Impact Study
For
Generation Interconnection
Request
GEN-2007-008

SPP Tariff Studies

(#GEN-2007-008)

August 2008

Executive Summary

<OMITTED TEXT> (Customer) has requested an Impact Study under the Southwest Power Pool Open Access Transmission Tariff (OATT) for interconnection of 300 MW of wind generation within the control area of Southwestern Public Service (SPS) in Gray County, Texas. The proposed point of interconnection (POI) is the existing Grapevine Interchange owned by SPS. The Customer has proposed an in-service date of December 1, 2009. However, as will be shown later in this report, if the customer wishes to interconnect at 300 MW of power, then substantial network reinforcements is required. Based on the addition of a 345 kV line near the proposed POI and extending to the Cimarron-Lawton Eastside 345 kV line near the Southwestern Generation Facility, the in-service date will need to be further evaluated during the Facility Study.

The method of interconnection is to add a new 230 kV breaker and terminal to the Grapevine Interchange. From the Grapevine Substation at the POI, the Customer will build a 230 kV line to its 230/34.5 kV collector substation. The customer substation will provide terminations for the wind turbine collection circuits. The cost to provide these facilities is to be determined by the Customer.

Two seasonal base cases were used in the study to analyze the impact of the proposed generation facility on the transmission system. The cases studied were for 2008 winter peak and 2012 summer peak. Each case was modified to include prior queued projects that are listed in the body of this report. Twenty-six contingencies were simulated in each case. The Suzlon S88 2.1MW Wind Turbine Generator (WTG) was modeled using information provided by the manufacturer.

To achieve a zero reactive component at the POI the Customer will be required to install in its substation 34 Mvars of capacitor banks on each of its 34.5 kV buses for a total of 68 Mvars.

The project as proposed by Customer caused the transmission system to be unstable due to the amount of power being dispatched by this project and by several other prior queued projects nearby. The study results also showed a number of prior queued project generators would trip off line for some contingencies.

Since the network cannot accommodate the Customer project as proposed, analysis was done to determine the maximum power that can be dispatched by the Customer to the POI without adding network reinforcements. It was found that 50 MW would be the maximum.

In order to accommodate the Customer request for generating 300 MW, network reinforcements will be necessary. For this study a 345 kV line was added near the proposed POI and extended to the Cimarron-Lawton Eastside 345 kV line near the Southwestern Generation Facility. The stability analysis for this configuration showed that the transmission system would remain stable for all contingencies.

In both the 50 MW configuration and the 300 MW with the 345 kV network reinforced configuration, the Customer windfarm will meet FERC Oder 661A for low voltage ride-through for faults at or near the POI.

If the Customer changes the manufacturer or type of wind turbine from the Suzlon S88 2.1 MW WTG, an Impact re-study will be required.

Nothing in this study should be construed as a guarantee of transmission service. If the customer wishes to sell power from the facility, a separate request for transmission service shall be requested on Southwest Power Pool's OASIS by the Customer.

1.0 Introduction

<OMITTED TEXT> (Customer) has requested an Impact Study under the Southwest Power Pool Open Access Transmission Tariff (OATT) for interconnection of 300 MW of wind generation within the control area of SPS in Gray County, Texas. The requested in-service date for the 300 MW facility is December 1, 2009. However, as will be shown later in this report, if the customer wishes to interconnect at 300 MW of power, then substantial network reinforcements is required. Based on the addition of a 345 kV line near the proposed POI and extending to the Cimarron-Lawton Eastside 345 kV line near the Southwestern Generation Facility, the in-service date will need to be evaluated during the Facility Study.

2.0 Purpose

The purpose of the Interconnection System Impact Study is to evaluate the impact of the proposed interconnection on the reliability of the Transmission System. The Impact Study considers the Base Case as well as all Generating Facilities (and with respect to (b) below, any identified Network Upgrades associated with such higher queued interconnection) that, on the date the Interconnection System Impact Study is commenced:

a) are directly interconnected to the Transmission System;
b) are interconnected to Affected Systems and may have an impact on the Interconnection Request;
c) have a pending higher queued Interconnection Request to interconnect to the Transmission System; or
d) have no Queue Position but have executed an LGIA or requested that an unexecuted LGIA be filed with FERC.

Any changes to these assumptions (for example, one or more of the previously queued projects not included in this study signing an interconnection agreement) may require a re-study of this request at the expense of the customer.

Nothing in this System Impact Study constitutes a request for transmission service or confers upon the Interconnection Customer any right to receive transmission service.

3.0 Facilities

3.1 Generating Facility

The Customer proposed generating facility consists of the following (see Figure 1):

1. Two 34.5/230 kV transformers connected to a 230 kV bus (which is connected to the POI through 12 miles of 230 kV transmission line). The impedance for each of the 34.5/230 kV transformers is 9.0% on a 90 MVA OA Base with a top rating of 150 MVA.
2. On the 34.5 kV side of each transformer are six collector circuits for a total of 12 collector circuits. Each 34.5 kV bus will have a 34 Mvar capacitor bank.
3. Each of eleven collector circuits has 12 Suzlon S88 2.1 MW WTGs and associated generator step up transformers. The twelfth collector circuit consists of 11 Suzlon WTGs. This arrangement provides 143 Suzlon WTGs producing a total of 300 MW.
4. Each wind turbine will feed into a 0.600/34.5 kV GSU rated at 2100 kVA. Impedance for the GSU is 5.75%.

The generating facility was studied with the assumption that it would be using Suzlon S88 Wind Turbine Generators. The nameplate rating of each turbine is 2.1 MW with a machine base of 2283 kVA. The turbine output voltage is 600 V. The generator synchronous speed is 1800 rpm, and generator can operate at speeds ranging from 1800 rpm to 2100 rpm. The Suzlon S88 generator produces power at a power factor of 0.9995 leading to 0.92 lagging. The power factor is settable at each WTG by the Plant SCADA system.

This study was performed using the latest Suzlon standard voltage and frequency settings with Fault Ride Through modeling stability package available from the manufacturer. These settings are shown in Table 3 and Table 4.

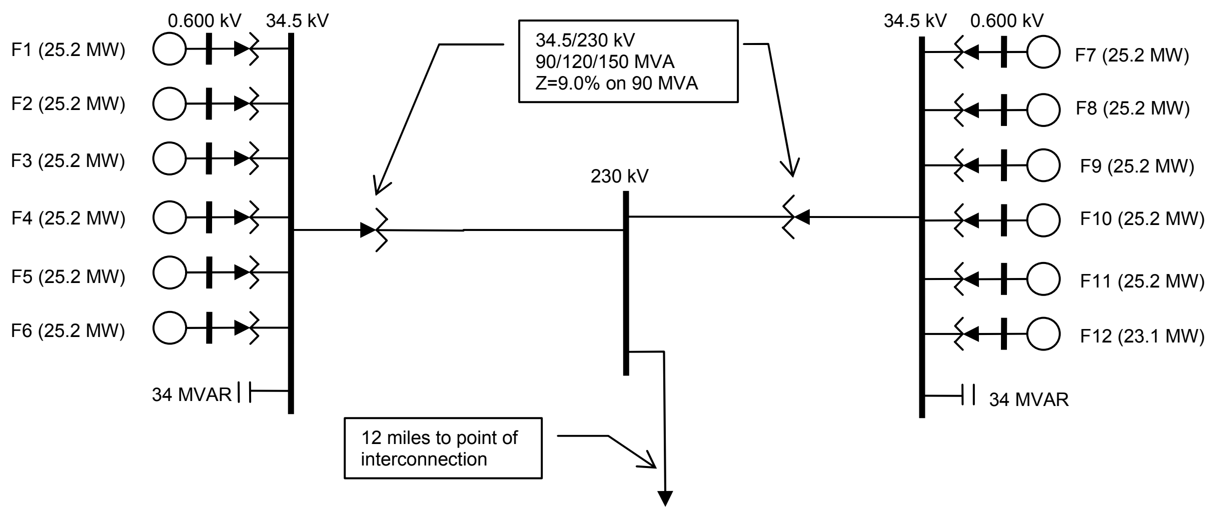


Figure 1: One-Line Drawing of the Customer Generation Facility

FACILITY	ESTIMATED COST (2007 DOLLARS)
Customer – 230/34.5 kV Substation facilities.	*
Customer – 230kV transmission line facilities between Customer facilities and SPS 230kV switching station.	*
Customer - Right-of-Way for Customer facilities.	*
Customer – 34.5 kV, 68 Mvar capacitor bank(s) in Customer substation.	*
Total	*

Note: * Estimates of cost to be determined by Customer.

Table 1: Direct Assignment Facilities

FACILITY	ESTIMATED COST (2007 DOLLARS)
SPS – (1) 230 kV breaker and terminal for Gen-2007-008 at Grapevine Interchange	$651,758
Total	**$651,758***

Table 2: Required Interconnection Network Upgrade Facilities

3.2 Interconnection Facility

The Customer has proposed the POI to be the existing Grapevine Interchange owned by SPS (see Figure 2). The method of interconnection is to add a new 230 kV breaker and terminal to the Grapevine Interchange. From the POI the Customer will build a 230 kV line to its 230/34.5 kV collector substation. The Customer substation will provide terminations for the wind turbine collection circuits. The costs to provide these facilities are to be determined by the Customer (see Table 1). The required network upgrades for this configuration is shown in Table 2.

Analysis of the reactive compensation requirements of the wind farm at 300 MW indicated the need for a 34.5 kV, 34 Mvar capacitor bank to be located on the secondary side of each of its 230/34.5 kV transformers (68 Mvar total for the substation). These capacitor banks are necessary to achieve a zero reactive component at the POI.

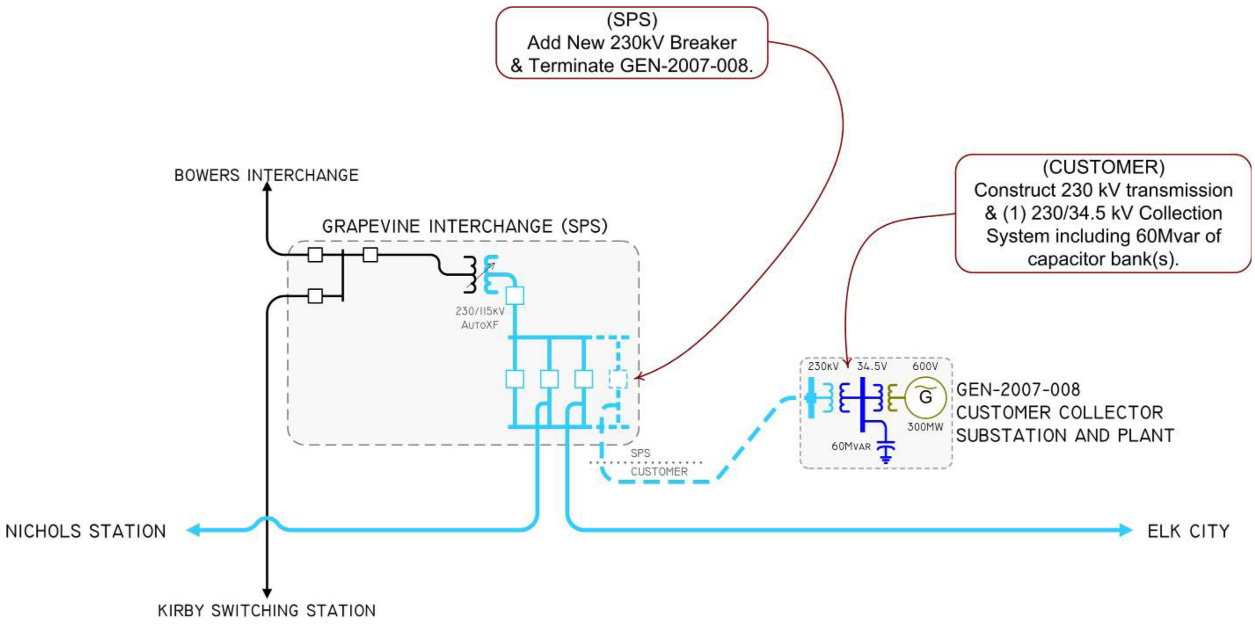


Figure 2: Proposed Method of Interconnection
(Final design to be determined)

3.3 Network Reinforcements

As will be shown in the results section of this report, the addition of the Customer project will cause the transmission system to become unstable during certain contingencies. In order to accept the full power (300 MW) from the Customer facility, network reinforcements will be required.

Figure 3 shows a proposed method of network reinforcement. The proposal is to add a 345 kV transmission line starting at Stateline east of the Grapevine Interchange on the 230 kV line to Elk City and running to the Cimarron–Lawton Eastside 345 kV line at a point near the Southwestern generation facility. Table 3 shows the cost of the network upgrades.

For the 345 kV reinforced network, analysis of the reactive compensation requirements of the Customer's wind farm at 300 MW indicated the need for a 34.5 kV, 34 Mvar capacitor bank to be located on the secondary side of each of its 230/34.5 kV transformers (68 Mvar total for the substation). These capacitor banks are necessary to achieve a zero reactive component at the POI.

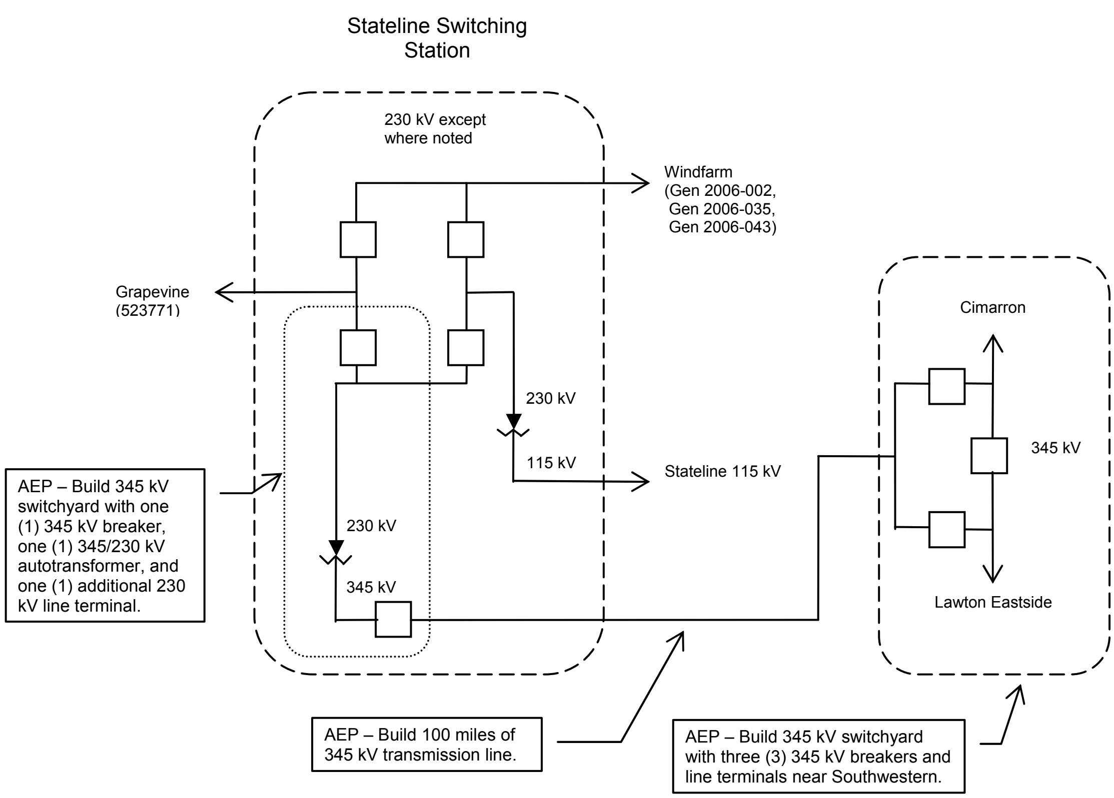


Figure 3: Proposed Network Reinforcements
(Final design to be determined)

FACILITY	ESTIMATED COST (2007 DOLLARS)
AEP Switching Station – Build 345 kV, one breaker switchyard including a 345/230 kV, 600 MVA autotransformer. Add two 230 kV terminals to the switching station 230 kV bus. Equipment to include breakers, switches, control relaying, high speed communications, all structures, and metering and other related equipment.	$13,000,000
AEP – Build 100 miles of 345 kV transmission line between the 345/230 kV switching station and a point on the LES–Cimarron 345 kV transmission line near the AEP Southwestern Power Station. Includes all transmission terminations at both ends	$150,000,000
AEP – Build 345 kV, three breaker ring bus at Southwestern Power Station. Equipment to include breakers, switches, control relaying, high speed communications, metering and related equipment and all structures.	$8,000,000
Total	**$171,000,000**

Table 3: Required Interconnection Network Upgrade Facilities for Addition of 345 kV Line (Assuming prior queued projects stay in the queue and Customer generating 300 MW)

4.0 Stability Analysis

4.1 Modeling of the Wind Turbines in the Power Flow

In order to simplify the model of the wind farm while capturing the effect of the different impedances of cables (due to change of the conductor size and length), the wind turbines and associated impedances connected to the same 34.5 kV collector lines were aggregated into one equivalent wind turbine generator. Therefore, this study reduced the 143 wind turbines into two equivalent wind turbine generators producing a total of 300 MW.

4.2 Modeling of the Wind Turbines in Dynamics

Suzlon S88 2.1 MW wind turbine generators were studied. The Suzlon S88 2.1 MW wind turbine generators are variable slip with electrical pitch system. The manufacturer provides 14 steps of capacitor banks intended for local power factor control. At full load, the wind turbine generator can operate between 0.92 inductive to 0.9995 capacitive power factor.

4.2.1 Turbine Protection Schemes

The Suzlon turbines utilize an undervoltage/overvoltage protection scheme and an underfrequency/overfrequency protection scheme. The various protection schemes are designed to protect the wind turbines in the case of system disturbances that can cause damage to the mechanical systems or power electronics on board the turbine. Generally, the protection schemes will disconnect the generator from the electric grid if the sampled frequency or voltage is outside of a specified band for a specified amount of time. Table 4 shows the voltage protection scheme. The frequency protection scheme for the Suzlon turbines is outlined in Table 5 below:

FERC Order #661A places specific requirements on wind farms through its Low Voltage Ride Through (LVRT) provisions. For Interconnection Agreements signed after December 31, 2006, wind farms shall stay on line for faults at the POI (in this case, the 230 kV bus at the SPS switching station) that draw the voltage down at the POI to 0.0 pu.

Voltage (pu)	Trip Delay Time (seconds)
Voltage ≥ 1.20	0.08
1.15 ≤ Voltage < 1.20	60.00
0.90 < Voltage < 1.15	Continuous operation
0.80 < Voltage ≤ 0.90	60.00
0.60 < Voltage ≤ 0.80	2.80
0.40 < Voltage ≤ 0.60	1.60
0.15 < Voltage ≤ 0.40	0.70
Voltage ≤0.15	0.08

Table 4: Suzlon Turbine Voltage Protection

Frequency (Hz)	Trip Delay Time (seconds)
Frequency ≥ 63	0.20
57 < Frequency < 63	Continuous Operation
Frequency ≤ 57	0.20

Table 5: Suzlon Turbine Frequency Protection

4.3 Contingencies Simulated

Twenty-six (26) contingencies were considered for the transient stability simulations. These contingencies included three phase faults and single phase line faults at locations defined by SPP. Single-phase line faults were simulated by applying a fault impedance to the positive sequence network at the fault location to represent the effect of the negative and zero sequence networks on the positive sequence network. The fault impedance was computed to give a positive sequence voltage at the specified fault location of approximately 60% of pre-fault voltage. This method is in agreement with SPP current practice. The faults that were defined and simulated are listed in Table 6.

In studying the Customer project with network reinforcements, the two contingencies shown in Table 7 were added to the dynamic simulation.

Table 6: Contingencies Evaluated
(No network reinforcements)

Cont. No.	Cont. Name	Description
1	FLT_1_3PH	Three phase fault on the Grapevine (523770) to Kirby (524088), 115 kV line, near Grapevine. a. Apply fault at the Grapevine (523770) b. Clear Fault after 5 cycles by removing the line from Grapevine (523770) to Kirby (524088). c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
2	FLT_2_1PH	Single phase fault and sequence like Cont. No. 1
3	FLT_3_3PH	Three phase fault on the Grapevine (523770) to Bowers (523748), 115 kV line, near Grapevine. a. Apply Fault at the Grapevine (523770). b. Clear fault after 5 cycles by removing the line from Grapevine (523770) to Bowers (523748) c. Wait 20 cycles, and then re-close the line in (b) into the fault. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
4	FLT_4_1PH	Single phase fault and sequence like Cont. No. 3
5	FLT_5_3PH	Three phase fault on the Grapevine 230/115 kV autotransformer a. Apply fault at the Grapevine 230 kV bus (523771) Clear fault after 5 cycles by removing the autotransformer from service.
6	FLT_6_1PH	Single phase fault and sequence like Cont. No. 5
7	FLT_7_3PH	Three phase fault on the Elk City (511490) to Wind Farm Tap (560012) 230 kV line, near Elk City. a. Apply fault at Elk City (511490). b. Clear fault after 5 cycles by removing the line from Elk City (511490) to the Wind Farm tap (560012). c. Wait 20 cycles, and then re-close the line in (b) into the fault. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
8	FLT_8_1PH	Single phase fault and sequence like Cont. No.7
9	FLT_9_3PH	Three phase fault on the Nichols (524044) to Grapevine (523771), 230 kV line near Grapevine. a. Apply Fault at the Grapevine bus (523771) b. Clear Fault after 5 cycles by removing the line from Nichols (524044) to Grapevine (523771). c. Wait 20 cycles, and then re-close the line in (b) back into the fault. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
10	FLT_10_1PH	Single phase fault and sequence like Cont. No.9
11	FLT_11_3PH	Three phase fault on the Grapevine (523771) to Stateline (50054) 230 kV line, near Grapevine. a. Apply fault at the Grapevine (523771). b. Clear fault after 5 cycles by removing the line from Grapevine (523771) to Stateline (50054). c. Wait 20 cycles, and then re-close the line in (b) into the fault. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
12	FLT_12_1PH	Single phase fault and sequence like Cont. No.11
13	FLT_13_3PH	Three phase fault on the Kirby (524088) to McLelln3 (523804), 115 kV line, near McLelln3 a. Apply fault at the Mclelln3 bus (523804) b. Clear fault after 5 cycles by removing the line from Kirby (524088) to McLelln3 (523804). c. Wait 20 cycles, and then re-close the line in (b) into the fault. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
14	FLT_14_1PH	Single phase fault and sequence like Cont. No.13

Cont. No.	Cont. Name	Description
15	FLT_15_3PH	Three phase fault on the McLelln3 (523804) to McLean Rural (523811), 115 kV line, near McLean Rural a. Apply fault at the Mclean Rural bus (523811) b. Clear fault after 5 cycles by removing the line from McLelln3 (523804) to McLean Rural (523811). c. Wait 20 cycles, and then re-close the line in (b) into the fault. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
16	FLT_16_1PH	Single phase fault and sequence like Cont. No.15
17	FLT_17_3PH	Three phase fault on the Nichols (524044) to Hutchison County Interchange (523551), 230 kV line, near Hutchison County Interchange. a. Apply Fault at the Hutchison County Interchange bus (523551). b. Clear fault after 5 cycles by removing the line from Nichols (524044) to Hutchison County Interchange (523551). c. Wait 20 cycles, and then re-close the line in (b) into the fault. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
18	FLT_18_1PH	Single phase fault and sequence like Cont. No.17
19	FLT_19_3PH	Three phase fault on the Nichols (524044) to Whitaker (524058), 115 kV line, near Whitaker a. Apply Fault at the Whitaker bus (524058). b. Clear fault after 5 cycles by removing the line from Nichols (524044) to Whitaker (524058). c. Wait 20 cycles, and then re-close the line in (b) into the fault. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
20	FLT_20_1PH	Single phase fault and sequence like Cont. No.19
21	FLT_21_3PH	Three phase fault on the Whitaker (524058) to East Plant Interchange (524162), 115 kV line, near East Plant Interchange a. Apply Fault at the East Plant Interchange bus (524162). b. Clear fault after 5 cycles by removing the line from Whitaker (524058) to East Plant Interchange (524162). c. Wait 20 cycles, and then re-close the line in (b) into the fault. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
22	FLT_22_1PH	Single phase fault and sequence like Cont. No.21
23	FLT_23_3PH	Three phase fault on the Grapevine 230/115 kV autotransformer a. Apply fault at the Grapevine 115 kV bus (523770) b. Clear fault after 5 cycles by removing the autotransformer from service.
24	FLT_24_1PH	Single phase fault and sequence like Cont. No.23
25	FLT_25_3PH	3 phase fault on the Wind Farm (560012) to Stateline (50054) 230 kV line, near the Wind Farm. a. Apply fault at the Wind Farm 230 kV bus. b. Clear fault after 5 cycles by tripping the line from the Wind Farm-Stateline.
26	FLT_26_1PH	Single phase fault and sequence like Cont. No.25

Table 6: Contingencies Evaluated (continued)
(No network reinforcements)

Cont. No.	Cont. Name	Description
27	FLT_27_3PH	3 phase fault on the Stateline (50054) to Stateline 345 (560007) 230 kV line, near Stateline. a. Apply fault at Stateline (50054) 230 kV bus. b. Clear fault after 5 cycles by placing 2-line transformer between Stateline and Stateline 345 out of service.
28	FLT_28_1PH	Single phase fault and sequence like Cont. No.27

Table 7: Additional Contingencies for the Reinforced Network

4.4 Further Model Preparation

The two base cases contain prior queued projects as shown in Table 8.

The wind farm generation from the study customer and previously queued customers is dispatched into the SPP footprint.

Initial simulations were carried out on both base cases and cases with the added generation for a no-disturbance run of 25 seconds to verify the numerical stability of the model. All cases were confirmed to be stable.

Project	MW
GEN-2002-005	114
GEN-2003-020	160
GEN-2004-003	240
GEN-2005-021	85.5
GEN-2006-002	150
GEN-2006-035	225
GEN-2006-043	126
GEN-2007-002	160

Table 8: Prior Queued Projects

4.5 The Scenarios

As mentioned earlier three scenarios were developed for this study, and they are described in this section. Results for these scenarios are found in Section 5.

4.5.1 Scenario 1

In this scenario the full 300 MW of power is dispatched to the POI. No network reinforcements were added.

4.5.2 Scenario 2

In this scenario the maximum power that can be dispatched to the POI without network reinforcement is determined.

4.5.3 Scenario 3

This scenario is the same as Scenario 1 with the addition of a 345 kV line at Stateline to the Cimarron-Lawton Eastside 345 kV line near the Southwestern Generation Facility. See section 3.3 and Table 2 for a description of the reinforcement.

5.0 Results

This section shows the results of the stability analysis for each scenario. Selected stability plots are in the appendices. All plots are available on request.

If the Customer changes the wind turbines to be used for this request at any time, an Impact re-study will be required.

5.1 Scenario 1: Customer Project with No Reinforcements

In this scenario the results of the study showed that the transmission system was unstable for the contingencies listed in Table 9. Unstable oscillations were observed for the wind turbines on some contingencies. Other contingencies showed that some or all wind turbines in the Customer project and the prior queued projects tripped off-line. The contingencies not listed in Table 9 did not cause instabilities of the transmission network.

Selected stability plots for these contingencies are included in Appendix A.

Contingency.	2008 Winter Peak	2012 Summer Peak
FLT_7_3PH	UNSTABLE [1,2,3]	UNSTABLE [1,2,3]
FLT_8_1PH	UNSTABLE [3]	UNSTABLE [3]
FLT_9_3PH	UNSTABLE [1,2]	UNSTABLE [1,2]
FLT_10_1PH	UNSTABLE [1,2]	UNSTABLE [1,2]

1. Gen-2006-002 generators tripped off-line.
2. Gen-2006-035 generators tripped off-line.
3. Gen-2006-043 generators tripped off-line.

Table 9: Results
(Customer Project with No Reinforcements)

5.2 Scenario 2: Maximum Power without Reinforcements

Further analysis of the results obtained in section 5.1 showed that the Elk City–Windfarm Tap contingency (FLT7_3PH) to be the most stringent fault. The PSSE PV analysis tool was used to assist in determining the maximum power that the Customer project could dispatch into the network for the Elk City–Windfarm Tap contingency. PV analysis showed that 55.63 MW (for winter peak) is the maximum that can be dispatched (see Appendix D for the PV graphs). This value was reduced to 50 MW to allow for an approximately 10% margin.

The PV graphs showed that as the power output was increased at the Customer project the bus voltage at Grapevine decreased. When power at the Customer plant was 55 MW, the voltage at Grapevine was 0.87 pu (2008 winter peak case).

It was determined that reactive compensation is required on the 34.5 kV bus of the Customer facility. Without this compensation the Suzlon terminal voltage dropped below 0.90 pu for the Elk City – Windfarm Tap contingency. The Customer will need to install a 15 Mvar capacitor bank which will bring the generator terminal voltage above 0.90 pu.

The summer and winter cases were both modified so that the Customer project dispatched a maximum of 50 MW. Dynamic simulations showed that both cases are stable for all the contingencies in Table 6. Selected stability plots for this scenario are shown in Appendix B.

5.3 Scenario 3: Customer Project with Reinforcements

Additional transmission reinforcements as described in section 3.3 were modeled in this scenario. The study results showed that with the addition of the 345 kV line, the network was stable for all contingencies (see Table 10). Selected stability plots for these contingencies are included in Appendix C.

Contingency. Name	2008 Winter Peak	2012 Summer Peak
FLT_1_3PH	STABLE	STABLE
FLT_2_1PH	STABLE	STABLE
FLT_3_3PH	STABLE	STABLE
FLT_4_1PH	STABLE	STABLE
FLT_5_3PH	STABLE	STABLE
FLT_6_1PH	STABLE	STABLE
FLT_7_3PH	STABLE	STABLE
FLT_8_1PH	STABLE	STABLE
FLT_9_3PH	STABLE	STABLE
FLT_10_1PH	STABLE	STABLE
FLT_11_3PH	STABLE	STABLE
FLT_12_1PH	STABLE	STABLE
FLT_13_3PH	STABLE	STABLE
FLT_14_1PH	STABLE	STABLE
FLT_15_3PH	STABLE	STABLE
FLT_16_1PH	STABLE	STABLE
FLT_17_3PH	STABLE	STABLE
FLT_18_1PH	STABLE	STABLE
FLT_19_3PH	STABLE	STABLE
FLT_20_1PH	STABLE	STABLE
FLT_21_3PH	STABLE	STABLE
FLT_22_1PH	STABLE	STABLE
FLT_23_3PH	STABLE	STABLE
FLT_24_1PH	STABLE	STABLE
FLT_25_3PH	STABLE	STABLE
FLT_26_1PH	STABLE	STABLE
FLT_27_3PH	STABLE	STABLE
FLT_28_1PH	STABLE	STABLE

Table 10: Results
(Customer Project with Reinforcements)

6.0 Conclusion

This study has demonstrated that due to the amount of prior queued generation and due to the size of the Customer's project, the Customer project cannot be interconnected at 300 MW without transmission reinforcements if all prior queued projects were placed in service. If the Customer's project is reduced to 50 MW maximum, the transmission system will be stable.

The LVRT provisions of FERC Order #661A will be met with the Suzlon S88 2.1 MW wind turbine.

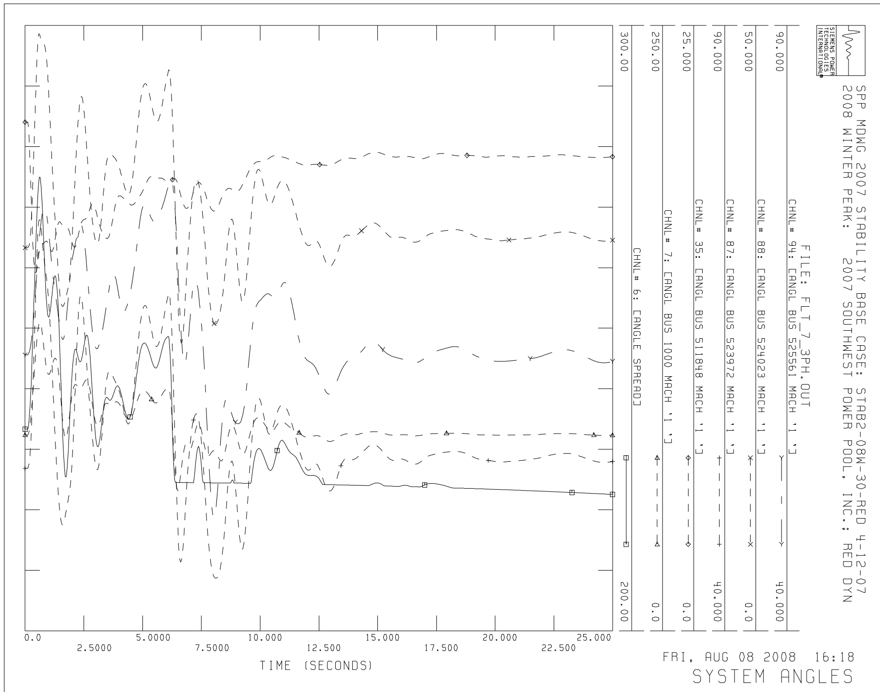
The costs shown in this document do not include any costs associated with the deliverability of the energy to final customers. These costs are determined by separate studies when the Customer requests transmission service through Southwest Power Pool's OASIS. It should be noted that the models used for simulation do not contain all SPP transmission service.

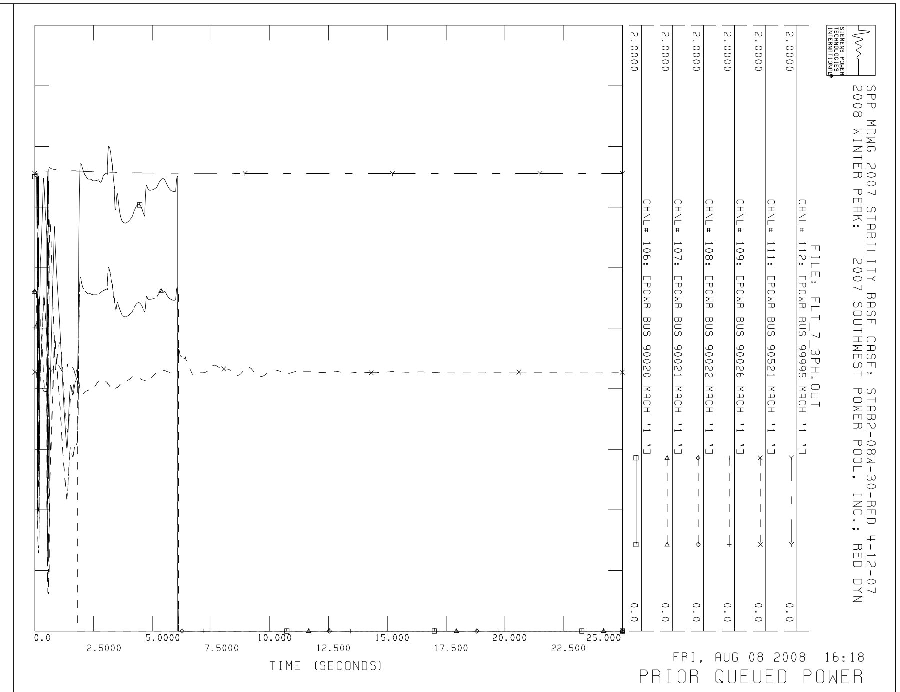
APPENDIX A.

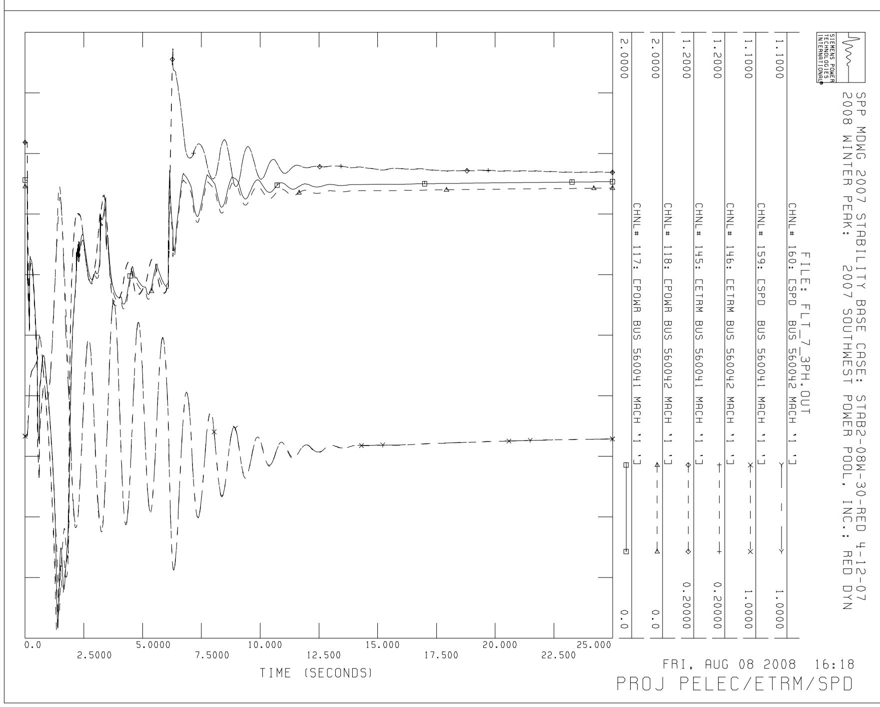
SELECTED STABILITY PLOTS – SCENARIO 1

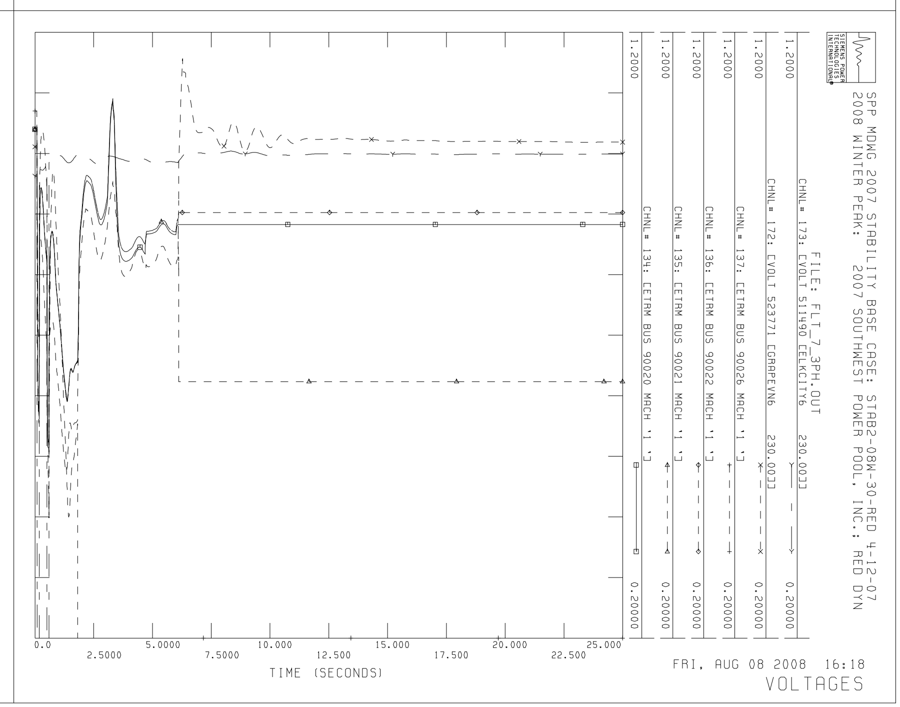
(Customer's 300 MW generation with no transmission system reinforcement)

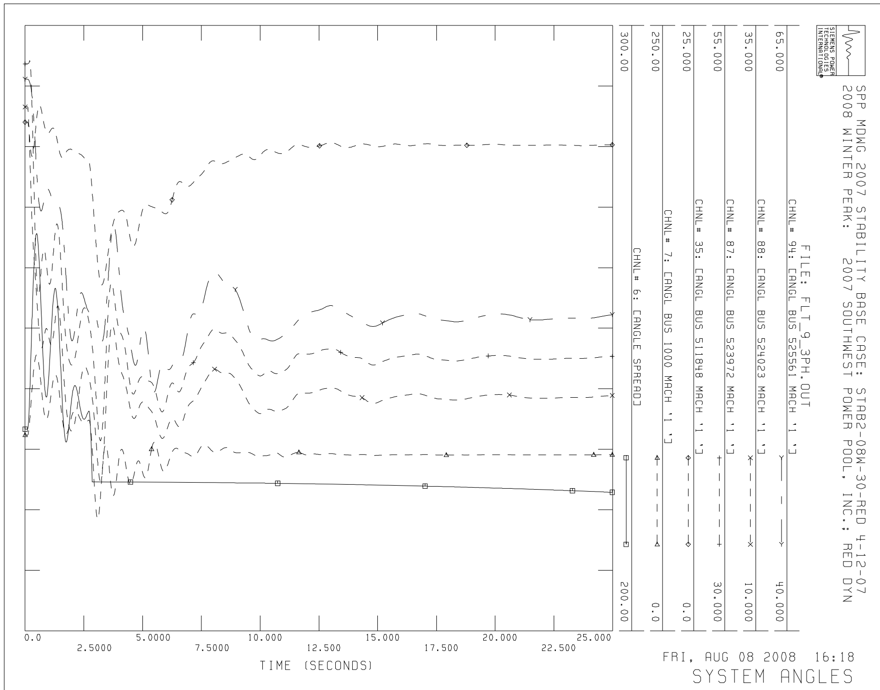
All plots available on request.

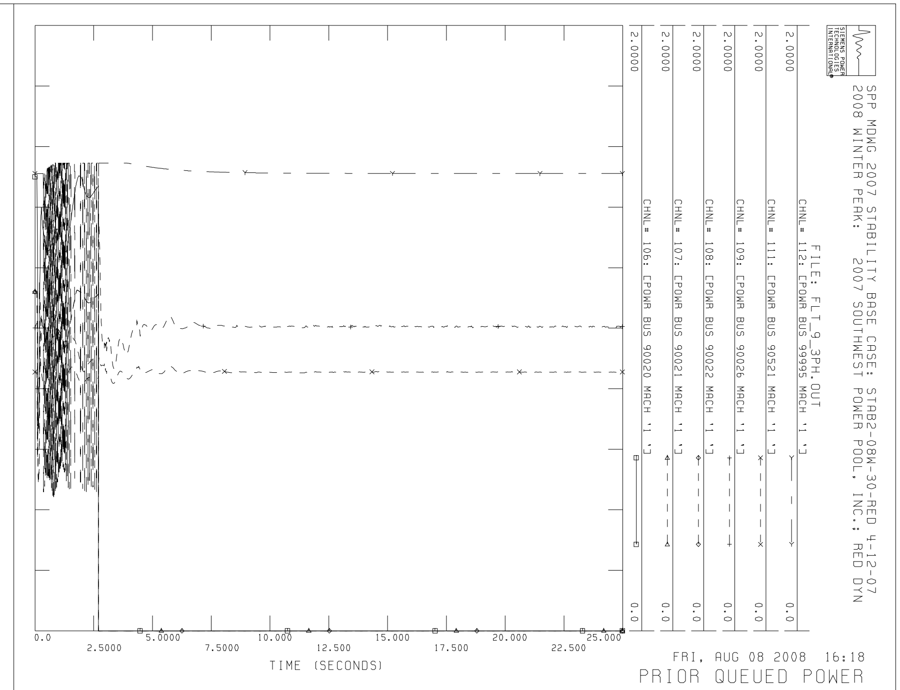

SPP MDWG 2007 STABILITY BASE CASE: STAB2-08W-30-RED 4-12-07
2008 WINTER PEAK: 2007 SOUTHWEST POWER POOL, INC.; RED DYN
FILE: FLT_7_3PH.OUT
CHNL# 94: CANGL BUS 525561 MACH '1 ' 90.000 40.000
CHNL# 88: CANGL BUS 524023 MACH '1 ' 50.000 0.0
CHNL# 87: CANGL BUS 523972 MACH '1 ' 90.000 40.000
CHNL# 35: CANGL BUS 511848 MACH '1 ' 25.000 0.0
CHNL# 7: CANGL BUS 1000 MACH '1 ' 250.00 0.0
CHNL# 6: CANGLE SPREAD 300.00 200.00
TIME (SECONDS)
FRI, AUG 08 2008 16:18
SYSTEM ANGLES

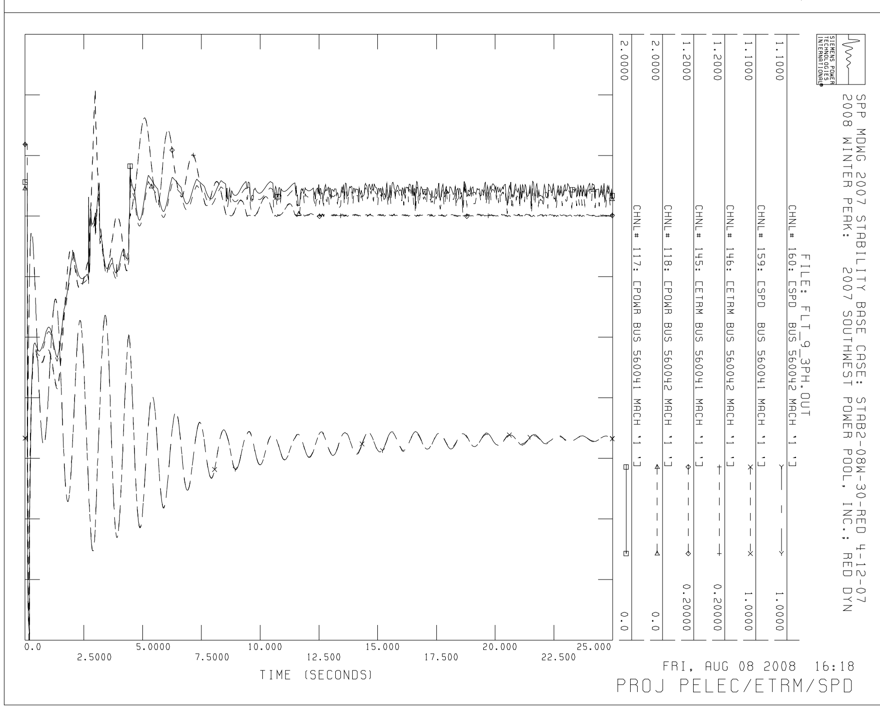

SPP MDWG 2007 STABILITY BASE CASE: STAB2-08W-30-RED 4-12-07
2008 WINTER PEAK: 2007 SOUTHWEST POWER POOL, INC.; RED DYN
FILE: FLT_7_3PH.OUT
CHNL# 112: CPOWR BUS 99995 MACH '1 ' 2.0000 0.0
CHNL# 111: CPOWR BUS 90521 MACH '1 ' 2.0000 0.0
CHNL# 109: CPOWR BUS 90026 MACH '1 ' 2.0000 0.0
CHNL# 108: CPOWR BUS 90022 MACH '1 ' 2.0000 0.0
CHNL# 107: CPOWR BUS 90021 MACH '1 ' 2.0000 0.0
CHNL# 106: CPOWR BUS 90020 MACH '1 ' 2.0000 0.0
TIME (SECONDS)
FRI, AUG 08 2008 16:18
PRIOR QUEUED POWER

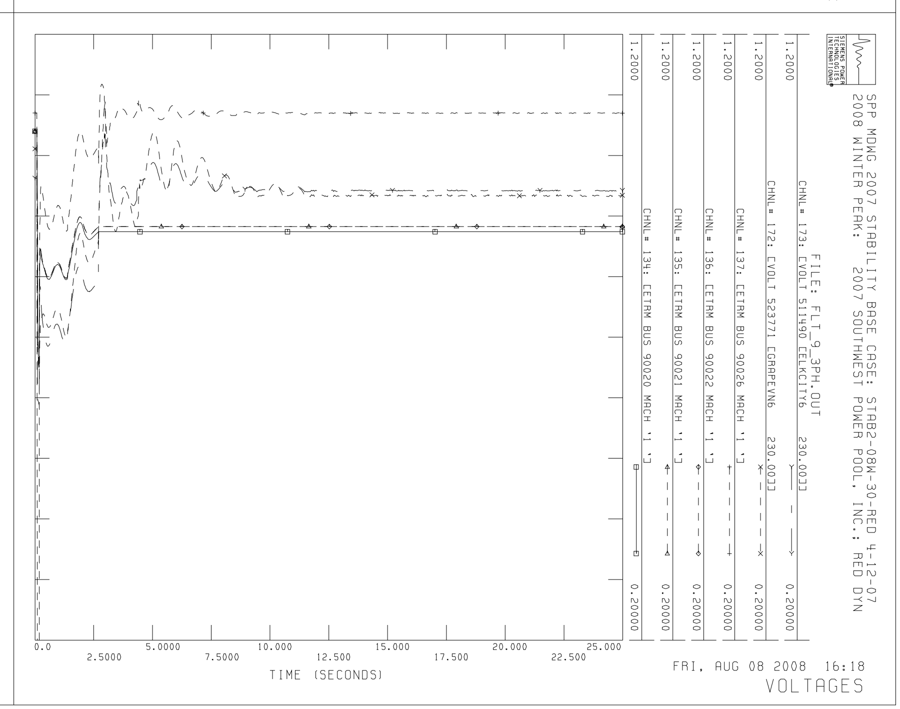

SPP MDWG 2007 STABILITY BASE CASE: STAB2-08W-30-RED 4-12-07
2008 WINTER PEAK: 2007 SOUTHWEST POWER POOL, INC.; RED DYN
FILE: FLT_7_3PH.OUT
CHNL# 160: CSPD BUS 560042 MACH '1 ' 1.1000 1.0000
CHNL# 159: CSPD BUS 560041 MACH '1 ' 1.1000 1.0000
CHNL# 146: CETRM BUS 560042 MACH '1 ' 1.2000 0.20000
CHNL# 145: CETRM BUS 560041 MACH '1 ' 1.2000 0.20000
CHNL# 118: CPOWR BUS 560042 MACH '1 ' 2.0000 0.0
CHNL# 117: CPOWR BUS 560041 MACH '1 ' 2.0000 0.0
TIME (SECONDS)
FRI, AUG 08 2008 16:18
PROJ PELEC/ETRM/SPD

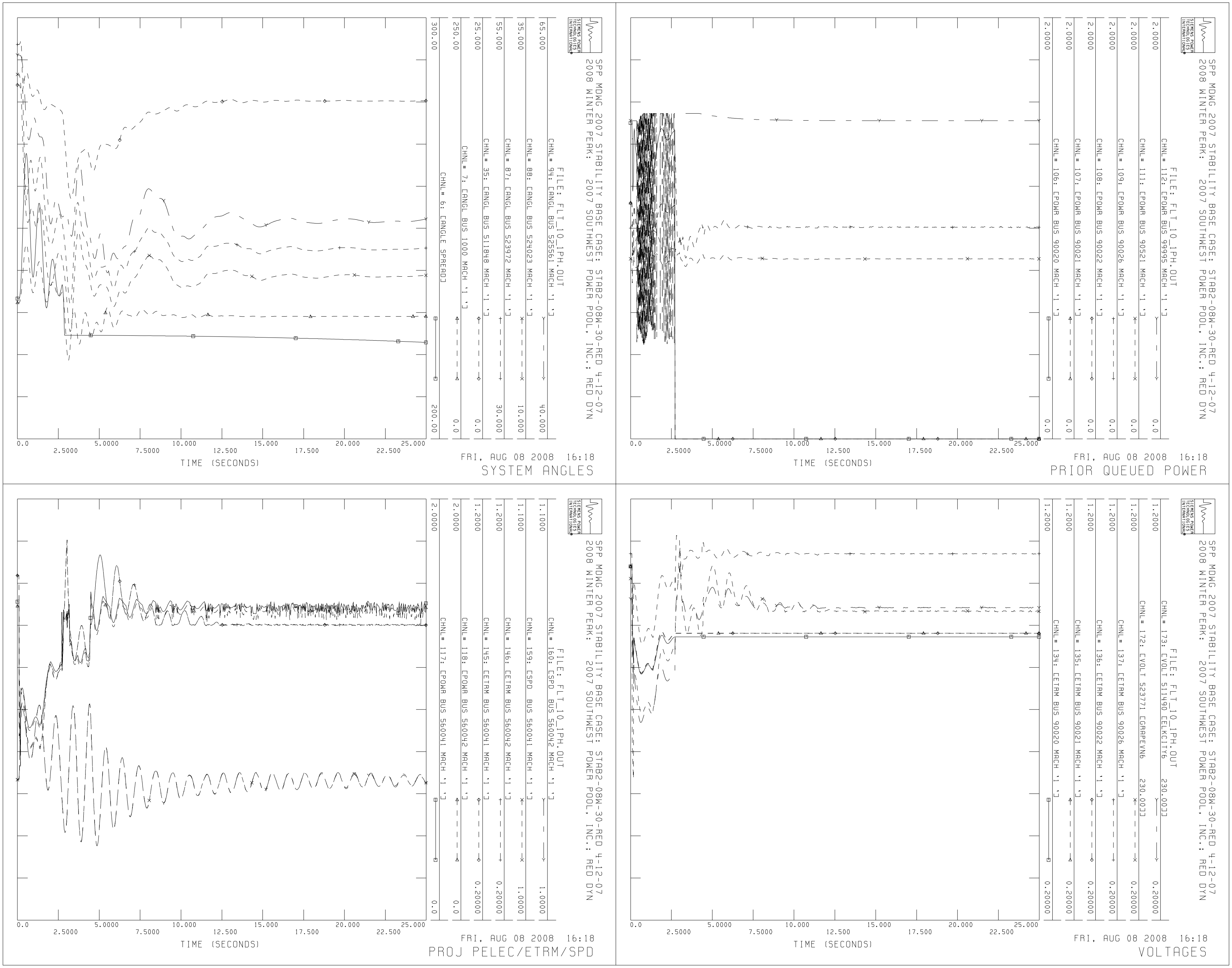

SPP MDWG 2007 STABILITY BASE CASE: STAB2-08W-30-RED 4-12-07
2008 WINTER PEAK: 2007 SOUTHWEST POWER POOL, INC.; RED DYN
FILE: FLT_7_3PH.OUT
CHNL# 173: CVOLT 51490 CELKCITY6 230.00] 1.2000 0.20000
CHNL# 172: CVOLT 52371 CGRAPEVN6 230.00] 1.2000 0.20000
CHNL# 137: CETRM BUS 90026 MACH '1 ' 1.2000 0.20000
CHNL# 136: CETRM BUS 90022 MACH '1 ' 1.2000 0.20000
CHNL# 135: CETRM BUS 90021 MACH '1 ' 1.2000 0.20000
CHNL# 134: CETRM BUS 90020 MACH '1 ' 1.2000 0.20000
TIME (SECONDS)
FRI, AUG 08 2008 16:18
VOLTAGES

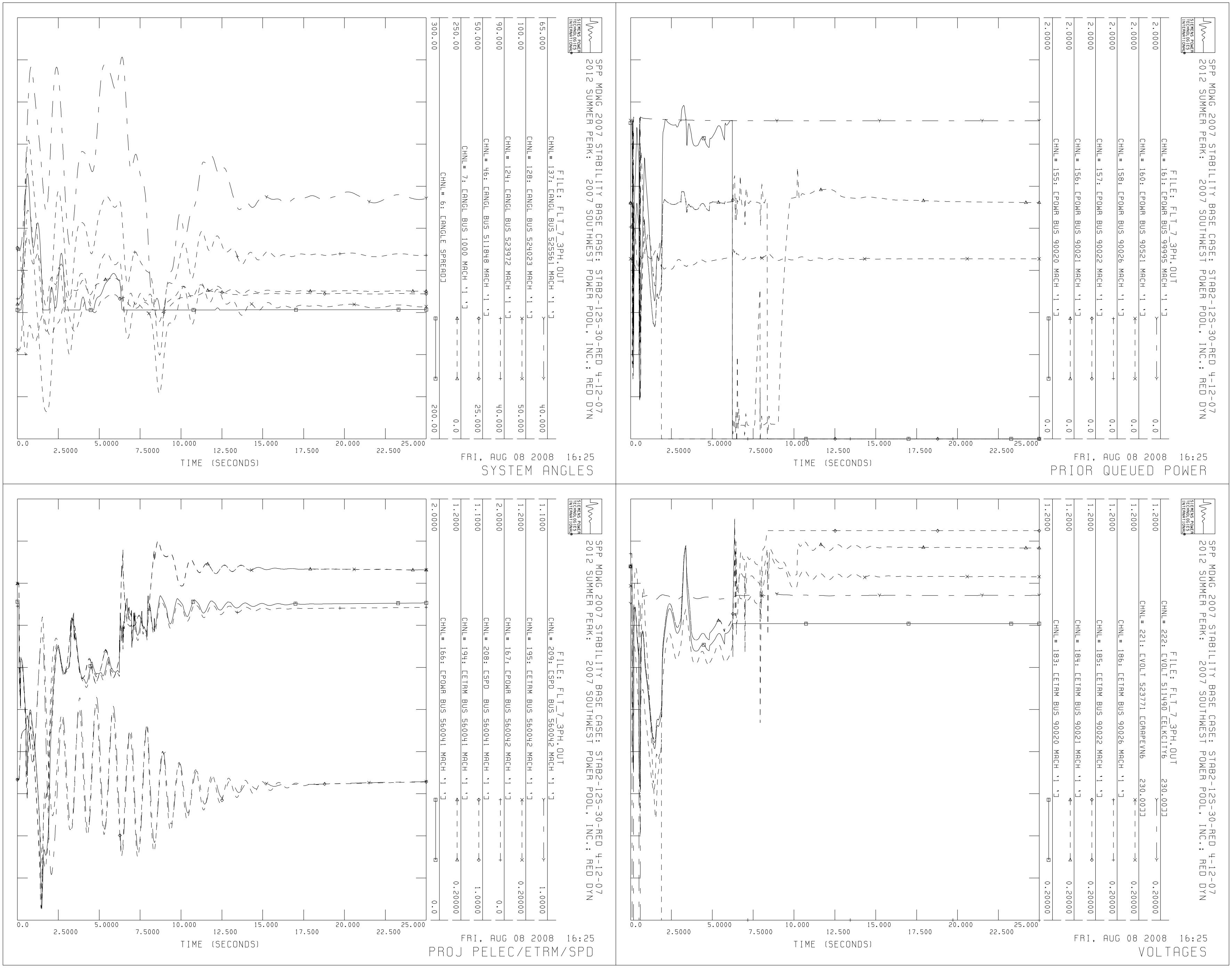

SPP MDWG 2007 STABILITY BASE CASE: STAB2-08W-30-RED 4-12-07
2008 WINTER PEAK: 2007 SOUTHWEST POWER POOL, INC.; RED DYN
FILE: FLT_9_3PH.OUT
CHNL# 94: CANGL BUS 525561 MACH '1 ' 65.000 40.000
CHNL# 88: CANGL BUS 524023 MACH '1 ' 35.000 10.000
CHNL# 87: CANGL BUS 523972 MACH '1 ' 55.000 30.000
CHNL# 35: CANGL BUS 511848 MACH '1 ' 25.000 0.0
CHNL# 7: CANGL BUS 1000 MACH '1 ' 250.00 0.0
CHNL# 6: CANGLE SPREAD 300.00 200.00
0.0 2.5000 5.0000 7.5000 10.000 12.500 15.000 17.500 20.000 22.500 25.000
TIME (SECONDS)
FRI, AUG 08 2008 16:18
SYSTEM ANGLES


SPP MDWG 2007 STABILITY BASE CASE: STAB2-08W-30-RED 4-12-07
2008 WINTER PEAK: 2007 SOUTHWEST POWER POOL, INC.; RED DYN
FILE: FLT_9_3PH.OUT
CHNL# 112: CPOWR BUS 99995 MACH '1 ' 2.0000 0.0
CHNL# 111: CPOWR BUS 90521 MACH '1 ' 2.0000 0.0
CHNL# 109: CPOWR BUS 90026 MACH '1 ' 2.0000 0.0
CHNL# 108: CPOWR BUS 90022 MACH '1 ' 2.0000 0.0
CHNL# 107: CPOWR BUS 90021 MACH '1 ' 2.0000 0.0
CHNL# 106: CPOWR BUS 90020 MACH '1 ' 2.0000 0.0
0.0 2.5000 5.0000 7.5000 10.000 12.500 15.000 17.500 20.000 22.500 25.000
TIME (SECONDS)
FRI, AUG 08 2008 16:18
PRIOR QUEUED POWER

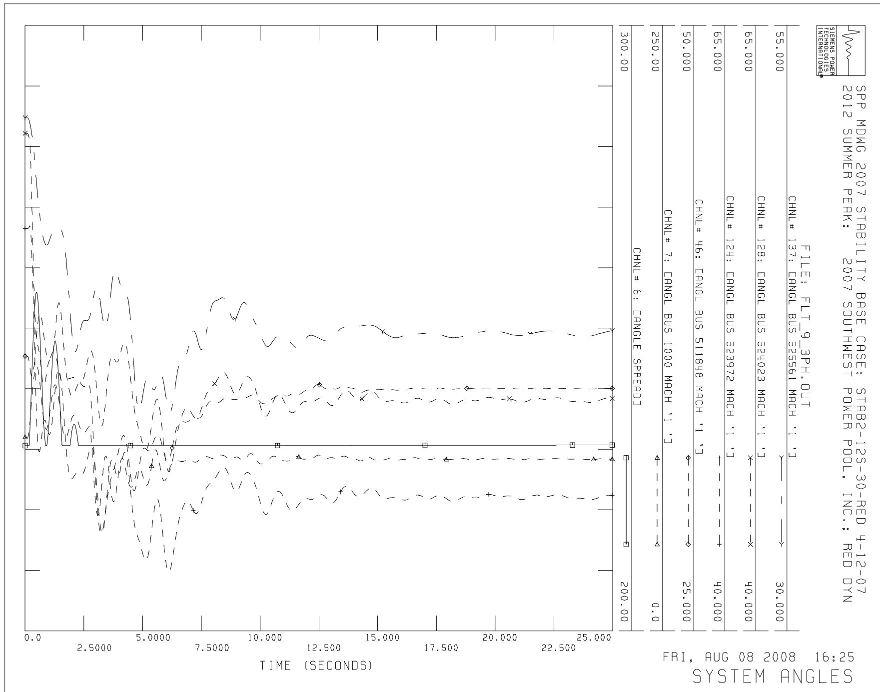

SPP MDWG 2007 STABILITY BASE CASE: STAB2-08W-30-RED 4-12-07
2008 WINTER PEAK: 2007 SOUTHWEST POWER POOL, INC.; RED DYN
FILE: FLT_9_3PH.OUT
CHNL# 160: CSPD BUS 560042 MACH '1 ' 1.1000 1.0000
CHNL# 159: CSPD BUS 560041 MACH '1 ' 1.1000 1.0000
CHNL# 146: CETRM BUS 560042 MACH '1 ' 1.2000 0.20000
CHNL# 145: CETRM BUS 560041 MACH '1 ' 1.2000 0.20000
CHNL# 118: CPOWR BUS 560042 MACH '1 ' 2.0000 0.0
CHNL# 117: CPOWR BUS 560041 MACH '1 ' 2.0000 0.0
0.0 2.5000 5.0000 7.5000 10.000 12.500 15.000 17.500 20.000 22.500 25.000
TIME (SECONDS)
FRI, AUG 08 2008 16:18
PROJ PELEC/ETRM/SPD

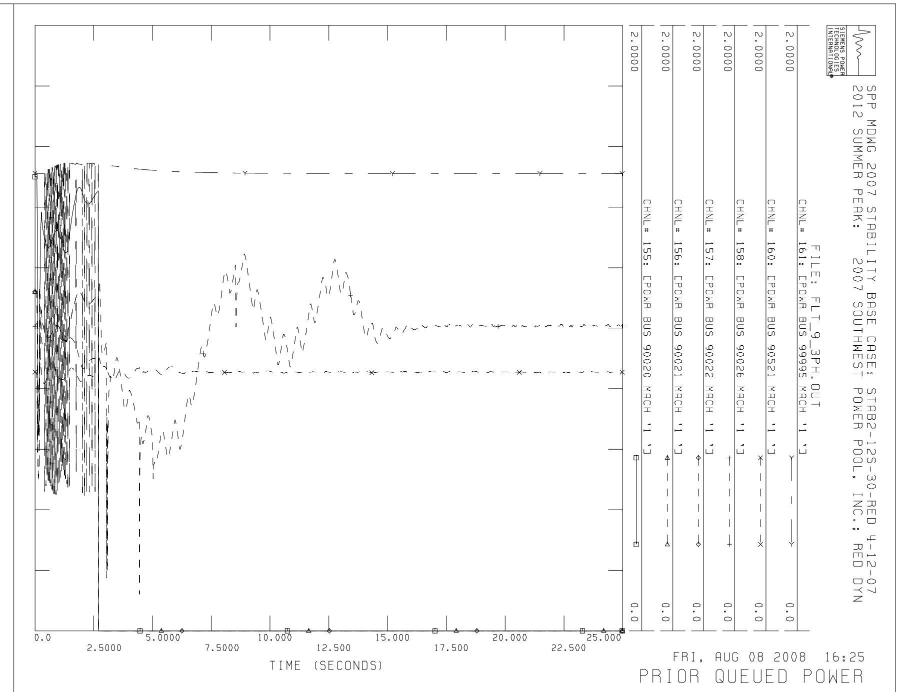

SPP MDWG 2007 STABILITY BASE CASE: STAB2-08W-30-RED 4-12-07
2008 WINTER PEAK: 2007 SOUTHWEST POWER POOL, INC.; RED DYN
FILE: FLT_9_3PH.OUT
CHNL# 173: CVOLT 51490 CELKCITY6 230.00] 1.2000 0.20000
CHNL# 172: CVOLT 52377 CGRAPEVN6 230.00] 1.2000 0.20000
CHNL# 137: CETRM BUS 90026 MACH '1 ' 1.2000 0.20000
CHNL# 136: CETRM BUS 90022 MACH '1 ' 1.2000 0.20000
CHNL# 135: CETRM BUS 90021 MACH '1 ' 1.2000 0.20000
CHNL# 134: CETRM BUS 90020 MACH '1 ' 1.2000 0.20000
0.0 2.5000 5.0000 7.5000 10.000 12.500 15.000 17.500 20.000 22.500 25.000
TIME (SECONDS)
FRI, AUG 08 2008 16:18
VOLTAGES

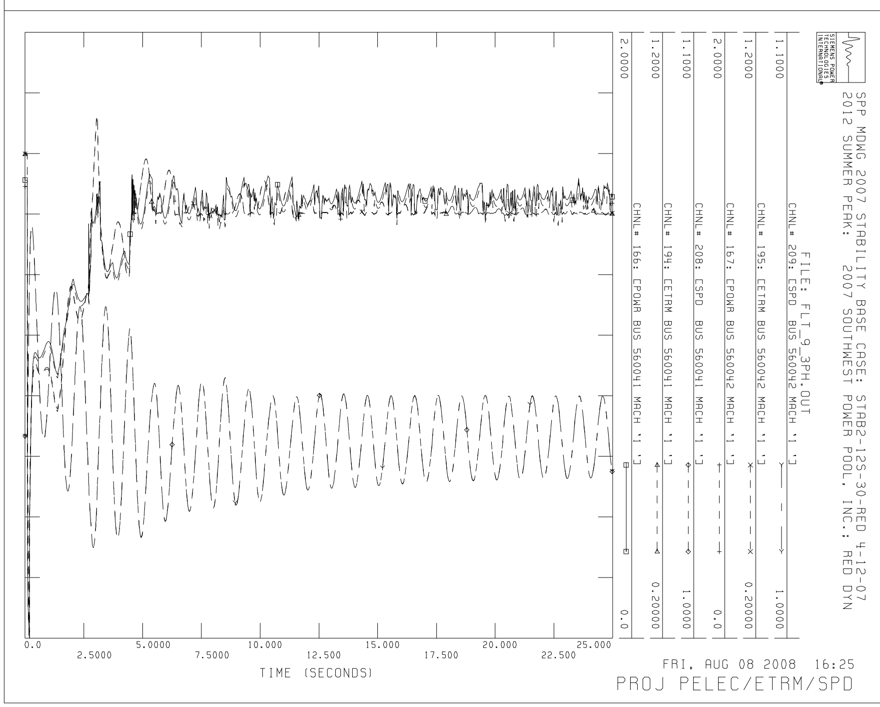

SPP MDWG 2007 STABILITY BASE CASE: STAB2-08W-30-RED 4-12-07
2008 WINTER PEAK: 2007 SOUTHWEST POWER POOL, INC.; RED DYN
FILE: FLT_10_1PH.OUT
CHNL# 94: [ANGL BUS 52556] MACH '1 ']
CHNL# 88: [ANGL BUS 524023 MACH '1 ']
CHNL# 87: [ANGL BUS 523972 MACH '1 ']
CHNL# 35: [ANGL BUS 511848 MACH '1 ']
CHNL# 7: [ANGL BUS 1000 MACH '1 ']
CHNL# 6: [ANGLE SPREAD]
TIME (SECONDS)
FRI, AUG 08 2008 16:18
SYSTEM ANGLES
CHNL# 112: [POWR BUS 99995 MACH '1 ']
CHNL# 111: [POWR BUS 90521 MACH '1 ']
CHNL# 109: [POWR BUS 90026 MACH '1 ']
CHNL# 108: [POWR BUS 90022 MACH '1 ']
CHNL# 107: [POWR BUS 90021 MACH '1 ']
CHNL# 106: [POWR BUS 90020 MACH '1 ']
PRIOR QUEUED POWER
CHNL# 160: [SPD BUS 560042 MACH '1 ']
CHNL# 159: [SPD BUS 560041 MACH '1 ']
CHNL# 146: [ETRM BUS 560042 MACH '1 ']
CHNL# 145: [ETRM BUS 560041 MACH '1 ']
CHNL# 118: [POWR BUS 560042 MACH '1 ']
CHNL# 117: [POWR BUS 560041 MACH '1 ']
PROJ PELEC/ETRM/SPD
CHNL# 173: [VOLT 51490 [ELKCITY6 230.00]]
CHNL# 172: [VOLT 52371 [GRAPEVN6 230.00]]
CHNL# 137: [ETRM BUS 90026 MACH '1 ']
CHNL# 136: [ETRM BUS 90022 MACH '1 ']
CHNL# 135: [ETRM BUS 90021 MACH '1 ']
CHNL# 134: [ETRM BUS 90020 MACH '1 ']
VOLTAGES

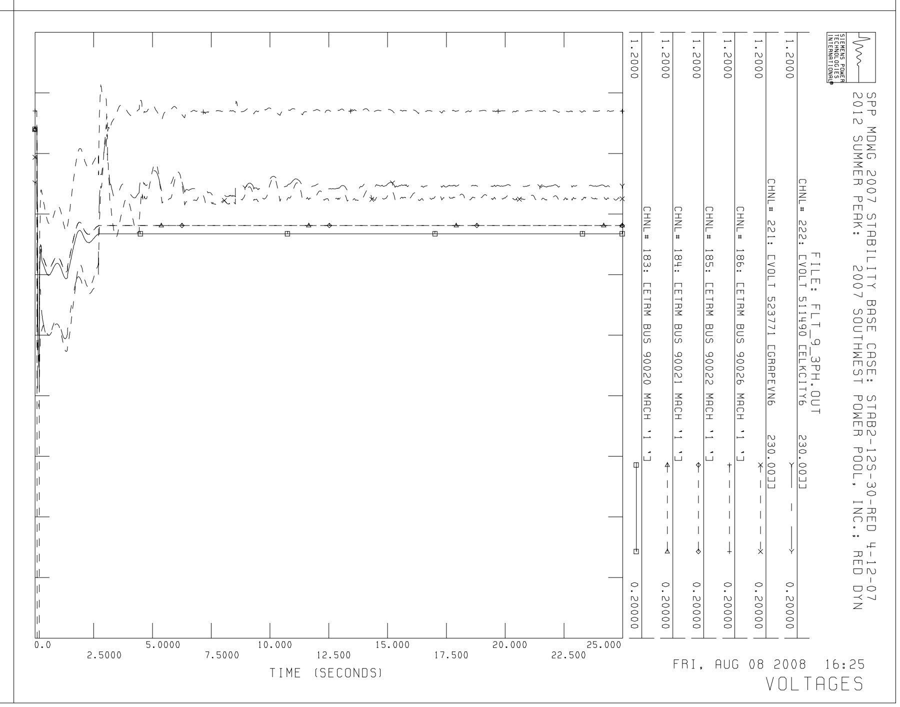


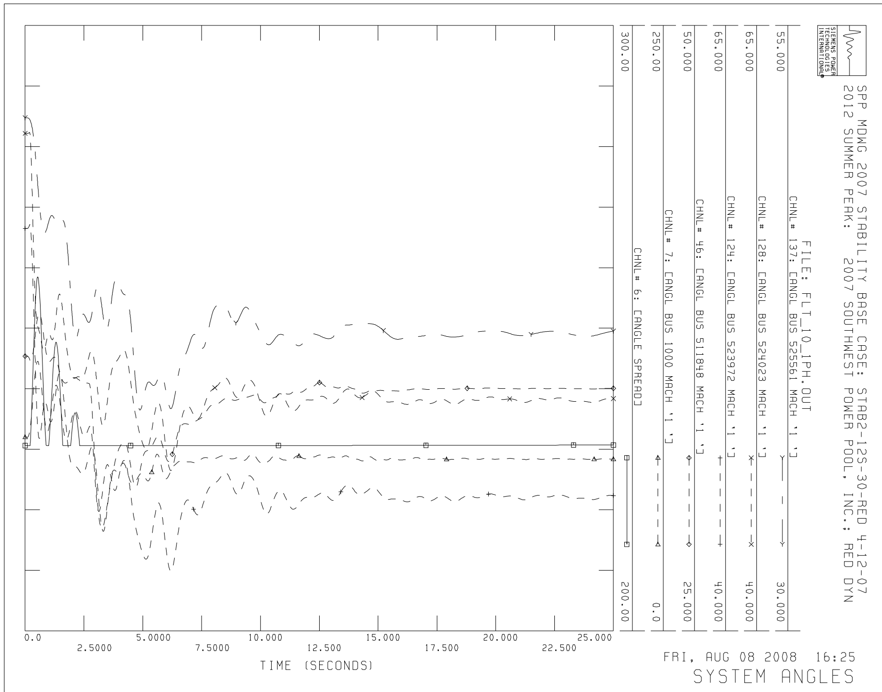
SPP MDWG 2007 STABILITY BASE CASE: STAB2-12S-30-RED 4-12-07
2012 SUMMER PEAK: 2007 SOUTHWEST POWER POOL, INC.; RED DYN
FILE: FLT_7_3PH.OUT
CHNL# 137: CANGL BUS 525561 MACH '1 '
CHNL# 128: CANGL BUS 524023 MACH '1 '
CHNL# 124: CANGL BUS 523972 MACH '1 '
CHNL# 46: CANGL BUS 511848 MACH '1 '
CHNL# 7: CANGL BUS 1000 MACH '1 '
CHNL# 6: CANGLE SPREAD
TIME (SECONDS)
FRI, AUG 08 2008 16:25
SYSTEM ANGLES
SPP MDWG 2007 STABILITY BASE CASE: STAB2-12S-30-RED 4-12-07
2012 SUMMER PEAK: 2007 SOUTHWEST POWER POOL, INC.; RED DYN
FILE: FLT_7_3PH.OUT
CHNL# 161: CPOWR BUS 99995 MACH '1 '
CHNL# 160: CPOWR BUS 90521 MACH '1 '
CHNL# 158: CPOWR BUS 90026 MACH '1 '
CHNL# 157: CPOWR BUS 90022 MACH '1 '
CHNL# 156: CPOWR BUS 90021 MACH '1 '
CHNL# 155: CPOWR BUS 90020 MACH '1 '
TIME (SECONDS)
FRI, AUG 08 2008 16:25
PRIOR QUEUED POWER
SPP MDWG 2007 STABILITY BASE CASE: STAB2-12S-30-RED 4-12-07
2012 SUMMER PEAK: 2007 SOUTHWEST POWER POOL, INC.; RED DYN
FILE: FLT_7_3PH.OUT
CHNL# 209: CSPD BUS 560042 MACH '1 '
CHNL# 195: CETRM BUS 560042 MACH '1 '
CHNL# 167: CPOWR BUS 560042 MACH '1 '
CHNL# 208: CSPD BUS 560041 MACH '1 '
CHNL# 194: CETRM BUS 560041 MACH '1 '
CHNL# 166: CPOWR BUS 560041 MACH '1 '
TIME (SECONDS)
FRI, AUG 08 2008 16:25
PROJ PELEC/ETRM/SPD
SPP MDWG 2007 STABILITY BASE CASE: STAB2-12S-30-RED 4-12-07
2012 SUMMER PEAK: 2007 SOUTHWEST POWER POOL, INC.; RED DYN
FILE: FLT_7_3PH.OUT
CHNL# 222: CVOLT 51490 CELKCITY6 230.00]
CHNL# 221: CVOLT 523771 CGRAPEVN6 230.00]
CHNL# 186: CETRM BUS 90026 MACH '1 '
CHNL# 185: CETRM BUS 90022 MACH '1 '
CHNL# 184: CETRM BUS 90021 MACH '1 '
CHNL# 183: CETRM BUS 90020 MACH '1 '
TIME (SECONDS)
FRI, AUG 08 2008 16:25
VOLTAGES

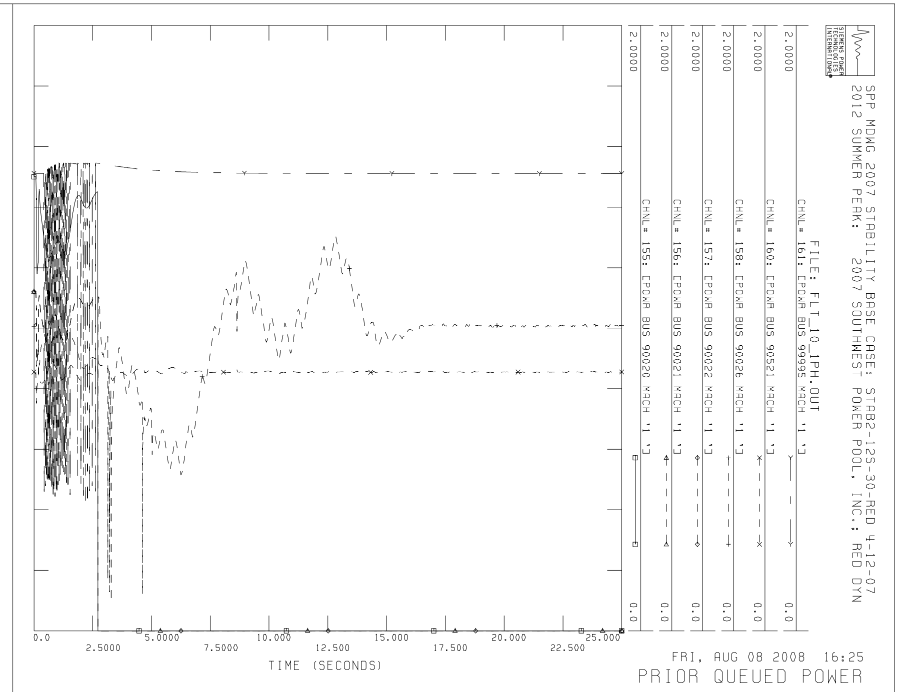

SPP MDWG 2007 STABILITY BASE CASE: STAB2-12S-30-RED 4-12-07
2012 SUMMER PEAK: 2007 SOUTHWEST POWER POOL, INC.; RED DYN
FILE: FLT_9_3PH.OUT
CHNL# 137: [ANGL BUS 525561 MACH '1 '] 55.000 30.000
CHNL# 128: [ANGL BUS 524023 MACH '1 '] 65.000 40.000
CHNL# 124: [ANGL BUS 523972 MACH '1 '] 65.000 40.000
CHNL# 46: [ANGL BUS 511848 MACH '1 '] 50.000 25.000
CHNL# 7: [ANGL BUS 1000 MACH '1 '] 250.00 0.0
CHNL# 6: [ANGLE SPREAD] 300.00 200.00
0.0 2.5000 5.0000 7.5000 10.000 12.500 15.000 17.500 20.000 22.500 25.000
TIME (SECONDS)
FRI, AUG 08 2008 16:25
SYSTEM ANGLES

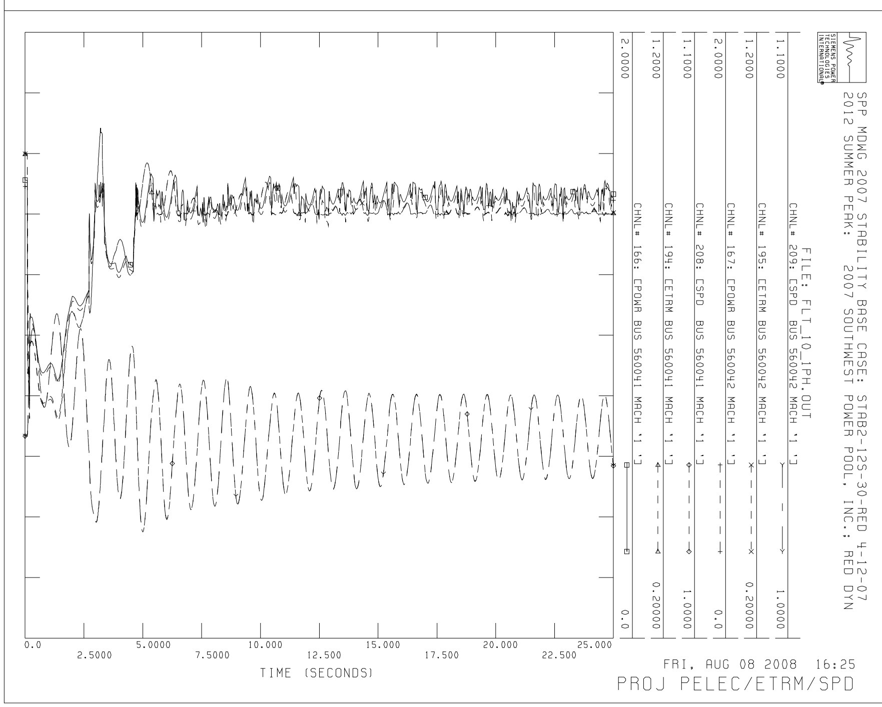

SPP MDWG 2007 STABILITY BASE CASE: STAB2-12S-30-RED 4-12-07
2012 SUMMER PEAK: 2007 SOUTHWEST POWER POOL, INC.; RED DYN
FILE: FLT_9_3PH.OUT
CHNL# 161: [POWR BUS 99995 MACH '1 '] 2.0000 0.0
CHNL# 160: [POWR BUS 90521 MACH '1 '] 2.0000 0.0
CHNL# 158: [POWR BUS 90026 MACH '1 '] 2.0000 0.0
CHNL# 157: [POWR BUS 90022 MACH '1 '] 2.0000 0.0
CHNL# 156: [POWR BUS 90021 MACH '1 '] 2.0000 0.0
CHNL# 155: [POWR BUS 90020 MACH '1 '] 2.0000 0.0
0.0 2.5000 5.0000 7.5000 10.000 12.500 15.000 17.500 20.000 22.500 25.000
TIME (SECONDS)
FRI, AUG 08 2008 16:25
PRIOR QUEUED POWER

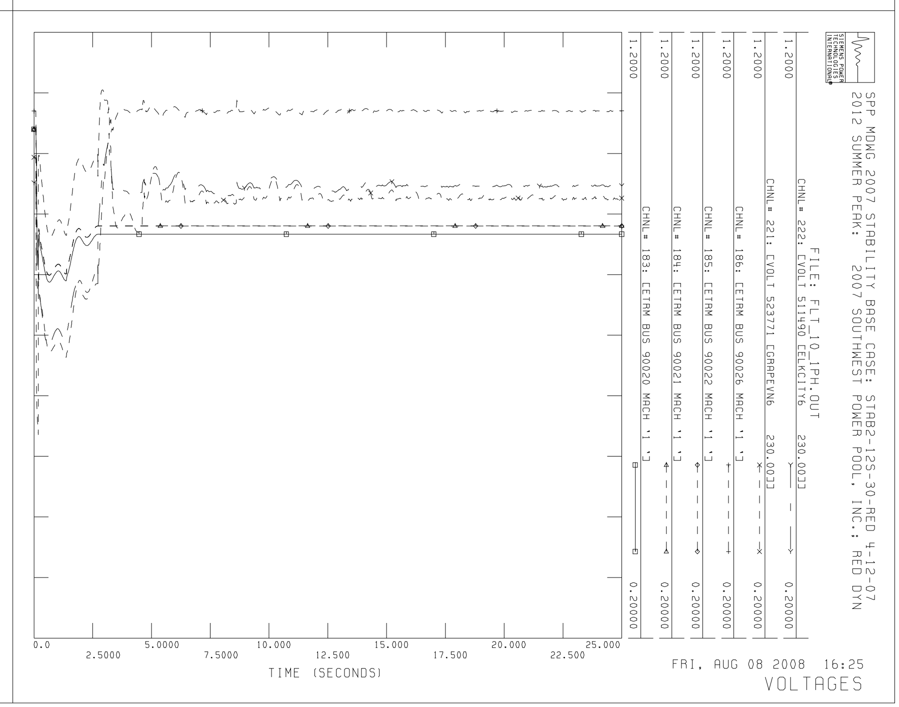

SPP MDWG 2007 STABILITY BASE CASE: STAB2-12S-30-RED 4-12-07
2012 SUMMER PEAK: 2007 SOUTHWEST POWER POOL, INC.; RED DYN
FILE: FLT_9_3PH.OUT
CHNL# 209: [SPD BUS 560042 MACH '1 '] 1.1000 1.0000
CHNL# 195: [ETRM BUS 560042 MACH '1 '] 1.2000 0.20000
CHNL# 167: [POWR BUS 560042 MACH '1 '] 2.0000 0.0
CHNL# 208: [SPD BUS 560041 MACH '1 '] 1.1000 1.0000
CHNL# 194: [ETRM BUS 560041 MACH '1 '] 1.2000 0.20000
CHNL# 166: [POWR BUS 560041 MACH '1 '] 2.0000 0.0
0.0 2.5000 5.0000 7.5000 10.000 12.500 15.000 17.500 20.000 22.500 25.000
TIME (SECONDS)
FRI, AUG 08 2008 16:25
PROJ PELEC/ETRM/SPD


SPP MDWG 2007 STABILITY BASE CASE: STAB2-12S-30-RED 4-12-07
2012 SUMMER PEAK: 2007 SOUTHWEST POWER POOL, INC.; RED DYN
FILE: FLT_9_3PH.OUT
CHNL# 222: [VOLT 51490 [ELKCITY6 230.00]] 1.2000 0.20000
CHNL# 221: [VOLT 52377 [GRAPEVN6 230.00]] 1.2000 0.20000
CHNL# 186: [ETRM BUS 90026 MACH '1 '] 1.2000 0.20000
CHNL# 185: [ETRM BUS 90022 MACH '1 '] 1.2000 0.20000
CHNL# 184: [ETRM BUS 90021 MACH '1 '] 1.2000 0.20000
CHNL# 183: [ETRM BUS 90020 MACH '1 '] 1.2000 0.20000
0.0 2.5000 5.0000 7.5000 10.000 12.500 15.000 17.500 20.000 22.500 25.000
TIME (SECONDS)
FRI, AUG 08 2008 16:25
VOLTAGES


SPP MDWG 2007 STABILITY BASE CASE: STAB2-12S-30-RED 4-12-07
2012 SUMMER PEAK: 2007 SOUTHWEST POWER POOL, INC.; RED DYN
FILE: FLT_10_1PH.OUT
55.000 CHNL# 137: CANGL BUS 525561 MACH '1 ' 30.000
65.000 CHNL# 128: CANGL BUS 524023 MACH '1 ' 40.000
65.000 CHNL# 124: CANGL BUS 523972 MACH '1 ' 40.000
50.000 CHNL# 46: CANGL BUS 511848 MACH '1 ' 25.000
250.00 CHNL# 7: CANGL BUS 1000 MACH '1 ' 0.0
300.00 CHNL# 6: CANGLE SPREAD 200.00
0.0 2.5000 5.0000 7.5000 10.000 12.500 15.000 17.500 20.000 22.500 25.000
TIME (SECONDS)
FRI, AUG 08 2008 16:25
SYSTEM ANGLES


SPP MDWG 2007 STABILITY BASE CASE: STAB2-12S-30-RED 4-12-07
2012 SUMMER PEAK: 2007 SOUTHWEST POWER POOL, INC.; RED DYN
FILE: FLT_10_1PH.OUT
2.0000 CHNL# 161: CPOWR BUS 99995 MACH '1 ' 0.0
2.0000 CHNL# 160: CPOWR BUS 90521 MACH '1 ' 0.0
2.0000 CHNL# 158: CPOWR BUS 90026 MACH '1 ' 0.0
2.0000 CHNL# 157: CPOWR BUS 90022 MACH '1 ' 0.0
2.0000 CHNL# 156: CPOWR BUS 90021 MACH '1 ' 0.0
2.0000 CHNL# 155: CPOWR BUS 90020 MACH '1 ' 0.0
0.0 2.5000 5.0000 7.5000 10.000 12.500 15.000 17.500 20.000 22.500 25.000
TIME (SECONDS)
FRI, AUG 08 2008 16:25
PRIOR QUEUED POWER


SPP MDWG 2007 STABILITY BASE CASE: STAB2-12S-30-RED 4-12-07
2012 SUMMER PEAK: 2007 SOUTHWEST POWER POOL, INC.; RED DYN
FILE: FLT_10_1PH.OUT
1.1000 CHNL# 209: CSPD BUS 560042 MACH '1 ' 1.0000
1.2000 CHNL# 195: CETRM BUS 560042 MACH '1 ' 0.20000
2.0000 CHNL# 167: CPOWR BUS 560042 MACH '1 ' 0.0
1.1000 CHNL# 208: CSPD BUS 560041 MACH '1 ' 1.0000
1.2000 CHNL# 194: CETRM BUS 560041 MACH '1 ' 0.20000
2.0000 CHNL# 166: CPOWR BUS 560041 MACH '1 ' 0.0
0.0 2.5000 5.0000 7.5000 10.000 12.500 15.000 17.500 20.000 22.500 25.000
TIME (SECONDS)
FRI, AUG 08 2008 16:25
PROJ PELEC/ETRM/SPD

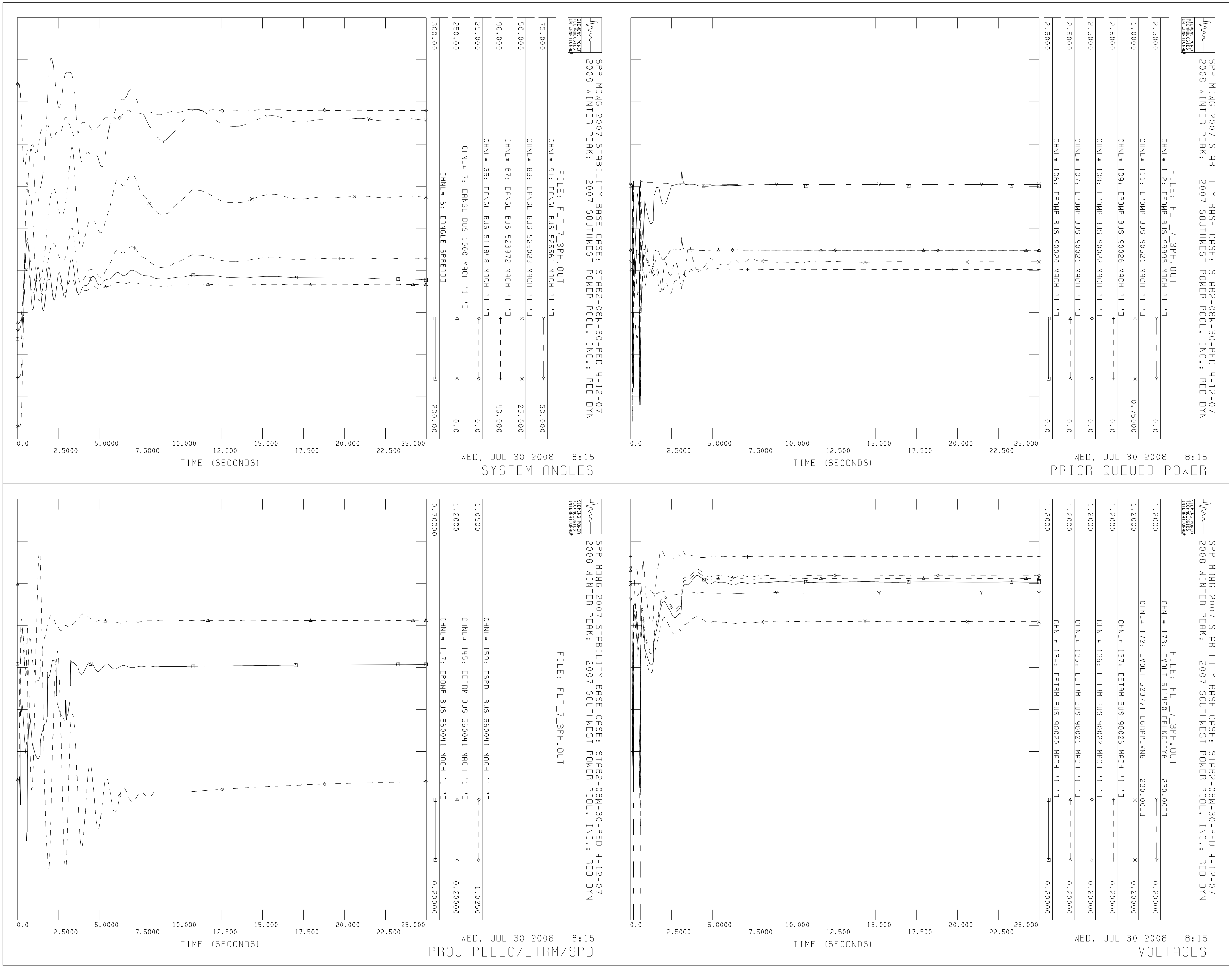

SPP MDWG 2007 STABILITY BASE CASE: STAB2-12S-30-RED 4-12-07
2012 SUMMER PEAK: 2007 SOUTHWEST POWER POOL, INC.; RED DYN
FILE: FLT_10_1PH.OUT
1.2000 CHNL# 222: CVOLT 51490 CELKCITY6 230.00] 0.20000
1.2000 CHNL# 221: CVOLT 52371 CGRAPEVN6 230.00] 0.20000
1.2000 CHNL# 186: CETRM BUS 90026 MACH '1 ' 0.20000
1.2000 CHNL# 185: CETRM BUS 90022 MACH '1 ' 0.20000
1.2000 CHNL# 184: CETRM BUS 90021 MACH '1 ' 0.20000
1.2000 CHNL# 183: CETRM BUS 90020 MACH '1 ' 0.20000
0.0 2.5000 5.0000 7.5000 10.000 12.500 15.000 17.500 20.000 22.500 25.000
TIME (SECONDS)
FRI, AUG 08 2008 16:25
VOLTAGES

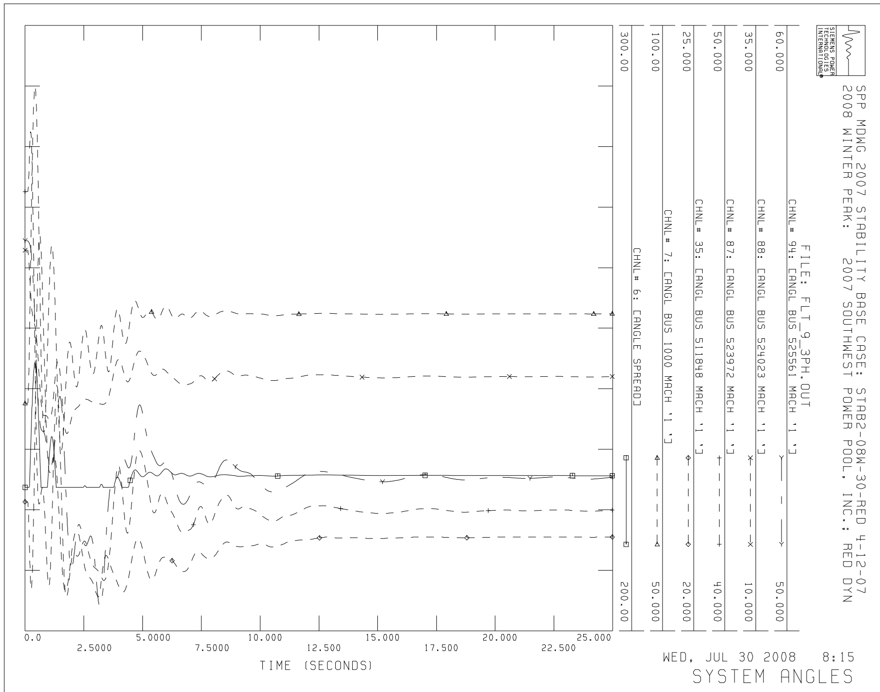
APPENDIX B.

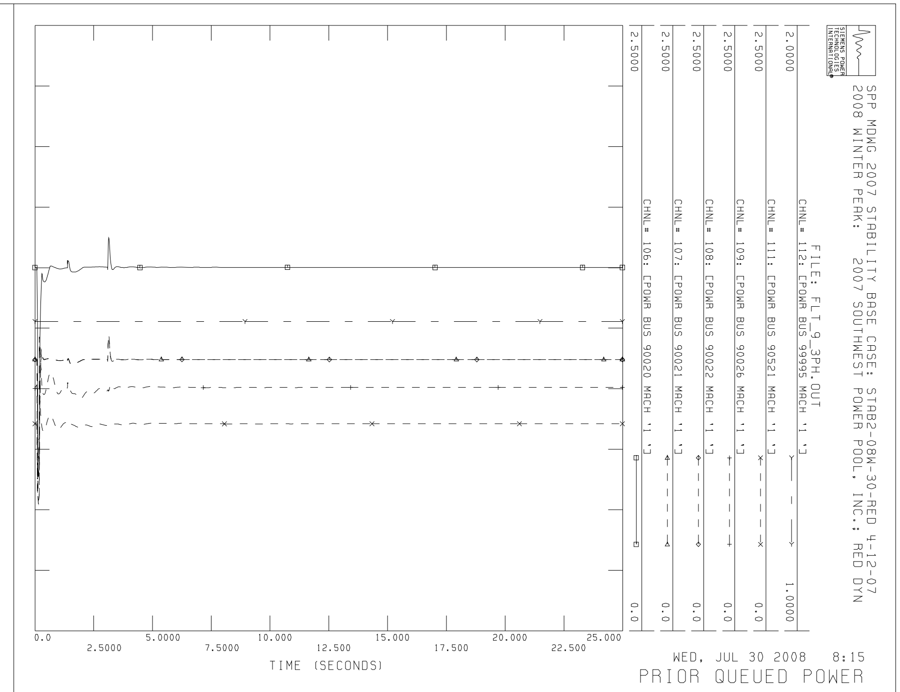
SELECTED STABILITY PLOTS – SCENARIO 2

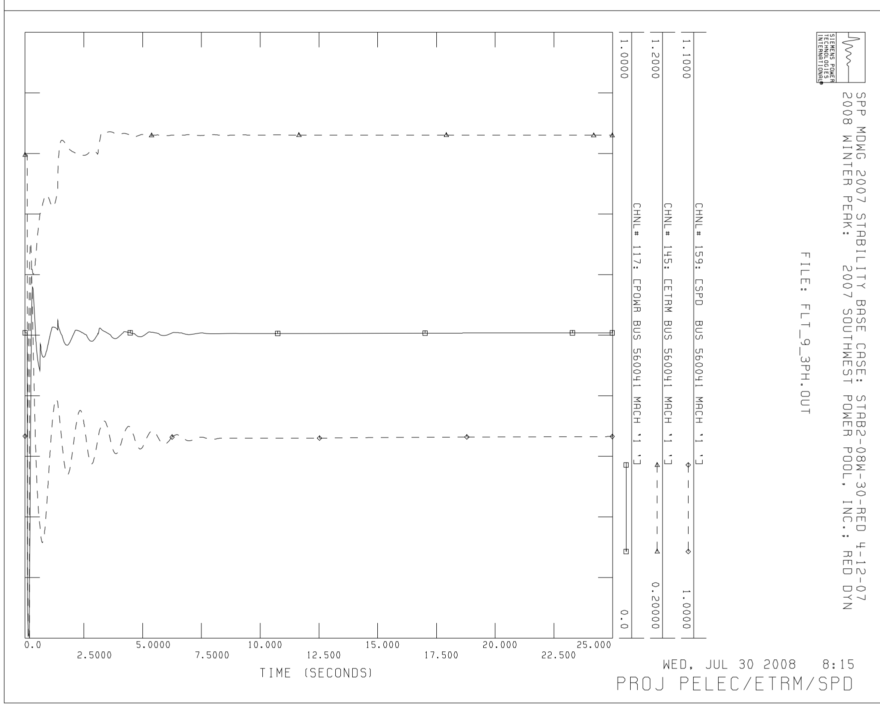
(Customer project at 50 MW generation with no transmission system reinforcements)

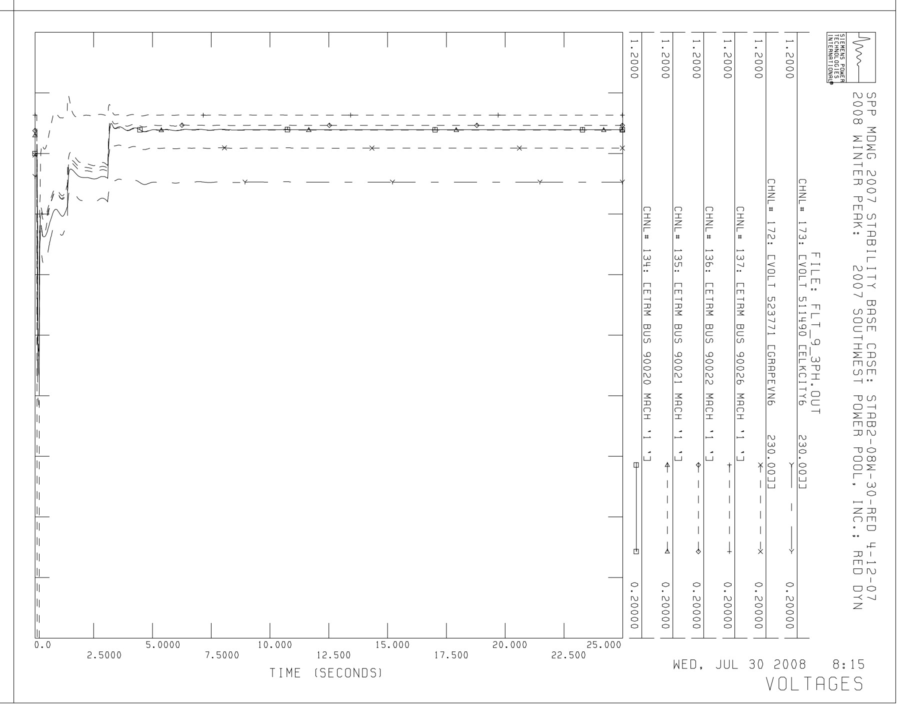
All plots available on request.

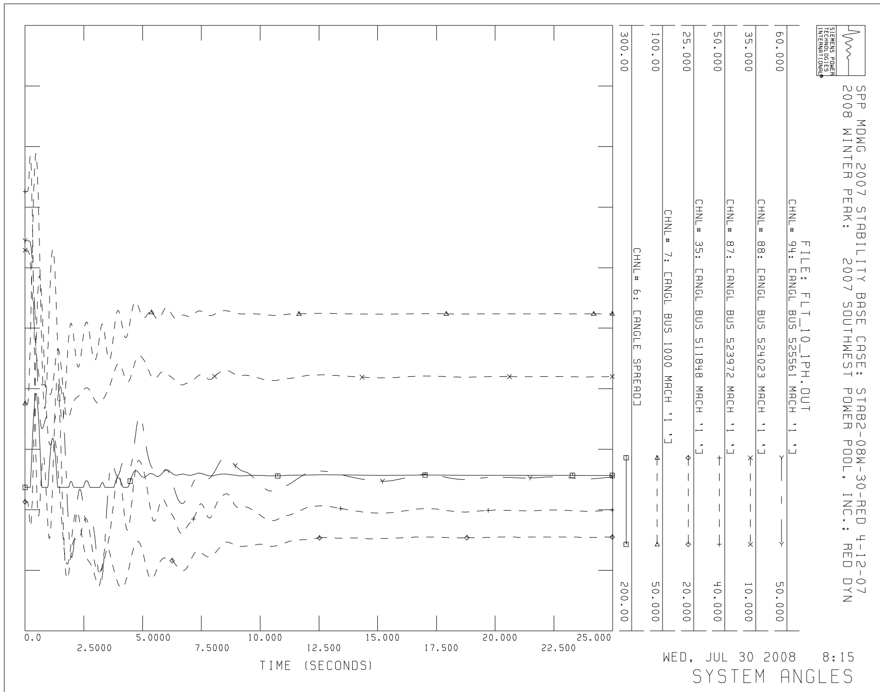

SPP MDWG 2007 STABILITY BASE CASE: STAB2-08W-30-RED 4-12-07
2008 WINTER PEAK: 2007 SOUTHWEST POWER POOL, INC.; RED DYN
FILE: FLT_7_3PH.OUT
CHNL# 94: [ANGL BUS 525561 MACH '1 ']
CHNL# 88: [ANGL BUS 524023 MACH '1 ']
CHNL# 87: [ANGL BUS 523972 MACH '1 ']
CHNL# 35: [ANGL BUS 511848 MACH '1 ']
CHNL# 7: [ANGL BUS 1000 MACH '1 ']
CHNL# 6: [ANGLE SPREAD]
WED, JUL 30 2008 8:15
SYSTEM ANGLES
TIME (SECONDS)
CHNL# 112: [POWR BUS 99995 MACH '1 ']
CHNL# 111: [POWR BUS 90521 MACH '1 ']
CHNL# 109: [POWR BUS 90026 MACH '1 ']
CHNL# 108: [POWR BUS 90022 MACH '1 ']
CHNL# 107: [POWR BUS 90021 MACH '1 ']
CHNL# 106: [POWR BUS 90020 MACH '1 ']
PRIOR QUEUED POWER
CHNL# 159: [SPD BUS 560041 MACH '1 ']
CHNL# 145: [ETRM BUS 560041 MACH '1 ']
CHNL# 117: [POWR BUS 560041 MACH '1 ']
PROJ PELEC/ETRM/SPD
CHNL# 173: [VOLT 51490 [ELKCITY6 230.00]]
CHNL# 172: [VOLT 52371 [GRAPEVN6 230.00]]
CHNL# 137: [ETRM BUS 90026 MACH '1 ']
CHNL# 136: [ETRM BUS 90022 MACH '1 ']
CHNL# 135: [ETRM BUS 90021 MACH '1 ']
CHNL# 134: [ETRM BUS 90020 MACH '1 ']
VOLTAGES

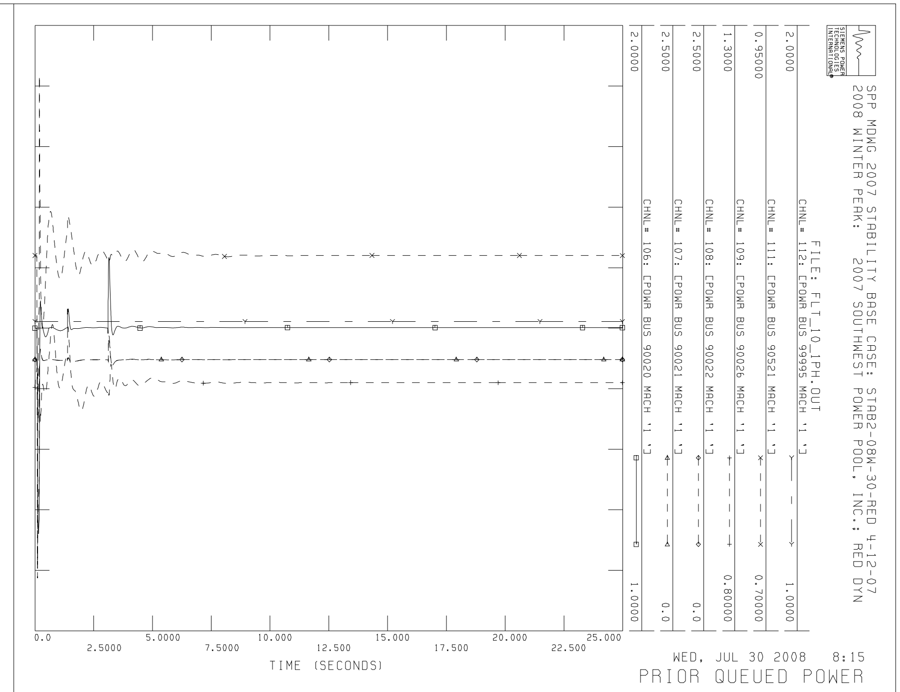

SPP MDWG 2007 STABILITY BASE CASE: STAB2-08W-30-RED 4-12-07
2008 WINTER PEAK: 2007 SOUTHWEST POWER POOL, INC.; RED DYN
FILE: FLT_9_3PH.OUT
CHNL# 94: CANGL BUS 525561 MACH '1 '
CHNL# 88: CANGL BUS 524023 MACH '1 '
CHNL# 87: CANGL BUS 523972 MACH '1 '
CHNL# 35: CANGL BUS 511848 MACH '1 '
CHNL# 7: CANGL BUS 1000 MACH '1 '
CHNL# 6: CANGLE SPREAD
TIME (SECONDS)
WED, JUL 30 2008 8:15
SYSTEM ANGLES

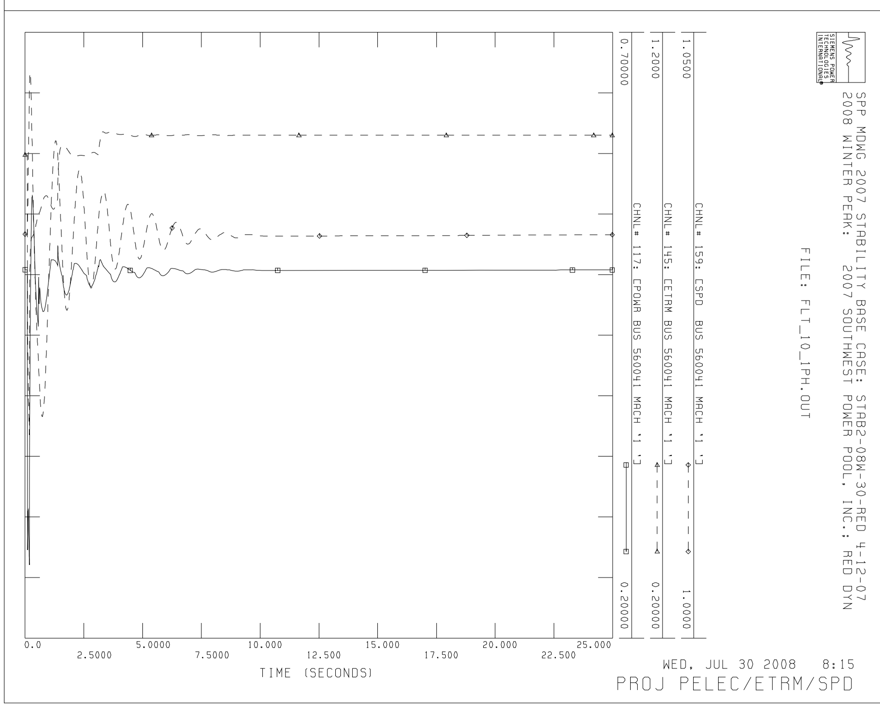

SPP MDWG 2007 STABILITY BASE CASE: STAB2-08W-30-RED 4-12-07
2008 WINTER PEAK: 2007 SOUTHWEST POWER POOL, INC.; RED DYN
FILE: FLT_9_3PH.OUT
CHNL# 112: CPOWR BUS 99995 MACH '1 '
CHNL# 111: CPOWR BUS 90521 MACH '1 '
CHNL# 109: CPOWR BUS 90026 MACH '1 '
CHNL# 108: CPOWR BUS 90022 MACH '1 '
CHNL# 107: CPOWR BUS 90021 MACH '1 '
CHNL# 106: CPOWR BUS 90020 MACH '1 '
TIME (SECONDS)
WED, JUL 30 2008 8:15
PRIOR QUEUED POWER

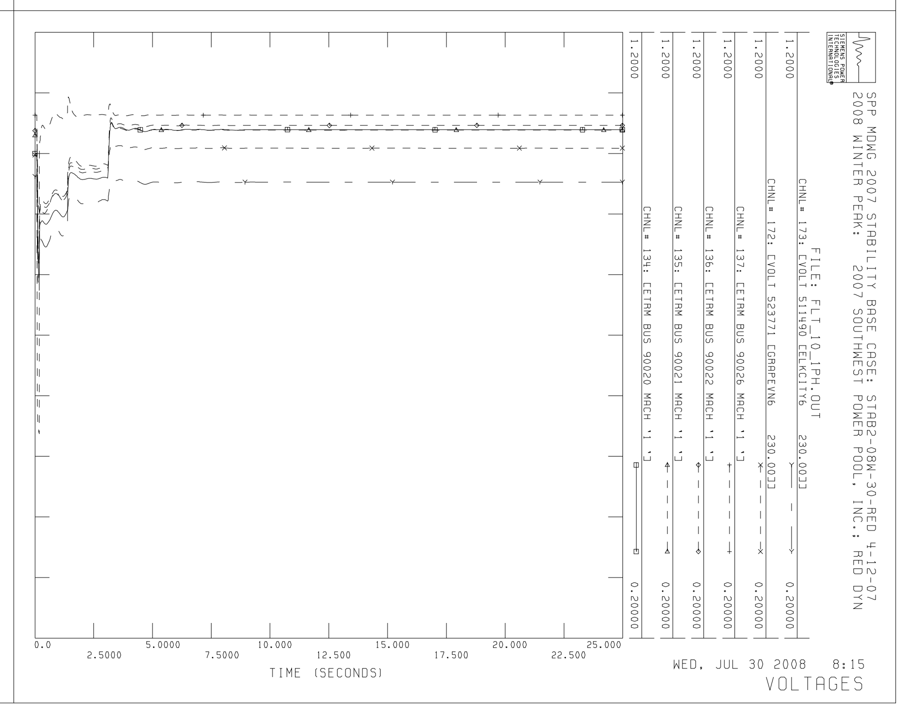

SPP MDWG 2007 STABILITY BASE CASE: STAB2-08W-30-RED 4-12-07
2008 WINTER PEAK: 2007 SOUTHWEST POWER POOL, INC.; RED DYN
FILE: FLT_9_3PH.OUT
CHNL# 159: CSPD BUS 560041 MACH '1 '
CHNL# 145: CETRM BUS 560041 MACH '1 '
CHNL# 117: CPOWR BUS 560041 MACH '1 '
TIME (SECONDS)
WED, JUL 30 2008 8:15
PROJ PELEC/ETRM/SPD

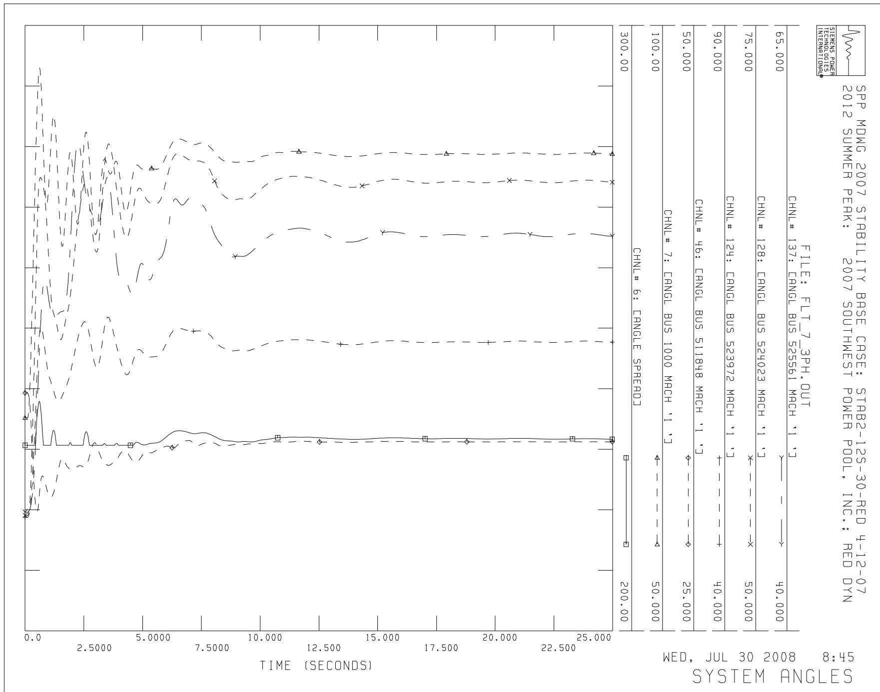

SPP MDWG 2007 STABILITY BASE CASE: STAB2-08W-30-RED 4-12-07
2008 WINTER PEAK: 2007 SOUTHWEST POWER POOL, INC.; RED DYN
FILE: FLT_9_3PH.OUT
CHNL# 173: CVOLT 511490 CELKCITY6 230.00]
CHNL# 172: CVOLT 523771 CGRAPEVN6 230.00]
CHNL# 137: CETRM BUS 90026 MACH '1 '
CHNL# 136: CETRM BUS 90022 MACH '1 '
CHNL# 135: CETRM BUS 90021 MACH '1 '
CHNL# 134: CETRM BUS 90020 MACH '1 '
TIME (SECONDS)
WED, JUL 30 2008 8:15
VOLTAGES


SPP MDWG 2007 STABILITY BASE CASE: STAB2-08W-30-RED 4-12-07
2008 WINTER PEAK: 2007 SOUTHWEST POWER POOL, INC.; RED DYN
FILE: FLT_10_1PH.OUT
CHNL# 94: [ANGL BUS 525561 MACH '1 ']
CHNL# 88: [ANGL BUS 524023 MACH '1 ']
CHNL# 87: [ANGL BUS 523972 MACH '1 ']
CHNL# 35: [ANGL BUS 511848 MACH '1 ']
CHNL# 7: [ANGL BUS 1000 MACH '1 ']
CHNL# 6: [ANGLE SPREAD]
TIME (SECONDS)
WED, JUL 30 2008 8:15
SYSTEM ANGLES

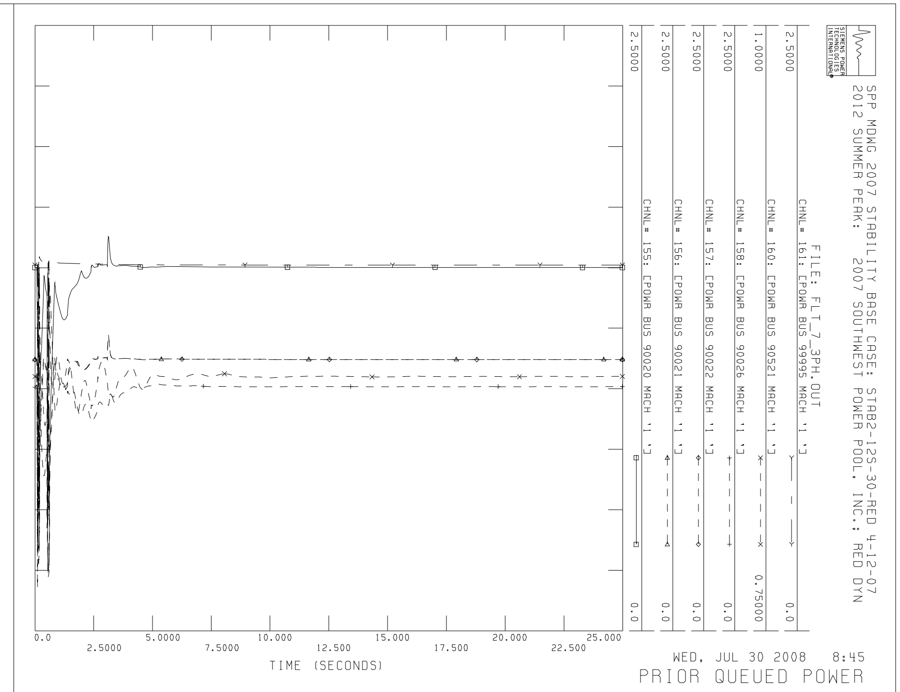

SPP MDWG 2007 STABILITY BASE CASE: STAB2-08W-30-RED 4-12-07
2008 WINTER PEAK: 2007 SOUTHWEST POWER POOL, INC.; RED DYN
FILE: FLT_10_1PH.OUT
CHNL# 112: [POWR BUS 99995 MACH '1 ']
CHNL# 111: [POWR BUS 90521 MACH '1 ']
CHNL# 109: [POWR BUS 90026 MACH '1 ']
CHNL# 108: [POWR BUS 90022 MACH '1 ']
CHNL# 107: [POWR BUS 90021 MACH '1 ']
CHNL# 106: [POWR BUS 90020 MACH '1 ']
TIME (SECONDS)
WED, JUL 30 2008 8:15
PRIOR QUEUED POWER


SPP MDWG 2007 STABILITY BASE CASE: STAB2-08W-30-RED 4-12-07
2008 WINTER PEAK: 2007 SOUTHWEST POWER POOL, INC.; RED DYN
FILE: FLT_10_1PH.OUT
CHNL# 159: [SPD BUS 560041 MACH '1 ']
CHNL# 145: [ETRM BUS 560041 MACH '1 ']
CHNL# 117: [POWR BUS 560041 MACH '1 ']
TIME (SECONDS)
WED, JUL 30 2008 8:15
PROJ PELEC/ETRM/SPD

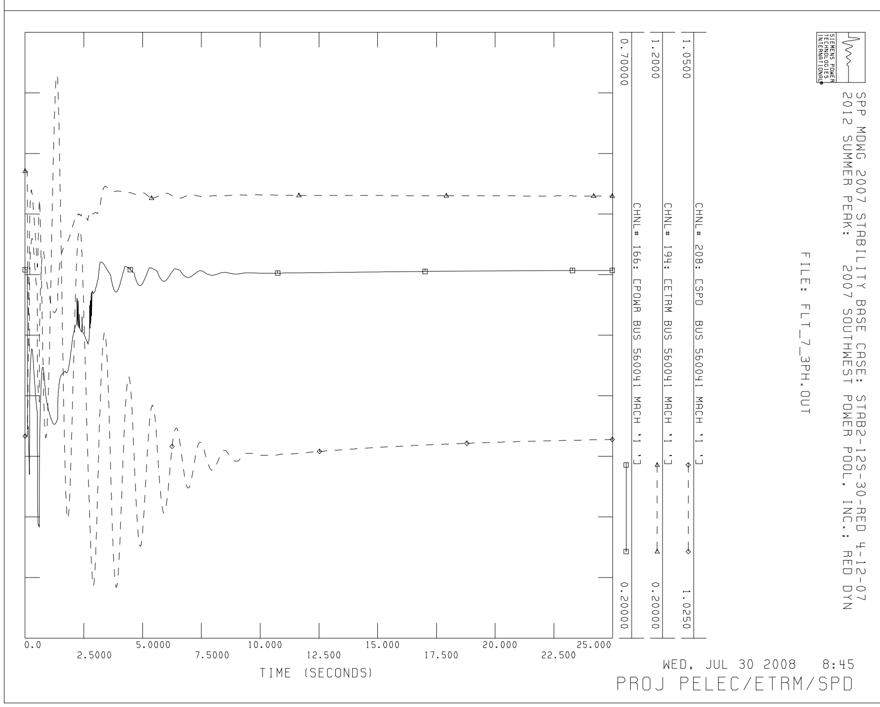

SPP MDWG 2007 STABILITY BASE CASE: STAB2-08W-30-RED 4-12-07
2008 WINTER PEAK: 2007 SOUTHWEST POWER POOL, INC.; RED DYN
FILE: FLT_10_1PH.OUT
CHNL# 173: [VOLT 511490 [ELKCITY6 230.00]]
CHNL# 172: [VOLT 523771 [GRAPEVN6 230.00]]
CHNL# 137: [ETRM BUS 90026 MACH '1 ']
CHNL# 136: [ETRM BUS 90022 MACH '1 ']
CHNL# 135: [ETRM BUS 90021 MACH '1 ']
CHNL# 134: [ETRM BUS 90020 MACH '1 ']
TIME (SECONDS)
WED, JUL 30 2008 8:15
VOLTAGES



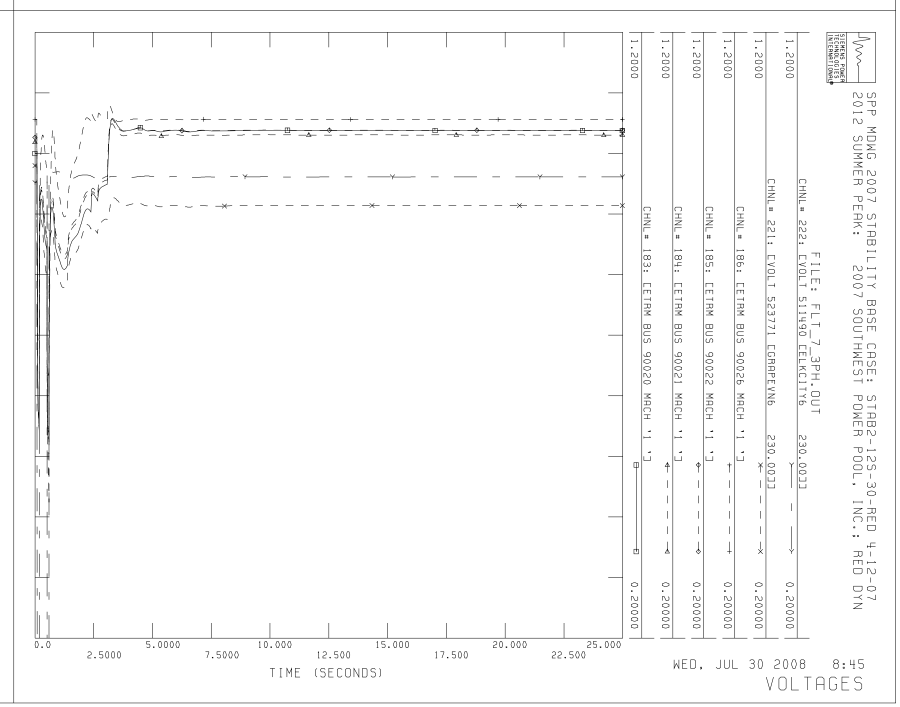
SPP MDWG 2007 STABILITY BASE CASE: STAB2-12S-30-RED 4-12-07
2012 SUMMER PEAK: 2007 SOUTHWEST POWER POOL, INC.; RED DYN
FILE: FLT_7_3PH.OUT
CHNL# 137: [ANGL BUS 525561 MACH '1 ']
65.000
40.000
CHNL# 128: [ANGL BUS 524023 MACH '1 ']
75.000
50.000
CHNL# 124: [ANGL BUS 523972 MACH '1 ']
90.000
40.000
CHNL# 46: [ANGL BUS 511848 MACH '1 ']
50.000
25.000
CHNL# 7: [ANGL BUS 1000 MACH '1 ']
100.00
50.000
CHNL# 6: [ANGLE SPREAD]
300.00
200.00
0.0
2.5000
5.0000
7.5000
10.000
12.500
15.000
17.500
20.000
22.500
25.000
TIME (SECONDS)
WED, JUL 30 2008 8:45
SYSTEM ANGLES



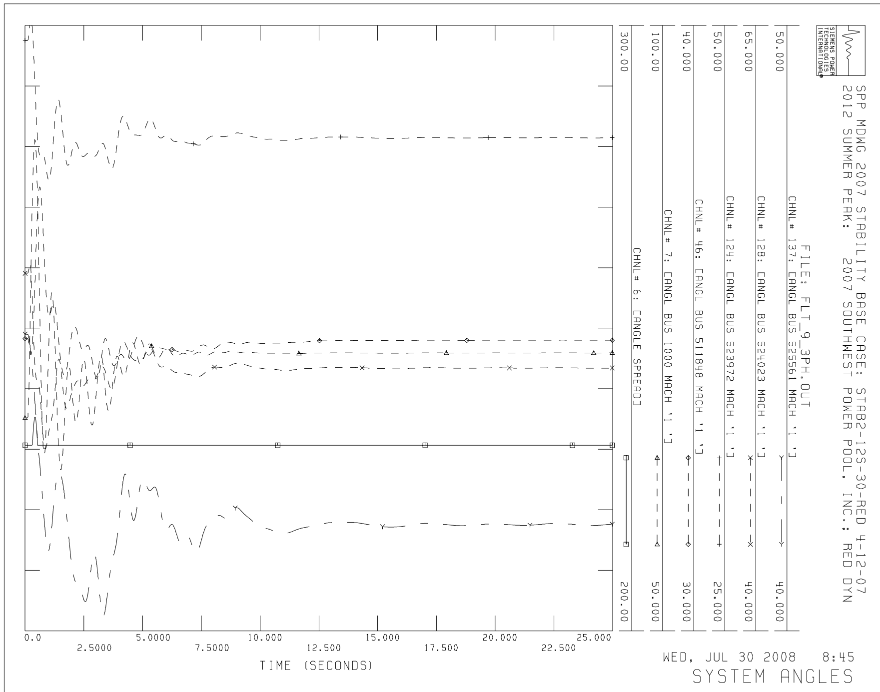
SPP MDWG 2007 STABILITY BASE CASE: STAB2-12S-30-RED 4-12-07
2012 SUMMER PEAK: 2007 SOUTHWEST POWER POOL, INC.; RED DYN
FILE: FLT_7_3PH.OUT
CHNL# 161: [POWR BUS 99995 MACH '1 ']
2.5000
0.0
CHNL# 160: [POWR BUS 90521 MACH '1 ']
1.0000
0.75000
CHNL# 158: [POWR BUS 90026 MACH '1 ']
2.5000
0.0
CHNL# 157: [POWR BUS 90022 MACH '1 ']
2.5000
0.0
CHNL# 156: [POWR BUS 90021 MACH '1 ']
2.5000
0.0
CHNL# 155: [POWR BUS 90020 MACH '1 ']
2.5000
0.0
0.0
2.5000
5.0000
7.5000
10.000
12.500
15.000
17.500
20.000
22.500
25.000
TIME (SECONDS)
WED, JUL 30 2008 8:45
PRIOR QUEUED POWER



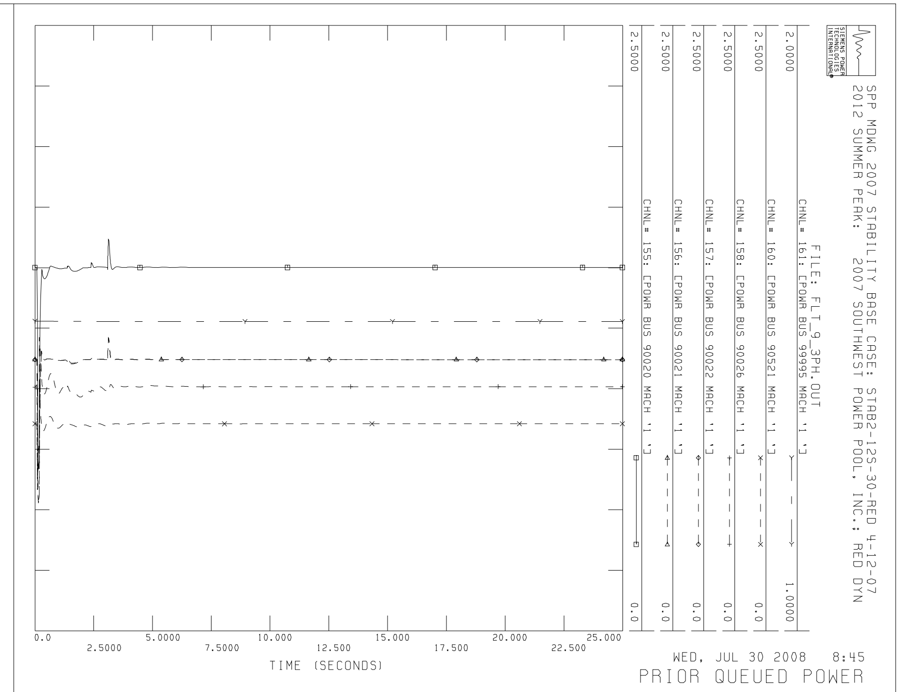
SPP MDWG 2007 STABILITY BASE CASE: STAB2-12S-30-RED 4-12-07
2012 SUMMER PEAK: 2007 SOUTHWEST POWER POOL, INC.; RED DYN
FILE: FLT_7_3PH.OUT
CHNL# 208: [SPD BUS 560041 MACH '1 ']
1.0500
1.0250
CHNL# 194: [ETRM BUS 560041 MACH '1 ']
1.2000
0.20000
CHNL# 166: [POWR BUS 560041 MACH '1 ']
0.70000
0.20000
0.0
2.5000
5.0000
7.5000
10.000
12.500
15.000
17.500
20.000
22.500
25.000
TIME (SECONDS)
WED, JUL 30 2008 8:45
PROJ PELEC/ETRM/SPD



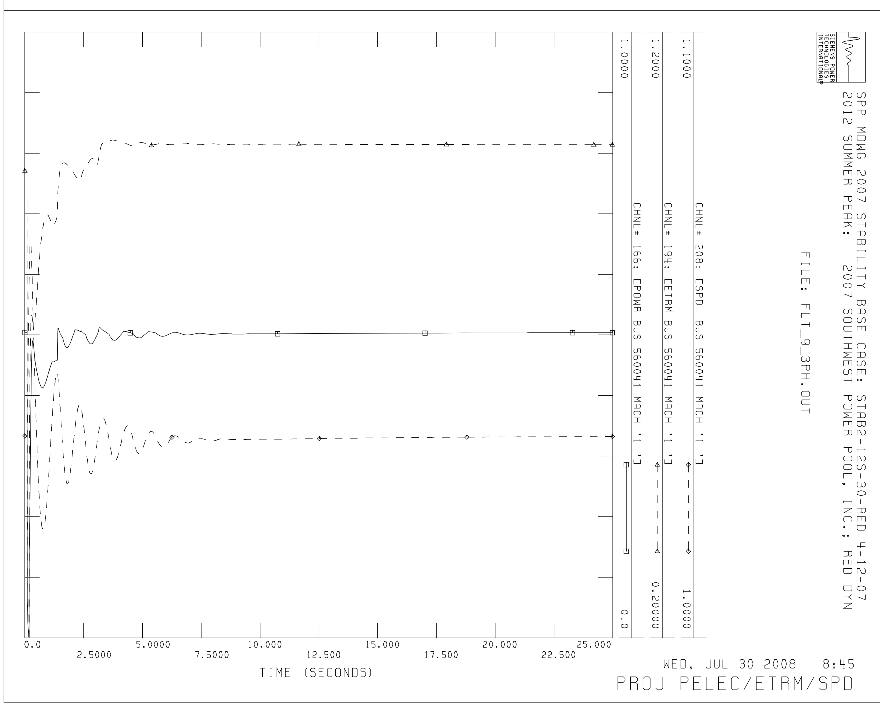
SPP MDWG 2007 STABILITY BASE CASE: STAB2-12S-30-RED 4-12-07
2012 SUMMER PEAK: 2007 SOUTHWEST POWER POOL, INC.; RED DYN
FILE: FLT_7_3PH.OUT
CHNL# 222: [VOLT 511490 [ELKCITY6 230.00]]
1.2000
0.20000
CHNL# 221: [VOLT 523771 [GRAPEVN6 230.00]]
1.2000
0.20000
CHNL# 186: [ETRM BUS 90026 MACH '1 ']
1.2000
0.20000
CHNL# 185: [ETRM BUS 90022 MACH '1 ']
1.2000
0.20000
CHNL# 184: [ETRM BUS 90021 MACH '1 ']
1.2000
0.20000
CHNL# 183: [ETRM BUS 90020 MACH '1 ']
1.2000
0.20000
0.0
2.5000
5.0000
7.5000
10.000
12.500
15.000
17.500
20.000
22.500
25.000
TIME (SECONDS)
WED, JUL 30 2008 8:45
VOLTAGES



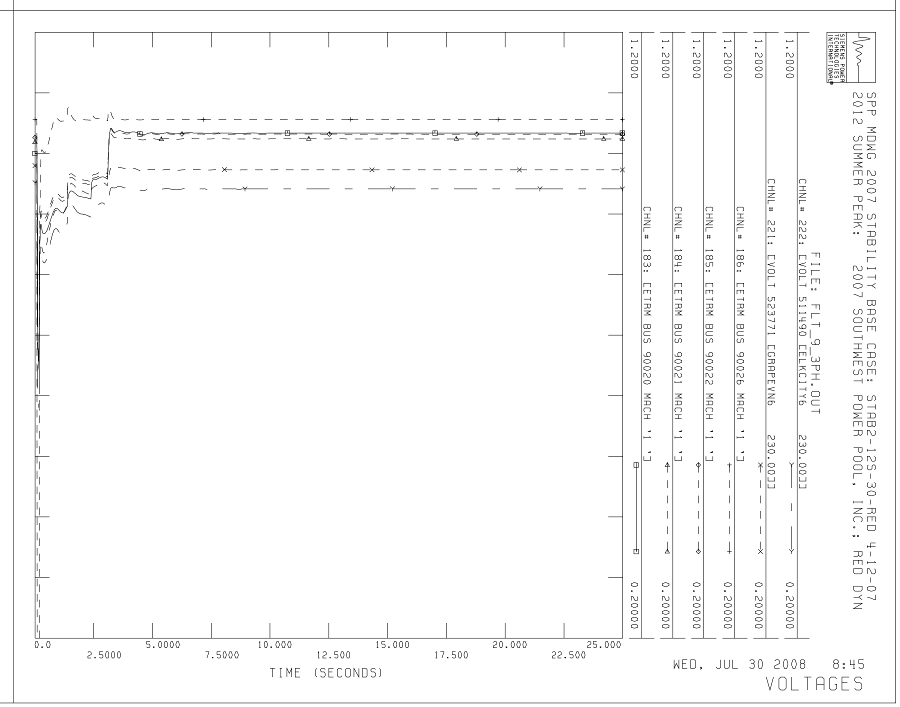
SPP MDWG 2007 STABILITY BASE CASE: STAB2-12S-30-RED 4-12-07
2012 SUMMER PEAK: 2007 SOUTHWEST POWER POOL, INC.; RED DYN
FILE: FLT_9_3PH.OUT
CHNL# 137: [ANGL BUS 525561 MACH '1 '] 50.000 40.000
CHNL# 128: [ANGL BUS 524023 MACH '1 '] 65.000 40.000
CHNL# 124: [ANGL BUS 523972 MACH '1 '] 50.000 25.000
CHNL# 46: [ANGL BUS 511848 MACH '1 '] 40.000 30.000
CHNL# 7: [ANGL BUS 1000 MACH '1 '] 100.00 50.000
CHNL# 6: [ANGLE SPREAD] 300.00 200.00
0.0 2.5000 5.0000 7.5000 10.000 12.500 15.000 17.500 20.000 22.500 25.000
TIME (SECONDS)
WED, JUL 30 2008 8:45
SYSTEM ANGLES



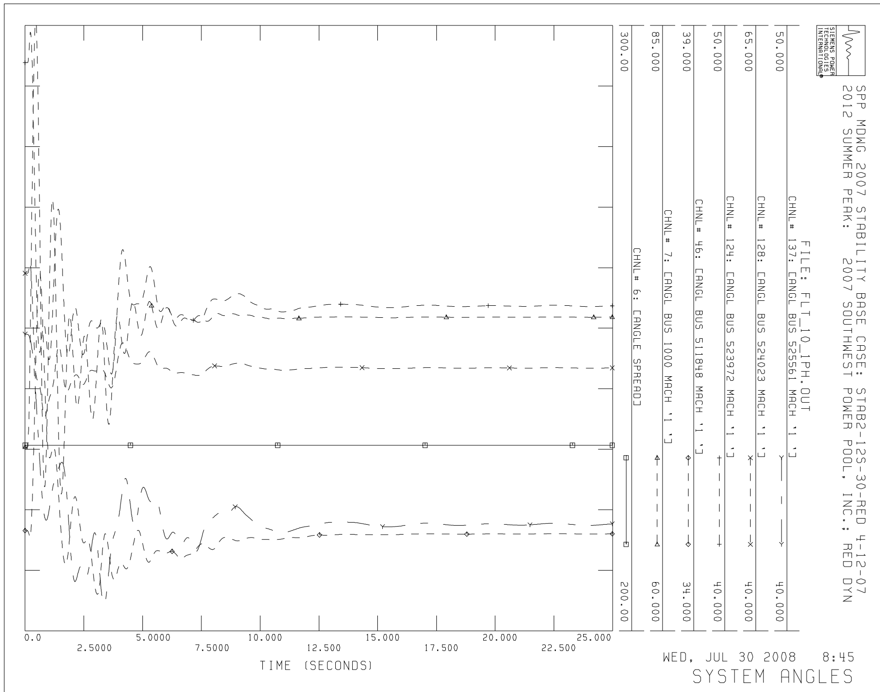
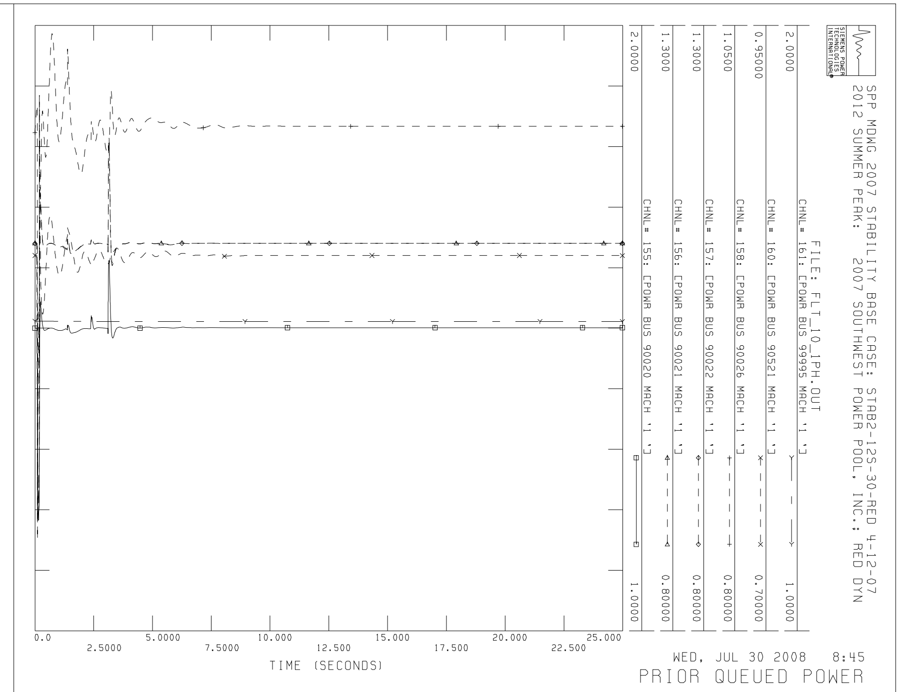
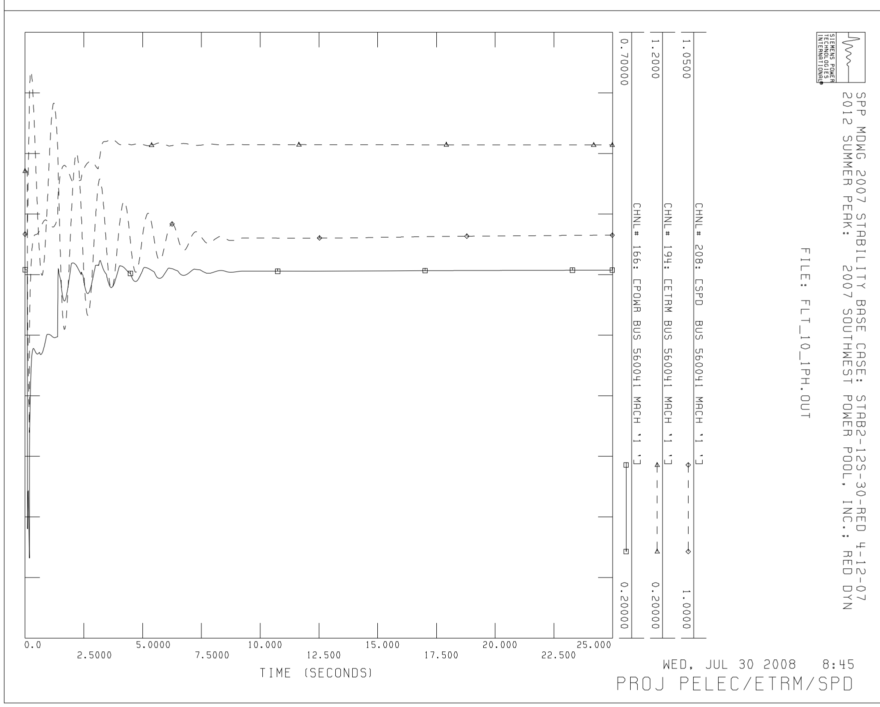
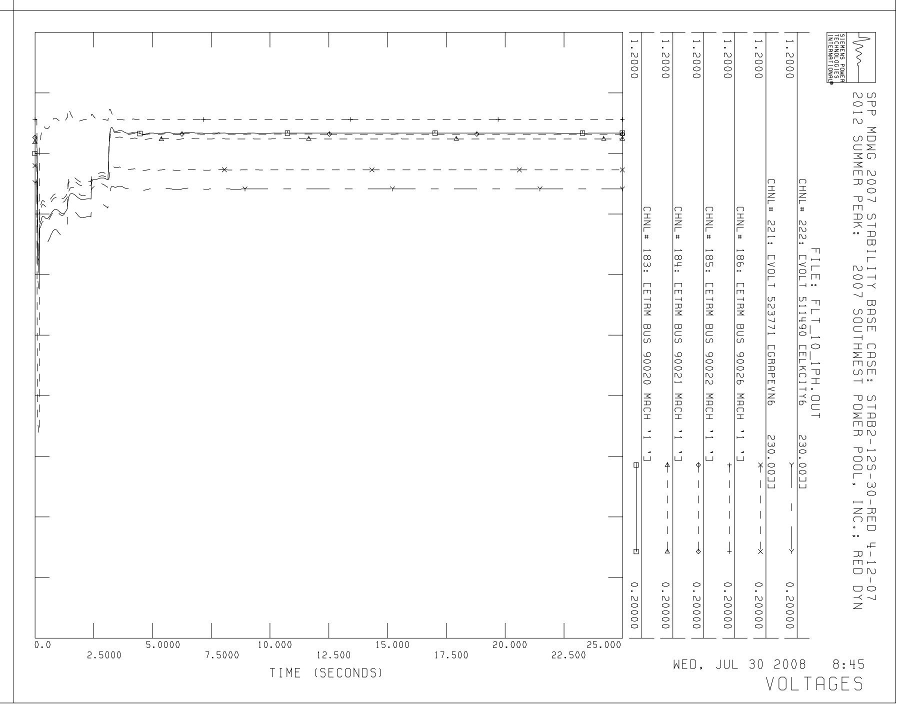
SPP MDWG 2007 STABILITY BASE CASE: STAB2-12S-30-RED 4-12-07
2012 SUMMER PEAK: 2007 SOUTHWEST POWER POOL, INC.; RED DYN
FILE: FLT_9_3PH.OUT
CHNL# 161: [POWR BUS 99995 MACH '1 '] 2.0000 1.0000
CHNL# 160: [POWR BUS 90521 MACH '1 '] 2.5000 0.0
CHNL# 158: [POWR BUS 90026 MACH '1 '] 2.5000 0.0
CHNL# 157: [POWR BUS 90022 MACH '1 '] 2.5000 0.0
CHNL# 156: [POWR BUS 90021 MACH '1 '] 2.5000 0.0
CHNL# 155: [POWR BUS 90020 MACH '1 '] 2.5000 0.0
0.0 2.5000 5.0000 7.5000 10.000 12.500 15.000 17.500 20.000 22.500 25.000
TIME (SECONDS)
WED, JUL 30 2008 8:45
PRIOR QUEUED POWER



SPP MDWG 2007 STABILITY BASE CASE: STAB2-12S-30-RED 4-12-07
2012 SUMMER PEAK: 2007 SOUTHWEST POWER POOL, INC.; RED DYN
FILE: FLT_9_3PH.OUT
CHNL# 208: [SPD BUS 560041 MACH '1 '] 1.1000 1.0000
CHNL# 194: [ETRM BUS 560041 MACH '1 '] 1.2000 0.20000
CHNL# 166: [POWR BUS 560041 MACH '1 '] 1.0000 0.0
0.0 2.5000 5.0000 7.5000 10.000 12.500 15.000 17.500 20.000 22.500 25.000
TIME (SECONDS)
WED, JUL 30 2008 8:45
PROJ PELEC/ETRM/SPD



SPP MDWG 2007 STABILITY BASE CASE: STAB2-12S-30-RED 4-12-07
2012 SUMMER PEAK: 2007 SOUTHWEST POWER POOL, INC.; RED DYN
FILE: FLT_9_3PH.OUT
CHNL# 222: [VOLT 511490 [ELKCITY6 230.00]] 1.2000 0.20000
CHNL# 221: [VOLT 523771 [GRAPEVN6 230.00]] 1.2000 0.20000
CHNL# 186: [ETRM BUS 90026 MACH '1 '] 1.2000 0.20000
CHNL# 185: [ETRM BUS 90022 MACH '1 '] 1.2000 0.20000
CHNL# 184: [ETRM BUS 90021 MACH '1 '] 1.2000 0.20000
CHNL# 183: [ETRM BUS 90020 MACH '1 '] 1.2000 0.20000
0.0 2.5000 5.0000 7.5000 10.000 12.500 15.000 17.500 20.000 22.500 25.000
TIME (SECONDS)
WED, JUL 30 2008 8:45
VOLTAGES

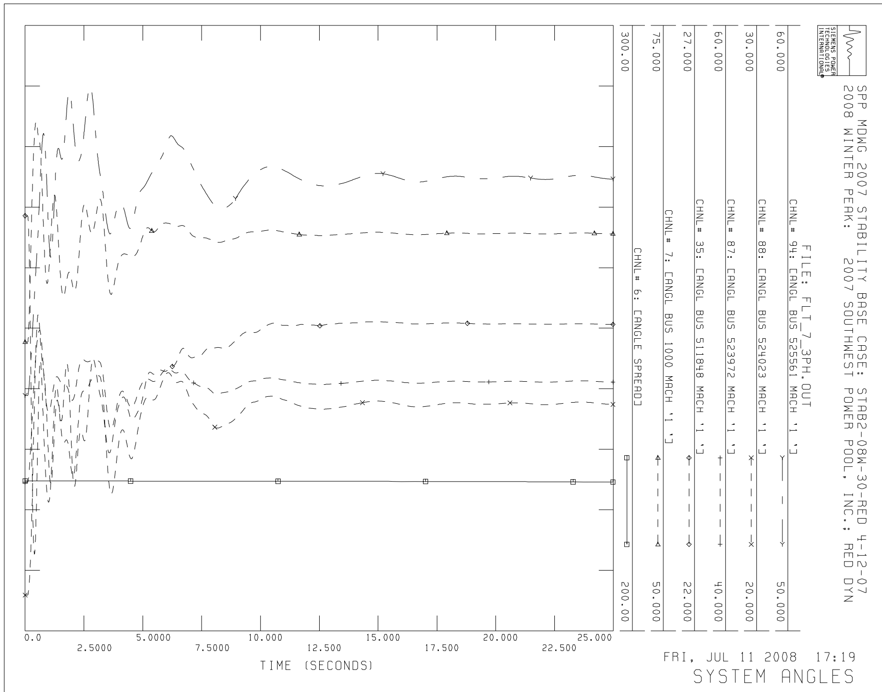

SPP MDWG 2007 STABILITY BASE CASE: STAB2-12S-30-RED 4-12-07
2012 SUMMER PEAK: 2007 SOUTHWEST POWER POOL, INC.; RED DYN
FILE: FLT_10_1PH.OUT
CHNL# 137: [ANGL BUS 525561 MACH '1 ']
CHNL# 128: [ANGL BUS 524023 MACH '1 ']
CHNL# 124: [ANGL BUS 523972 MACH '1 ']
CHNL# 46: [ANGL BUS 511848 MACH '1 ']
CHNL# 7: [ANGL BUS 1000 MACH '1 ']
CHNL# 6: [ANGLE SPREAD]
TIME (SECONDS)
WED, JUL 30 2008 8:45
SYSTEM ANGLES

SPP MDWG 2007 STABILITY BASE CASE: STAB2-12S-30-RED 4-12-07
2012 SUMMER PEAK: 2007 SOUTHWEST POWER POOL, INC.; RED DYN
FILE: FLT_10_1PH.OUT
CHNL# 161: [POWR BUS 99995 MACH '1 ']
CHNL# 160: [POWR BUS 90521 MACH '1 ']
CHNL# 158: [POWR BUS 90026 MACH '1 ']
CHNL# 157: [POWR BUS 90022 MACH '1 ']
CHNL# 156: [POWR BUS 90021 MACH '1 ']
CHNL# 155: [POWR BUS 90020 MACH '1 ']
TIME (SECONDS)
WED, JUL 30 2008 8:45
PRIOR QUEUED POWER

SPP MDWG 2007 STABILITY BASE CASE: STAB2-12S-30-RED 4-12-07
2012 SUMMER PEAK: 2007 SOUTHWEST POWER POOL, INC.; RED DYN
FILE: FLT_10_1PH.OUT
CHNL# 208: [SPD BUS 560041 MACH '1 ']
CHNL# 194: [ETRM BUS 560041 MACH '1 ']
CHNL# 166: [POWR BUS 560041 MACH '1 ']
TIME (SECONDS)
WED, JUL 30 2008 8:45
PROJ PELEC/ETRM/SPD

SPP MDWG 2007 STABILITY BASE CASE: STAB2-12S-30-RED 4-12-07
2012 SUMMER PEAK: 2007 SOUTHWEST POWER POOL, INC.; RED DYN
FILE: FLT_10_1PH.OUT
CHNL# 222: [VOLT 51490 [ELKCITY6 230.00]]
CHNL# 221: [VOLT 523771 [GRAPEVN6 230.00]]
CHNL# 186: [ETRM BUS 90026 MACH '1 ']
CHNL# 185: [ETRM BUS 90022 MACH '1 ']
CHNL# 184: [ETRM BUS 90021 MACH '1 ']
CHNL# 183: [ETRM BUS 90020 MACH '1 ']
TIME (SECONDS)
WED, JUL 30 2008 8:45
VOLTAGES

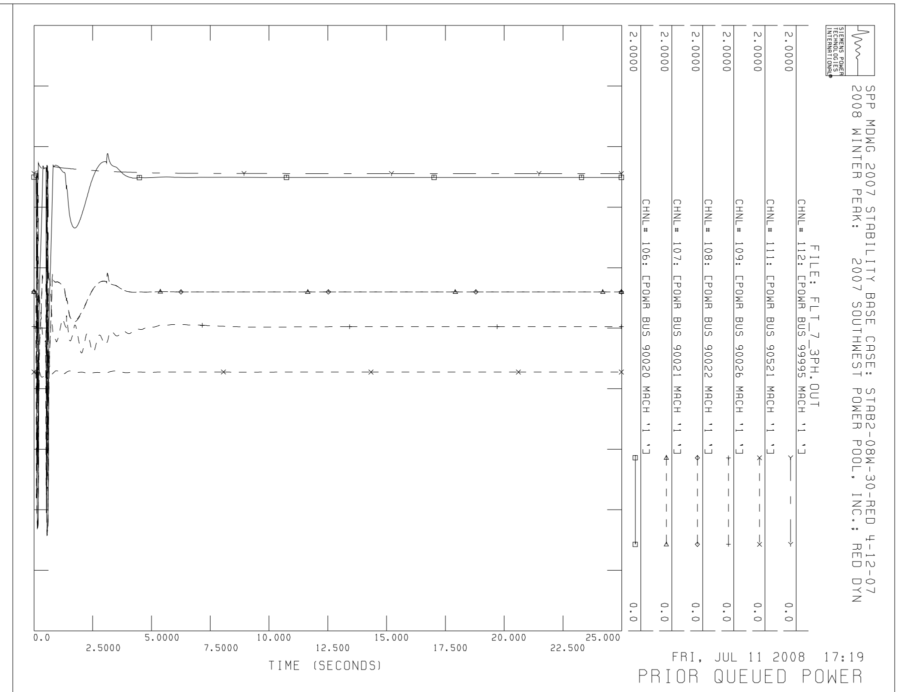
APPENDIX C.

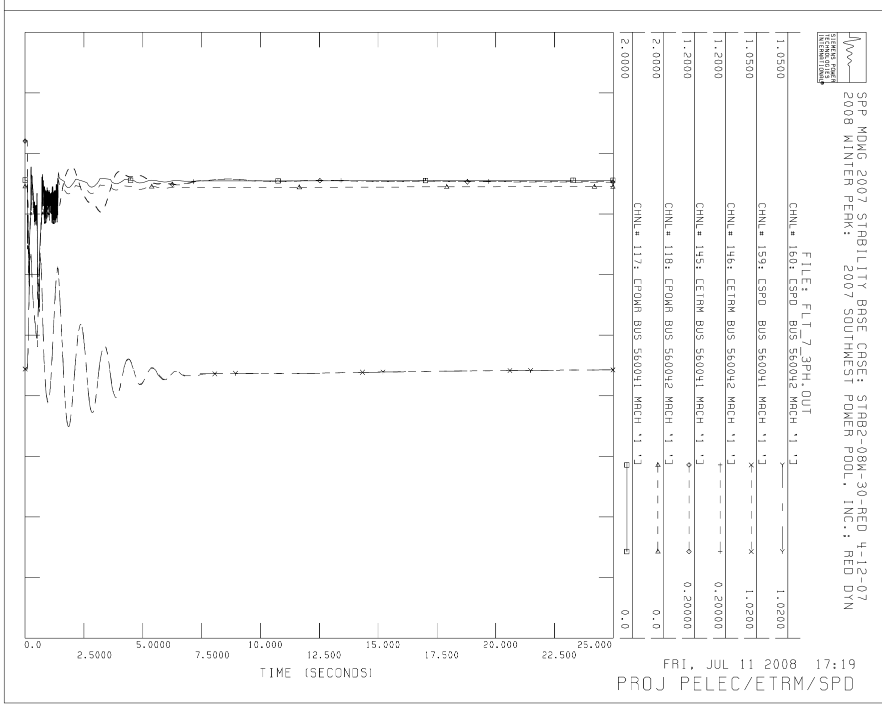
SELECTED STABILITY PLOTS – SCENARIO 3

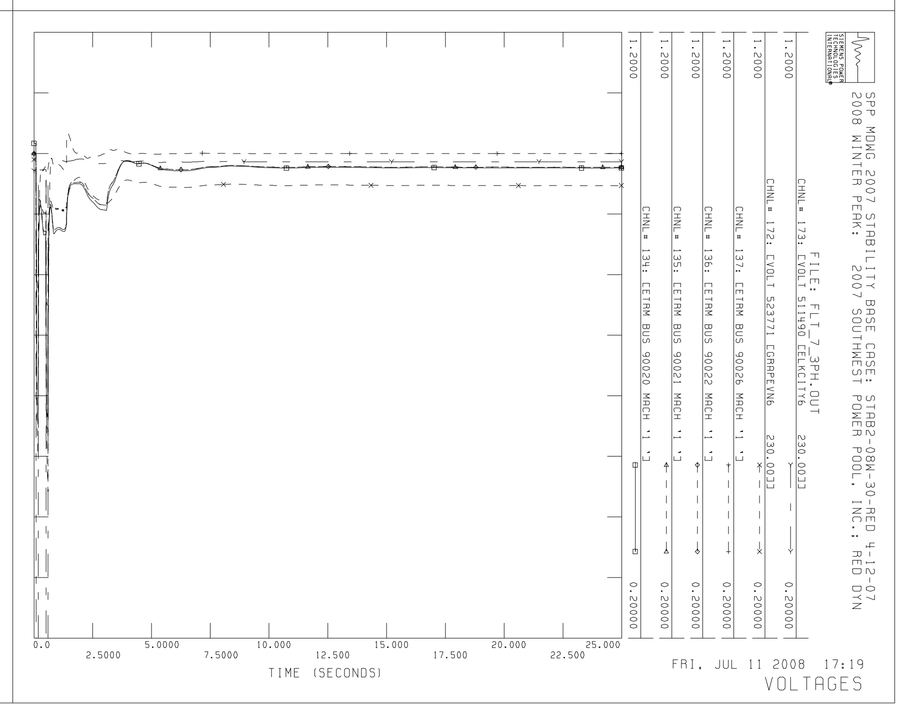
(Customer's 300 MW generation with 345 kV transmission system reinforcement)

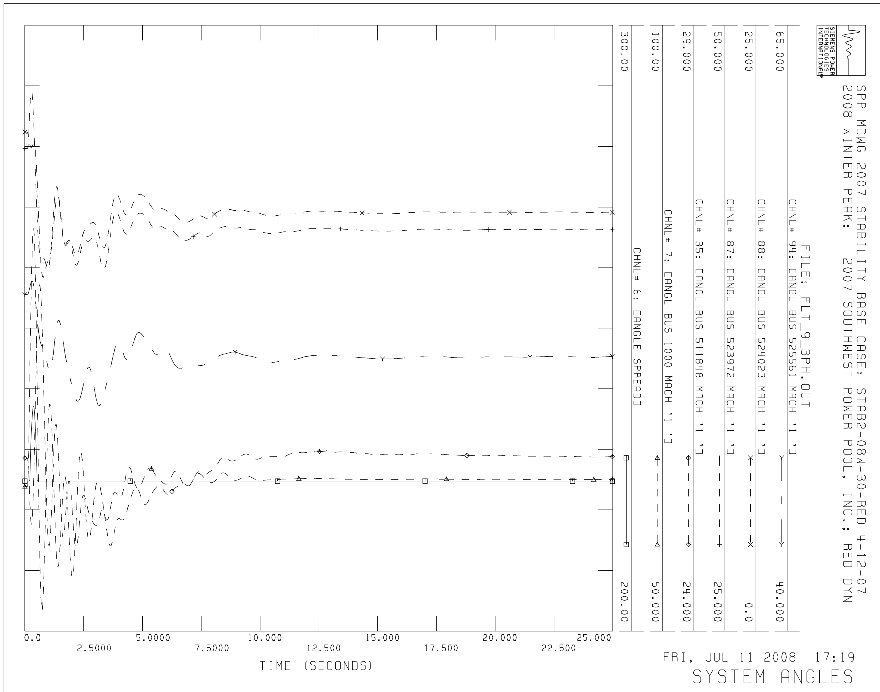
All plots available on request.

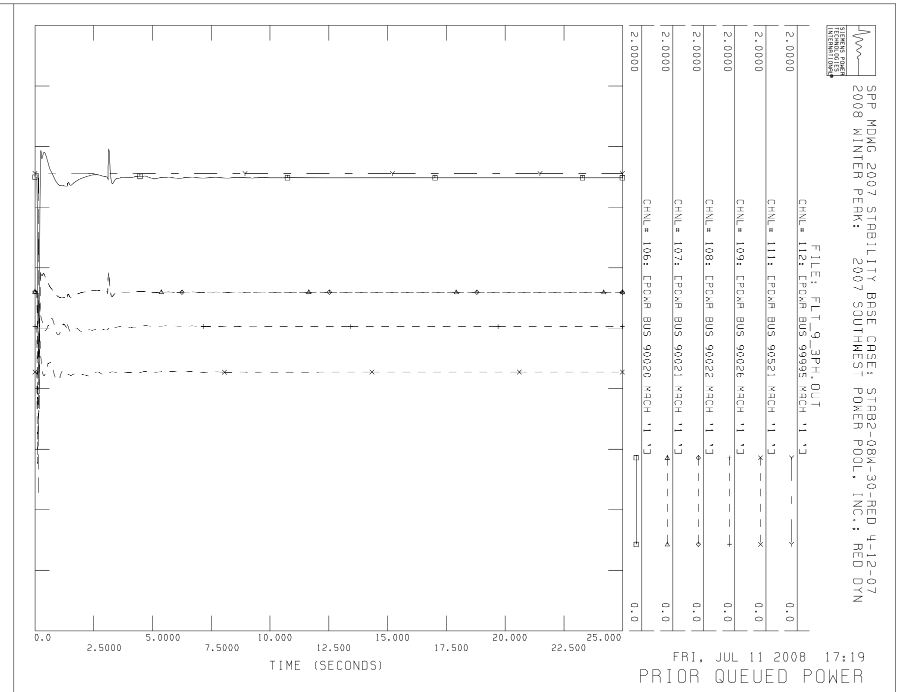

SPP MDWG 2007 STABILITY BASE CASE: STAB2-08W-30-RED 4-12-07
2008 WINTER PEAK: 2007 SOUTHWEST POWER POOL, INC.; RED DYN
FILE: FLT_7_3PH.OUT
CHNL# 94: [ANGL BUS 525561 MACH '1 ']
60.000 50.000
CHNL# 88: [ANGL BUS 524023 MACH '1 ']
30.000 20.000
CHNL# 87: [ANGL BUS 523972 MACH '1 ']
60.000 40.000
CHNL# 35: [ANGL BUS 511848 MACH '1 ']
27.000 22.000
CHNL# 7: [ANGL BUS 1000 MACH '1 ']
75.000 50.000
CHNL# 6: [ANGLE SPREAD]
300.00 200.00
0.0 2.5000 5.0000 7.5000 10.000 12.500 15.000 17.500 20.000 22.500 25.000
TIME (SECONDS)
FRI, JUL 11 2008 17:19
SYSTEM ANGLES


SPP MDWG 2007 STABILITY BASE CASE: STAB2-08W-30-RED 4-12-07
2008 WINTER PEAK: 2007 SOUTHWEST POWER POOL, INC.; RED DYN
FILE: FLT_7_3PH.OUT
CHNL# 112: [POWR BUS 99995 MACH '1 ']
2.0000 0.0
CHNL# 111: [POWR BUS 90521 MACH '1 ']
2.0000 0.0
CHNL# 109: [POWR BUS 90026 MACH '1 ']
2.0000 0.0
CHNL# 108: [POWR BUS 90022 MACH '1 ']
2.0000 0.0
CHNL# 107: [POWR BUS 90021 MACH '1 ']
2.0000 0.0
CHNL# 106: [POWR BUS 90020 MACH '1 ']
2.0000 0.0
0.0 2.5000 5.0000 7.5000 10.000 12.500 15.000 17.500 20.000 22.500 25.000
TIME (SECONDS)
FRI, JUL 11 2008 17:19
PRIOR QUEUED POWER


SPP MDWG 2007 STABILITY BASE CASE: STAB2-08W-30-RED 4-12-07
2008 WINTER PEAK: 2007 SOUTHWEST POWER POOL, INC.; RED DYN
FILE: FLT_7_3PH.OUT
CHNL# 160: [SPD BUS 560042 MACH '1 ']
1.0500 1.0200
CHNL# 159: [SPD BUS 560041 MACH '1 ']
1.0500 1.0200
CHNL# 146: [ETRM BUS 560042 MACH '1 ']
1.2000 0.20000
CHNL# 145: [ETRM BUS 560041 MACH '1 ']
1.2000 0.20000
CHNL# 118: [POWR BUS 560042 MACH '1 ']
2.0000 0.0
CHNL# 117: [POWR BUS 560041 MACH '1 ']
2.0000 0.0
0.0 2.5000 5.0000 7.5000 10.000 12.500 15.000 17.500 20.000 22.500 25.000
TIME (SECONDS)
FRI, JUL 11 2008 17:19
PROJ PELEC/ETRM/SPD


SPP MDWG 2007 STABILITY BASE CASE: STAB2-08W-30-RED 4-12-07
2008 WINTER PEAK: 2007 SOUTHWEST POWER POOL, INC.; RED DYN
FILE: FLT_7_3PH.OUT
CHNL# 173: [VOLT 511490 [ELKCITY6 230.00]]
1.2000 0.20000
CHNL# 172: [VOLT 523771 [GRAPEVN6 230.00]]
1.2000 0.20000
CHNL# 137: [ETRM BUS 90026 MACH '1 ']
1.2000 0.20000
CHNL# 136: [ETRM BUS 90022 MACH '1 ']
1.2000 0.20000
CHNL# 135: [ETRM BUS 90021 MACH '1 ']
1.2000 0.20000
CHNL# 134: [ETRM BUS 90020 MACH '1 ']
1.2000 0.20000
0.0 2.5000 5.0000 7.5000 10.000 12.500 15.000 17.500 20.000 22.500 25.000
TIME (SECONDS)
FRI, JUL 11 2008 17:19
VOLTAGES


SPP MDWG 2007 STABILITY BASE CASE: STAB2-08W-30-RED 4-12-07
2008 WINTER PEAK: 2007 SOUTHWEST POWER POOL, INC.; RED DYN
FILE: FLT_9_3PH.OUT
CHNL# 94: [ANGL BUS 525561 MACH '1 '] 65.000 40.000
CHNL# 88: [ANGL BUS 524023 MACH '1 '] 25.000 0.0
CHNL# 87: [ANGL BUS 523972 MACH '1 '] 50.000 25.000
CHNL# 35: [ANGL BUS 511848 MACH '1 '] 29.000 24.000
CHNL# 7: [ANGL BUS 1000 MACH '1 '] 100.00 50.000
CHNL# 6: [ANGLE SPREAD] 300.00 200.00
0.0 2.5000 5.0000 7.5000 10.000 12.500 15.000 17.500 20.000 22.500 25.000
TIME (SECONDS)
FRI, JUL 11 2008 17:19
SYSTEM ANGLES


SPP MDWG 2007 STABILITY BASE CASE: STAB2-08W-30-RED 4-12-07
2008 WINTER PEAK: 2007 SOUTHWEST POWER POOL, INC.; RED DYN
FILE: FLT_9_3PH.OUT
CHNL# 112: [POWR BUS 99995 MACH '1 '] 2.0000 0.0
CHNL# 111: [POWR BUS 90521 MACH '1 '] 2.0000 0.0
CHNL# 109: [POWR BUS 90026 MACH '1 '] 2.0000 0.0
CHNL# 108: [POWR BUS 90022 MACH '1 '] 2.0000 0.0
CHNL# 107: [POWR BUS 90021 MACH '1 '] 2.0000 0.0
CHNL# 106: [POWR BUS 90020 MACH '1 '] 2.0000 0.0
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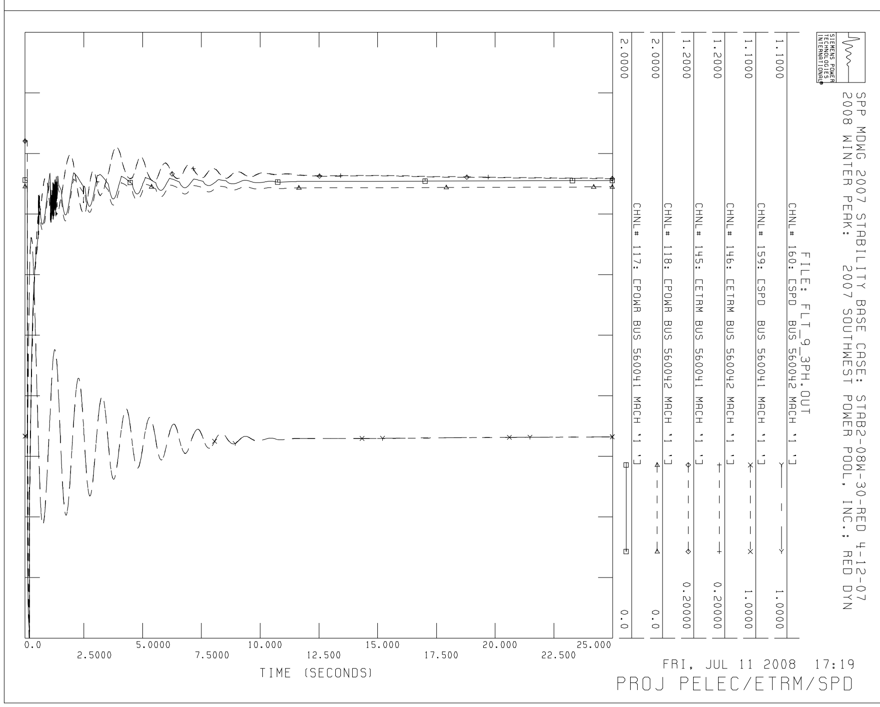
TIME (SECONDS)
FRI, JUL 11 2008 17:19
PRIOR QUEUED POWER


SPP MDWG 2007 STABILITY BASE CASE: STAB2-08W-30-RED 4-12-07
2008 WINTER PEAK: 2007 SOUTHWEST POWER POOL, INC.; RED DYN
FILE: FLT_9_3PH.OUT
CHNL# 160: [SPD BUS 560042 MACH '1 '] 1.1000 1.0000
CHNL# 159: [SPD BUS 560041 MACH '1 '] 1.1000 1.0000
CHNL# 146: [ETRM BUS 560042 MACH '1 '] 1.2000 0.20000
CHNL# 145: [ETRM BUS 560041 MACH '1 '] 1.2000 0.20000
CHNL# 118: [POWR BUS 560042 MACH '1 '] 2.0000 0.0
CHNL# 117: [POWR BUS 560041 MACH '1 '] 2.0000 0.0
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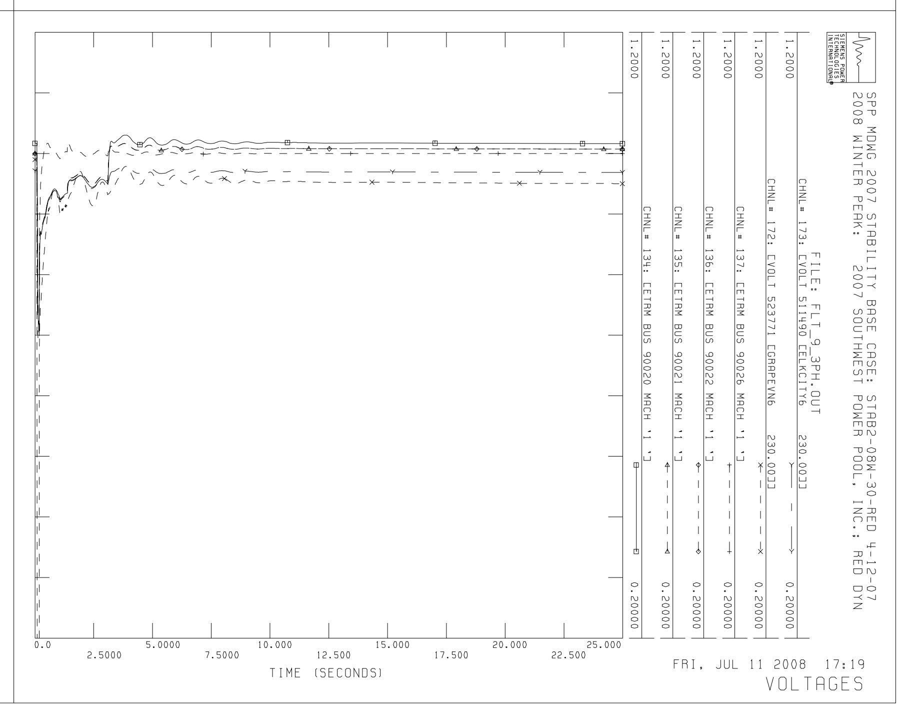
TIME (SECONDS)
FRI, JUL 11 2008 17:19
PROJ PELEC/ETRM/SPD


SPP MDWG 2007 STABILITY BASE CASE: STAB2-08W-30-RED 4-12-07
2008 WINTER PEAK: 2007 SOUTHWEST POWER POOL, INC.; RED DYN
FILE: FLT_9_3PH.OUT
CHNL# 173: [VOLT 51490 CELKCITY6 230.00] 1.2000 0.20000
CHNL# 172: [VOLT 523771 CGRAPEVN6 230.00] 1.2000 0.20000
CHNL# 137: [ETRM BUS 90026 MACH '1 '] 1.2000 0.20000
CHNL# 136: [ETRM BUS 90022 MACH '1 '] 1.2000 0.20000
CHNL# 135: [ETRM BUS 90021 MACH '1 '] 1.2000 0.20000
CHNL# 134: [ETRM BUS 90020 MACH '1 '] 1.2000 0.20000
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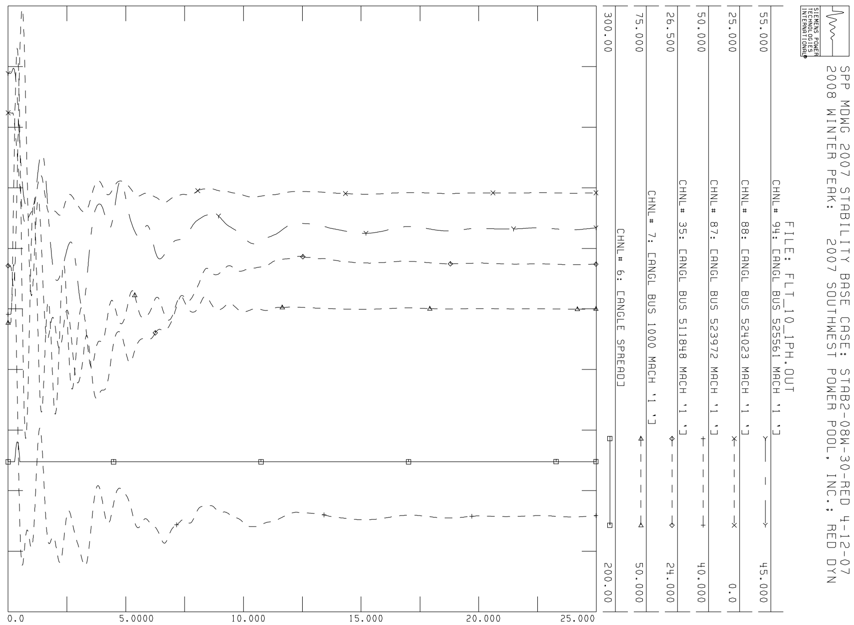
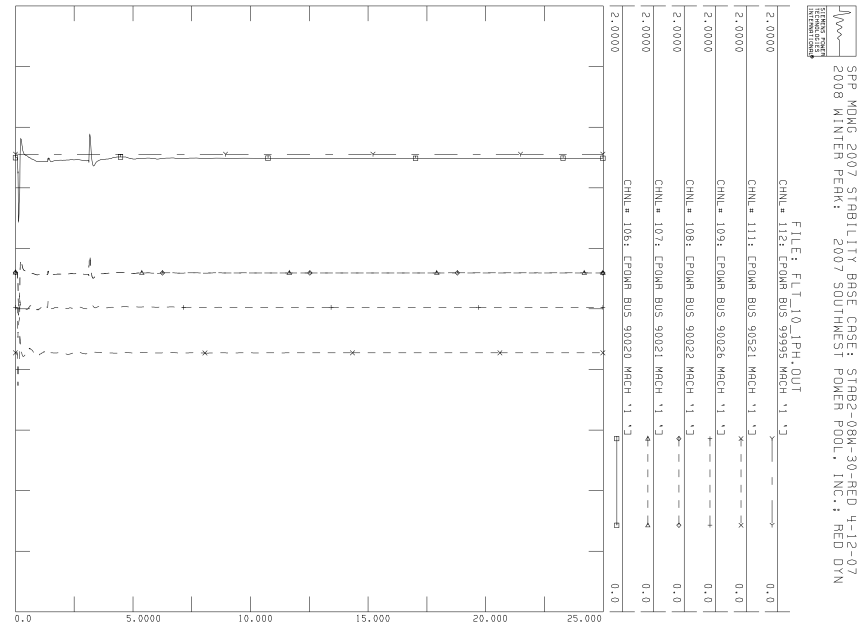
TIME (SECONDS)
FRI, JUL 11 2008 17:19
VOLTAGES



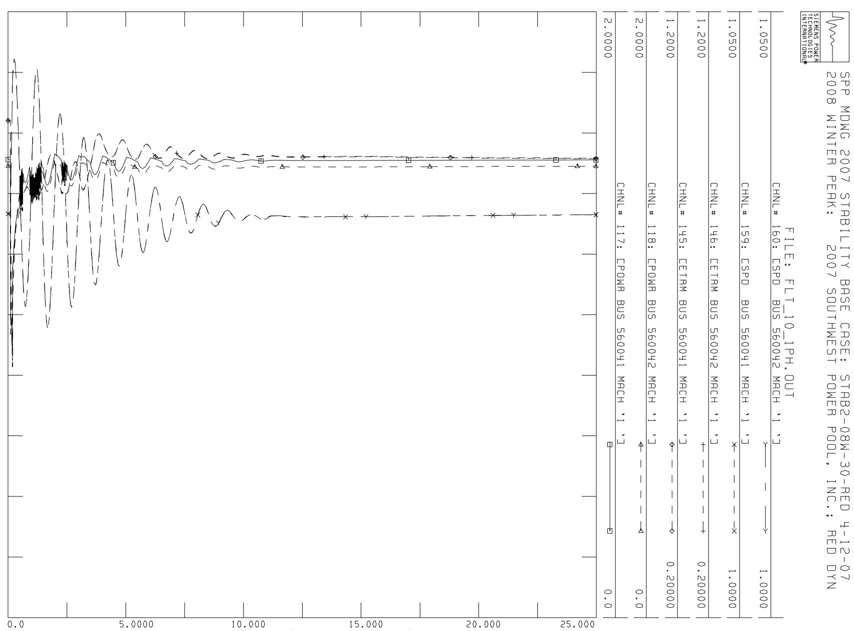
FRI, JUL 11 2008 17:19

SYSTEM ANGLES



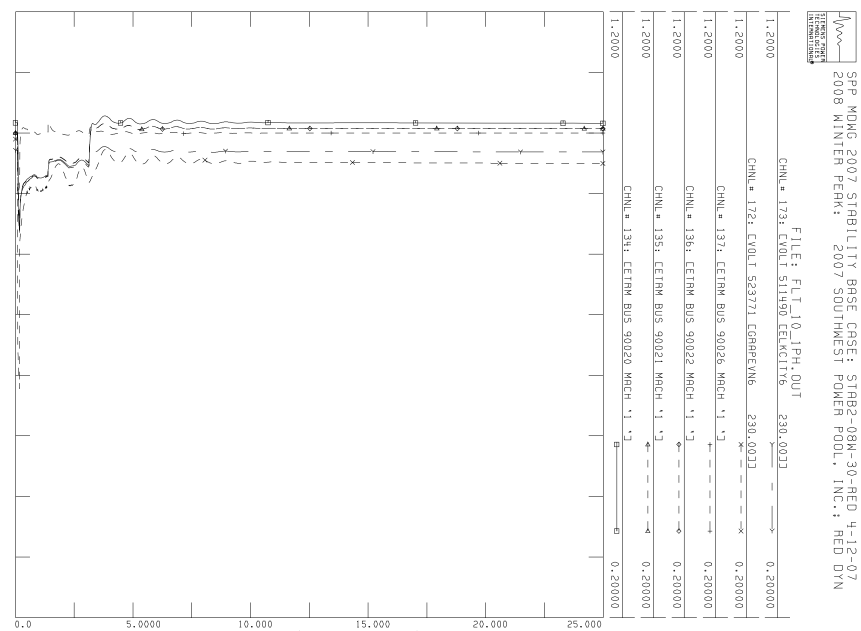
FRI, JUL 11 2008 17:19

PRIOR QUEUED POWER



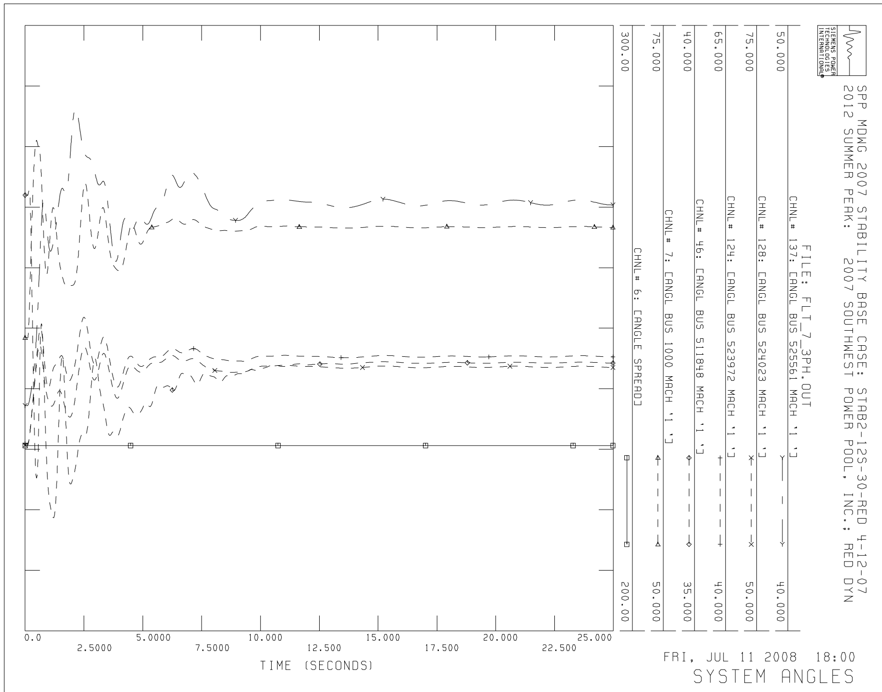
FRI, JUL 11 2008 17:19

PROJ PELEC/ETRM/SPD

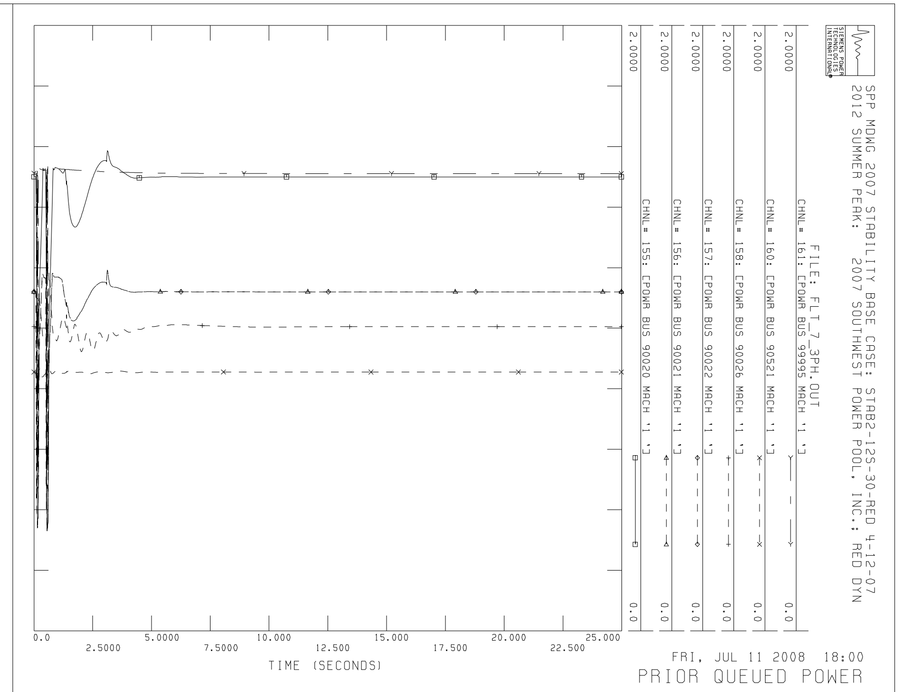


FRI, JUL 11 2008 17:19

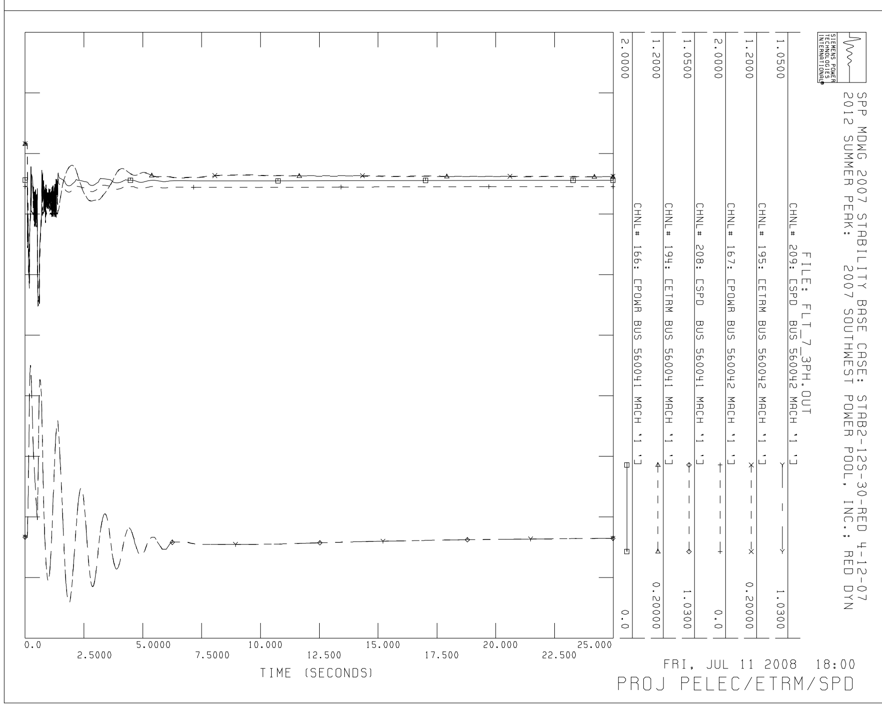
VOLTAGES



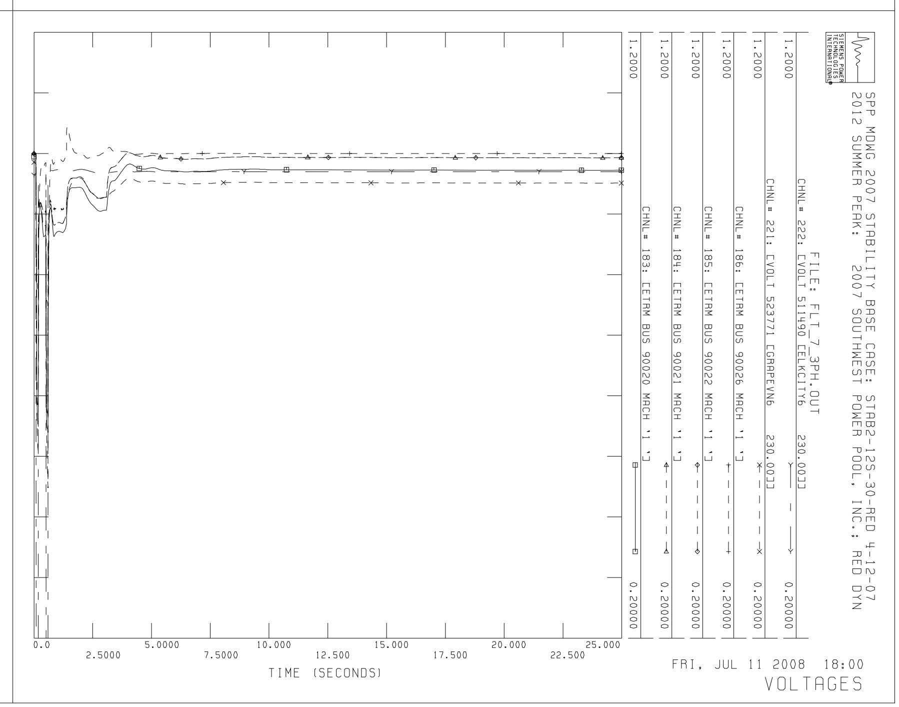
SPP MDWG 2007 STABILITY BASE CASE: STAB2-12S-30-RED 4-12-07
2012 SUMMER PEAK: 2007 SOUTHWEST POWER POOL, INC.; RED DYN
FILE: FLT_7_3PH.OUT
CHNL# 137: [ANGL BUS 525561 MACH '1 '] 50.000 40.000
CHNL# 128: [ANGL BUS 524023 MACH '1 '] 75.000 50.000
CHNL# 124: [ANGL BUS 523972 MACH '1 '] 65.000 40.000
CHNL# 46: [ANGL BUS 511848 MACH '1 '] 40.000 35.000
CHNL# 7: [ANGL BUS 1000 MACH '1 '] 75.000 50.000
CHNL# 6: [ANGLE SPREAD] 300.00 200.00
0.0 2.5000 5.0000 7.5000 10.000 12.500 15.000 17.500 20.000 22.500 25.000
TIME (SECONDS)
FRI, JUL 11 2008 18:00
SYSTEM ANGLES



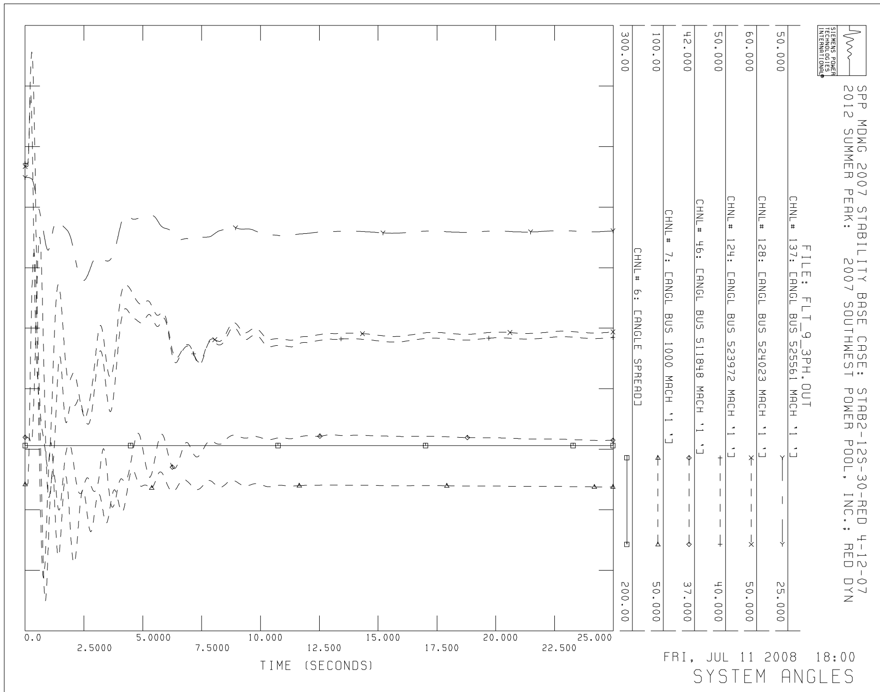
SPP MDWG 2007 STABILITY BASE CASE: STAB2-12S-30-RED 4-12-07
2012 SUMMER PEAK: 2007 SOUTHWEST POWER POOL, INC.; RED DYN
FILE: FLT_7_3PH.OUT
CHNL# 161: [POWR BUS 99995 MACH '1 '] 2.0000 0.0
CHNL# 160: [POWR BUS 90521 MACH '1 '] 2.0000 0.0
CHNL# 158: [POWR BUS 90026 MACH '1 '] 2.0000 0.0
CHNL# 157: [POWR BUS 90022 MACH '1 '] 2.0000 0.0
CHNL# 156: [POWR BUS 90021 MACH '1 '] 2.0000 0.0
CHNL# 155: [POWR BUS 90020 MACH '1 '] 2.0000 0.0
0.0 2.5000 5.0000 7.5000 10.000 12.500 15.000 17.500 20.000 22.500 25.000
TIME (SECONDS)
FRI, JUL 11 2008 18:00
PRIOR QUEUED POWER



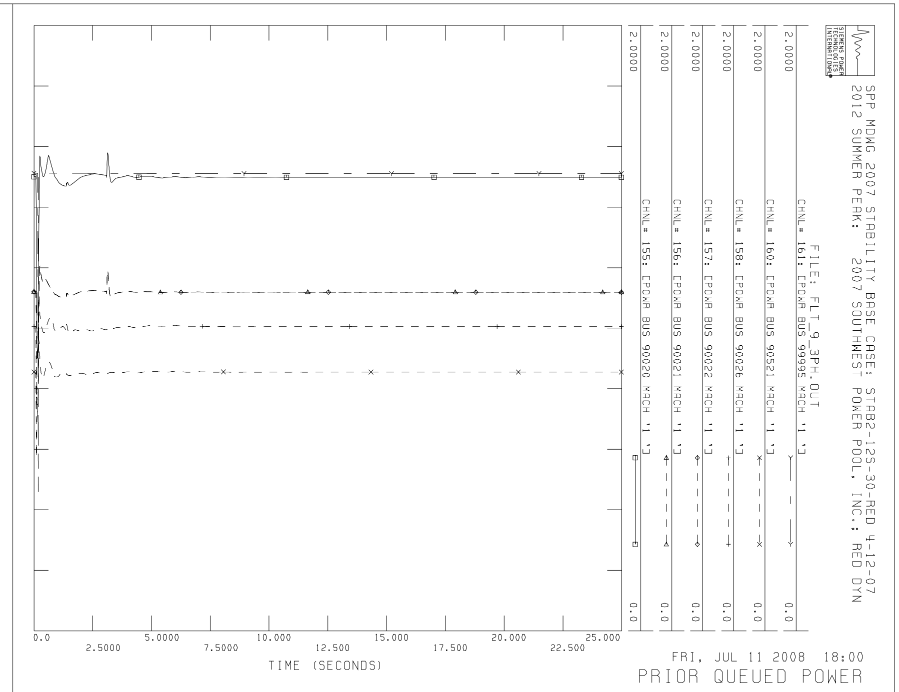
SPP MDWG 2007 STABILITY BASE CASE: STAB2-12S-30-RED 4-12-07
2012 SUMMER PEAK: 2007 SOUTHWEST POWER POOL, INC.; RED DYN
FILE: FLT_7_3PH.OUT
CHNL# 209: [SPD BUS 560042 MACH '1 '] 1.0500 1.0300
CHNL# 195: [ETRM BUS 560042 MACH '1 '] 1.2000 0.20000
CHNL# 167: [POWR BUS 560042 MACH '1 '] 2.0000 0.0
CHNL# 208: [SPD BUS 560041 MACH '1 '] 1.0500 1.0300
CHNL# 194: [ETRM BUS 560041 MACH '1 '] 1.2000 0.20000
CHNL# 166: [POWR BUS 560041 MACH '1 '] 2.0000 0.0
0.0 2.5000 5.0000 7.5000 10.000 12.500 15.000 17.500 20.000 22.500 25.000
TIME (SECONDS)
FRI, JUL 11 2008 18:00
PROJ PELEC/ETRM/SPD



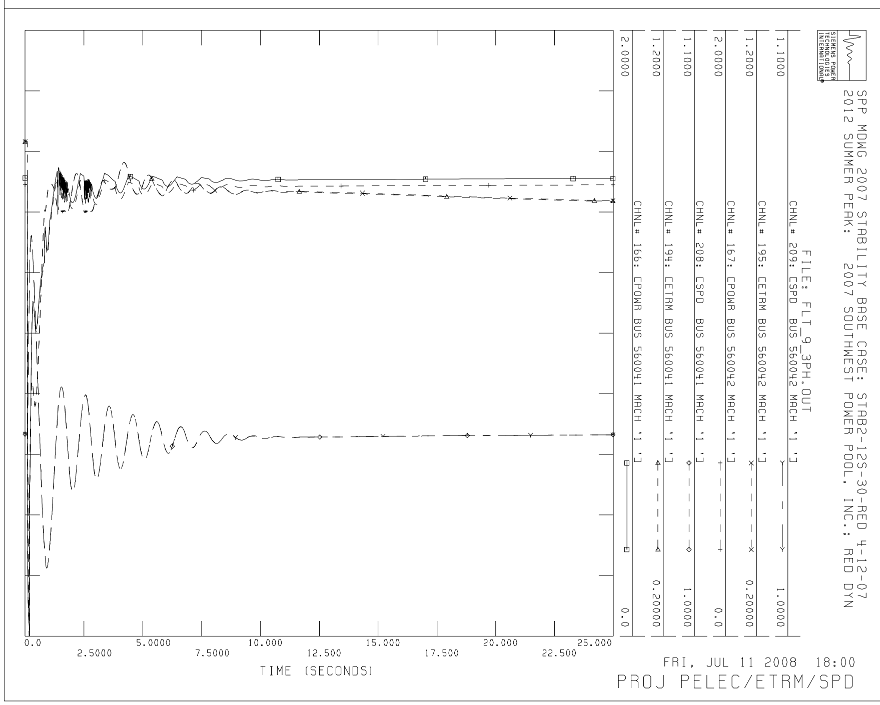
SPP MDWG 2007 STABILITY BASE CASE: STAB2-12S-30-RED 4-12-07
2012 SUMMER PEAK: 2007 SOUTHWEST POWER POOL, INC.; RED DYN
FILE: FLT_7_3PH.OUT
CHNL# 222: [VOLT 51490 [ELKCITY6 230.00]] 1.2000 0.20000
CHNL# 221: [VOLT 52371 [GRAPEVN6 230.00]] 1.2000 0.20000
CHNL# 186: [ETRM BUS 90026 MACH '1 '] 1.2000 0.20000
CHNL# 185: [ETRM BUS 90022 MACH '1 '] 1.2000 0.20000
CHNL# 184: [ETRM BUS 90021 MACH '1 '] 1.2000 0.20000
CHNL# 183: [ETRM BUS 90020 MACH '1 '] 1.2000 0.20000
0.0 2.5000 5.0000 7.5000 10.000 12.500 15.000 17.500 20.000 22.500 25.000
TIME (SECONDS)
FRI, JUL 11 2008 18:00
VOLTAGES



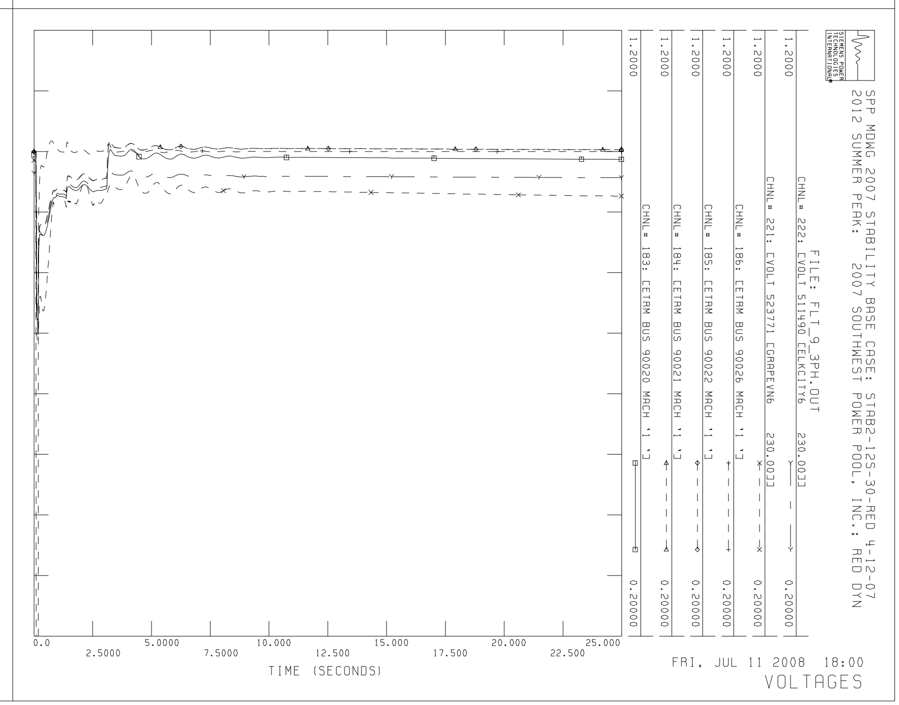
SPP MDWG 2007 STABILITY BASE CASE: STAB2-12S-30-RED 4-12-07
2012 SUMMER PEAK: 2007 SOUTHWEST POWER POOL, INC.; RED DYN
FILE: FLT_9_3PH.OUT
CHNL# 137: CANGL BUS 525561 MACH '1 ' 50.000 25.000
CHNL# 128: CANGL BUS 524023 MACH '1 ' 60.000 50.000
CHNL# 124: CANGL BUS 523972 MACH '1 ' 50.000 40.000
CHNL# 46: CANGL BUS 511448 MACH '1 ' 42.000 37.000
CHNL# 7: CANGL BUS 1000 MACH '1 ' 100.00 50.000
CHNL# 6: CANGLE SPREAD 300.00 200.00
0.0 2.5000 5.0000 7.5000 10.000 12.500 15.000 17.500 20.000 22.500 25.000
TIME (SECONDS)
FRI, JUL 11 2008 18:00
SYSTEM ANGLES



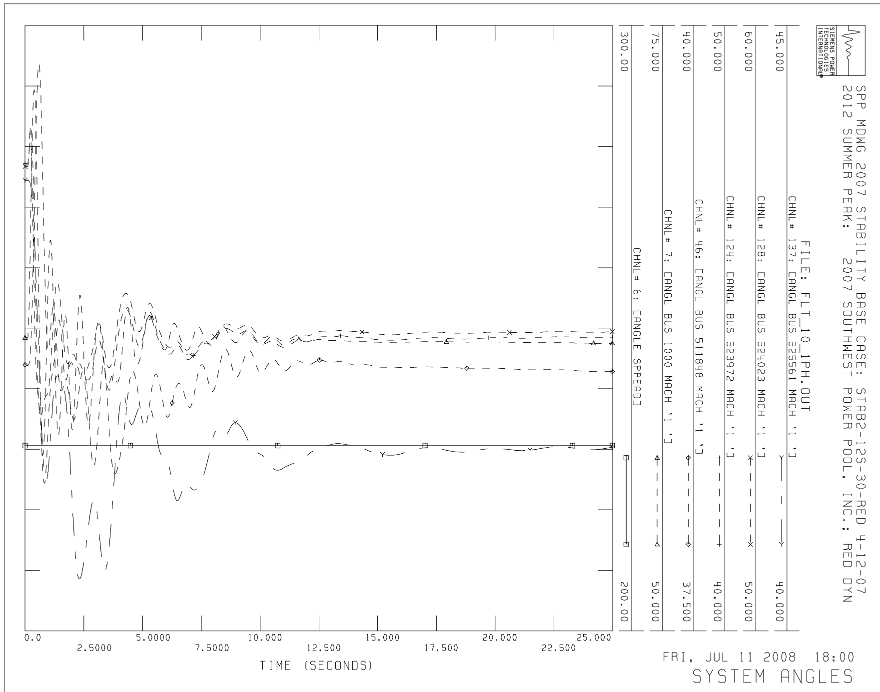
SPP MDWG 2007 STABILITY BASE CASE: STAB2-12S-30-RED 4-12-07
2012 SUMMER PEAK: 2007 SOUTHWEST POWER POOL, INC.; RED DYN
FILE: FLT_9_3PH.OUT
CHNL# 161: CPOWR BUS 99995 MACH '1 ' 2.0000 0.0
CHNL# 160: CPOWR BUS 90521 MACH '1 ' 2.0000 0.0
CHNL# 158: CPOWR BUS 90026 MACH '1 ' 2.0000 0.0
CHNL# 157: CPOWR BUS 90022 MACH '1 ' 2.0000 0.0
CHNL# 156: CPOWR BUS 90021 MACH '1 ' 2.0000 0.0
CHNL# 155: CPOWR BUS 90020 MACH '1 ' 2.0000 0.0
0.0 2.5000 5.0000 7.5000 10.000 12.500 15.000 17.500 20.000 22.500 25.000
TIME (SECONDS)
FRI, JUL 11 2008 18:00
PRIOR QUEUED POWER



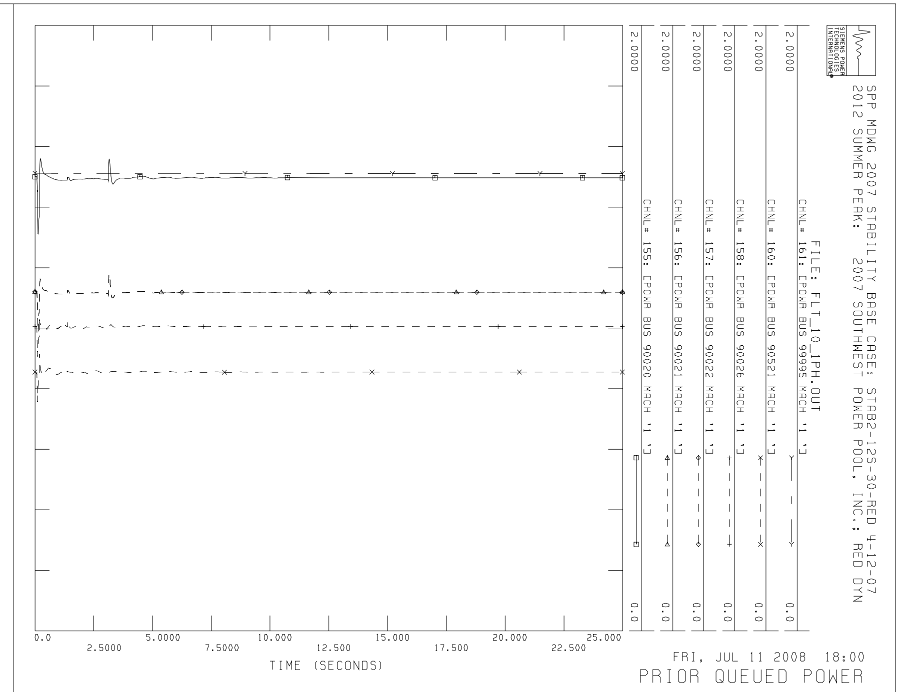
SPP MDWG 2007 STABILITY BASE CASE: STAB2-12S-30-RED 4-12-07
2012 SUMMER PEAK: 2007 SOUTHWEST POWER POOL, INC.; RED DYN
FILE: FLT_9_3PH.OUT
CHNL# 209: CSPD BUS 560042 MACH '1 ' 1.1000 1.0000
CHNL# 195: CETRM BUS 560042 MACH '1 ' 1.2000 0.20000
CHNL# 167: CPOWR BUS 560042 MACH '1 ' 2.0000 0.0
CHNL# 208: CSPD BUS 560041 MACH '1 ' 1.1000 1.0000
CHNL# 194: CETRM BUS 560041 MACH '1 ' 1.2000 0.20000
CHNL# 166: CPOWR BUS 560041 MACH '1 ' 2.0000 0.0
0.0 2.5000 5.0000 7.5000 10.000 12.500 15.000 17.500 20.000 22.500 25.000
TIME (SECONDS)
FRI, JUL 11 2008 18:00
PROJ PELEC/ETRM/SPD



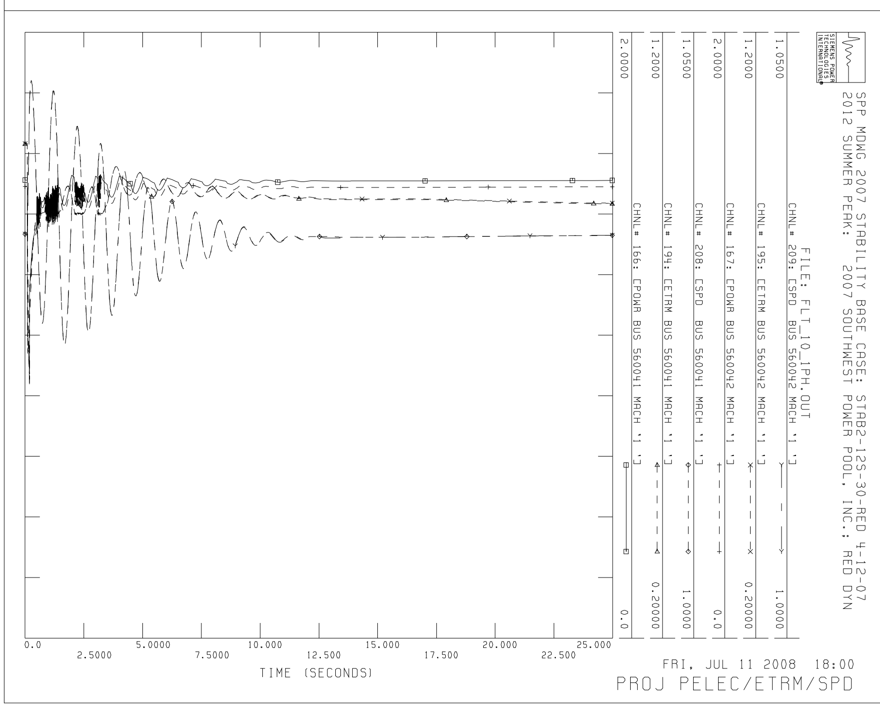
SPP MDWG 2007 STABILITY BASE CASE: STAB2-12S-30-RED 4-12-07
2012 SUMMER PEAK: 2007 SOUTHWEST POWER POOL, INC.; RED DYN
FILE: FLT_9_3PH.OUT
CHNL# 222: CVOLT 51490 CELKCITY6 230.00] 1.2000 0.20000
CHNL# 221: CVOLT 52371 CGRAPEVN6 230.00] 1.2000 0.20000
CHNL# 186: CETRM BUS 90026 MACH '1 ' 1.2000 0.20000
CHNL# 185: CETRM BUS 90022 MACH '1 ' 1.2000 0.20000
CHNL# 184: CETRM BUS 90021 MACH '1 ' 1.2000 0.20000
CHNL# 183: CETRM BUS 90020 MACH '1 ' 1.2000 0.20000
0.0 2.5000 5.0000 7.5000 10.000 12.500 15.000 17.500 20.000 22.500 25.000
TIME (SECONDS)
FRI, JUL 11 2008 18:00
VOLTAGES



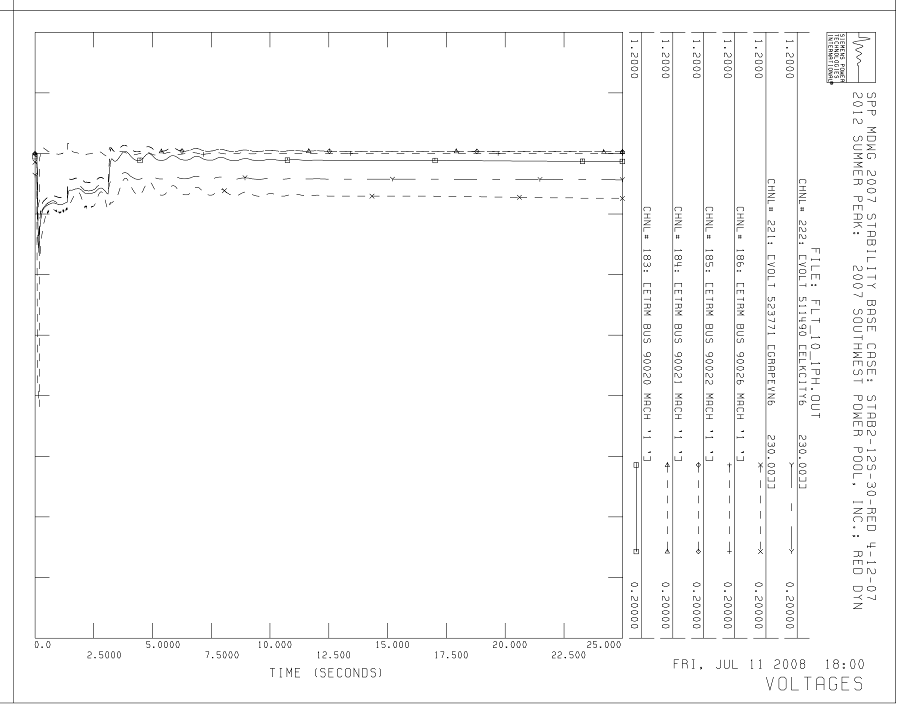
SPP MDWG 2007 STABILITY BASE CASE: STAB2-12S-30-RED 4-12-07
2012 SUMMER PEAK: 2007 SOUTHWEST POWER POOL, INC.; RED DYN
FILE: FLT_10_1PH.OUT
CHNL# 137: [ANGL BUS 525561 MACH '1 '] 45.000 40.000
CHNL# 128: [ANGL BUS 524023 MACH '1 '] 60.000 50.000
CHNL# 124: [ANGL BUS 523972 MACH '1 '] 50.000 40.000
CHNL# 46: [ANGL BUS 511848 MACH '1 '] 40.000 37.500
CHNL# 7: [ANGL BUS 1000 MACH '1 '] 75.000 50.000
CHNL# 6: [ANGLE SPREAD] 300.00 200.00
0.0 2.5000 5.0000 7.5000 10.000 12.500 15.000 17.500 20.000 22.500 25.000
TIME (SECONDS)
FRI, JUL 11 2008 18:00
SYSTEM ANGLES



SPP MDWG 2007 STABILITY BASE CASE: STAB2-12S-30-RED 4-12-07
2012 SUMMER PEAK: 2007 SOUTHWEST POWER POOL, INC.; RED DYN
FILE: FLT_10_1PH.OUT
CHNL# 161: [POWR BUS 99995 MACH '1 '] 2.0000 0.0
CHNL# 160: [POWR BUS 90521 MACH '1 '] 2.0000 0.0
CHNL# 158: [POWR BUS 90026 MACH '1 '] 2.0000 0.0
CHNL# 157: [POWR BUS 90022 MACH '1 '] 2.0000 0.0
CHNL# 156: [POWR BUS 90021 MACH '1 '] 2.0000 0.0
CHNL# 155: [POWR BUS 90020 MACH '1 '] 2.0000 0.0
0.0 2.5000 5.0000 7.5000 10.000 12.500 15.000 17.500 20.000 22.500 25.000
TIME (SECONDS)
FRI, JUL 11 2008 18:00
PRIOR QUEUED POWER



SPP MDWG 2007 STABILITY BASE CASE: STAB2-12S-30-RED 4-12-07
2012 SUMMER PEAK: 2007 SOUTHWEST POWER POOL, INC.; RED DYN
FILE: FLT_10_1PH.OUT
CHNL# 209: [SPD BUS 560042 MACH '1 '] 1.0500 1.0000
CHNL# 195: [ETRM BUS 560042 MACH '1 '] 1.2000 0.20000
CHNL# 167: [POWR BUS 560042 MACH '1 '] 2.0000 0.0
CHNL# 208: [SPD BUS 560041 MACH '1 '] 1.0500 1.0000
CHNL# 194: [ETRM BUS 560041 MACH '1 '] 1.2000 0.20000
CHNL# 166: [POWR BUS 560041 MACH '1 '] 2.0000 0.0
0.0 2.5000 5.0000 7.5000 10.000 12.500 15.000 17.500 20.000 22.500 25.000
TIME (SECONDS)
FRI, JUL 11 2008 18:00
PROJ PELEC/ETRM/SPD

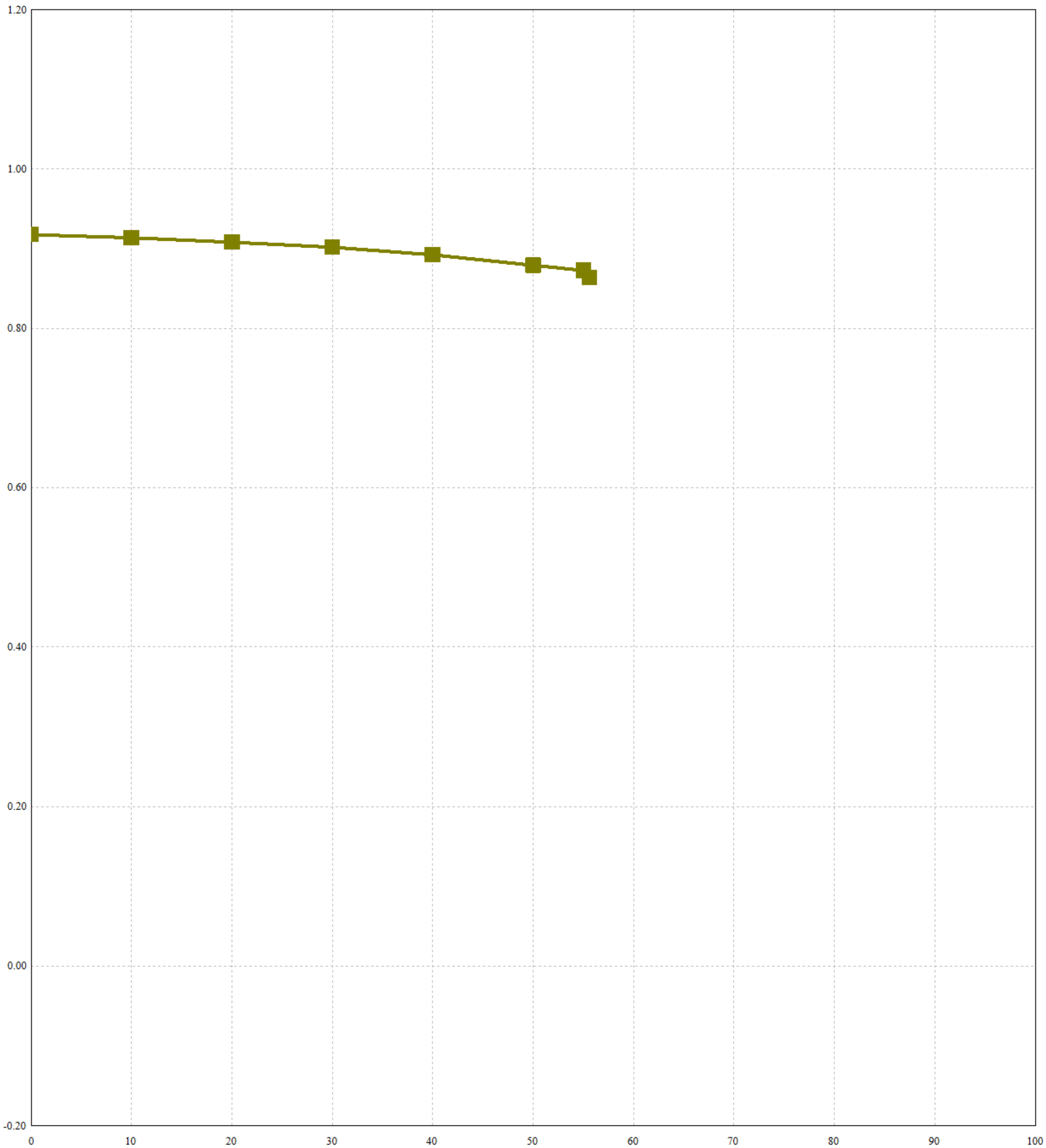


SPP MDWG 2007 STABILITY BASE CASE: STAB2-12S-30-RED 4-12-07
2012 SUMMER PEAK: 2007 SOUTHWEST POWER POOL, INC.; RED DYN
FILE: FLT_10_1PH.OUT
CHNL# 222: [VOLT 51490 [ELKCITY6 230.00]] 1.2000 0.20000
CHNL# 221: [VOLT 52371 [GRAPEVN6 230.00]] 1.2000 0.20000
CHNL# 186: [ETRM BUS 90026 MACH '1 '] 1.2000 0.20000
CHNL# 185: [ETRM BUS 90022 MACH '1 '] 1.2000 0.20000
CHNL# 184: [ETRM BUS 90021 MACH '1 '] 1.2000 0.20000
CHNL# 183: [ETRM BUS 90020 MACH '1 '] 1.2000 0.20000
0.0 2.5000 5.0000 7.5000 10.000 12.500 15.000 17.500 20.000 22.500 25.000
TIME (SECONDS)
FRI, JUL 11 2008 18:00
VOLTAGES

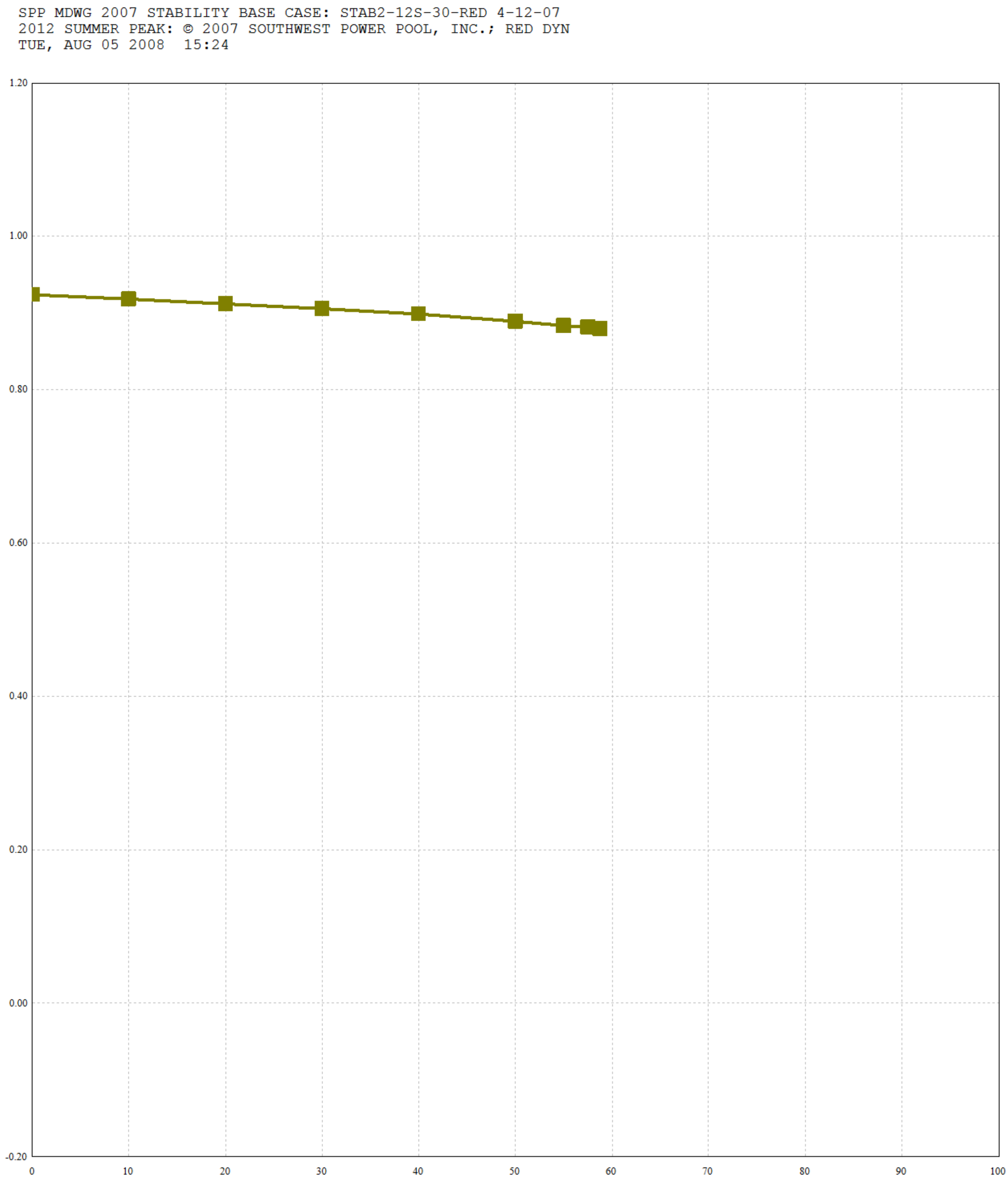
APPENDIX D.

PV GRAPH OF MAXIMUM POWER THAT CAN BE DISPATCHED INTO POI WITHOUT NETWORK REINFORCEMTENTS (CONTINGENCY FLT_7_3PH)

SPP MDWG 2007 STABILITY BASE CASE: STAB2-08W-30-RED 4-12-07
2008 WINTER PEAK: © 2007 SOUTHWEST POWER POOL, INC.; RED DYN
TUE, AUG 05 2008 14:12



PV Graph for 2008 Winter Peak – Maximum transfer is 55.63 MW



PV Graph for 2012 Summer Peak – Maximum transfer is 58.75 MW