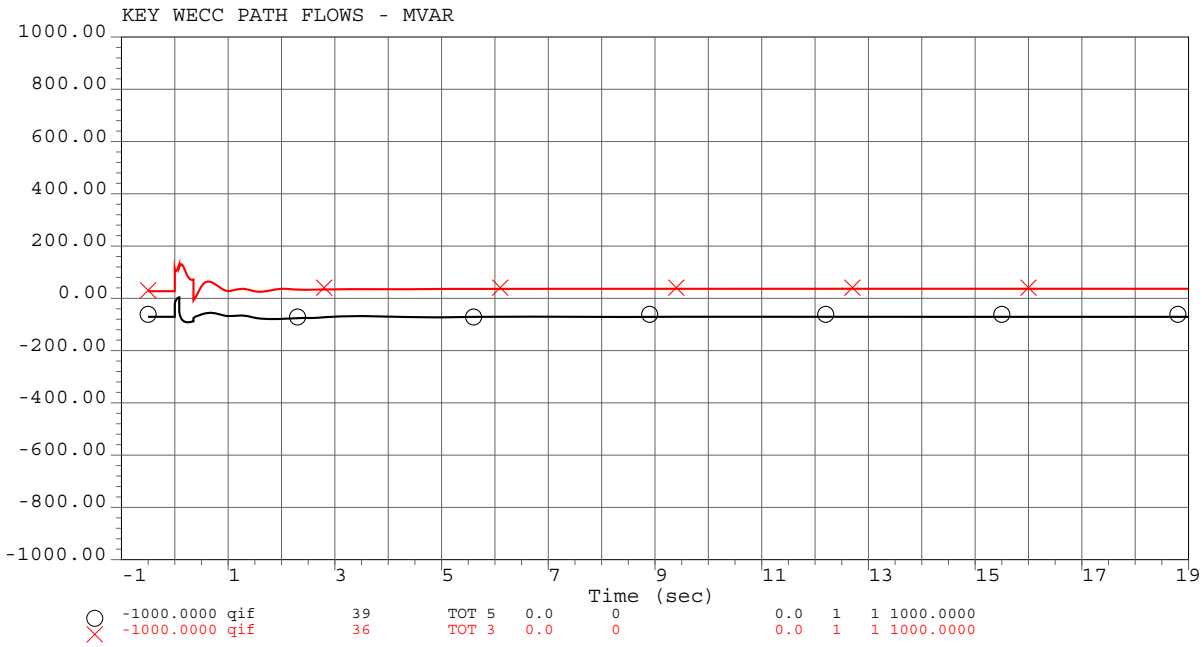


SC2_Sum_PstDet_v0_03_SprCan!-Sidney_230_3ph_B.chf

.

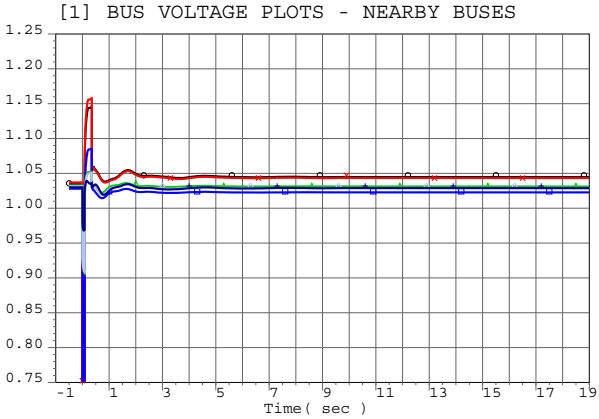
Tue Nov 26 12:33:32 2013


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

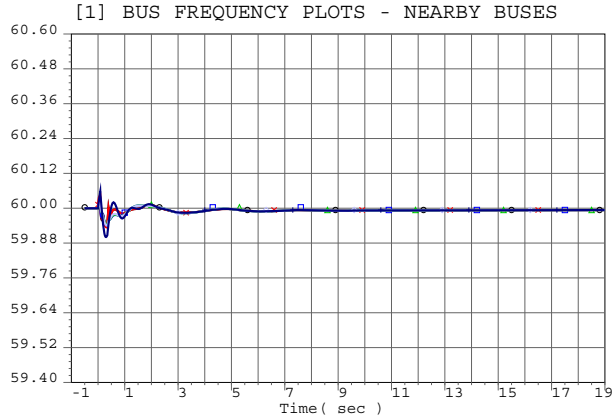
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



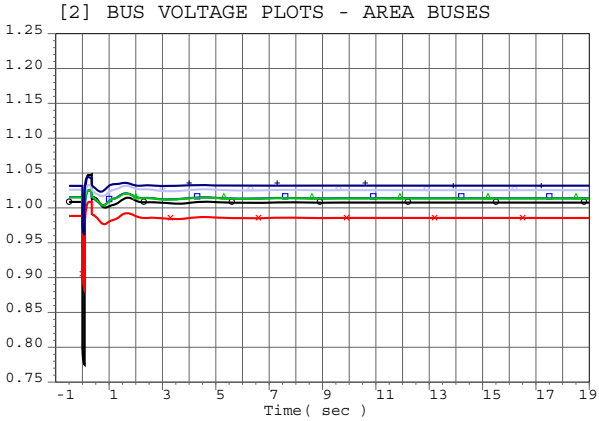

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



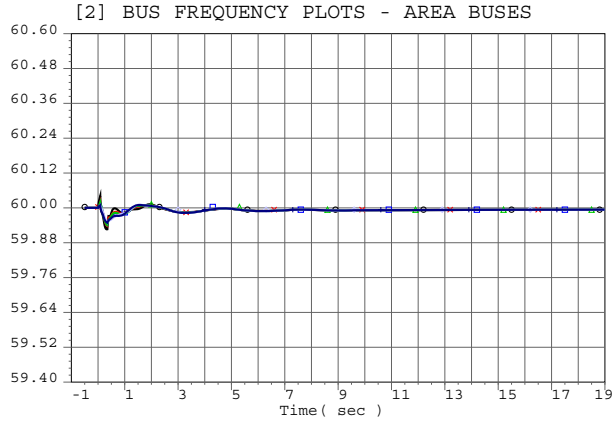

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



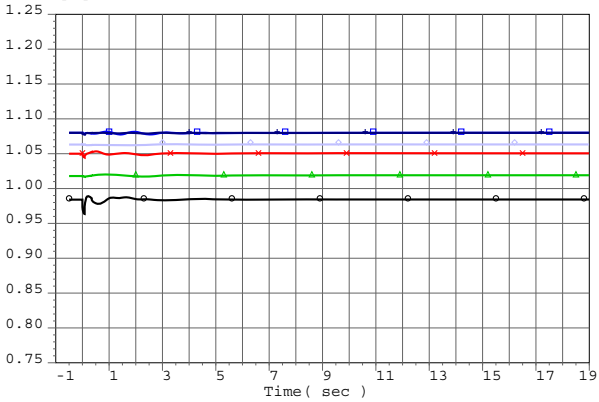

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



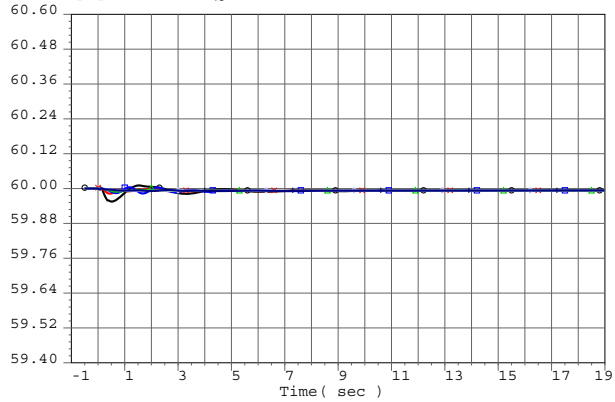

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 14021 | BALNORTH 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 14021 | BALNORTH 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013 HS2-OP BASE CASE
NOVEMBER 30, 2012



SC2_Sum_PstDet_v0_04_SprCan!-NYuma_230_3ph_B.chf

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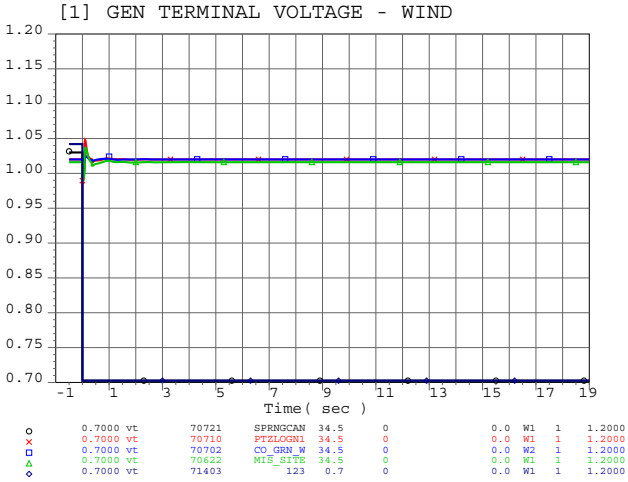
Tue Nov 26 12:33:39 2013

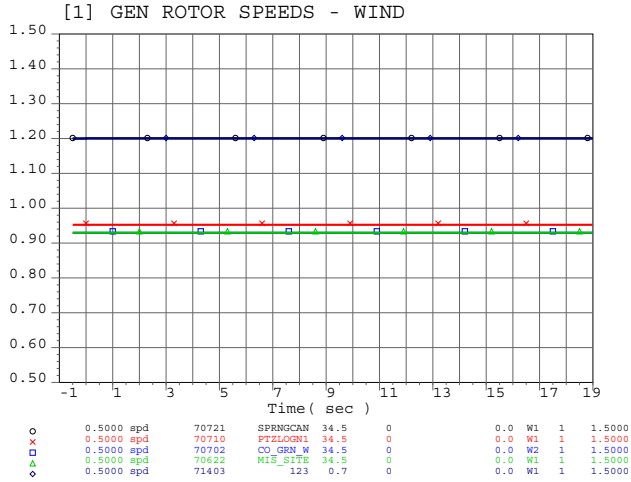
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



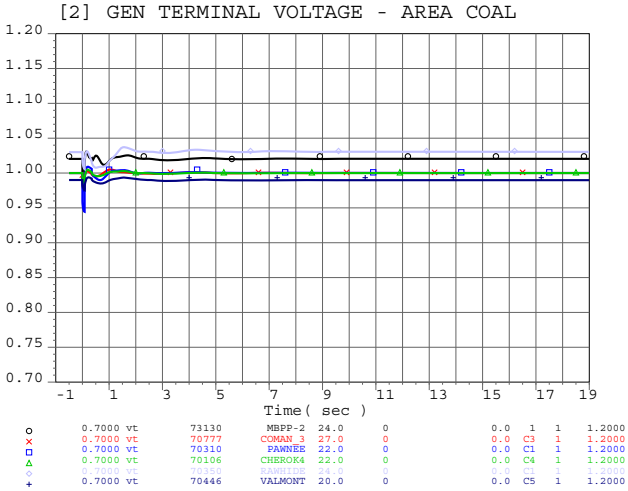

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| × | 0.7000 vt | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| □ | 0.7000 vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| △ | 0.7000 vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 71403 | 123 | 0.7 | 0 | 0.0 | W1 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



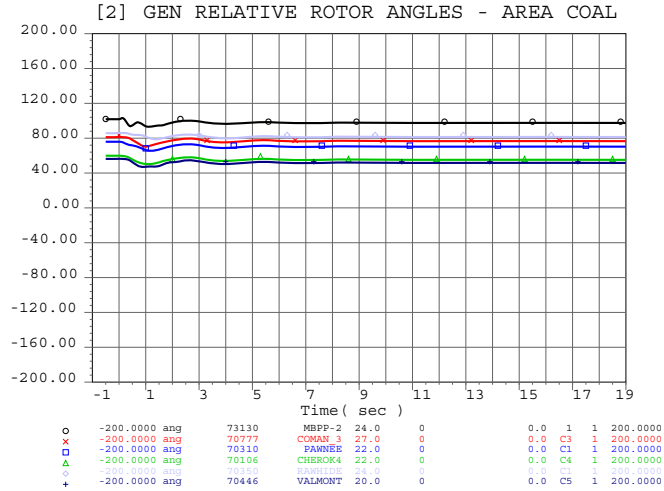

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.5000 spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| × | 0.5000 spd | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| □ | 0.5000 spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| △ | 0.5000 spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| ◇ | 0.5000 spd | 71403 | 123 | 0.7 | 0 | 0.0 | W1 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



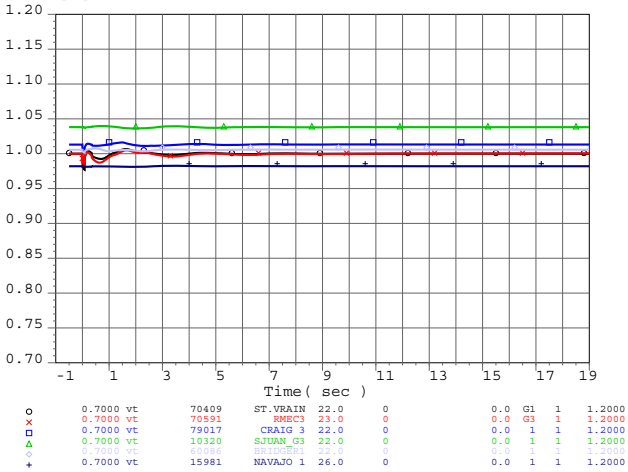

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| × | 0.7000 vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| □ | 0.7000 vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| △ | 0.7000 vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| + | 0.7000 vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



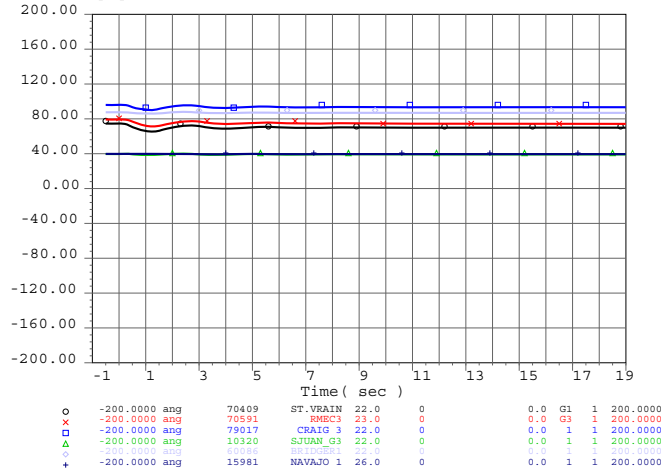

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| × | -200.0000 ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| □ | -200.0000 ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| △ | -200.0000 ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| + | -200.0000 ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| × | 0.7000 vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| □ | 0.7000 vt | 79017 | CRAIG_3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| △ | 0.7000 vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 60186 | NUCLEA4 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| + | 0.7000 vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| × | -200.0000 ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| □ | -200.0000 ang | 79017 | CRAIG_3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| △ | -200.0000 ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 60186 | NUCLEA4 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| + | -200.0000 ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013 HS2-OP BASE CASE
NOVEMBER 30, 2012



SC2_Sum_PstDet_v0_04_SprCan!-NYuma_230_3ph_B.chf

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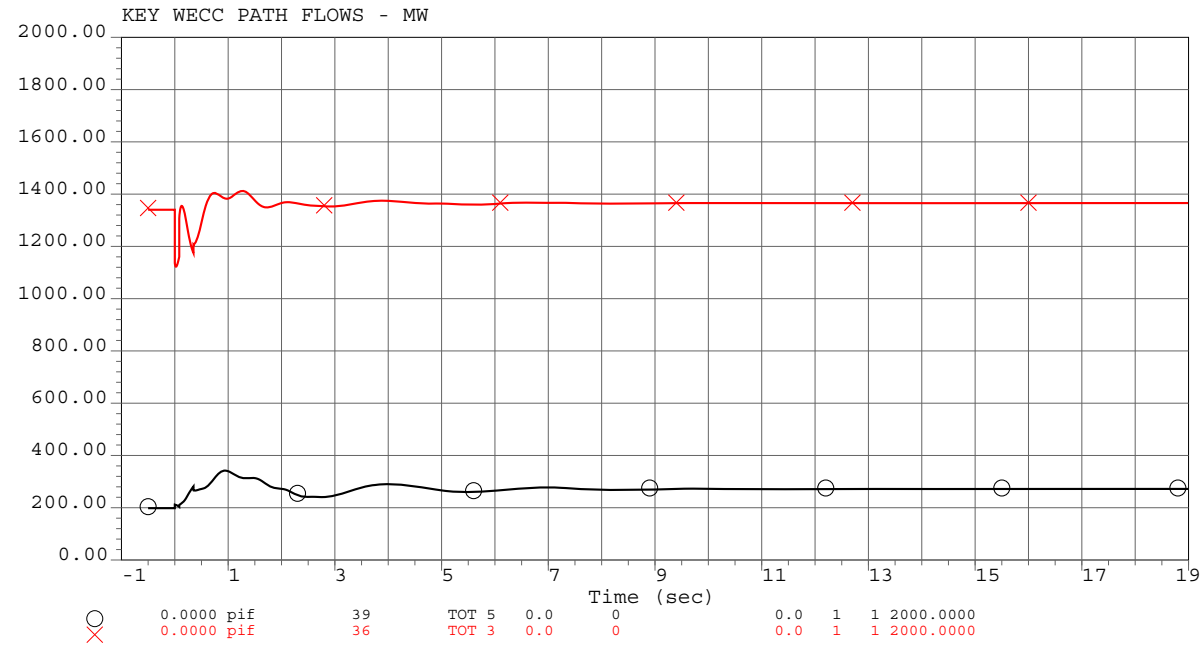
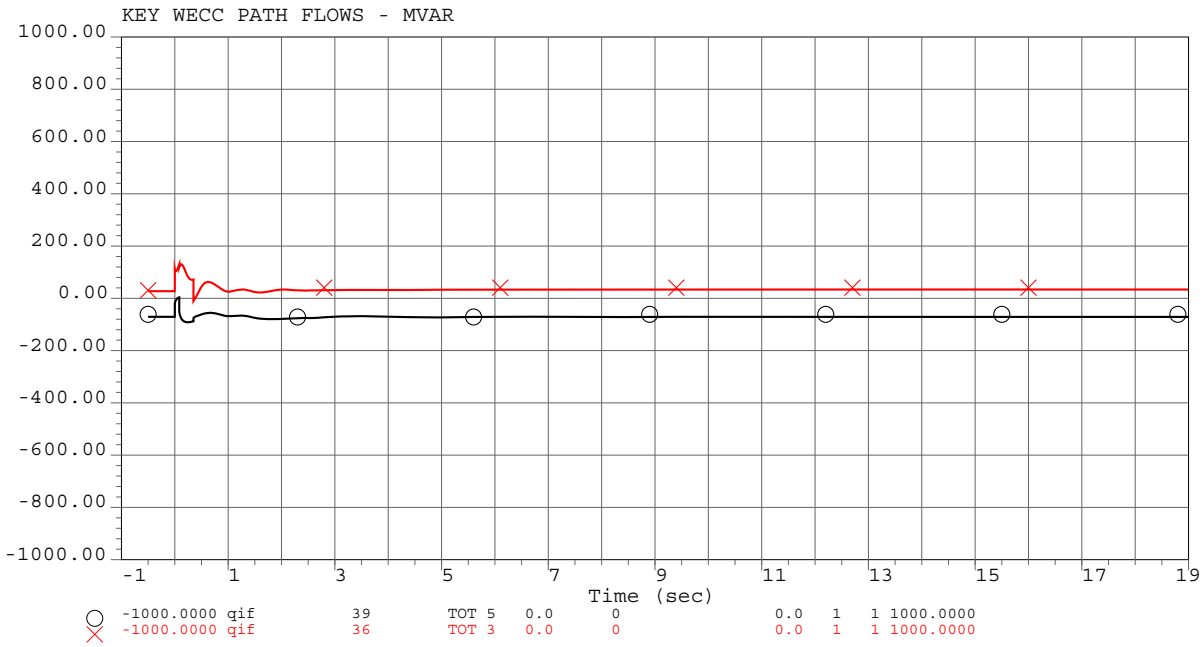
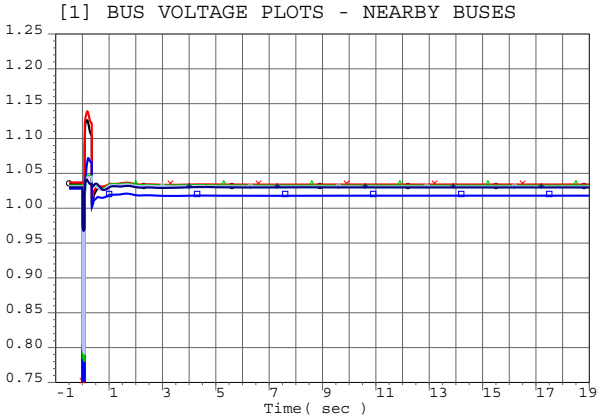
Tue Nov 26 12:33:39 2013


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

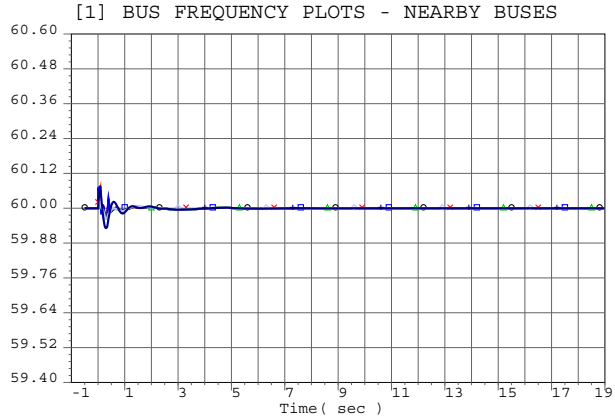
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



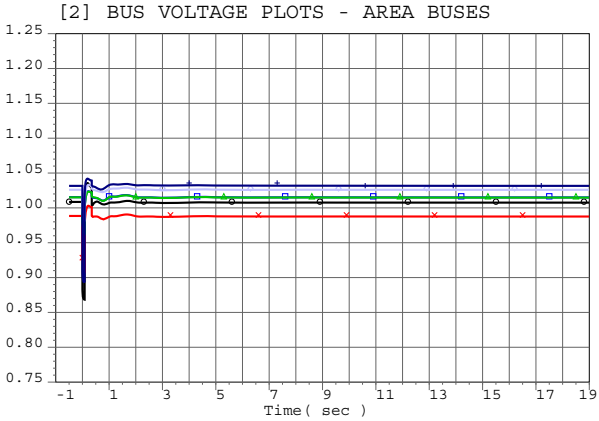

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



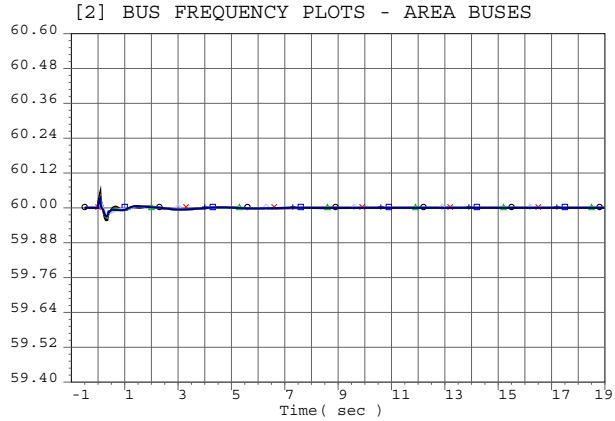

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



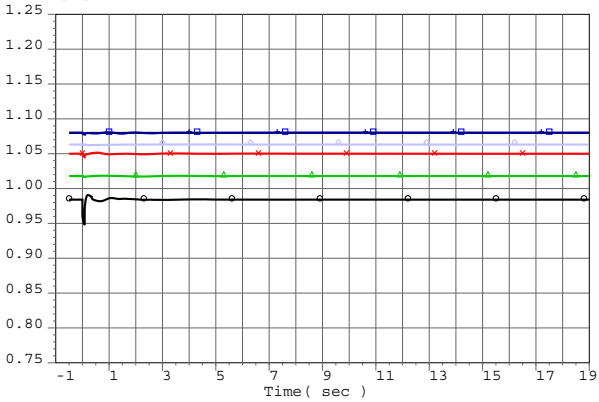

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



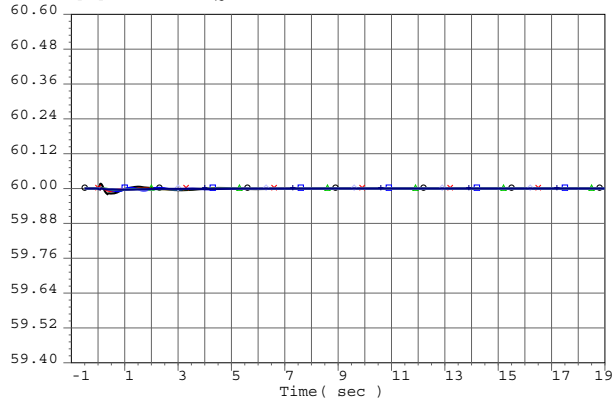

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 14021 | BALNORTH 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 14021 | BALNORTH 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013 HS2-OP BASE CASE
NOVEMBER 30, 2012



SC2_Sum_PstDet_v0_05_NYuma!-Story_230_3ph_B.chf

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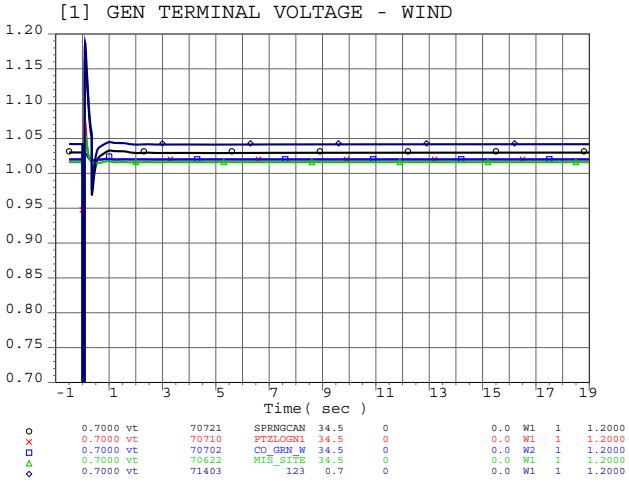
Tue Nov 26 12:35:10 2013

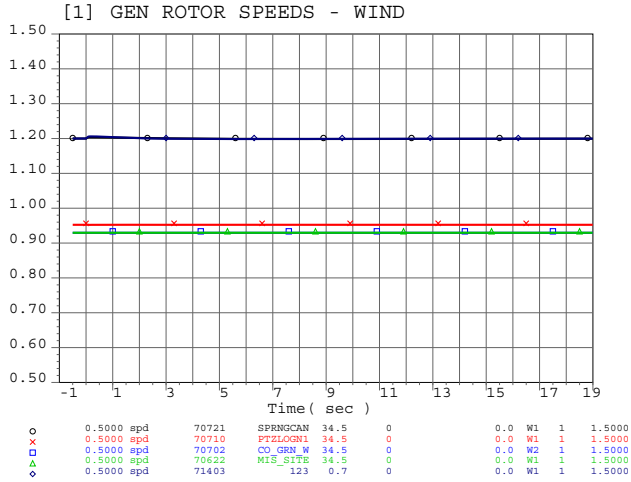
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



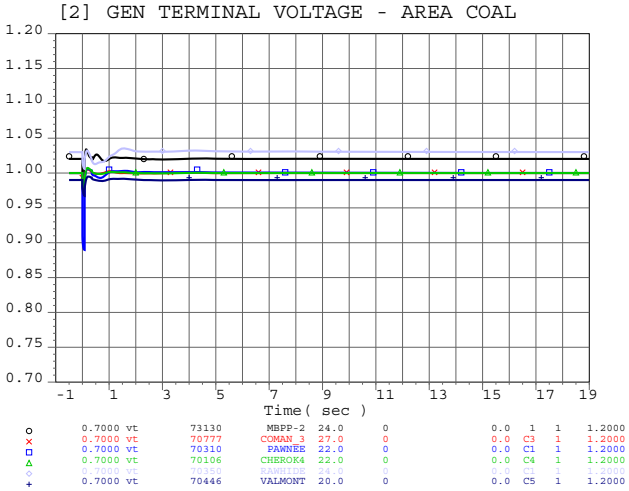

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| × | 0.7000 vt | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| □ | 0.7000 vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| △ | 0.7000 vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 71403 | 123 | 0.7 | 0 | 0.0 | W1 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



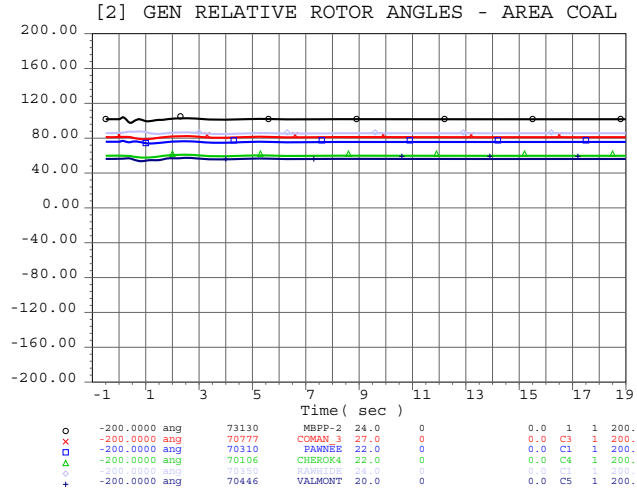

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.5000 spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| × | 0.5000 spd | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| □ | 0.5000 spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| △ | 0.5000 spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| ◇ | 0.5000 spd | 71403 | 123 | 0.7 | 0 | 0.0 | W1 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



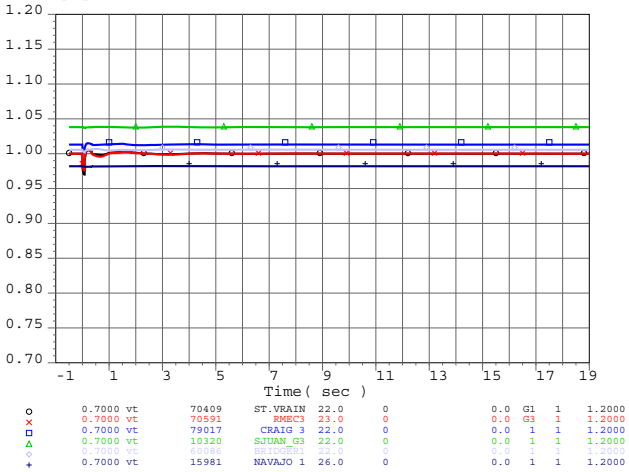

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| × | 0.7000 vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| □ | 0.7000 vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| △ | 0.7000 vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| + | 0.7000 vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



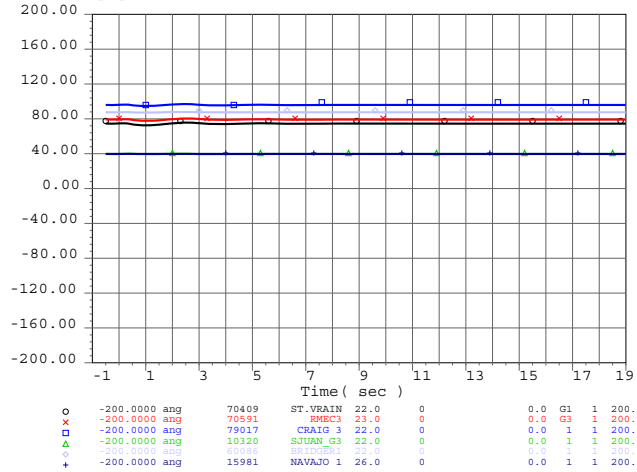

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| × | -200.0000 ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| □ | -200.0000 ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| △ | -200.0000 ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| + | -200.0000 ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| × | 0.7000 vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| □ | 0.7000 vt | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| △ | 0.7000 vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 60186 | NUCLEA4 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| + | 0.7000 vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| × | -200.0000 ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| □ | -200.0000 ang | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| △ | -200.0000 ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 60186 | NUCLEA4 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| + | -200.0000 ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |

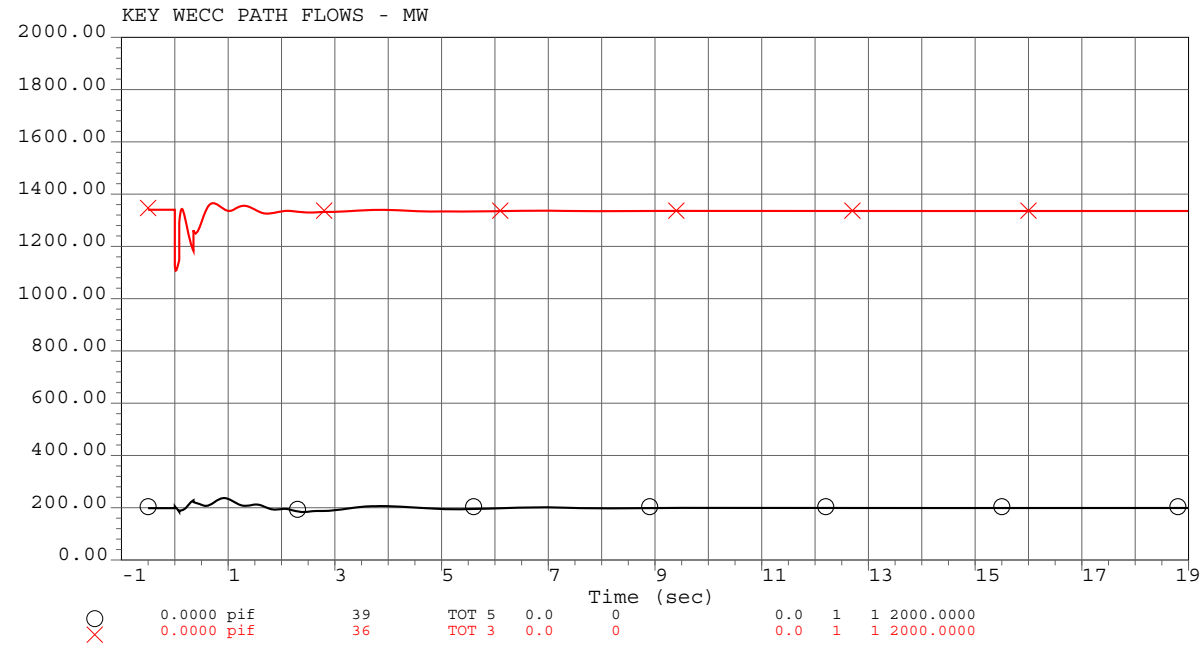
WESTERN ELECTRICITY COORDINATING COUNCIL
2013 HS2-OP BASE CASE
NOVEMBER 30, 2012

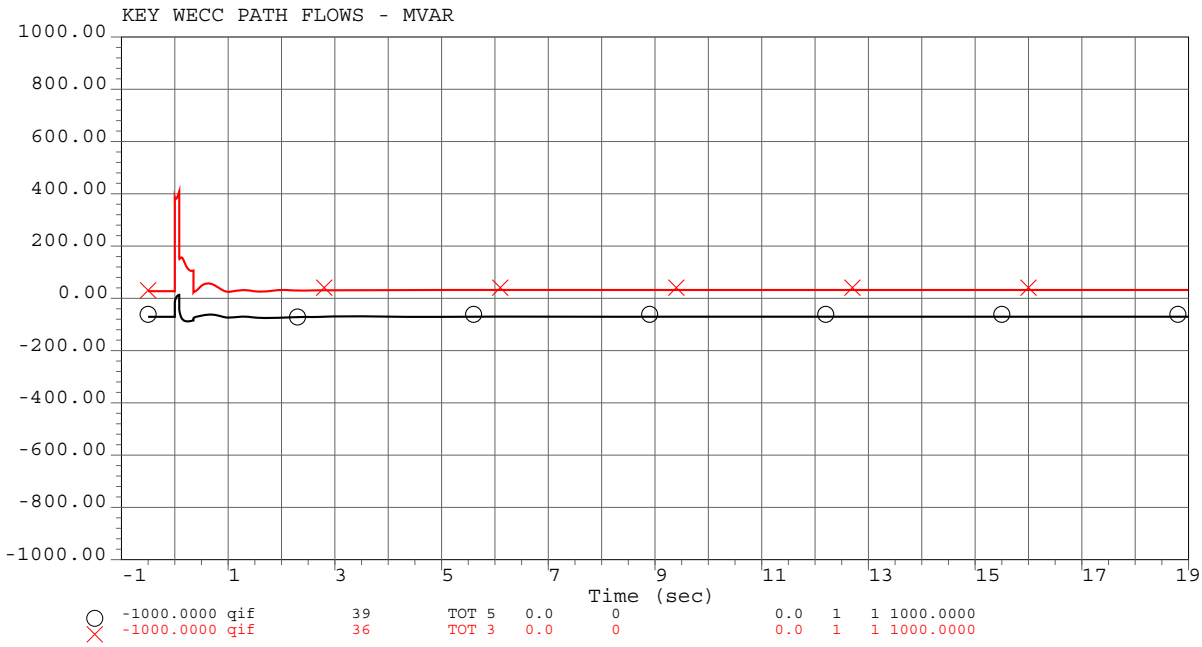


SC2_Sum_PstDet_v0_05_NYuma!-Story_230_3ph_B.chf

.

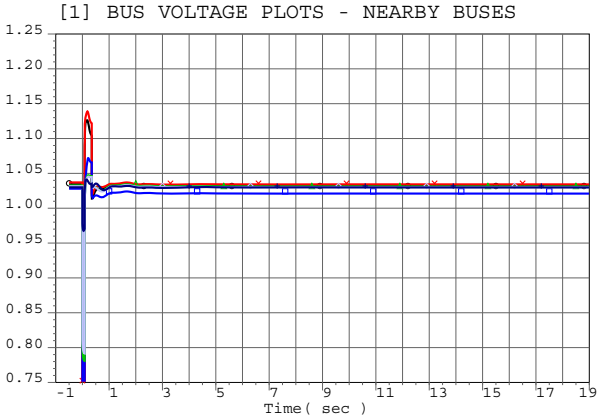
Tue Nov 26 12:35:10 2013


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

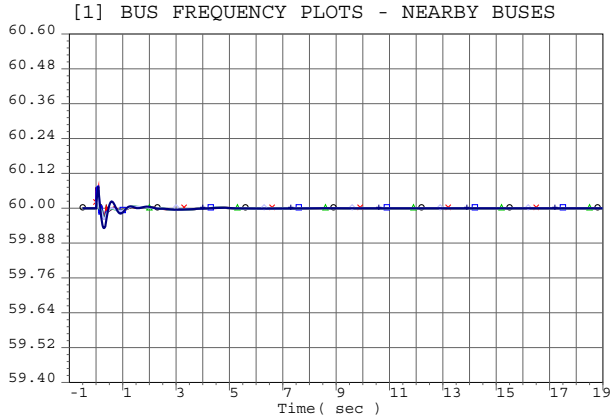
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



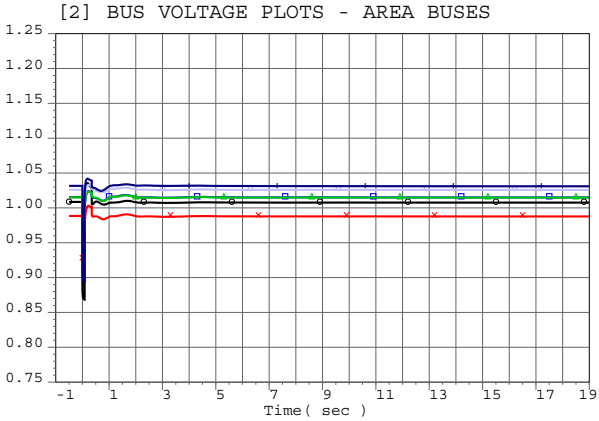

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



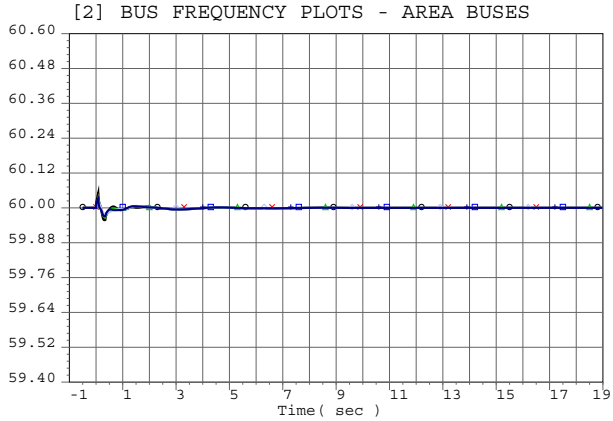

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



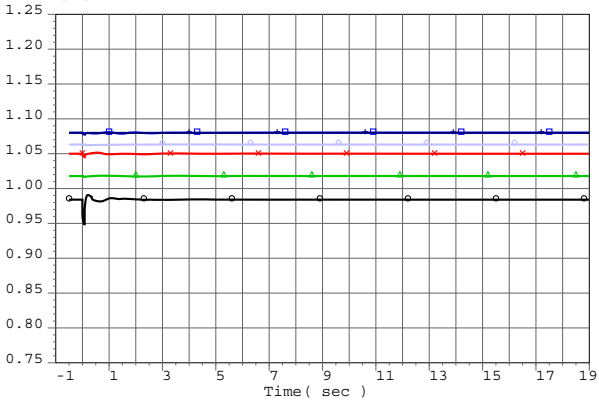

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



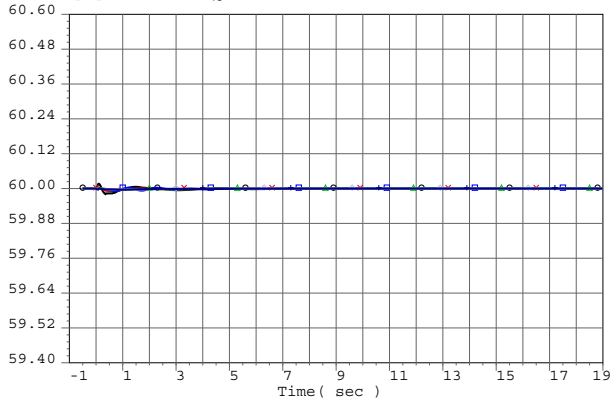

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 14021 | BALNORTH 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 14021 | BALNORTH 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013 HS2-OP BASE CASE
NOVEMBER 30, 2012



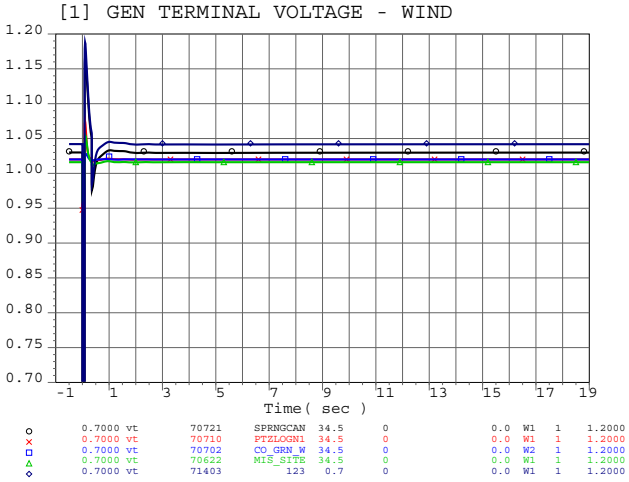
SC2_Sum_PstDet_v0_06_NYuma!-Wray_230_3ph_B.chf

.

Tue Nov 26 12:35:18 2013

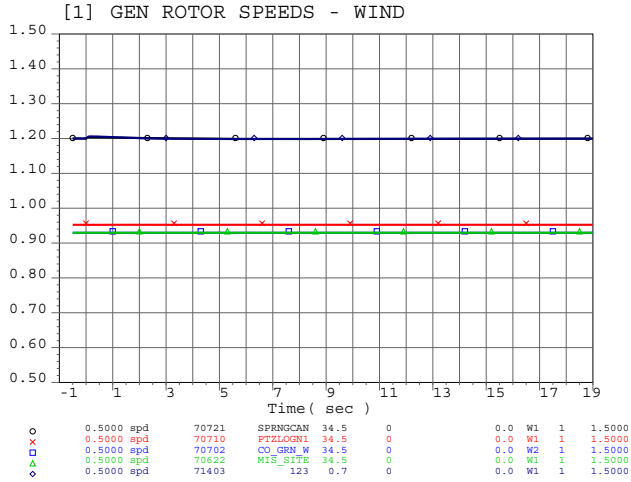
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



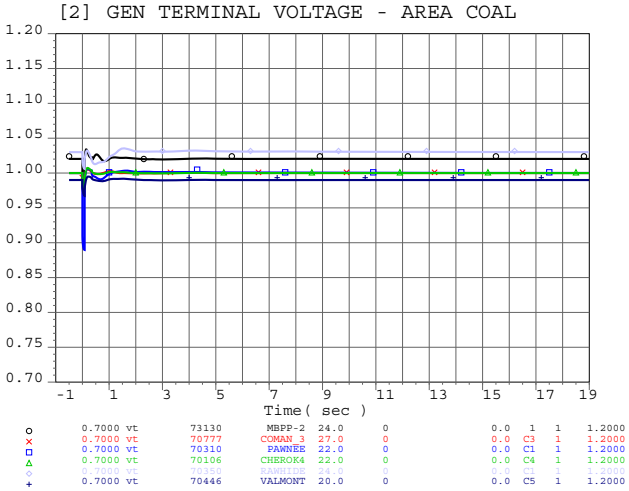

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| × | 0.7000 vt | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| □ | 0.7000 vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| △ | 0.7000 vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 71403 | 123 | 0.7 | 0 | 0.0 | W1 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



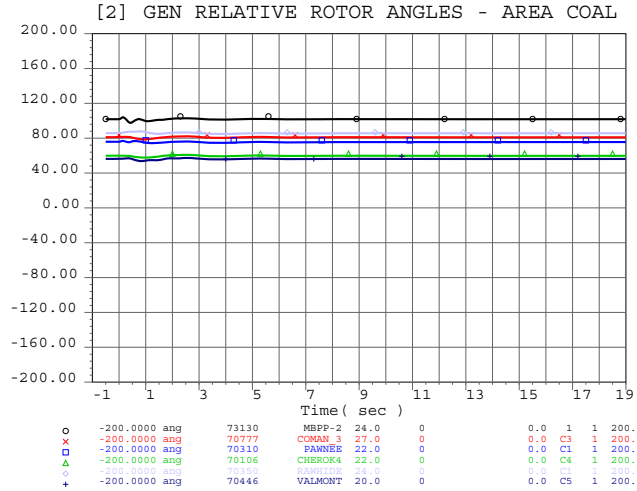

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.5000 spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| × | 0.5000 spd | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| □ | 0.5000 spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| △ | 0.5000 spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| ◇ | 0.5000 spd | 71403 | 123 | 0.7 | 0 | 0.0 | W1 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



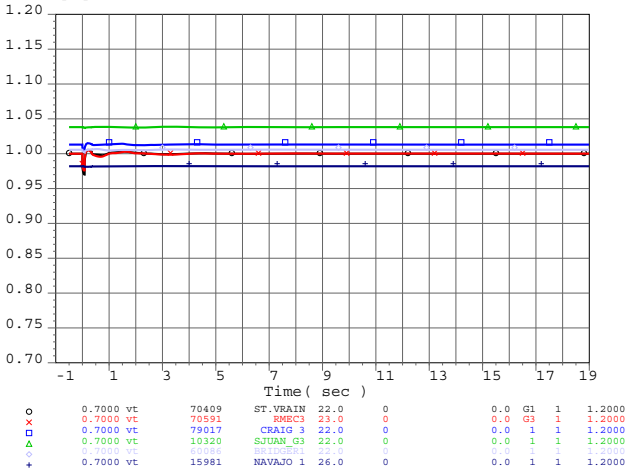

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| × | 0.7000 vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| □ | 0.7000 vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| △ | 0.7000 vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| + | 0.7000 vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



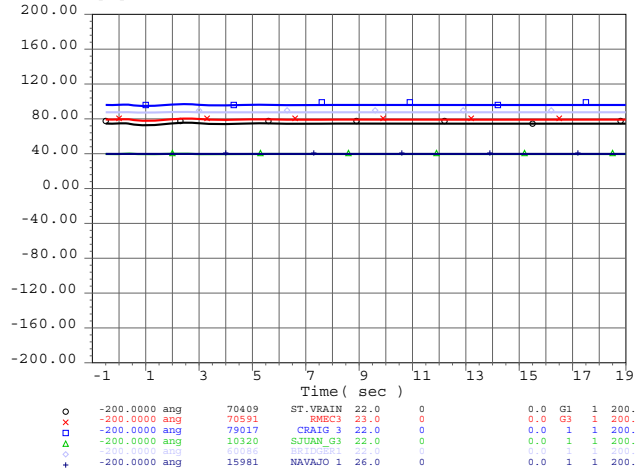

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| × | -200.0000 ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| □ | -200.0000 ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| △ | -200.0000 ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| + | -200.0000 ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| × | 0.7000 vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| □ | 0.7000 vt | 79017 | CRAIG_3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| △ | 0.7000 vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 60186 | MIDWAY4 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| + | 0.7000 vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| × | -200.0000 ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| □ | -200.0000 ang | 79017 | CRAIG_3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| △ | -200.0000 ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 60186 | MIDWAY4 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| + | -200.0000 ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |

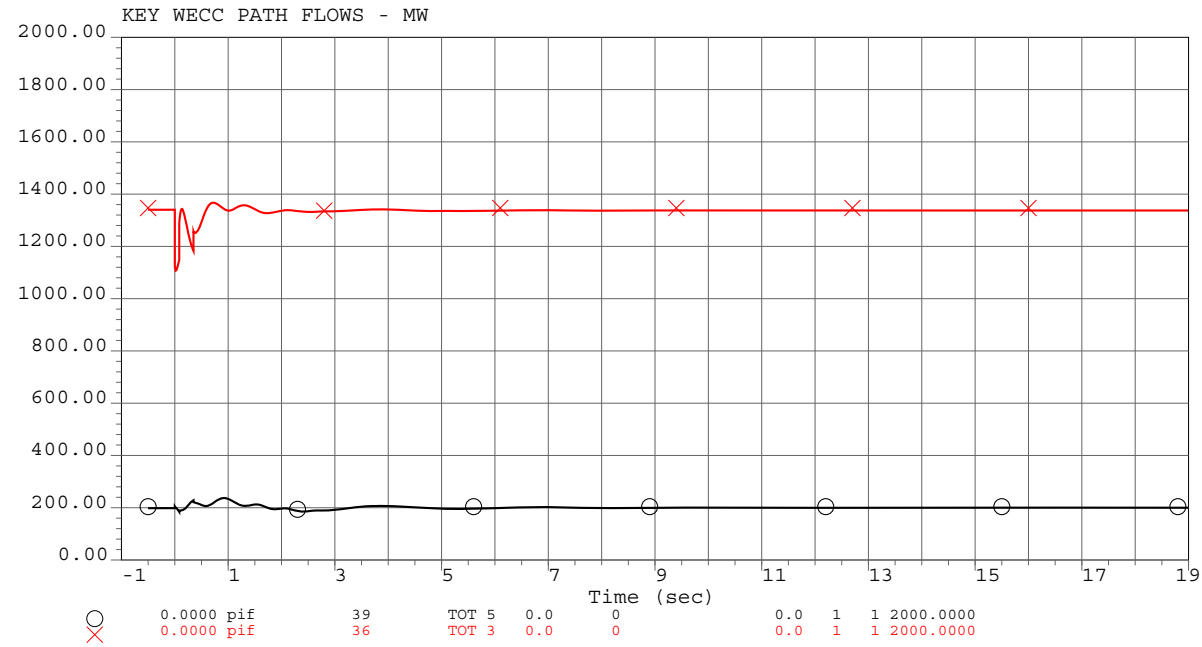
WESTERN ELECTRICITY COORDINATING COUNCIL
2013 HS2-OP BASE CASE
NOVEMBER 30, 2012

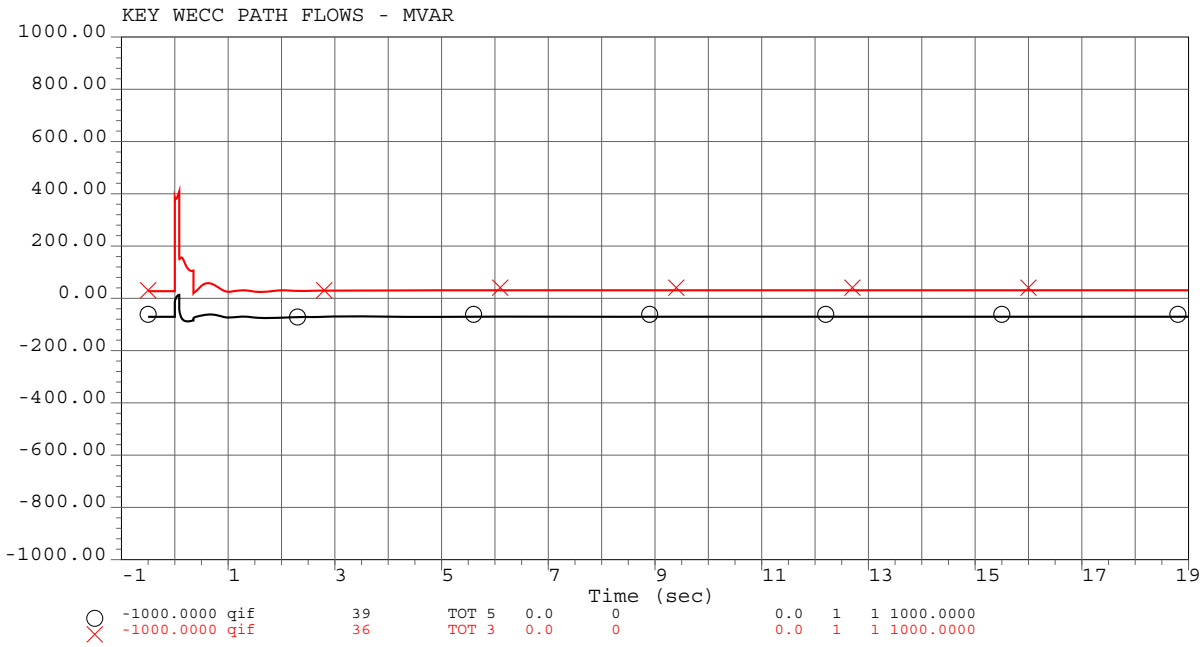


SC2_Sum_PstDet_v0_06_NYuma!-Wray_230_3ph_B.chf

.

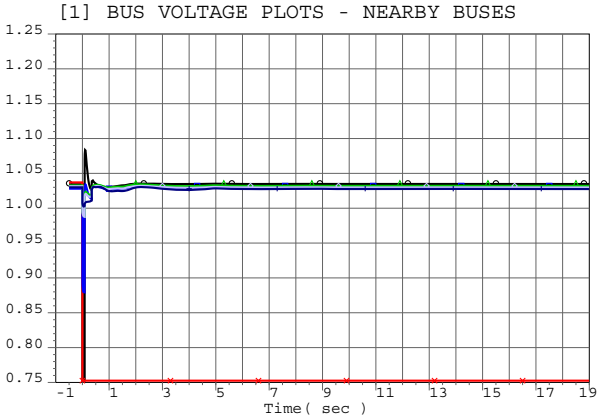
Tue Nov 26 12:35:18 2013


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

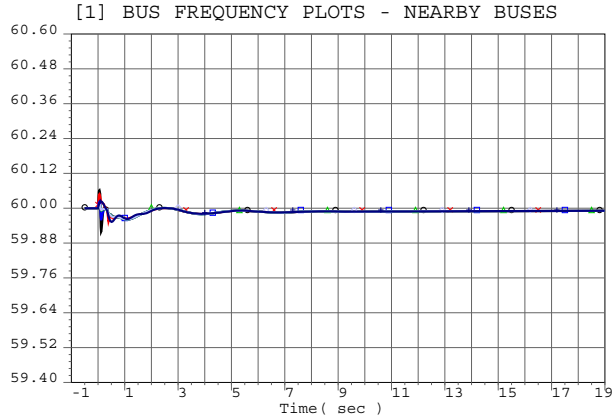
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



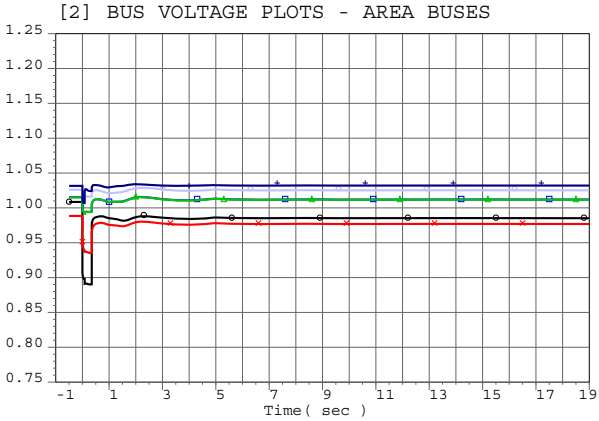

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



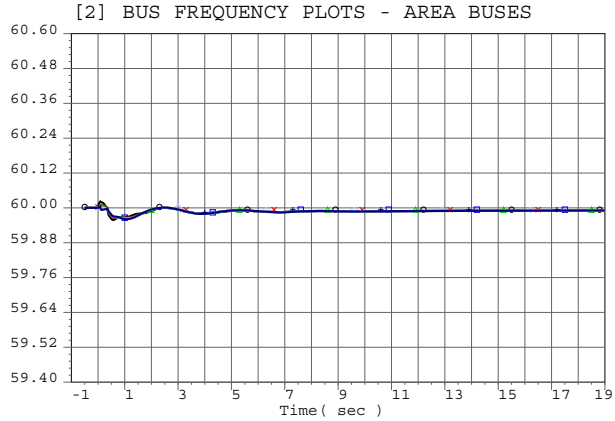

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



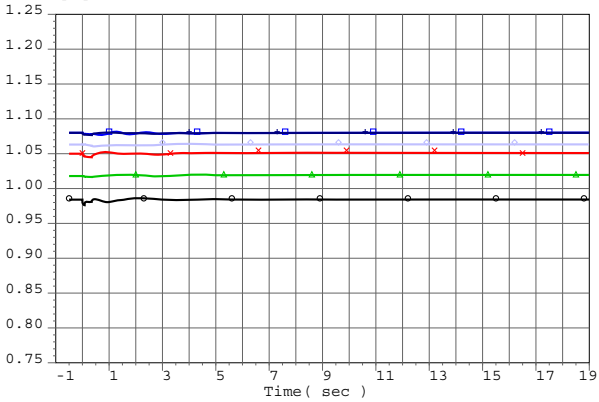

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



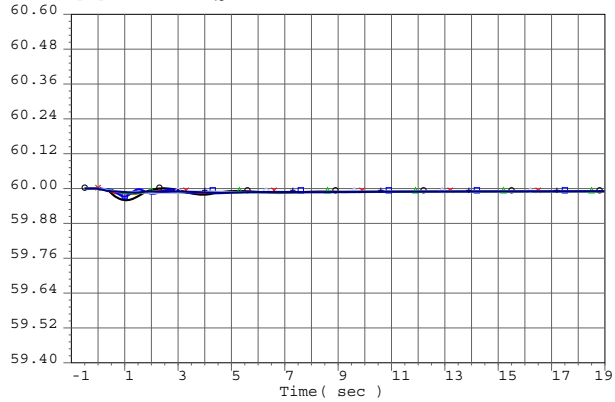

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 14021 | BALNORTH 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 14021 | BALNORTH 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013 HS2-OP BASE CASE
NOVEMBER 30, 2012



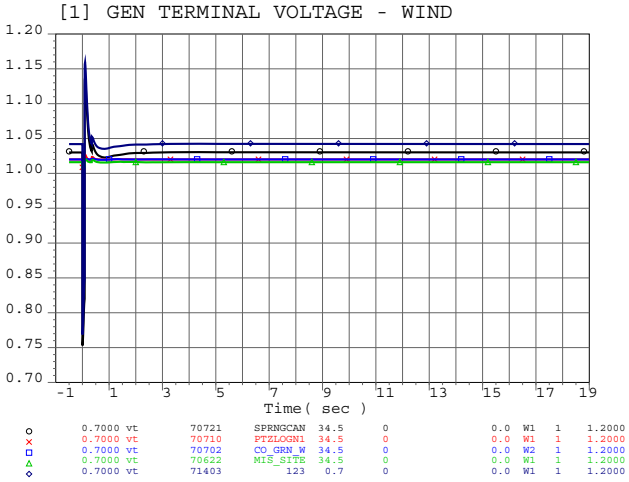
SC2_Sum_PstDet_v0_07_Sidney!-SprCan_230_SLG_C.chf

.

Tue Nov 26 12:35:28 2013

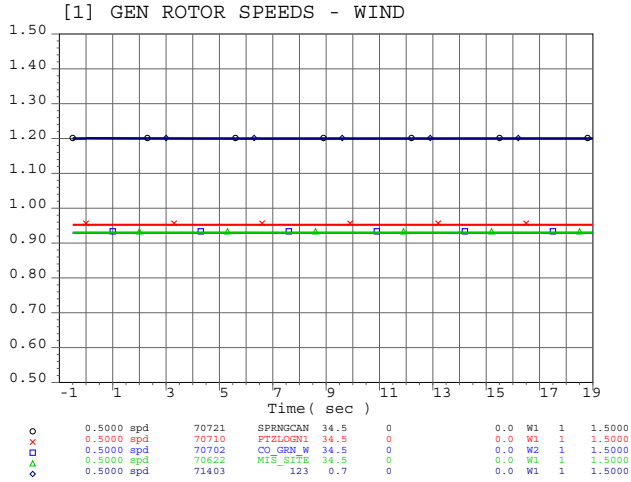
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



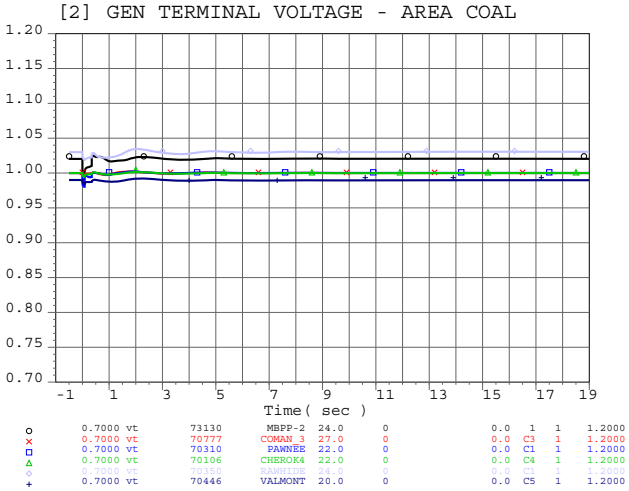

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 | vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| × | 0.7000 | vt | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| □ | 0.7000 | vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| △ | 0.7000 | vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| ◇ | 0.7000 | vt | 71403 | 123 | 0.7 | 0 | 0.0 | W1 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



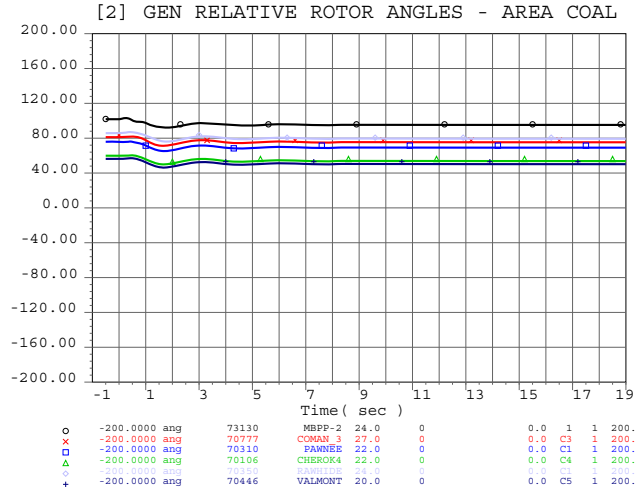

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.5000 | spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| × | 0.5000 | spd | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| □ | 0.5000 | spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| △ | 0.5000 | spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| ◇ | 0.5000 | spd | 71403 | 123 | 0.7 | 0 | 0.0 | W1 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



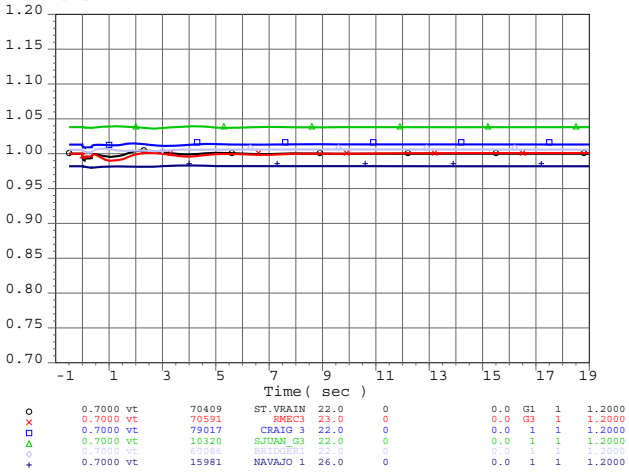

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 | vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| × | 0.7000 | vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| □ | 0.7000 | vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| △ | 0.7000 | vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| ◇ | 0.7000 | vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| + | 0.7000 | vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



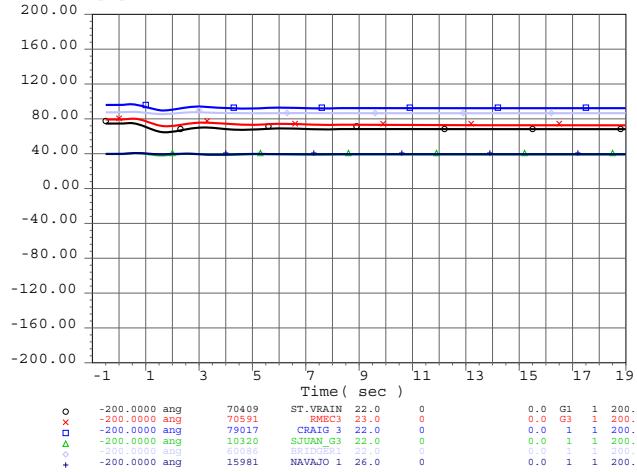

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 | ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| × | -200.0000 | ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| □ | -200.0000 | ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| △ | -200.0000 | ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| ◇ | -200.0000 | ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| + | -200.0000 | ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER




| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 | vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| × | 0.7000 | vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| □ | 0.7000 | vt | 79017 | CRAIG_3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| △ | 0.7000 | vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| ◇ | 0.7000 | vt | 60186 | HAYDEN1 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| + | 0.7000 | vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER




| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 | ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| × | -200.0000 | ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| □ | -200.0000 | ang | 79017 | CRAIG_3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| △ | -200.0000 | ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| ◇ | -200.0000 | ang | 60186 | HAYDEN1 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| + | -200.0000 | ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |

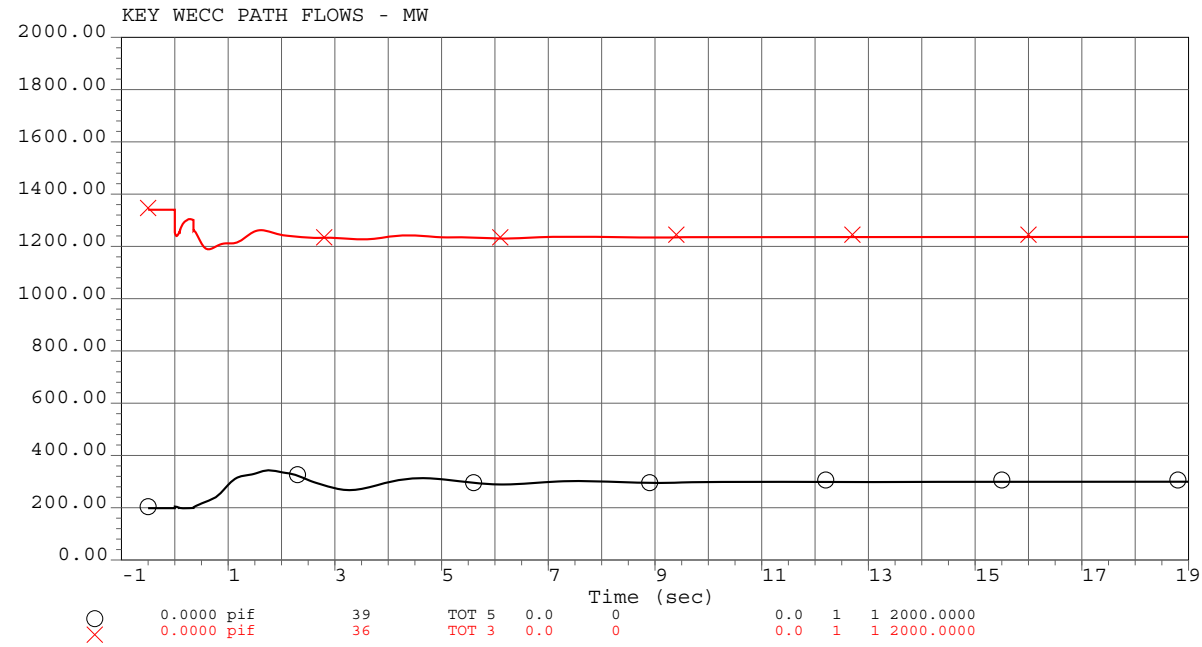
WESTERN ELECTRICITY COORDINATING COUNCIL
2013 HS2-OP BASE CASE
NOVEMBER 30, 2012

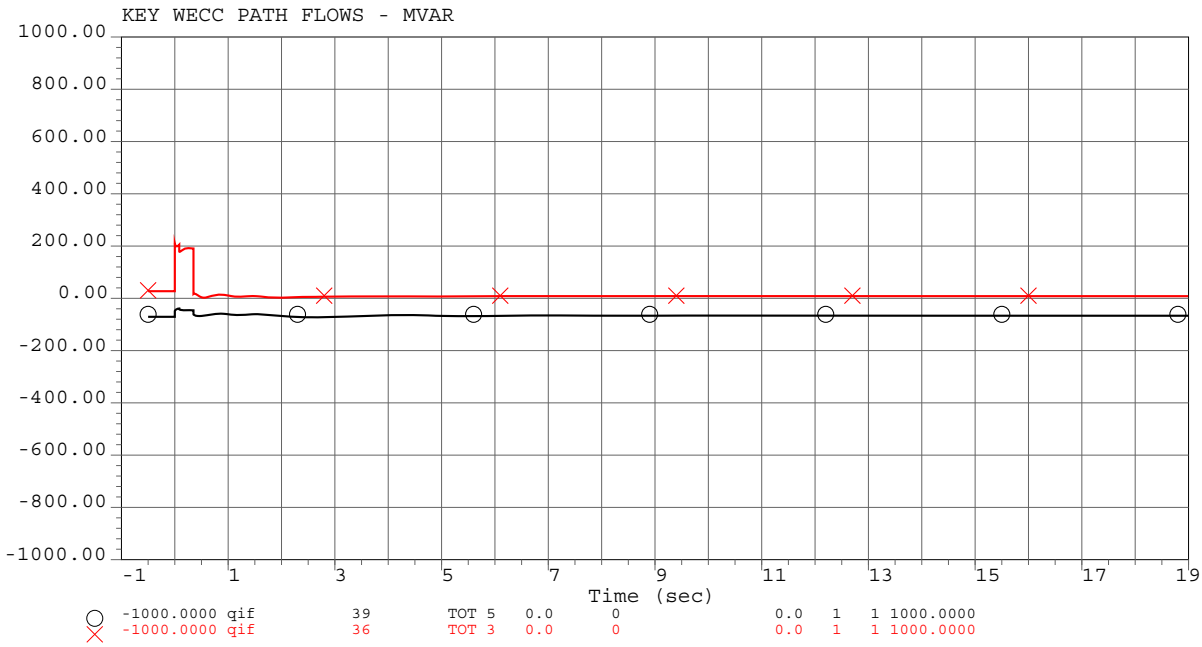


SC2_Sum_PstDet_v0_07_Sidney!-SprCan_230_SLG_C.chf

.

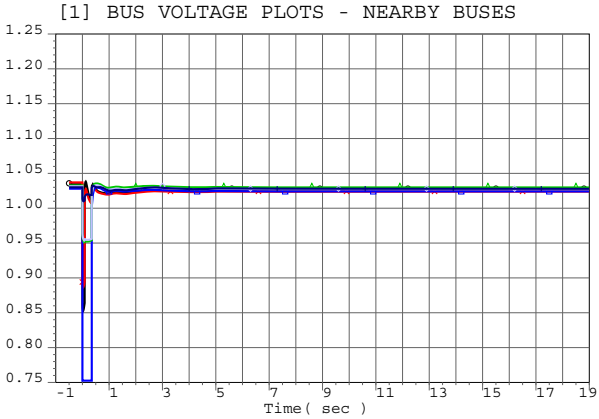
Tue Nov 26 12:35:28 2013


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

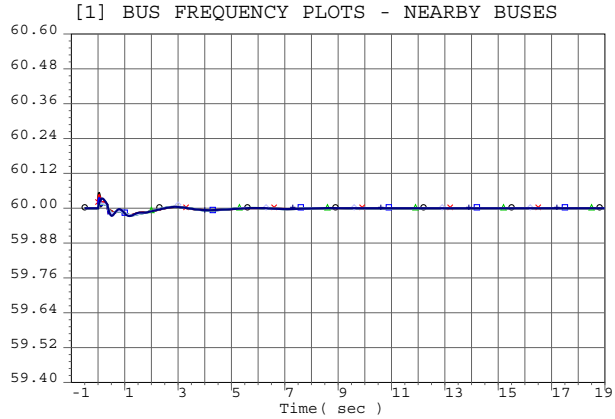
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



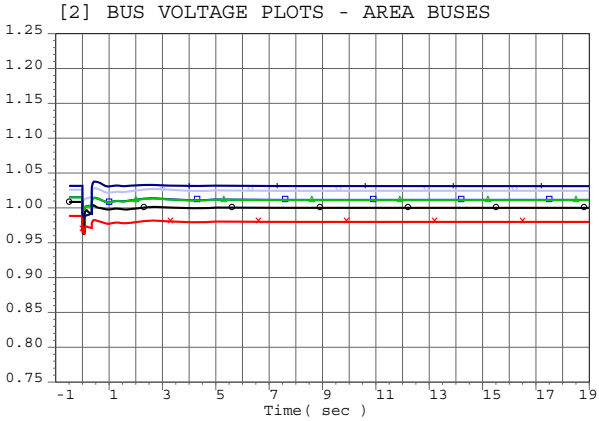

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



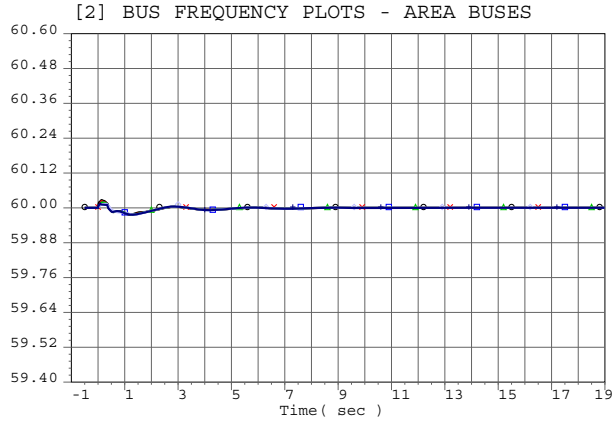

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



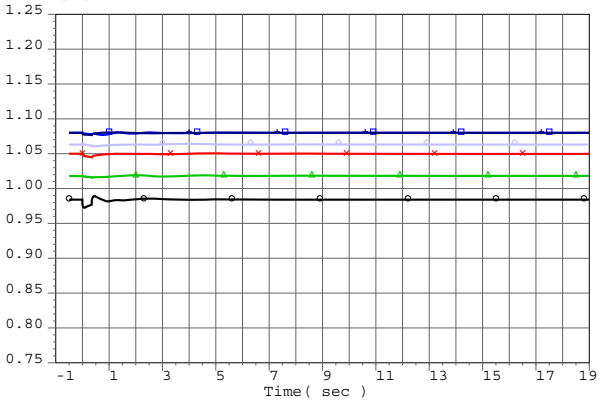

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



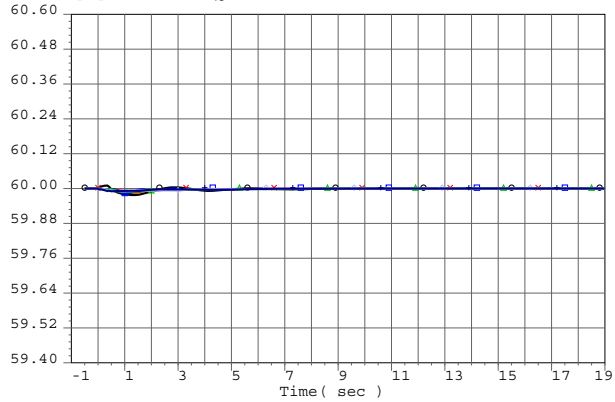

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 14021 | BALNORTH 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 14021 | BALNORTH 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013 HS2-OP BASE CASE
NOVEMBER 30, 2012



SC2_Sum_PstDet_v0_08_NYuma!-SprCan_230_SLG_C.chf

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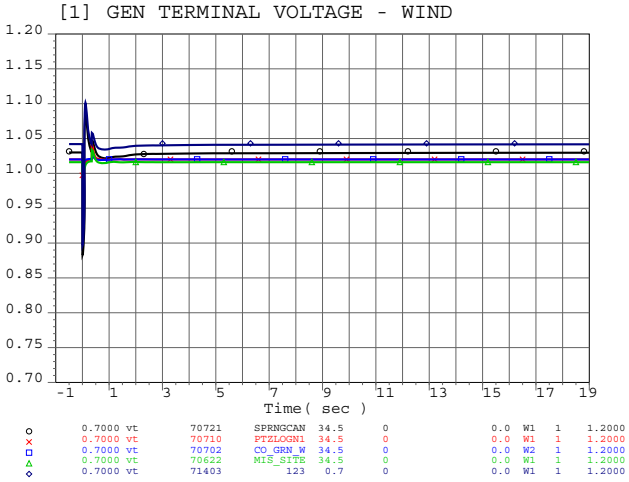
Tue Nov 26 12:35:36 2013

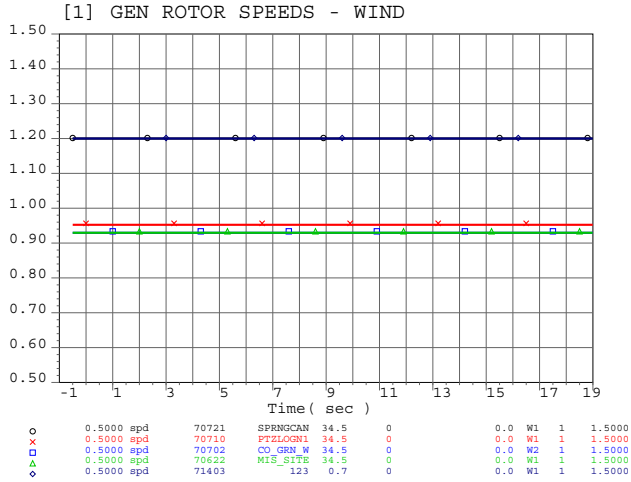
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



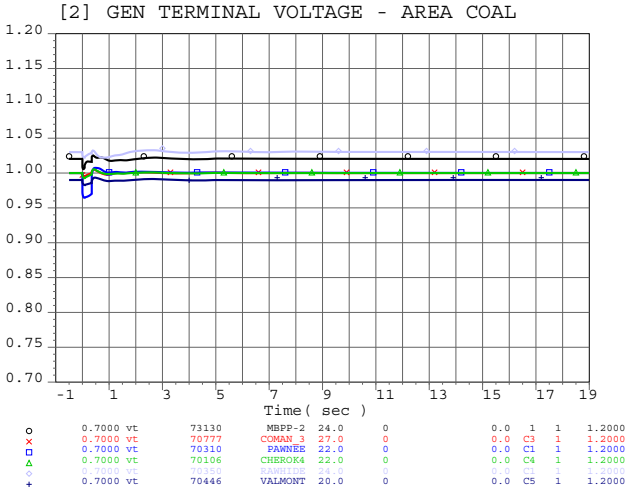

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 | vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| × | 0.7000 | vt | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| □ | 0.7000 | vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| △ | 0.7000 | vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| ◇ | 0.7000 | vt | 71403 | 123 | 0.7 | 0 | 0.0 | W1 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



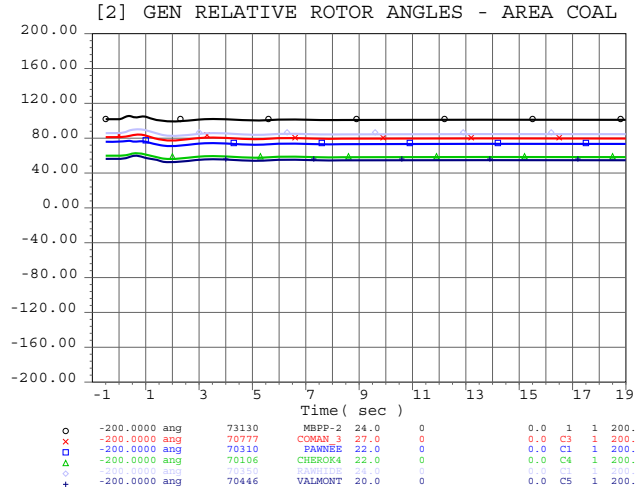

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.5000 | spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| × | 0.5000 | spd | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| □ | 0.5000 | spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| △ | 0.5000 | spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| ◇ | 0.5000 | spd | 71403 | 123 | 0.7 | 0 | 0.0 | W1 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



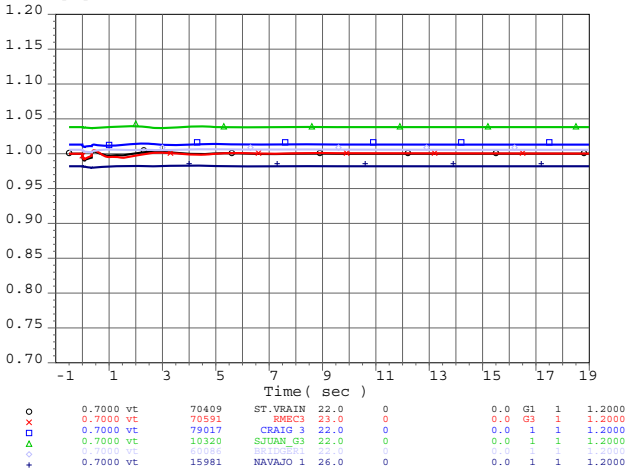

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 | vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| × | 0.7000 | vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| □ | 0.7000 | vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| △ | 0.7000 | vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| ◇ | 0.7000 | vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| + | 0.7000 | vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



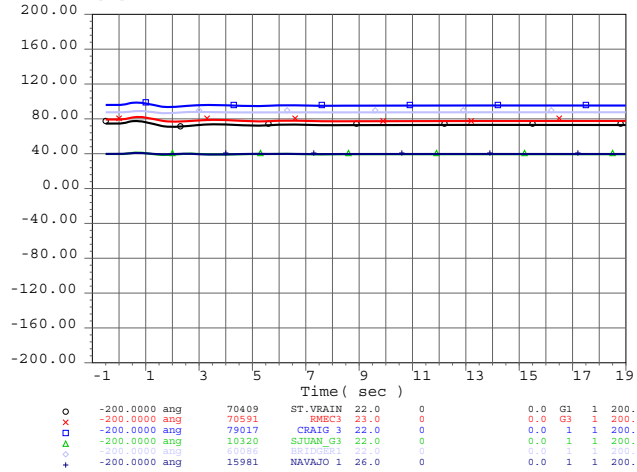

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 | ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| × | -200.0000 | ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| □ | -200.0000 | ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| △ | -200.0000 | ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| ◇ | -200.0000 | ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| + | -200.0000 | ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER




| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 | vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| × | 0.7000 | vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| □ | 0.7000 | vt | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| △ | 0.7000 | vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| ◇ | 0.7000 | vt | 60186 | NUCLEA1 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| + | 0.7000 | vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER




| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 | ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| × | -200.0000 | ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| □ | -200.0000 | ang | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| △ | -200.0000 | ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| ◇ | -200.0000 | ang | 60186 | NUCLEA1 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| + | -200.0000 | ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |

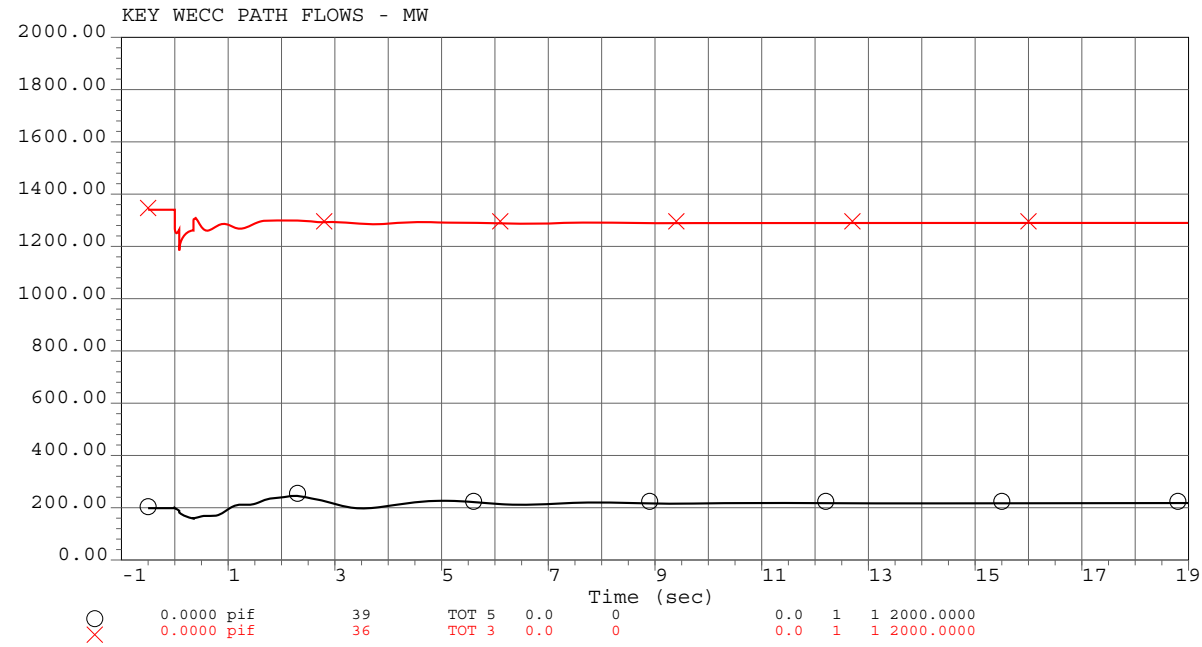
WESTERN ELECTRICITY COORDINATING COUNCIL
2013 HS2-OP BASE CASE
NOVEMBER 30, 2012

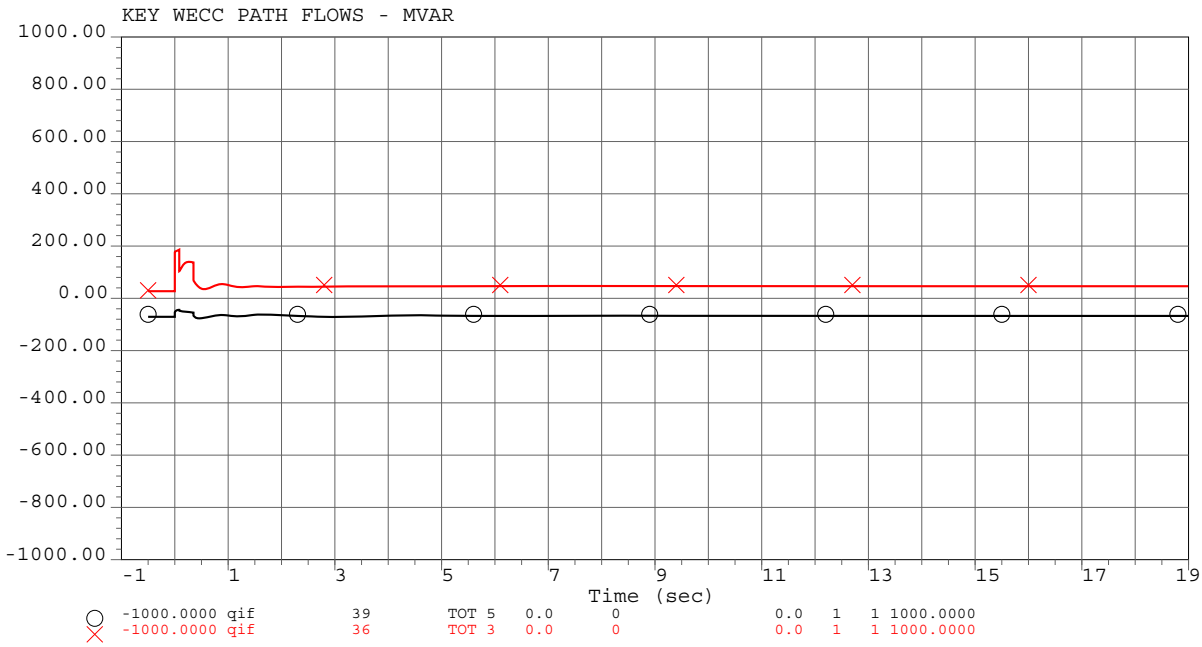


SC2_Sum_PstDet_v0_08_NYuma!-SprCan_230_SLG_C.chf

.

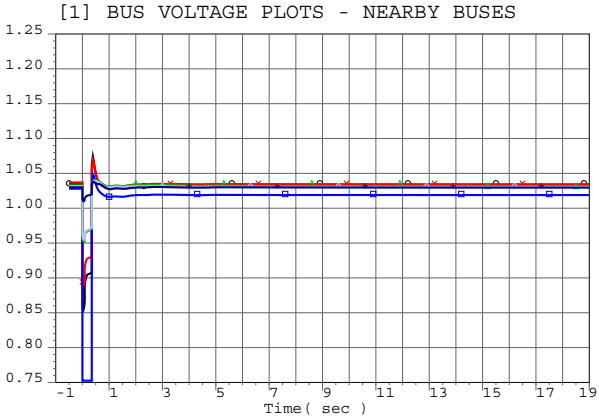
Tue Nov 26 12:35:36 2013


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

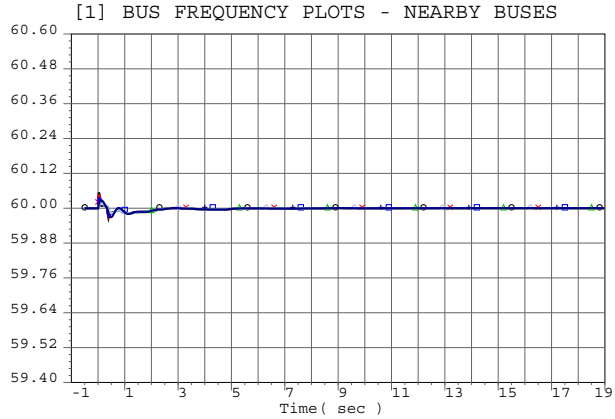
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



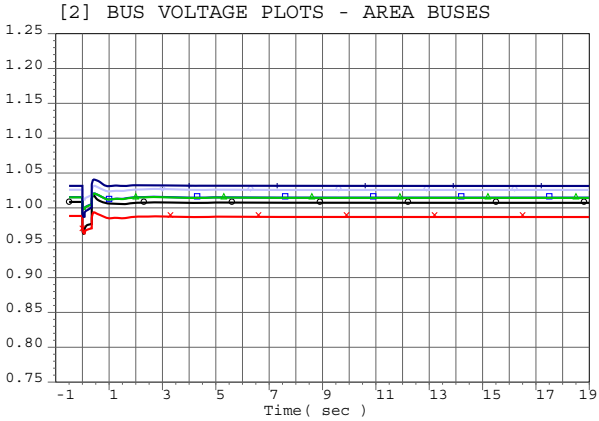

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



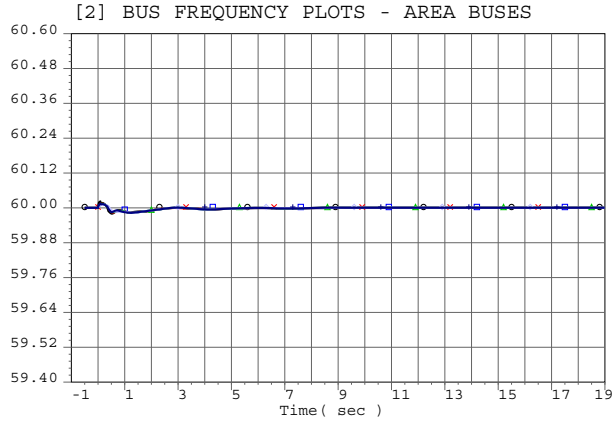

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



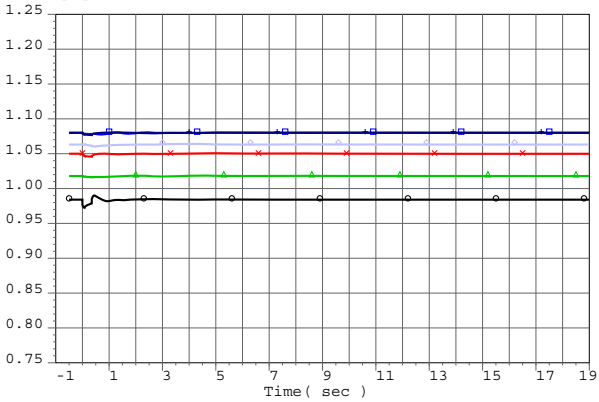

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



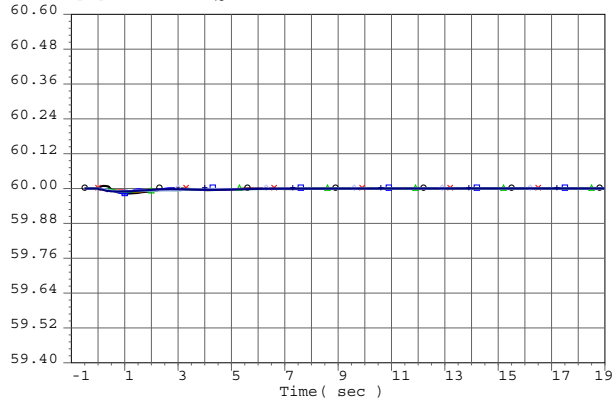

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 14021 | BALNORTH 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 14021 | BALNORTH 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013 HS2-OP BASE CASE
NOVEMBER 30, 2012



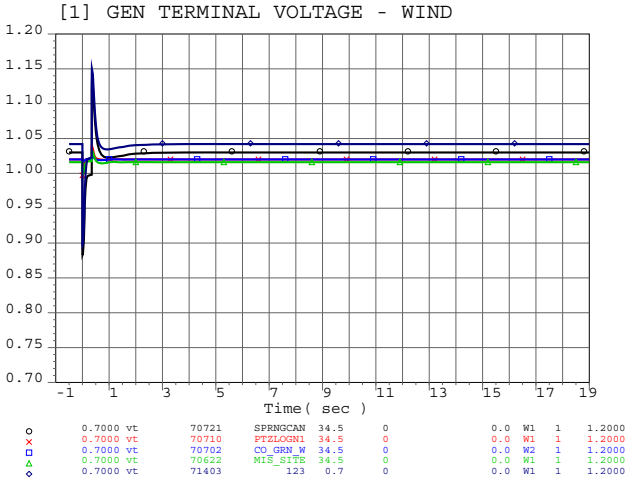
SC2_Sum_PstDet_v0_08a_NYuma230!-115Xfmr_SLG_C.chf

.

Tue Nov 26 12:35:44 2013

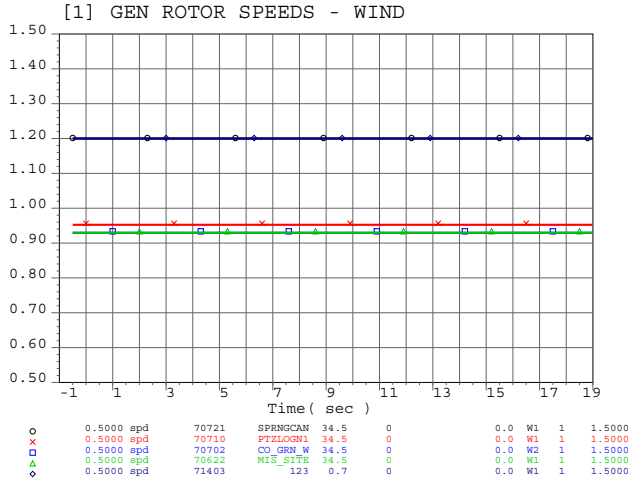
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



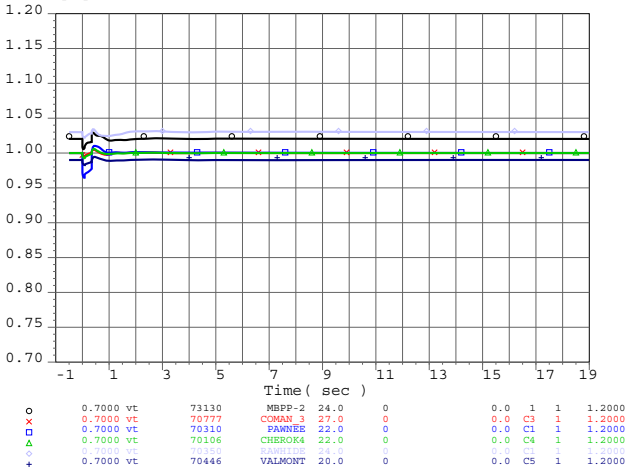

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 | vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| × | 0.7000 | vt | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| □ | 0.7000 | vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| △ | 0.7000 | vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| ◇ | 0.7000 | vt | 71403 | 123 | 0.7 | 0 | 0.0 | W1 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



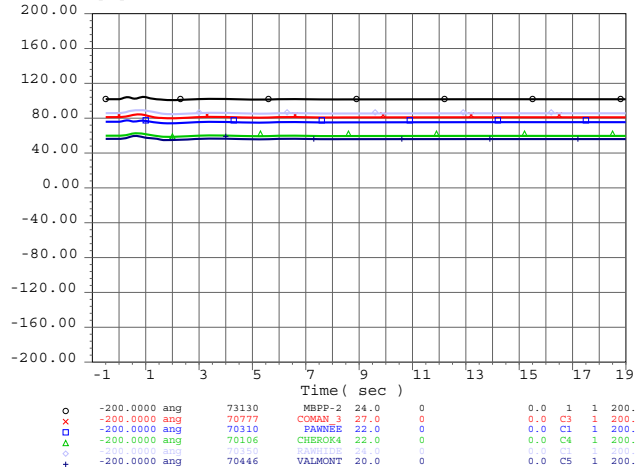

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.5000 | spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| × | 0.5000 | spd | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| □ | 0.5000 | spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| △ | 0.5000 | spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| ◇ | 0.5000 | spd | 71403 | 123 | 0.7 | 0 | 0.0 | W1 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



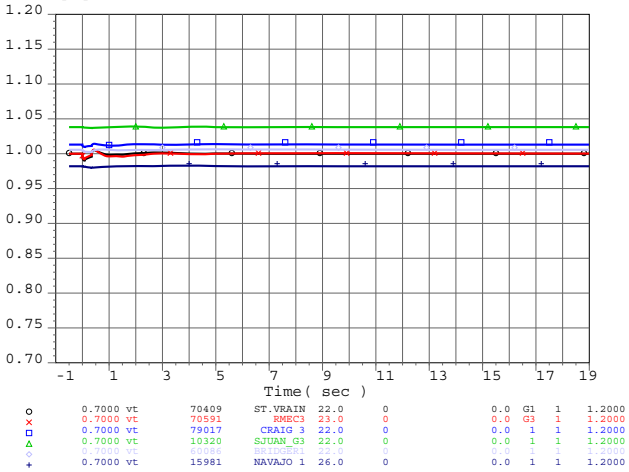

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 | vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| × | 0.7000 | vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| □ | 0.7000 | vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| △ | 0.7000 | vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| ◇ | 0.7000 | vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| + | 0.7000 | vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



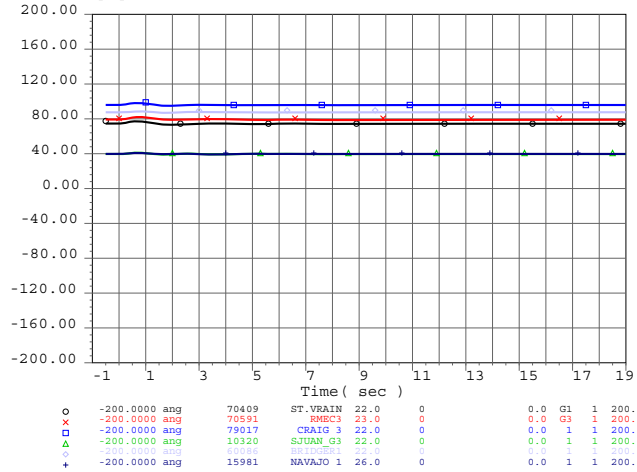

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 | ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| × | -200.0000 | ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| □ | -200.0000 | ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| △ | -200.0000 | ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| ◇ | -200.0000 | ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| + | -200.0000 | ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER




| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 | vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| × | 0.7000 | vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| □ | 0.7000 | vt | 79017 | CRAIG_3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| △ | 0.7000 | vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| ◇ | 0.7000 | vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| + | 0.7000 | vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER




| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 | ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| × | -200.0000 | ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| □ | -200.0000 | ang | 79017 | CRAIG_3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| △ | -200.0000 | ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| ◇ | -200.0000 | ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| + | -200.0000 | ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013 HS2-OP BASE CASE
NOVEMBER 30, 2012



SC2_Sum_PstDet_v0_08a_NYuma230!-115Xfmr_SLG_C.chf

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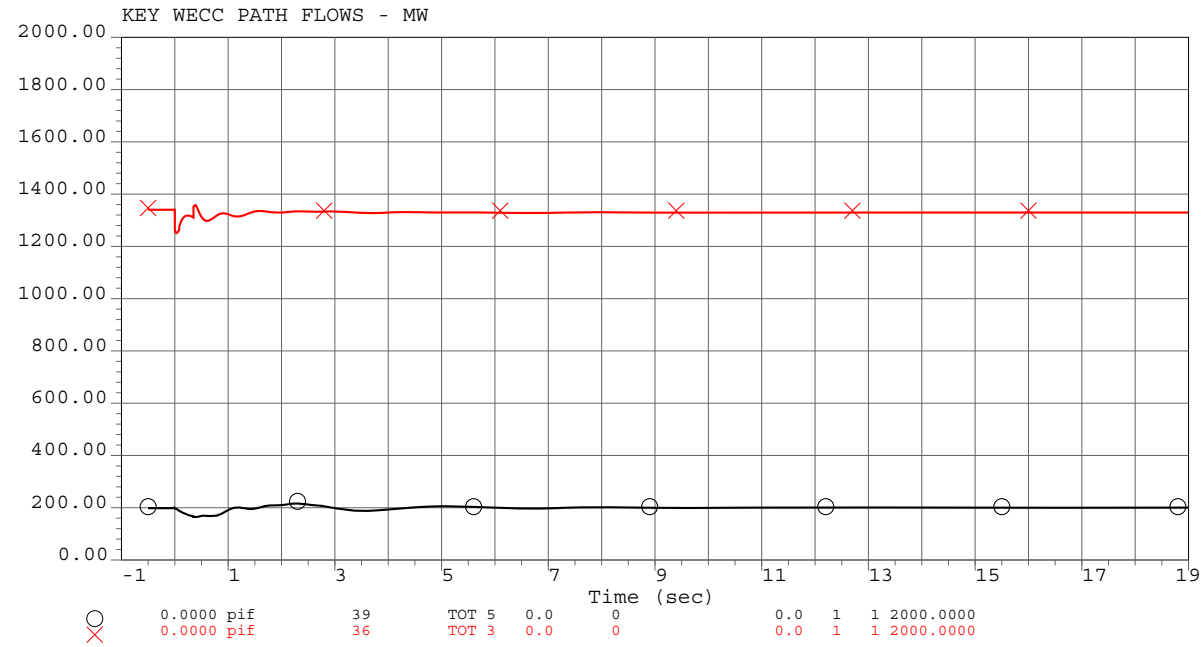
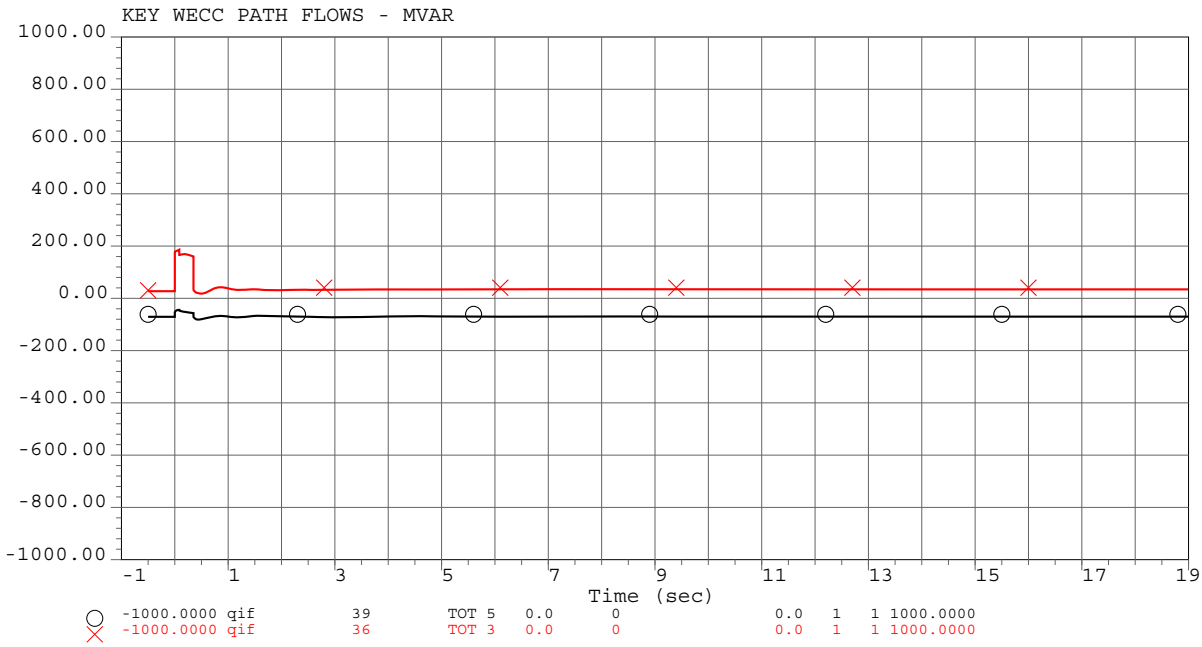
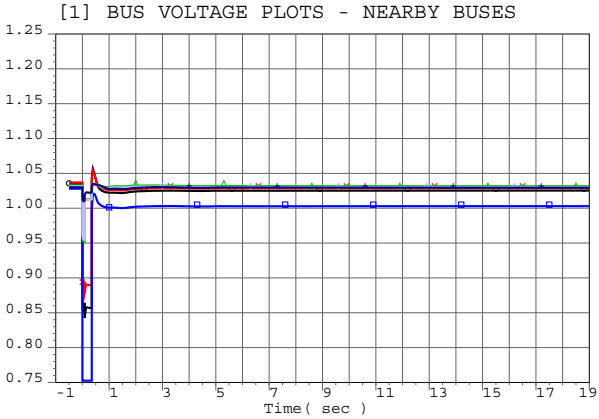
Tue Nov 26 12:35:44 2013


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

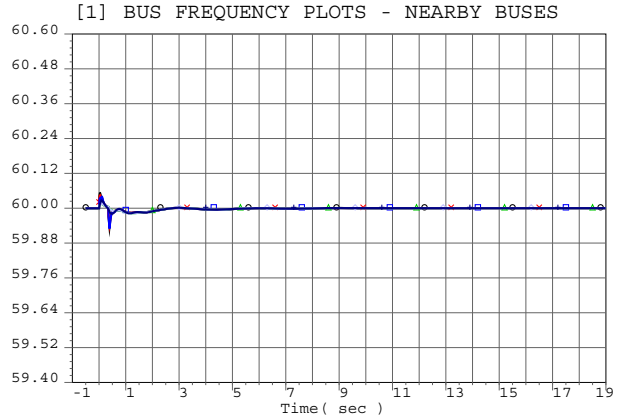
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



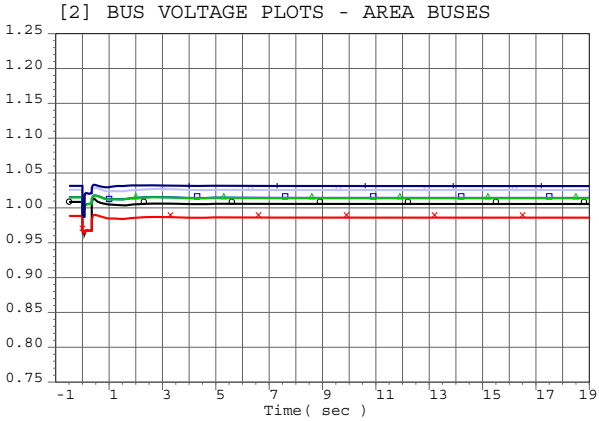

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



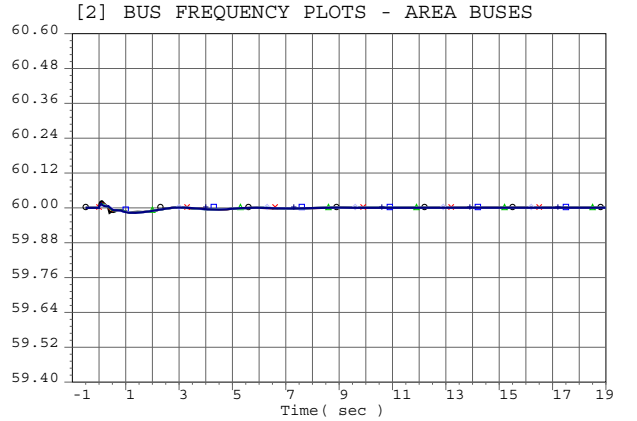

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



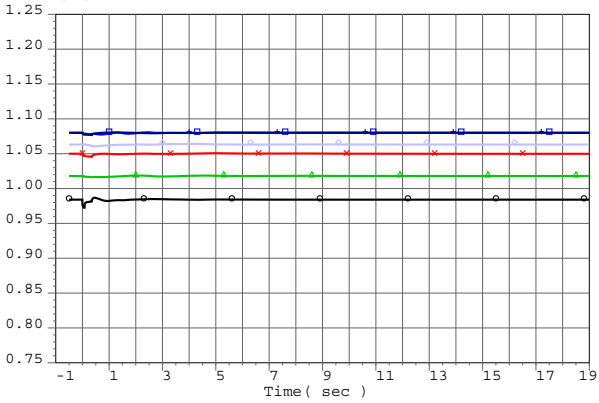

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



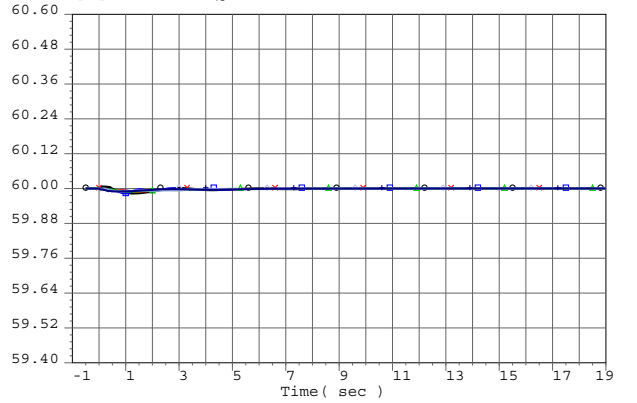

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 14021 | BALNORTH 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 14021 | BALNORTH 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013 HS2-OP BASE CASE
NOVEMBER 30, 2012



SC2_Sum_PstDet_v0_09_NYuma!-Story_230_SLG_C.chf

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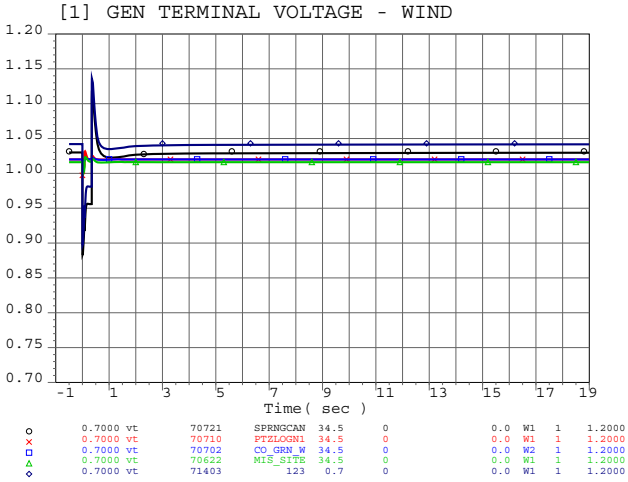
Tue Nov 26 12:35:52 2013

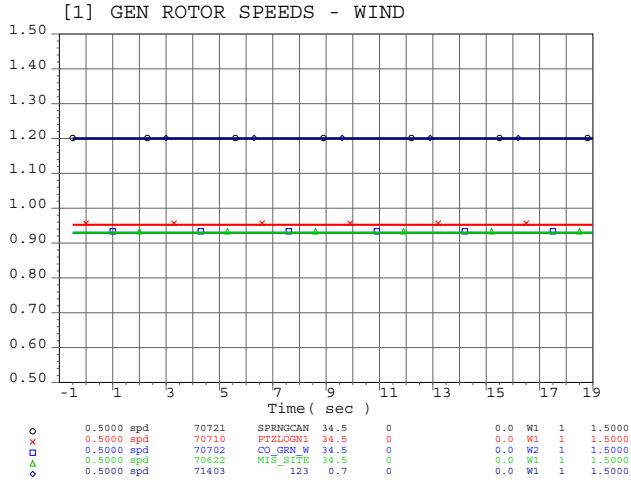
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



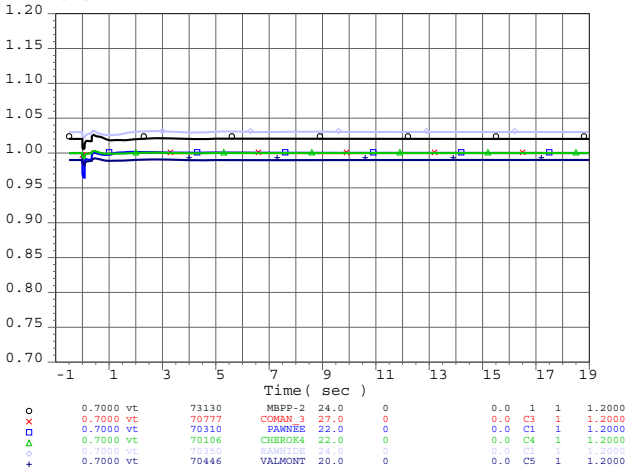

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 | vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| × | 0.7000 | vt | 70710 | PTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| □ | 0.7000 | vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| △ | 0.7000 | vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| ◇ | 0.7000 | vt | 71403 | 123 | 0.7 | 0 | 0.0 | W1 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



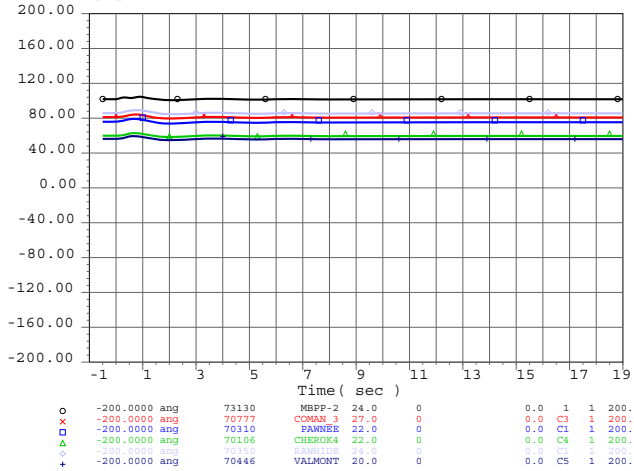

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.5000 | spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| × | 0.5000 | spd | 70710 | PTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| □ | 0.5000 | spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| △ | 0.5000 | spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| ◇ | 0.5000 | spd | 71403 | 123 | 0.7 | 0 | 0.0 | W1 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



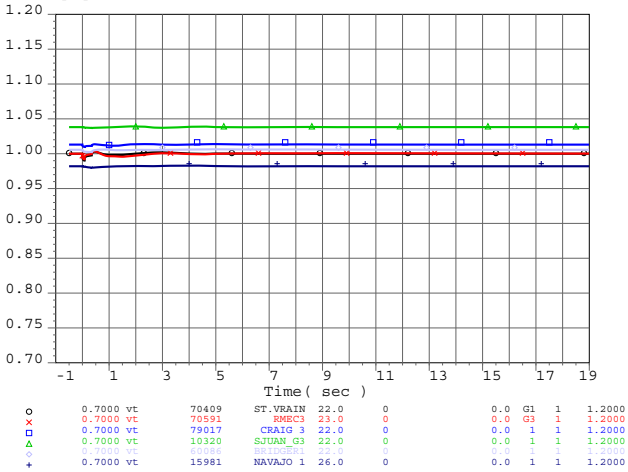

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 | vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| × | 0.7000 | vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| □ | 0.7000 | vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| △ | 0.7000 | vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| ◇ | 0.7000 | vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| + | 0.7000 | vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



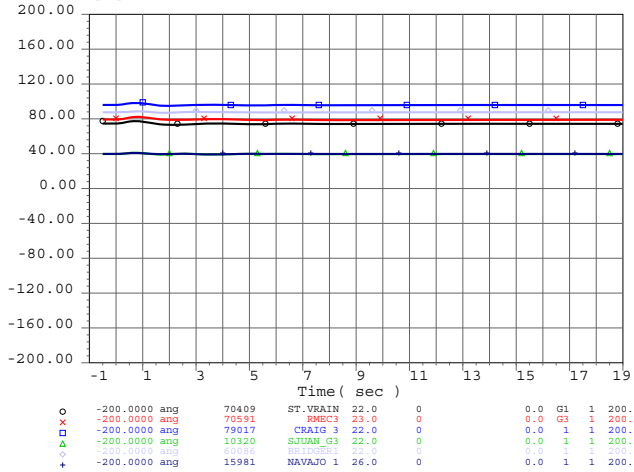

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 | ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| × | -200.0000 | ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| □ | -200.0000 | ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| △ | -200.0000 | ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| ◇ | -200.0000 | ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| + | -200.0000 | ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER




| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 | vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| × | 0.7000 | vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| □ | 0.7000 | vt | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| △ | 0.7000 | vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| ◇ | 0.7000 | vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| + | 0.7000 | vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER




| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 | ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| × | -200.0000 | ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| □ | -200.0000 | ang | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| △ | -200.0000 | ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| ◇ | -200.0000 | ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| + | -200.0000 | ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |

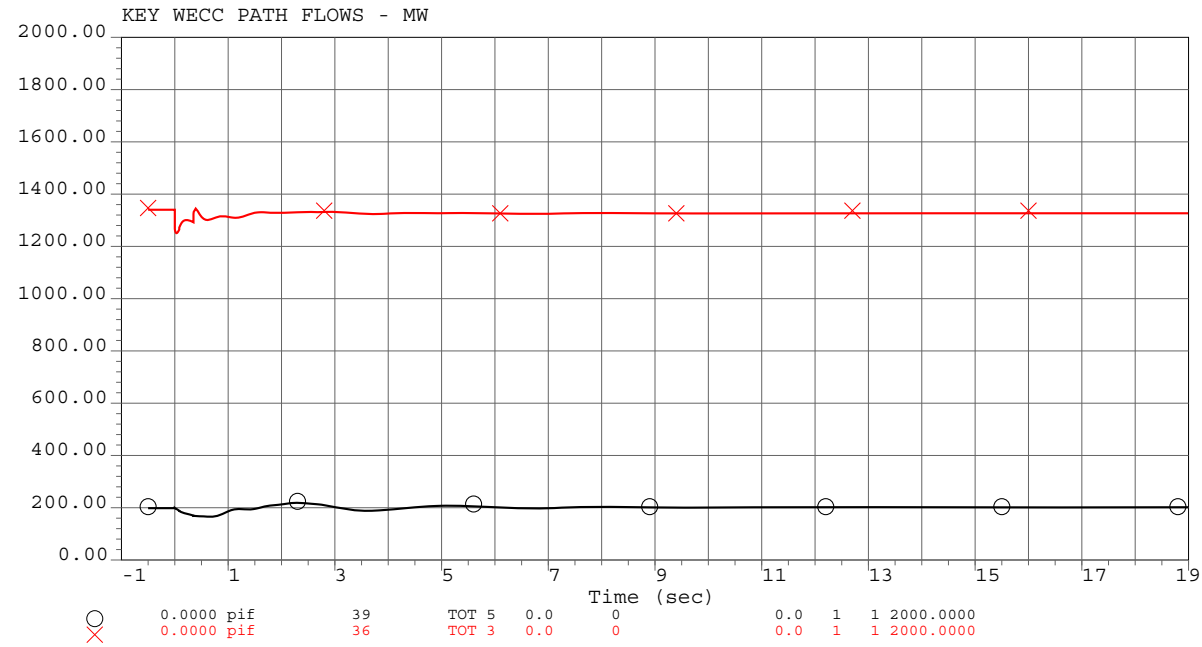
WESTERN ELECTRICITY COORDINATING COUNCIL
2013 HS2-OP BASE CASE
NOVEMBER 30, 2012

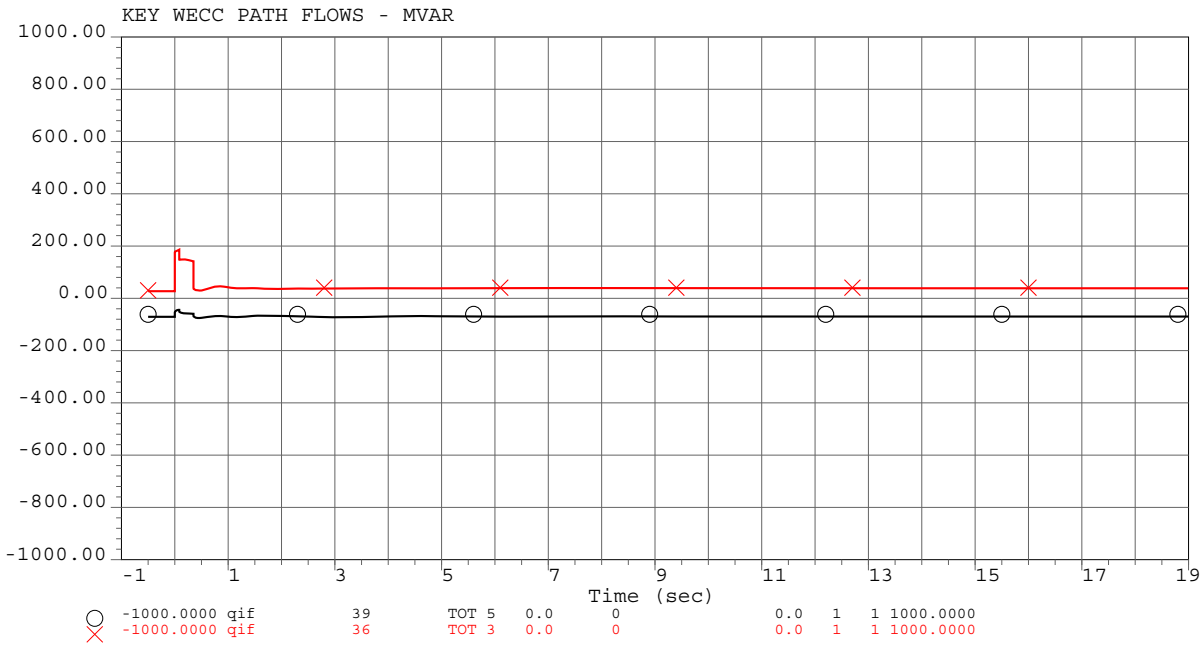


SC2_Sum_PstDet_v0_09_NYuma!-Story_230_SLG_C.chf

.

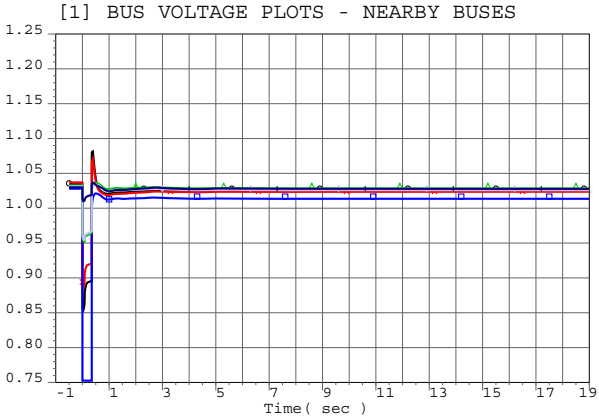
Tue Nov 26 12:35:52 2013


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

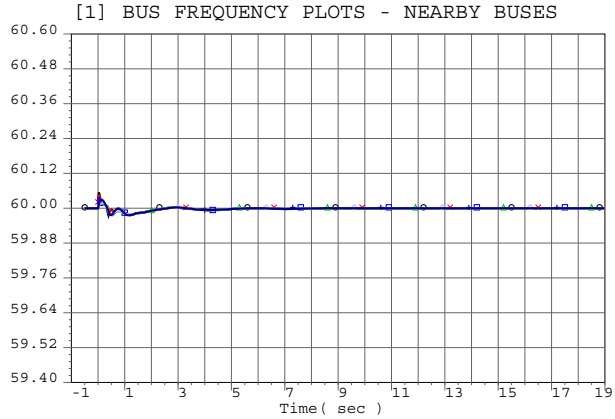
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



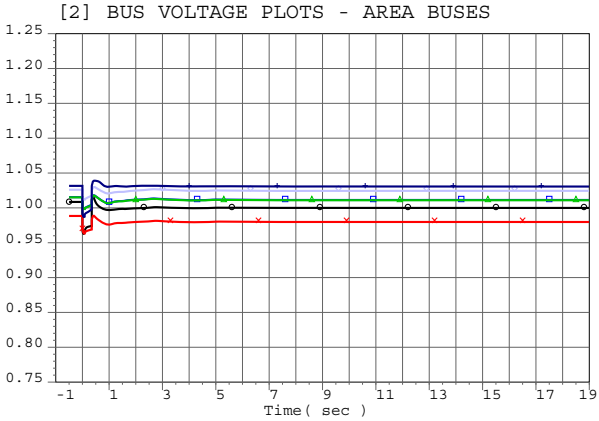

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



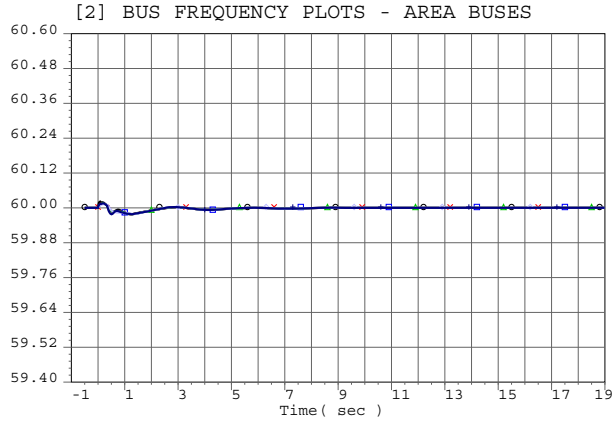

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



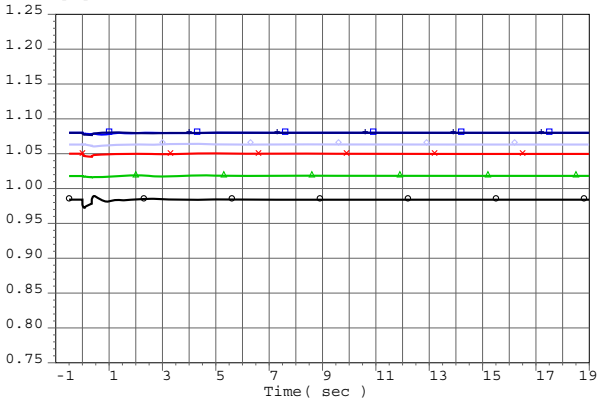

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



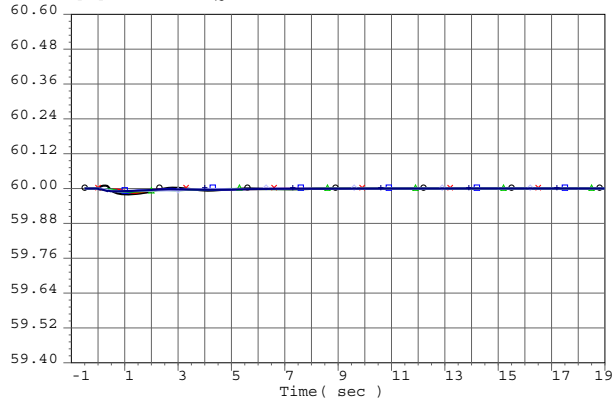

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 14021 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 14021 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013 HS2-OP BASE CASE
NOVEMBER 30, 2012



SC2_Sum_PstDet_v0_10_NYuma!-Wray_230_SLG_C.chf

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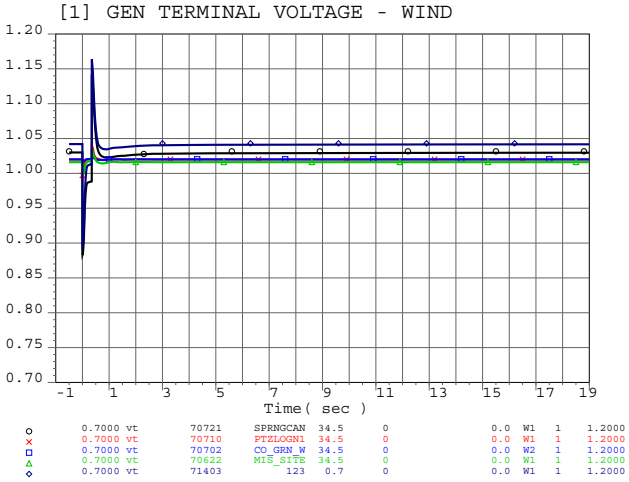
Tue Nov 26 12:37:57 2013

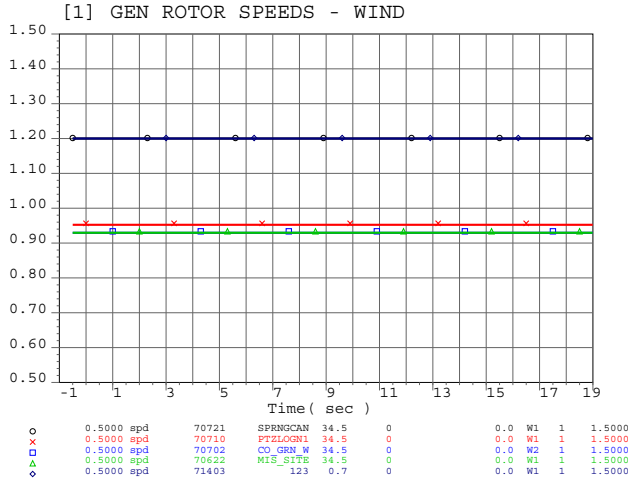
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



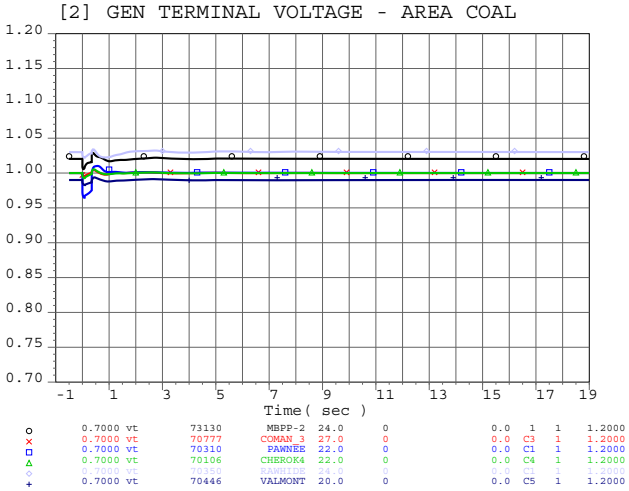

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| × | 0.7000 vt | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| □ | 0.7000 vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| △ | 0.7000 vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 71403 | 123 | 0.7 | 0 | 0.0 | W1 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



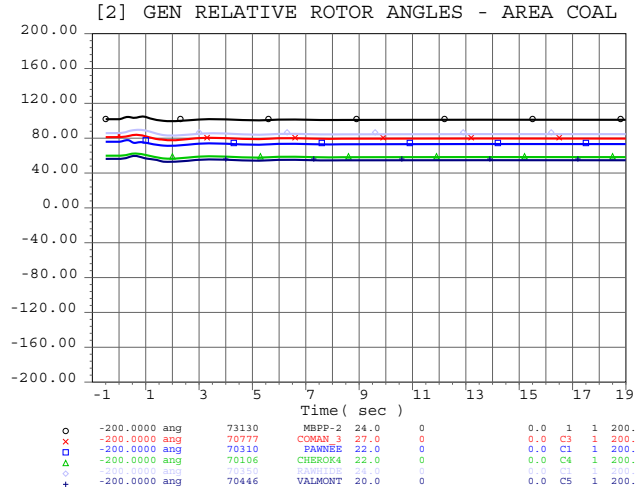

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.5000 spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| × | 0.5000 spd | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| □ | 0.5000 spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| △ | 0.5000 spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| ◇ | 0.5000 spd | 71403 | 123 | 0.7 | 0 | 0.0 | W1 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



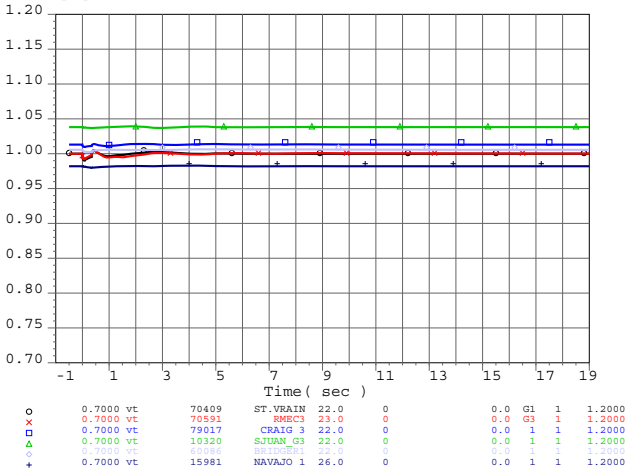

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| × | 0.7000 vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| □ | 0.7000 vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| △ | 0.7000 vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| + | 0.7000 vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



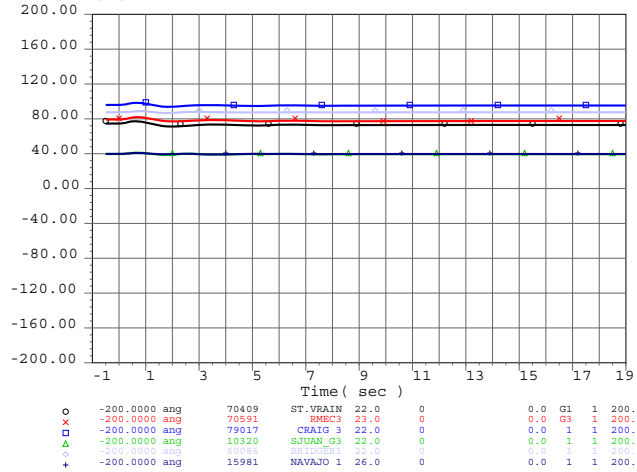

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| × | -200.0000 ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| □ | -200.0000 ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| △ | -200.0000 ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| + | -200.0000 ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| × | 0.7000 vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| □ | 0.7000 vt | 79017 | CRAIG_3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| △ | 0.7000 vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 60186 | NUCLEAR4 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| + | 0.7000 vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| × | -200.0000 ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| □ | -200.0000 ang | 79017 | CRAIG_3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| △ | -200.0000 ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 60186 | NUCLEAR4 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| + | -200.0000 ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013 HS2-OP BASE CASE
NOVEMBER 30, 2012



SC2_Sum_PstDet_v0_10_NYuma!-Wray_230_SLG_C.chf

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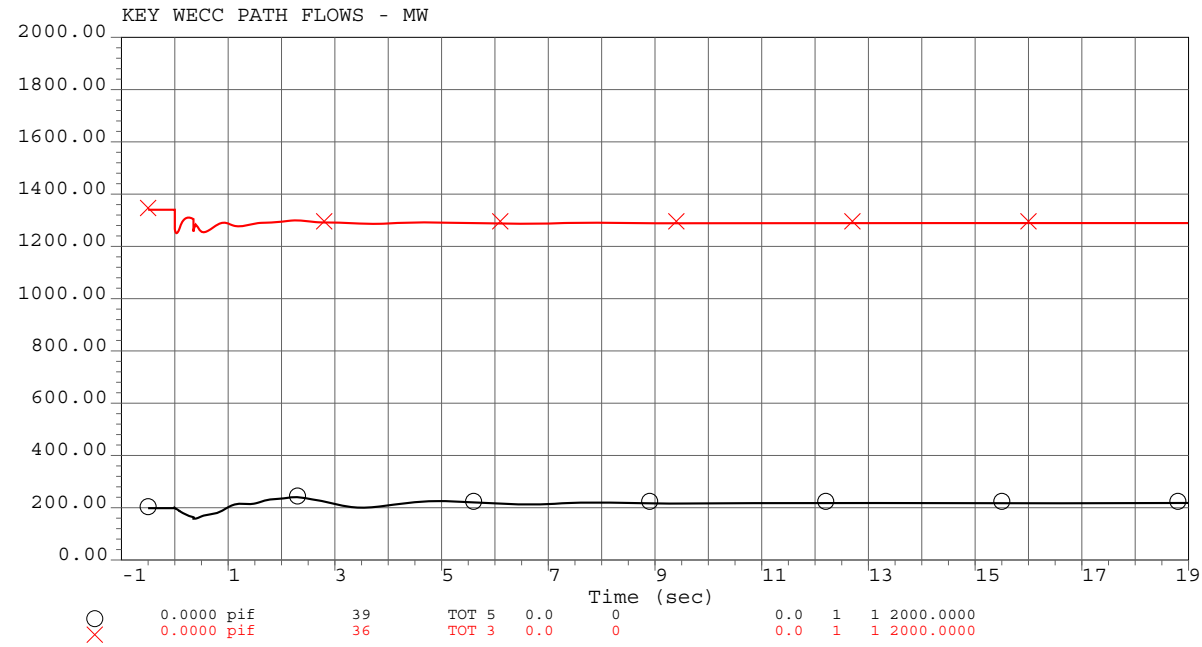
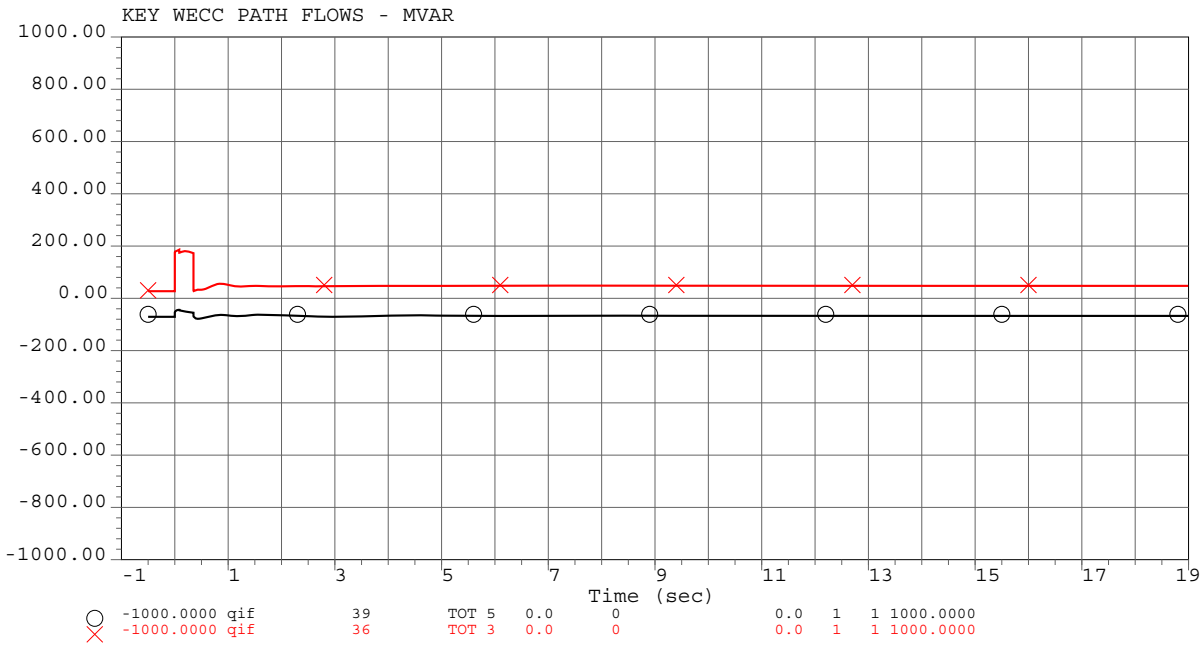
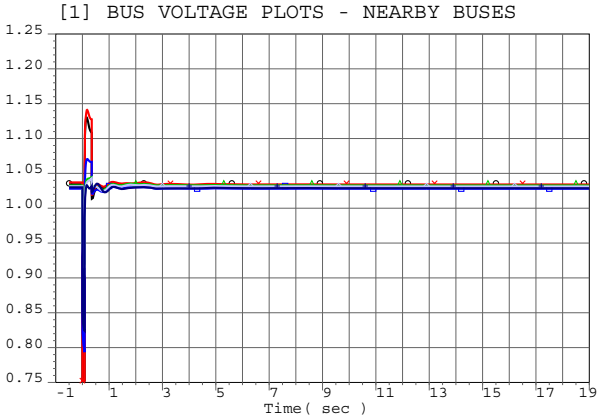
Tue Nov 26 12:37:57 2013


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

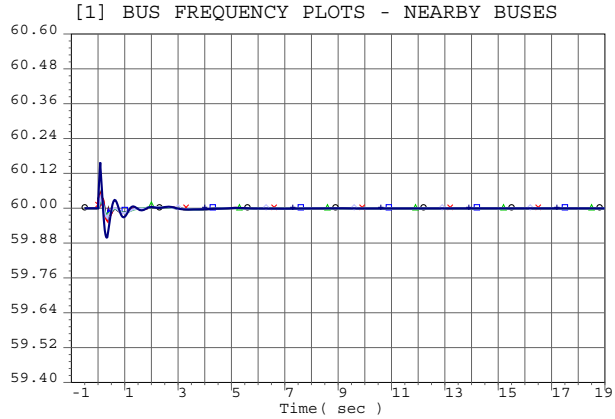
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



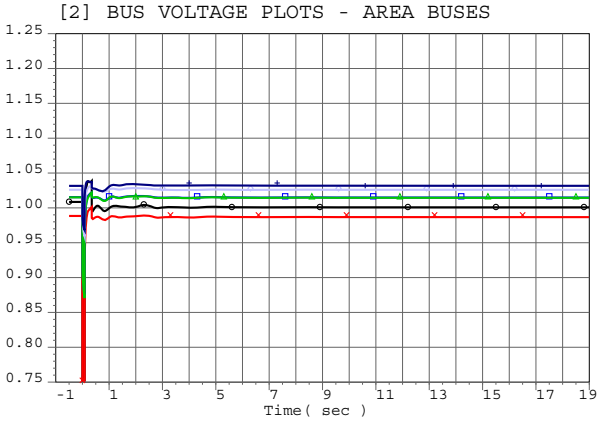

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



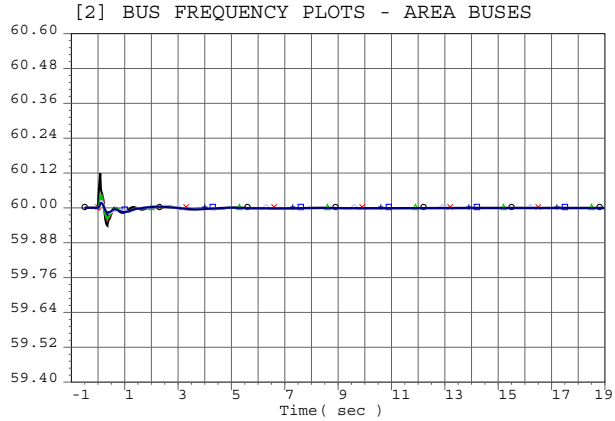

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



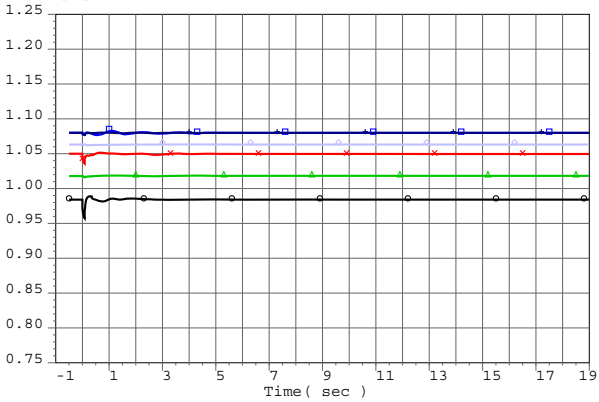

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



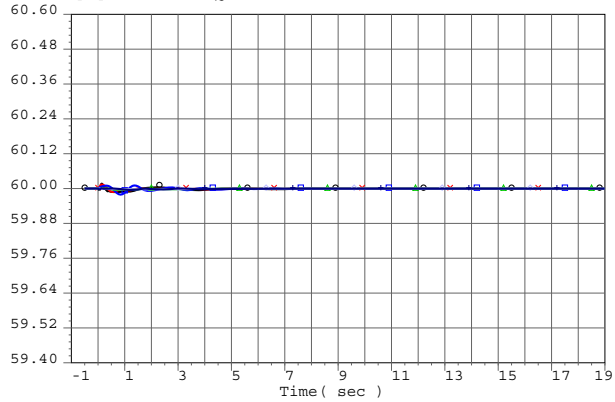

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 14021 | BALNORTH 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 14021 | BALNORTH 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013 HS2-OP BASE CASE
NOVEMBER 30, 2012



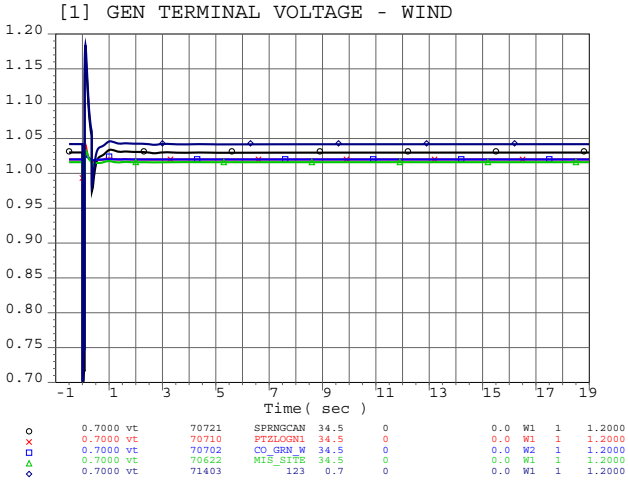
SC2_Sum_PstDet_v0_11_Stegall!-DJnstn_230_3ph_B.chf

.

Tue Nov 26 12:38:05 2013

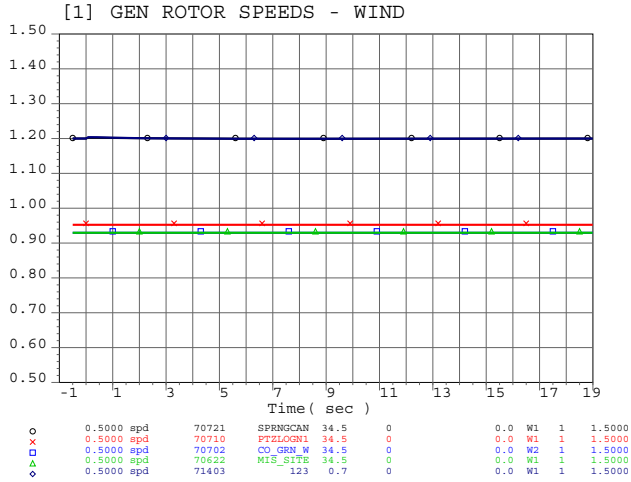
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



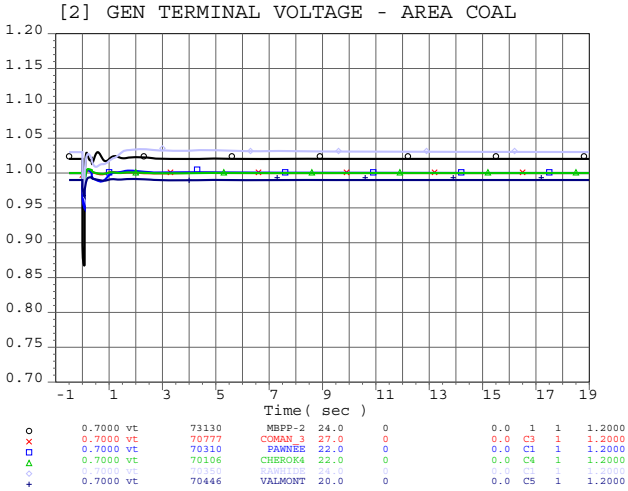

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| × | 0.7000 vt | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| □ | 0.7000 vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| △ | 0.7000 vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 71403 | 123 | 0.7 | 0 | 0.0 | W1 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



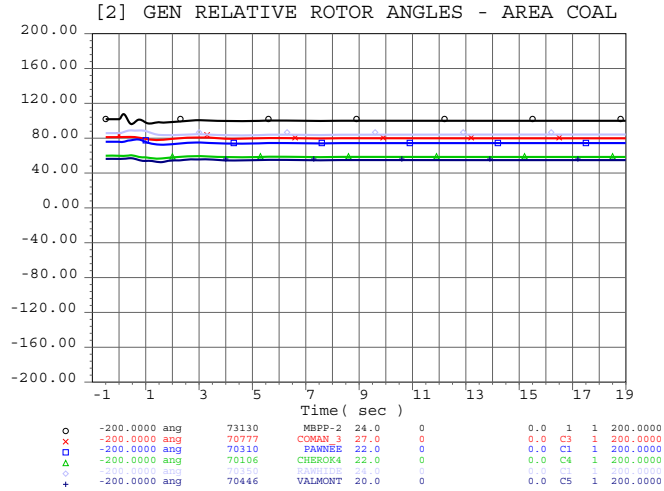

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.5000 spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| × | 0.5000 spd | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| □ | 0.5000 spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| △ | 0.5000 spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| ◇ | 0.5000 spd | 71403 | 123 | 0.7 | 0 | 0.0 | W1 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



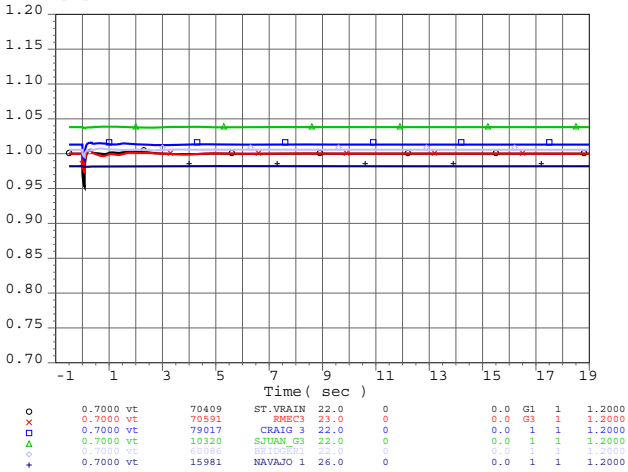

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| × | 0.7000 vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| □ | 0.7000 vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| △ | 0.7000 vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| + | 0.7000 vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



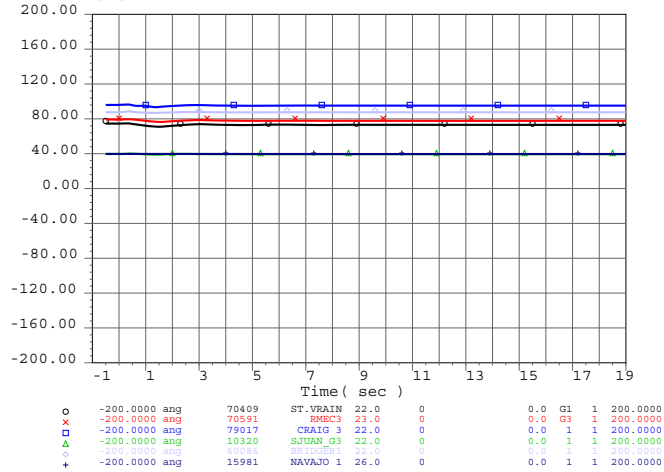

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| × | -200.0000 ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| □ | -200.0000 ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| △ | -200.0000 ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| + | -200.0000 ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| × | 0.7000 vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| □ | 0.7000 vt | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| △ | 0.7000 vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 60186 | NUCLEA4 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| + | 0.7000 vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| × | -200.0000 ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| □ | -200.0000 ang | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| △ | -200.0000 ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 60186 | NUCLEA4 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| + | -200.0000 ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |

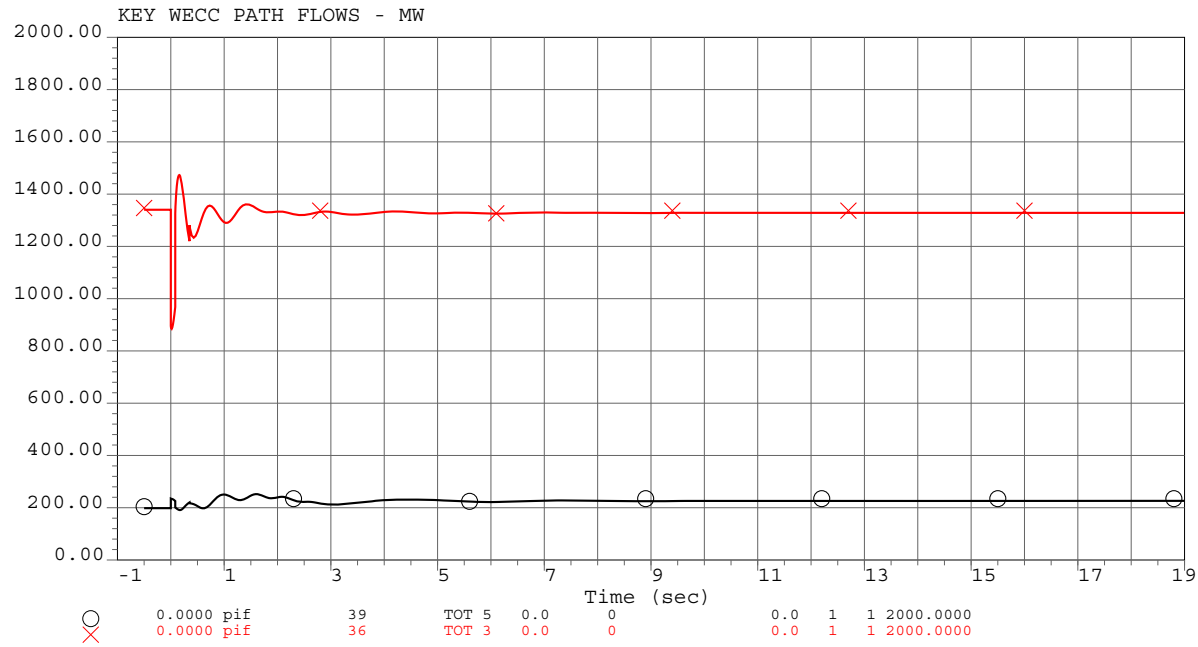
WESTERN ELECTRICITY COORDINATING COUNCIL
2013 HS2-OP BASE CASE
NOVEMBER 30, 2012

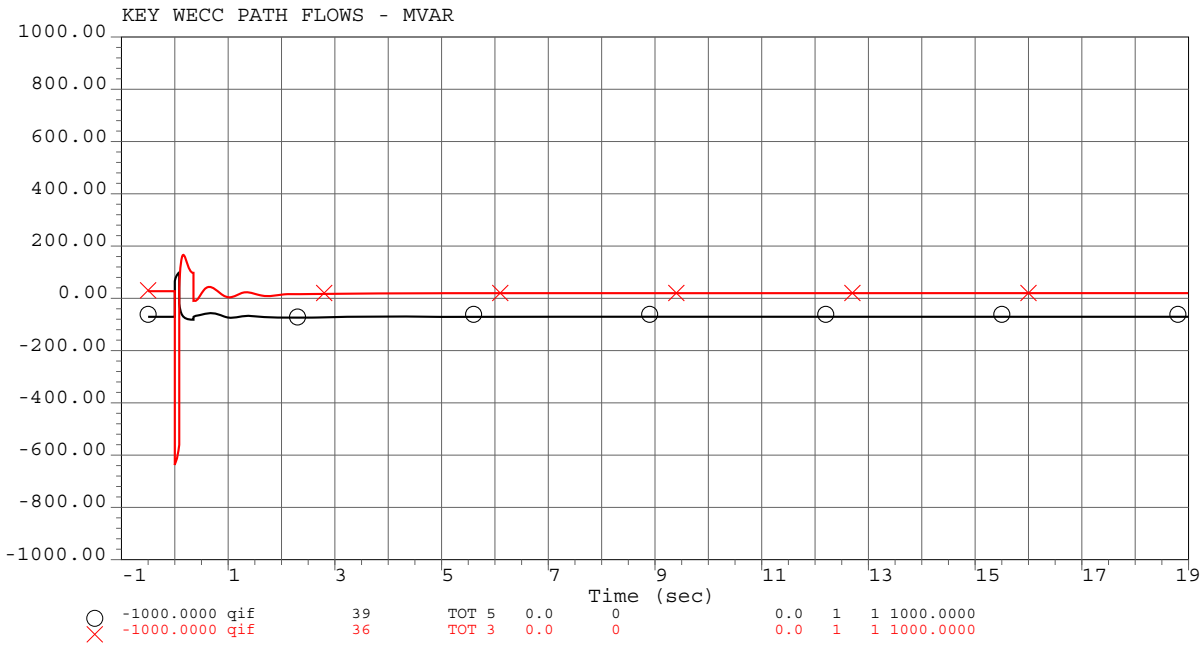


SC2_Sum_PstDet_v0_11_Stegall!-DJnstn_230_3ph_B.chf

.

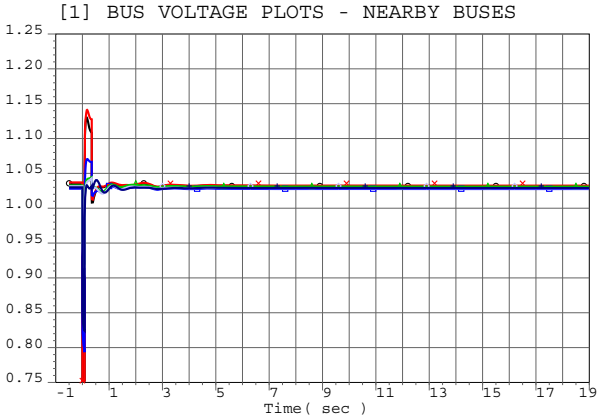
Tue Nov 26 12:38:05 2013


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

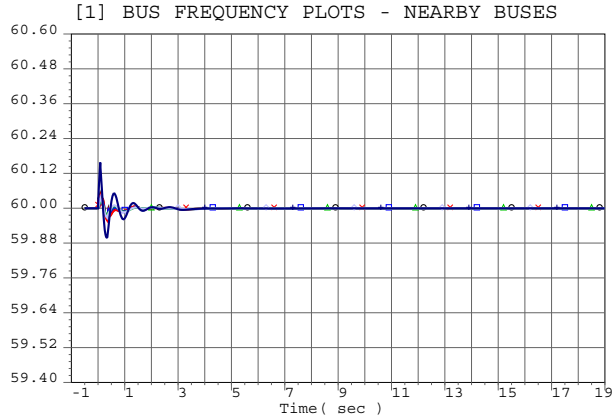
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



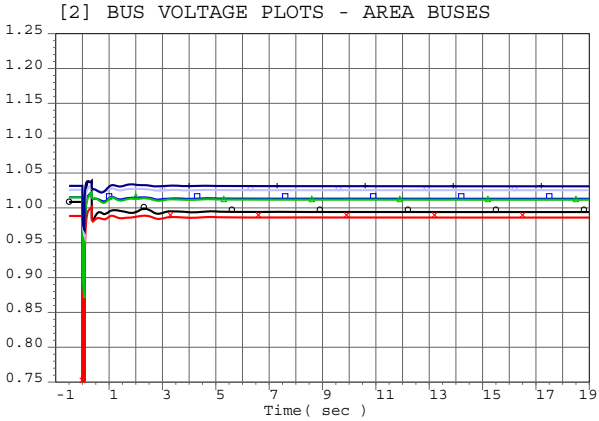

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



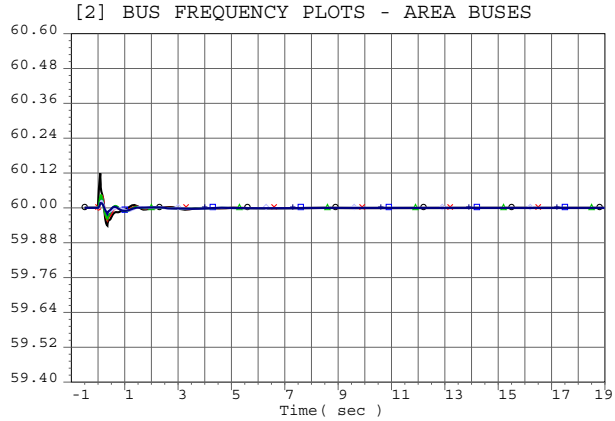

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



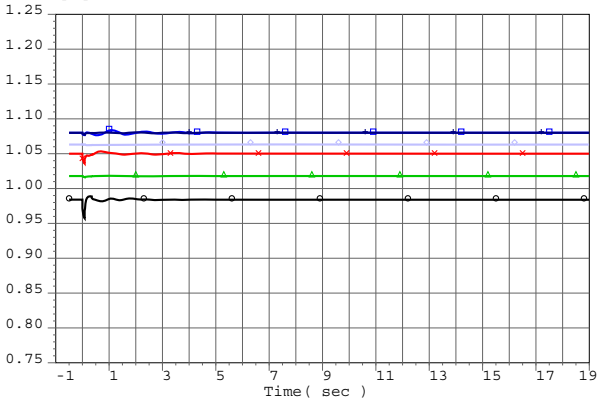

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



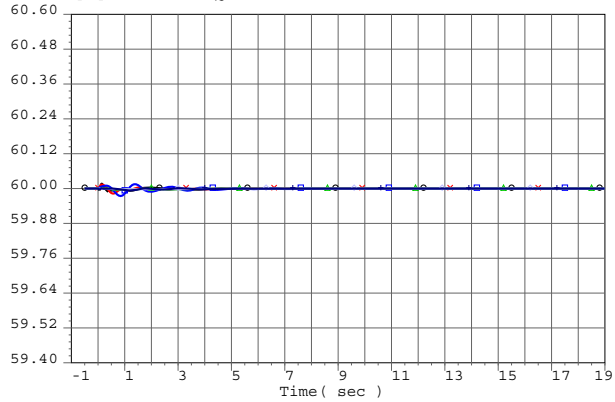

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 14021 | BALDWIN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 14021 | BALDWIN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013 HS2-OP BASE CASE
NOVEMBER 30, 2012



SC2_Sum_PstDet_v0_12_Stegall!-LRS_230_3ph_B.chf

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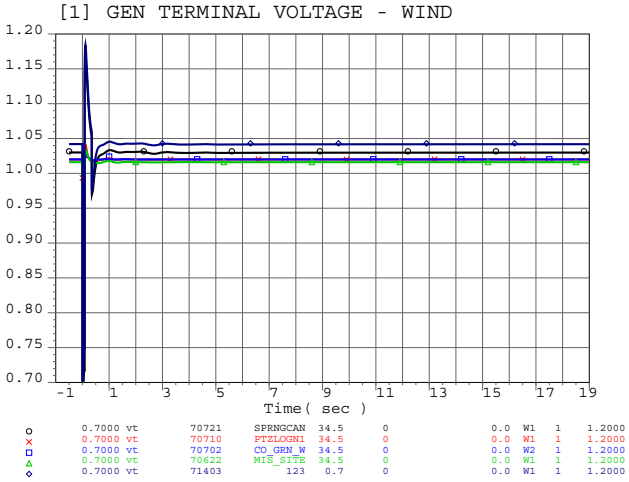
Tue Nov 26 12:38:14 2013

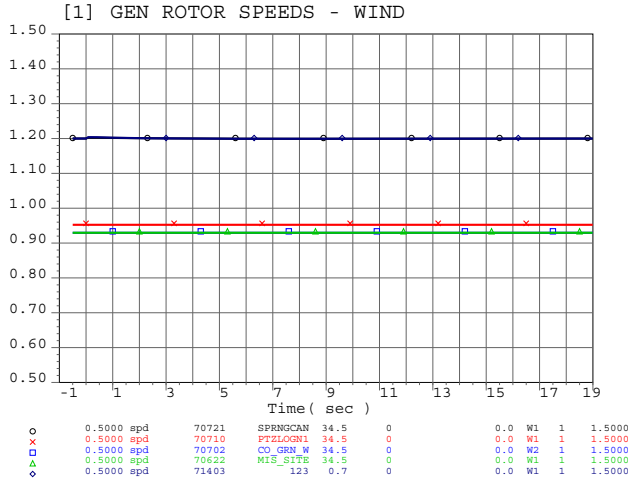
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

## [1] GEN TERMINAL VOLTAGE - WIND



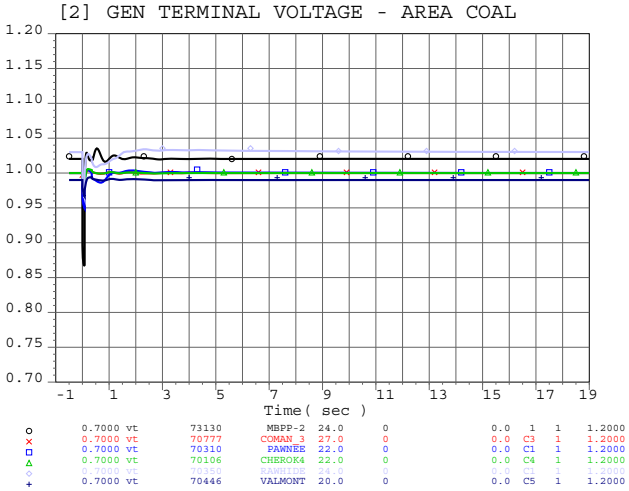

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 0.7000 vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| 0.7000 vt | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| 0.7000 vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| 0.7000 vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| 0.7000 vt | 71403 | 123 | 0.7 | 0 | 0.0 | W1 | 1 | 1.2000 |

## [1] GEN ROTOR SPEEDS - WIND



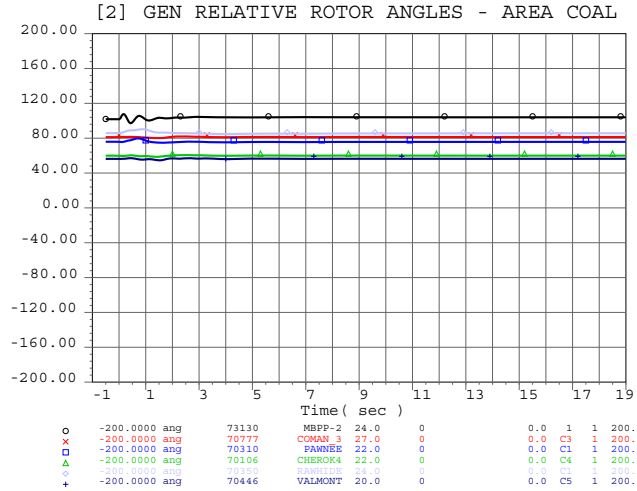

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 0.5000 spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| 0.5000 spd | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| 0.5000 spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| 0.5000 spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| 0.5000 spd | 71403 | 123 | 0.7 | 0 | 0.0 | W1 | 1 | 1.5000 |

## [2] GEN TERMINAL VOLTAGE - AREA COAL



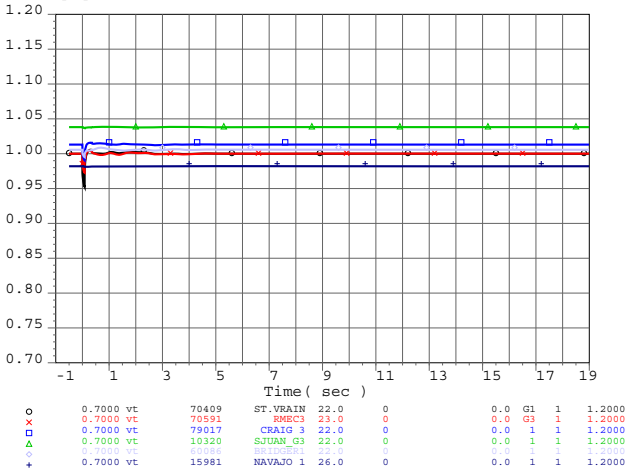

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 0.7000 vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| 0.7000 vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| 0.7000 vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| 0.7000 vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| 0.7000 vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| 0.7000 vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

## [2] GEN RELATIVE ROTOR ANGLES - AREA COAL



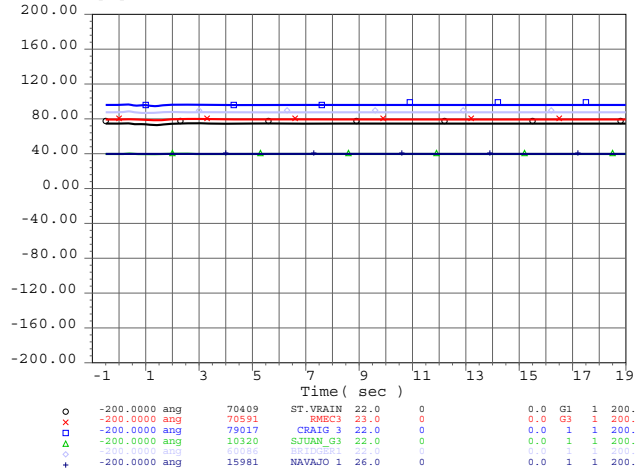

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| -200.0000 ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| -200.0000 ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| -200.0000 ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| -200.0000 ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| -200.0000 ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| -200.0000 ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

## [3] GEN TERMINAL VOLTAGE - OTHER




| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 0.7000 vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| 0.7000 vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| 0.7000 vt | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| 0.7000 vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| 0.7000 vt | 60186 | NUCLEAR4 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| 0.7000 vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

## [3] GEN RELATIVE ROTOR ANGLES - OTHER




| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| -200.0000 ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| -200.0000 ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| -200.0000 ang | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| -200.0000 ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| -200.0000 ang | 60186 | NUCLEAR4 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| -200.0000 ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |

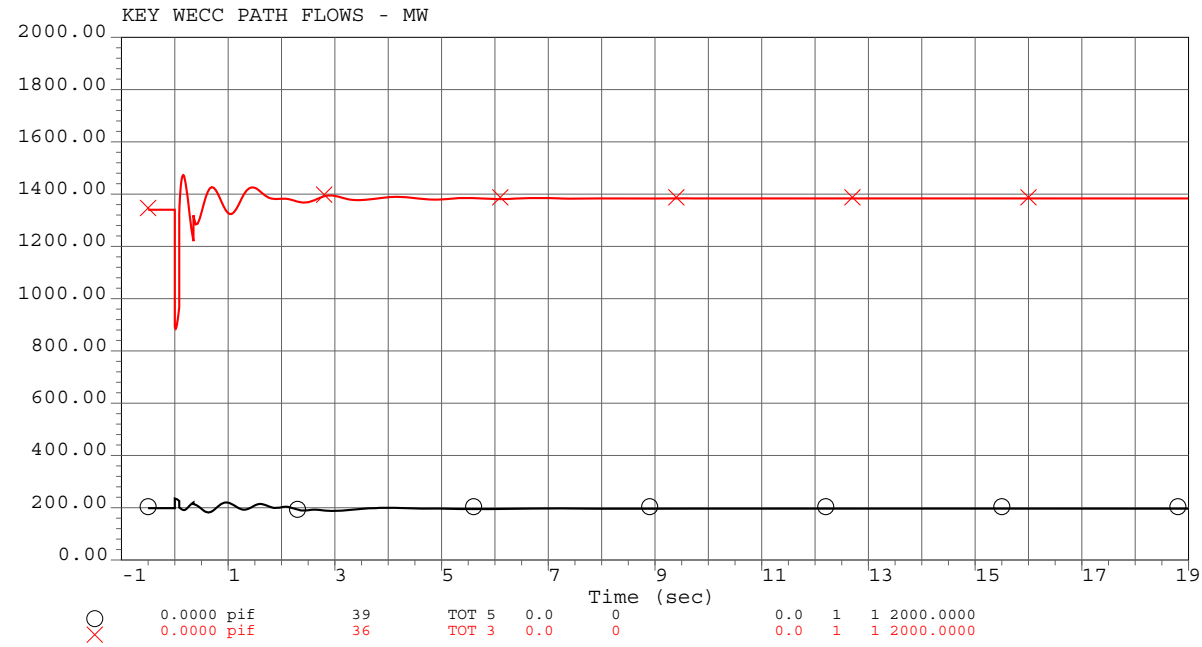
WESTERN ELECTRICITY COORDINATING COUNCIL
2013 HS2-OP BASE CASE
NOVEMBER 30, 2012

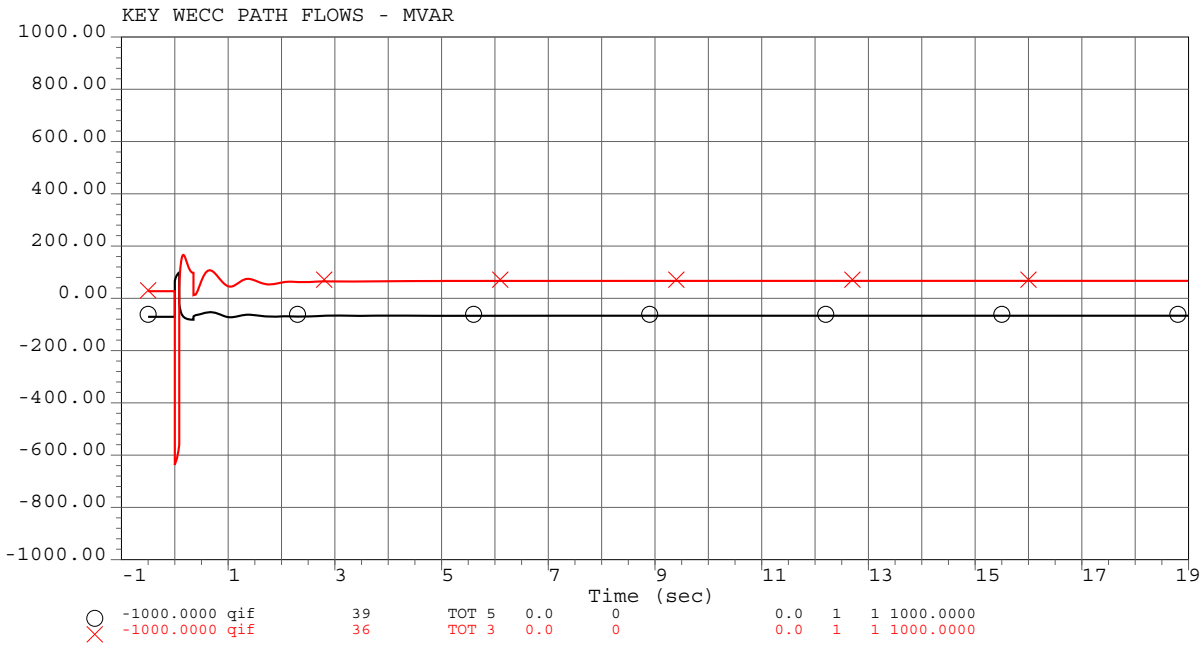


SC2_Sum_PstDet_v0_12_Stegall!-LRS_230_3ph_B.chf

.

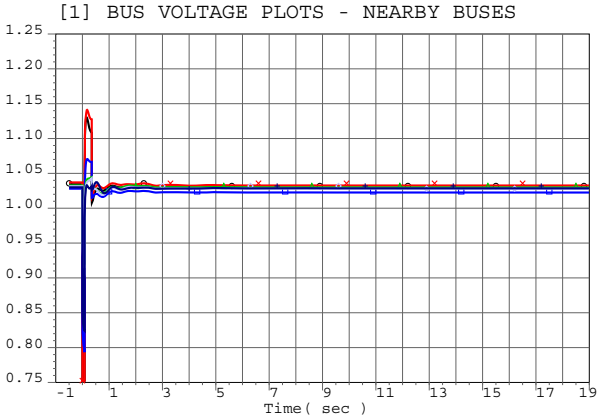
Tue Nov 26 12:38:14 2013


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

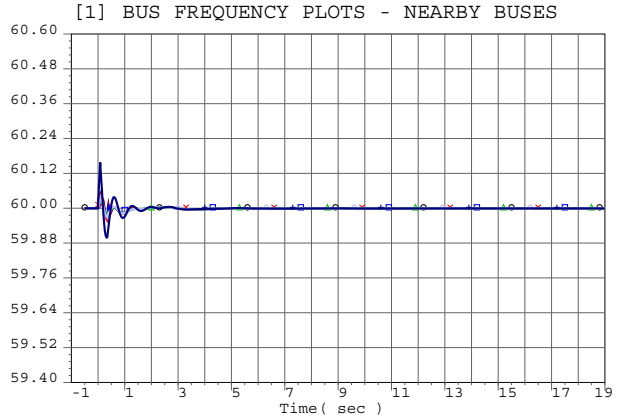
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



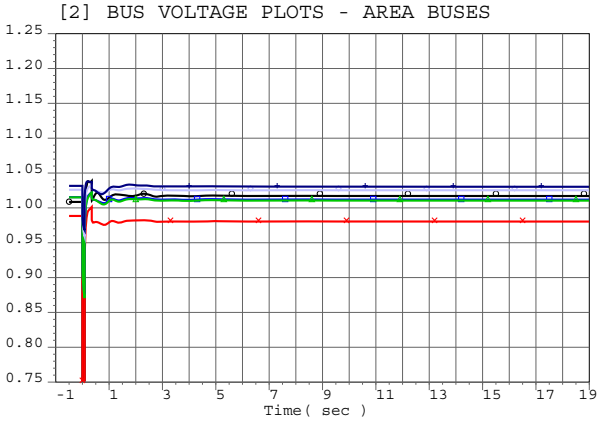

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



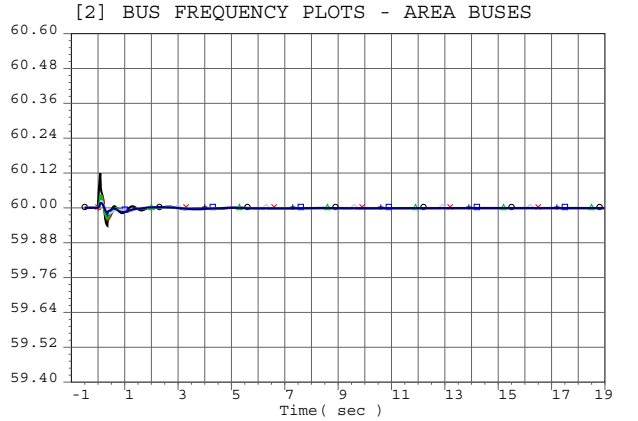

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



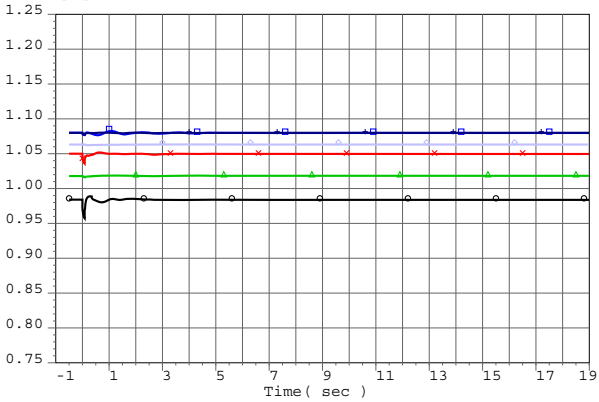

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



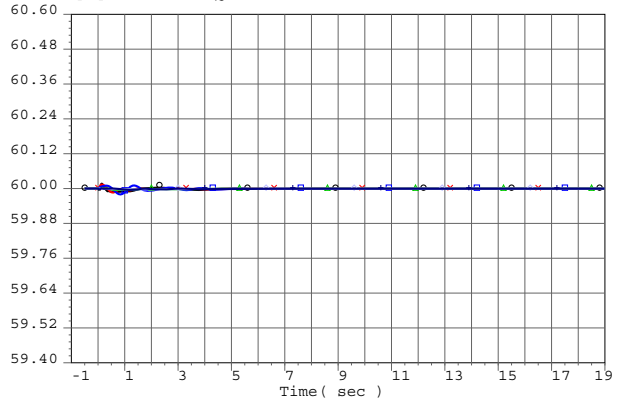

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 14021 | BALNORTH 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 14021 | BALNORTH 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013 HS2-OP BASE CASE
NOVEMBER 30, 2012



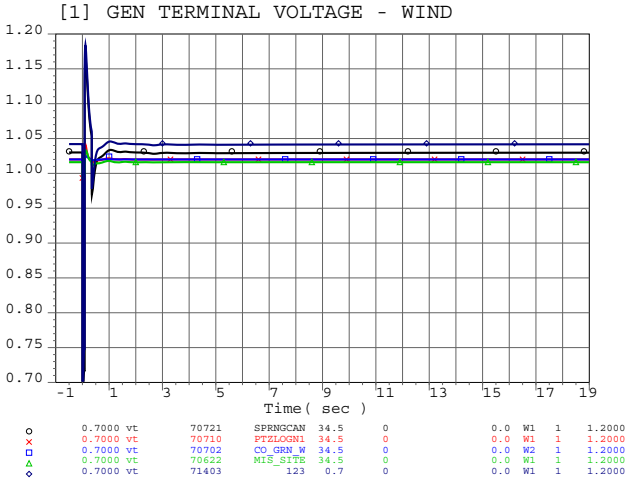
SC2_Sum_PstDet_v0_13_Stegall!-Archer_230_3ph_B.chf

.

Tue Nov 26 12:38:22 2013

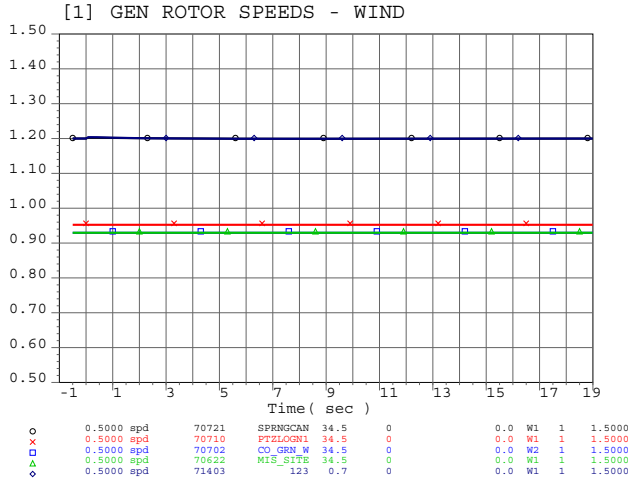
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



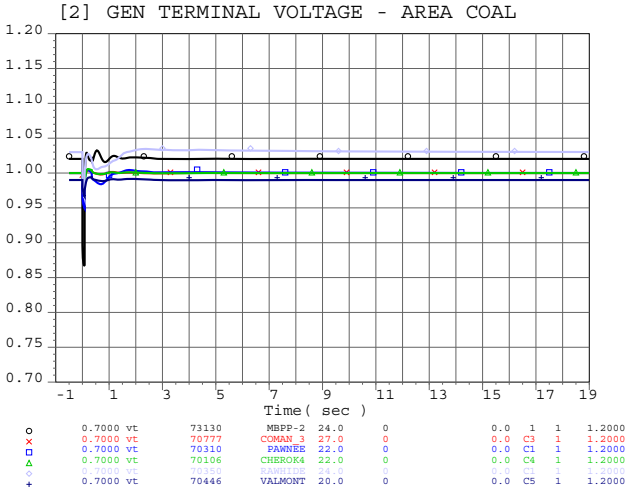

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| × | 0.7000 vt | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| □ | 0.7000 vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| △ | 0.7000 vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 71403 | 123 | 0.7 | 0 | 0.0 | W1 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



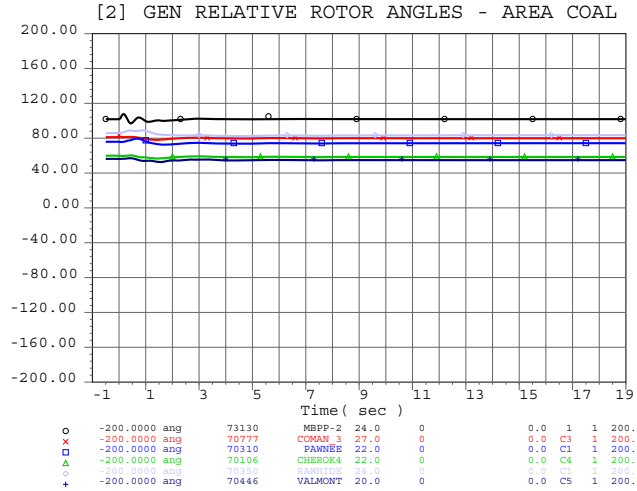

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.5000 spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| × | 0.5000 spd | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| □ | 0.5000 spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| △ | 0.5000 spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| ◇ | 0.5000 spd | 71403 | 123 | 0.7 | 0 | 0.0 | W1 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



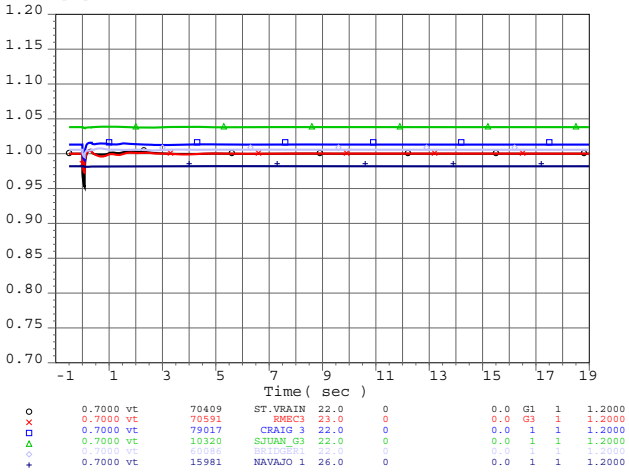

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| × | 0.7000 vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| □ | 0.7000 vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| △ | 0.7000 vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| + | 0.7000 vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



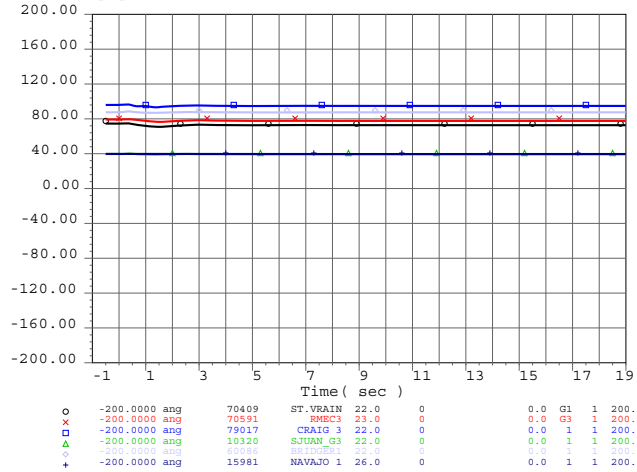

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| × | -200.0000 ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| □ | -200.0000 ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| △ | -200.0000 ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| + | -200.0000 ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| × | 0.7000 vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| □ | 0.7000 vt | 79017 | CRAIG_3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| △ | 0.7000 vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| + | 0.7000 vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| × | -200.0000 ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| □ | -200.0000 ang | 79017 | CRAIG_3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| △ | -200.0000 ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| + | -200.0000 ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |

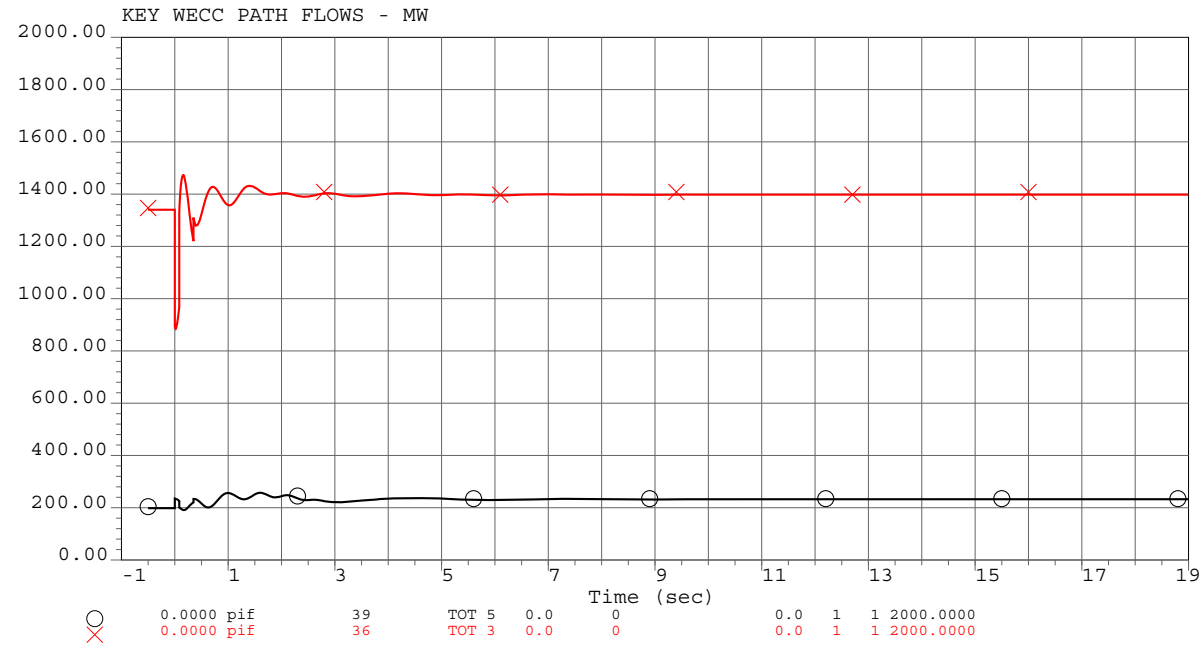
WESTERN ELECTRICITY COORDINATING COUNCIL
2013 HS2-OP BASE CASE
NOVEMBER 30, 2012

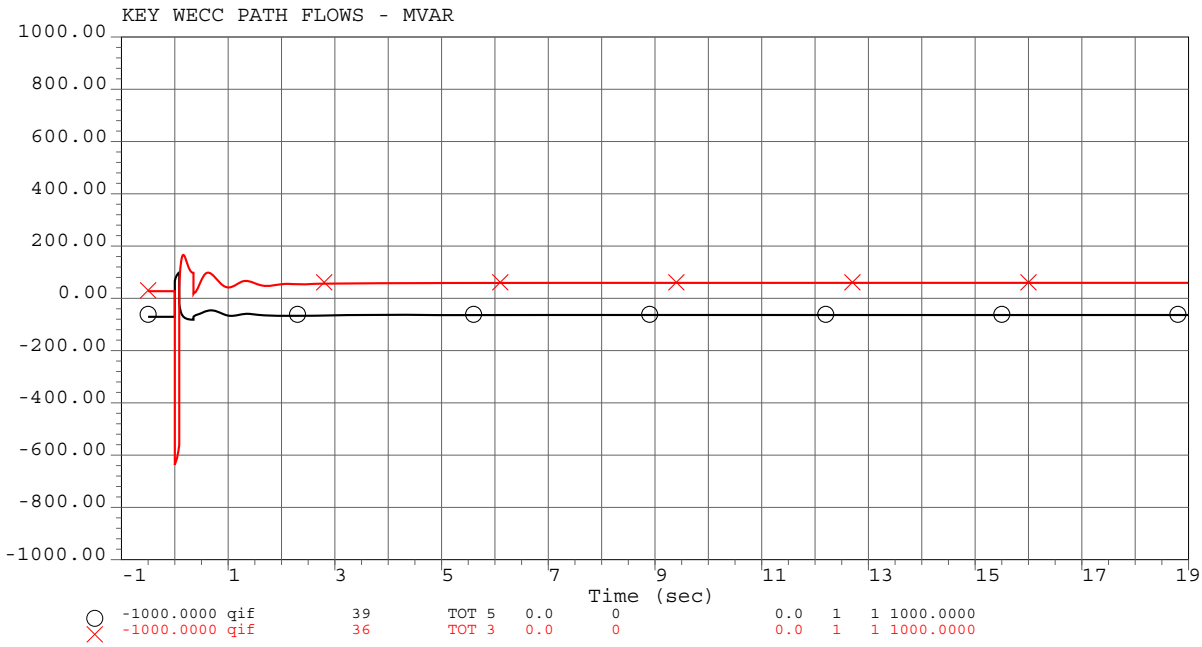


SC2_Sum_PstDet_v0_13_Stegall!-Archer_230_3ph_B.chf

.

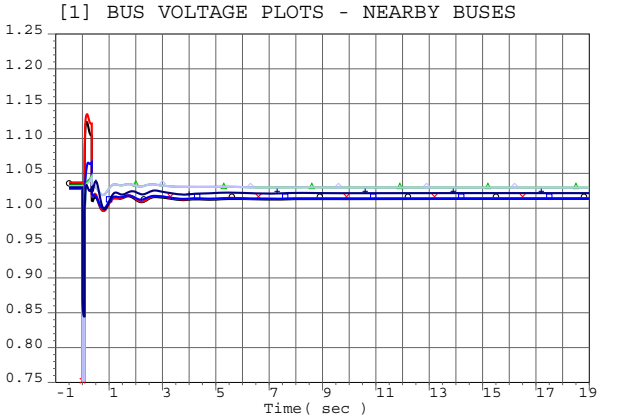
Tue Nov 26 12:38:22 2013


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

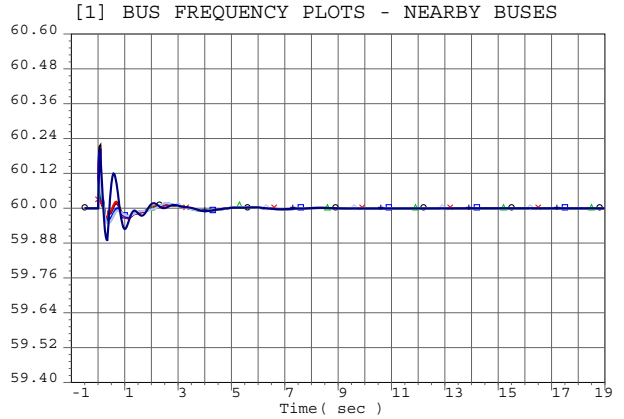
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



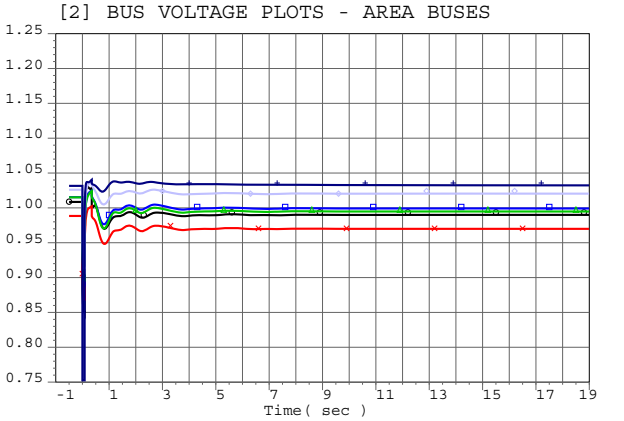

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



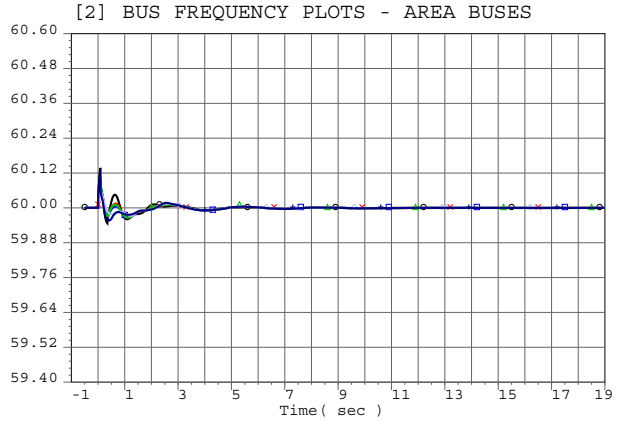

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



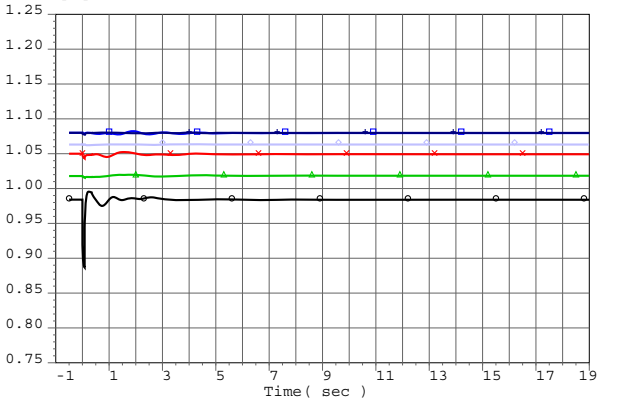

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



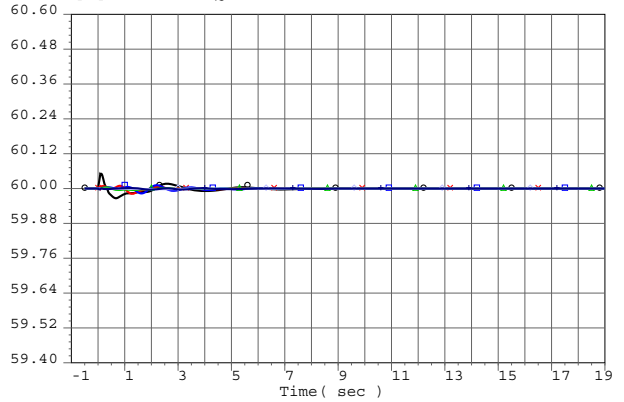

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 14021 | BALDWIN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 14021 | BALDWIN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013 HS2-OP BASE CASE
NOVEMBER 30, 2012



SC2_Sum_PstDet_v0_14_Story!-LRS_345_3ph_B.chf

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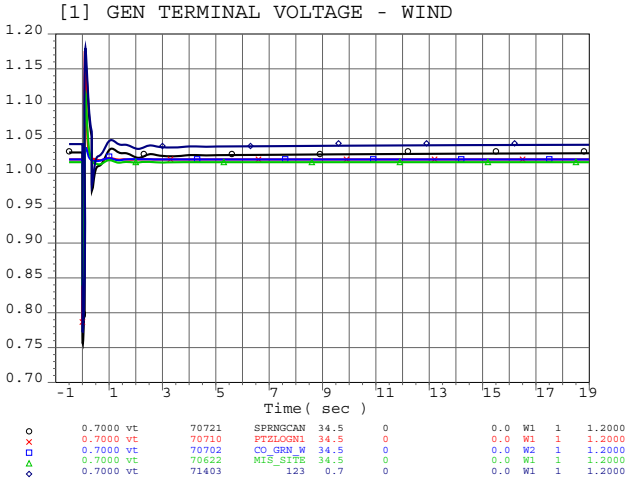
Tue Nov 26 12:38:30 2013

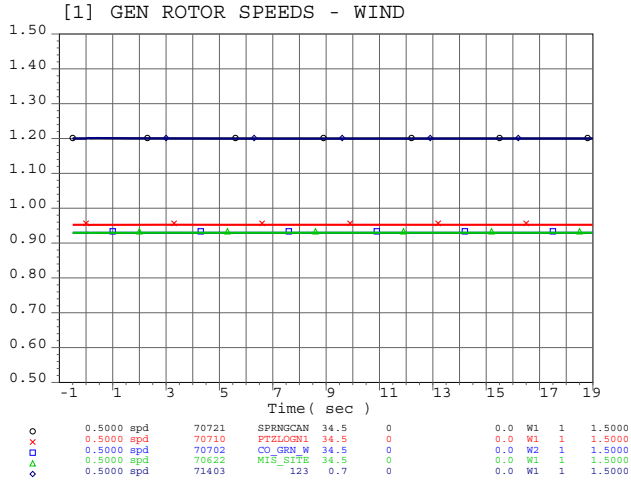
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



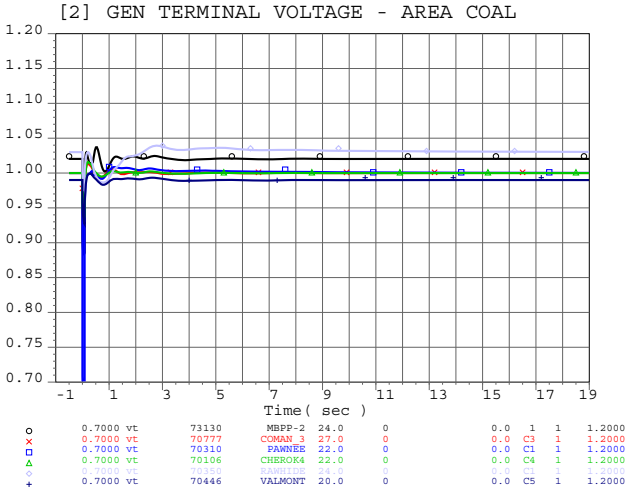

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 | vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| × | 0.7000 | vt | 70710 | PTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| □ | 0.7000 | vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| △ | 0.7000 | vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| ◇ | 0.7000 | vt | 71403 | 123 | 0.7 | 0 | 0.0 | W1 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



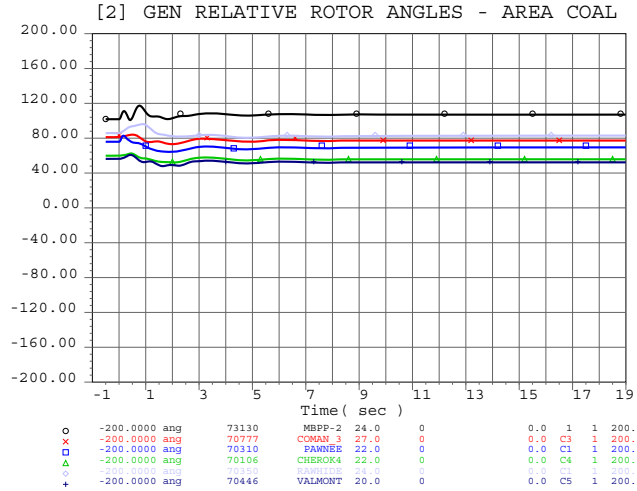

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.5000 | spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| × | 0.5000 | spd | 70710 | PTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| □ | 0.5000 | spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| △ | 0.5000 | spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| ◇ | 0.5000 | spd | 71403 | 123 | 0.7 | 0 | 0.0 | W1 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



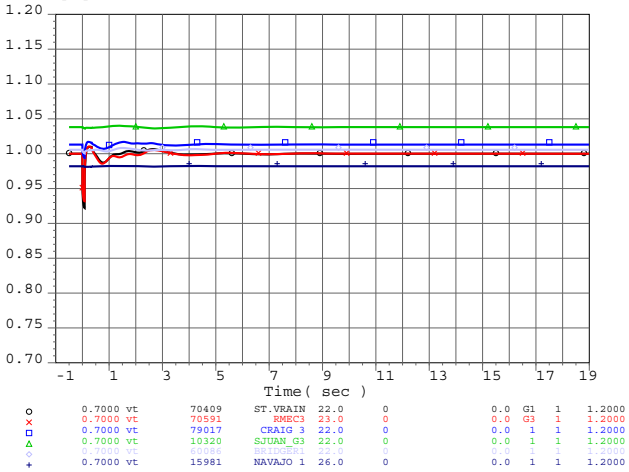

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 | vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| × | 0.7000 | vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| □ | 0.7000 | vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| △ | 0.7000 | vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| ◇ | 0.7000 | vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| + | 0.7000 | vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



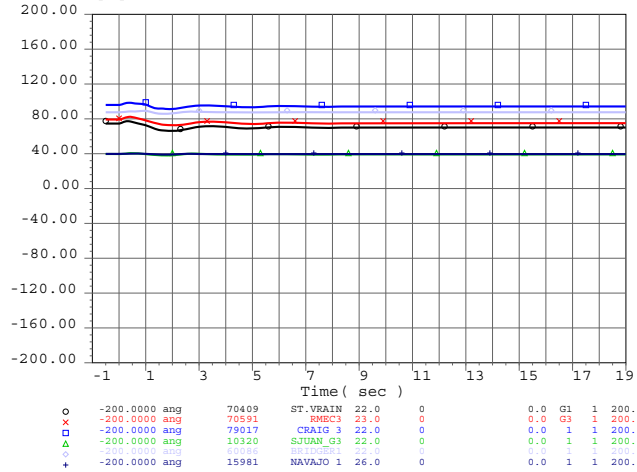

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 | ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| × | -200.0000 | ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| □ | -200.0000 | ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| △ | -200.0000 | ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| ◇ | -200.0000 | ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| + | -200.0000 | ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 | vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| × | 0.7000 | vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| □ | 0.7000 | vt | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| △ | 0.7000 | vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| ◇ | 0.7000 | vt | 60186 | MIDWAY4 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| + | 0.7000 | vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 | ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| × | -200.0000 | ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| □ | -200.0000 | ang | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| △ | -200.0000 | ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| ◇ | -200.0000 | ang | 60186 | MIDWAY4 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| + | -200.0000 | ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |

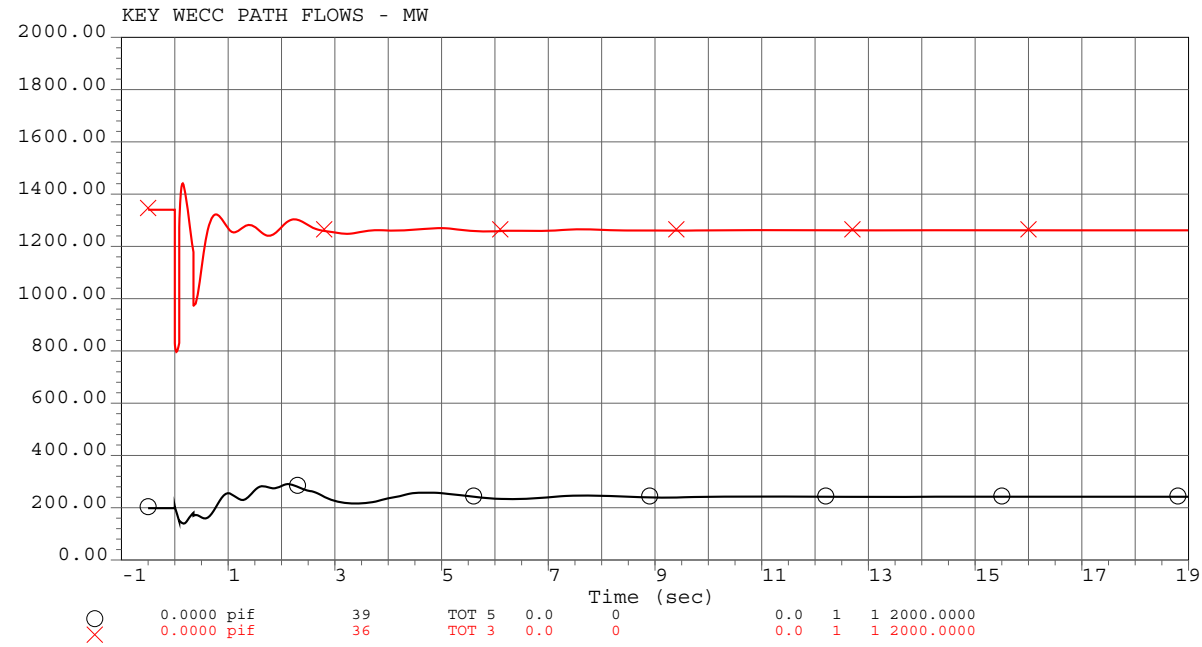
WESTERN ELECTRICITY COORDINATING COUNCIL
2013 HS2-OP BASE CASE
NOVEMBER 30, 2012

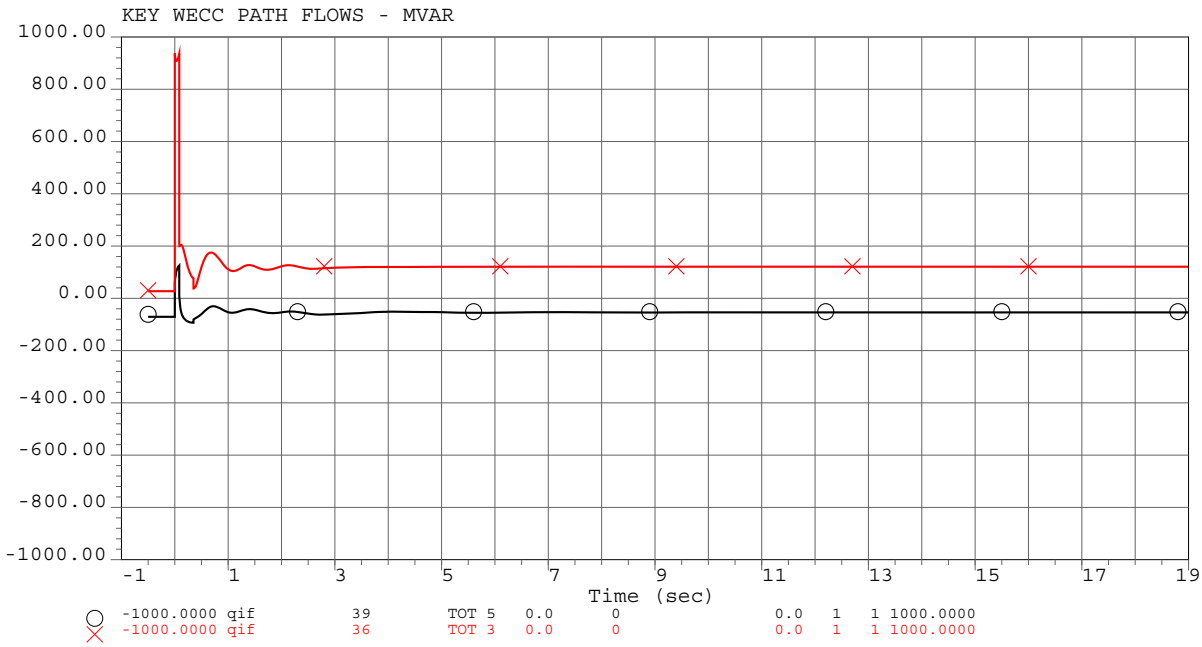


SC2_Sum_PstDet_v0_14_Story!-LRS_345_3ph_B.chf

.

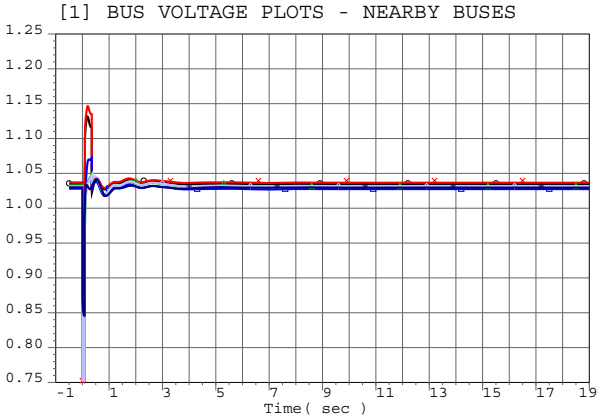
Tue Nov 26 12:38:30 2013


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

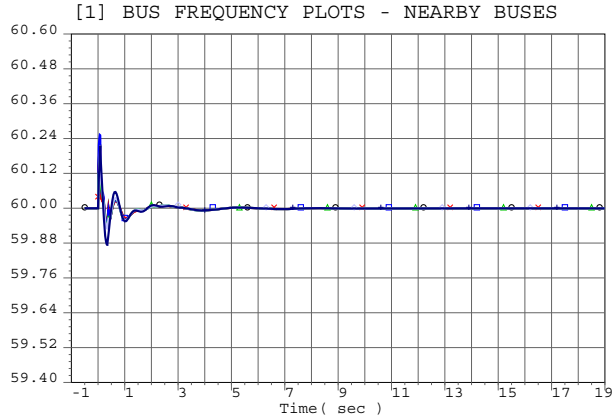
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



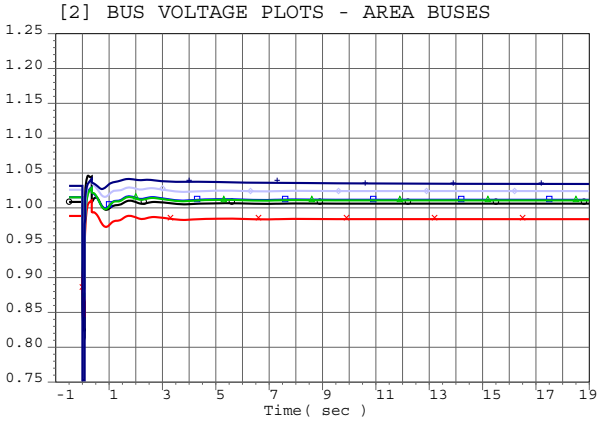

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



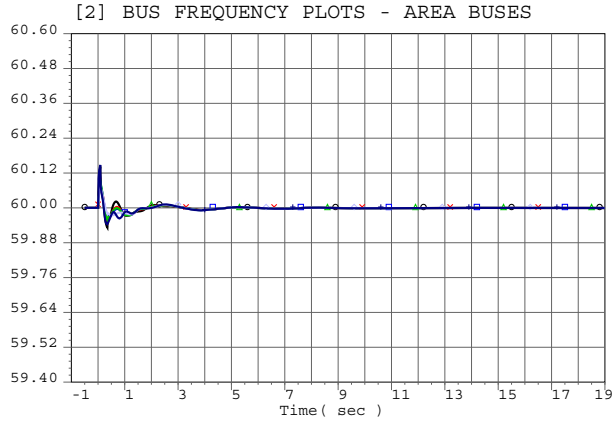

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



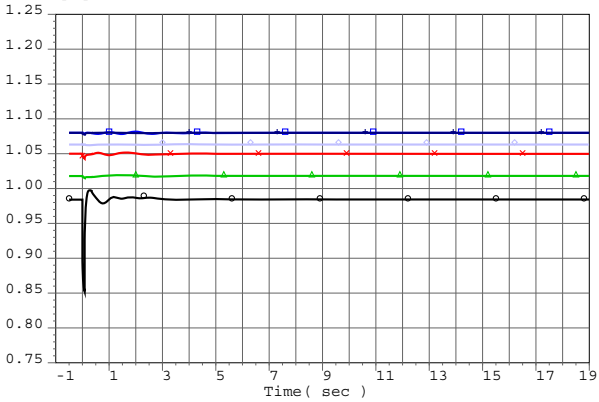

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



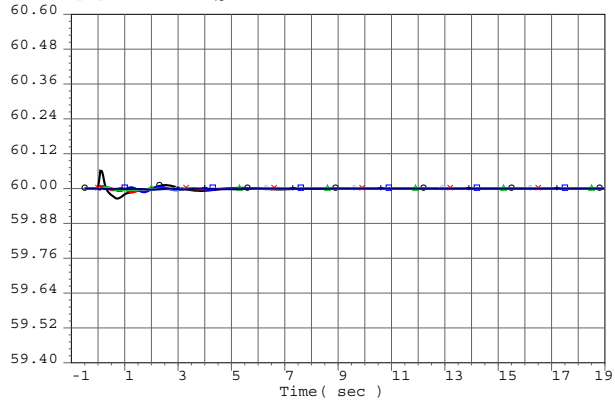

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 14021 | BALNORTH 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 14021 | BALNORTH 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013 HS2-OP BASE CASE
NOVEMBER 30, 2012



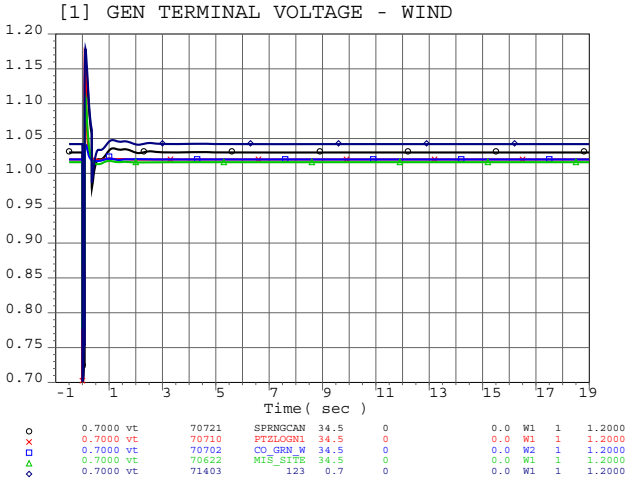
SC2_Sum_PstDet_v0_15_Story!-Pawnee_230_3ph_B.chf

.

Tue Nov 26 12:38:38 2013

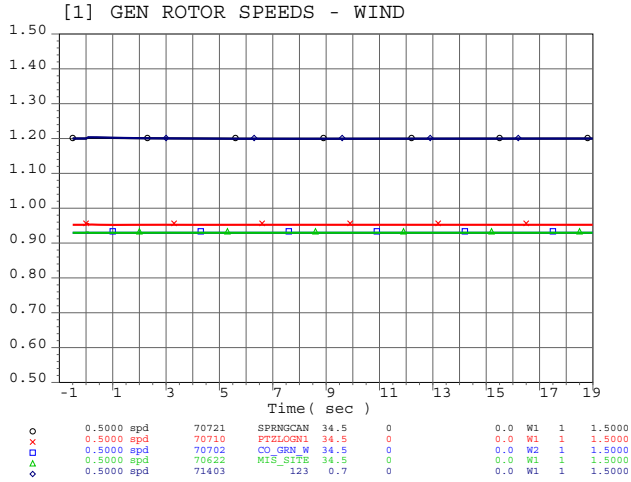
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



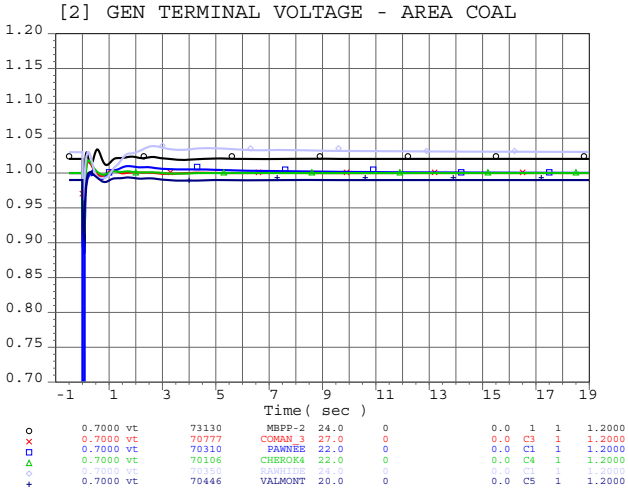

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| × | 0.7000 vt | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| □ | 0.7000 vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| △ | 0.7000 vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 71403 | 123 | 0.7 | 0 | 0.0 | W1 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



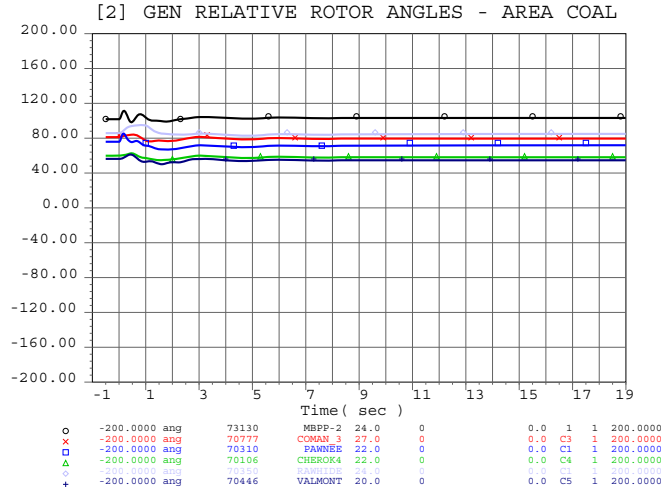

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.5000 spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| × | 0.5000 spd | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| □ | 0.5000 spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| △ | 0.5000 spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| ◇ | 0.5000 spd | 71403 | 123 | 0.7 | 0 | 0.0 | W1 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



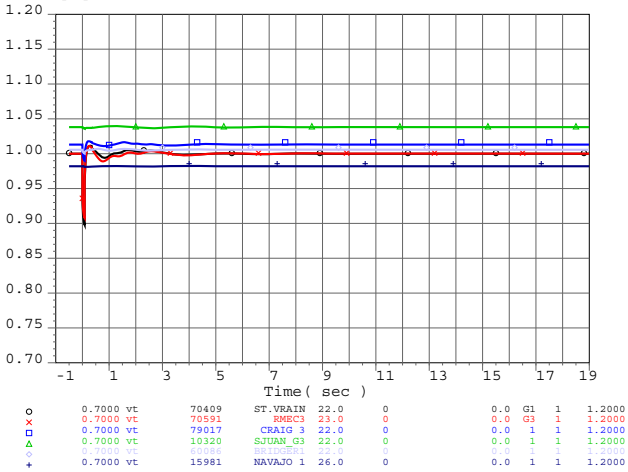

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| × | 0.7000 vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| □ | 0.7000 vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| △ | 0.7000 vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| + | 0.7000 vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



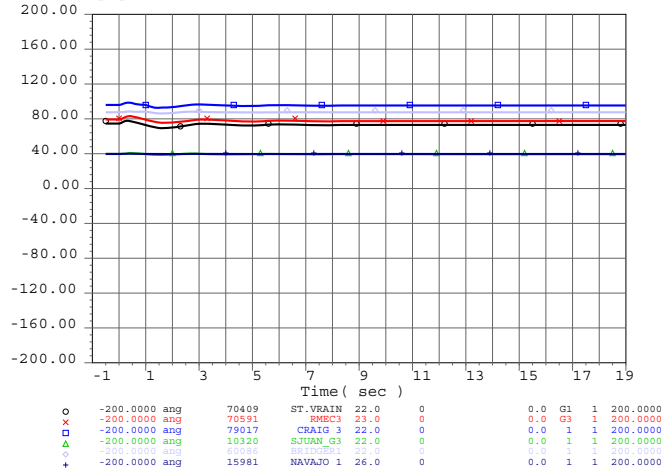

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| × | -200.0000 ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| □ | -200.0000 ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| △ | -200.0000 ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| + | -200.0000 ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER

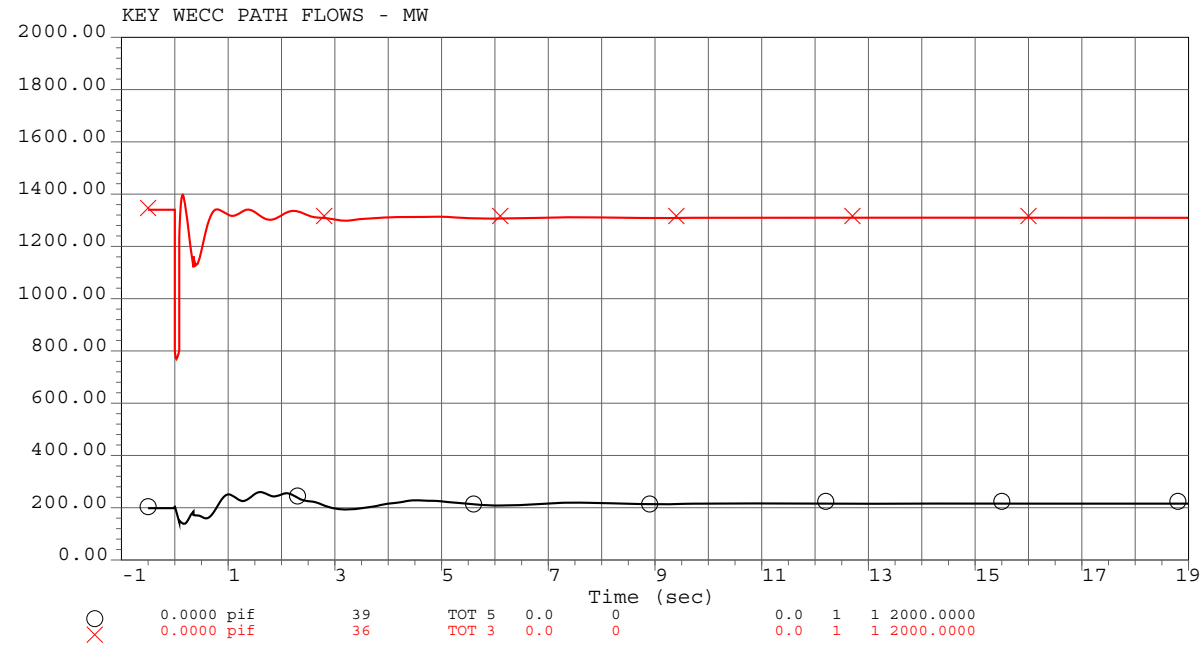


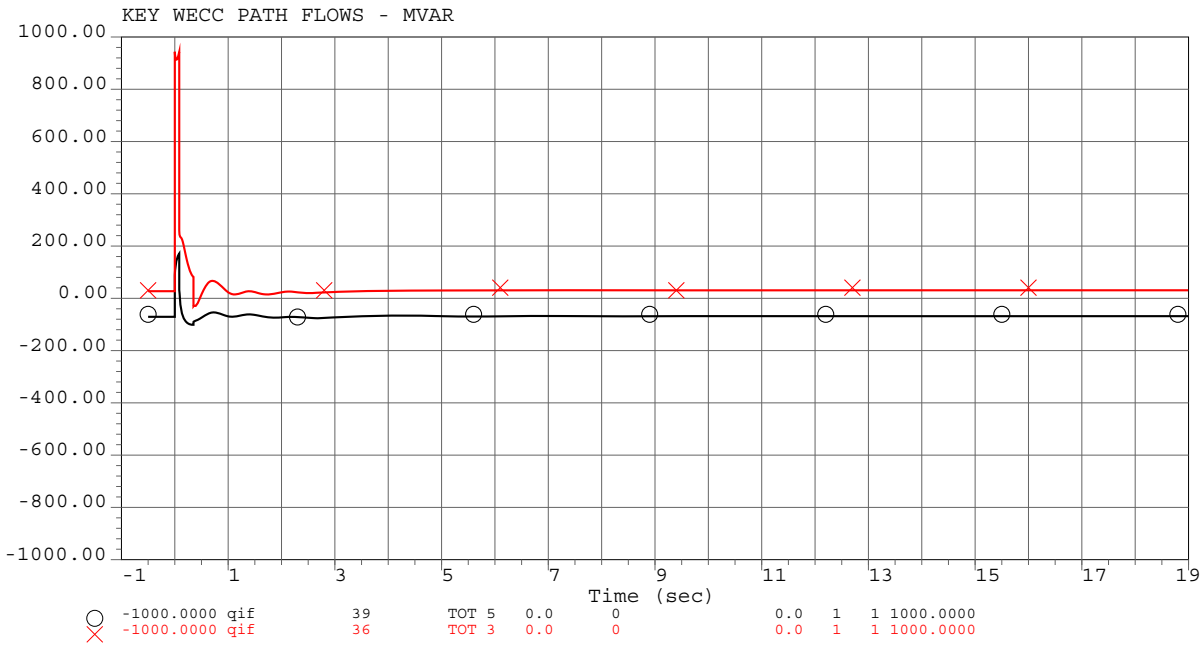

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| × | 0.7000 vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| □ | 0.7000 vt | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| △ | 0.7000 vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 70106 | BRLNGT4 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| + | 0.7000 vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER



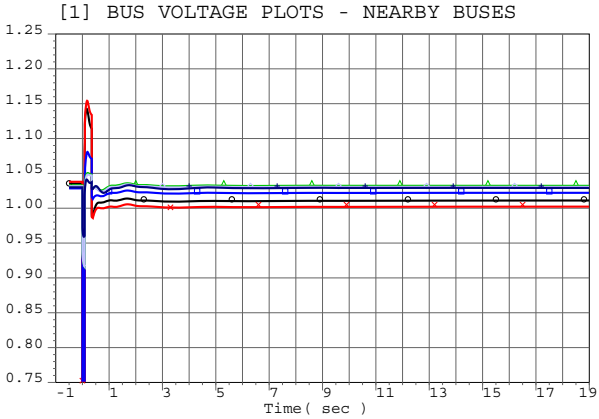

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| × | -200.0000 ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| □ | -200.0000 ang | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| △ | -200.0000 ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 70106 | BRLNGT4 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| + | -200.0000 ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

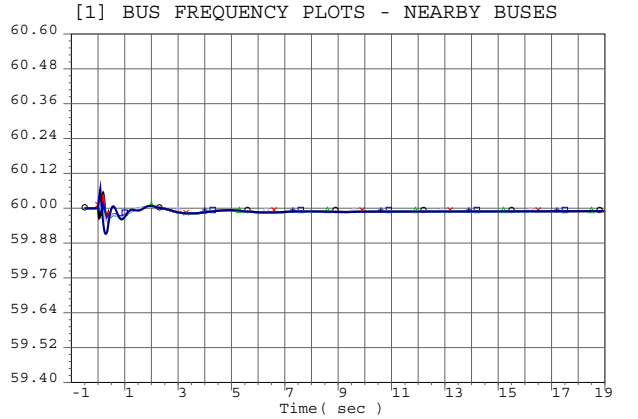
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



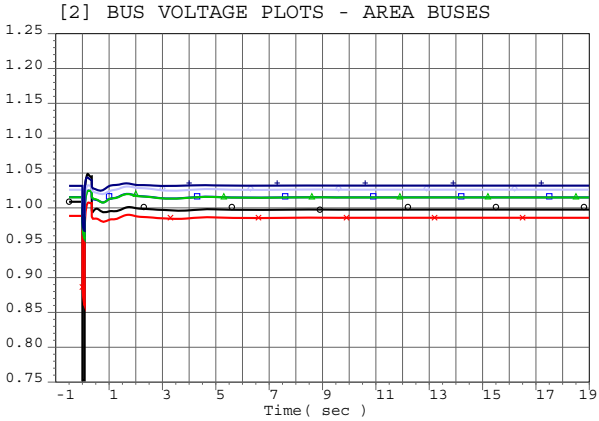

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



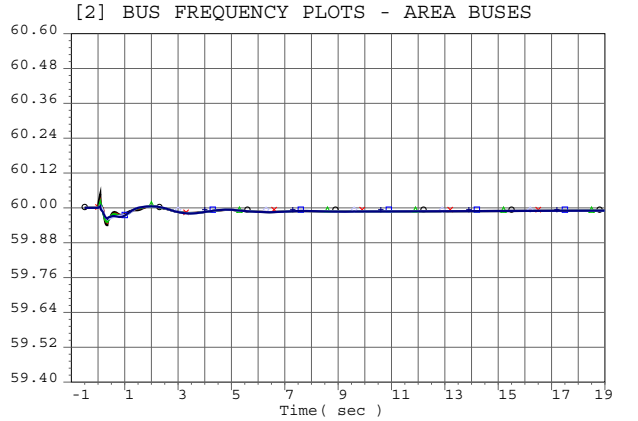

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



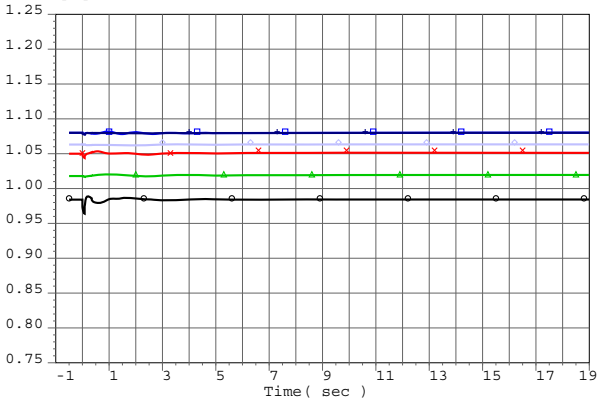

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



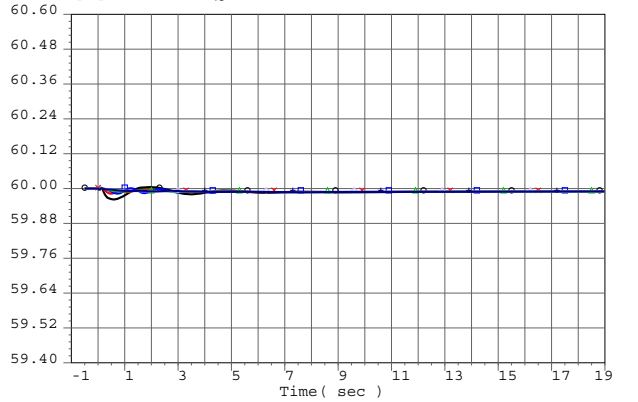

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 14021 | BALNORTH 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 14021 | BALNORTH 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013 HS2-OP BASE CASE
NOVEMBER 30, 2012



SC2_Sum_PstEqv_v0_01_Sidney!-SidneyDC_230_3ph_B.chf

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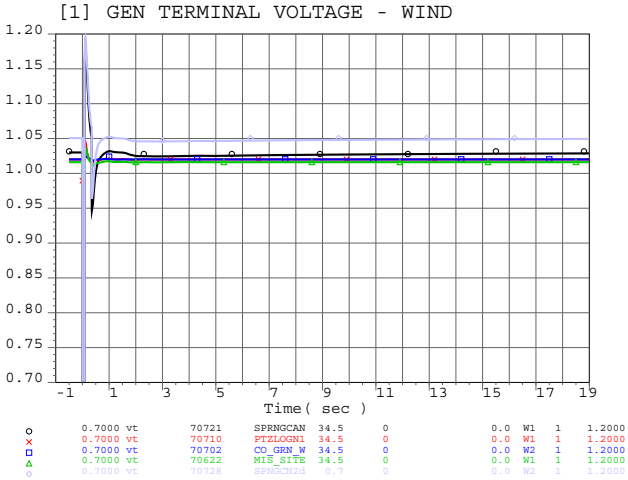
Tue Nov 26 12:38:45 2013

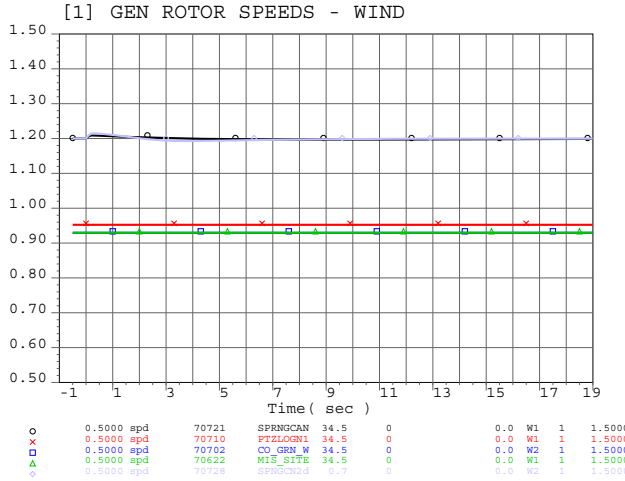
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



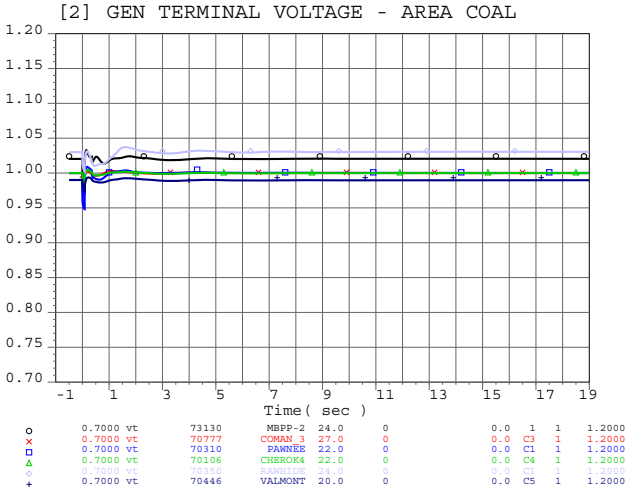

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| × | 0.7000 vt | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| □ | 0.7000 vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| △ | 0.7000 vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 70728 | SPNGCN2d | 0.7 | 0 | 0.0 | W2 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



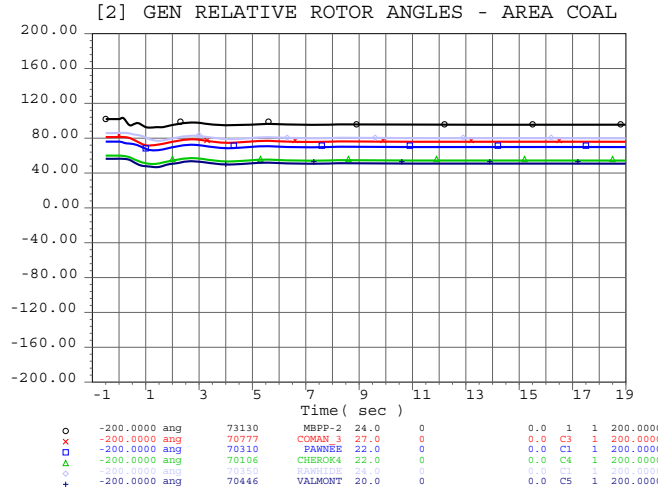

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.5000 spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| × | 0.5000 spd | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| □ | 0.5000 spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| △ | 0.5000 spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| ◇ | 0.5000 spd | 70728 | SPNGCN2d | 0.7 | 0 | 0.0 | W2 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



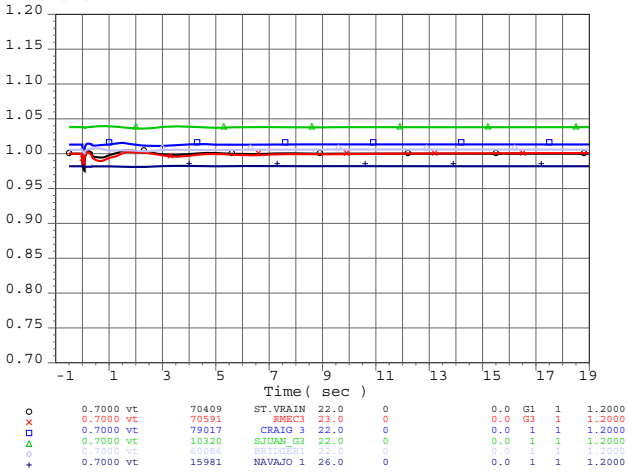

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| × | 0.7000 vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| □ | 0.7000 vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| △ | 0.7000 vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| + | 0.7000 vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



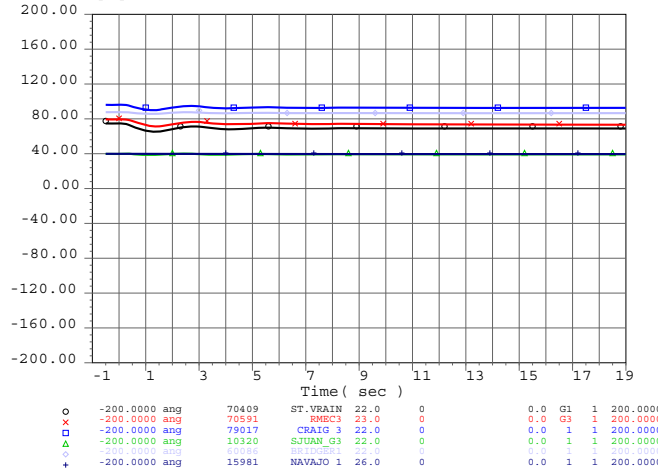

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| × | -200.0000 ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| □ | -200.0000 ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| △ | -200.0000 ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| + | -200.0000 ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| × | 0.7000 vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| □ | 0.7000 vt | 79017 | CRAIG_3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| △ | 0.7000 vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 60186 | NUCLEA4 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| + | 0.7000 vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| × | -200.0000 ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| □ | -200.0000 ang | 79017 | CRAIG_3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| △ | -200.0000 ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 60186 | NUCLEA4 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| + | -200.0000 ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |

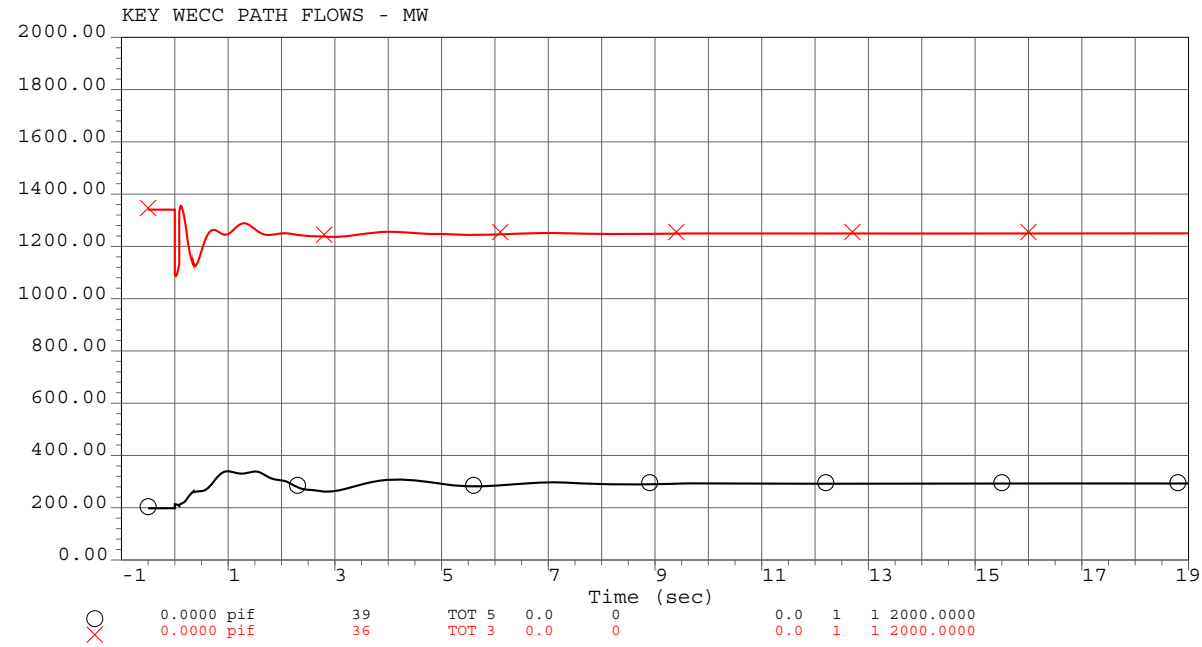
WESTERN ELECTRICITY COORDINATING COUNCIL
2013 HS2-OP BASE CASE
NOVEMBER 30, 2012

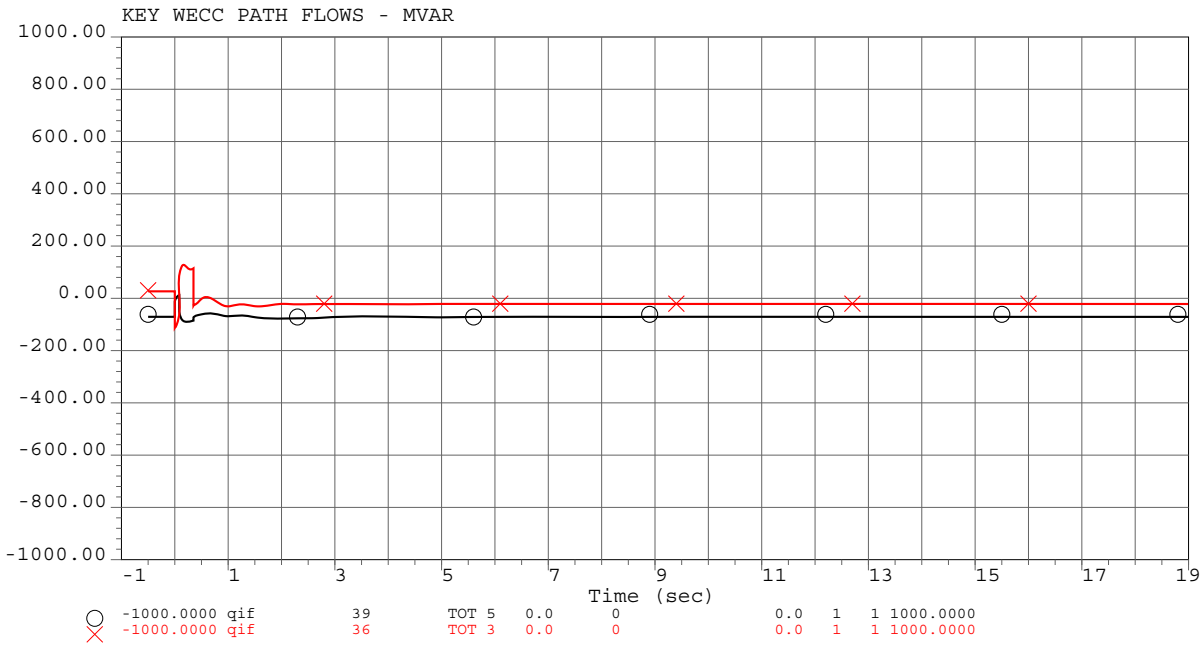


SC2_Sum_PstEqv_v0_01_Sidney!-SidneyDC_230_3ph_B.chf

.

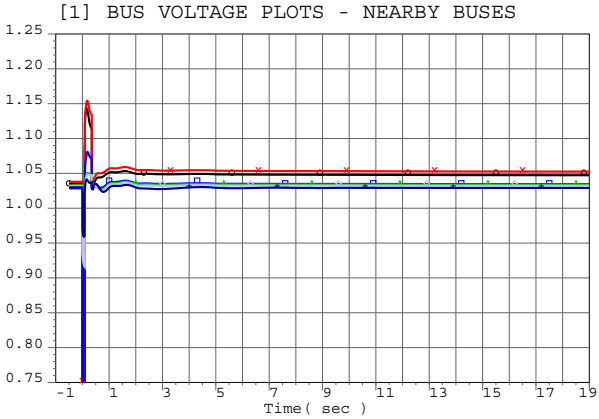
Tue Nov 26 12:38:45 2013


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

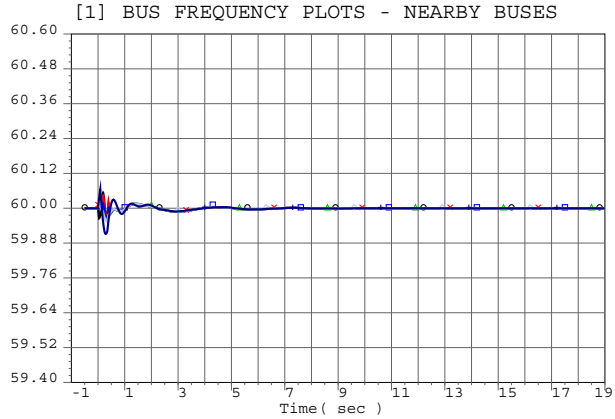
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



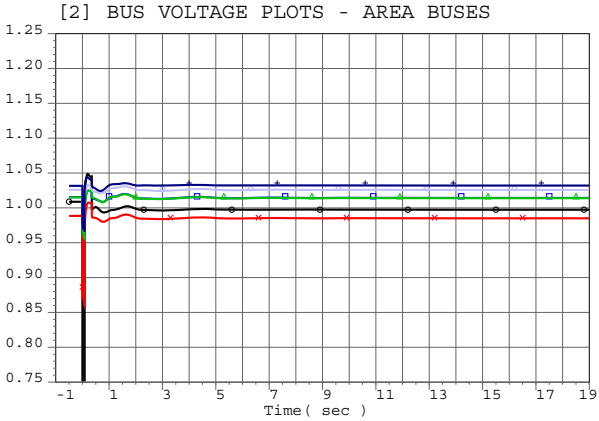

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



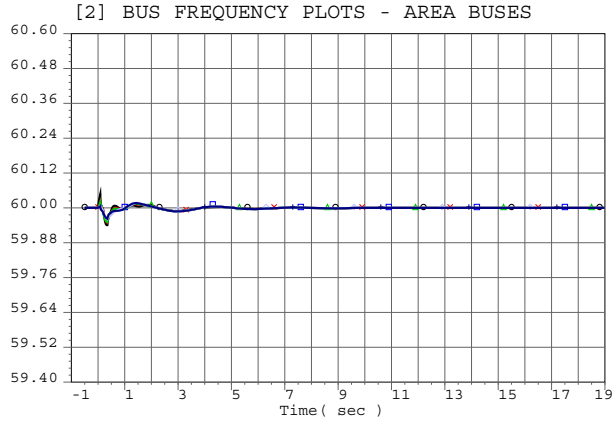

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



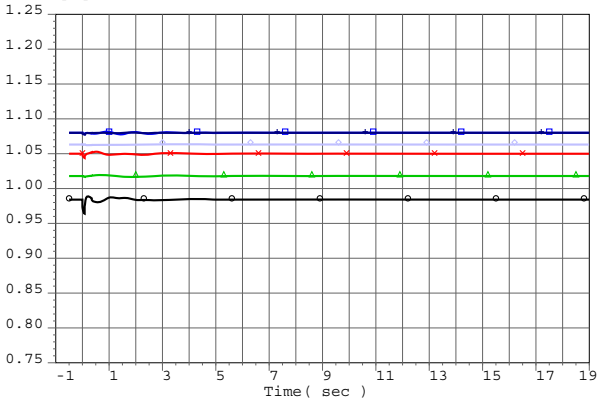

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



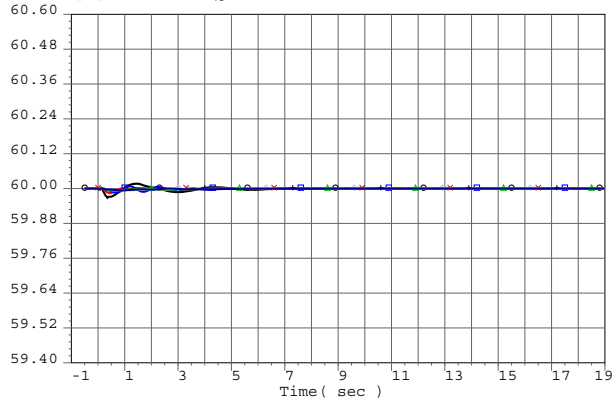

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 14021 | BALOMORH 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 14021 | BALOMORH 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013 HS2-OP BASE CASE
NOVEMBER 30, 2012



SC2_Sum_PstEqv_v0_02_Sidney!-Stegall_230_3ph_B.chf

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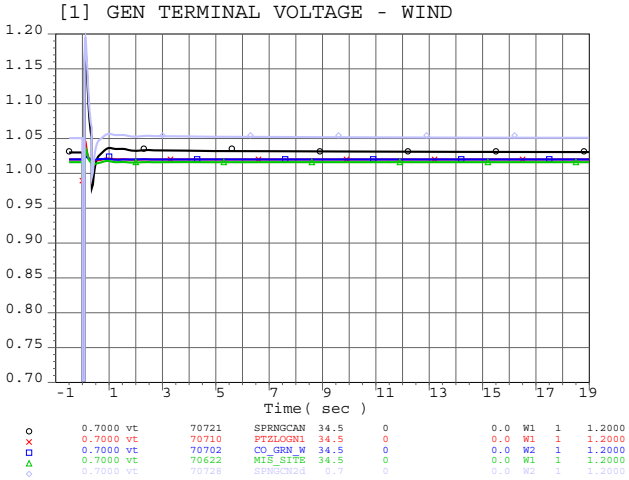
Tue Nov 26 12:38:53 2013

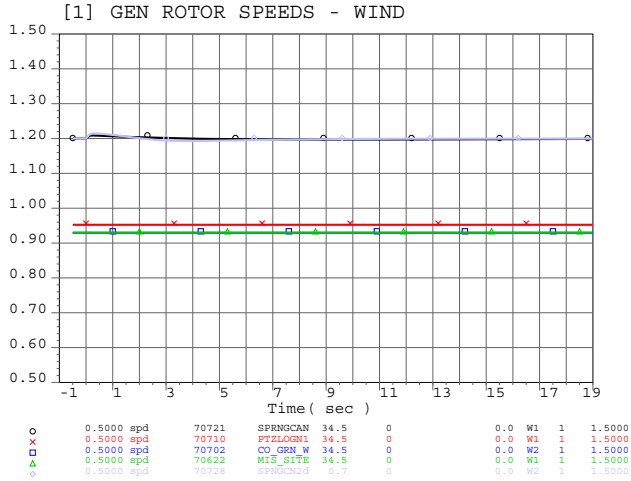
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



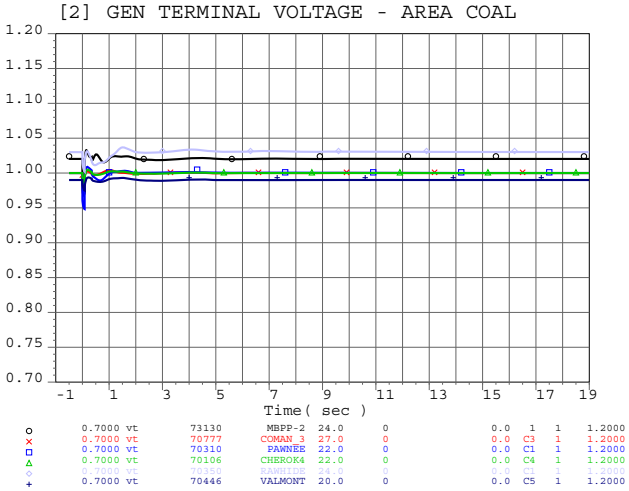

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 0.7000 vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| 0.7000 vt | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| 0.7000 vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| 0.7000 vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| 0.7000 vt | 70728 | SPNGCN2d | 0.7 | 0 | 0.0 | W2 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



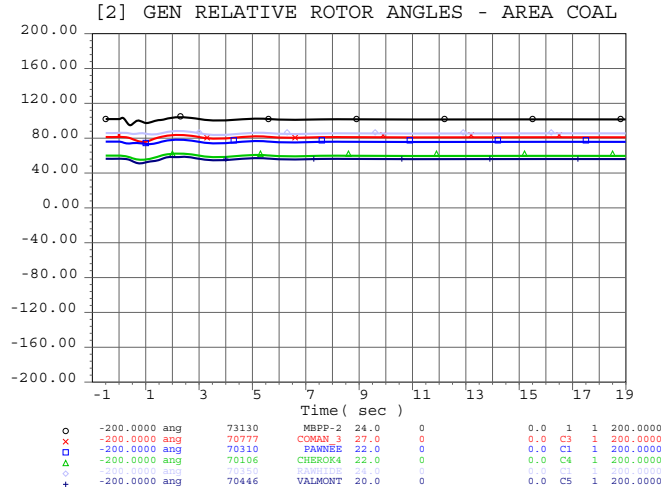

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 0.5000 spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| 0.5000 spd | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| 0.5000 spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| 0.5000 spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| 0.5000 spd | 70728 | SPNGCN2d | 0.7 | 0 | 0.0 | W2 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



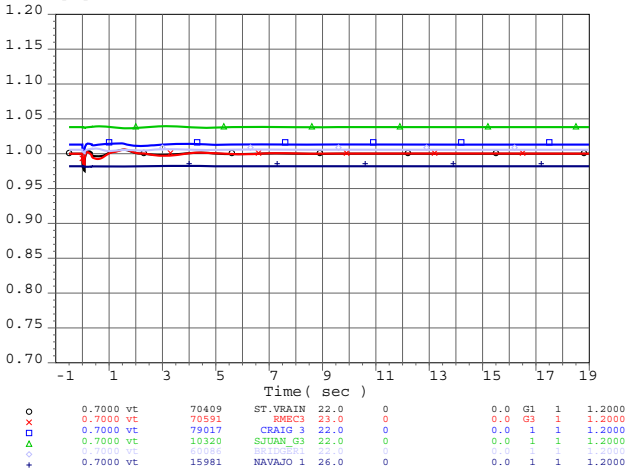

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 0.7000 vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| 0.7000 vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| 0.7000 vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| 0.7000 vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| 0.7000 vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| 0.7000 vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



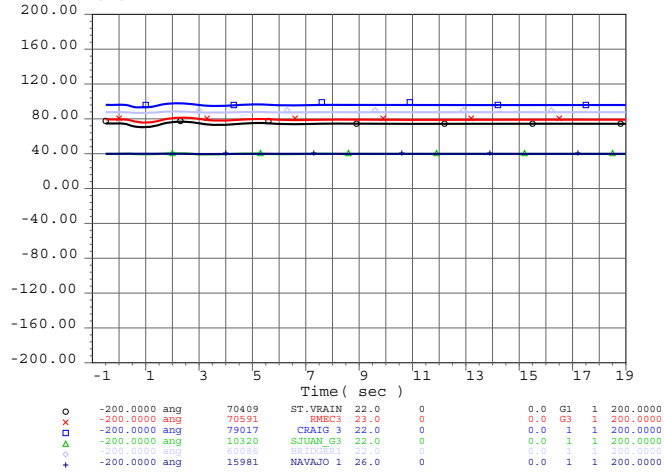

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| -200.0000 ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| -200.0000 ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| -200.0000 ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| -200.0000 ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| -200.0000 ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| -200.0000 ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER




| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 0.7000 vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| 0.7000 vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| 0.7000 vt | 79017 | CRAIG_3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| 0.7000 vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| 0.7000 vt | 60186 | NUCLEAR4 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| 0.7000 vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER




| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| -200.0000 ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| -200.0000 ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| -200.0000 ang | 79017 | CRAIG_3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| -200.0000 ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| -200.0000 ang | 60186 | NUCLEAR4 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| -200.0000 ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |

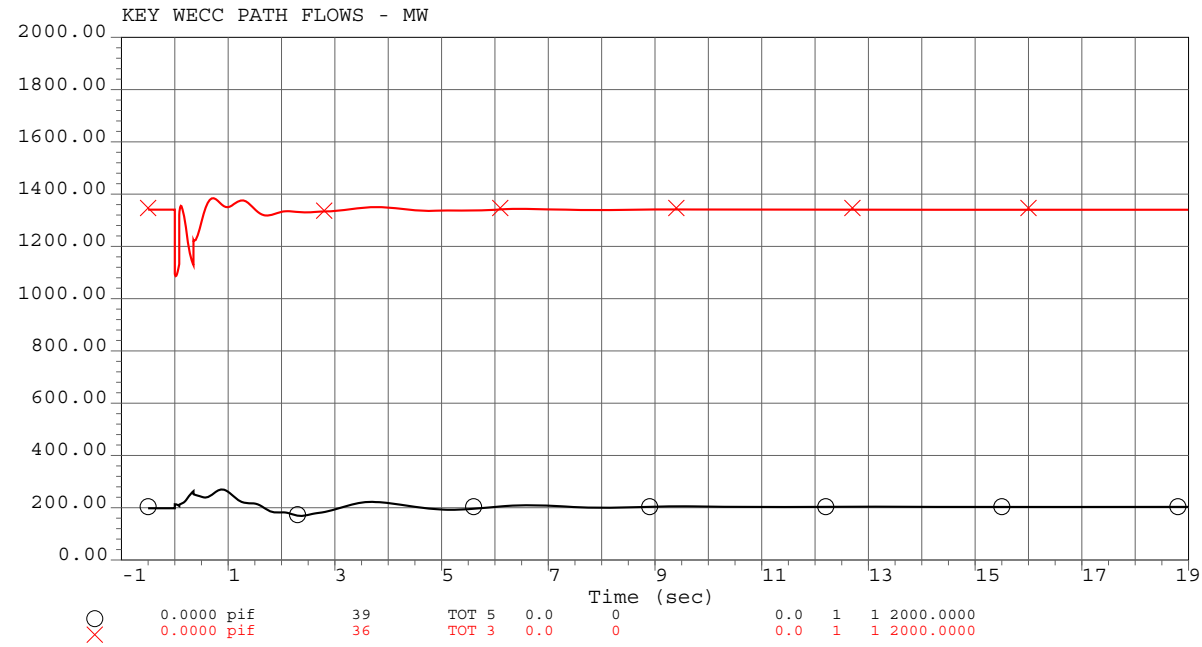
WESTERN ELECTRICITY COORDINATING COUNCIL
2013 HS2-OP BASE CASE
NOVEMBER 30, 2012

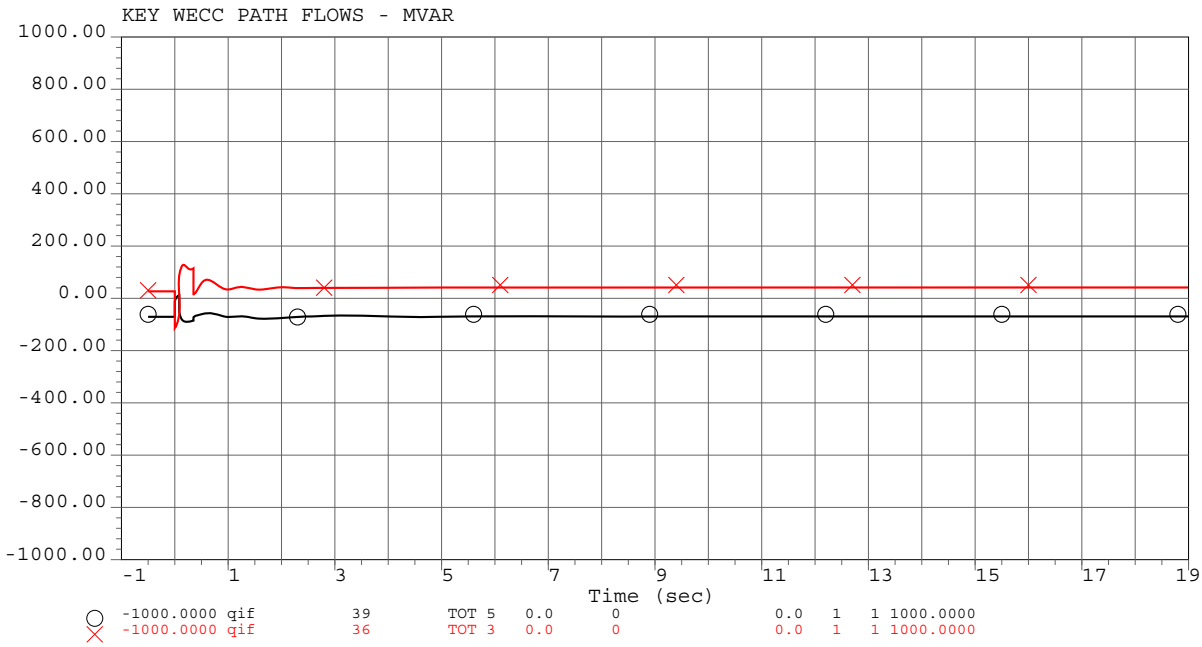


SC2_Sum_PstEqv_v0_02_Sidney!-Stegall_230_3ph_B.chf

.

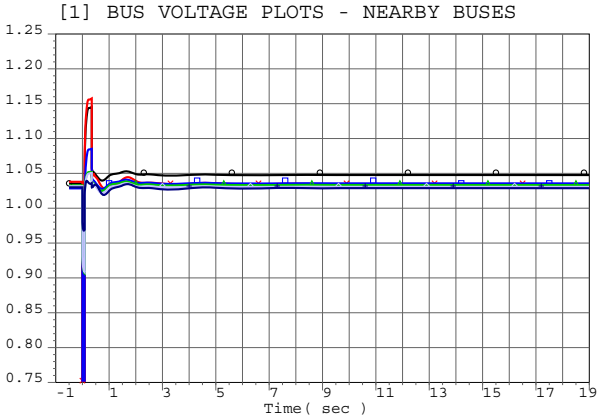
Tue Nov 26 12:38:54 2013


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

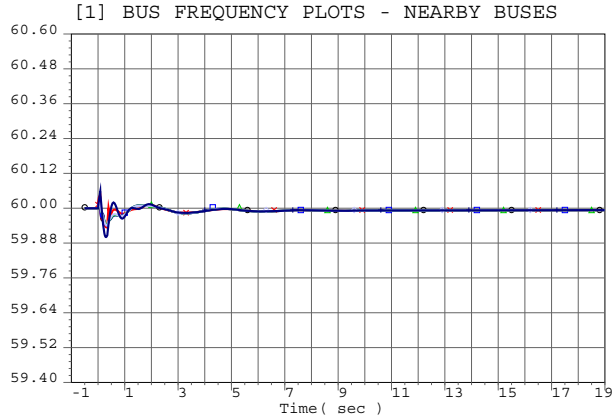
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



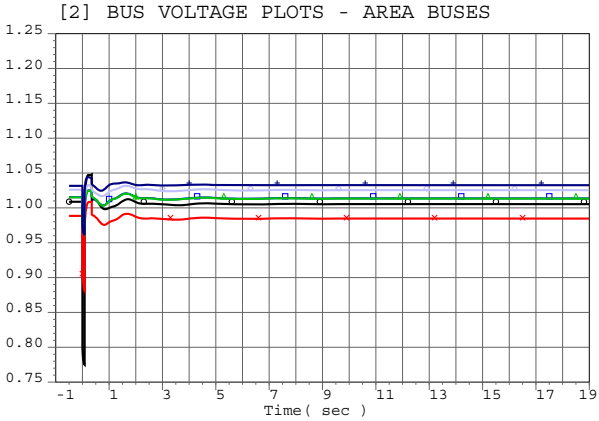

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



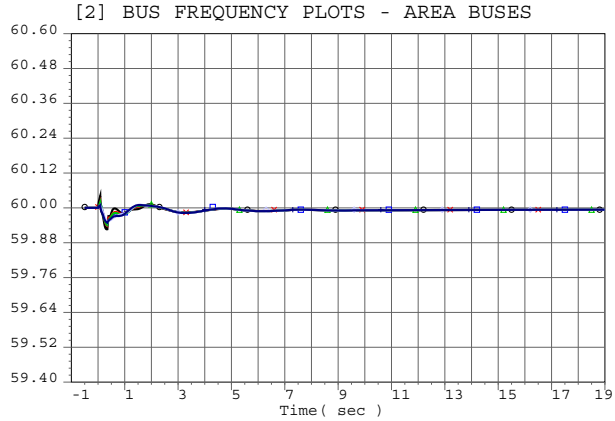

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



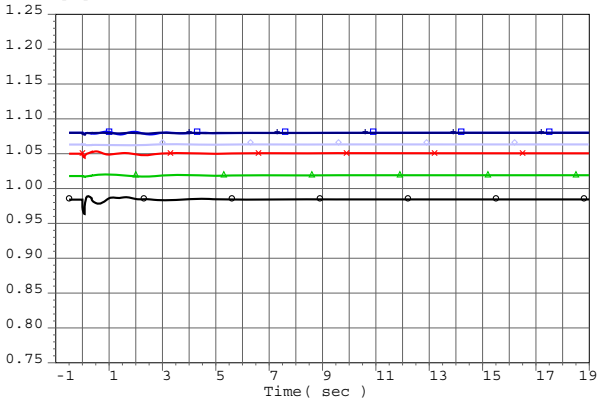

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



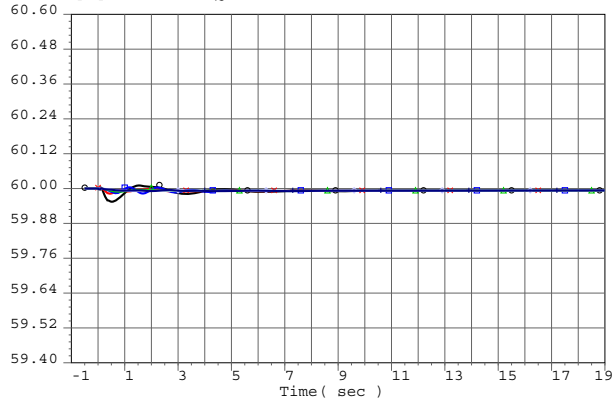

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 14021 | BALNORTH 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 14021 | BALNORTH 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013 HS2-OP BASE CASE
NOVEMBER 30, 2012



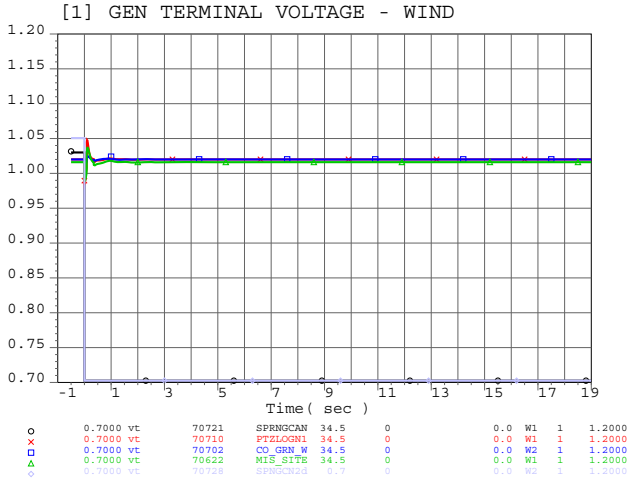
SC2_Sum_PstEqv_v0_03_SprCan!-Sidney_230_3ph_B.chf

.

Tue Nov 26 12:39:01 2013

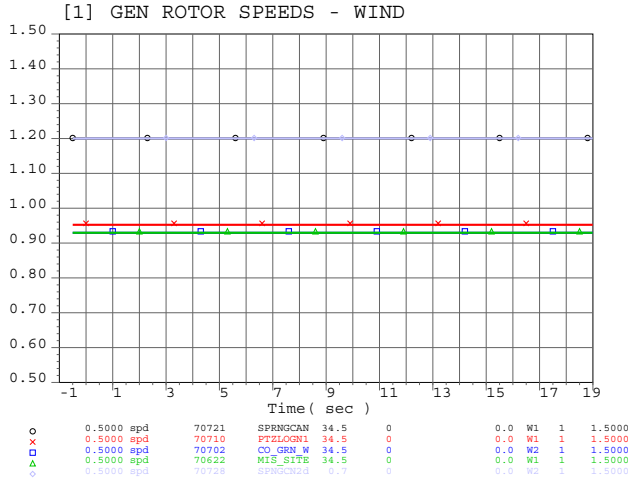
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



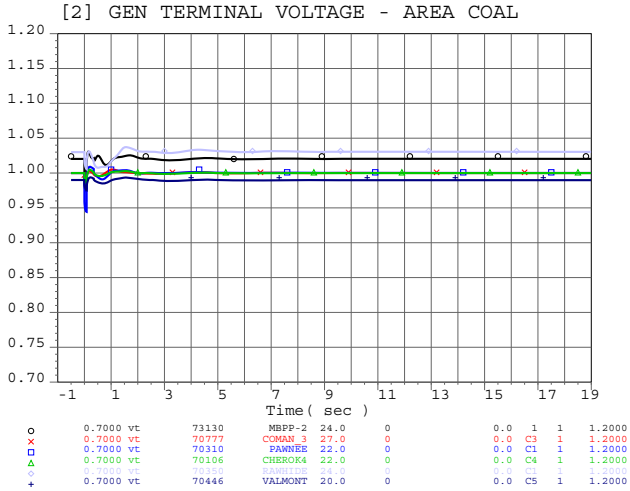

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| × | 0.7000 vt | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| □ | 0.7000 vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| △ | 0.7000 vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 70728 | SPNGCN2d | 0.7 | 0 | 0.0 | W2 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



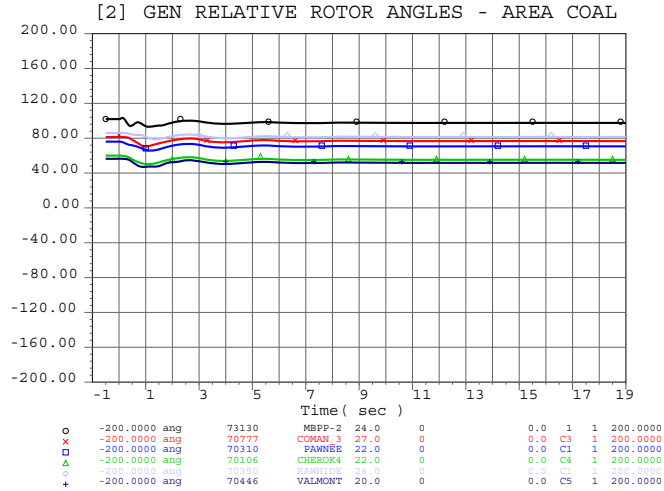

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.5000 spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| × | 0.5000 spd | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| □ | 0.5000 spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| △ | 0.5000 spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| ◇ | 0.5000 spd | 70728 | SPNGCN2d | 0.7 | 0 | 0.0 | W2 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



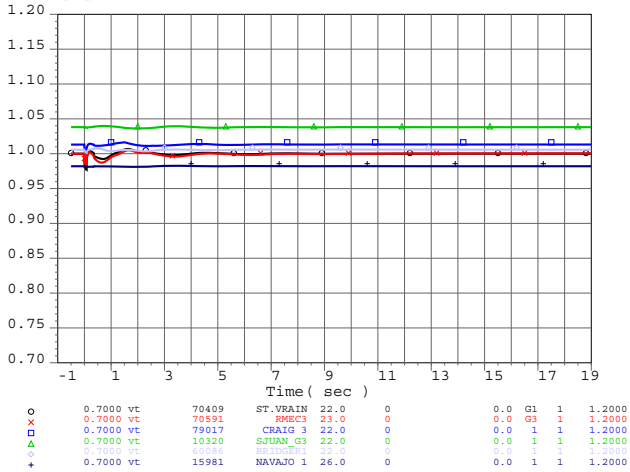

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| × | 0.7000 vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| □ | 0.7000 vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| △ | 0.7000 vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| + | 0.7000 vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



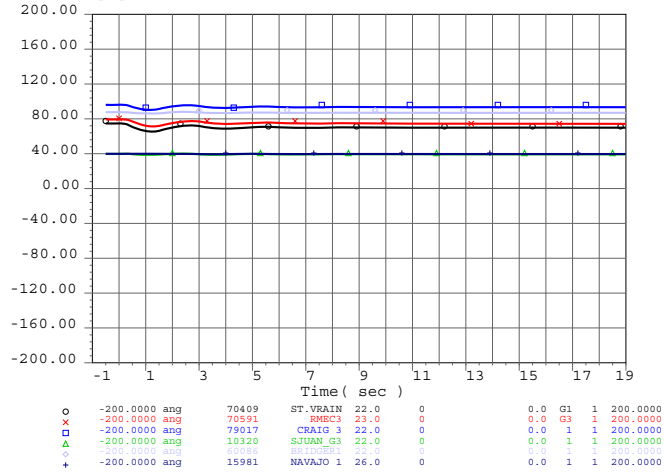

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| × | -200.0000 ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| □ | -200.0000 ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| △ | -200.0000 ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| + | -200.0000 ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| × | 0.7000 vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| □ | 0.7000 vt | 79017 | CRAIG_3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| △ | 0.7000 vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 60186 | NUCLEAR4 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| + | 0.7000 vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| × | -200.0000 ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| □ | -200.0000 ang | 79017 | CRAIG_3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| △ | -200.0000 ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 60186 | NUCLEAR4 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| + | -200.0000 ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |

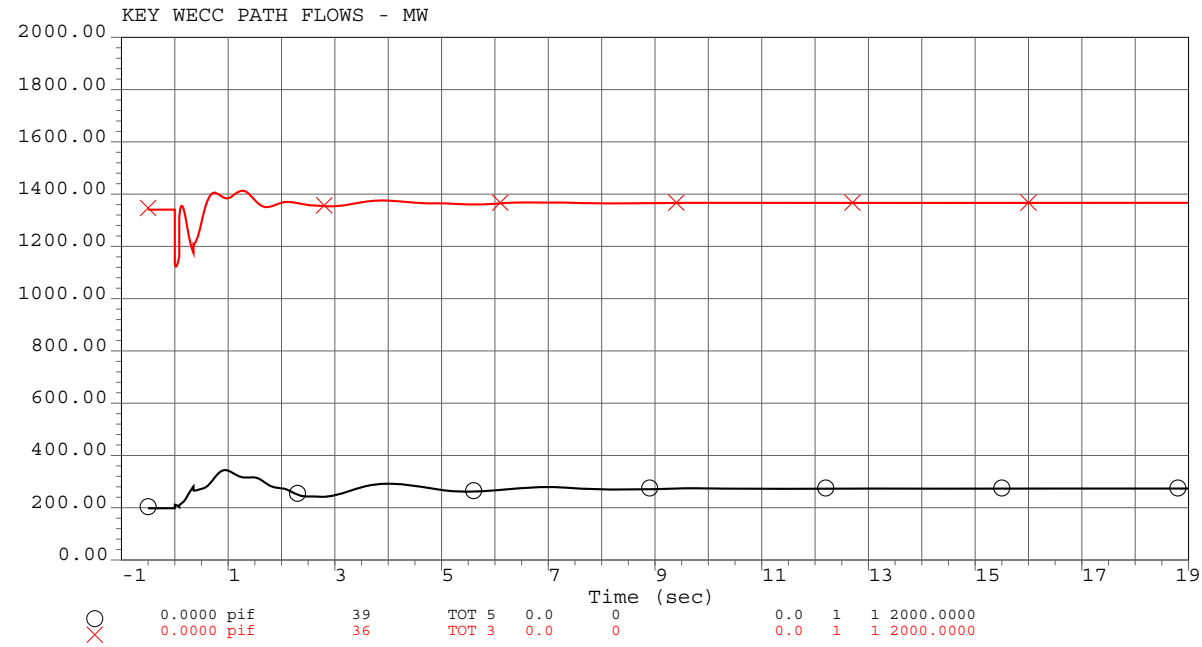
WESTERN ELECTRICITY COORDINATING COUNCIL
2013 HS2-OP BASE CASE
NOVEMBER 30, 2012

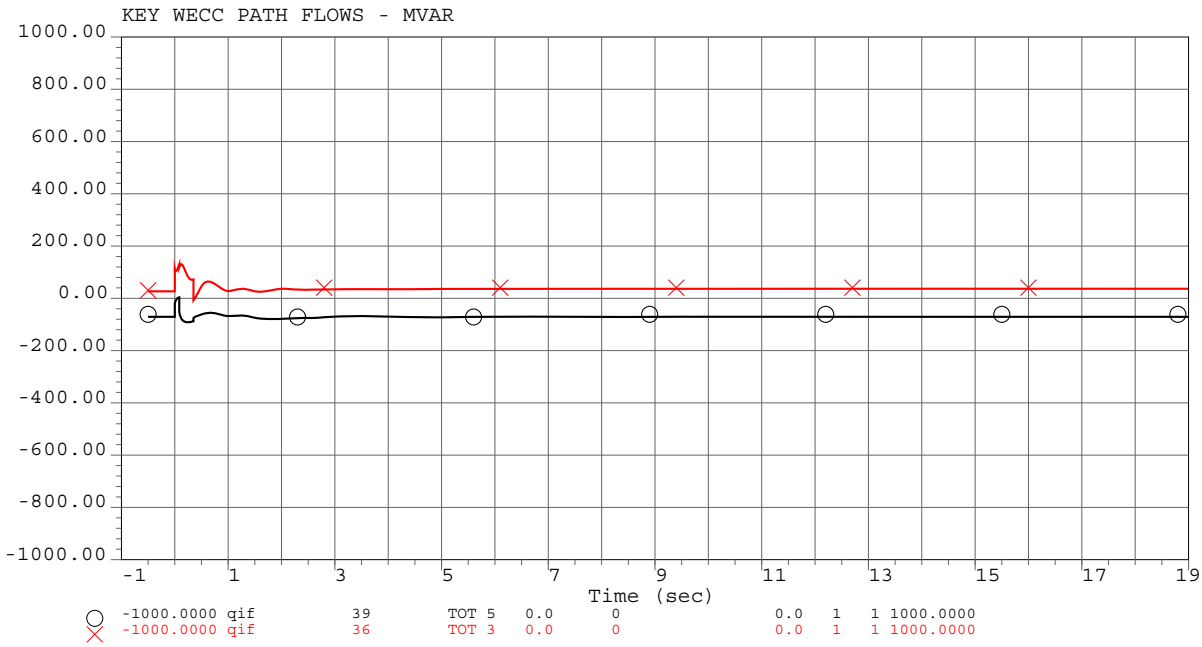


SC2_Sum_PstEqv_v0_03_SprCan!-Sidney_230_3ph_B.chf

.

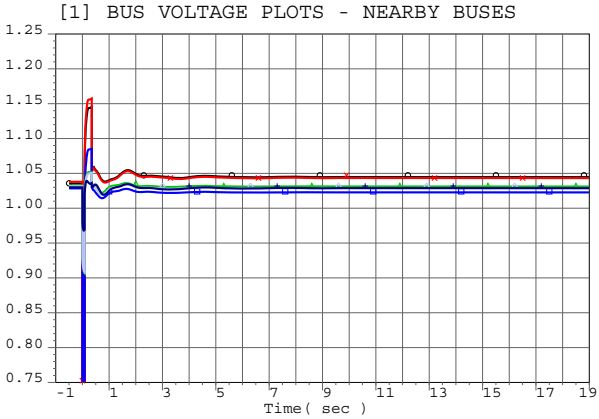
Tue Nov 26 12:39:01 2013


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

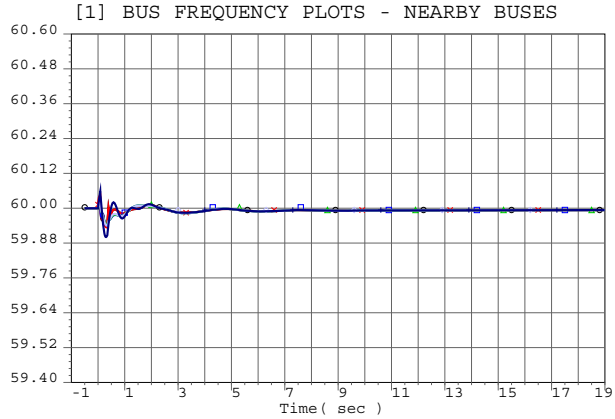
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



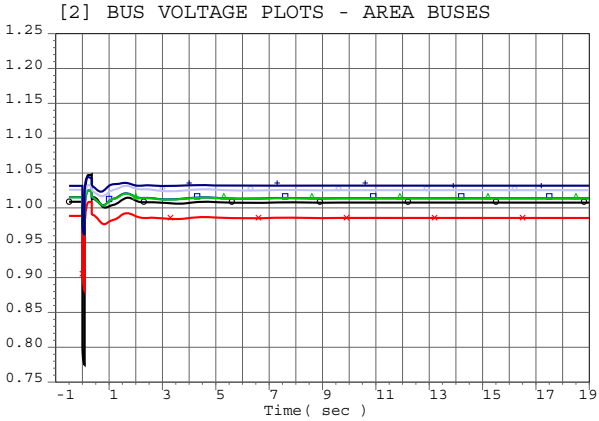

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



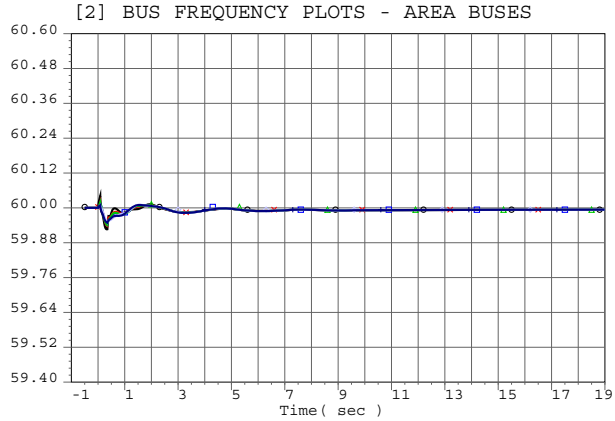

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



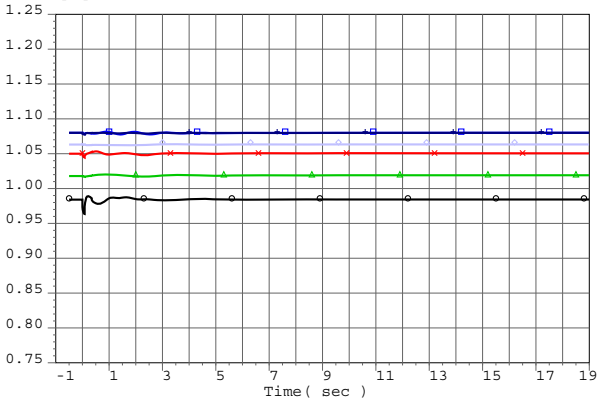

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



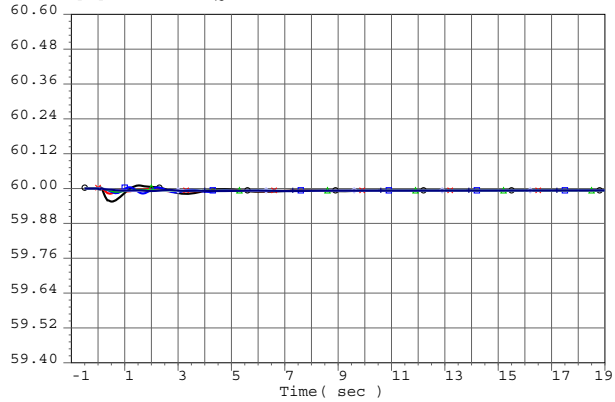

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 14021 | BALNORTH 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 14021 | BALNORTH 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013 HS2-OP BASE CASE
NOVEMBER 30, 2012



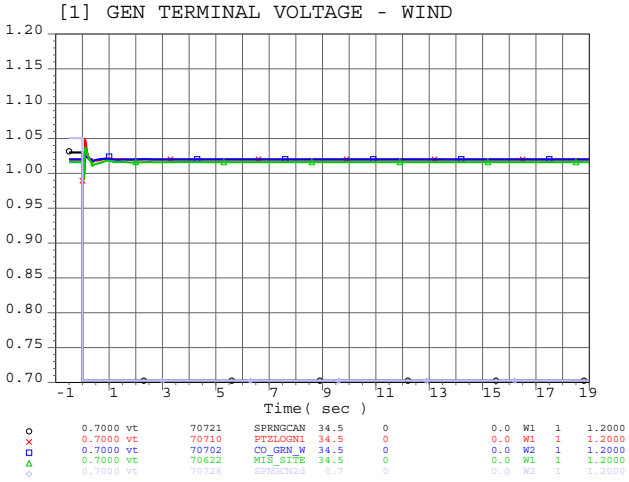
SC2_Sum_PstEqv_v0_04_SprCan!-NYuma_230_3ph_B.chf

.

Tue Nov 26 12:39:09 2013

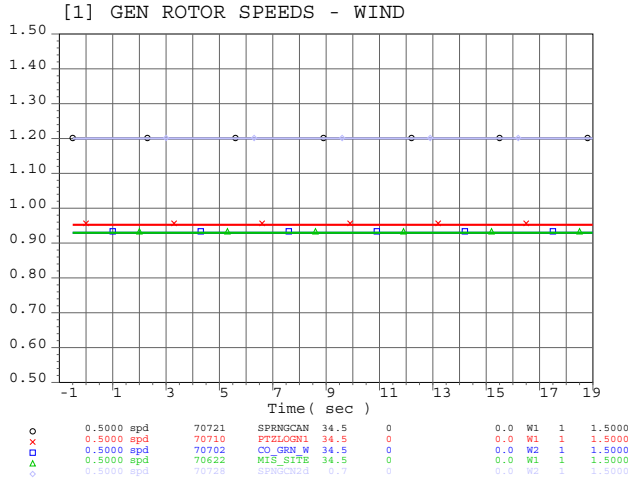
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



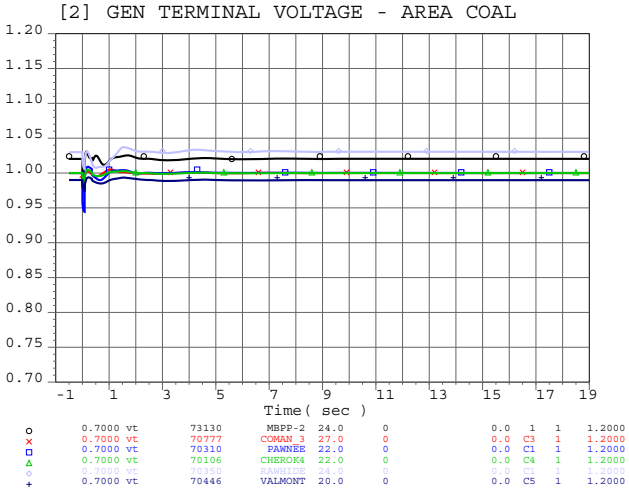

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| × | 0.7000 vt | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| □ | 0.7000 vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| △ | 0.7000 vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 70728 | SPNGCN2d | 0.7 | 0 | 0.0 | W2 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



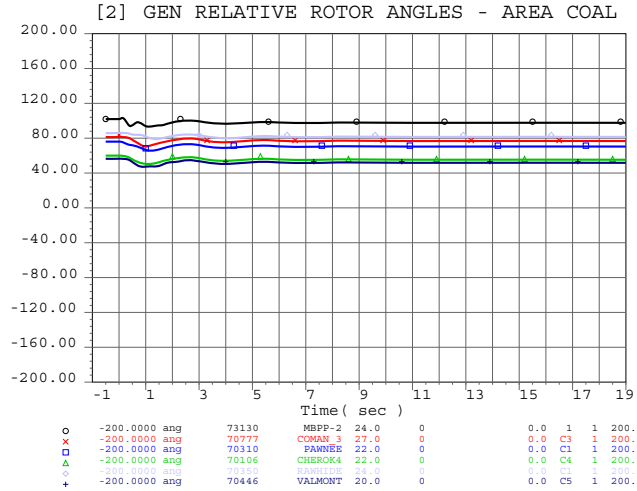

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.5000 spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| × | 0.5000 spd | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| □ | 0.5000 spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| △ | 0.5000 spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| ◇ | 0.5000 spd | 70728 | SPNGCN2d | 0.7 | 0 | 0.0 | W2 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



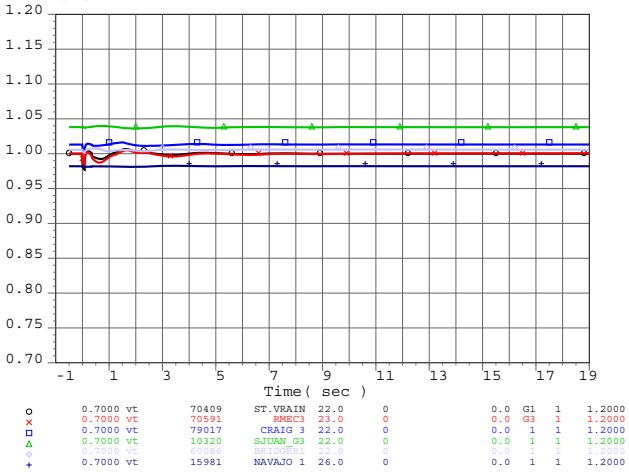

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| × | 0.7000 vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| □ | 0.7000 vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| △ | 0.7000 vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| + | 0.7000 vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



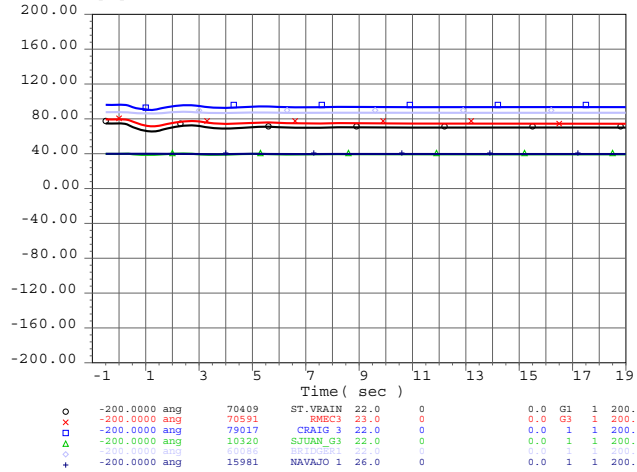

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| × | -200.0000 ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| □ | -200.0000 ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| △ | -200.0000 ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| + | -200.0000 ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| × | 0.7000 vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| □ | 0.7000 vt | 79017 | CRAIG_3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| △ | 0.7000 vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 60186 | NUCLEA4 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| + | 0.7000 vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| × | -200.0000 ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| □ | -200.0000 ang | 79017 | CRAIG_3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| △ | -200.0000 ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 60186 | NUCLEA4 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| + | -200.0000 ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |

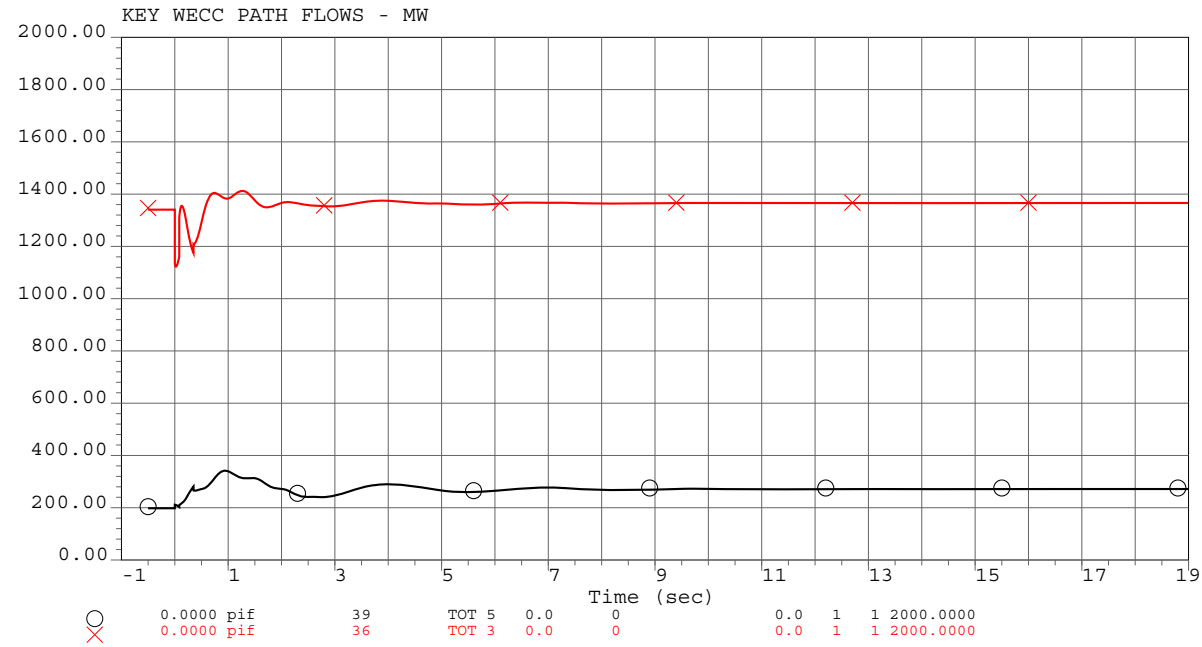
WESTERN ELECTRICITY COORDINATING COUNCIL
2013 HS2-OP BASE CASE
NOVEMBER 30, 2012

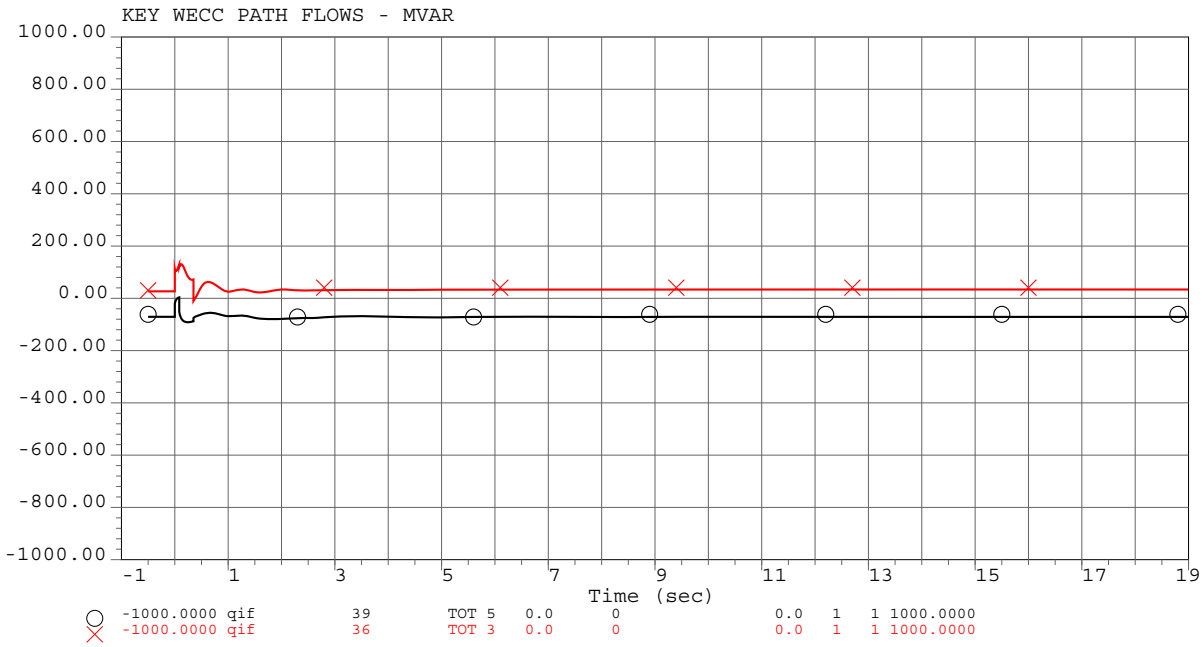


SC2_Sum_PstEqv_v0_04_SprCan!-NYuma_230_3ph_B.chf

.

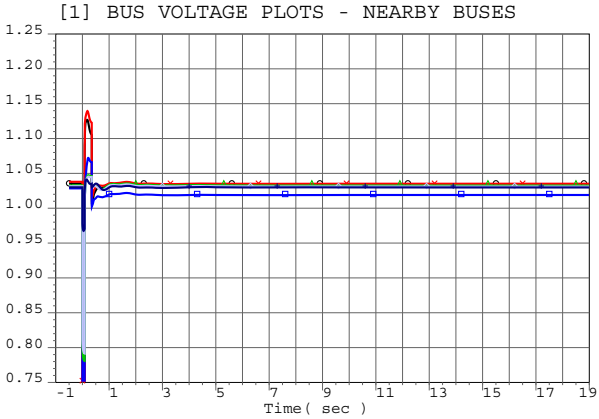
Tue Nov 26 12:39:09 2013


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

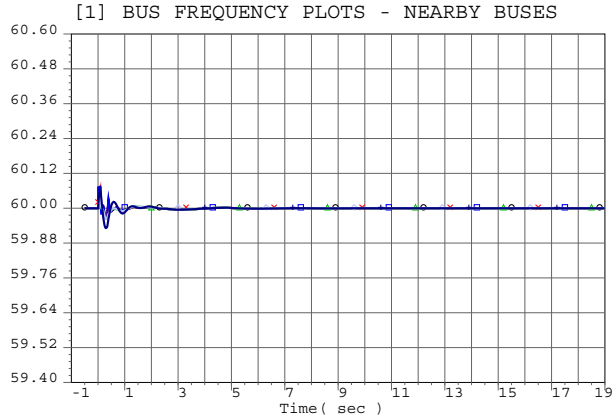
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



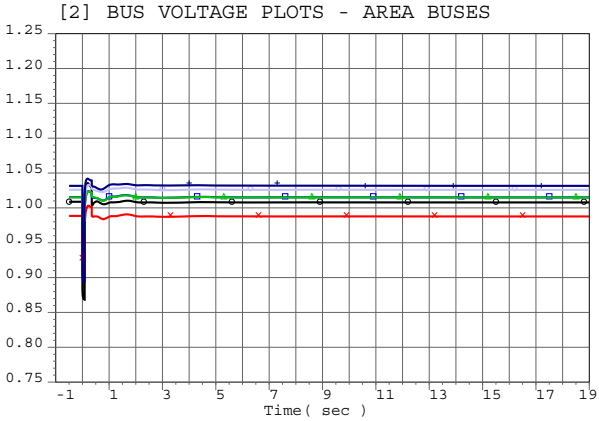

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



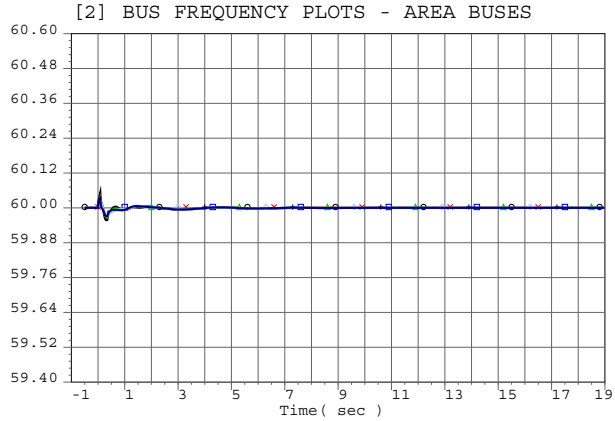

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



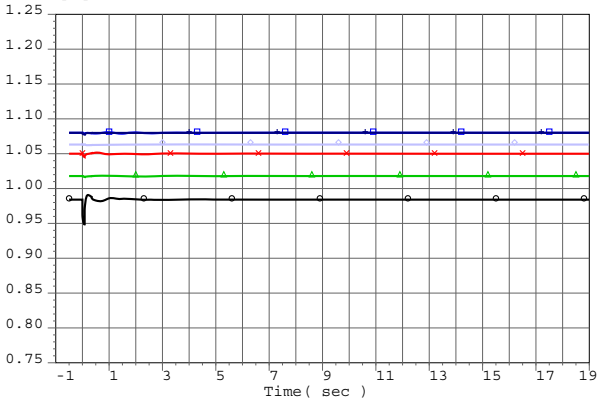

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



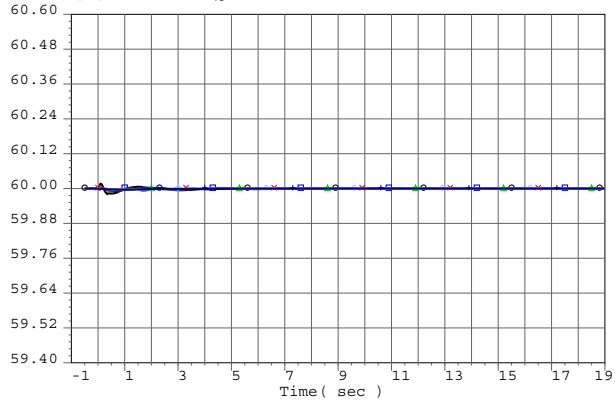

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 14021 | BALNORTH 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 14021 | BALNORTH 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013 HS2-OP BASE CASE
NOVEMBER 30, 2012



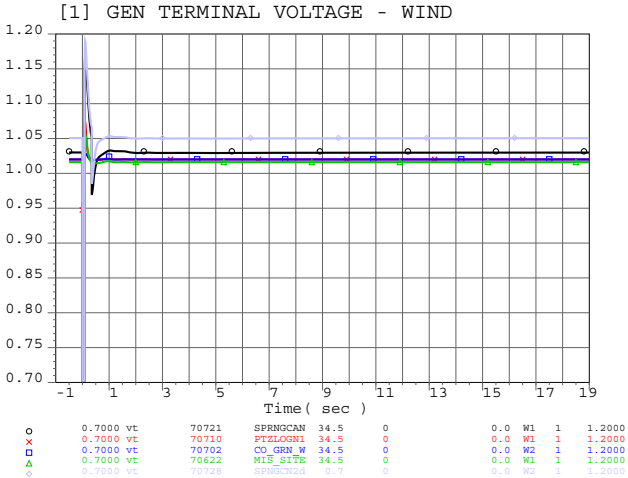
SC2_Sum_PstEqv_v0_05_NYuma!-Story_230_3ph_B.chf

.

Tue Nov 26 12:39:18 2013

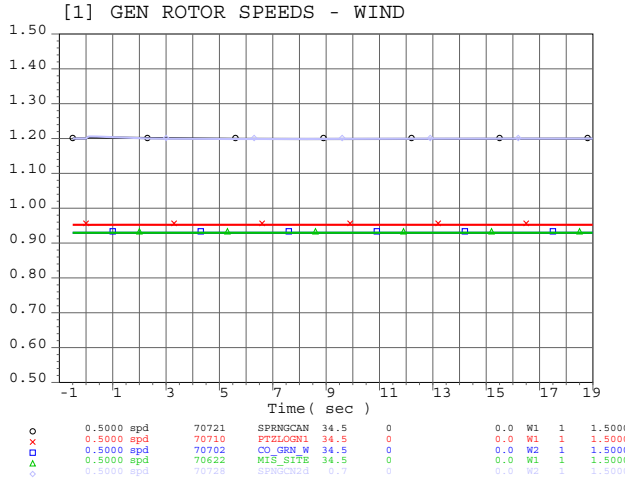
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



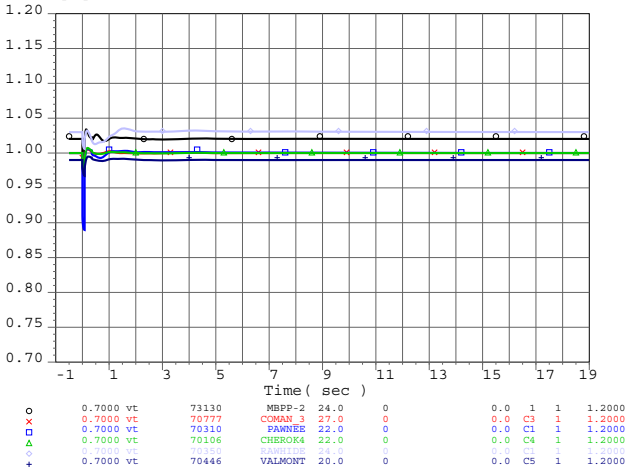

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| × | 0.7000 vt | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| □ | 0.7000 vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| △ | 0.7000 vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 70728 | SPNGCN2d | 0.7 | 0 | 0.0 | W2 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



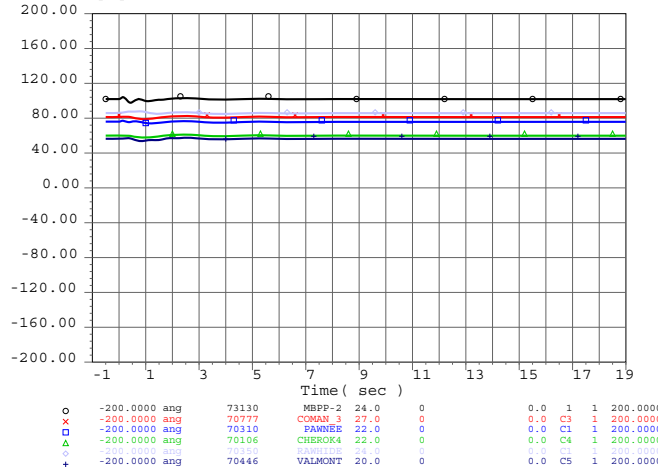

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.5000 spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| × | 0.5000 spd | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| □ | 0.5000 spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| △ | 0.5000 spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| ◇ | 0.5000 spd | 70728 | SPNGCN2d | 0.7 | 0 | 0.0 | W2 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



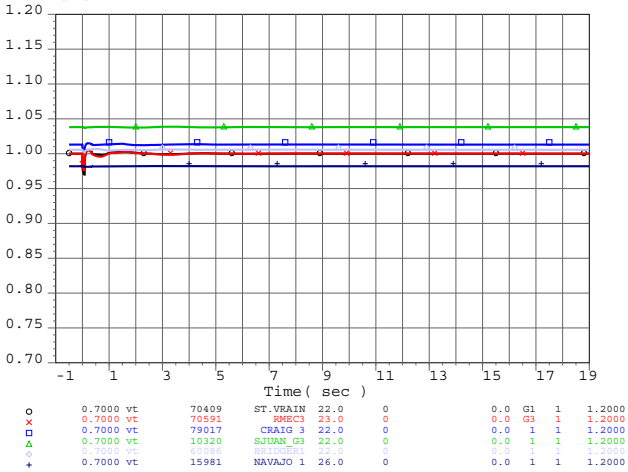

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| × | 0.7000 vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| □ | 0.7000 vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| △ | 0.7000 vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| + | 0.7000 vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



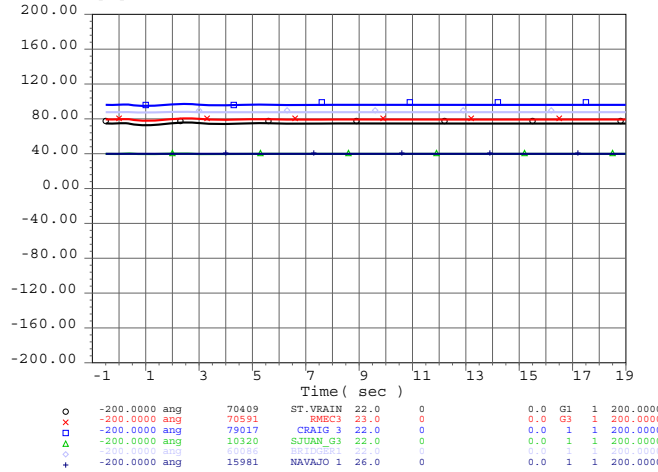

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| × | -200.0000 ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| □ | -200.0000 ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| △ | -200.0000 ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| + | -200.0000 ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| × | 0.7000 vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| □ | 0.7000 vt | 79017 | CRAIG_3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| △ | 0.7000 vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 60186 | NUCLEAR4 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| + | 0.7000 vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| × | -200.0000 ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| □ | -200.0000 ang | 79017 | CRAIG_3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| △ | -200.0000 ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 60186 | NUCLEAR4 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| + | -200.0000 ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |

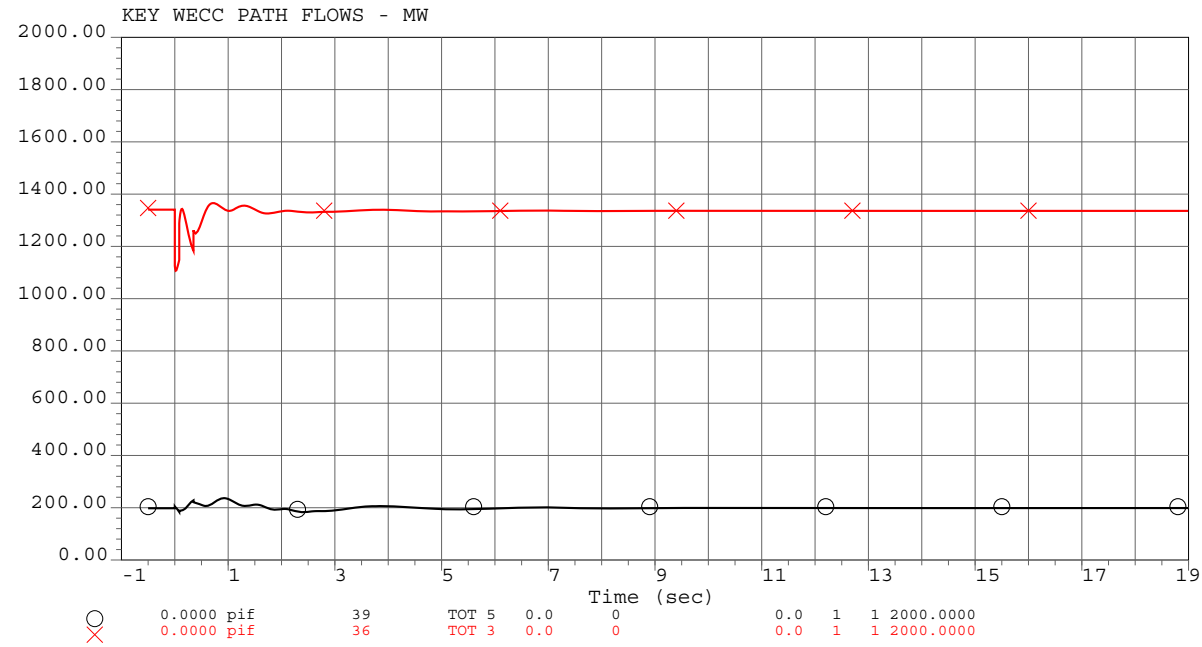
WESTERN ELECTRICITY COORDINATING COUNCIL
2013 HS2-OP BASE CASE
NOVEMBER 30, 2012

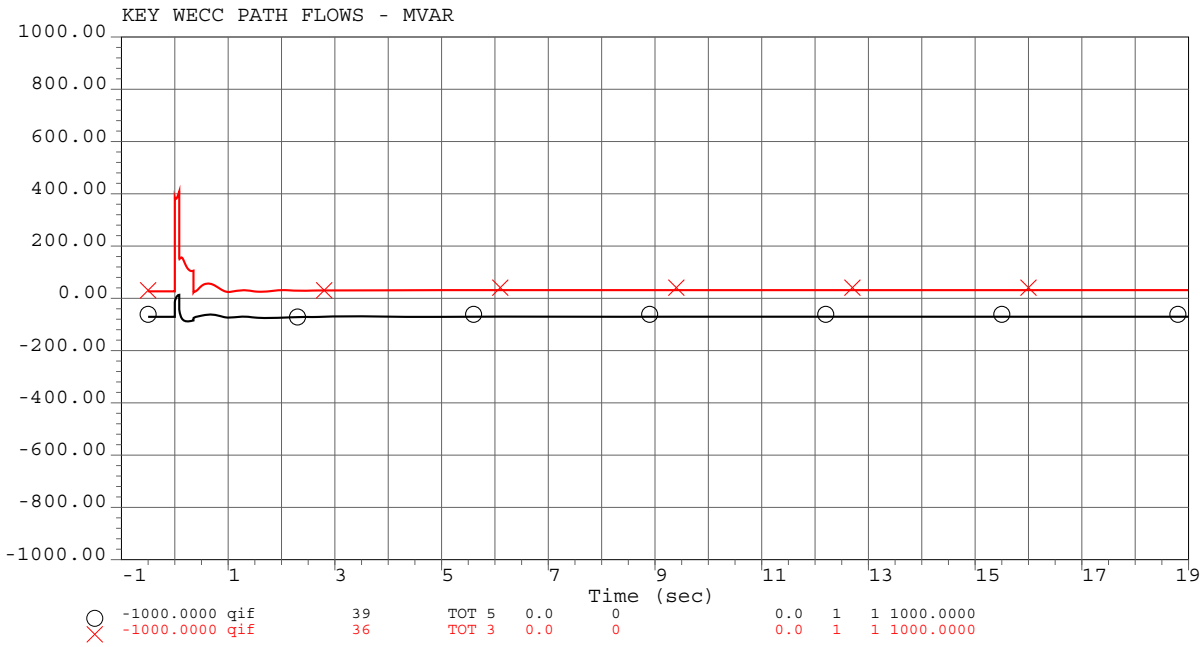


SC2_Sum_PstEqv_v0_05_NYuma!-Story_230_3ph_B.chf

.

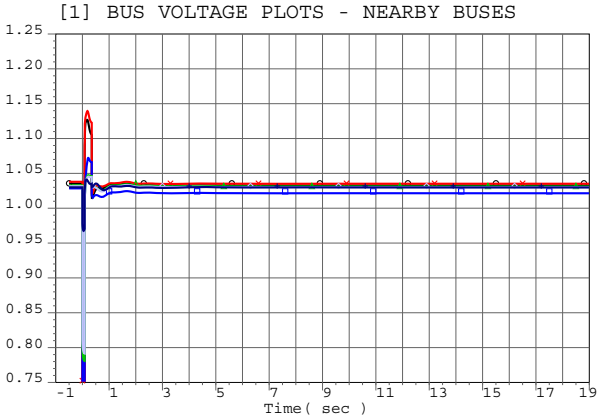
Tue Nov 26 12:39:18 2013


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

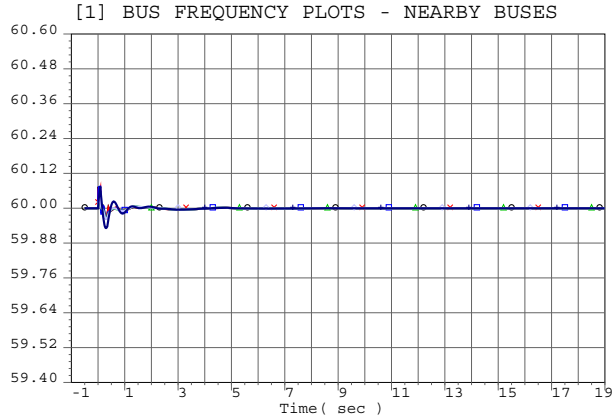
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



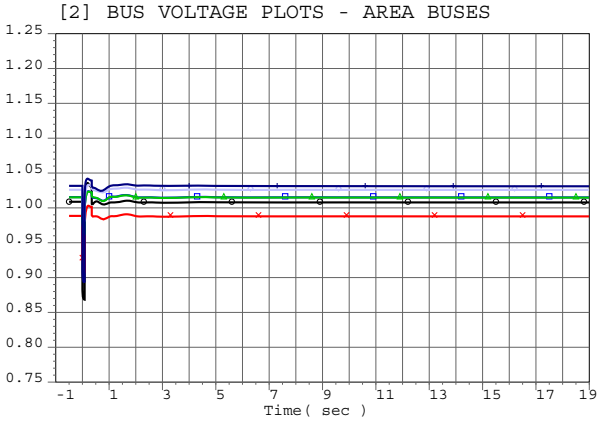

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 73188 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



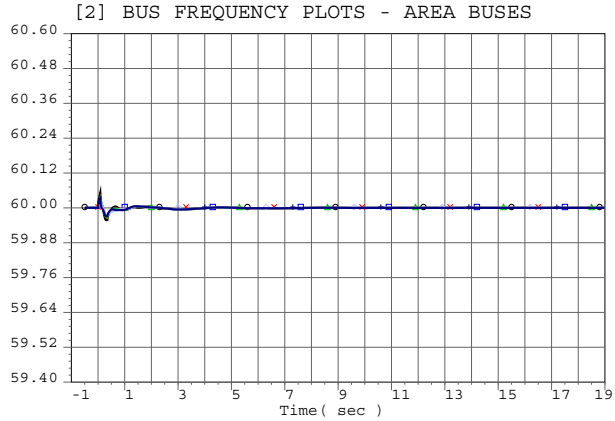

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 73188 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



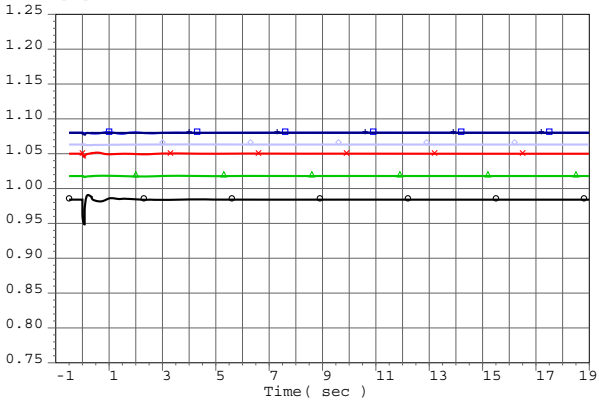

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



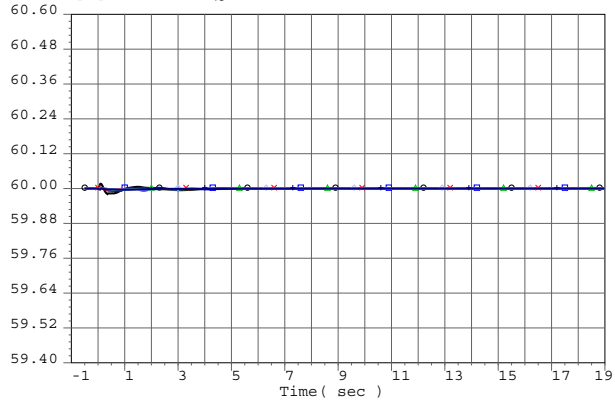

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 14021 | BALNORTH 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 14021 | BALNORTH 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013 HS2-OP BASE CASE
NOVEMBER 30, 2012



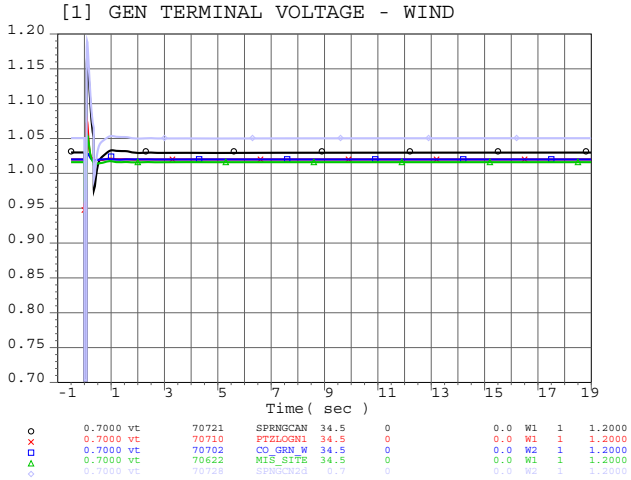
SC2_Sum_PstEqv_v0_06_NYuma!-Wray_230_3ph_B.chf

.

Tue Nov 26 12:39:26 2013

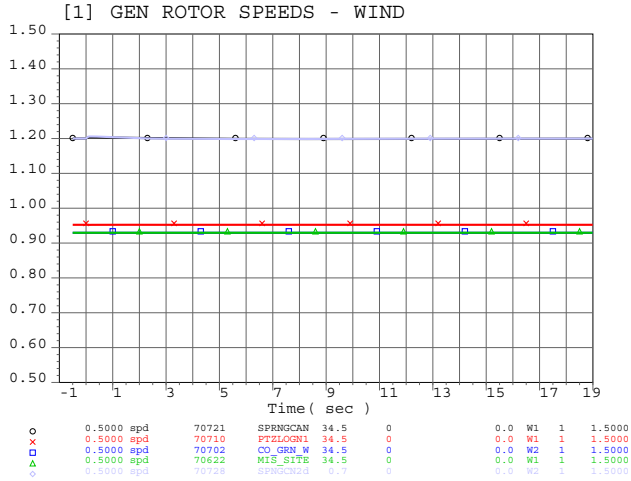
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



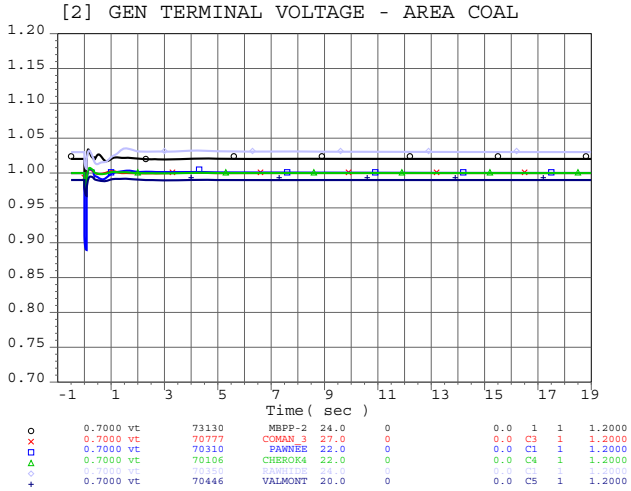

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| × | 0.7000 vt | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| □ | 0.7000 vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| △ | 0.7000 vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 70728 | SPNGCN2d | 0.7 | 0 | 0.0 | W2 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



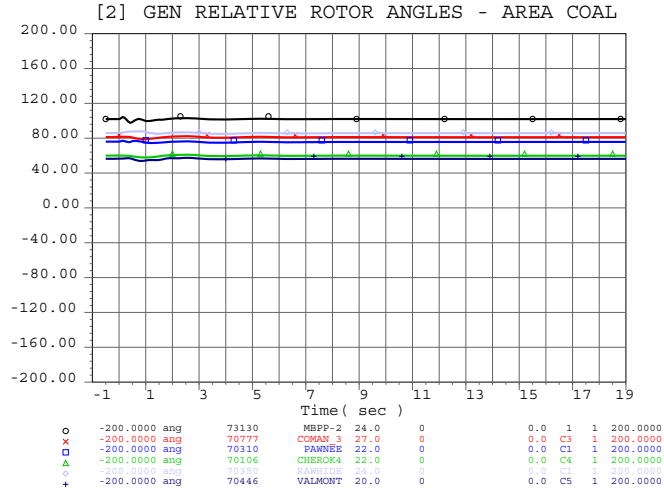

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.5000 spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| × | 0.5000 spd | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| □ | 0.5000 spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| △ | 0.5000 spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| ◇ | 0.5000 spd | 70728 | SPNGCN2d | 0.7 | 0 | 0.0 | W2 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



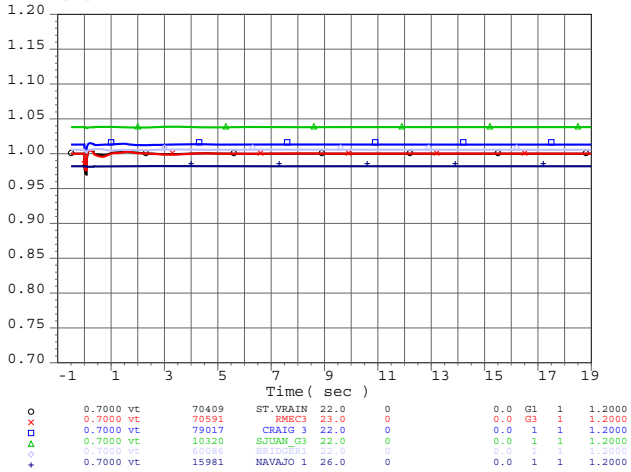

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| × | 0.7000 vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| □ | 0.7000 vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| △ | 0.7000 vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| + | 0.7000 vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



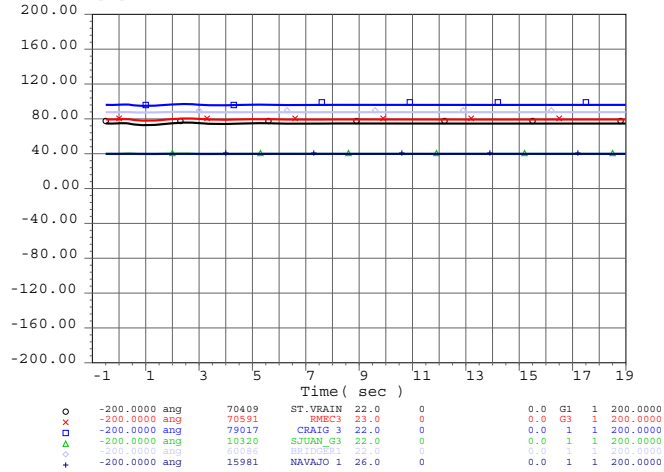

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| × | -200.0000 ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| □ | -200.0000 ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| △ | -200.0000 ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| + | -200.0000 ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| × | 0.7000 vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| □ | 0.7000 vt | 79017 | CRAIG_3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| △ | 0.7000 vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 60186 | NAUGHS4 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| + | 0.7000 vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| × | -200.0000 ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| □ | -200.0000 ang | 79017 | CRAIG_3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| △ | -200.0000 ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 60186 | NAUGHS4 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| + | -200.0000 ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |

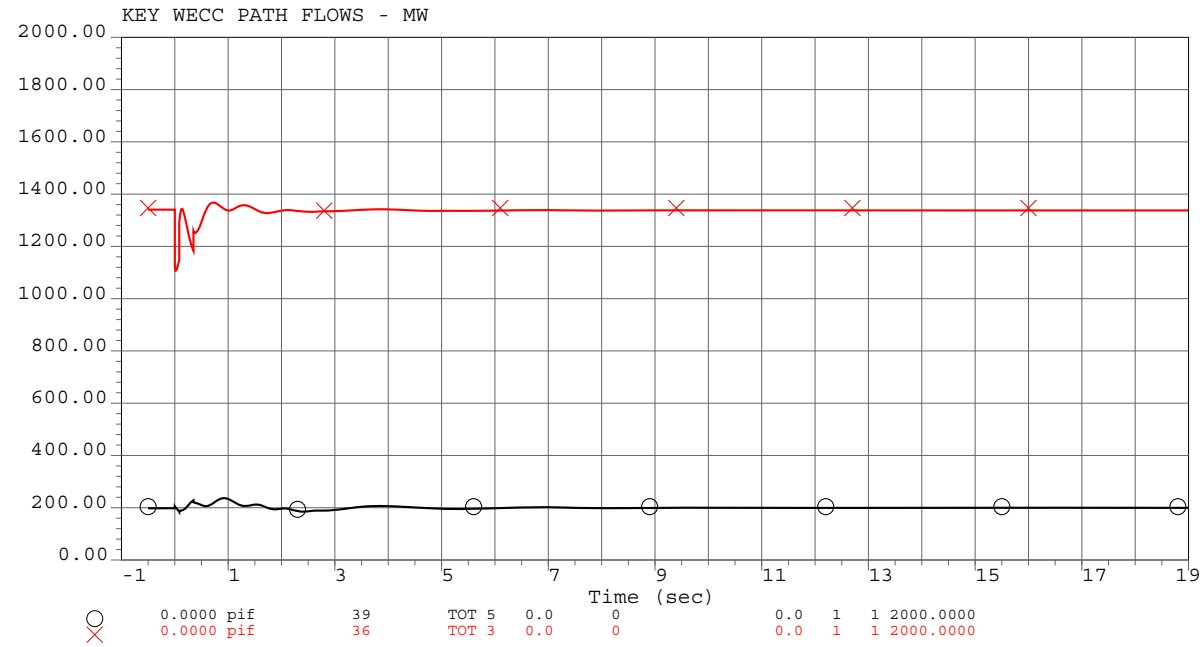
WESTERN ELECTRICITY COORDINATING COUNCIL
2013 HS2-OP BASE CASE
NOVEMBER 30, 2012

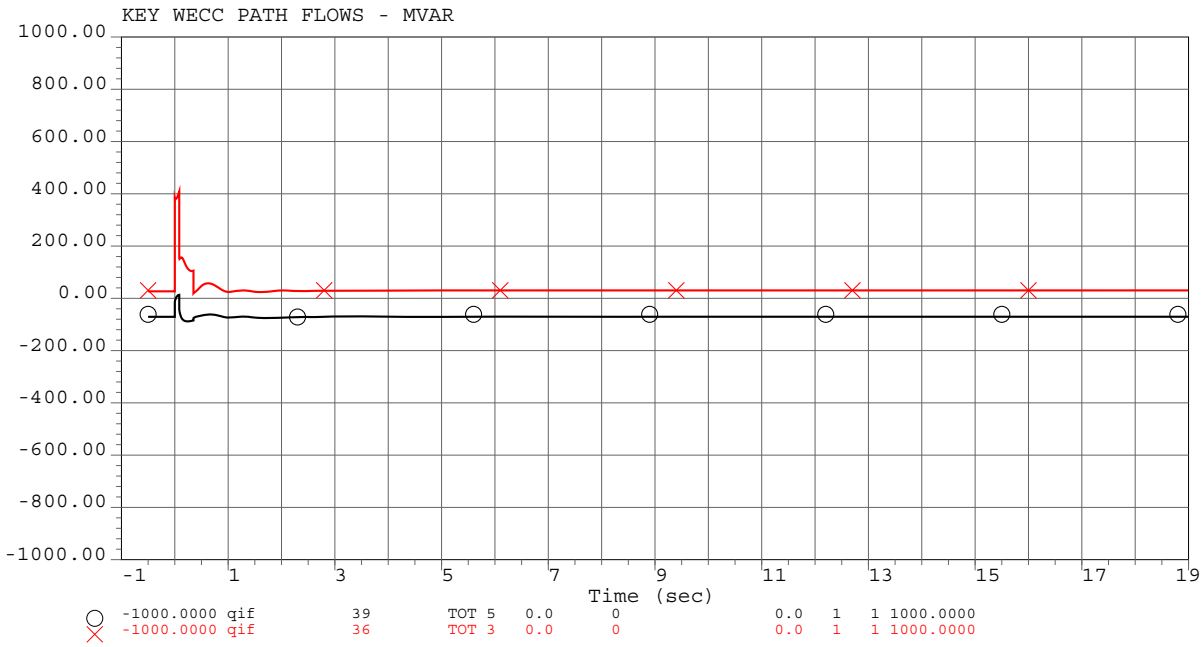


SC2_Sum_PstEqv_v0_06_NYuma!-Wray_230_3ph_B.chf

.

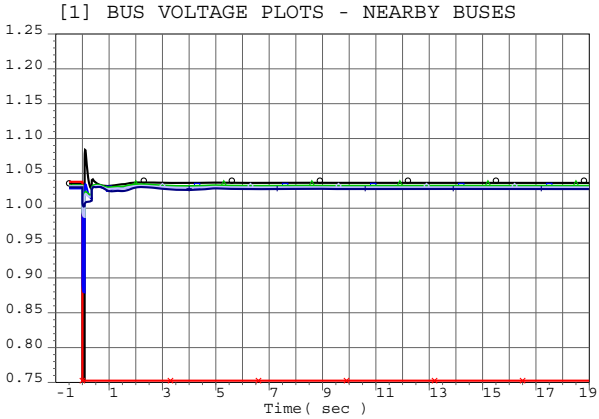
Tue Nov 26 12:39:26 2013


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

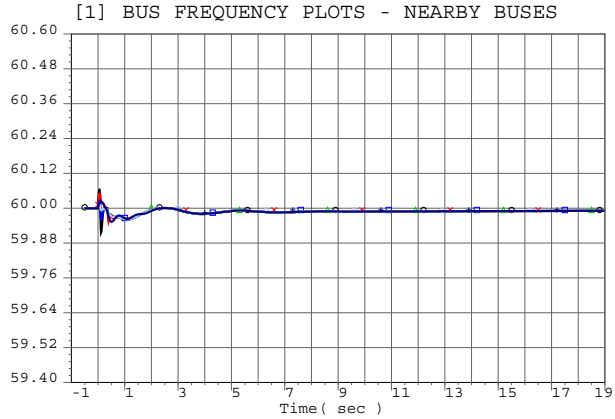
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



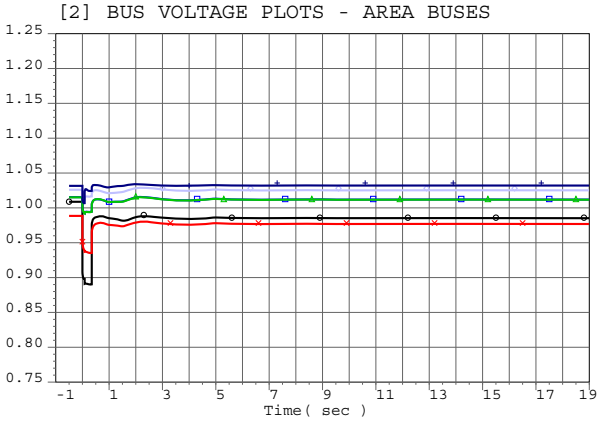

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



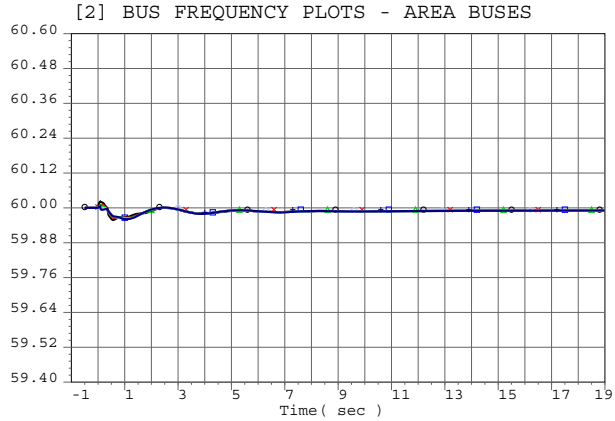

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



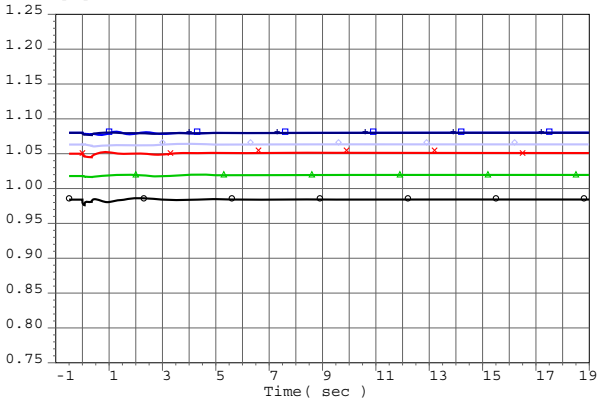

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



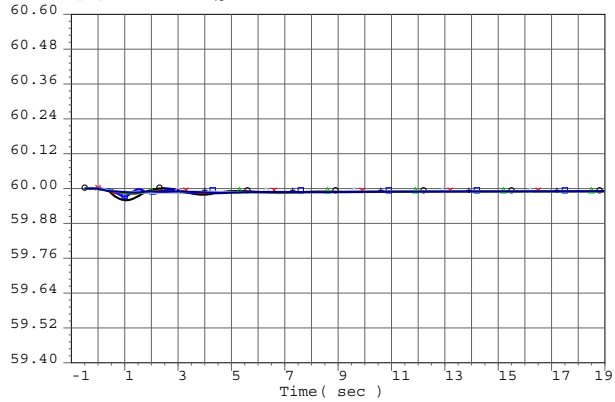

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 14021 | BALNORTH 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 14021 | BALNORTH 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013 HS2-OP BASE CASE
NOVEMBER 30, 2012



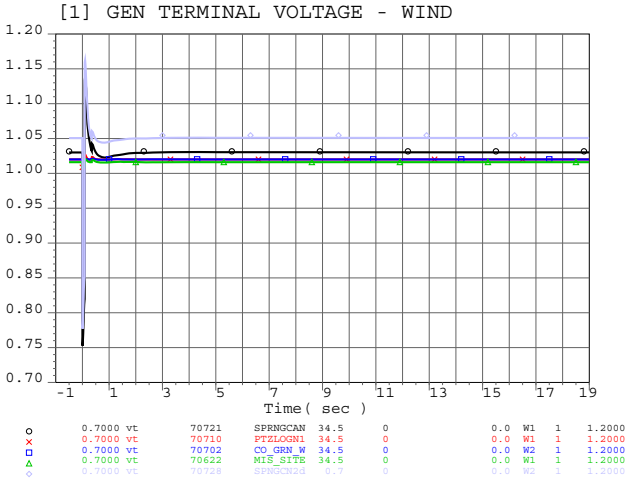
SC2_Sum_PstEqv_v0_07_Sidney!-SprCan_230_SLG_C.chf

.

Tue Nov 26 12:39:34 2013

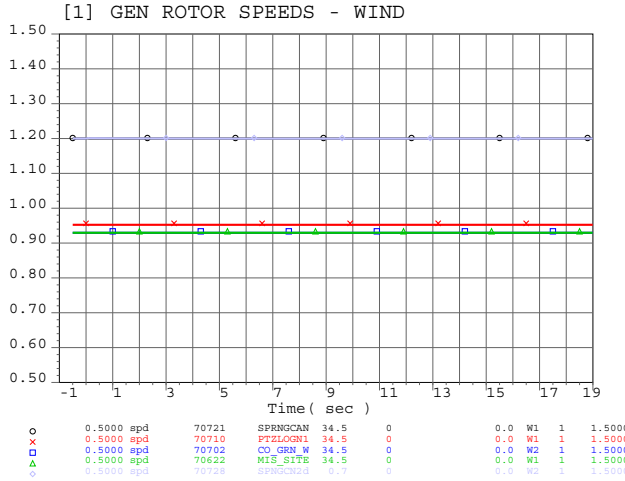
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



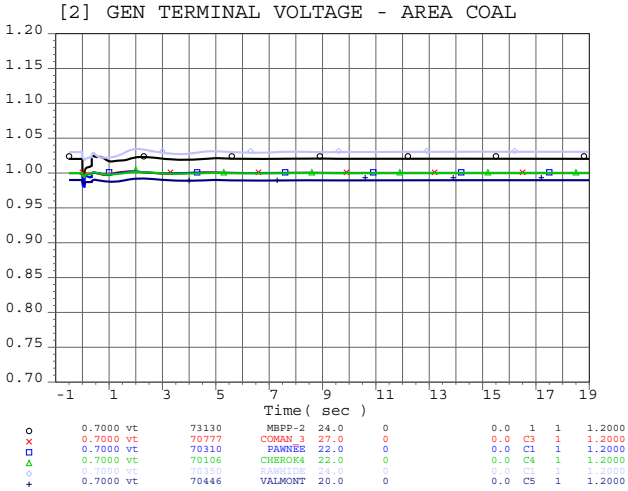

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| × | 0.7000 vt | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| □ | 0.7000 vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| △ | 0.7000 vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 70728 | SPNGCN2d | 0.7 | 0 | 0.0 | W2 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



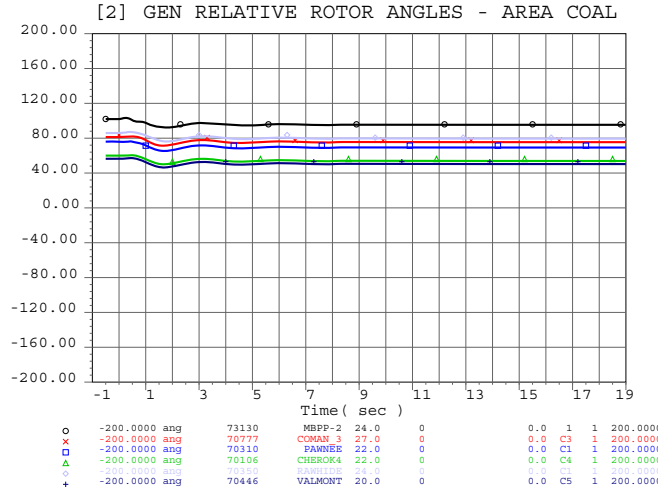

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.5000 spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| × | 0.5000 spd | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| □ | 0.5000 spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| △ | 0.5000 spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| ◇ | 0.5000 spd | 70728 | SPNGCN2d | 0.7 | 0 | 0.0 | W2 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



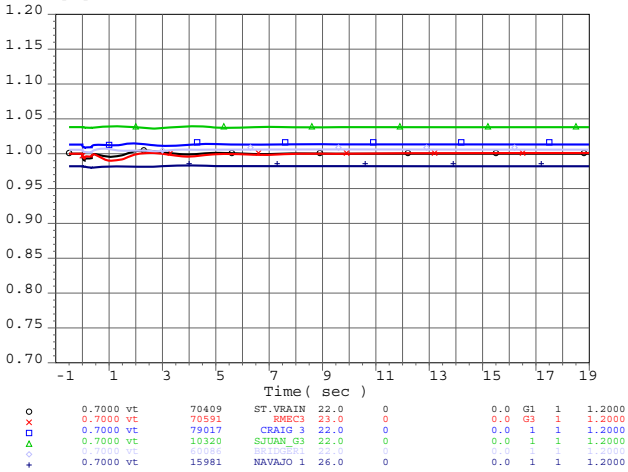

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| × | 0.7000 vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| □ | 0.7000 vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| △ | 0.7000 vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| + | 0.7000 vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



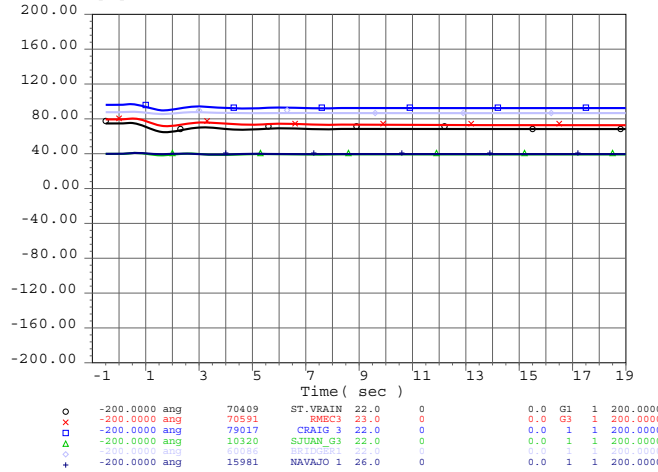

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| × | -200.0000 ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| □ | -200.0000 ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| △ | -200.0000 ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| + | -200.0000 ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| × | 0.7000 vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| □ | 0.7000 vt | 79017 | CRAIG_3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| △ | 0.7000 vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 60186 | NUCLEAR4 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| + | 0.7000 vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| × | -200.0000 ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| □ | -200.0000 ang | 79017 | CRAIG_3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| △ | -200.0000 ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 60186 | NUCLEAR4 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| + | -200.0000 ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |

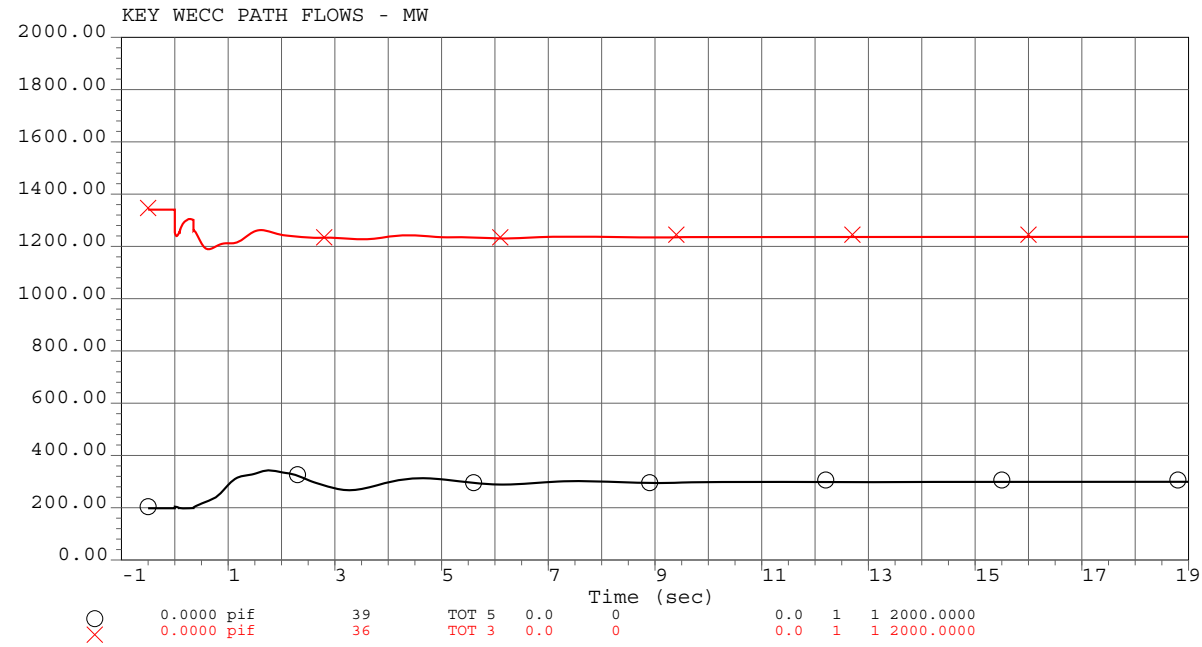
WESTERN ELECTRICITY COORDINATING COUNCIL
2013 HS2-OP BASE CASE
NOVEMBER 30, 2012

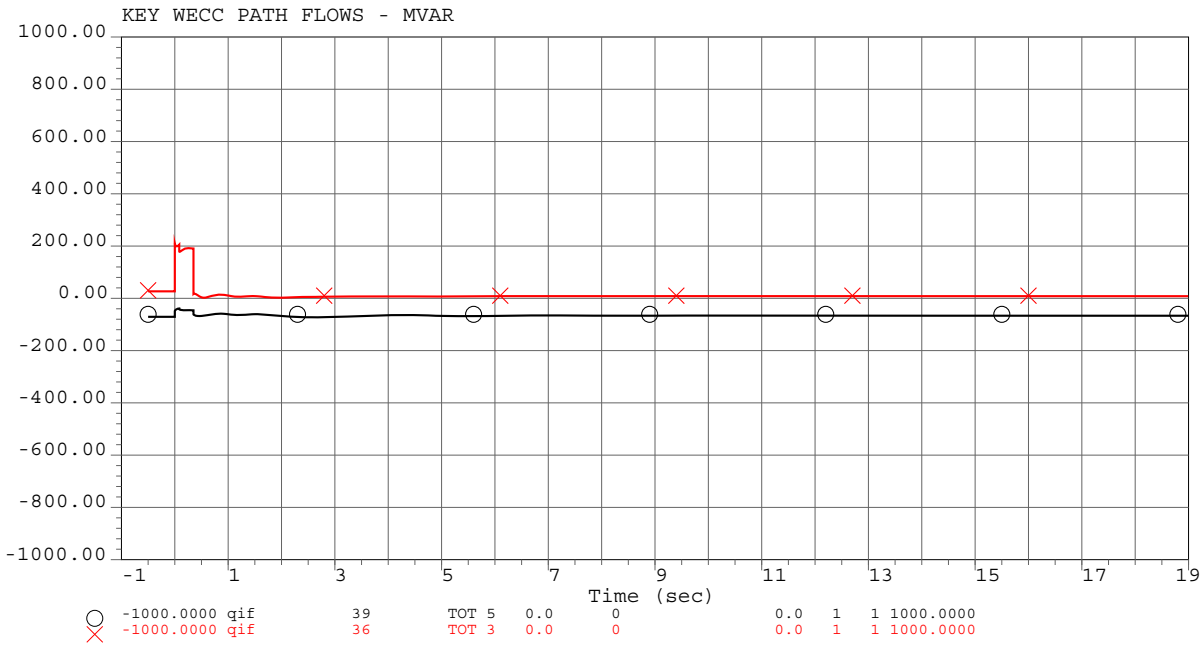


SC2_Sum_PstEqv_v0_07_Sidney!-SprCan_230_SLG_C.chf

.

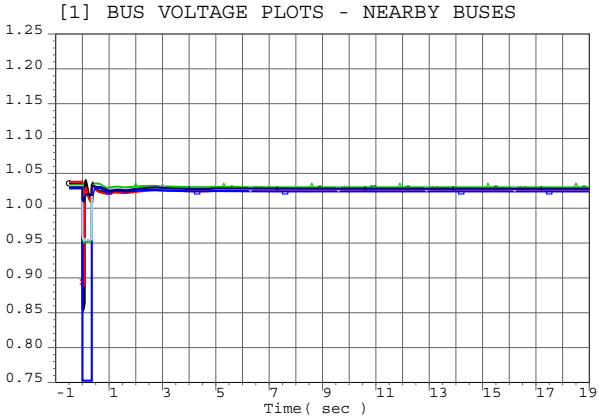
Tue Nov 26 12:39:34 2013


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

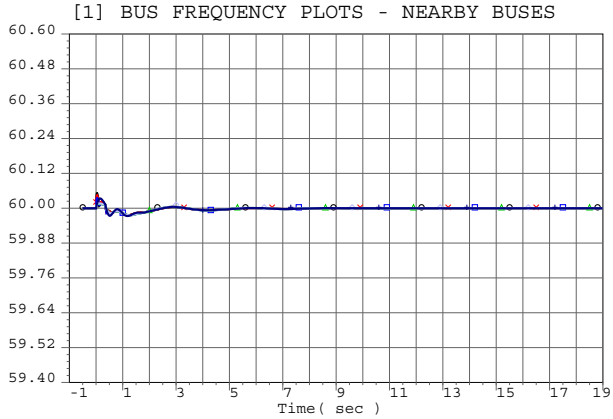
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



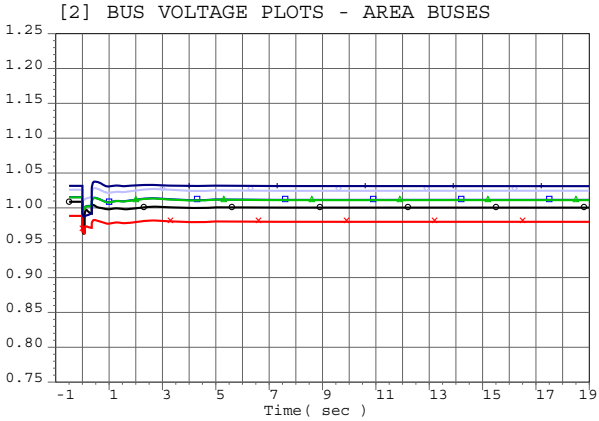

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



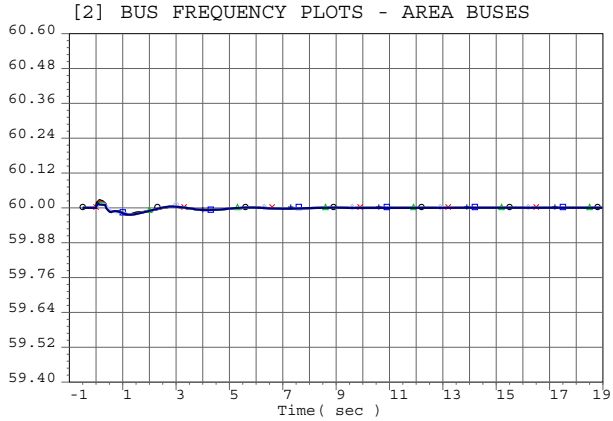

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



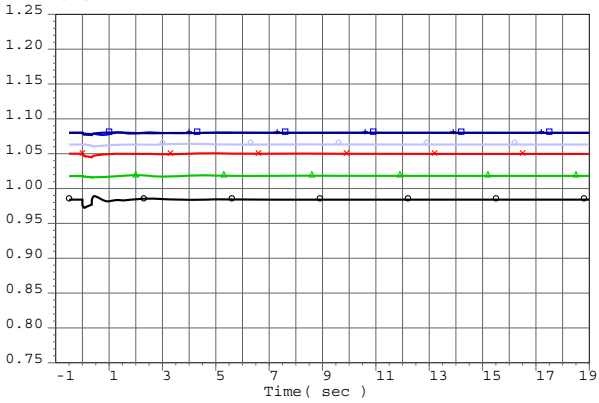

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



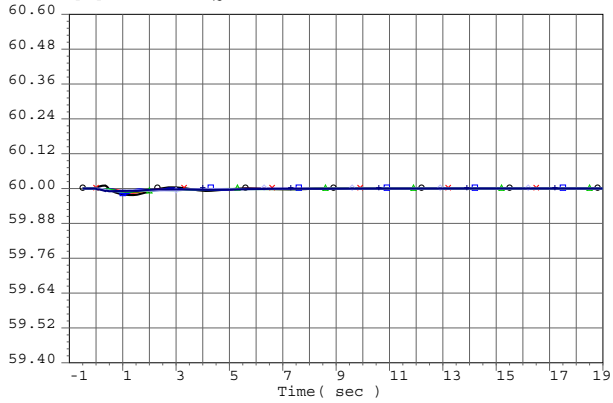

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 14021 | BALNORTH 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 14021 | BALNORTH 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013 HS2-OP BASE CASE
NOVEMBER 30, 2012



SC2_Sum_PstEqv_v0_08_NYuma!-SprCan_230_SLG_C.chf

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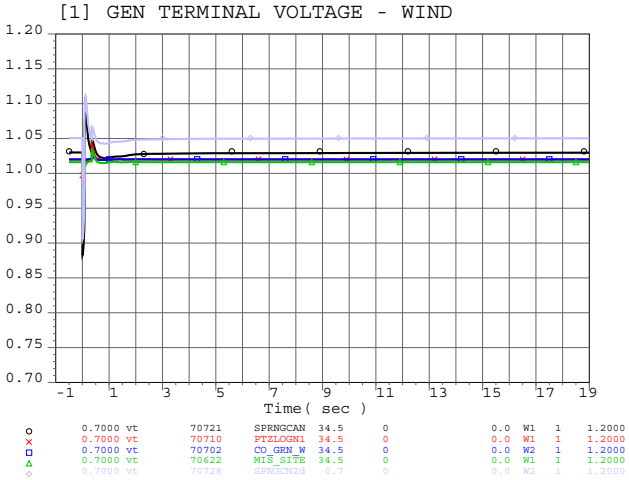
Tue Nov 26 12:39:43 2013

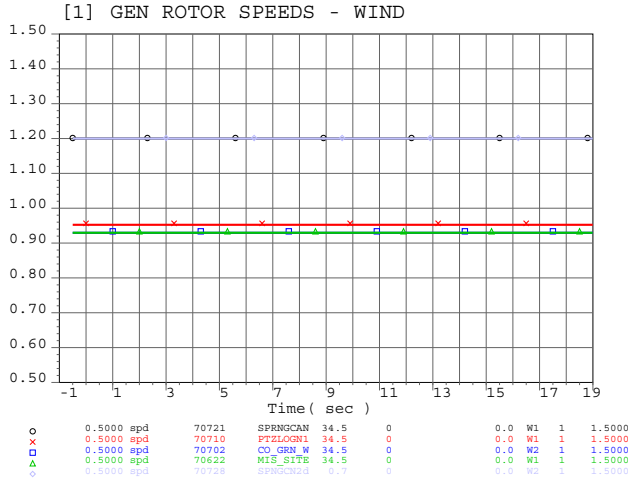
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



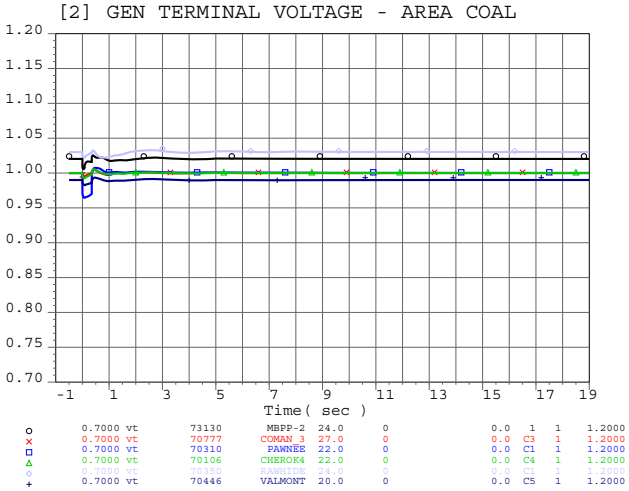

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| × | 0.7000 vt | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| □ | 0.7000 vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| △ | 0.7000 vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 70728 | SPNGCN2d | 0.7 | 0 | 0.0 | W2 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



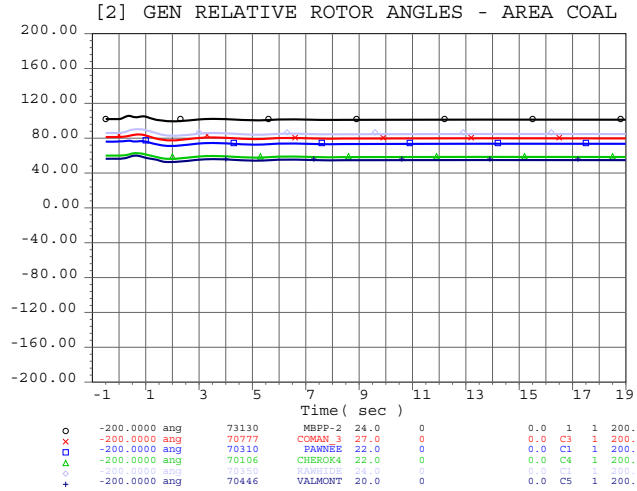

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.5000 spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| × | 0.5000 spd | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| □ | 0.5000 spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| △ | 0.5000 spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| ◇ | 0.5000 spd | 70728 | SPNGCN2d | 0.7 | 0 | 0.0 | W2 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



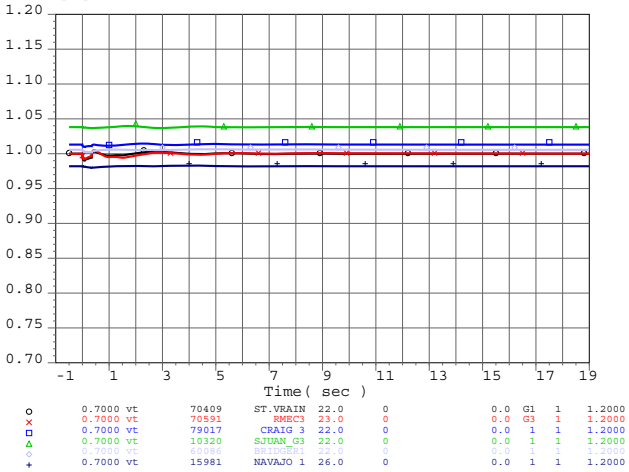

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| × | 0.7000 vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| □ | 0.7000 vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| △ | 0.7000 vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| + | 0.7000 vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



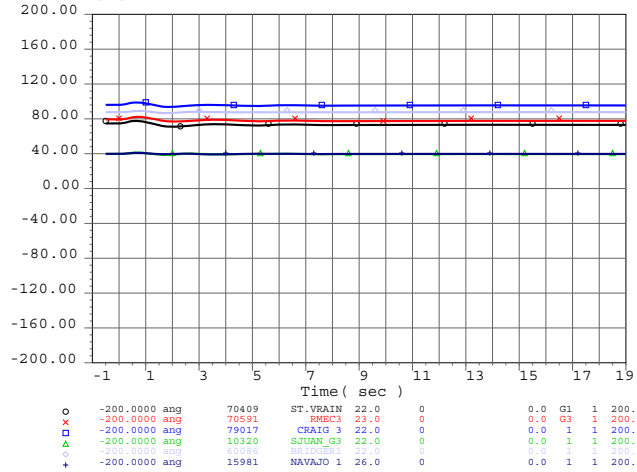

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| × | -200.0000 ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| □ | -200.0000 ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| △ | -200.0000 ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| + | -200.0000 ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| × | 0.7000 vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| □ | 0.7000 vt | 79017 | CRAIG_3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| △ | 0.7000 vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 70186 | HAYDEN4 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| + | 0.7000 vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| × | -200.0000 ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| □ | -200.0000 ang | 79017 | CRAIG_3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| △ | -200.0000 ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 70186 | HAYDEN4 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| + | -200.0000 ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |

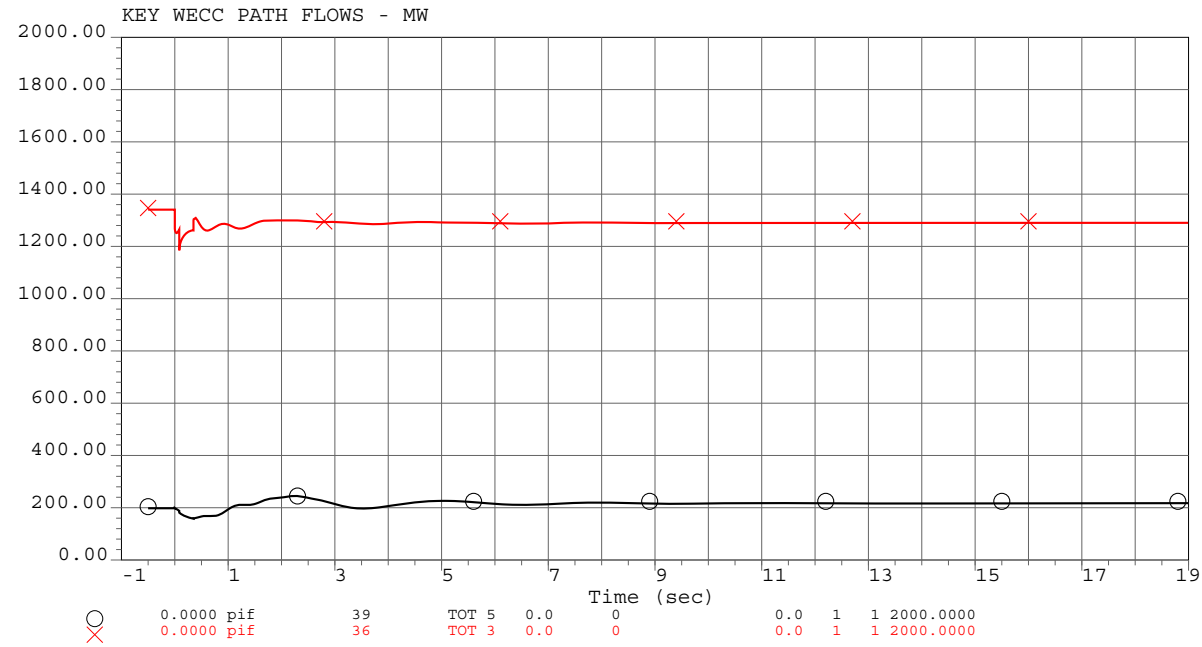
WESTERN ELECTRICITY COORDINATING COUNCIL
2013 HS2-OP BASE CASE
NOVEMBER 30, 2012

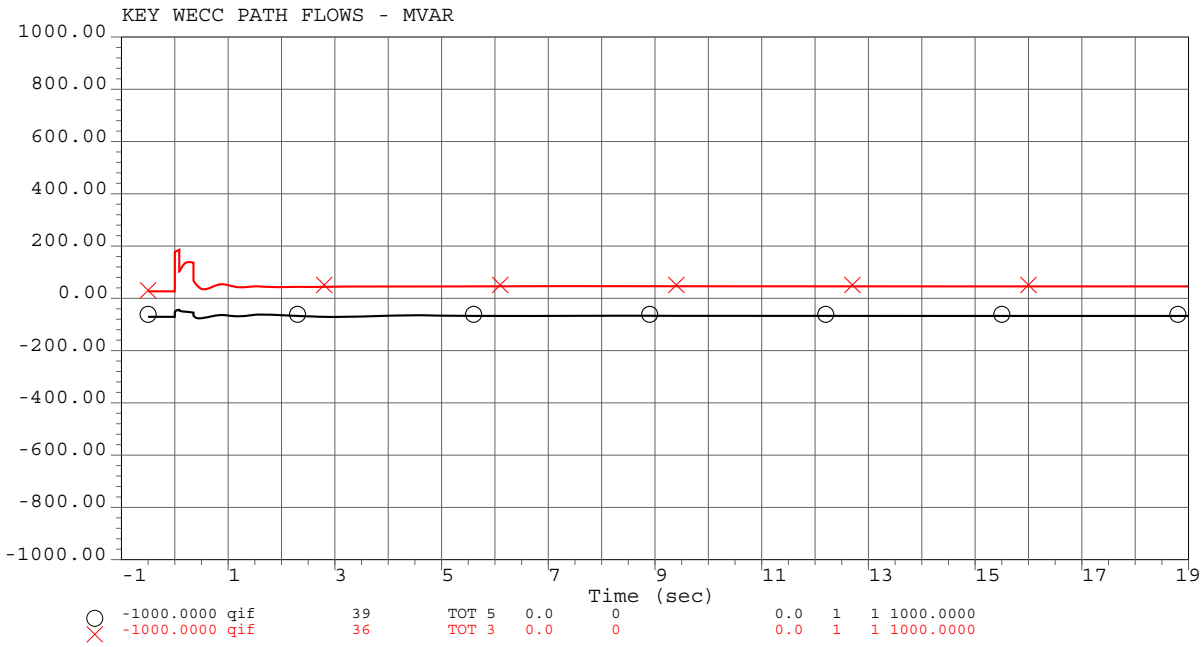


SC2_Sum_PstEqv_v0_08_NYuma!-SprCan_230_SLG_C.chf

.

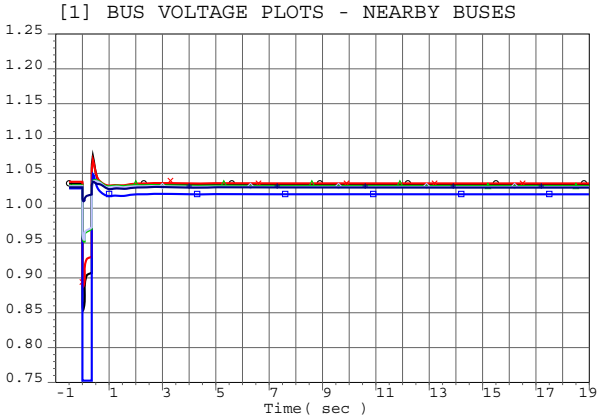
Tue Nov 26 12:39:44 2013


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

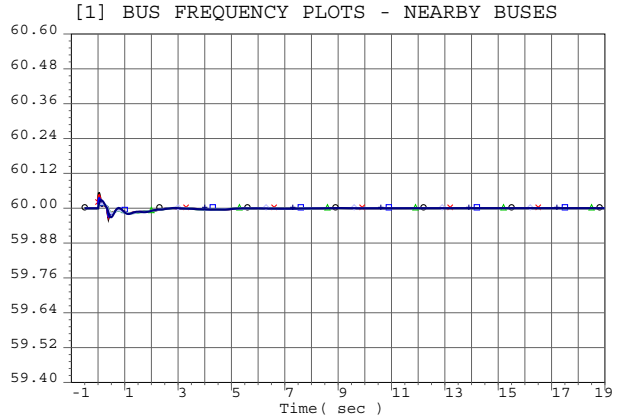
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



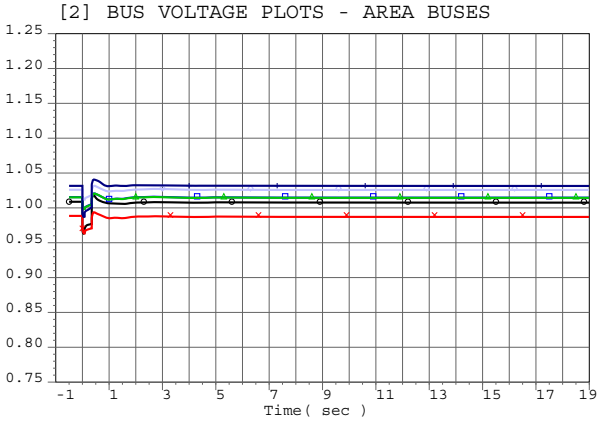

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



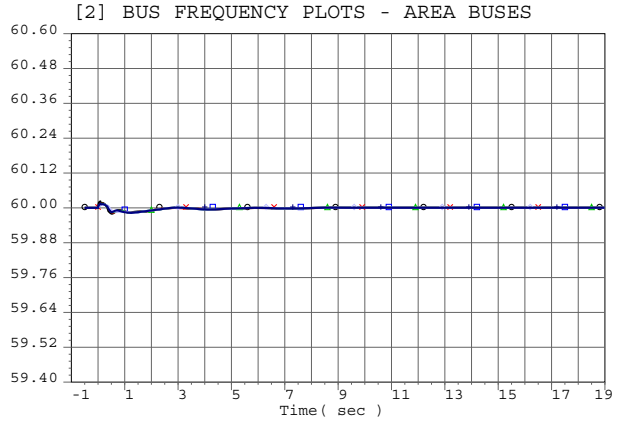

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



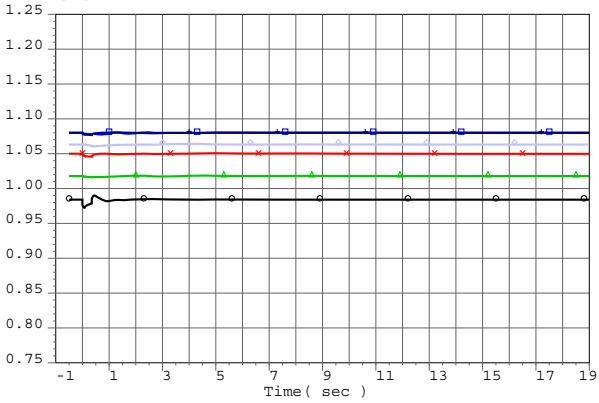

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



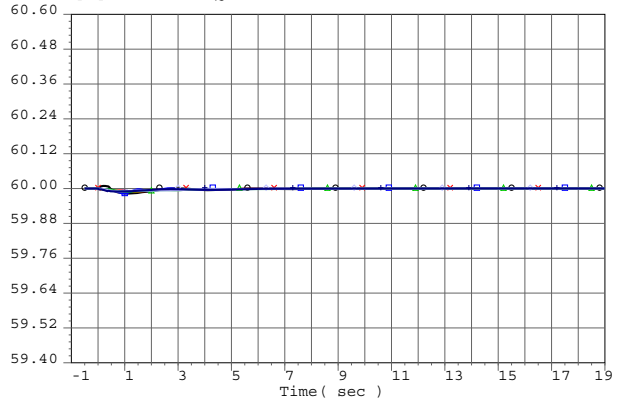

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 14021 | BALNORTH 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 14021 | BALNORTH 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013 HS2-OP BASE CASE
NOVEMBER 30, 2012



SC2_Sum_PstEqv_v0_08a_NYuma230!-115Xfmr_SLG_C.chf

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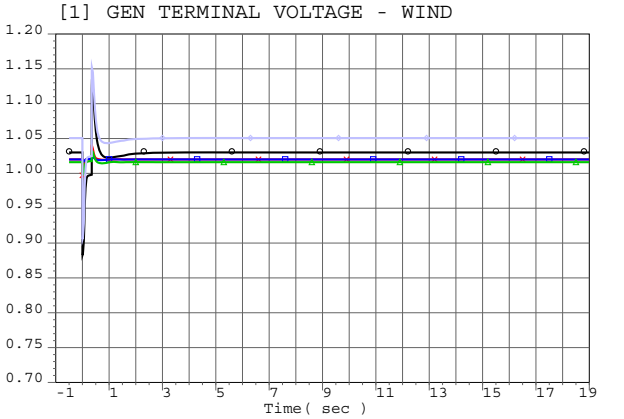
Tue Nov 26 12:39:52 2013

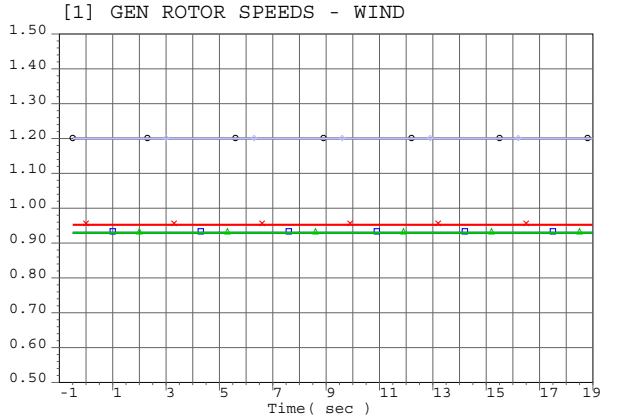
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



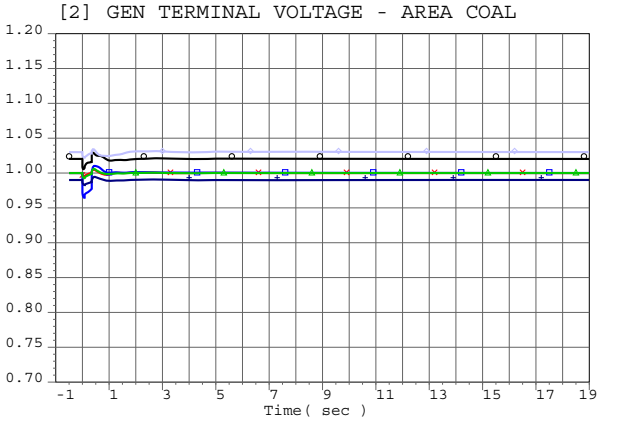

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| × | 0.7000 vt | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| □ | 0.7000 vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| △ | 0.7000 vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 70728 | SPNGCN2d | 0.7 | 0 | 0.0 | W2 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



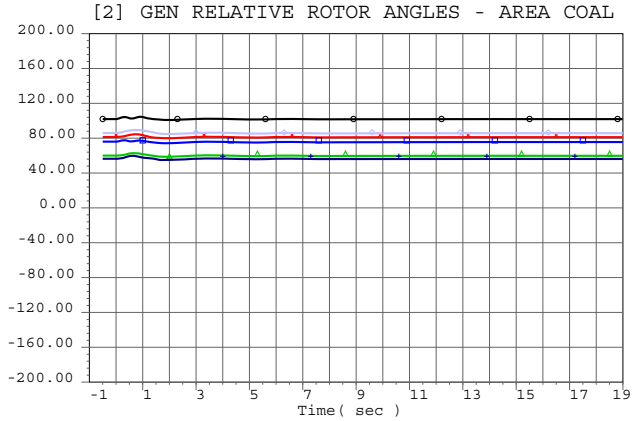

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.5000 spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| × | 0.5000 spd | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| □ | 0.5000 spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| △ | 0.5000 spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| ◇ | 0.5000 spd | 70728 | SPNGCN2d | 0.7 | 0 | 0.0 | W2 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



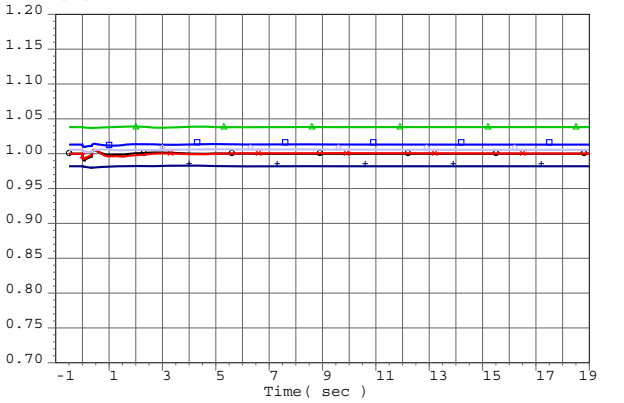

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| × | 0.7000 vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| □ | 0.7000 vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| △ | 0.7000 vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| + | 0.7000 vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



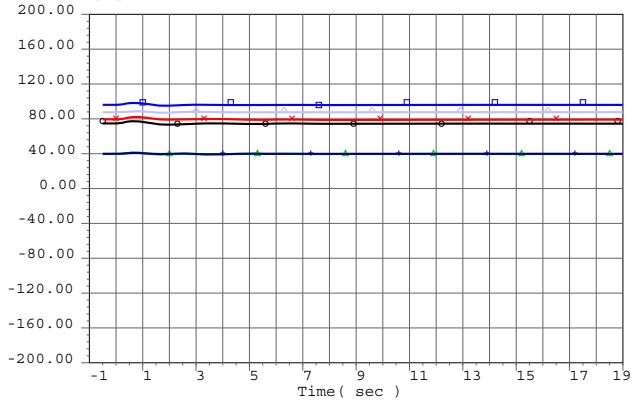

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| × | -200.0000 ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| □ | -200.0000 ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| △ | -200.0000 ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| + | -200.0000 ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| × | 0.7000 vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| □ | 0.7000 vt | 79017 | CRAIG_3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| △ | 0.7000 vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 60186 | NUCLEAR4 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| + | 0.7000 vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| × | -200.0000 ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| □ | -200.0000 ang | 79017 | CRAIG_3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| △ | -200.0000 ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 60186 | NUCLEAR4 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| + | -200.0000 ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013 HS2-OP BASE CASE
NOVEMBER 30, 2012



SC2_Sum_PstEqv_v0_08a_NYuma230!-115Xfmr_SLG_C.chf

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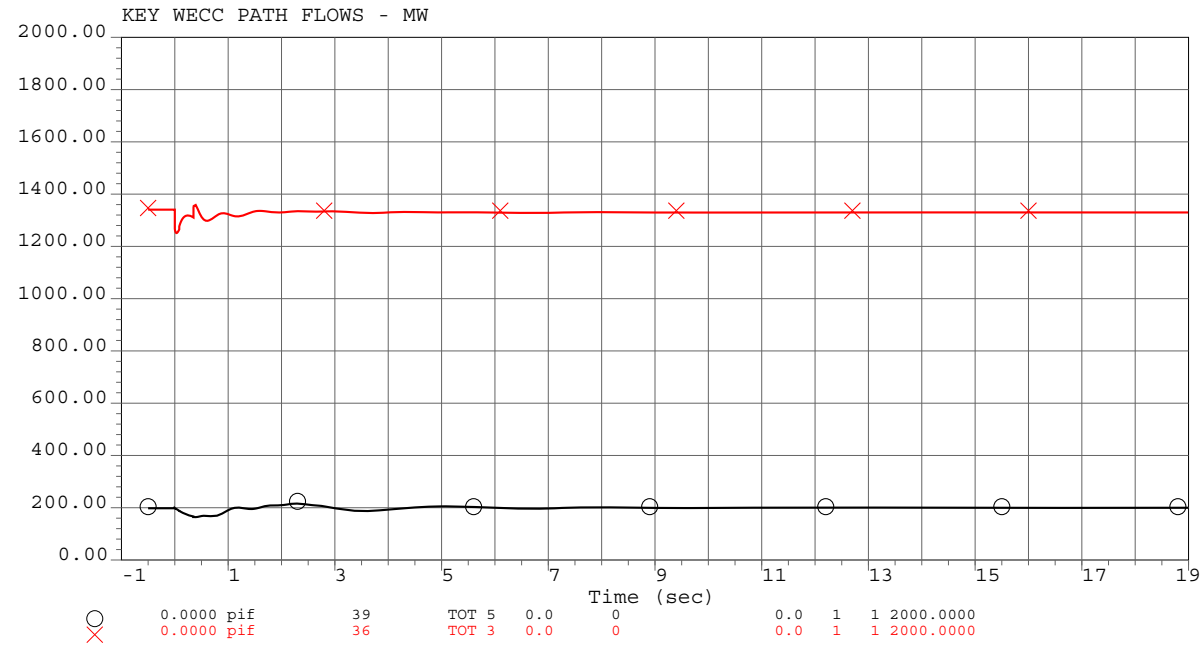
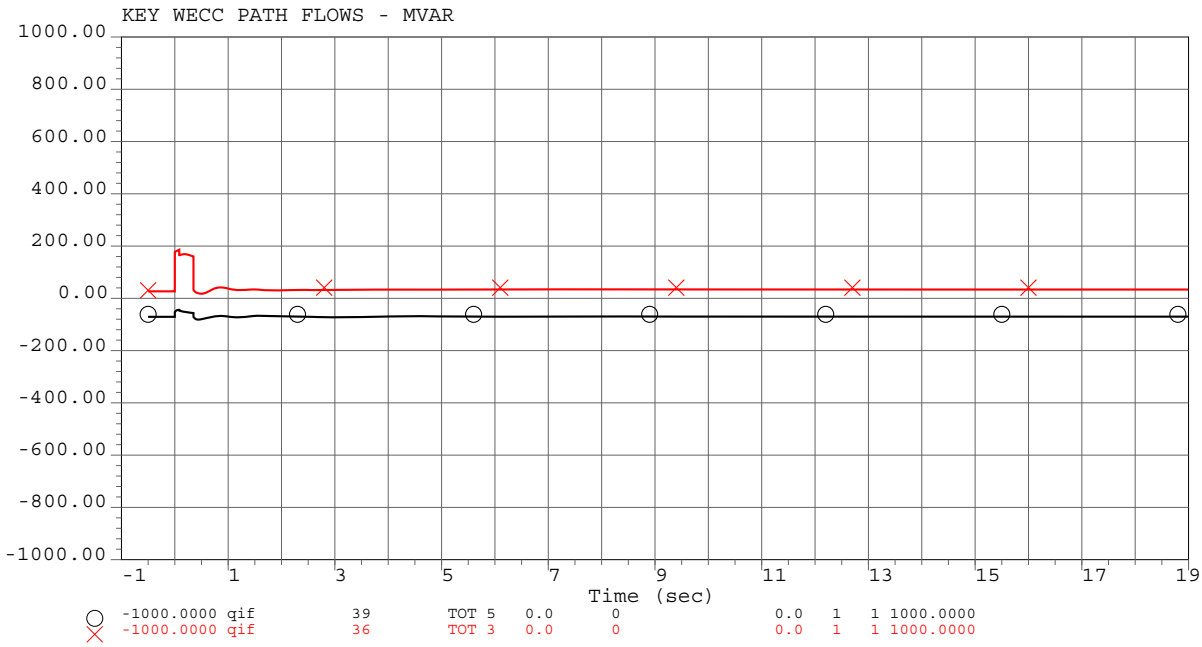
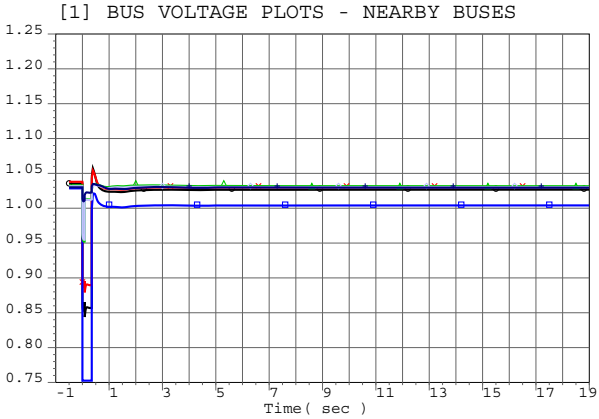
Tue Nov 26 12:39:52 2013


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

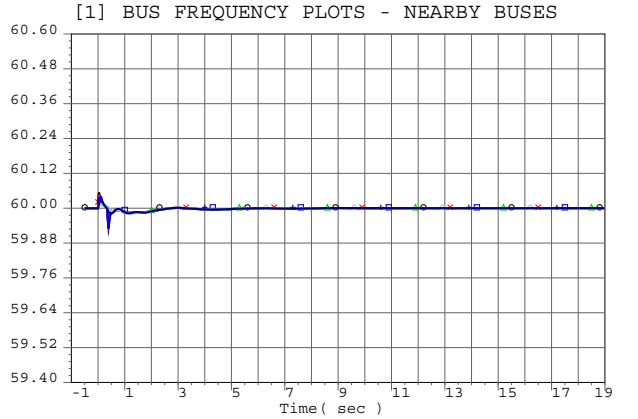
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



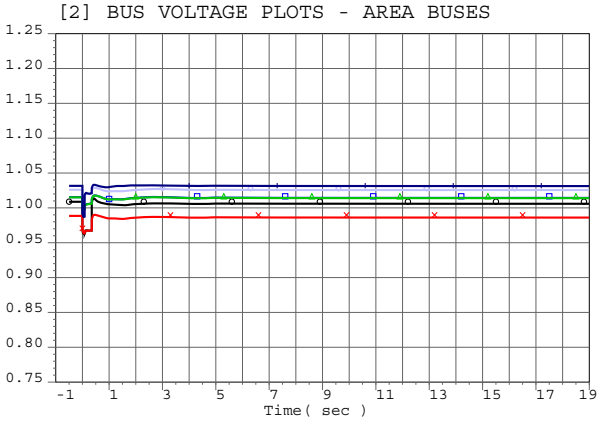

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



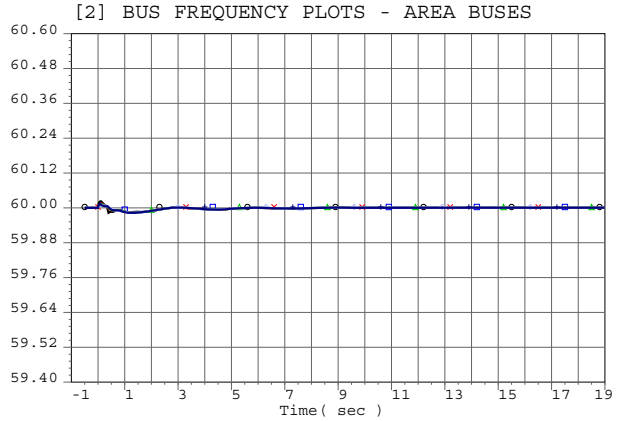

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



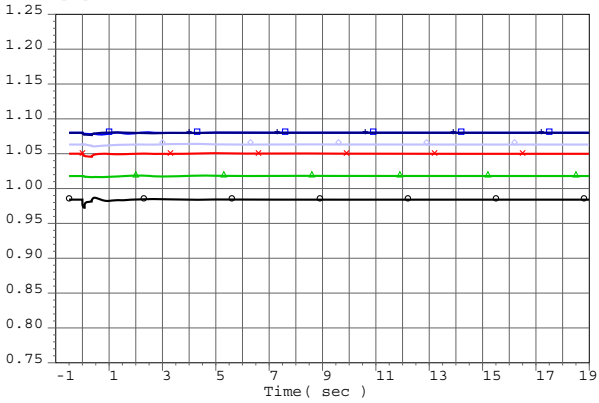

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



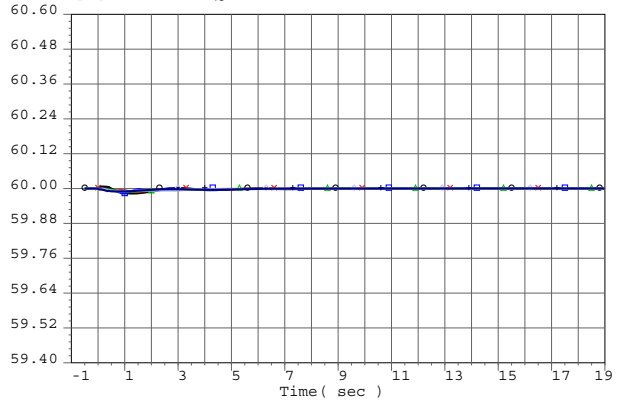

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 14021 | BALNORTH 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 14021 | BALNORTH 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013 HS2-OP BASE CASE
NOVEMBER 30, 2012



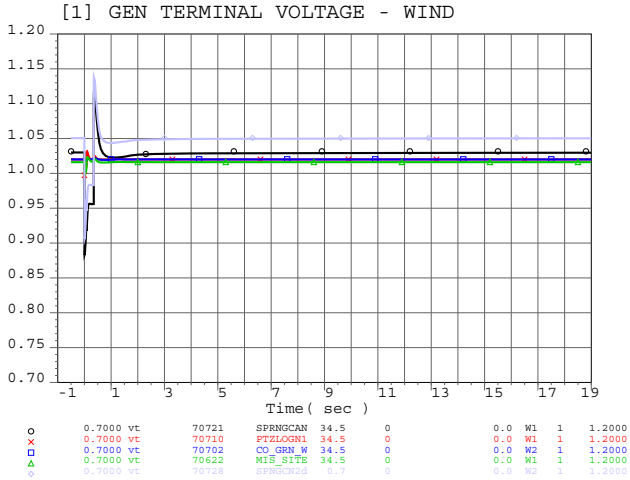
SC2_Sum_PstEqv_v0_09_NYuma!-Story_230_SLG_C.chf

.

Tue Nov 26 12:39:59 2013

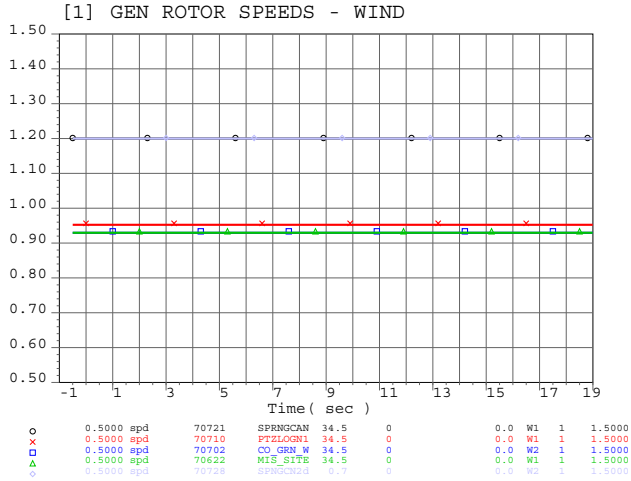
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



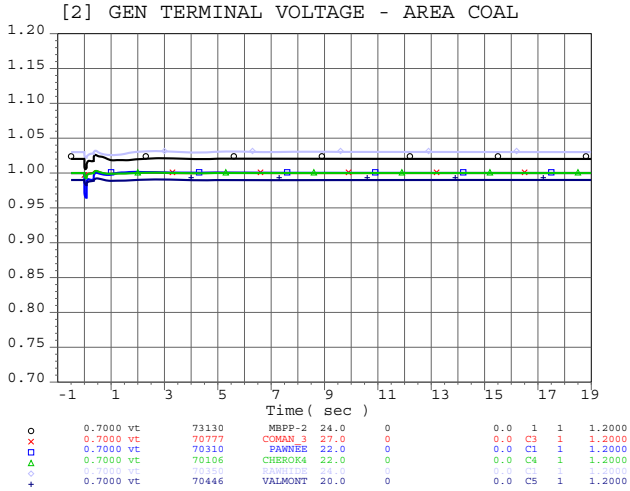

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| × | 0.7000 vt | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| □ | 0.7000 vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| △ | 0.7000 vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 70728 | SPNGCN2d | 0.7 | 0 | 0.0 | W2 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



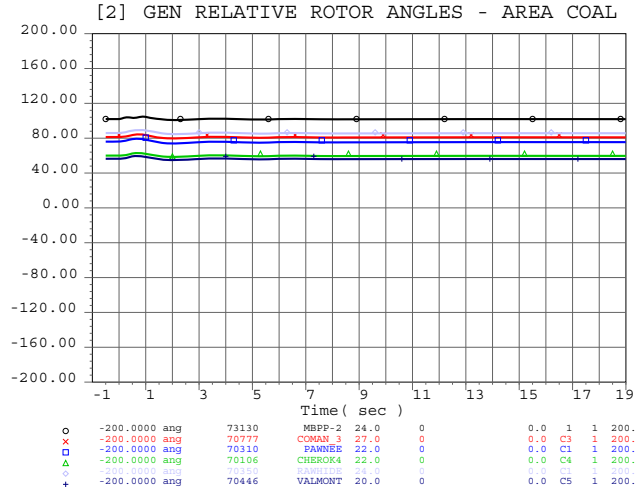

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.5000 spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| × | 0.5000 spd | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| □ | 0.5000 spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| △ | 0.5000 spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| ◇ | 0.5000 spd | 70728 | SPNGCN2d | 0.7 | 0 | 0.0 | W2 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



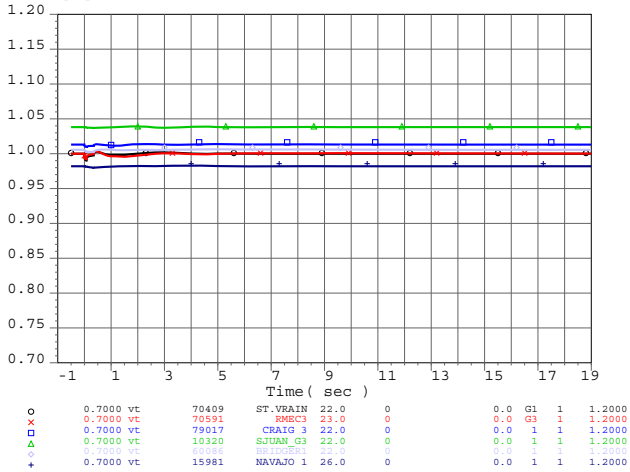

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| × | 0.7000 vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| □ | 0.7000 vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| △ | 0.7000 vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| + | 0.7000 vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



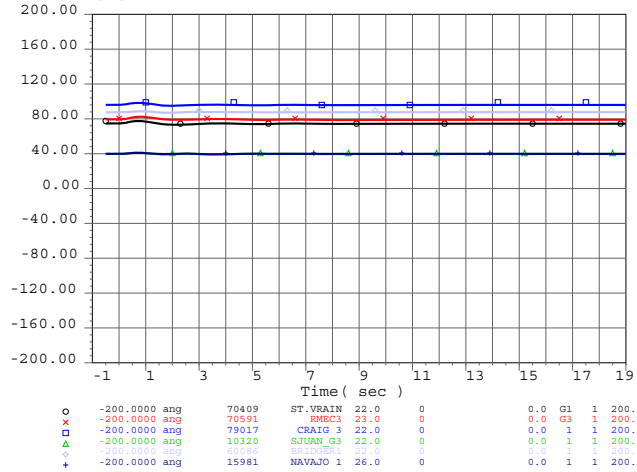

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| × | -200.0000 ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| □ | -200.0000 ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| △ | -200.0000 ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| + | -200.0000 ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| × | 0.7000 vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| □ | 0.7000 vt | 79017 | CRAIG_3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| △ | 0.7000 vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 60186 | HLYNDE4 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| + | 0.7000 vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| × | -200.0000 ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| □ | -200.0000 ang | 79017 | CRAIG_3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| △ | -200.0000 ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 60186 | HLYNDE4 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| + | -200.0000 ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |

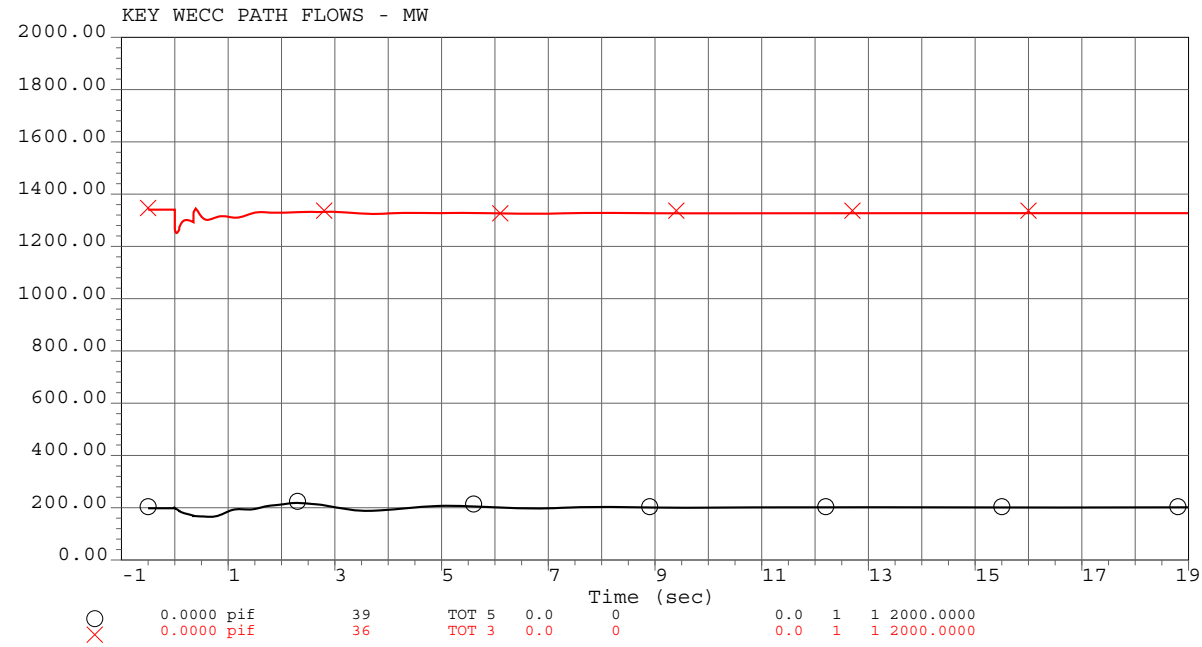
WESTERN ELECTRICITY COORDINATING COUNCIL
2013 HS2-OP BASE CASE
NOVEMBER 30, 2012

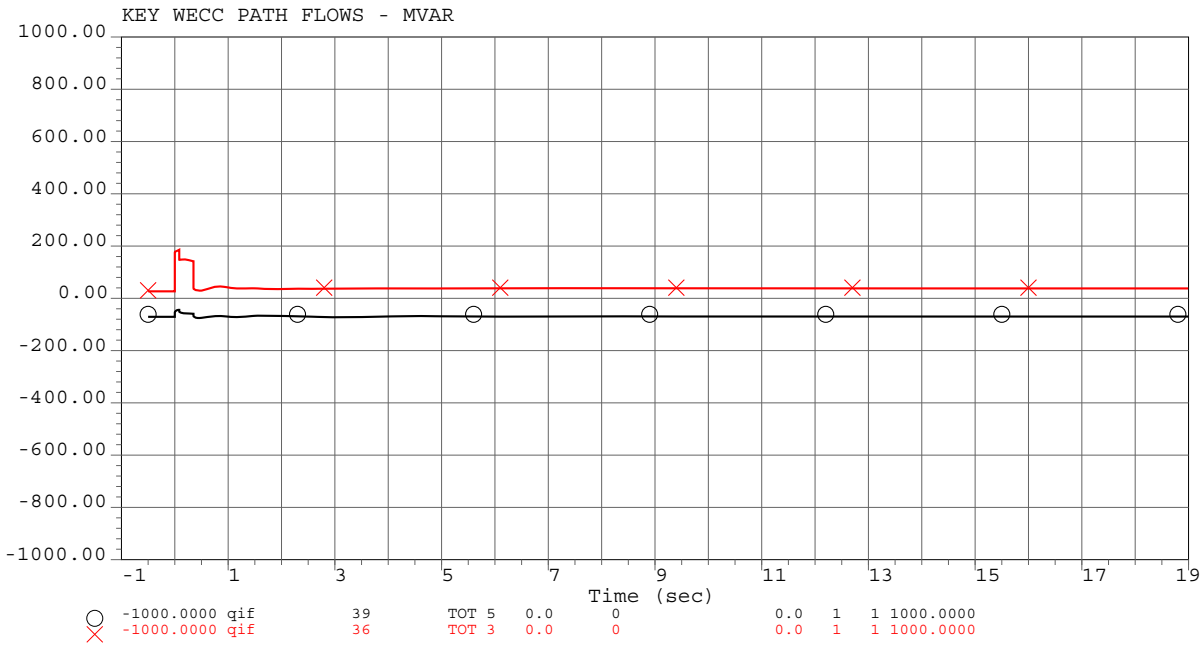


SC2_Sum_PstEqv_v0_09_NYuma!-Story_230_SLG_C.chf

.

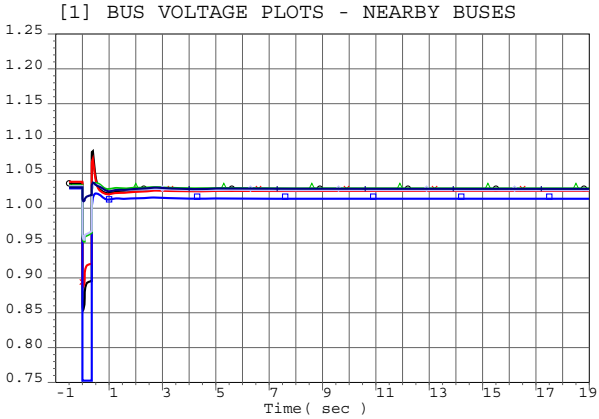
Tue Nov 26 12:39:59 2013


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

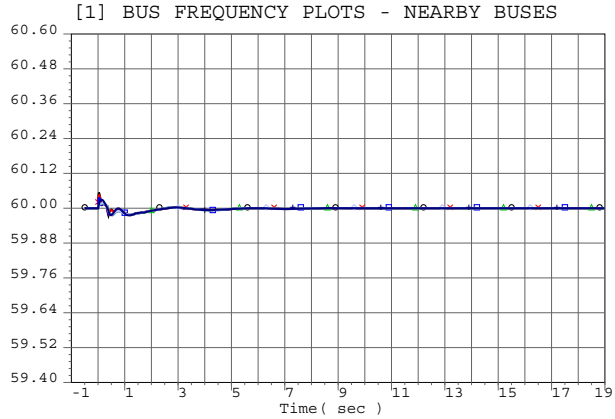
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



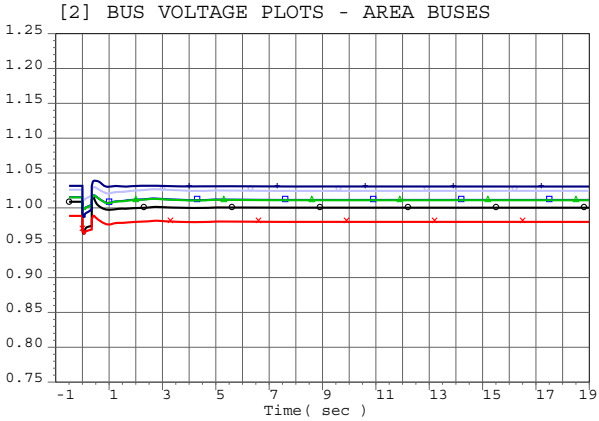

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



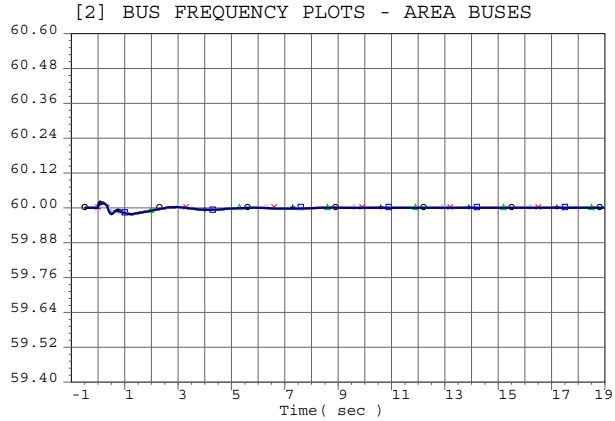

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



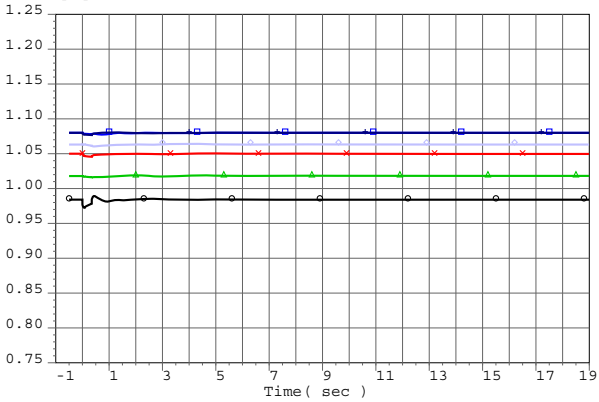

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



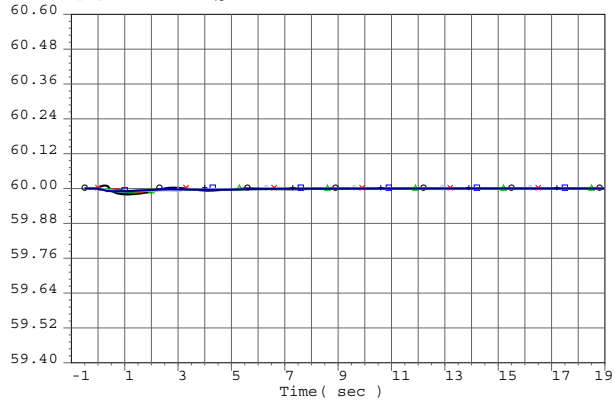

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 14021 | BALNORTH 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 14021 | BALNORTH 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013 HS2-OP BASE CASE
NOVEMBER 30, 2012



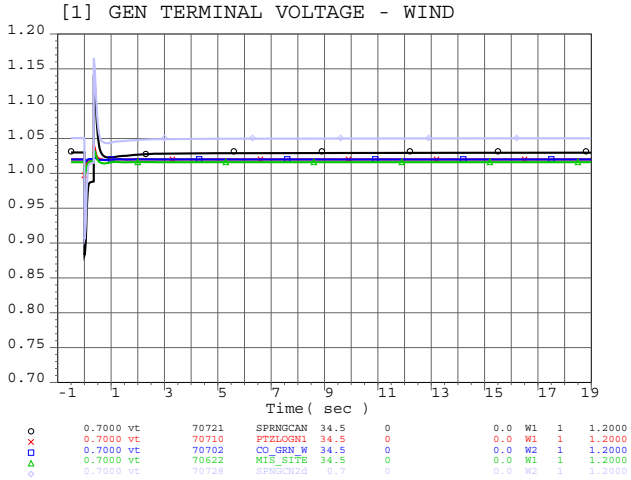
SC2_Sum_PstEqv_v0_10_NYuma!-Wray_230_SLG_C.chf

.

Tue Nov 26 12:40:09 2013

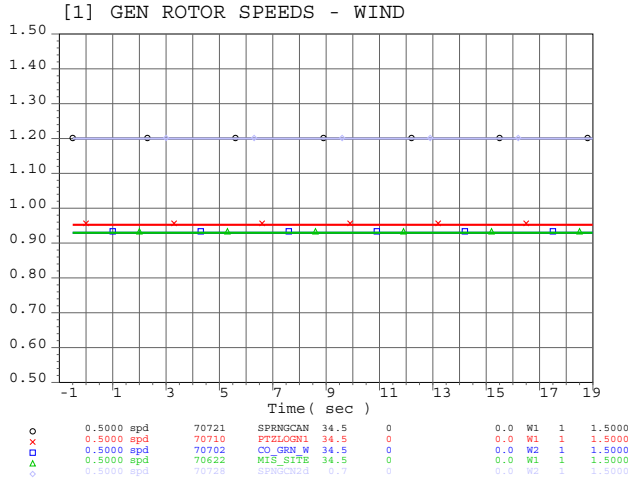
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



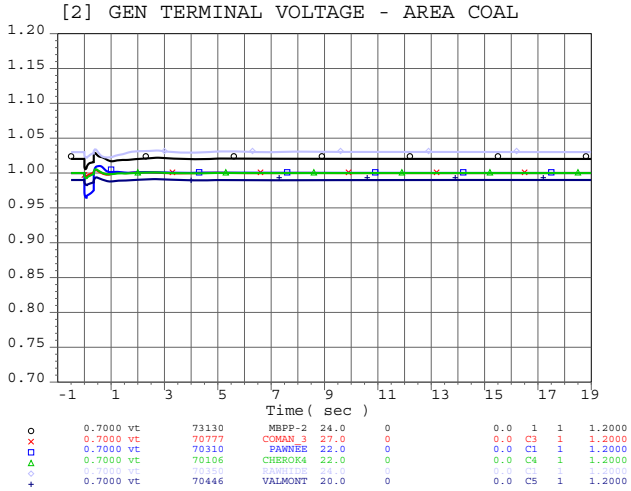

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| × | 0.7000 vt | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| □ | 0.7000 vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| △ | 0.7000 vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 70728 | SPNGCN2d | 0.7 | 0 | 0.0 | W2 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



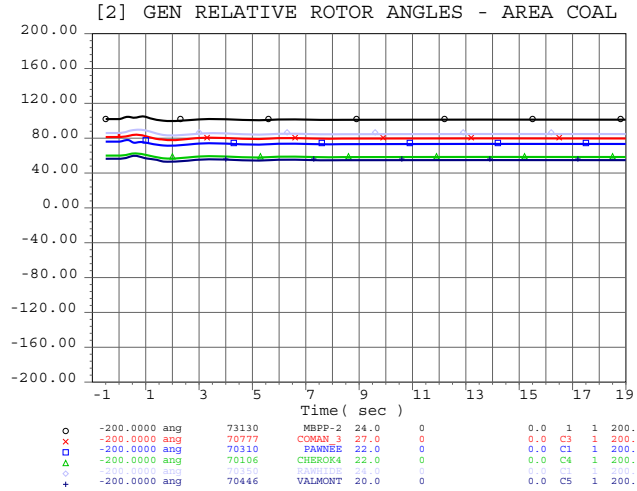

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.5000 spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| × | 0.5000 spd | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| □ | 0.5000 spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| △ | 0.5000 spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| ◇ | 0.5000 spd | 70728 | SPNGCN2d | 0.7 | 0 | 0.0 | W2 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



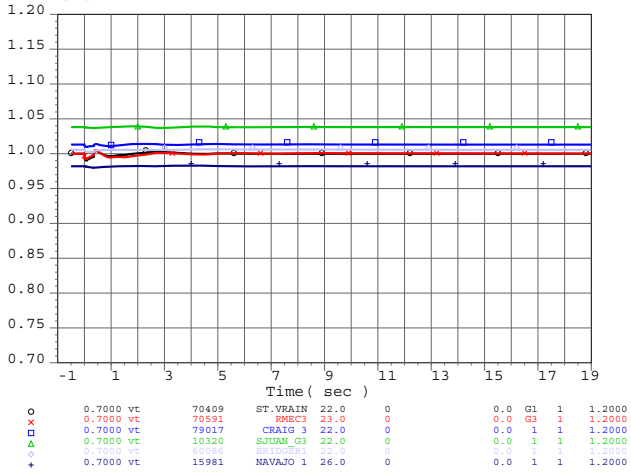

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| × | 0.7000 vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| □ | 0.7000 vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| △ | 0.7000 vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| + | 0.7000 vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



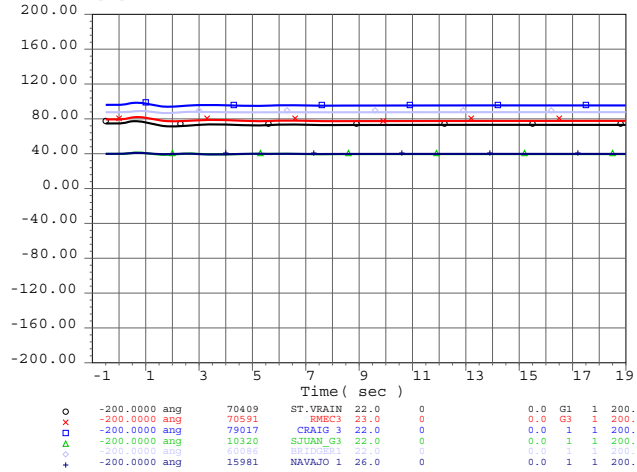

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| × | -200.0000 ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| □ | -200.0000 ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| △ | -200.0000 ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| + | -200.0000 ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| × | 0.7000 vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| □ | 0.7000 vt | 79017 | CRAIG_3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| △ | 0.7000 vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 60186 | NUCLEA4 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| + | 0.7000 vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| × | -200.0000 ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| □ | -200.0000 ang | 79017 | CRAIG_3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| △ | -200.0000 ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 60186 | NUCLEA4 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| + | -200.0000 ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |

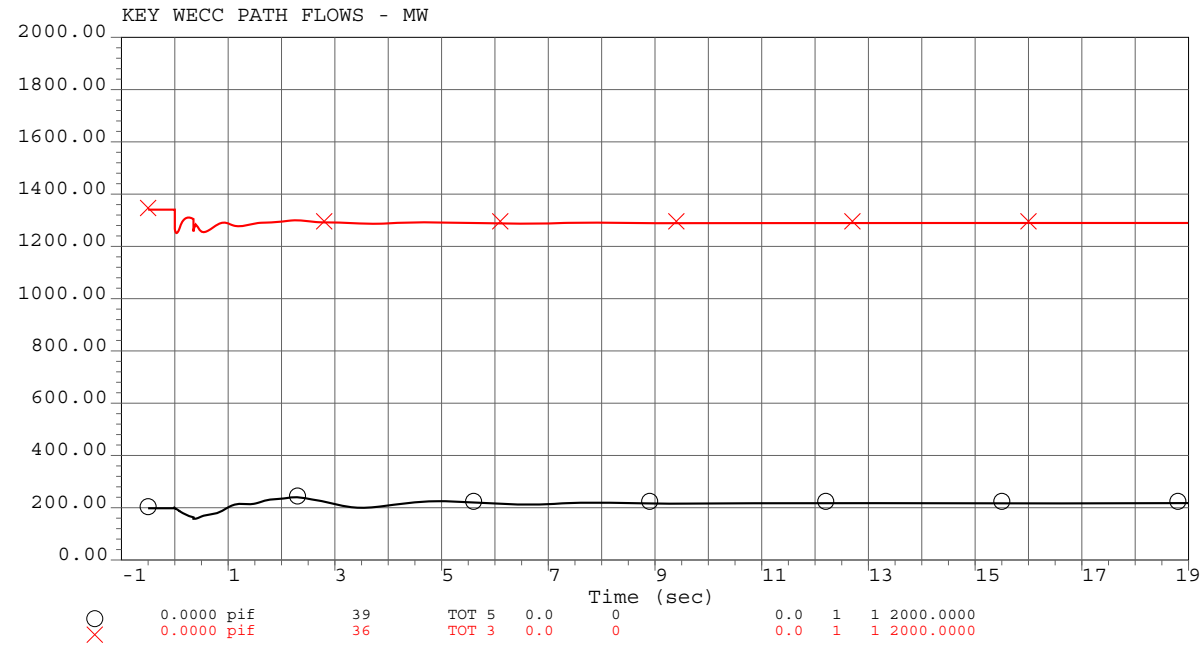
WESTERN ELECTRICITY COORDINATING COUNCIL
2013 HS2-OP BASE CASE
NOVEMBER 30, 2012

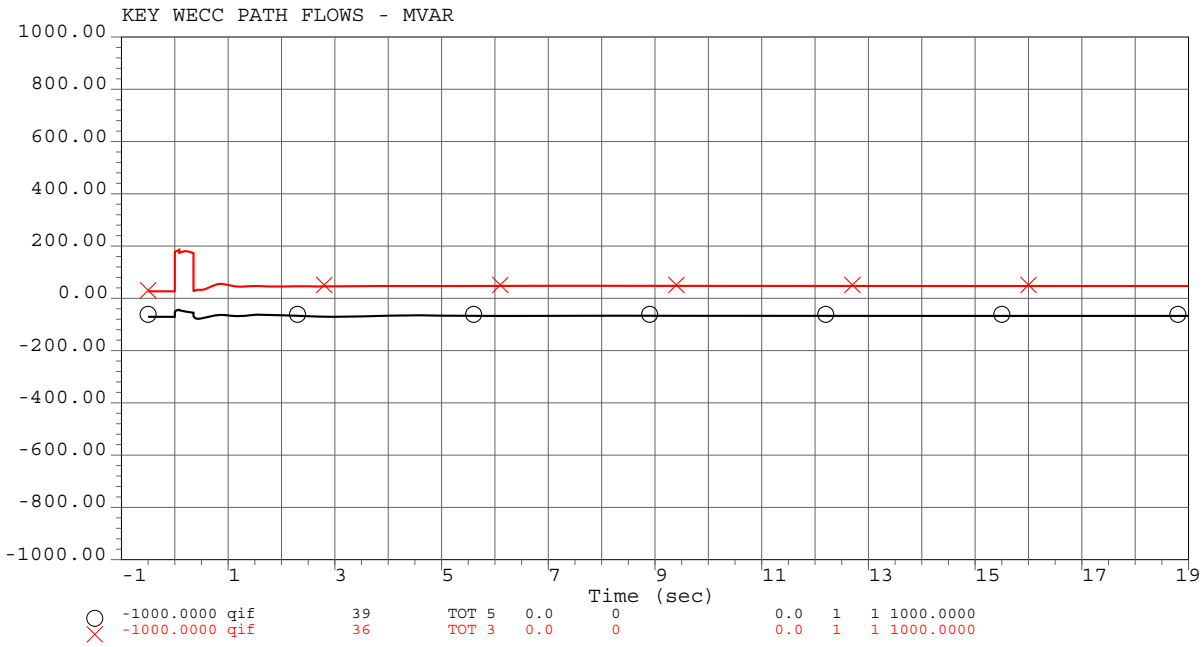


SC2_Sum_PstEqv_v0_10_NYuma!-Wray_230_SLG_C.chf

.

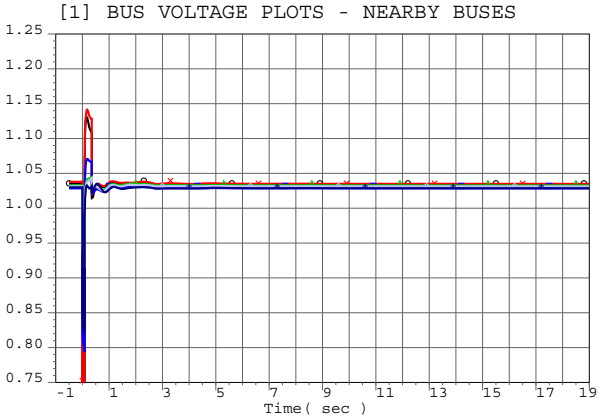
Tue Nov 26 12:40:09 2013


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

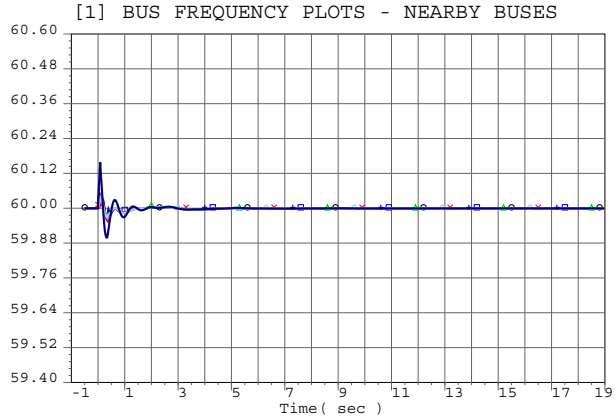
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



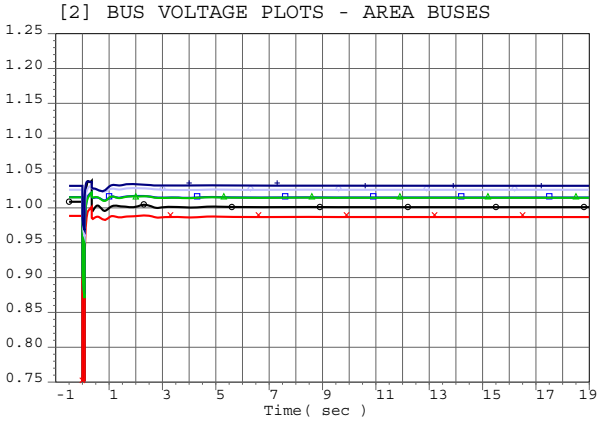

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



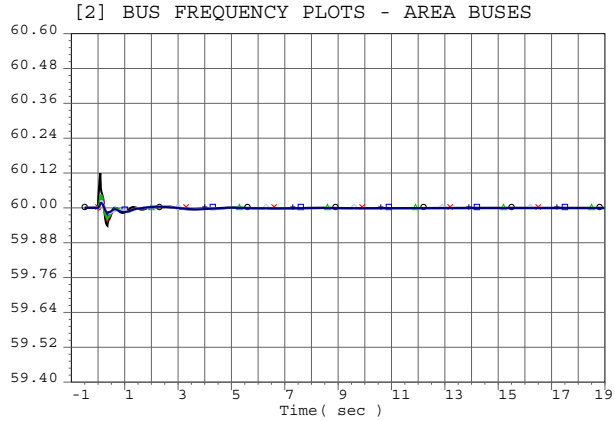

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



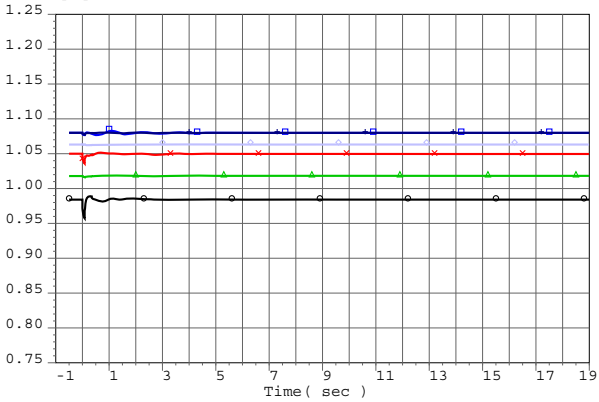

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



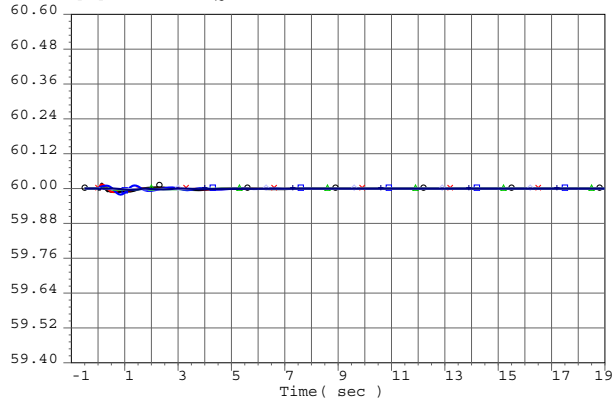

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 14021 | BALNORTH 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 14021 | BALNORTH 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013 HS2-OP BASE CASE
NOVEMBER 30, 2012



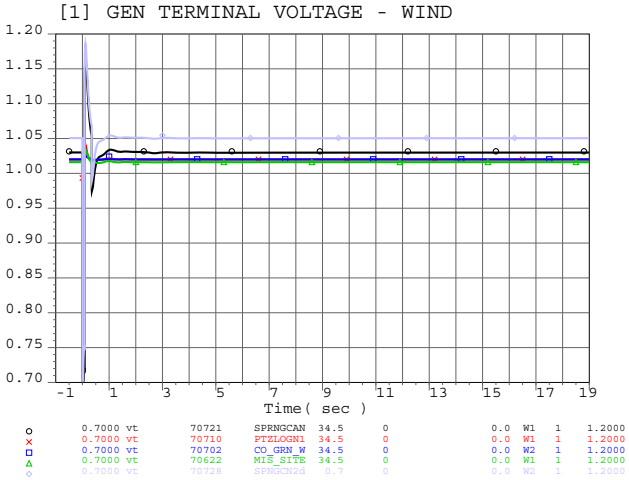
SC2_Sum_PstEqv_v0_11_Stegall!-DJnstn_230_3ph_B.chf

.

Tue Nov 26 12:41:23 2013

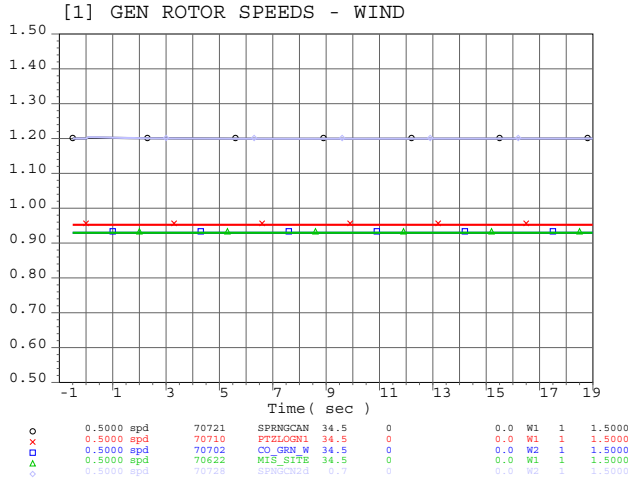
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



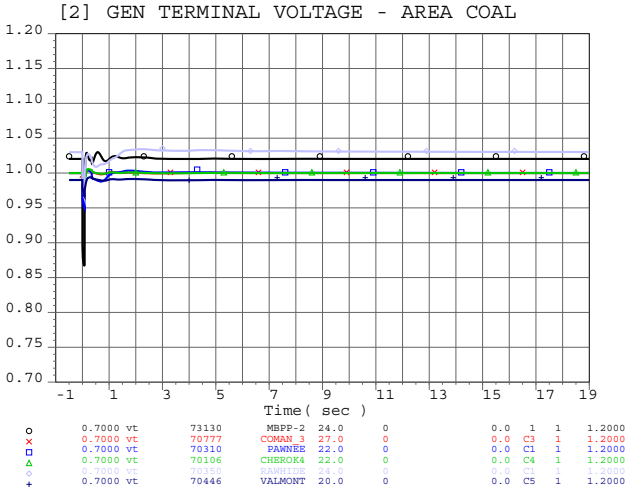

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| × | 0.7000 vt | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| □ | 0.7000 vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| △ | 0.7000 vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 70728 | SPNGCN2d | 0.7 | 0 | 0.0 | W2 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



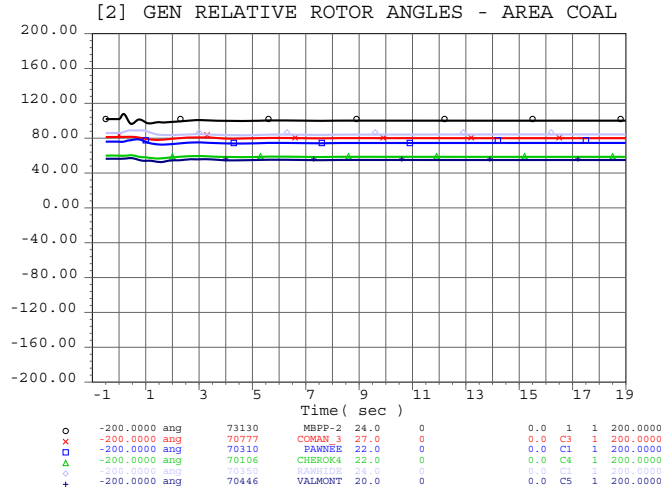

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.5000 spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| × | 0.5000 spd | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| □ | 0.5000 spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| △ | 0.5000 spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| ◇ | 0.5000 spd | 70728 | SPNGCN2d | 0.7 | 0 | 0.0 | W2 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



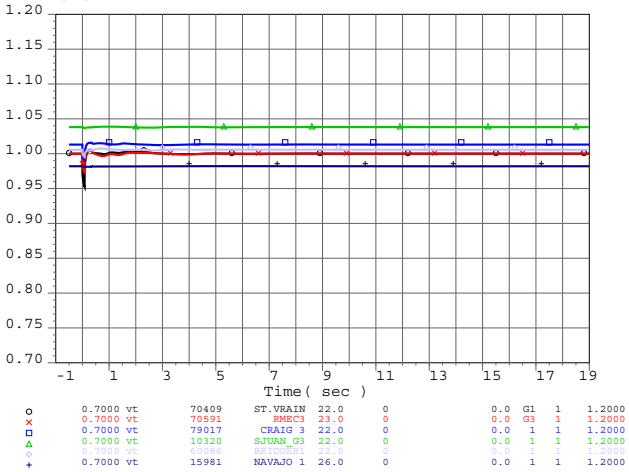

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| × | 0.7000 vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| □ | 0.7000 vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| △ | 0.7000 vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| + | 0.7000 vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



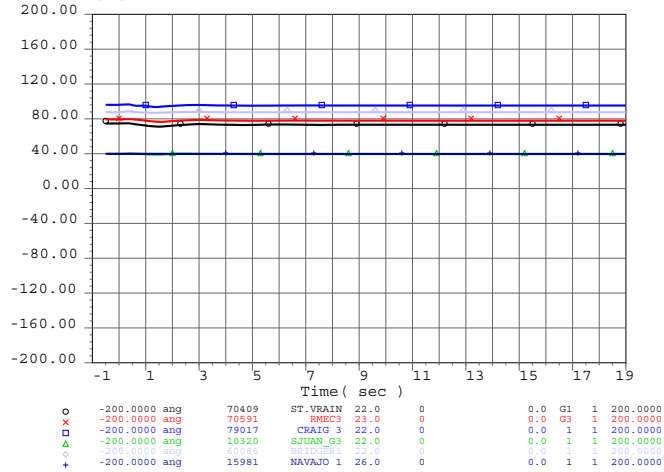

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| × | -200.0000 ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| □ | -200.0000 ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| △ | -200.0000 ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| + | -200.0000 ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| × | 0.7000 vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| □ | 0.7000 vt | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| △ | 0.7000 vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 60186 | NUCLEA1 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| + | 0.7000 vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| × | -200.0000 ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| □ | -200.0000 ang | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| △ | -200.0000 ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 60186 | NUCLEA1 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| + | -200.0000 ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |

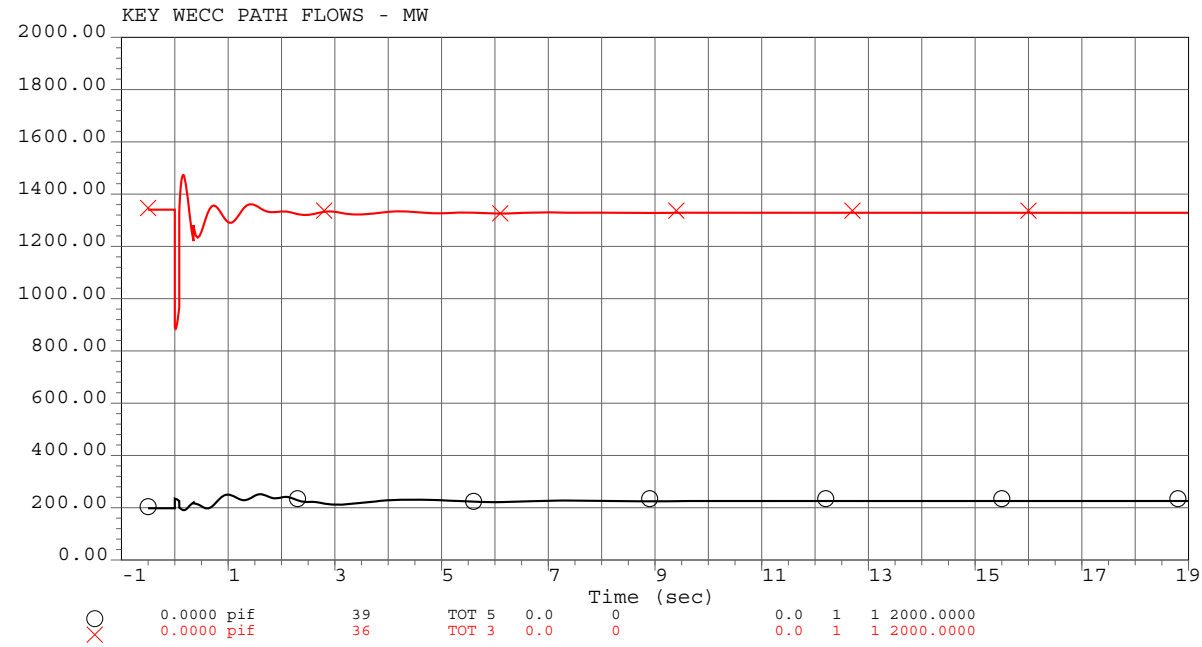
WESTERN ELECTRICITY COORDINATING COUNCIL
2013 HS2-OP BASE CASE
NOVEMBER 30, 2012

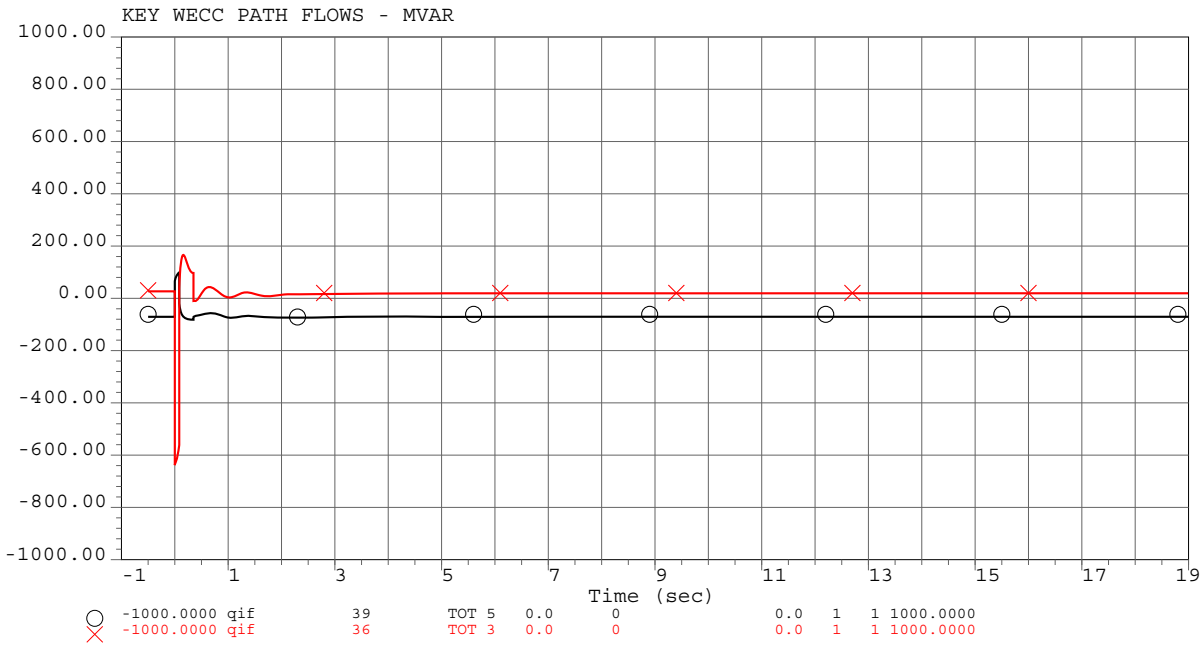


SC2_Sum_PstEqv_v0_11_Stegall!-DJnstn_230_3ph_B.chf

.

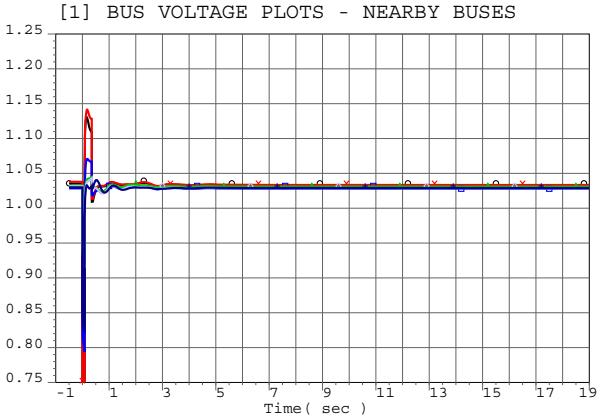
Tue Nov 26 12:41:23 2013


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

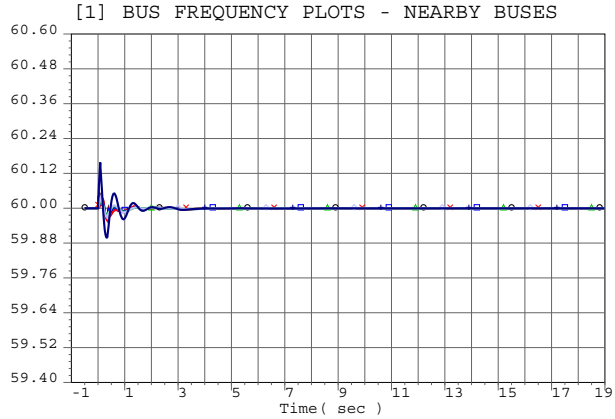
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



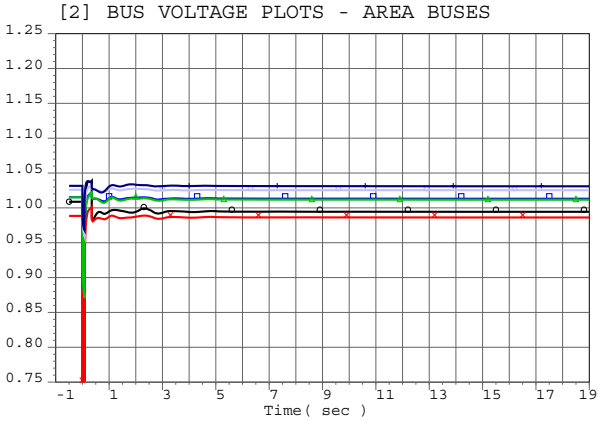

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



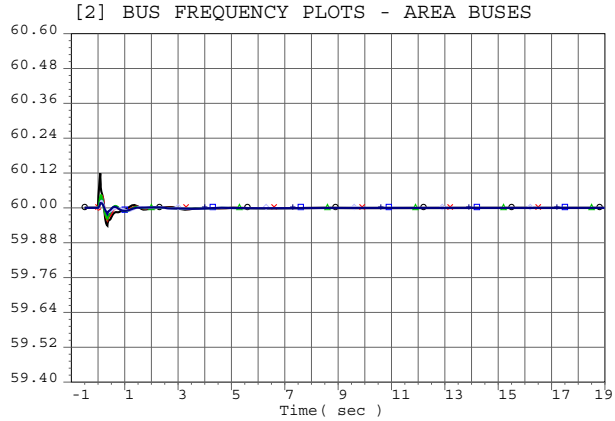

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



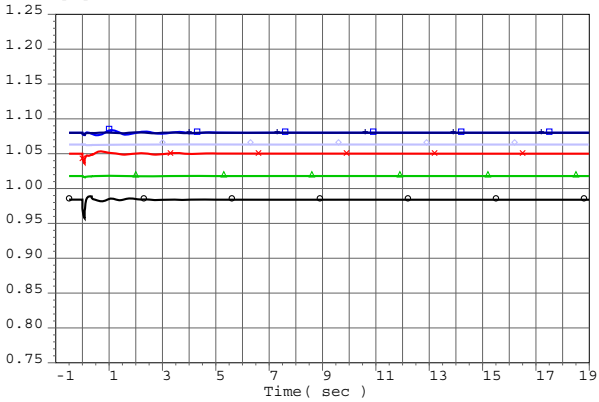

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



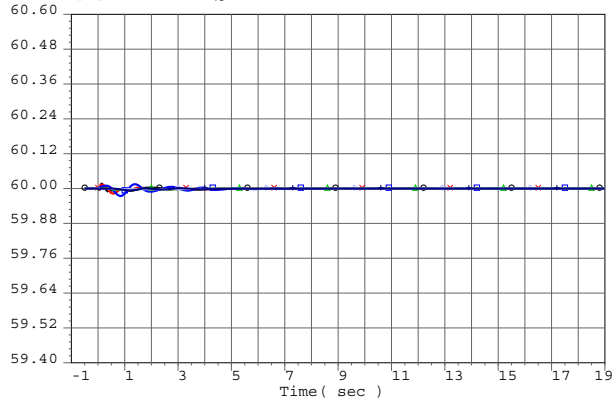

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 14021 | BALNORTH 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 14021 | BALNORTH 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013 HS2-OP BASE CASE
NOVEMBER 30, 2012



SC2_Sum_PstEqv_v0_12_Stegall!-LRS_230_3ph_B.chf

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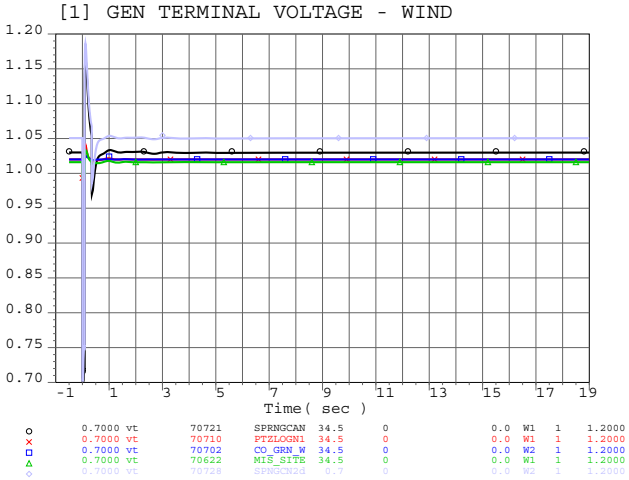
Tue Nov 26 12:41:30 2013

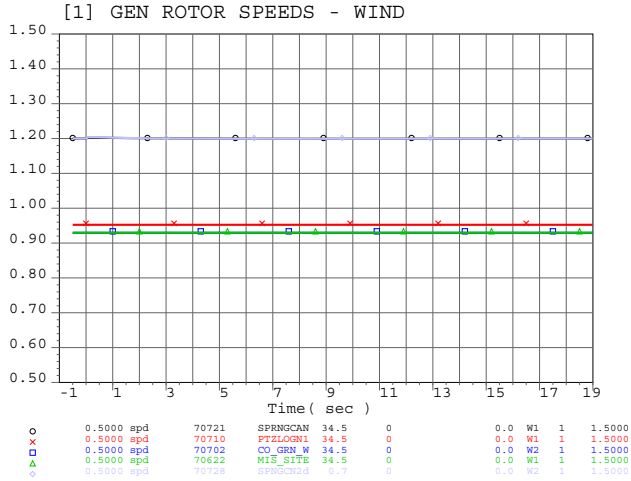
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



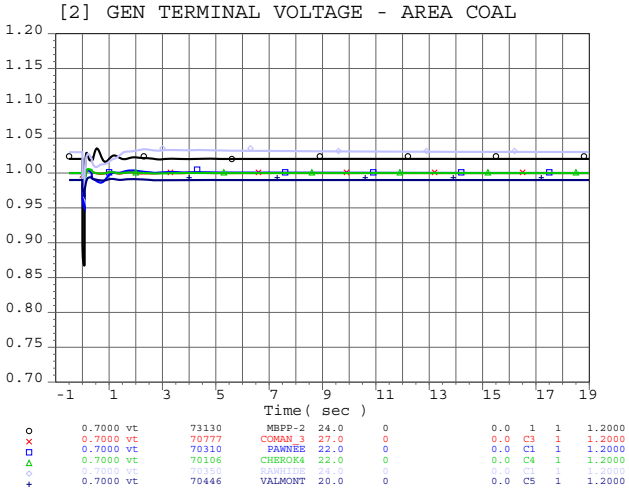

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| × | 0.7000 vt | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| □ | 0.7000 vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| △ | 0.7000 vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 70728 | SPNGCN2d | 0.7 | 0 | 0.0 | W2 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



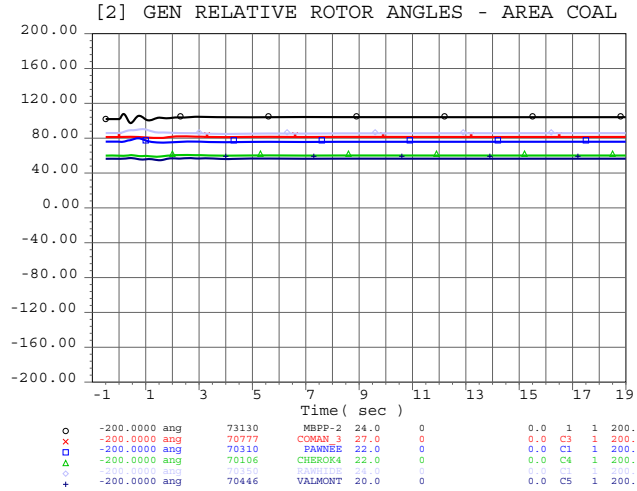

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.5000 spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| × | 0.5000 spd | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| □ | 0.5000 spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| △ | 0.5000 spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| ◇ | 0.5000 spd | 70728 | SPNGCN2d | 0.7 | 0 | 0.0 | W2 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



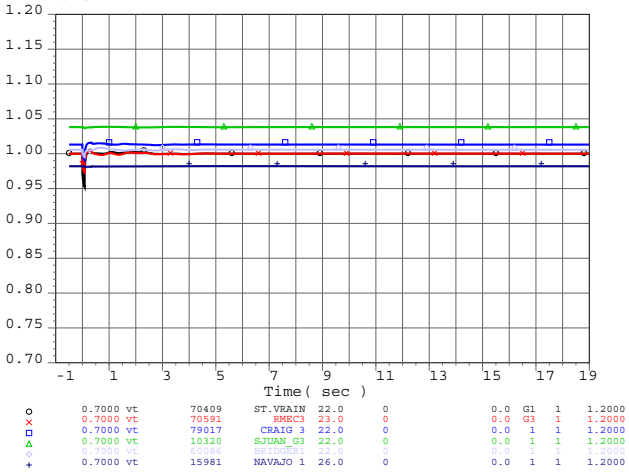

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| × | 0.7000 vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| □ | 0.7000 vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| △ | 0.7000 vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| + | 0.7000 vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



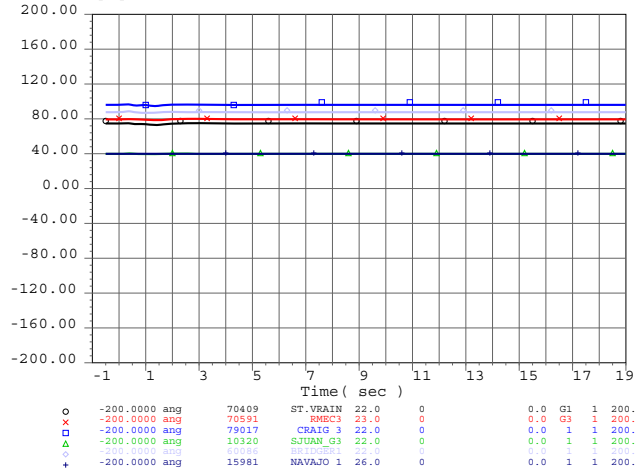

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| × | -200.0000 ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| □ | -200.0000 ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| △ | -200.0000 ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| + | -200.0000 ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| × | 0.7000 vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| □ | 0.7000 vt | 79017 | CRAIG_3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| △ | 0.7000 vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 60186 | NUCLEAR4 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| + | 0.7000 vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| × | -200.0000 ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| □ | -200.0000 ang | 79017 | CRAIG_3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| △ | -200.0000 ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 60186 | NUCLEAR4 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| + | -200.0000 ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |

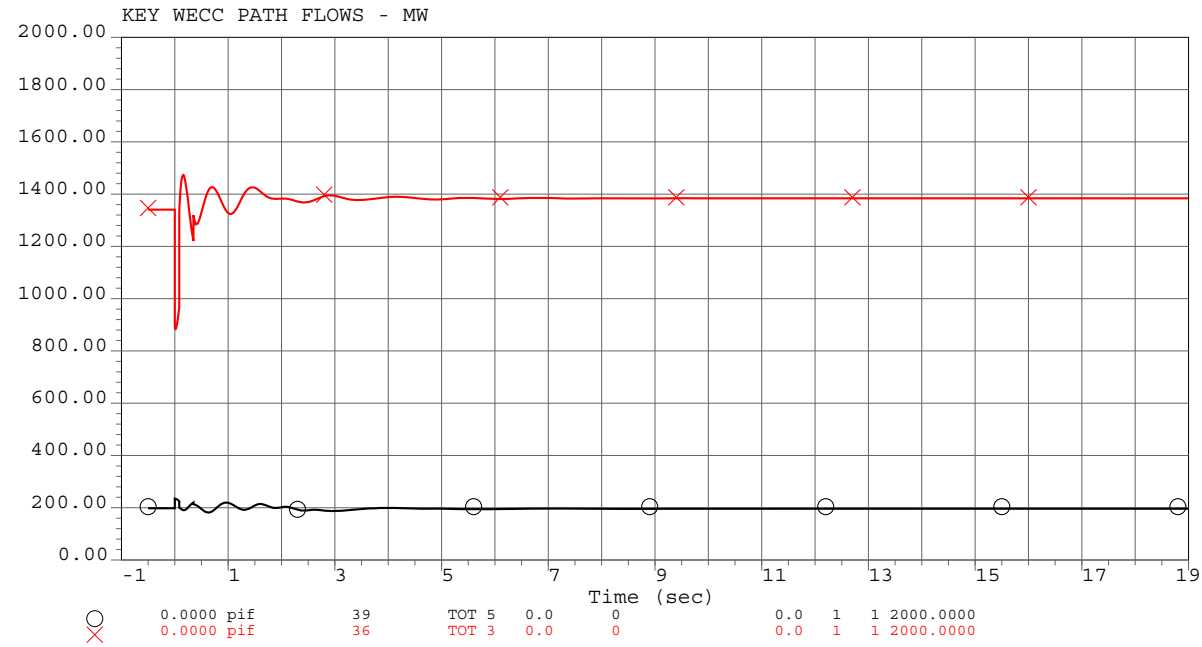
WESTERN ELECTRICITY COORDINATING COUNCIL
2013 HS2-OP BASE CASE
NOVEMBER 30, 2012

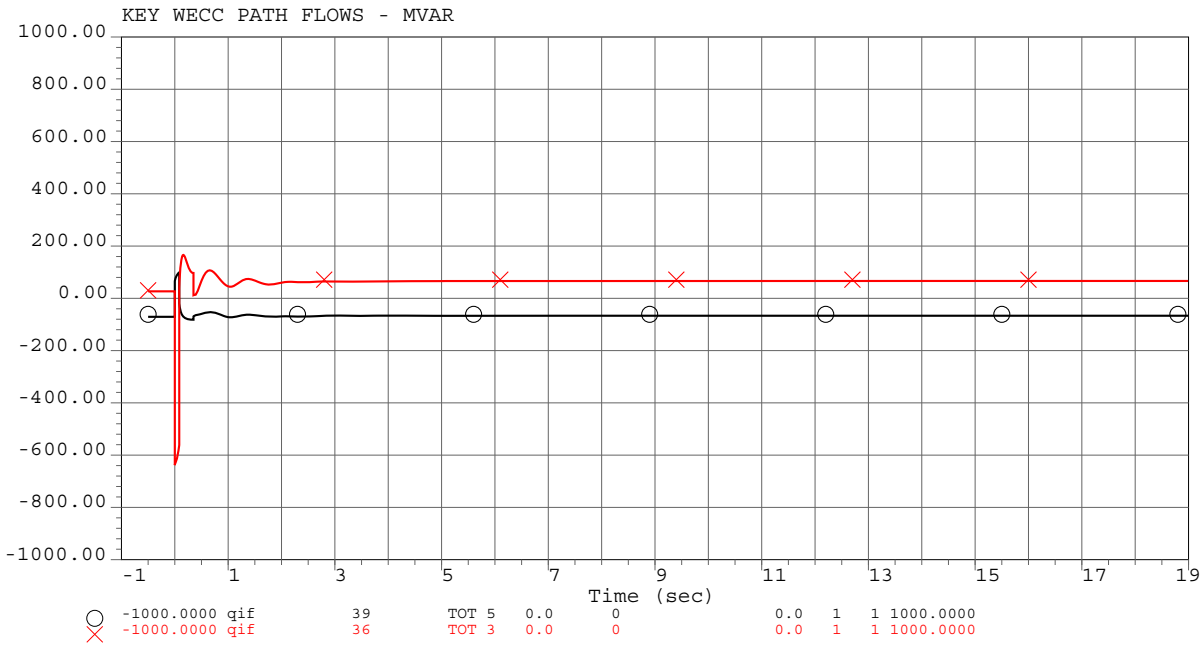


SC2_Sum_PstEqv_v0_12_Stegall!-LRS_230_3ph_B.chf

.

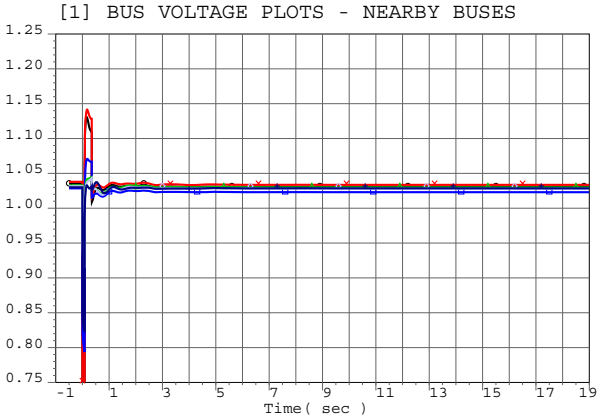
Tue Nov 26 12:41:30 2013


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

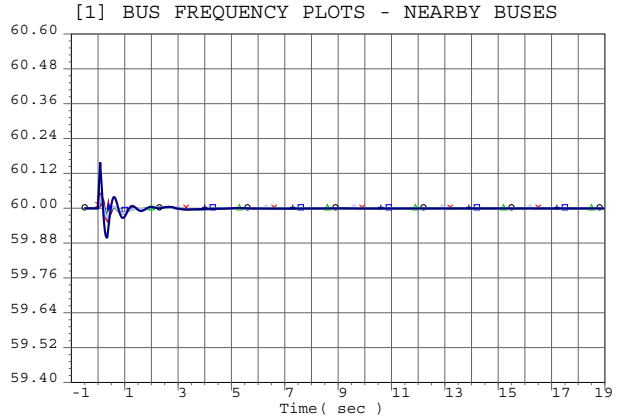
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



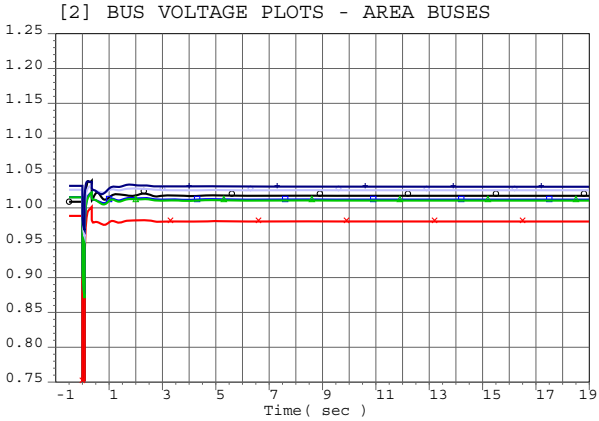

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



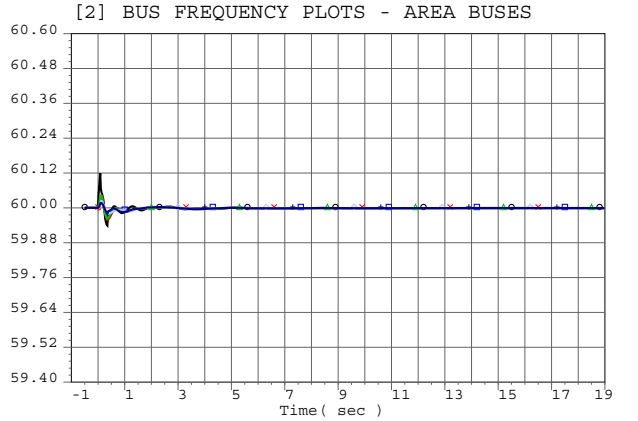

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



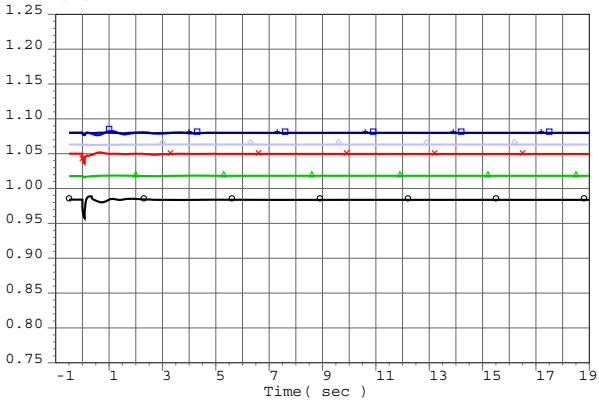

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



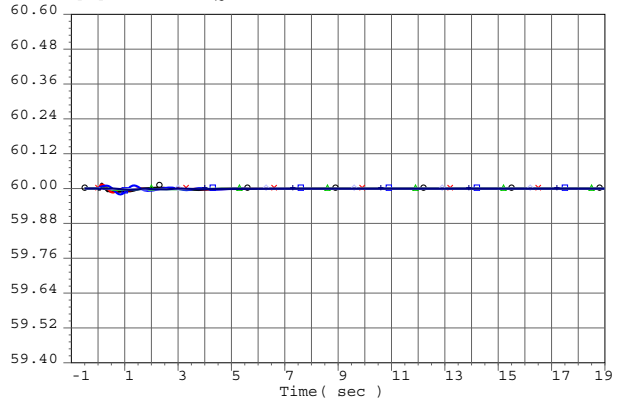

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 14021 | BALNORTH 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 14021 | BALNORTH 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013 HS2-OP BASE CASE
NOVEMBER 30, 2012



SC2_Sum_PstEqv_v0_13_Stegall!-Archer_230_3ph_B.chf

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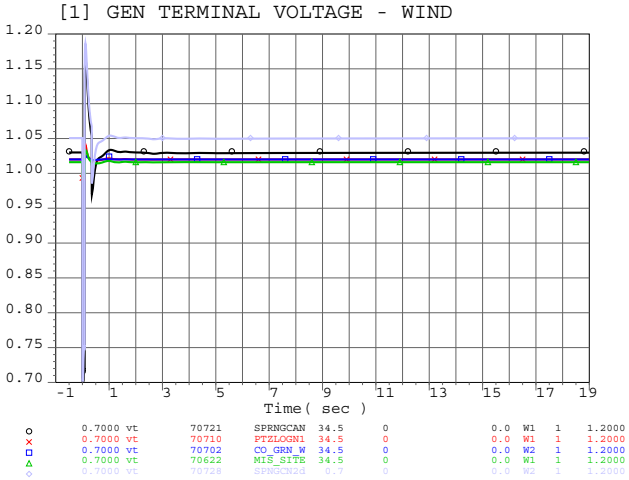
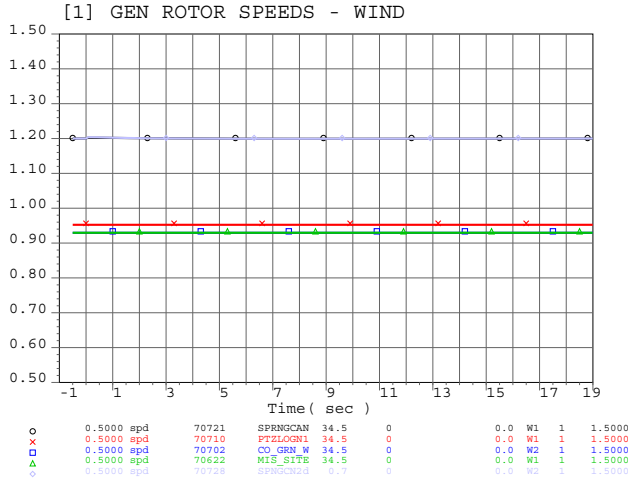
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



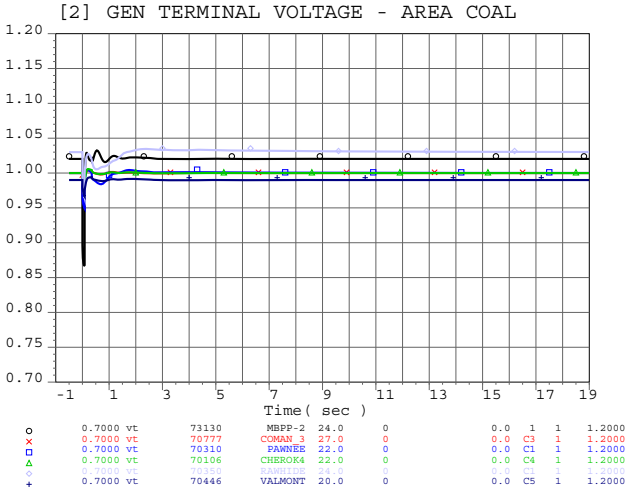

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 0.7000 vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| 0.7000 vt | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| 0.7000 vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| 0.7000 vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| 0.7000 vt | 70728 | SPNGCN2d | 0.7 | 0 | 0.0 | W2 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



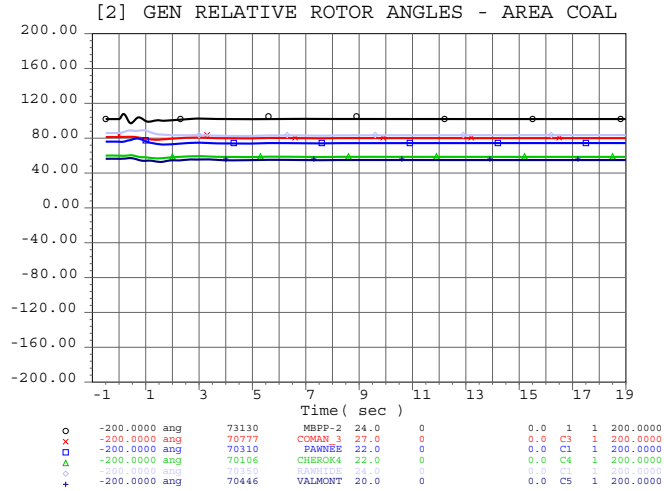

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 0.5000 spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| 0.5000 spd | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| 0.5000 spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| 0.5000 spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| 0.5000 spd | 70728 | SPNGCN2d | 0.7 | 0 | 0.0 | W2 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



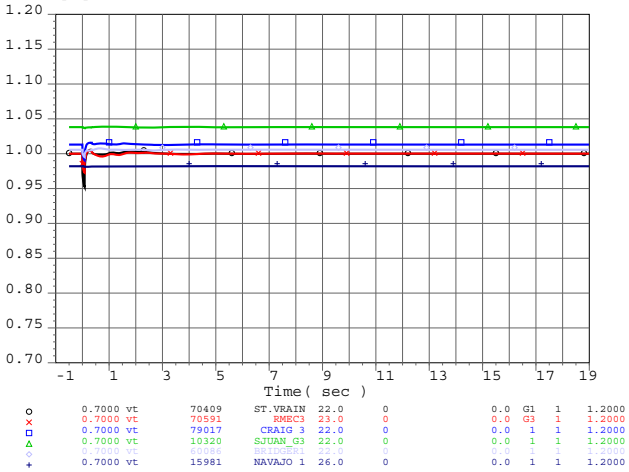

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 0.7000 vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| 0.7000 vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| 0.7000 vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| 0.7000 vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| 0.7000 vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| 0.7000 vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



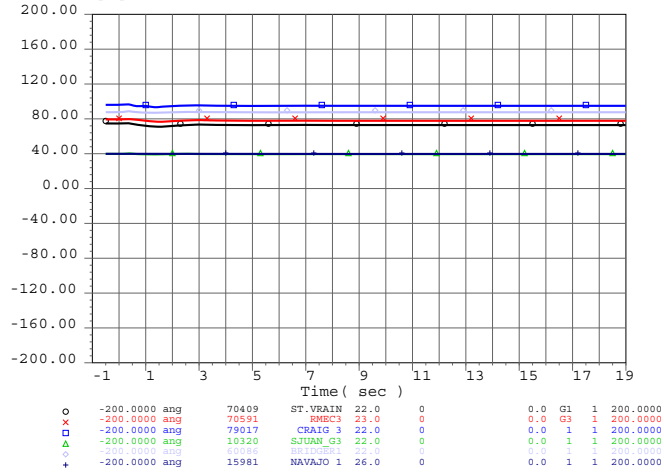

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| -200.0000 ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| -200.0000 ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| -200.0000 ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| -200.0000 ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| -200.0000 ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| -200.0000 ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER




| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 0.7000 vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| 0.7000 vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| 0.7000 vt | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| 0.7000 vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| 0.7000 vt | 60186 | NUCLEAR4 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| 0.7000 vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER




| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| -200.0000 ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| -200.0000 ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| -200.0000 ang | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| -200.0000 ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| -200.0000 ang | 60186 | NUCLEAR4 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| -200.0000 ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |

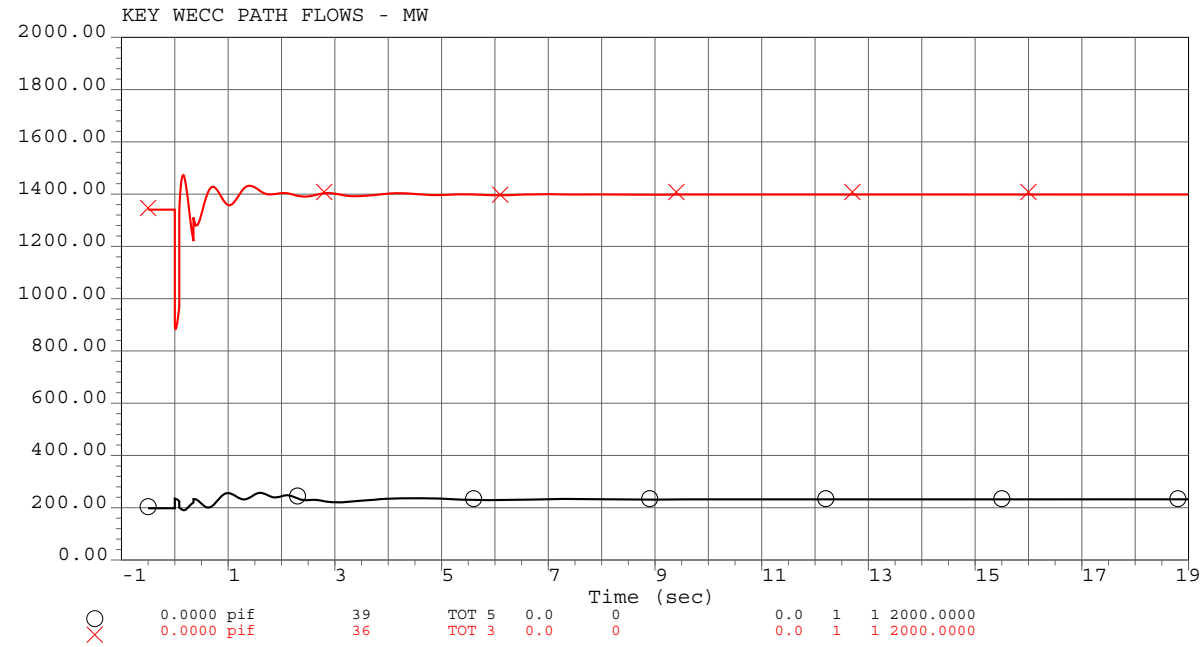
WESTERN ELECTRICITY COORDINATING COUNCIL
2013 HS2-OP BASE CASE
NOVEMBER 30, 2012

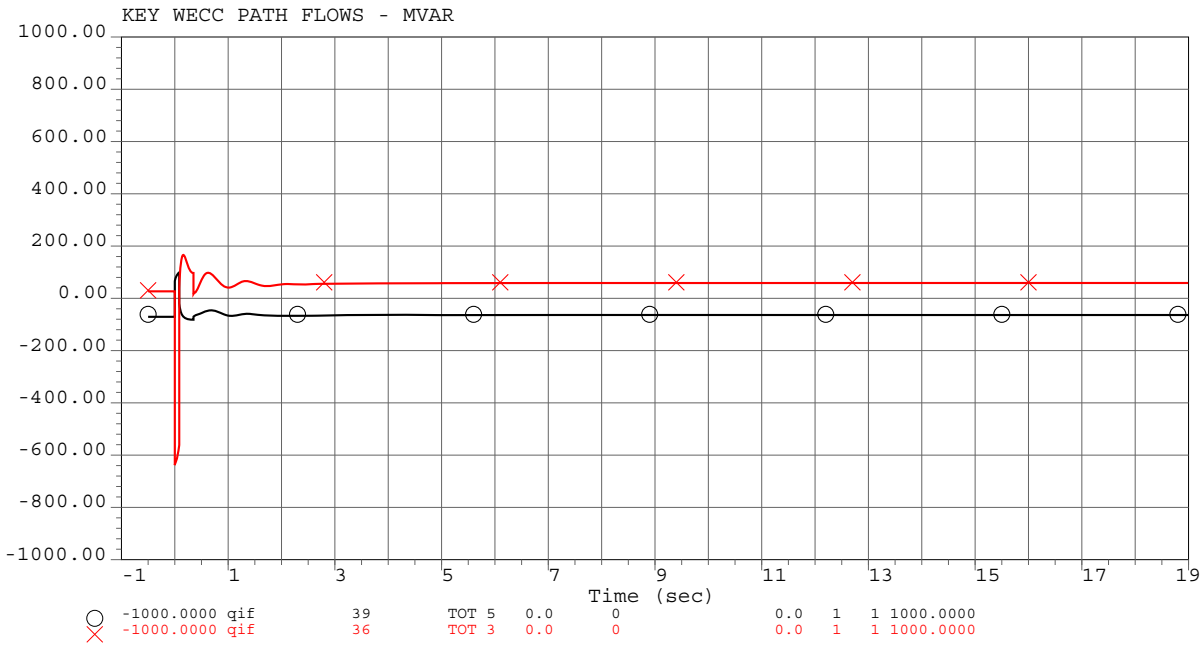


SC2_Sum_PstEqv_v0_13_Stegall!-Archer_230_3ph_B.chf

.

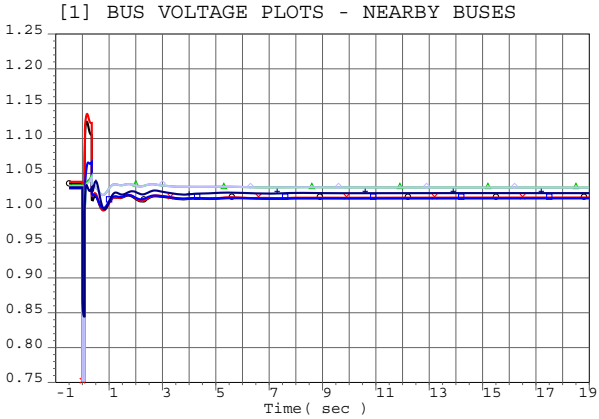
Tue Nov 26 12:41:40 2013


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

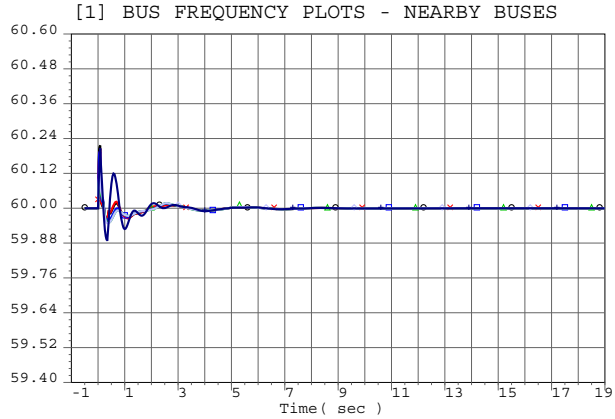
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



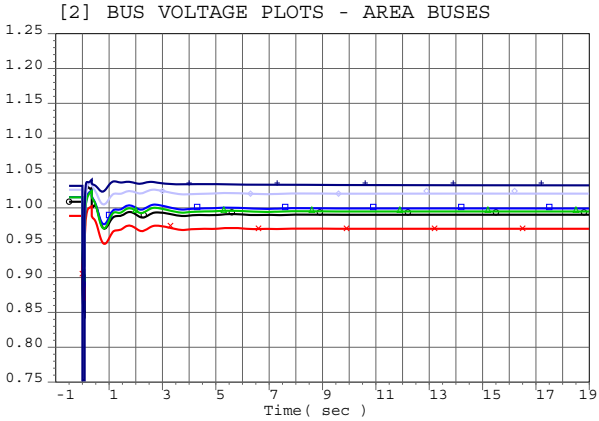

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



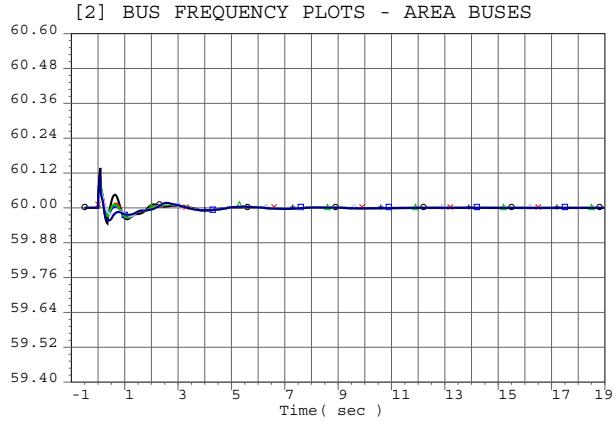

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



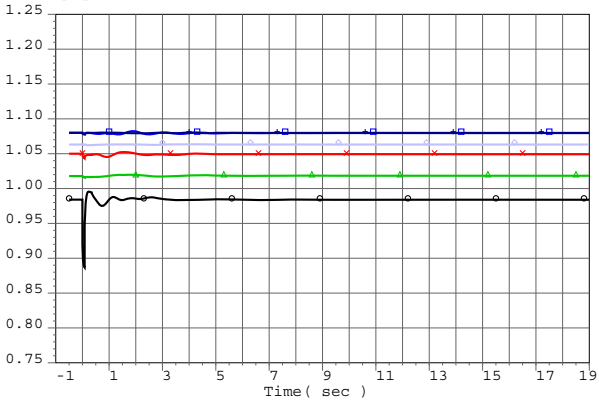

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



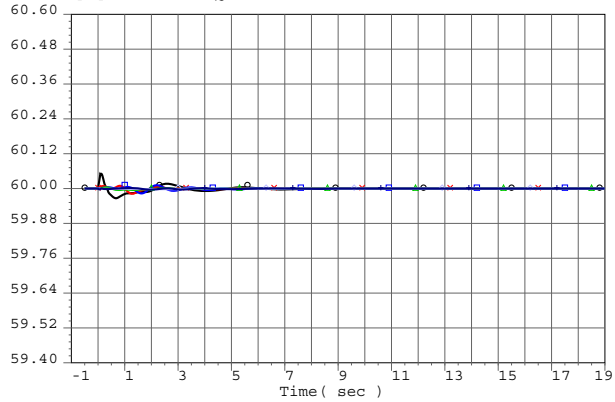

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 14021 | BALNORTH 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 14021 | BALNORTH 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013 HS2-OP BASE CASE
NOVEMBER 30, 2012



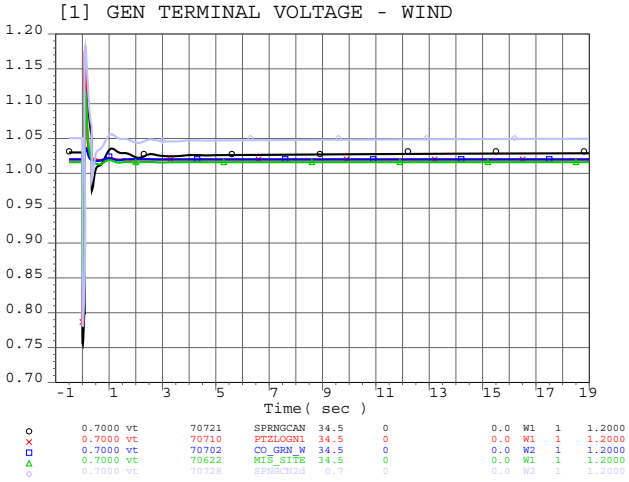
SC2_Sum_PstEqv_v0_14_Story!-LRS_345_3ph_B.chf

.

Tue Nov 26 12:42:05 2013

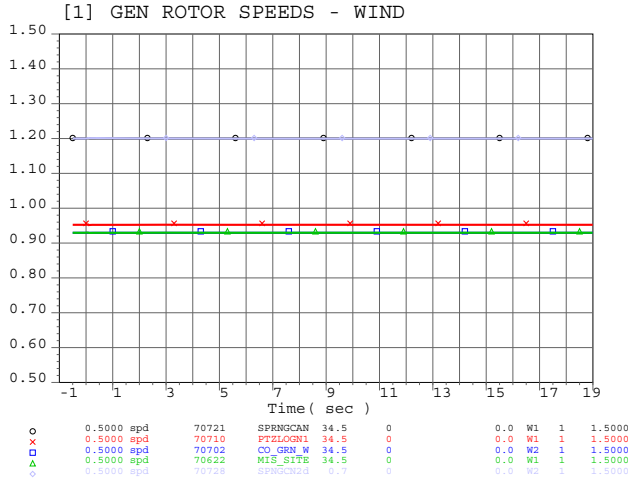
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



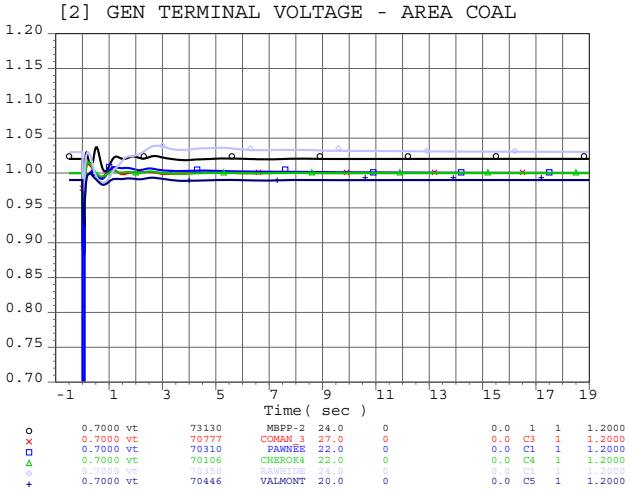

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| × | 0.7000 vt | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| □ | 0.7000 vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| △ | 0.7000 vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 70728 | SPNGCN2d | 0.7 | 0 | 0.0 | W2 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



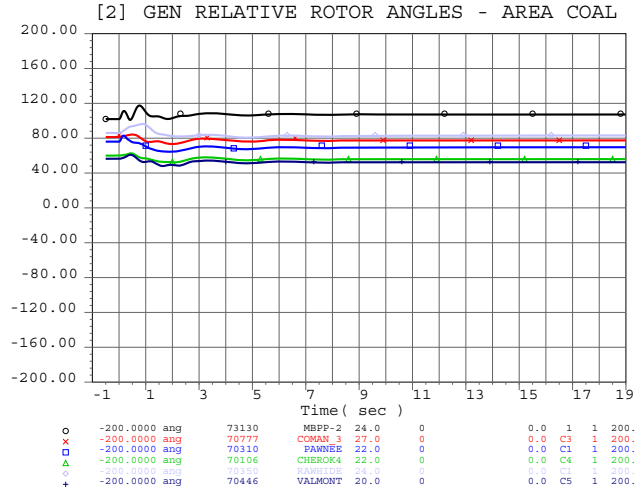

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.5000 spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| × | 0.5000 spd | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| □ | 0.5000 spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| △ | 0.5000 spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| ◇ | 0.5000 spd | 70728 | SPNGCN2d | 0.7 | 0 | 0.0 | W2 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



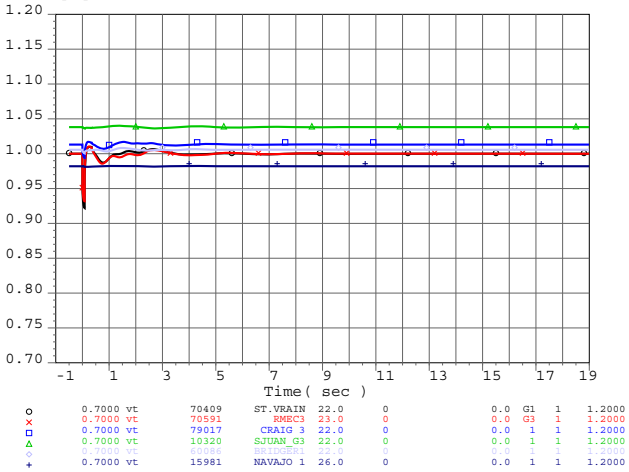

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| × | 0.7000 vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| □ | 0.7000 vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| △ | 0.7000 vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| + | 0.7000 vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



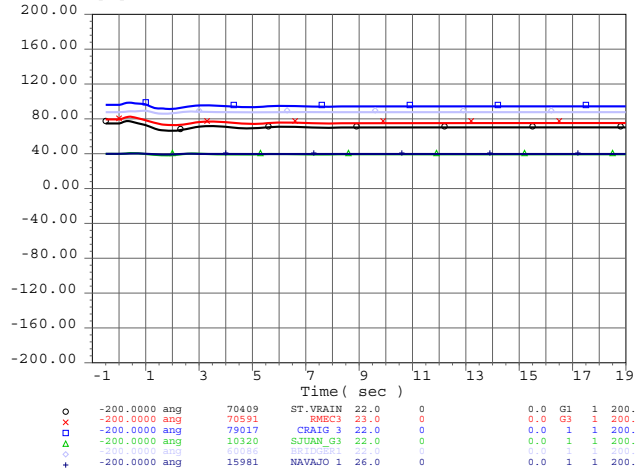

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| × | -200.0000 ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| □ | -200.0000 ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| △ | -200.0000 ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| + | -200.0000 ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| × | 0.7000 vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| □ | 0.7000 vt | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| △ | 0.7000 vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 60186 | NUCLEA4 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| + | 0.7000 vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| × | -200.0000 ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| □ | -200.0000 ang | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| △ | -200.0000 ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 60186 | NUCLEA4 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| + | -200.0000 ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |

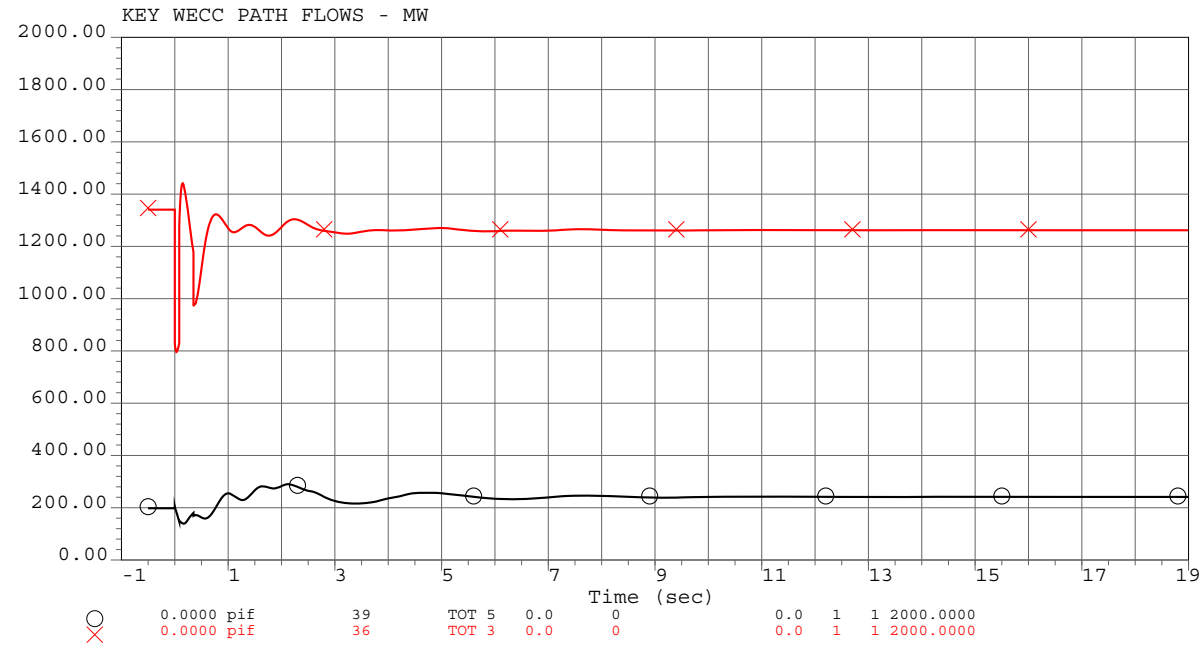
WESTERN ELECTRICITY COORDINATING COUNCIL
2013 HS2-OP BASE CASE
NOVEMBER 30, 2012

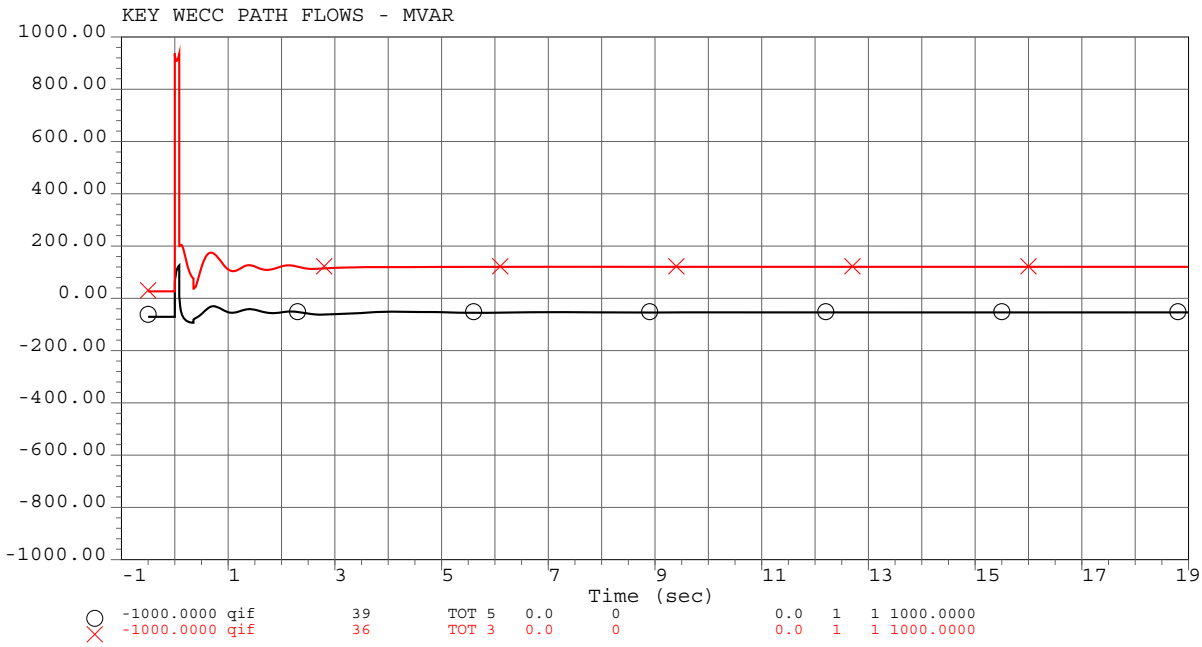


SC2_Sum_PstEqv_v0_14_Story!-LRS_345_3ph_B.chf

.

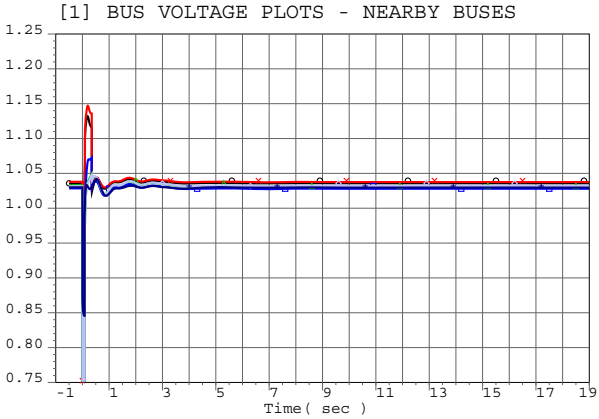
Tue Nov 26 12:42:05 2013


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

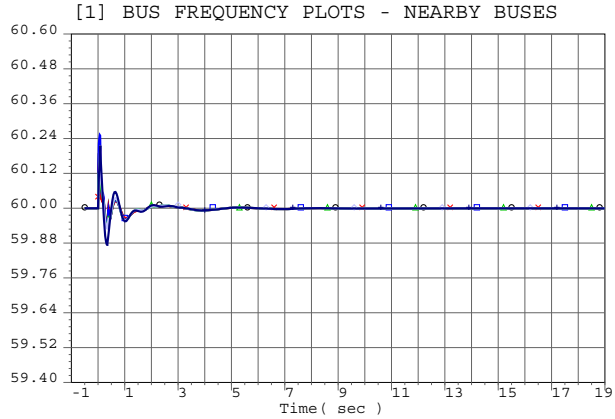
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



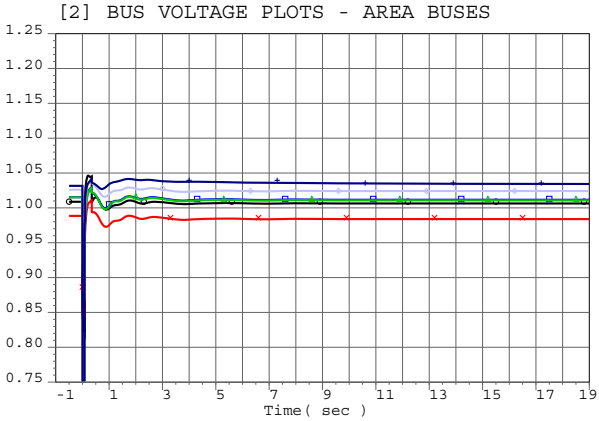

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



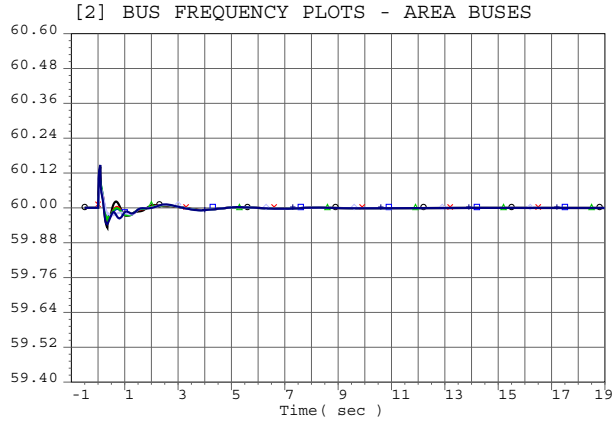

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



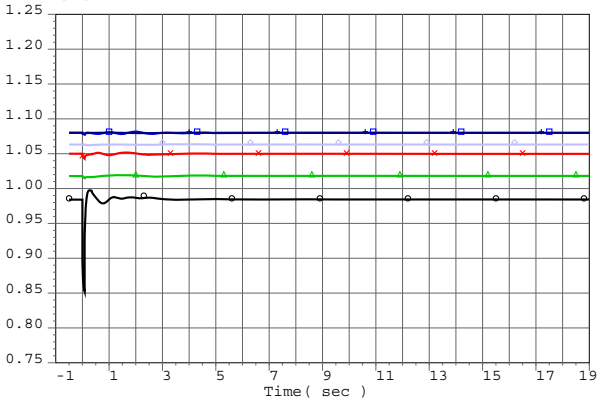

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



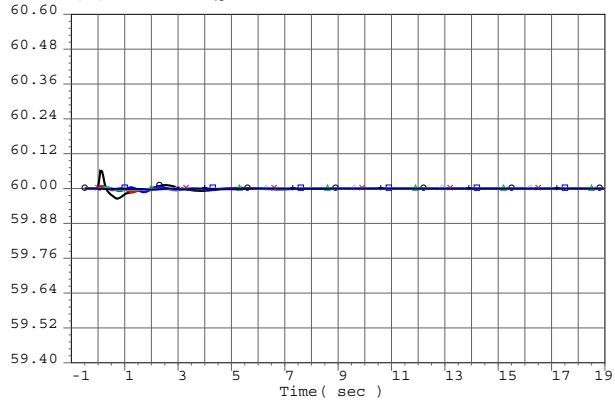

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbul | 73009 | ARCHER 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 14021 | BALNORTH 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 60085 | BRIDGER 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 14021 | BALNORTH 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013 HS2-OP BASE CASE
NOVEMBER 30, 2012



SC2_Sum_PstEqv_v0_15_Story!-Pawnee_230_3ph_B.chf

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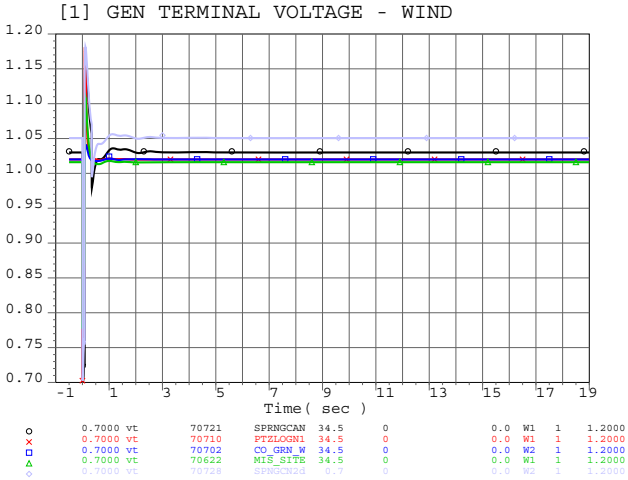
Tue Nov 26 12:42:13 2013

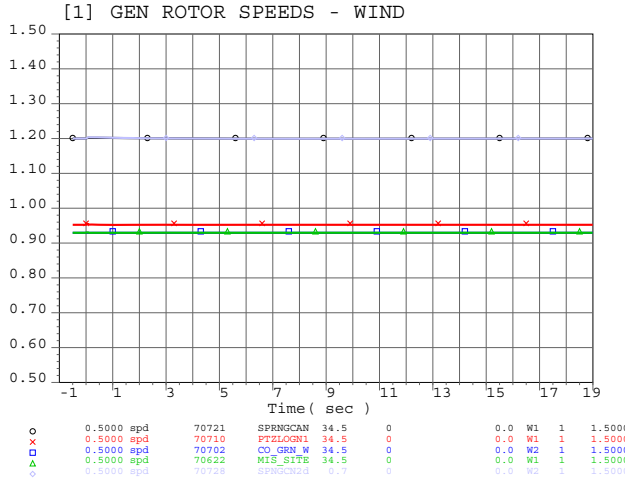
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



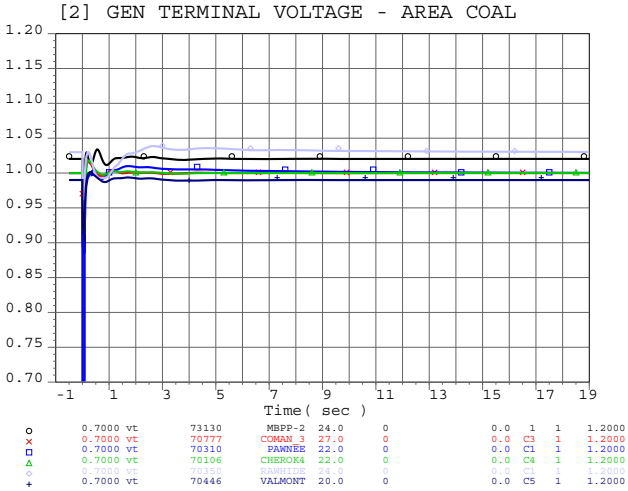

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| × | 0.7000 vt | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| □ | 0.7000 vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| △ | 0.7000 vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 70728 | SPNGCN2d | 0.7 | 0 | 0.0 | W2 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



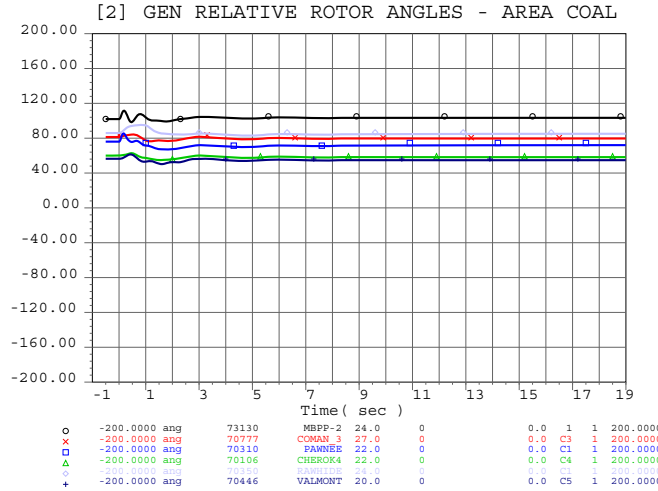

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.5000 spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| × | 0.5000 spd | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| □ | 0.5000 spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| △ | 0.5000 spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| ◇ | 0.5000 spd | 70728 | SPNGCN2d | 0.7 | 0 | 0.0 | W2 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



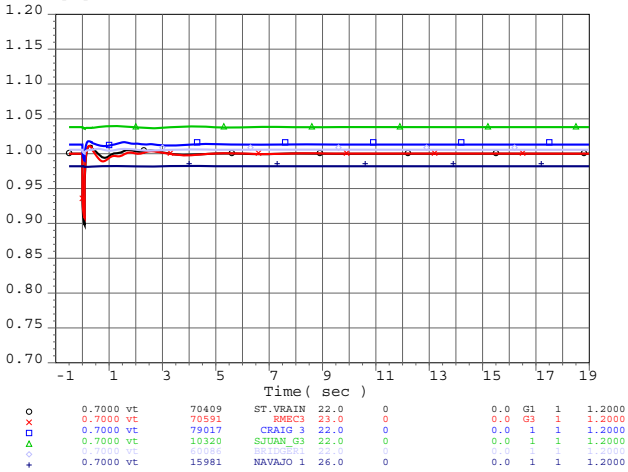

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| × | 0.7000 vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| □ | 0.7000 vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| △ | 0.7000 vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| + | 0.7000 vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



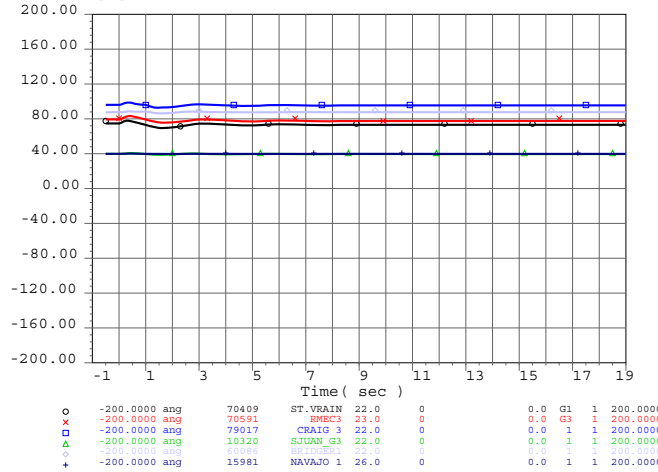

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| × | -200.0000 ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| □ | -200.0000 ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| △ | -200.0000 ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| + | -200.0000 ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| × | 0.7000 vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| □ | 0.7000 vt | 79017 | CRAIG_3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| △ | 0.7000 vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 60186 | HAYDEN4 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| + | 0.7000 vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| × | -200.0000 ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| □ | -200.0000 ang | 79017 | CRAIG_3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| △ | -200.0000 ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 60186 | HAYDEN4 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| + | -200.0000 ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |

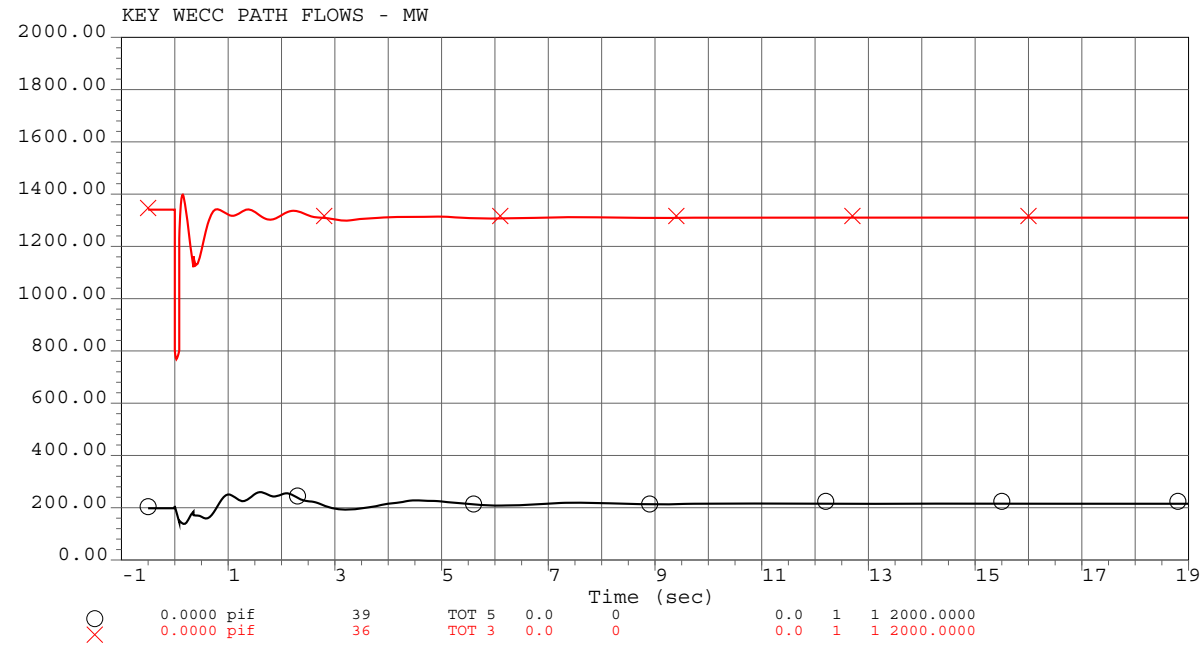
WESTERN ELECTRICITY COORDINATING COUNCIL
2013 HS2-OP BASE CASE
NOVEMBER 30, 2012

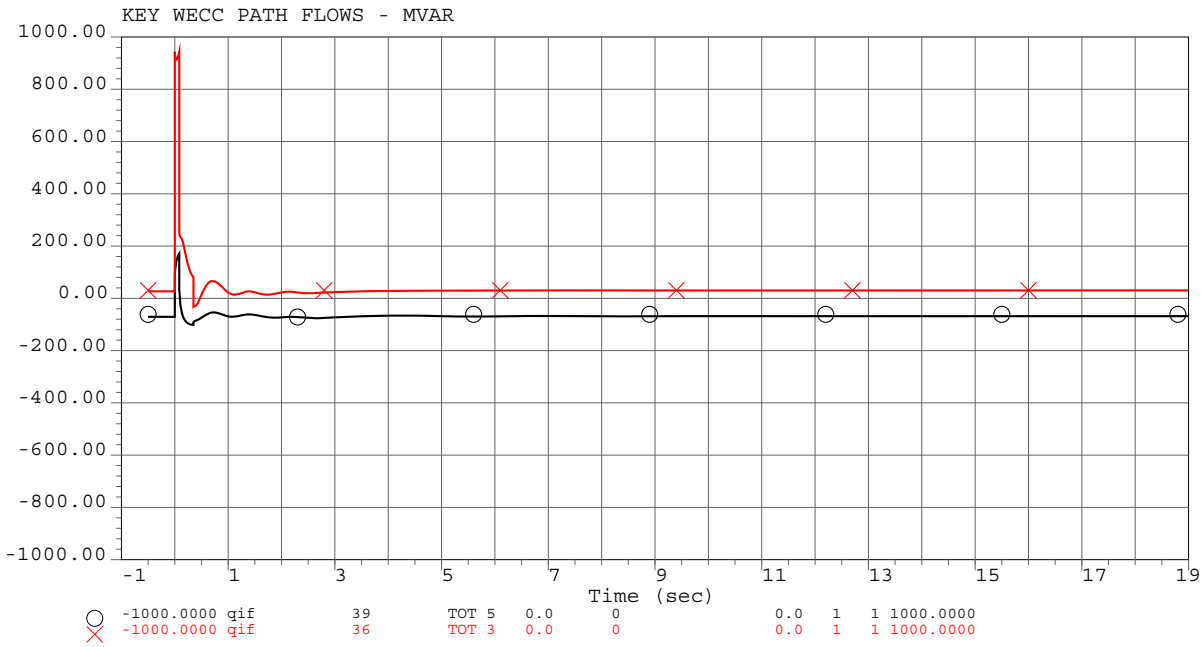


SC2_Sum_PstEqv_v0_15_Story!-Pawnee_230_3ph_B.chf

.

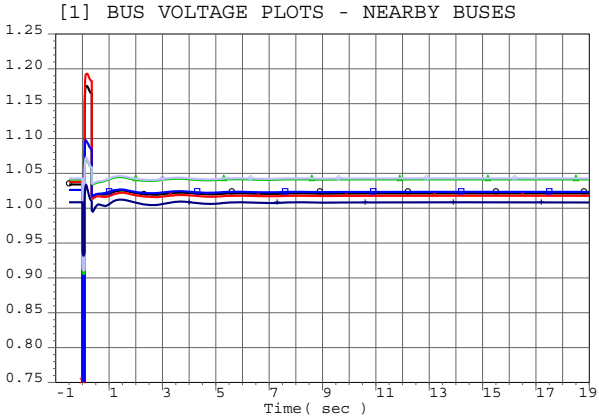
Tue Nov 26 12:42:13 2013


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

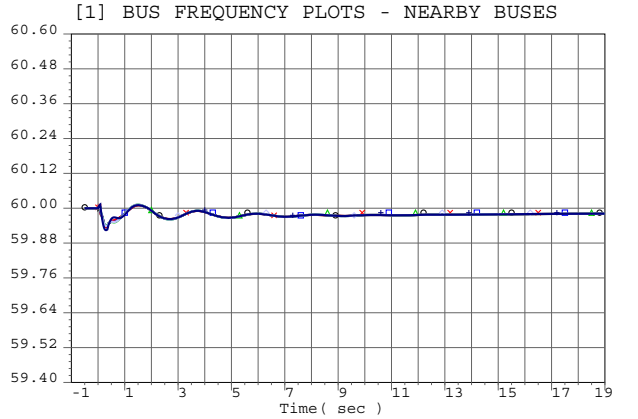
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



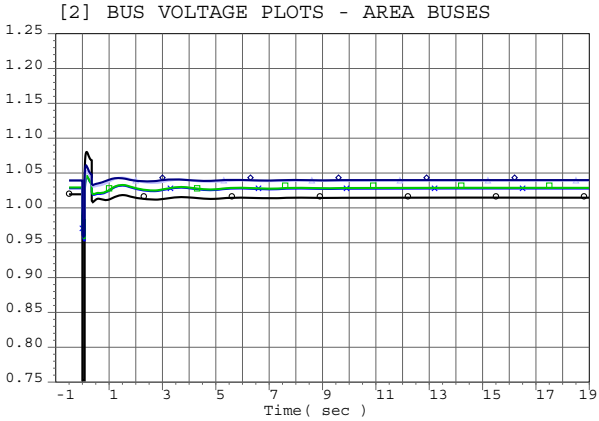

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



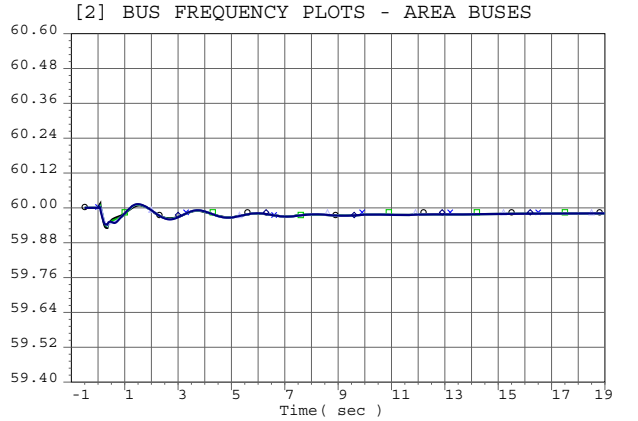

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



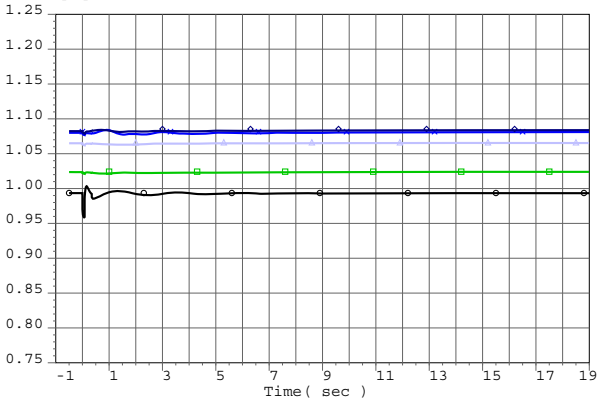

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



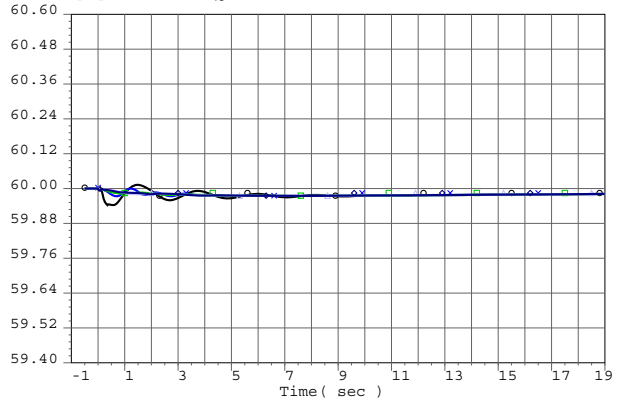

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013-14 LW1 OPERATING CASE
MAY 16, 2013



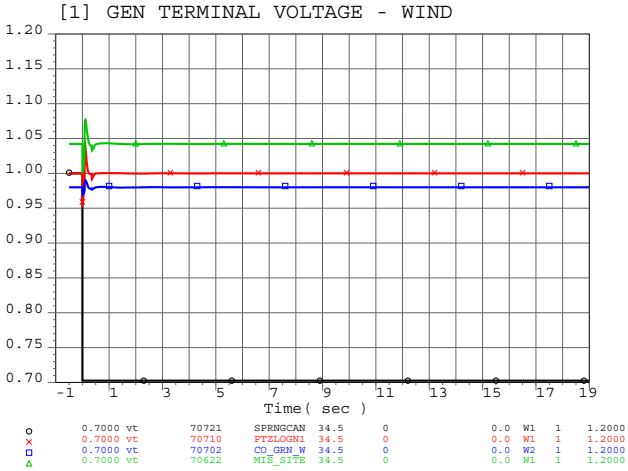
SC2_LW_Base_v0_01_Sidney!-SidneyDC_230_3ph_B.chf

.

Tue Nov 26 13:26:02 2013

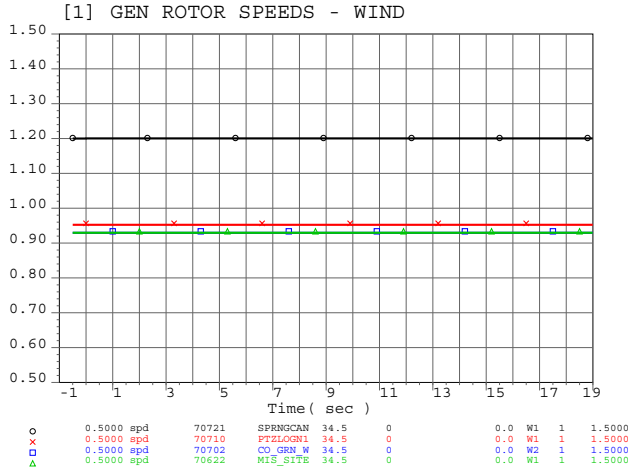
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



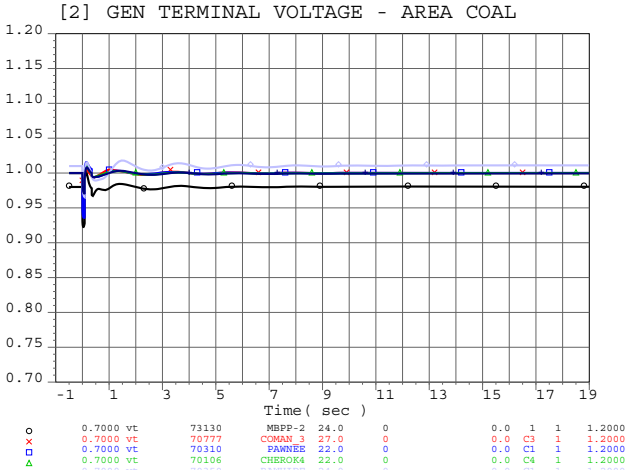

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| × | 0.7000 vt | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| □ | 0.7000 vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| △ | 0.7000 vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



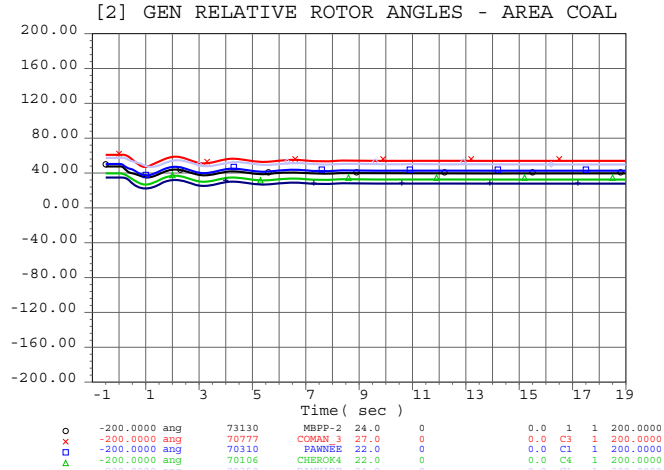

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.5000 spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| × | 0.5000 spd | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| □ | 0.5000 spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| △ | 0.5000 spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



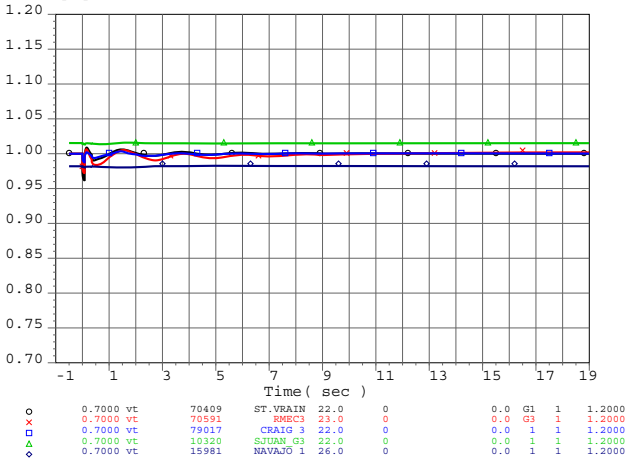

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| × | 0.7000 vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| □ | 0.7000 vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| △ | 0.7000 vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| + | 0.7000 vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



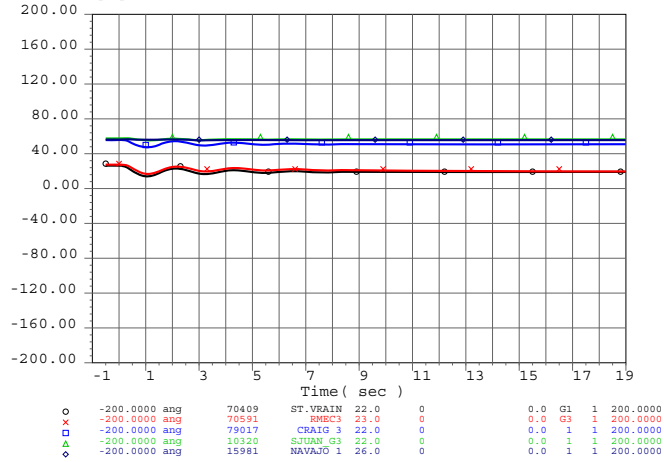

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| × | -200.0000 ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| □ | -200.0000 ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| △ | -200.0000 ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| + | -200.0000 ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| × | 0.7000 vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| □ | 0.7000 vt | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| △ | 0.7000 vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| × | -200.0000 ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| □ | -200.0000 ang | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| △ | -200.0000 ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |

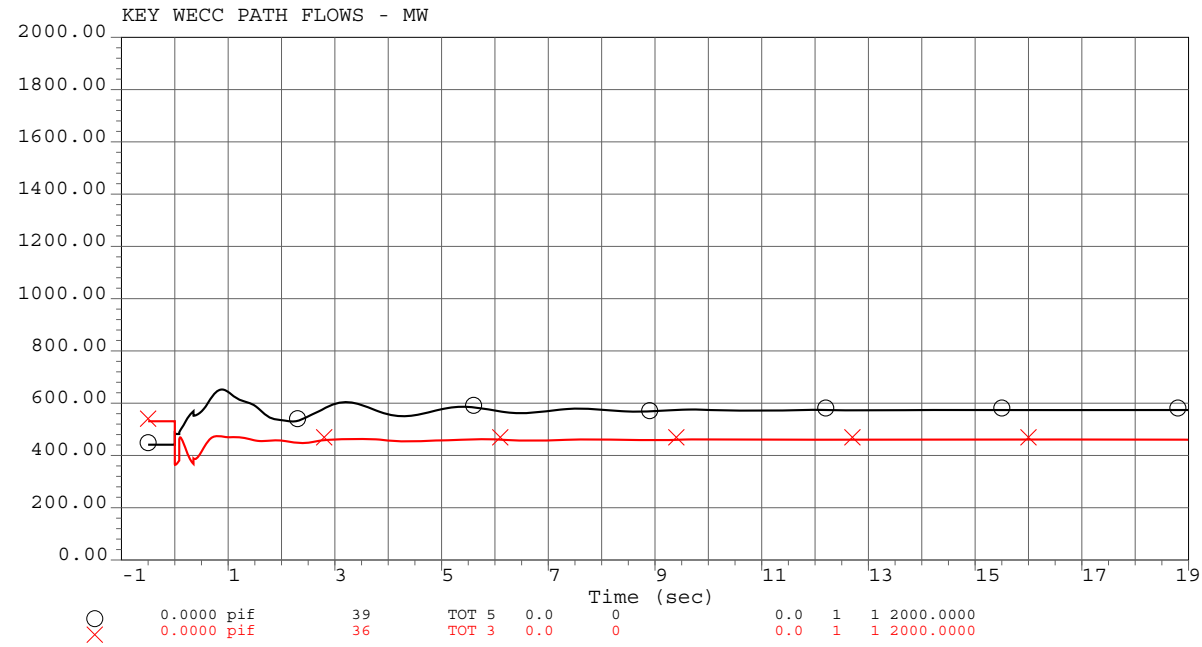
WESTERN ELECTRICITY COORDINATING COUNCIL
2013-14 LW1 OPERATING CASE
MAY 16, 2013

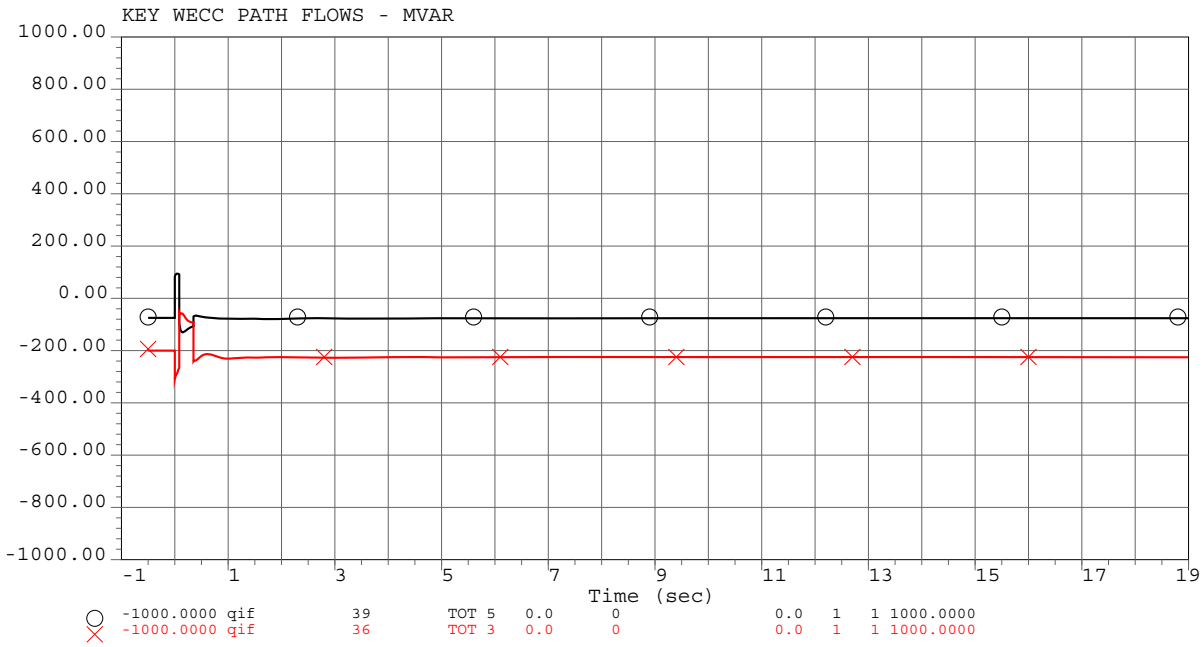


SC2_LW_Base_v0_01_Sidney!-SidneyDC_230_3ph_B.chf

.

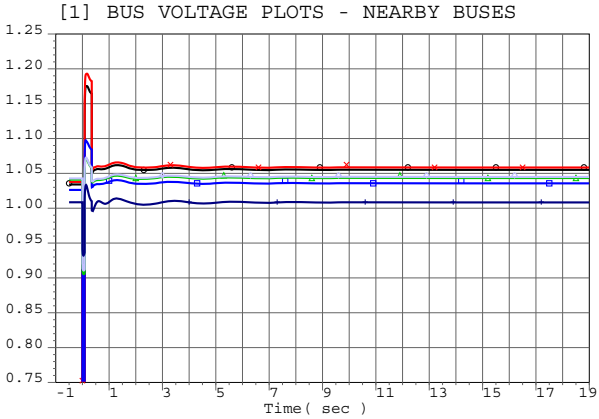
Tue Nov 26 13:26:02 2013


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

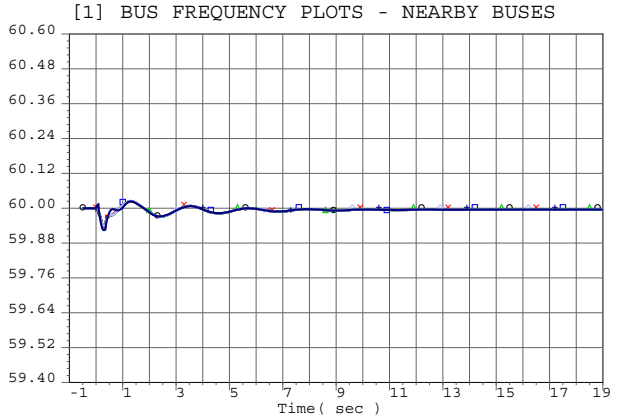
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



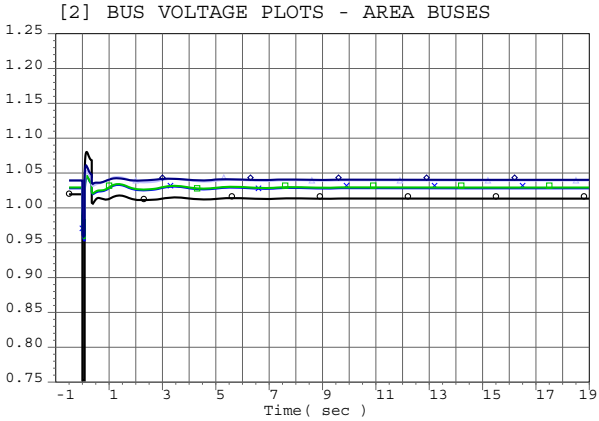

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



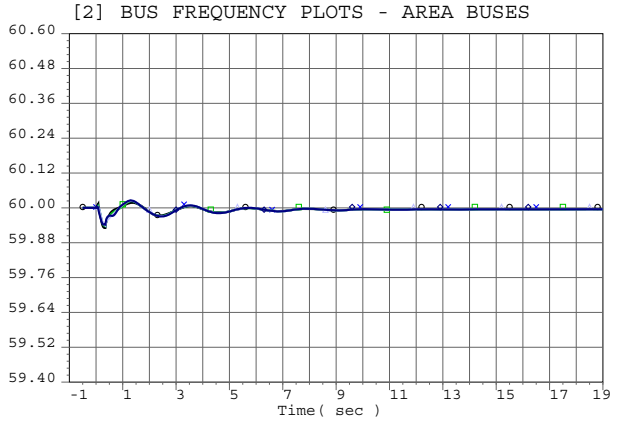

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



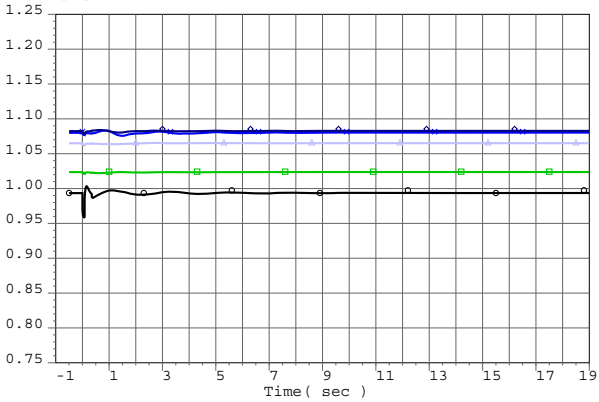

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



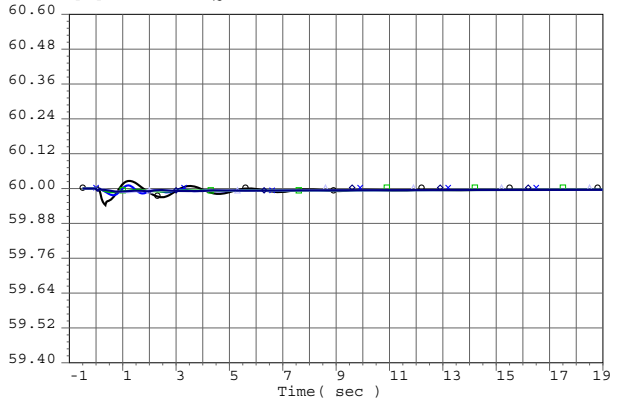

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013-14 LW1 OPERATING CASE
MAY 16, 2013



SC2_LW_Base_v0_02_Sidney!-Stegall_230_3ph_B.chf

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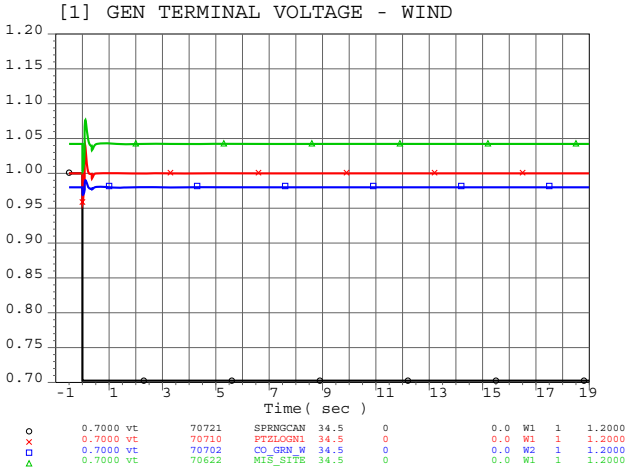
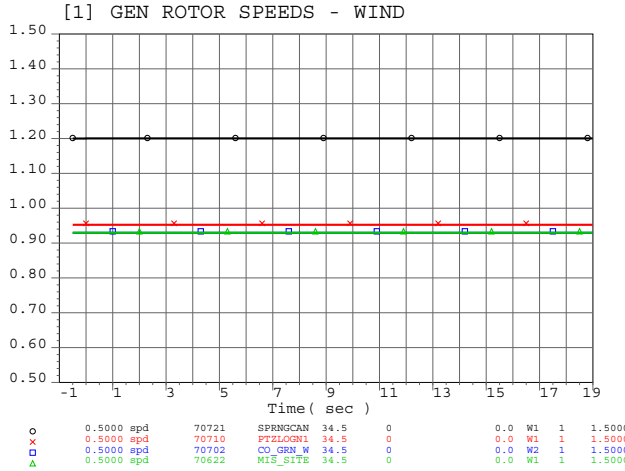
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



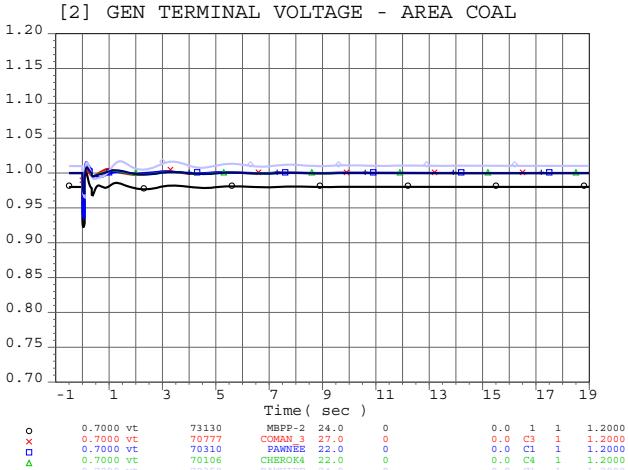

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| × | 0.7000 vt | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| □ | 0.7000 vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| △ | 0.7000 vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



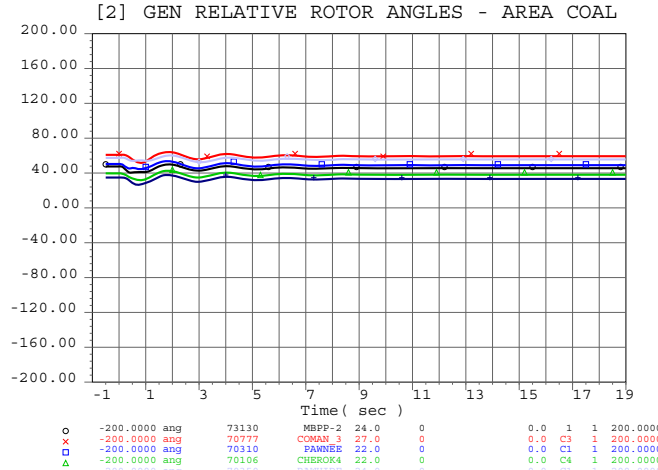

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.5000 spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| × | 0.5000 spd | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| □ | 0.5000 spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| △ | 0.5000 spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



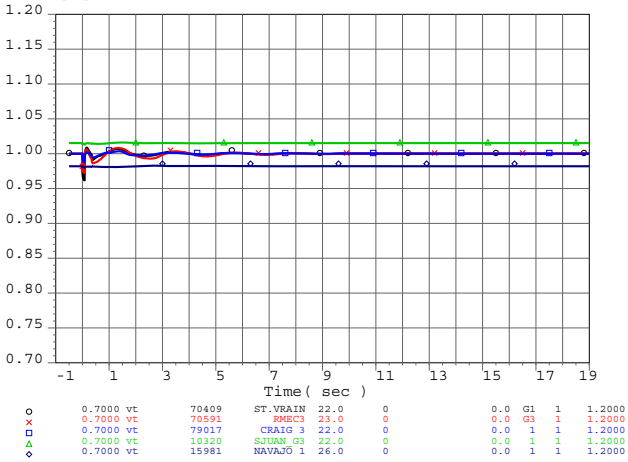

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| × | 0.7000 vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| □ | 0.7000 vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| △ | 0.7000 vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| + | 0.7000 vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



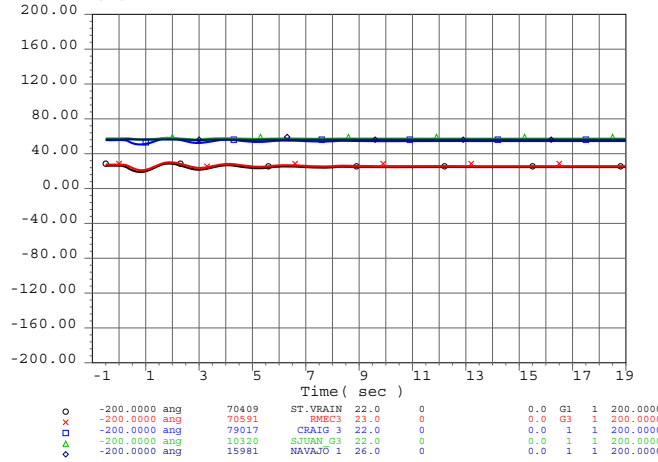

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| × | -200.0000 ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| □ | -200.0000 ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| △ | -200.0000 ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| + | -200.0000 ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| × | 0.7000 vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| □ | 0.7000 vt | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| △ | 0.7000 vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| × | -200.0000 ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| □ | -200.0000 ang | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| △ | -200.0000 ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013-14 LW1 OPERATING CASE
MAY 16, 2013



SC2_LW_Base_v0_02_Sidney!-Stegall_230_3ph_B.chf

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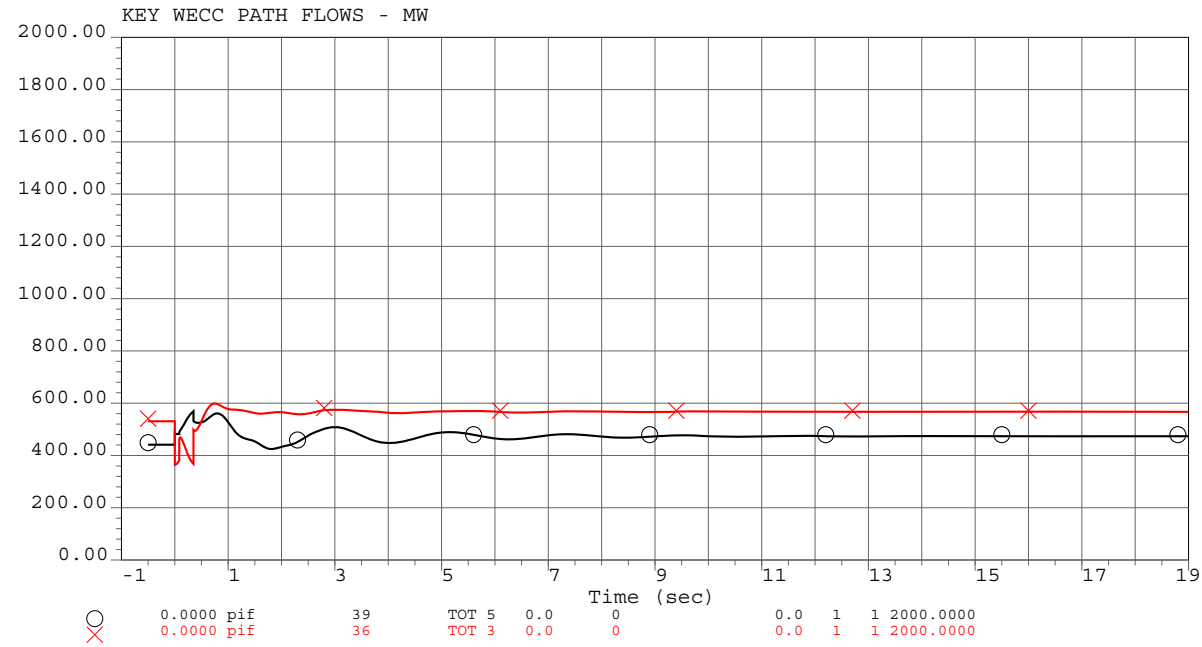
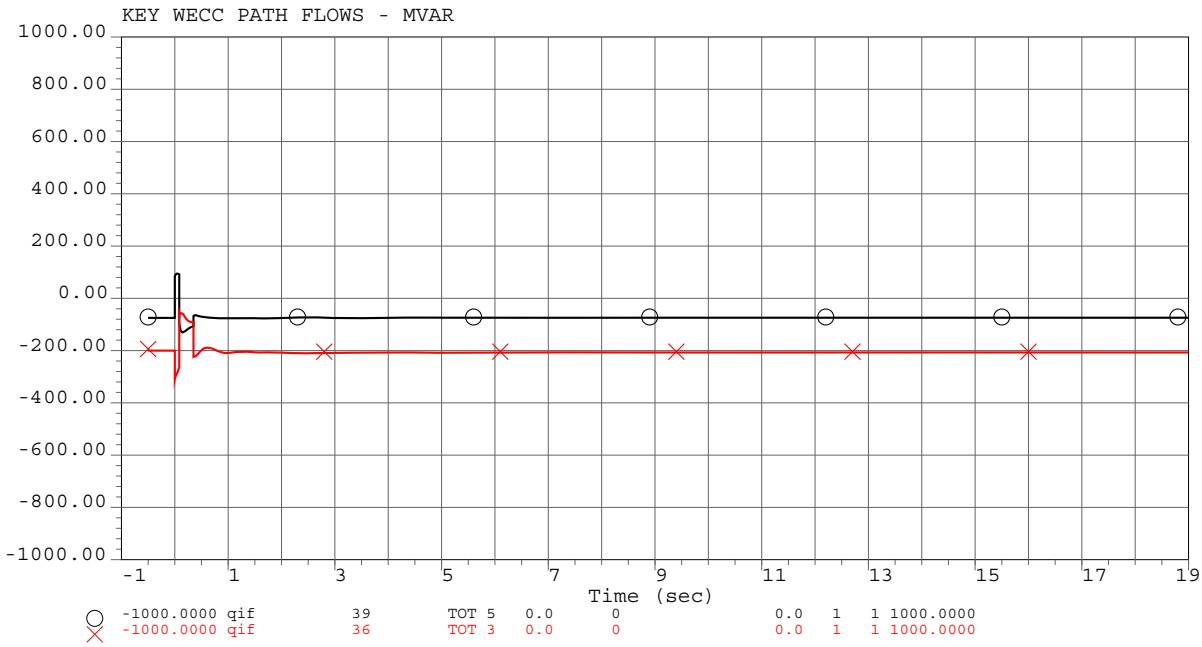
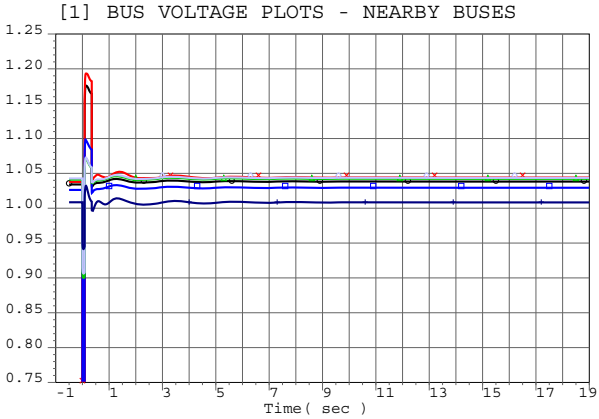
Tue Nov 26 13:27:11 2013


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

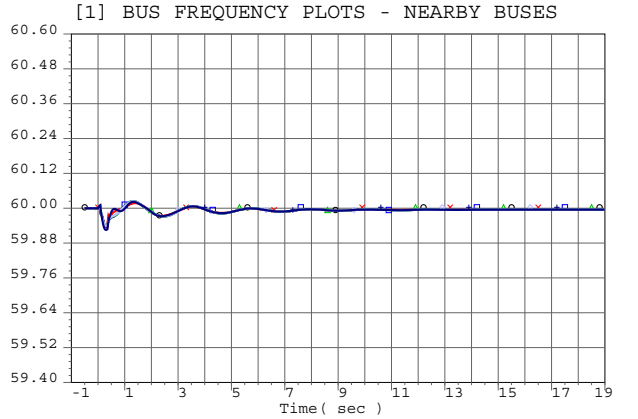
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



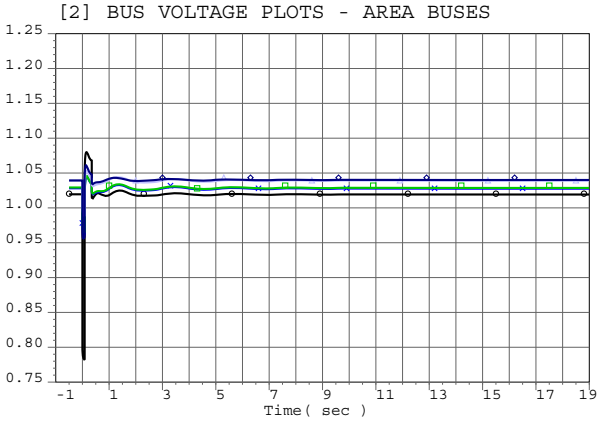

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



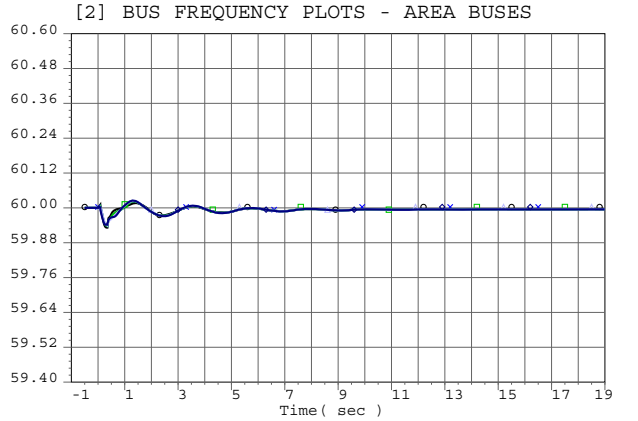

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



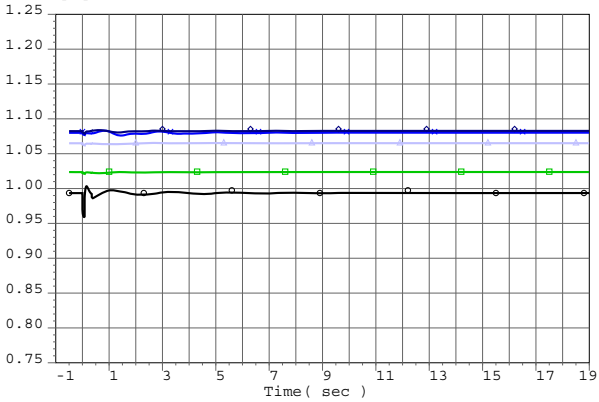

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



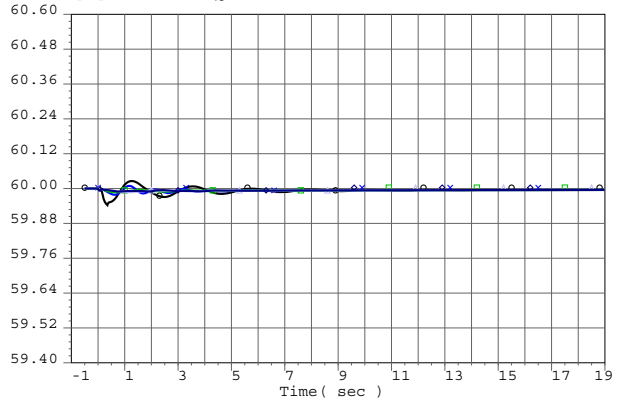

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013-14 LW1 OPERATING CASE
MAY 16, 2013



SC2_LW_Base_v0_03_SprCan!-Sidney_230_3ph_B.chf

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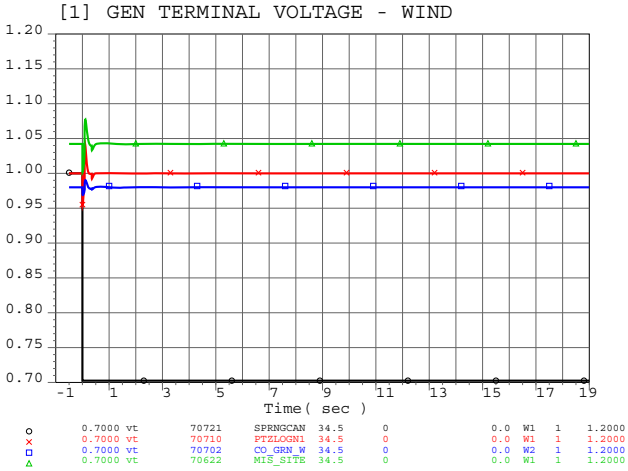
Tue Nov 26 13:27:18 2013

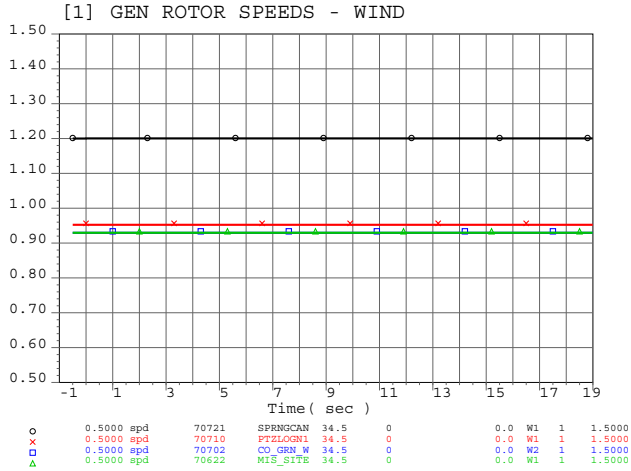
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



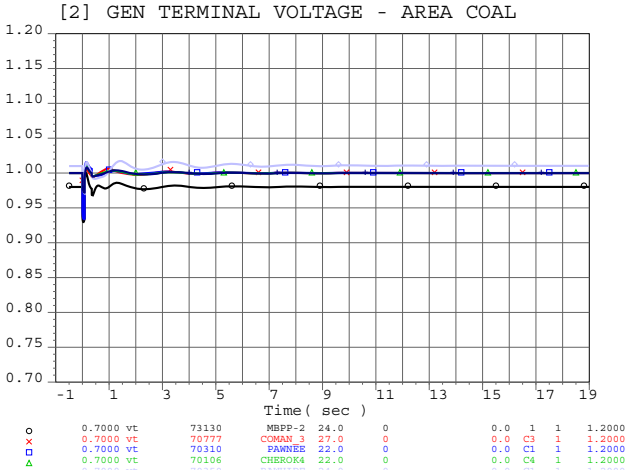

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| × | 0.7000 vt | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| □ | 0.7000 vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| △ | 0.7000 vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



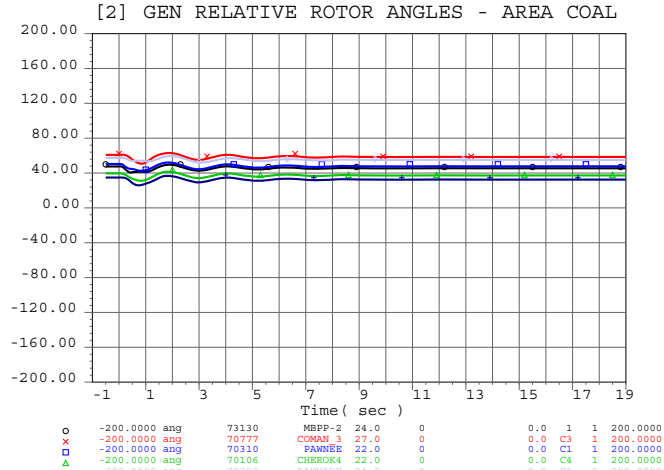

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.5000 spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| × | 0.5000 spd | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| □ | 0.5000 spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| △ | 0.5000 spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



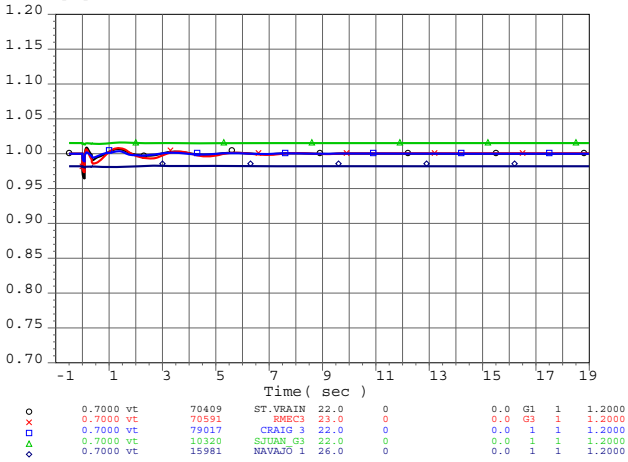

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| × | 0.7000 vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| □ | 0.7000 vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| △ | 0.7000 vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| + | 0.7000 vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



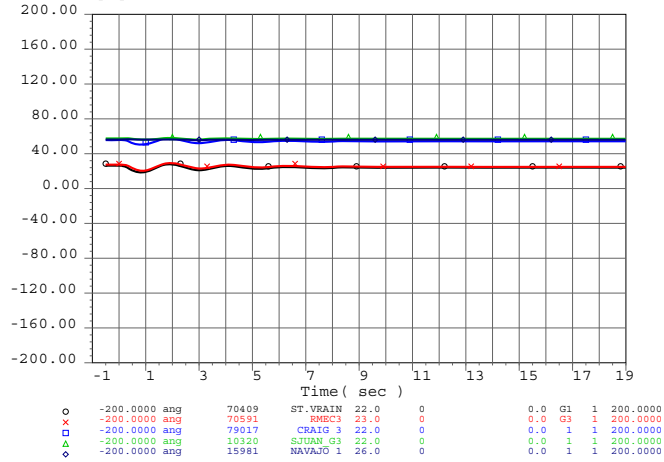

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| × | -200.0000 ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| □ | -200.0000 ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| △ | -200.0000 ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| + | -200.0000 ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| × | 0.7000 vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| □ | 0.7000 vt | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| △ | 0.7000 vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| × | -200.0000 ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| □ | -200.0000 ang | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| △ | -200.0000 ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |

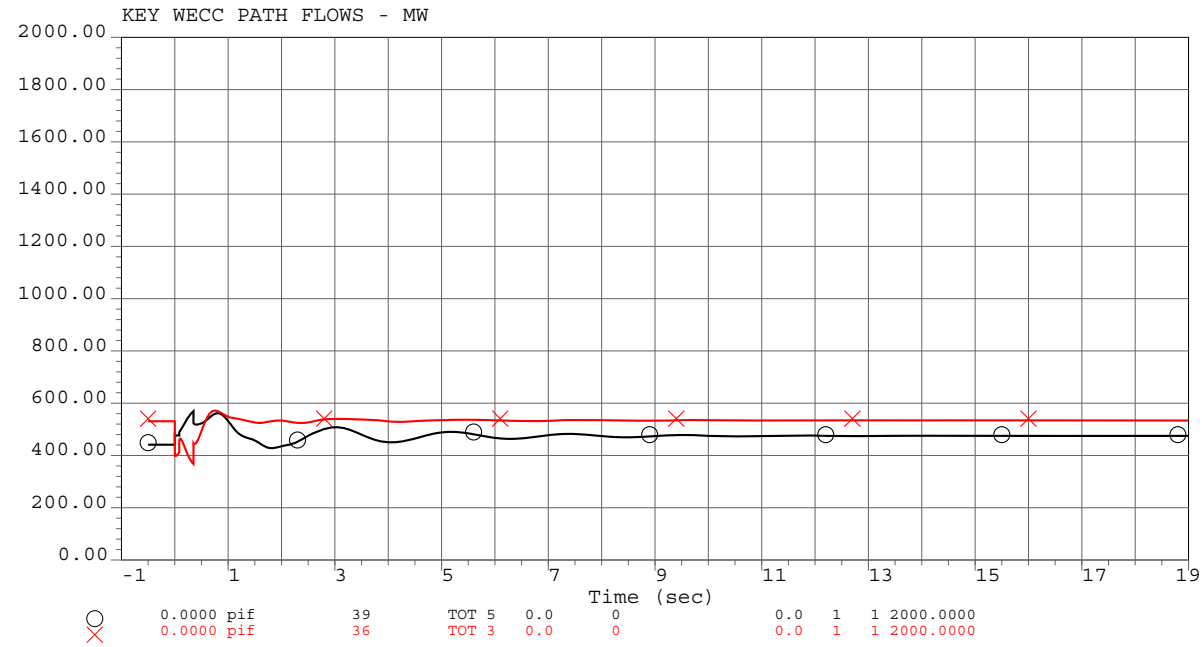
WESTERN ELECTRICITY COORDINATING COUNCIL
2013-14 LW1 OPERATING CASE
MAY 16, 2013

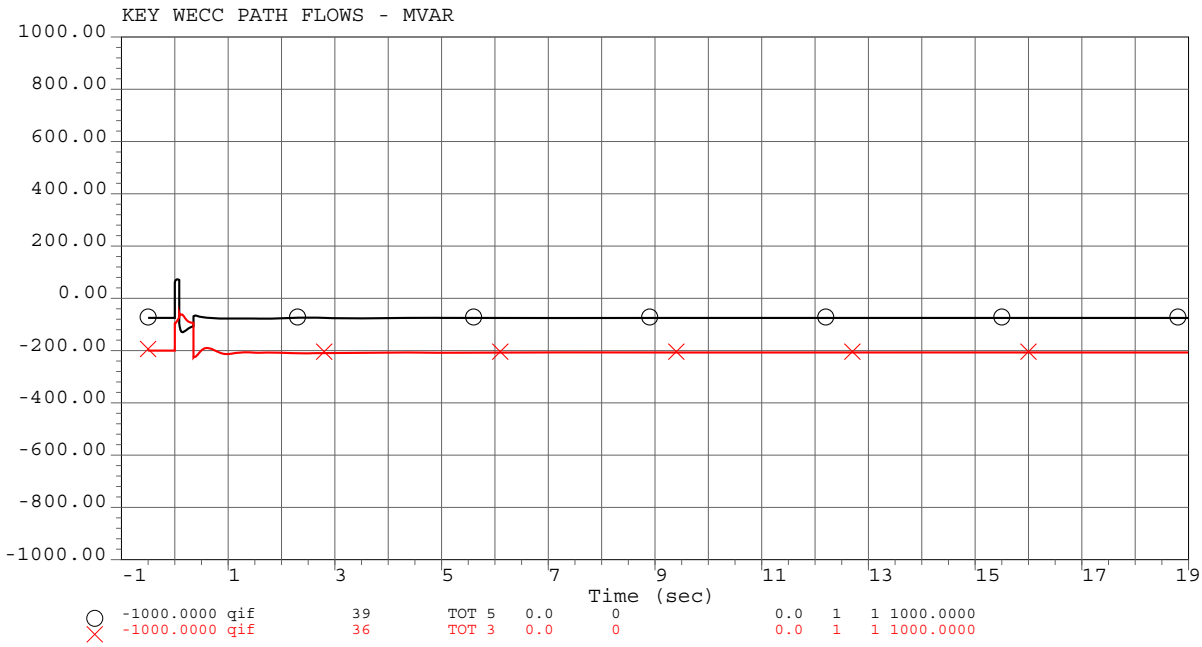


SC2_LW_Base_v0_03_SprCan!-Sidney_230_3ph_B.chf

.

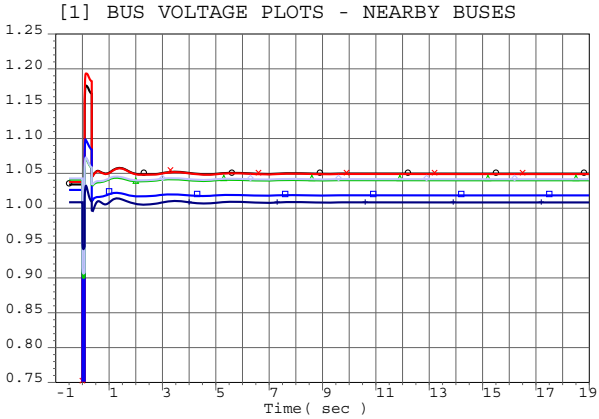
Tue Nov 26 13:27:18 2013


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

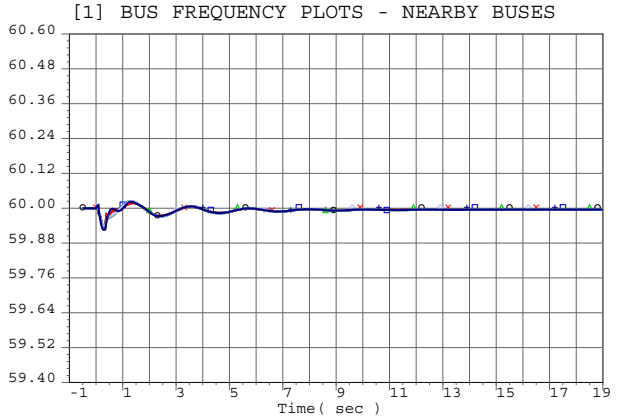
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



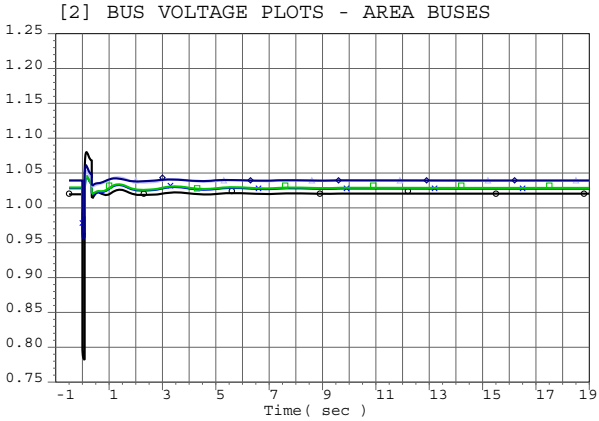

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



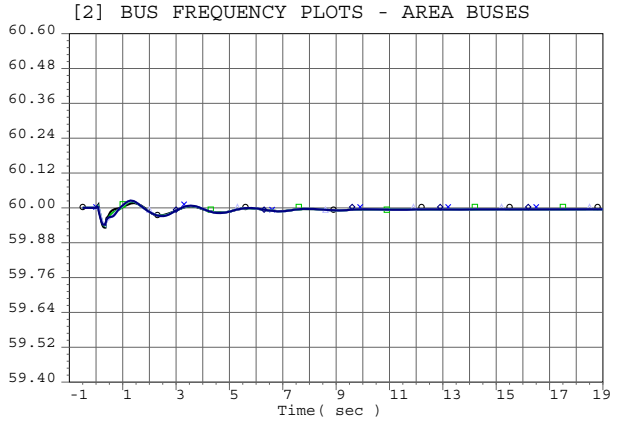

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



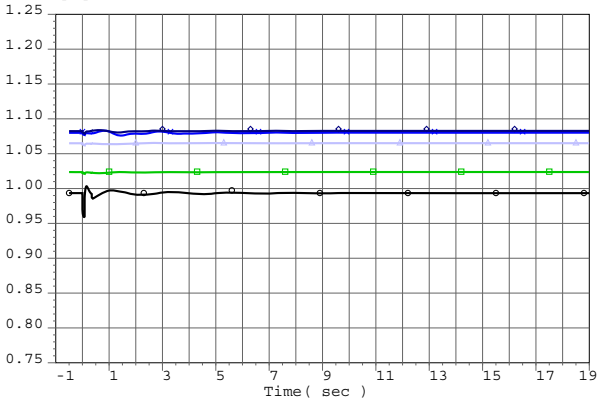

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



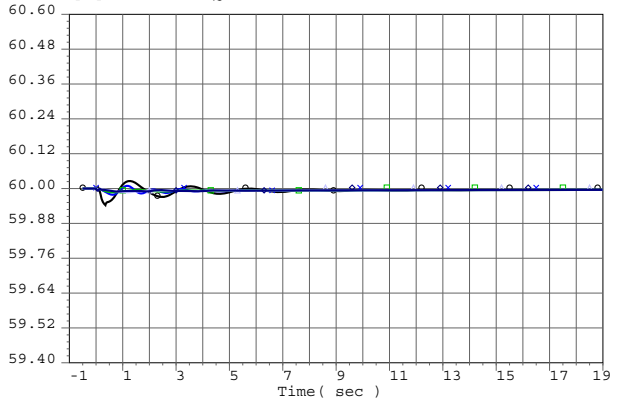

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013-14 LW1 OPERATING CASE
MAY 16, 2013



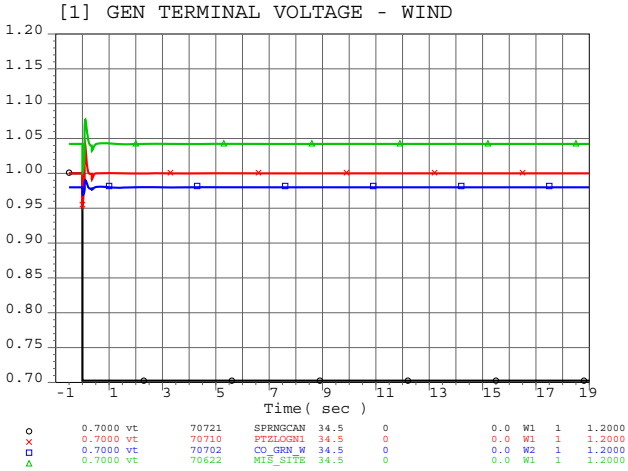
SC2_LW_Base_v0_04_SprCan!-NYuma_230_3ph_B.chf

.

Tue Nov 26 13:27:26 2013

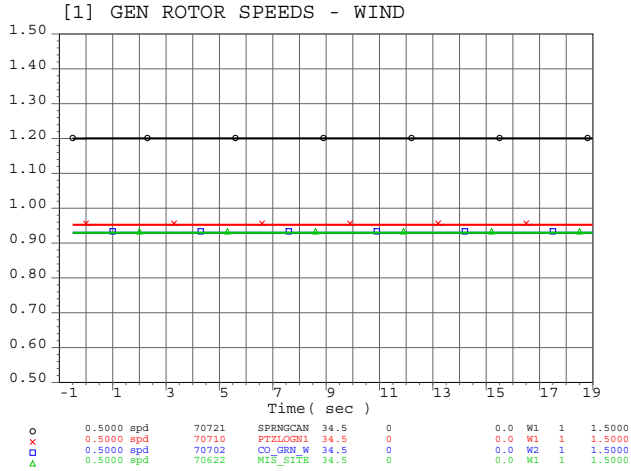
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



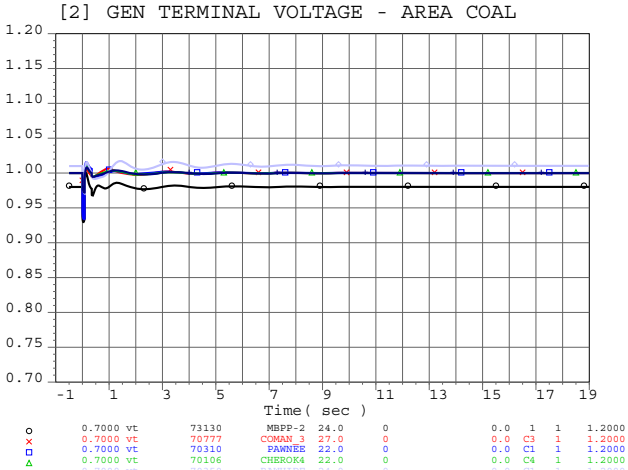

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| × | 0.7000 vt | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| □ | 0.7000 vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| △ | 0.7000 vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



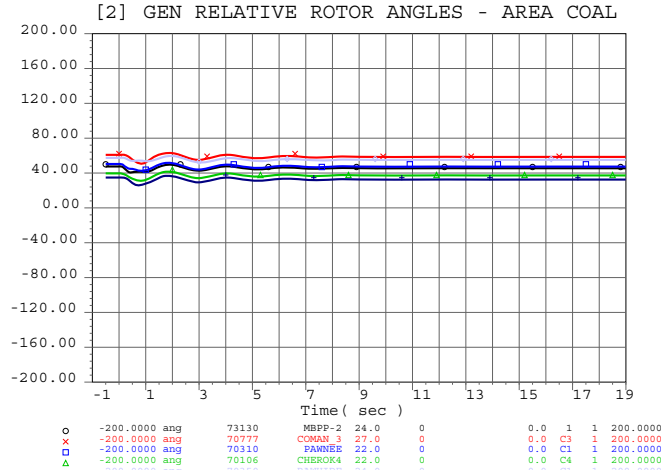

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.5000 spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| × | 0.5000 spd | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| □ | 0.5000 spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| △ | 0.5000 spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



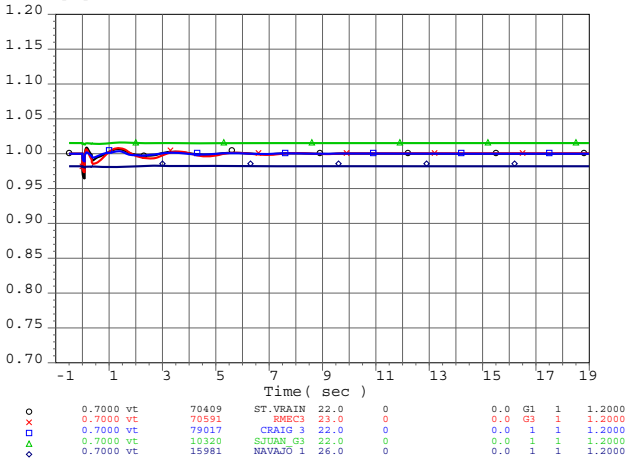

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| × | 0.7000 vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| □ | 0.7000 vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| △ | 0.7000 vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| + | 0.7000 vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



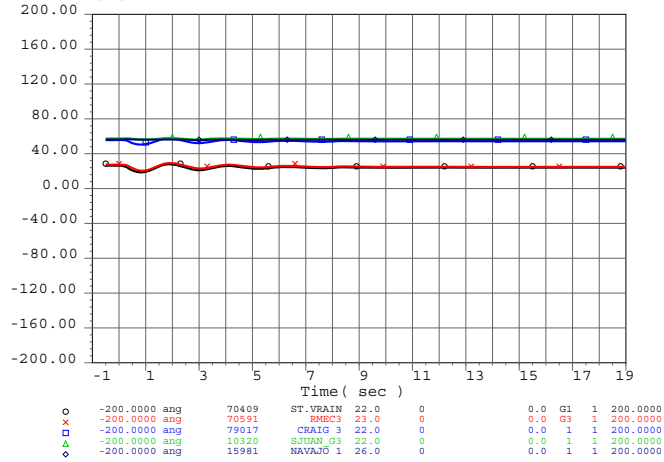

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| × | -200.0000 ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| □ | -200.0000 ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| △ | -200.0000 ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| + | -200.0000 ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| × | 0.7000 vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| □ | 0.7000 vt | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| △ | 0.7000 vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| × | -200.0000 ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| □ | -200.0000 ang | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| △ | -200.0000 ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013-14 LW1 OPERATING CASE
MAY 16, 2013



SC2_LW_Base_v0_04_SprCan!-NYuma_230_3ph_B.chf

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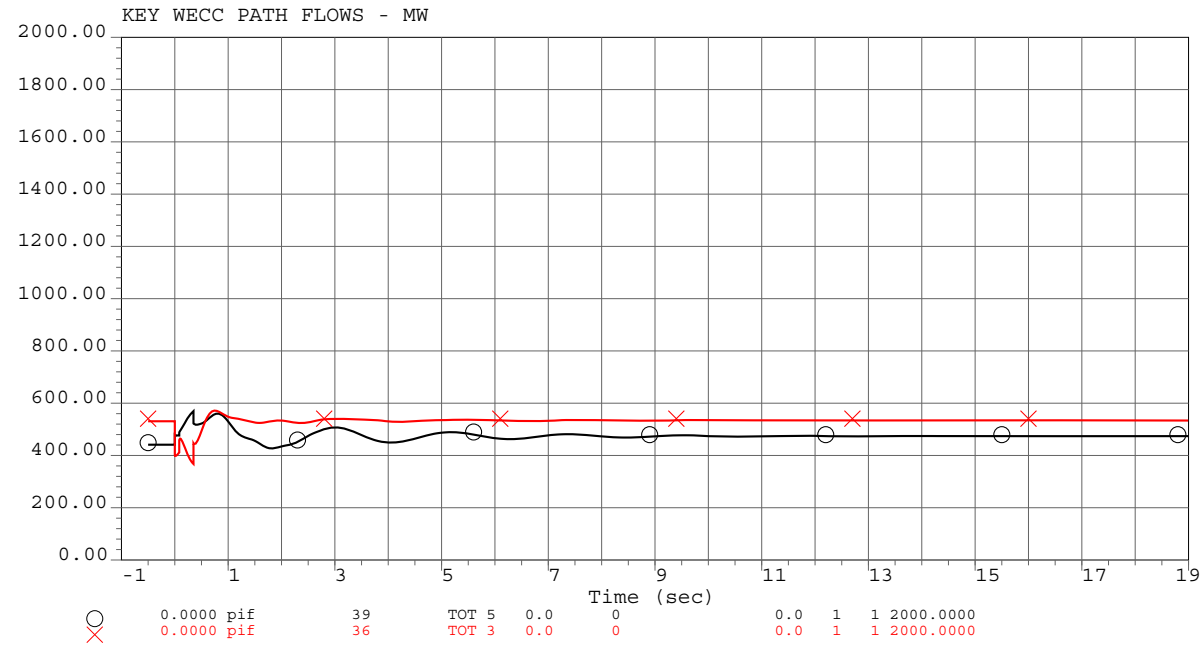
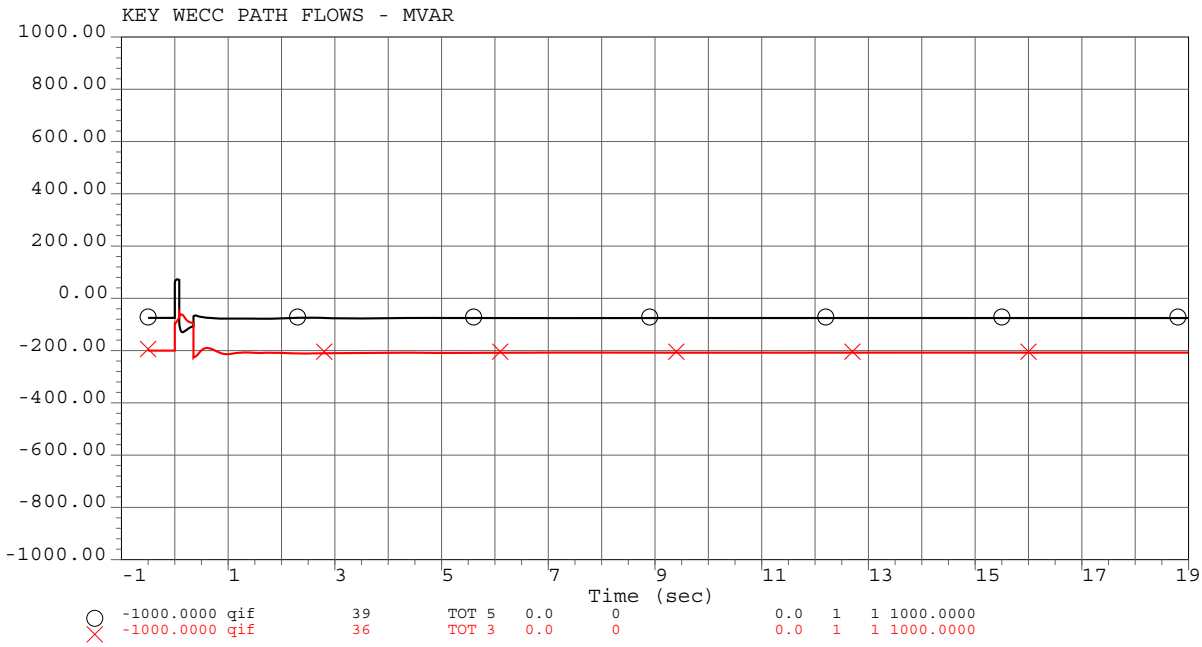
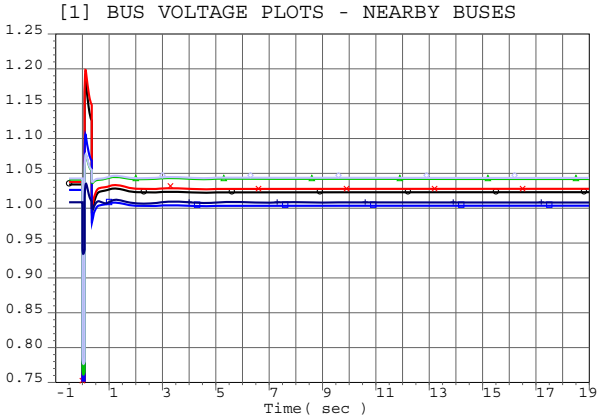
Tue Nov 26 13:27:26 2013


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

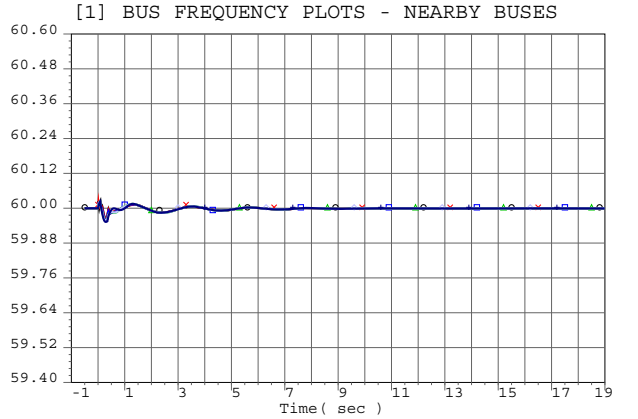
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



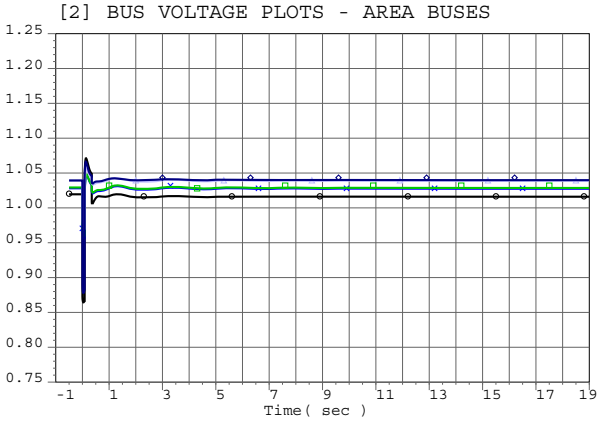

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



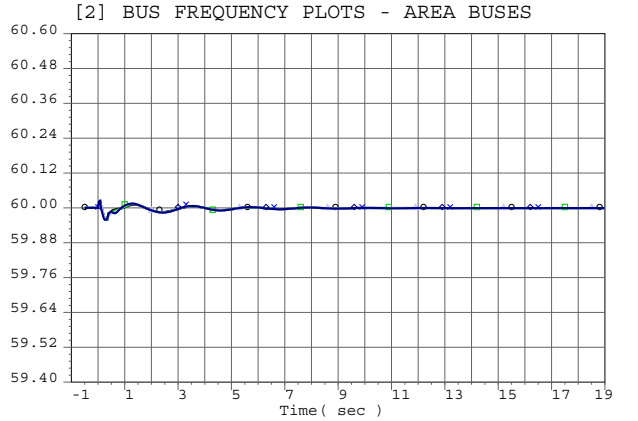

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



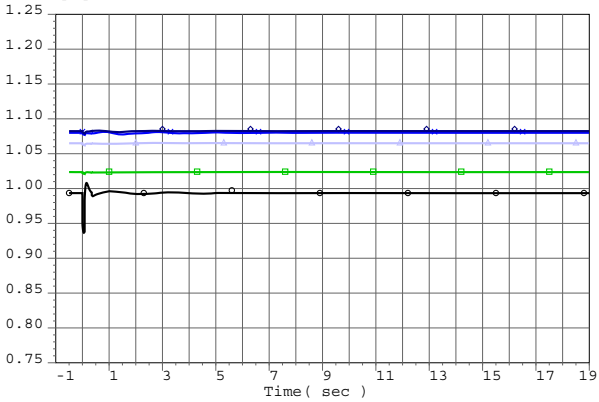

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



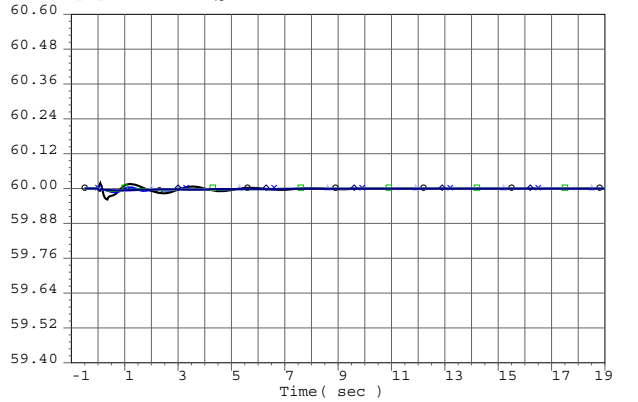

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013-14 LW1 OPERATING CASE
MAY 16, 2013



SC2_LW_Base_v0_05_NYuma!-Story_230_3ph_B.chf

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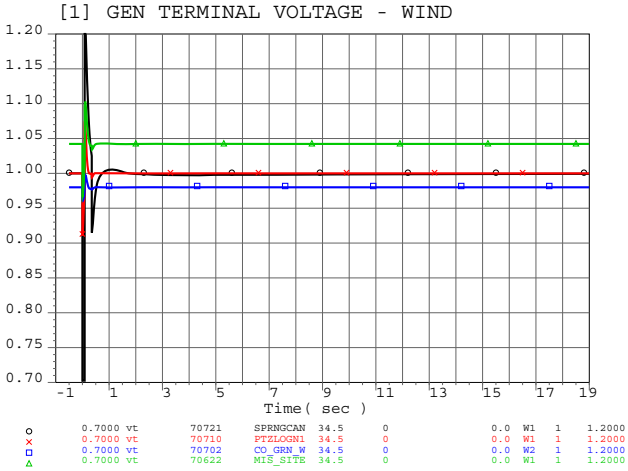
Tue Nov 26 13:27:33 2013

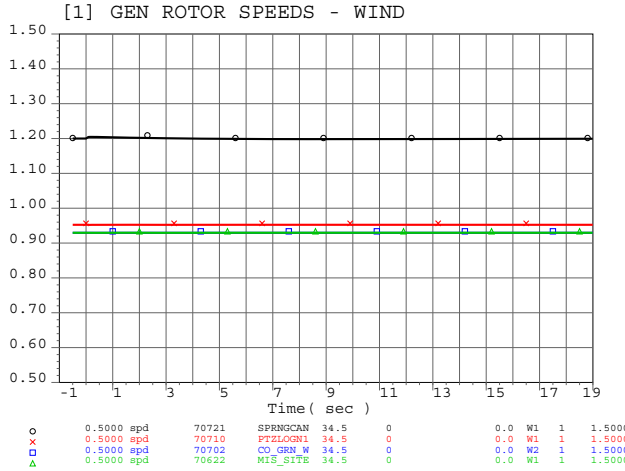
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



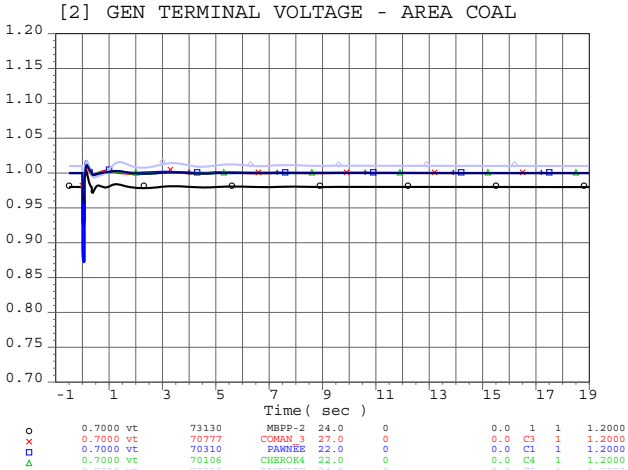

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| × | 0.7000 vt | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| □ | 0.7000 vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| △ | 0.7000 vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



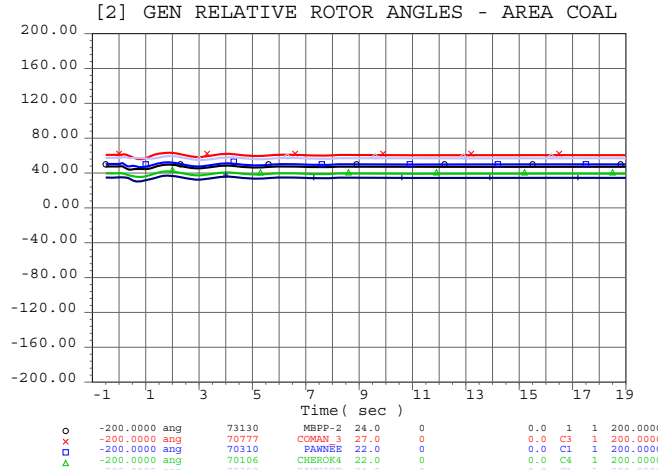

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.5000 spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| × | 0.5000 spd | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| □ | 0.5000 spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| △ | 0.5000 spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



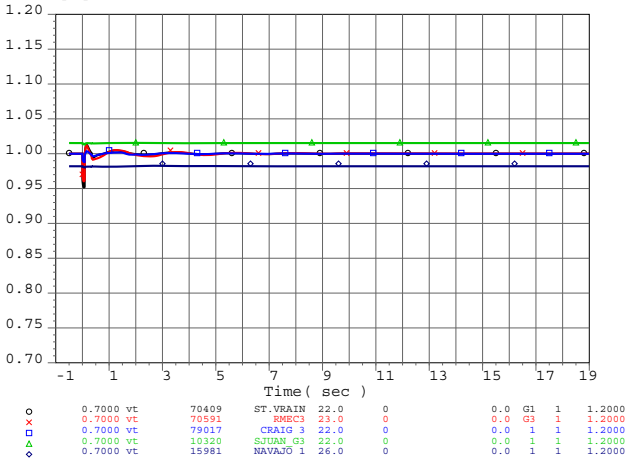

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| × | 0.7000 vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| □ | 0.7000 vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| △ | 0.7000 vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| + | 0.7000 vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



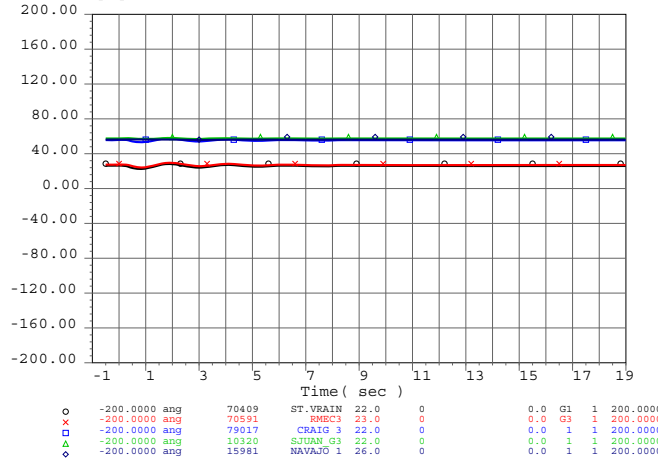

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| × | -200.0000 ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| □ | -200.0000 ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| △ | -200.0000 ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| + | -200.0000 ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| × | 0.7000 vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| □ | 0.7000 vt | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| △ | 0.7000 vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| × | -200.0000 ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| □ | -200.0000 ang | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| △ | -200.0000 ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |

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2013-14 LW1 OPERATING CASE
MAY 16, 2013



SC2_LW_Base_v0_05_NYuma!-Story_230_3ph_B.chf

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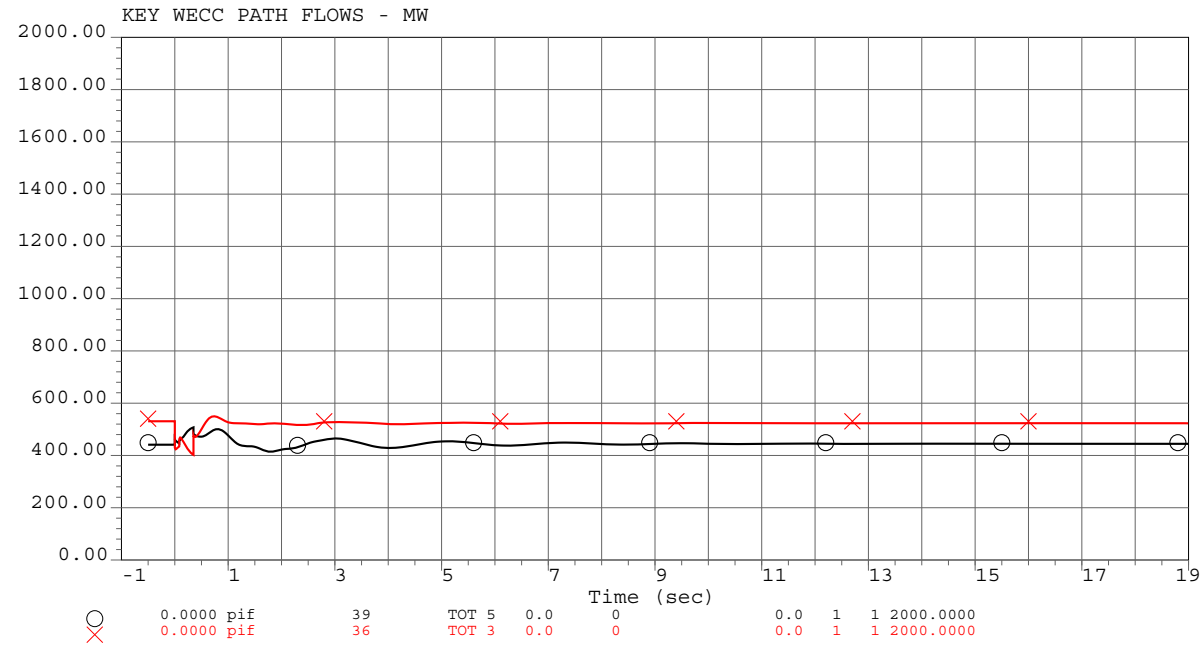
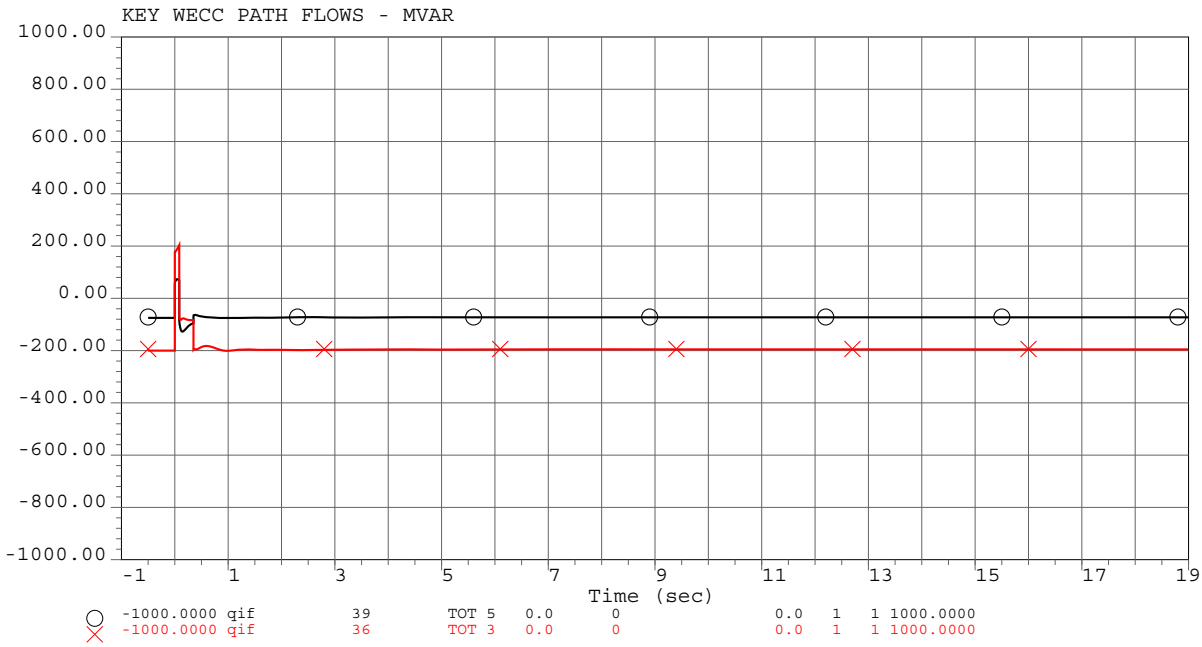
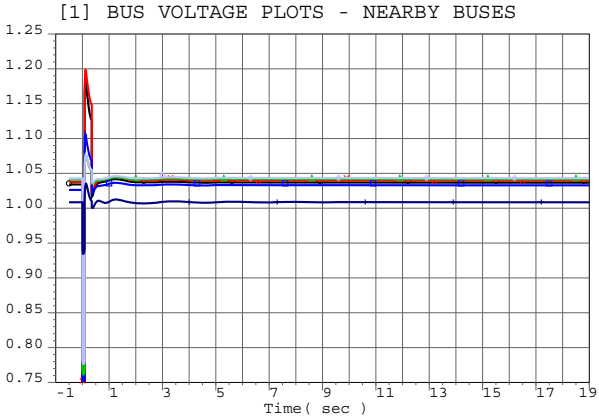

KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

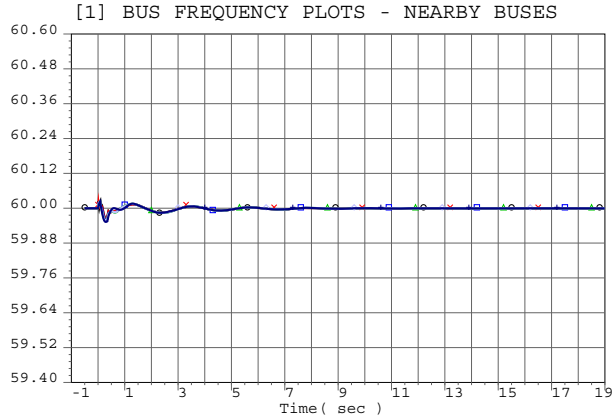
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



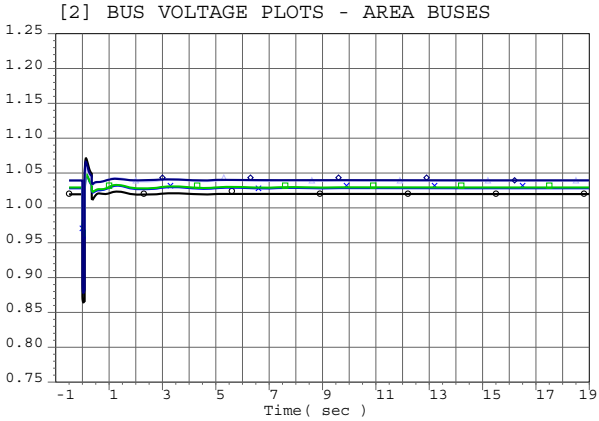

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 73188 | CROWY 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



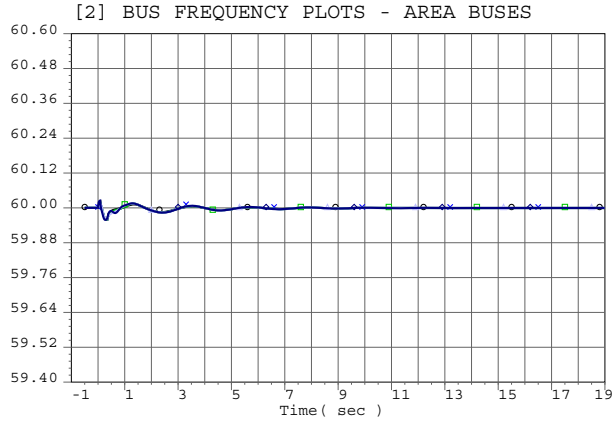

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 73188 | CROWY 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



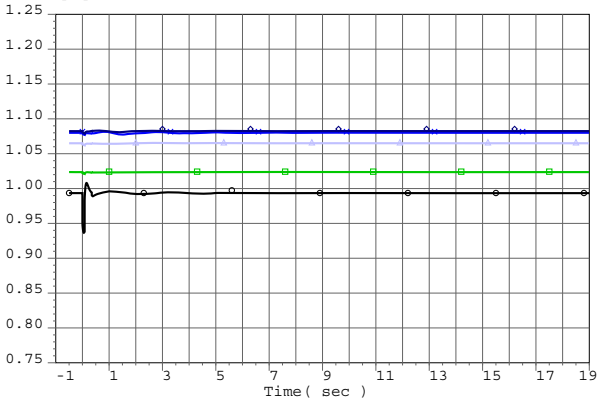

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



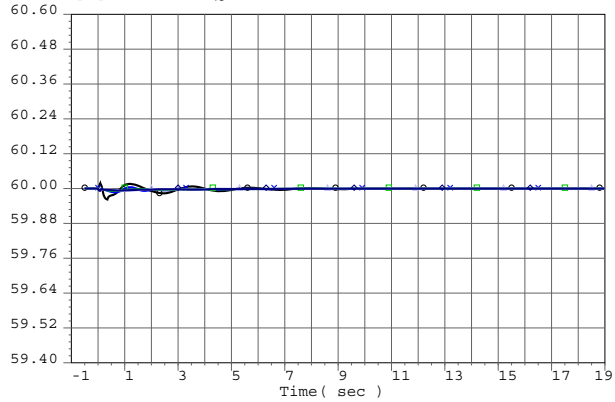

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013-14 LW1 OPERATING CASE
MAY 16, 2013



SC2_LW_Base_v0_06_NYuma!-Wray_230_LW_3ph_B.chf

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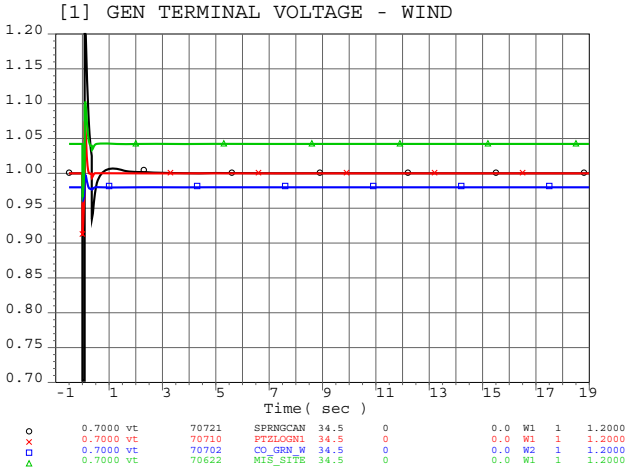
Tue Nov 26 13:27:42 2013

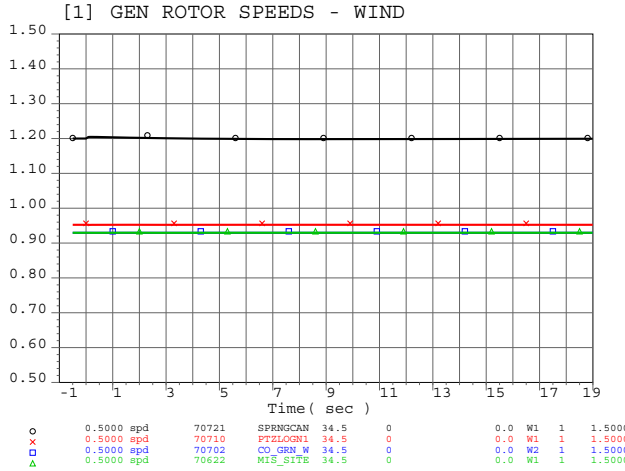
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



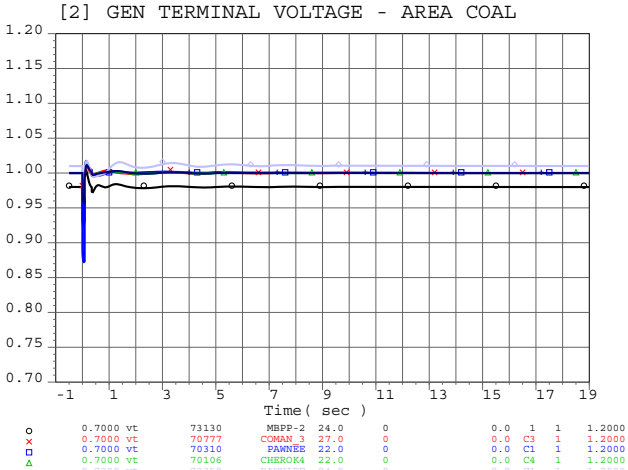

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| × | 0.7000 vt | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| □ | 0.7000 vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| △ | 0.7000 vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



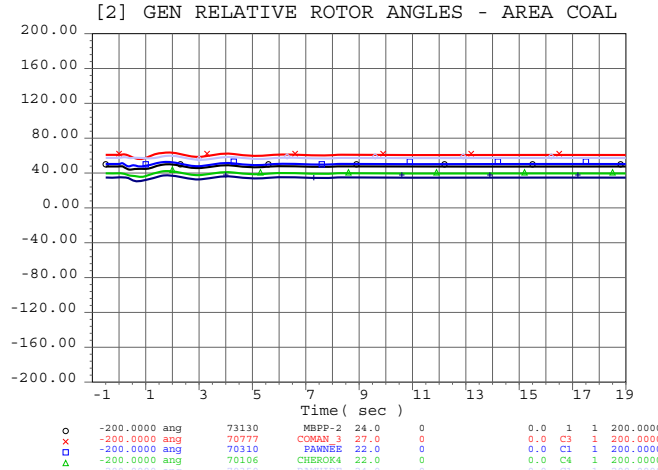

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.5000 spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| × | 0.5000 spd | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| □ | 0.5000 spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| △ | 0.5000 spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



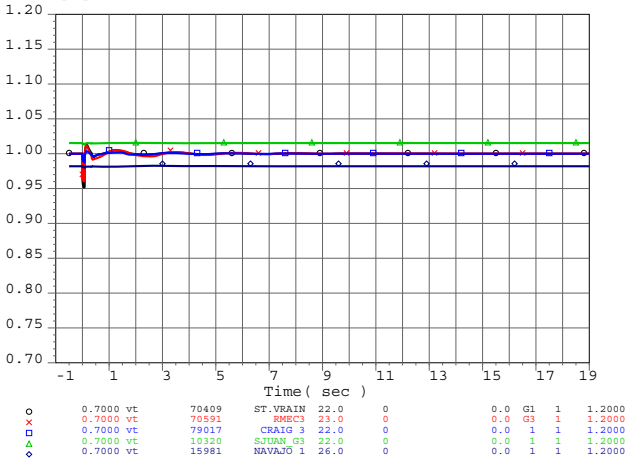

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| × | 0.7000 vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| □ | 0.7000 vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| △ | 0.7000 vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| + | 0.7000 vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



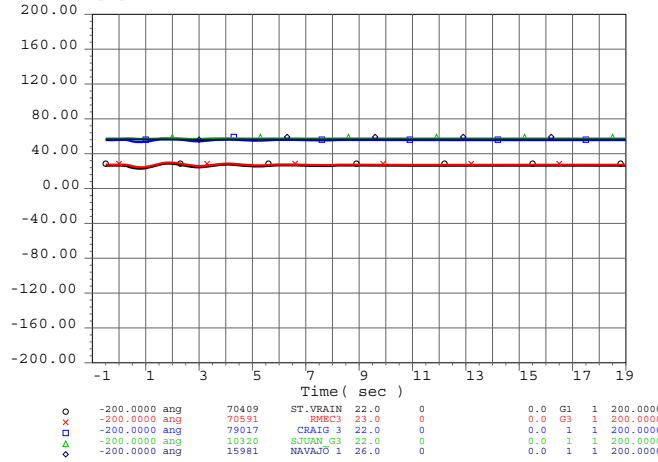

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| × | -200.0000 ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| □ | -200.0000 ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| △ | -200.0000 ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| + | -200.0000 ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| × | 0.7000 vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| □ | 0.7000 vt | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| △ | 0.7000 vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| × | -200.0000 ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| □ | -200.0000 ang | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| △ | -200.0000 ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |

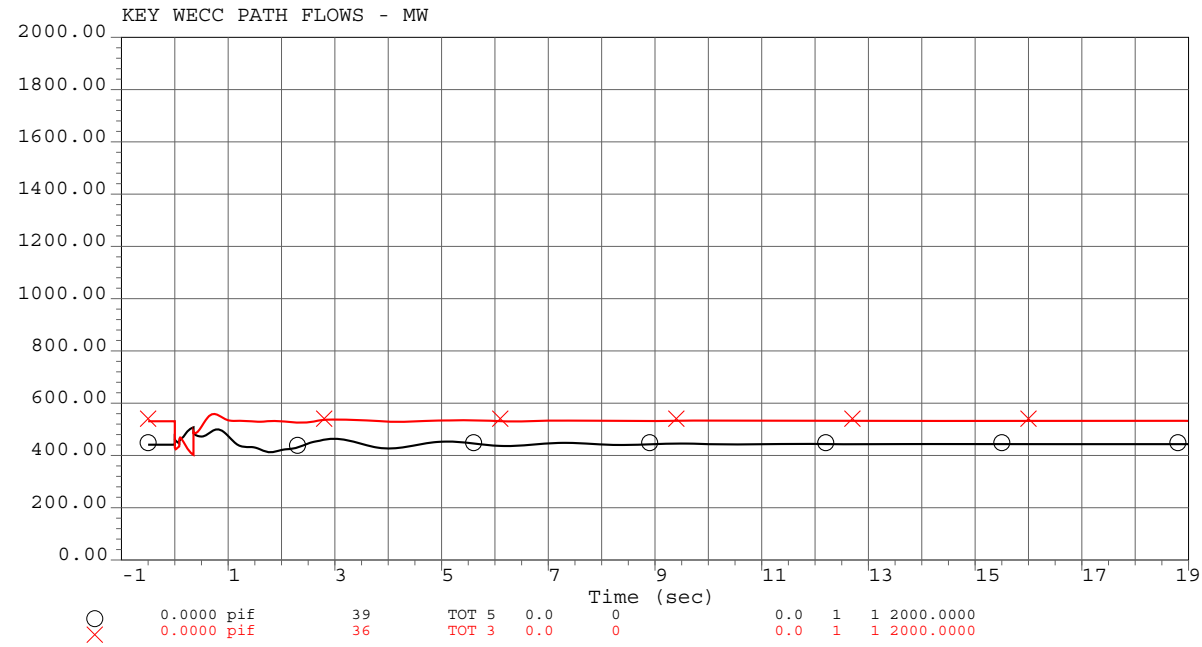
WESTERN ELECTRICITY COORDINATING COUNCIL
2013-14 LW1 OPERATING CASE
MAY 16, 2013

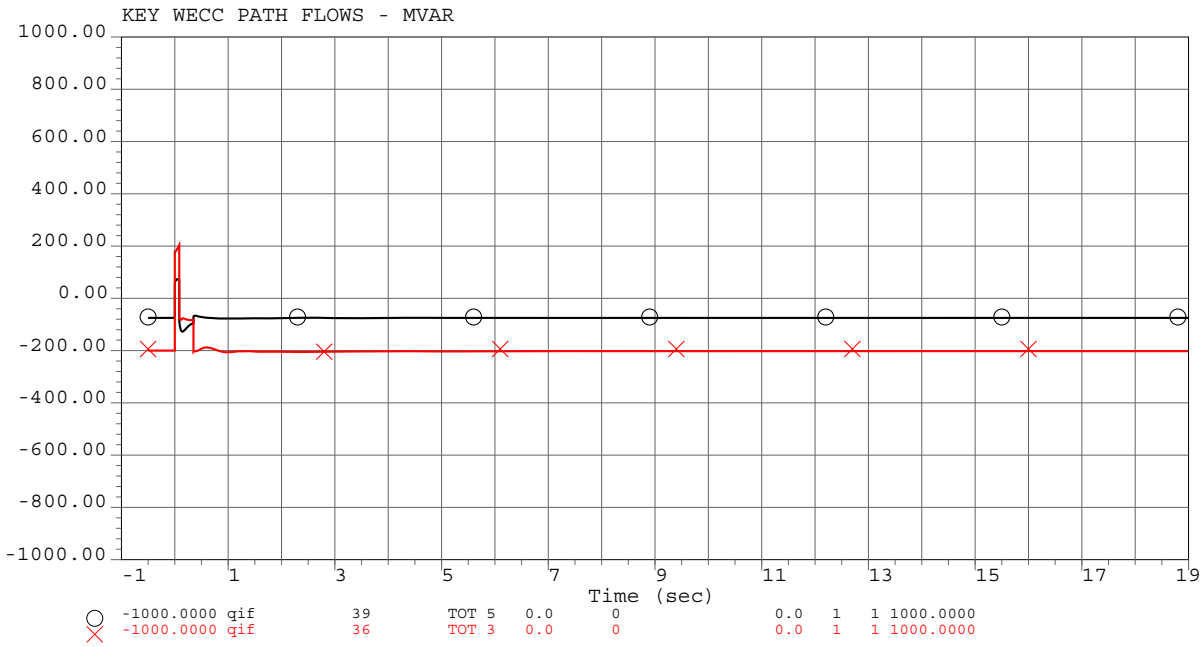


SC2_LW_Base_v0_06_NYuma!-Wray_230_LW_3ph_B.chf

.

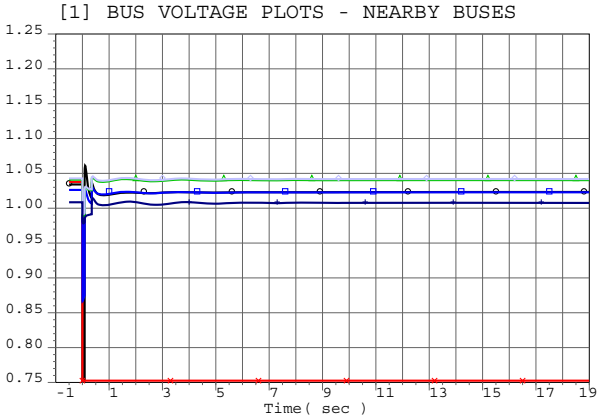
Tue Nov 26 13:27:42 2013


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

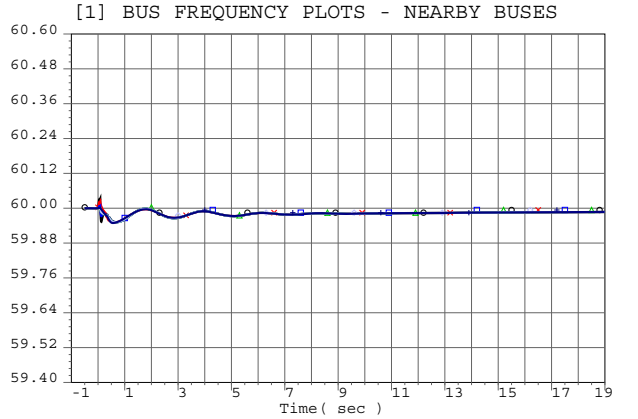
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



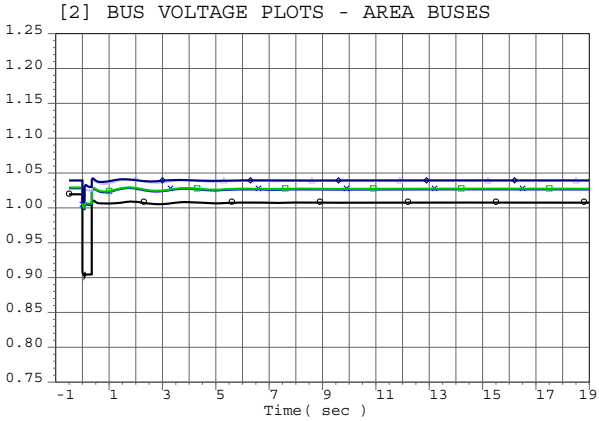

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



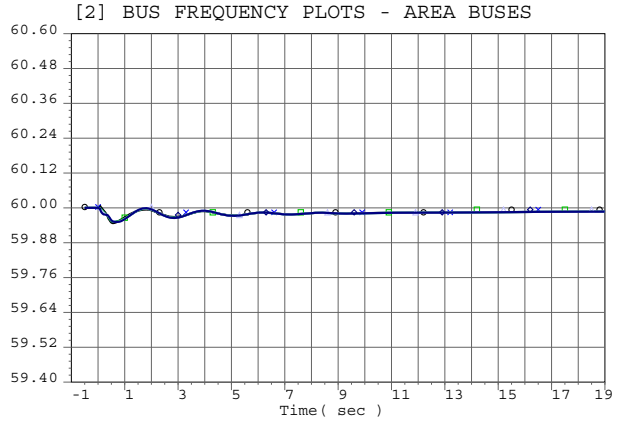

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



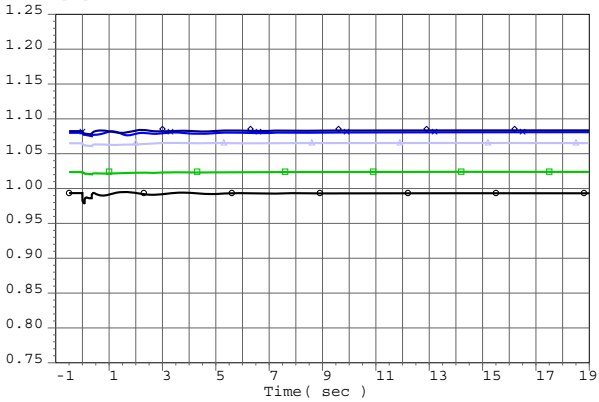

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



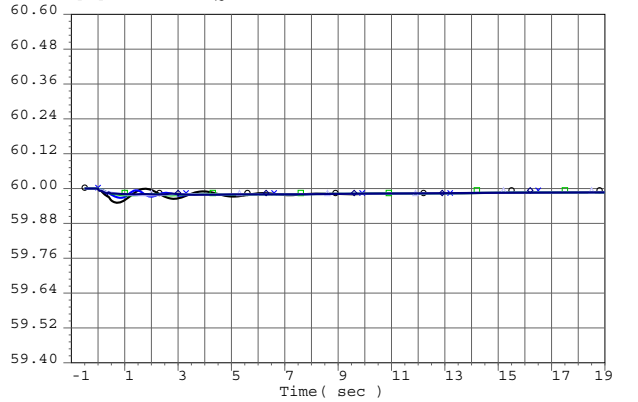

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013-14 LW1 OPERATING CASE
MAY 16, 2013



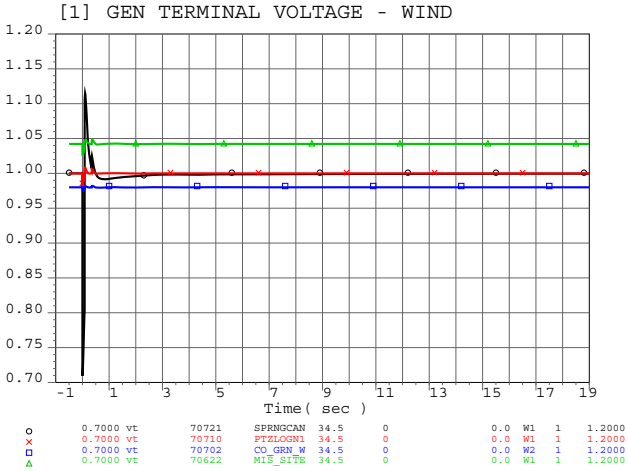
SC2_LW_Base_v0_07_Sidney!-SprCan_230_SLG_C.chf

.

Tue Nov 26 13:27:53 2013

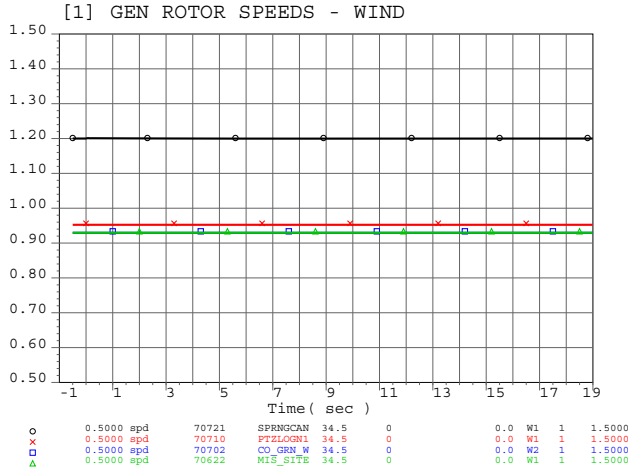
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



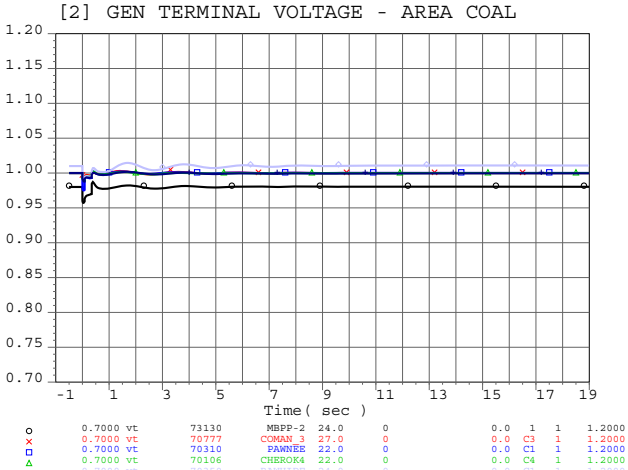

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| × | 0.7000 vt | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| □ | 0.7000 vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| △ | 0.7000 vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



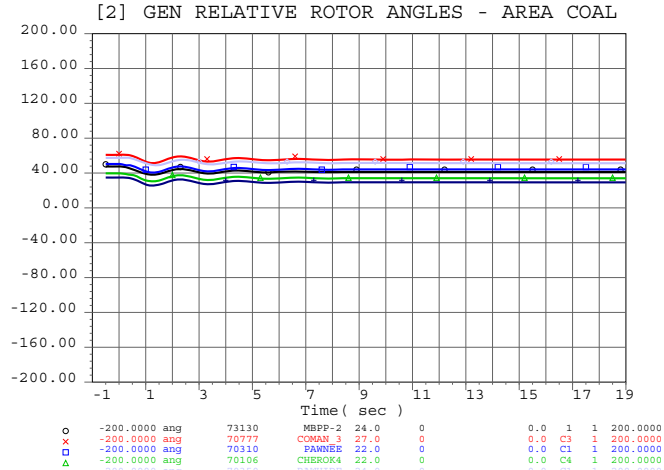

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.5000 spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| × | 0.5000 spd | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| □ | 0.5000 spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| △ | 0.5000 spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



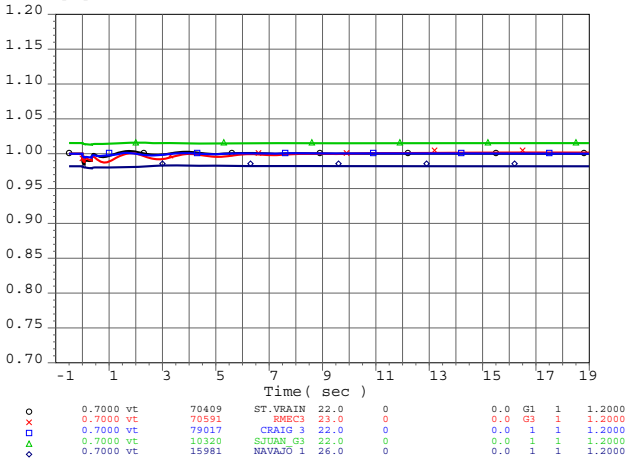

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| × | 0.7000 vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| □ | 0.7000 vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| △ | 0.7000 vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| + | 0.7000 vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



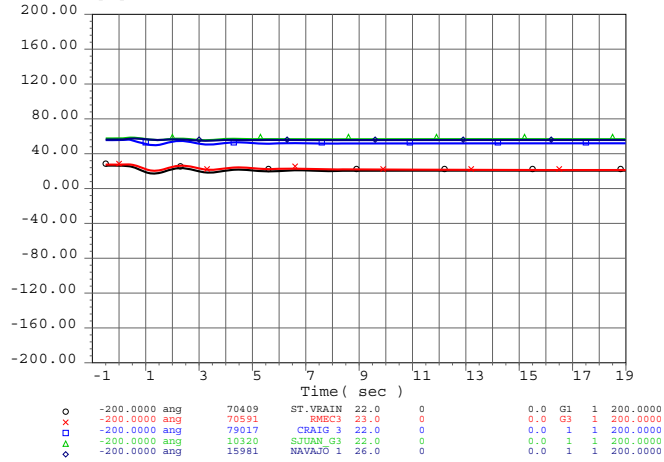

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| × | -200.0000 ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| □ | -200.0000 ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| △ | -200.0000 ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| + | -200.0000 ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| × | 0.7000 vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| □ | 0.7000 vt | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| △ | 0.7000 vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| × | -200.0000 ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| □ | -200.0000 ang | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| △ | -200.0000 ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |

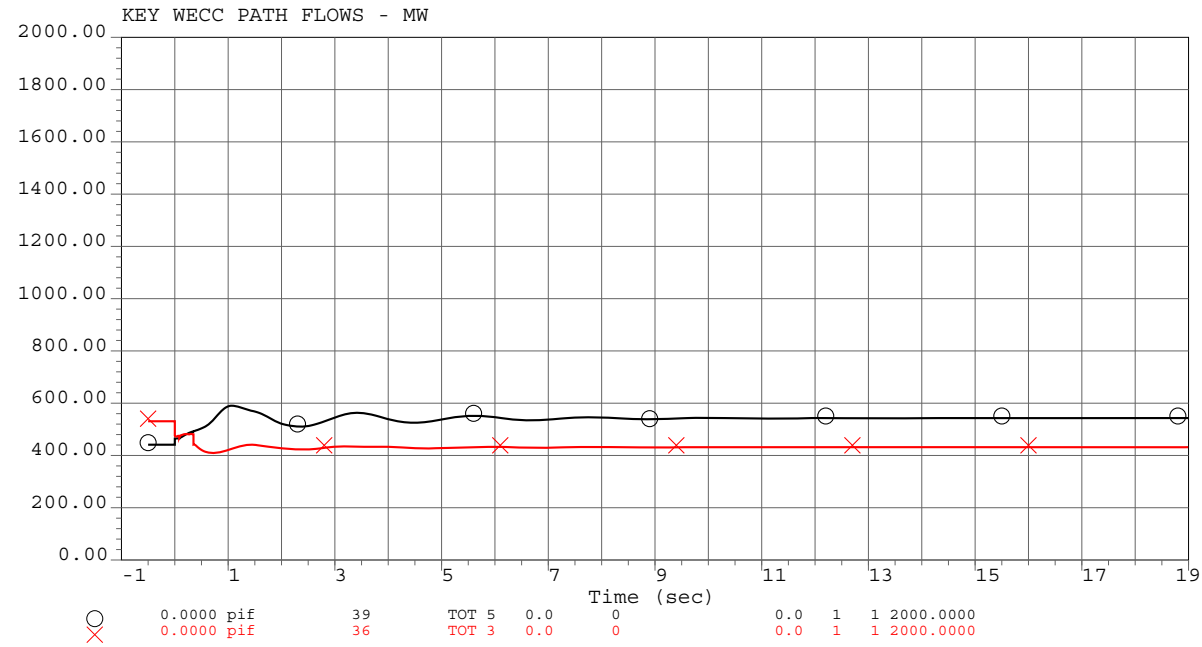
WESTERN ELECTRICITY COORDINATING COUNCIL
2013-14 LW1 OPERATING CASE
MAY 16, 2013

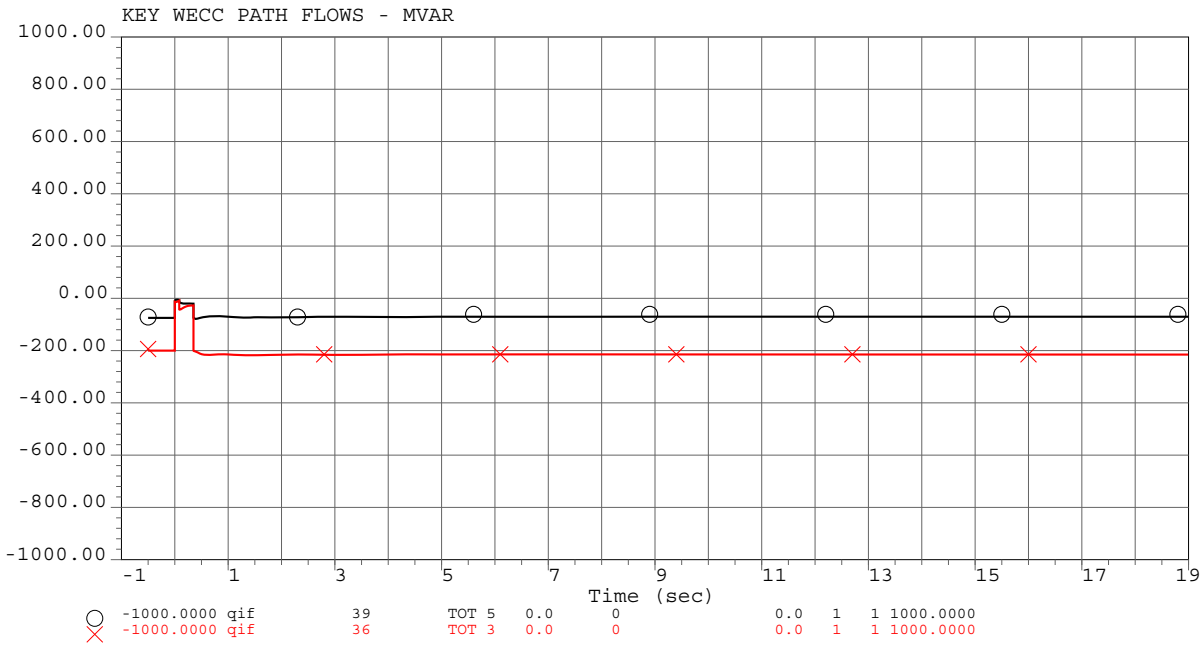


SC2_LW_Base_v0_07_Sidney!-SprCan_230_SLG_C.chf

.

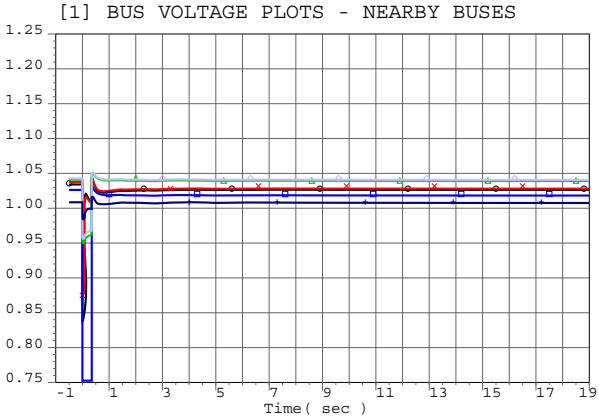
Tue Nov 26 13:27:53 2013


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

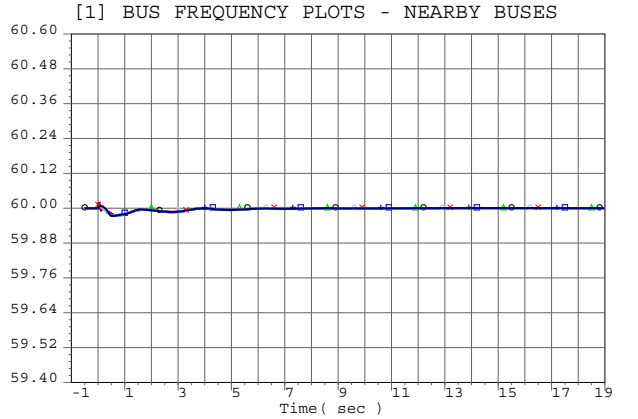
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



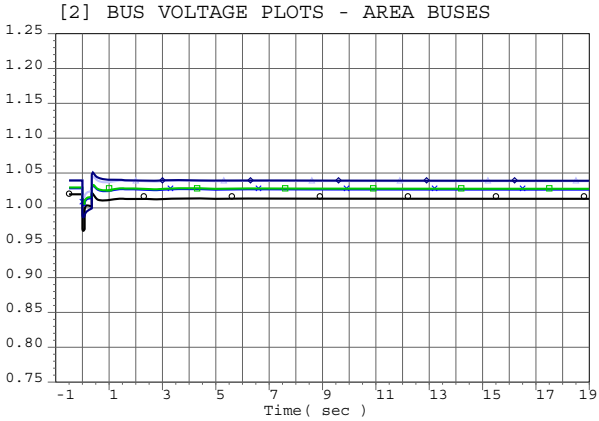

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 vbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 vbus | 73188 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



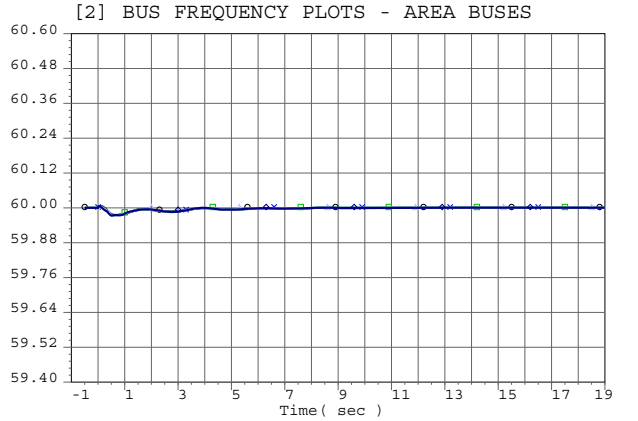

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 fbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 fbus | 73188 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



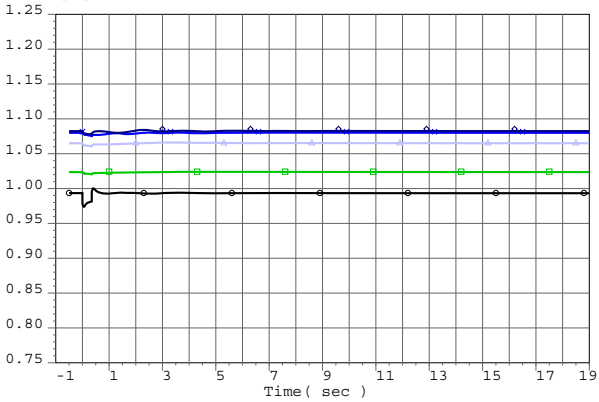

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



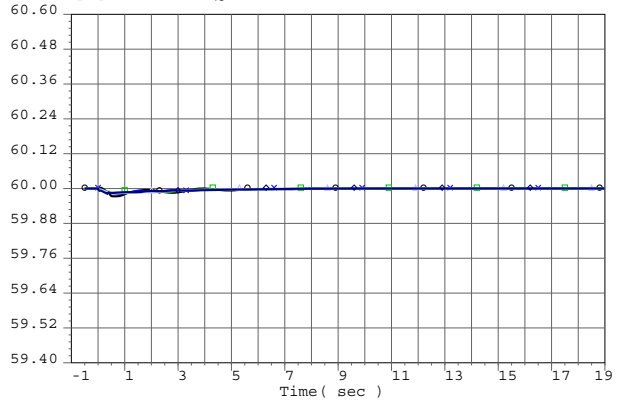

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 vbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 fbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

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SC2_LW_Base_v0_08_NYuma!-SprCan_230_SLG_C.chf

.

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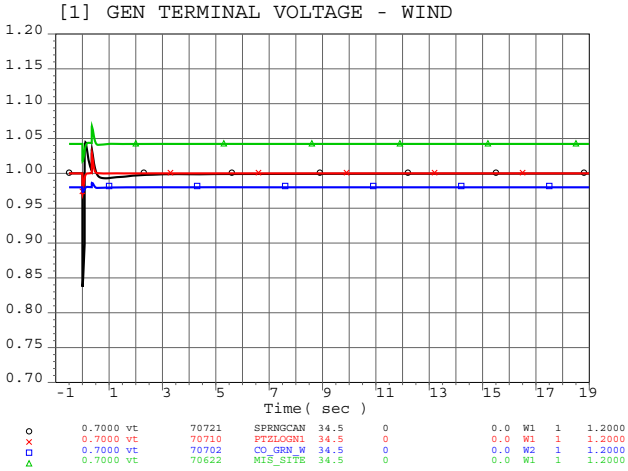
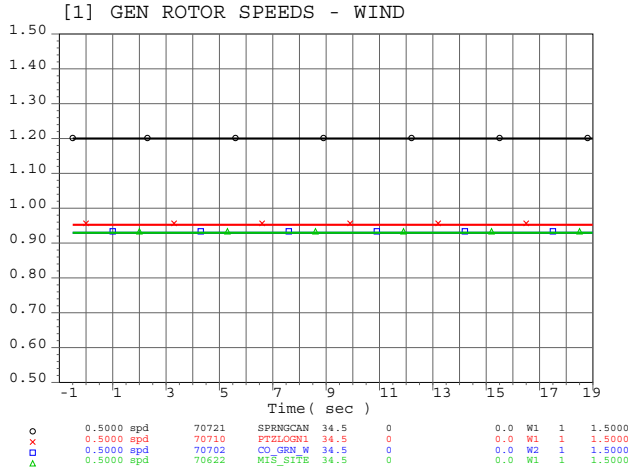
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



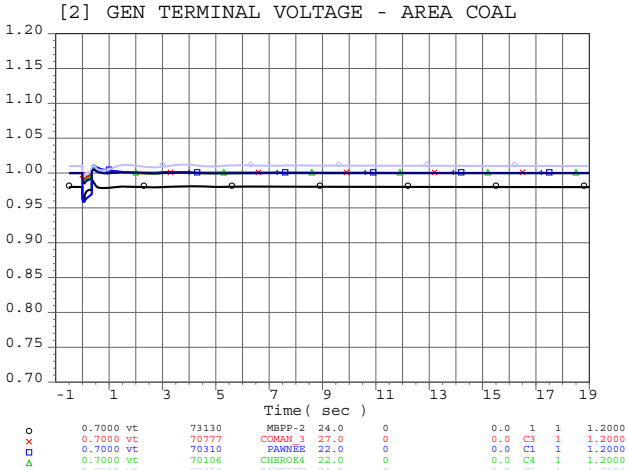

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| × | 0.7000 vt | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| □ | 0.7000 vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| △ | 0.7000 vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



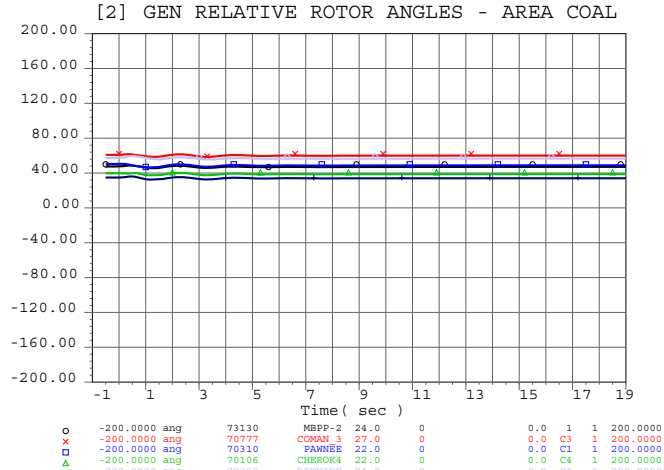

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.5000 spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| × | 0.5000 spd | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| □ | 0.5000 spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| △ | 0.5000 spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



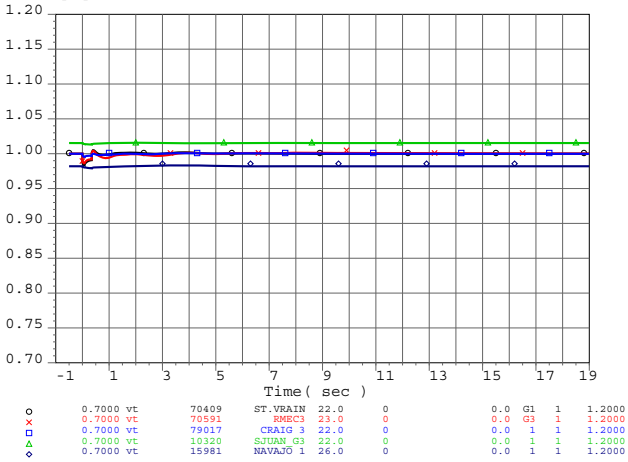

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| × | 0.7000 vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| □ | 0.7000 vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| △ | 0.7000 vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| + | 0.7000 vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



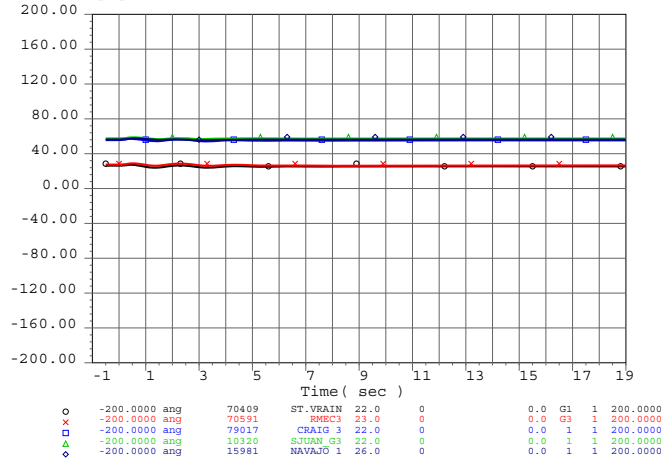

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| × | -200.0000 ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| □ | -200.0000 ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| △ | -200.0000 ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| + | -200.0000 ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| × | 0.7000 vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| □ | 0.7000 vt | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| △ | 0.7000 vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| × | -200.0000 ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| □ | -200.0000 ang | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| △ | -200.0000 ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |

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.

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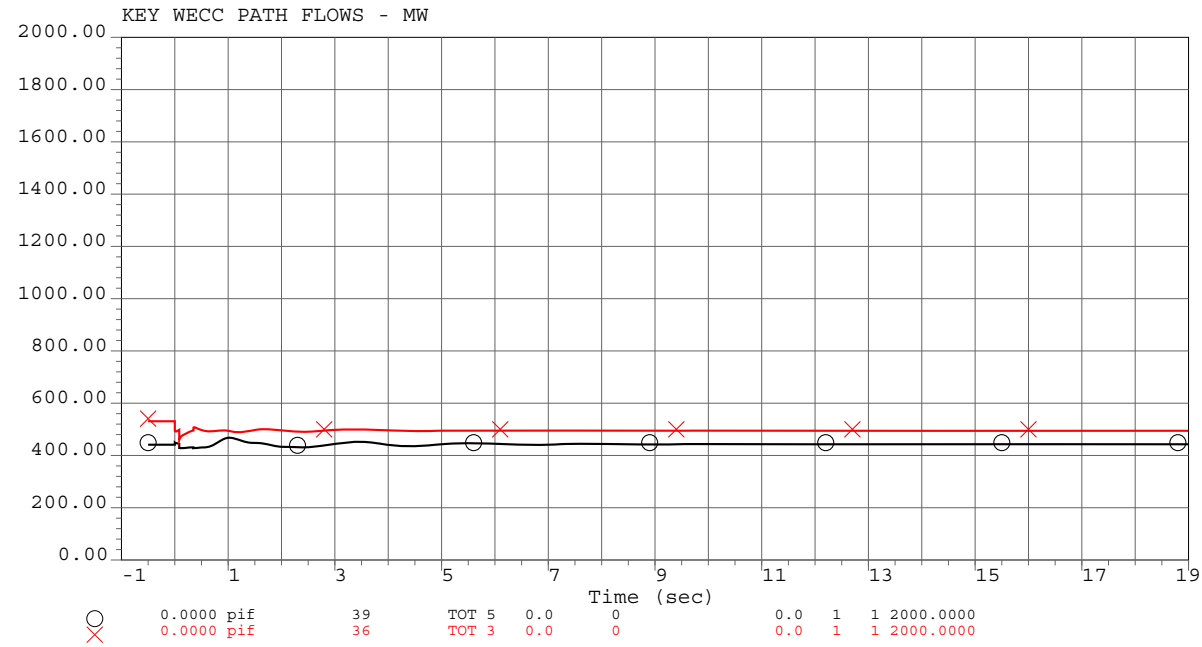
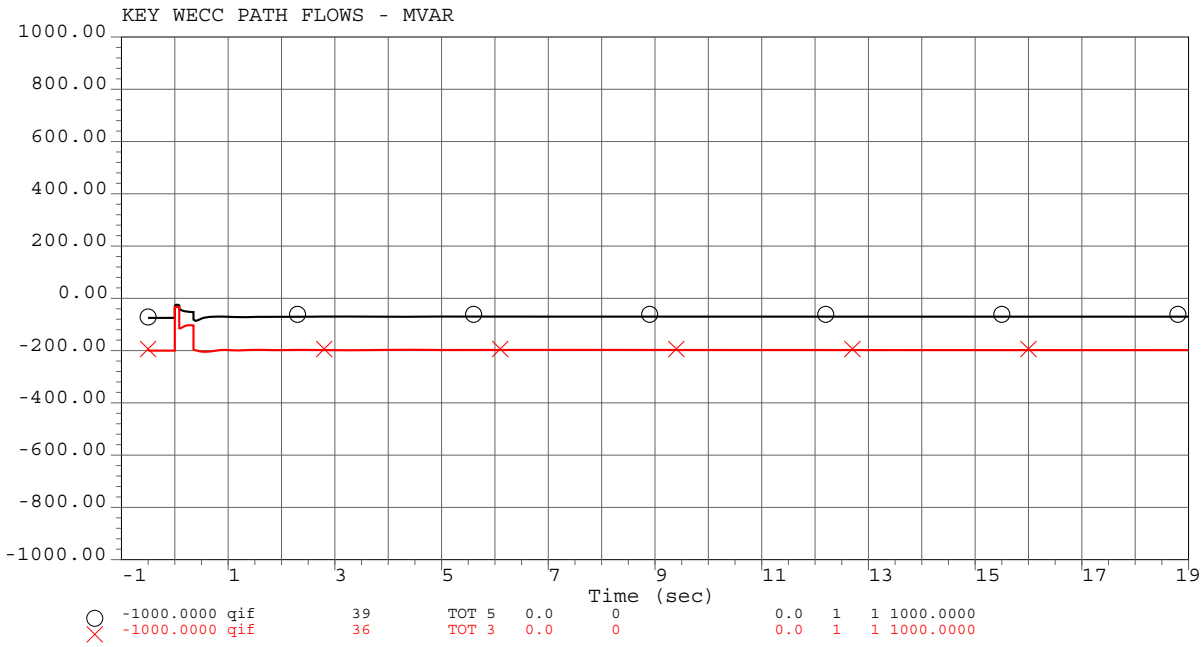
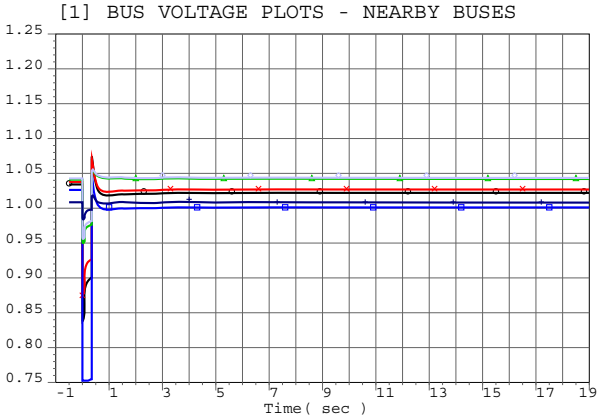

KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

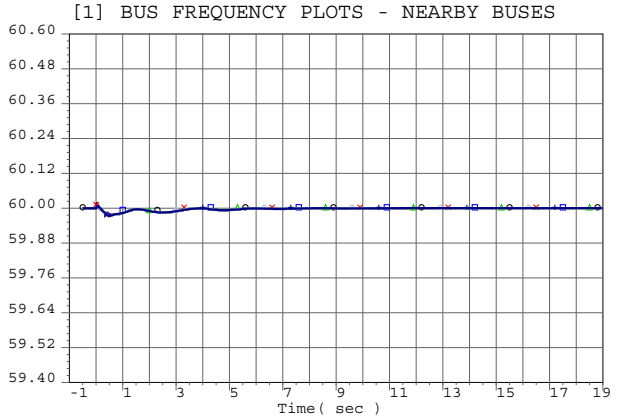
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



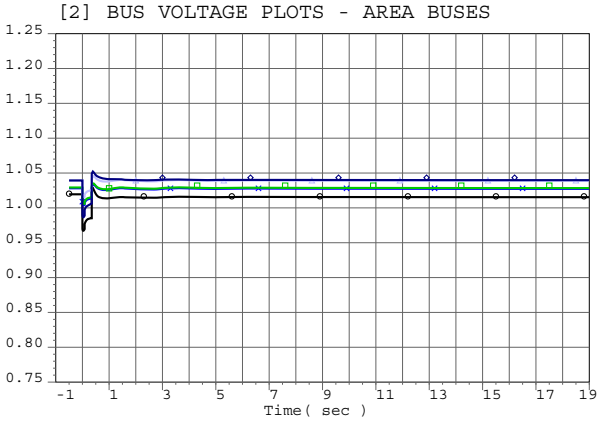

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



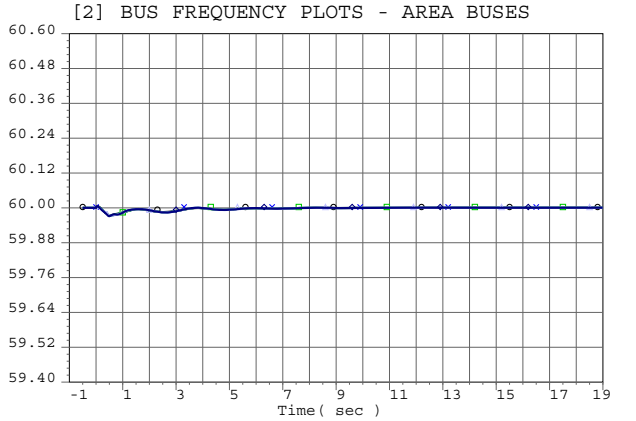

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



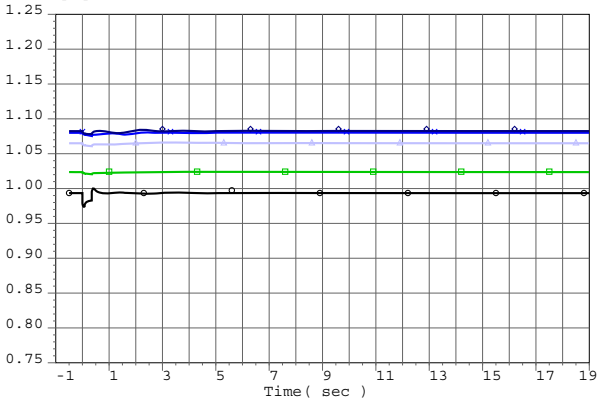

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



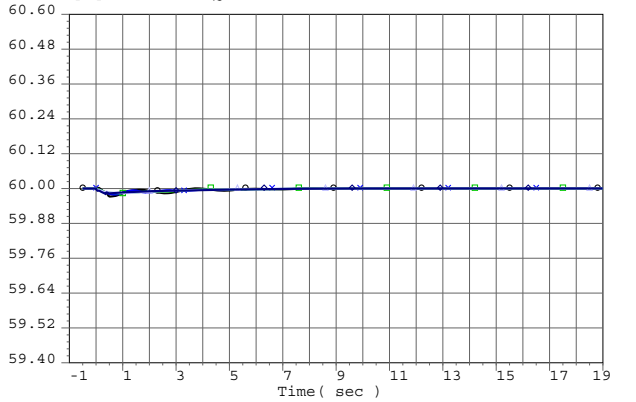

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
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SC2_LW_Base_v0_08a_NYuma230!-115Xfmr_SLG_C.chf

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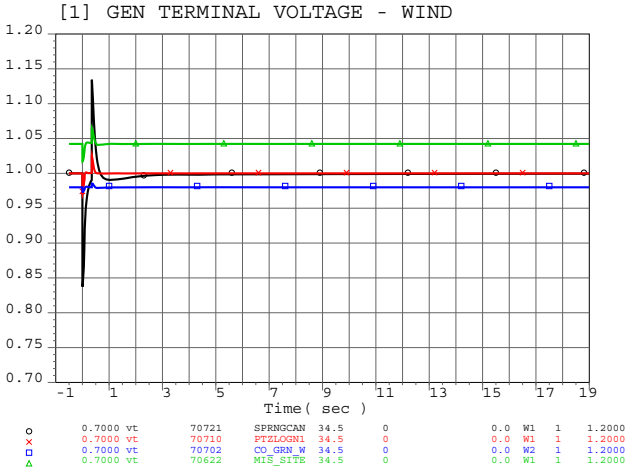
Tue Nov 26 13:28:11 2013

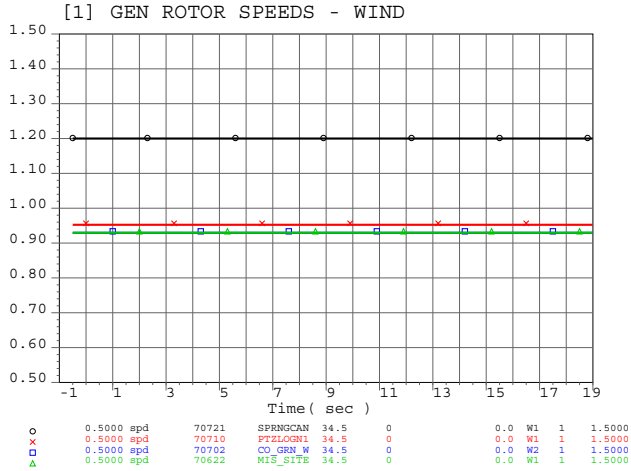
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



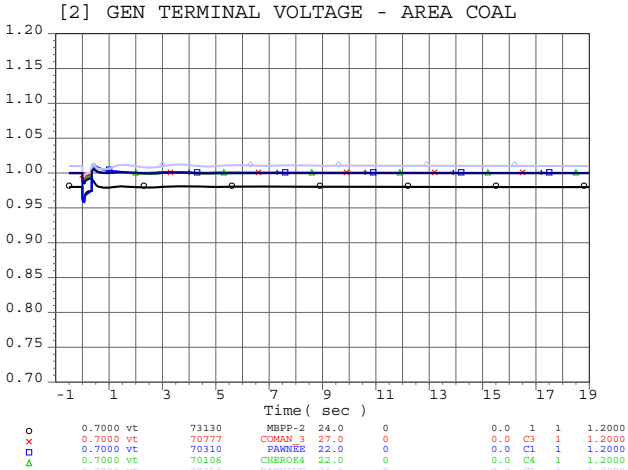

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| × | 0.7000 vt | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| □ | 0.7000 vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| △ | 0.7000 vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



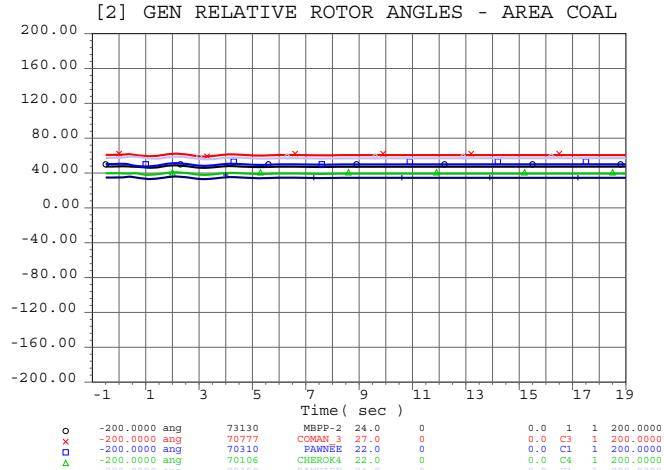

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.5000 spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| × | 0.5000 spd | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| □ | 0.5000 spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| △ | 0.5000 spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



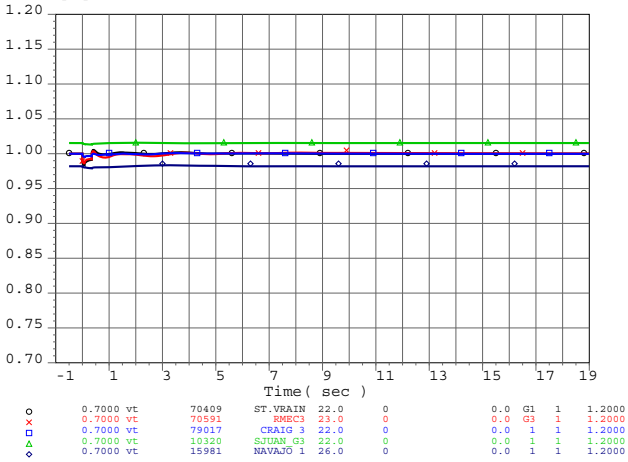

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| × | 0.7000 vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| □ | 0.7000 vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| △ | 0.7000 vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| + | 0.7000 vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



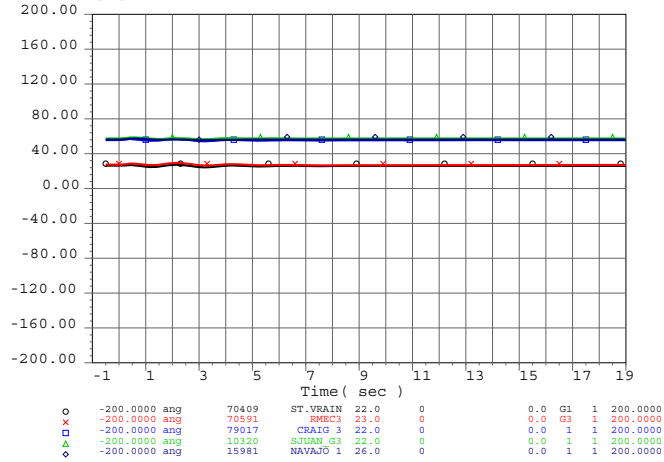

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| × | -200.0000 ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| □ | -200.0000 ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| △ | -200.0000 ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| + | -200.0000 ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| × | 0.7000 vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| □ | 0.7000 vt | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| △ | 0.7000 vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| × | -200.0000 ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| □ | -200.0000 ang | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| △ | -200.0000 ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |

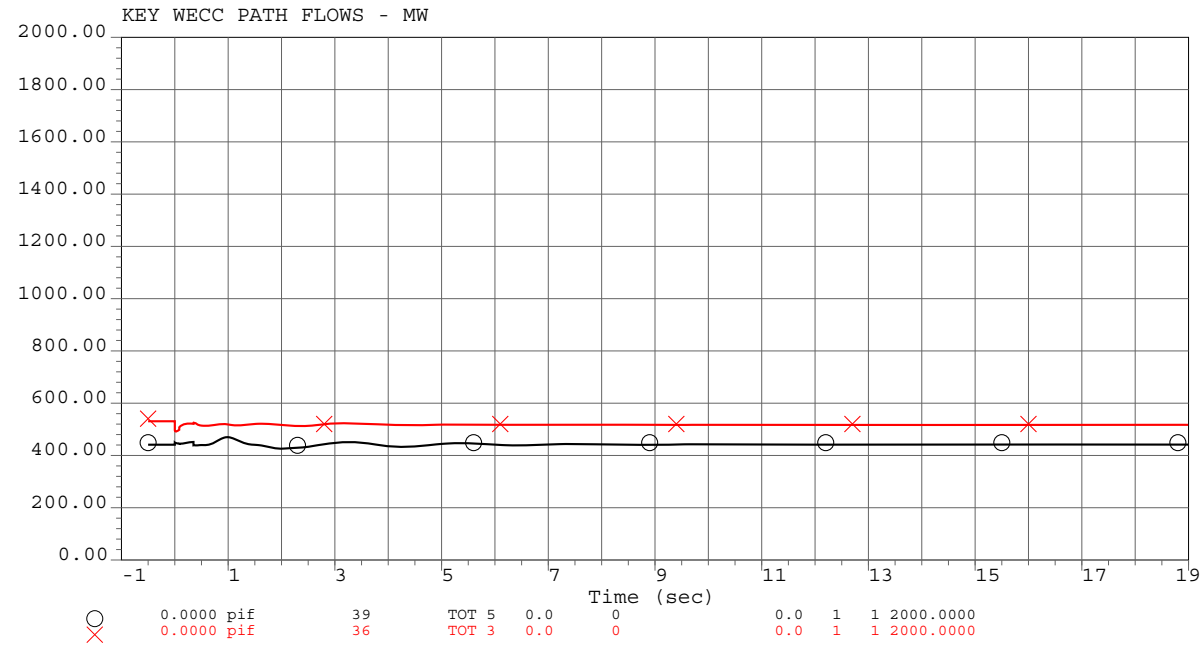
WESTERN ELECTRICITY COORDINATING COUNCIL
2013-14 LW1 OPERATING CASE
MAY 16, 2013

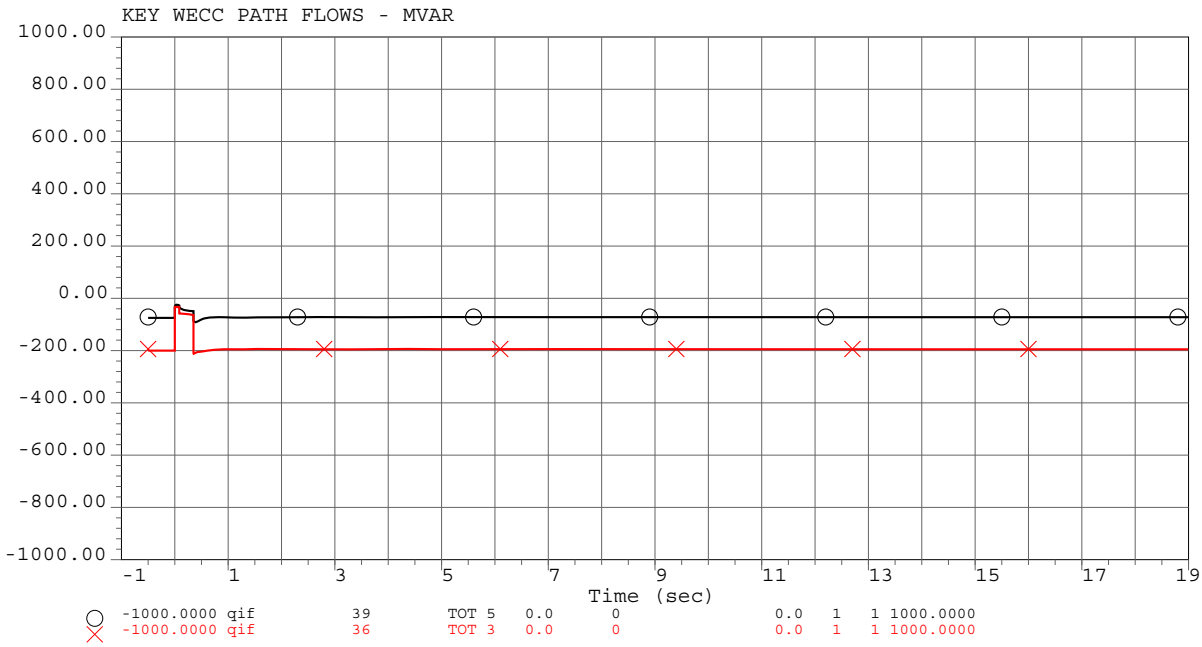


SC2_LW_Base_v0_08a_NYuma230!-115Xfmr_SLG_C.chf

.

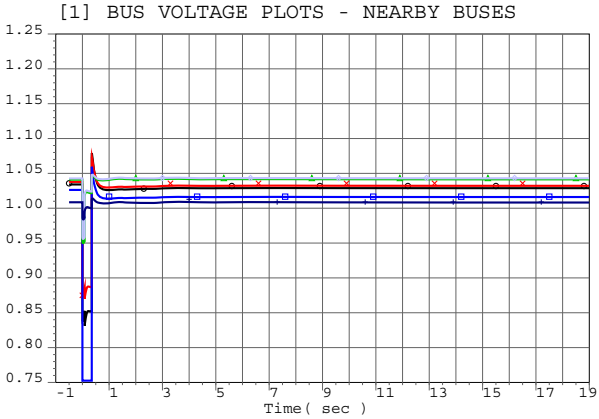
Tue Nov 26 13:28:11 2013


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

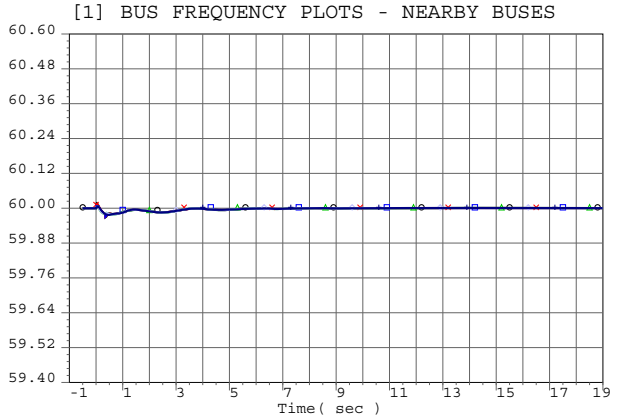
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



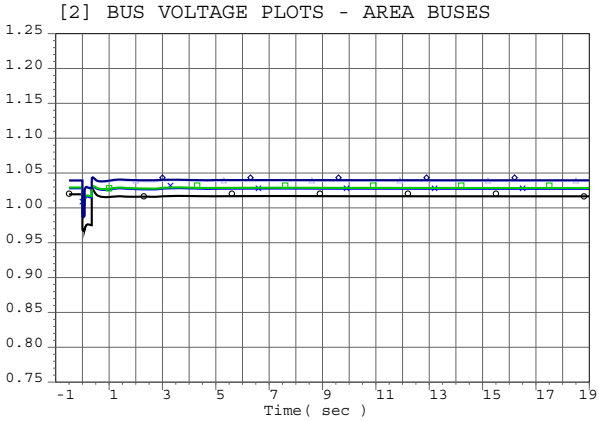

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 73188 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



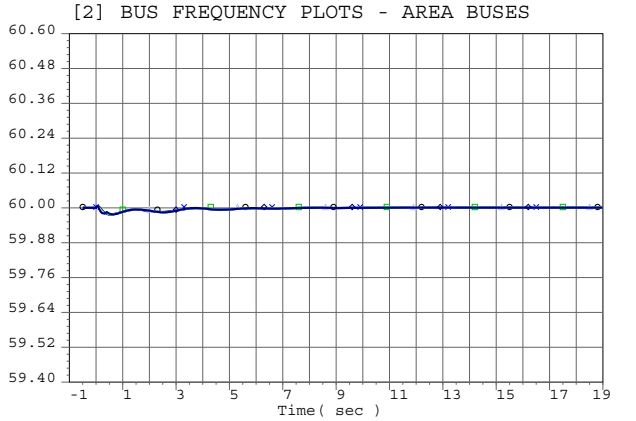

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 73188 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



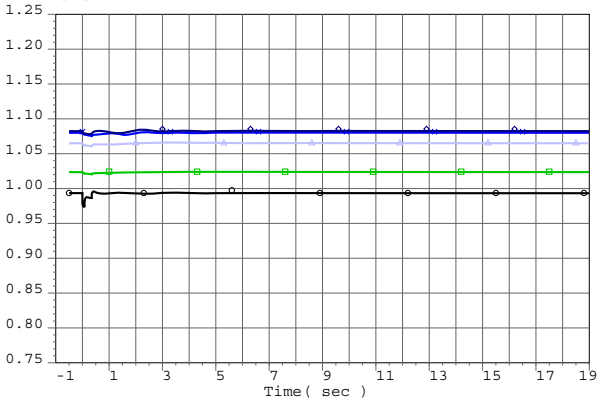

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



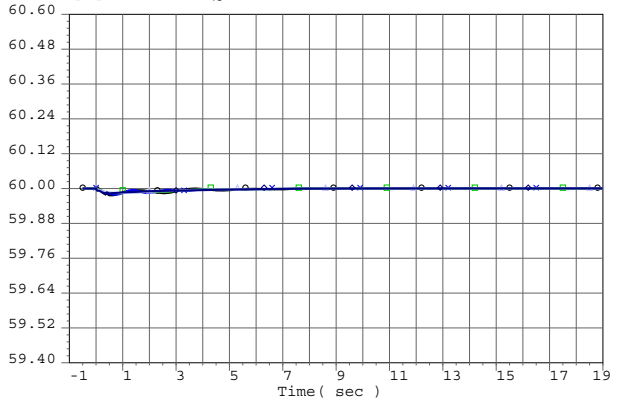

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013-14 LW1 OPERATING CASE
MAY 16, 2013



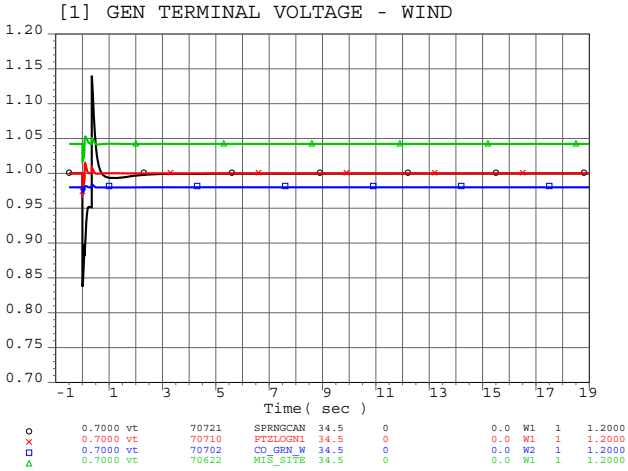
SC2_LW_Base_v0_09_NYuma!-Story_230_LW_SLG_C.chf

.

Tue Nov 26 13:28:19 2013

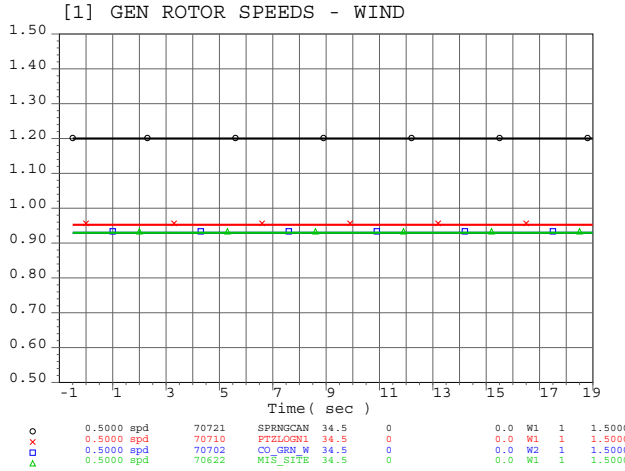
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



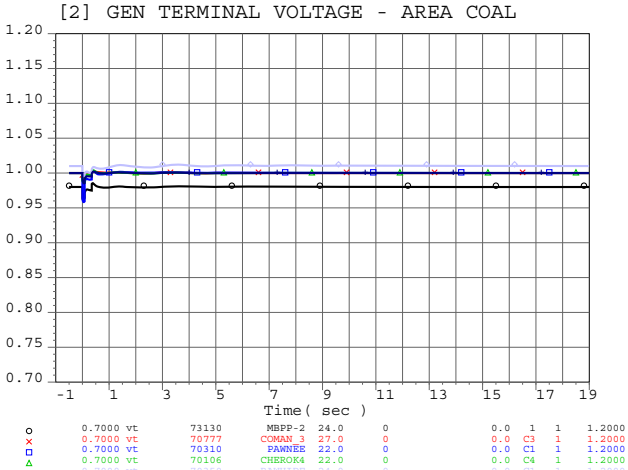

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| × | 0.7000 vt | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| □ | 0.7000 vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| △ | 0.7000 vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



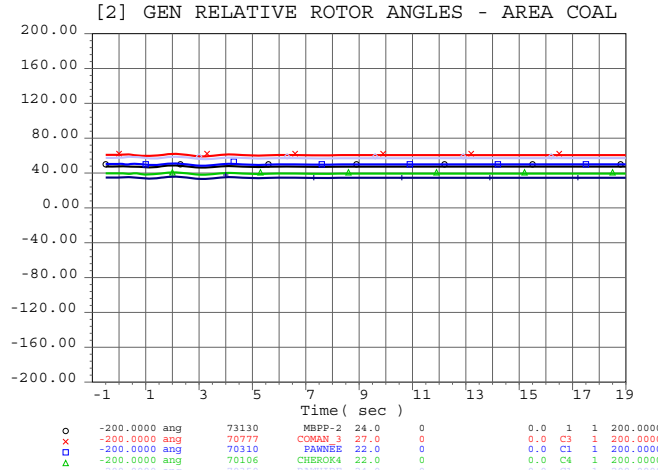

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.5000 spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| × | 0.5000 spd | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| □ | 0.5000 spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| △ | 0.5000 spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



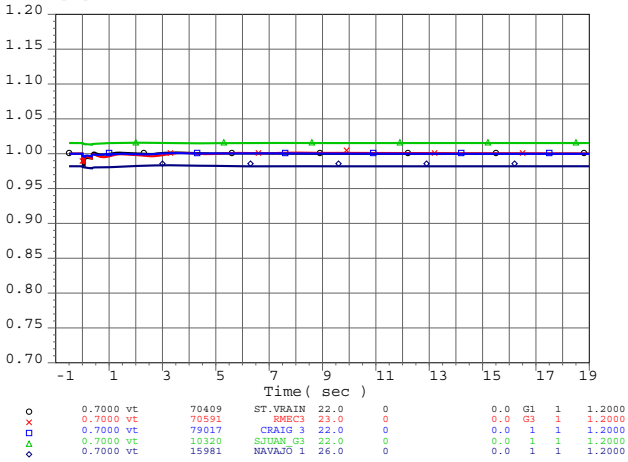

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| × | 0.7000 vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| □ | 0.7000 vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| △ | 0.7000 vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| + | 0.7000 vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



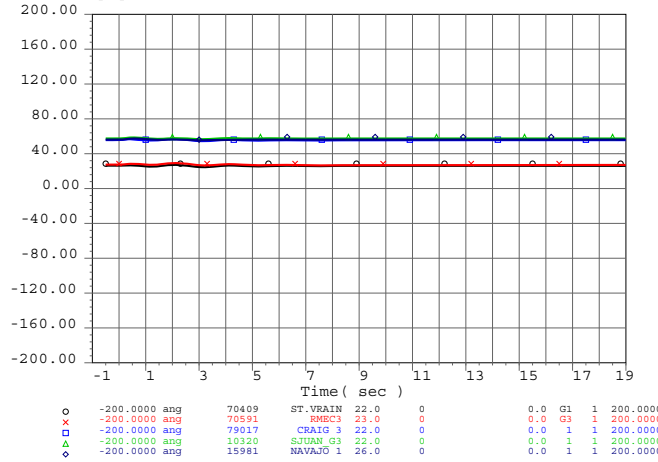

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| × | -200.0000 ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| □ | -200.0000 ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| △ | -200.0000 ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| + | -200.0000 ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| × | 0.7000 vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| □ | 0.7000 vt | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| △ | 0.7000 vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| × | -200.0000 ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| □ | -200.0000 ang | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| △ | -200.0000 ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |

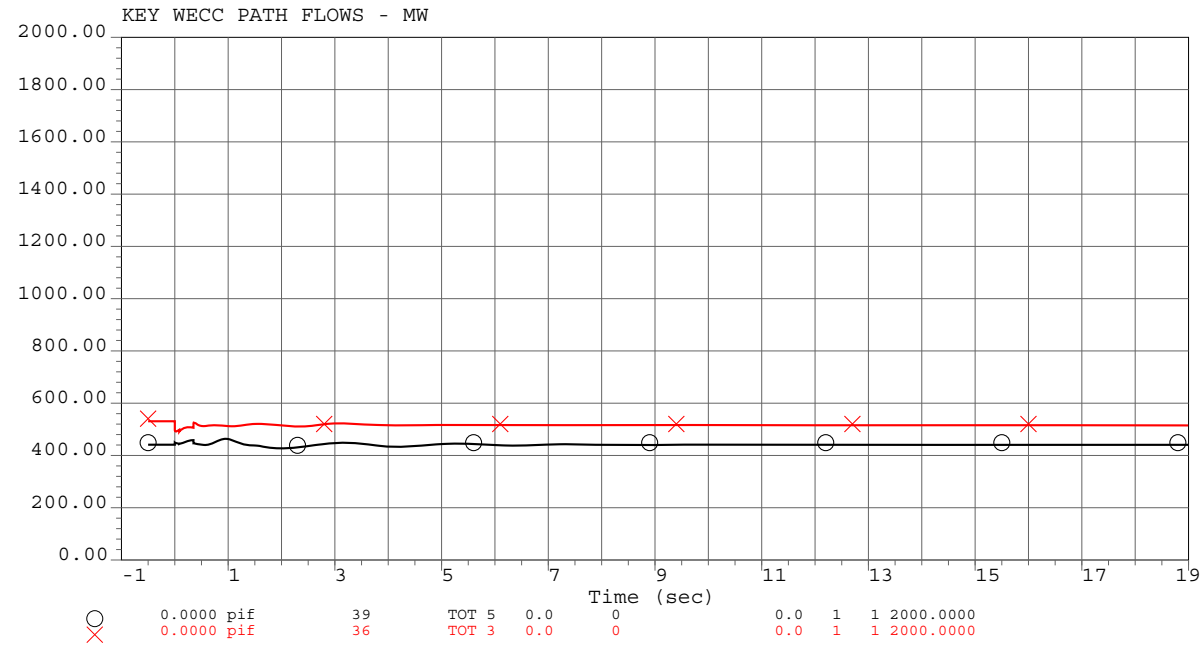
WESTERN ELECTRICITY COORDINATING COUNCIL
2013-14 LW1 OPERATING CASE
MAY 16, 2013

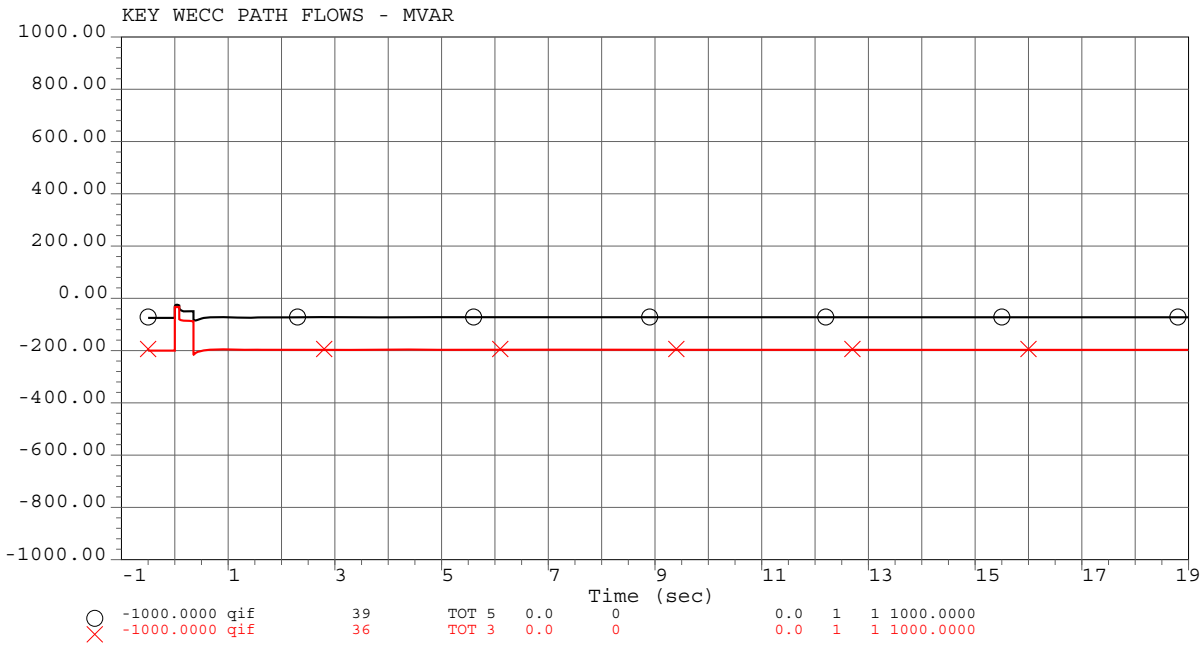


SC2_LW_Base_v0_09_NYuma!-Story_230_LW_SLG_C.chf

.

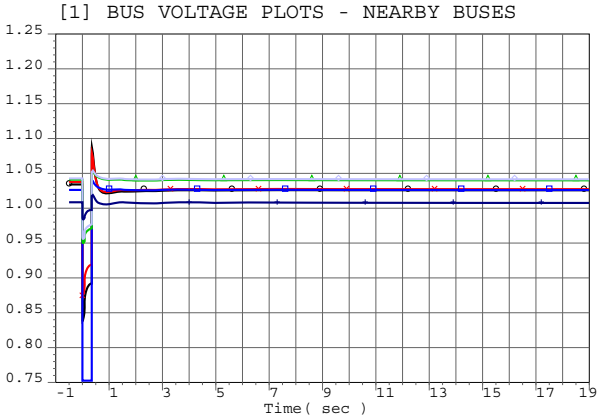
Tue Nov 26 13:28:19 2013


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

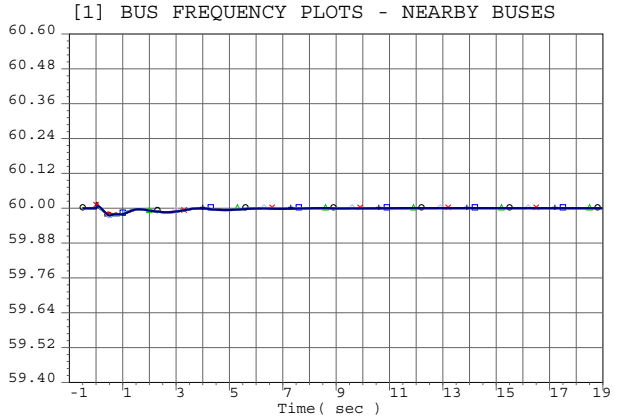
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



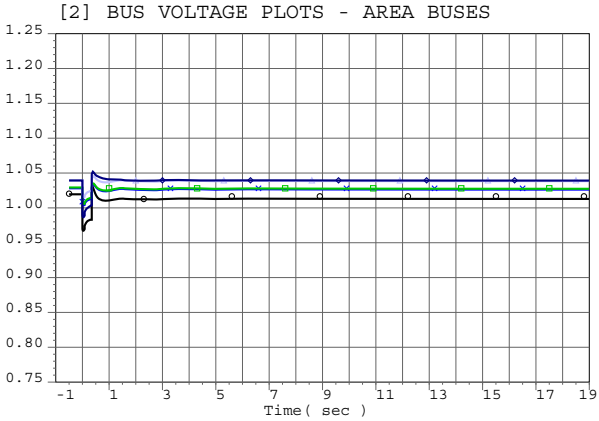

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 73188 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



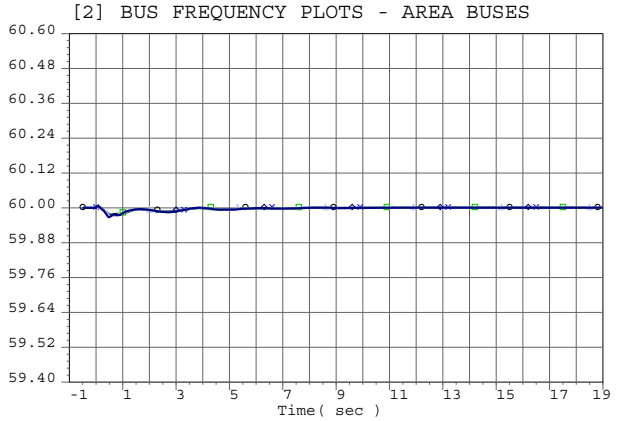

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 73188 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



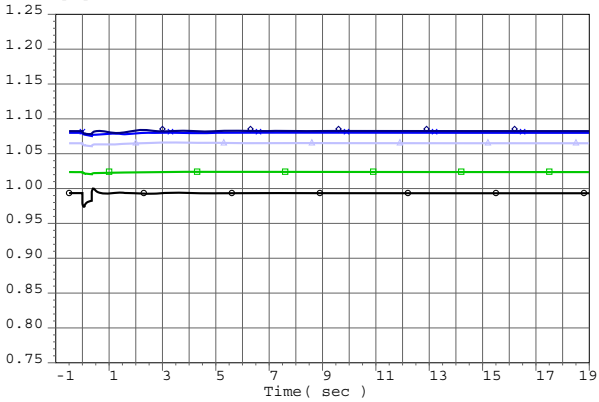

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



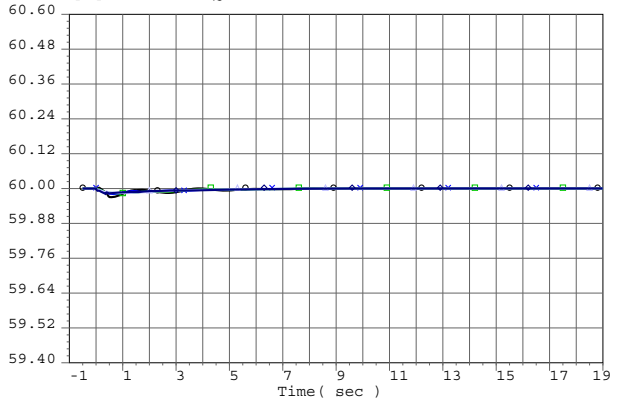

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013-14 LW1 OPERATING CASE
MAY 16, 2013



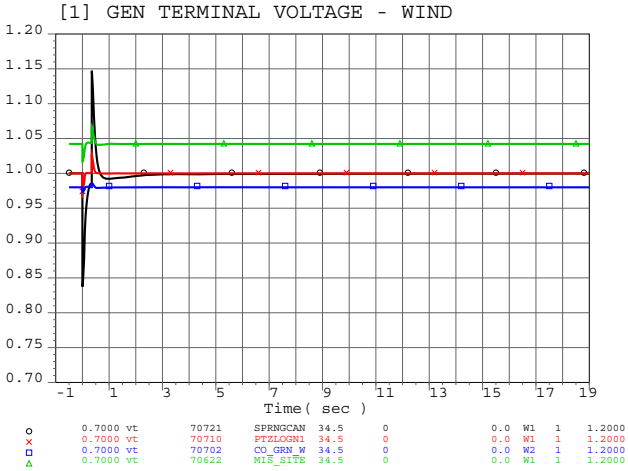
SC2_LW_Base_v0_10_NYuma!-Wray_230_LW_SLG_C.chf

.

Tue Nov 26 13:28:29 2013

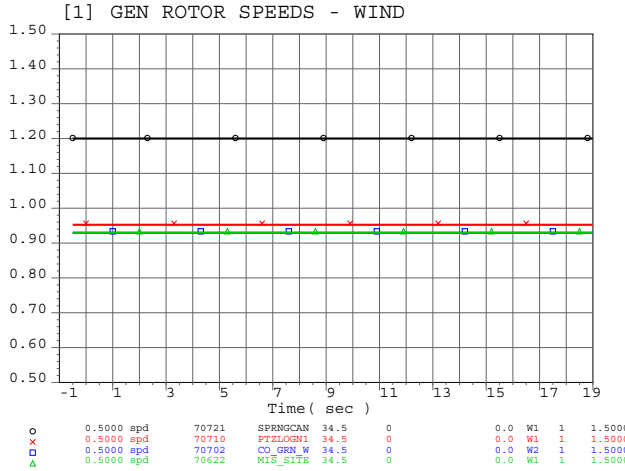
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



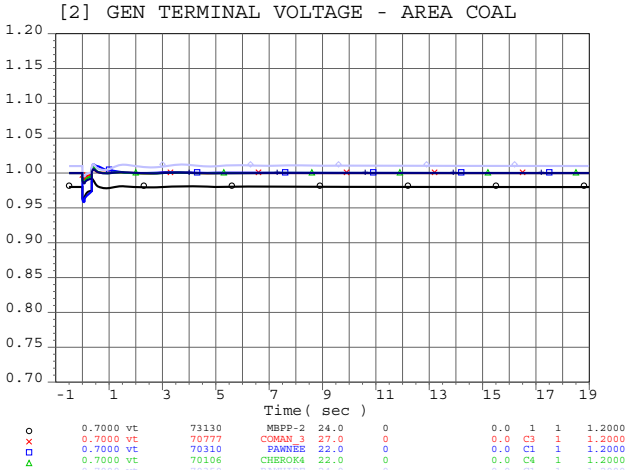

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| × | 0.7000 vt | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| □ | 0.7000 vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| △ | 0.7000 vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



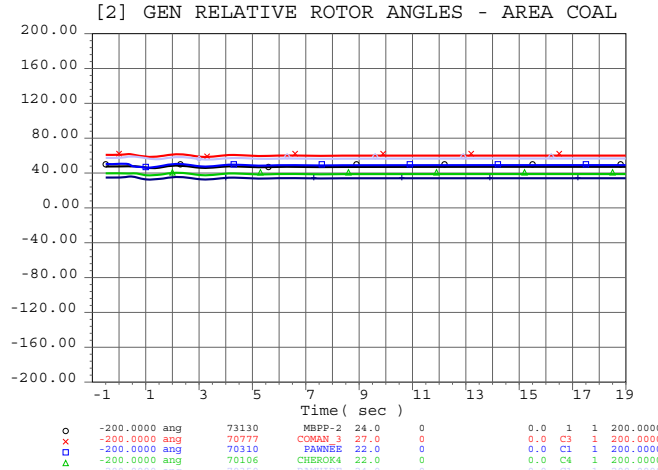

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.5000 spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| × | 0.5000 spd | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| □ | 0.5000 spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| △ | 0.5000 spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



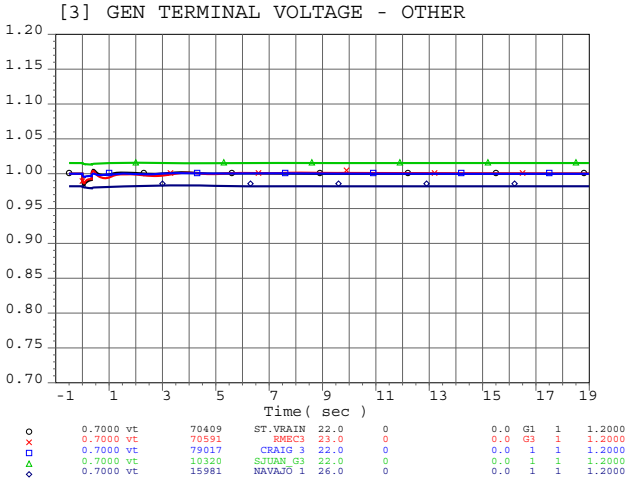

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| × | 0.7000 vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| □ | 0.7000 vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| △ | 0.7000 vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| + | 0.7000 vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



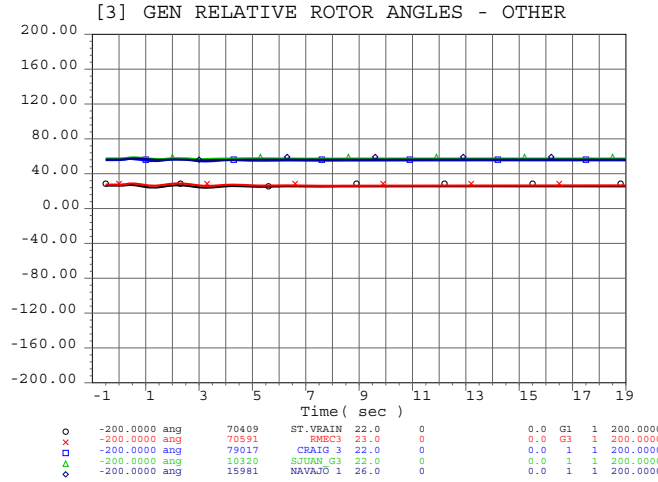

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| × | -200.0000 ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| □ | -200.0000 ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| △ | -200.0000 ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| + | -200.0000 ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| × | 0.7000 vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| □ | 0.7000 vt | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| △ | 0.7000 vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| × | -200.0000 ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| □ | -200.0000 ang | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| △ | -200.0000 ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
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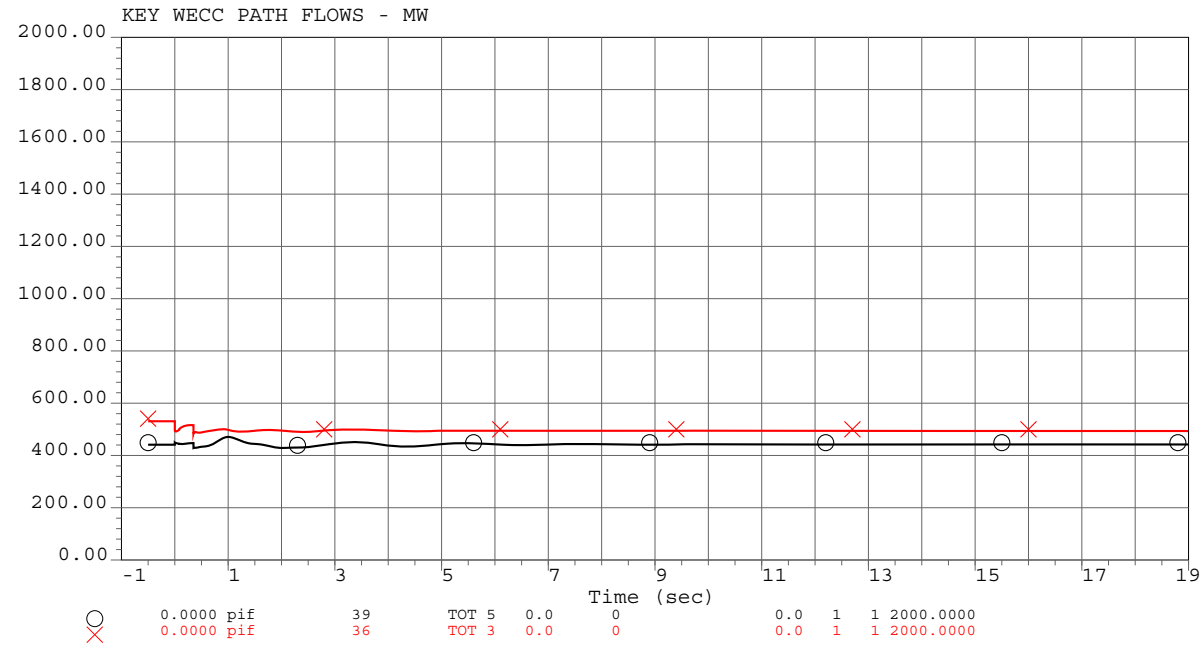
MAY 16, 2013

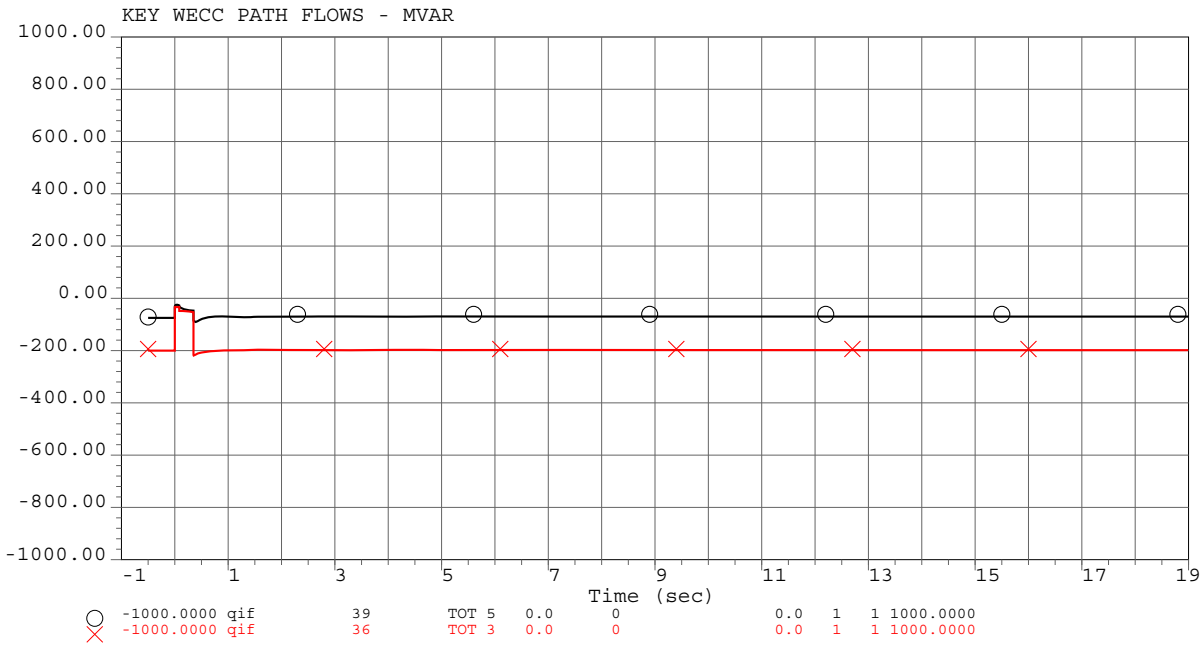


SC2_LW_Base_v0_10_NYuma!-Wray_230_LW_SLG_C.chf

.

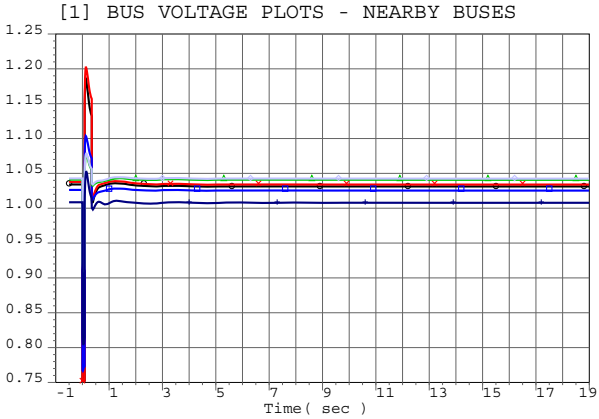
Tue Nov 26 13:28:30 2013


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

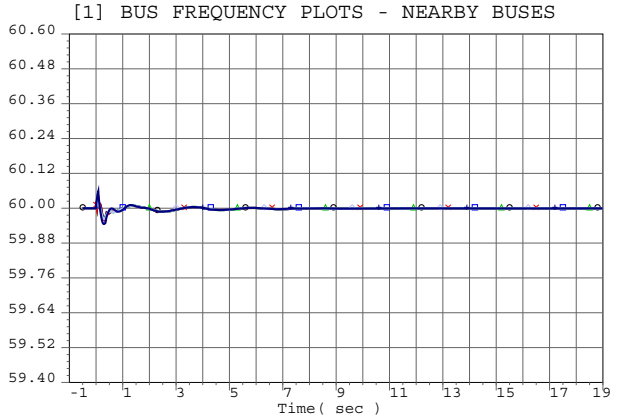
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



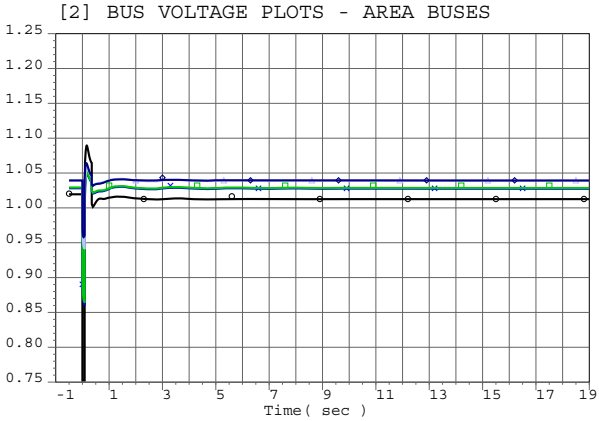

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 73188 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



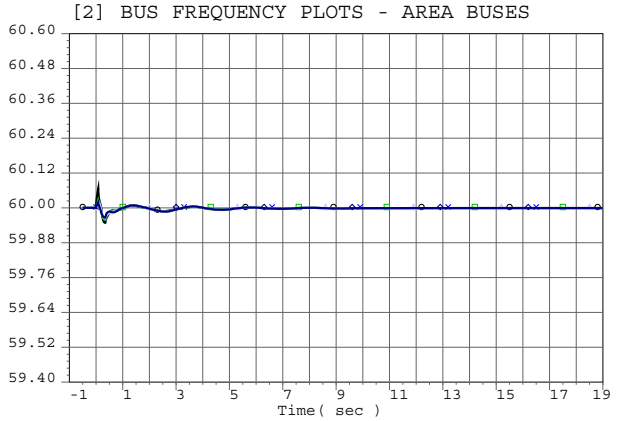

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 73188 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



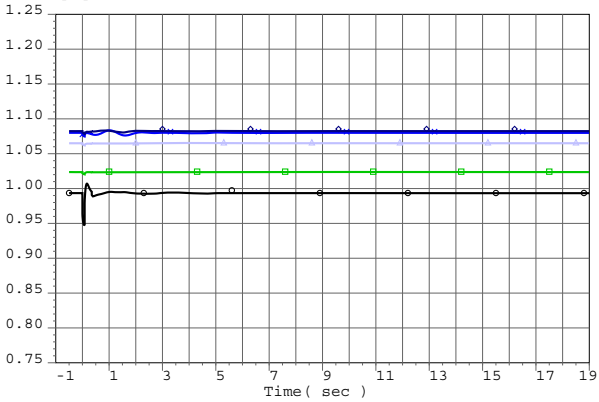

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



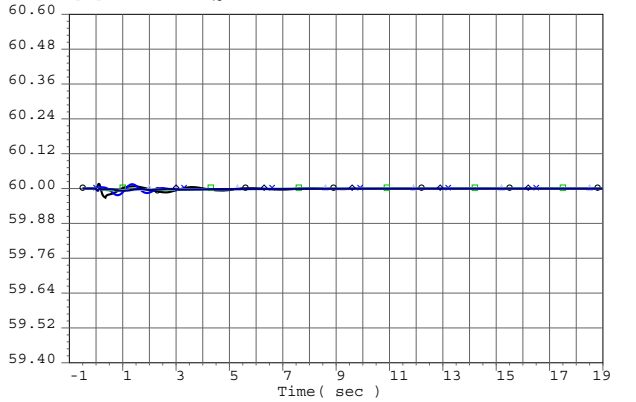

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013-14 LW1 OPERATING CASE
MAY 16, 2013



SC2_LW_Base_v0_11_Stegall!-DJnstn_230_3ph_B.chf

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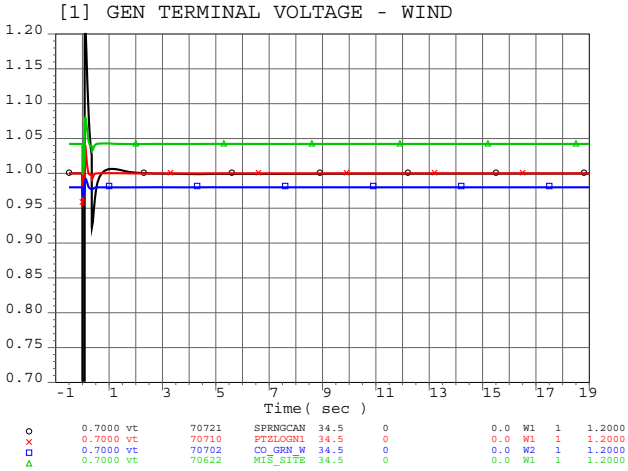
Tue Nov 26 13:28:38 2013

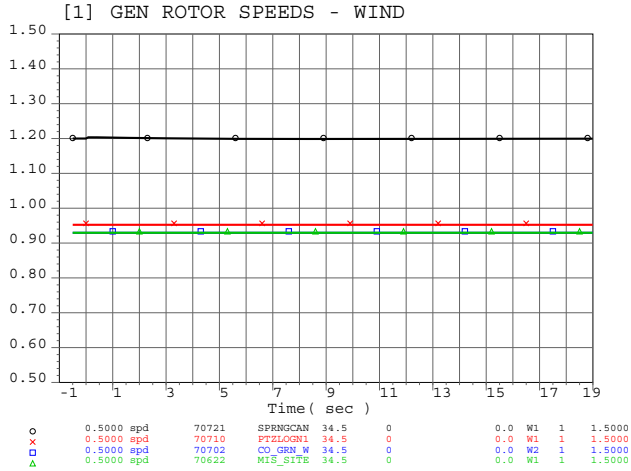
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



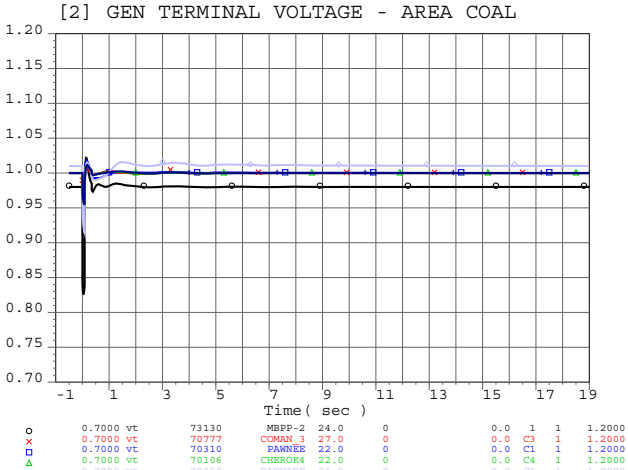

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| × | 0.7000 vt | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| □ | 0.7000 vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| △ | 0.7000 vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



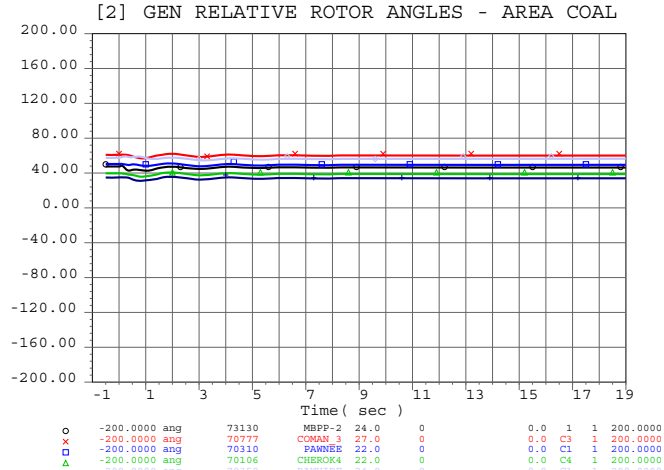

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.5000 spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| × | 0.5000 spd | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| □ | 0.5000 spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| △ | 0.5000 spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



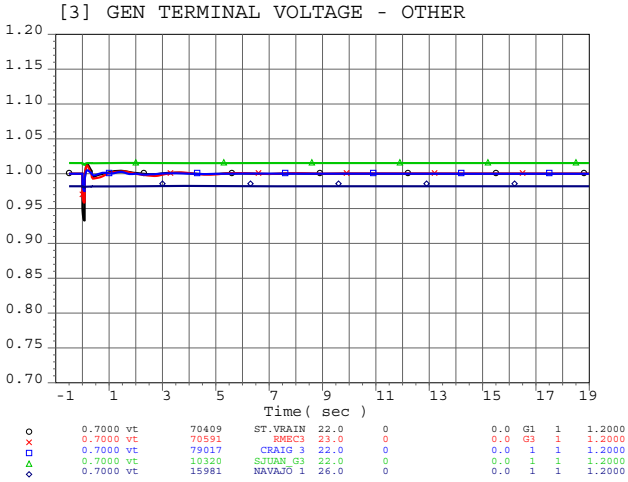

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| × | 0.7000 vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| □ | 0.7000 vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| △ | 0.7000 vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| + | 0.7000 vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



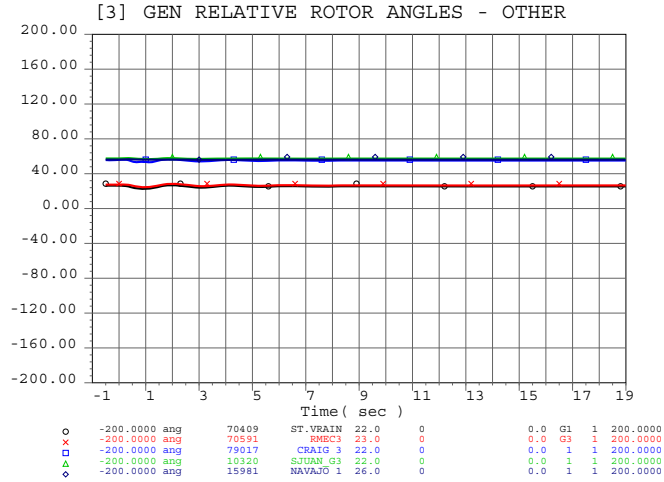

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| × | -200.0000 ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| □ | -200.0000 ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| △ | -200.0000 ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| + | -200.0000 ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| × | 0.7000 vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| □ | 0.7000 vt | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| △ | 0.7000 vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| × | -200.0000 ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| □ | -200.0000 ang | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| △ | -200.0000 ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |

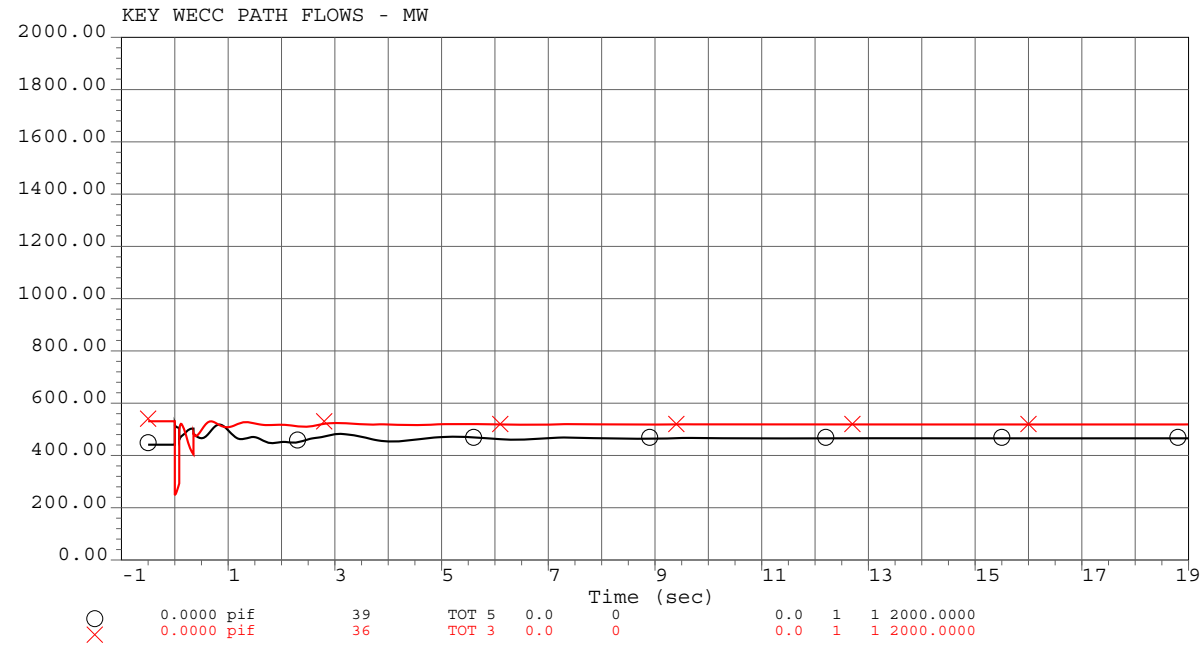
WESTERN ELECTRICITY COORDINATING COUNCIL
2013-14 LW1 OPERATING CASE
MAY 16, 2013

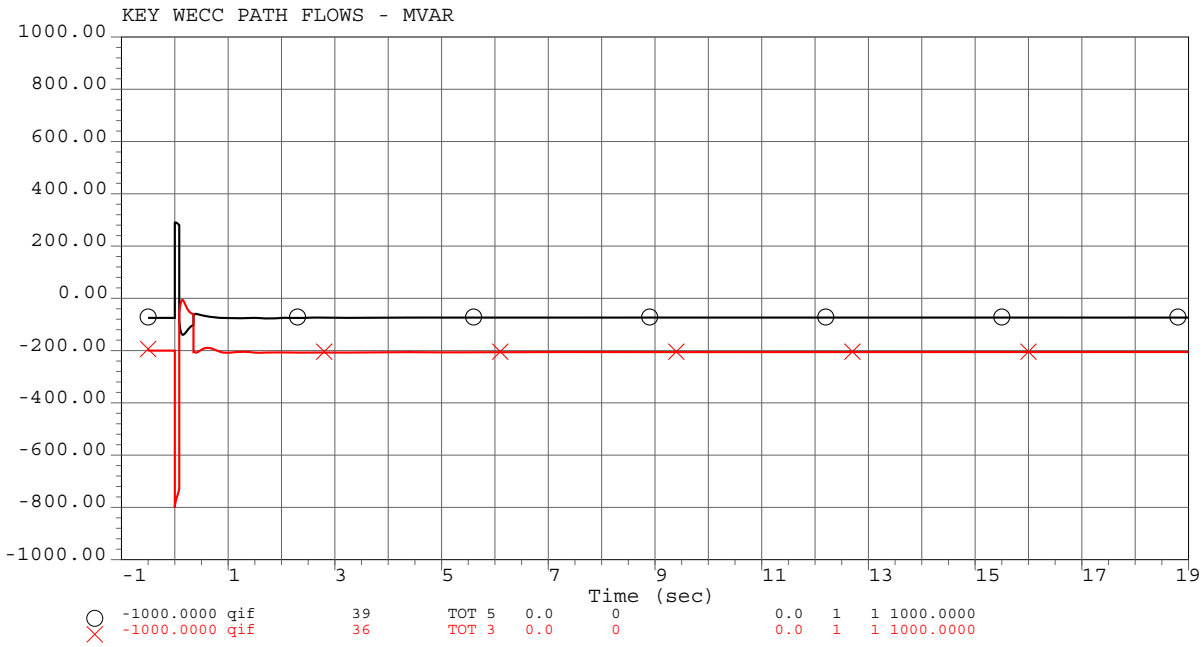


SC2_LW_Base_v0_11_Stegall!-DJnstn_230_3ph_B.chf

.

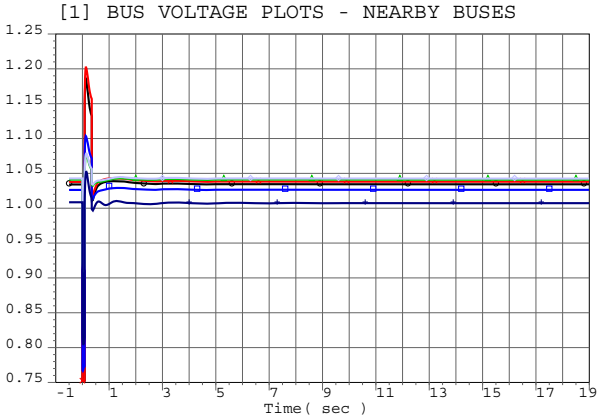
Tue Nov 26 13:28:38 2013


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

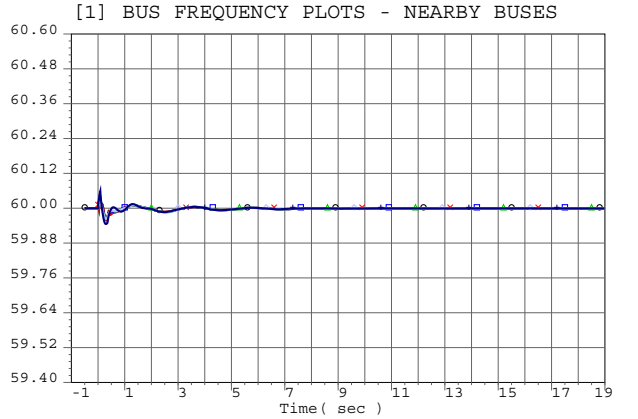
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



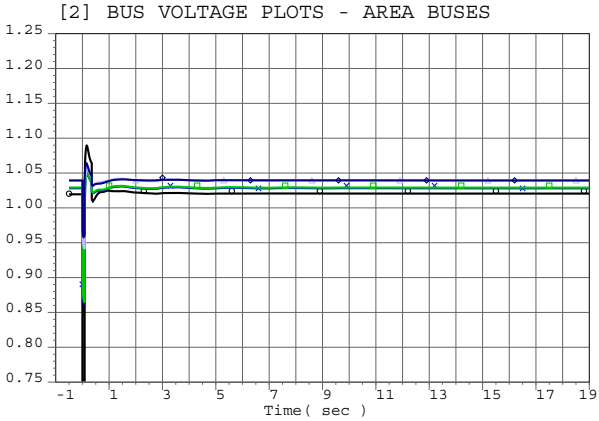

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 73188 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



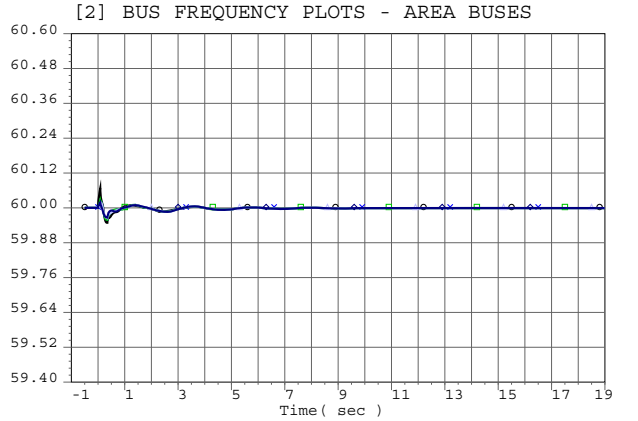

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 73188 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



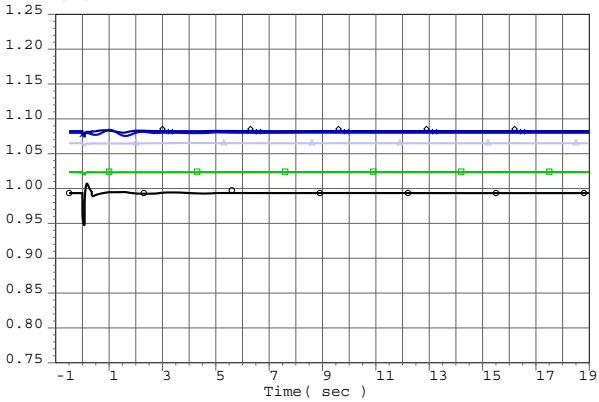

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



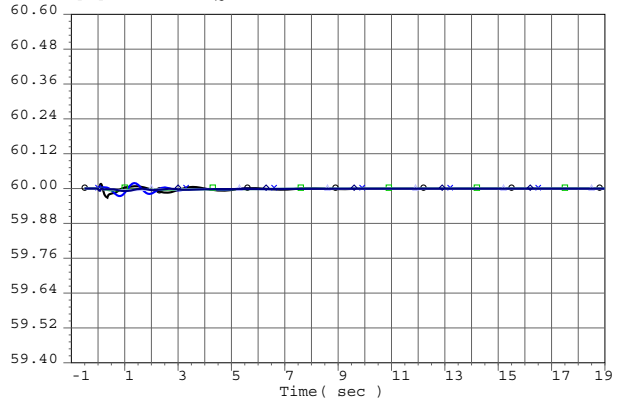

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013-14 LW1 OPERATING CASE
MAY 16, 2013



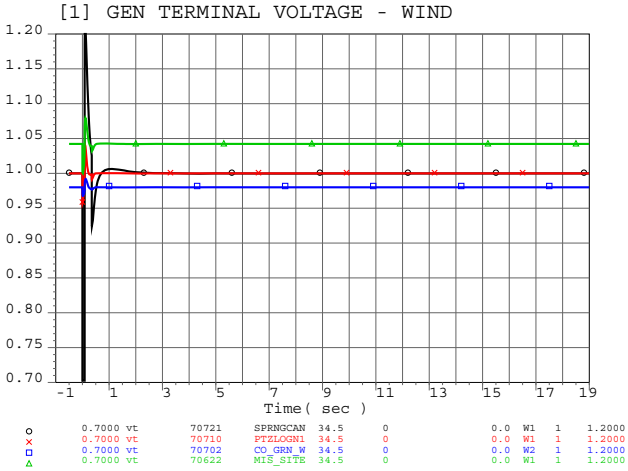
SC2_LW_Base_v0_12_Stegall!-LRS_230_3ph_B.chf

.

Tue Nov 26 13:28:46 2013

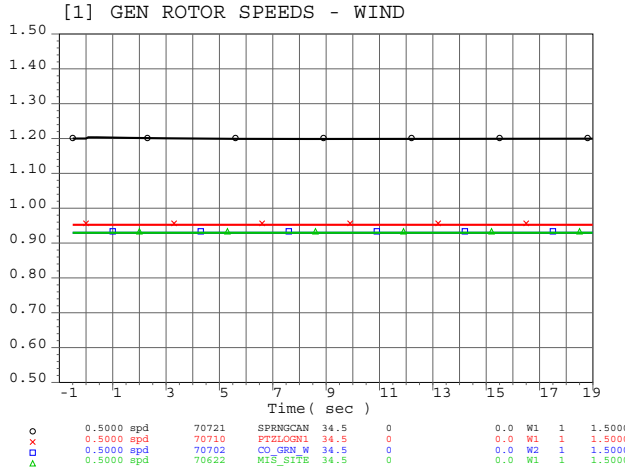
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



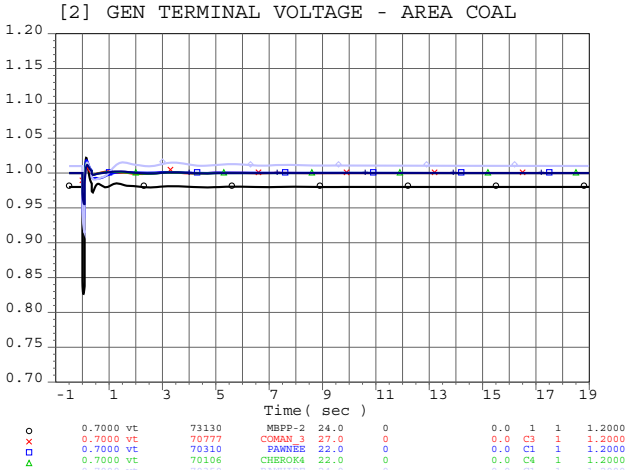

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| × | 0.7000 vt | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| □ | 0.7000 vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| △ | 0.7000 vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



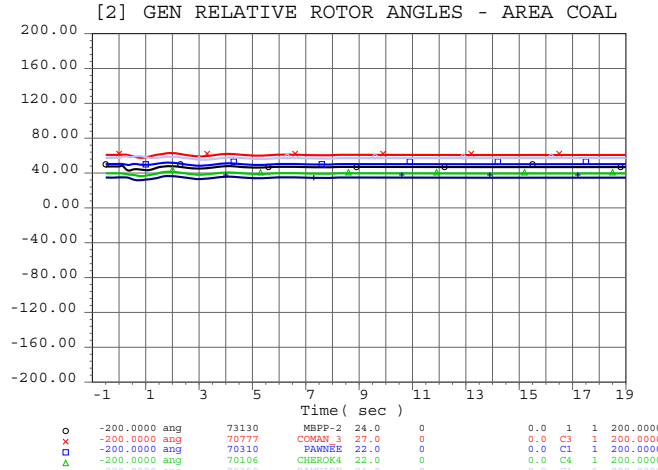

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.5000 spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| × | 0.5000 spd | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| □ | 0.5000 spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| △ | 0.5000 spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



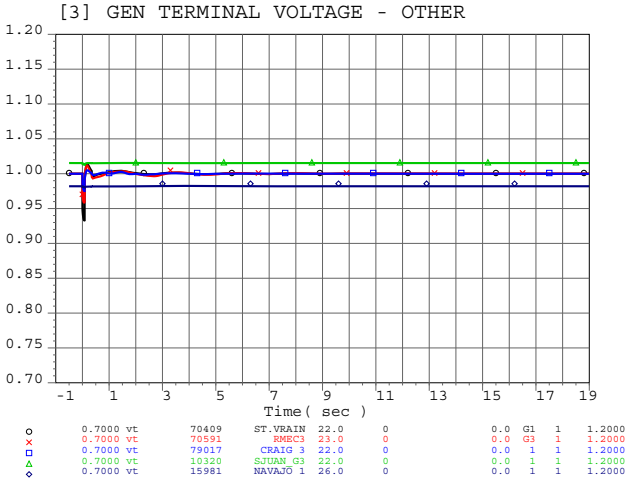

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| × | 0.7000 vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| □ | 0.7000 vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| △ | 0.7000 vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| + | 0.7000 vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



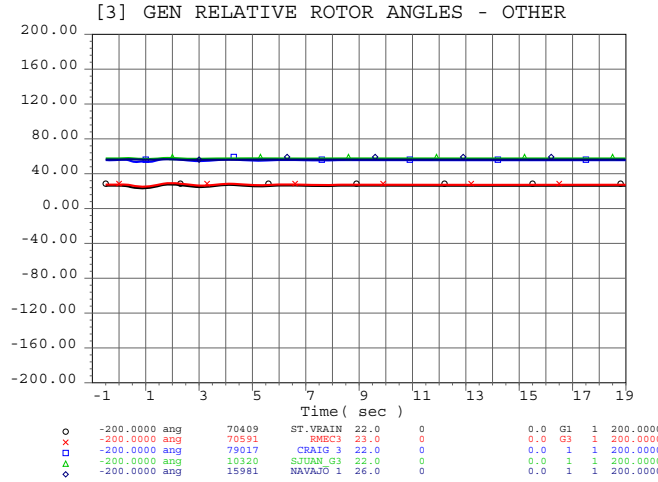

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| × | -200.0000 ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| □ | -200.0000 ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| △ | -200.0000 ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| + | -200.0000 ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| × | 0.7000 vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| □ | 0.7000 vt | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| △ | 0.7000 vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| × | -200.0000 ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| □ | -200.0000 ang | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| △ | -200.0000 ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013-14 LW1 OPERATING CASE
MAY 16, 2013



SC2_LW_Base_v0_12_Stegall!-LRS_230_3ph_B.chf

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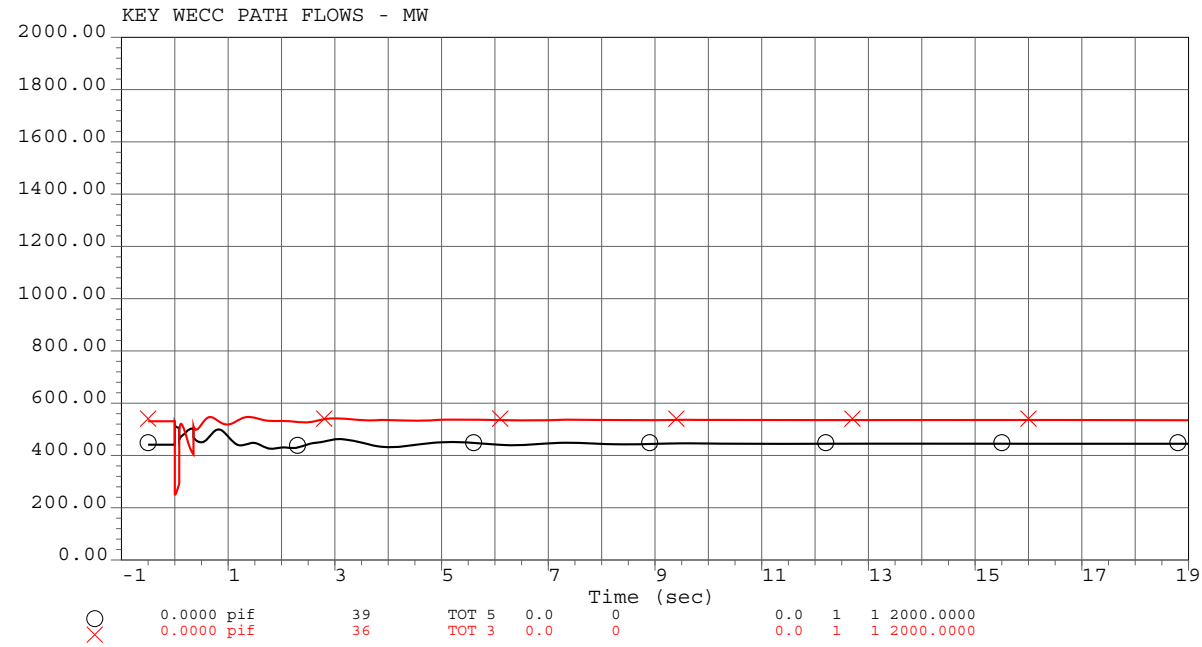
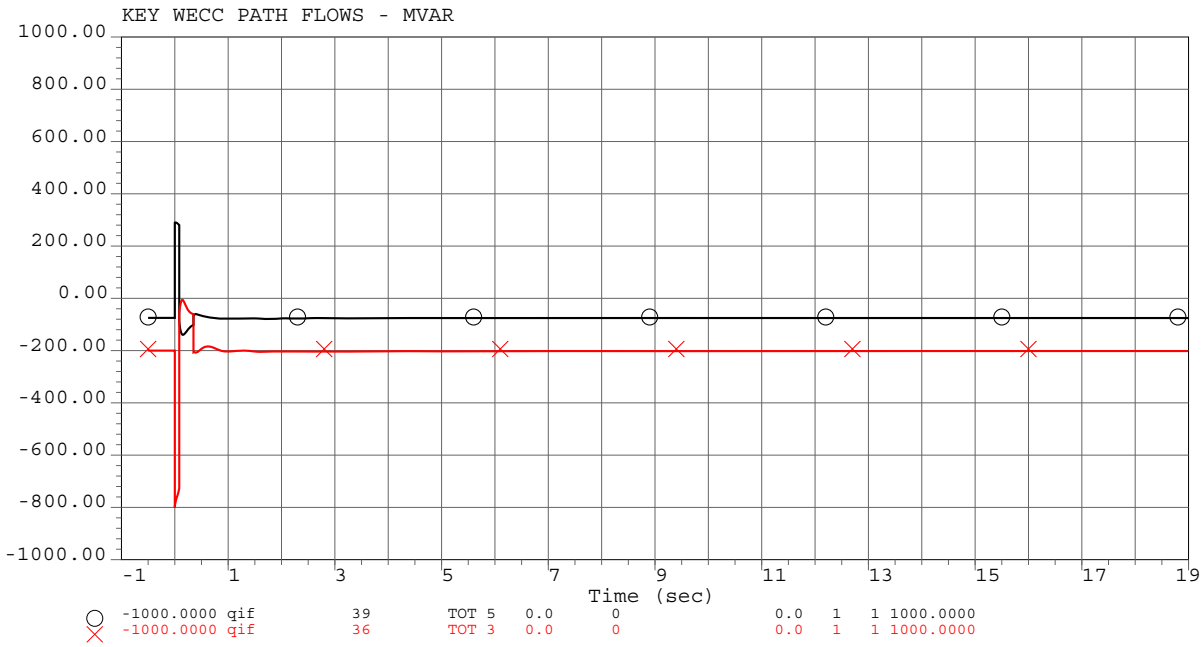
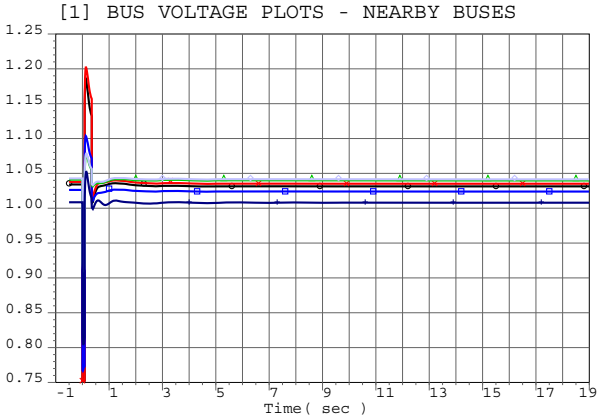
Tue Nov 26 13:28:46 2013


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

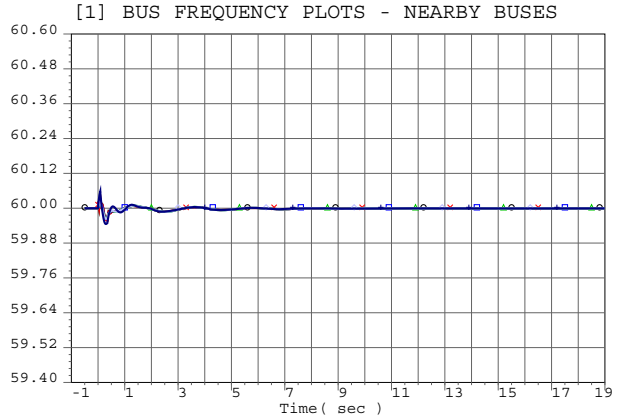
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



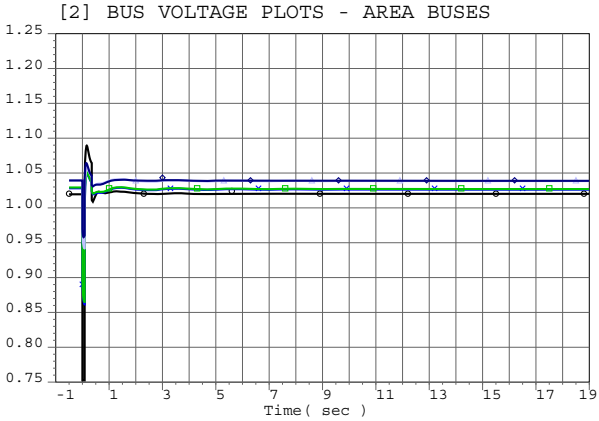

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 73188 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



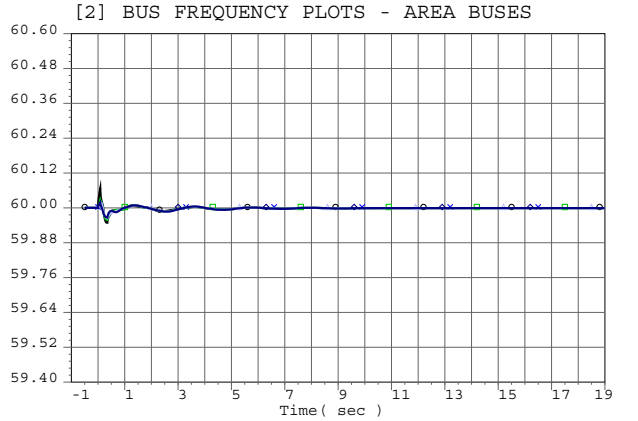

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 73188 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



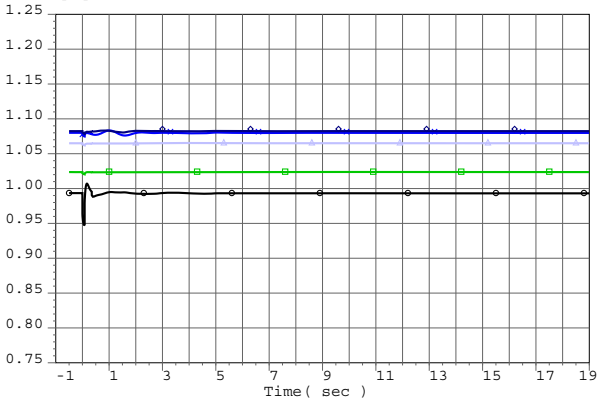

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



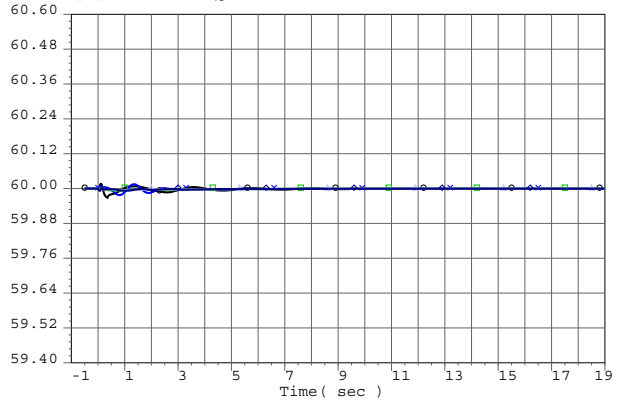

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013-14 LW1 OPERATING CASE
MAY 16, 2013



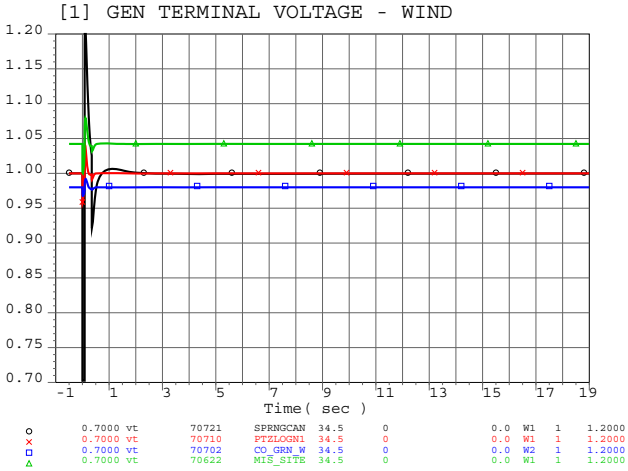
SC2_LW_Base_v0_13_Stegall!-Archer_230_3ph_B.chf

.

Tue Nov 26 13:29:09 2013

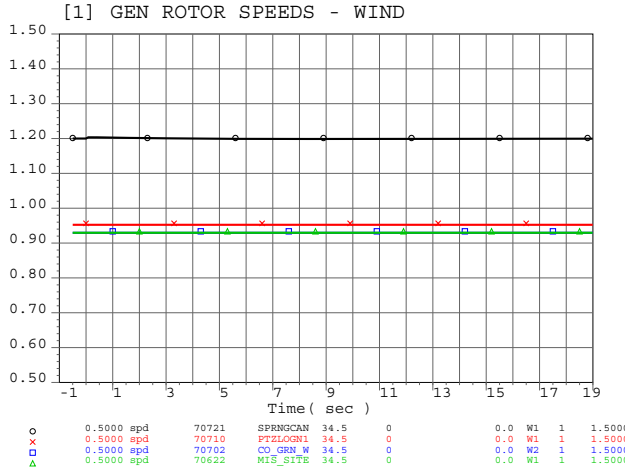
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



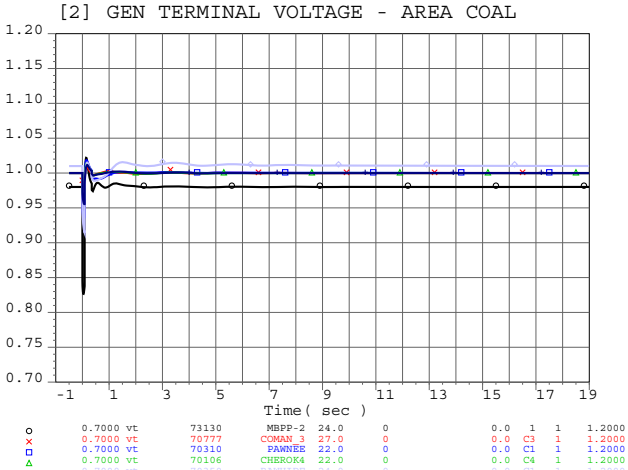

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| × | 0.7000 vt | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| □ | 0.7000 vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| △ | 0.7000 vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



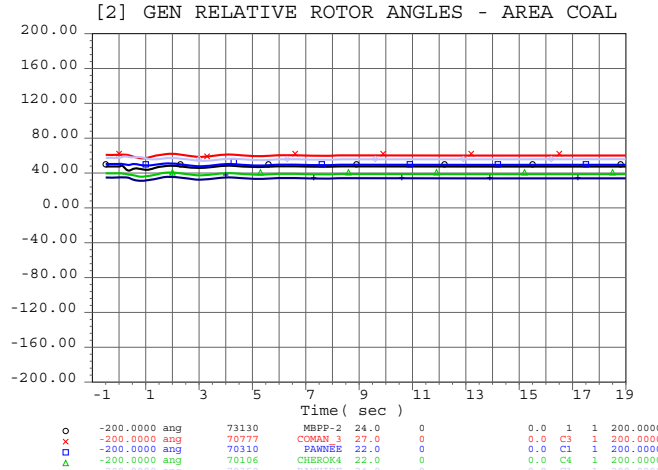

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.5000 spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| × | 0.5000 spd | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| □ | 0.5000 spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| △ | 0.5000 spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



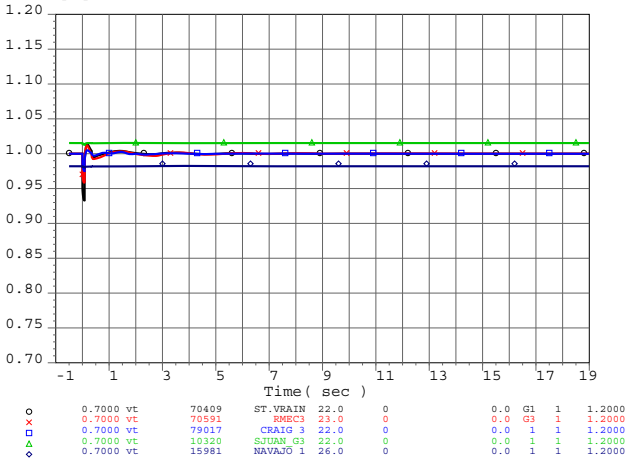

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| × | 0.7000 vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| □ | 0.7000 vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| △ | 0.7000 vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| + | 0.7000 vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



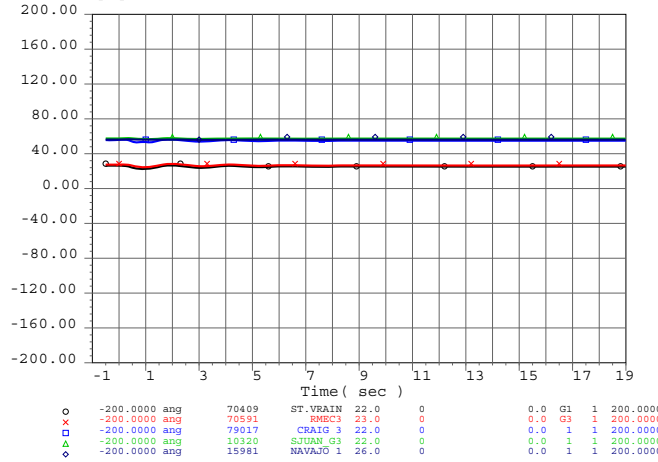

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| × | -200.0000 ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| □ | -200.0000 ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| △ | -200.0000 ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| + | -200.0000 ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| × | 0.7000 vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| □ | 0.7000 vt | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| △ | 0.7000 vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| × | -200.0000 ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| □ | -200.0000 ang | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| △ | -200.0000 ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |

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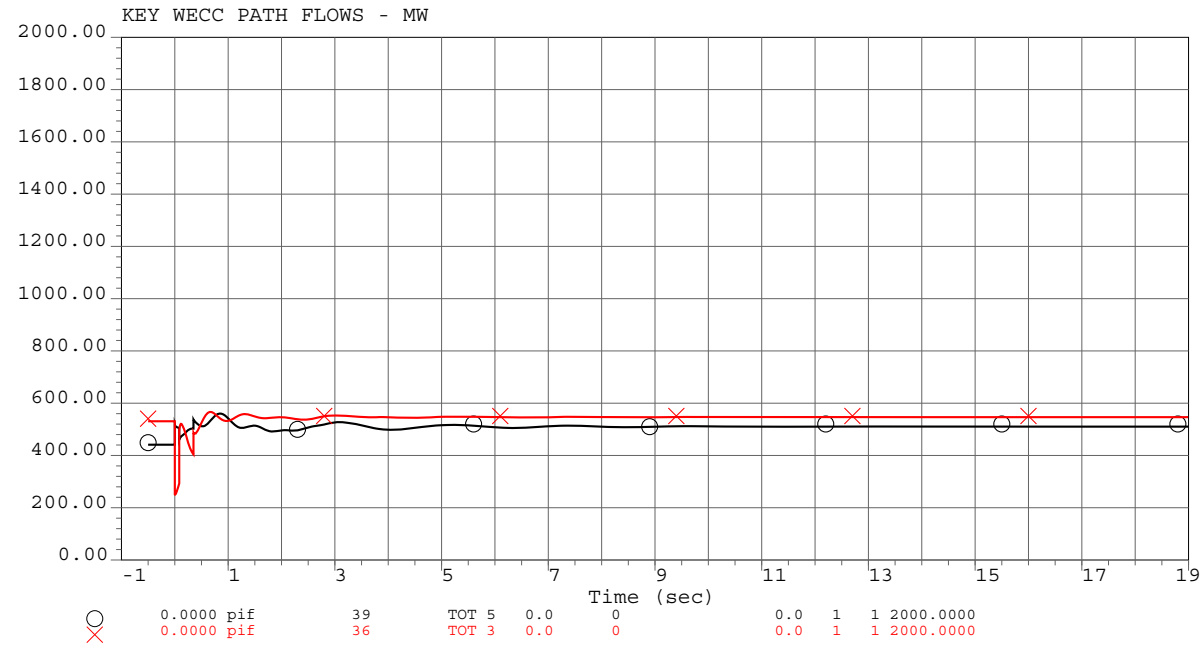
2013-14 LW1 OPERATING CASE
MAY 16, 2013

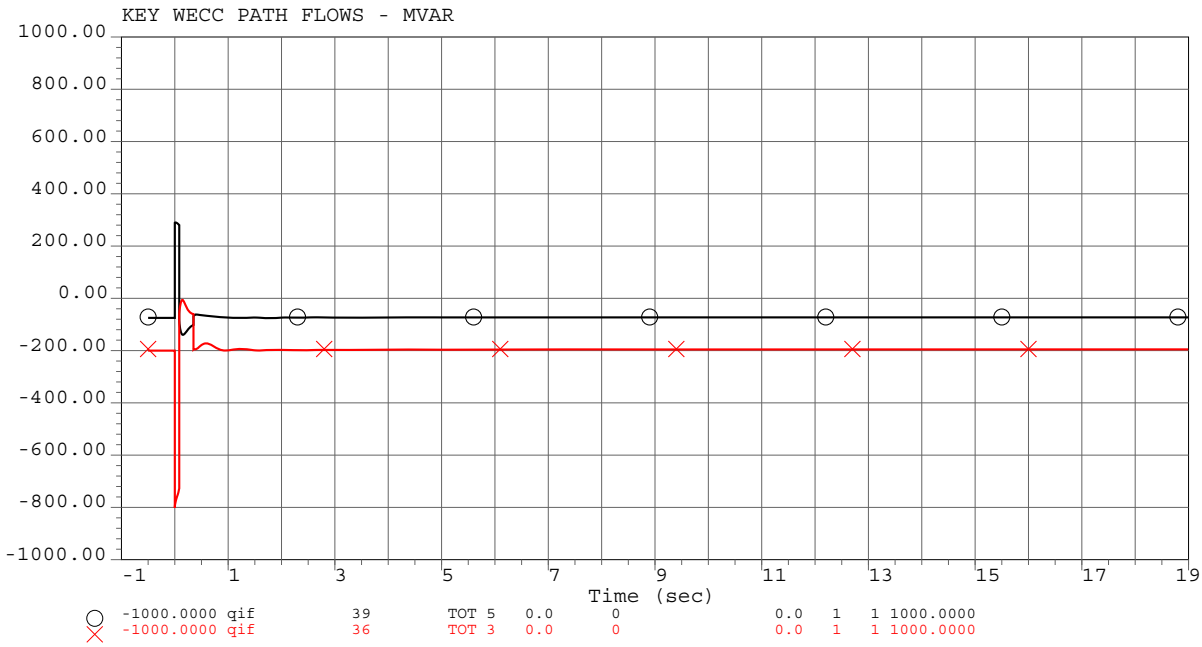


SC2_LW_Base_v0_13_Stegall!-Archer_230_3ph_B.chf

.

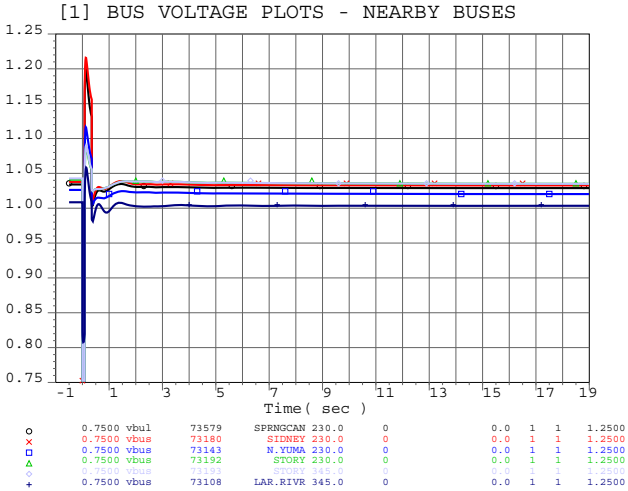
Tue Nov 26 13:29:09 2013


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

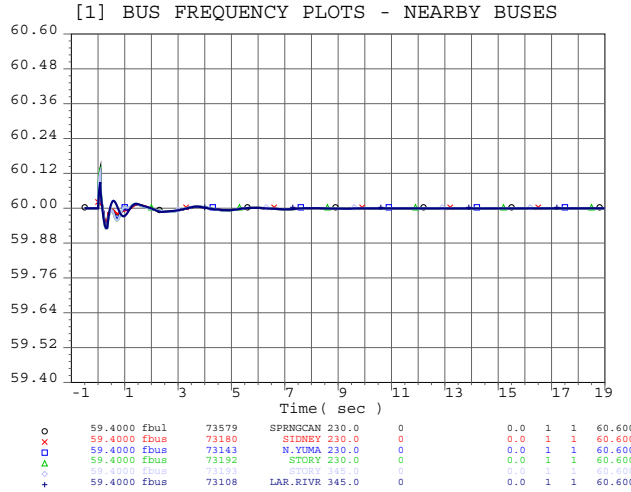
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



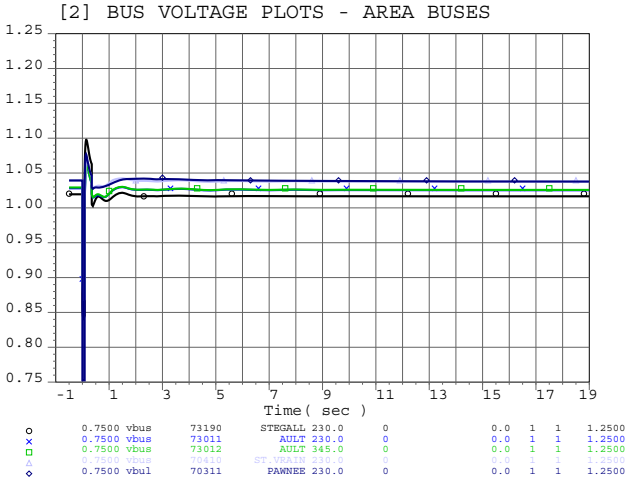

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 vbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 vbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



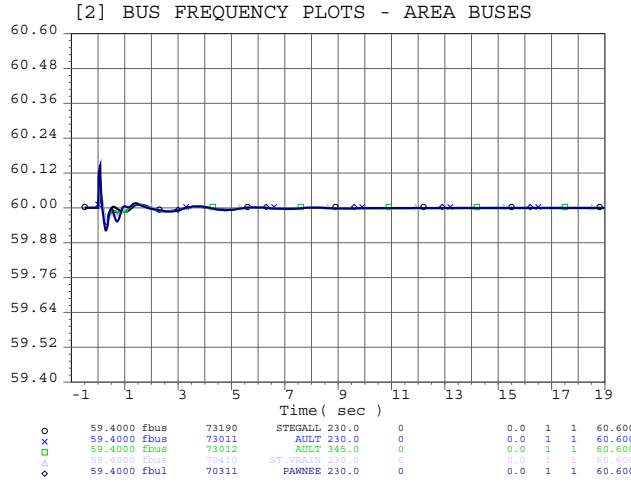

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 fbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 fbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



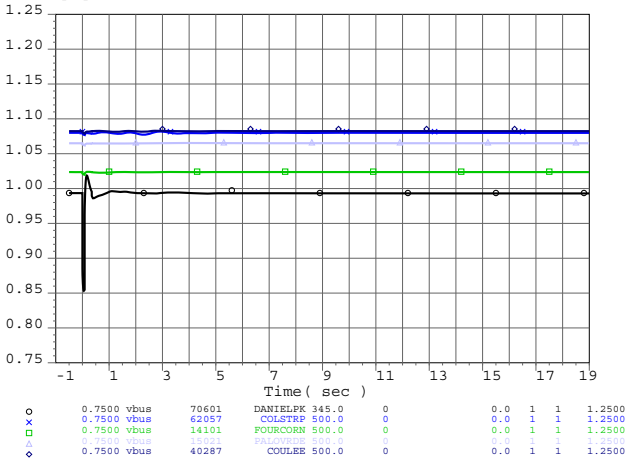

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



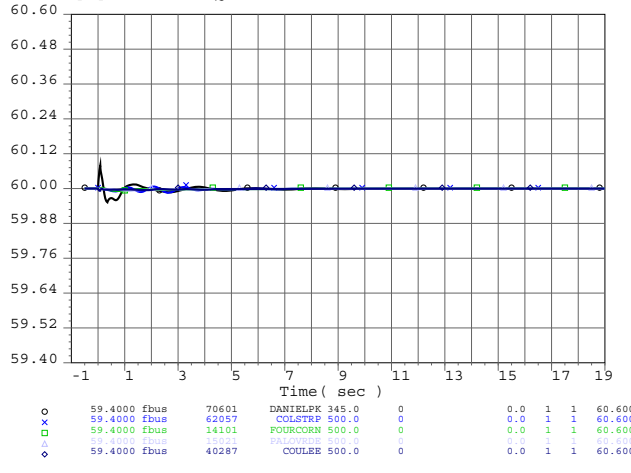

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 vbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 fbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013-14 LW1 OPERATING CASE
MAY 16, 2013



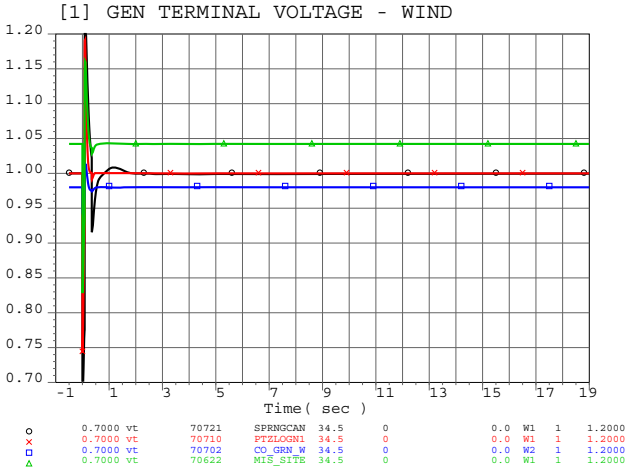
SC2_LW_Base_v0_14_Story!-LRS_345_3ph_B.chf

.

Tue Nov 26 13:29:30 2013

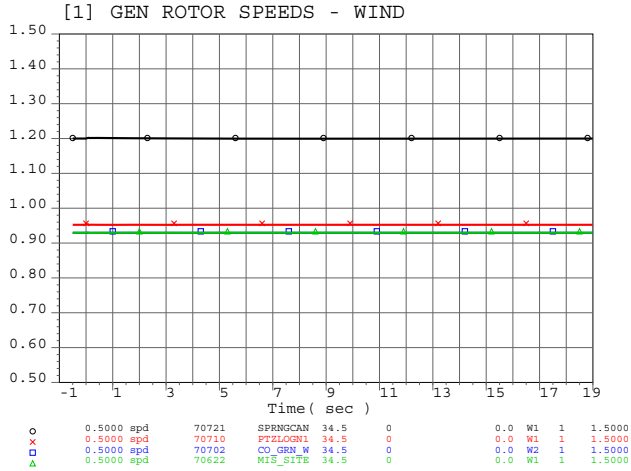
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



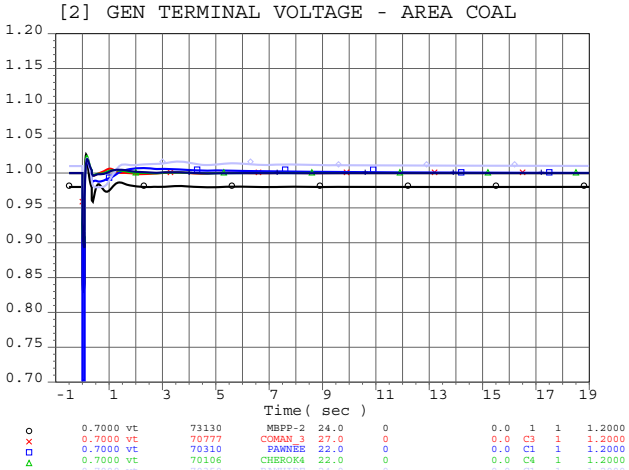

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| × | 0.7000 vt | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| □ | 0.7000 vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| △ | 0.7000 vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



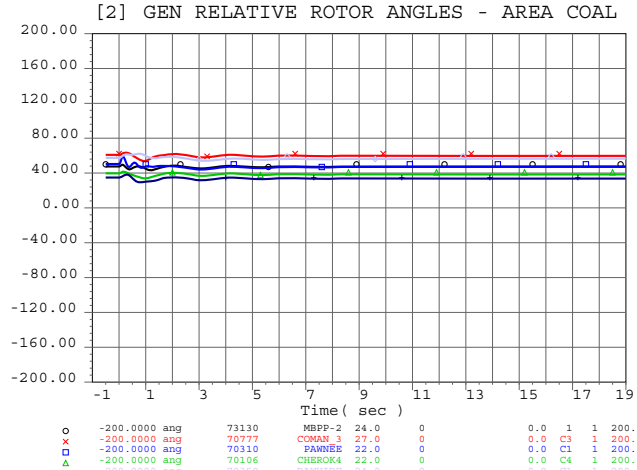

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.5000 spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| × | 0.5000 spd | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| □ | 0.5000 spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| △ | 0.5000 spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



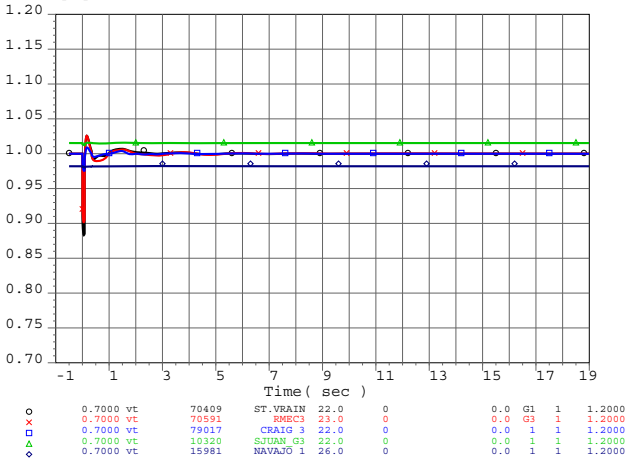

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| × | 0.7000 vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| □ | 0.7000 vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| △ | 0.7000 vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| + | 0.7000 vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



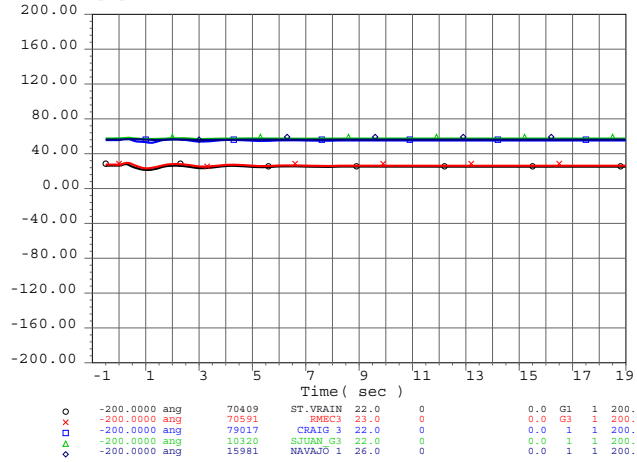

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| × | -200.0000 ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| □ | -200.0000 ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| △ | -200.0000 ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| + | -200.0000 ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| × | 0.7000 vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| □ | 0.7000 vt | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| △ | 0.7000 vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| × | -200.0000 ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| □ | -200.0000 ang | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| △ | -200.0000 ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013-14 LW1 OPERATING CASE
MAY 16, 2013



SC2_LW_Base_v0_14_Story!-LRS_345_3ph_B.chf

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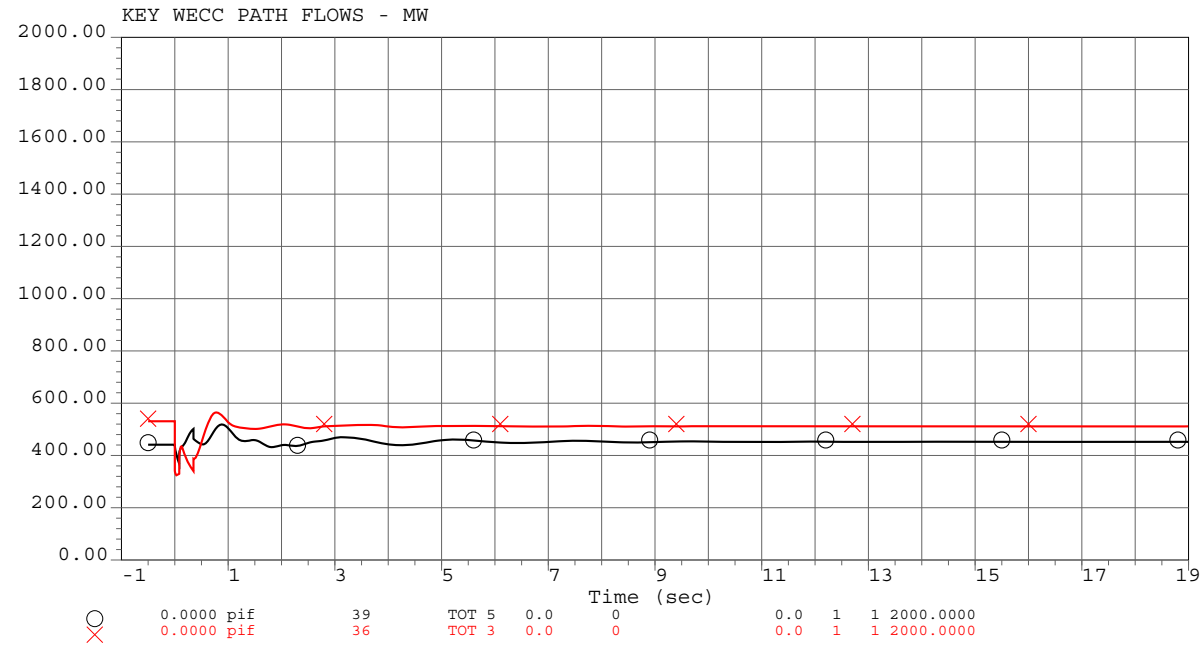
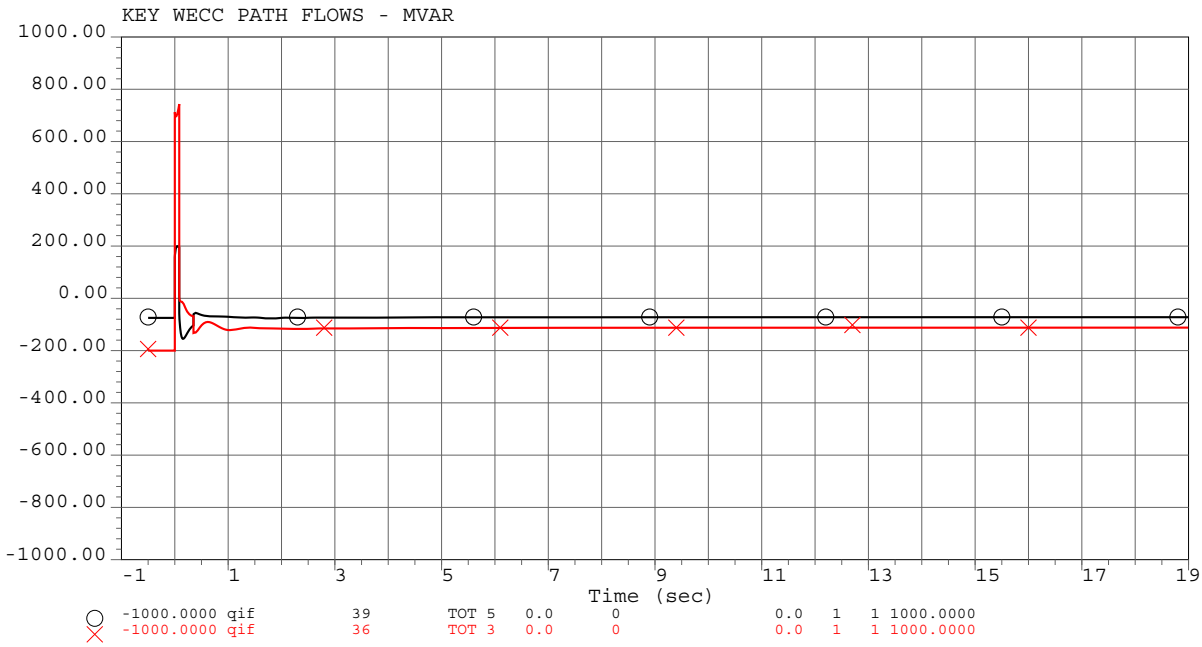
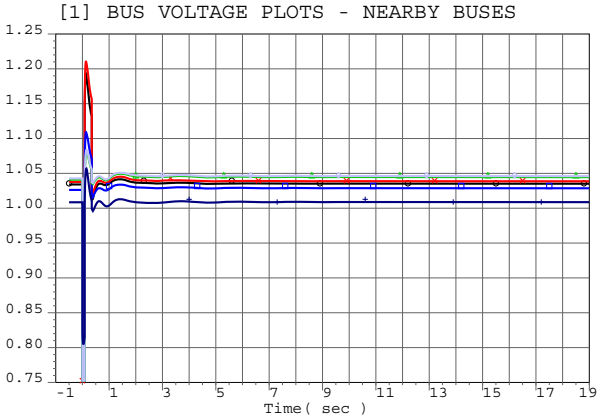
Tue Nov 26 13:29:30 2013


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

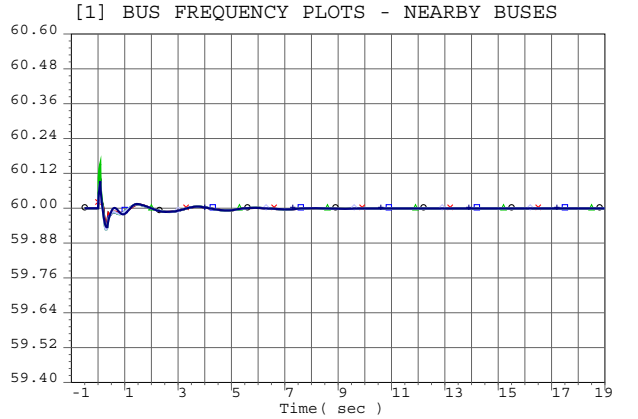
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



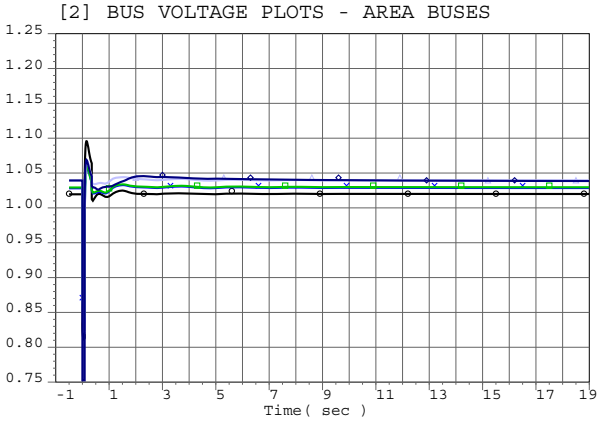

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 vbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 vbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



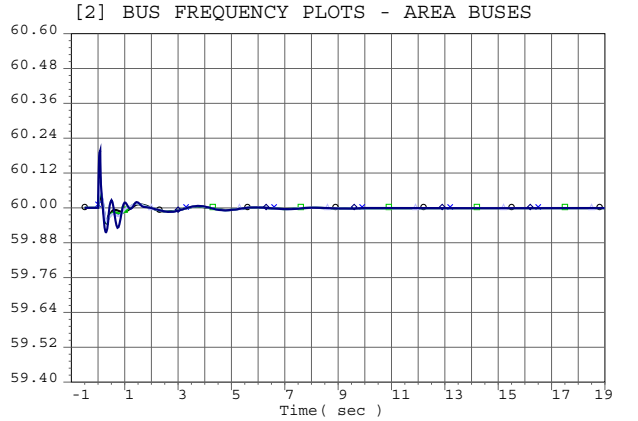

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 fbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 fbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



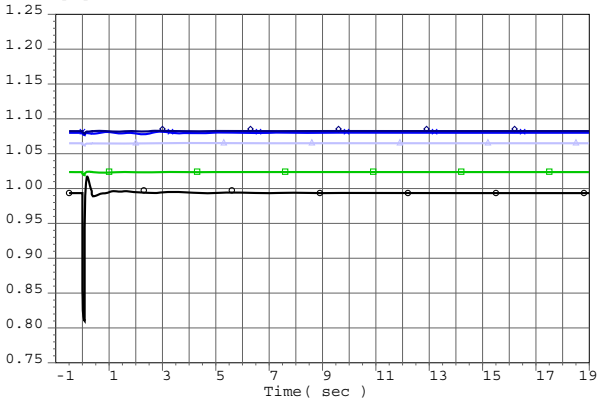

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



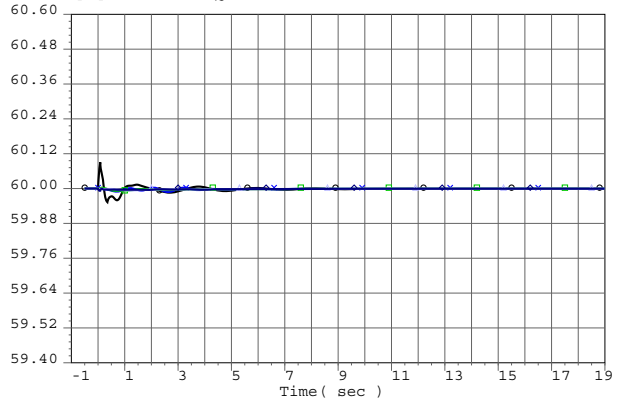

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 vbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 fbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013-14 LW1 OPERATING CASE
MAY 16, 2013



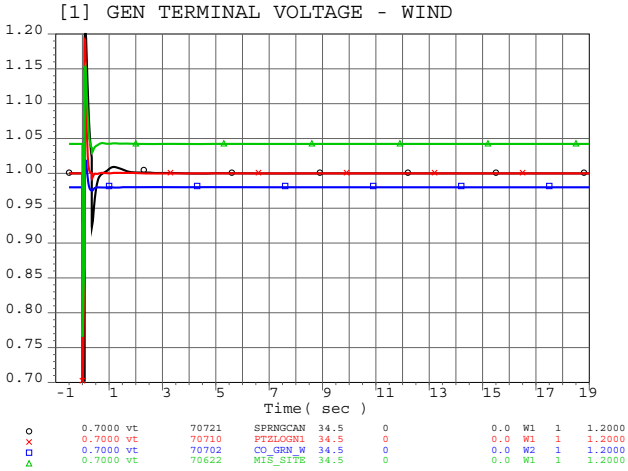
SC2_LW_Base_v0_15_Story!-Pawnee_230_3ph_B.chf

.

Tue Nov 26 13:29:44 2013

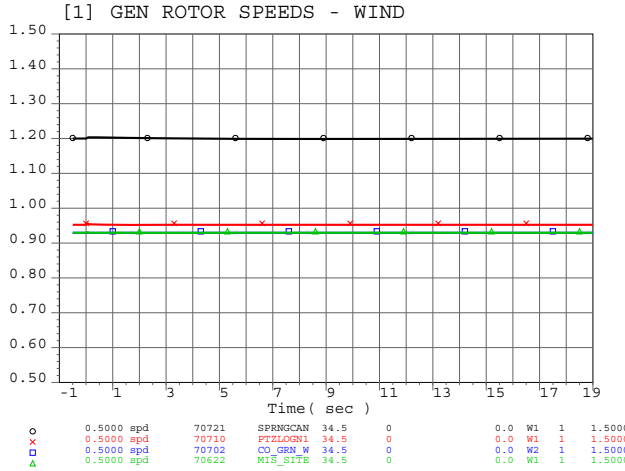
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



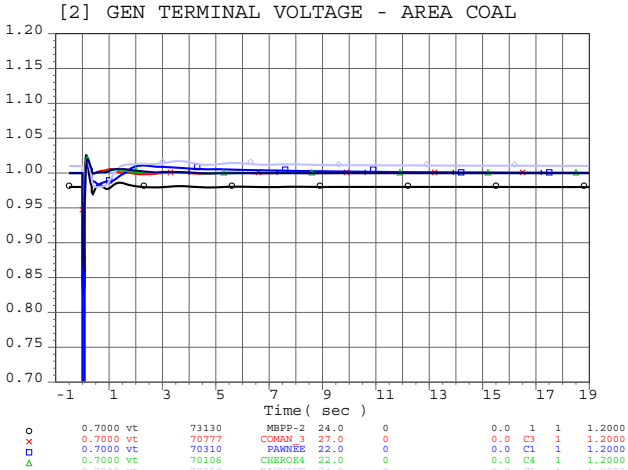

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| × | 0.7000 vt | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| □ | 0.7000 vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| △ | 0.7000 vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



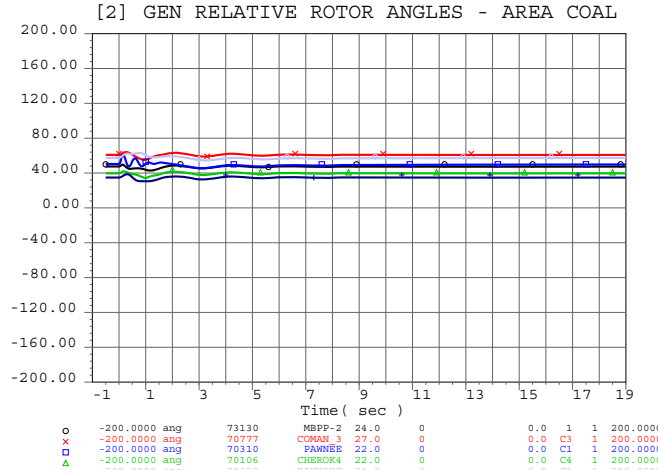

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.5000 spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| × | 0.5000 spd | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| □ | 0.5000 spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| △ | 0.5000 spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



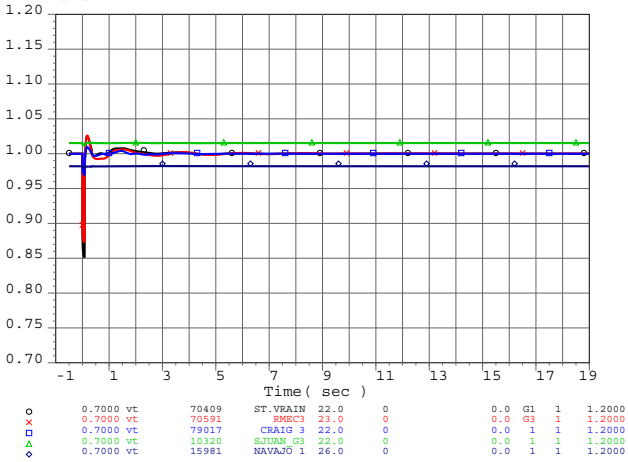

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| × | 0.7000 vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| □ | 0.7000 vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| △ | 0.7000 vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| + | 0.7000 vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



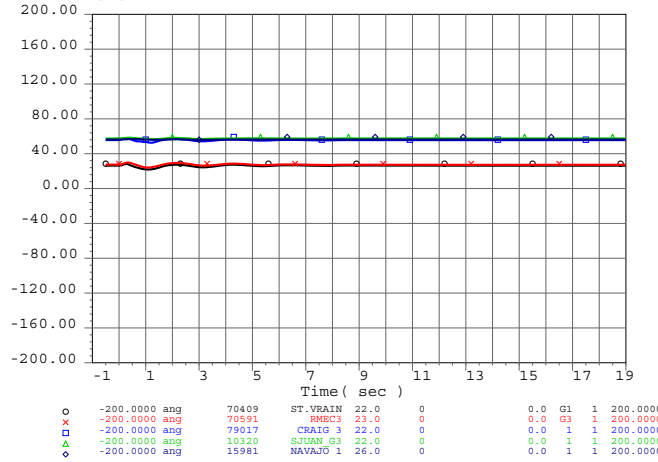

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| × | -200.0000 ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| □ | -200.0000 ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| △ | -200.0000 ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| + | -200.0000 ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| × | 0.7000 vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| □ | 0.7000 vt | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| △ | 0.7000 vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| × | -200.0000 ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| □ | -200.0000 ang | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| △ | -200.0000 ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |

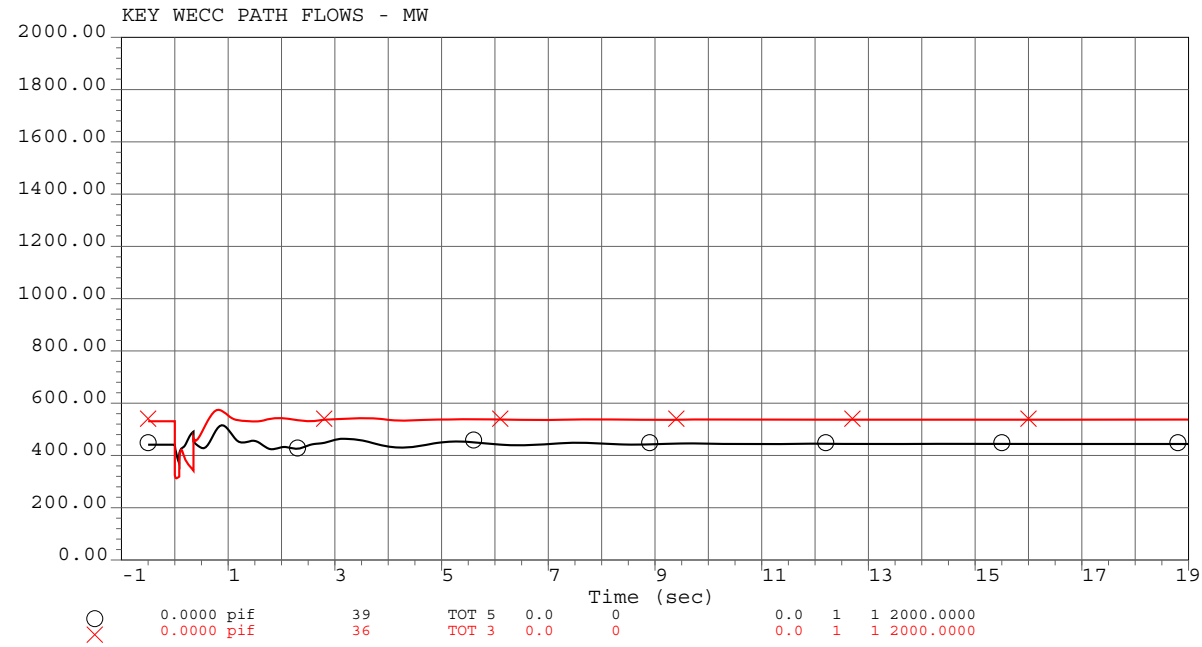
WESTERN ELECTRICITY COORDINATING COUNCIL
2013-14 LW1 OPERATING CASE
MAY 16, 2013

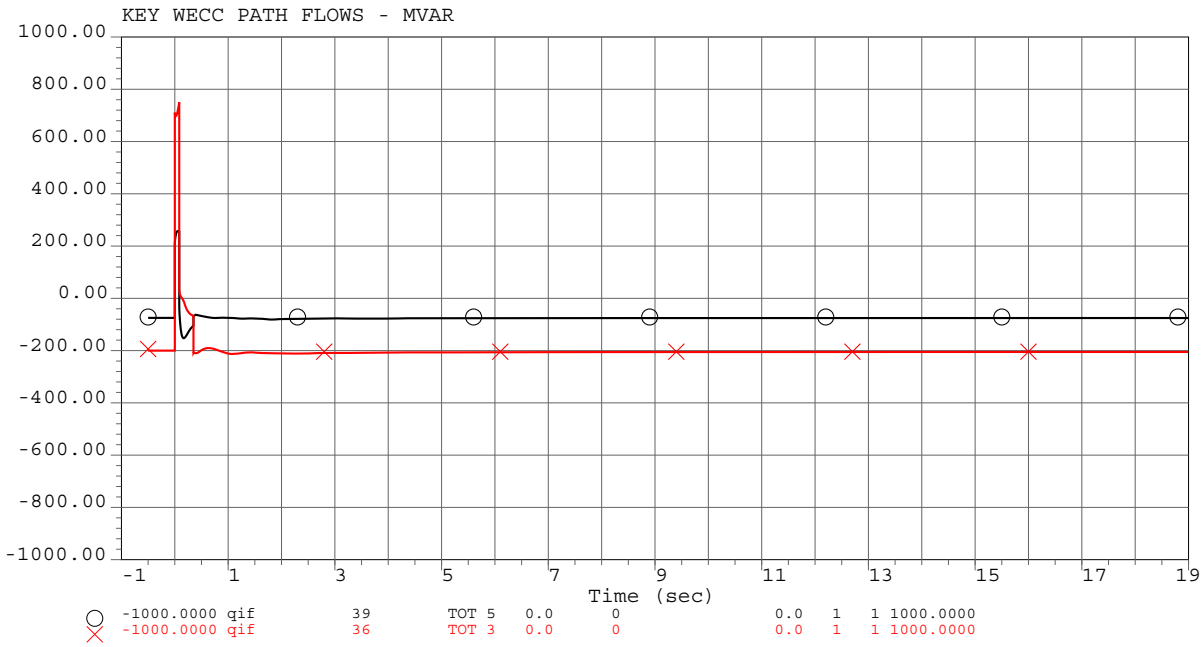


SC2_LW_Base_v0_15_Story!-Pawnee_230_3ph_B.chf

.

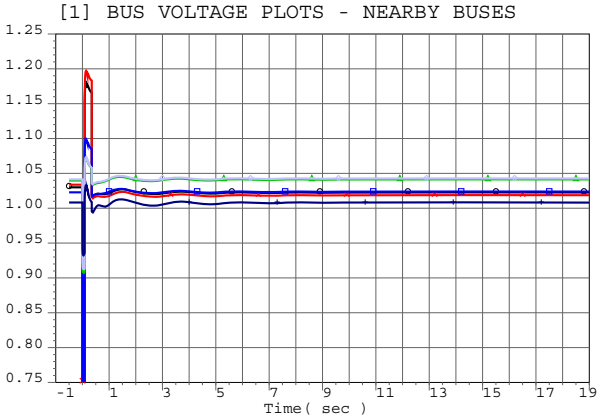
Tue Nov 26 13:29:44 2013


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

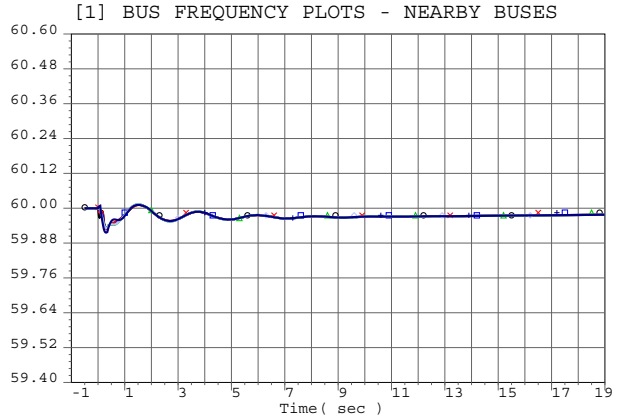
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



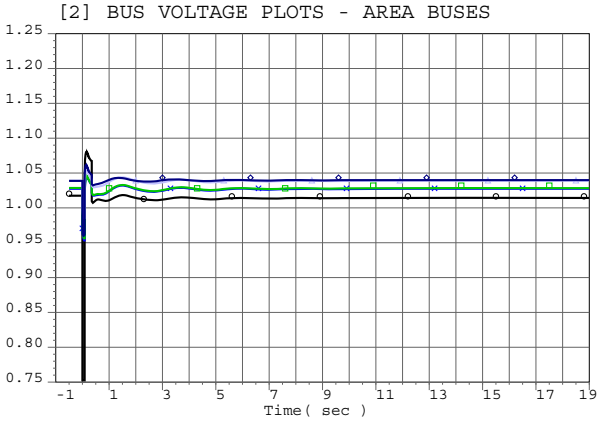

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



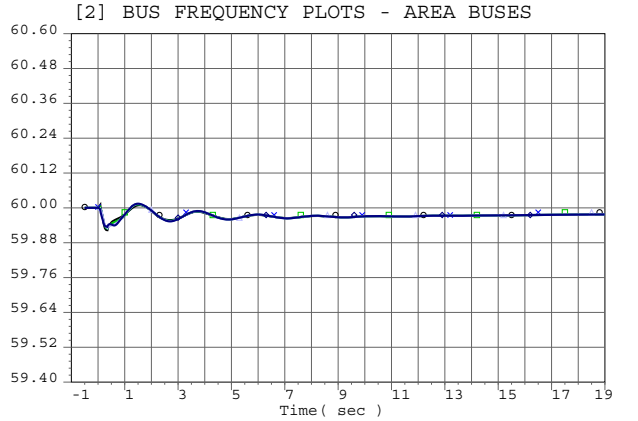

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



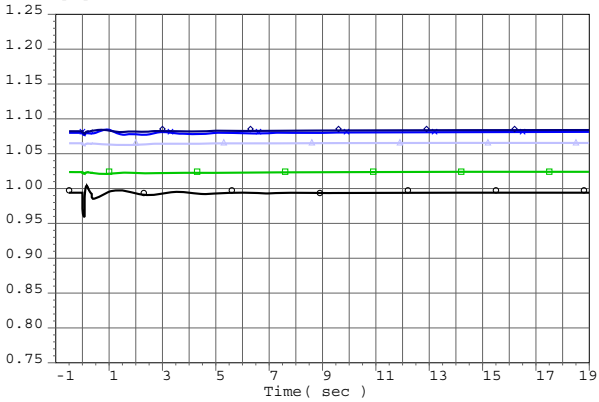

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



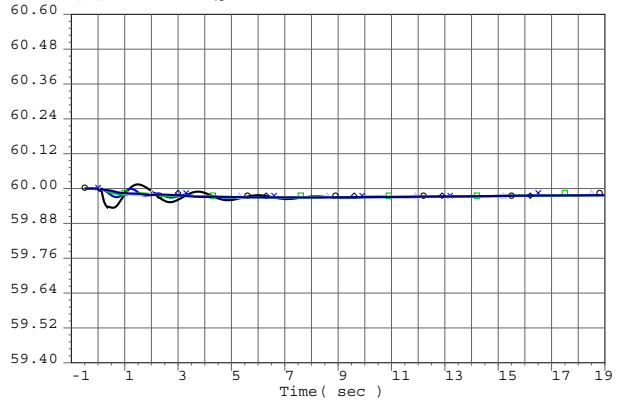

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013-14 LW1 OPERATING CASE
MAY 16, 2013



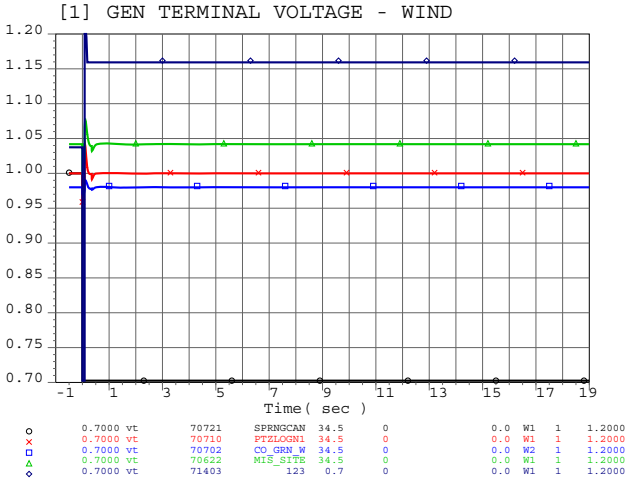
SC2_LW_PstDet_v0_01_Sidney!-SidneyDC_230_3ph_B.chf

.

Tue Nov 26 13:30:01 2013

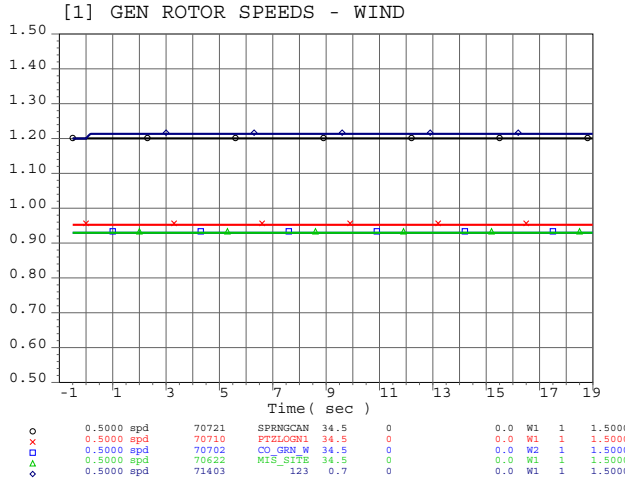
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



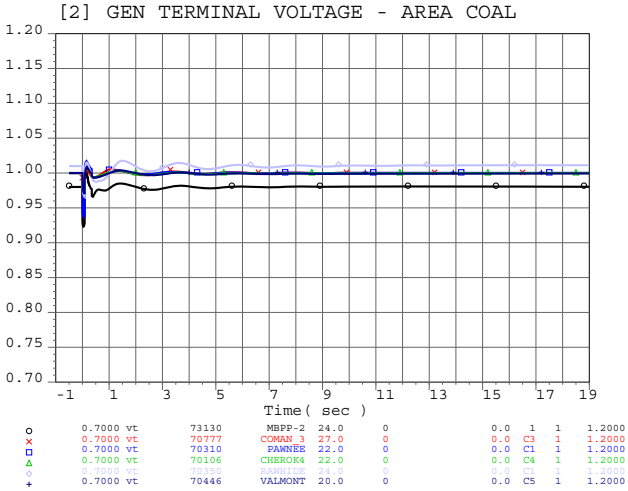

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 | vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| × | 0.7000 | vt | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| □ | 0.7000 | vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| △ | 0.7000 | vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| ◇ | 0.7000 | vt | 71403 | 123 | 0.7 | 0 | 0.0 | W1 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



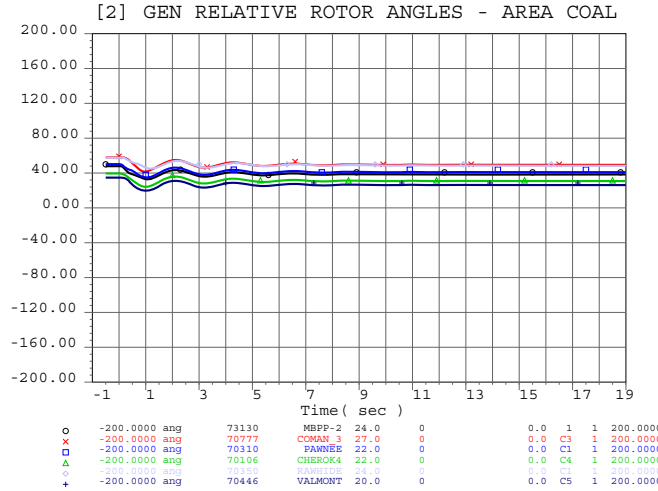

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.5000 | spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| × | 0.5000 | spd | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| □ | 0.5000 | spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| △ | 0.5000 | spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| ◇ | 0.5000 | spd | 71403 | 123 | 0.7 | 0 | 0.0 | W1 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



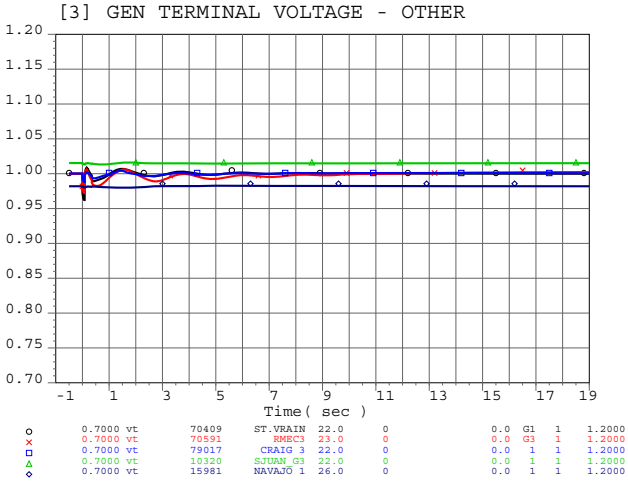

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 | vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| × | 0.7000 | vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| □ | 0.7000 | vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| △ | 0.7000 | vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| ◇ | 0.7000 | vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| + | 0.7000 | vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



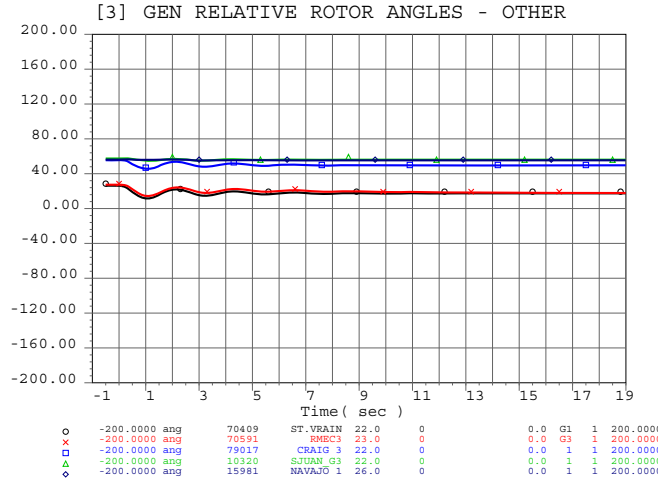

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 | ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| × | -200.0000 | ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| □ | -200.0000 | ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| △ | -200.0000 | ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| ◇ | -200.0000 | ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| + | -200.0000 | ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 | vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| × | 0.7000 | vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| □ | 0.7000 | vt | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| △ | 0.7000 | vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| ◇ | 0.7000 | vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 | ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| × | -200.0000 | ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| □ | -200.0000 | ang | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| △ | -200.0000 | ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| ◇ | -200.0000 | ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |

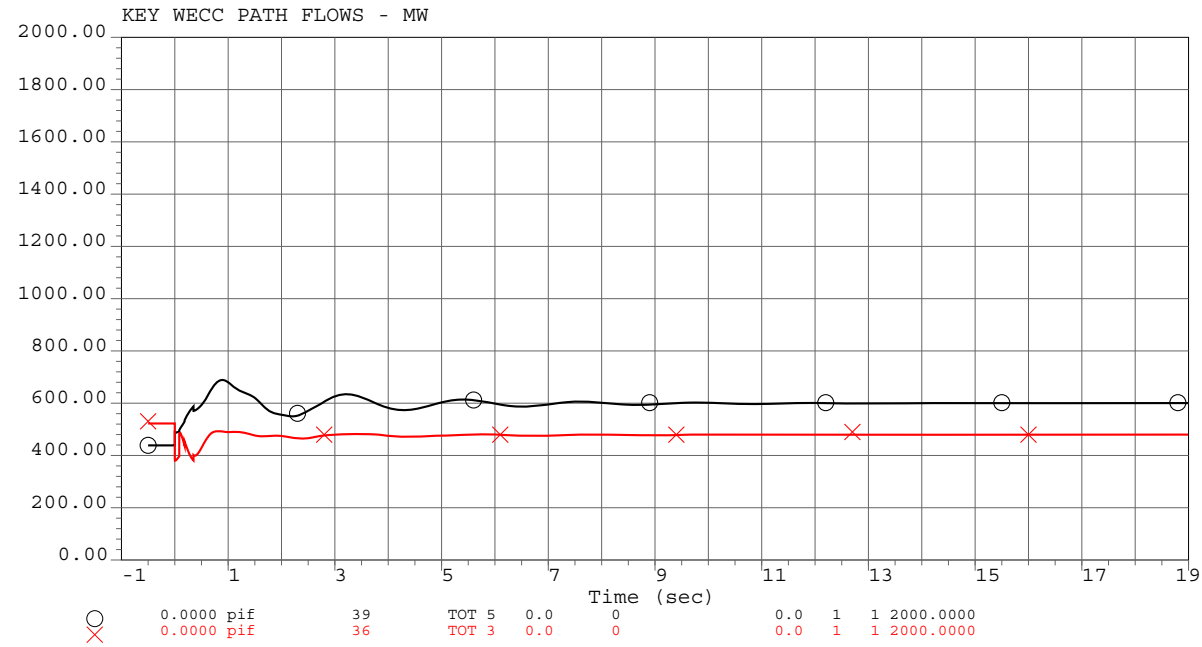
WESTERN ELECTRICITY COORDINATING COUNCIL
2013-14 LW1 OPERATING CASE
MAY 16, 2013

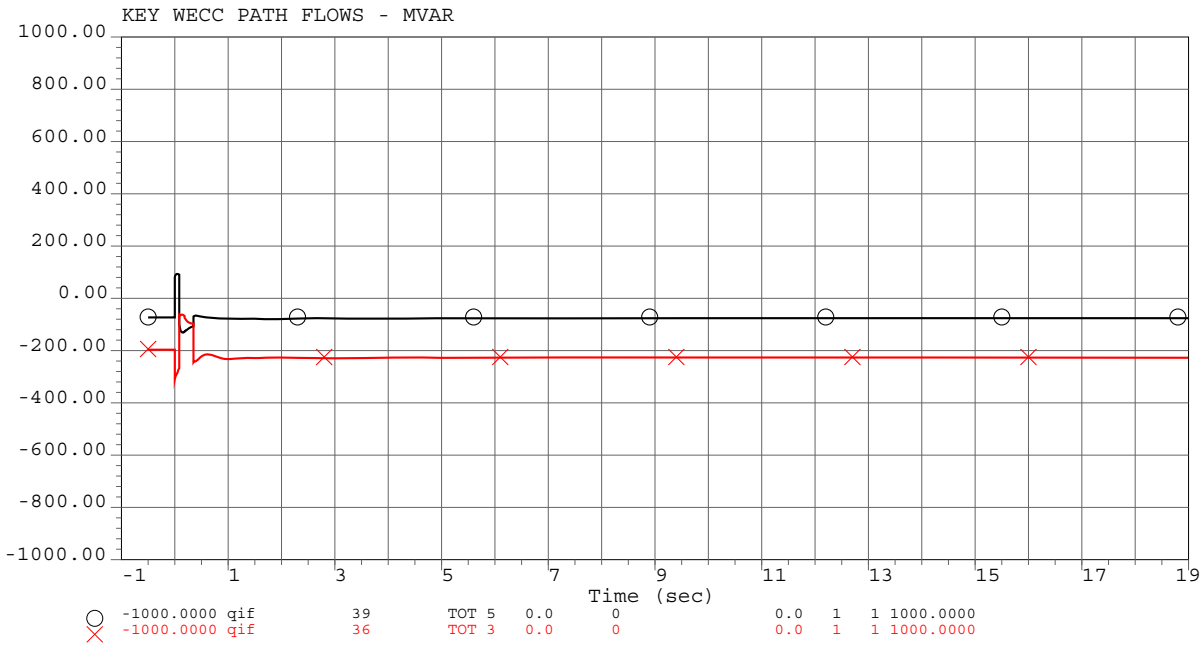


SC2_LW_PstDet_v0_01_Sidney!-SidneyDC_230_3ph_B.chf

.

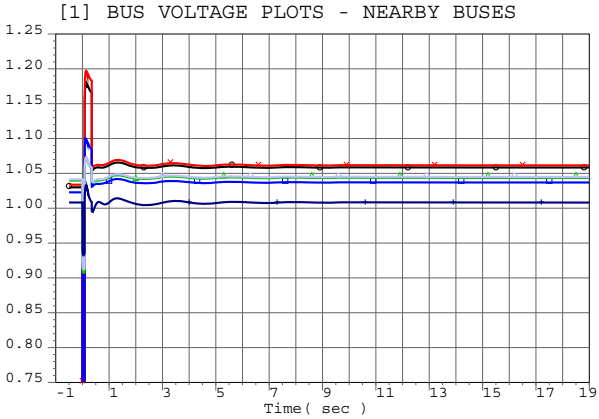
Tue Nov 26 13:30:01 2013


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

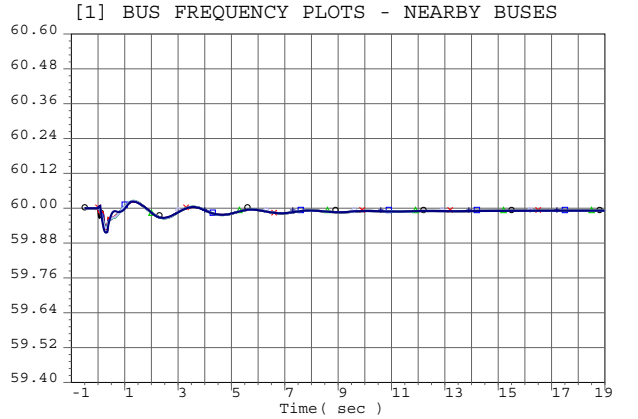
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



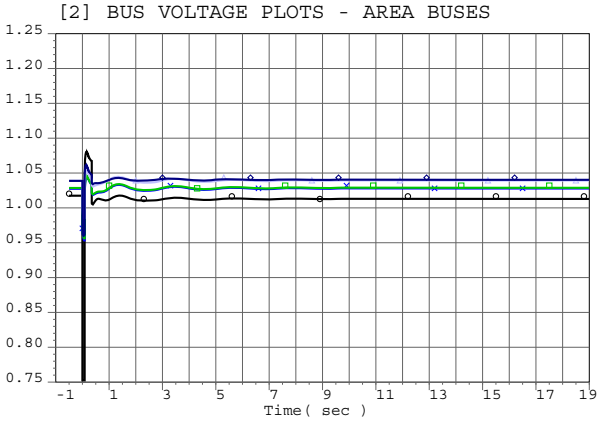

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



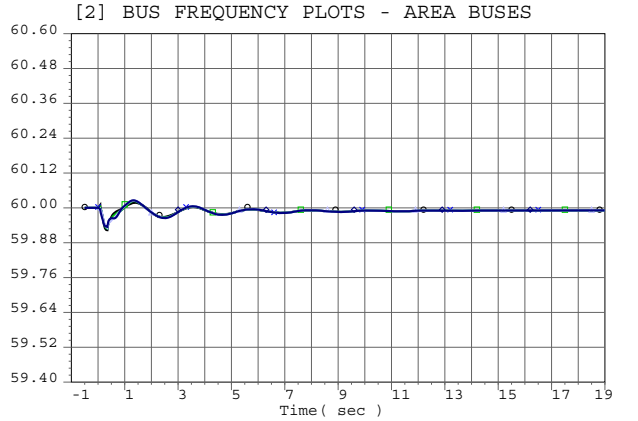

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



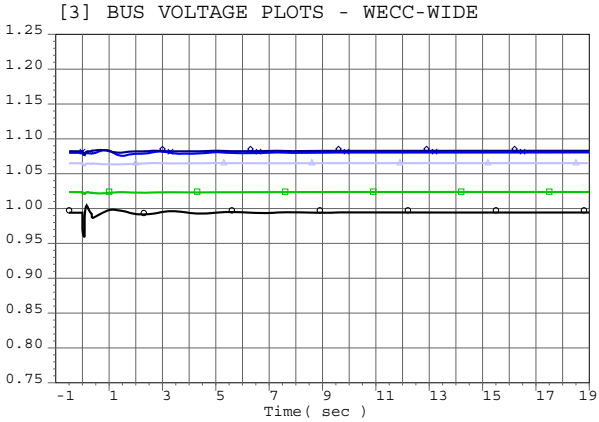

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



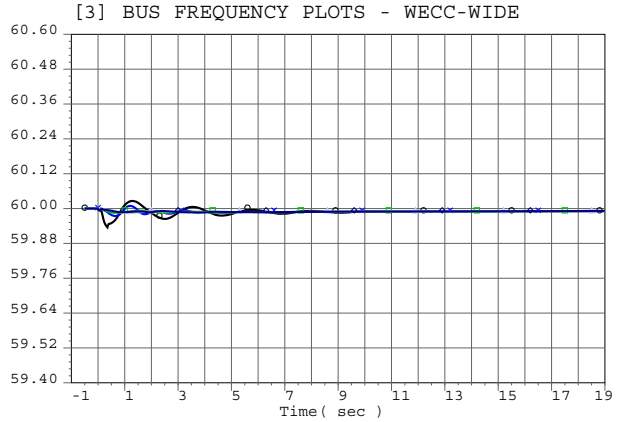

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013-14 LW1 OPERATING CASE
MAY 16, 2013



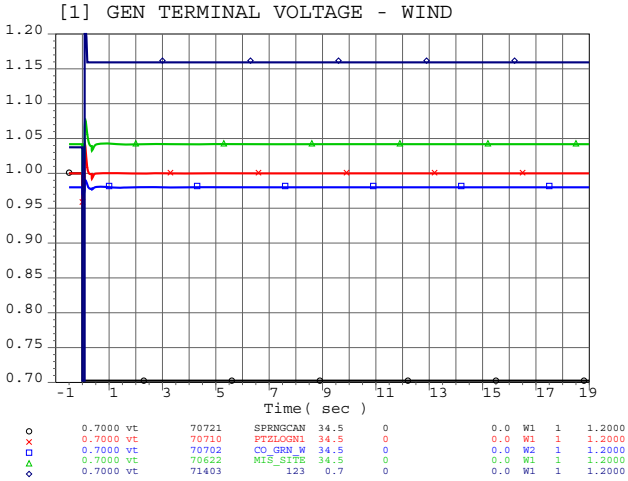
SC2_LW_PstDet_v0_02_Sidney!-Stegall_230_3ph_B.chf

.

Tue Nov 26 13:30:19 2013

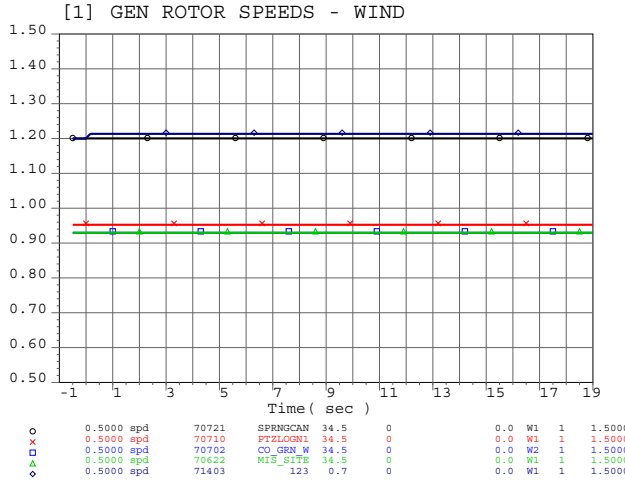
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



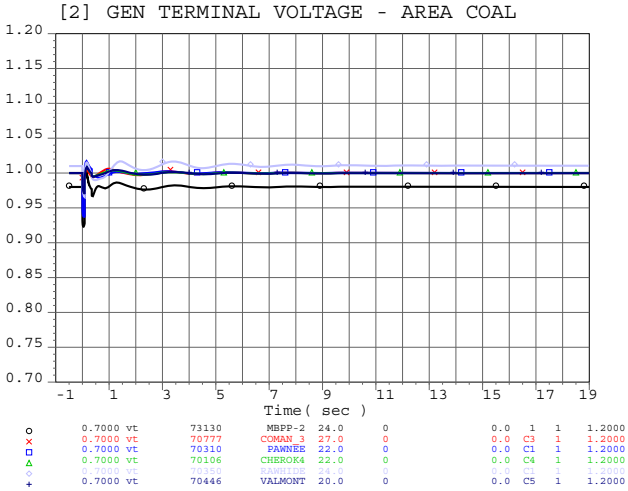

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| × | 0.7000 vt | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| □ | 0.7000 vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| △ | 0.7000 vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 71403 | 123 | 0.7 | 0 | 0.0 | W1 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



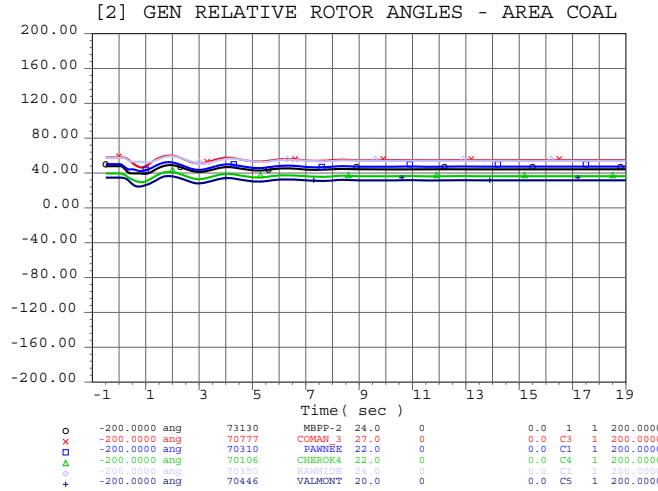

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.5000 spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| × | 0.5000 spd | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| □ | 0.5000 spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| △ | 0.5000 spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| ◇ | 0.5000 spd | 71403 | 123 | 0.7 | 0 | 0.0 | W1 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



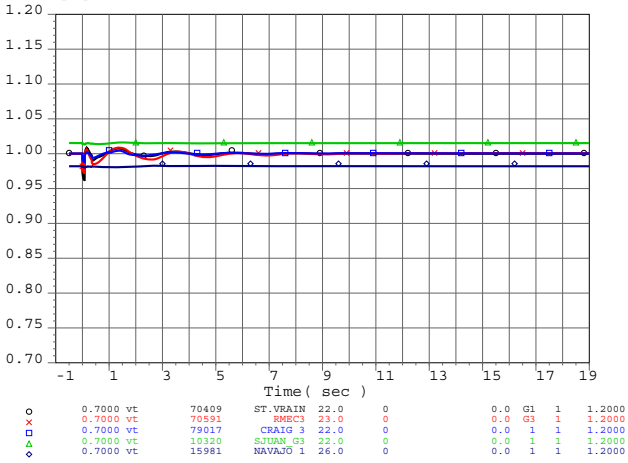

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| × | 0.7000 vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| □ | 0.7000 vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| △ | 0.7000 vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| + | 0.7000 vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



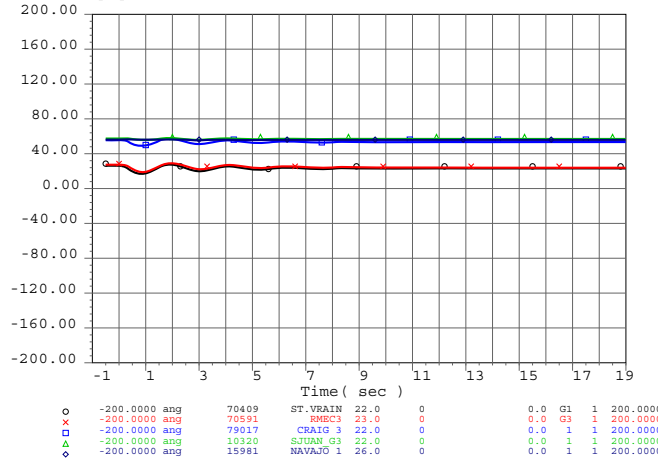

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| × | -200.0000 ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| □ | -200.0000 ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| △ | -200.0000 ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| + | -200.0000 ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| × | 0.7000 vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| □ | 0.7000 vt | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| △ | 0.7000 vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| × | -200.0000 ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| □ | -200.0000 ang | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| △ | -200.0000 ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |

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2013-14 LW1 OPERATING CASE
MAY 16, 2013



SC2_LW_PstDet_v0_02_Sidney!-Stegall_230_3ph_B.chf

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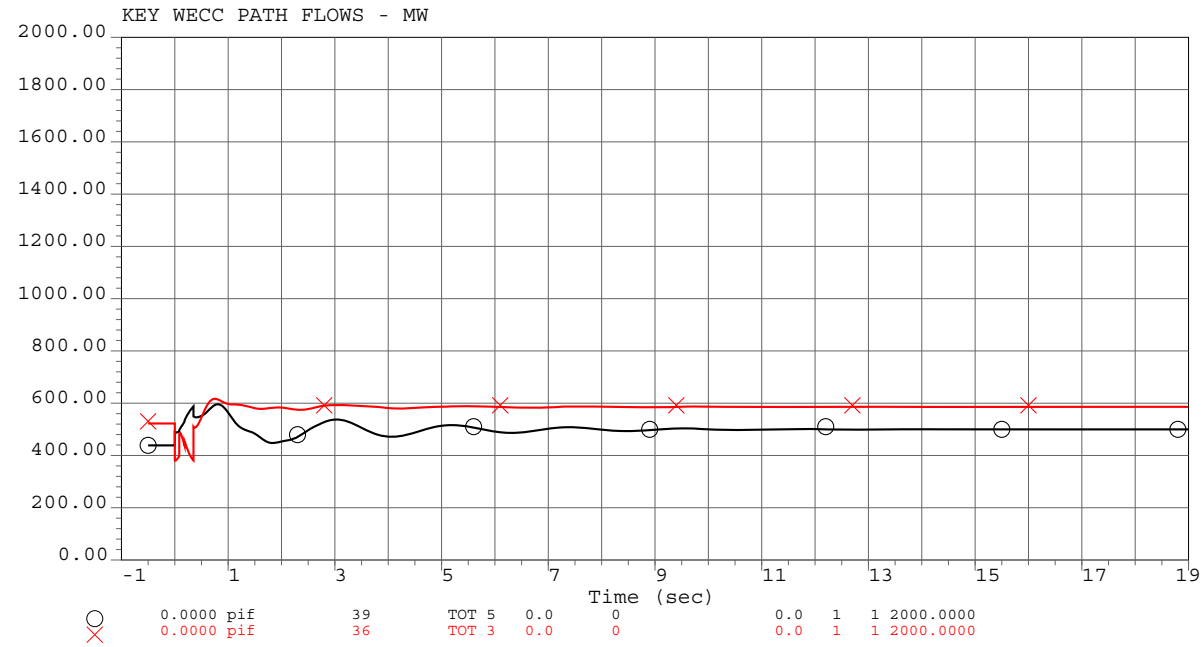
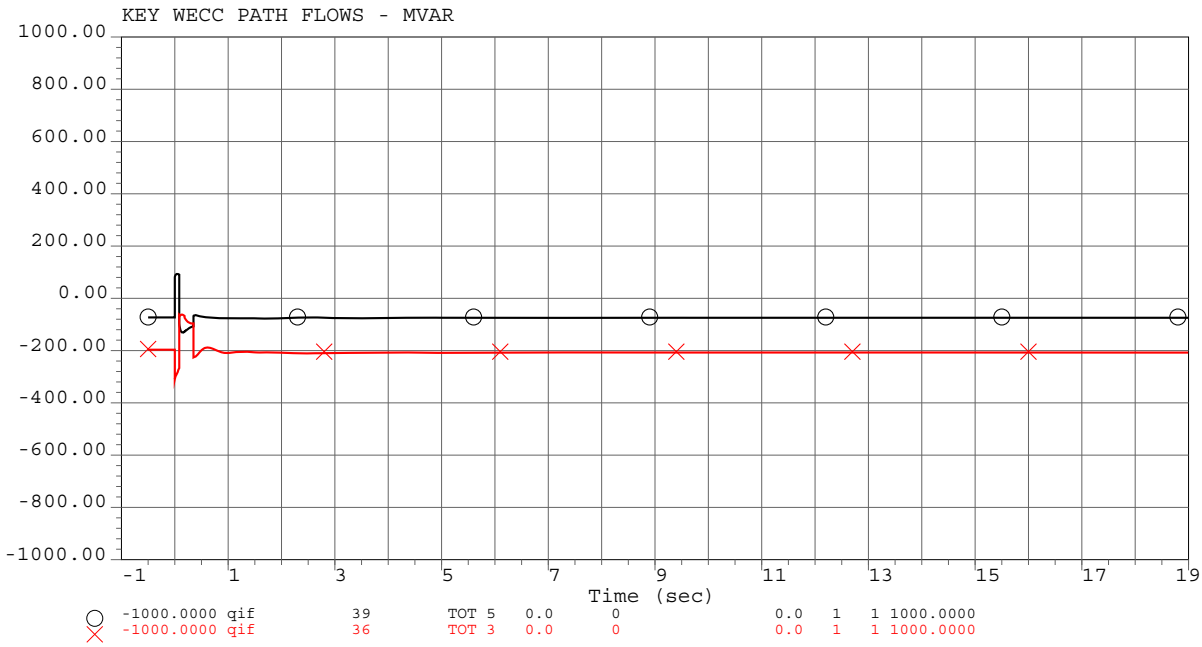
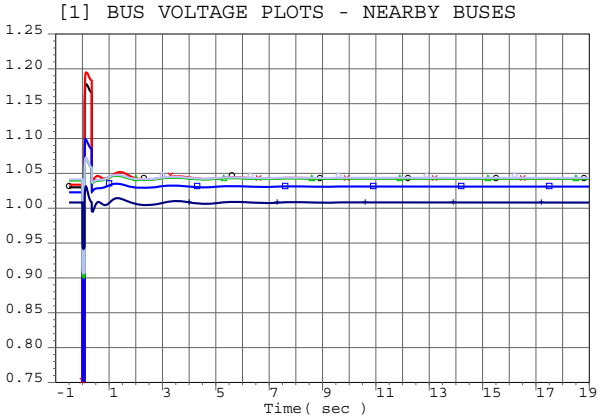
Tue Nov 26 13:30:19 2013


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

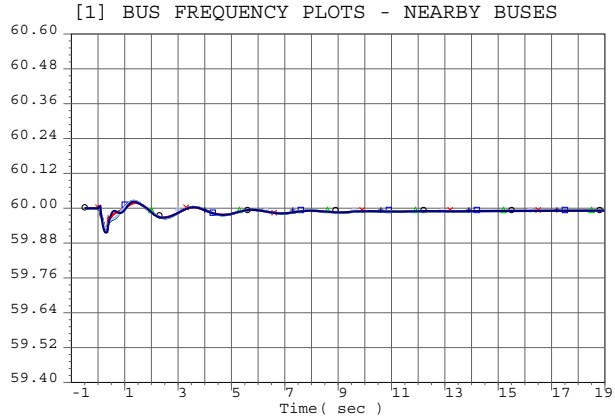
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



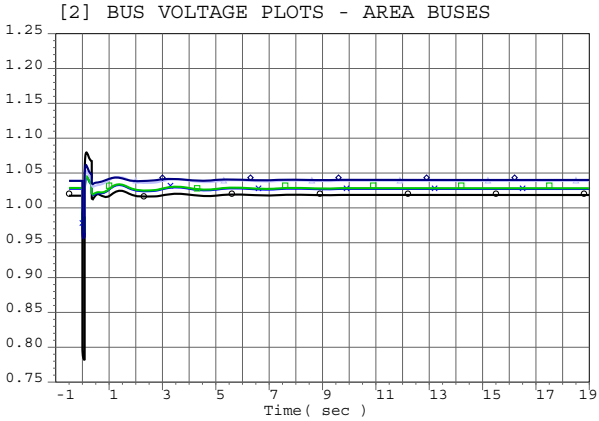

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



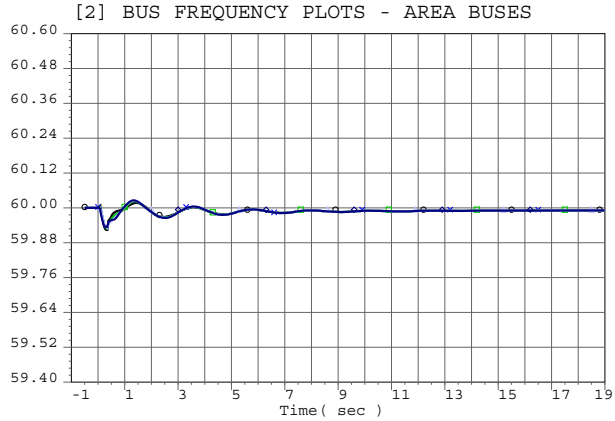

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



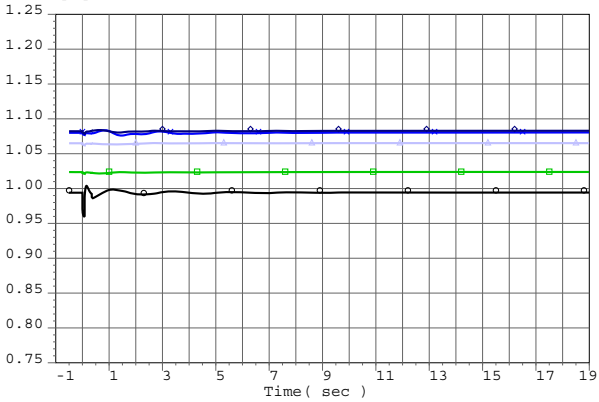

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



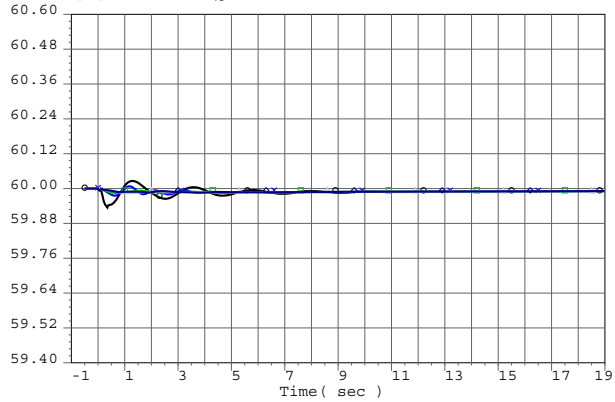

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013-14 LW1 OPERATING CASE
MAY 16, 2013



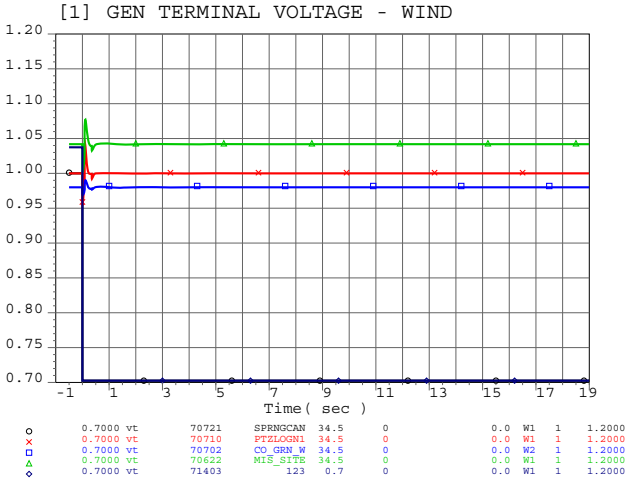
SC2_LW_PstDet_v0_03_SprCan!-Sidney_230_3ph_B.chf

.

Tue Nov 26 13:30:36 2013

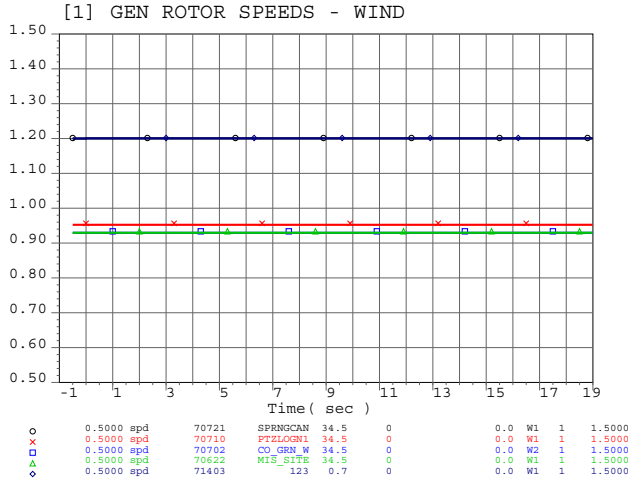
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



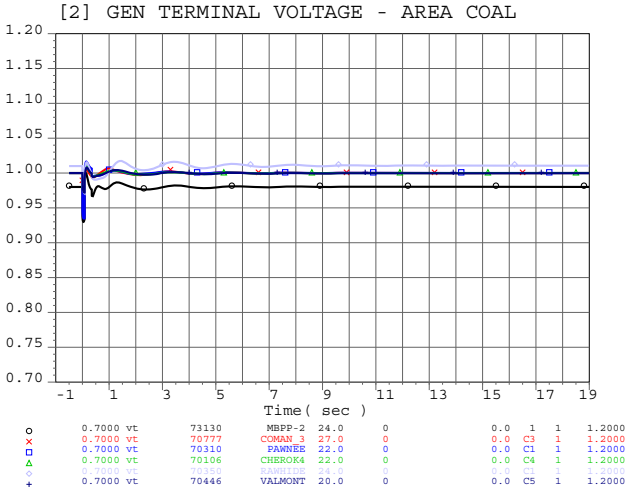

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 | vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| × | 0.7000 | vt | 70710 | PTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| □ | 0.7000 | vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| △ | 0.7000 | vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| ◇ | 0.7000 | vt | 71403 | 123 | 0.7 | 0 | 0.0 | W1 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



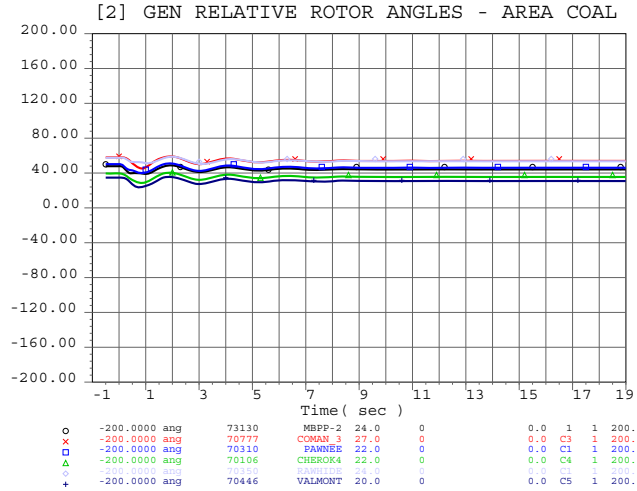

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.5000 | spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| × | 0.5000 | spd | 70710 | PTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| □ | 0.5000 | spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| △ | 0.5000 | spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| ◇ | 0.5000 | spd | 71403 | 123 | 0.7 | 0 | 0.0 | W1 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



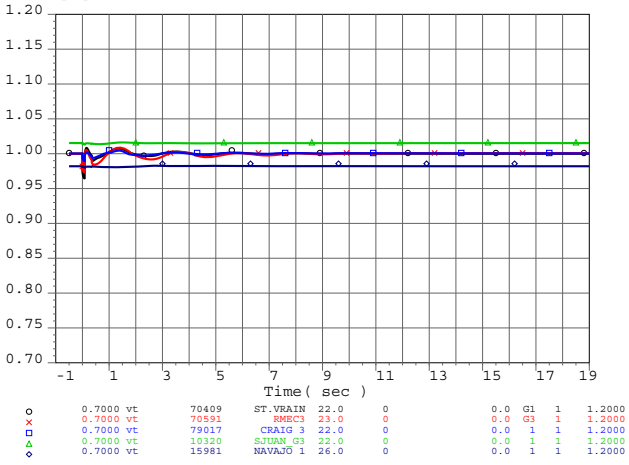

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 | vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| × | 0.7000 | vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| □ | 0.7000 | vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| △ | 0.7000 | vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| ◇ | 0.7000 | vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| + | 0.7000 | vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



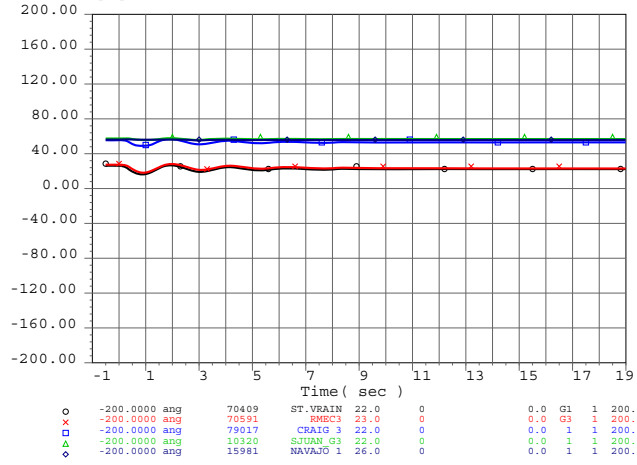

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 | ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| × | -200.0000 | ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| □ | -200.0000 | ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| △ | -200.0000 | ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| ◇ | -200.0000 | ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| + | -200.0000 | ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER




| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 | vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| × | 0.7000 | vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| □ | 0.7000 | vt | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| △ | 0.7000 | vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| ◇ | 0.7000 | vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER




| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 | ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| × | -200.0000 | ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| □ | -200.0000 | ang | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| △ | -200.0000 | ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| ◇ | -200.0000 | ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |

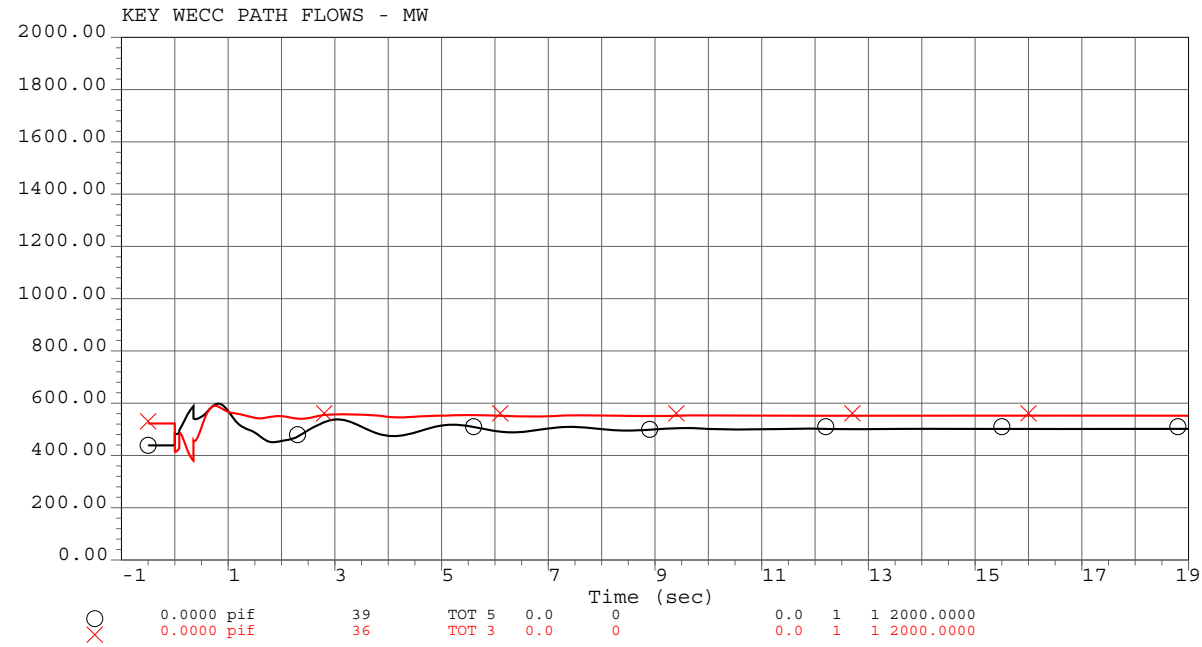
WESTERN ELECTRICITY COORDINATING COUNCIL
2013-14 LW1 OPERATING CASE
MAY 16, 2013

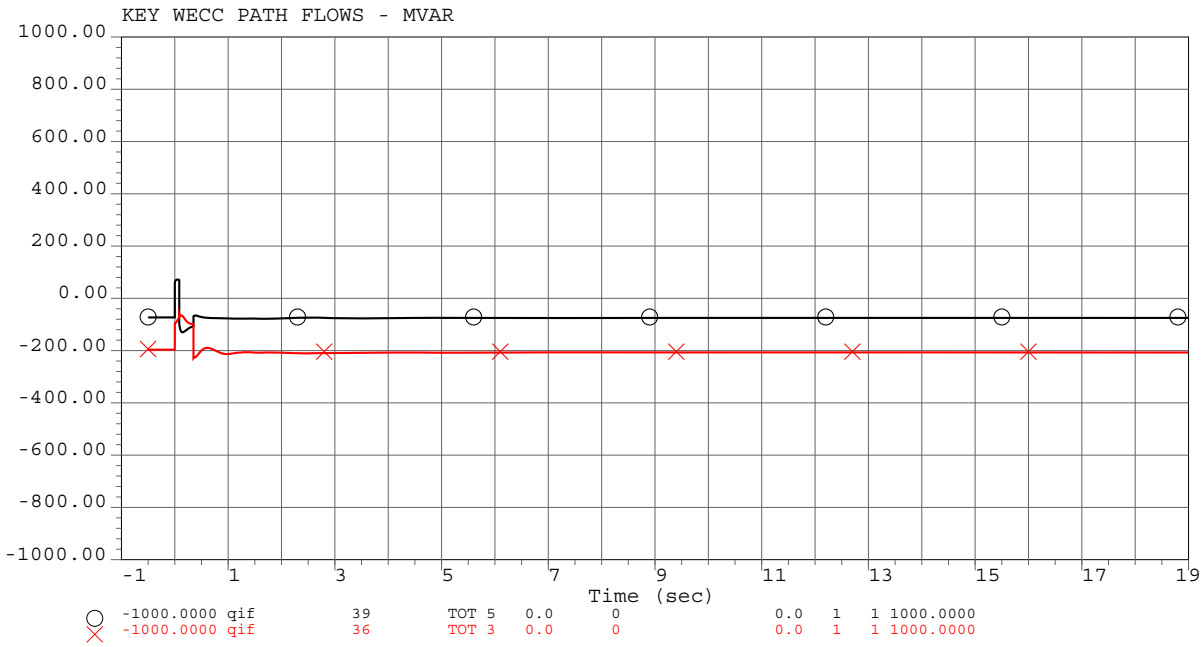


SC2_LW_PstDet_v0_03_SprCan!-Sidney_230_3ph_B.chf

.

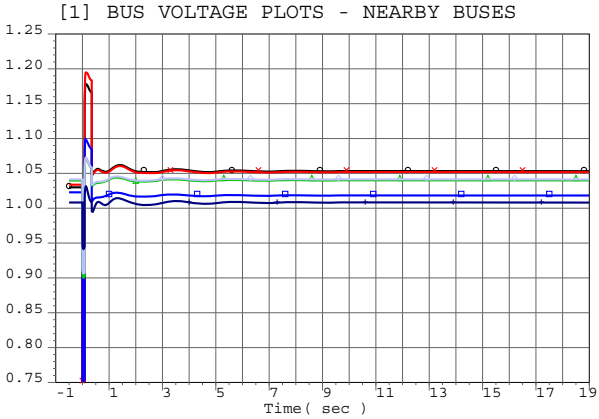
Tue Nov 26 13:30:36 2013


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

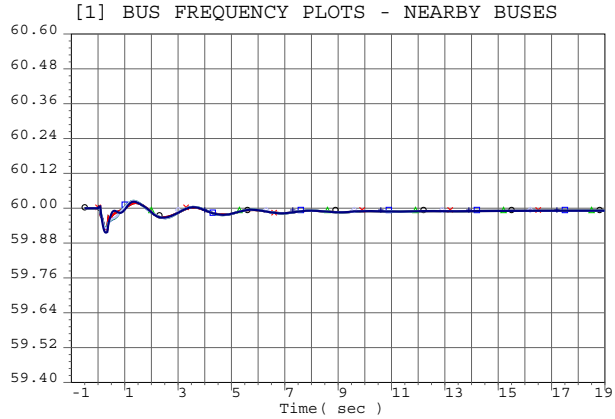
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



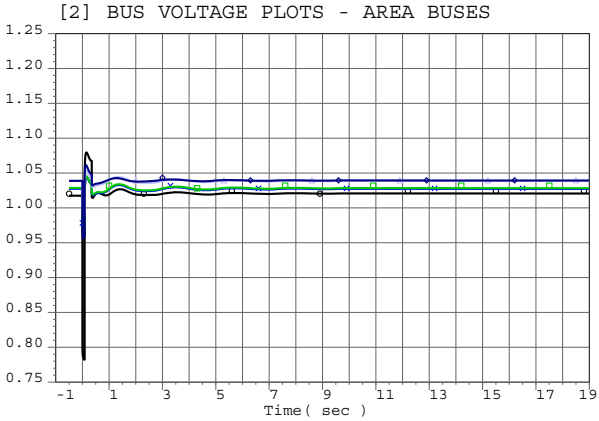

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



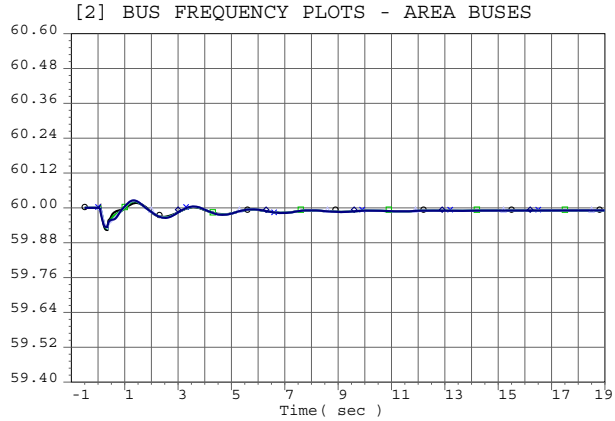

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



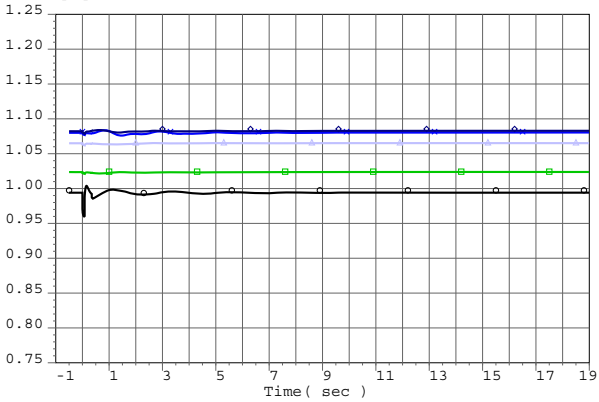

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



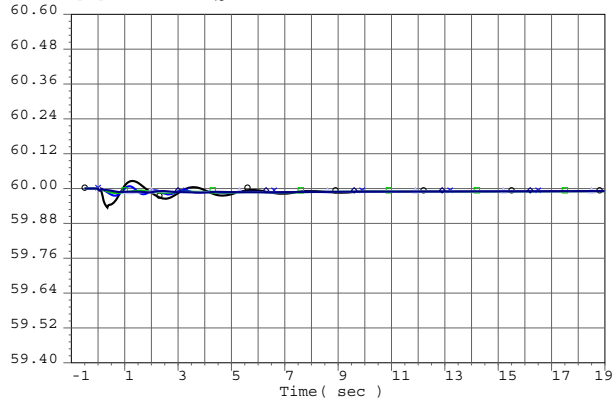

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013-14 LW1 OPERATING CASE
MAY 16, 2013



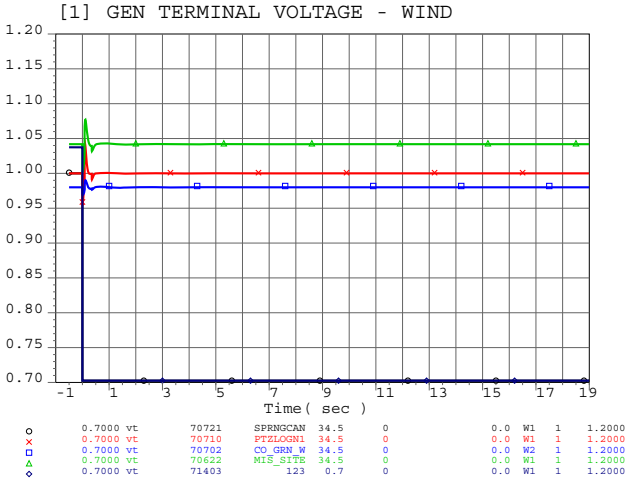
SC2_LW_PstDet_v0_04_SprCan!-NYuma_230_3ph_B.chf

.

Tue Nov 26 13:30:54 2013

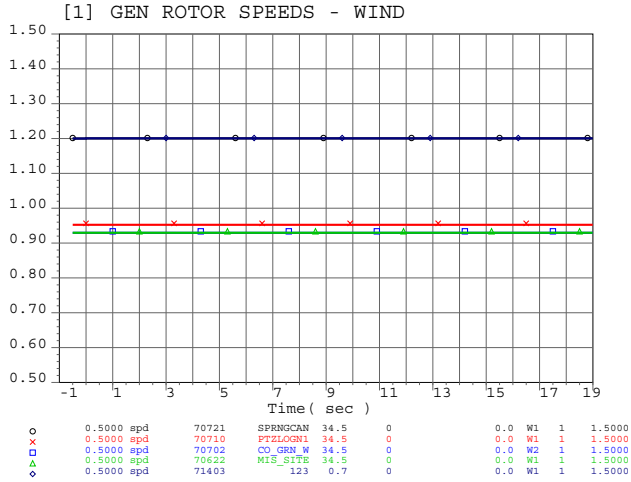
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



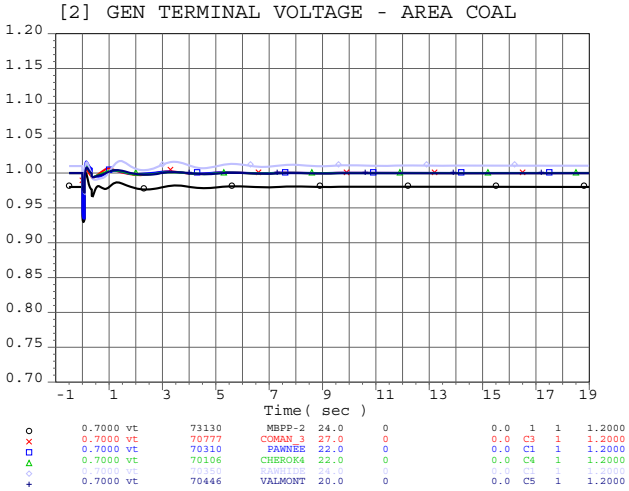

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| × | 0.7000 vt | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| □ | 0.7000 vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| △ | 0.7000 vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 71403 | 123 | 0.7 | 0 | 0.0 | W1 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



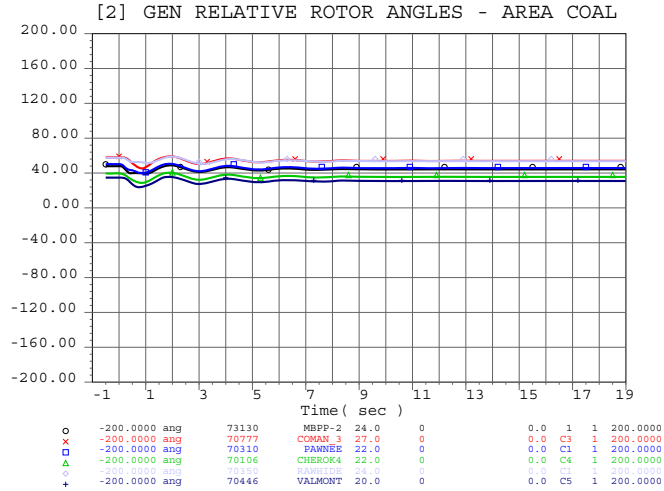

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.5000 spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| × | 0.5000 spd | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| □ | 0.5000 spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| △ | 0.5000 spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| ◇ | 0.5000 spd | 71403 | 123 | 0.7 | 0 | 0.0 | W1 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



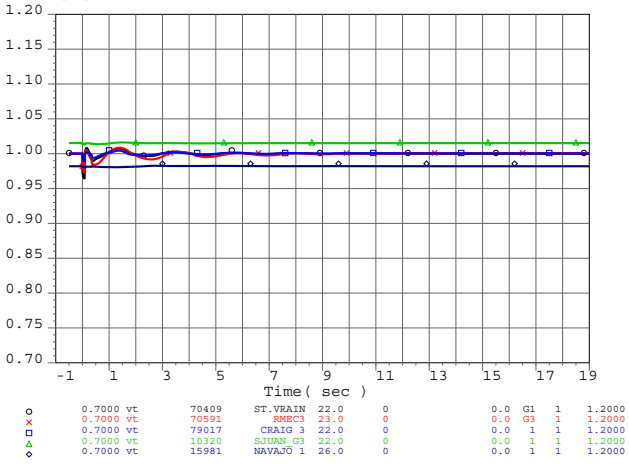

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| × | 0.7000 vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| □ | 0.7000 vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| △ | 0.7000 vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| + | 0.7000 vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



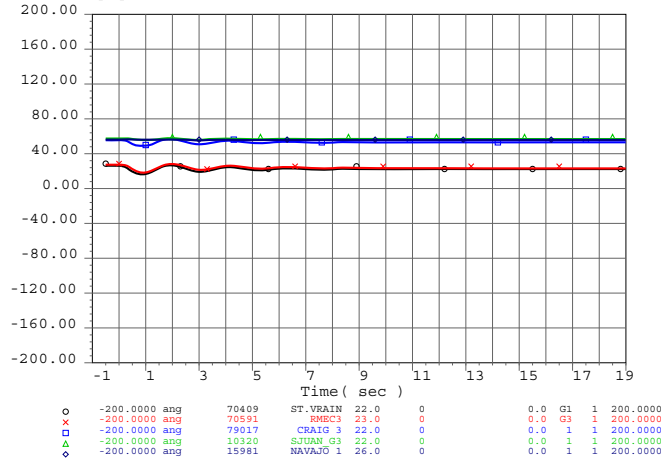

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| × | -200.0000 ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| □ | -200.0000 ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| △ | -200.0000 ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| + | -200.0000 ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| × | 0.7000 vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| □ | 0.7000 vt | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| △ | 0.7000 vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| × | -200.0000 ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| □ | -200.0000 ang | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| △ | -200.0000 ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |

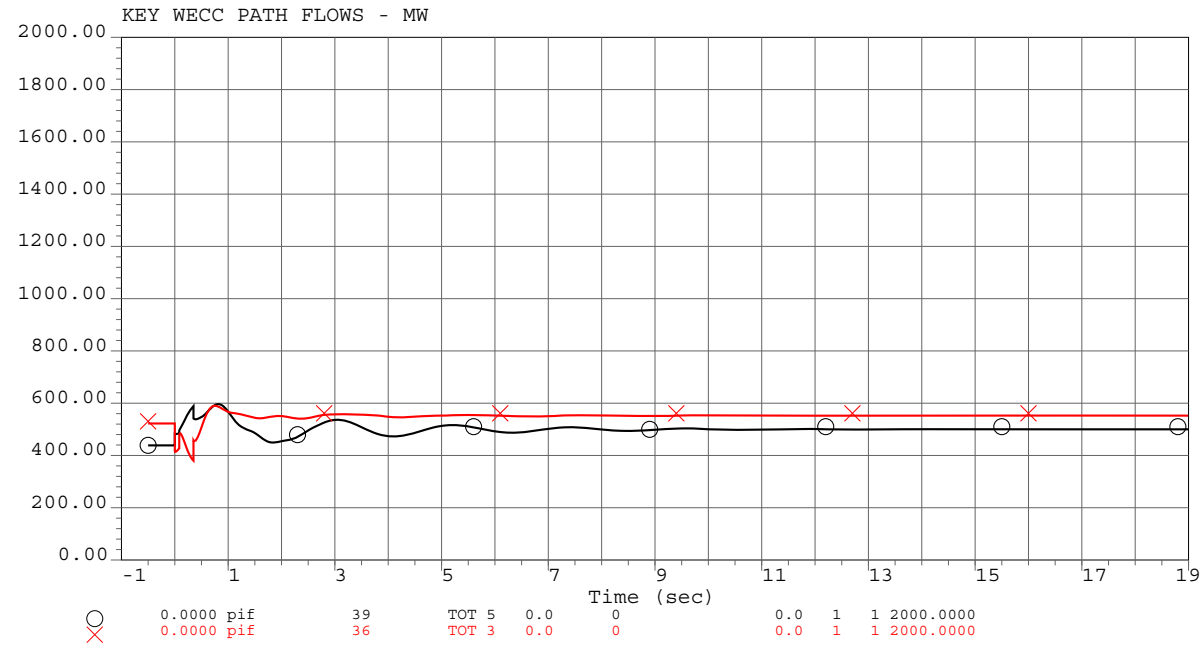
WESTERN ELECTRICITY COORDINATING COUNCIL
2013-14 LW1 OPERATING CASE
MAY 16, 2013

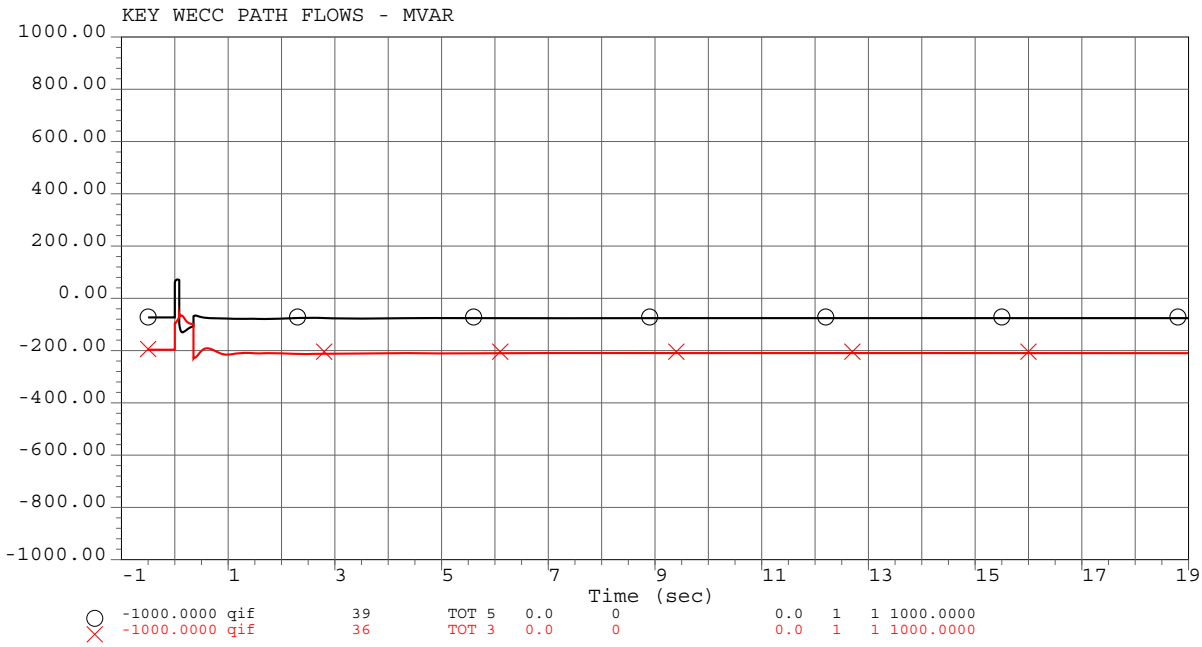


SC2_LW_PstDet_v0_04_SprCan!-NYuma_230_3ph_B.chf

.

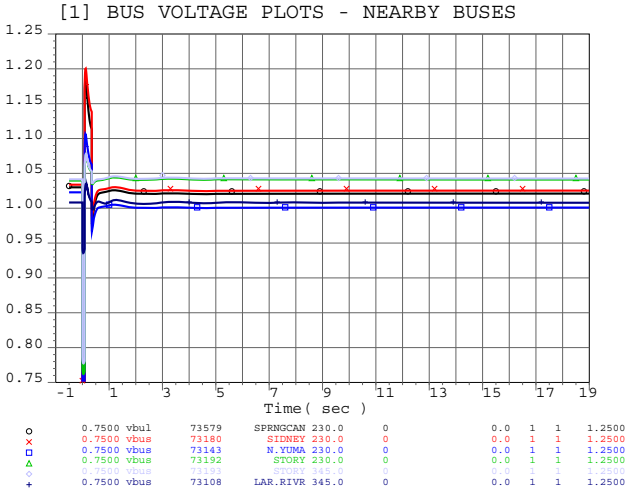
Tue Nov 26 13:30:54 2013


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

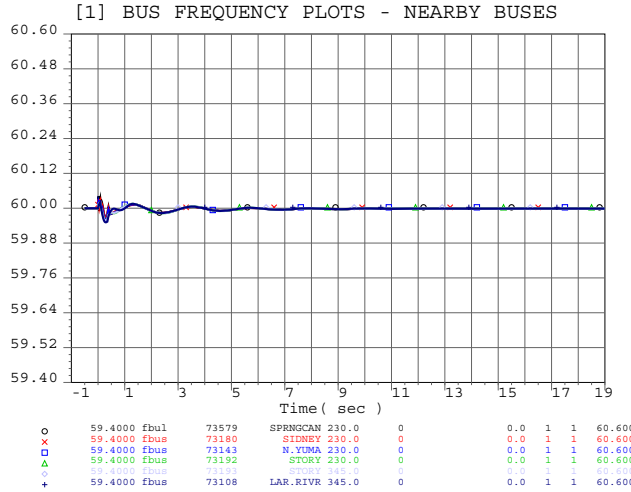
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



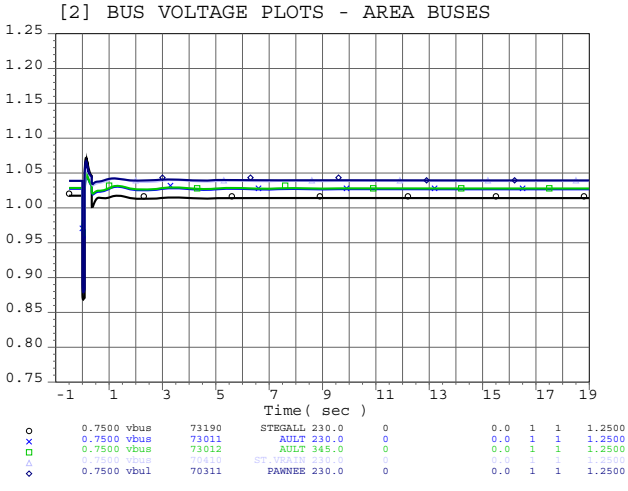

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 vbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 vbus | 73188 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



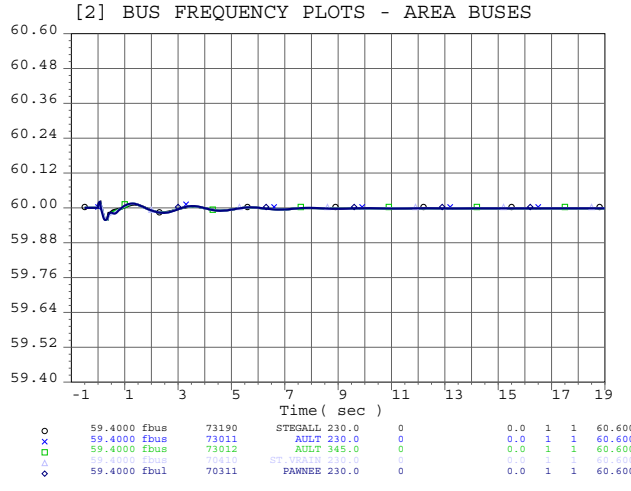

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 fbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 fbus | 73188 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



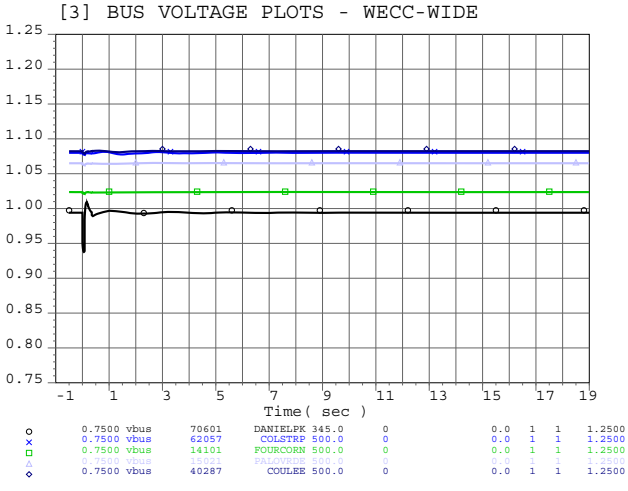

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



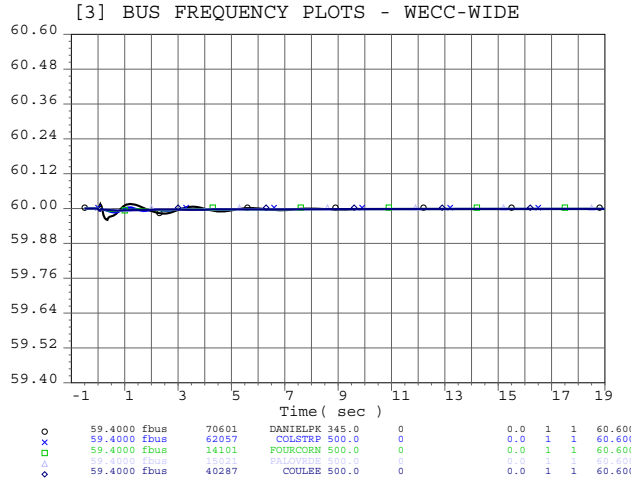

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 vbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 fbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013-14 LW1 OPERATING CASE
MAY 16, 2013



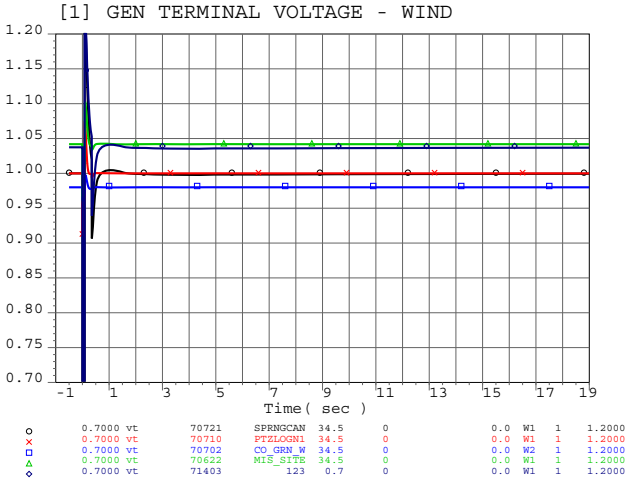
SC2_LW_PstDet_v0_05_NYuma!-Story_230_3ph_B.chf

.

Tue Nov 26 13:31:12 2013

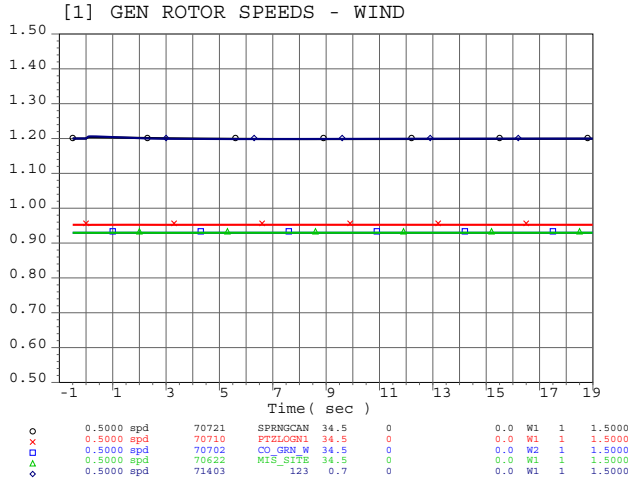
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



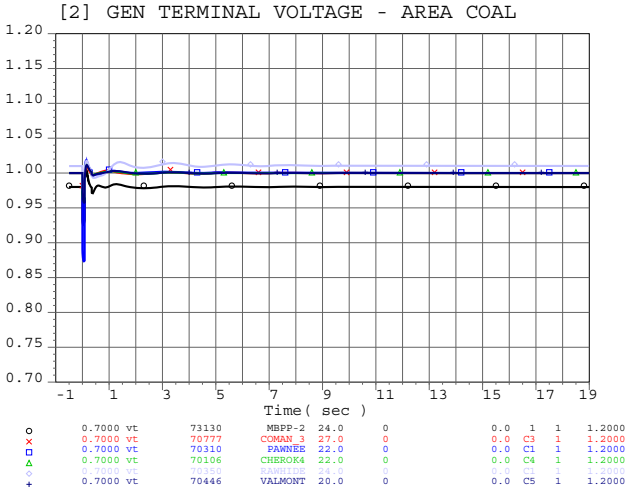

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 0.7000 | vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| 0.7000 | vt | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| 0.7000 | vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| 0.7000 | vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| 0.7000 | vt | 71403 | 123 | 0.7 | 0 | 0.0 | W1 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



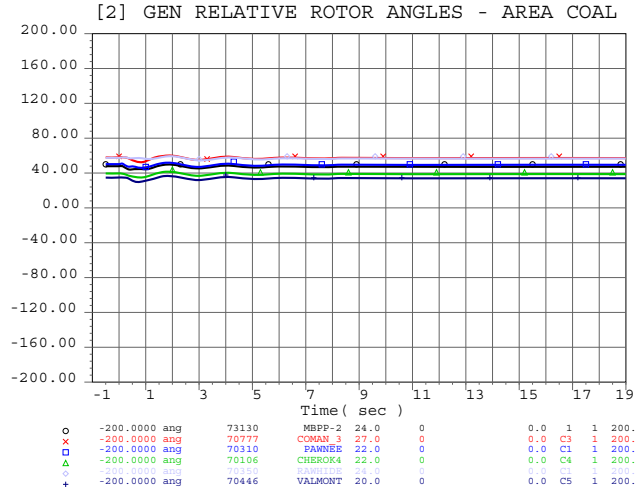

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 0.5000 | spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| 0.5000 | spd | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| 0.5000 | spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| 0.5000 | spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| 0.5000 | spd | 71403 | 123 | 0.7 | 0 | 0.0 | W1 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



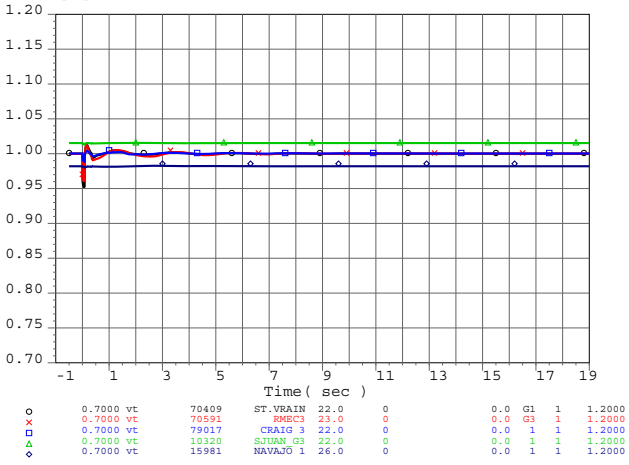

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 0.7000 | vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| 0.7000 | vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| 0.7000 | vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| 0.7000 | vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| 0.7000 | vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| 0.7000 | vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



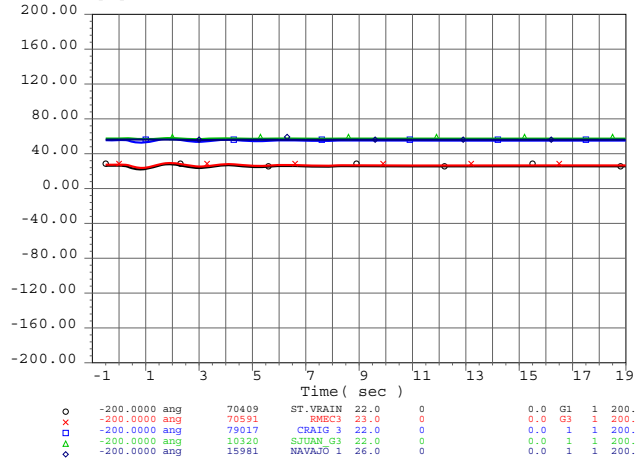

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| -200.0000 | ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| -200.0000 | ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| -200.0000 | ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| -200.0000 | ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| -200.0000 | ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| -200.0000 | ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 0.7000 | vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| 0.7000 | vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| 0.7000 | vt | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| 0.7000 | vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| 0.7000 | vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| -200.0000 | ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| -200.0000 | ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| -200.0000 | ang | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| -200.0000 | ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| -200.0000 | ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013-14 LW1 OPERATING CASE
MAY 16, 2013



SC2_LW_PstDet_v0_05_NYuma!-Story_230_3ph_B.chf

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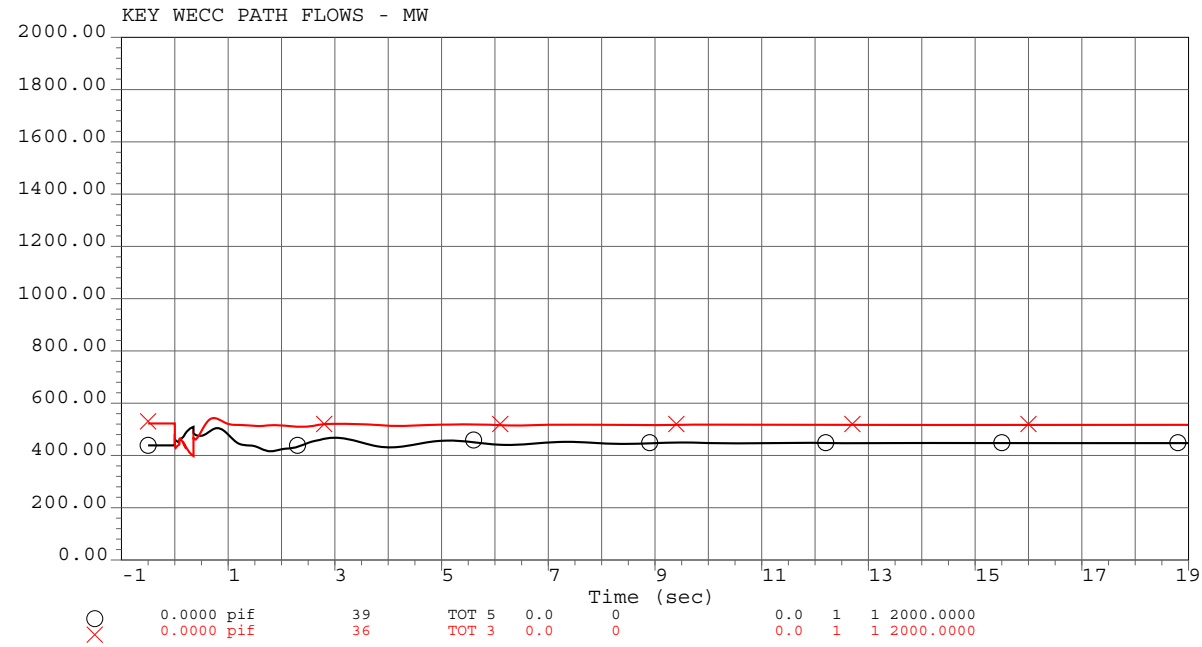
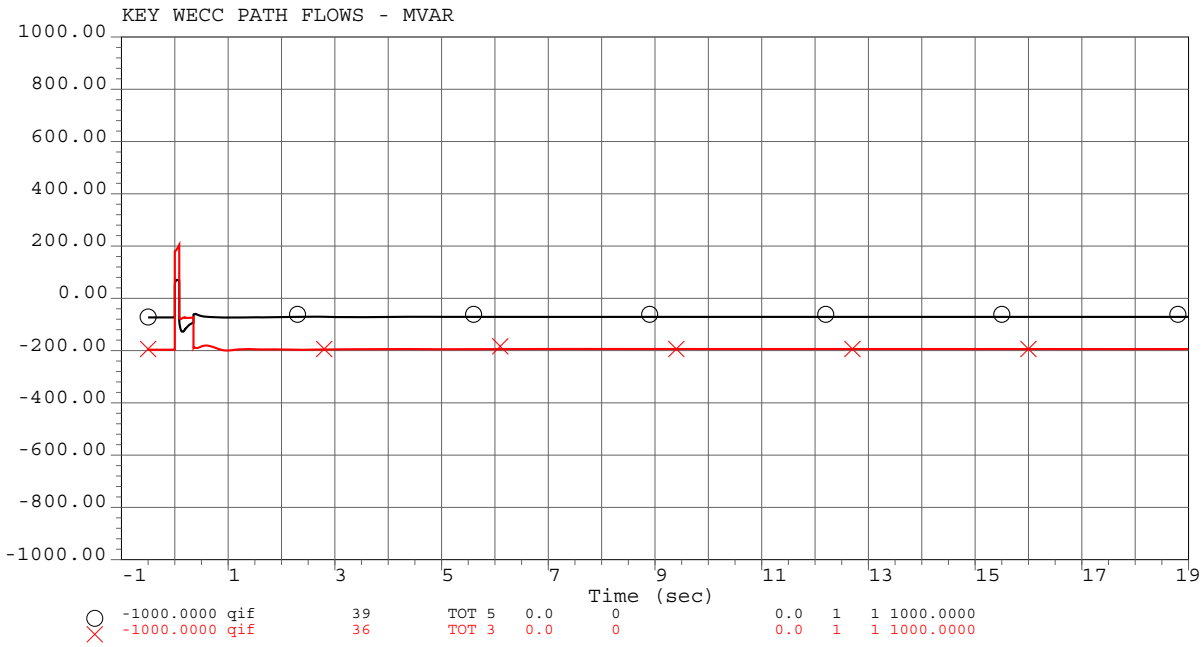
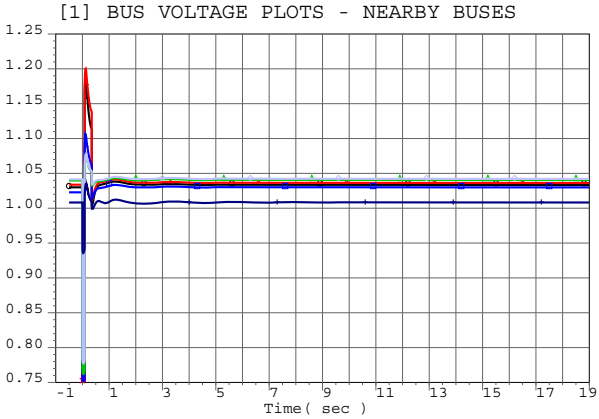
Tue Nov 26 13:31:12 2013


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

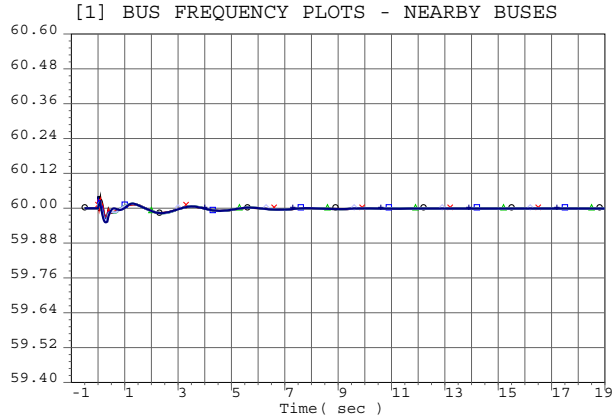
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



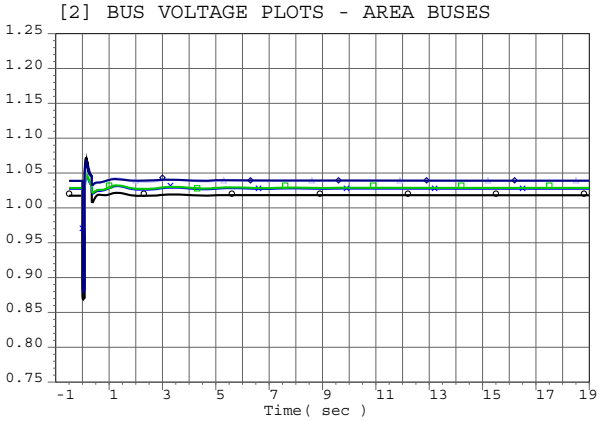

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



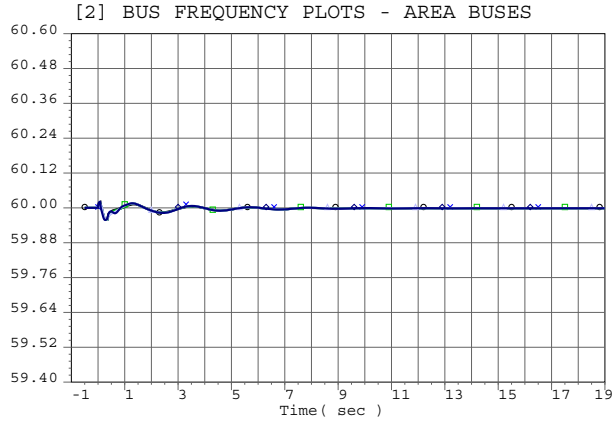

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



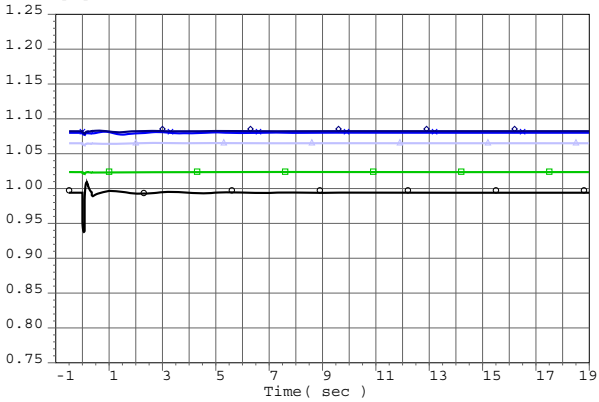

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



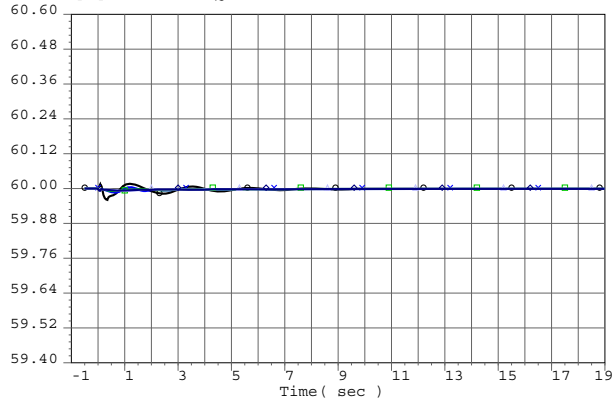

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013-14 LW1 OPERATING CASE
MAY 16, 2013



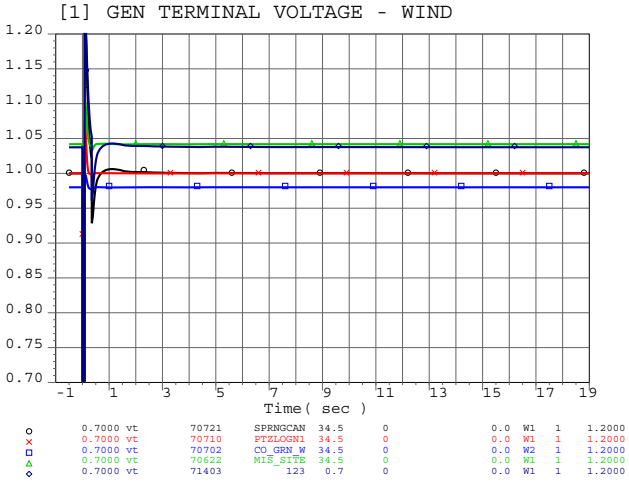
SC2_LW_PstDet_v0_06_NYuma!-Wray_230_LW_3ph_B.chf

.

Tue Nov 26 13:31:30 2013

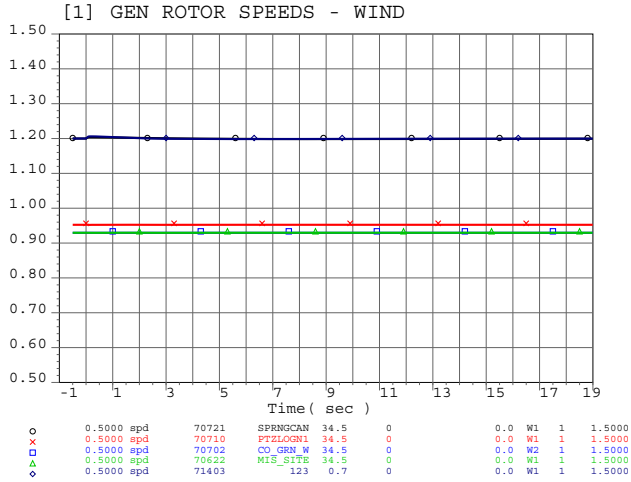
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



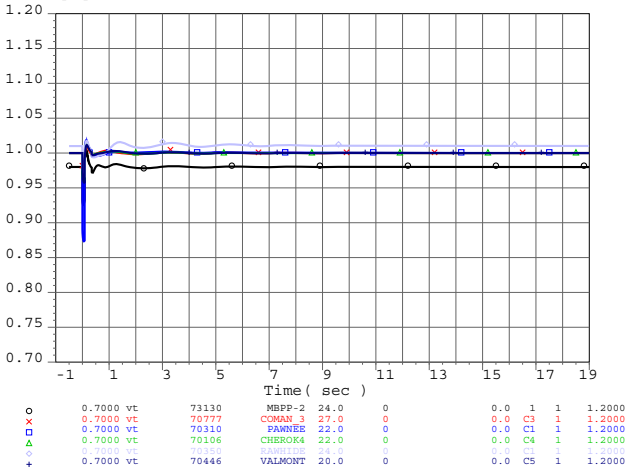

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 | vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| × | 0.7000 | vt | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| □ | 0.7000 | vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| △ | 0.7000 | vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| ◇ | 0.7000 | vt | 71403 | 123 | 0.7 | 0 | 0.0 | W1 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



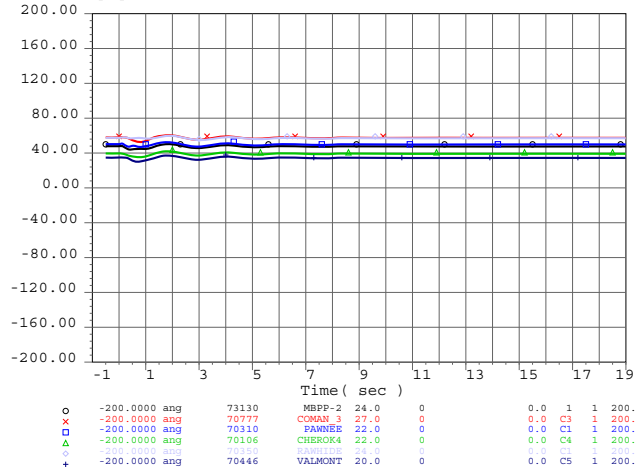

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.5000 | spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| × | 0.5000 | spd | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| □ | 0.5000 | spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| △ | 0.5000 | spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| ◇ | 0.5000 | spd | 71403 | 123 | 0.7 | 0 | 0.0 | W1 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



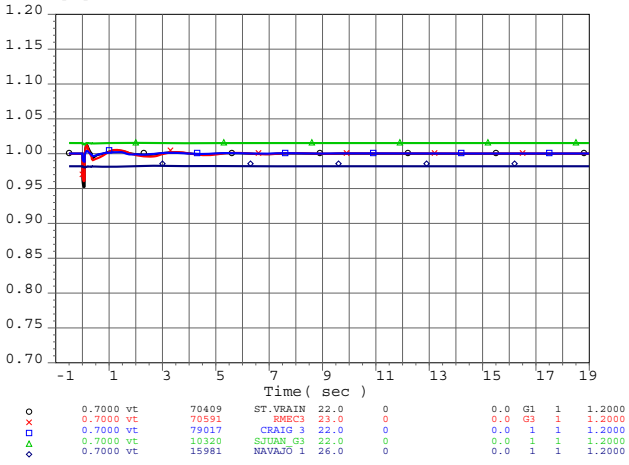

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 | vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| × | 0.7000 | vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| □ | 0.7000 | vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| △ | 0.7000 | vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| ◇ | 0.7000 | vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| + | 0.7000 | vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



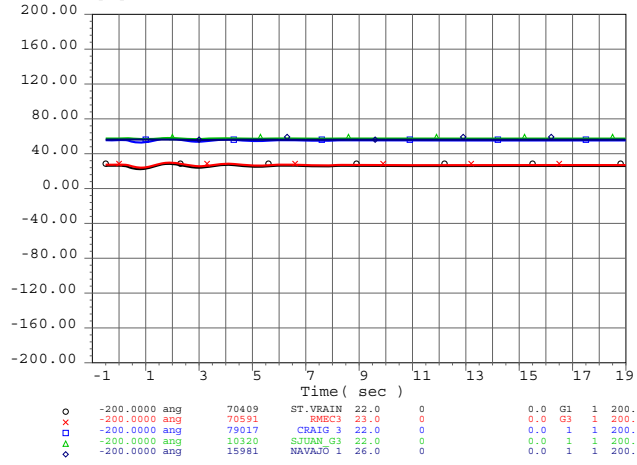

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 | ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| × | -200.0000 | ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| □ | -200.0000 | ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| △ | -200.0000 | ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| ◇ | -200.0000 | ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| + | -200.0000 | ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER




| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 | vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| × | 0.7000 | vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| □ | 0.7000 | vt | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| △ | 0.7000 | vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| ◇ | 0.7000 | vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER




| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 | ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| × | -200.0000 | ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| □ | -200.0000 | ang | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| △ | -200.0000 | ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| ◇ | -200.0000 | ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |

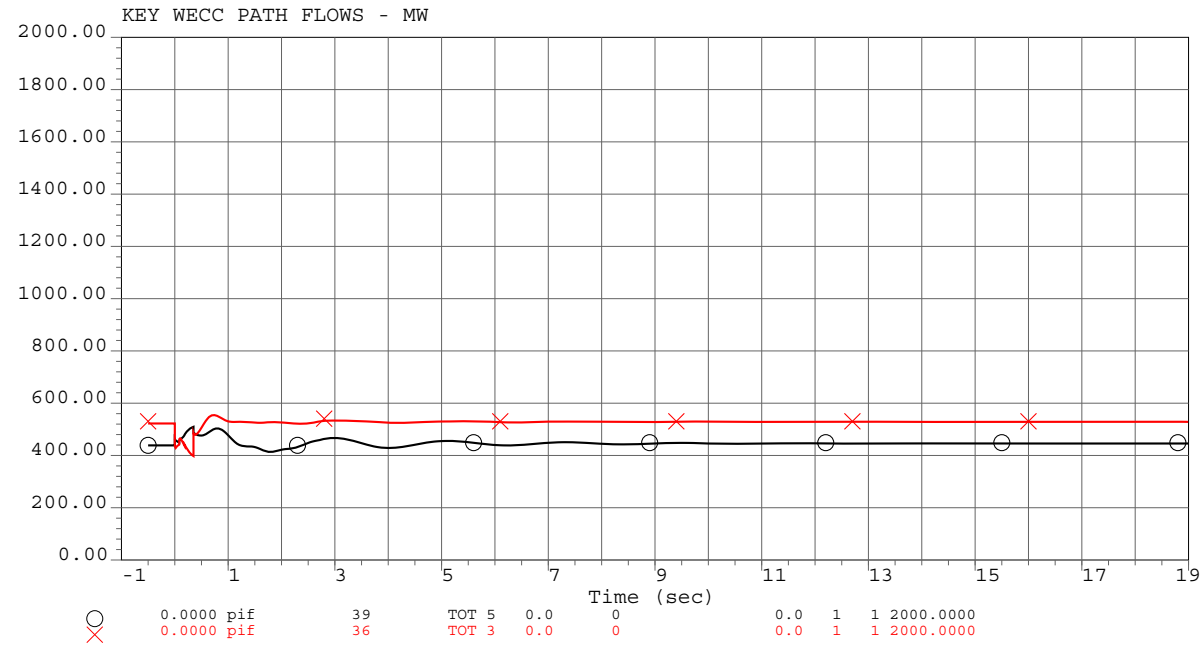
WESTERN ELECTRICITY COORDINATING COUNCIL
2013-14 LW1 OPERATING CASE
MAY 16, 2013

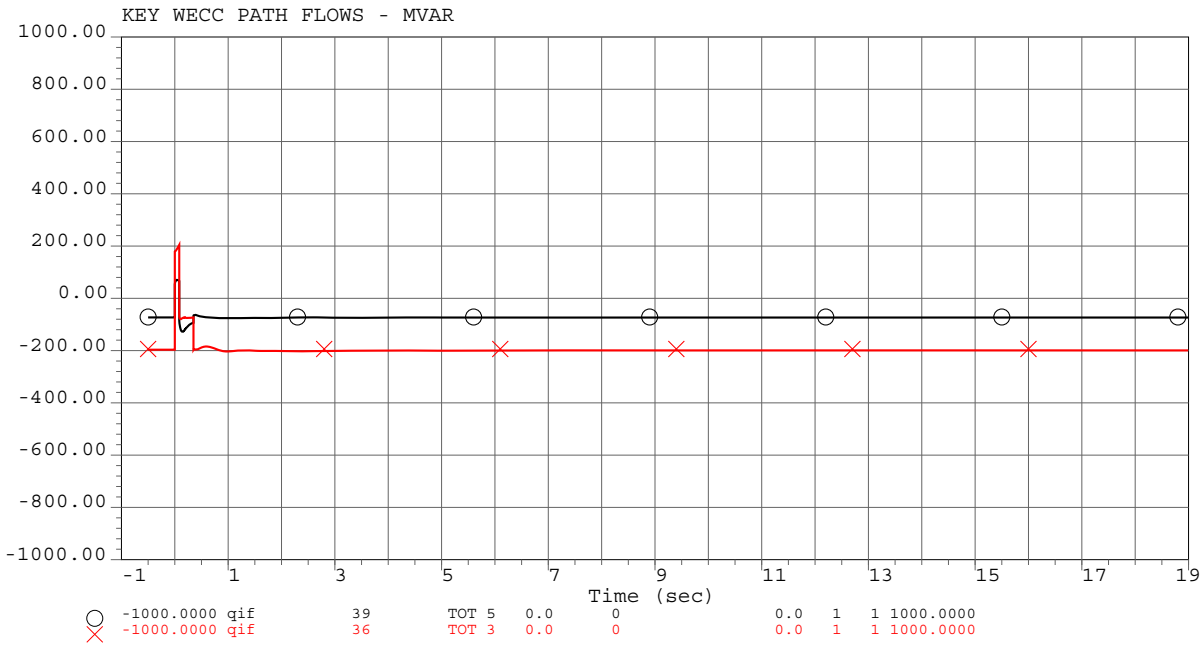


SC2_LW_PstDet_v0_06_NYuma!-Wray_230_LW_3ph_B.chf

.

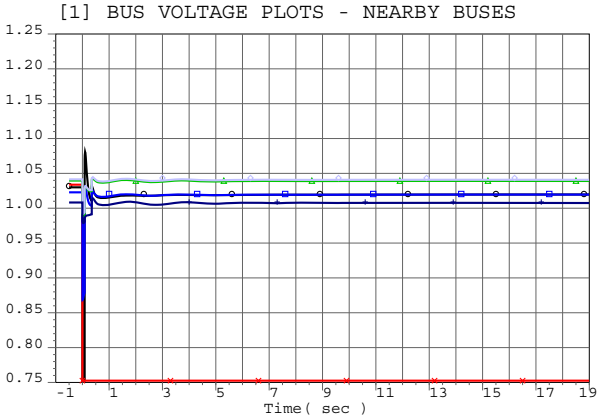
Tue Nov 26 13:31:30 2013


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

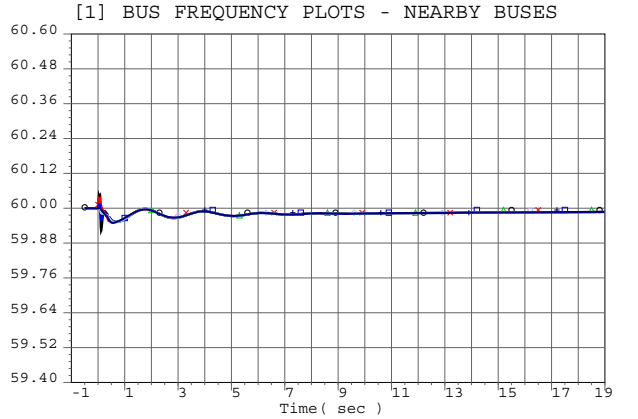
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



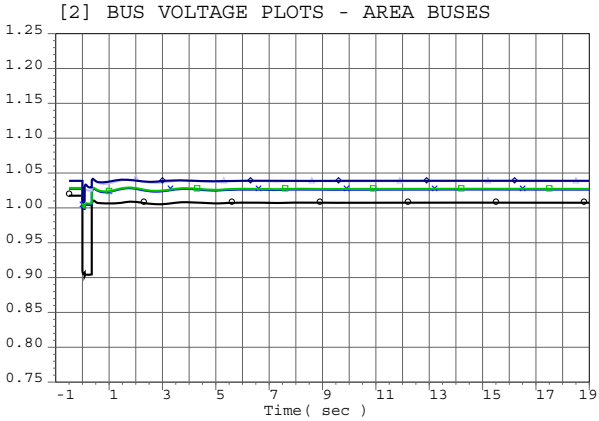

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



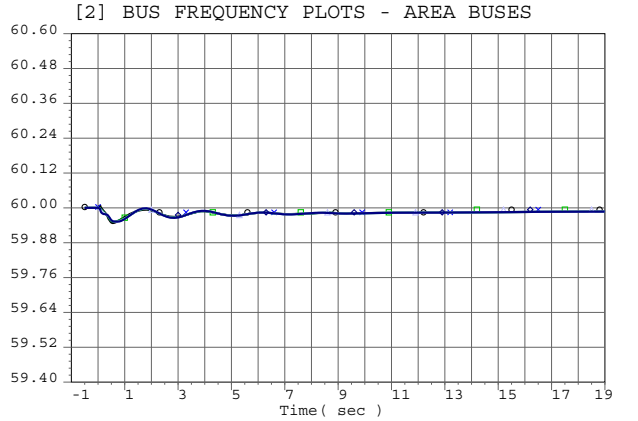

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



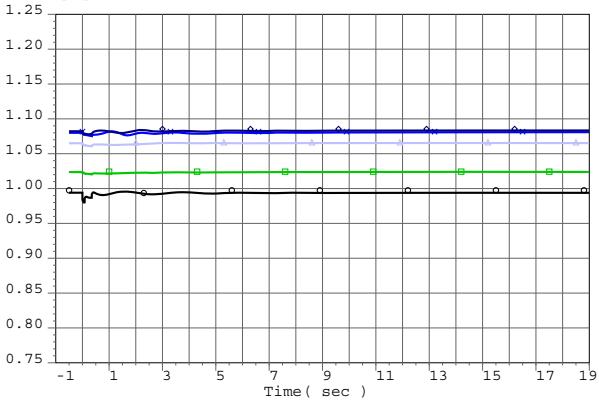

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



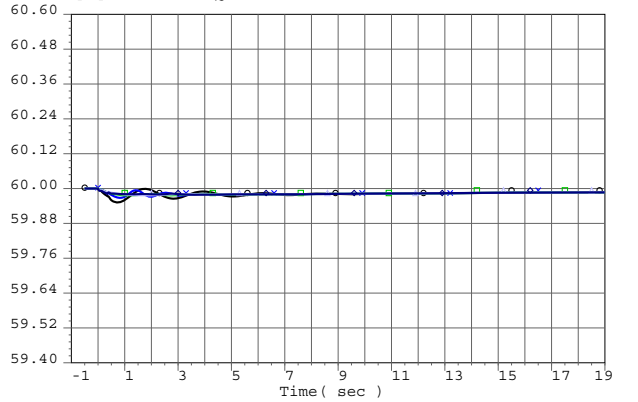

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013-14 LW1 OPERATING CASE
MAY 16, 2013



SC2_LW_PstDet_v0_07_Sidney!-SprCan_230_SLG_C.chf

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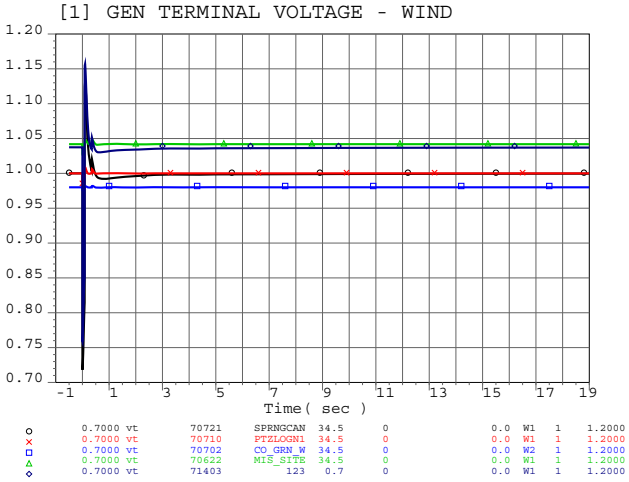
Tue Nov 26 13:31:45 2013

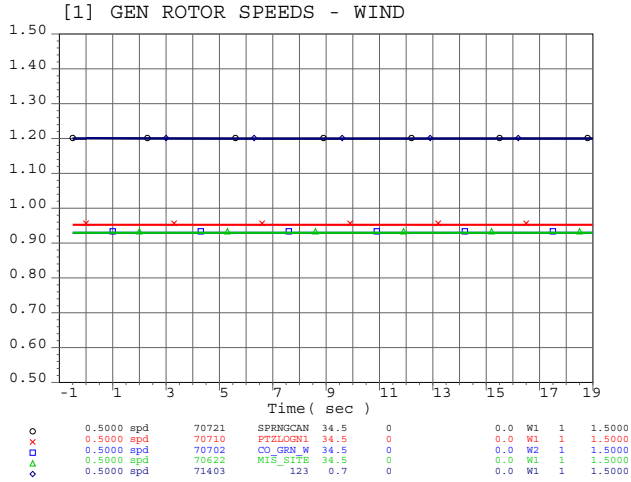
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



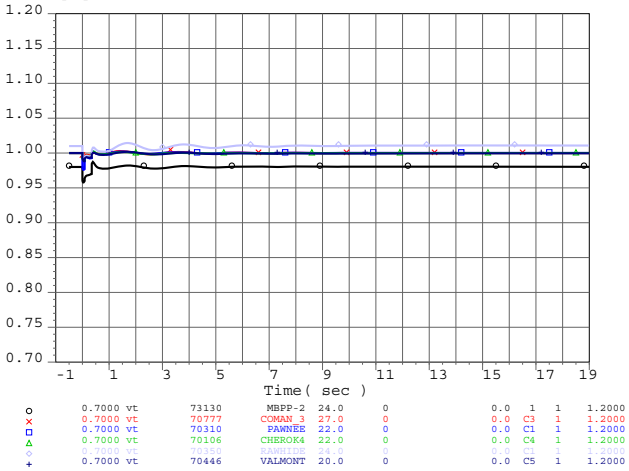

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 | vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| × | 0.7000 | vt | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| □ | 0.7000 | vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| △ | 0.7000 | vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| ◇ | 0.7000 | vt | 71403 | 123 | 0.7 | 0 | 0.0 | W1 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



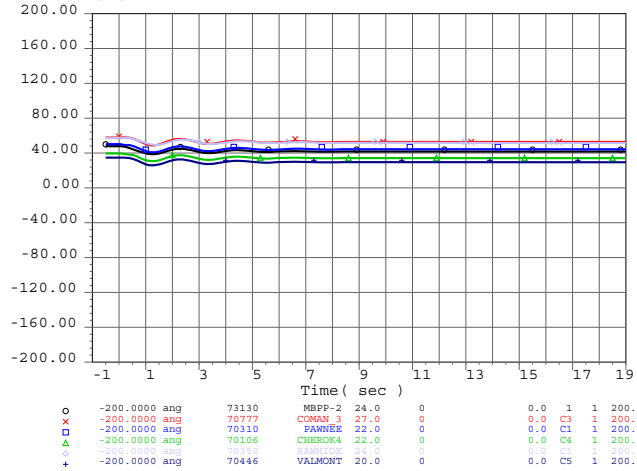

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.5000 | spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| × | 0.5000 | spd | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| □ | 0.5000 | spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| △ | 0.5000 | spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| ◇ | 0.5000 | spd | 71403 | 123 | 0.7 | 0 | 0.0 | W1 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



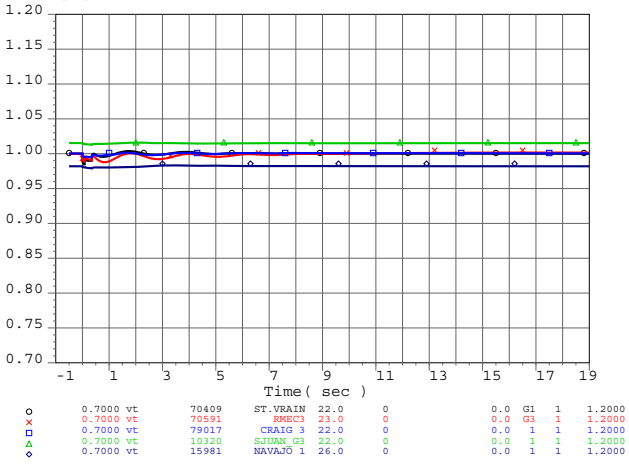

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 | vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| × | 0.7000 | vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| □ | 0.7000 | vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| △ | 0.7000 | vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| ◇ | 0.7000 | vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| + | 0.7000 | vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



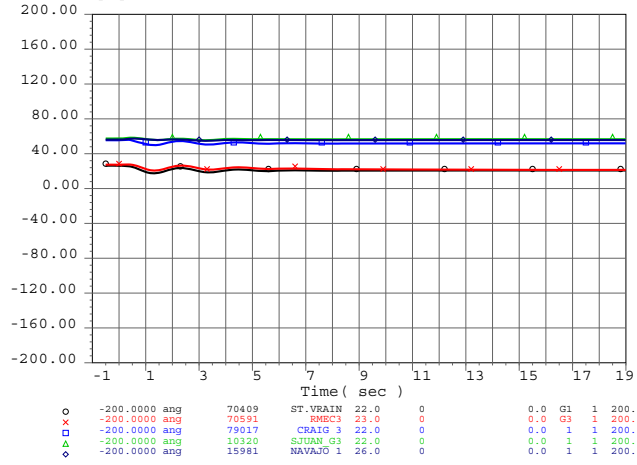

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 | ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| × | -200.0000 | ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| □ | -200.0000 | ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| △ | -200.0000 | ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| ◇ | -200.0000 | ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| + | -200.0000 | ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER




| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 | vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| × | 0.7000 | vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| □ | 0.7000 | vt | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| △ | 0.7000 | vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| ◇ | 0.7000 | vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER




| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 | ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| × | -200.0000 | ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| □ | -200.0000 | ang | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| △ | -200.0000 | ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| ◇ | -200.0000 | ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013-14 LW1 OPERATING CASE
MAY 16, 2013



SC2_LW_PstDet_v0_07_Sidney!-SprCan_230_SLG_C.chf

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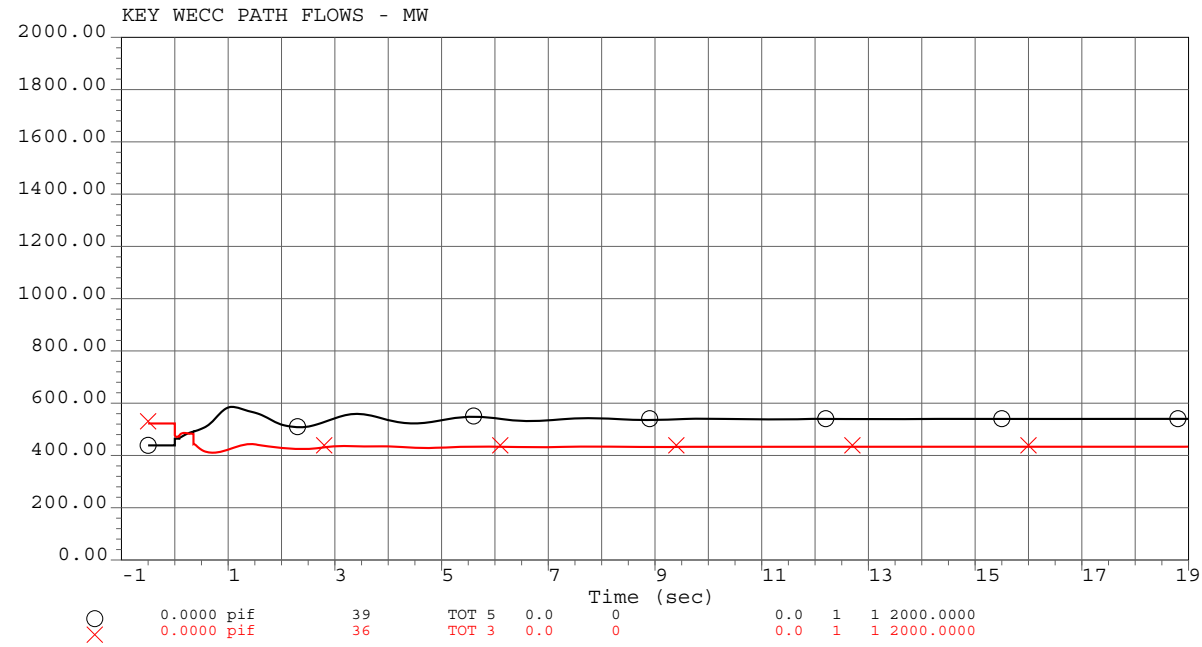
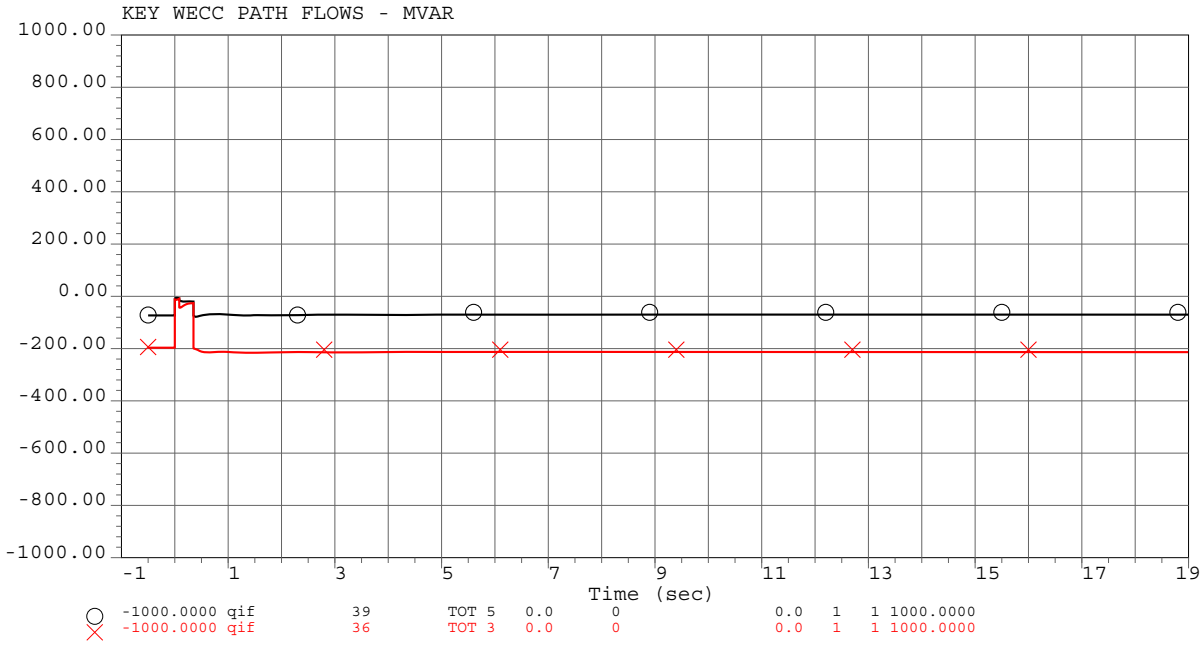
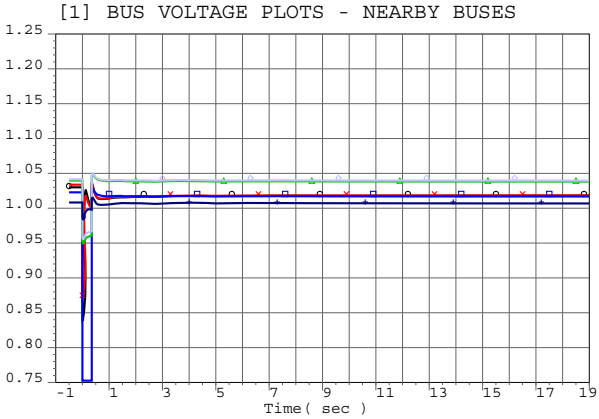
Tue Nov 26 13:31:46 2013


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

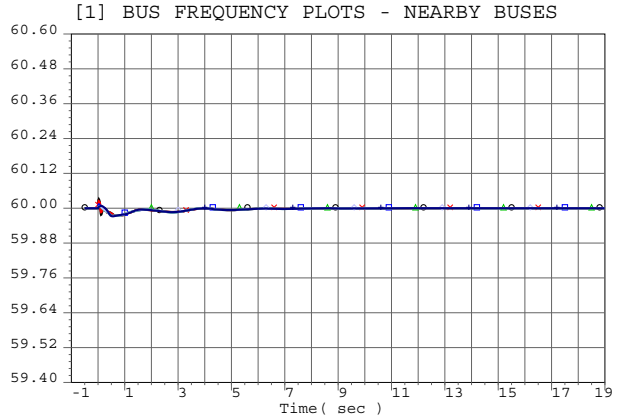
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



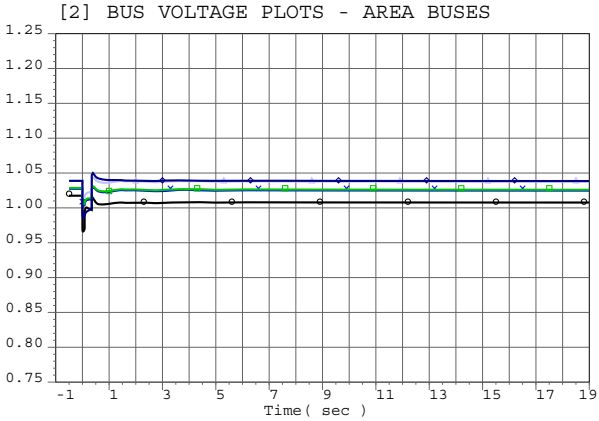

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 vbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 vbus | 73188 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



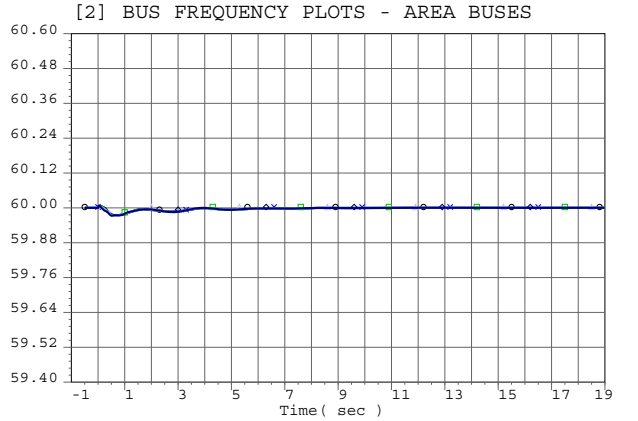

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 fbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 fbus | 73188 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



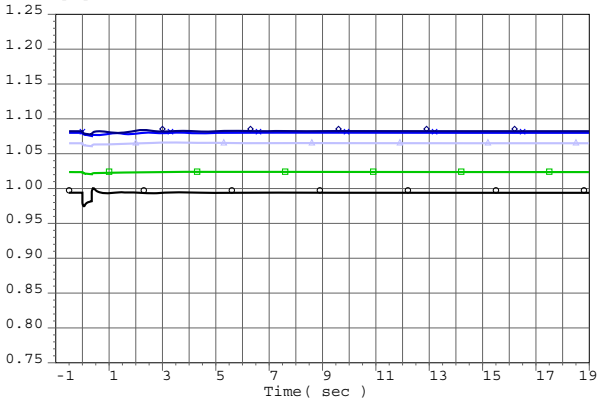

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



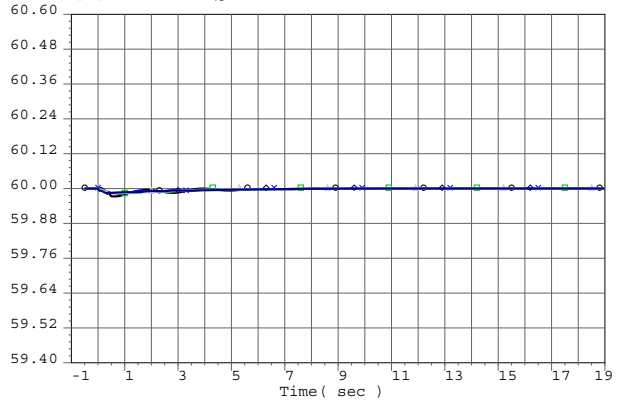

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 vbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 fbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013-14 LW1 OPERATING CASE
MAY 16, 2013



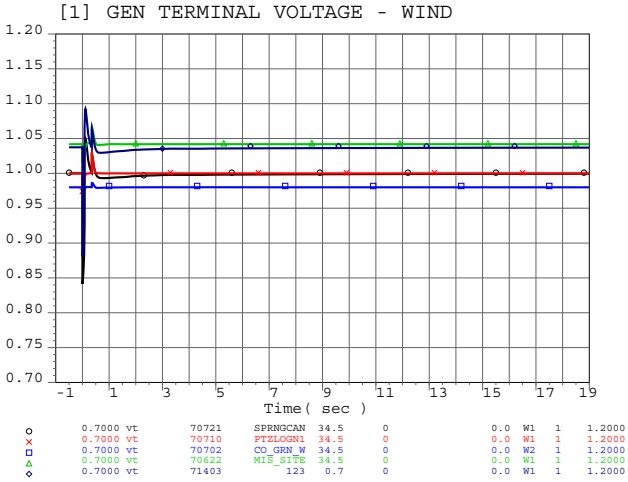
SC2_LW_PstDet_v0_08_NYuma!-SprCan_230_SLG_C.chf

.

Tue Nov 26 13:31:59 2013

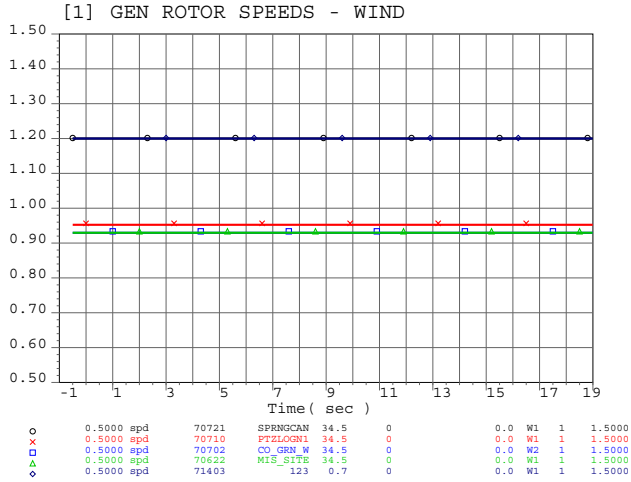
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



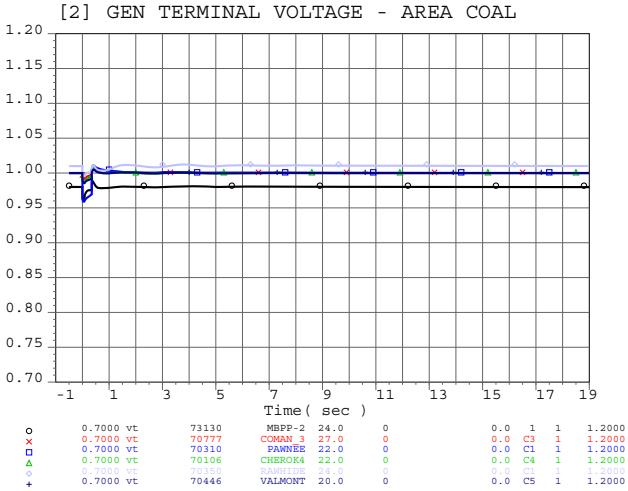

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| × | 0.7000 vt | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| □ | 0.7000 vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| △ | 0.7000 vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 71403 | 123 | 0.7 | 0 | 0.0 | W1 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



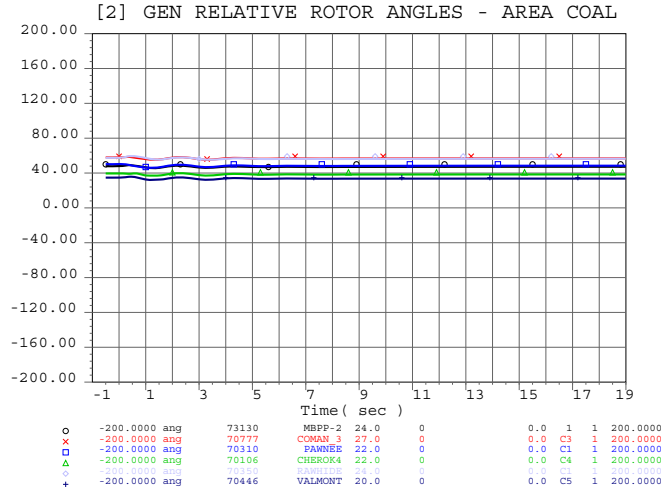

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.5000 spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| × | 0.5000 spd | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| □ | 0.5000 spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| △ | 0.5000 spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| ◇ | 0.5000 spd | 71403 | 123 | 0.7 | 0 | 0.0 | W1 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



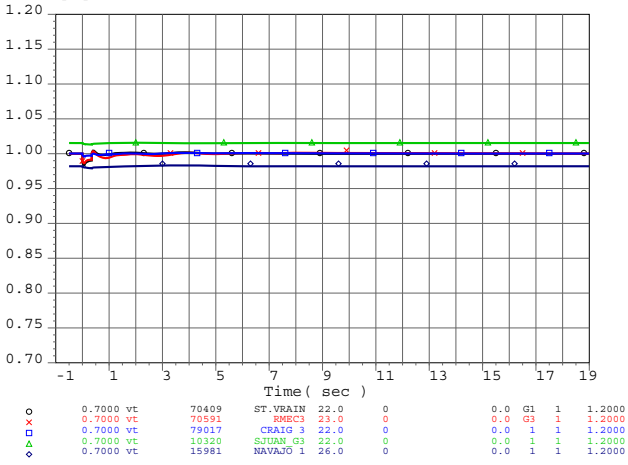

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| × | 0.7000 vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| □ | 0.7000 vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| △ | 0.7000 vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| + | 0.7000 vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



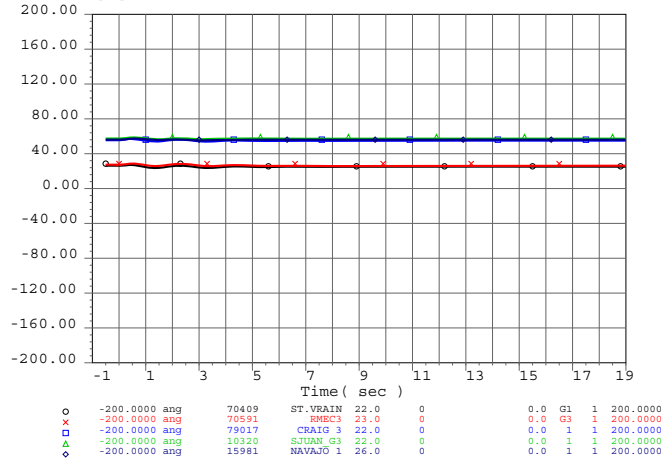

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| × | -200.0000 ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| □ | -200.0000 ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| △ | -200.0000 ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| + | -200.0000 ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| × | 0.7000 vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| □ | 0.7000 vt | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| △ | 0.7000 vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| × | -200.0000 ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| □ | -200.0000 ang | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| △ | -200.0000 ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013-14 LW1 OPERATING CASE
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SC2_LW_PstDet_v0_08_NYuma!-SprCan_230_SLG_C.chf

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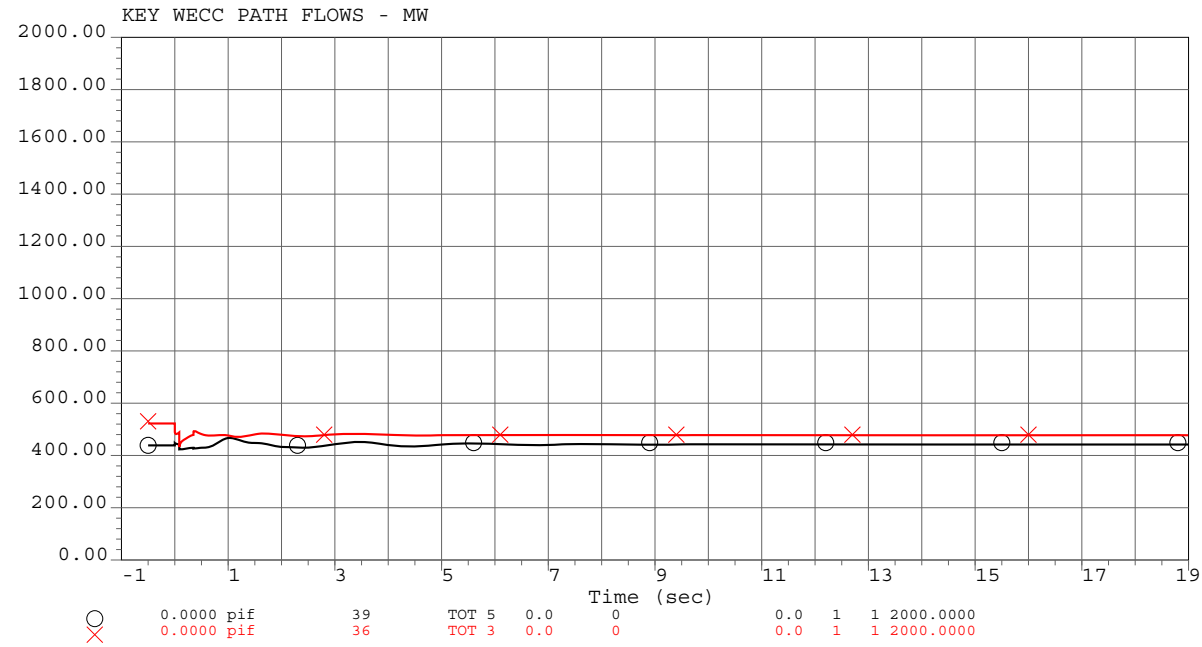
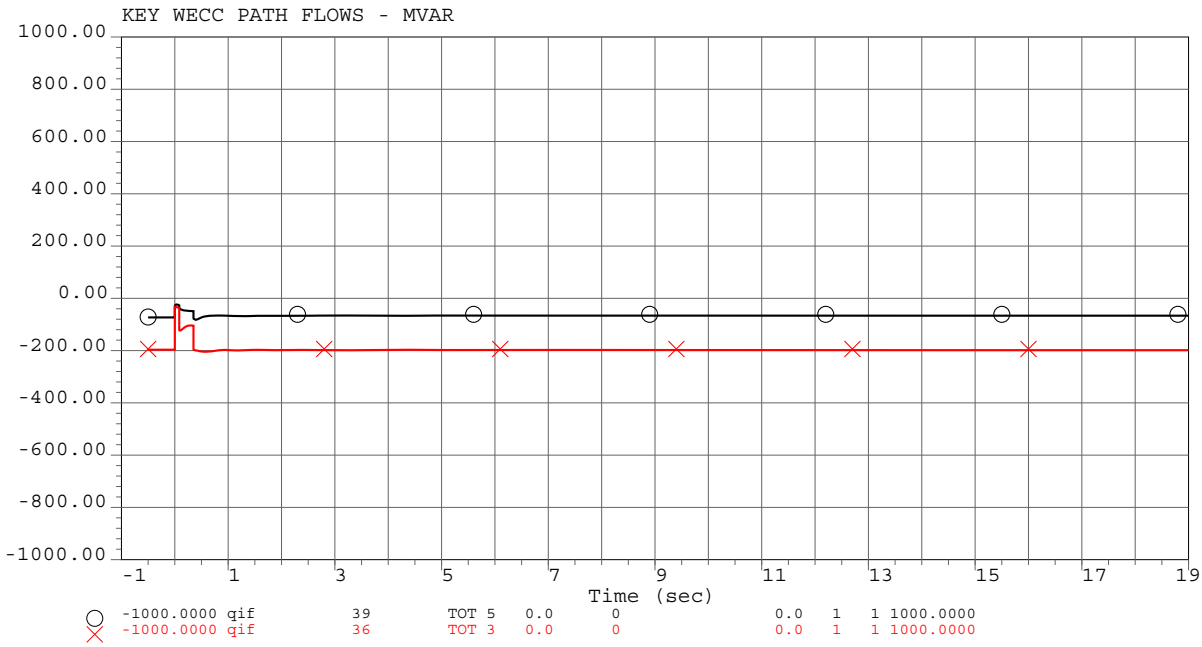
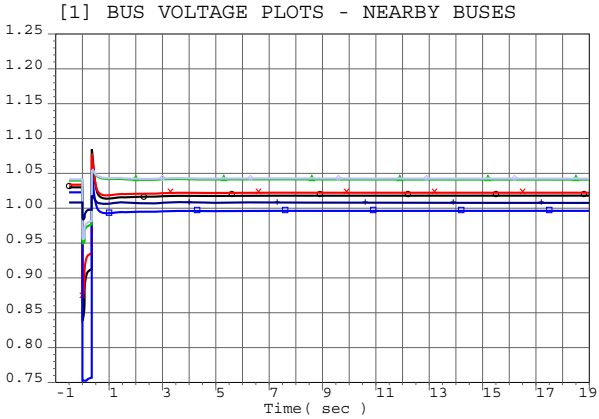
Tue Nov 26 13:31:59 2013


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

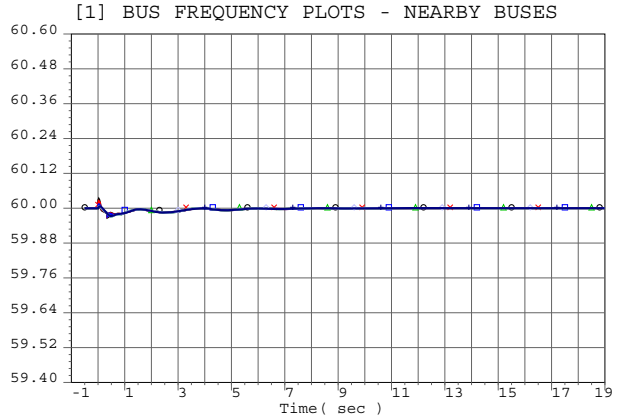
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



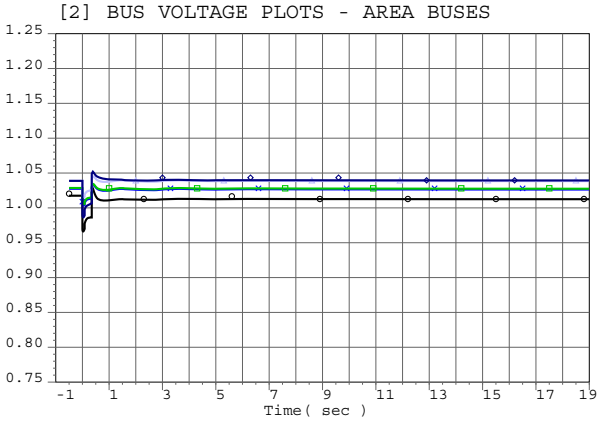

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 vbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 vbus | 73188 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



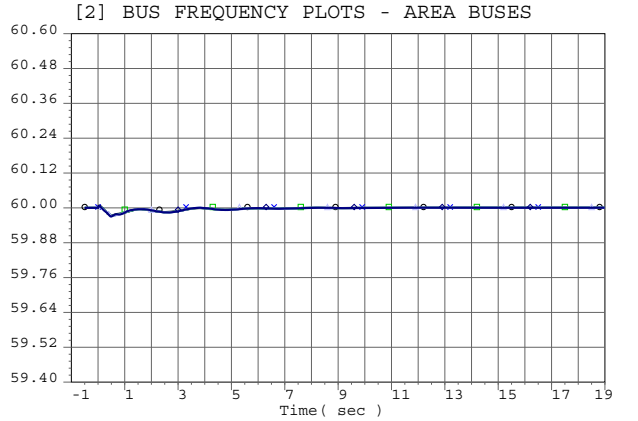

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 fbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 fbus | 73188 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



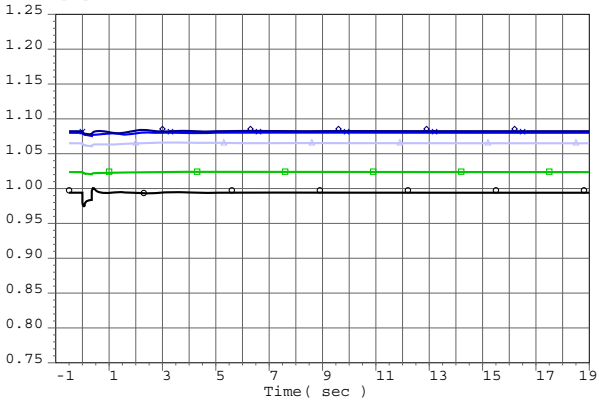

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



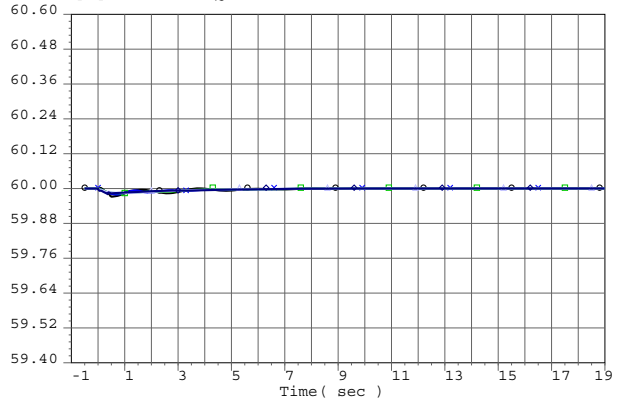

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 vbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 fbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013-14 LW1 OPERATING CASE
MAY 16, 2013



SC2_LW_PstDet_v0_08a_NYuma230!-115Xfmr_SLG_C.chf

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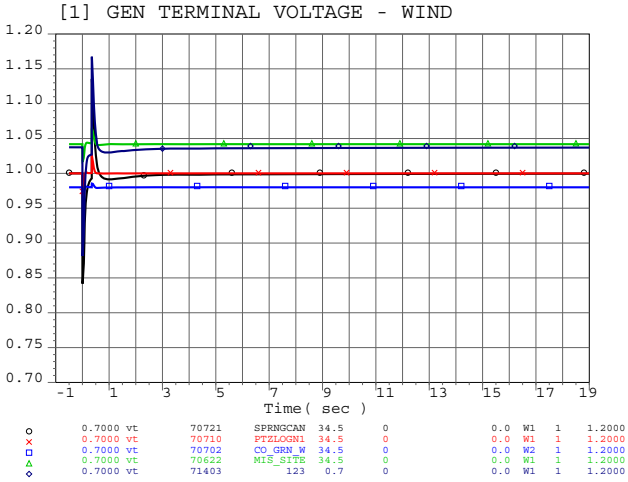
Tue Nov 26 13:32:38 2013

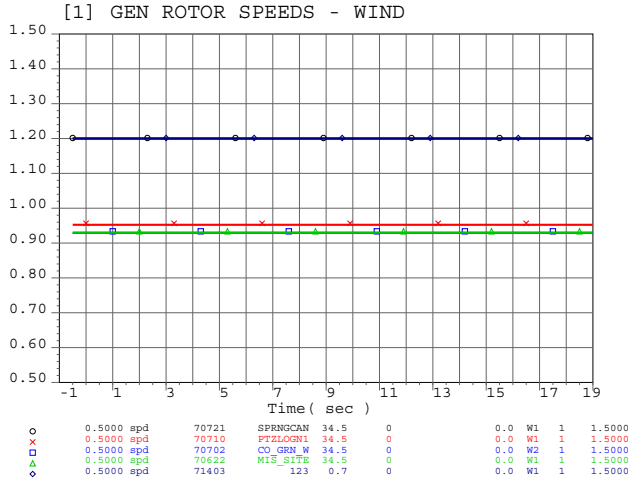
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



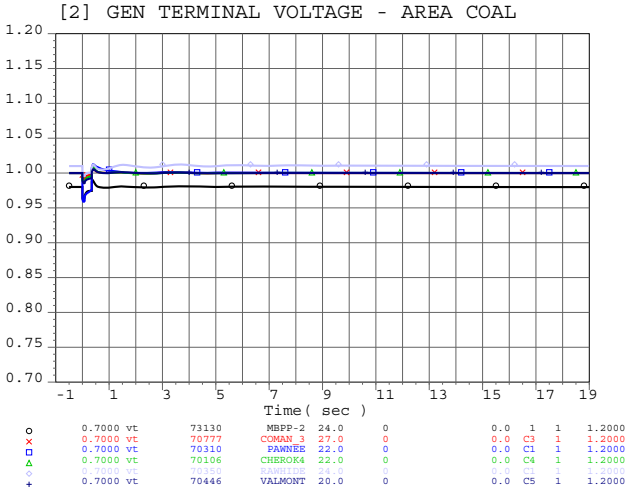

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 0.7000 vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| 0.7000 vt | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| 0.7000 vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| 0.7000 vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| 0.7000 vt | 71403 | 123 | 0.7 | 0 | 0.0 | W1 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



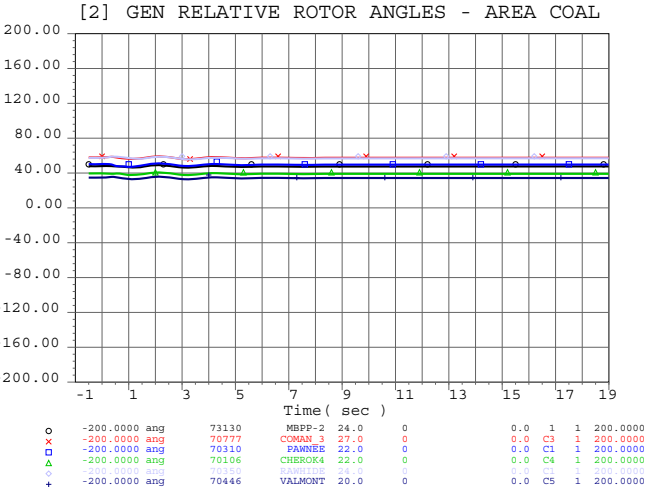

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 0.5000 spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| 0.5000 spd | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| 0.5000 spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| 0.5000 spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| 0.5000 spd | 71403 | 123 | 0.7 | 0 | 0.0 | W1 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



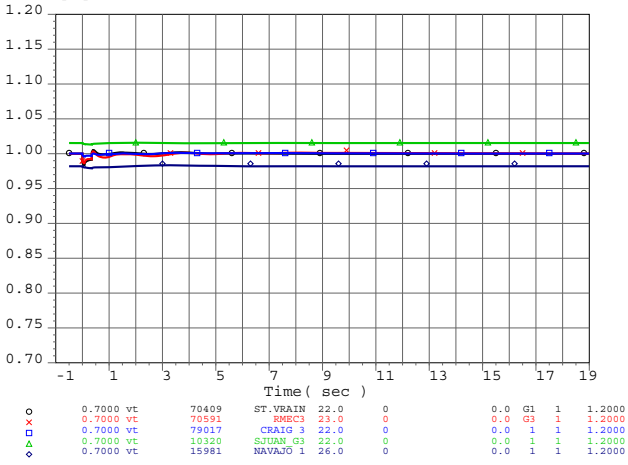

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 0.7000 vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| 0.7000 vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| 0.7000 vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| 0.7000 vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| 0.7000 vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| 0.7000 vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



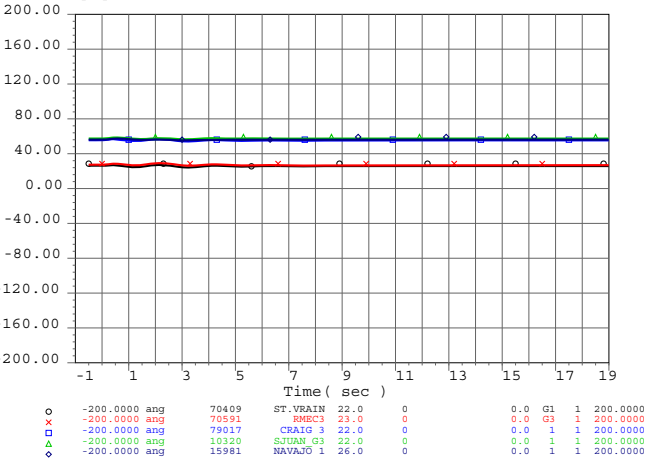

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| -200.0000 ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| -200.0000 ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| -200.0000 ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| -200.0000 ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| -200.0000 ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| -200.0000 ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER




| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 0.7000 vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| 0.7000 vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| 0.7000 vt | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| 0.7000 vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| 0.7000 vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER




| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| -200.0000 ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| -200.0000 ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| -200.0000 ang | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| -200.0000 ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| -200.0000 ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |

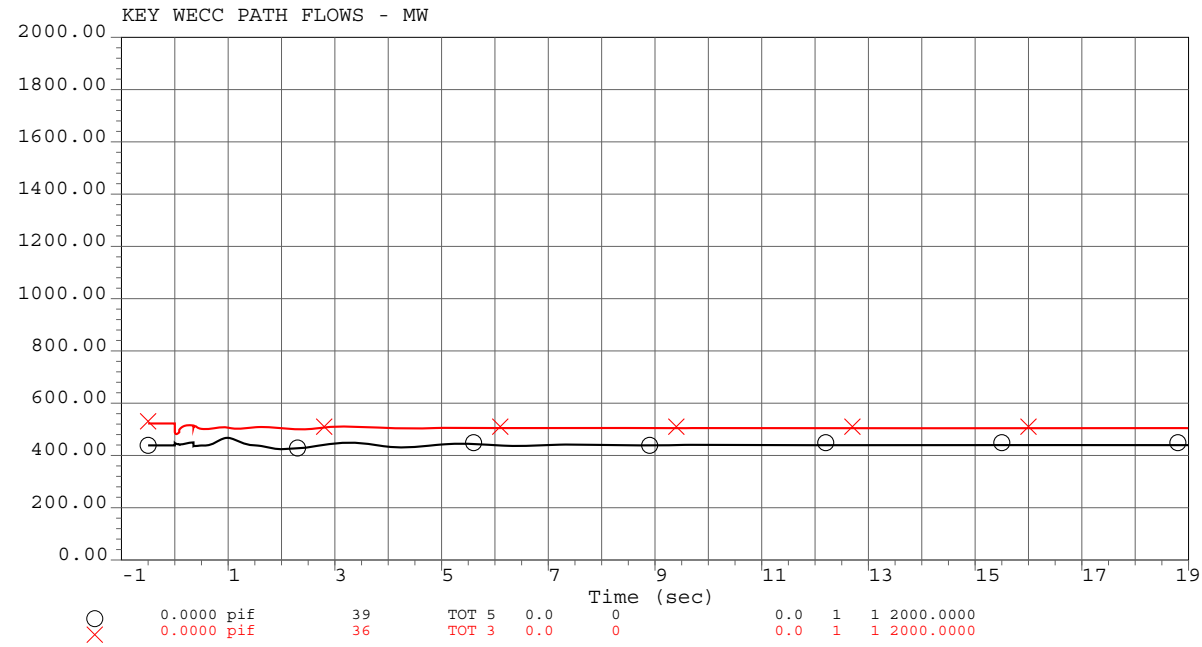
WESTERN ELECTRICITY COORDINATING COUNCIL
2013-14 LW1 OPERATING CASE
MAY 16, 2013

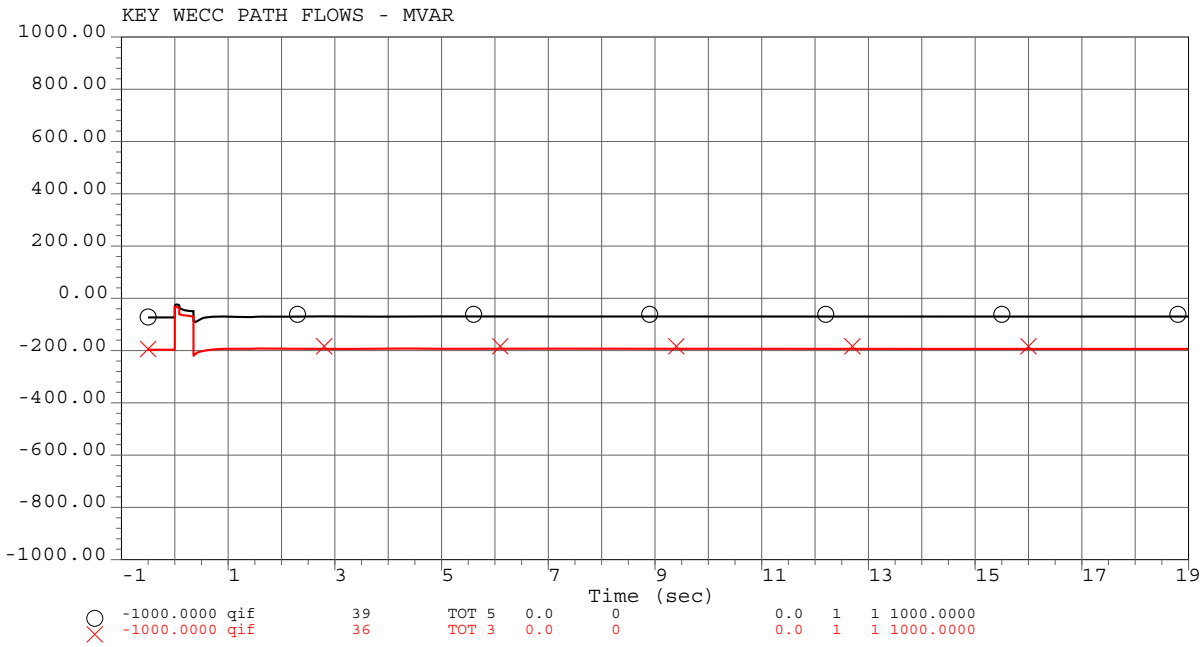


SC2_LW_PstDet_v0_08a_NYuma230!-115Xfmr_SLG_C.chf

.

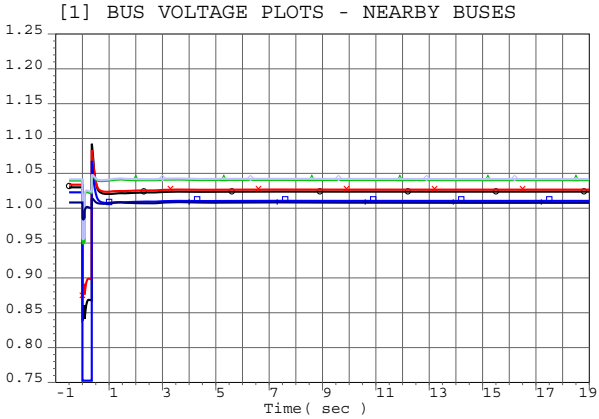
Tue Nov 26 13:32:38 2013


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

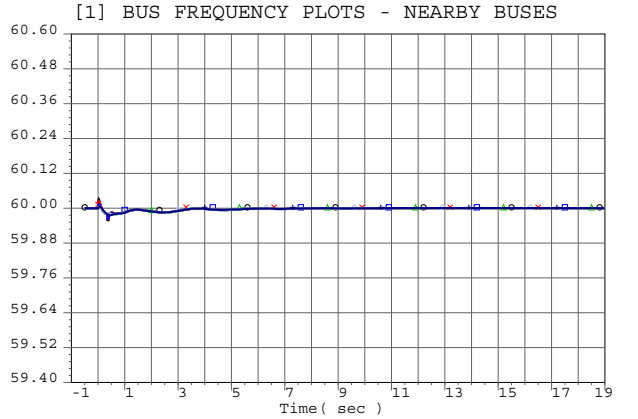
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



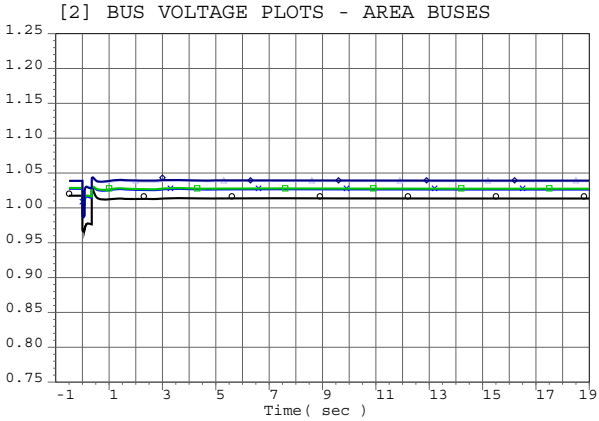

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 73188 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



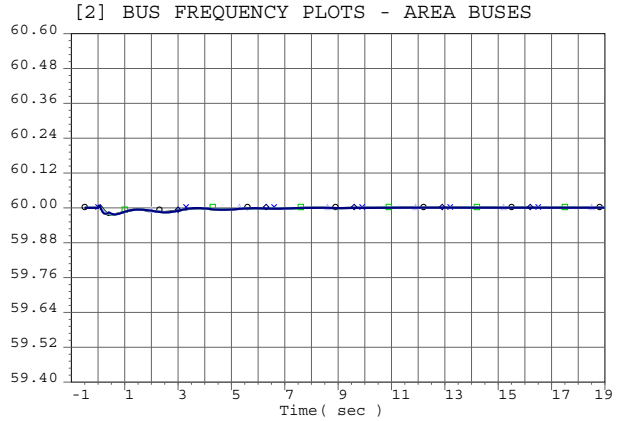

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 73188 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



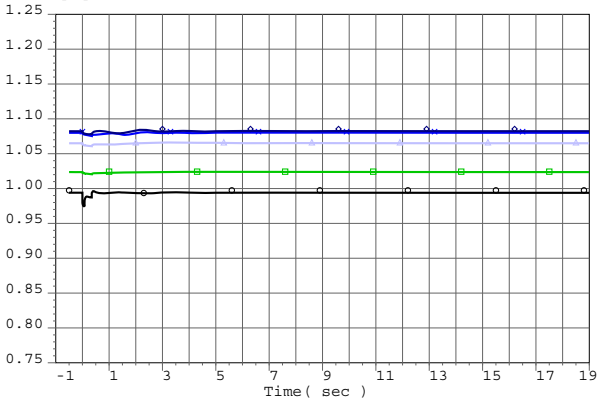

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



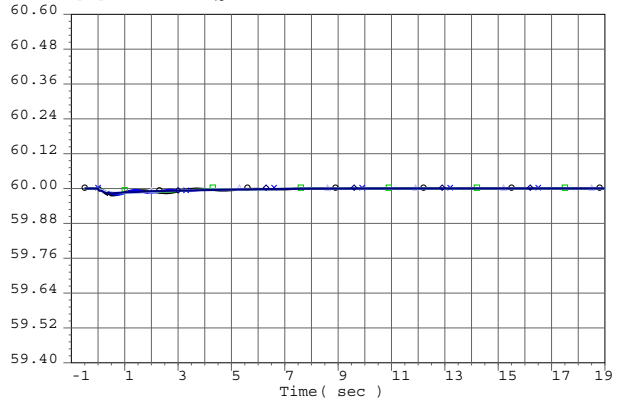

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013-14 LW1 OPERATING CASE
MAY 16, 2013



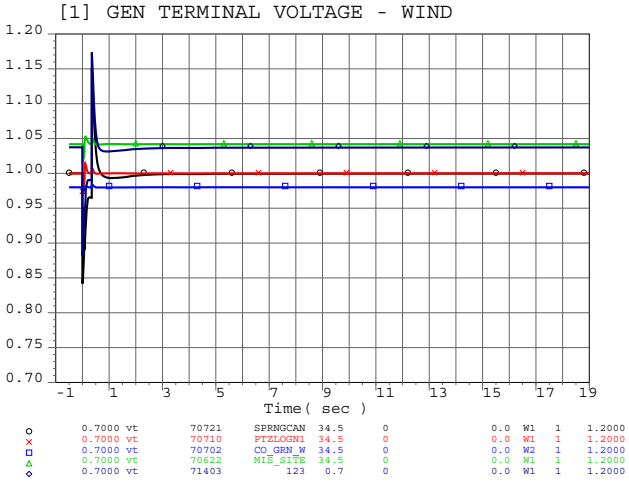
SC2_LW_PstDet_v0_09_NYuma!-Story_230_LW_SLG_C.chf

.

Tue Nov 26 13:33:06 2013

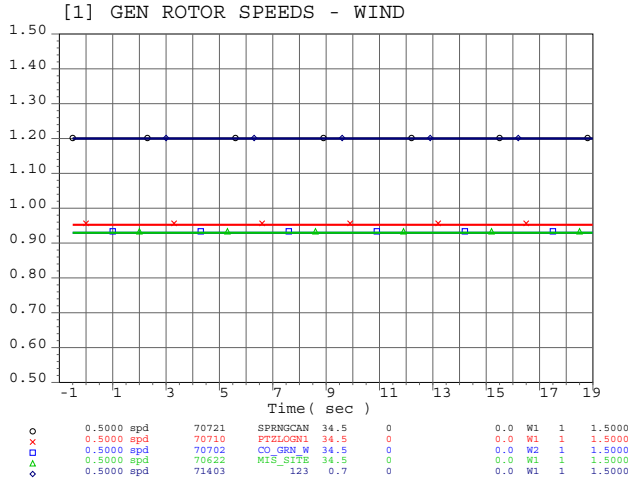
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



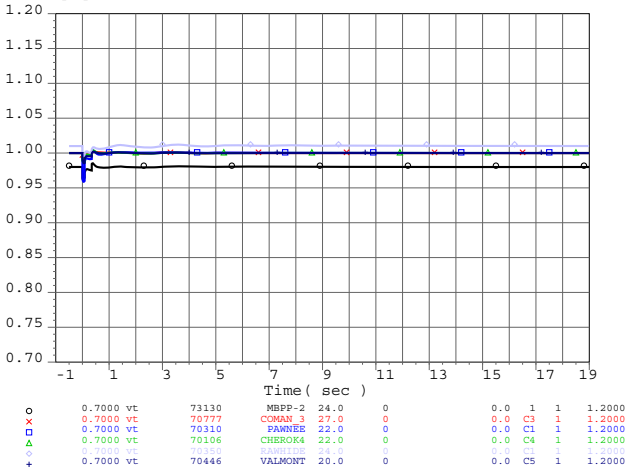

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 0.7000 | vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| 0.7000 | vt | 70710 | PTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| 0.7000 | vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| 0.7000 | vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| 0.7000 | vt | 71403 | 123 | 0.7 | 0 | 0.0 | W1 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



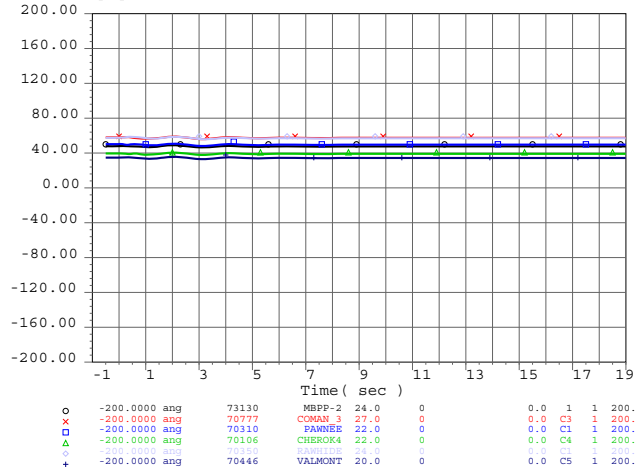

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 0.5000 | spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| 0.5000 | spd | 70710 | PTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| 0.5000 | spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| 0.5000 | spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| 0.5000 | spd | 71403 | 123 | 0.7 | 0 | 0.0 | W1 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



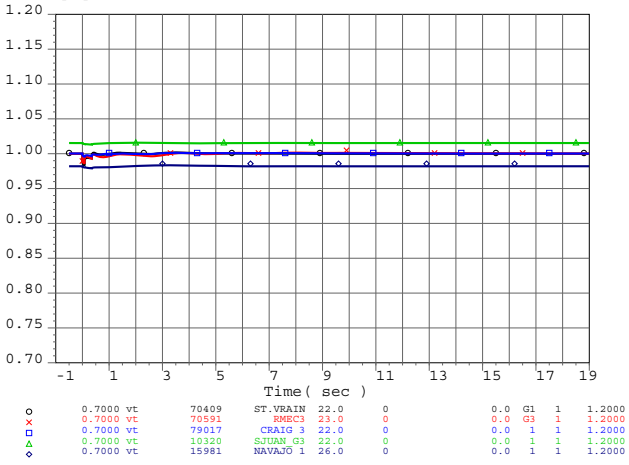

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 0.7000 | vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| 0.7000 | vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| 0.7000 | vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| 0.7000 | vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| 0.7000 | vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| 0.7000 | vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



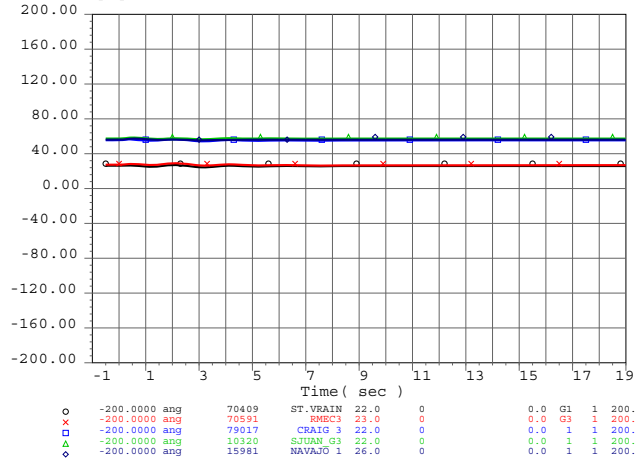

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| -200.0000 | ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| -200.0000 | ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| -200.0000 | ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| -200.0000 | ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| -200.0000 | ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| -200.0000 | ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 0.7000 | vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| 0.7000 | vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| 0.7000 | vt | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| 0.7000 | vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| 0.7000 | vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| -200.0000 | ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| -200.0000 | ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| -200.0000 | ang | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| -200.0000 | ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| -200.0000 | ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |

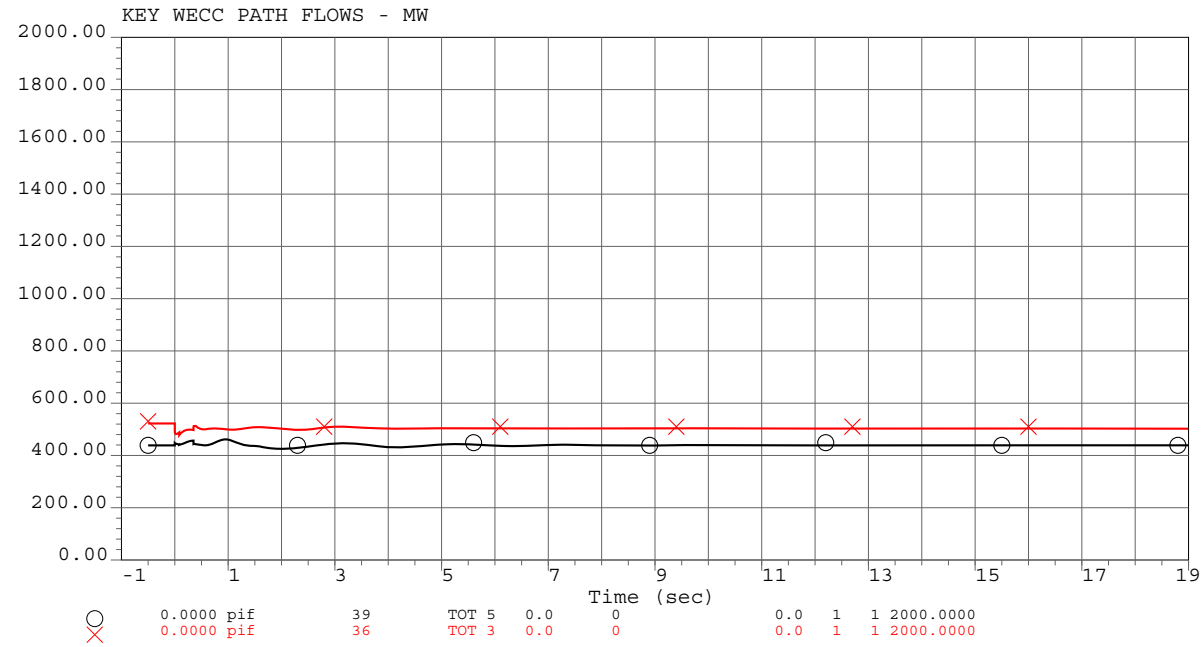
WESTERN ELECTRICITY COORDINATING COUNCIL
2013-14 LW1 OPERATING CASE
MAY 16, 2013

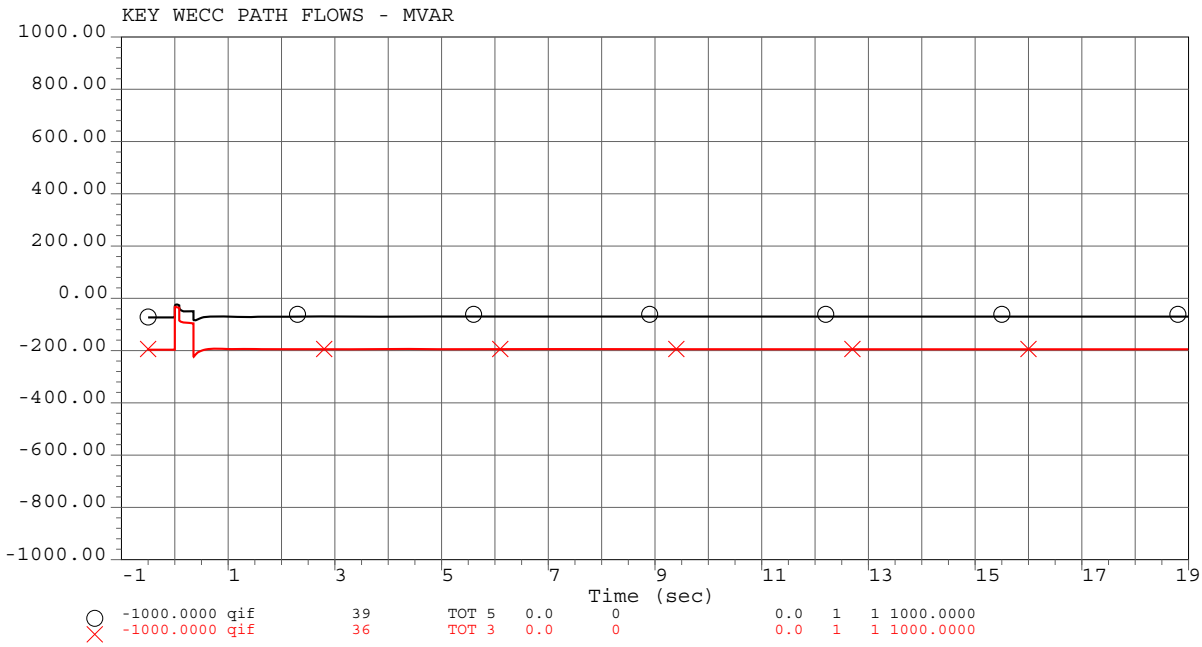


SC2_LW_PstDet_v0_09_NYuma!-Story_230_LW_SLG_C.chf

.

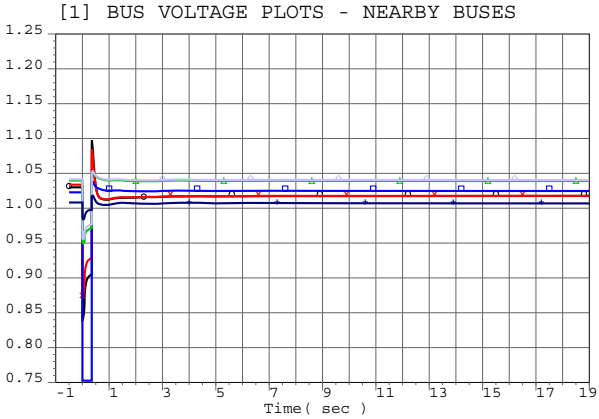
Tue Nov 26 13:33:06 2013


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

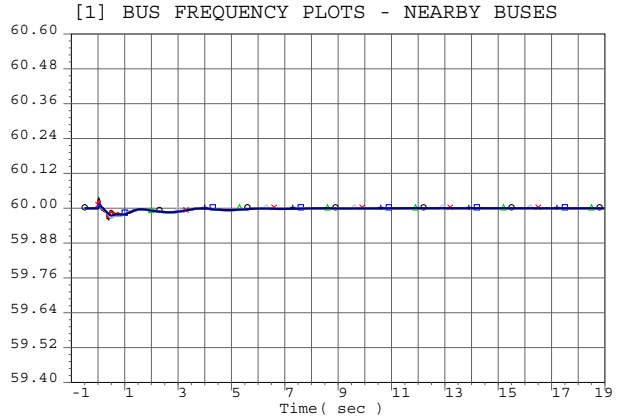
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



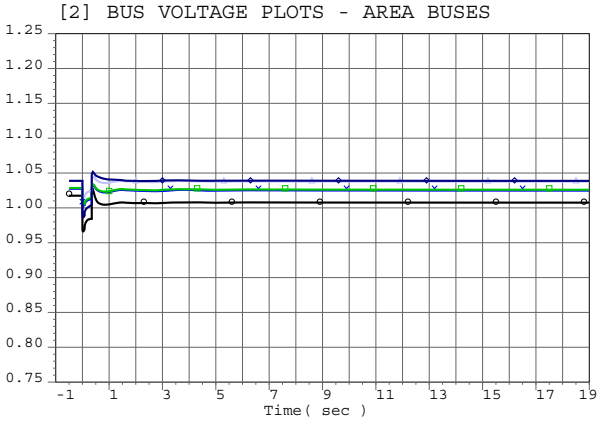

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 73188 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



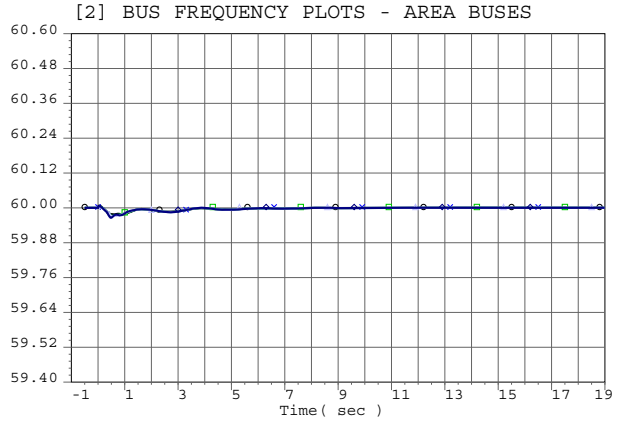

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 73188 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



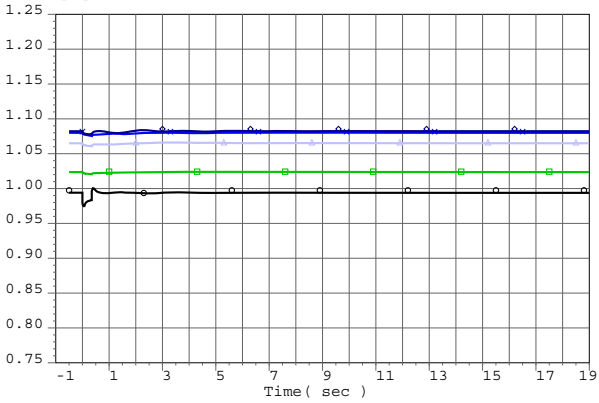

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



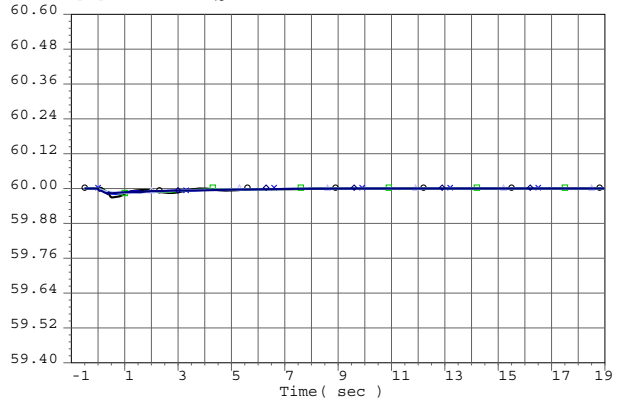

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013-14 LW1 OPERATING CASE
MAY 16, 2013



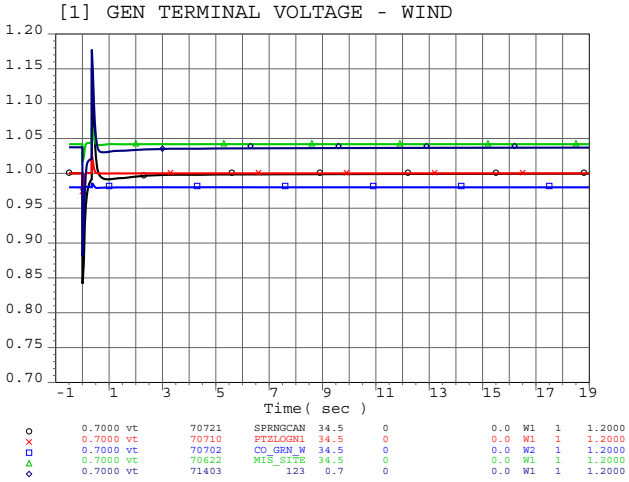
SC2_LW_PstDet_v0_10_NYuma!-Wray_230_LW_SLG_C.chf

.

Tue Nov 26 13:33:14 2013

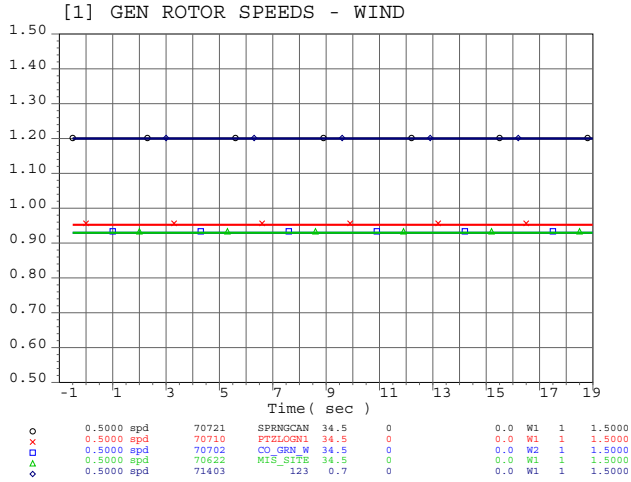
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



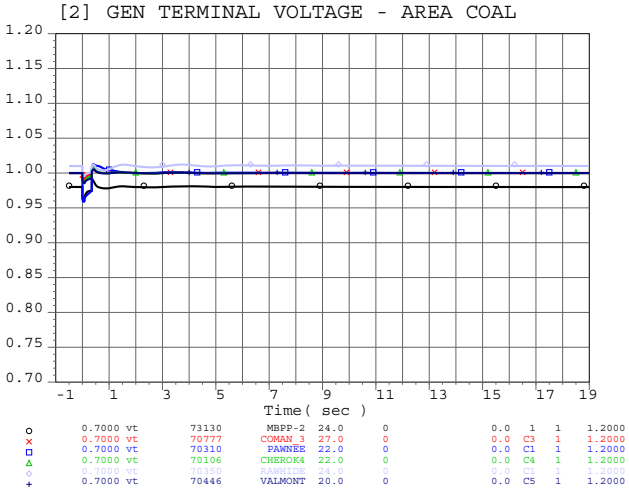

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| × | 0.7000 vt | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| □ | 0.7000 vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| △ | 0.7000 vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 71403 | 123 | 0.7 | 0 | 0.0 | W1 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



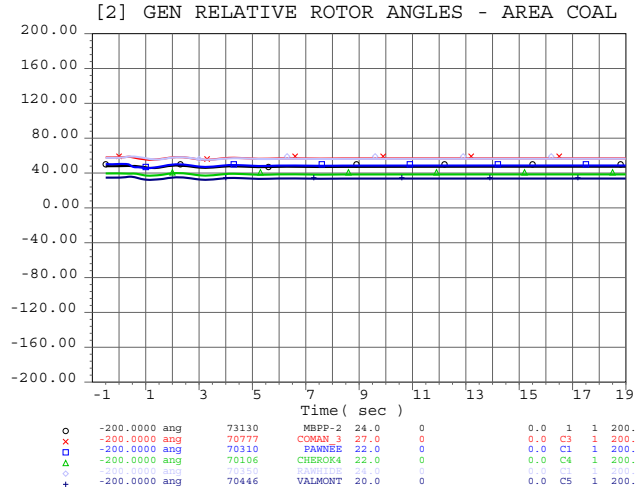

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.5000 spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| × | 0.5000 spd | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| □ | 0.5000 spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| △ | 0.5000 spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| ◇ | 0.5000 spd | 71403 | 123 | 0.7 | 0 | 0.0 | W1 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



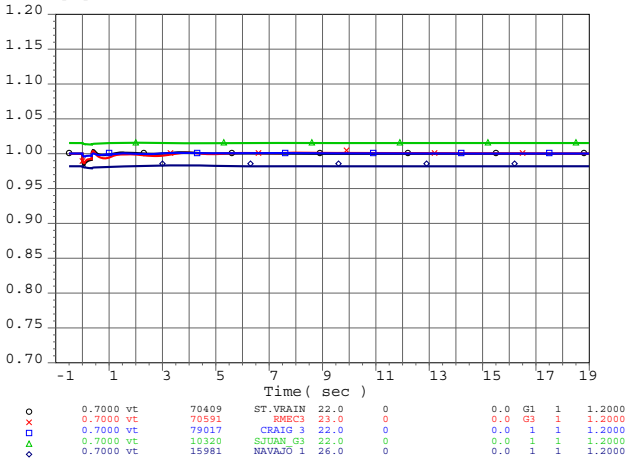

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| × | 0.7000 vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| □ | 0.7000 vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| △ | 0.7000 vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| + | 0.7000 vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



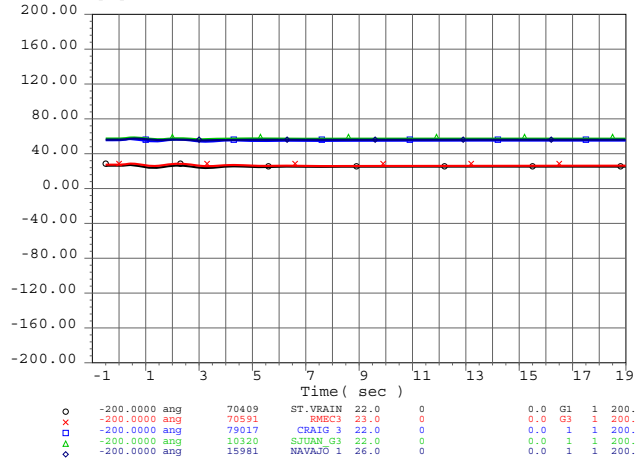

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| × | -200.0000 ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| □ | -200.0000 ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| △ | -200.0000 ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| + | -200.0000 ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| × | 0.7000 vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| □ | 0.7000 vt | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| △ | 0.7000 vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| × | -200.0000 ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| □ | -200.0000 ang | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| △ | -200.0000 ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |

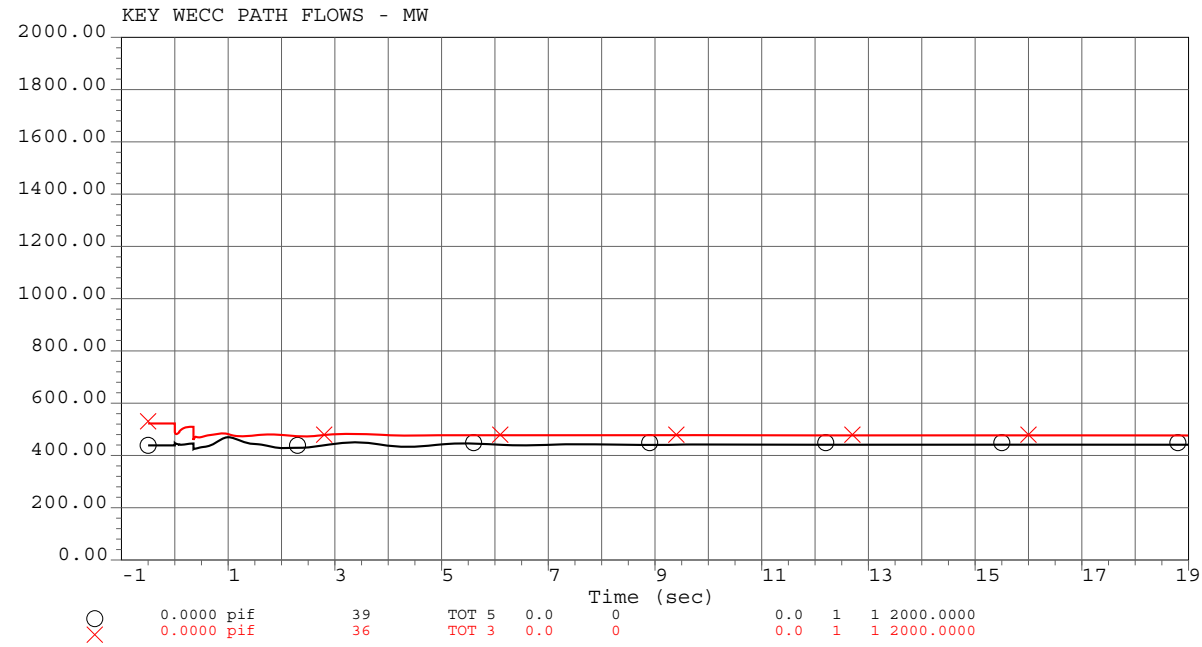
WESTERN ELECTRICITY COORDINATING COUNCIL
2013-14 LW1 OPERATING CASE
MAY 16, 2013

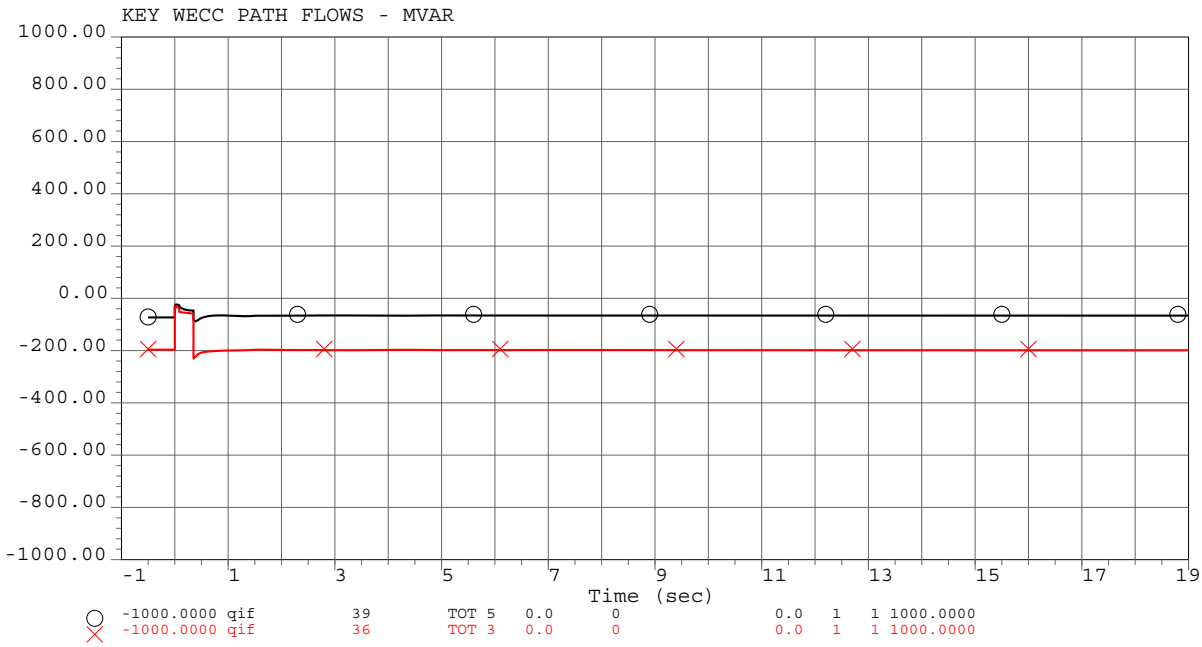


SC2_LW_PstDet_v0_10_NYuma!-Wray_230_LW_SLG_C.chf

.

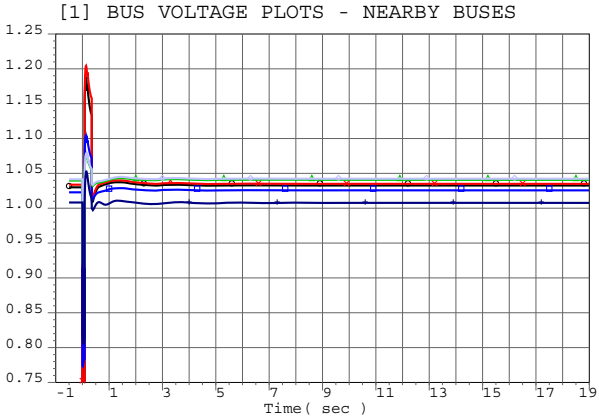
Tue Nov 26 13:33:14 2013


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

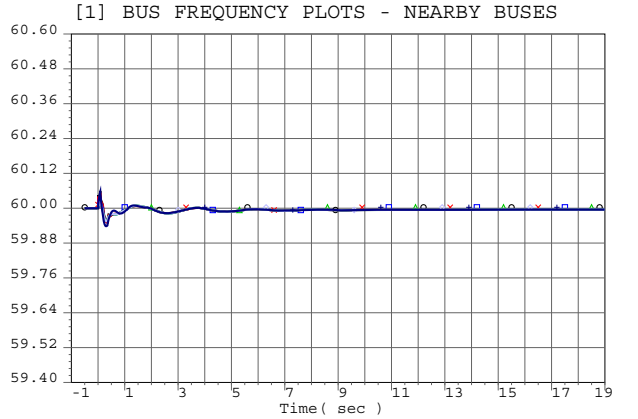
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



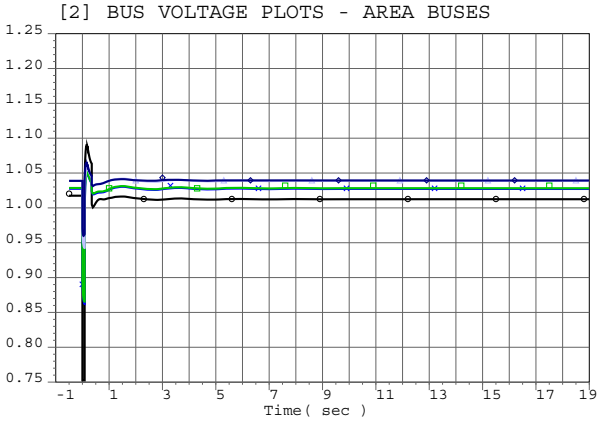

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 73188 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



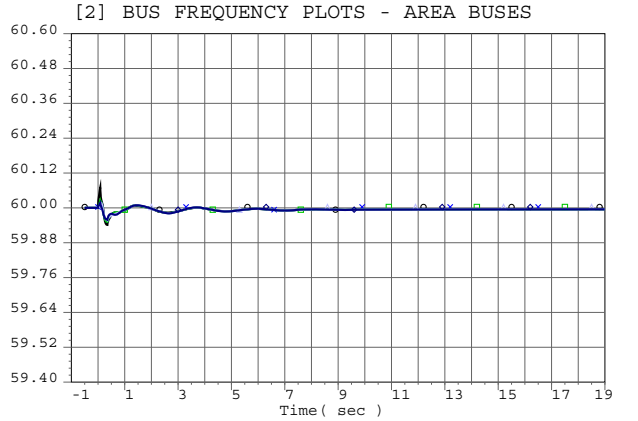

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 73188 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



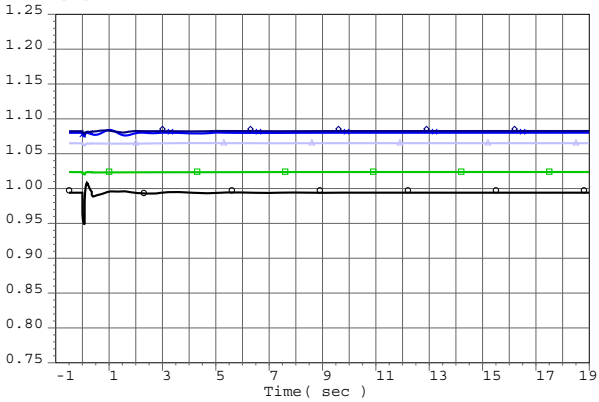

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



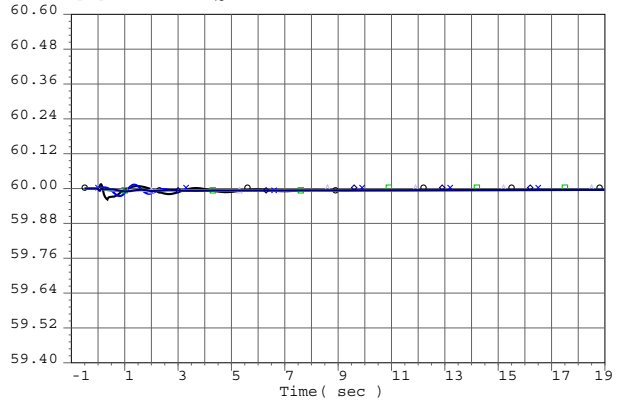

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013-14 LW1 OPERATING CASE
MAY 16, 2013



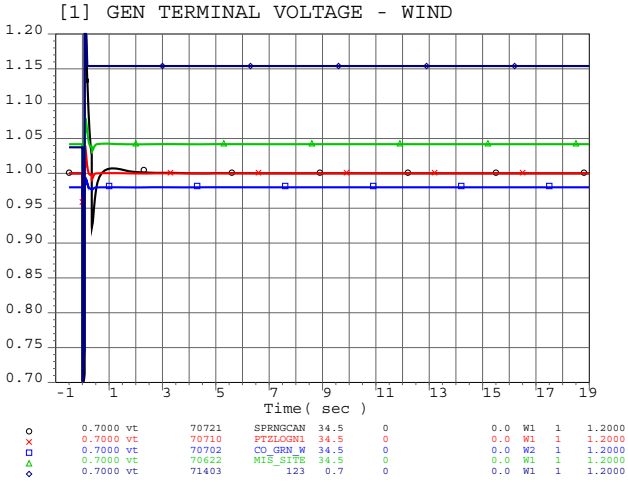
SC2_LW_PstDet_v0_11_Stegall!-DJnstn_230_3ph_B.chf

.

Tue Nov 26 13:33:21 2013

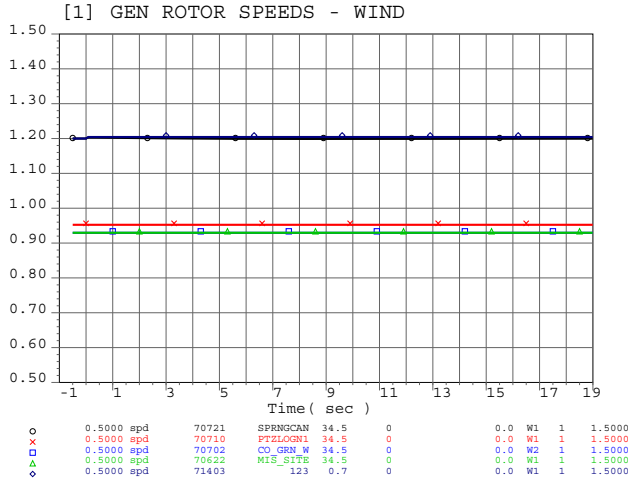
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



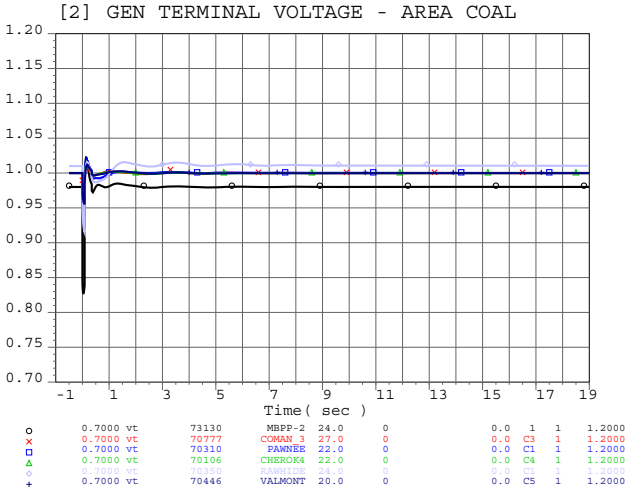

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 | vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| × | 0.7000 | vt | 70710 | PTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| □ | 0.7000 | vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| △ | 0.7000 | vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| ◇ | 0.7000 | vt | 71403 | 123 | 0.7 | 0 | 0.0 | W1 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



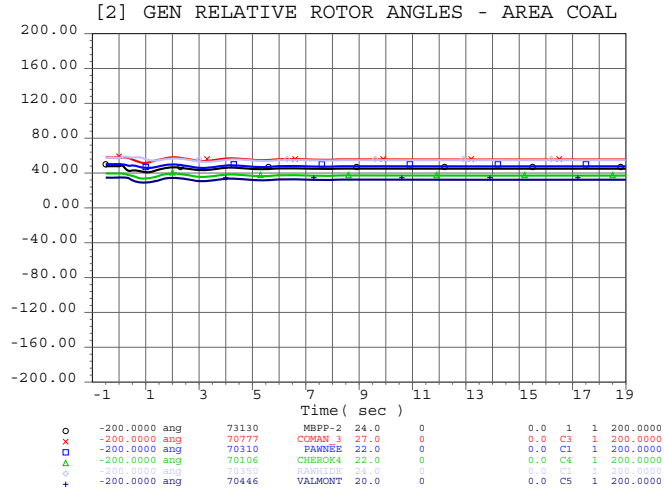

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.5000 | spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| × | 0.5000 | spd | 70710 | PTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| □ | 0.5000 | spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| △ | 0.5000 | spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| ◇ | 0.5000 | spd | 71403 | 123 | 0.7 | 0 | 0.0 | W1 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



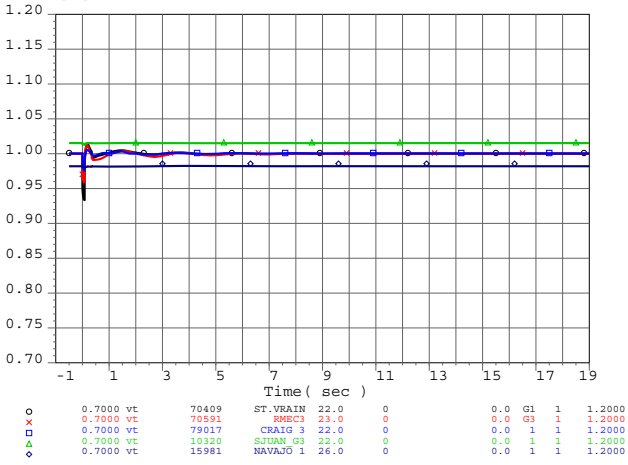

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 | vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| × | 0.7000 | vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| □ | 0.7000 | vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| △ | 0.7000 | vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| ◇ | 0.7000 | vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| + | 0.7000 | vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



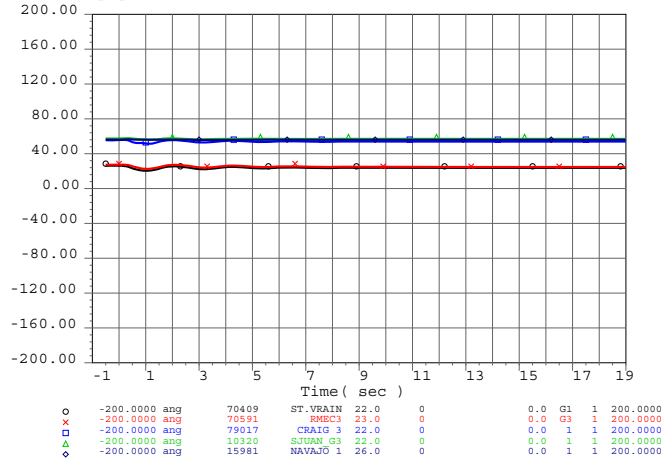

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 | ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| × | -200.0000 | ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| □ | -200.0000 | ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| △ | -200.0000 | ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| ◇ | -200.0000 | ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| + | -200.0000 | ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER




| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 | vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| × | 0.7000 | vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| □ | 0.7000 | vt | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| △ | 0.7000 | vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| ◇ | 0.7000 | vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER




| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 | ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| × | -200.0000 | ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| □ | -200.0000 | ang | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| △ | -200.0000 | ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| ◇ | -200.0000 | ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |

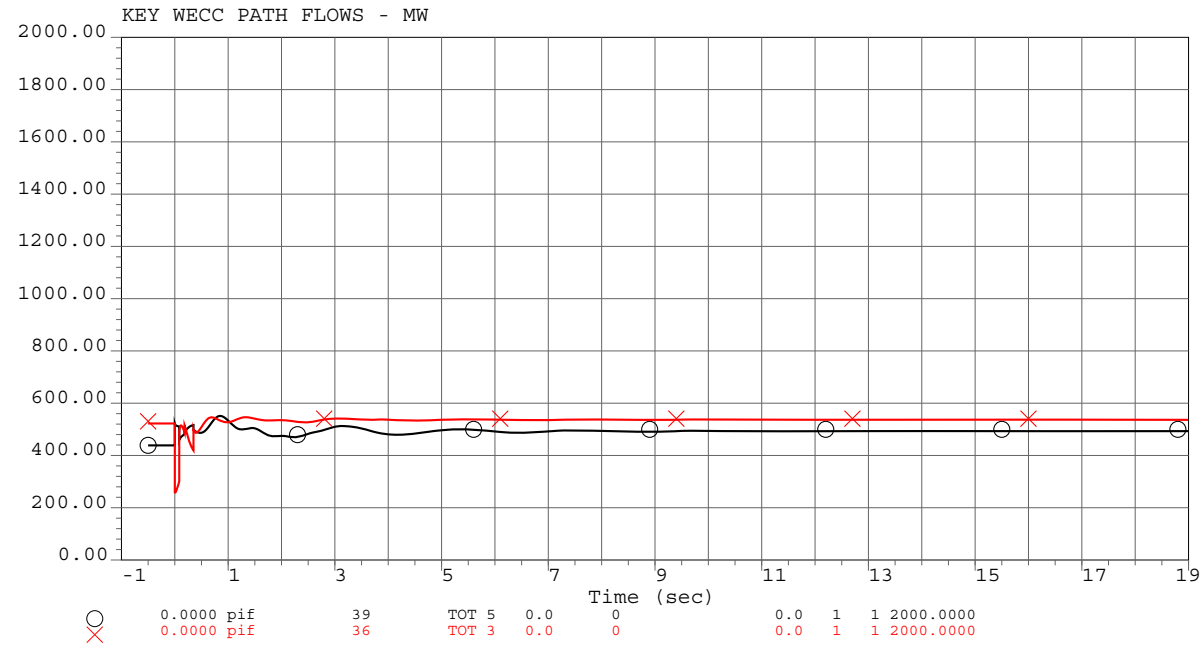
WESTERN ELECTRICITY COORDINATING COUNCIL
2013-14 LW1 OPERATING CASE
MAY 16, 2013

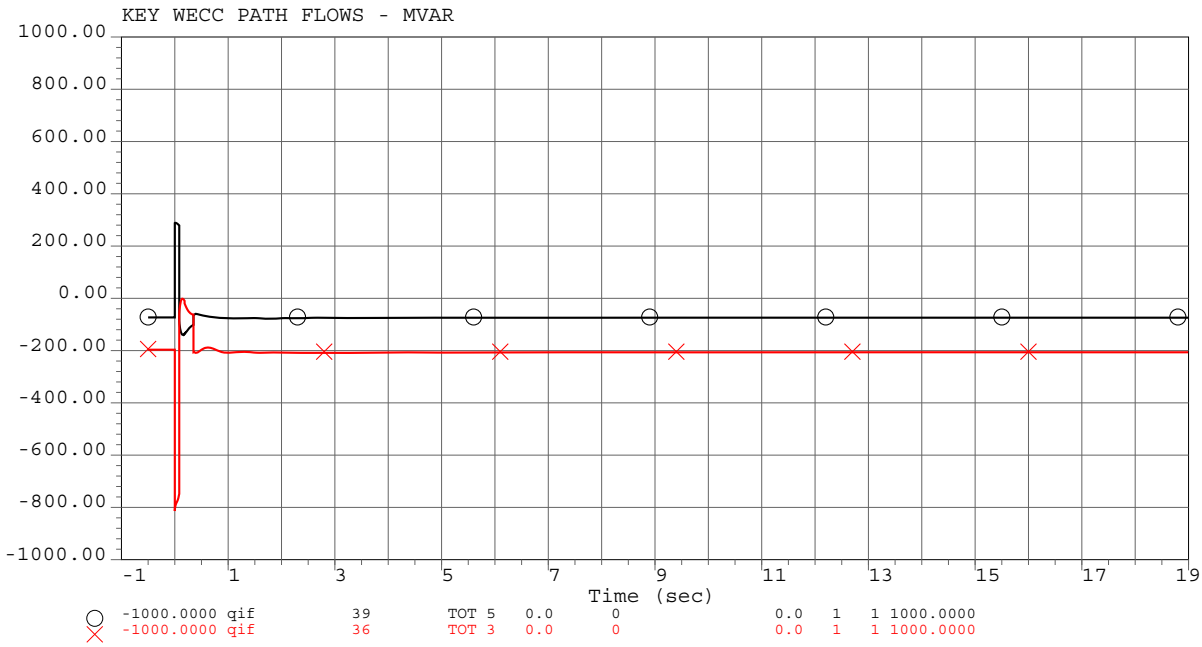


SC2_LW_PstDet_v0_11_Stegall!-DJnstn_230_3ph_B.chf

.

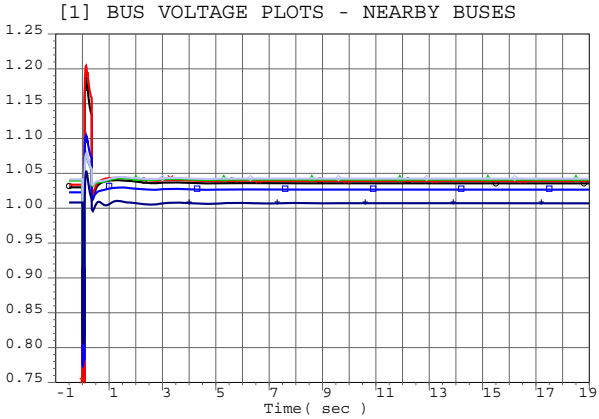
Tue Nov 26 13:33:21 2013


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

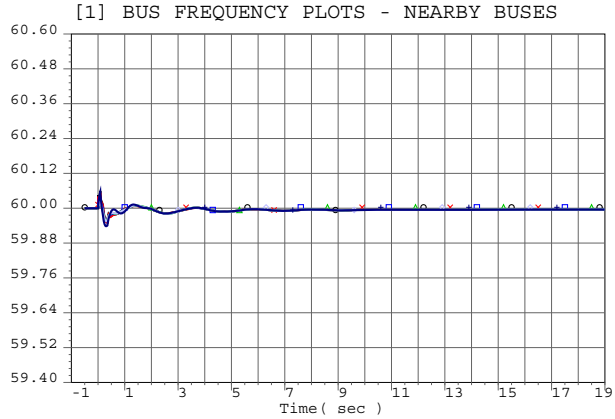
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



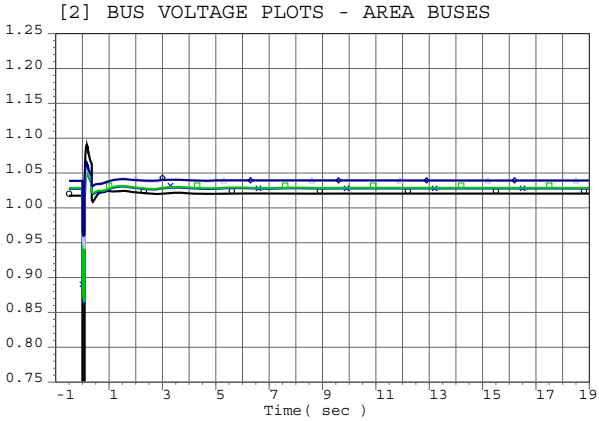

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



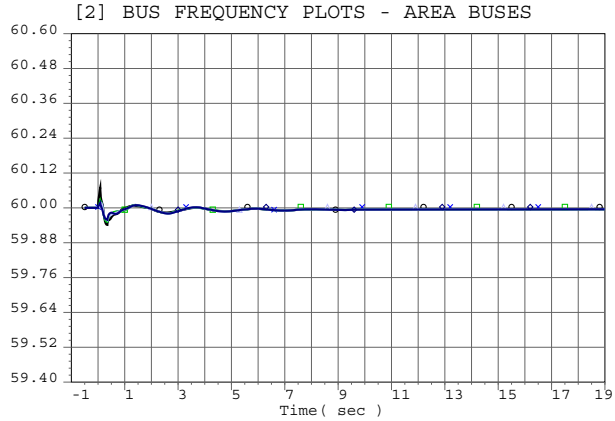

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



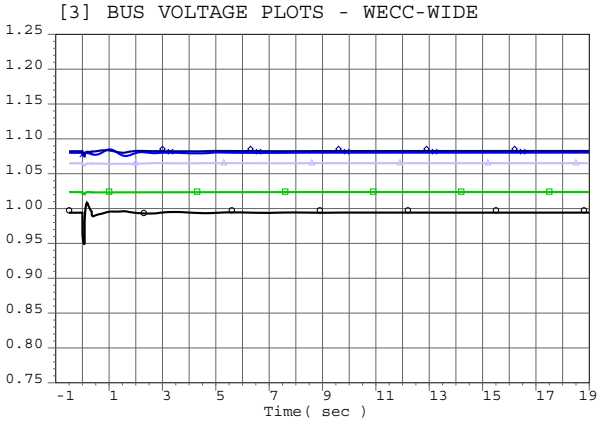

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



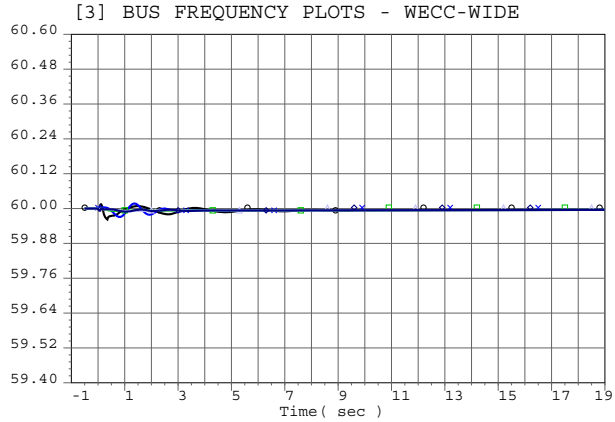

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013-14 LW1 OPERATING CASE
MAY 16, 2013



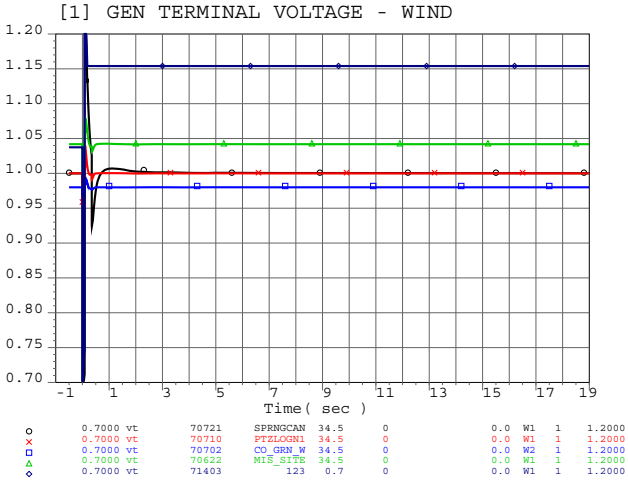
SC2_LW_PstDet_v0_12_Stegall!-LRS_230_3ph_B.chf

.

Tue Nov 26 13:33:28 2013

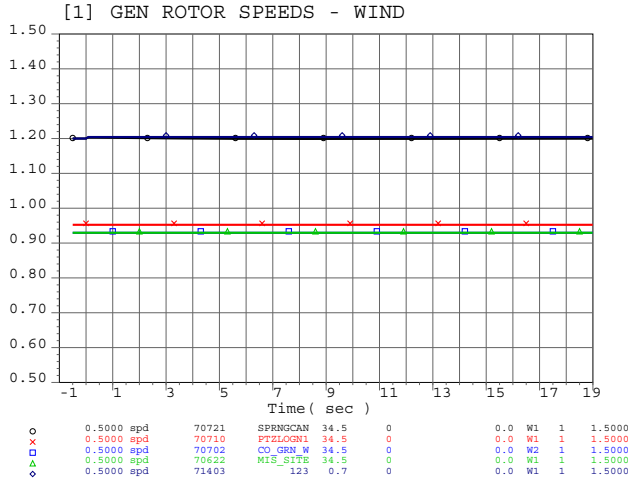
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



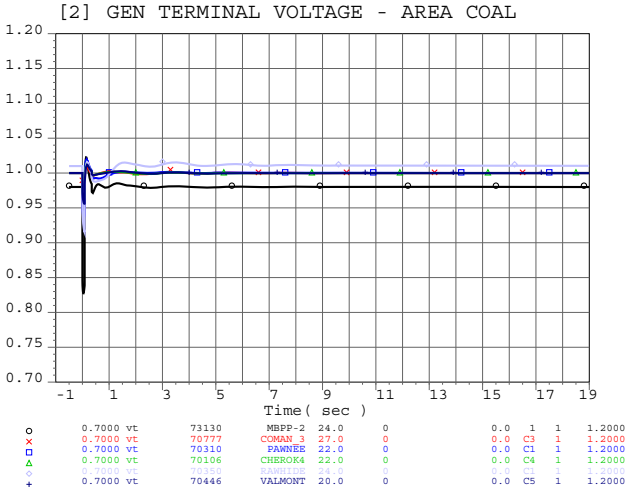

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 0.7000 vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| 0.7000 vt | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| 0.7000 vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| 0.7000 vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| 0.7000 vt | 71403 | 123 | 0.7 | 0 | 0.0 | W1 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



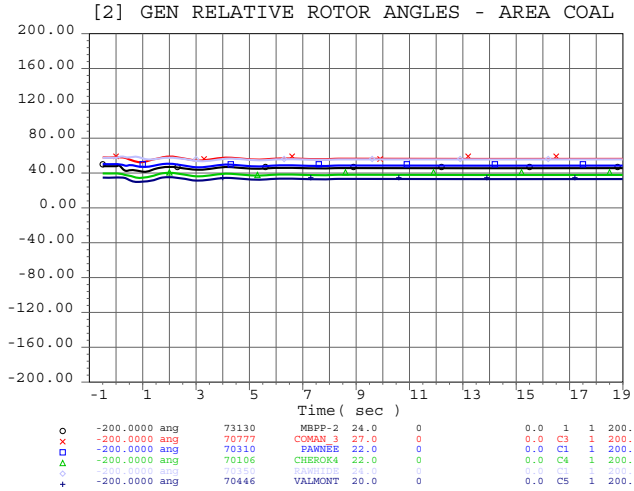

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 0.5000 spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| 0.5000 spd | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| 0.5000 spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| 0.5000 spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| 0.5000 spd | 71403 | 123 | 0.7 | 0 | 0.0 | W1 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



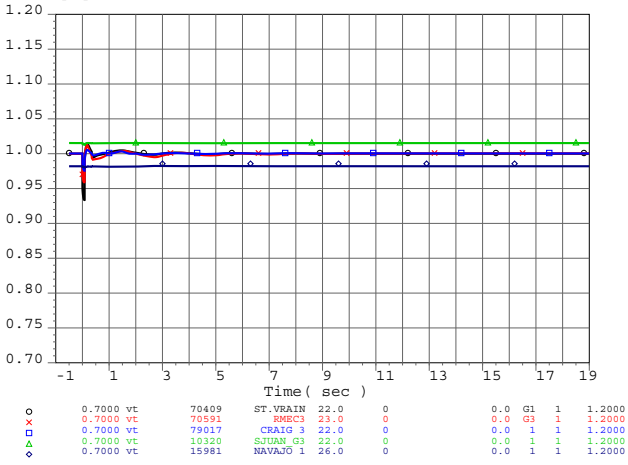

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 0.7000 vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| 0.7000 vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| 0.7000 vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| 0.7000 vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| 0.7000 vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| 0.7000 vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



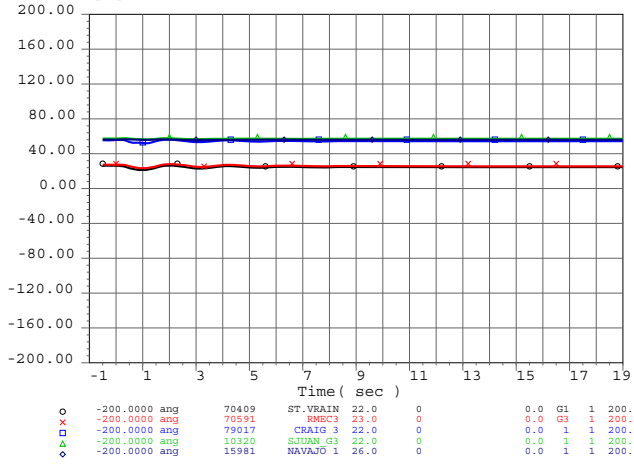

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| -200.0000 ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| -200.0000 ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| -200.0000 ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| -200.0000 ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| -200.0000 ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| -200.0000 ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER




| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 0.7000 vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| 0.7000 vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| 0.7000 vt | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| 0.7000 vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| 0.7000 vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER




| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| -200.0000 ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| -200.0000 ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| -200.0000 ang | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| -200.0000 ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| -200.0000 ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |

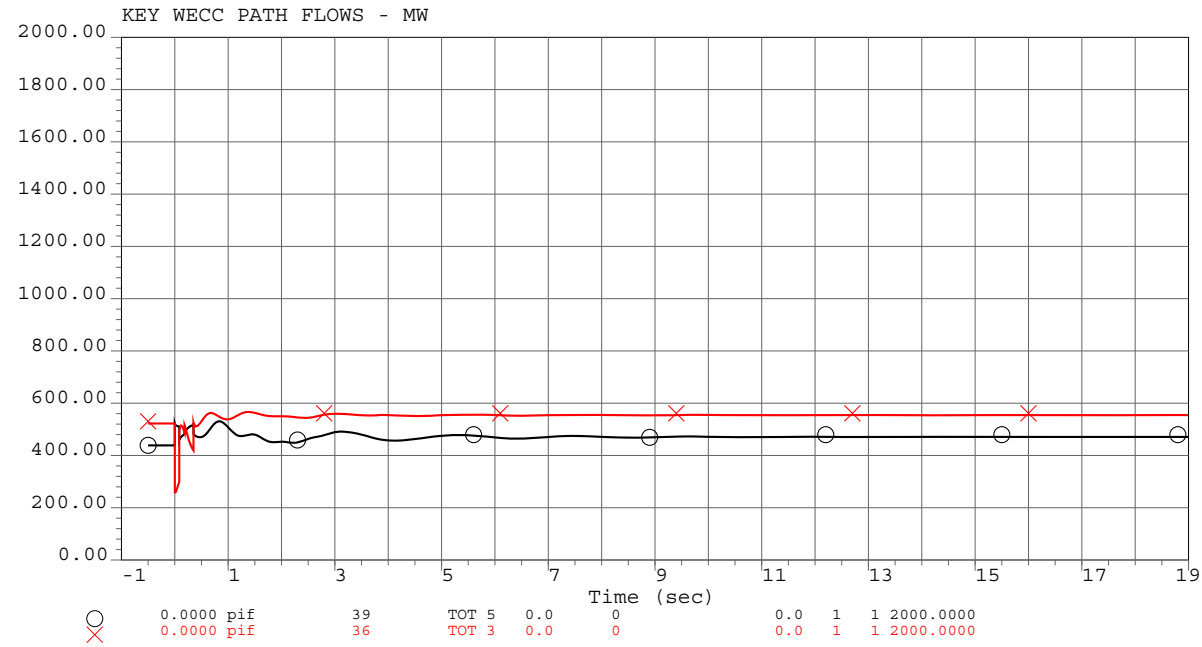
WESTERN ELECTRICITY COORDINATING COUNCIL
2013-14 LW1 OPERATING CASE
MAY 16, 2013

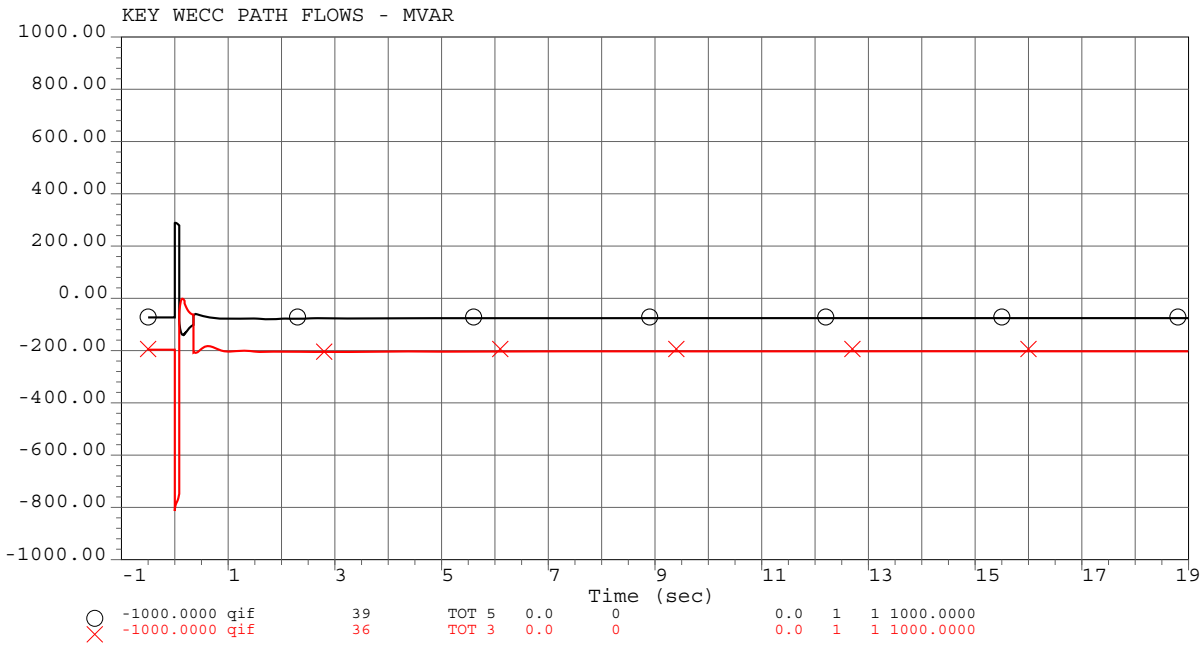


SC2_LW_PstDet_v0_12_Stegall!-LRS_230_3ph_B.chf

.

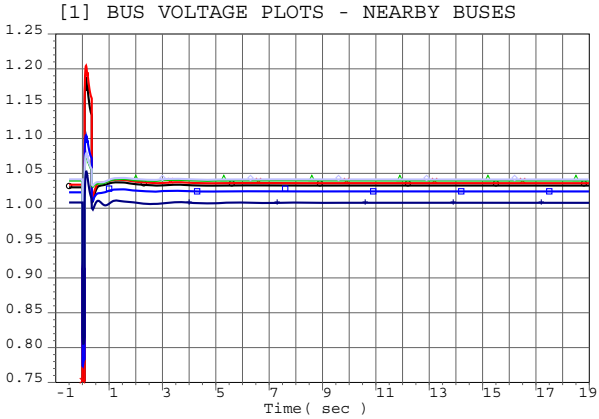
Tue Nov 26 13:33:28 2013


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

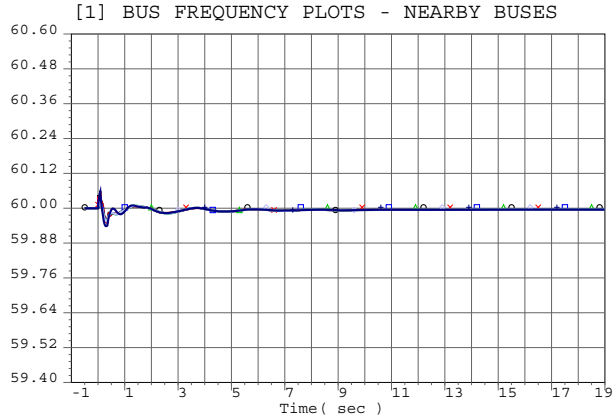
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



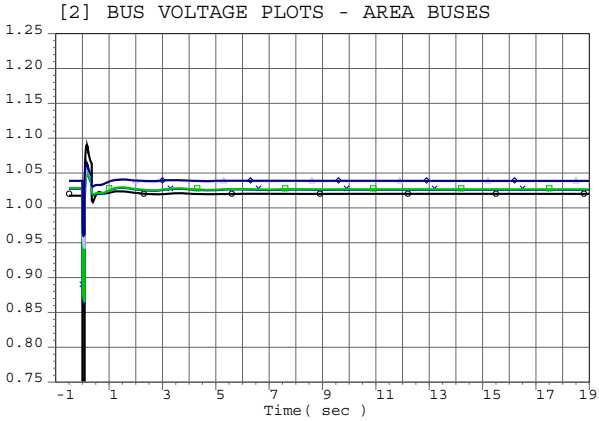

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



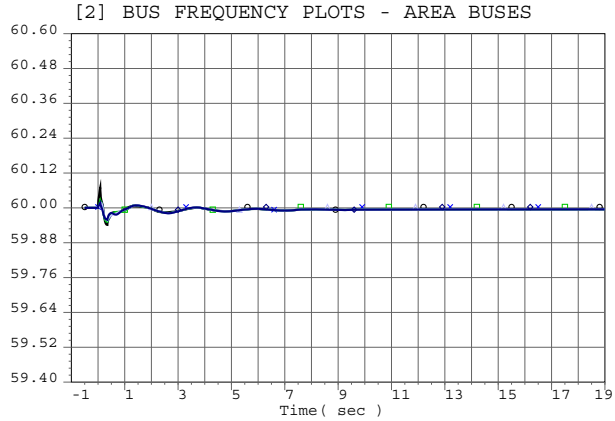

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



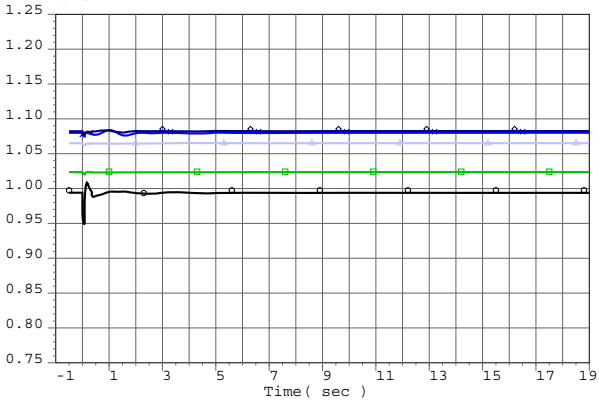

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



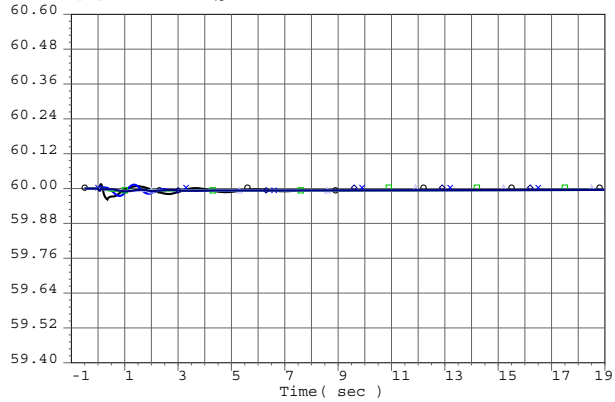

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013-14 LW1 OPERATING CASE
MAY 16, 2013



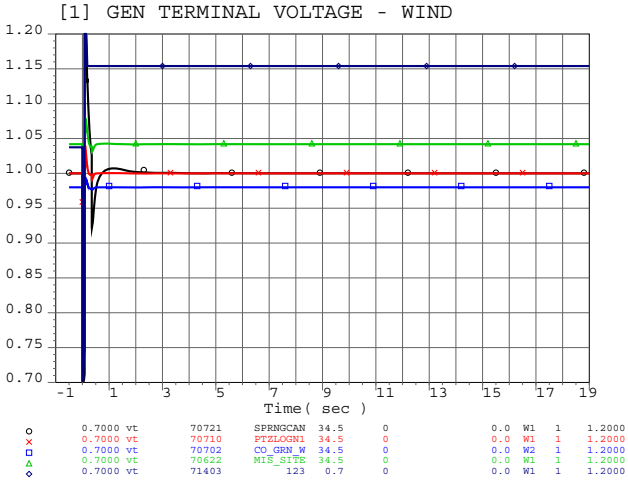
SC2_LW_PstDet_v0_13_Stegall!-Archer_230_3ph_B.chf

.

Tue Nov 26 13:33:42 2013

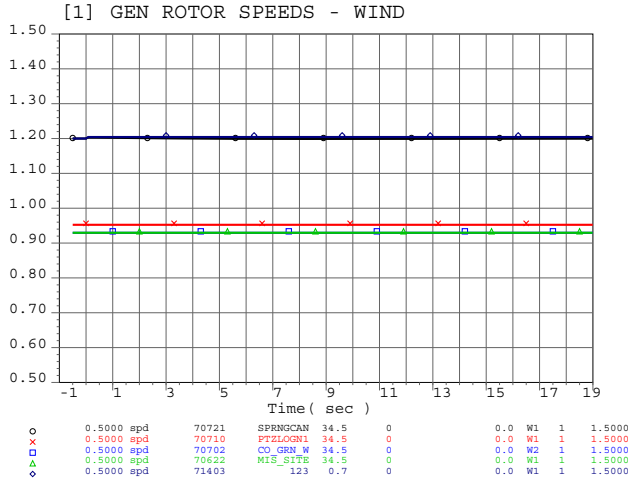
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



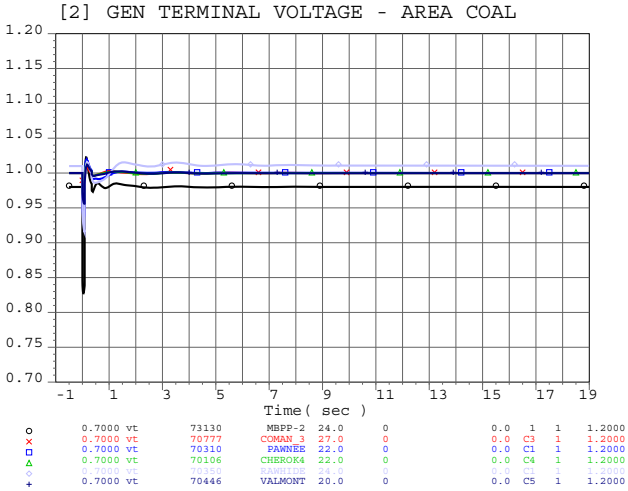

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 | vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| × | 0.7000 | vt | 70710 | PTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| □ | 0.7000 | vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| △ | 0.7000 | vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| ◇ | 0.7000 | vt | 71403 | 123 | 0.7 | 0 | 0.0 | W1 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



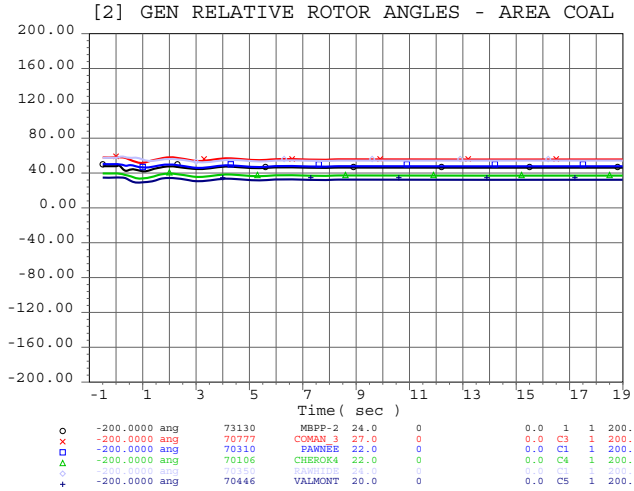

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.5000 | spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| × | 0.5000 | spd | 70710 | PTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| □ | 0.5000 | spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| △ | 0.5000 | spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| ◇ | 0.5000 | spd | 71403 | 123 | 0.7 | 0 | 0.0 | W1 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



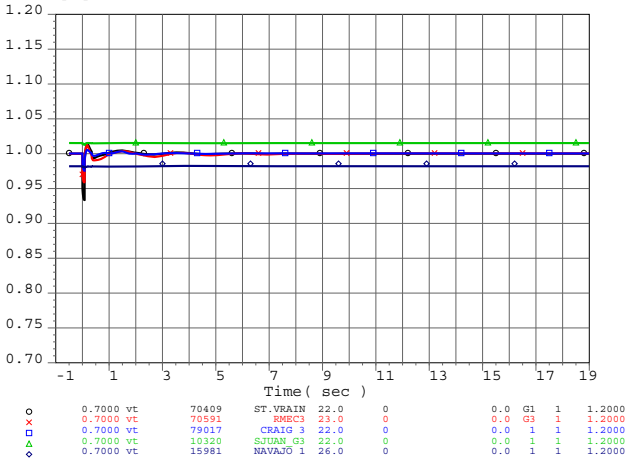

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 | vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| × | 0.7000 | vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| □ | 0.7000 | vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| △ | 0.7000 | vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| ◇ | 0.7000 | vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| + | 0.7000 | vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



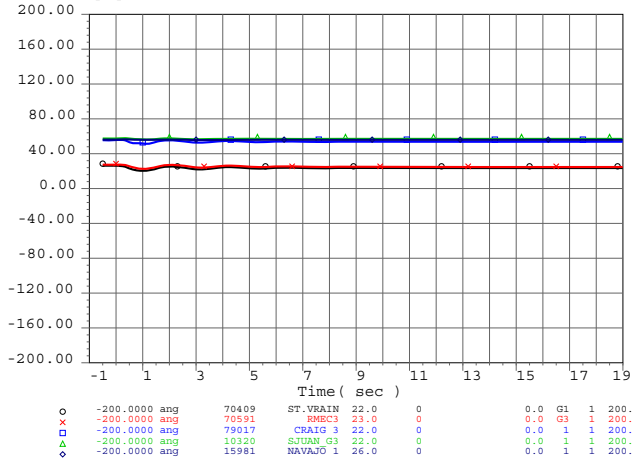

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 | ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| × | -200.0000 | ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| □ | -200.0000 | ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| △ | -200.0000 | ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| ◇ | -200.0000 | ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| + | -200.0000 | ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER




| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 | vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| × | 0.7000 | vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| □ | 0.7000 | vt | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| △ | 0.7000 | vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| ◇ | 0.7000 | vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER




| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 | ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| × | -200.0000 | ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| □ | -200.0000 | ang | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| △ | -200.0000 | ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| ◇ | -200.0000 | ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013-14 LW1 OPERATING CASE
MAY 16, 2013



SC2_LW_PstDet_v0_13_Stegall!-Archer_230_3ph_B.chf

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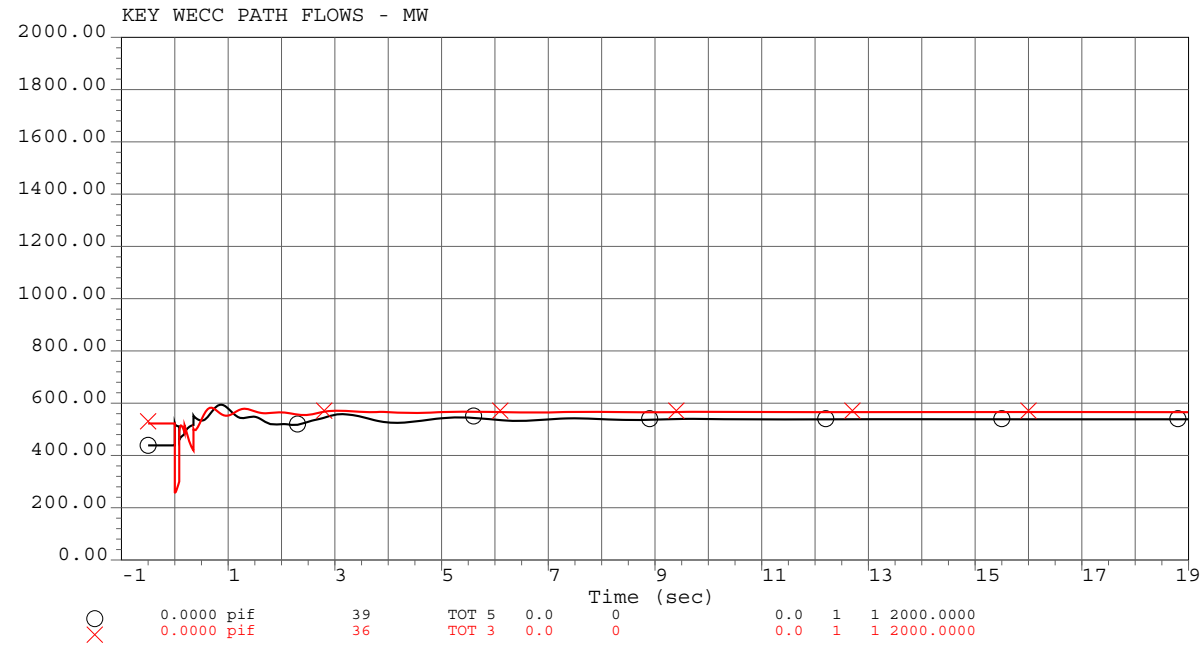
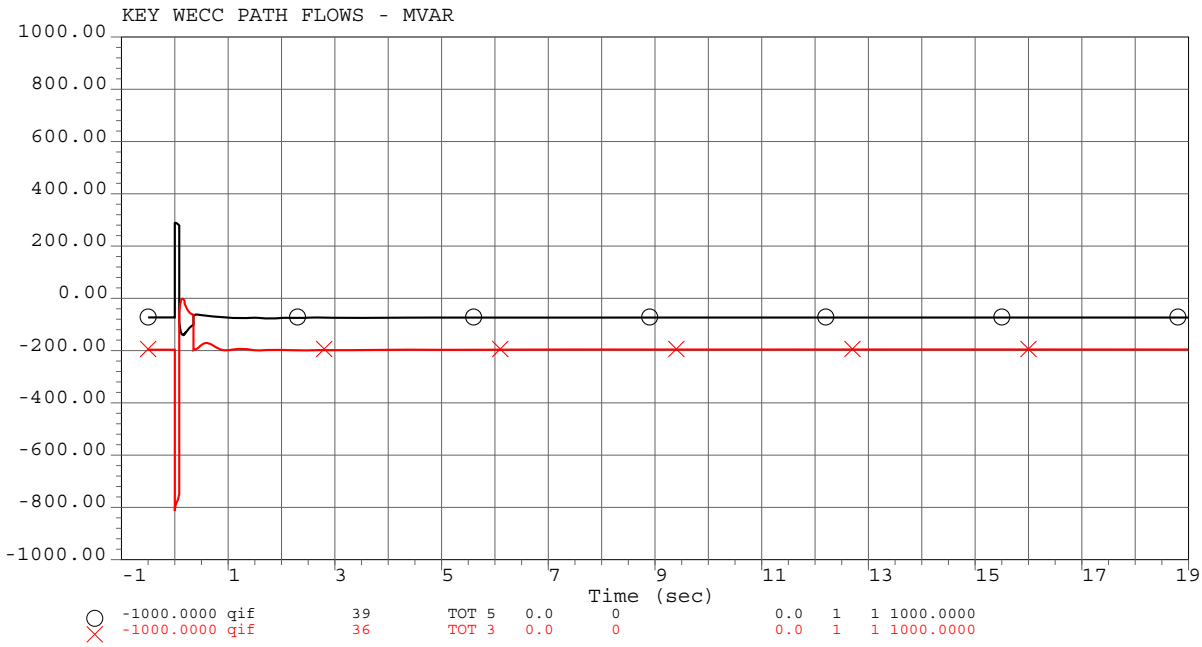
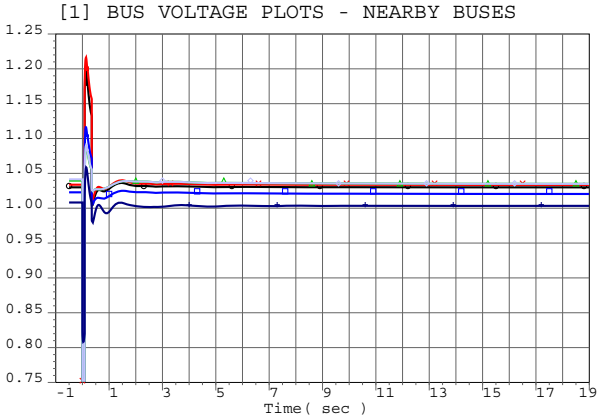
Tue Nov 26 13:33:42 2013


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

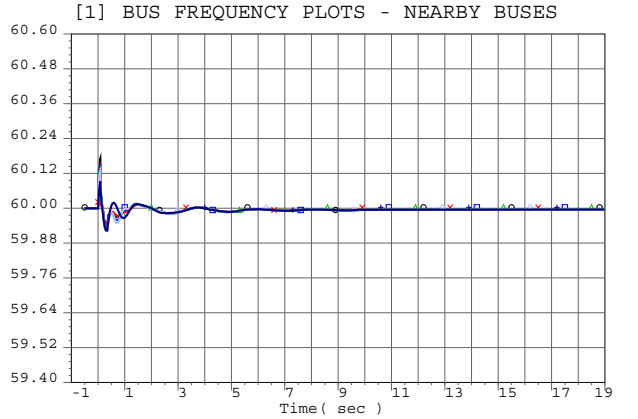
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



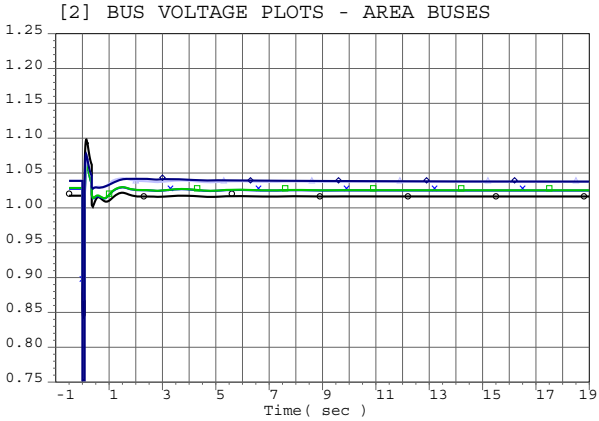

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 vbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 vbus | 73188 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



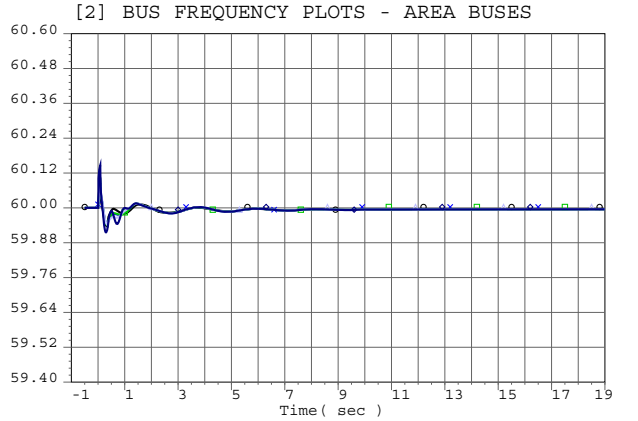

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 fbus | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 fbus | 73188 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



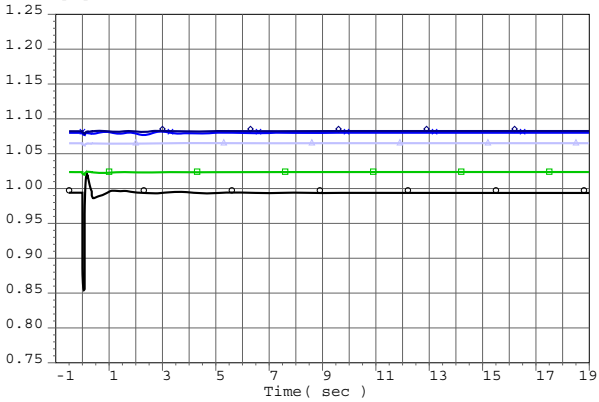

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



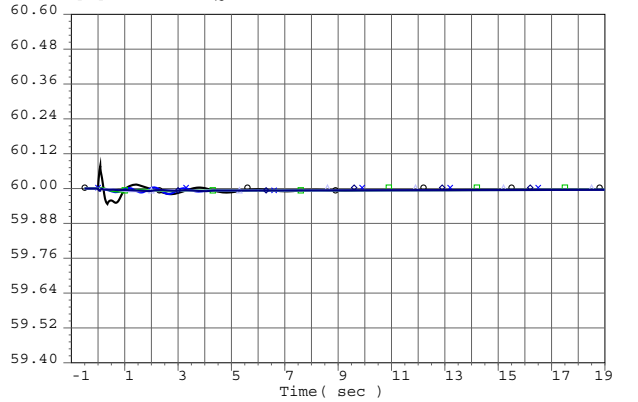

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 vbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 fbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013-14 LW1 OPERATING CASE
MAY 16, 2013



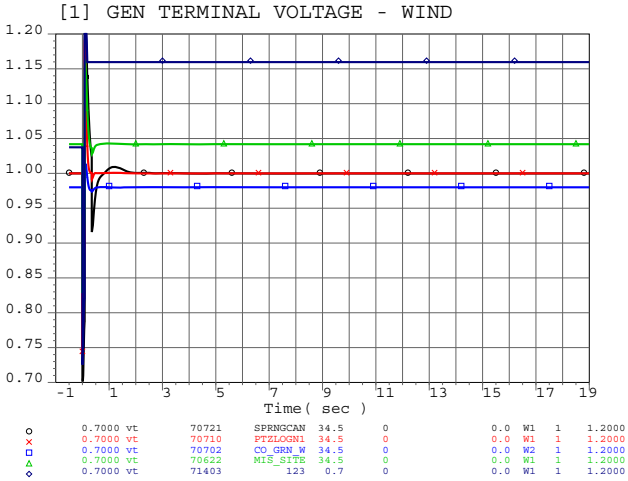
SC2_LW_PstDet_v0_14_Story!-LRS_345_3ph_B.chf

.

Tue Nov 26 13:33:55 2013

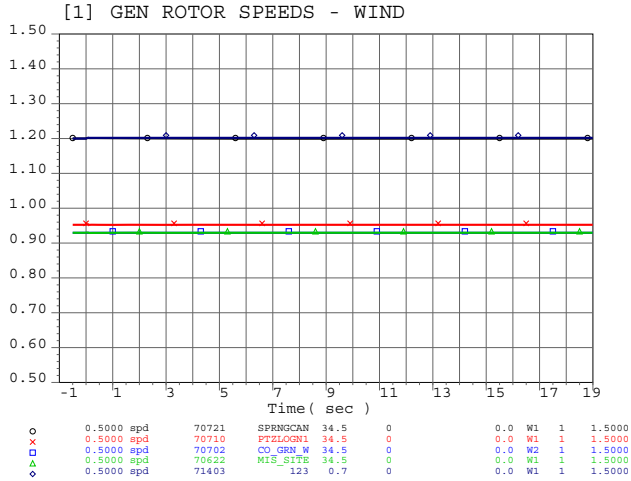
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



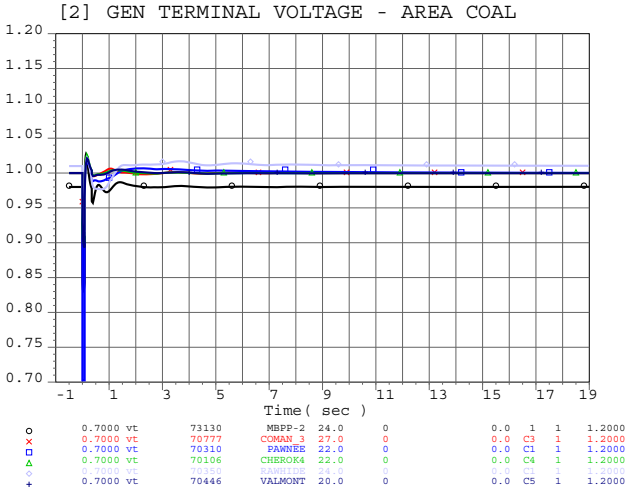

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 | vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| × | 0.7000 | vt | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| □ | 0.7000 | vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| △ | 0.7000 | vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| ◇ | 0.7000 | vt | 71403 | 123 | 0.7 | 0 | 0.0 | W1 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



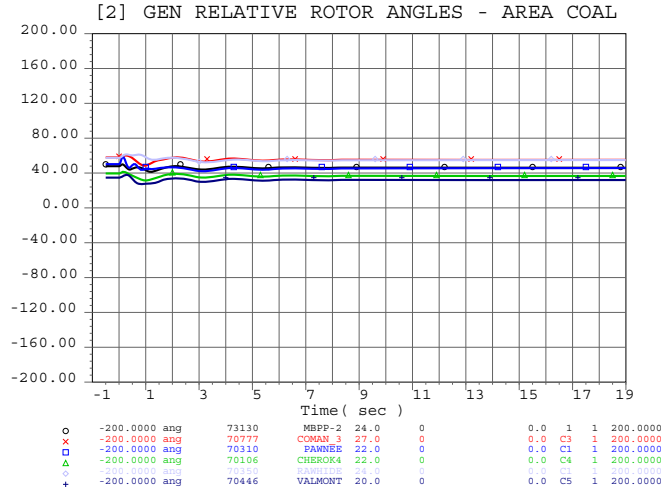

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.5000 | spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| × | 0.5000 | spd | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| □ | 0.5000 | spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| △ | 0.5000 | spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| ◇ | 0.5000 | spd | 71403 | 123 | 0.7 | 0 | 0.0 | W1 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



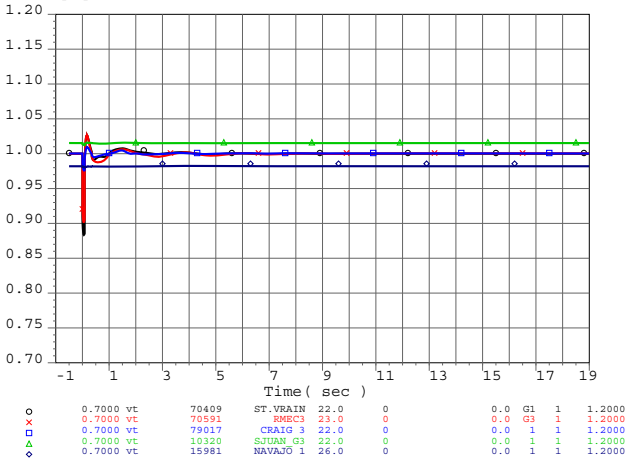

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 | vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| × | 0.7000 | vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| □ | 0.7000 | vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| △ | 0.7000 | vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| ◇ | 0.7000 | vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| + | 0.7000 | vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



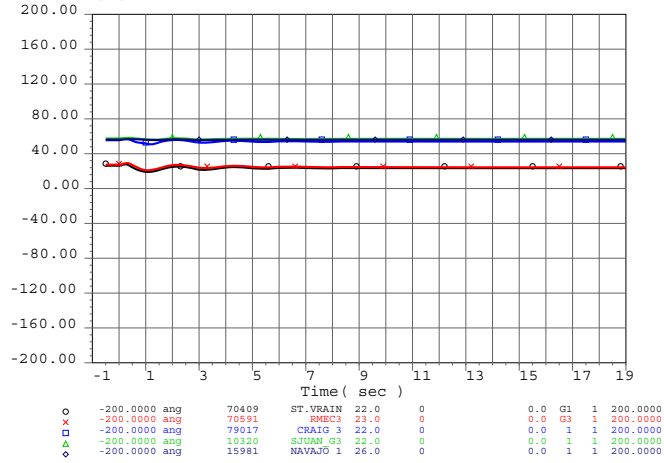

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 | ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| × | -200.0000 | ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| □ | -200.0000 | ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| △ | -200.0000 | ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| ◇ | -200.0000 | ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| + | -200.0000 | ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER




| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 | vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| × | 0.7000 | vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| □ | 0.7000 | vt | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| △ | 0.7000 | vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| ◇ | 0.7000 | vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER




| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 | ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| × | -200.0000 | ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| □ | -200.0000 | ang | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| △ | -200.0000 | ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| ◇ | -200.0000 | ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013-14 LW1 OPERATING CASE
MAY 16, 2013



SC2_LW_PstDet_v0_14_Story!-LRS_345_3ph_B.chf

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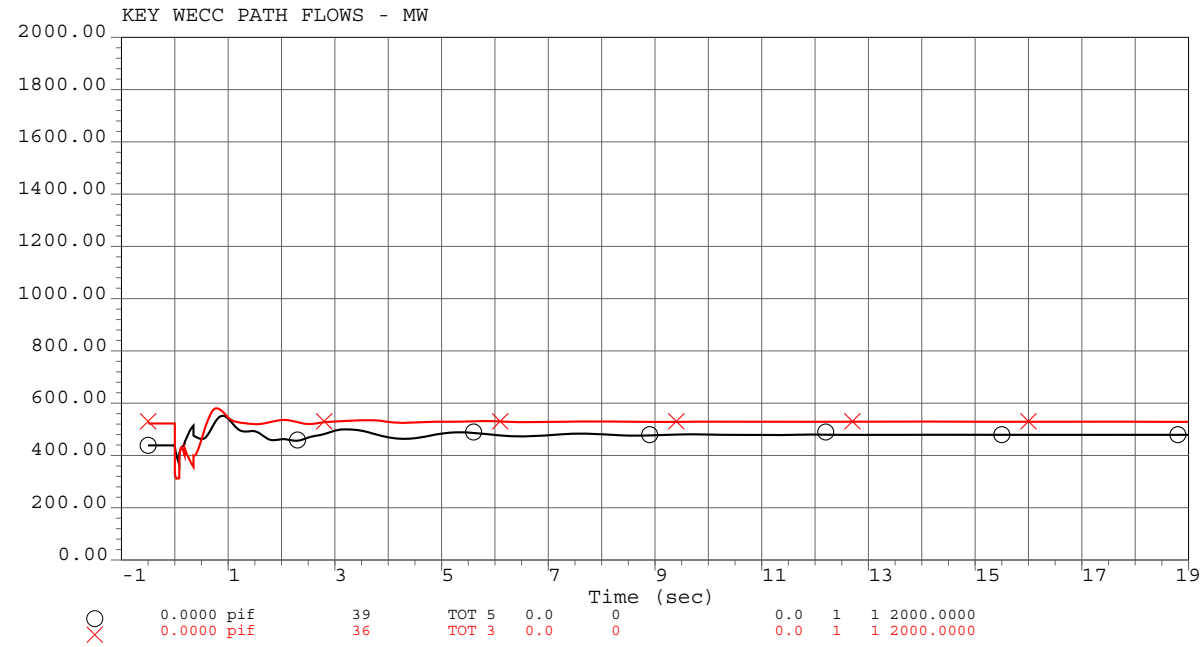
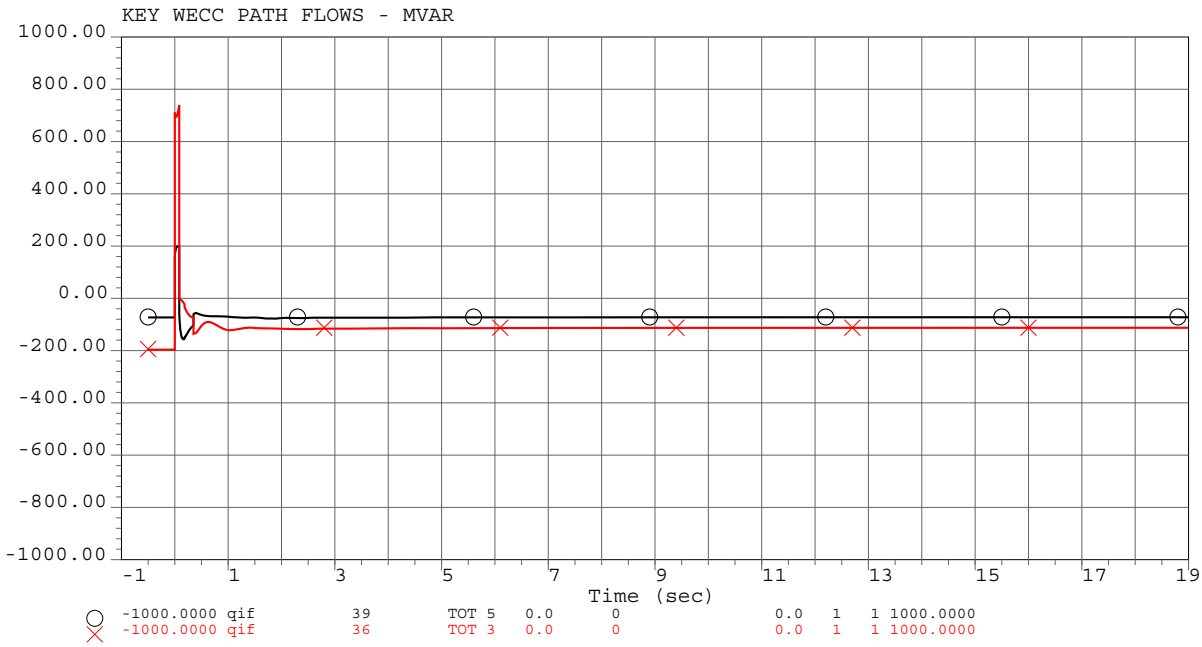
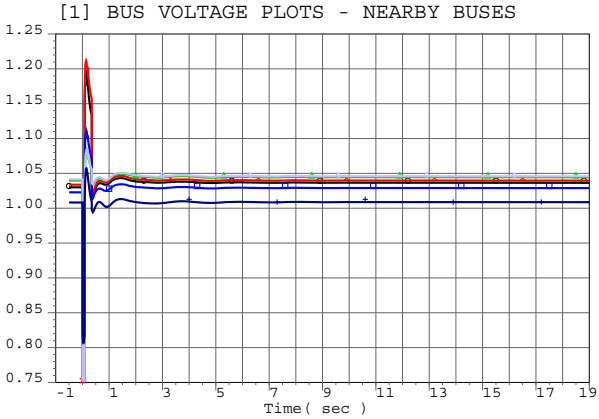
Tue Nov 26 13:33:55 2013


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

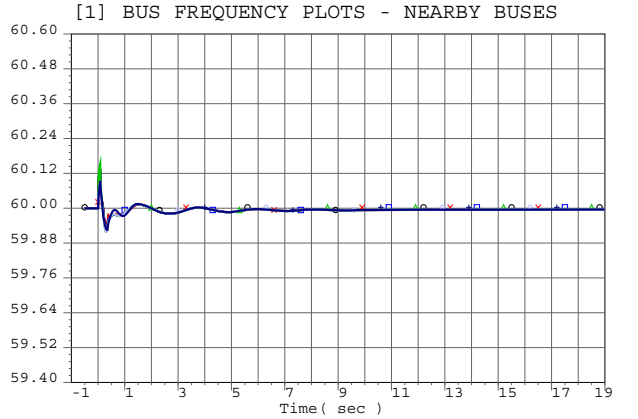
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



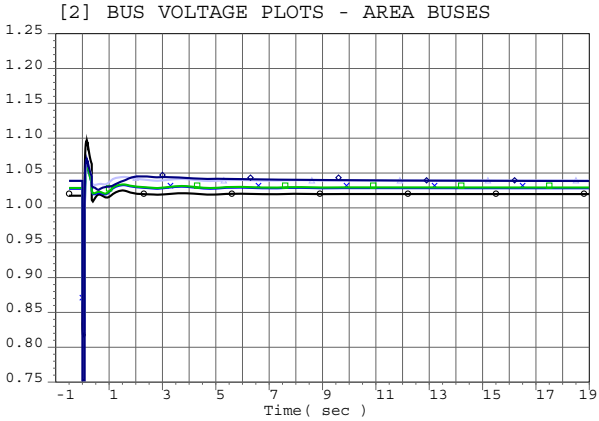

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 vbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 vbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



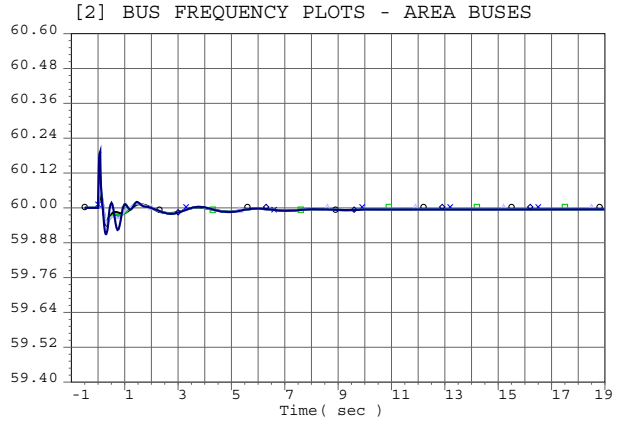

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 fbus | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 fbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



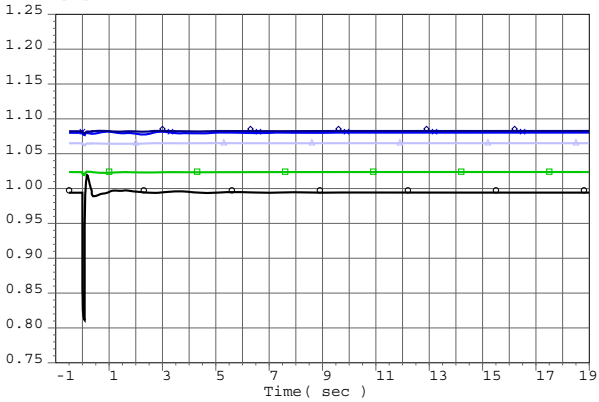

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



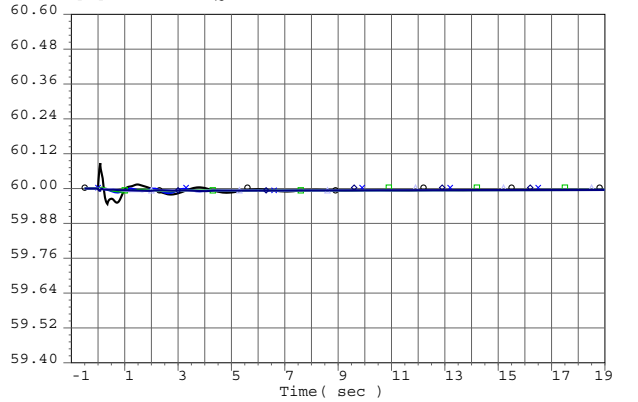

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 vbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 fbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013-14 LW1 OPERATING CASE
MAY 16, 2013



SC2_LW_PstDet_v0_15_Story!-Pawnee_230_3ph_B.chf

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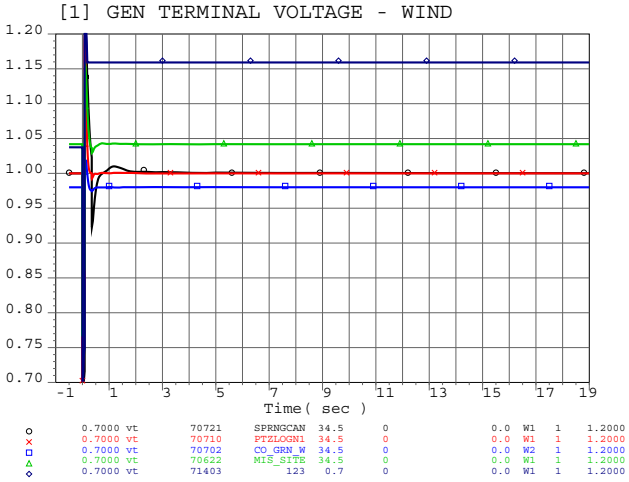
Tue Nov 26 13:34:10 2013

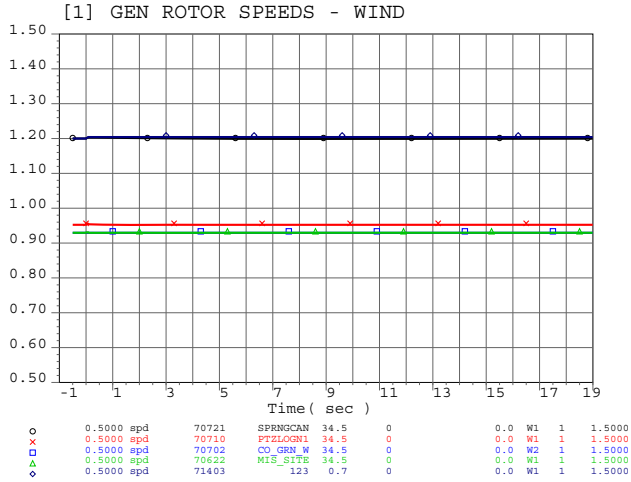
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



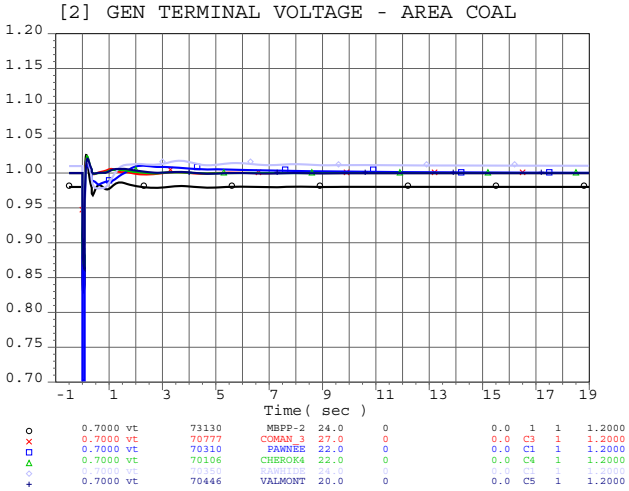

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 0.7000 vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| 0.7000 vt | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| 0.7000 vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| 0.7000 vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| 0.7000 vt | 71403 | 123 | 0.7 | 0 | 0.0 | W1 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



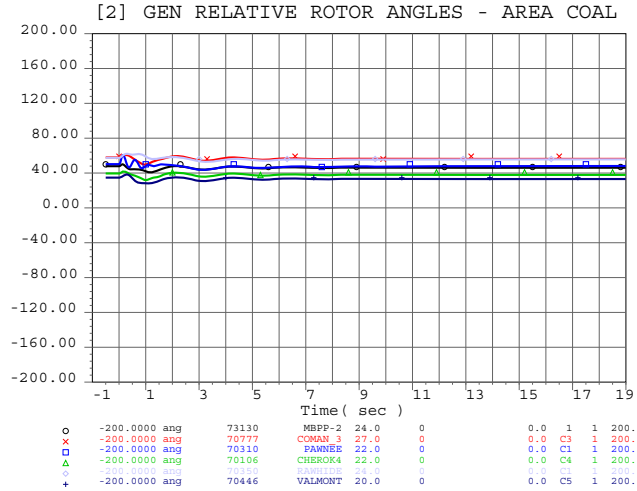

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 0.5000 spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| 0.5000 spd | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| 0.5000 spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| 0.5000 spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| 0.5000 spd | 71403 | 123 | 0.7 | 0 | 0.0 | W1 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



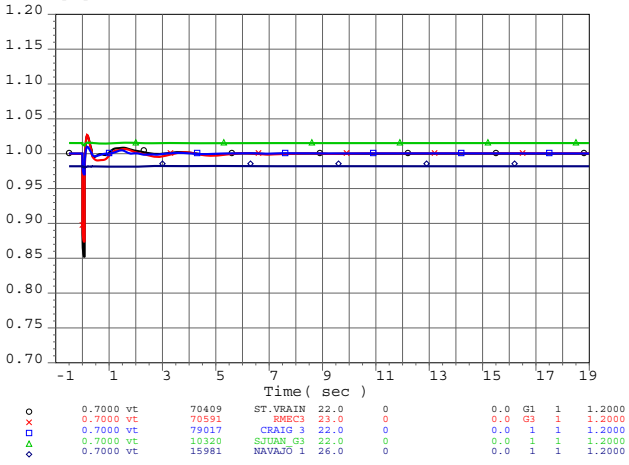

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 0.7000 vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| 0.7000 vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| 0.7000 vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| 0.7000 vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| 0.7000 vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| 0.7000 vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



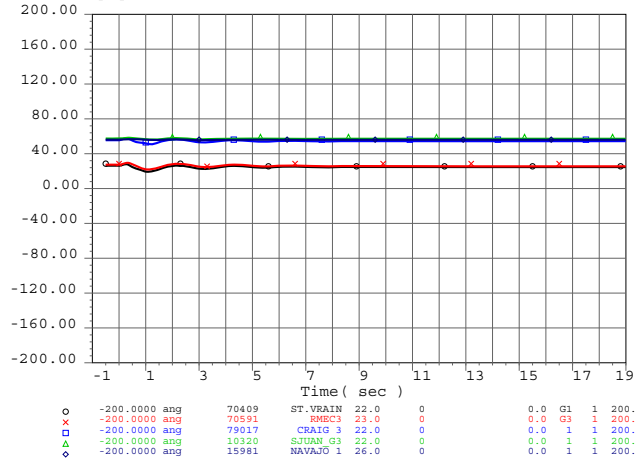

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| -200.0000 ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| -200.0000 ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| -200.0000 ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| -200.0000 ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| -200.0000 ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| -200.0000 ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER




| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 0.7000 vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| 0.7000 vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| 0.7000 vt | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| 0.7000 vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| 0.7000 vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER




| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| -200.0000 ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| -200.0000 ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| -200.0000 ang | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| -200.0000 ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| -200.0000 ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |

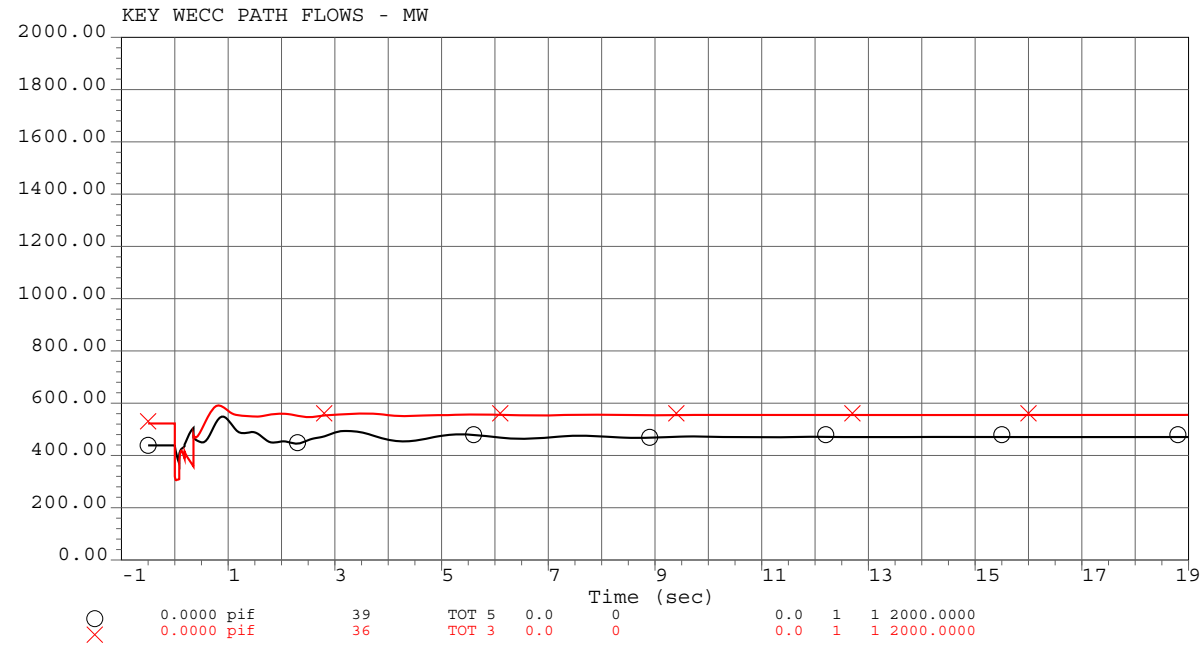
WESTERN ELECTRICITY COORDINATING COUNCIL
2013-14 LW1 OPERATING CASE
MAY 16, 2013

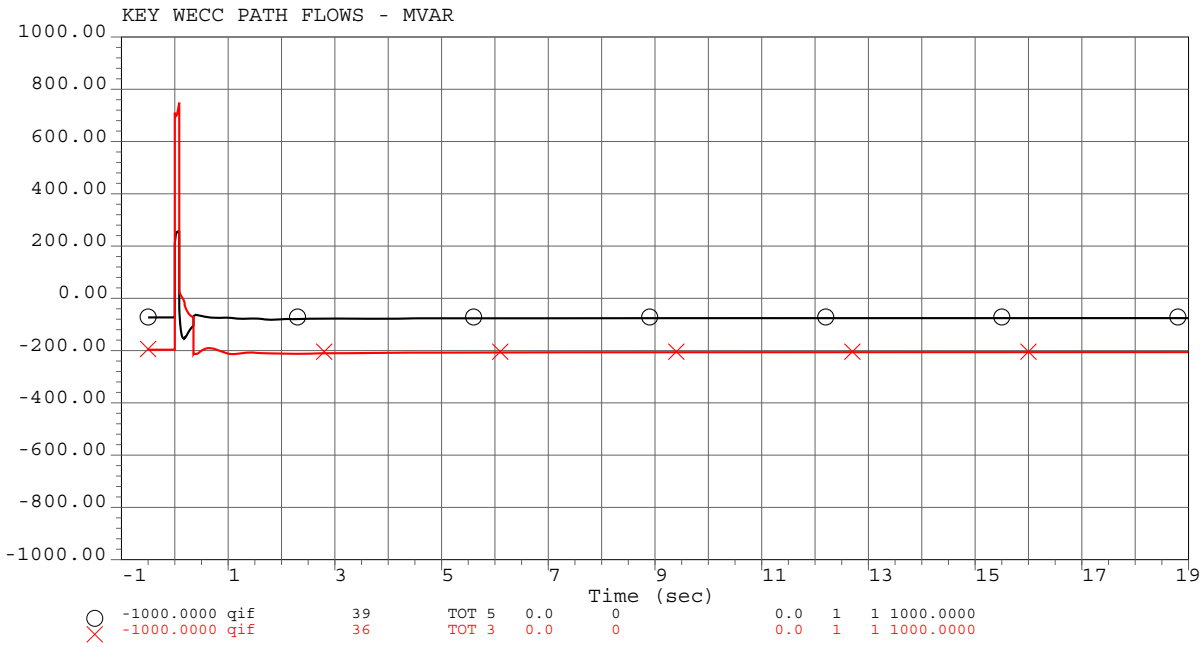


SC2_LW_PstDet_v0_15_Story!-Pawnee_230_3ph_B.chf

.

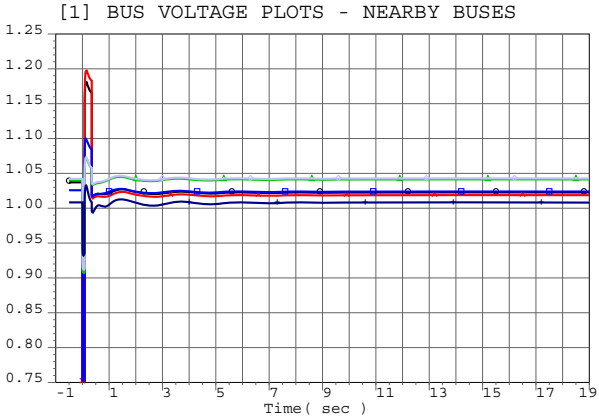
Tue Nov 26 13:34:10 2013


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

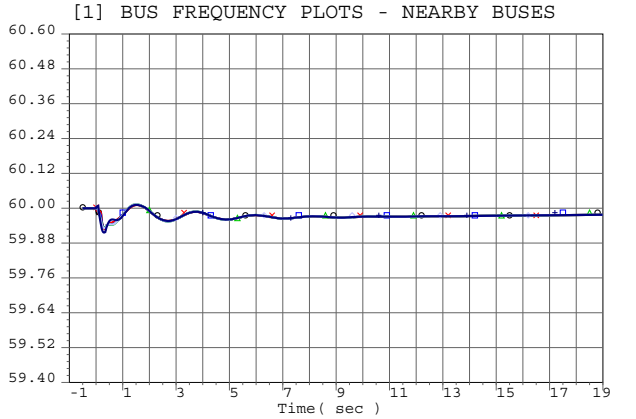
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



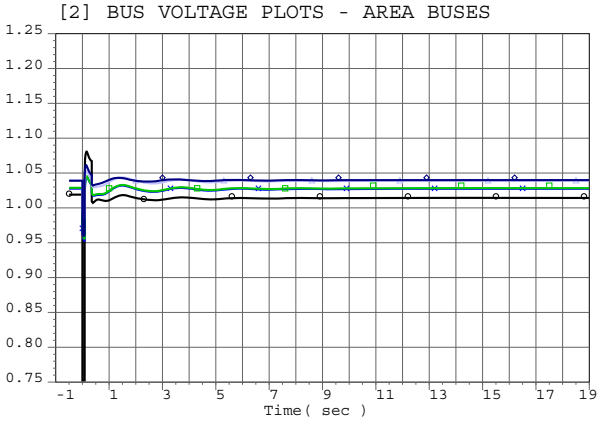

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



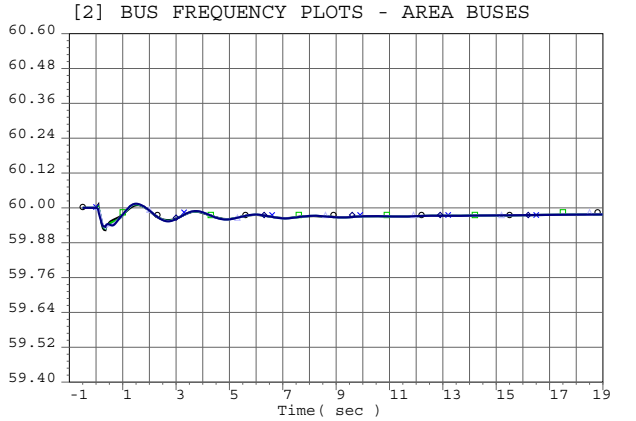

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



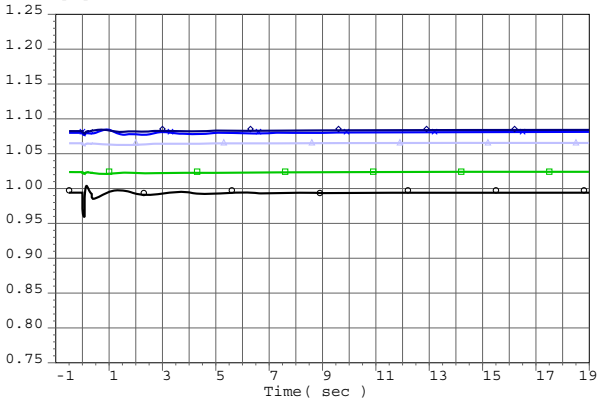

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



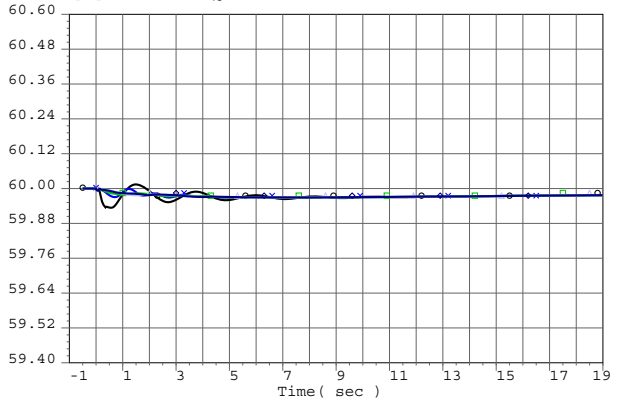

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013-14 LW1 OPERATING CASE
MAY 16, 2013



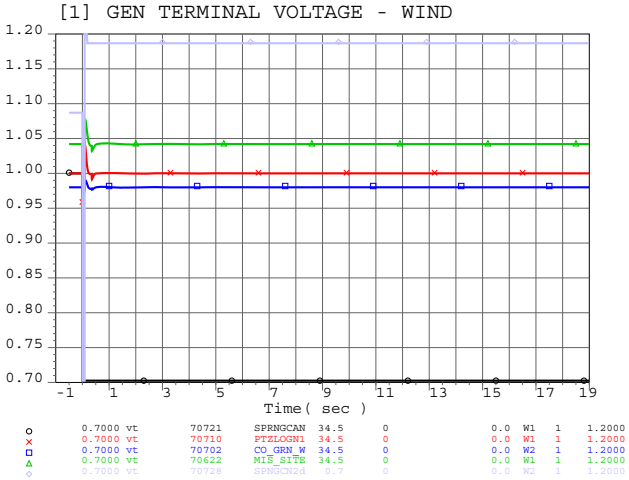
SC2_LW_PstEqv_v0_01_Sidney!-SidneyDC_230_3ph_B.chf

.

Tue Nov 26 13:34:25 2013

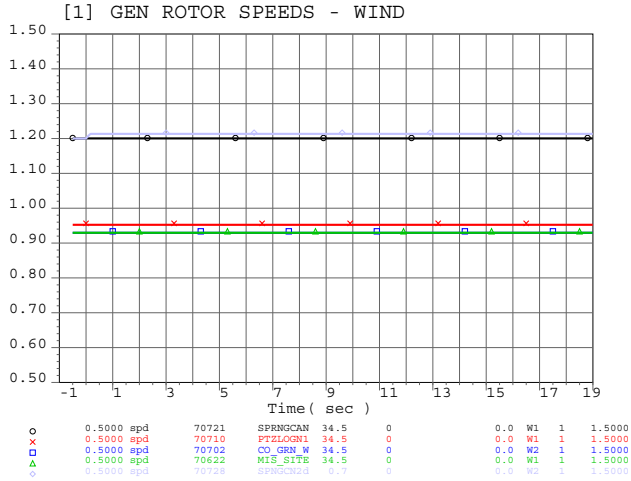
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



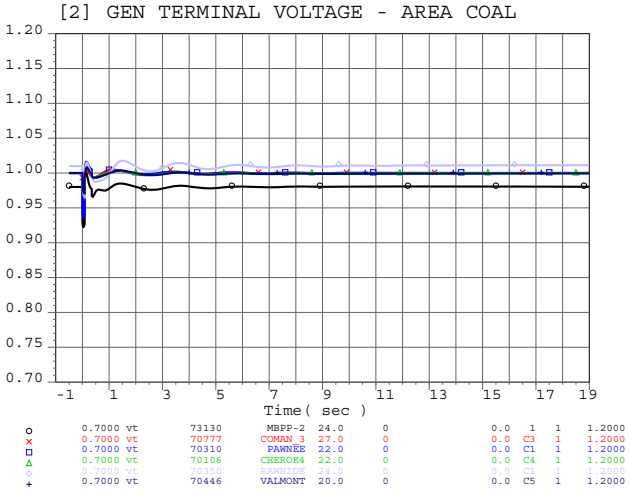

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 0.7000 vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| 0.7000 vt | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| 0.7000 vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| 0.7000 vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| 0.7000 vt | 70728 | SPNGCN2d | 0.7 | 0 | 0.0 | W2 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



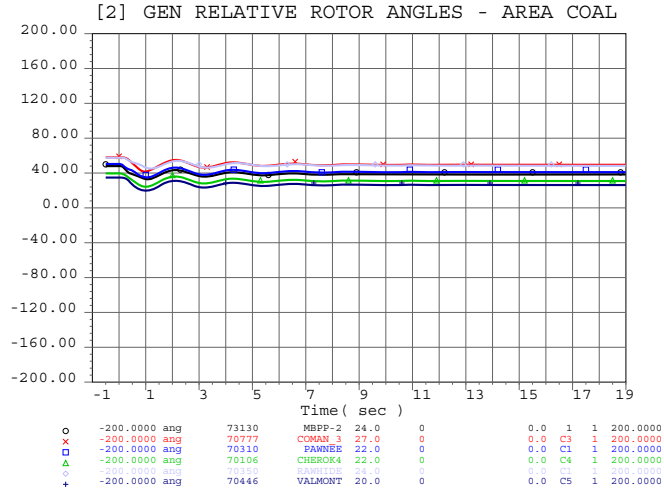

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 0.5000 spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| 0.5000 spd | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| 0.5000 spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| 0.5000 spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| 0.5000 spd | 70728 | SPNGCN2d | 0.7 | 0 | 0.0 | W2 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



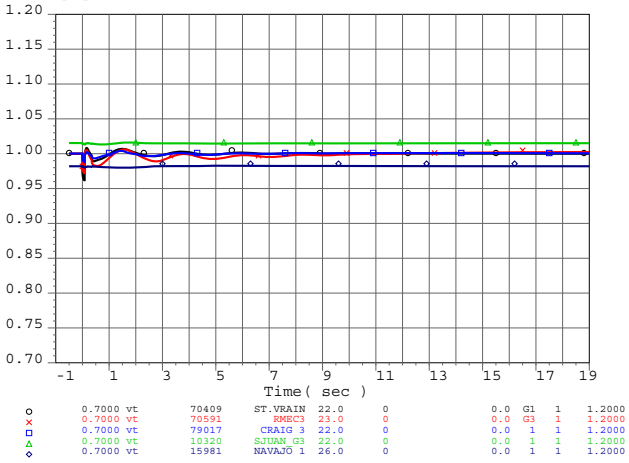

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 0.7000 vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| 0.7000 vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| 0.7000 vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| 0.7000 vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| 0.7000 vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| 0.7000 vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



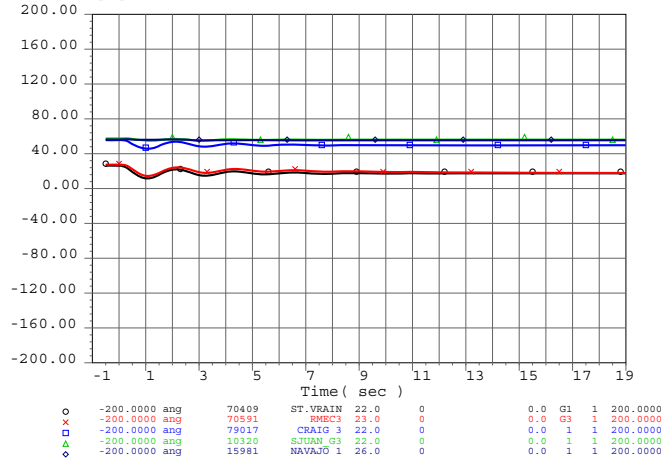

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| -200.0000 ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| -200.0000 ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| -200.0000 ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| -200.0000 ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| -200.0000 ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| -200.0000 ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER




| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 0.7000 vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| 0.7000 vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| 0.7000 vt | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| 0.7000 vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| 0.7000 vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER




| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| -200.0000 ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| -200.0000 ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| -200.0000 ang | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| -200.0000 ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| -200.0000 ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013-14 LW1 OPERATING CASE
MAY 16, 2013



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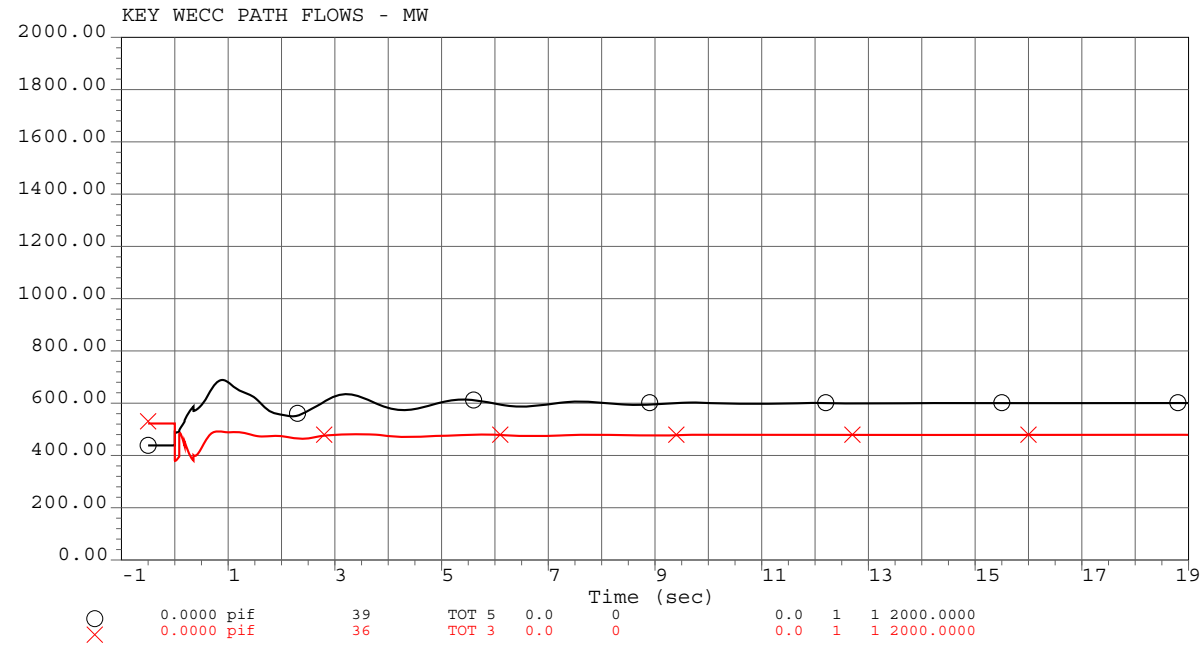
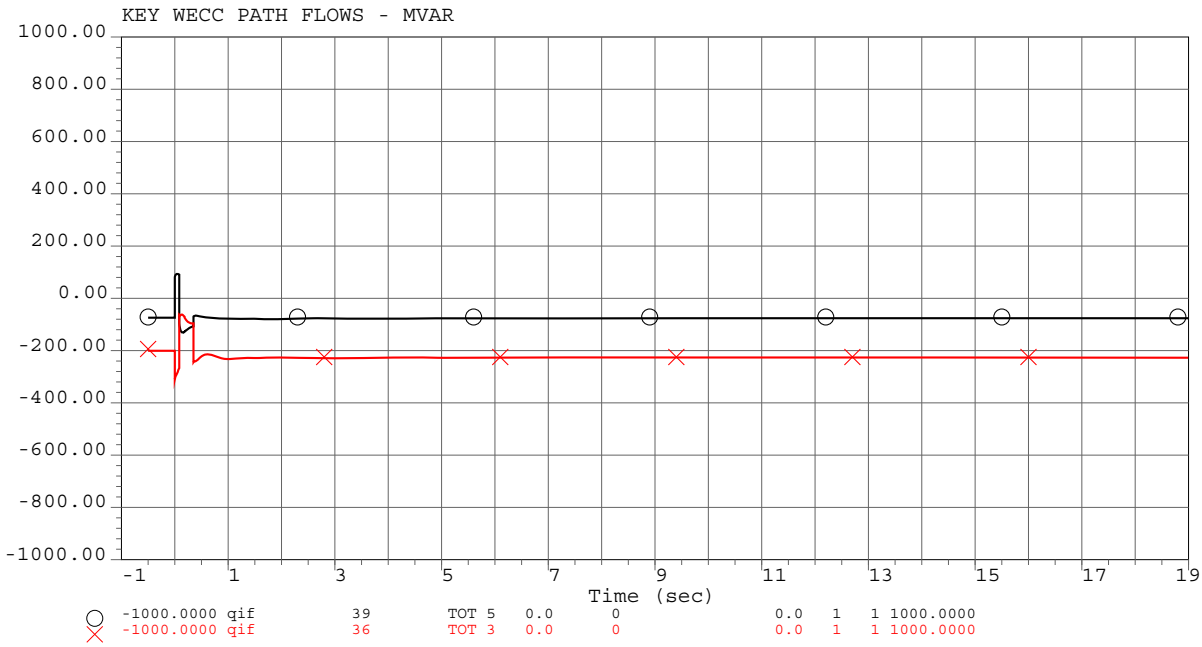
.

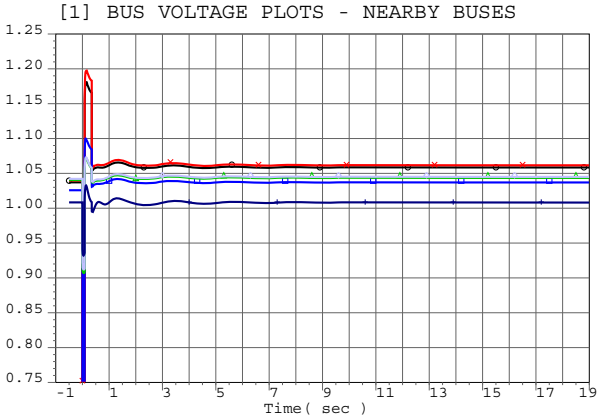
Tue Nov 26 13:34:25 2013


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

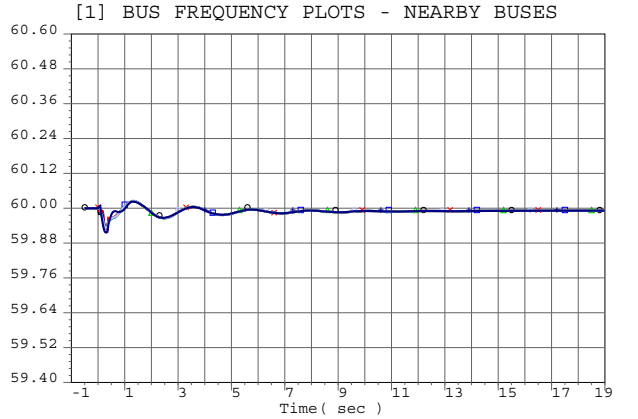
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



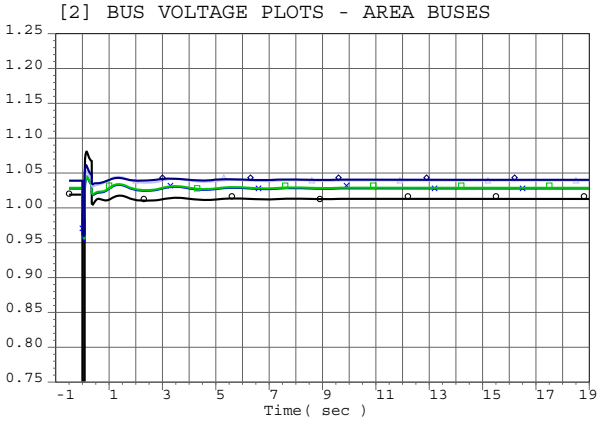

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



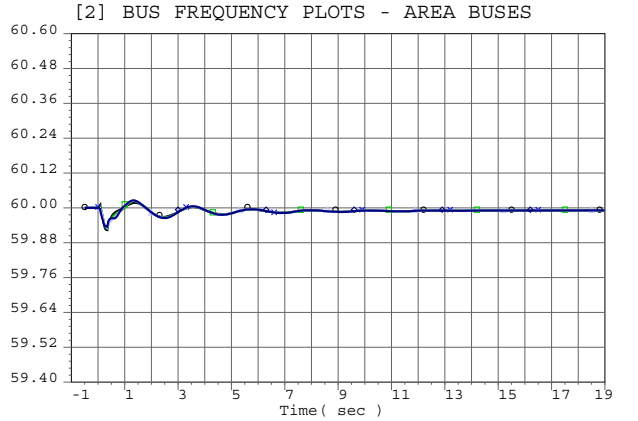

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



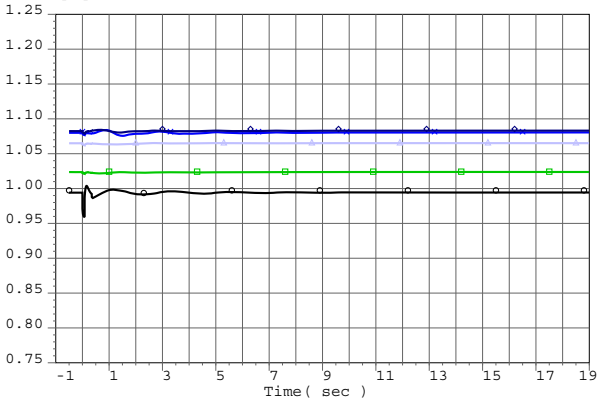

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



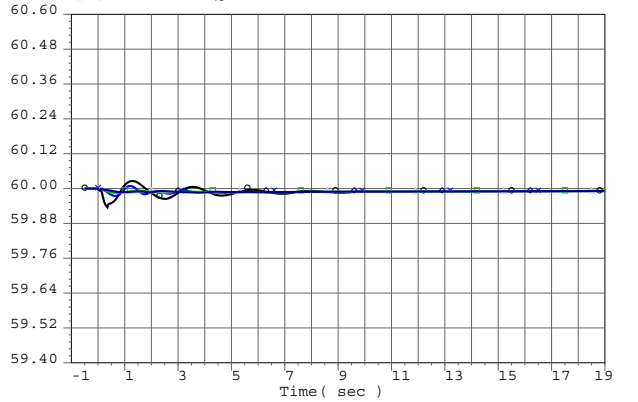

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013-14 LW1 OPERATING CASE
MAY 16, 2013



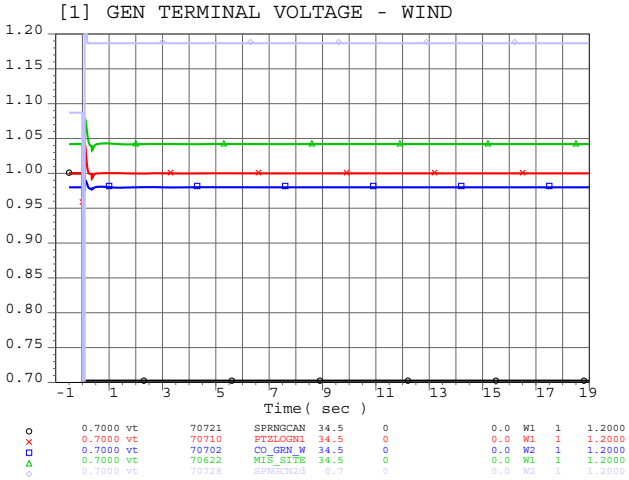
SC2_LW_PstEqv_v0_02_Sidney!-Stegall_230_3ph_B.chf

.

Tue Nov 26 13:34:40 2013

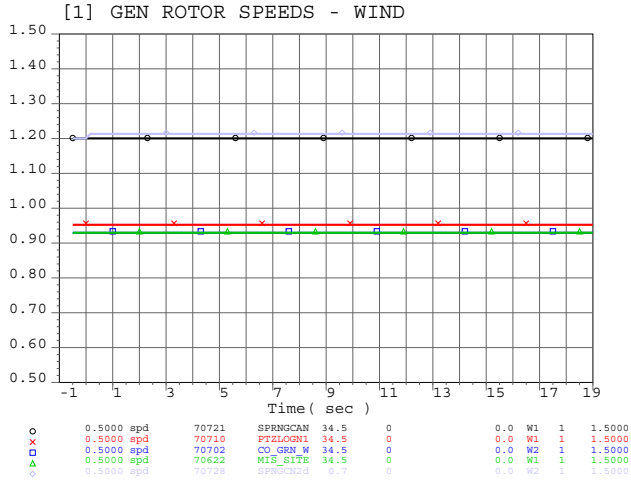
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



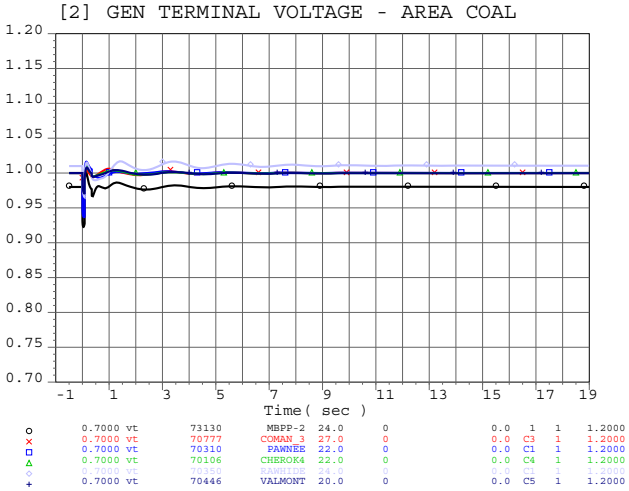

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 | vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| × | 0.7000 | vt | 70710 | PTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| □ | 0.7000 | vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| △ | 0.7000 | vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| ◇ | 0.7000 | vt | 70728 | SPNGCN2d | 0.7 | 0 | 0.0 | W2 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



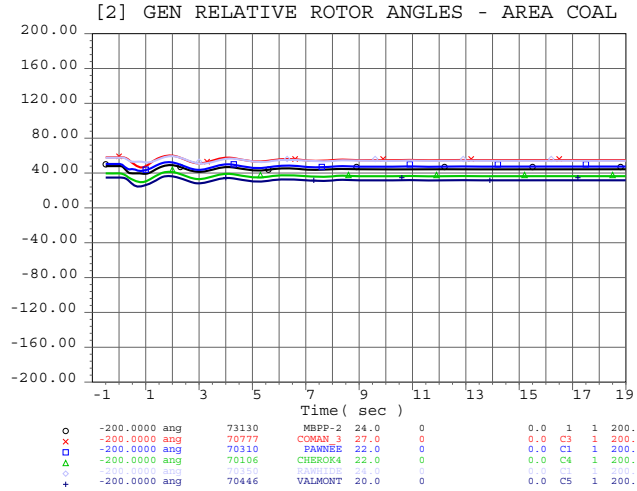

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.5000 | spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| × | 0.5000 | spd | 70710 | PTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| □ | 0.5000 | spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| △ | 0.5000 | spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| ◇ | 0.5000 | spd | 70728 | SPNGCN2d | 0.7 | 0 | 0.0 | W2 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



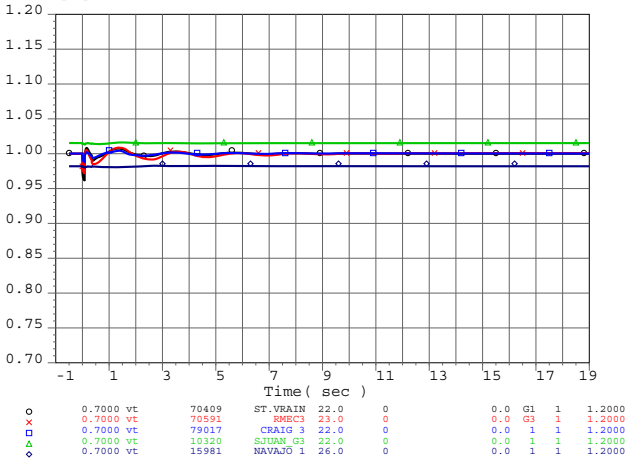

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 | vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| × | 0.7000 | vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| □ | 0.7000 | vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| △ | 0.7000 | vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| ◇ | 0.7000 | vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| + | 0.7000 | vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



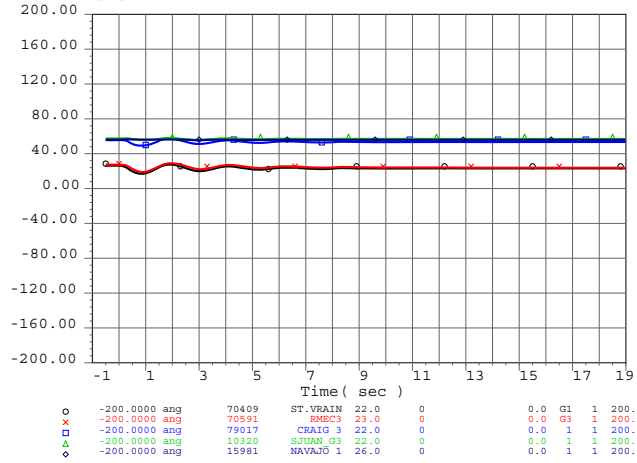

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 | ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| × | -200.0000 | ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| □ | -200.0000 | ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| △ | -200.0000 | ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| ◇ | -200.0000 | ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| + | -200.0000 | ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER




| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 | vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| × | 0.7000 | vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| □ | 0.7000 | vt | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| △ | 0.7000 | vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| ◇ | 0.7000 | vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER




| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 | ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| × | -200.0000 | ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| □ | -200.0000 | ang | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| △ | -200.0000 | ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| ◇ | -200.0000 | ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |

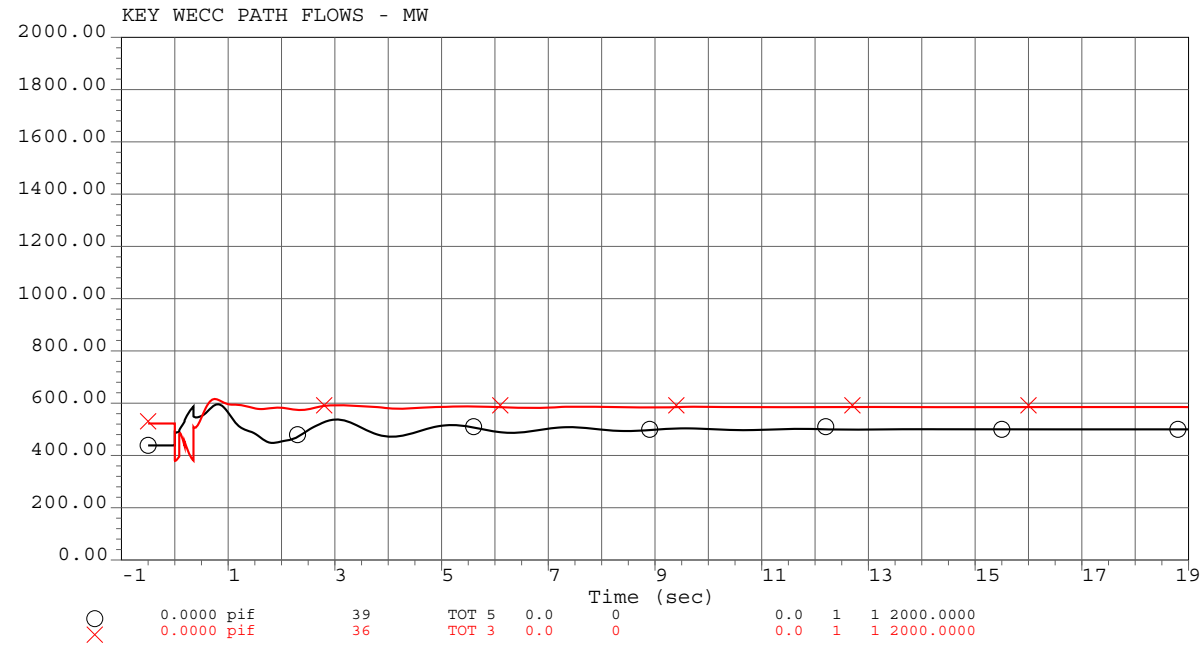
WESTERN ELECTRICITY COORDINATING COUNCIL
2013-14 LW1 OPERATING CASE
MAY 16, 2013

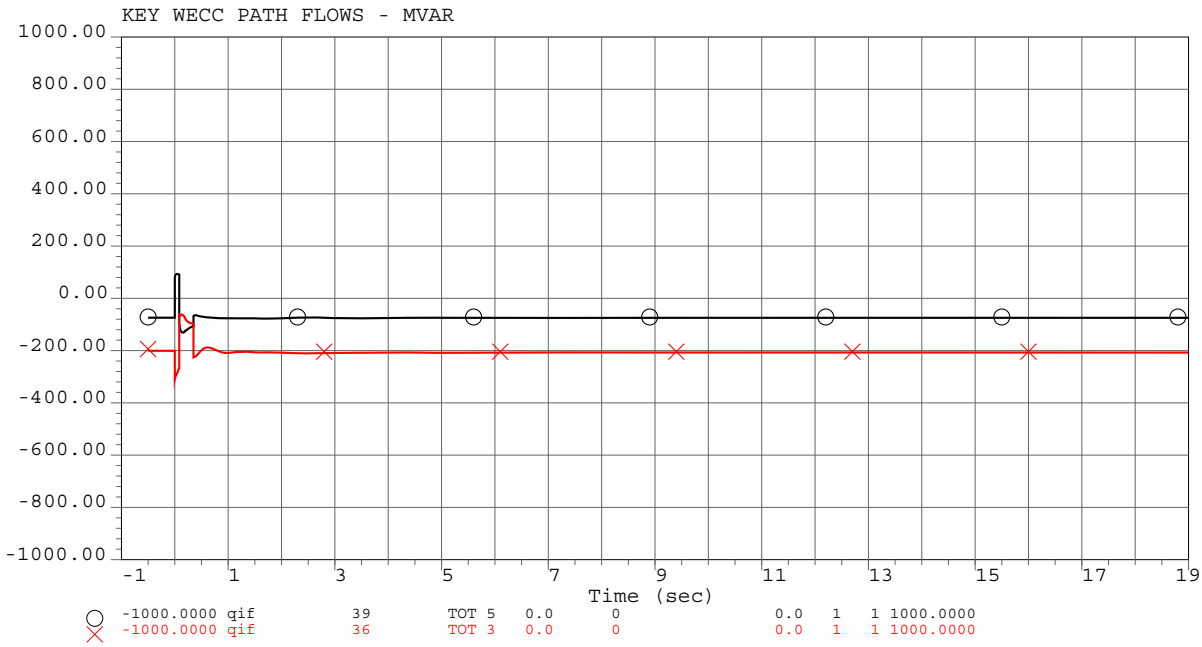


SC2_LW_PstEqv_v0_02_Sidney!-Stegall_230_3ph_B.chf

.

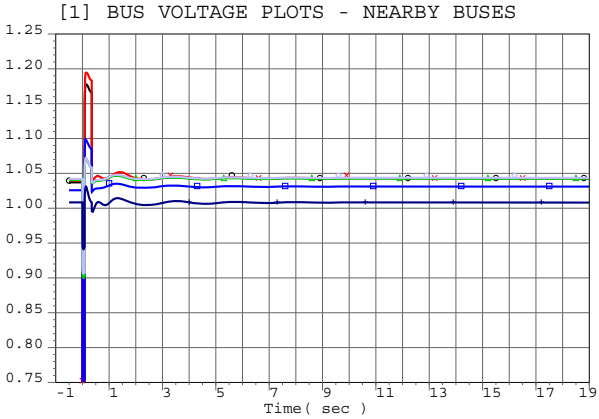
Tue Nov 26 13:34:40 2013


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

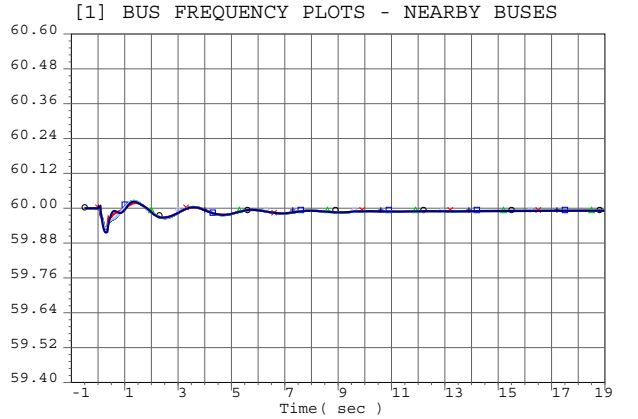
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



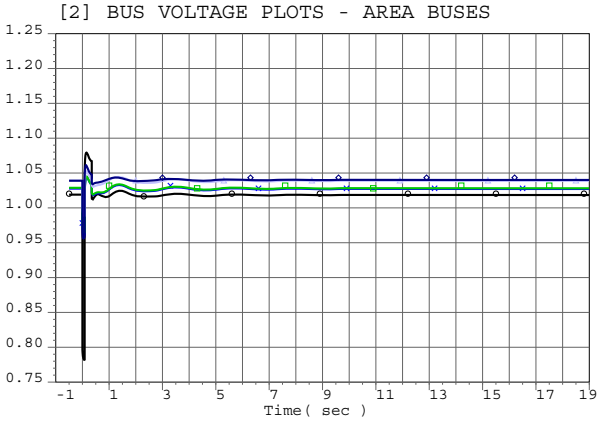

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



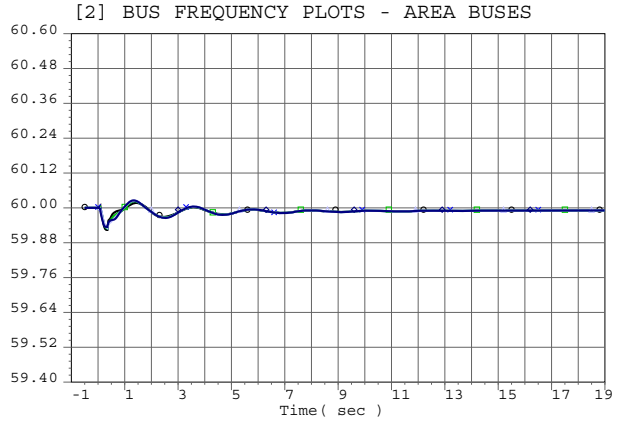

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



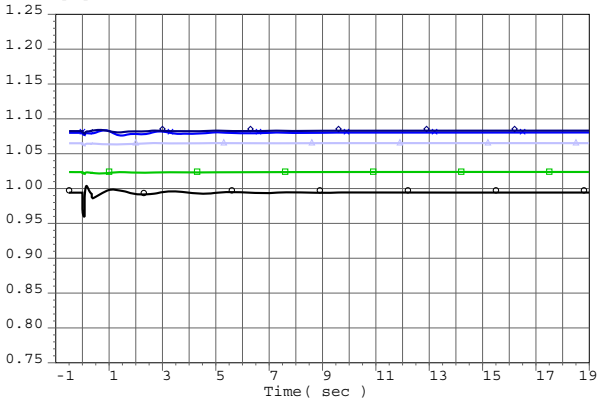

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



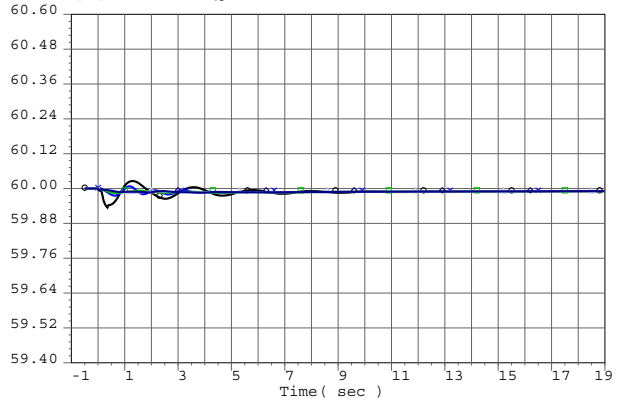

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013-14 LW1 OPERATING CASE
MAY 16, 2013



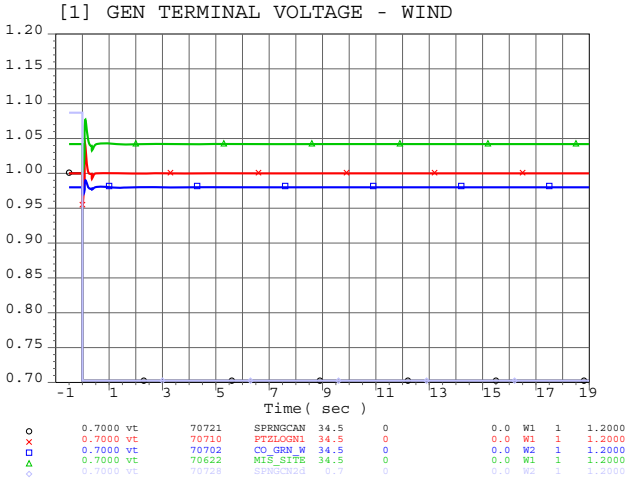
SC2_LW_PstEqv_v0_03_SprCan!-Sidney_230_3ph_B.chf

.

Tue Nov 26 13:34:54 2013

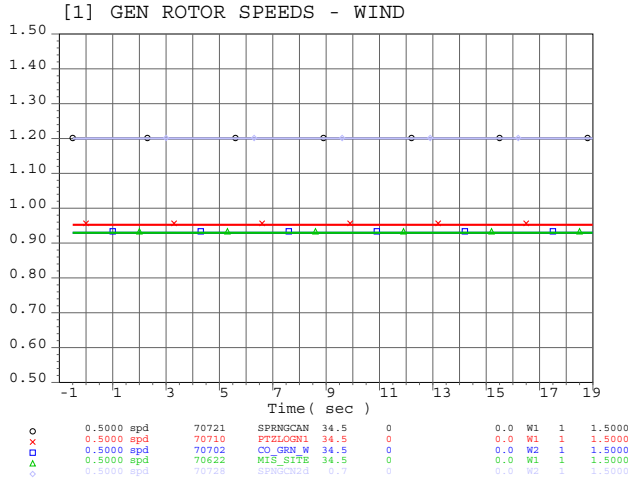
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



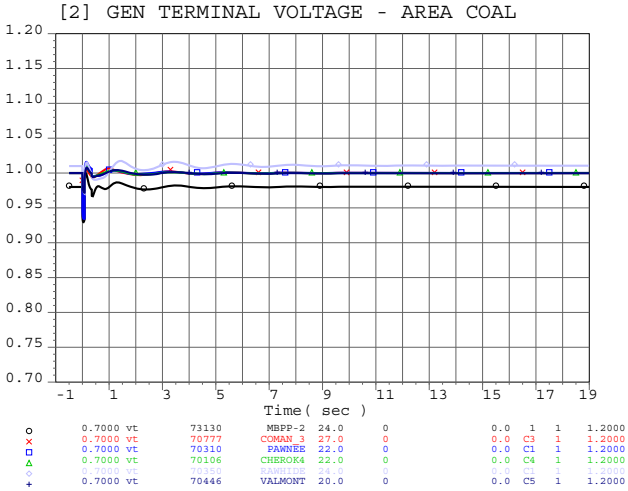

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| × | 0.7000 vt | 70710 | FTYLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| □ | 0.7000 vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| △ | 0.7000 vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 70728 | SPNGCN2d | 0.7 | 0 | 0.0 | W2 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



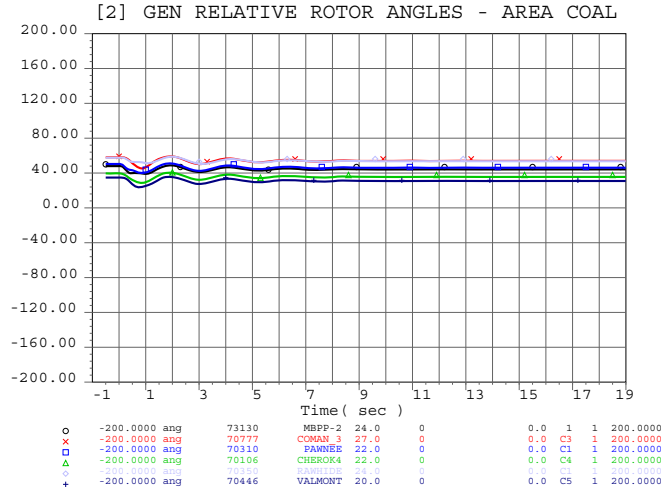

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.5000 spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| × | 0.5000 spd | 70710 | FTYLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| □ | 0.5000 spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| △ | 0.5000 spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| ◇ | 0.5000 spd | 70728 | SPNGCN2d | 0.7 | 0 | 0.0 | W2 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



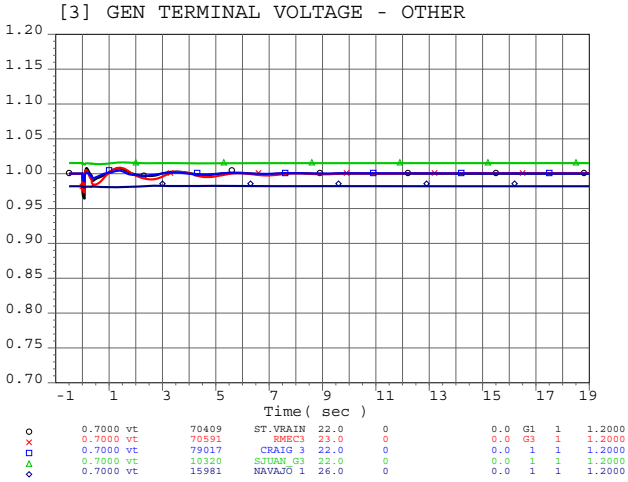

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| × | 0.7000 vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| □ | 0.7000 vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| △ | 0.7000 vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| + | 0.7000 vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



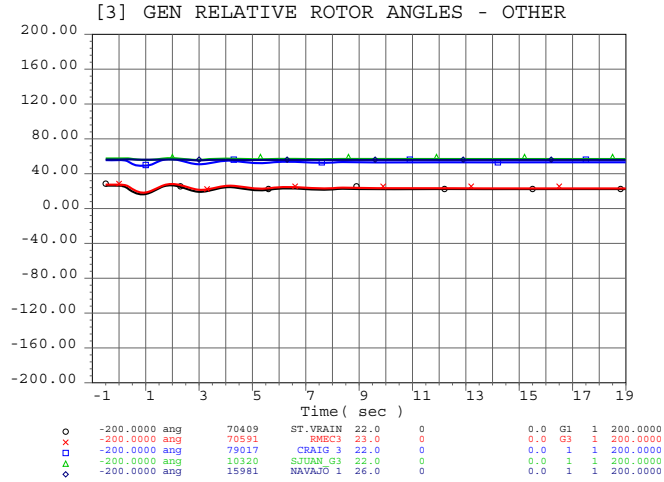

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| × | -200.0000 ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| □ | -200.0000 ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| △ | -200.0000 ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| + | -200.0000 ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| × | 0.7000 vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| □ | 0.7000 vt | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| △ | 0.7000 vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| × | -200.0000 ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| □ | -200.0000 ang | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| △ | -200.0000 ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |

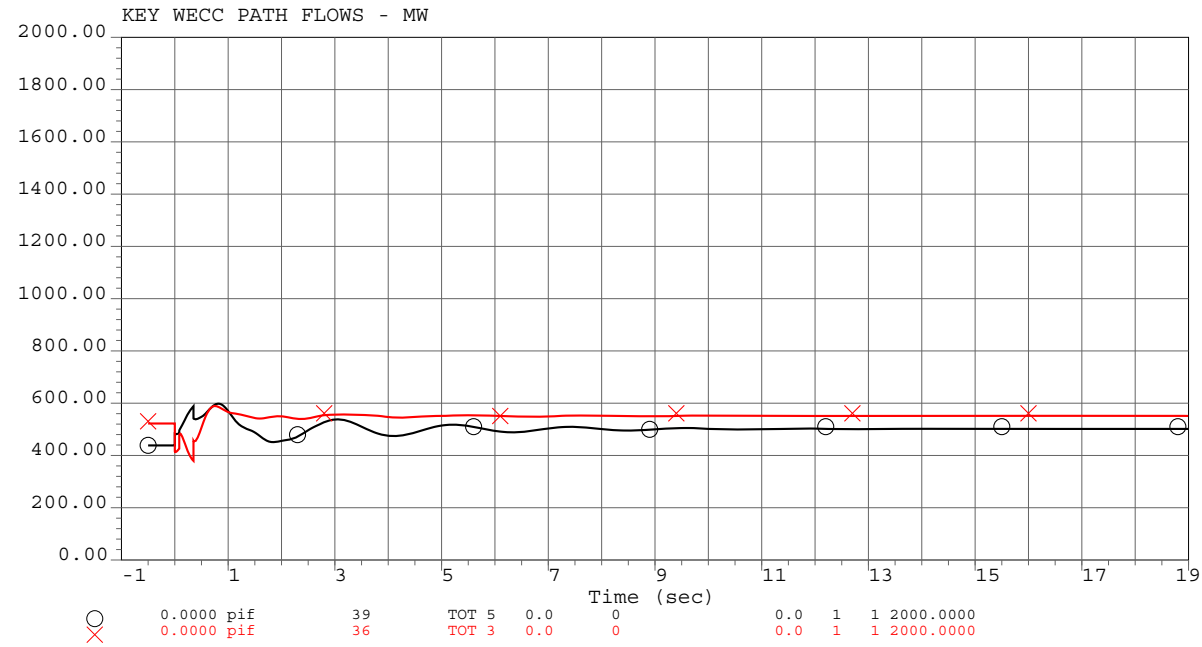
WESTERN ELECTRICITY COORDINATING COUNCIL
2013-14 LW1 OPERATING CASE
MAY 16, 2013

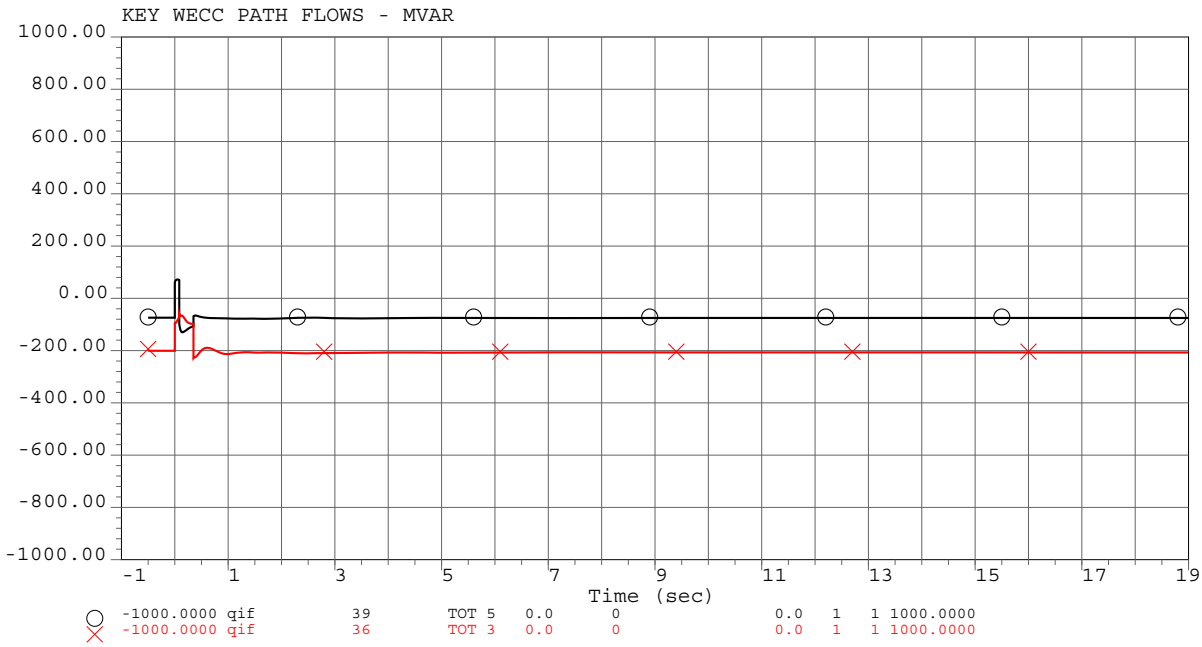


SC2_LW_PstEqv_v0_03_SprCan!-Sidney_230_3ph_B.chf

.

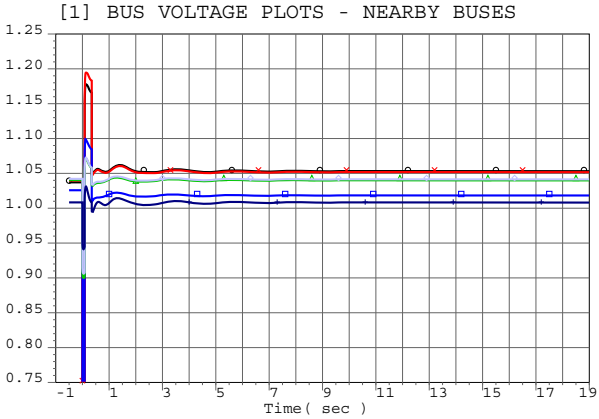
Tue Nov 26 13:34:54 2013


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

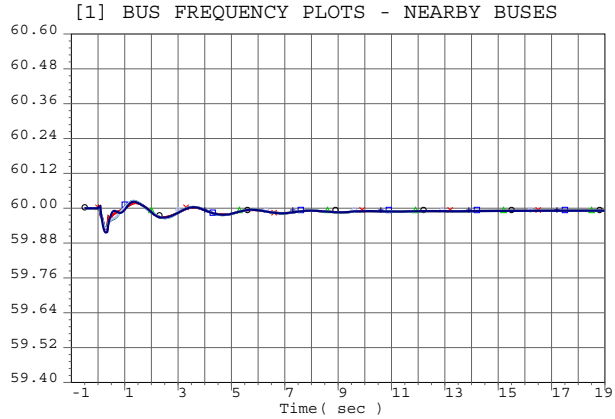
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



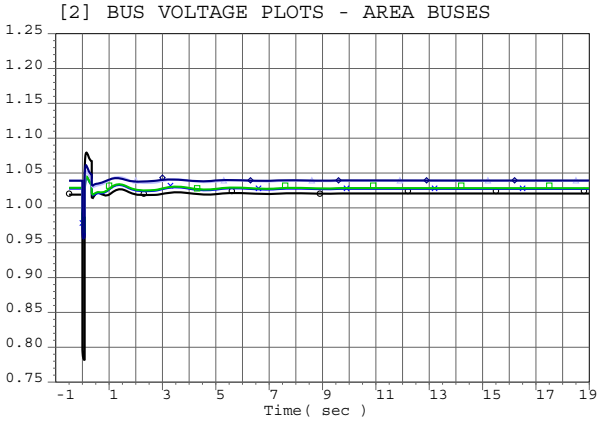

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 73188 | CRAIG 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



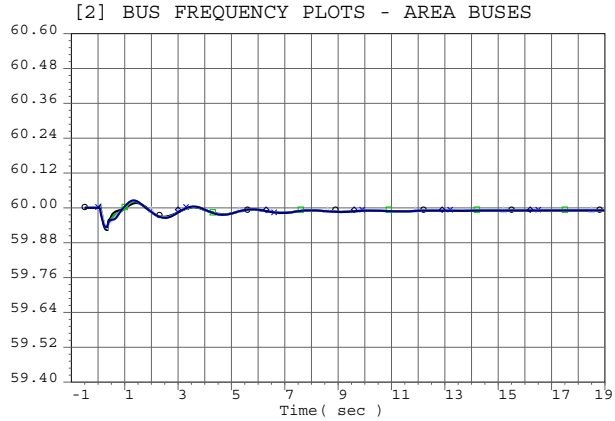

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 73188 | CRAIG 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



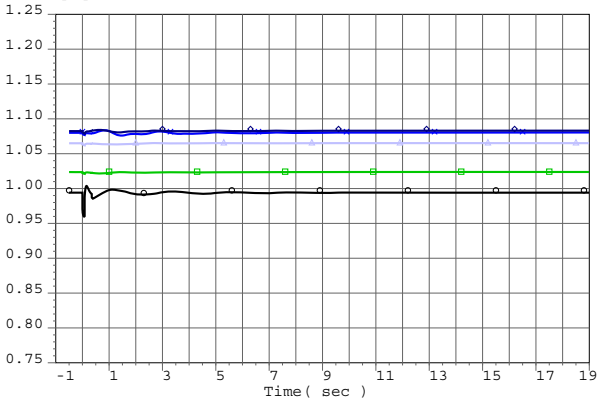

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



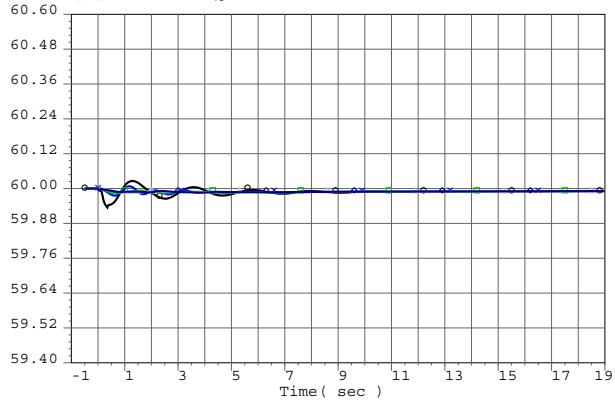

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013-14 LW1 OPERATING CASE
MAY 16, 2013



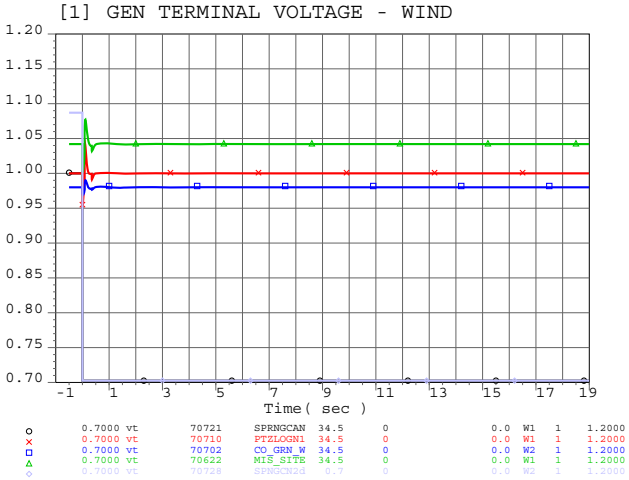
SC2_LW_PstEqv_v0_04_SprCan!-NYuma_230_3ph_B.chf

.

Tue Nov 26 13:35:08 2013

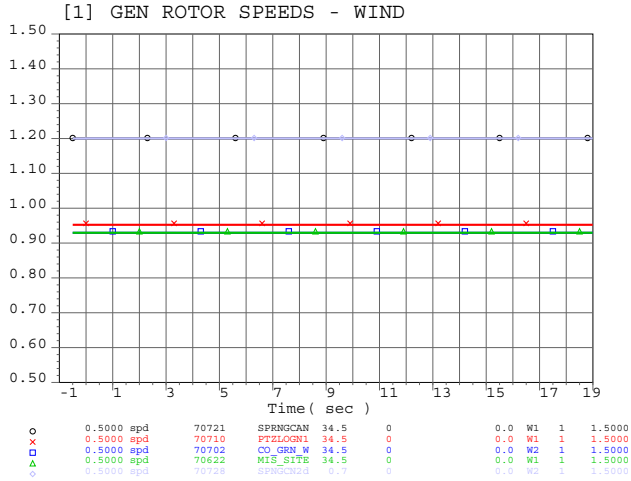
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



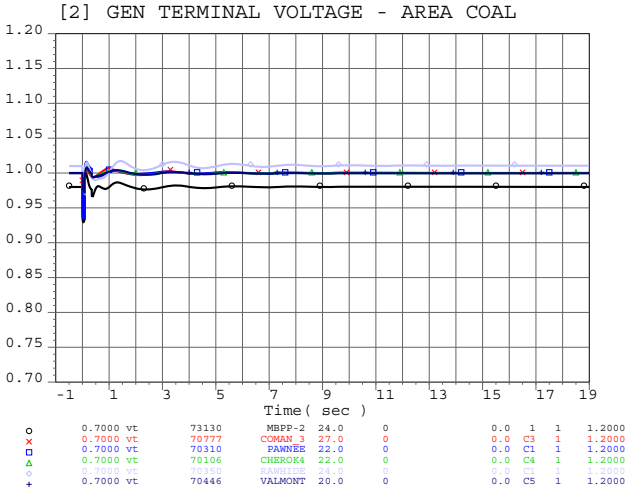

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| × | 0.7000 vt | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| □ | 0.7000 vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| △ | 0.7000 vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 70728 | SPNGCN2d | 0.7 | 0 | 0.0 | W2 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



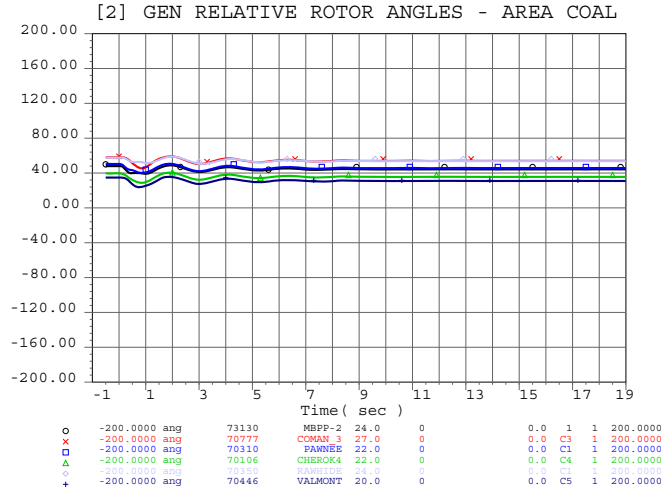

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.5000 spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| × | 0.5000 spd | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| □ | 0.5000 spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| △ | 0.5000 spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| ◇ | 0.5000 spd | 70728 | SPNGCN2d | 0.7 | 0 | 0.0 | W2 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



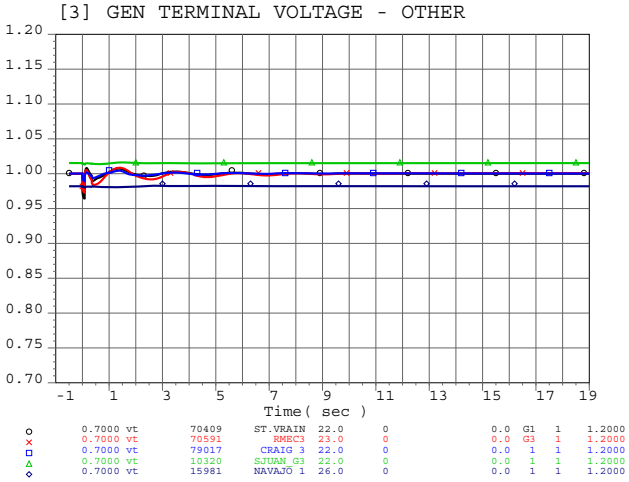

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| × | 0.7000 vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| □ | 0.7000 vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| △ | 0.7000 vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| + | 0.7000 vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



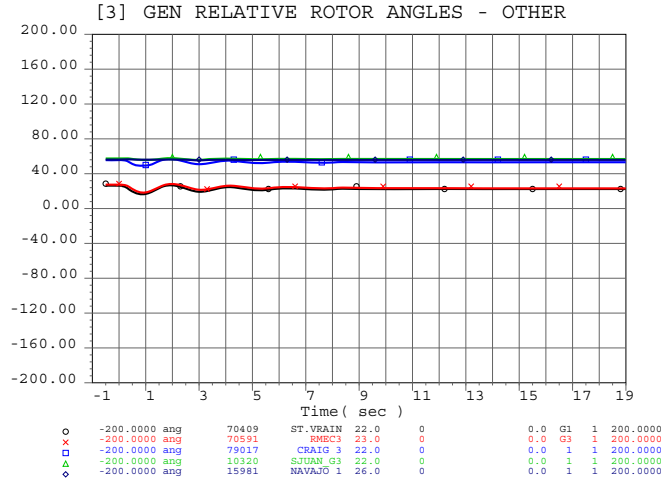

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| × | -200.0000 ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| □ | -200.0000 ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| △ | -200.0000 ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| + | -200.0000 ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| × | 0.7000 vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| □ | 0.7000 vt | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| △ | 0.7000 vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| × | -200.0000 ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| □ | -200.0000 ang | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| △ | -200.0000 ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |

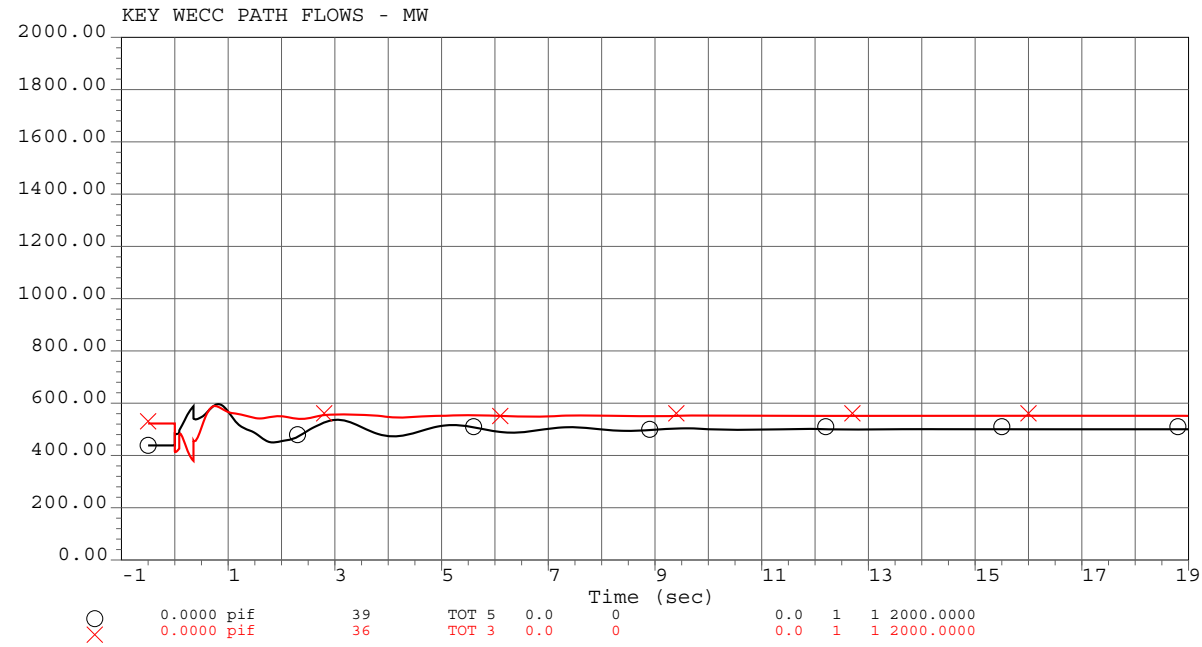
WESTERN ELECTRICITY COORDINATING COUNCIL
2013-14 LW1 OPERATING CASE
MAY 16, 2013

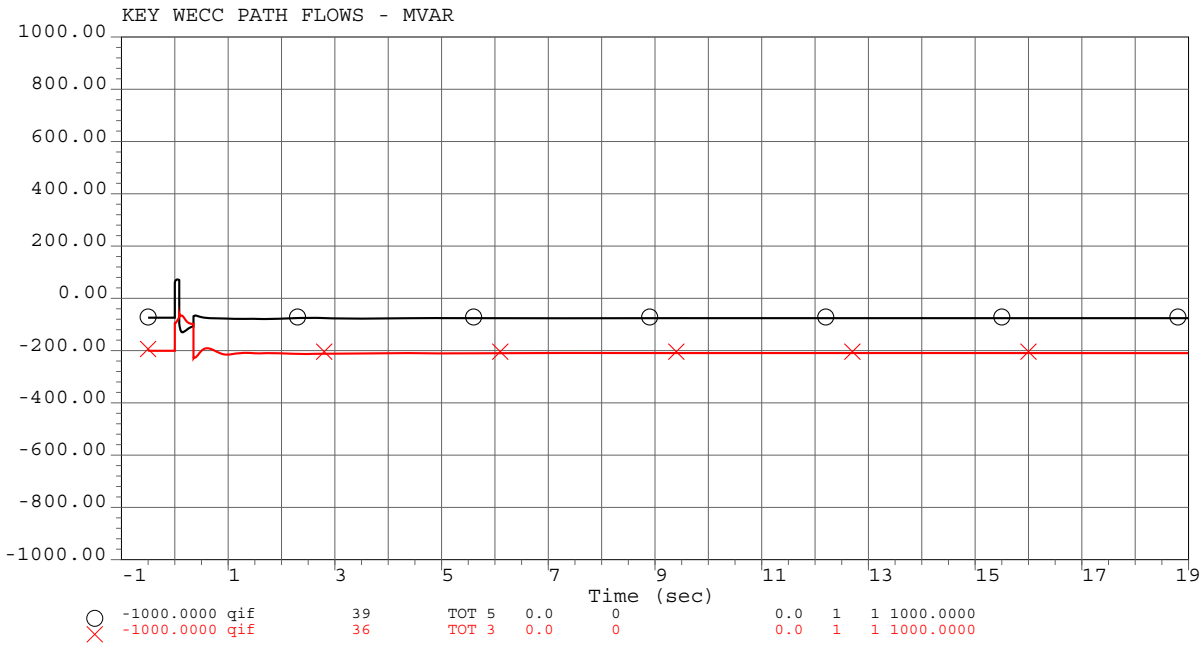


SC2_LW_PstEqv_v0_04_SprCan!-NYuma_230_3ph_B.chf

.

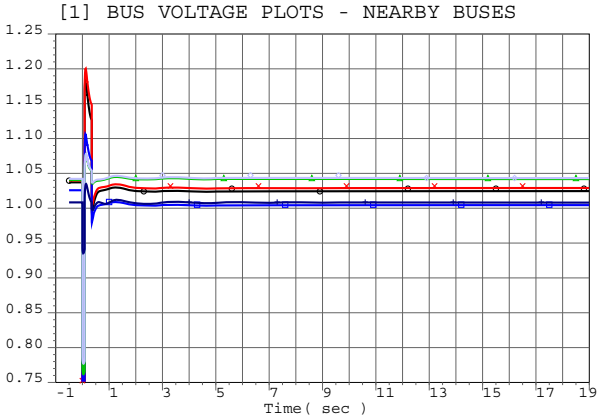
Tue Nov 26 13:35:08 2013


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

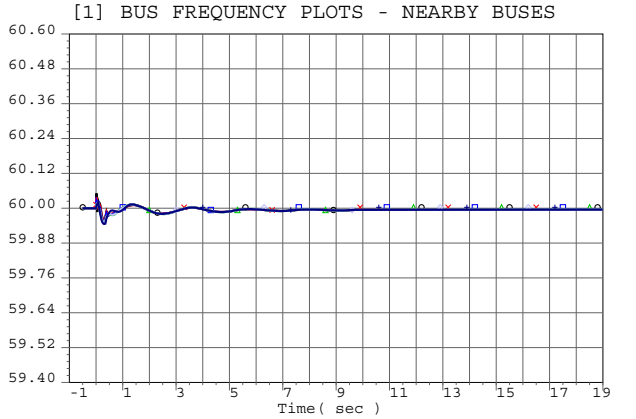
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



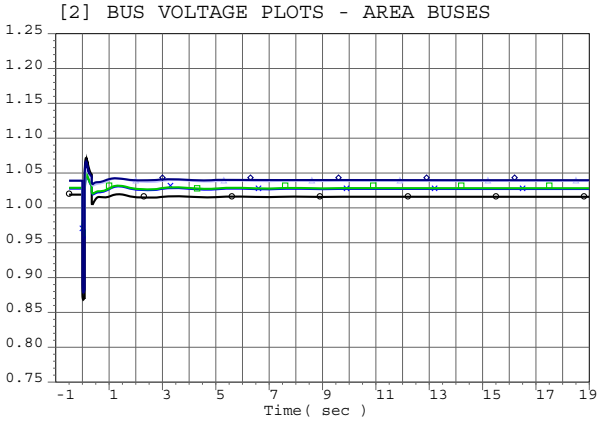

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



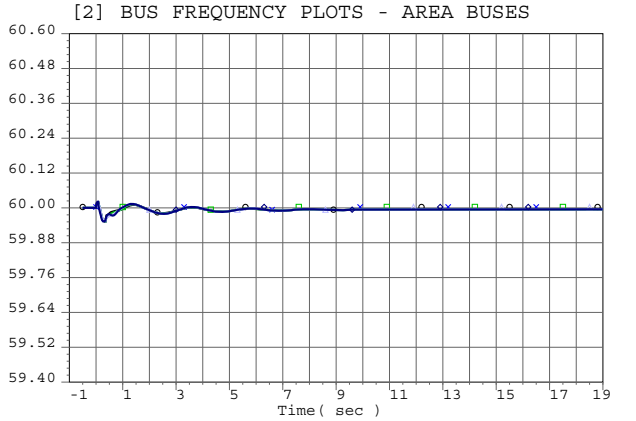

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



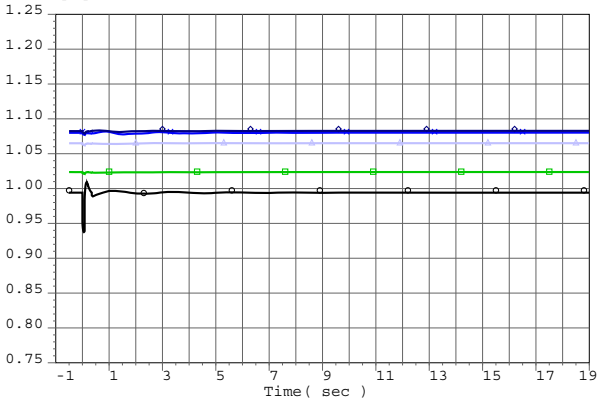

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



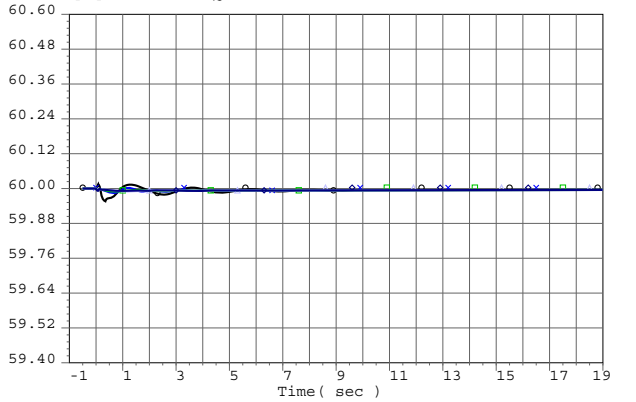

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013-14 LW1 OPERATING CASE
MAY 16, 2013



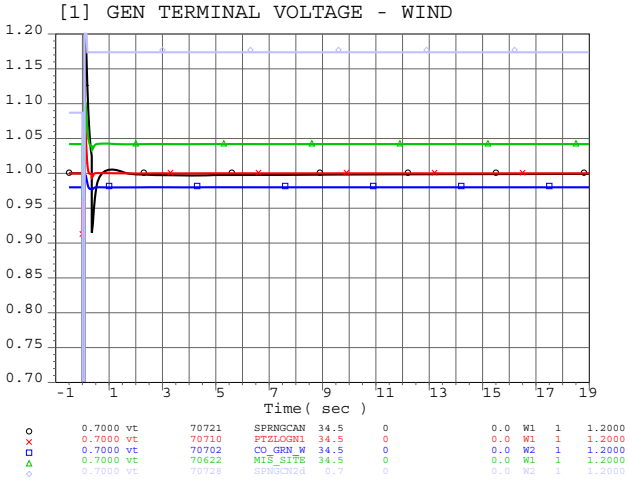
SC2_LW_PstEqv_v0_05_NYuma!-Story_230_3ph_B.chf

.

Tue Nov 26 13:35:16 2013

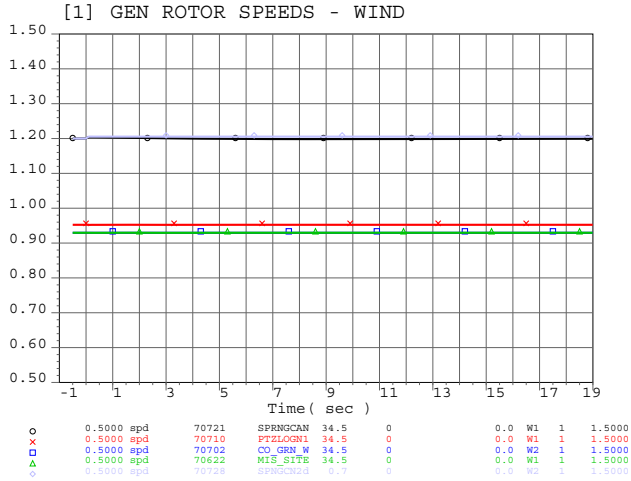
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



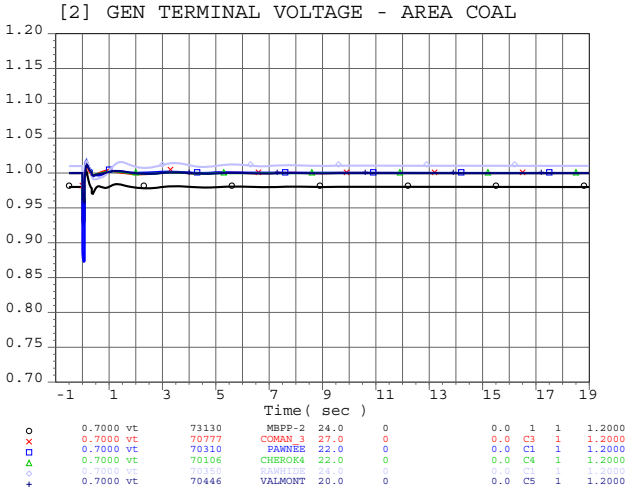

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 | vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| × | 0.7000 | vt | 70710 | PTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| □ | 0.7000 | vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| △ | 0.7000 | vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| ◇ | 0.7000 | vt | 70728 | SPNGCN2d | 0.7 | 0 | 0.0 | W2 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



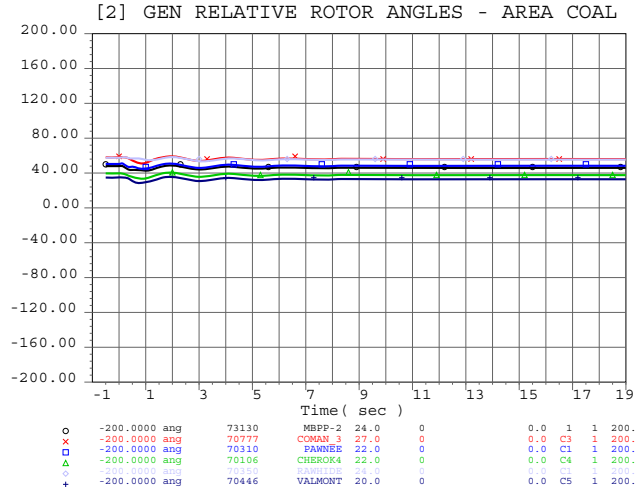

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.5000 | spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| × | 0.5000 | spd | 70710 | PTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| □ | 0.5000 | spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| △ | 0.5000 | spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| ◇ | 0.5000 | spd | 70728 | SPNGCN2d | 0.7 | 0 | 0.0 | W2 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



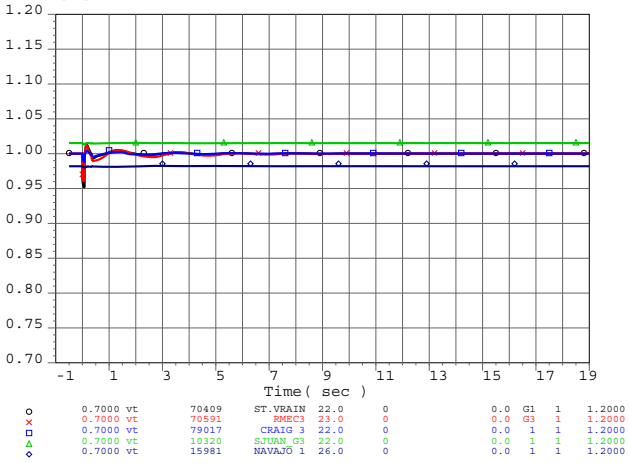

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 | vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| × | 0.7000 | vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| □ | 0.7000 | vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| △ | 0.7000 | vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| ◇ | 0.7000 | vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| + | 0.7000 | vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



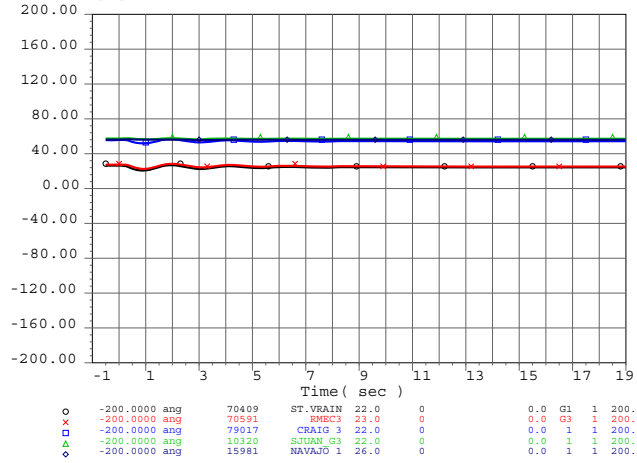

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 | ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| × | -200.0000 | ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| □ | -200.0000 | ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| △ | -200.0000 | ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| ◇ | -200.0000 | ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| + | -200.0000 | ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER




| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 | vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| × | 0.7000 | vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| □ | 0.7000 | vt | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| △ | 0.7000 | vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| ◇ | 0.7000 | vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER




| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 | ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| × | -200.0000 | ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| □ | -200.0000 | ang | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| △ | -200.0000 | ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| ◇ | -200.0000 | ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |

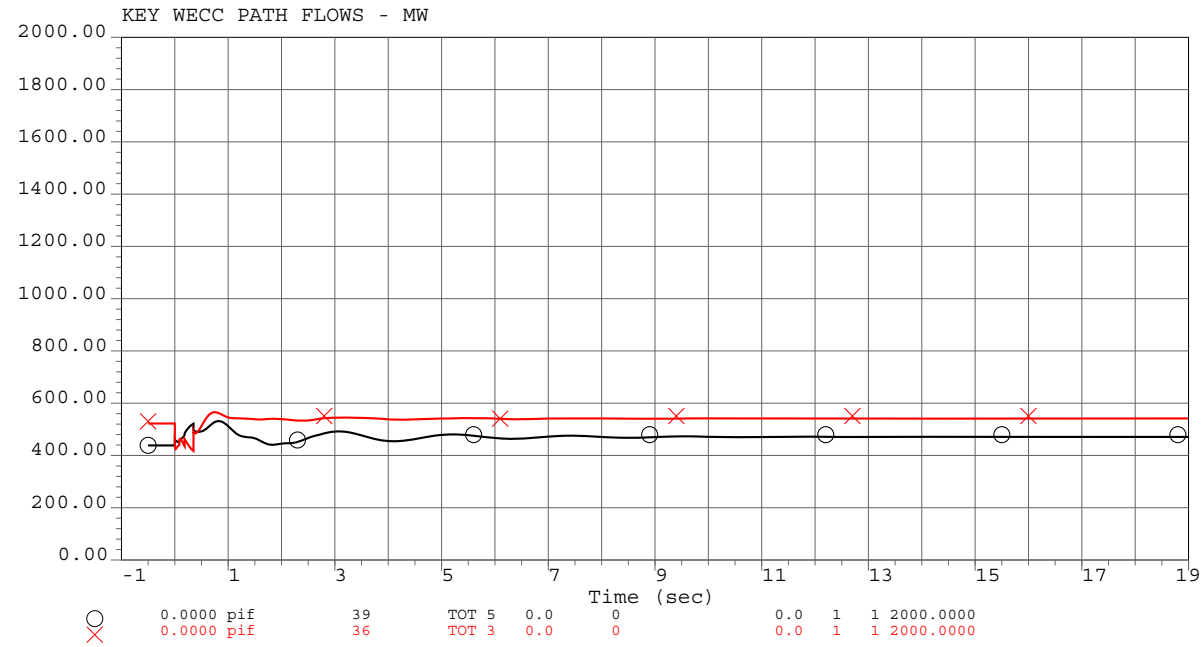
WESTERN ELECTRICITY COORDINATING COUNCIL
2013-14 LW1 OPERATING CASE
MAY 16, 2013

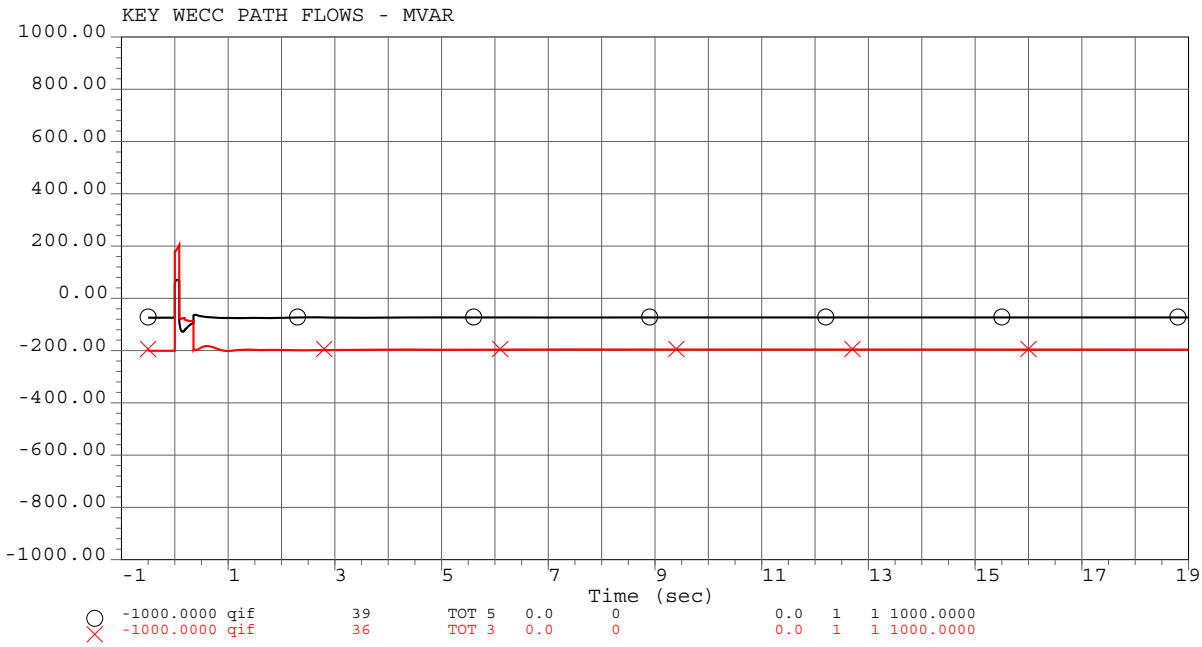


SC2_LW_PstEqv_v0_05_NYuma!-Story_230_3ph_B.chf

.

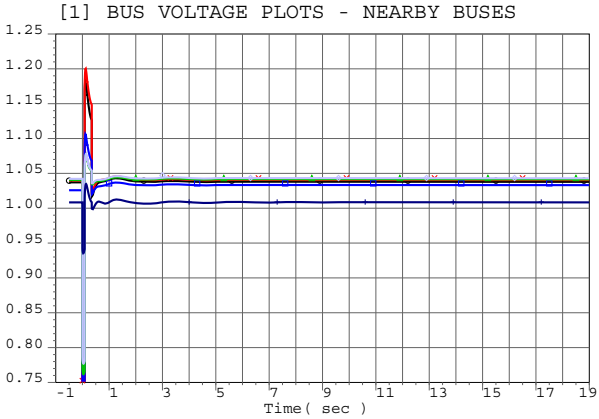
Tue Nov 26 13:35:16 2013


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

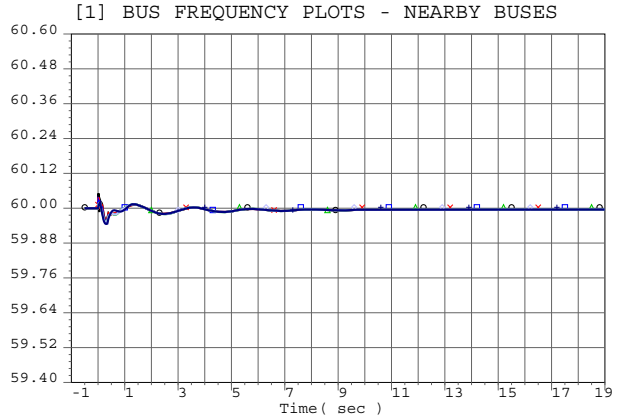
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



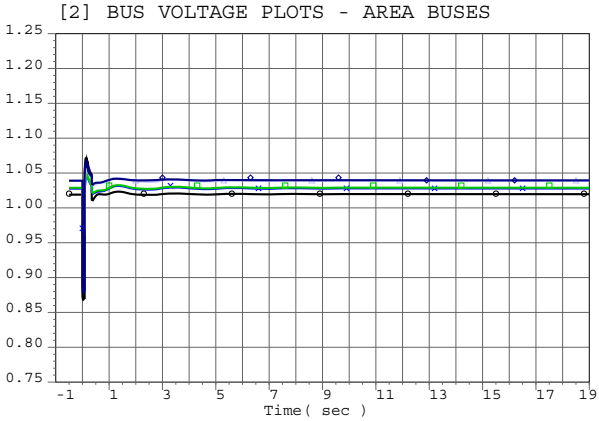

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 vbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 vbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



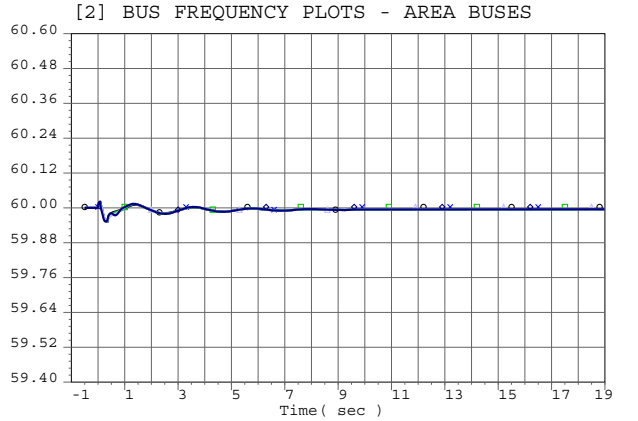

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 fbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 fbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



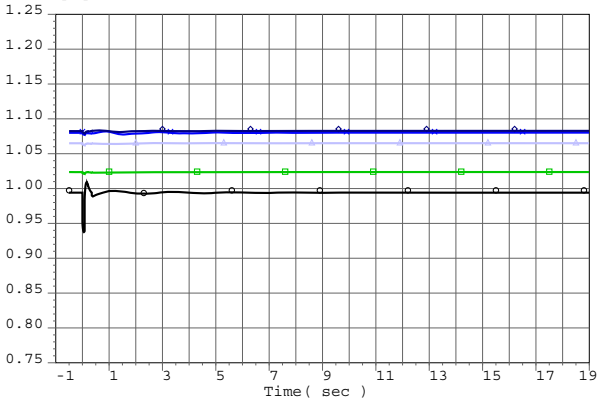

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



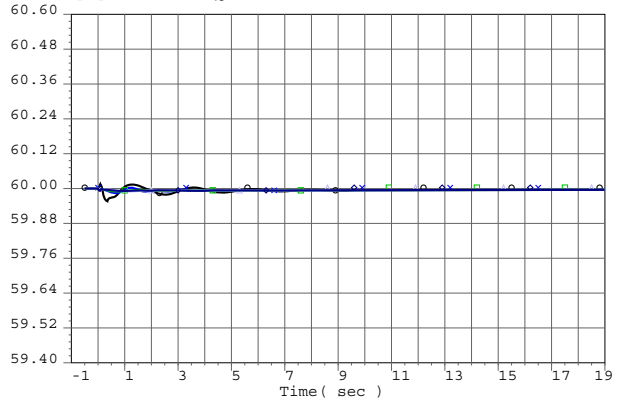

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 vbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 fbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013-14 LW1 OPERATING CASE
MAY 16, 2013



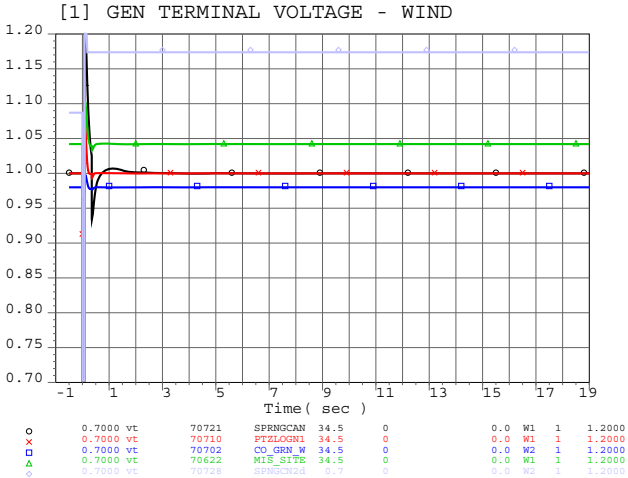
SC2_LW_PstEqv_v0_06_NYuma!-Wray_230_LW_3ph_B.chf

.

Tue Nov 26 13:35:24 2013

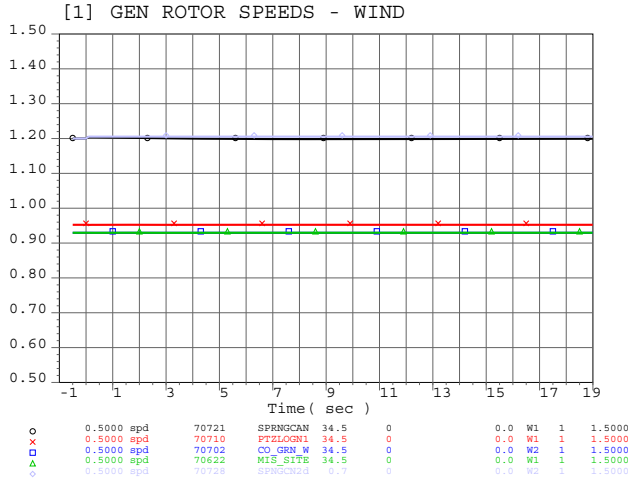
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



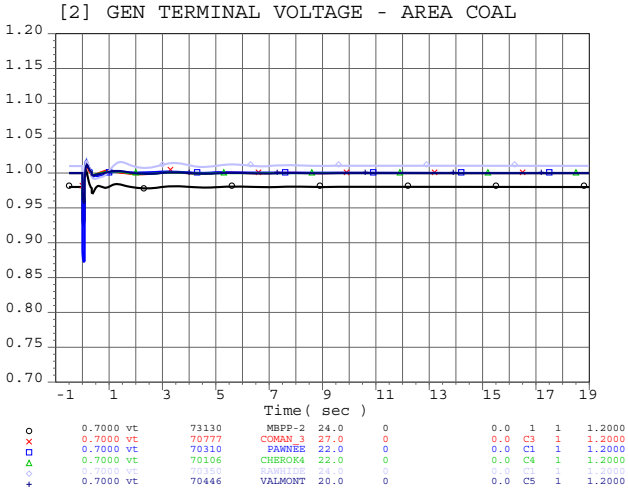

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 | vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| × | 0.7000 | vt | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| □ | 0.7000 | vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| △ | 0.7000 | vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| ◇ | 0.7000 | vt | 70728 | SPNGCN2d | 0.7 | 0 | 0.0 | W2 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



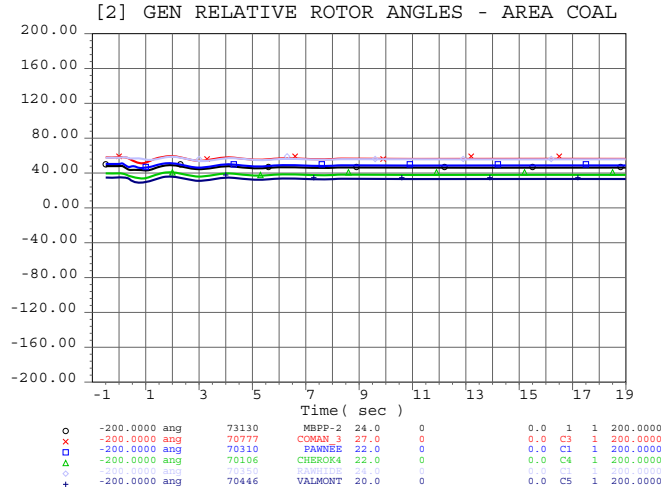

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.5000 | spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| × | 0.5000 | spd | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| □ | 0.5000 | spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| △ | 0.5000 | spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| ◇ | 0.5000 | spd | 70728 | SPNGCN2d | 0.7 | 0 | 0.0 | W2 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



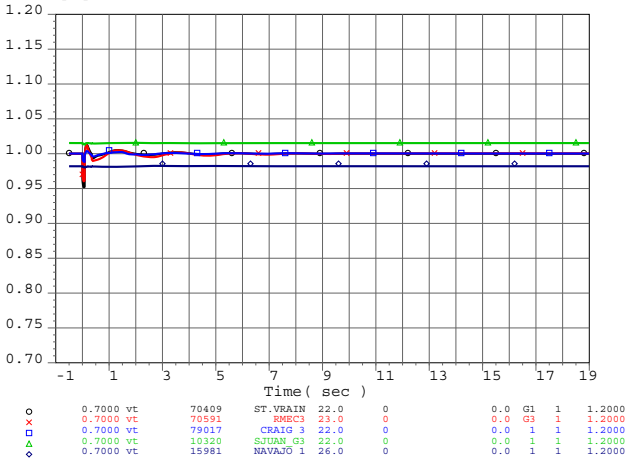

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 | vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| × | 0.7000 | vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| □ | 0.7000 | vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| △ | 0.7000 | vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| ◇ | 0.7000 | vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| + | 0.7000 | vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



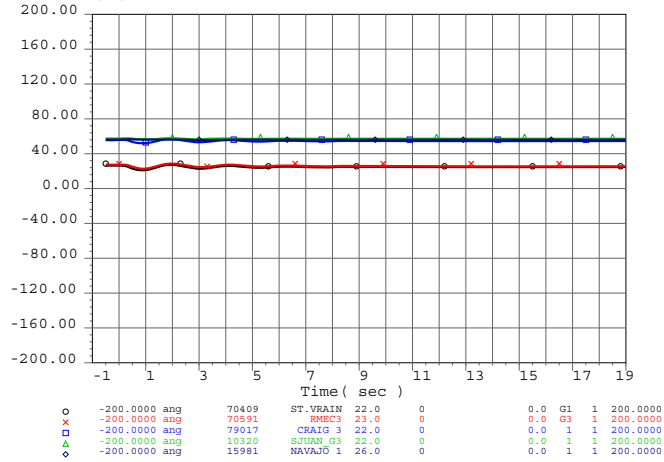

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 | ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| × | -200.0000 | ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| □ | -200.0000 | ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| △ | -200.0000 | ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| ◇ | -200.0000 | ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| + | -200.0000 | ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER

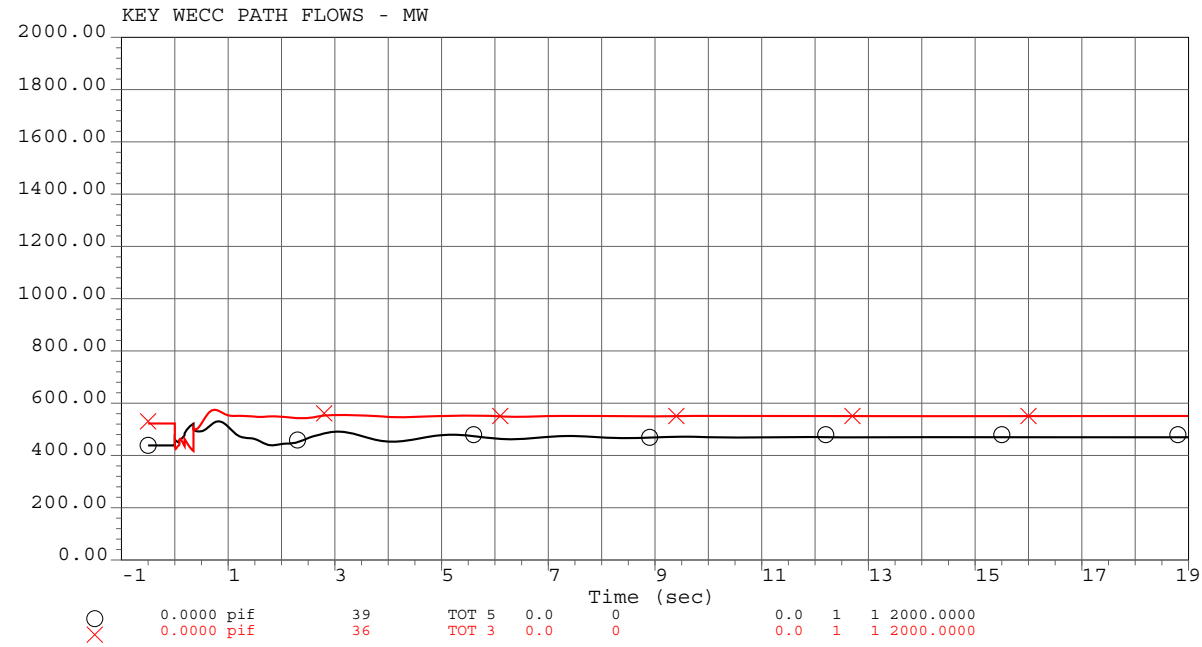


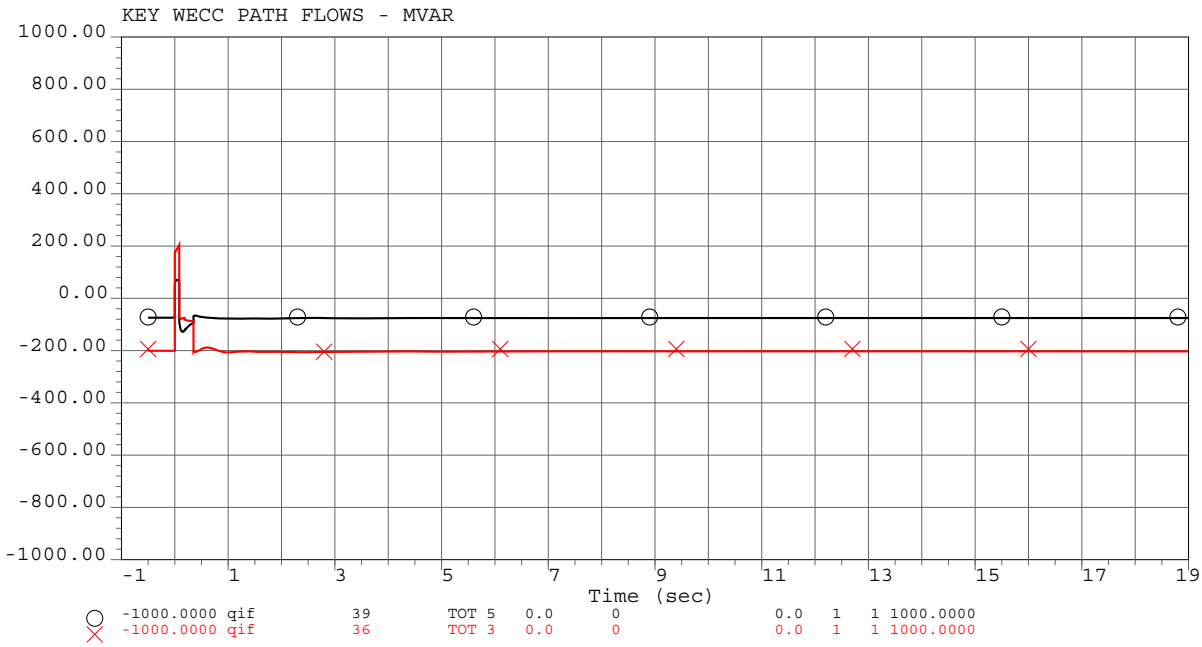

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 | vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| × | 0.7000 | vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| □ | 0.7000 | vt | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| △ | 0.7000 | vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| ◇ | 0.7000 | vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER



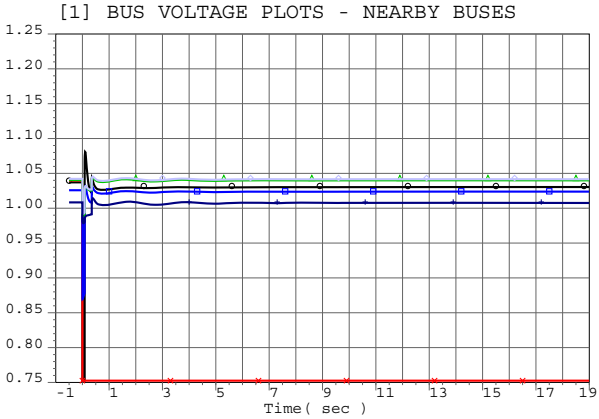

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 | ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| × | -200.0000 | ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| □ | -200.0000 | ang | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| △ | -200.0000 | ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| ◇ | -200.0000 | ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

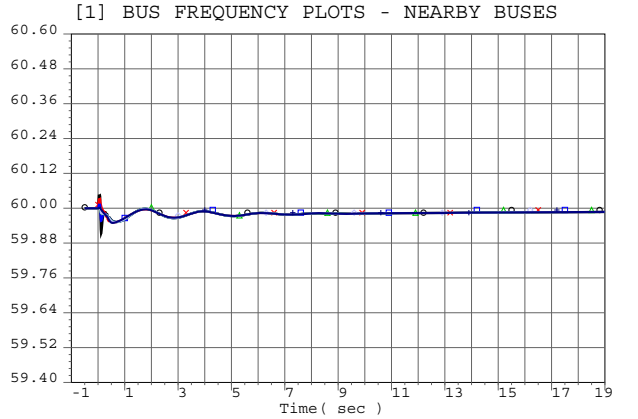
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



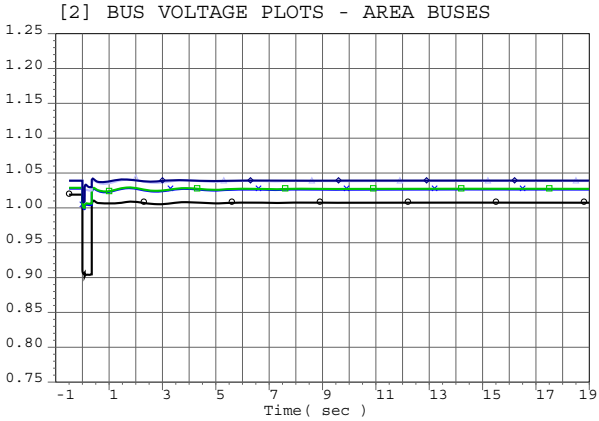

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 vbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 vbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



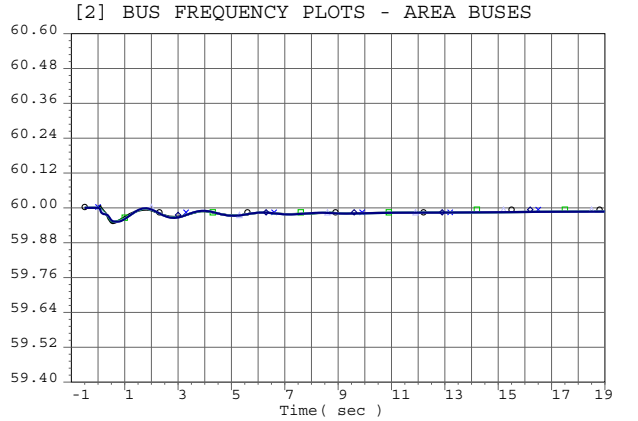

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 fbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 fbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



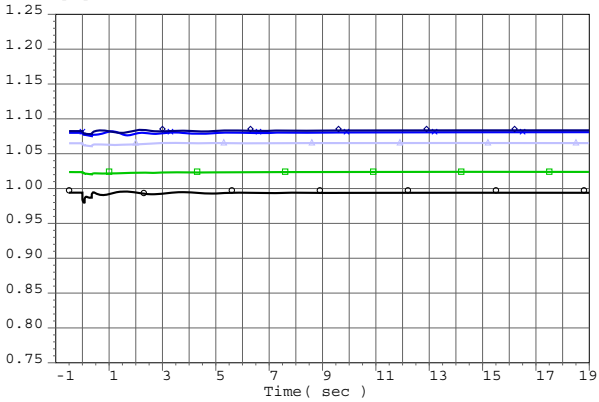

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



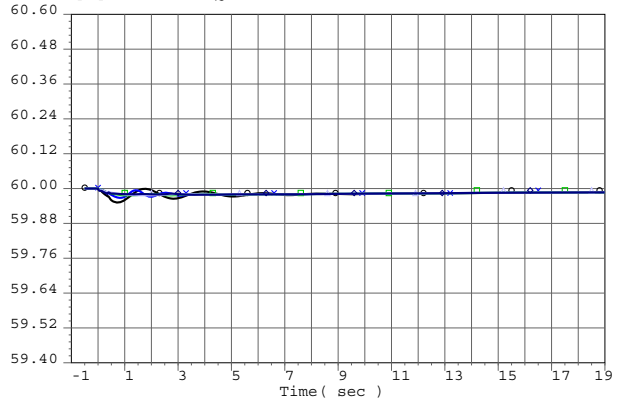

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 vbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 fbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

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2013-14 LW1 OPERATING CASE
MAY 16, 2013



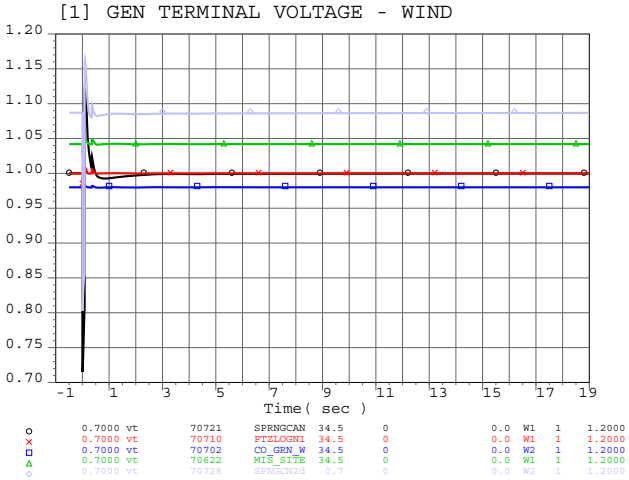
SC2_LW_PstEqv_v0_07_Sidney!-SprCan_230_SLG_C.chf

.

Tue Nov 26 13:35:37 2013

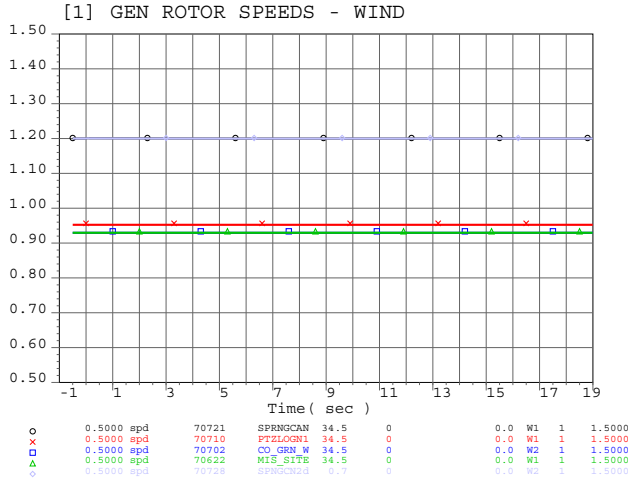
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



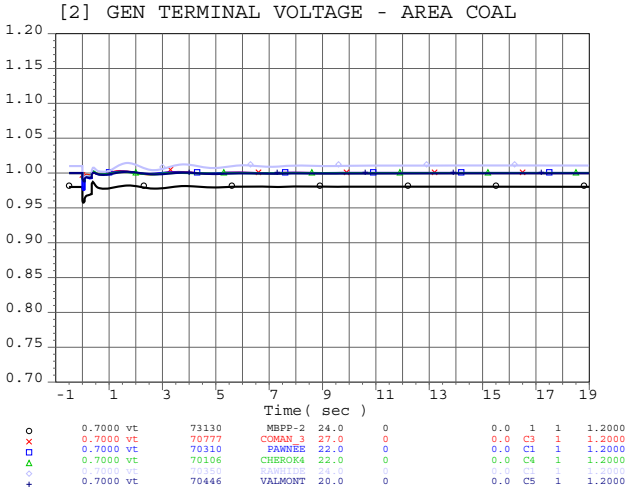

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 0.7000 vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| 0.7000 vt | 70710 | PTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| 0.7000 vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| 0.7000 vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| 0.7000 vt | 70728 | SPNGCN2d | 0.7 | 0 | 0.0 | W2 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



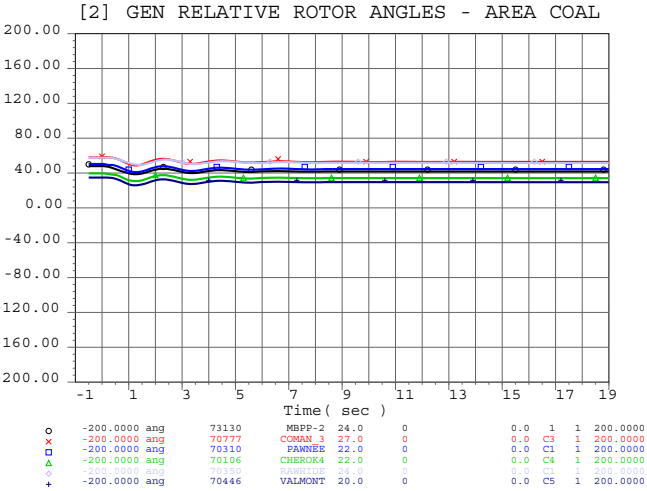

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 0.5000 spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| 0.5000 spd | 70710 | PTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| 0.5000 spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| 0.5000 spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| 0.5000 spd | 70728 | SPNGCN2d | 0.7 | 0 | 0.0 | W2 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



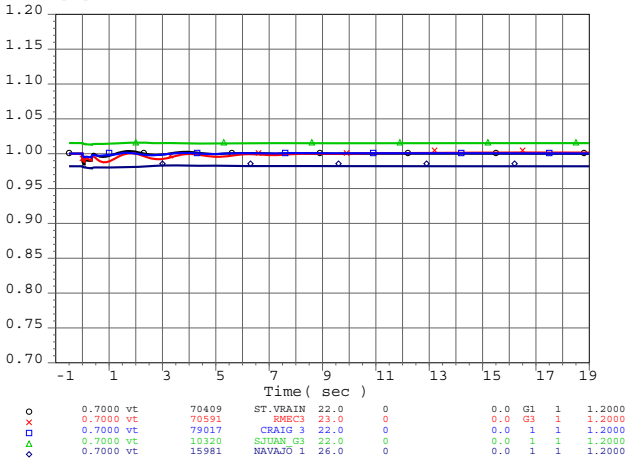

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 0.7000 vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| 0.7000 vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| 0.7000 vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| 0.7000 vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| 0.7000 vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| 0.7000 vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



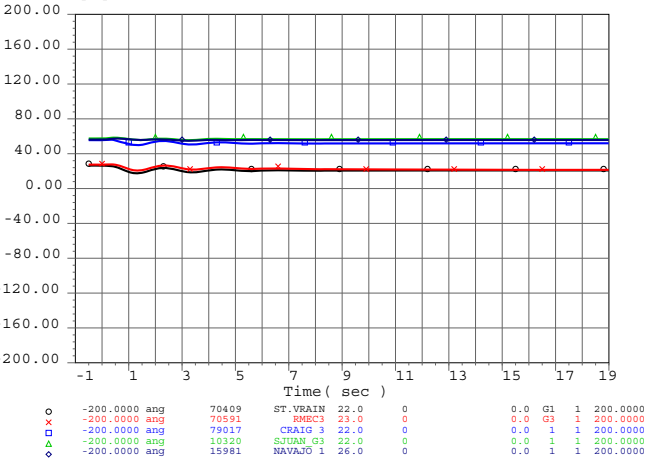

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| -200.0000 ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| -200.0000 ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| -200.0000 ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| -200.0000 ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| -200.0000 ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| -200.0000 ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER




| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 0.7000 vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| 0.7000 vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| 0.7000 vt | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| 0.7000 vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| 0.7000 vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER




| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| -200.0000 ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| -200.0000 ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| -200.0000 ang | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| -200.0000 ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| -200.0000 ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |

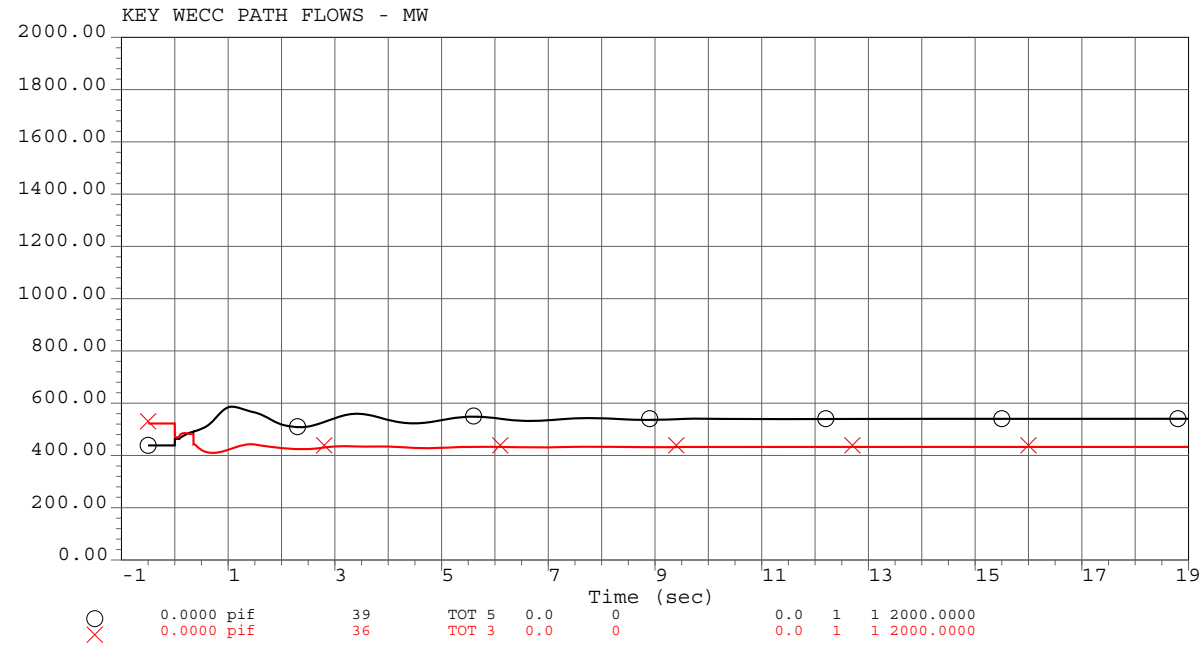
WESTERN ELECTRICITY COORDINATING COUNCIL
2013-14 LW1 OPERATING CASE
MAY 16, 2013

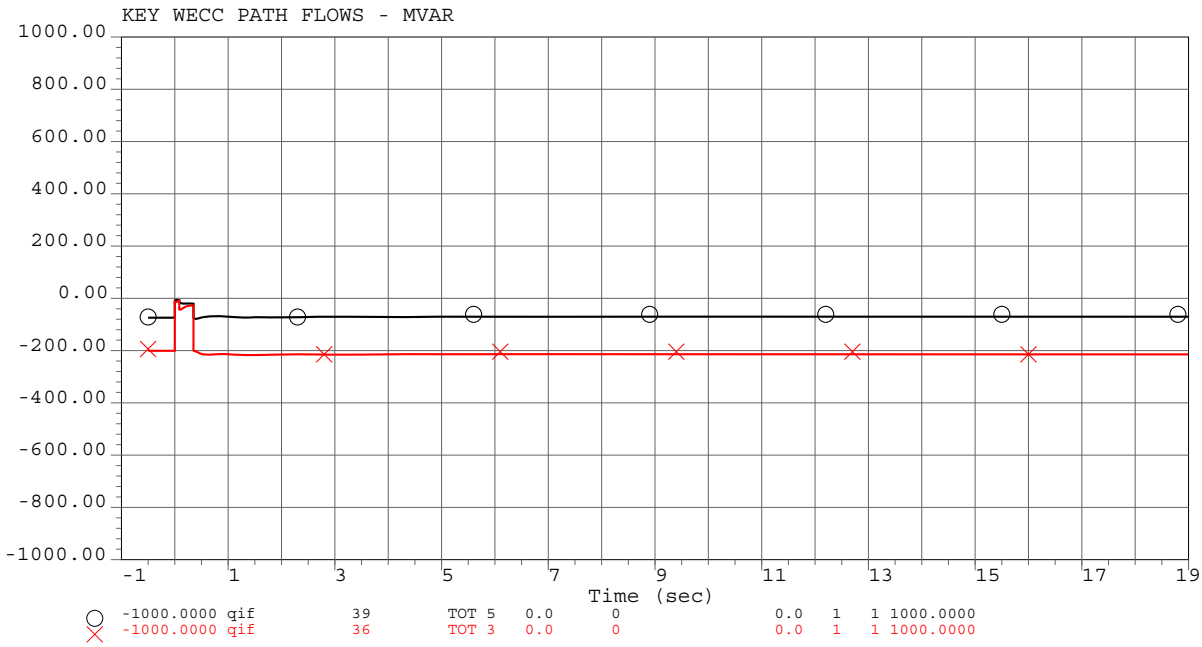


SC2_LW_PstEqv_v0_07_Sidney!-SprCan_230_SLG_C.chf

.

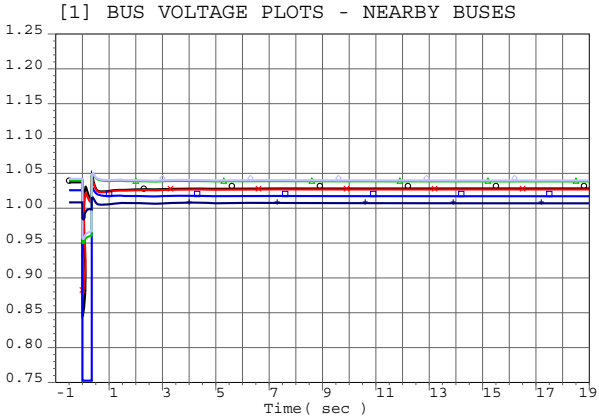
Tue Nov 26 13:35:37 2013


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

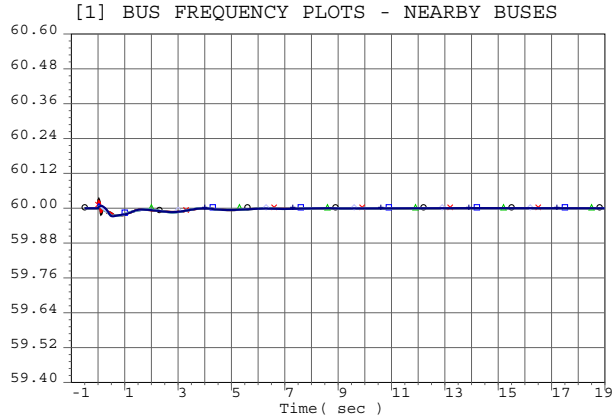
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



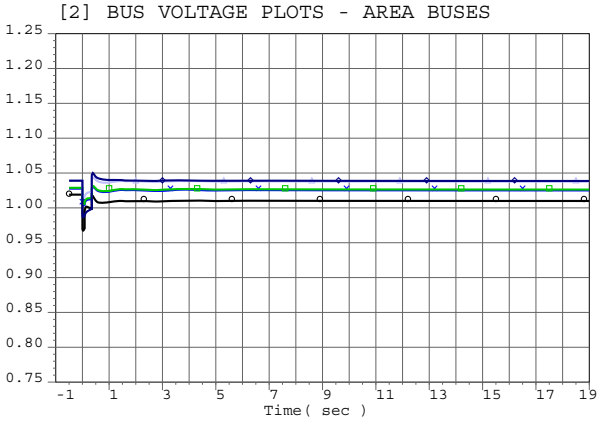

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 73188 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



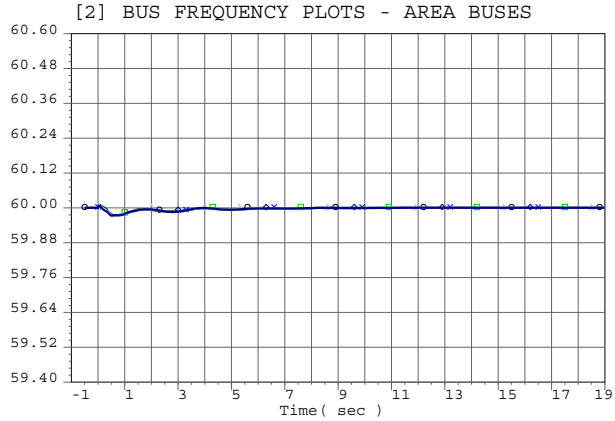

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 73188 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



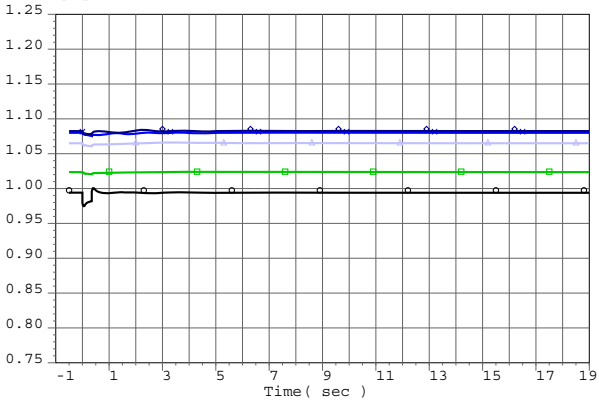

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



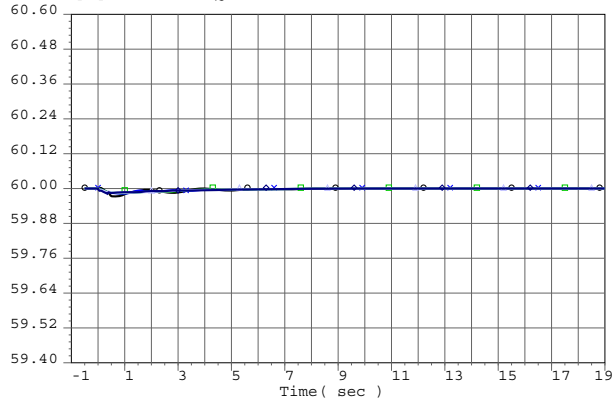

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013-14 LW1 OPERATING CASE
MAY 16, 2013



SC2_LW_PstEqv_v0_08_NYuma!-SprCan_230_SLG_C.chf

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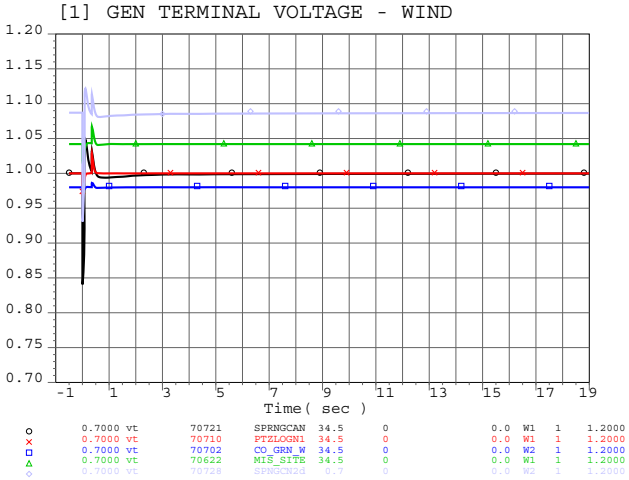
Tue Nov 26 13:36:59 2013

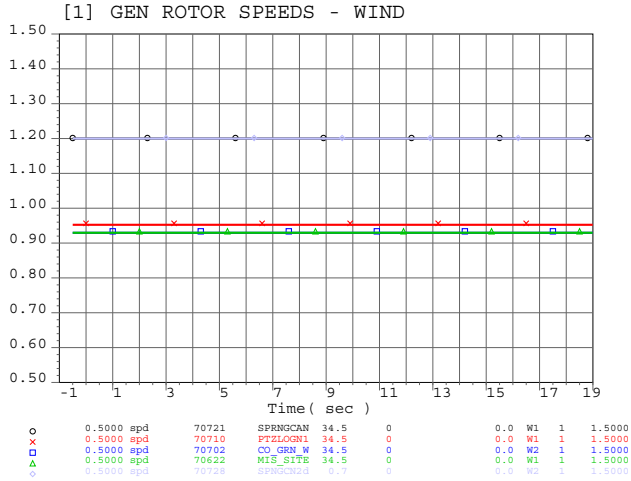
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



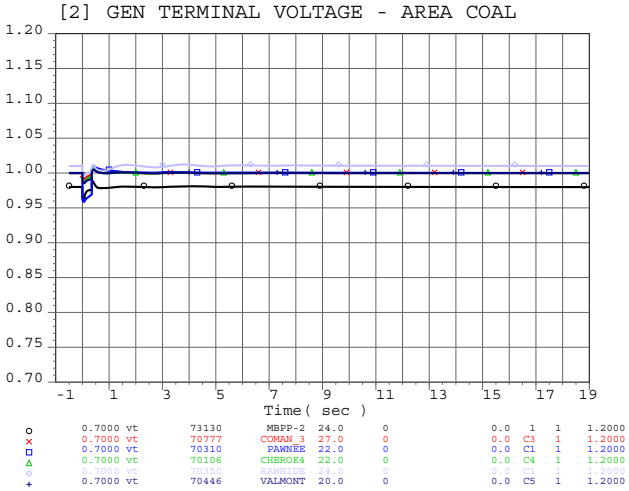

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 | vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| × | 0.7000 | vt | 70710 | PTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| □ | 0.7000 | vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| △ | 0.7000 | vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| ◇ | 0.7000 | vt | 70728 | SPNGCN2d | 0.7 | 0 | 0.0 | W2 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



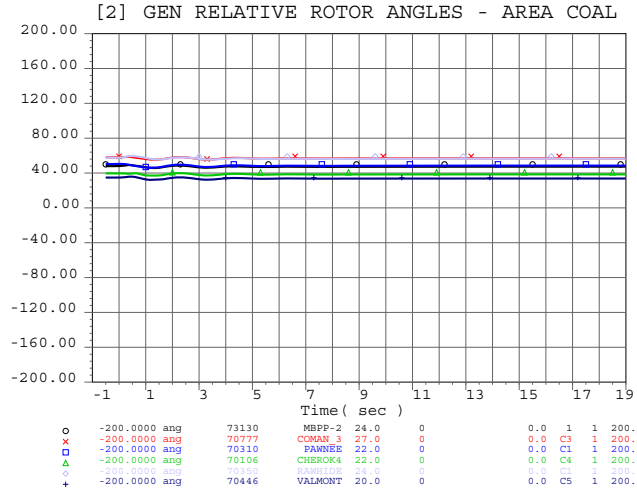

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.5000 | spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| × | 0.5000 | spd | 70710 | PTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| □ | 0.5000 | spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| △ | 0.5000 | spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| ◇ | 0.5000 | spd | 70728 | SPNGCN2d | 0.7 | 0 | 0.0 | W2 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



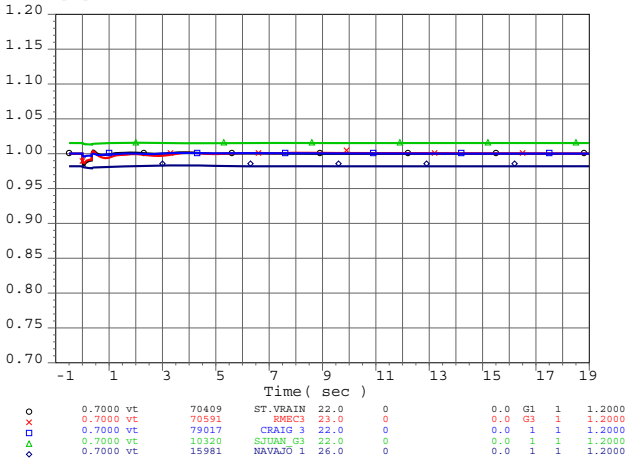

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 | vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| × | 0.7000 | vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| □ | 0.7000 | vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| △ | 0.7000 | vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| ◇ | 0.7000 | vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| + | 0.7000 | vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



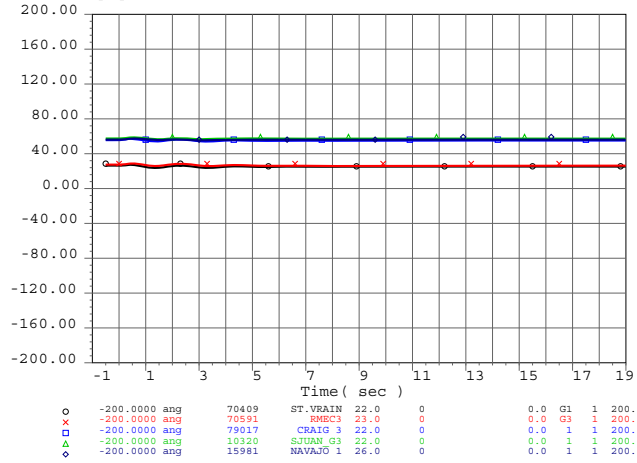

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 | ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| × | -200.0000 | ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| □ | -200.0000 | ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| △ | -200.0000 | ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| ◇ | -200.0000 | ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| + | -200.0000 | ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER




| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 | vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| × | 0.7000 | vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| □ | 0.7000 | vt | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| △ | 0.7000 | vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| ◇ | 0.7000 | vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER




| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 | ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| × | -200.0000 | ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| □ | -200.0000 | ang | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| △ | -200.0000 | ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| ◇ | -200.0000 | ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |

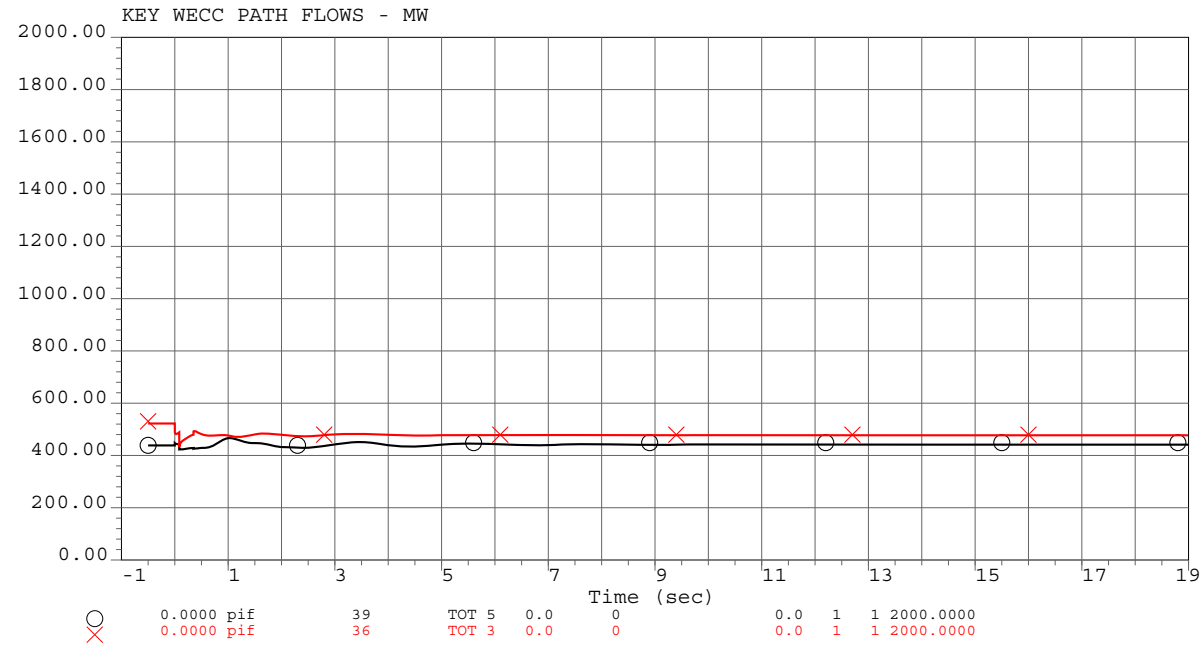
WESTERN ELECTRICITY COORDINATING COUNCIL
2013-14 LW1 OPERATING CASE
MAY 16, 2013

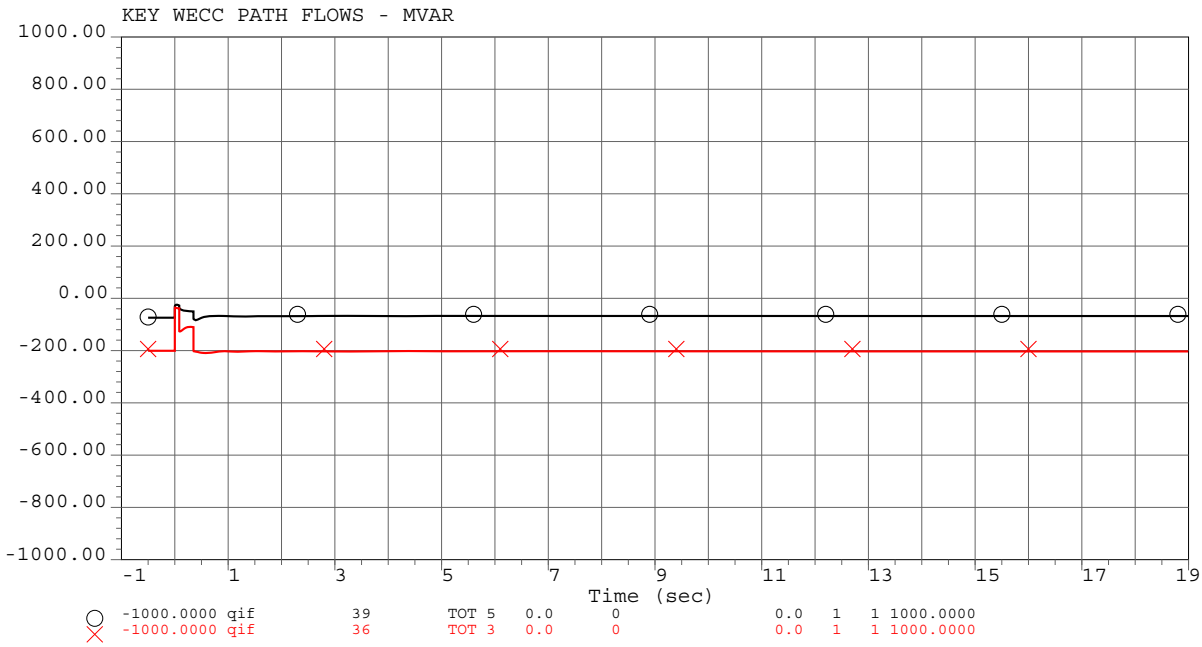


SC2_LW_PstEqv_v0_08_NYuma!-SprCan_230_SLG_C.chf

.

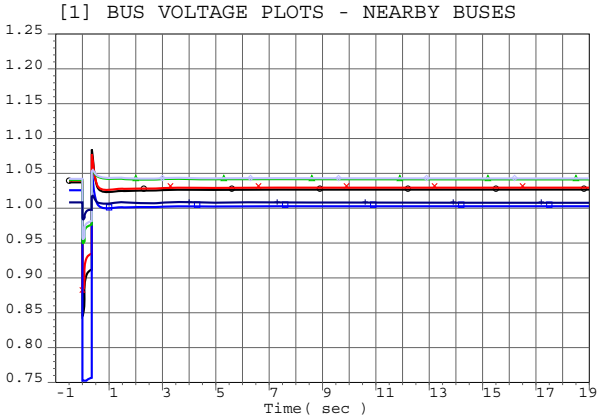
Tue Nov 26 13:36:59 2013


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

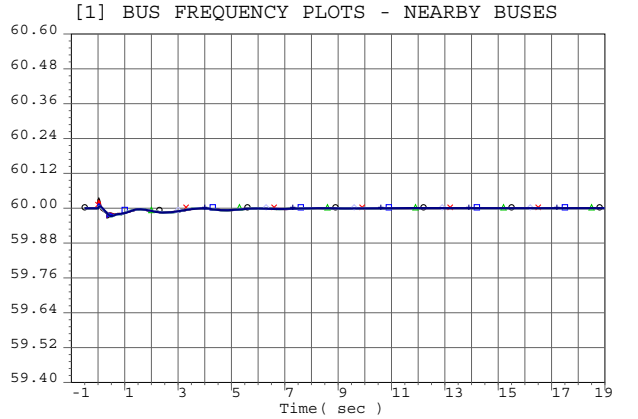
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



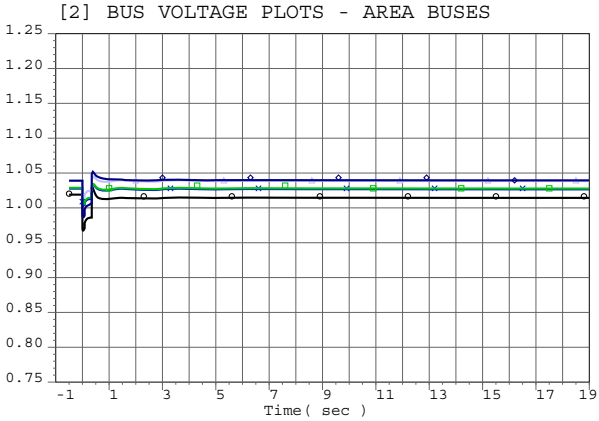

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 73188 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



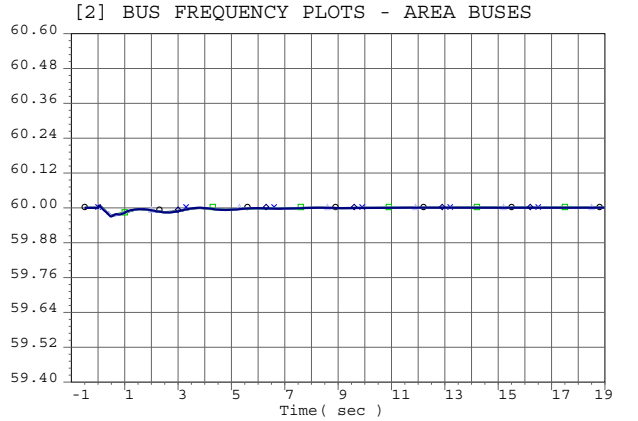

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 73188 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



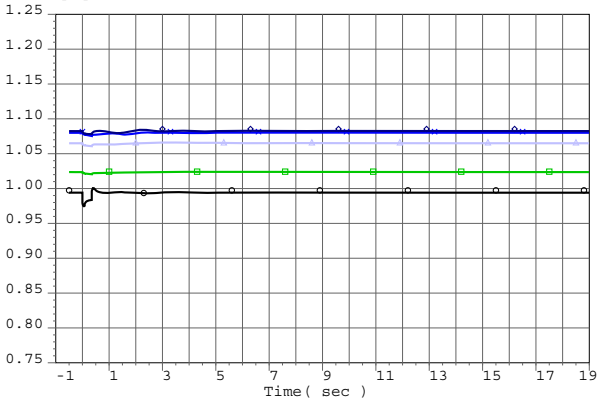

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



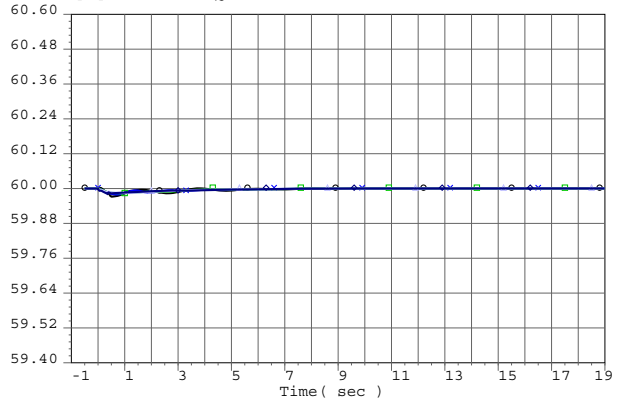

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013-14 LW1 OPERATING CASE
MAY 16, 2013



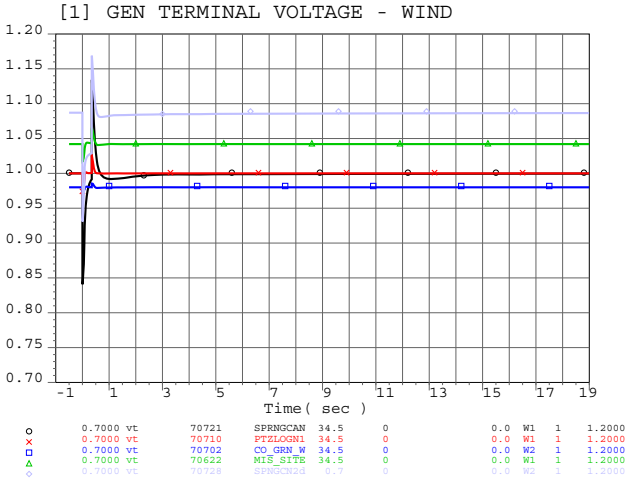
SC2_LW_PstEqv_v0_08a_NYuma230!-115Xfmr_SLG_C.chf

.

Tue Nov 26 13:38:07 2013

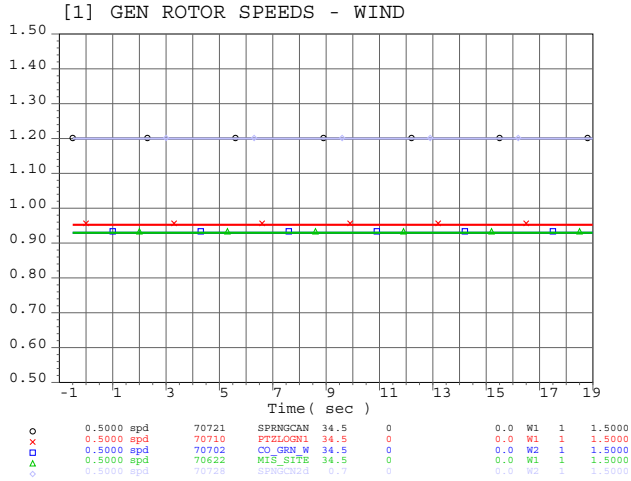
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



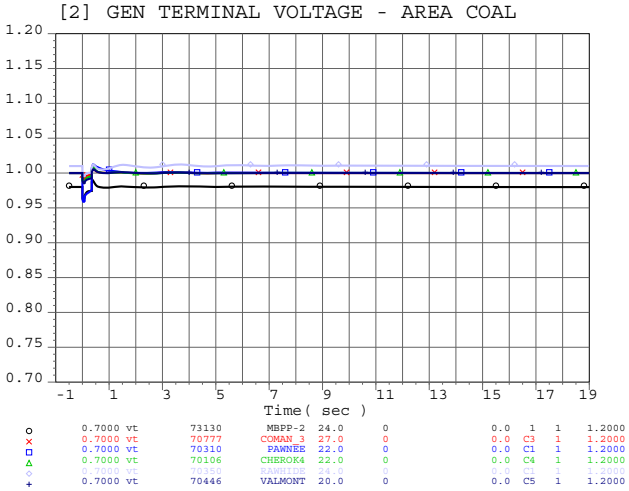

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 | vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| × | 0.7000 | vt | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| □ | 0.7000 | vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| △ | 0.7000 | vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| ◇ | 0.7000 | vt | 70728 | SPNGCN2d | 0.7 | 0 | 0.0 | W2 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



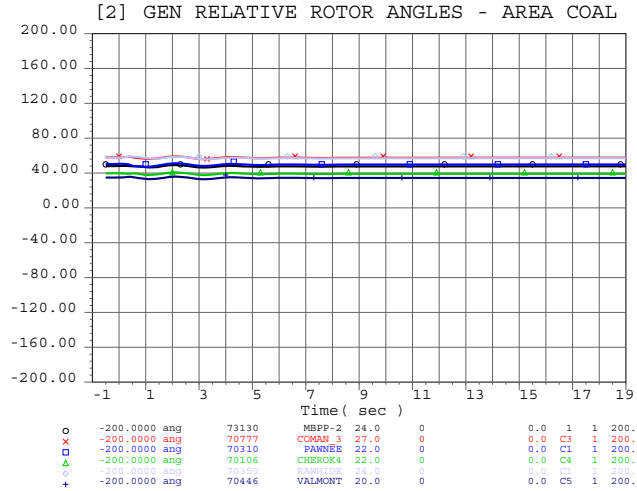

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.5000 | spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| × | 0.5000 | spd | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| □ | 0.5000 | spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| △ | 0.5000 | spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| ◇ | 0.5000 | spd | 70728 | SPNGCN2d | 0.7 | 0 | 0.0 | W2 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



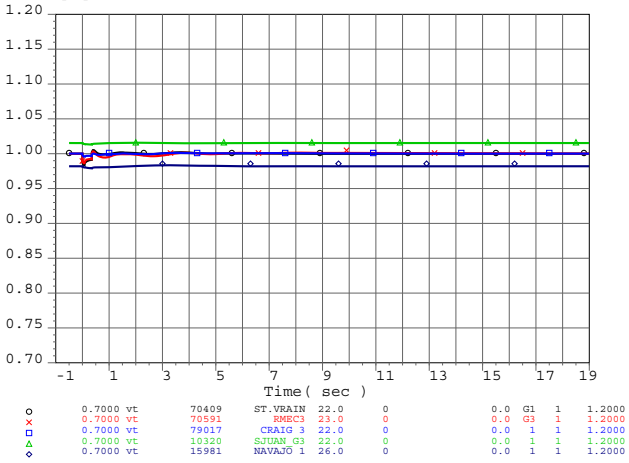

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 | vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| × | 0.7000 | vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| □ | 0.7000 | vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| △ | 0.7000 | vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| ◇ | 0.7000 | vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| + | 0.7000 | vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



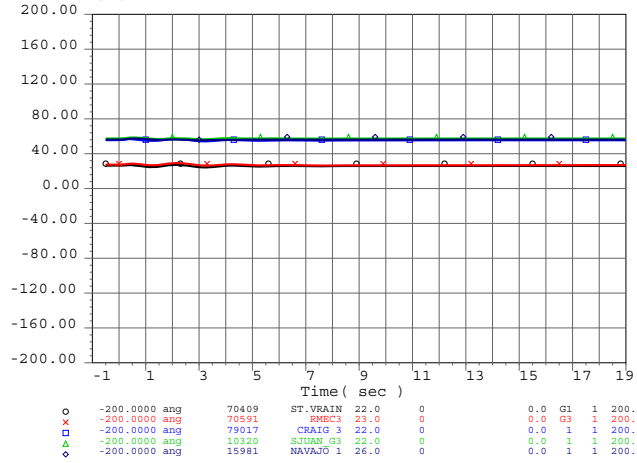

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 | ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| × | -200.0000 | ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| □ | -200.0000 | ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| △ | -200.0000 | ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| ◇ | -200.0000 | ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| + | -200.0000 | ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER




| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 | vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| × | 0.7000 | vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| □ | 0.7000 | vt | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| △ | 0.7000 | vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| ◇ | 0.7000 | vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER




| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 | ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| × | -200.0000 | ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| □ | -200.0000 | ang | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| △ | -200.0000 | ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| ◇ | -200.0000 | ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |

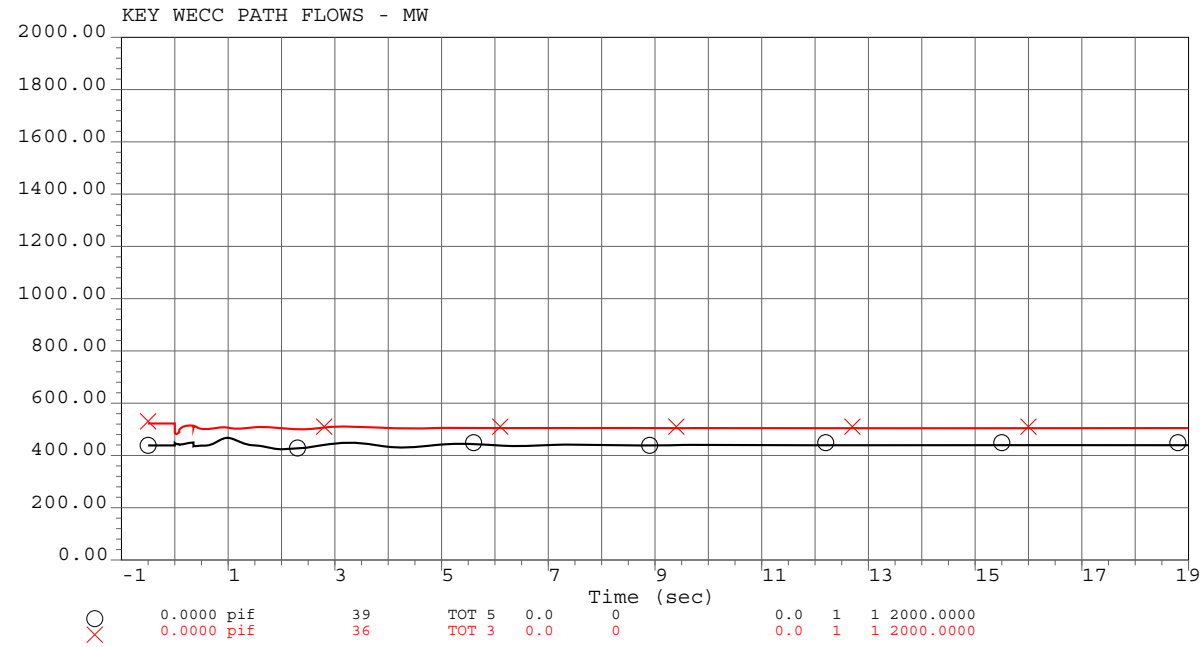
WESTERN ELECTRICITY COORDINATING COUNCIL
2013-14 LW1 OPERATING CASE
MAY 16, 2013

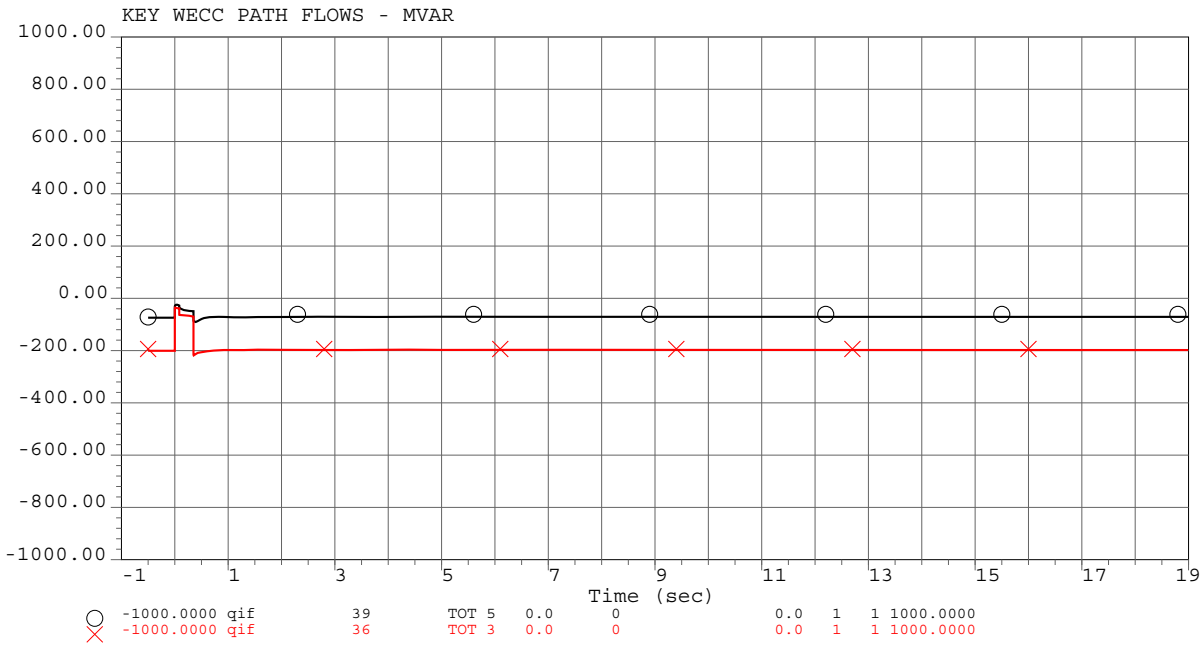


SC2_LW_PstEqv_v0_08a_NYuma230!-115Xfmr_SLG_C.chf

.

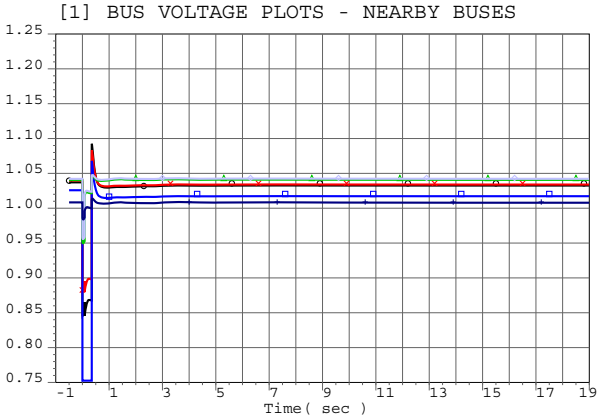
Tue Nov 26 13:38:07 2013


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

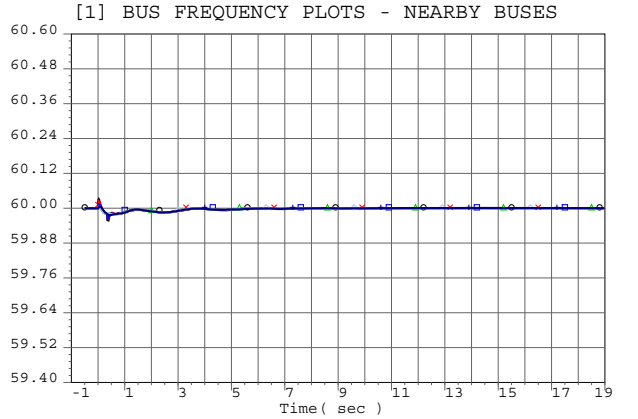
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



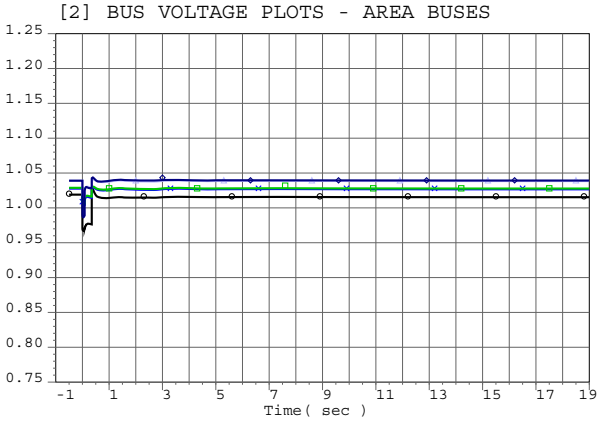

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 73188 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



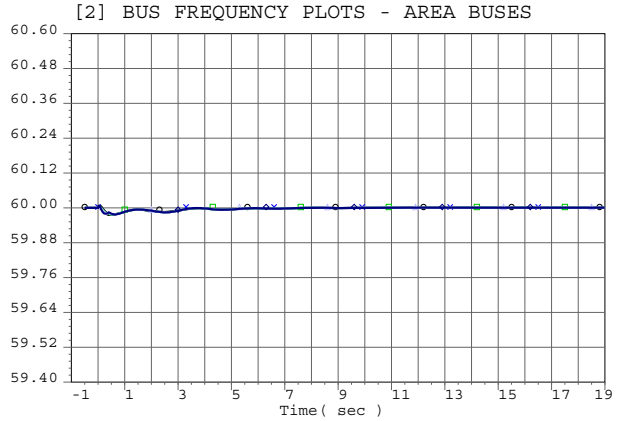

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 73188 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



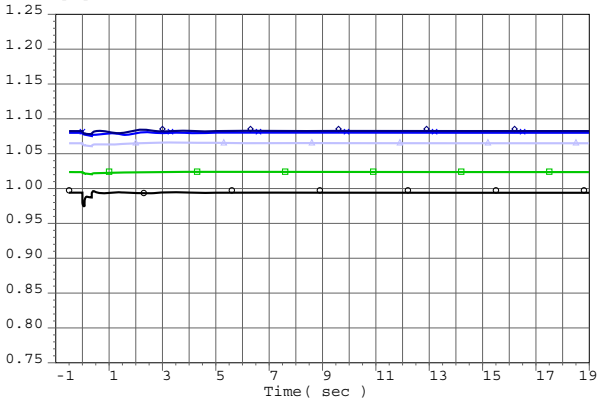

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



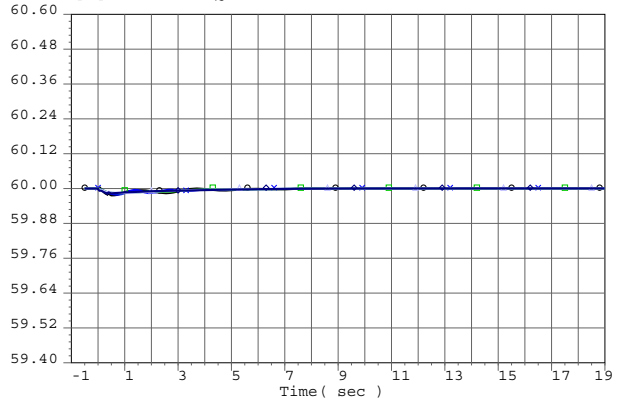

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 14287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 14287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013-14 LW1 OPERATING CASE
MAY 16, 2013



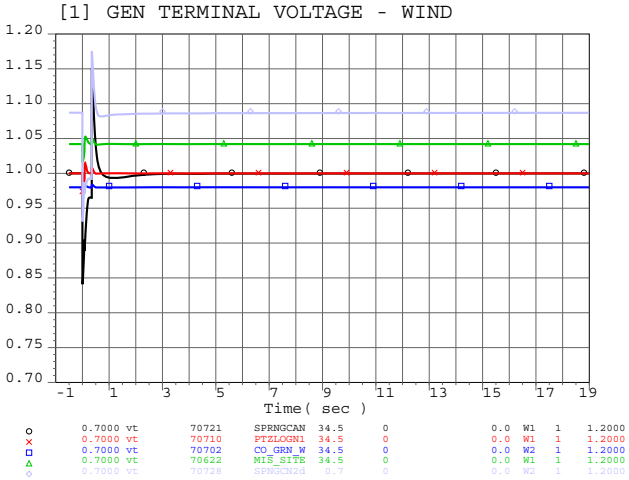
SC2_LW_PstEqv_v0_09_NYuma!-Story_230_LW_SLG_C.chf

.

Tue Nov 26 13:39:18 2013

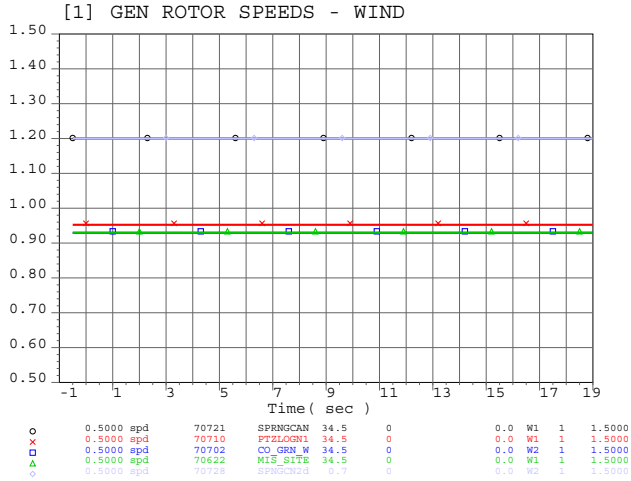
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



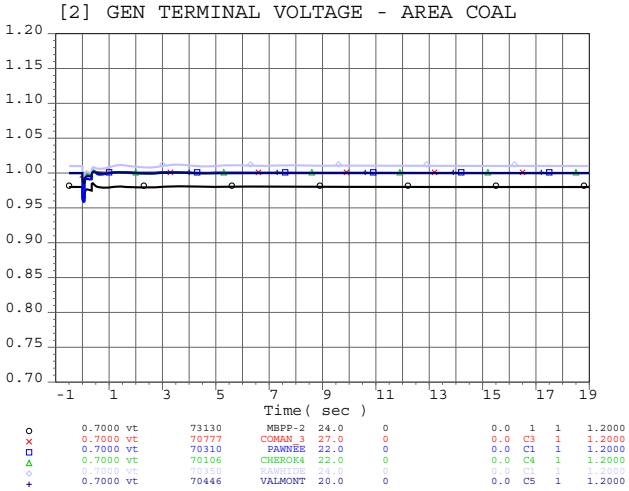

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 | vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| × | 0.7000 | vt | 70710 | PTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| □ | 0.7000 | vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| △ | 0.7000 | vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| ◇ | 0.7000 | vt | 70728 | SPNGCN2d | 0.7 | 0 | 0.0 | W2 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



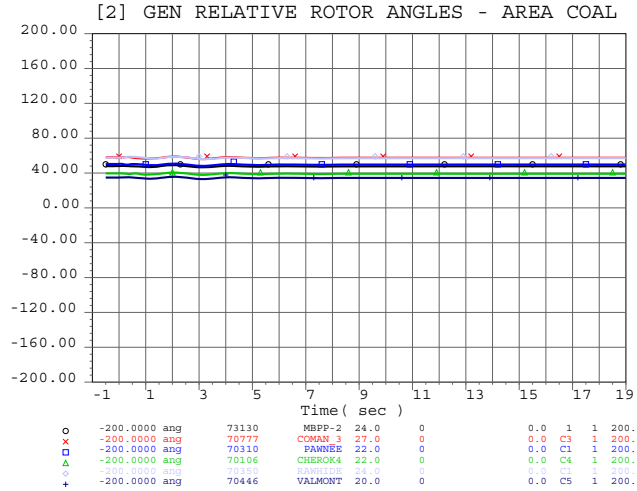

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.5000 | spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| × | 0.5000 | spd | 70710 | PTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| □ | 0.5000 | spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| △ | 0.5000 | spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| ◇ | 0.5000 | spd | 70728 | SPNGCN2d | 0.7 | 0 | 0.0 | W2 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



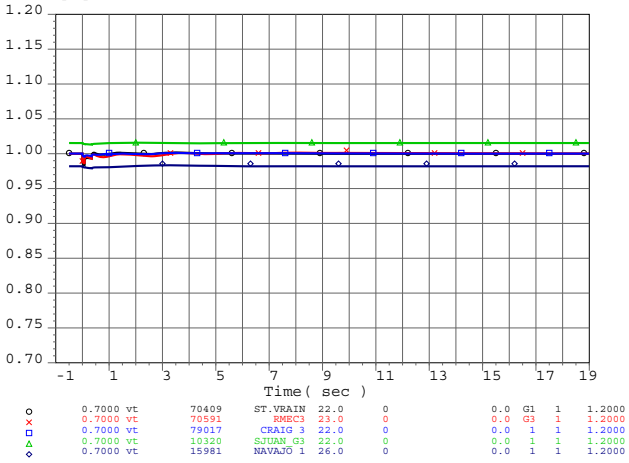

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 | vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| × | 0.7000 | vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| □ | 0.7000 | vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| △ | 0.7000 | vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| ◇ | 0.7000 | vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| + | 0.7000 | vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



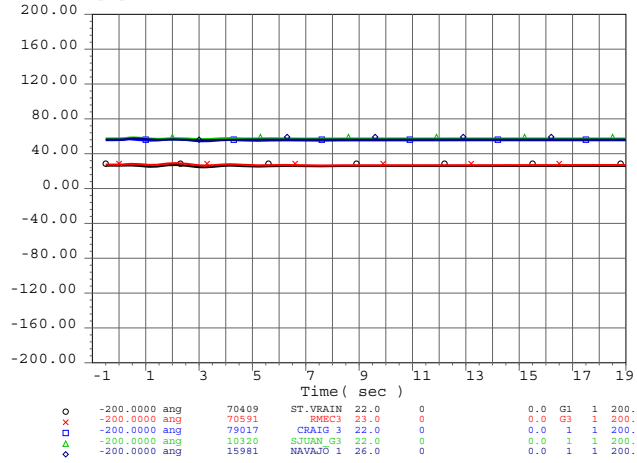

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 | ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| × | -200.0000 | ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| □ | -200.0000 | ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| △ | -200.0000 | ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| ◇ | -200.0000 | ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| + | -200.0000 | ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER




| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 | vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| × | 0.7000 | vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| □ | 0.7000 | vt | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| △ | 0.7000 | vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| ◇ | 0.7000 | vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER




| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 | ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| × | -200.0000 | ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| □ | -200.0000 | ang | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| △ | -200.0000 | ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| ◇ | -200.0000 | ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |

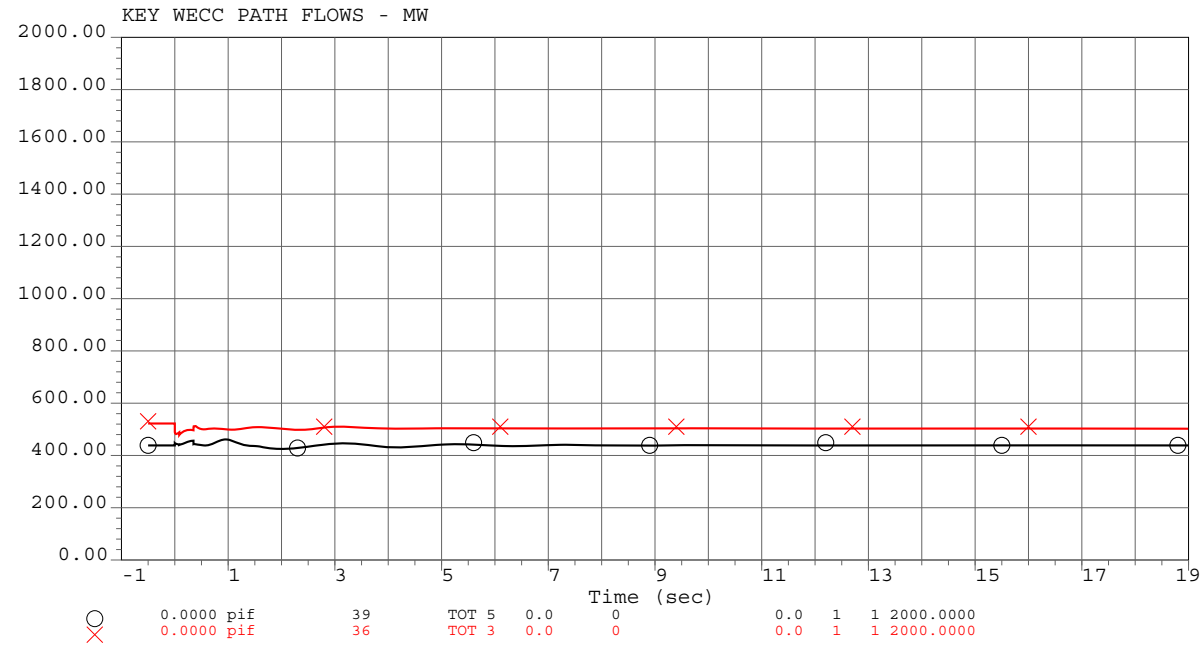
WESTERN ELECTRICITY COORDINATING COUNCIL
2013-14 LW1 OPERATING CASE
MAY 16, 2013

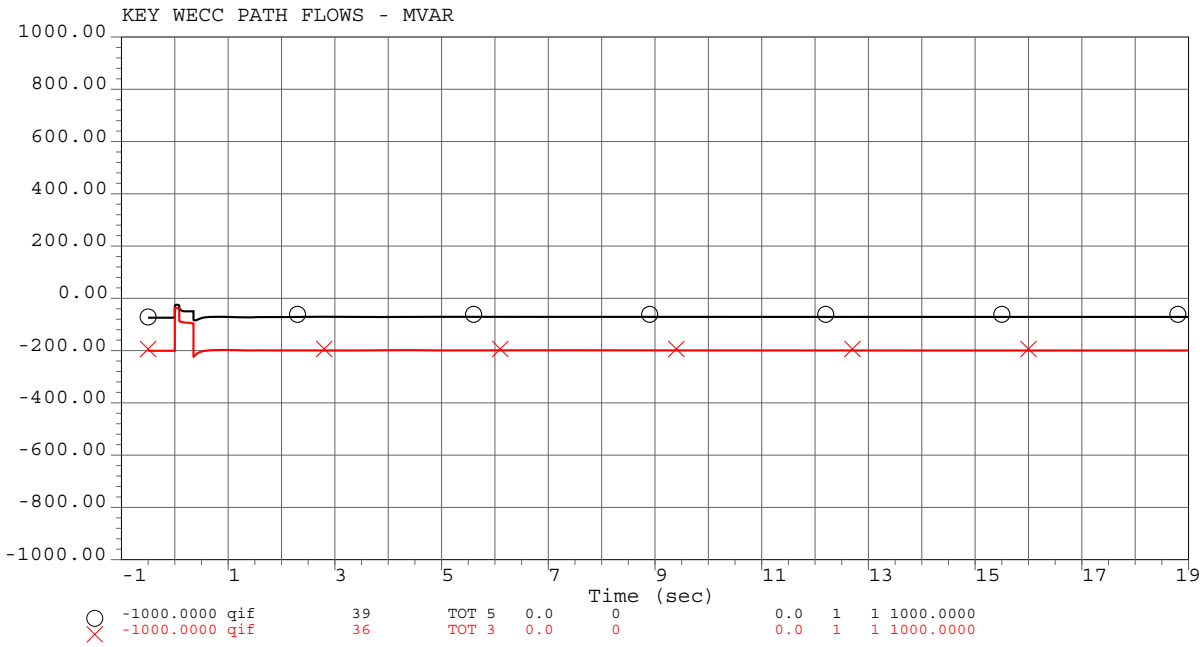


SC2_LW_PstEqv_v0_09_NYuma!-Story_230_LW_SLG_C.chf

.

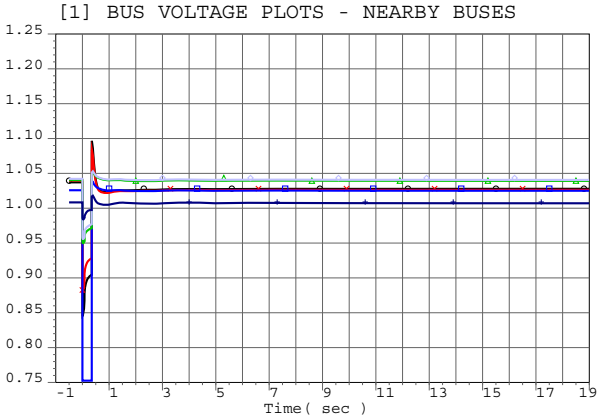
Tue Nov 26 13:39:18 2013


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

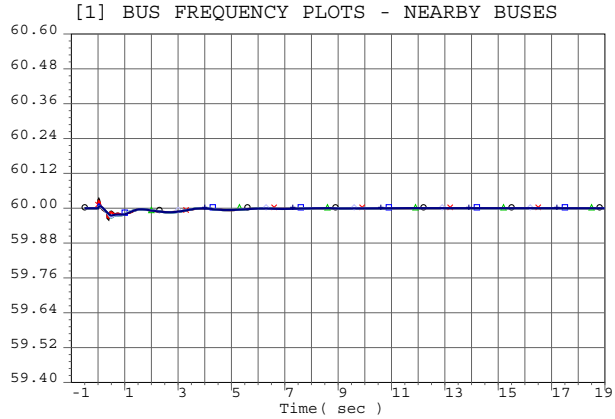
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



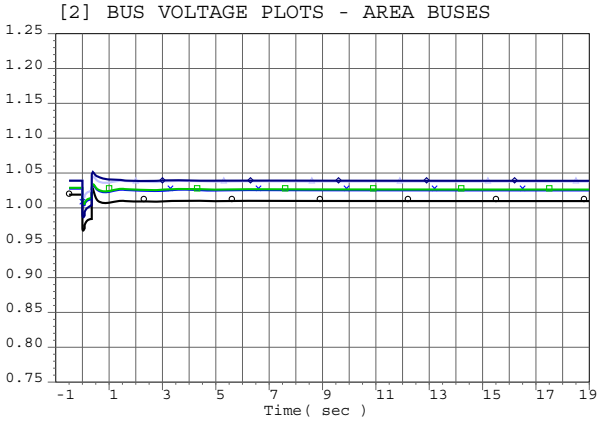

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 vbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 vbus | 73188 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



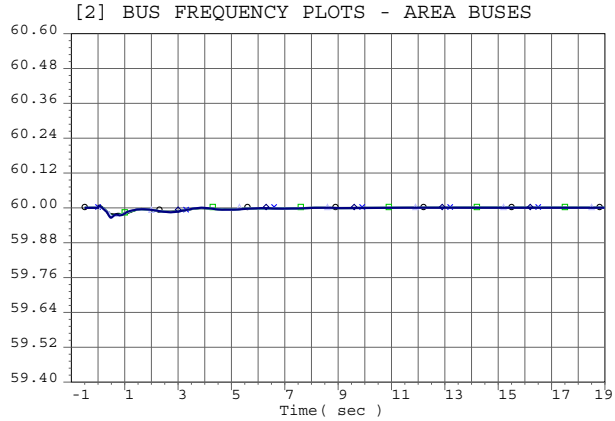

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 fbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 fbus | 73188 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



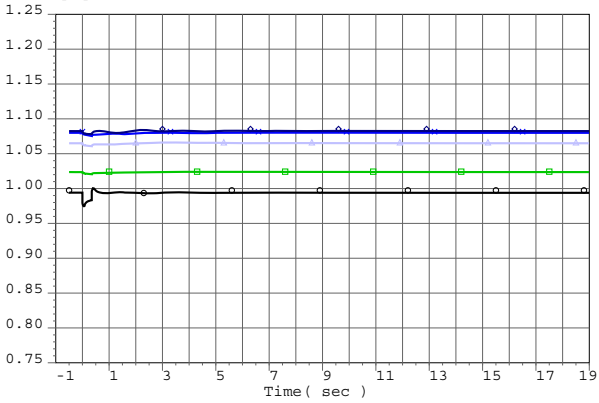

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



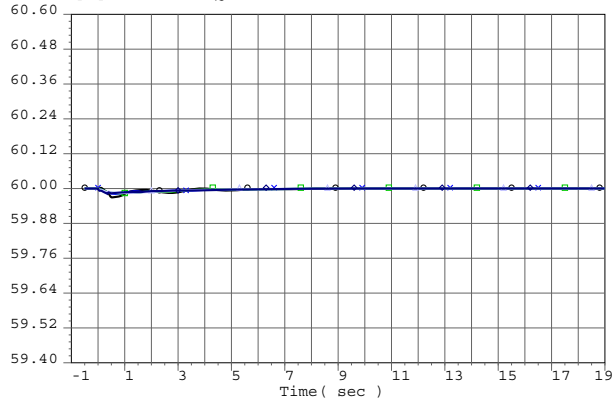

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 vbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 fbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013-14 LW1 OPERATING CASE
MAY 16, 2013



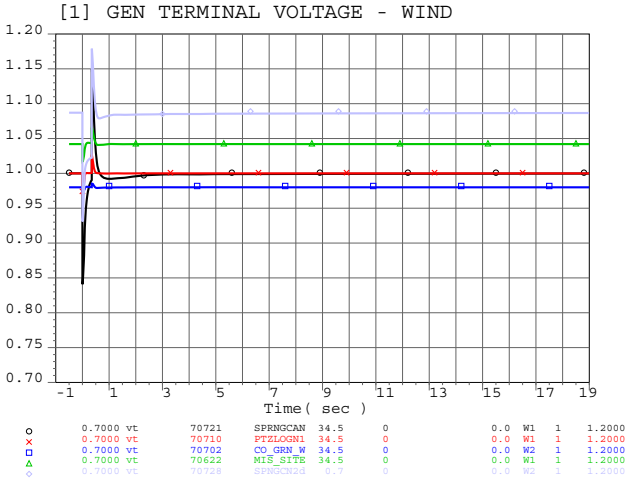
SC2_LW_PstEqv_v0_10_NYuma!-Wray_230_LW_SLG_C.chf

.

Tue Nov 26 13:40:30 2013

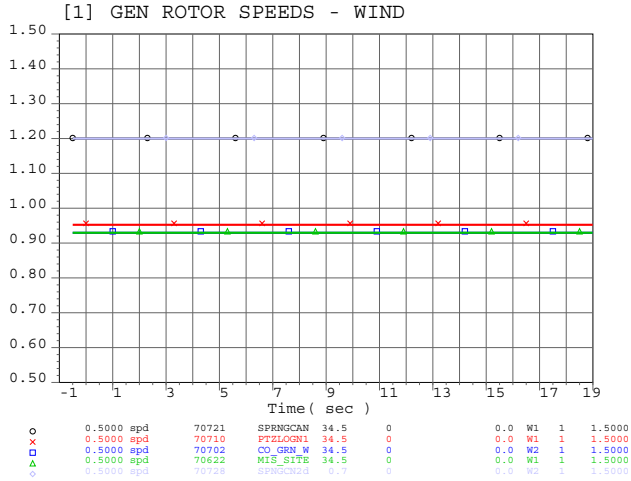
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



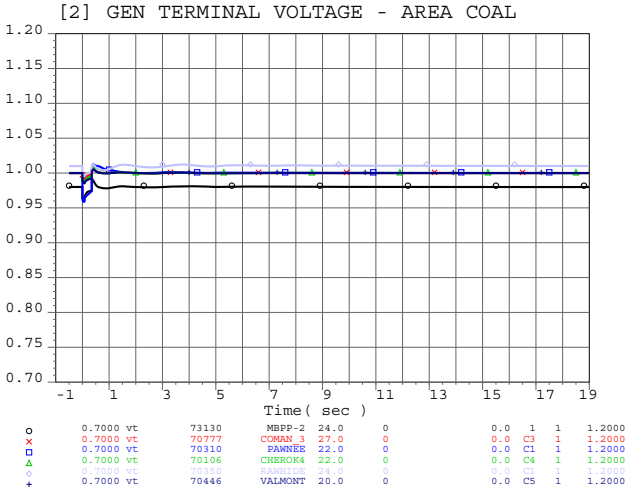

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 | vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| × | 0.7000 | vt | 70710 | PTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| □ | 0.7000 | vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| △ | 0.7000 | vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| ◇ | 0.7000 | vt | 70728 | SPNGCN2d | 0.7 | 0 | 0.0 | W2 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



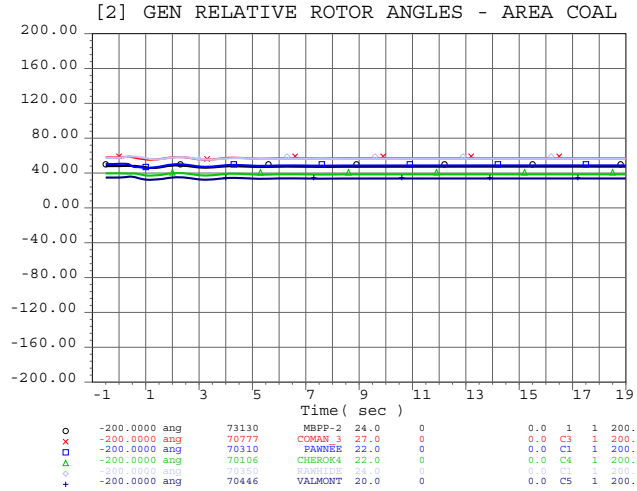

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.5000 | spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| × | 0.5000 | spd | 70710 | PTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| □ | 0.5000 | spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| △ | 0.5000 | spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| ◇ | 0.5000 | spd | 70728 | SPNGCN2d | 0.7 | 0 | 0.0 | W2 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



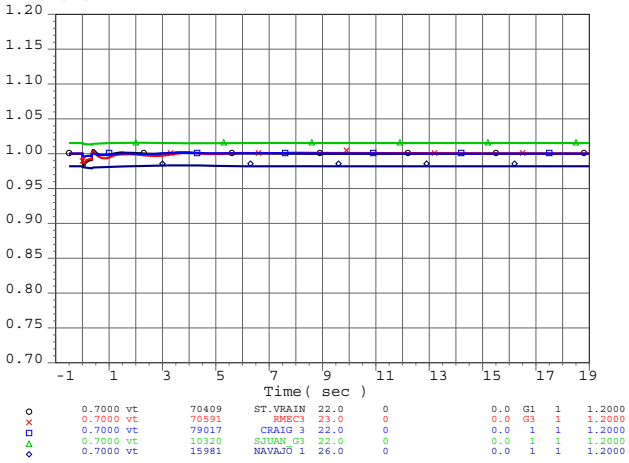

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 | vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| × | 0.7000 | vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| □ | 0.7000 | vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| △ | 0.7000 | vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| ◇ | 0.7000 | vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| + | 0.7000 | vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



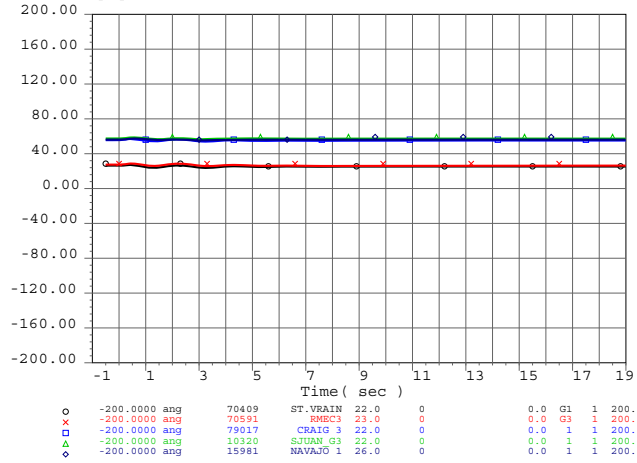

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 | ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| × | -200.0000 | ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| □ | -200.0000 | ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| △ | -200.0000 | ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| ◇ | -200.0000 | ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| + | -200.0000 | ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER




| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 | vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| × | 0.7000 | vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| □ | 0.7000 | vt | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| △ | 0.7000 | vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| ◇ | 0.7000 | vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER




| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 | ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| × | -200.0000 | ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| □ | -200.0000 | ang | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| △ | -200.0000 | ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| ◇ | -200.0000 | ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |

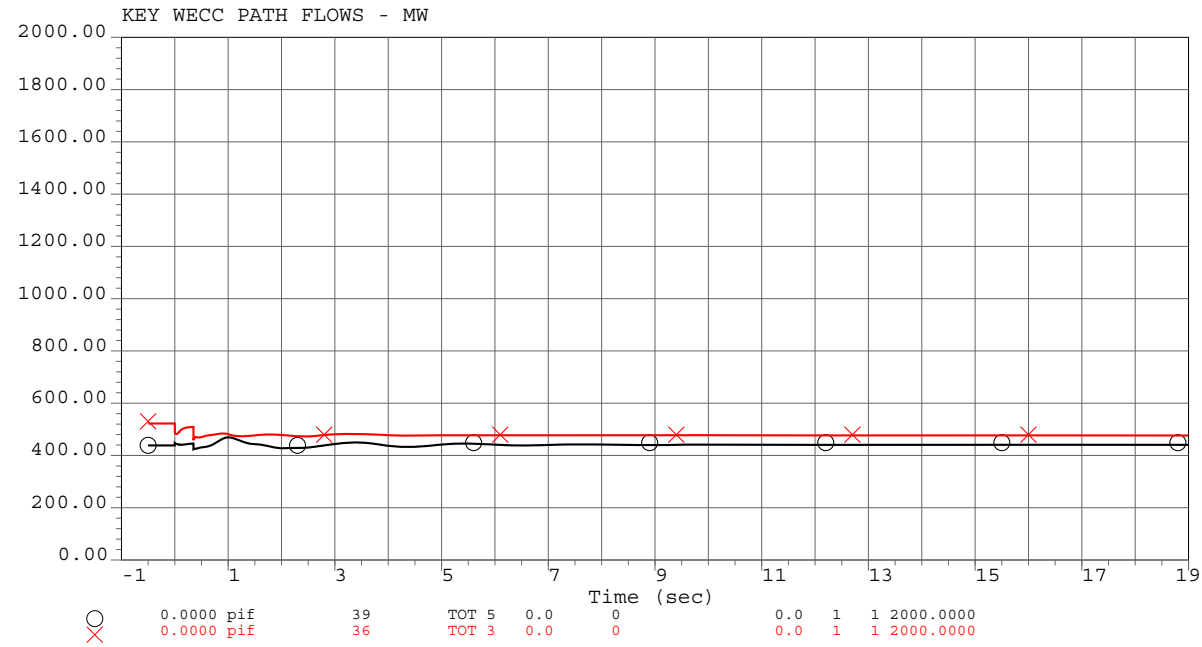
WESTERN ELECTRICITY COORDINATING COUNCIL
2013-14 LW1 OPERATING CASE
MAY 16, 2013

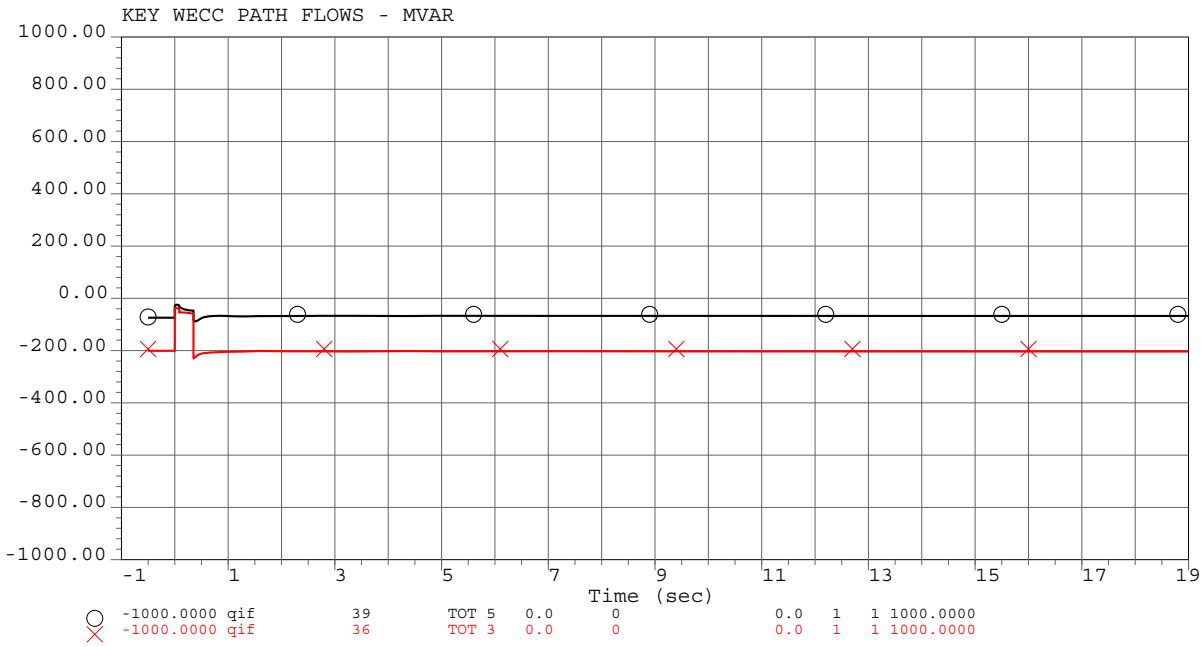


SC2_LW_PstEqv_v0_10_NYuma!-Wray_230_LW_SLG_C.chf

.

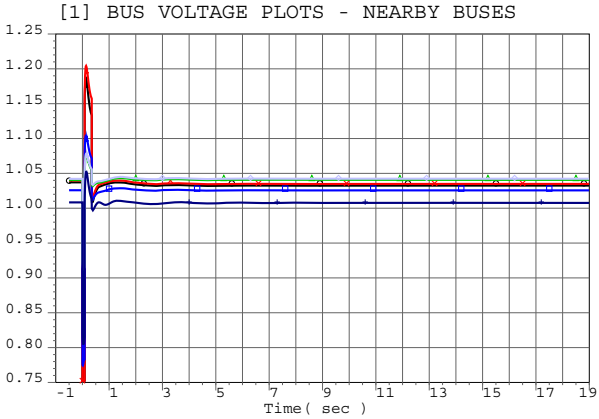
Tue Nov 26 13:40:30 2013


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

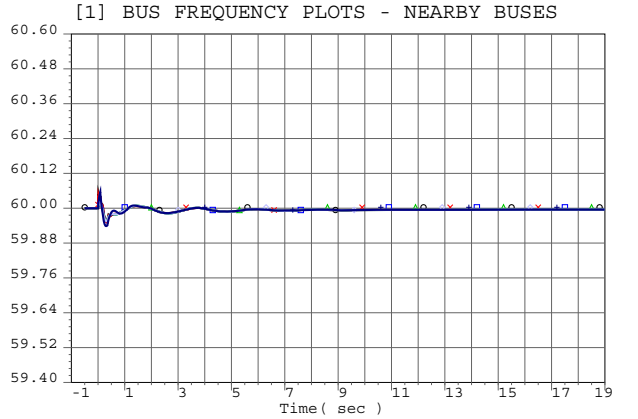
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



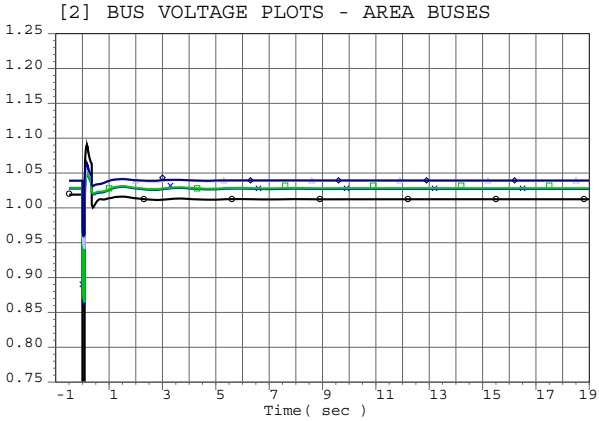

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 vbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 vbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



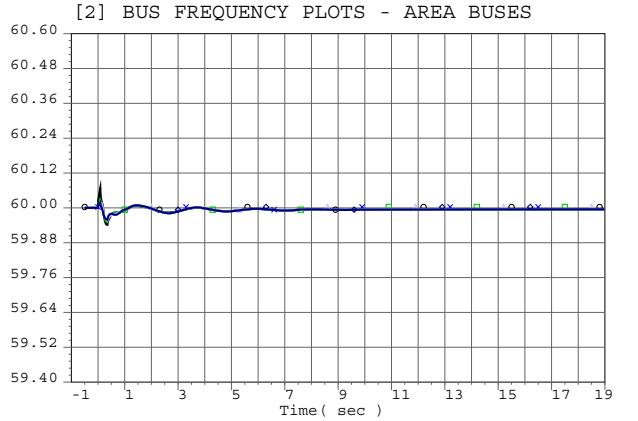

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 fbus | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 fbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



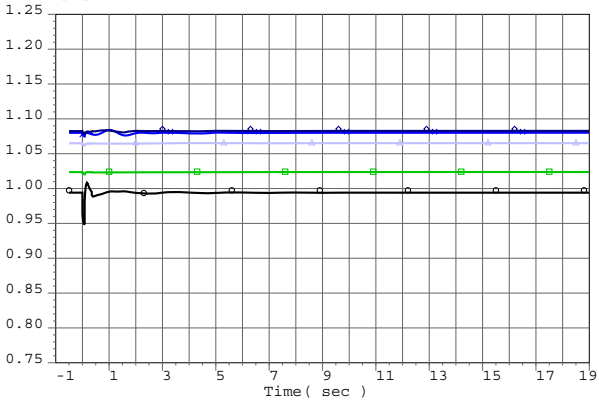

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



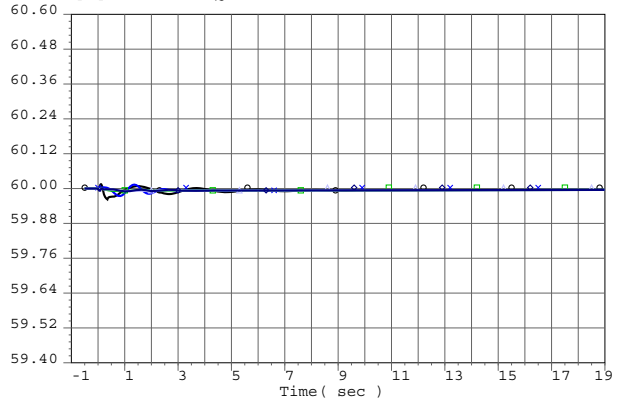

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 vbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 fbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013-14 LW1 OPERATING CASE
MAY 16, 2013



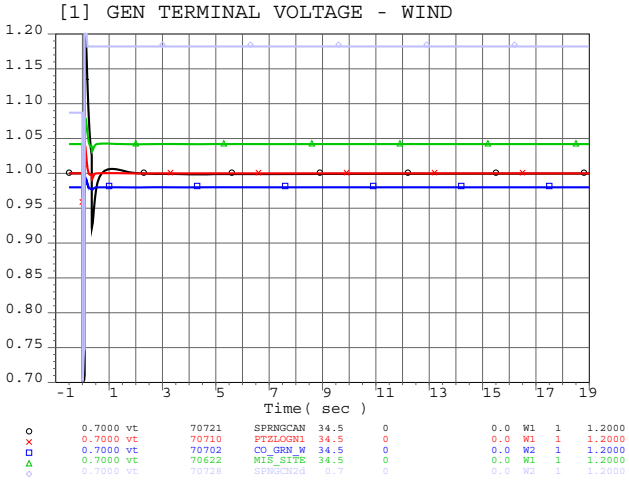
SC2_LW_PstEqv_v0_11_Stegall!-DJnstn_230_3ph_B.chf

.

Tue Nov 26 13:41:39 2013

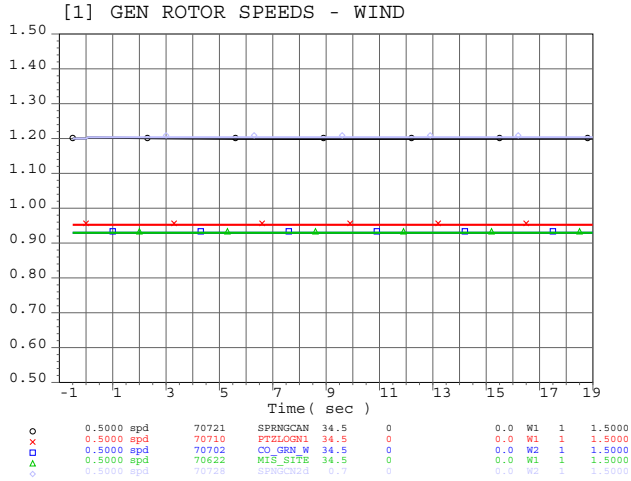
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



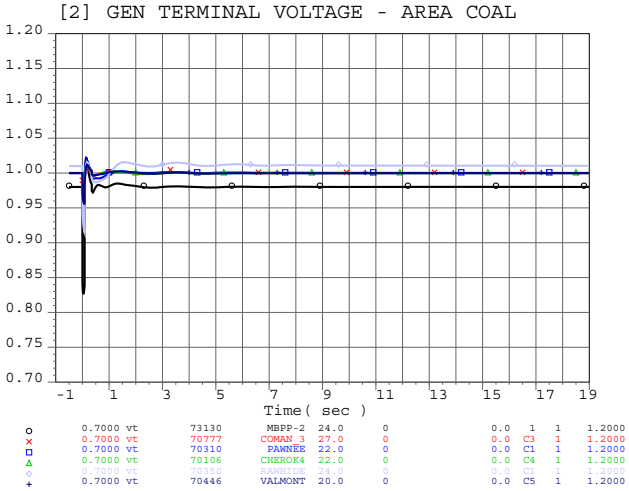

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 0.7000 | vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| 0.7000 | vt | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| 0.7000 | vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| 0.7000 | vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| 0.7000 | vt | 70728 | SPNGCN2d | 0.7 | 0 | 0.0 | W2 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



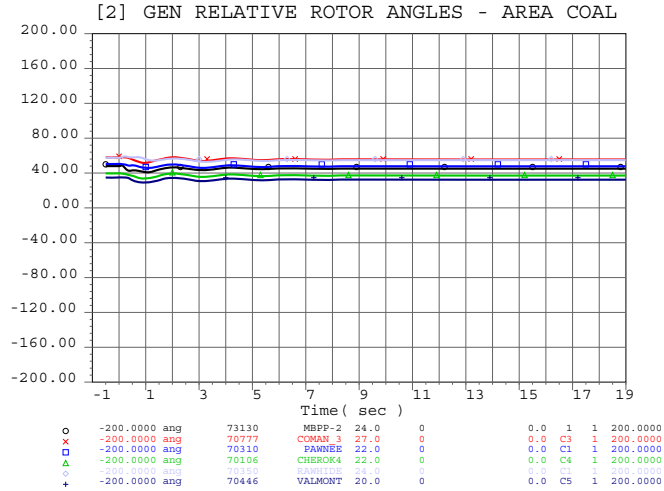

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 0.5000 | spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| 0.5000 | spd | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| 0.5000 | spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| 0.5000 | spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| 0.5000 | spd | 70728 | SPNGCN2d | 0.7 | 0 | 0.0 | W2 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



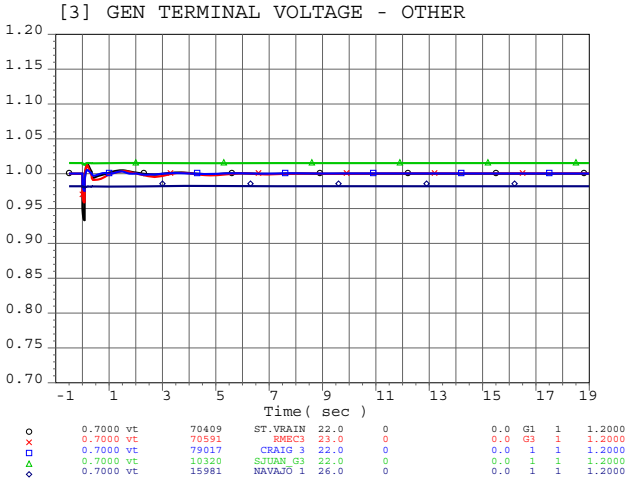

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 0.7000 | vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| 0.7000 | vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| 0.7000 | vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| 0.7000 | vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| 0.7000 | vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| 0.7000 | vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



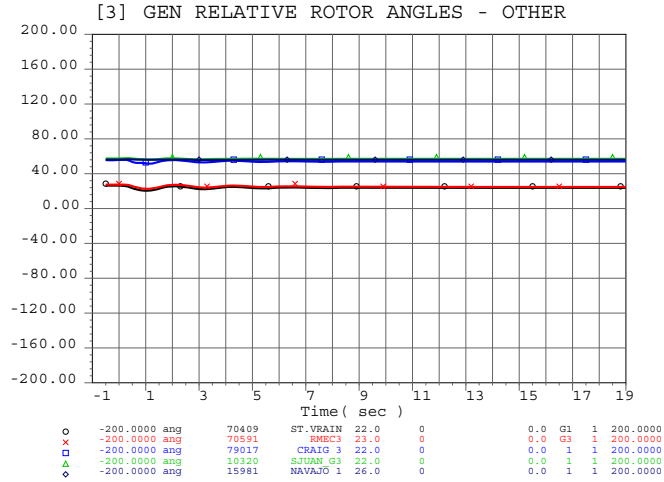

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| -200.0000 | ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| -200.0000 | ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| -200.0000 | ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| -200.0000 | ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| -200.0000 | ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| -200.0000 | ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 0.7000 | vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| 0.7000 | vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| 0.7000 | vt | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| 0.7000 | vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| 0.7000 | vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| -200.0000 | ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| -200.0000 | ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| -200.0000 | ang | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| -200.0000 | ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| -200.0000 | ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |

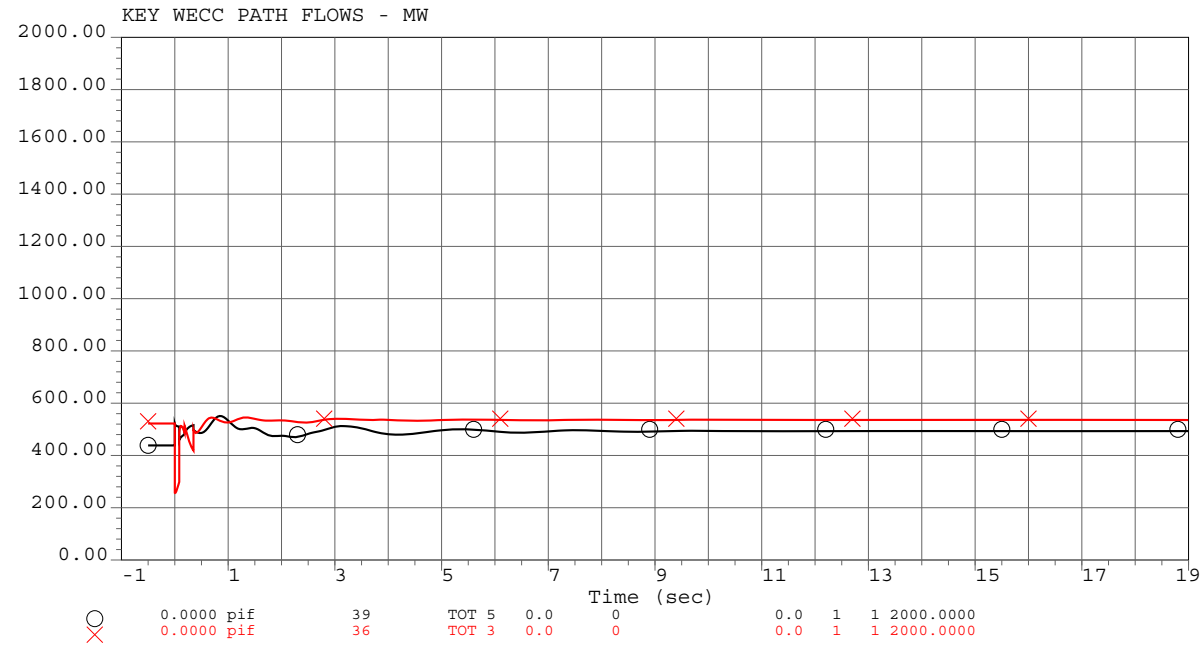
WESTERN ELECTRICITY COORDINATING COUNCIL
2013-14 LW1 OPERATING CASE
MAY 16, 2013

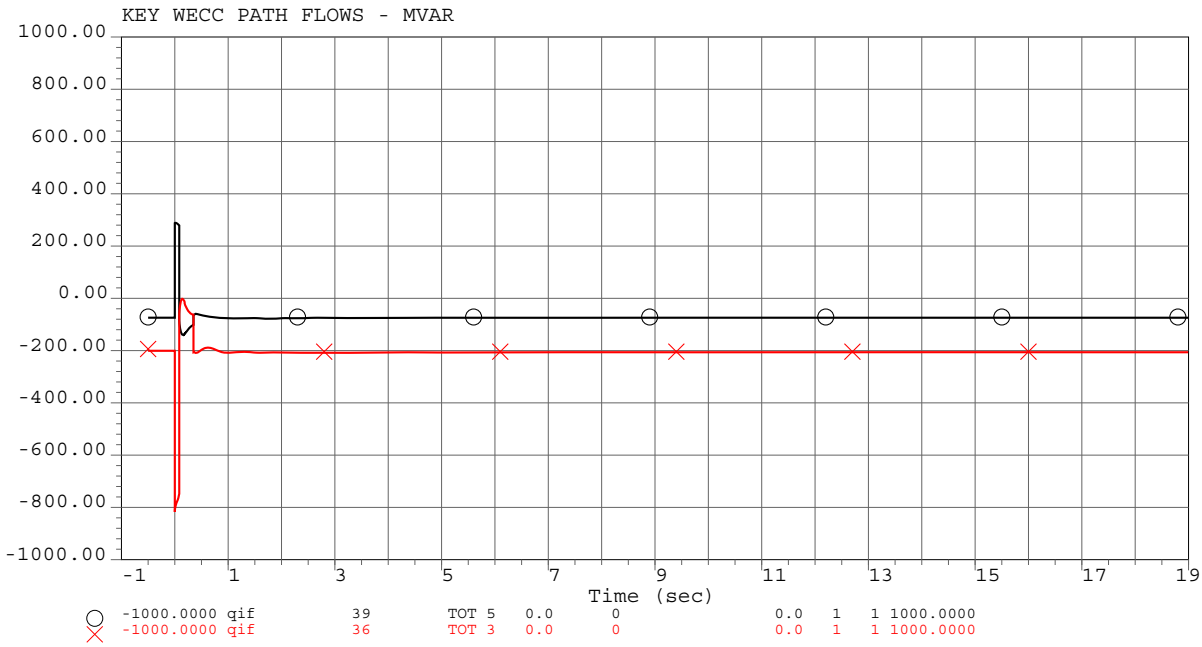


SC2_LW_PstEqv_v0_11_Stegall!-DJnstn_230_3ph_B.chf

.

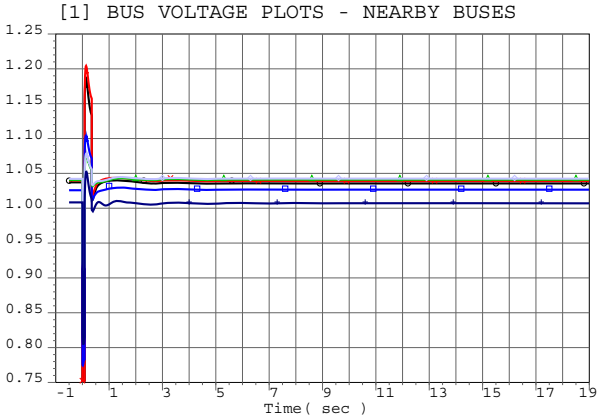
Tue Nov 26 13:41:40 2013


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

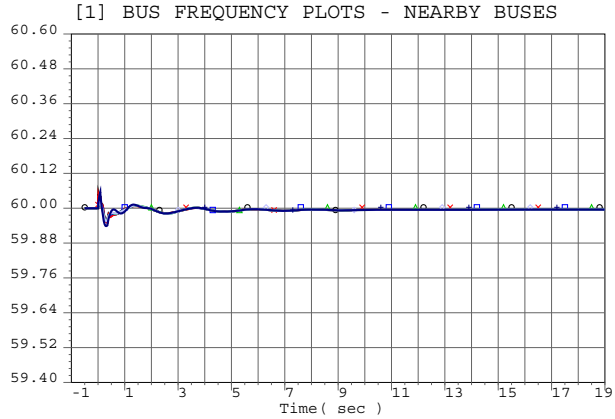
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



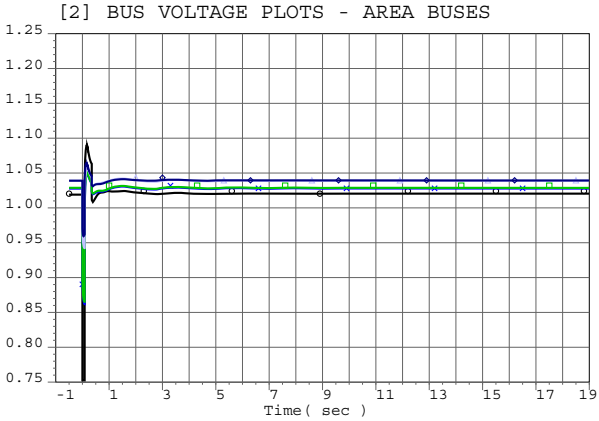

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 vbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 vbus | 73188 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



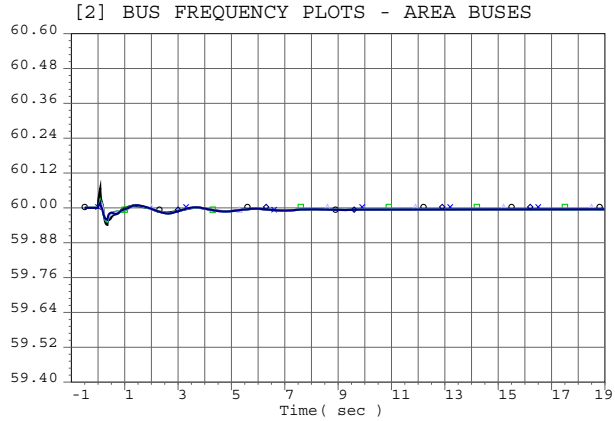

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 fbus | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 fbus | 73188 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



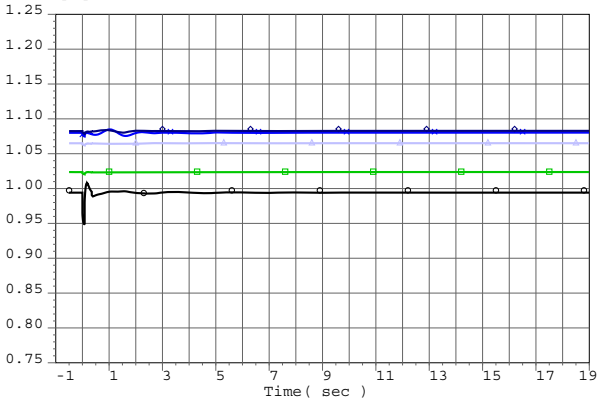

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



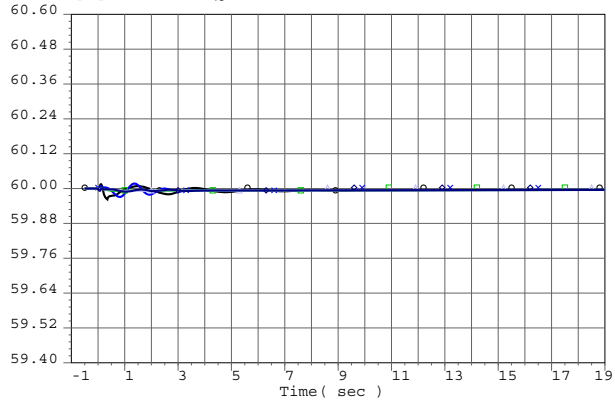

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 vbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 fbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

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2013-14 LW1 OPERATING CASE
MAY 16, 2013



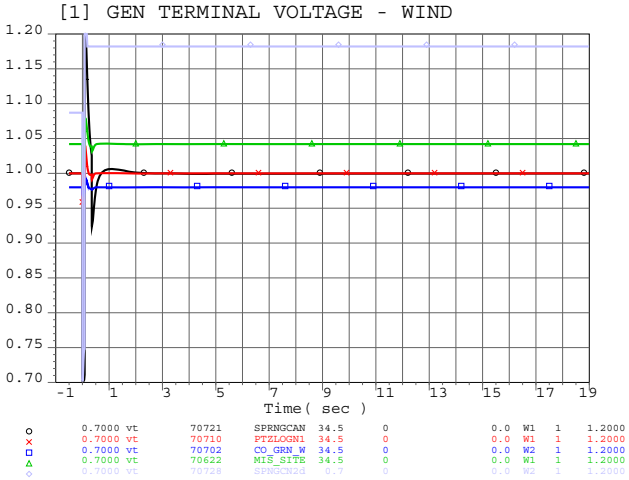
SC2_LW_PstEqv_v0_12_Stegall!-LRS_230_3ph_B.chf

.

Tue Nov 26 13:43:12 2013

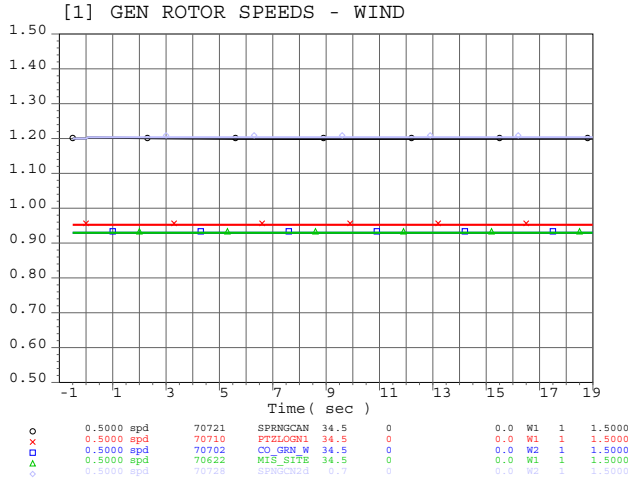
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



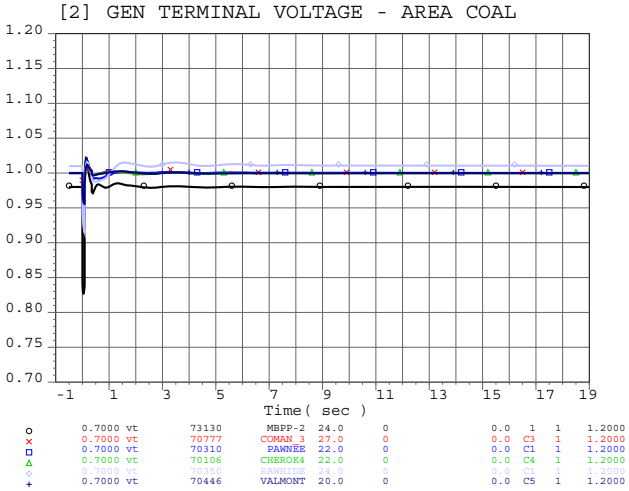

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 0.7000 vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| 0.7000 vt | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| 0.7000 vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| 0.7000 vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| 0.7000 vt | 70728 | SPNGCN2d | 0.7 | 0 | 0.0 | W2 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



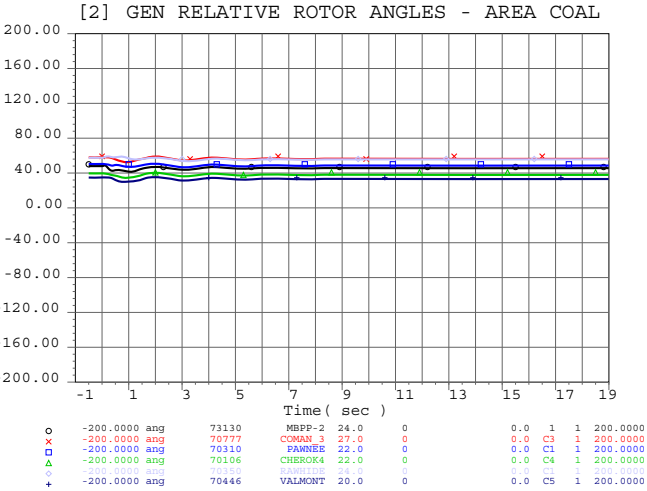

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 0.5000 spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| 0.5000 spd | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| 0.5000 spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| 0.5000 spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| 0.5000 spd | 70728 | SPNGCN2d | 0.7 | 0 | 0.0 | W2 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



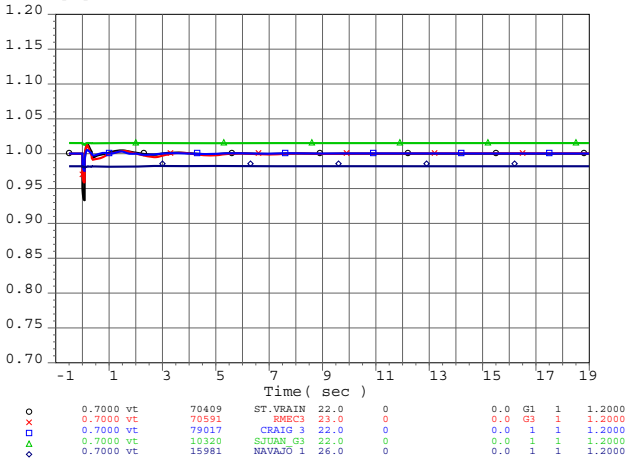

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 0.7000 vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| 0.7000 vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| 0.7000 vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| 0.7000 vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| 0.7000 vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| 0.7000 vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



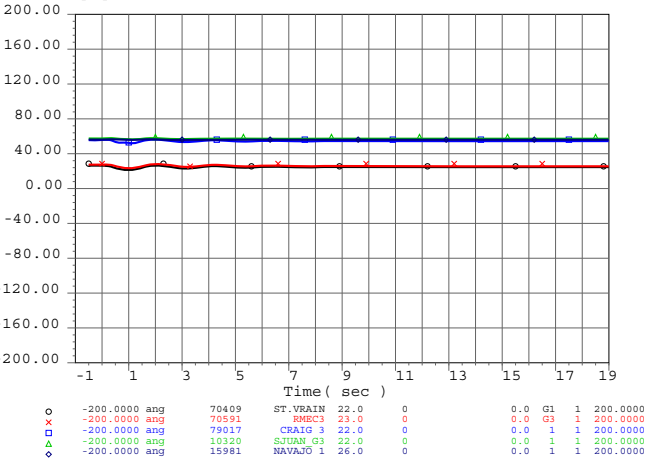

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| -200.0000 ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| -200.0000 ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| -200.0000 ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| -200.0000 ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| -200.0000 ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| -200.0000 ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER




| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 0.7000 vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| 0.7000 vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| 0.7000 vt | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| 0.7000 vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| 0.7000 vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER




| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| -200.0000 ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| -200.0000 ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| -200.0000 ang | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| -200.0000 ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| -200.0000 ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |

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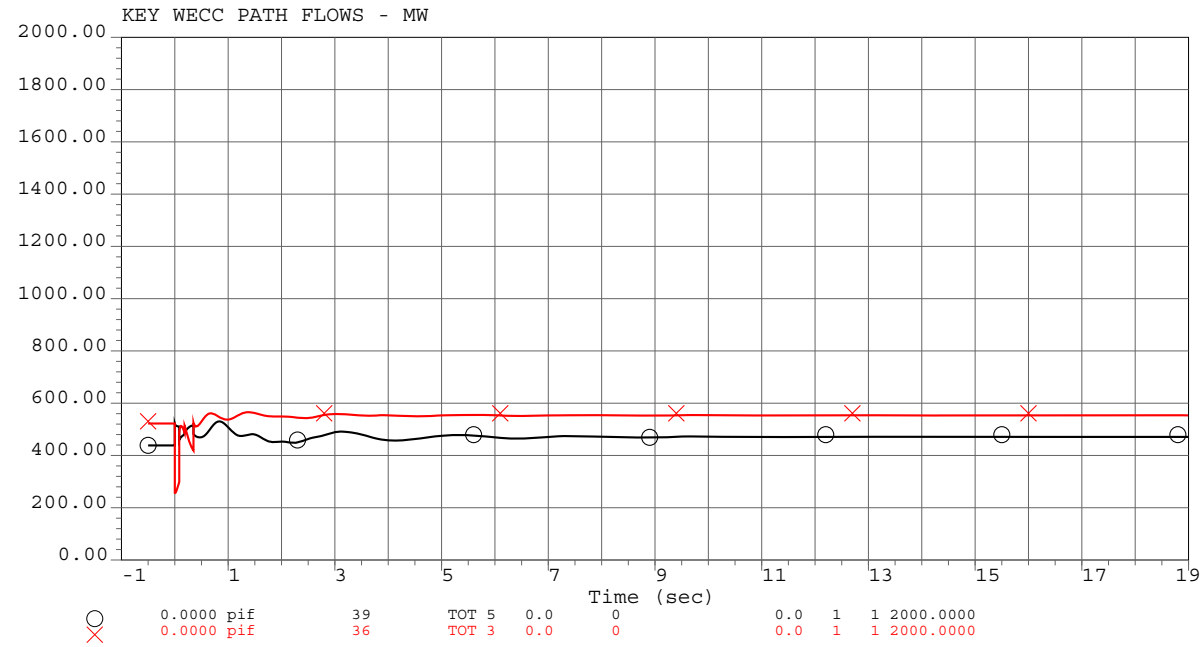
2013-14 LW1 OPERATING CASE
MAY 16, 2013

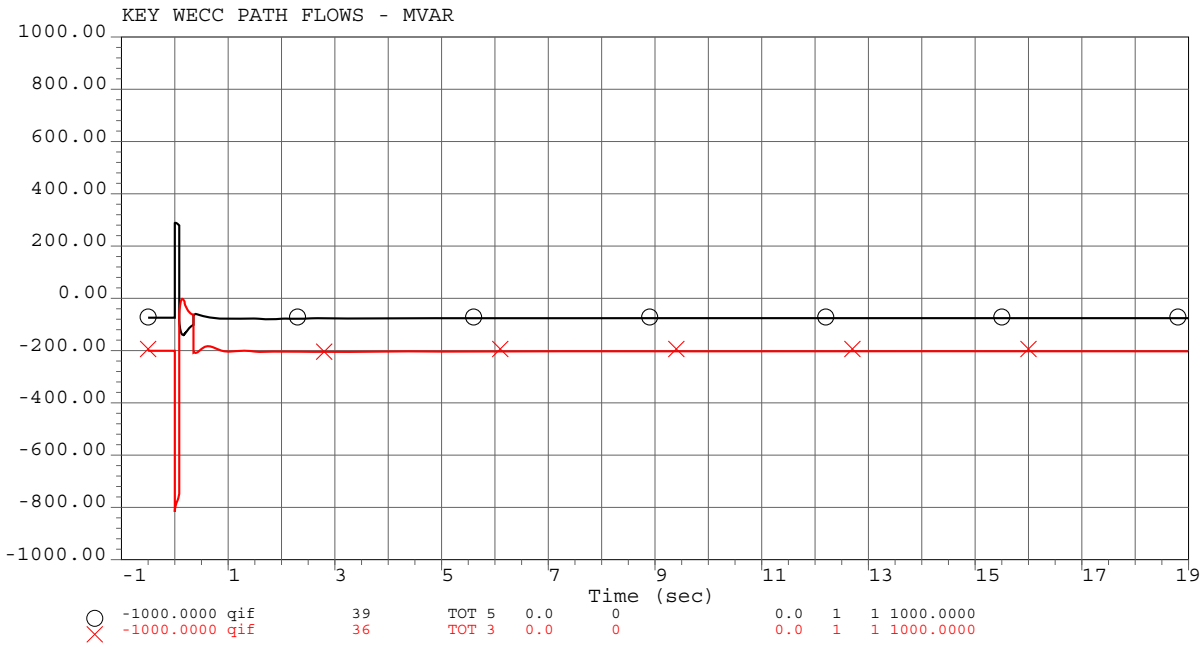


SC2_LW_PstEqv_v0_12_Stegall!-LRS_230_3ph_B.chf

.

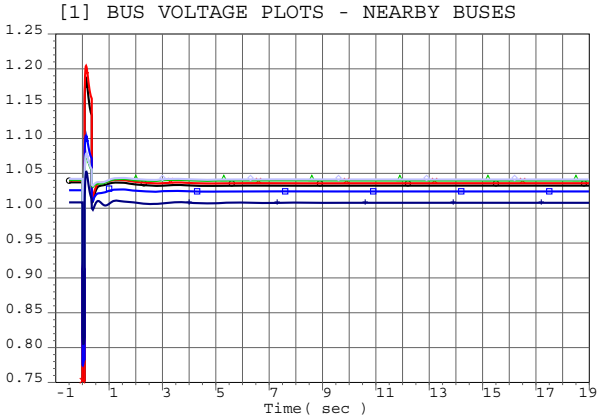
Tue Nov 26 13:43:12 2013


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

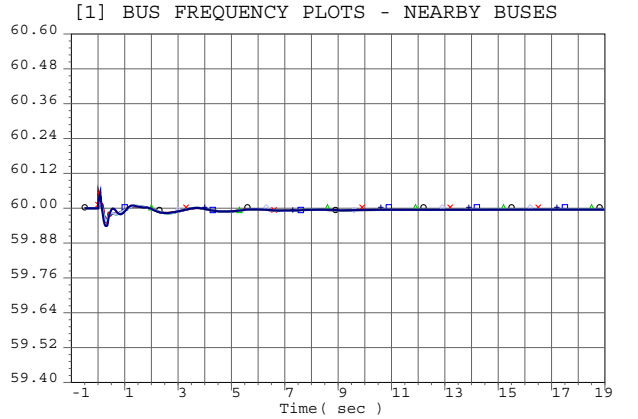
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



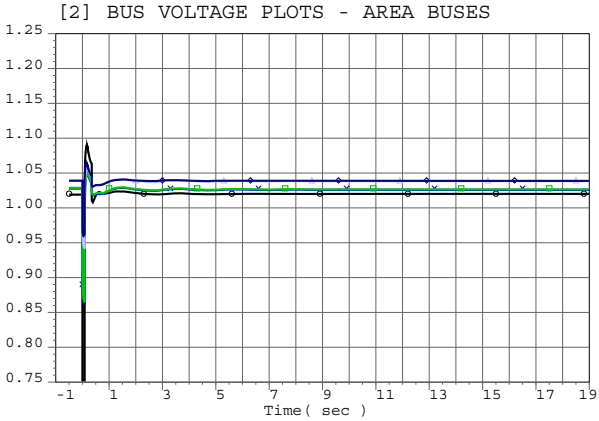

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 73188 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 | vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



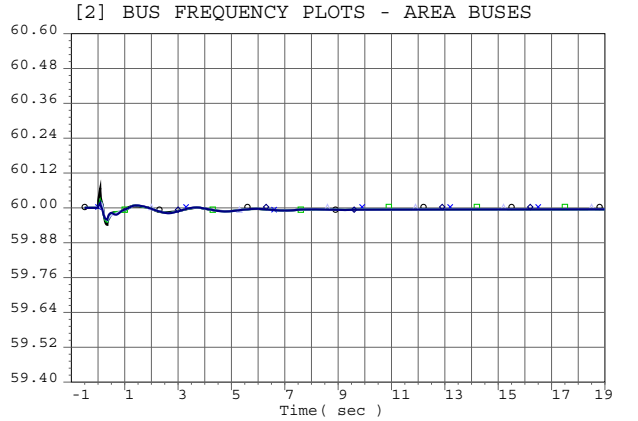

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 73188 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 | fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



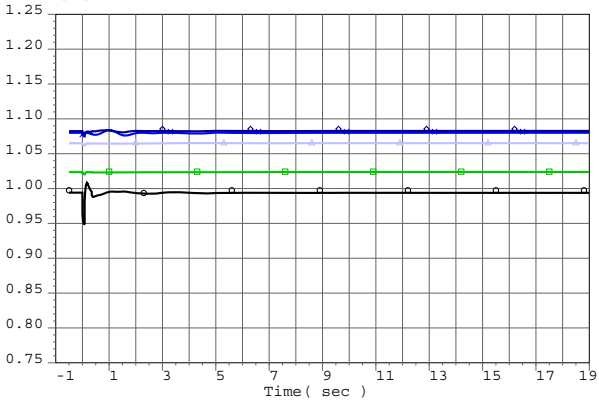

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



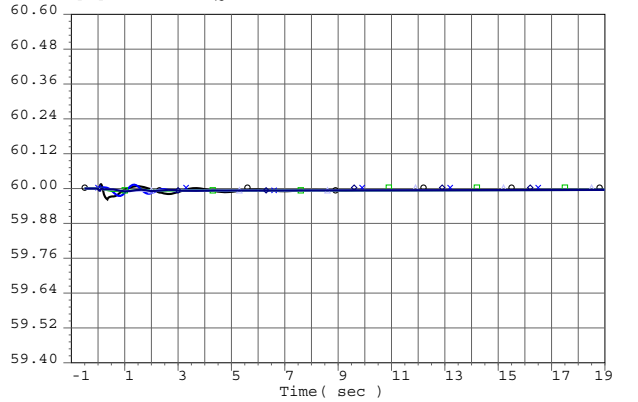

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 | vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 | vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 | vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 | vbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 | vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 | fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 | fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 | fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 | fbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 | fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013-14 LW1 OPERATING CASE
MAY 16, 2013



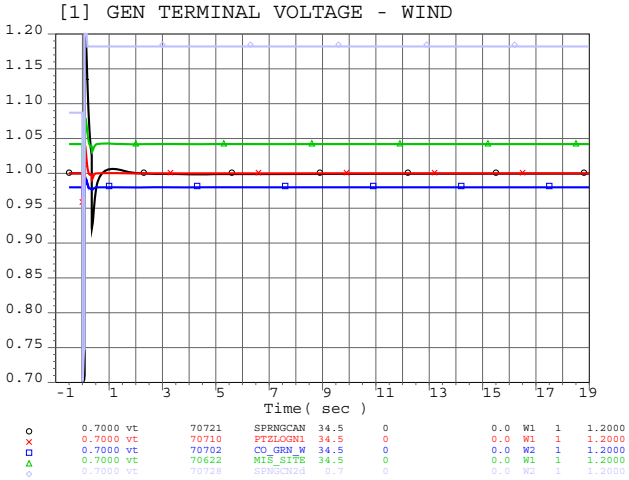
SC2_LW_PstEqv_v0_13_Stegall!-Archer_230_3ph_B.chf

.

Tue Nov 26 13:44:13 2013

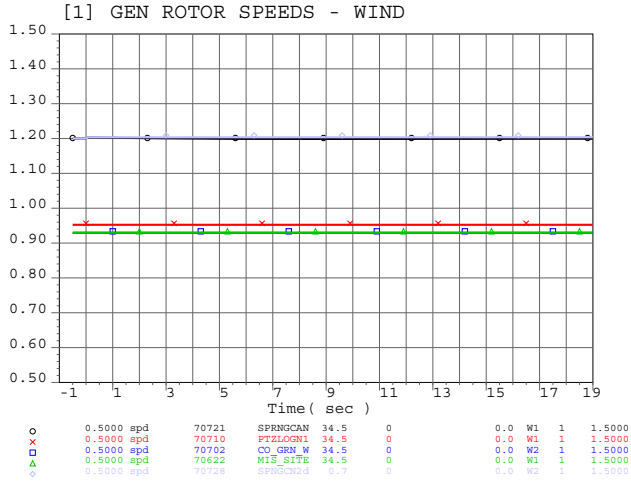
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



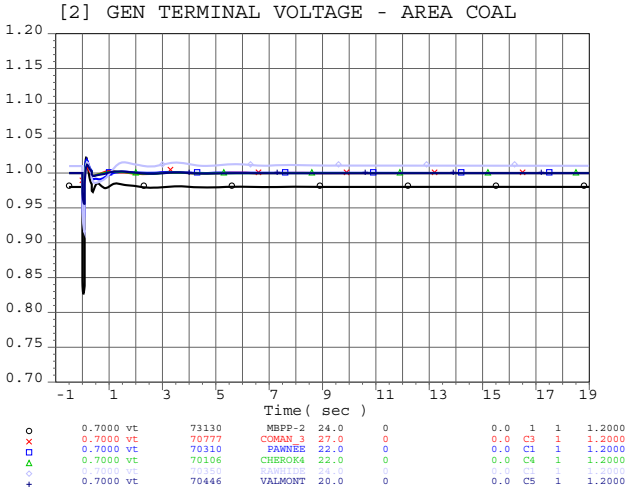

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| × | 0.7000 vt | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| □ | 0.7000 vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| △ | 0.7000 vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 70728 | SPNGCN2d | 0.7 | 0 | 0.0 | W2 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



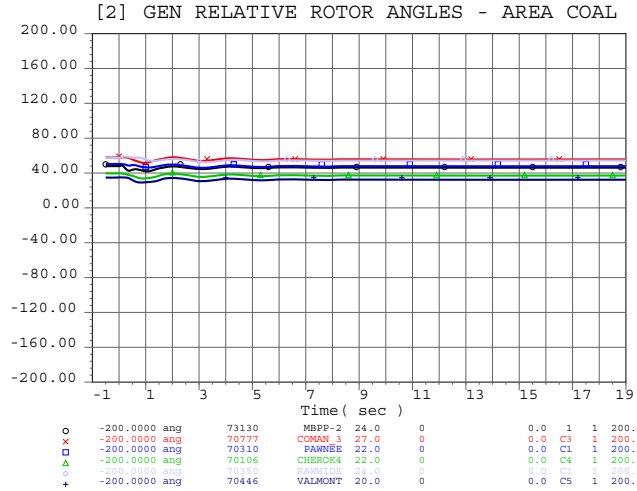

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.5000 spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| × | 0.5000 spd | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| □ | 0.5000 spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| △ | 0.5000 spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| ◇ | 0.5000 spd | 70728 | SPNGCN2d | 0.7 | 0 | 0.0 | W2 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



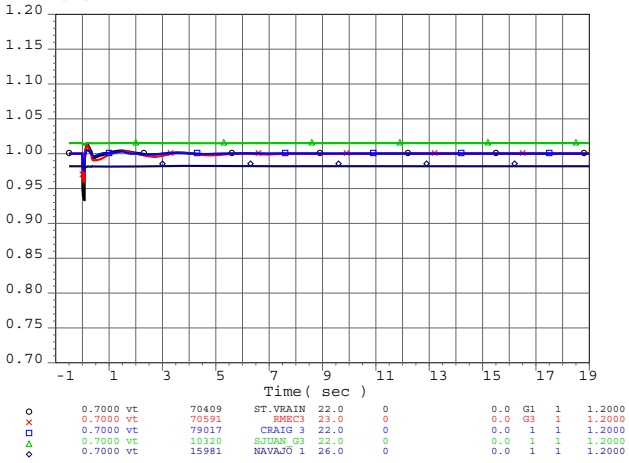

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| × | 0.7000 vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| □ | 0.7000 vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| △ | 0.7000 vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| + | 0.7000 vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



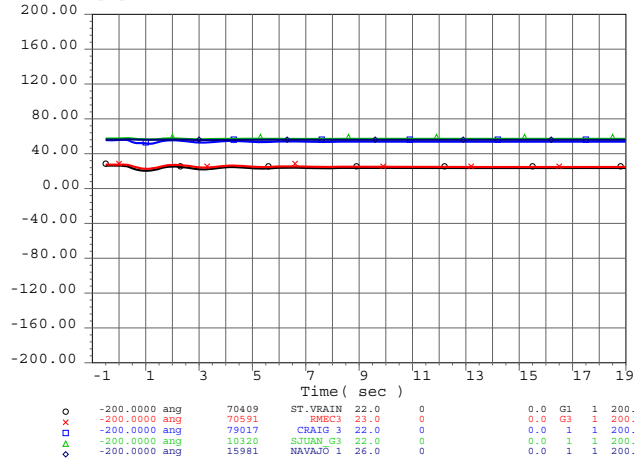

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| × | -200.0000 ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| □ | -200.0000 ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| △ | -200.0000 ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| + | -200.0000 ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | 0.7000 vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| × | 0.7000 vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| □ | 0.7000 vt | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| △ | 0.7000 vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| ◇ | 0.7000 vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ○ | -200.0000 ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| × | -200.0000 ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| □ | -200.0000 ang | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| △ | -200.0000 ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| ◇ | -200.0000 ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013-14 LW1 OPERATING CASE
MAY 16, 2013



SC2_LW_PstEqv_v0_13_Stegall!-Archer_230_3ph_B.chf

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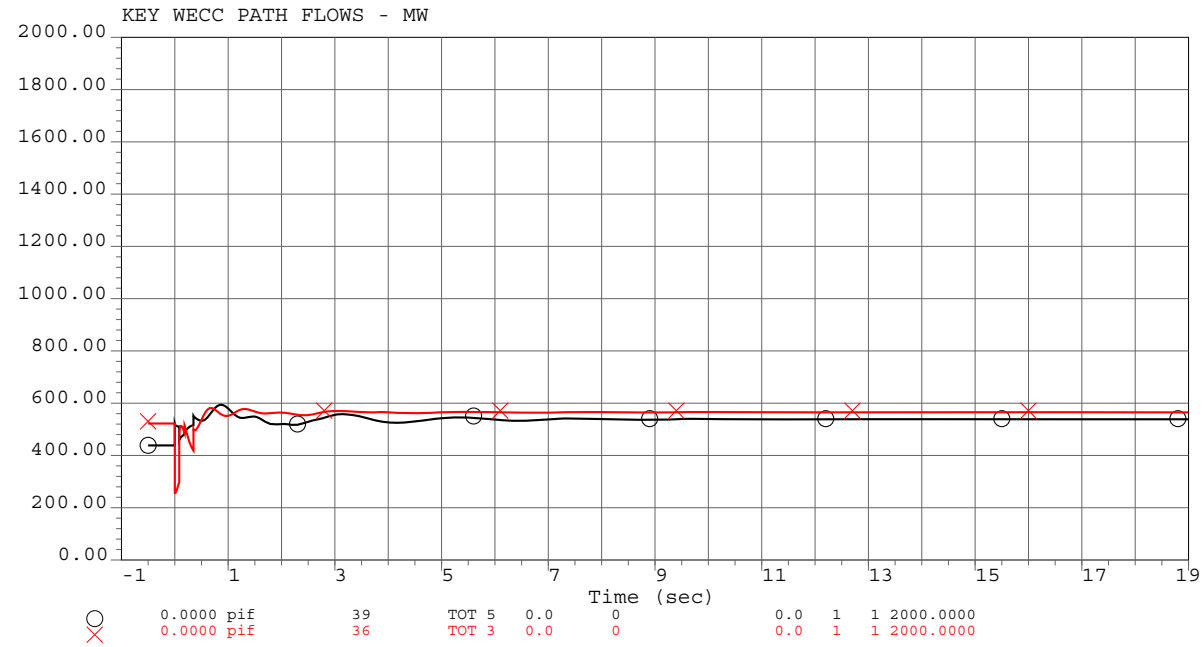
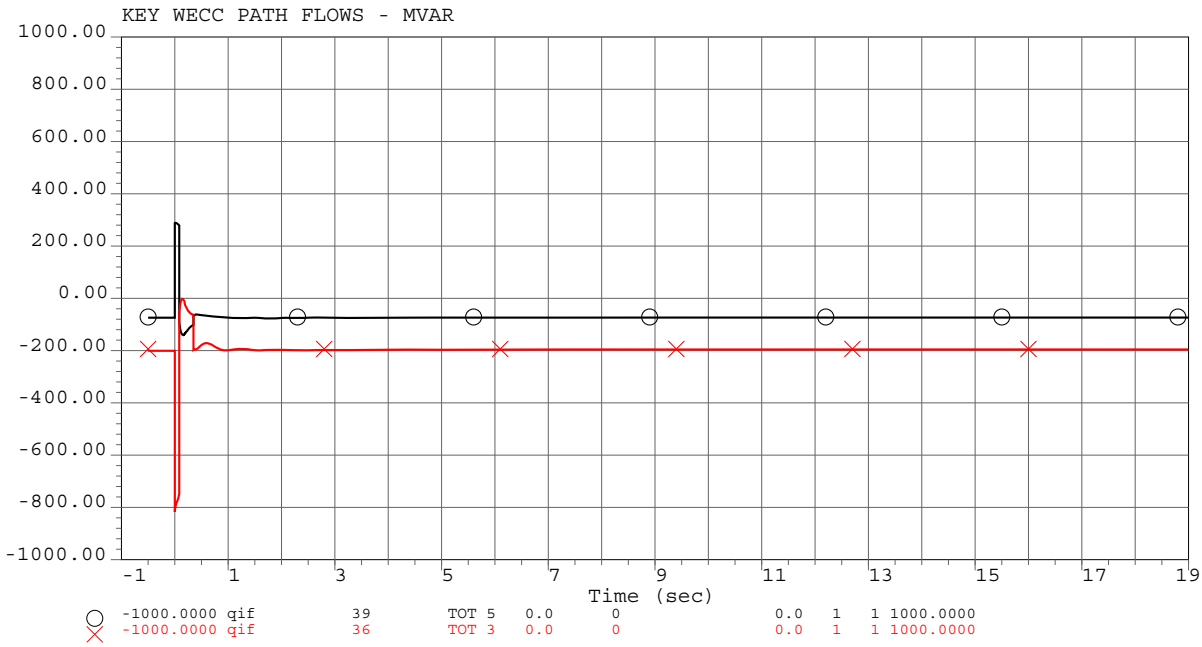
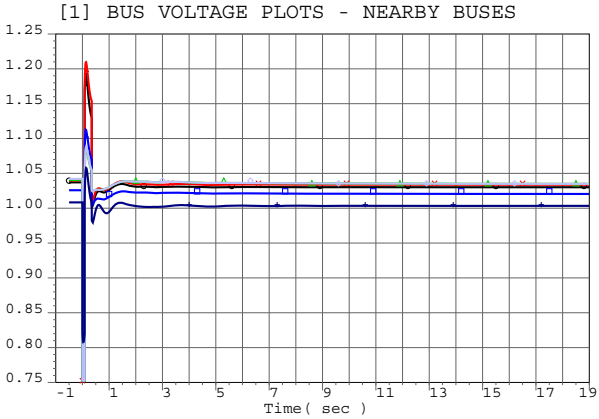
Tue Nov 26 13:44:13 2013


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

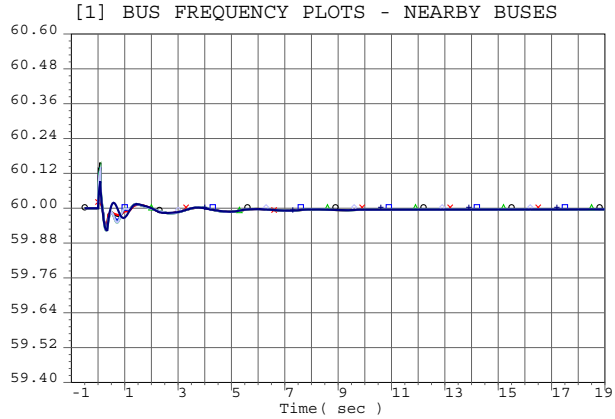
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



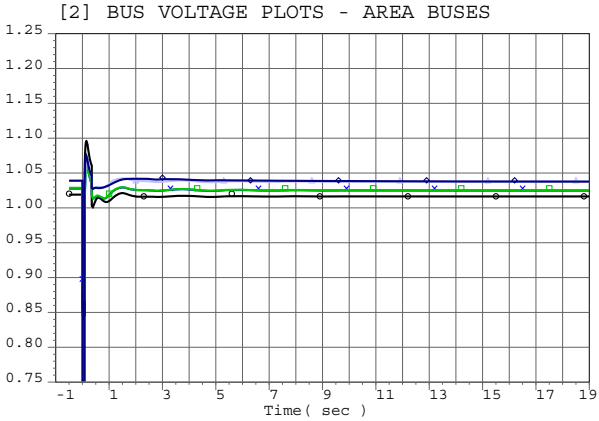

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 vbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 vbus | 73188 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



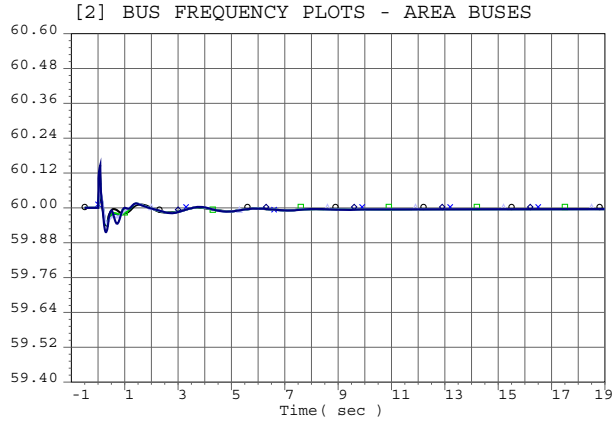

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 fbus | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 fbus | 73188 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



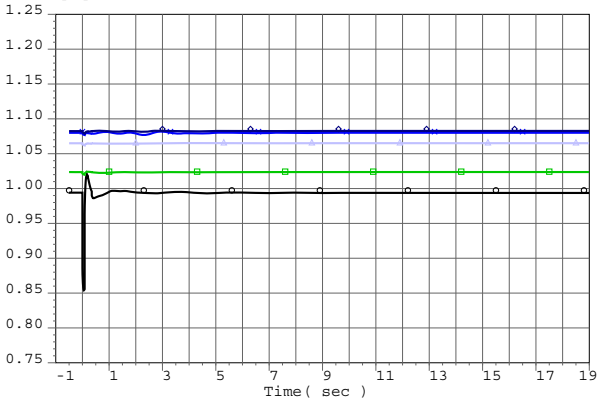

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



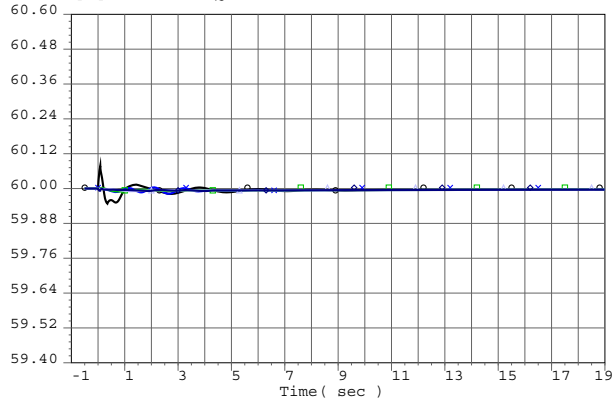

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 vbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 fbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013-14 LW1 OPERATING CASE
MAY 16, 2013



SC2_LW_PstEqv_v0_14_Story!-LRS_345_3ph_B.chf

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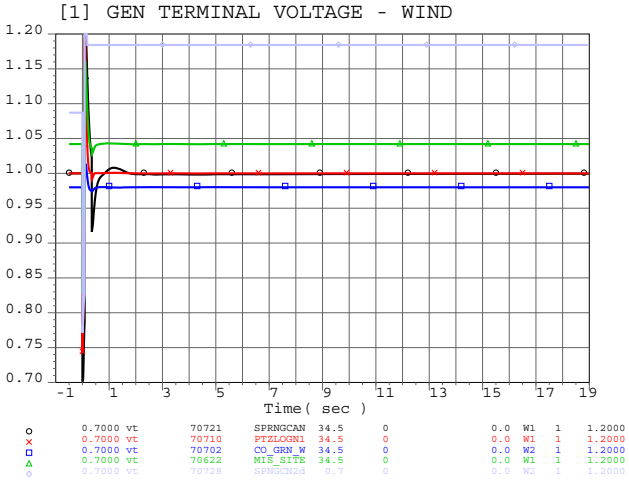
Tue Nov 26 13:45:16 2013

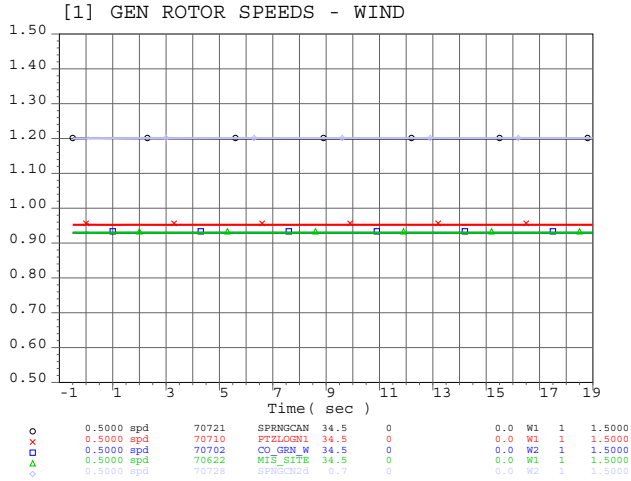
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



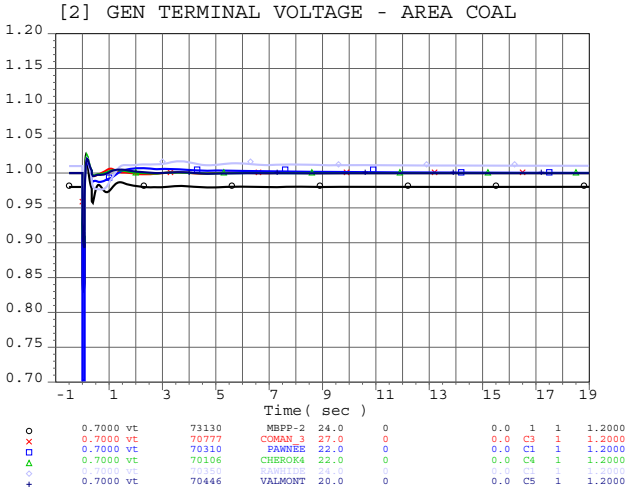

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 0.7000 vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| 0.7000 vt | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| 0.7000 vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| 0.7000 vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| 0.7000 vt | 70728 | SPNGCN2d | 0.7 | 0 | 0.0 | W2 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



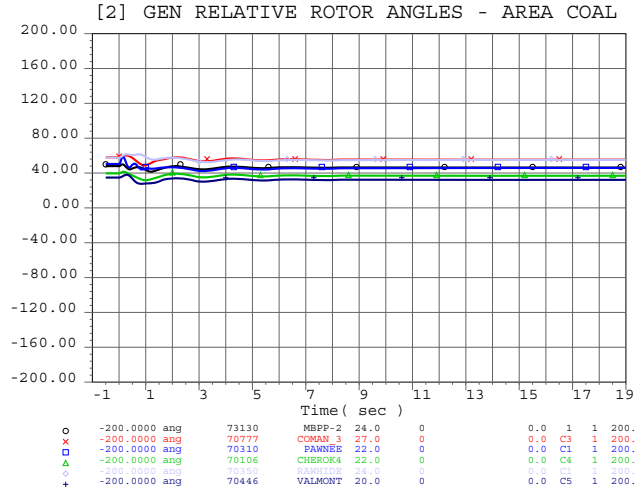

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 0.5000 spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| 0.5000 spd | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| 0.5000 spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| 0.5000 spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| 0.5000 spd | 70728 | SPNGCN2d | 0.7 | 0 | 0.0 | W2 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



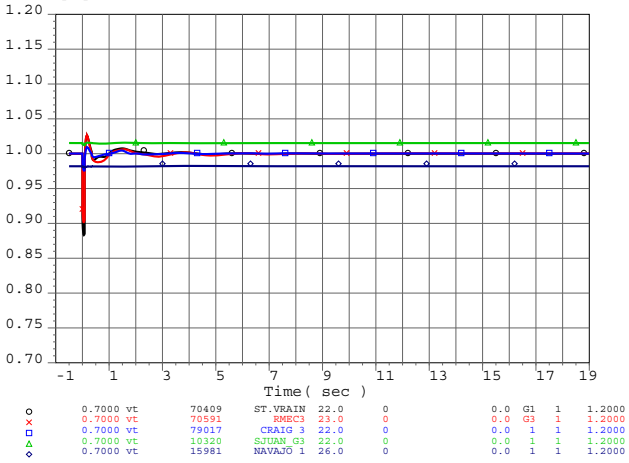

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 0.7000 vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| 0.7000 vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| 0.7000 vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| 0.7000 vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| 0.7000 vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| 0.7000 vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



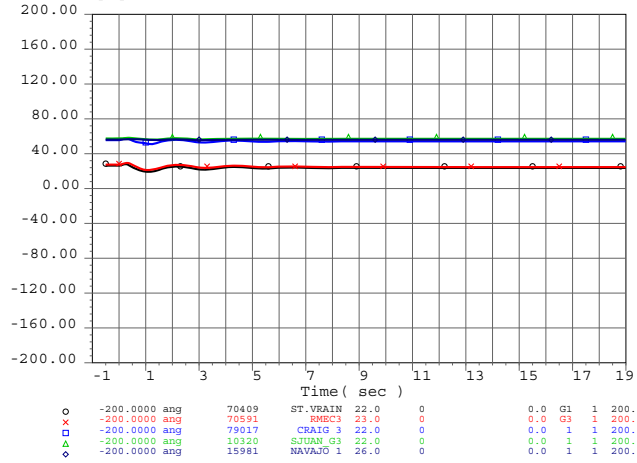

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| -200.0000 ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| -200.0000 ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| -200.0000 ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| -200.0000 ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| -200.0000 ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| -200.0000 ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 0.7000 vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| 0.7000 vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| 0.7000 vt | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| 0.7000 vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| 0.7000 vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| -200.0000 ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| -200.0000 ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| -200.0000 ang | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| -200.0000 ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| -200.0000 ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |

WESTERN ELECTRICITY COORDINATING COUNCIL
2013-14 LW1 OPERATING CASE
MAY 16, 2013



SC2_LW_PstEqv_v0_14_Story!-LRS_345_3ph_B.chf

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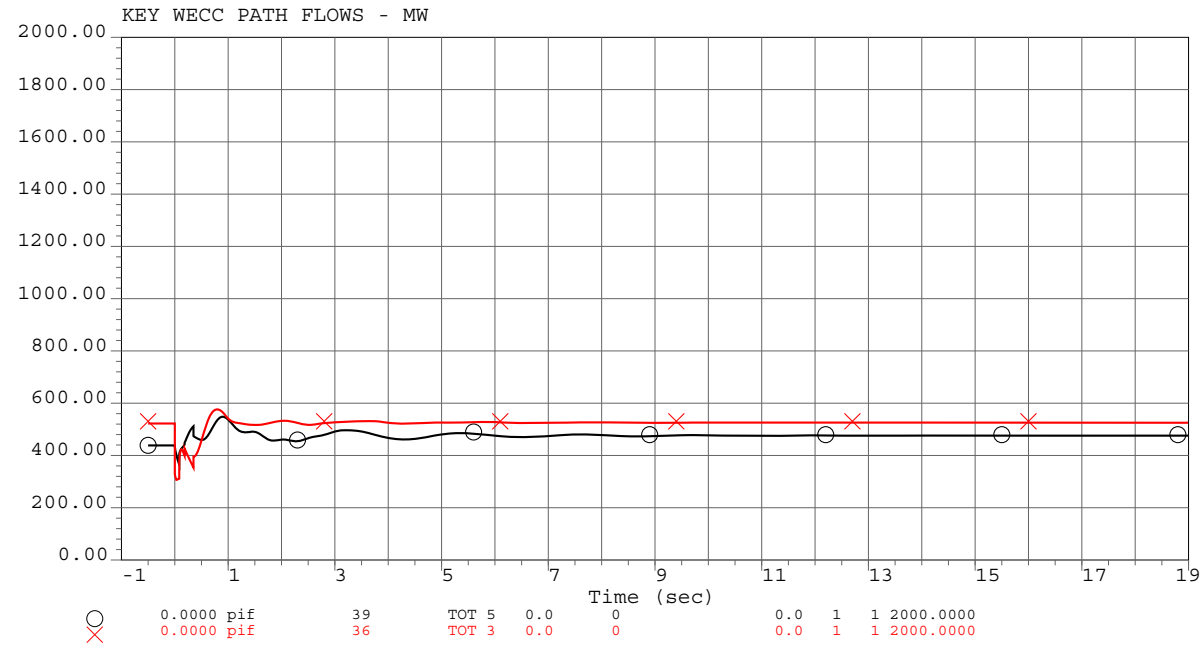
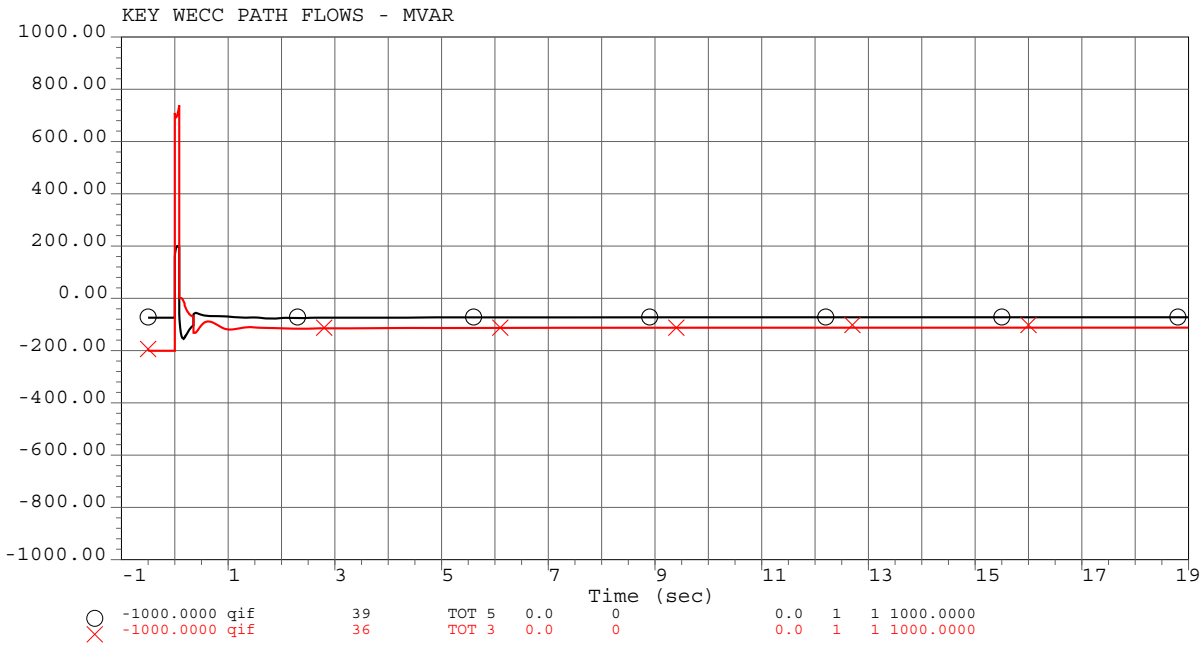
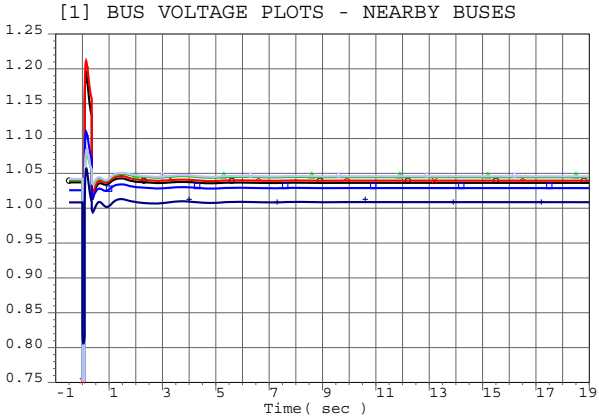
Tue Nov 26 13:45:16 2013


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000

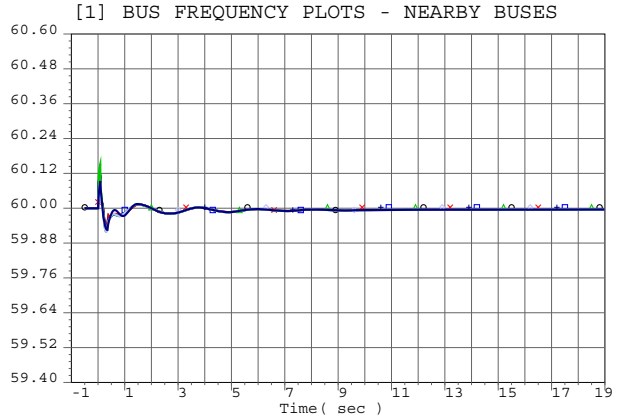
# SPRING CANYON II TRANSIENT STABILITY - BUS VOLTAGE AND FREQUENCY

## [1] BUS VOLTAGE PLOTS - NEARBY BUSES



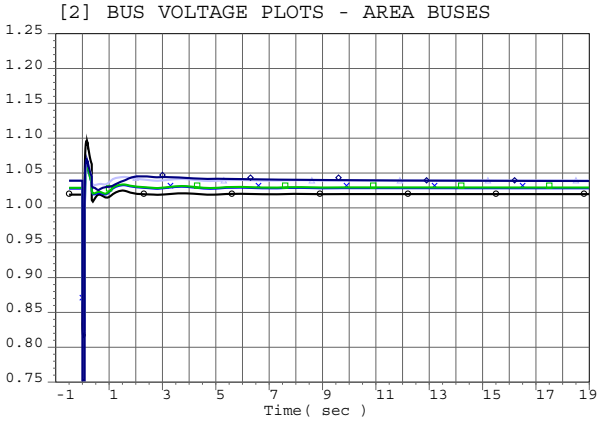

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 vbul | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 vbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 vbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 vbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 vbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| + | 0.7500 vbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [1] BUS FREQUENCY PLOTS - NEARBY BUSES



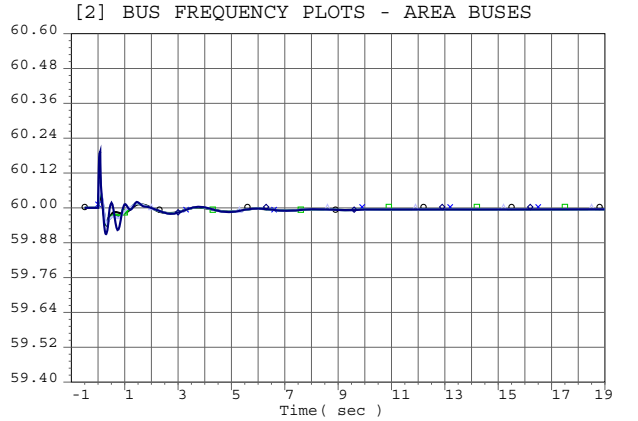

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 fbus | 73579 | SPRNGCAN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 fbus | 73180 | SIDNEY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 fbus | 73143 | N.YUMA 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 fbus | 73192 | STORY 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 fbus | 73108 | STORY 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| + | 59.4000 fbus | 73108 | LAR.RIVR 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [2] BUS VOLTAGE PLOTS - AREA BUSES



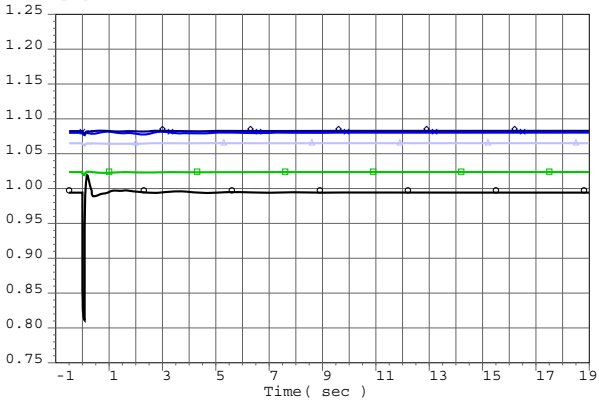

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 vbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 vbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 vbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 vbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 vbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [2] BUS FREQUENCY PLOTS - AREA BUSES



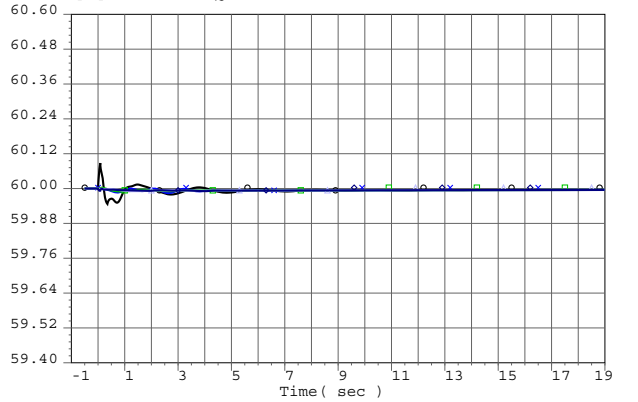

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 fbus | 73190 | STEGALL 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 fbus | 73011 | AULT 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 fbus | 73012 | AULT 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 fbus | 70410 | ST.VRAIN 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 fbul | 70311 | PAWNEE 230.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

## [3] BUS VOLTAGE PLOTS - WECC-WIDE




| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 0.7500 vbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| × | 0.7500 vbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| □ | 0.7500 vbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| △ | 0.7500 vbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |
| ◇ | 0.7500 vbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 1.2500 |

## [3] BUS FREQUENCY PLOTS - WECC-WIDE




| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ | 59.4000 fbus | 70601 | DANIELPK 345.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| × | 59.4000 fbus | 62057 | COLSTRP 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| □ | 59.4000 fbus | 14101 | FOURCORN 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| △ | 59.4000 fbus | 40287 | PALOVRDE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |
| ◇ | 59.4000 fbus | 40287 | COULEE 500.0 | 0 | 0.0 | 1 | 1 | 60.6000 |

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2013-14 LW1 OPERATING CASE
MAY 16, 2013



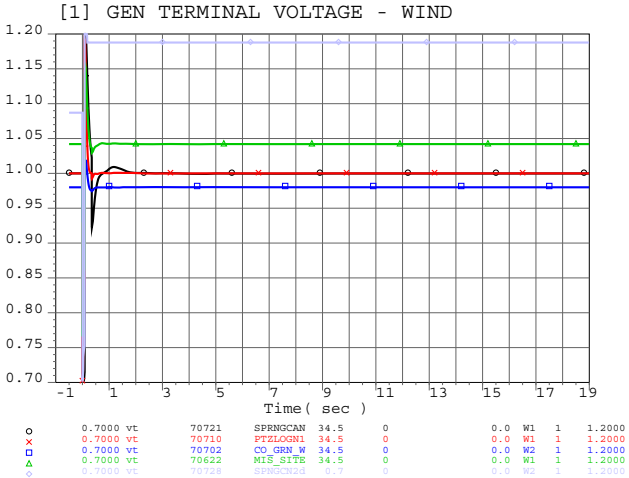
SC2_LW_PstEqv_v0_15_Story!-Pawnee_230_3ph_B.chf

.

Tue Nov 26 13:46:22 2013

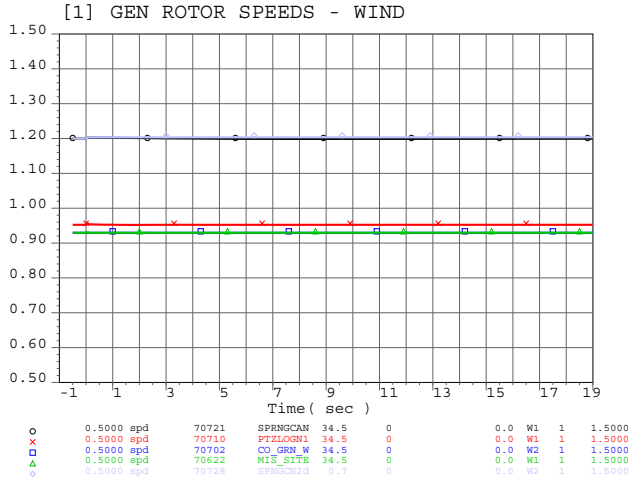
# SPRING CANYON II TRANSIENT STABILITY - TERMINAL VOLTAGE AND ROTOR SPEED/ANGLE

[1] GEN TERMINAL VOLTAGE - WIND



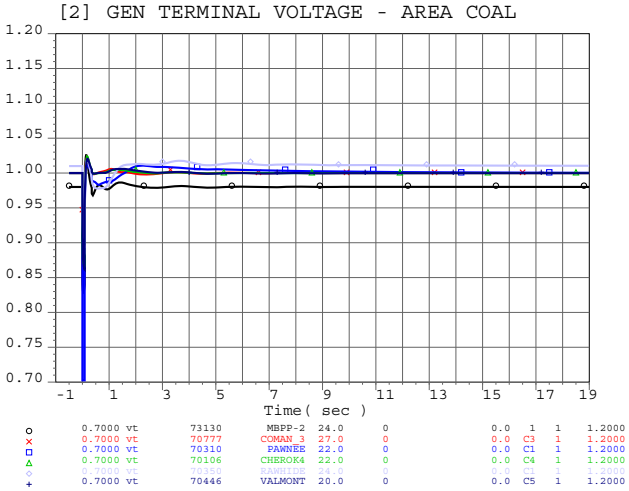

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 0.7000 vt | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| 0.7000 vt | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| 0.7000 vt | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.2000 |
| 0.7000 vt | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.2000 |
| 0.7000 vt | 70728 | SPNGCN2d | 0.7 | 0 | 0.0 | W2 | 1 | 1.2000 |

[1] GEN ROTOR SPEEDS - WIND



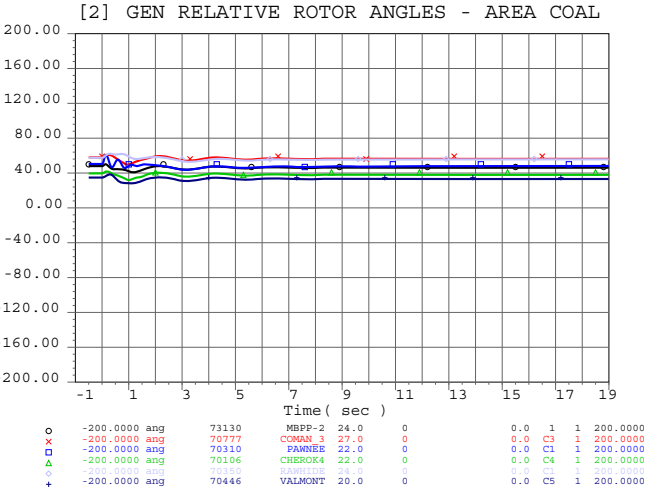

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 0.5000 spd | 70721 | SPRNGCAN | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| 0.5000 spd | 70710 | FTZLOGN1 | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| 0.5000 spd | 70702 | CO_GRN_W | 34.5 | 0 | 0.0 | W2 | 1 | 1.5000 |
| 0.5000 spd | 70622 | MIS_SITE | 34.5 | 0 | 0.0 | W1 | 1 | 1.5000 |
| 0.5000 spd | 70728 | SPNGCN2d | 0.7 | 0 | 0.0 | W2 | 1 | 1.5000 |

[2] GEN TERMINAL VOLTAGE - AREA COAL



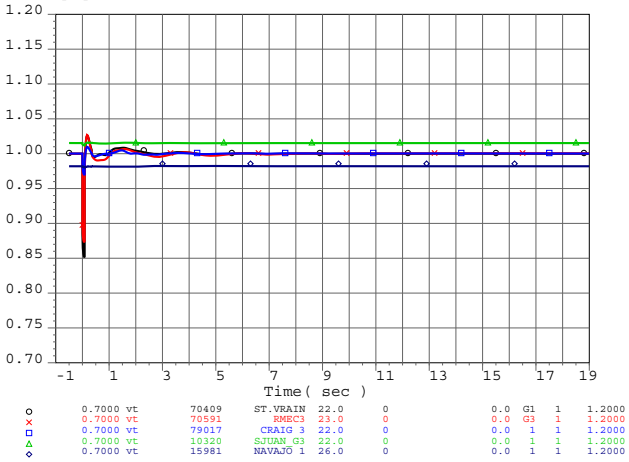

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 0.7000 vt | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| 0.7000 vt | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 1.2000 |
| 0.7000 vt | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| 0.7000 vt | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 1.2000 |
| 0.7000 vt | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 1.2000 |
| 0.7000 vt | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 1.2000 |

[2] GEN RELATIVE ROTOR ANGLES - AREA COAL



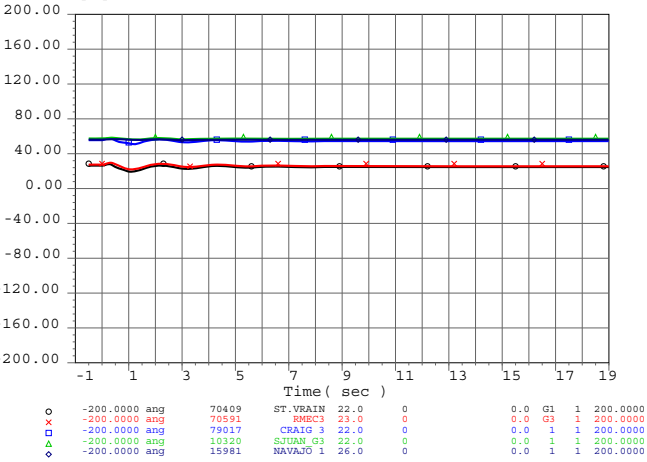

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| -200.0000 ang | 73130 | MBPP-2 | 24.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| -200.0000 ang | 70777 | COMAN_3 | 27.0 | 0 | 0.0 | C3 | 1 | 200.0000 |
| -200.0000 ang | 70310 | PAWNEE | 22.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| -200.0000 ang | 70106 | CHEROK4 | 22.0 | 0 | 0.0 | C4 | 1 | 200.0000 |
| -200.0000 ang | 70350 | RAWHIDE | 24.0 | 0 | 0.0 | C1 | 1 | 200.0000 |
| -200.0000 ang | 70446 | VALMONT | 20.0 | 0 | 0.0 | C5 | 1 | 200.0000 |

[3] GEN TERMINAL VOLTAGE - OTHER




| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 0.7000 vt | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 1.2000 |
| 0.7000 vt | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 1.2000 |
| 0.7000 vt | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| 0.7000 vt | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 1.2000 |
| 0.7000 vt | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 1.2000 |

[3] GEN RELATIVE ROTOR ANGLES - OTHER




| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| -200.0000 ang | 70409 | ST.VRAIN | 22.0 | 0 | 0.0 | G1 | 1 | 200.0000 |
| -200.0000 ang | 70591 | RMEC3 | 23.0 | 0 | 0.0 | G3 | 1 | 200.0000 |
| -200.0000 ang | 79017 | CRAIG 3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| -200.0000 ang | 10320 | SJUAN_G3 | 22.0 | 0 | 0.0 | 1 | 1 | 200.0000 |
| -200.0000 ang | 15981 | NAVAJO 1 | 26.0 | 0 | 0.0 | 1 | 1 | 200.0000 |

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MAY 16, 2013



SC2_LW_PstEqv_v0_15_Story!-Pawnee_230_3ph_B.chf

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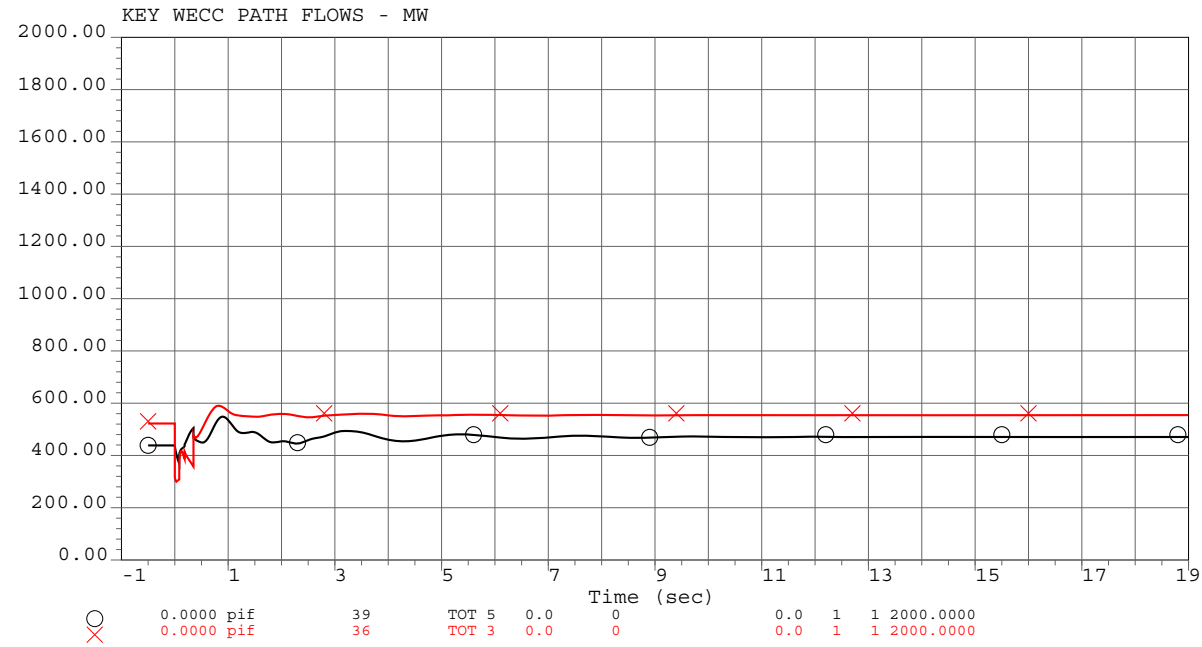
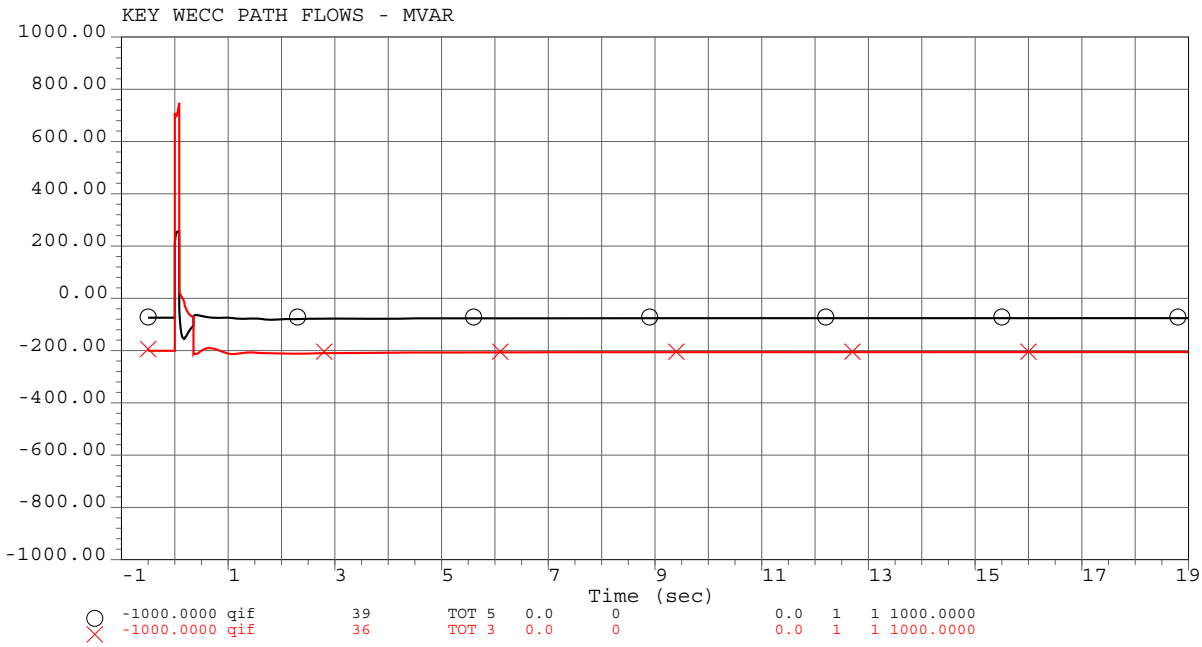
Tue Nov 26 13:46:22 2013


KEY WECC PATH FLOWS - MW
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
0.0000 pif 39 TOT 5 0.0 0 0.0 1 1 2000.0000
0.0000 pif 36 TOT 3 0.0 0 0.0 1 1 2000.0000


KEY WECC PATH FLOWS - MVAR
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
-1
1
3
5
7
9
11
13
15
17
19
Time (sec)
-1000.0000 qif 39 TOT 5 0.0 0 0.0 1 1 1000.0000
-1000.0000 qif 36 TOT 3 0.0 0 0.0 1 1 1000.0000