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December 1, 2006

Ms. Judy Nickel
Operations Engineering & Maintenance
CAISO
151 Blue Ravine Road
Folsom, CA 95630

Re: DESB Revised FINAL Interconnection Facilities Study Report

Dear Ms. Nickel:

Pursuant to the Interconnection Facilities Study Agreement dated December 13, 2005 between Duke Energy South Bay, LLC ("DESB") and San Diego Gas & Electric Company ("SDG&E"), SDG&E provides the attached Revised FINAL Interconnection Facilities Study Report dated December 1, 2006.

If you have any questions or comments, please contact me at 858-654-1799.

Sincerely,

(Original Signed)

Rodney D. Winter
Senior Energy Administrator

Attachment: Revised FINAL Interconnection Facilities Study Report Draft dated
December 1, 2006

cc: L. P. Brown
M. Mishler
M. Turner
J. Walsh

J. Baranowski
A. Amirali (LS Power)



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"In accordance with the "Non-Disclosure and Use of Information Agreement" (the "Agreement") between SDG&E and the CAISO, the CAISO must cause each of its employees who will have access to this confidential information to acknowledge that they have read the Agreement and agree to abide by all of its terms regarding use and disclosure of this confidential information, and must cause such persons to execute Individual Agreements in the form attached as Attachment A to the "Agreement."

Project Developer
Duke Energy South Bay, LLC

Project Name
Duke Energy South Bay, LLC

INTERCONNECTION FACILITIES STUDY

Final Report
Revision 1

December 1, 2006

Study Performed for Duke Energy South Bay, LLC
By San Diego Gas & Electric Company

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EXECUTIVE SUMMARY

PROJECT DESCRIPTION

Duke Energy South Bay, LLC. (“Duke”) requested San Diego Gas & Electric Company (“SDG&E”) perform an Interconnection Facilities Study (the “Study”) to interconnect its new facility (“Project”) located at 990 Bay Blvd, Chula Vista, California. The proposed project is a 650 MW repower project that will replace the existing South Bay generation facilities. The proposed Project would be located west of Interstate 5 and south of the existing South Bay Power Plant (see Figure 1). The property is referred to as the former “LNG” property. Duke’s original application was received by the California Independent System Operator (“CAISO”) and was accepted by SDG&E and CAISO with an effective date of February 29, 2004.

PROJECT IN-SERVICE DATE

Duke’s application stated a proposed commercial operation date of January 2010. The anticipated testing date is August 2009 (see Permitting and Scheduling discussion in the Introduction and Objectives section).

INTERCONNECTION POINT

The generator interconnections would be at 69 kV, 138 kV, and 230 kV. The 69 kV and 138 kV transmission lines currently exist in the area and the 230 kV tie would be provided via SDG&E’s future 230 kV transmission line scheduled for construction in 2007. The 69, 138, 230 kV substation is presently contemplated to be located on property south of the existing South Bay Power Plant.

PROJECT CAPACITY

Duke’s application stated an interconnection net capacity of 650 MW (nominal rating) to the interconnection point. The Project includes two 165 MW gas turbines and one 320 MW steam turbine for a total 650 MW of net generation capacity.

INTERCONNECTION FACILITIES STUDY DESCRIPTION

This Study constitutes an “Interconnection Facilities Study” in accordance with the CAISO Tariff. CAISO will be responsible for approval of the final Study report provided to Duke and the recommended plan of service articulated in this report.

This Study includes power flow, transient stability, post-transient voltage stability, and short circuit analyses. In addition, an assessment of the impact this project may have on the tax-exempt status of interest on Local Furnishing Bonds is included. The Study identifies a transmission plan of service and provides corresponding cost estimates.

Duke requested a sensitivity study to the modeling of generation ahead of them in the CAISO Queue. The sensitivity modeled the Sycamore Canyon Combined Cycle (SCCC) project (also known as ENPEX) not dispatched. The following two scenarios were studied:

1. Sycamore Canyon Combined Cycle Project not dispatched.
2. Sycamore Canyon Combined Cycle Project dispatched to 750 MW.

INTERCONNECTION FACILITY STUDY CONCLUSIONS

The Study was conducted by applying the CAISO Grid Planning Criteria, which includes the WECC Reliability Criteria and the NERC Planning Standards.

As described, Duke requested a sensitivity to the generation ahead of them in the CAISO queue. There were two (2) NERC/CAISO Category B overloads caused by the addition of the Duke Project when SCCC was not dispatched. These overloads are the Sycamore Canyon – Miguel Tap 230 kV line, and Sycamore Canyon bank 70 230/69 kV transformer.

There were three (3) NERC/CAISO Category B overloads caused by the addition of the Duke Project when SCCC was dispatched to 750 MW. These overloads are Sycamore Canyon bank 70, Eastgate – Rose Canyon 69 kV line, and Sycamore Canyon – Carlton Hills Tap 138 kV line.

There will be no capital projects proposed for these overloads. Mitigations for these overloads are outlined in the power flow results section of this report.

The cost estimates to interconnect Duke's project are based on the use of AIS (air insulated substation) construction. At the time the Memorandum of Understanding between SDG&E and the City of Chula Vista was signed, SDG&E contemplated, for its own use in serving its customers, a relocated South Bay Substation comprising 230 kV/69 kV facilities. The footprint for the new substation, currently represented by Duke, does not appear to be sufficient to accommodate all necessary facilities using AIS construction for all three voltage levels. To accommodate the 138 kV facilities, SDG&E would need a larger substation footprint and the City would be obligated under the MOU to provide a larger parcel of land for these facilities. If the City does not provide an adequately sized footprint, it most likely will be necessary to construct the 230 kV switchyard using GIS (gas insulated substation) technology to accommodate all necessary interconnection facilities. SDG&E and Duke collaborated on a conceptual substation layout (Figure 2) using GIS equipment for the 230kV switchyard. If it is necessary to construct a 230 kV switchyard using GIS technology, the differential in cost between GIS construction and AIS construction would be the responsibility of Duke. SDG&E would request that Duke make an advance in aid of construction for this cost differential that would not be refundable.

All facilities required to directly interconnect the generators are considered Direct Assignment Facilities.

The use of the terms “Direct Assignment Facilities”, “Reliability Upgrades,” and “Delivery Upgrades” in this report are consistent with the definitions and uses of those terms in the CAISO Tariff currently in effect. Refer to Appendix A - Definitions for an explanation of terms¹.

The estimated cost to interconnect the Duke Project is \$63.4 million, consisting of Reliability Upgrades estimated at \$45 million and Direct Assignment Facilities estimated at \$18.4 million. Only the 230 kV facilities that must be constructed are being considered as Reliability Upgrades. The Direct Assignment Facilities estimate includes \$3 million to construct an interim overhead connection to the existing 69 kV and 138 kV switchyards. If GIS technology is required for the 230kV switchyard, there will be an additional non-refundable cost of \$15 million.

The Study results and cost estimates presented in this report are preliminary and non-binding.

Pursuant to the CAISO Tariff, Duke will be responsible for the cost of Direct Assignment Facilities. Should SDG&E build these facilities on behalf of Duke, Duke will be required to pay SDG&E in advance. Duke is obligated to fund the construction of the facilities described as Reliability Upgrades. SDG&E will build the improvements and, upon the commercial operation of the Duke Project, Duke shall be entitled to a repayment subject to applicable CAISO Tariff provisions, equal to the total amount paid to SDG&E for the cost of the Reliability Upgrades plus interest. If Duke elects not to fund Reliability Upgrades, SDG&E is under no obligation to construct the improvements.

The current pro forma Large Generator Interconnection Agreement states that all payments or property transfers made to a Participating Transmission Owner for the installation of Direct Assignment Facilities and Network Upgrades shall be non-taxable, subject to compliance with applicable IRS rulings. SDG&E has not included a tax markup in the estimated costs provided in this report.

Because there are numerous possible system conditions that could be studied, the Study results should be considered valid only for the indicated study assumptions.

The transient stability and post-transient voltage stability studies were performed for selected contingencies within the vicinity of the project. The WECC/NERC Reliability and Performance Criteria were applied to both the SDG&E internal transmission system and the external WECC transmission system. The study results showed that the WECC

¹ FERC issued an Order effective July 1, 2005 regarding implementation of FERC Orders 2003, 2003-A, and 2003-B concerning a standardized pro forma interconnection procedure and agreement, CAISO and SDG&E filed interim procedures and a standardized interconnection agreement on August 30, 2005. Additionally, CAISO and SDG&E filed centralized interconnection procedures and a revised standardized interconnection agreement on November 1, 2005, which became effective June 23, 2006 pursuant to the order FERC issued May 24, 2006.

transmission system remained stable for all contingency simulations and no criteria violations were found.

The short circuit analysis identified no overstressed breakers requiring upgrades due to the Duke interconnection to SDG&E's transmission system.

An assessment has determined that some aspects of this Project may impact the tax-exempt status of the interest on outstanding Local Furnishing Bonds (LFBs). Upon signing a Large Generator Interconnection Agreement, SDG&E will work with Duke to prepare and file an Application for Interconnection and Order for a Transmission Order pursuant to Section 211 of the Federal Power Act. The purpose of this Application will be to prevent a loss of any such tax exempt status of interest on the LFBs as a result of SDG&E providing interconnection and transmission service to Duke. Separately, SDG&E has completed its assessment in the 2010 time period to determine whether electric energy from the Duke Project in combination with other local generation may cause an actual or deemed cumulative annual net outbound flow of electric energy from SDG&E's wholly-owned electric facilities in San Diego, Orange and Imperial Counties in violation of the Encumbrances set forth in SDG&E's Appendix B to the Transmission Control Agreement with the CAISO. Our analysis reflects that the flows over these points of interconnection are expected to remain in-bound on a net annual basis with the addition of the Duke project.

INTRODUCTION AND OBJECTIVES

Pursuant to Duke's Interconnection Application and completion of a System Impact Study, SDG&E conducted an Interconnection Facilities Study to interconnect a 650 MW combined cycle generation station that consists of two 165 MW (net output) gas turbines (GT) and one 320 MW (net output) steam turbine. Duke proposed that one GT will be interconnected at 69 kV, one GT will be interconnected at 138 kV, and the steam turbine will be interconnected to a new 230 kV switchyard near the proposed generating facility. The Study analyzes the interconnection of the Project, using the proposed configuration, with a maximum net output of 650 MW to the SDG&E transmission system and assuming that it will have an adequately sized substation footprint based on SDG&E's customary design, cost, and construction practices. Refer to Figure 1: Duke Project Vicinity Map, Figure 2: Duke Project Conceptual Substation Layout, Figure 3: Duke Project Conceptual Substation One-Line - Initial Design, and Figure 4: Duke Project Conceptual Substation One-Line - Ultimate Design for interconnection details.

Figure 1 shows the corridor where SDG&E proposes to construct the 230 kV transmission line as part of SDG&E's Otay Mesa Power Purchase Agreement transmission line project. The Duke proposal would interconnect the steam turbine generator into this line at the location described. A 69 kV switchyard and a 138 kV switchyard with transformation would be located generally on or adjacent to the LNG property cohabitating with the new 230 kV switchyard and the Duke's proposed combined cycle plant (see Figure 2).

PERMITTING AND SCHEDULING

The length of time required for environmental and permitting processes for new transmission or transmission upgrades is uncertain. It depends on many factors, including whether exemption(s) can be obtained from the California Public Utilities Commission's (CPUC's) G.O. 131-D Certificate of Public Convenience and Necessity (CPCN) process or the CPUC's Permit To Construct (PTC) process. The outcome of these processes could increase cost, as well as delay the in-service date. Absent an exemption, the process of obtaining CPUC's approval could take two years or more.

SDG&E believes that the ability to obtain exemptions from the CPCN and PTC processes (in which case an advice letter filing with the CPUC may be sufficient for obtaining the CPUC's approval to proceed with construction) will be enhanced if Duke includes in its application to the appropriate permitting agencies (i.e. CEC) the full scope of transmission and substation additions and upgrades that will be part of the Project.

Duke should also be aware that once the necessary environmental review and permits are obtained, lead time will be required for SDG&E to procure and construct the interconnection facilities. At this time, SDG&E expects that the procurement and construction period for these upgrades will be a minimum of two years from the date all regulatory and environmental permits are obtained and Duke's funding obligations are

accepted by SDG&E. The procurement and construction period also depends on which facilities Duke elects to fund. For the purposes of cost estimating, it is assumed that sufficient suitable pre-graded land acceptable to SDG&E (including environmental state and land entitlements) for the SDG&E substation facilities is available. The design and equipment procurement process can start after the funds are received by SDG&E to cover the design and equipment purchases. Construction can start after receipt of the CPUC approval and additional funds are received by SDG&E for the construction activities.. The installation of these facilities is contingent on obtaining binding commitments acceptable to SDG&E for the land and easements necessary for it to construct, operate, and maintain the new equipment. SDG&E believes that Duke can assist in obtaining these commitments.

Should Duke choose to modify or change the information provided in the Interconnection Application (i.e. generator information), it may result in the need to update and/or modify the Study, cause a significant delay in completing the Study, and result in additional study costs.

Per Duke's inquiry SDG&E confirmed that an interim connection to the existing 138 \69 kV switchyard at South Bay could be accommodated if construction of the new facilities was not complete at the same time as the Duke Project. The interim configuration would be electrically identical to the interconnection studied; therefore, the CAISO confirmed that an interim configuration, if required, would not be cause for a re-study of the Project.

The Direct Assignment Facilities requirements in the transmission plan of service were developed on the basis that the full interconnection capacity requested by Duke can be delivered to the first point of interconnection with the SDG&E system under normal operating conditions. However, even with Direct Assignment Facilities and Reliability Upgrades there could be transmission congestion limits that would require the CAISO to constrain the output on the proposed generating plant.



Figure 1: Duke Project Vicinity Map

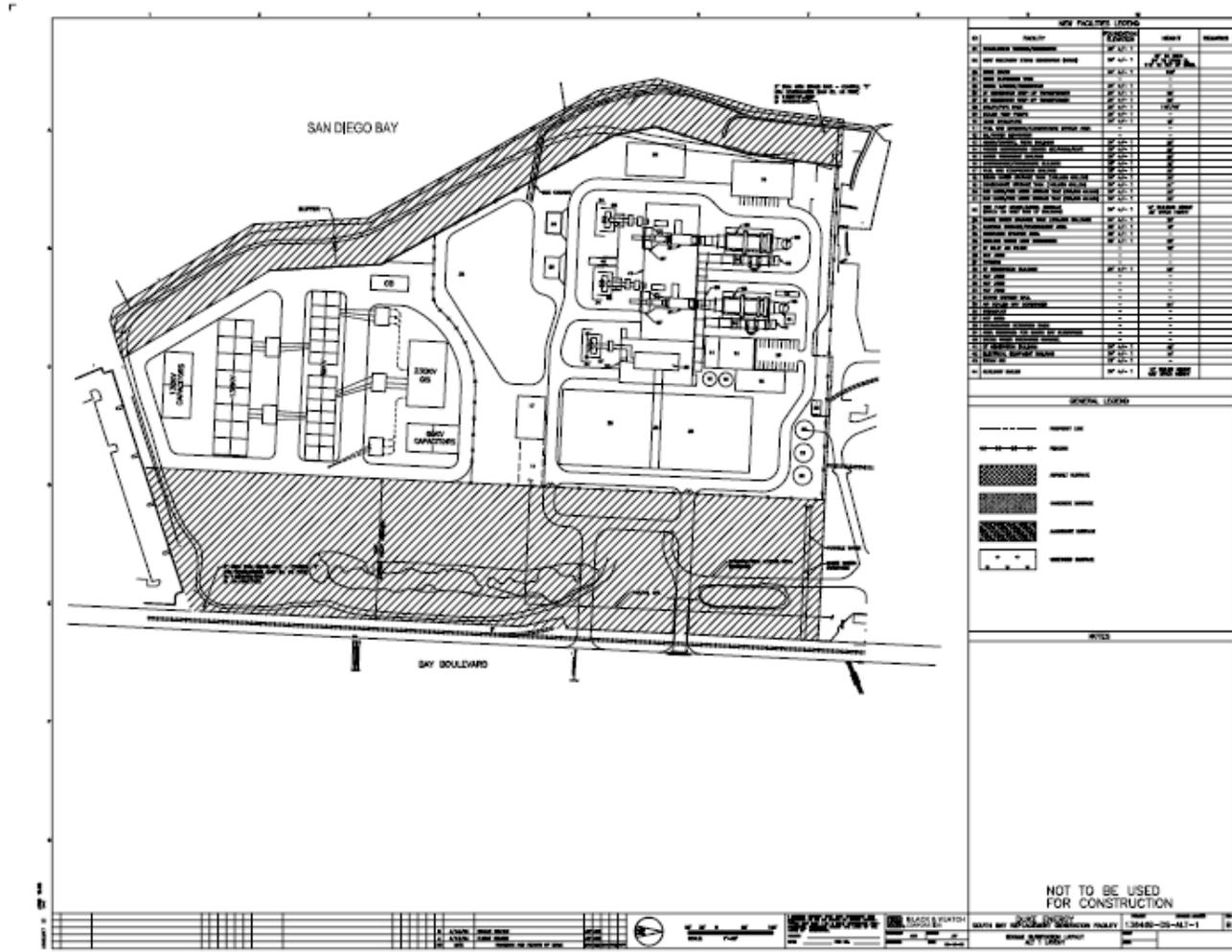


Figure 2: Duke Project Conceptual Substation Layout

Duke Project Conceptual Substation Layout Initial Design

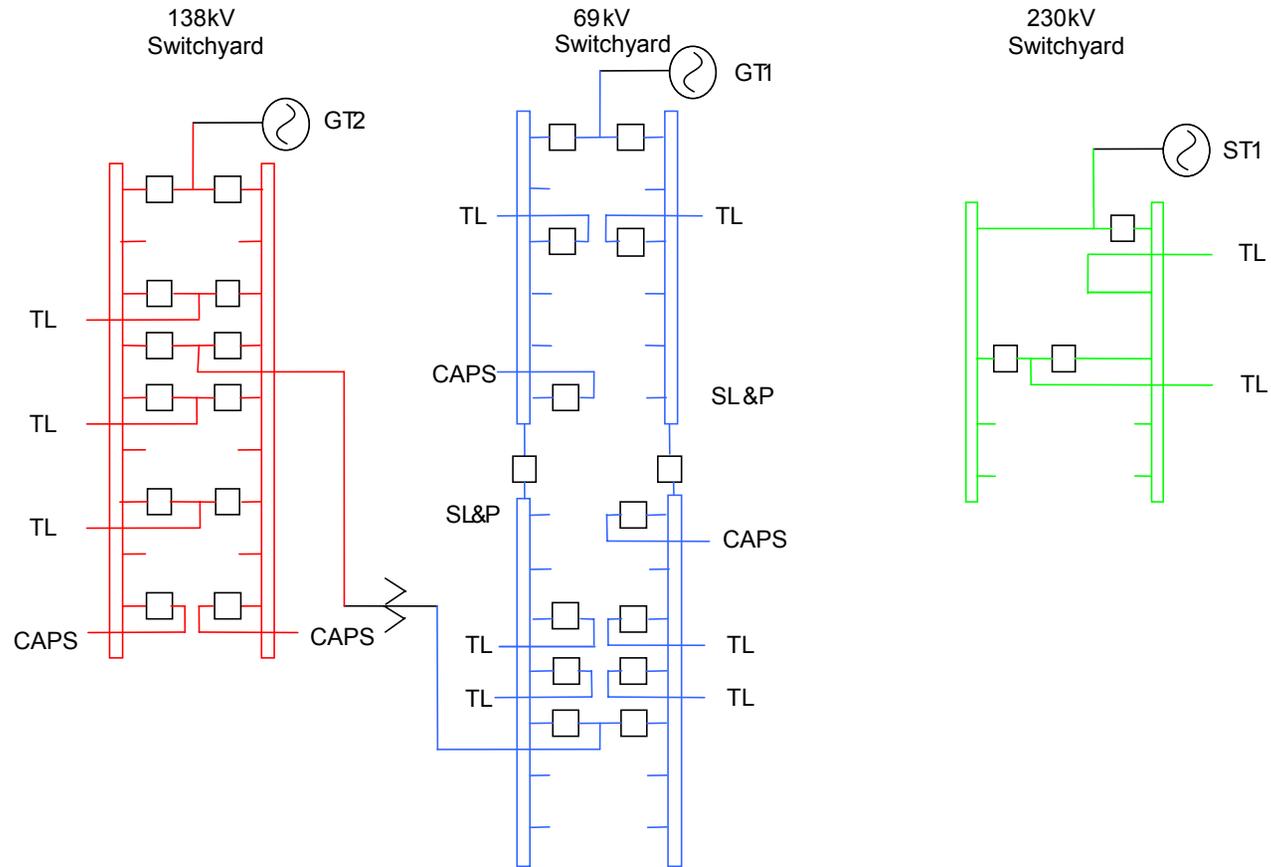


Figure 3: Duke Project Conceptual Substation One-Line* – Initial Design

* This layout does not necessarily represent SDG&E's final plan of service for the relocated switchyard.

Duke Project Conceptual Substation One-Line Ultimate Design

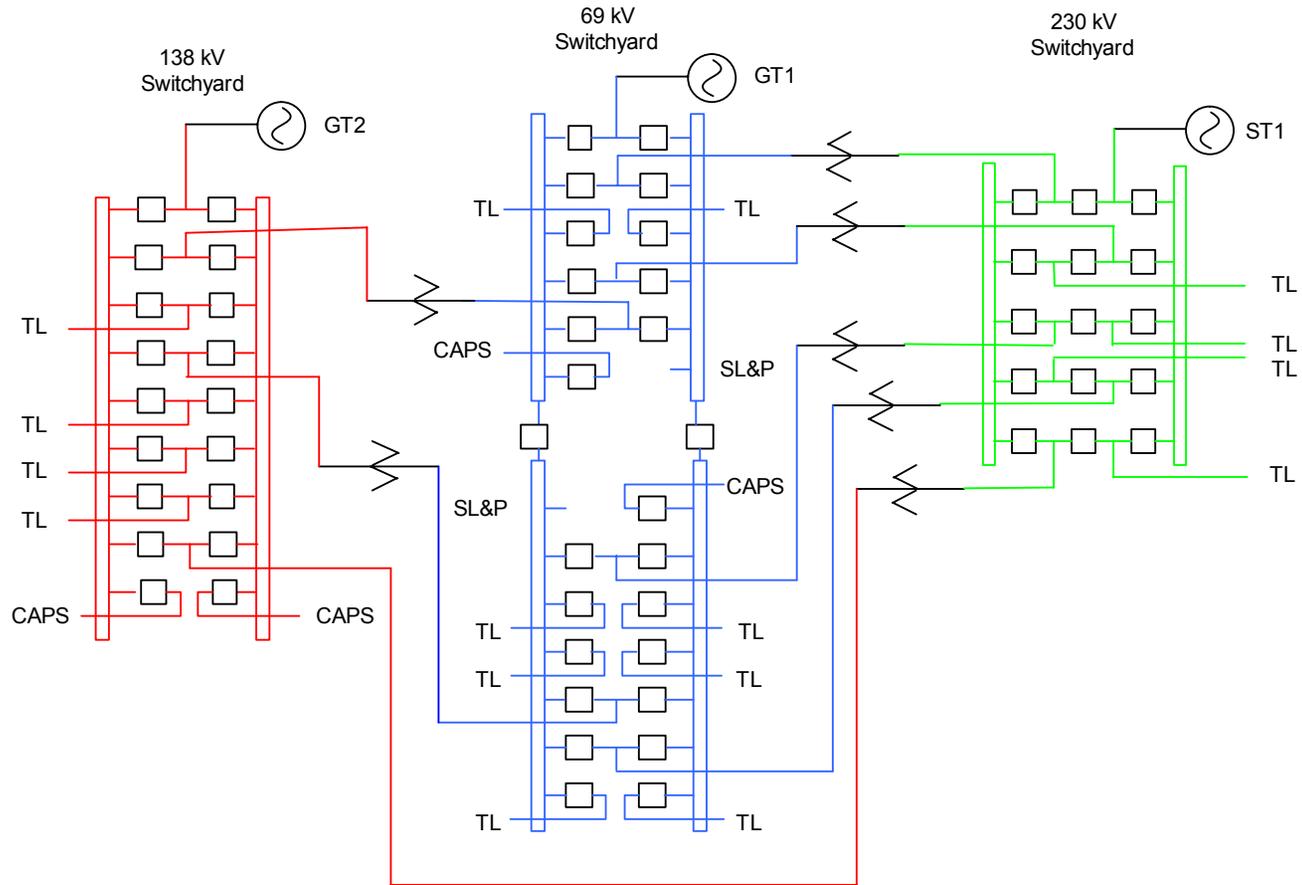


Figure 4: Duke Project Conceptual Substation One-Line – Ultimate Design

STUDY RESULTS AND PLAN OF SERVICE DEVELOPMENT

Power flow analysis results have been provided in Appendix B – Power Flow Summary to show the anticipated flows on affected SDG&E transmission lines for NERC Category A, Category B and selected Category C and D conditions.

The cases that were developed simulate the SDG&E system with all planned transmission elements in-service for the 2010 benchmark case. The heavy summer cases include high import and low generation dispatch scenarios with heavy system load to reflect stressed system conditions.

This Study investigated compliance with NERC/CAISO Category A, B, and C criteria. Duke requested a sensitivity that did not include the dispatch of the Sycamore Canyon Combined Cycle (SCCC) project. Thus, two power flow cases were developed – one case with SCCC not dispatched and one case with SCCC dispatched to 750 MW.

Power Flow Results

The power flow analysis studied all voltage level contingencies in the SDG&E transmission system for both scenarios. These results are valid only for the system configuration as modeled in this study and may not apply to future transmission system upgrades. For the purposes of this study, cases 6 & 7 are most appropriate, as this is how the SDG&E system would operate, since SDG&E traditionally imports a significant amount of power from outside its system. Case 8 as performed in this Study is merely a sensitivity, as this case has all QF generation turned off. This is not how the system would be operated under peak load conditions. Qualifying Facilities are only offline during the off-season, when it is not economical for these units to run, as they are must-take units.

There were no NERC/CAISO Category A normal overloads caused solely by the addition of the Duke Project for any of the studied scenarios.

There were two (2) NERC/CAISO Category B overloads caused by the addition of the Duke Project when SCCC was not dispatched. These overloads are the Sycamore Canyon – Miguel Tap 230 kV line, and Sycamore Canyon bank 70 230/69 kV transformer.

1. The transformer is overloaded by 0.5% of its emergency rating for the outage of the other 230/69 kV transformer, but does not appear under certain operating conditions. If the taps on the transformers at 3R or higher, and the Los Coches capacitors are turned on, the overload does

- not appear. In addition, this overload also appears in many pre-cases, thus there will be no capital project proposed for this overload.
2. The Sycamore Canyon – Miguel Tap 230 kV line overloads by 4.3% of its emergency rating for the outage of the South Bay – Silvergate 230 kV line. Due to its sensitivity to generation dispatch, and the fact that an SPS can mitigate this overload, there will be no capital project proposed for this overload. This overload may occur for import and load levels as low as 2850 MW and 4300 MW, respectively.

The SPS needed to mitigate the Sycamore Canyon – Miguel Tap 230 kV line overload would trip generation at either Otay Mesa or South Bay post contingency.

In addition, there are several lines that operate near their continuous ratings, and during the course of daily operation, lines may be out of service that cause these highly loaded lines to exceed their ratings. If this were to occur plant dispatch may be limited in these instances.

There were three (3) NERC/CAISO Category B overloads caused by the addition of the Duke Project when SCCC was dispatched to 750 MW.

1. Sycamore Canyon bank 70 overloads by 0.9% of its emergency rating for the loss of the other 230/69 kV transformer at Sycamore Canyon in case 2. Again, as noted above, this overload does not appear under certain operating conditions and it also appears in many pre-cases. There will be no capital project proposed for this overload.
2. The Eastgate – Rose Canyon 69 kV line overloads by 2.1% for the outage of the Penasquitos – Rose Canyon 69 kV line. The dispatch in this case is not typical of how the system would be operated, as every generator in the SDG&E basin is at full output. In addition, this line is only rated at 50.3 MVA and will likely be a future grid assessment project. There will be no capital project proposed for this overload at this time.
3. The Sycamore Canyon – Carlton Hills Tap 138 kV line exceeds its emergency rating by 8.9% for the outage of SWPL followed by SPS 6.6. This overload will be eliminated as part of a reconfiguration of TL 13821 and TL 13822. This overload has been seen in other SDG&E studies, and will not be charged to the South Bay Project.

The SCCC developer filed an Interconnection Application that pre-dates the Duke Interconnection Application to the CAISO. The SCCC application is still active and maintains a higher position in the CAISO Interconnection Queue. If the SCCC developer fails to construct or the project is removed from its current queue position by the CAISO, the high loading would not occur.

These conclusions are subject to the assumptions and conditions reflected in this Study.

Transient Stability Results

The power flow case for Alternative 6 created for the thermal load flow study was used for the transient stability simulations. The case was modeled with high import at Miguel and high levels of generation dispatched in SDG&E's southern area. The customer provided the proposed generator's dynamic data for modeling purposes.

Transient stability simulations were performed with selected contingencies within the vicinity of the project. The WECC/NERC Reliability and Performance Criteria were applied to both the SDG&E internal transmission system and the remaining external WECC transmission system. This study also includes the simulations with six cycle faults at South Bay 230 kV, 138 kV, and 69 kV buses. The study results showed that the SDG&E internal transmission system and the external WECC transmission system remained stable and there were no criteria violations due to the project. The Worst Condition Analysis (WCA) processor, available within the General Electric Power Systems Dynamic Simulations (PSDS) software package, was used to track and record any frequency and transient voltage dip violations from the channel output files. No frequency and voltage violations were recorded from the study.

Stability model assumptions, a list of contingencies, and transient stability plots are in Appendix C.

Post-Transient Voltage Stability Results

The Alternative 6 power flow case was used for the post-transient voltage stability studies. The Power Systems Analysis Software (PSAS) EPCL Tools was set up for this study. The simulations were performed with the pre-Project and post-Project conditions. The existing South Bay generation plant was modeled in the pre-Project power flow case. For the post-Project case, the power flow case was updated with the new proposed South Bay generation plant. Post-transient voltage stability simulations were performed for selected contingencies within the vicinity of the project. This study closely followed the WECC Post-Transient Voltage Stability methodology and criteria. The post-transient voltage stability simulations were performed with SDG&E's 2010 heavy summer peak for the selected contingencies. Governor power flow simulations were performed by increasing SDG&E's load to 105% of the peak load for selected N-1 contingencies and 102.5% of the peak load for selected N-2 contingencies. The study results showed that no voltage violations were found and governor power flows were solved for all the contingency simulations.

A list of contingencies used for the post-transient voltage analysis is in Appendix D.

Short Circuit Results

SDG&E conducted detailed short circuit studies with three line-to-ground and single line-to-ground faults to examine the impact of the Duke Project on the system. The Aspen Version 9.0 program was used for conducting the short circuit study.

Based on SDG&E's planning criteria, an overstress of 115% of short circuit duty (nameplate rating) is permissible for existing non-generator substation breakers, 230 kV and below, and 100% of short circuit duty for existing generator breakers.

Two scenarios were studied:

1. Pre-Project (without Duke)
2. Post-Project (with Duke)

Three line-to-ground (3LG) and single line-to-ground (SLG) faults were simulated with and without the project at all busses in the system, 69 kV and above. Table 3 summarizes the fault duties for busses in the vicinity of the project. The one-line plots for these busses are shown in Appendix E – Short Circuit Results.

Table 3: 3LG and SLG Fault Duties for Selected Busses

Faulted Bus	Breaker Rating (kAmps)	Pre-Project		Post-Project	
		Max 3LG Bus Fault (kAmps)	Max SLG Bus Fault (kAmps)	Max 3LG Bus Fault (kAmps)	Max SLG Bus Fault (kAmps)
South Bay 69 kV	38 - 42	27.0	27.1	22.4	23.1
South Bay 138 kV	37 - 42	27.8	28.8	20.1	15.4
South Bay 230 kV	N/A	21.9	14.6	22.3	16.9

No overstressed breakers have been identified as a result of the Duke interconnection.

Local Furnishing Bonds

SDG&E has financed substantial portions of its transmission and distribution systems with proceeds from \$687,000,000 of outstanding Local Furnishing Bonds (LFB) issued by the City of San Diego and the City of Chula Vista. Interest on these bonds is tax-exempt. Pursuant to applicable IRS private letter rulings, if the proposed Project would cause impairment of the tax-exempt interest on these bonds, Duke would pay any resulting costs to SDG&E in mitigating the impairment to the continued tax-exempt status of interest on the LFBs (an “Impairment”).

SDG&E has determined that if Duke requires the installation and operation (i) of 138 kV facilities in the relocated South Bay Substation or (ii) of 230 kV facilities using GIS (gas insulated substation) technology to accommodate all interconnection facilities, an Impairment of the LFBs may occur if Duke does not sell the Project’s electric output to SDG&E. This Impairment may result from SDG&E constructing the 138 kV facilities and the 230 kV facilities using GIS technology sooner, larger, more costly, or of a different design than SDG&E would undertake solely to service its local furnishing customers.

As contemplated by the ISO Tariff and SDG&E’s Transmission Owner Tariff, SDG&E will work with Duke to prepare and file an Application for Interconnection and Order for a Transmission Order pursuant to Section 211 of the Federal Power Act. This filing will be made after the Large Generator Interconnection Agreement is signed. The purpose of this Application will be to prevent a loss of any such tax exempt status of interest on the LFBs (as well as preventing a loss of SDG&E’s ability to deduct interest expense on the LFBs for tax purposes) as a result of SDG&E providing interconnection and transmission service to Duke, and

thereby to enable SDG&E to provide the service consistent with certain bond covenants given by SDG&E for the benefit of the owners of those LFBs. By this means, SDG&E will concur in the Application, confirm the factual statements made therein by Duke based on representations by SDG&E, and will waive its rights to a prior request and an evidentiary hearing under Section 211(a) and to a proposed order under Section 212(c), if the Commission issues an order substantially in the form requested.

Separately, SDG&E has completed its assessment in the 2010 time period to determine whether electric energy from the Duke Project in combination with other local generation may cause an actual or deemed cumulative annual net outbound flow of electric energy from SDG&E's wholly-owned electric facilities in San Diego, Orange and Imperial Counties in violation of the Encumbrances set forth in SDG&E's Appendix B to the Transmission Control Agreement with the CAISO. To complete this assessment, SDG&E has utilized ABB's Grid View software, a market simulation tool, to model the net energy flow into the SDG&E service territory. Our analysis reflects that the flows over these points of interconnection are expected to remain in-bound on a net annual basis with the addition of the Duke project.

However, if in the future the dispatch of electric energy by owners of existing and new generation located in the San Diego that is not sold to SDG&E for service to its local furnishing customers, SDG&E may be required to effect a tax call on the LFBs in the absence of remedial measures that prevent annual net outbound flows from SDG&E's local transmission and distribution system, as contemplated by SDG&E's Appendix B to the Transmission Control Agreement ("TCA") with the CAISO. Under the CAISO Tariff and TCA, however, the CAISO is obligated to affect such remedial measures to avoid an Impairment that would otherwise trigger a tax call. Such remedial measures, for example, would be undertaken by the CAISO through rejection of schedules or bid protocols sufficient to avoid net annual outbound flows resulting from the Duke Project and other generation within the San Diego basin not utilized to service local furnishing customers, subject to the annual net importer limitation.

Cost Estimates

Based on the Study results, Table 4 summarizes the scope of transmission reinforcements and associated cost estimates for interconnection of the Project. Though there were no Delivery Upgrades identified in this Study, Duke will be subject to any dispatch constraints that may be required according to CAISO congestion management protocols.

Cost and construction schedule estimates assume that SDG&E can obtain necessary rights to access and construct required facilities.

Table 4: Direct Assignment Cost Estimates and assumptions

	69 kV (UG)	138 kV (UG)	230 kV (UG)
Distance (ft.)	705	980	365
Rating (MVA)	200	200	400
Rating (Amps)	1966	1207	1145
Cost (\$k)	6650	6600	2150

The costs in Table 4 reflect a 2010 in-service date. In addition to the costs identified in Table 4, an additional \$3 million will may be required to make an interim overhead connection to the existing South Bay Substation if a relocated substation is not constructed before the new South Bay Power Plant. This brings the direct assignment total cost to \$18.4 million.

The cost estimate for the 230 kV switchyard and loop-in includes the 230 kV equipment depicted in Figure 3. This cost does not include the 138 kV and 69 kV facilities depicted in Figure3. This cost breaks down as shown in Table 5:

Table 5: 230 kV Substation Cost estimate breakdown

GIS Substation	
Item	Cost(x\$1000)
Equipment	\$22,340
Engineering	\$9,809
Construction	\$19,754
Loop-in of TL 23042	\$8,400
GIS Total	\$60,303
AIS Substation	
Equipment	\$9,716
Engineering	\$7,181
Construction	\$19,749
Loop-in of TL 23042	\$8,400
AIS Total	\$45,046

If it is necessary to construct a 230 kV switchyard using GIS technology, the differential in cost between GIS construction and AIS (air insulated substation) construction would be the responsibility of Duke. SDG&E would request that Duke make an advance in aid of construction for this cost differential that would not be refundable. The cost differential is estimated at \$15 million as indicated in the table above.

BASE CASE ASSUMPTIONS

The pre-project case (benchmark case) was based on the power flow cases used by SDG&E for its own internal system planning studies and includes the most recently available WECC power flow models. Duke's proposed commercial operation date is January 2010. Thus, a 2010 Heavy Summer scenario was modeled for the Study based on the case used by SDG&E for its own internal transmission expansion studies. The power flow case developed within the CAISO Stakeholder process in 2005 is being used as the pre-Project case. A set of projects needed by SDG&E due to its internal system load growth, new generator interconnection requests ahead of the Duke Project in the CAISO's Queue, and inter-regional transmission expansion planning (the WECC planning process), was established in the 2005 Stakeholder process. This provided a benchmark upon which to perform these generation interconnection studies.

The SDG&E Load and Resource Tables for all power flow cases are included in Appendix G.

Power Flow Database

1. Pre-Project

Duke requested, and it is consistent with SDG&E's plans, that this Interconnection Facilities Study includes the Sunrise Powerlink Project. The Sunrise Powerlink Project consists of a major 500 kV transmission line terminating at SDG&E's existing Imperial Valley Substation and at a proposed 500/230 kV substation called Central. The Central Substation provides the transformation to 230 kV and the interconnection with the existing SDG&E transmission grid at Sycamore Canyon.

2. Post-Project

The post-project model includes the pre-project model and the addition of the Duke 650 MW combined cycle project. This includes an additional 230 kV bus looping the SDG&E proposed 230 kV transmission line that interconnects the 320 MW steam turbine generator. Figure 5: 2010 South Bay Area Transmission System provides a conceptual one-line diagram illustrating the 2010 transmission system in the area of the South Bay Power Plant.

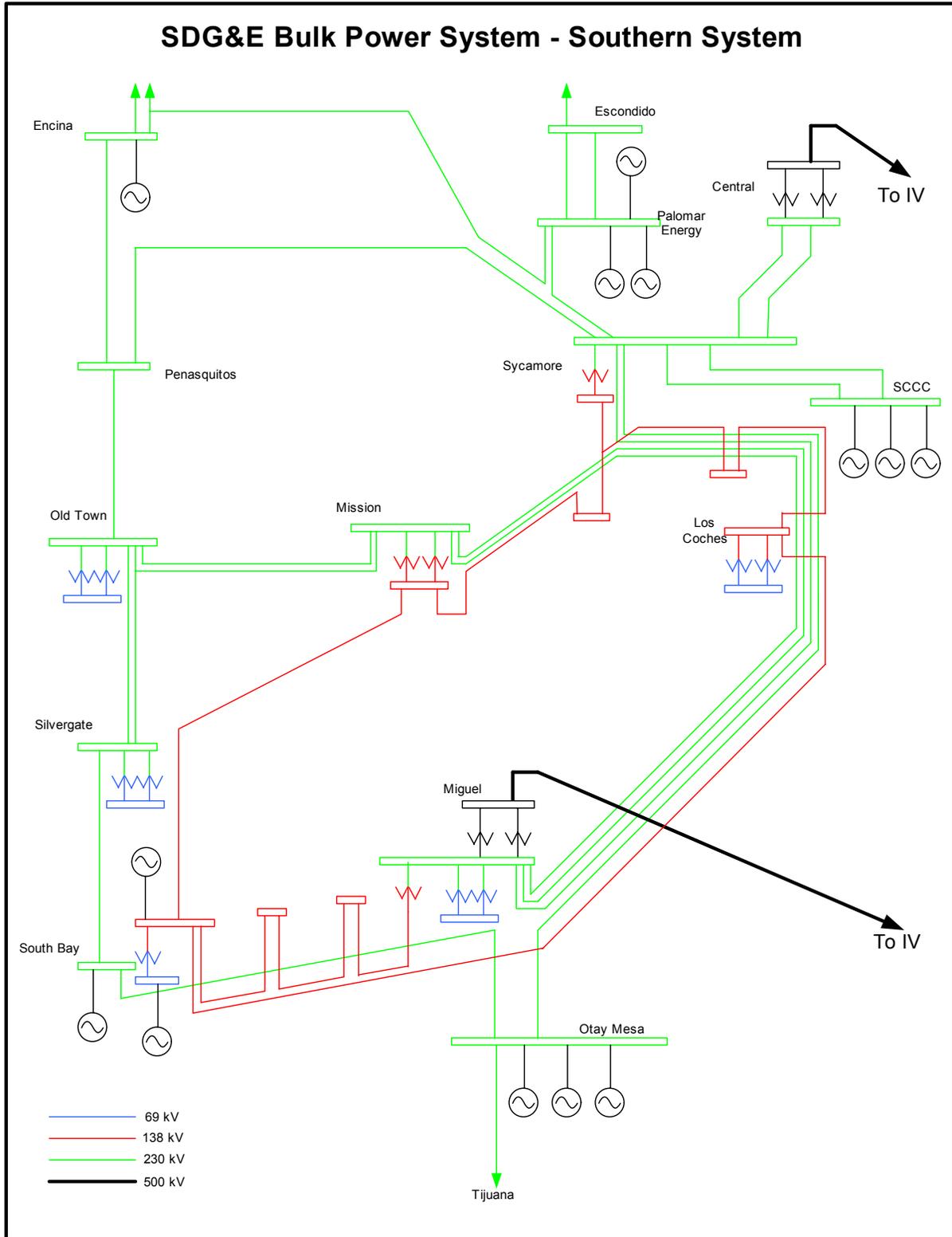


Figure 5: 2010 South Bay Area Transmission System

3. Reliability Criteria

A system reliability evaluation consists primarily of determining if thermal overloads exist, that voltages are within criteria (not too high or low), and that the system is stable (the system should not oscillate excessively and generators should remain synchronized with one another). Additional criteria may include assurance that there is sufficient reactive power available. Evaluation of these criteria must be conducted for credible “emergency” conditions that the system might sustain, such as loss of a single or double circuit line, a transformer, or a combination of these facilities.

Power Flow

The Study was conducted by applying the CAISO Grid Planning Criteria, which includes the WECC Reliability Criteria and the NERC Planning Standards.

The following conditions were considered for the SDG&E system:

- a. All facilities in service (N-0 NERC/CAISO Category A)
- b. All single contingencies including generators, lines and transformers (N-1 NERC/CAISO Category B)
- c. Credible double contingencies (N-2 NERC/CAISO Category C): two lines on common structures or right-of-way, substation common bay, and two generators at a common switchyard

4. Study Methodology

This section of the report provides a summary of methods employed for determining power flow results. This Study evaluates only the impact of interconnecting the proposed Duke generation project.

Power Flow

Under the proposed configuration of the Duke interconnection, the system is most stressed by dispatching generation internal to the SDG&E service territory. Specifically, generators connected to the 230 kV transmission in the southern portion of the SDG&E system were modeled at full output. Therefore, SCCC, Palomar Energy (PEN), and Otay Mesa power plant, were fully dispatched and the SDGE interchange was adjusted accordingly.

Power flow analysis considers a snapshot in time where transformer tap changers and static VAR devices have had time to adjust. Phase shifting transformers were not allowed to move since the majority of WECC phase shifting transformers have manual operation and a swing bus balances the system during each contingency scenario.

Traditional power flow analysis was used to evaluate thermal (and voltage) performance of the system under NERC/CAISO Category A, B and C criteria. Reported thermal overloads were limited to the condition where a modeled transmission component is loaded over 100% of its appropriate emergency MVA rating (MVA2, as entered in the power flow database), and the incremental increase in component loading, between pre-project and post-project, exceeds 1%.

NERC/CAISO Category A voltage violations were limited to the conditions where per unit voltages are less than 0.95 or greater than 1.05. NERC/CAISO Category B and Category C voltage violations were limited to the conditions where, per unit voltages are less than 0.90 or greater than 1.10. In addition, only voltage deviations greater than 5% between the pre and post-contingency were recorded.

All power flow analyses were conducted with version 15.1 of General Electric's PSLF software.

Stability Reliability and Performance Criteria

Performance of the transmission system is measured against the following planning criteria: The California ISO Reliability Criteria, The Western Electricity Coordinating Council Reliability Criteria, and the North American Electric Reliability Criteria. Table 7 is an excerpt from WECC Reliability Criteria. The reliability and performance criteria were applied to both SDG&E’s internal transmission and the remaining external WECC transmission system.

Table 7: WECC Disturbance-Performance Table of Allowable Effects on Other System

NERC& WECC Categories	Outage Frequency (outage/yr)	Transient Voltage Dip Standard	Min Transient Frequency Standard	Post transient voltage deviation standard (see Note 1 for)
A	N/A	N/A	N/A	N/A
B	≥ 0.33	Not to exceed 25% at load bus or 30% at non-load bus. Not to exceed 20% for more than 20 cycles at load buses	Not to below 59.6HZ for 6 cycles or more at a load bus	Not to exceed 5% at any bus
C	0.033 – 0.33	Not to exceed 30% at any load bus. Not to exceed 20% for more than 40 cycles at load buses	Not to below 59.0HZ for 6 cycles or more at a load bus	Not to exceed 10% at any bus
D	N/A	N/A	N/A	N/A

Notes:

1. As an example in applying the WECC Disturbance-Performance Table, a Category B disturbance in one system shall not cause a transient voltage dip in another system that is greater than 20% for more than 20 cycles at load buses, or exceed 25% at load buses or 30% at non-load buses at any time other than during the fault.

Short Circuit Database

1. Pre-Project

The database for determining if any overstressed breakers exist pre-project included all generation in the CAISO Queue in SDG&E's service territory that have applications pre-dating the proposed project.

2. Post-Project

From the pre-project case, a case was developed to simulate the Project addition.

STUDY ASSUMPTIONS

The following assumptions have been used during the course of this Study. The Study results, recommendations, and cost estimates may vary if these assumptions are changed.

1. Unless specifically known, typical data for generators and associated system upgrades such as lines, transformers, etc. were used for setting up the power flow base cases and the short circuit database.
2. The power flow and short circuit analyses were based on the data provided in the Interconnection Application and subsequent information.
3. SDG&E has financed substantial portions of its transmission and distribution systems with proceeds from Local Furnishing Bonds (also known as Industrial Development Bonds or IDBs) issued by the City of San Diego and the City of Chula Vista. Interest on these bonds is tax-exempt. Pursuant to IRS requirements, if the proposed Project would cause impairment of these bonds, the developer would need to mitigate the resulting costs to SDG&E.
4. Any potential overloads or voltage problems that exist in the pre-project case, but have not been aggravated by the generation interconnection, have been ignored for the purpose of this Study.
5. Generators in the CAISO Queue that are interconnecting in SDG&E's service territory that will be in-service by the Project's commercial operation date were modeled in the power flow. The CAISO Queue is shown in Appendix F – CAISO Controlled Grid Generation Queue.
6. All prior generators in the Queue in SDG&E's service territory were modeled for the short circuit analysis.
7. The SDG&E document entitled, "Technical Standards for Load and Non-SDG&E Owned Generator Interconnections" located on the SDG&E web site provides additional information about the SDG&E technical standards. The Project must meet SDG&E technical standards.

TECHNICAL REQUIREMENTS/SPECIFICATIONS

These requirements are included but not limited to the following:

1. The Project's interconnection substation (the substation that is used to interface the Project to the transmission system) must meet SDG&E substation standards.
2. The SDG&E document entitled, "Technical Standards for Load and Non-SDG&E Owned Generator Interconnections" located on the SDG&E web site provides additional information about the SDG&E technical standards. The Project must meet SDG&E technical standards.
3. It must be possible to automatically control the production from the Project by a single remote signal so that it does not exceed a certain MW limit. The production limit would recognize the dispatch limit provided by CAISO or SDG&E, the presence of a contingency detection signal, and local values of frequency and/or voltage. It will be possible to change the control algorithms from time to time, if necessary.
4. The production must not at any time exceed the production limit by more than five percent, and the one-minute average plant output will not exceed the production limit.
5. The control will take place in a manner that it will be possible to control the production quickly enough so that it can be reduced to below 20 percent of the maximum power in less than two seconds.
6. CAISO/SDG&E may limit the operation and/or disconnect or require the disconnection of a generating facility from the SDG&E system at any time, with or without notice, in the event of an emergency or to correct unsafe operating conditions. CAISO/SDG&E may also limit the operation and/or disconnect or require the disconnection of a generation facility from the SDG&E system upon the provision of reasonable notice:
 - a. To allow for routine maintenance, repairs or modifications to the SDG&E system,
 - b. Upon CAISO/SDG&E's determination that a facility is not in compliance with protocol, or
 - c. Upon termination of the Interconnection Agreement.
7. Generating facilities will not inject Direct Current greater than 0.5% of rated output current into the SDG&E system under either normal or abnormal operating conditions.

8. Starting or rapid load fluctuations on induction motors can adversely impact SDG&E system voltage. Corrective step-switched capacitors or other techniques may be necessary and may cause undesirable ferro-resonance. When these countermeasures (e.g. additional capacitors) are installed on the plant side of the interconnection point, SDG&E must review these measures. Additional equipment may still be required to resolve this problem.
9. The generator will contain a signal showing the status of the plant, e.g. whether the plant has stopped due to lack of fuel (water), forced outage, external signals, etc. Together with signals from the system operator and local measurements (for instance, voltage and frequency) this signal will be part of a logic managing the release of the generators for operation. Signals and principles are arranged for the individual generation units.
10. The developer will provide values of harmonics currents created by the generation facility at the Point of Interconnection to the SDG&E system. These harmonics currents, expressed in percent of the total generated current (15-minute demand) at the system frequency of 60 Hz (fundamental), should be within the limits specified by IEEE Standard 519-1992. These limits are a function of the short circuit duty level at the point of delivery to the SDG&E system.
11. SDG&E requires that all generators connected to the SDG&E transmission system:
 - a. Demonstrate low voltage ride-through capability and
 - b. Maintain an appropriate power factor within an acceptable range consistent with CAISO tariff requirements
12. Communication, protection, and control facilities including telemetering equipment will be required at the Project's switchyard to provide status of the 69, 138, and 230 kV circuit breakers and monitoring of the generator output.
13. Per SDG&E "Technical Standards for load and Non-SDG&E Owned Generator Interconnections, "all Participating Generators shall maintain the CAISO specific voltage schedule at the transmission interconnection points to the extent possible while operating within the power factor range specified in their interconnection agreements or, for Regulatory Must-Take Generation, Regulatory Must Run Generation and Reliability Must-Take Generation consistent with existing obligations. For Generating Units, that do not operate under one of these agreements, the minimum power factor range will be within a band of 0.9 lag (producing VARs) and 0.95 lead (absorbing VARs) power factors.

14. The generators/project must be able to dynamically control the bus voltage and maintaining it within a desired range within the capability of the generator power factor defined above.
15. Any AC-DC-AC converter must be equipped with forced-commutated inverters.
16. SDG&E reserves the right to measure the actual flicker and harmonic levels before the interconnection can be allowed. If the measurements show that actual flicker and harmonic levels do not meet SDG&E standards during actual operation, then the plant will be disconnected until mitigation measures are taken by the developer to resolve the flicker and harmonic problems.



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"In accordance with the "Non-Disclosure and Use of Information Agreement" (the "Agreement") between SDG&E and the CAISO, the CAISO must cause each of its employees who will have access to this confidential information to acknowledge that they have read the Agreement and agree to abide by all of its terms regarding use and disclosure of this confidential information, and must cause such persons to execute Individual Agreements in the form attached as Attachment A to the "Agreement."

Project Developer
Duke Energy South Bay, LLC

Project Name
Duke Energy South Bay, LLC

INTERCONNECTION FACILITIES STUDY

Final Report

Appendix

December 1, 2006

Study Performed for Duke Energy South Bay, LLC
By San Diego Gas & Electric Company

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Appendix A – Definitions

<u>Category A Contingency</u>	All facilities in service, no contingency.
<u>Category B Contingency</u>	Event resulting in the loss of a single element. <i>(The CAISO considers the loss of a critical generator followed with redispatch of the remaining system generation and the subsequent loss of any single element as a Category B contingency.)</i>
<u>Category C Contingency</u>	Event resulting in the loss of two or more (multiple) elements.
<u>Category D Contingency</u>	Extreme event resulting in two or more (multiple) elements removed or cascading out of service.
<u>Delivery Upgrade</u>	The transmission facilities, other than Direct Assignment Facilities and Reliability Upgrades, necessary to relieve constraints on the ISO Controlled Grid and to ensure the delivery of energy from a New Facility to load.
<u>Direct Assignment Facility</u>	The transmission facilities necessary to physically and electrically interconnect a New Facility Operator to the ISO Controlled Grid at the point of interconnection.
<u>Reliability Upgrade</u>	The transmission facilities, other than Direct Assignment Facilities, beyond the first point of interconnection necessary to interconnect a New Facility safely and reliably to the ISO Controlled Grid, which would not have been necessary but for the interconnection of a New Facility, including network upgrades necessary to remedy short circuit or stability problems resulting from the interconnection of a New Facility to the ISO Controlled Grid. Reliability Upgrades also include, consistent with WECC practice, the facilities necessary to mitigate any adverse impact a New Facility's interconnection may have on a path's WECC path rating.

Appendix B – Power Flow Summary

Power Flow Plots

The following plots illustrate the pre and post case loading of transmission facilities that were identified as overloads in the report. For each overload, the first plot is the pre-case, and the second is the post case. The units used for all figures are MVA/% loading.

Plots 1&2: These show the pre- and post-case loadings for the Eastgate – Rose Canyon 69 kV line. The case shown is case 2, a very high import case.

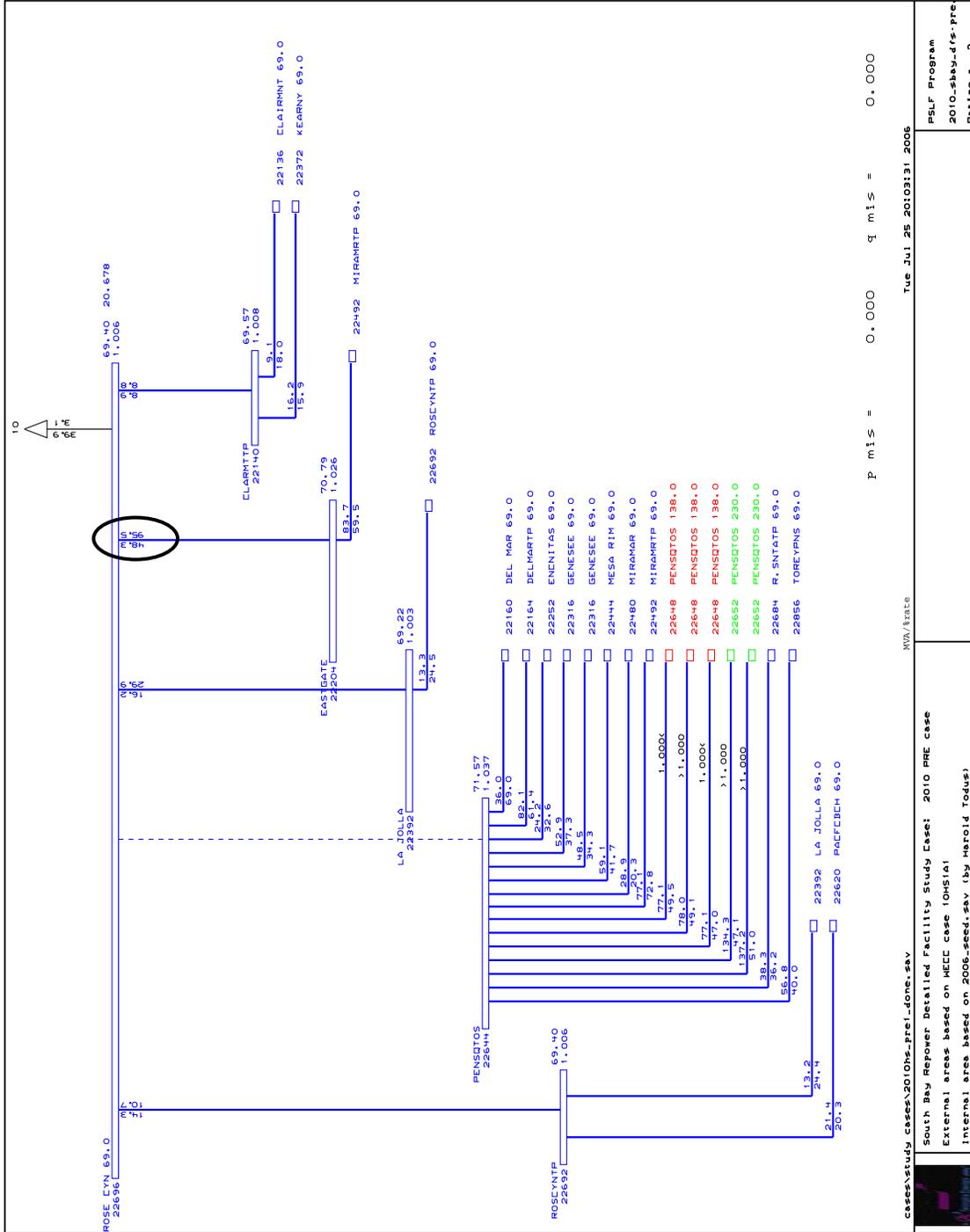
Plots 3-6: These show the pre- and post-case loadings for the Sycamore Canyon – Miguel Tap 230 kV line. Plots 3&4 are case 6, and plots 5&6 are case 7.

Plots 7&8: These show the pre- and post-case loadings for Sycamore Canyon bank 70. The case shown is case 7.

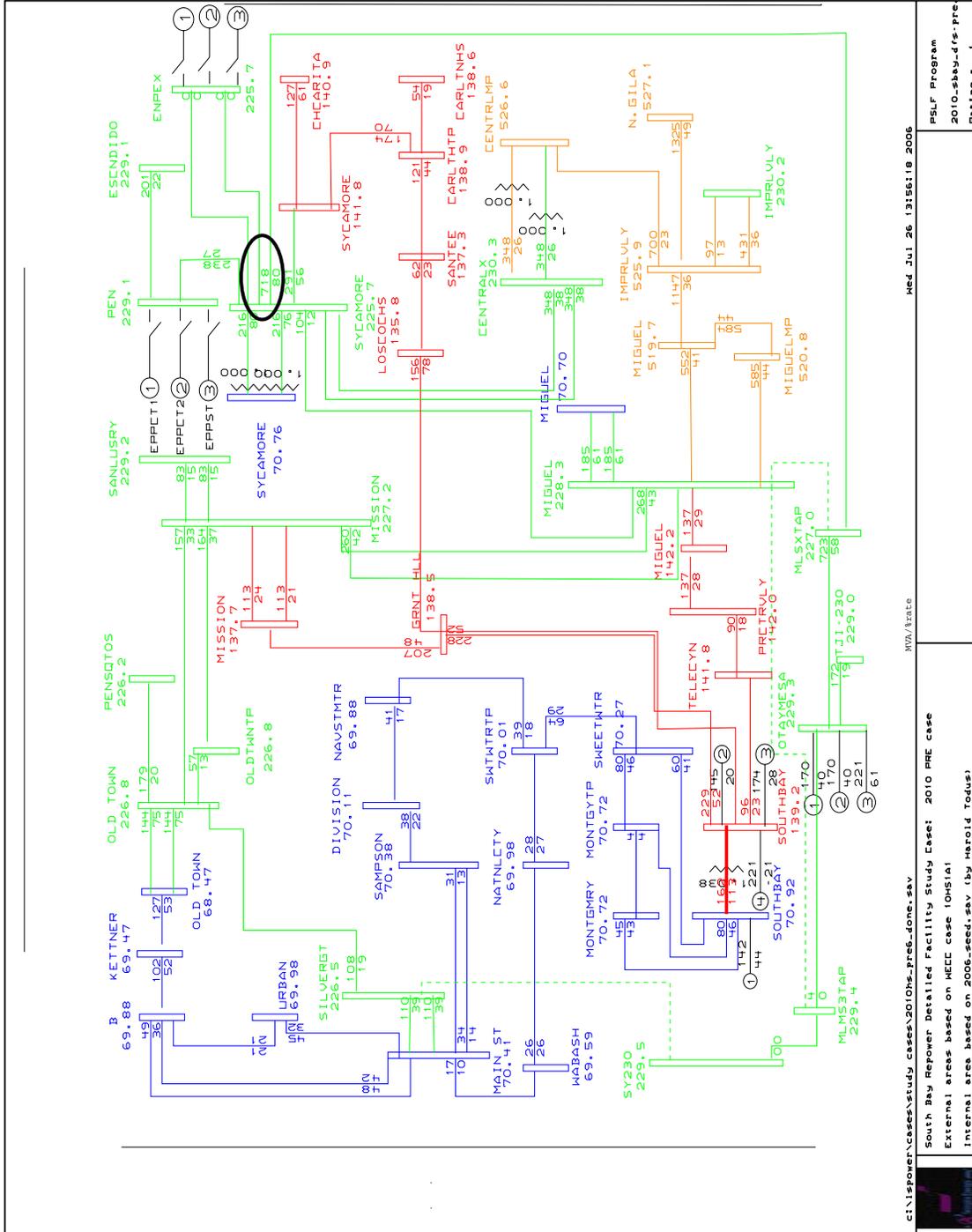
Since the Sycamore Canyon – Carlton Hills Tap 138 kV overload is being evaluated as part of other studies, it is not included in these plots.

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 Appendix B

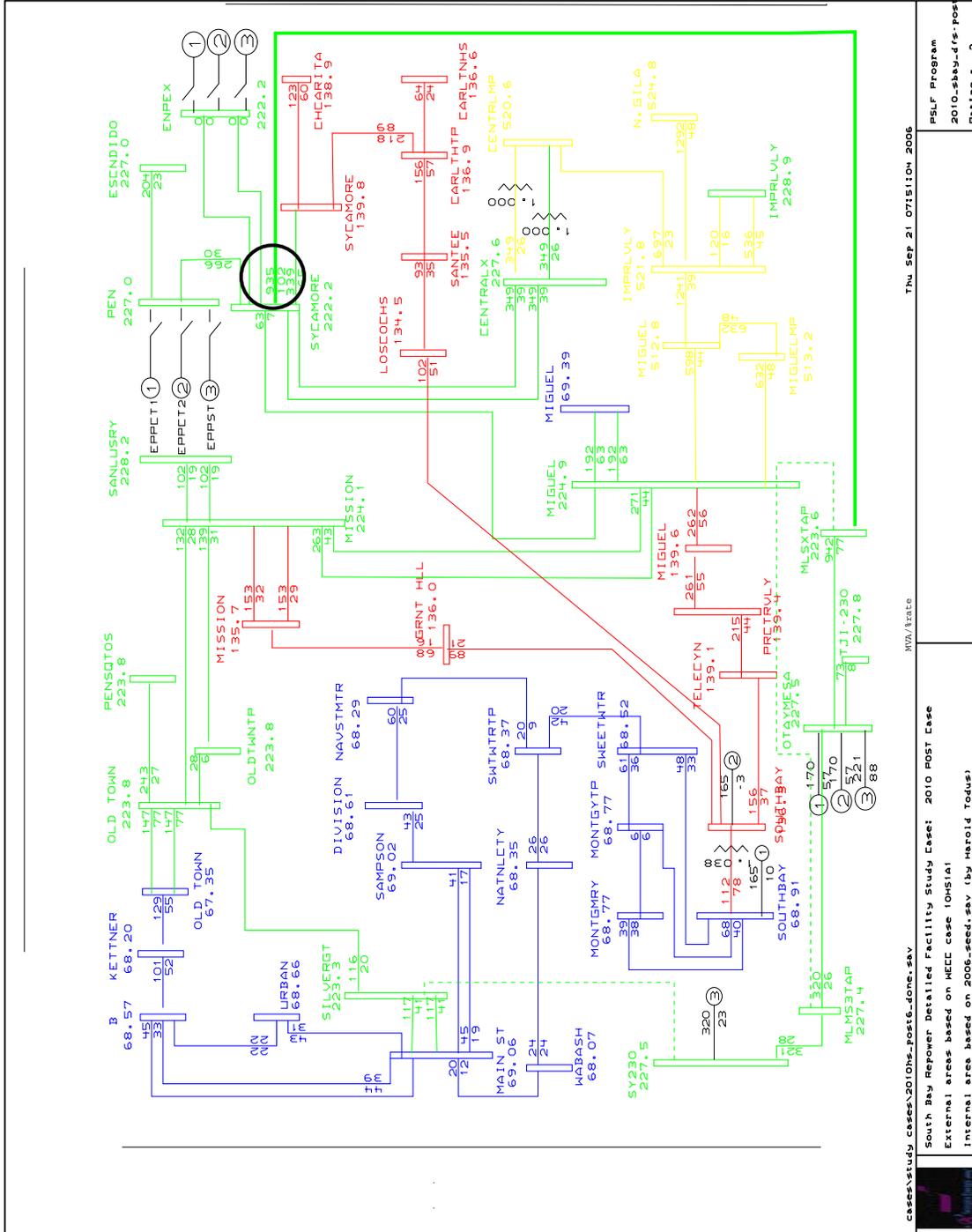
Plot 1: Pre-case (1) loading of TL 6927, Eastgate – Rose Canyon



Plot 3: Pre-Case (6) loading of TL 23041, Sycamore Canyon – Miguel Tap



Plot 4: Post-Case (6) loading of TL 23041, Sycamore Canyon – Miguel Tap

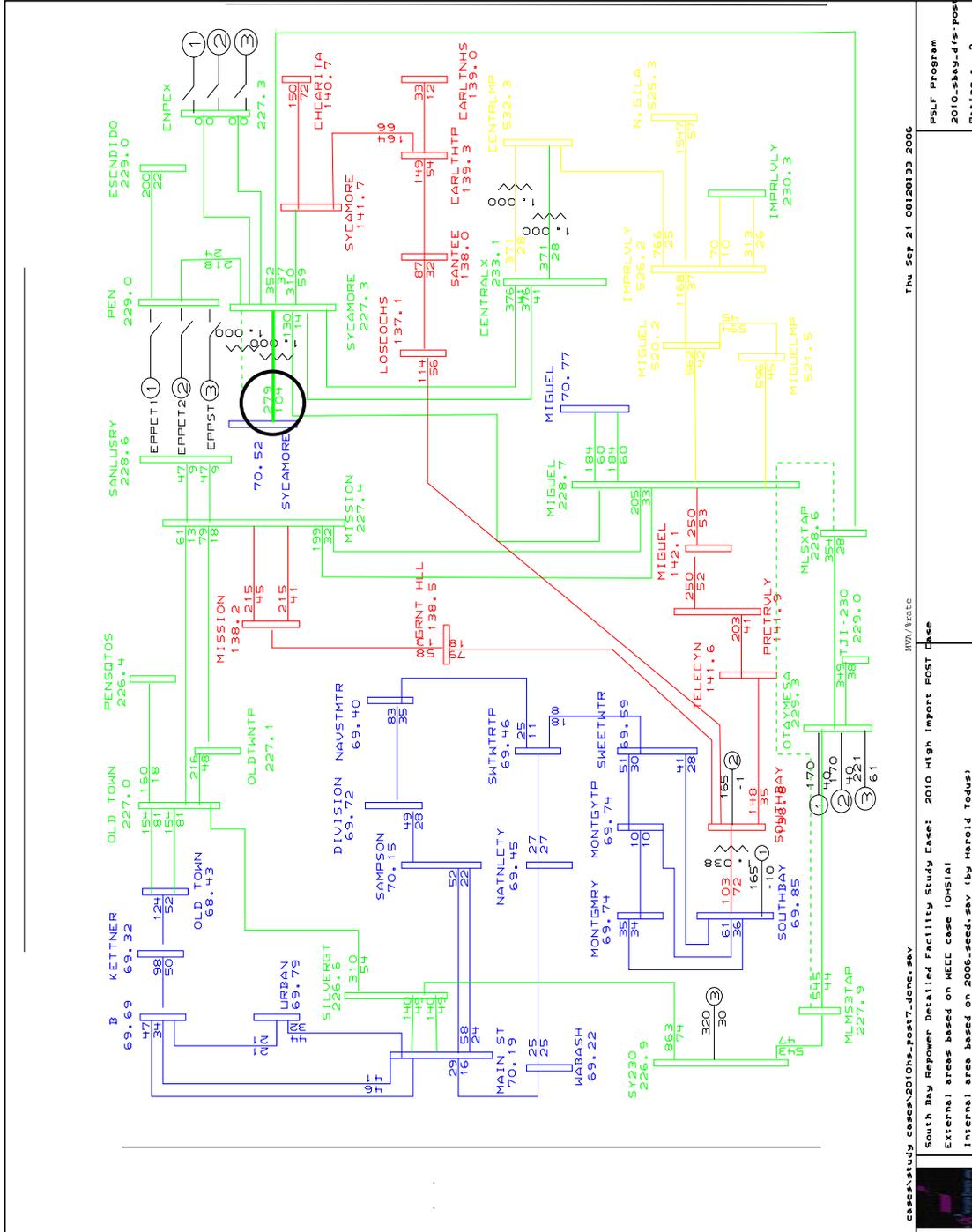


cases\study cases\2010hs-post16-done.sav MVA/phase Thu Sep 21 07:15:10M 2006

South Bay Repower Detailed Facility Study Case: 2010 POST Case
 External areas based on WECC case 10HS1A1
 Internal area based on 2006-seed.sav (by Harold Todus)

PLF Program
 2010-sbbv-dfs-post1-drw
 Rating - 2

Plot 8: Post-Case (7) loading of Sycamore Canyon bank 70



Appendix C – Transient Stability Plots

Stability Dynamic Modeling for South Bay Unit #1

genrou										mbase 702.0 mbaser 234.0											
										22780 SOUTHBY1 18.0 1											
ld	2.1400	lppq	0.1660	tpqo	0.4090	d	0.0000	pkd	0.0000	dpdf	0.0000	dangle	0.0000								
lpd	0.2380	ll	0.1890	tpqqo	0.0710	rcomp	0.0000	pfq	0.0000	dpkd	0.0000										
lppd	0.1660	ra	0.0000	s1	0.0650	xcomp	0.0000	pkq	0.0000	dpfq	0.0000										
lq	2.0400	tpdo	4.7670	s12	0.4300	accel	0.0000	speed	0.0000	dpkq	0.0000										
lpq	0.4970	tppdo	0.0330	h	4.8400	pdf	0.0000	angle	0.0000	dspeed	0.0000										
exst4b										mbase 702.0 mbaser 234.0											
										22780 SOUTHBY1 18.0 1											
ld	2.1400	lppq	0.1660	tpqo	0.4090	d	0.0000	pkd	0.0000	dpdf	0.0000	dangle	0.0000								
lpd	0.2380	ll	0.1890	tpqqo	0.0710	rcomp	0.0000	pfq	0.0000	dpkd	0.0000										
lppd	0.1660	ra	0.0000	s1	0.0650	xcomp	0.0000	pkq	0.0000	dpfq	0.0000										
lq	2.0400	tpdo	4.7670	s12	0.4300	accel	0.0000	speed	0.0000	dpkq	0.0000										
lpq	0.4970	tppdo	0.0330	h	4.8400	pdf	0.0000	angle	0.0000	dspeed	0.0000										
ggov1										mbase 702.0 mbaser 234.0											
										22780 SOUTHBY1 18.0 1											
Tr	0.0000	Vrmin	-0.8700	Kg	0.0000	XI	0.0000	s3	0.0000												
Kpr	3.9700	Kpm	1.0000	Kp	5.0400	Vbmax	6.3000	ds0	0.0000												
Kir	3.9700	Kim	0.0000	Ang p	0.0000	s0	0.0000	ds1	0.0000												
Ta	0.0100	Vmmax	1.0000	Ki	0.0000	s1	0.0000	ds2	0.0000												
Vrmax	1.0000	Vrmin	-0.8700	Kc	0.0800	s2	0.0000	ds3	0.0000												
pss2a										mbase 702.0 mbaser 234.0											
										22780 SOUTHBY1 18.0 1											
r	0.0400	kpgov	10.0000	vmin	0.1500	tc	0.0000	kload	0.6700	kimw	0.0000	db	0.0003	s0	0.0000	s5	0.0000	ds0	0.0000	ds5	0.0000
rselect	1.0000	kigov	2.0000	tact	0.5000	flag	1.0000	ldref	1.0000	pmwset	0.0000	tsa	4.0000	s1	0.0000	s6	0.0000	ds1	0.0000	ds6	0.0000
tpelec	1.0000	kdgov	0.0000	kturb	1.5000	teng	0.0000	dm	-2.0000	aset	0.0100	tsb	4.0000	s2	0.0000	s7	0.0000	ds2	0.0000	ds7	0.0000
maxerr	0.0500	tdgov	1.0000	wfnl	0.2000	tfload	3.0000	ropen	0.1000	ka	5.0000	rup	99.0000	s3	0.0000	s8	0.0000	ds3	0.0000	ds8	0.0000
minerr	-0.0500	vmx	1.0000	tb	0.5000	kpload	2.0000	rclose	-0.1000	ta	0.1000	rdown	-99.0000	s4	0.0000	s9	0.0000	ds4	0.0000	ds9	0.0000

Stability Dynamic Modeling for South Bay Unit #2

genrou												mbase 702.0 mbase_r 234.0 22784 SOUTHBY2 18.0 1													
ld	2.1400	lppq	0.1660	tpqo	0.4090	d	0.0000	pkd	0.0000	dpdf	0.0000	dangle	0.0000												
lpd	0.2380	ll	0.1890	tpqqo	0.0710	rcomp	0.0000	pfq	0.0000	dpkd	0.0000														
lppd	0.1660	ra	0.0000	s1	0.0650	xcomp	0.0000	pkq	0.0000	dpfq	0.0000														
lq	2.0400	tpdo	4.7670	s12	0.4300	accel	0.0000	speed	0.0000	dpkq	0.0000														
lpq	0.4970	tppdo	0.0330	h	4.8400	pdf	0.0000	angle	0.0000	dspeed	0.0000														
exst4b												mbase 702.0 mbase_r 234.0 22784 SOUTHBY2 18.0 1													
Tr	0.0000	Vrmin	-0.8700	Kg	0.0000	XI	0.0000	s3	0.0000																
Kpr	3.9700	Kpm	1.0000	Kp	5.0400	Vbmax	6.3000	ds0	0.0000																
Kir	3.9700	Kim	0.0000	Ang p	0.0000	s0	0.0000	ds1	0.0000																
Ta	0.0100	Vmmax	1.0000	Ki	0.0000	s1	0.0000	ds2	0.0000																
Vrmax	1.0000	Vrmin	-0.8700	Kc	0.0800	s2	0.0000	ds3	0.0000																
ggov1												mbase 702.0 mbase_r 234.0 22784 SOUTHBY2 18.0 1													
r	0.0400	kpgov	10.0000	vmin	0.1500	tc	0.0000	kiload	0.6700	kimw	0.0000	db	0.0003	s0	0.0000	s5	0.0000	ds0	0.0000	ds5	0.0000				
rselect	1.0000	kigov	2.0000	taot	0.5000	flag	1.0000	ldref	1.0000	pmwset	0.0000	tsa	4.0000	s1	0.0000	s6	0.0000	ds1	0.0000	ds6	0.0000				
tpelec	1.0000	kdgov	0.0000	kturb	1.5000	teng	0.0000	dm	-2.0000	aset	0.0100	tsb	4.0000	s2	0.0000	s7	0.0000	ds2	0.0000	ds7	0.0000				
maxerr	0.0500	tdgov	1.0000	wfni	0.2000	tload	3.0000	ropen	0.1000	ka	5.0000	rup	99.0000	s3	0.0000	s8	0.0000	ds3	0.0000	ds8	0.0000				
minerr	-0.0500	vmax	1.0000	tb	0.5000	kpload	2.0000	rclose	-0.1000	ta	0.1000	rdown	-99.0000	s4	0.0000	s9	0.0000	ds4	0.0000	ds9	0.0000				
pss2a												mbase 702.0 mbase_r 234.0 22784 SOUTHBY2 18.0 1													
j1	1.0000	tw2	2.0000	ks2	0.2100	n	1.0000	t3	0.1500	ta	0.0000	s3	0.0000	s8	0.0000	s13	0.0000	s18	0.0000	d4	0.0000	d9	0.0000		
k1	0.0000	tw3	2.0000	ks3	1.0000	m	5.0000	t4	0.0300	tb	0.0000	s4	0.0000	s9	0.0000	s14	0.0000	d0	0.0000	d5	0.0000	d10	0.0000		
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k2	0.0000	t6	0.0000	t8	0.5000	t1	0.1500	vstmin	-0.1000	s1	0.0000	s6	0.0000	s11	0.0000	s16	0.0000	d2	0.0000	d7	0.0000	d12	0.0000		
tw1	2.0000	t7	2.0000	t9	0.1000	t2	0.0300	a	0.0000	s2	0.0000	s7	0.0000	s12	0.0000	s17	0.0000	d3	0.0000	d8	0.0000	d13	0.0000		

Stability Dynamic Modeling for South Bay Unit #3

genrou															mbase 1119.0 mbaser 373.0								
															22788 SOUTHBY3 19.0 1								
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exst4b															mbase 1119.0 mbaser 373.0								
															22788 SOUTHBY3 19.0 1								
Tr	0.0000	Vrmin	-0.8700	Kg	0.0000	XI	0.0000	s3	0.0000														
Kpr	3.5000	Kpm	1.0000	Kp	5.7100	Vbmax	7.1400	ds0	0.0000														
Kir	3.5000	Kim	0.0000	Ang p	0.0000	s0	0.0000	ds1	0.0000														
Ta	0.0100	Vmmax	1.0000	Ki	0.0000	s1	0.0000	ds2	0.0000														
Vrmax	1.0000	Vrmin	-0.8700	Kc	0.0700	s2	0.0000	ds3	0.0000														
ggov1															mbase 1119.0 mbaser 373.0								
															22788 SOUTHBY3 19.0 1								
r	0.0400	kpgov	10.0000	vmin	0.1500	tc	195.0000	kload	0.6700	kimw	0.0000	db	0.0003	s0	0.0000	s5	0.0000	ds0	0.0000	ds5	0.0000		
rselect	1.0000	kigov	2.0000	tact	0.5000	flag	0.0000	ldref	1.0000	pmwset	0.0000	tsa	4.0000	s1	0.0000	s6	0.0000	ds1	0.0000	ds6	0.0000		
tpelec	1.0000	kdgov	0.0000	kturb	1.5000	teng	0.0000	dm	-2.0000	aset	0.0100	tsb	4.0000	s2	0.0000	s7	0.0000	ds2	0.0000	ds7	0.0000		
maxerr	0.0500	tdgov	1.0000	wfnl	0.2000	tfload	3.0000	ropen	0.1000	ka	5.0000	rup	99.0000	s3	0.0000	s8	0.0000	ds3	0.0000	ds8	0.0000		
minerr	-0.0500	vmax	1.0000	tb	300.0000	kload	2.0000	rclose	-0.1000	ta	0.1000	rdown	-99.0000	s4	0.0000	s9	0.0000	ds4	0.0000	ds9	0.0000		
pss2a															mbase 1119.0 mbaser 373.0								
															22788 SOUTHBY3 19.0 1								
j1	1.0000	tw2	2.0000	ks2	0.2970	n	1.0000	t3	0.1500	ta	0.0000	s3	0.0000	s8	0.0000	s13	0.0000	s18	0.0000	d4	0.0000	d9	0.0000
k1	0.0000	tw3	2.0000	ks3	1.0000	m	5.0000	t4	0.0300	tb	0.0000	s4	0.0000	s9	0.0000	s14	0.0000	d0	0.0000	d5	0.0000	d10	0.0000
j2	3.0000	tw4	0.0000	ks4	1.0000	ks1	10.0000	vstmax	0.1000	s0	0.0000	s5	0.0000	s10	0.0000	s15	0.0000	d1	0.0000	d6	0.0000	d11	0.0000
k2	0.0000	t6	0.0000	t8	0.5000	t1	0.1500	vstmin	-0.1000	s1	0.0000	s6	0.0000	s11	0.0000	s16	0.0000	d2	0.0000	d7	0.0000	d12	0.0000
tw1	2.0000	t7	2.0000	t9	0.1000	t2	0.0300	a	0.0000	s2	0.0000	s7	0.0000	s12	0.0000	s17	0.0000	d3	0.0000	d8	0.0000	d13	0.0000

Transient Stability Contingency List

Case 1

Fault Palo Verde 500 kV
Trip Palo Verde-Devers 500 kv SLO

Case 2

Fault Devers 500 kV
Trip DPV1 & DPV2

Case 3

Fault Hassayampa 500 kV
Trip Hassayampa-N.Gila 500 kV SLO

Case 4

Fault Imperial Valley 500 kV
Trip Imperial Valley-Miguel 500 kV SLO (trip open IV-ROA)

Case 5

Fault Imperial Valley 500 kV
Trip N.Gila-Imperial Valley 500 kV SLO

Case 6

Fault Otay Mesa 230 kV
Trip Otay Mesa Units 1, 2 & 3

Case 7

Fault S.ONOFRE 230 kV bus
Trip San Onofre units #2 and #3

Case 8

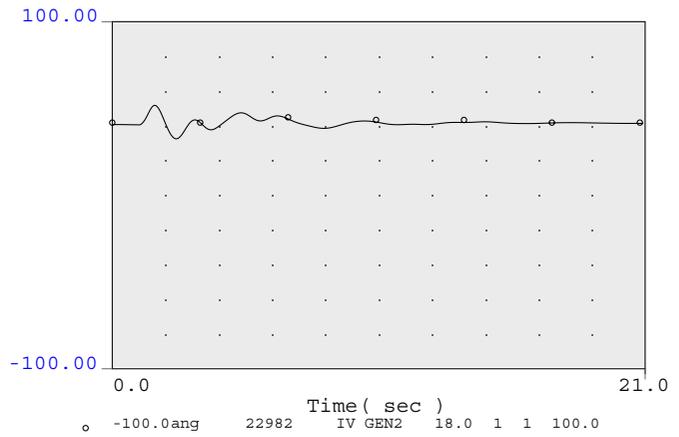
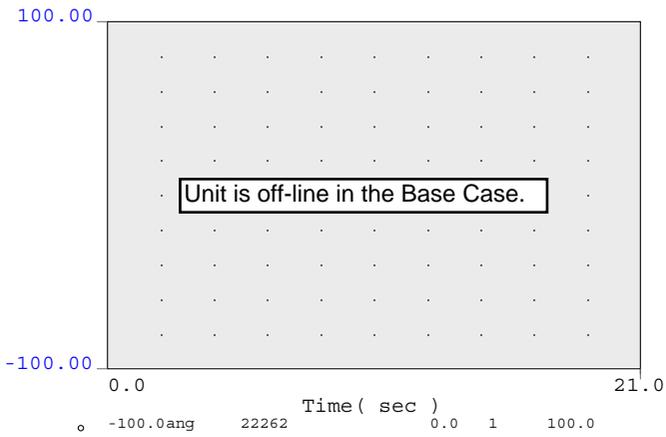
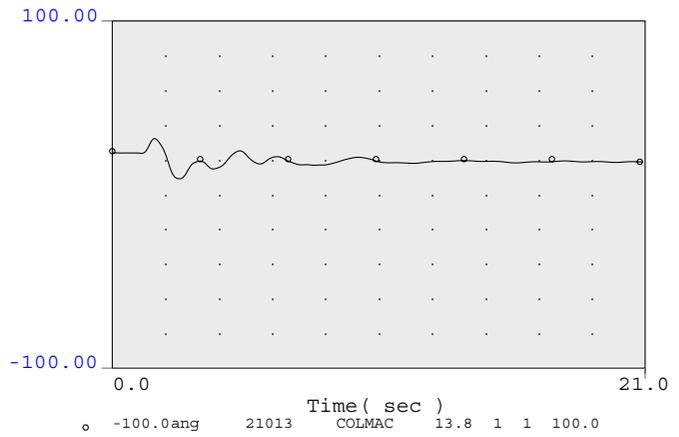
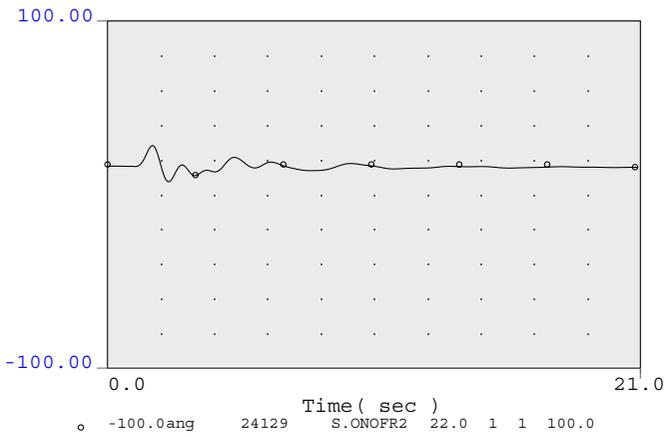
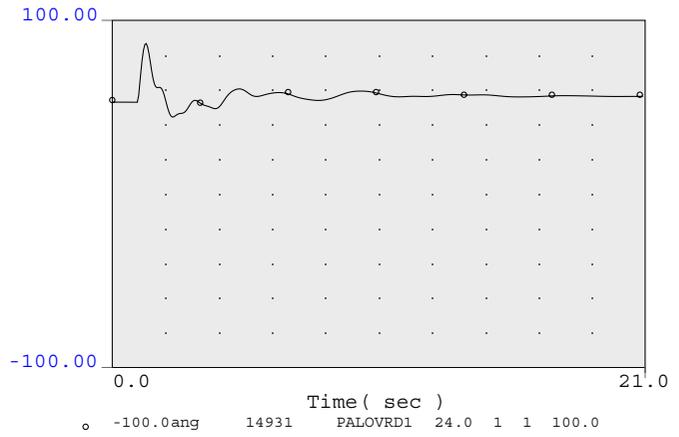
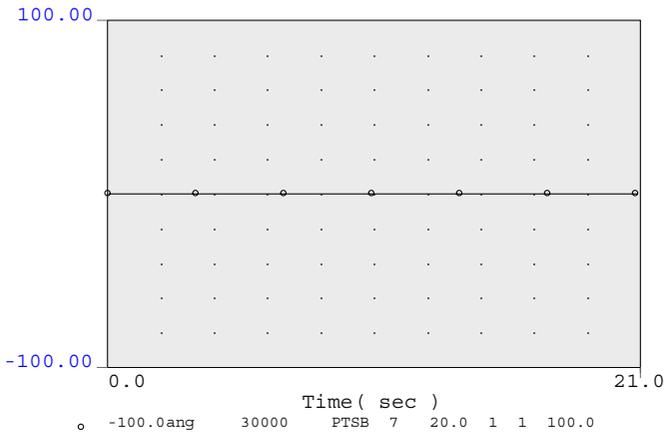
6 Cycle Fault SOUTH BAY 69kV
No system elements removed post clearing

Case 9

6 Cycle Fault SOUTH BAY 138kV
No system elements removed post clearing

Case 10

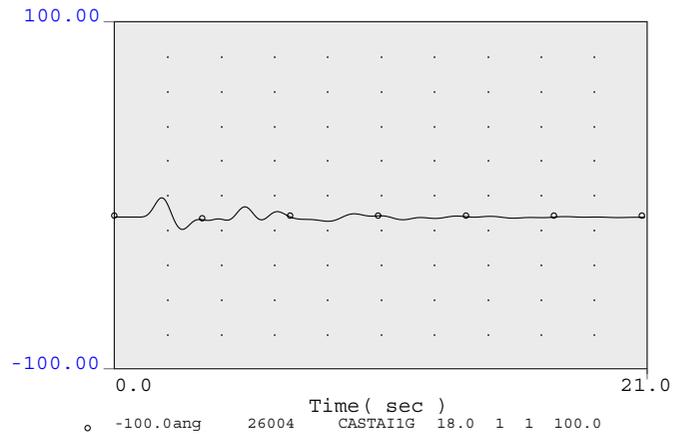
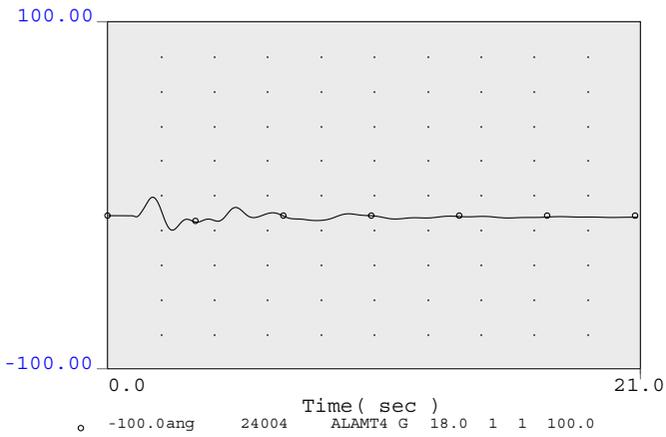
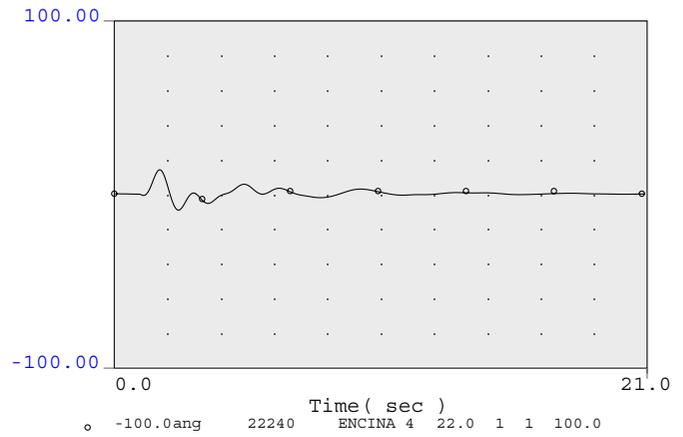
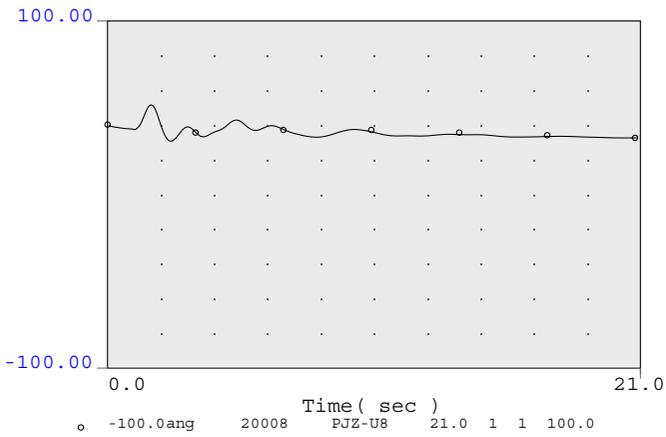
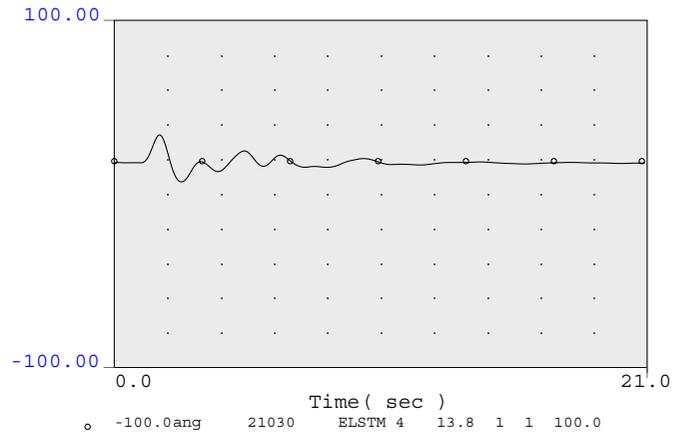
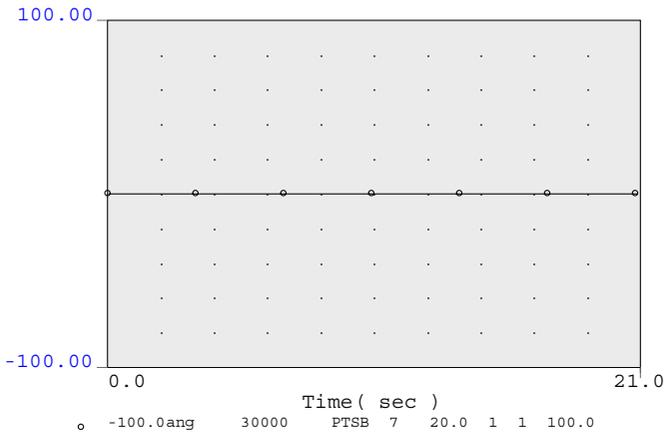
6 Cycle Fault SOUTH BAY 230kV
No system elements removed post clearing



Fault Palo Verde 500 kV
 Trip Palo Verde-Devers 500 kv SLO
 This is a Post project Case.
 This case contains ENPEX, Cabrillo, and all Crestwood wind generation.
 This is a high import Case, with All newer generation
 in the SDG&E control area at full output.



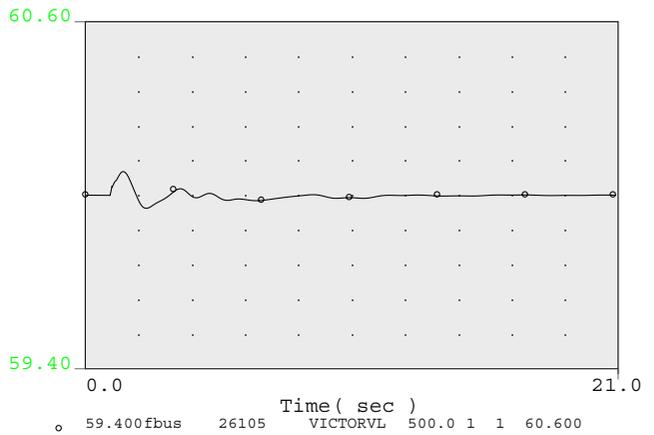
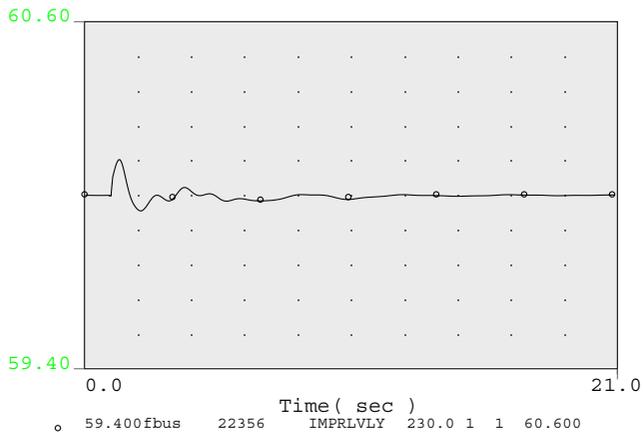
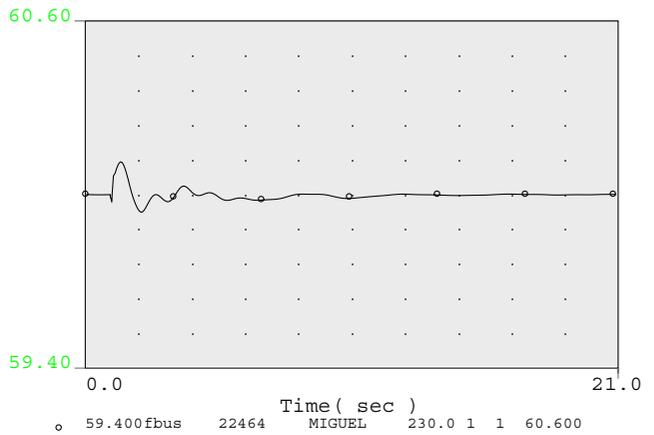
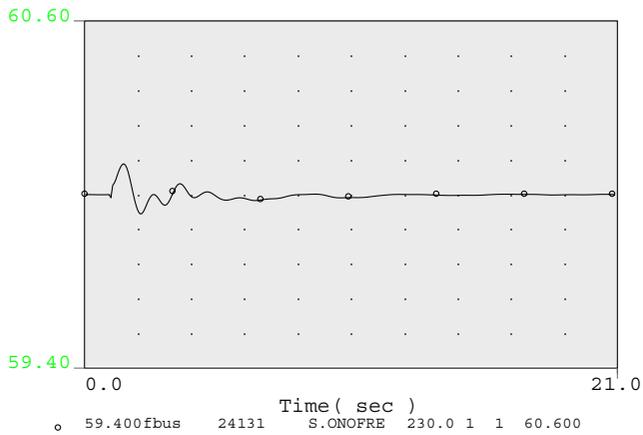
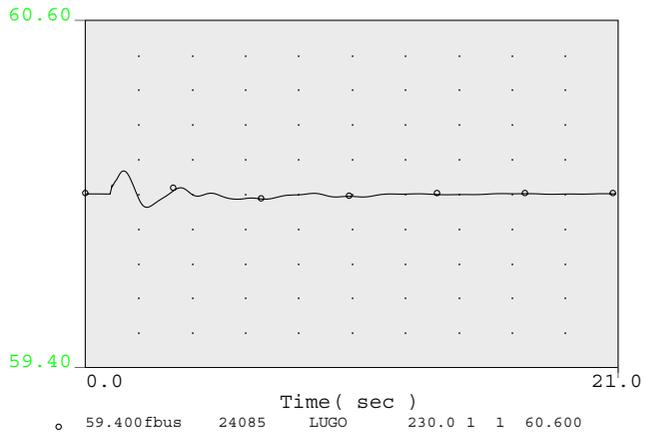
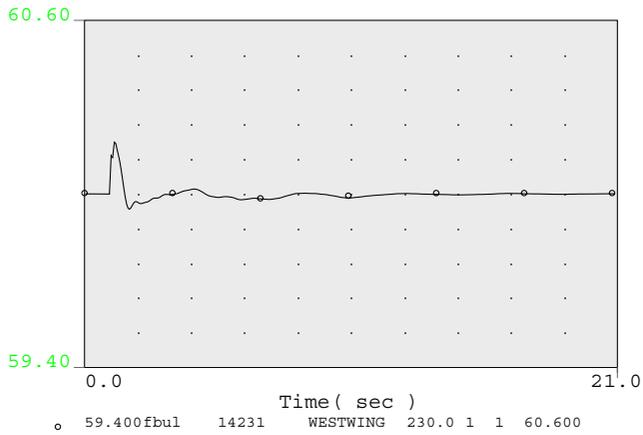
peakers, and old steam units in the SDG&E control area are OFF.
 dpvl pst.chf
 s OFF, Cabrillo is OFF, Otay Mesa is OFF, South Bay
 generation is at 650 MW.



Fault Palo Verde 500 kV
 Trip Palo Verde-Devers 500 kv SLO
 This is a Post project Case.
 This case contains ENPEX, Cabrillo, and all Crestwood wind generation.
 This is a high import Case, with All newer generation
 in the SDG&E control area at full output.



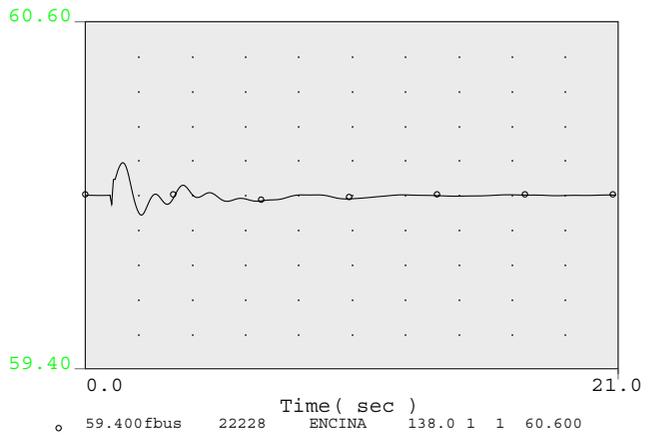
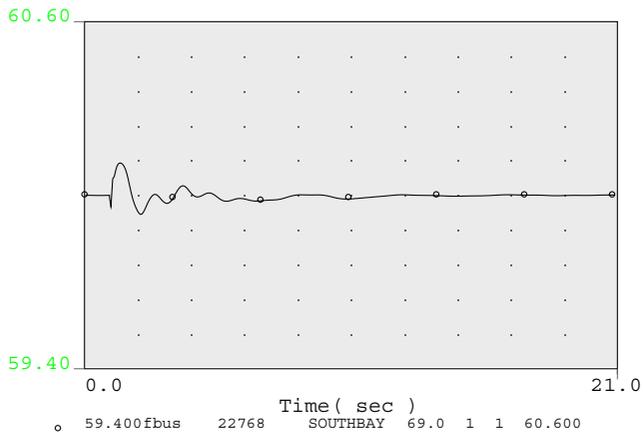
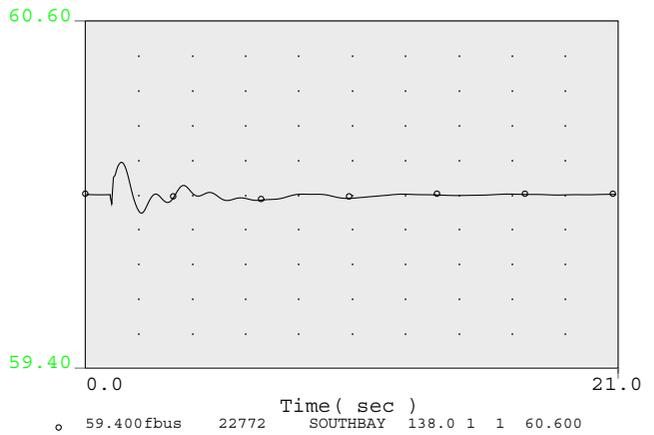
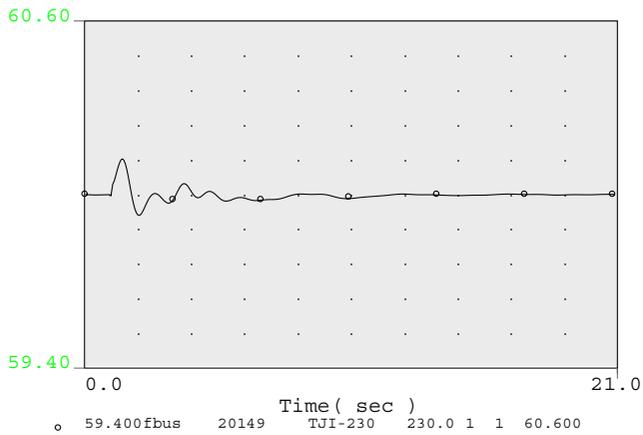
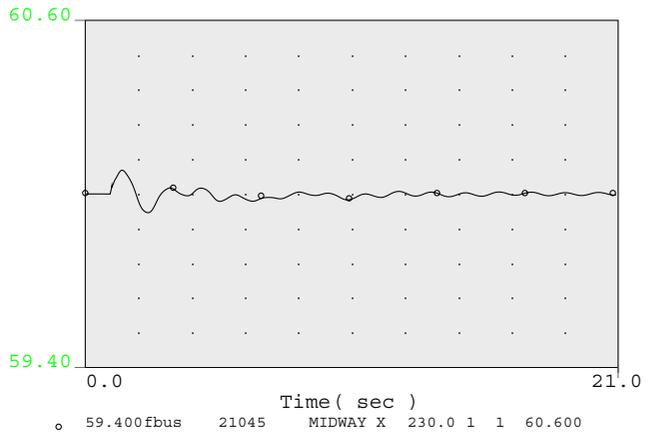
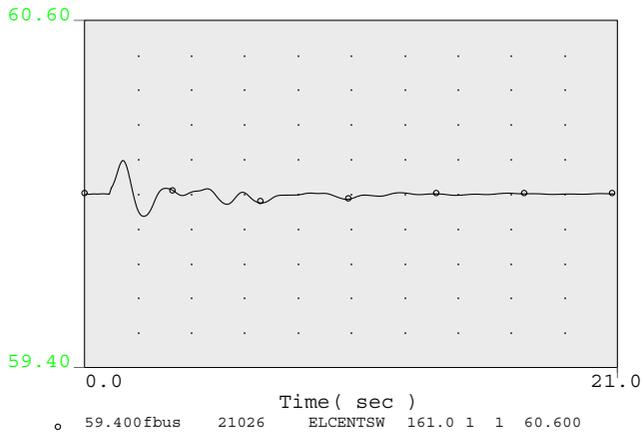
peakers, and old steam units in the SDG&E control area are OFF.
 dpvl pst.chf
 s OFF, Cabrillo is OFF, Otay Mesa is OFF, South Bay
 generation is at 650 MW.



Fault Palo Verde 500 kV
 Trip Palo Verde-Devers 500 kv SLO
 This is a Post project Case.
 This case contains ENPEX, Cabrillo, and all Crestwood wind generation.
 This is a high import Case, with All newer generation
 in the SDG&E control area at full output.



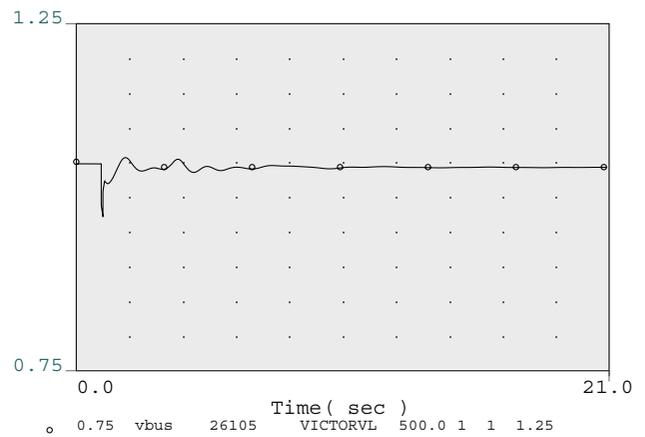
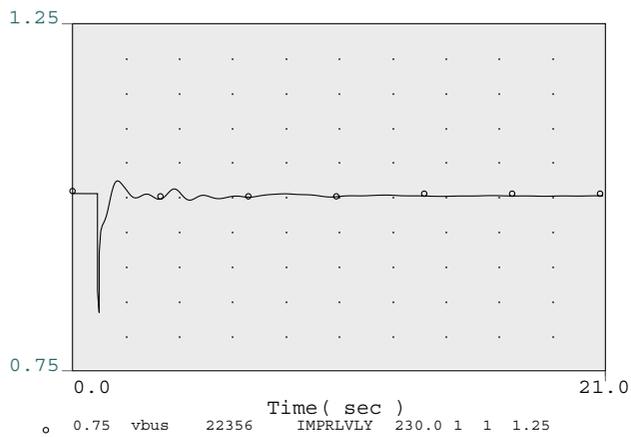
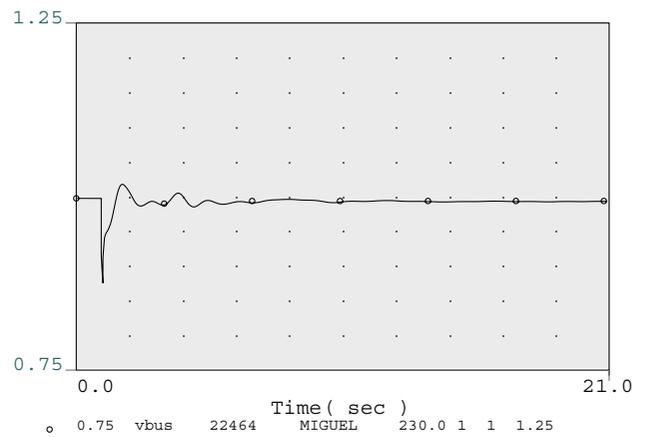
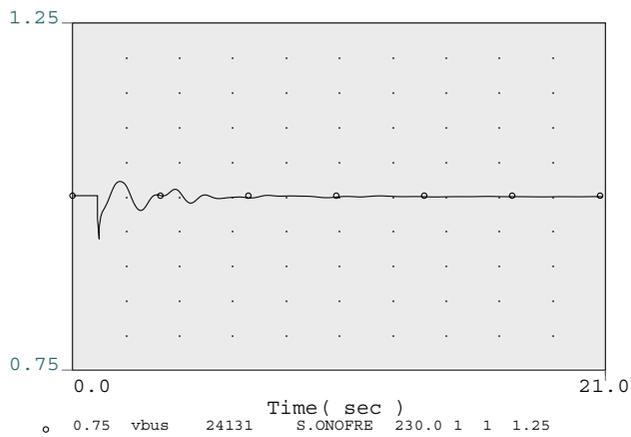
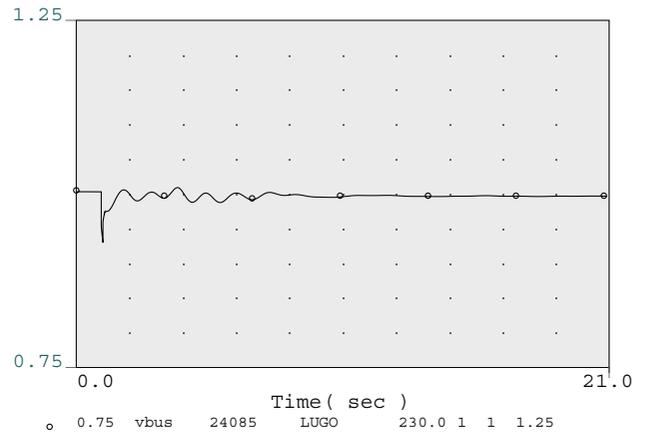
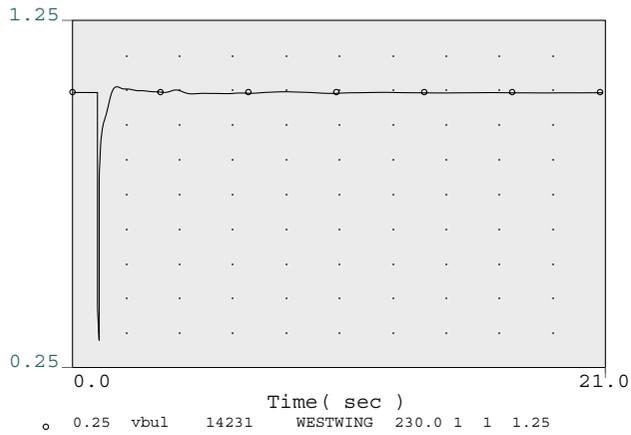
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 dpvl pst.chf
 s OFF, Cabrillo is OFF, Otay Mesa is OFF, South Bay
 generation is at 650 MW.



Fault Palo Verde 500 kV
 Trip Palo Verde-Devers 500 kv SLO
 This is a Post project Case.
 This case contains ENPEX, Cabrillo, and all Crestwood wind generation.
 This is a high import Case, with All newer generation
 in the SDG&E control area at full output.



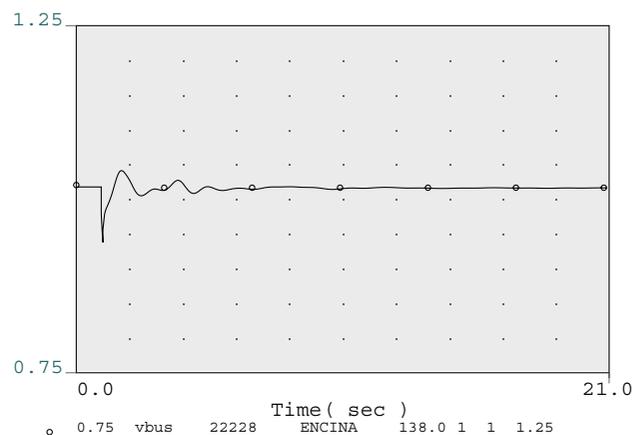
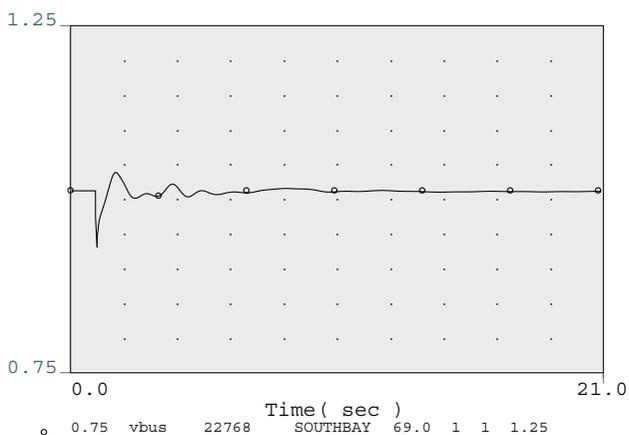
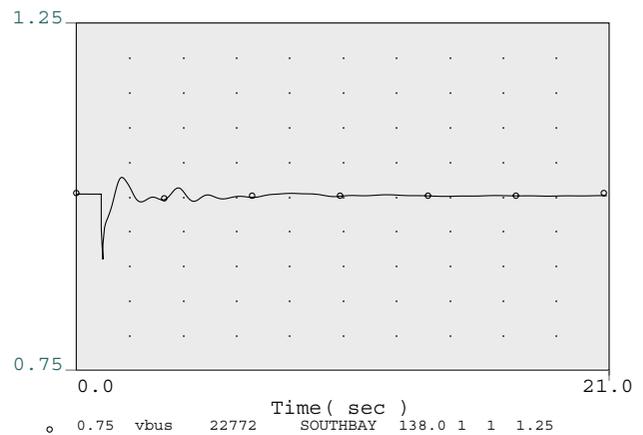
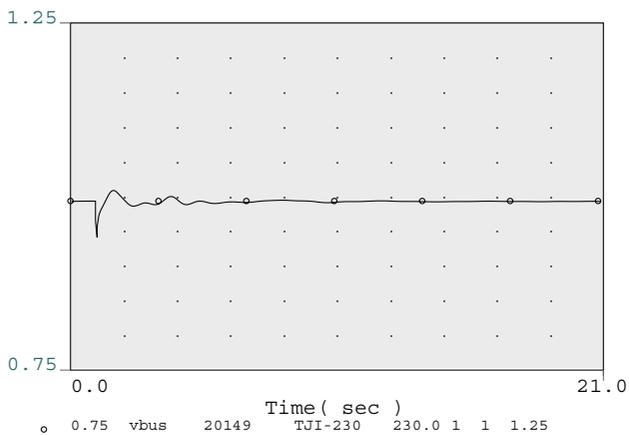
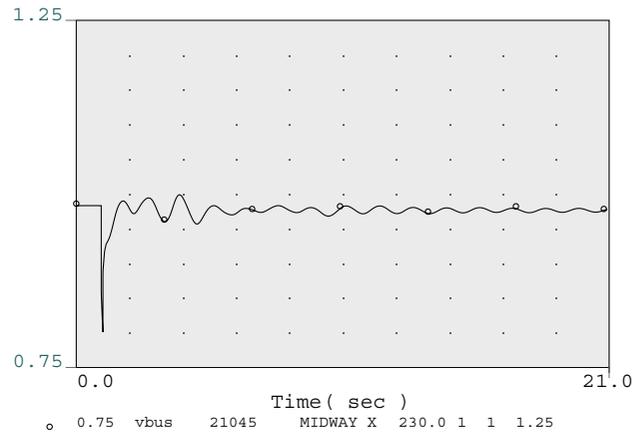
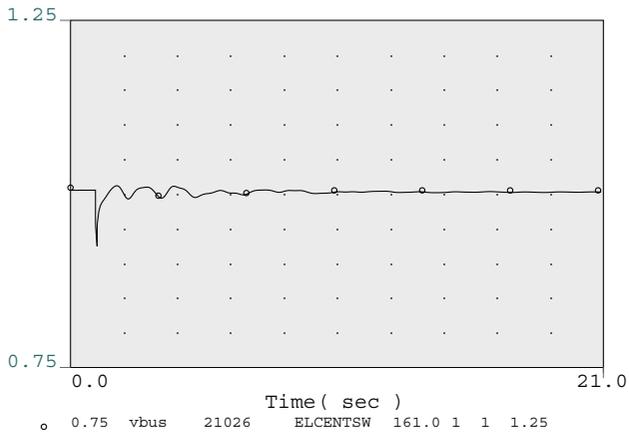
peakers, and old steam units in the SDG&E control area are OFF.
 dpvl pst.chf
 s OFF, Cabrillo is OFF, Otay Mesa is OFF, South Bay
 generation is at 650 MW.



Fault Palo Verde 500 kV
 Trip Palo Verde-Devers 500 kv SLO
 This is a Post project Case.
 This case contains ENPEX, Cabrillo, and all Crestwood wind generation.
 This is a high import Case, with All newer generation
 in the SDG&E control area at full output.



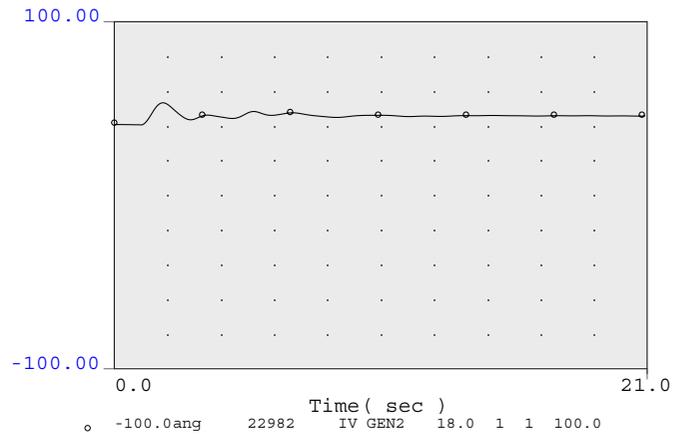
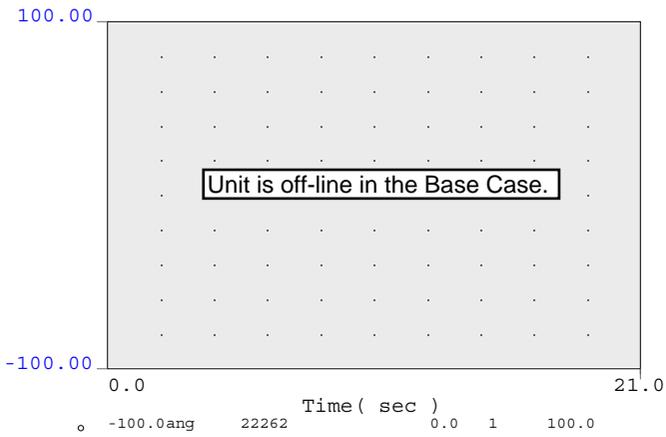
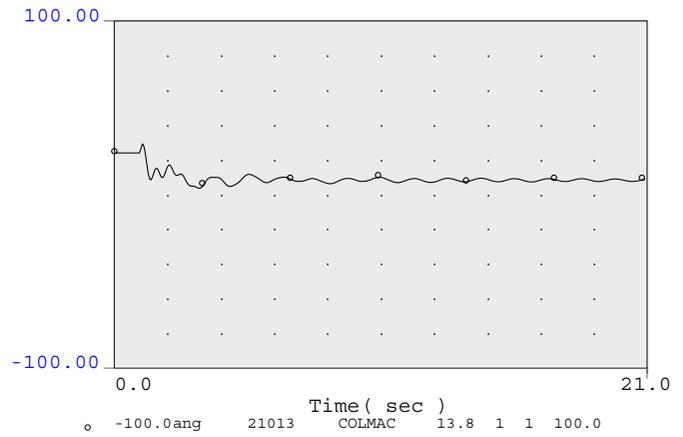
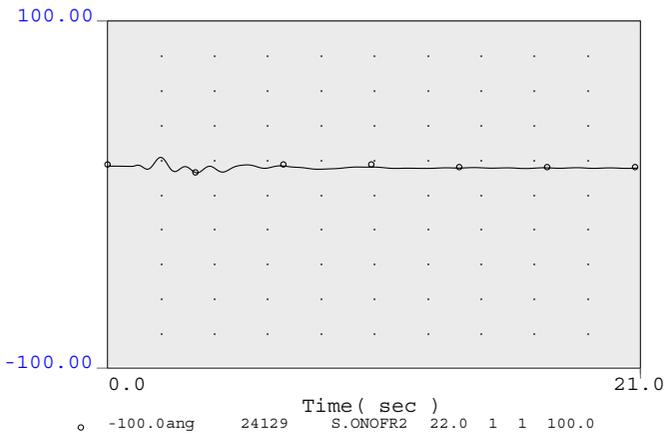
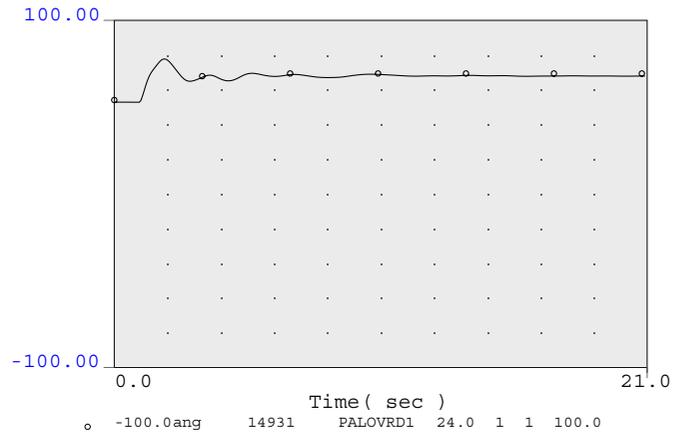
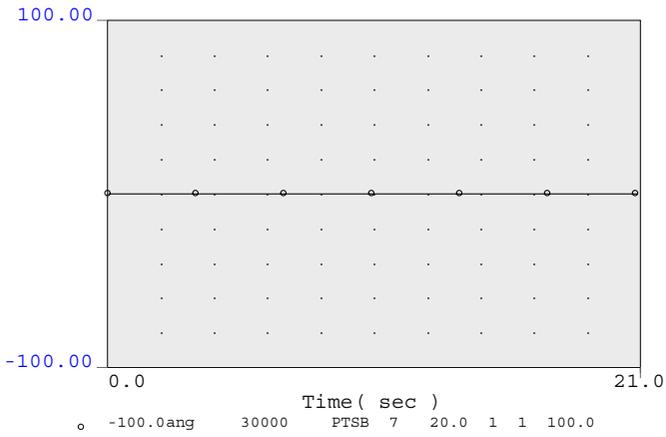
peakers, and old steam units in the SDG&E control area are OFF.
 dpvl pst.chf
 s OFF, Cabrillo is OFF, Otay Mesa is OFF, South Bay
 generation is at 650 MW.



Fault Palo Verde 500 kV
 Trip Palo Verde-Devers 500 kv SLO
 This is a Post project Case.
 This case contains ENPEX, Cabrillo, and all Crestwood wind generation.
 This is a high import Case, with All newer generation
 in the SDG&E control area at full output.



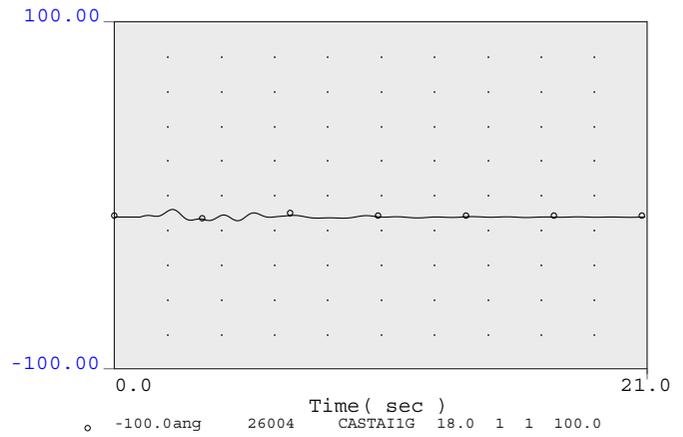
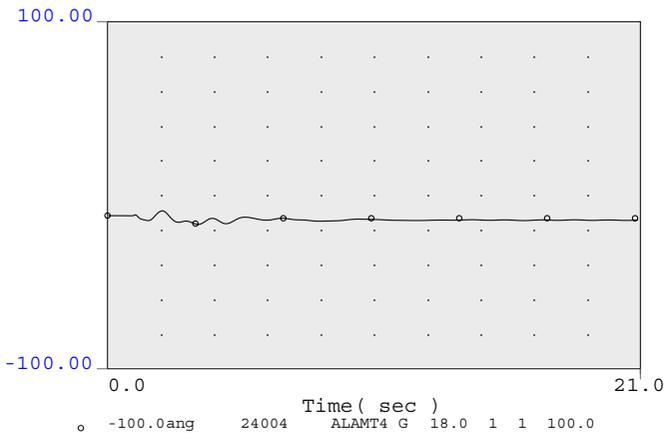
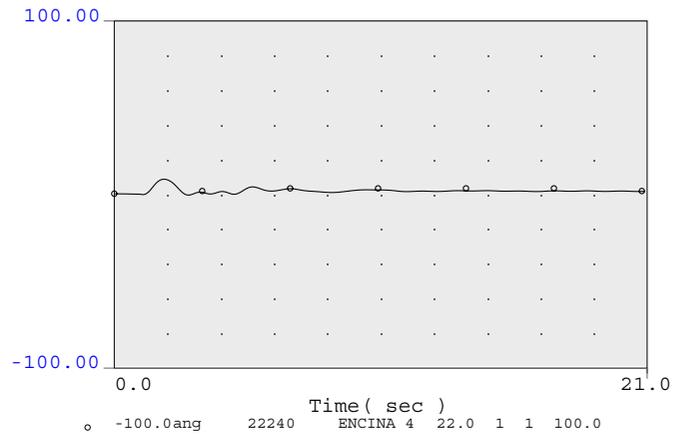
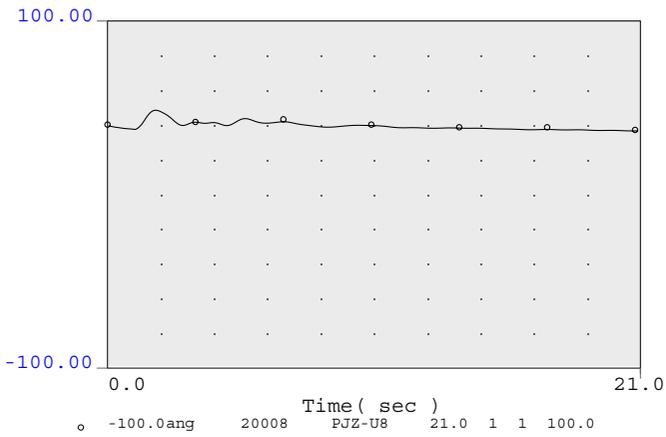
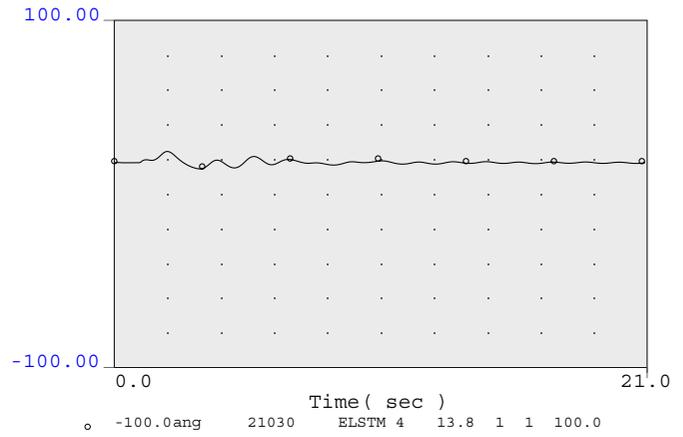
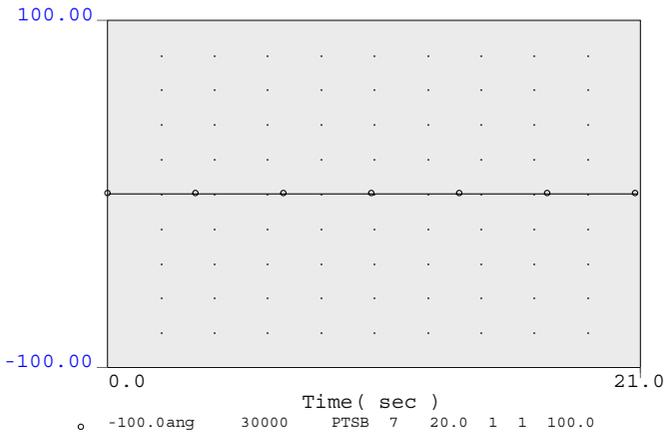
peakers, and old steam units in the SDG&E control area are OFF.
 dpvl pst.chf
 s OFF, Cabrillo is OFF, Otay Mesa is OFF, South Bay
 generation is at 650 MW.



Fault Devers 500 kV
 Trip DPV1 & DPV2
 This is a Post project Case.
 This case contains ENPEX, Cabrillo, and all Crestwood wind generation.
 This is a high import Case, with All newer generation
 in the SDG&E control area at full output.



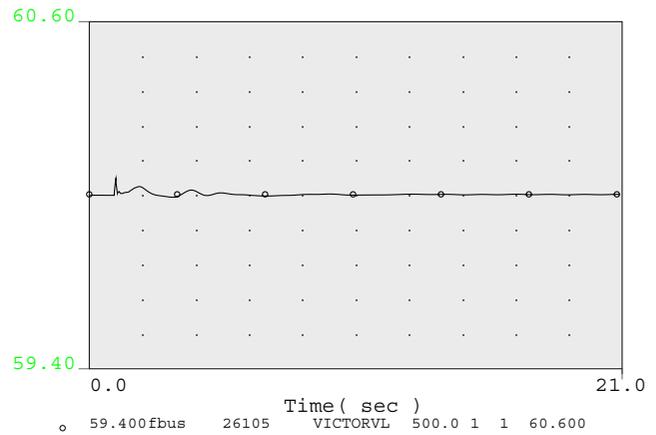
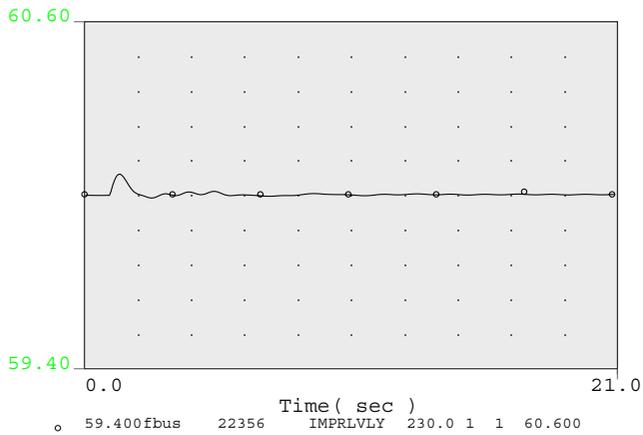
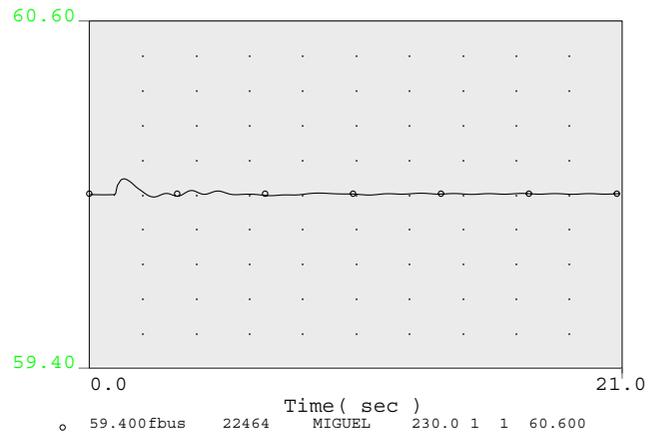
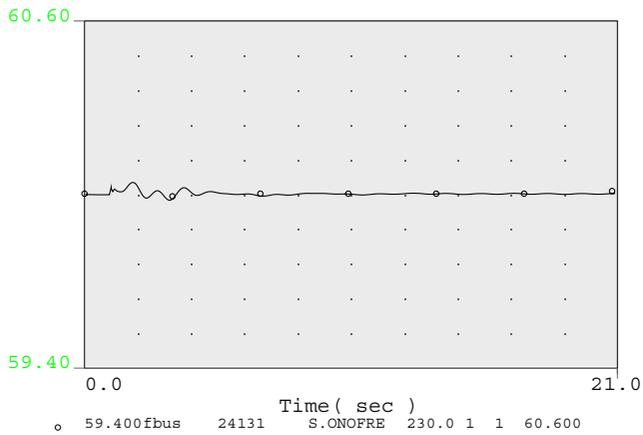
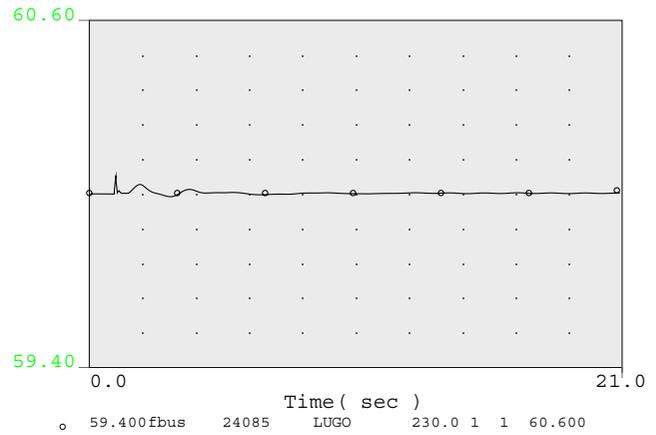
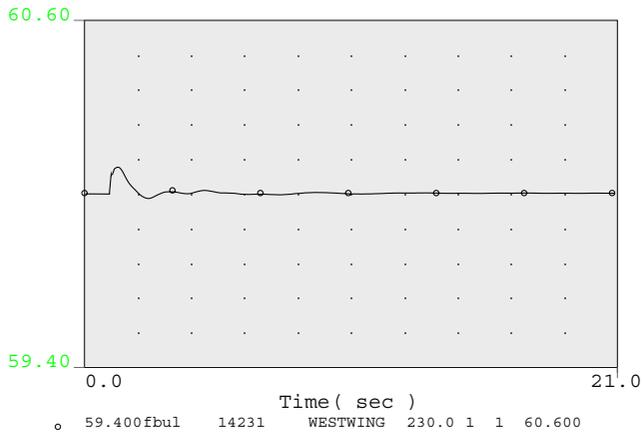
peakers, and old steam units in the SDG&E control area are OFF.
 dpv12_pst.chf
 s OFF, Cabrillo is OFF, Otay Mesa is OFF, South Bay
 generation is at 650 MW.



Fault Devers 500 kV
 Trip DPV1 & DPV2
 This is a Post project Case.
 This case contains ENPEX, Cabrillo, and all Crestwood wind generation.
 This is a high import Case, with All newer generation
 in the SDG&E control area at full output.



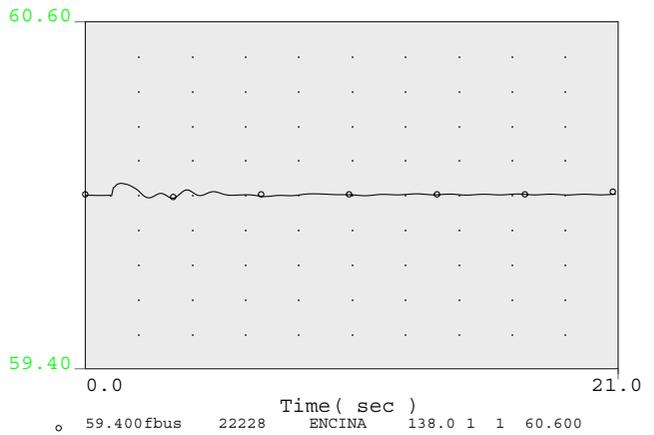
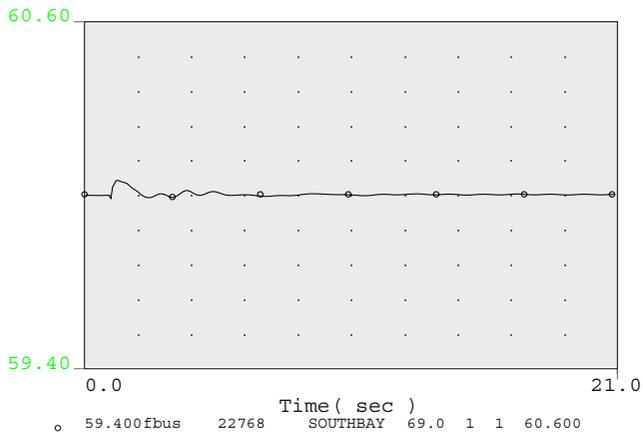
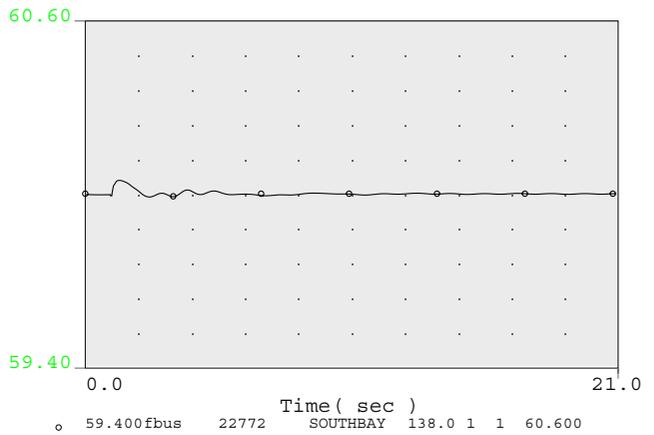
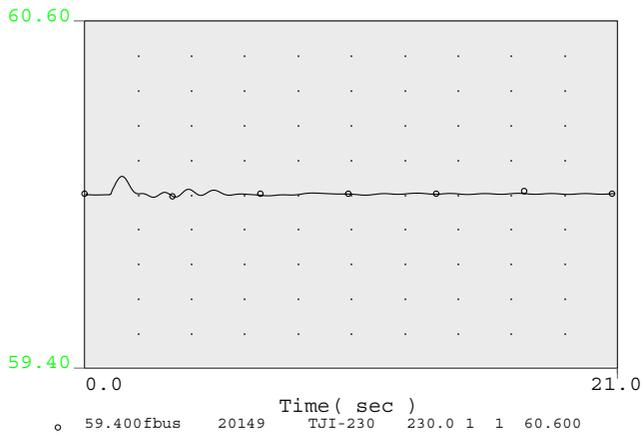
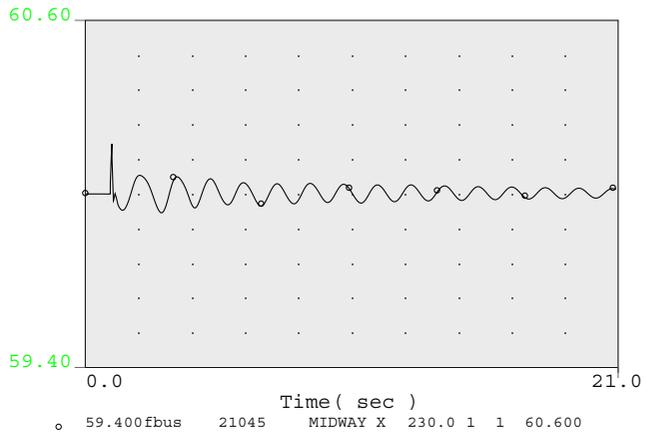
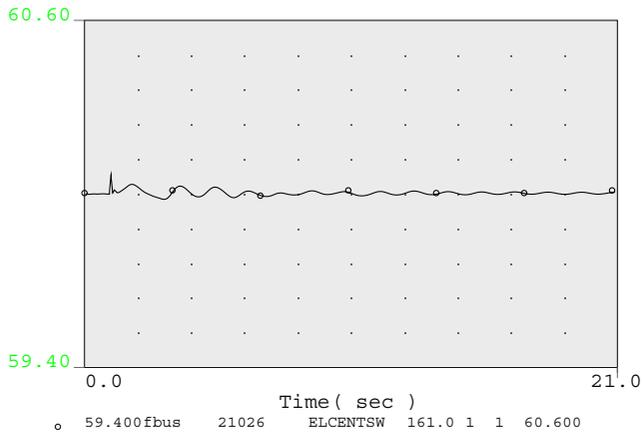
peakers, and old steam units in the SDG&E control area are OFF.
 dpv12_pst.chf
 s OFF, Cabrillo is OFF, Otay Mesa is OFF, South Bay
 generation is at 650 MW.



Fault Devers 500 kV
 Trip DPV1 & DPV2
 This is a Post project Case.
 This case contains ENPEX, Cabrillo, and all Crestwood wind generation.
 This is a high import Case, with All newer generation
 in the SDG&E control area at full output.



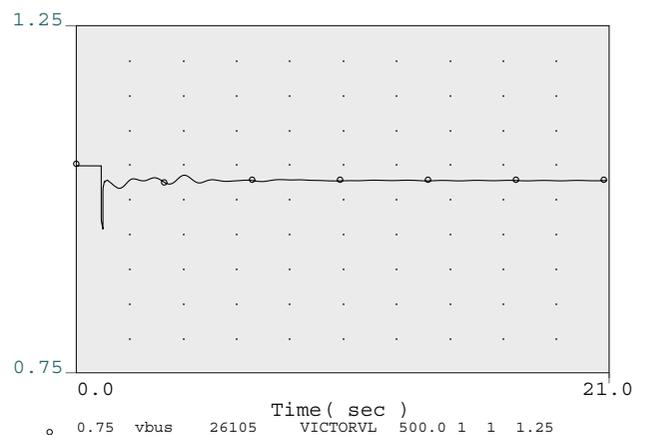
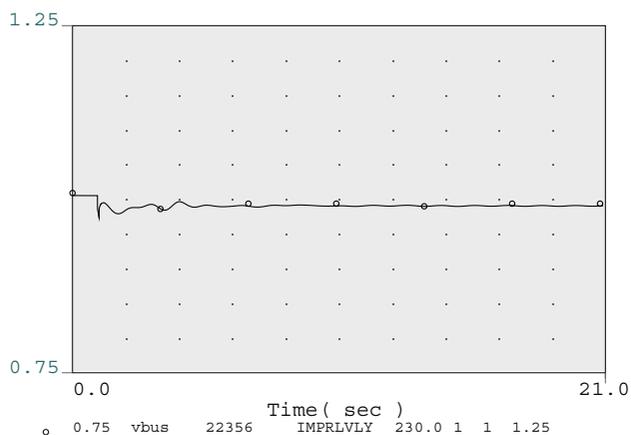
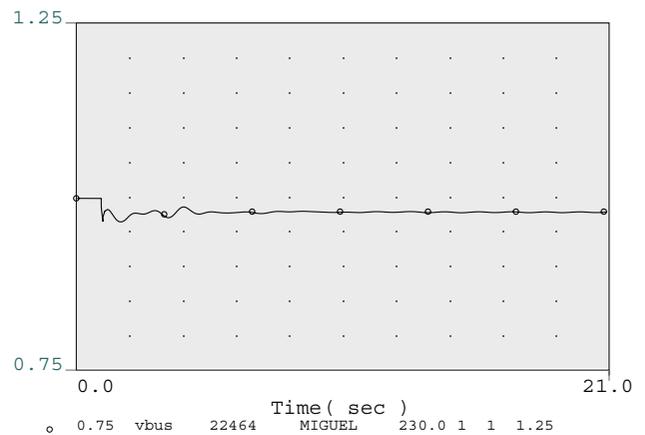
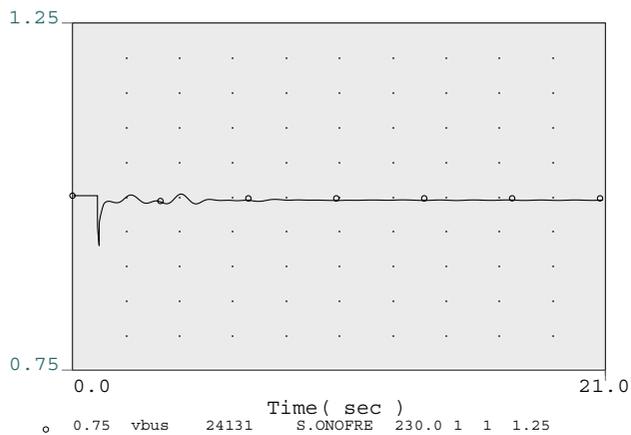
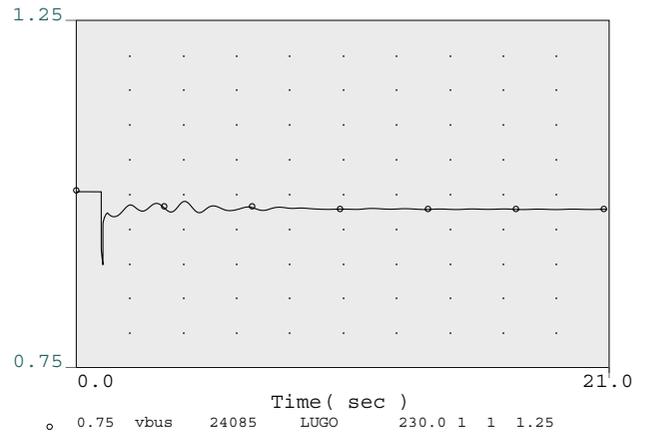
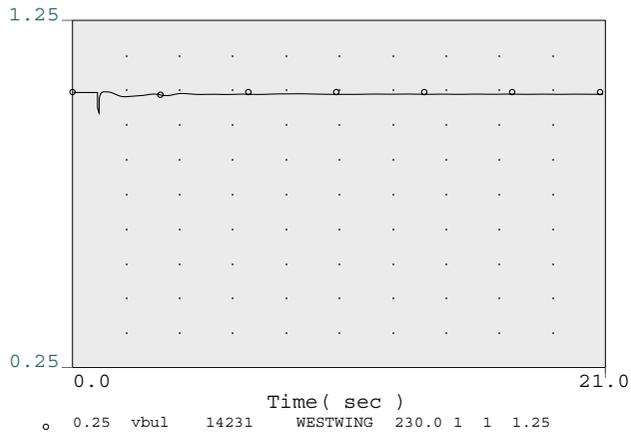
peakers, and old steam units in the SDG&E control area are OFF.
 dpv12_pst.chf
 s OFF, Cabrillo is OFF, Otay Mesa is OFF, South Bay
 generation is at 650 MW.



Fault Devers 500 kV
 Trip DPV1 & DPV2
 This is a Post project Case.
 This case contains ENPEX, Cabrillo, and all Crestwood wind generation.
 This is a high import Case, with All newer generation
 in the SDG&E control area at full output.



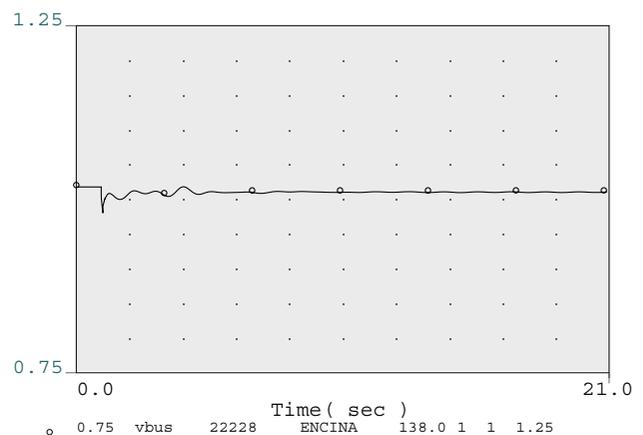
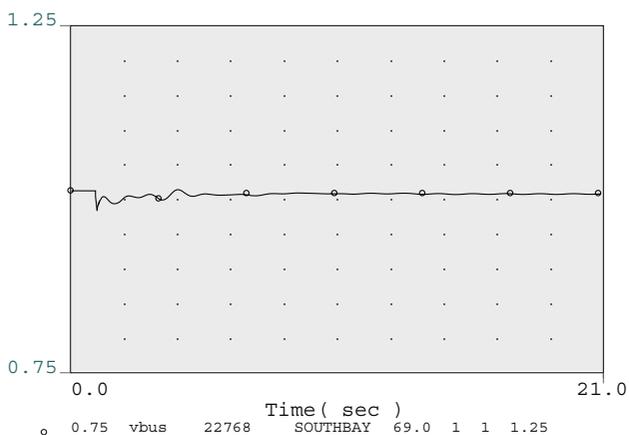
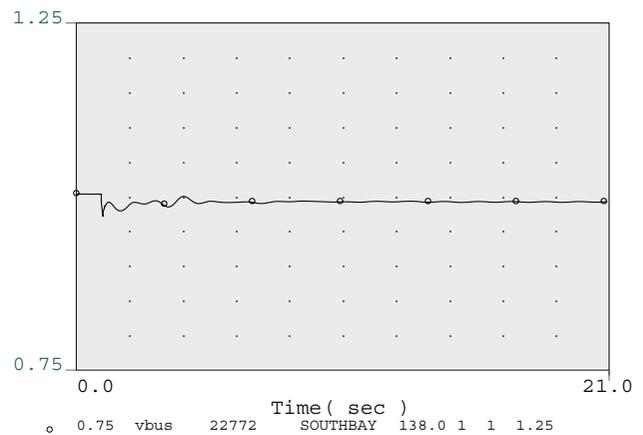
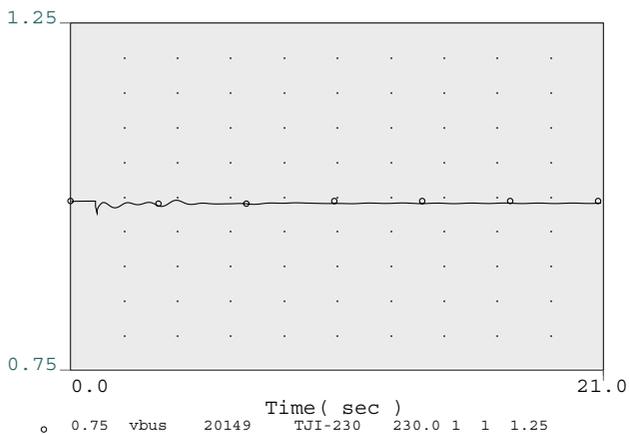
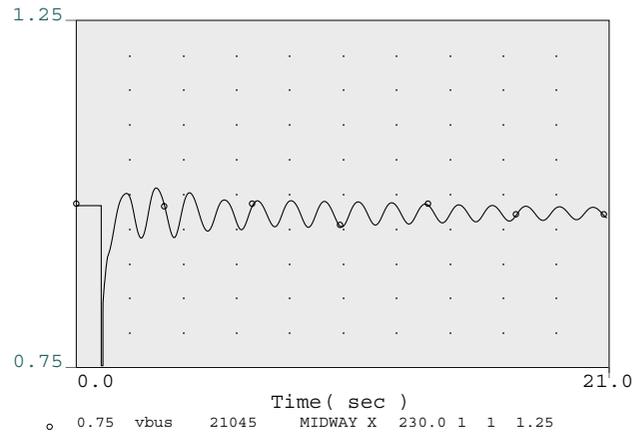
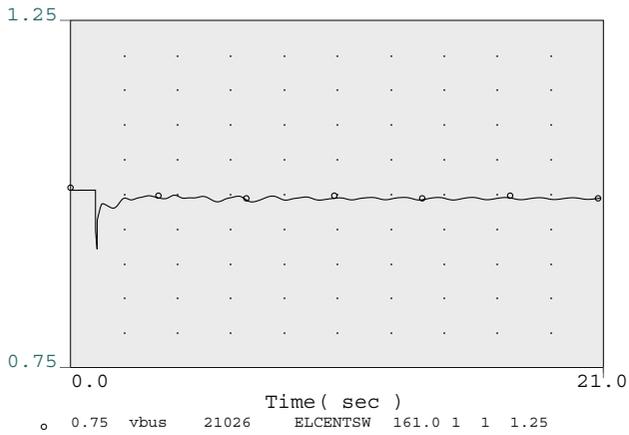
peakers, and old steam units in the SDG&E control area are OFF.
 dpv12_pst.chf
 s OFF, Cabrillo is OFF, Otay Mesa is OFF, South Bay
 generation is at 650 MW.



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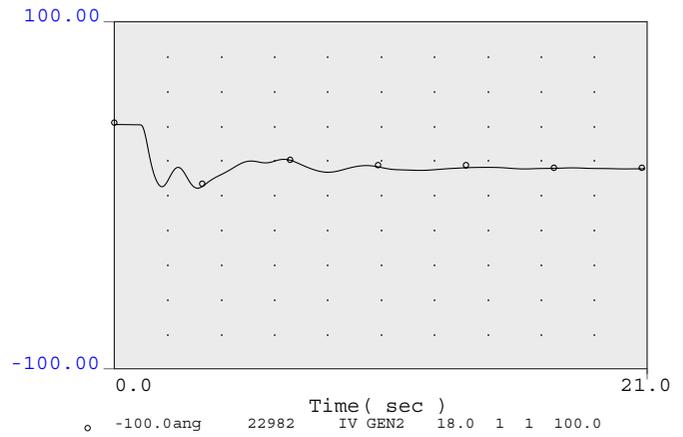
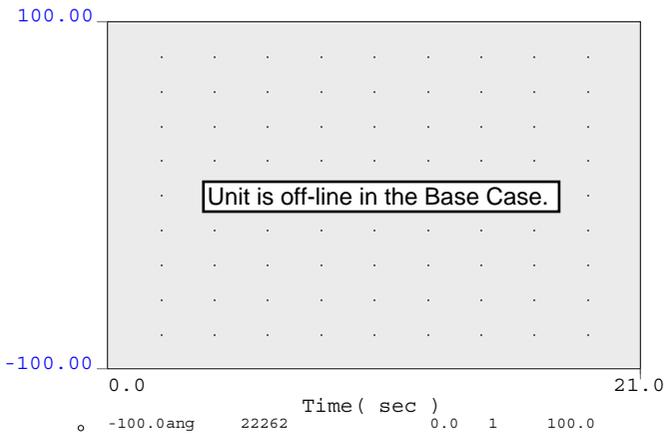
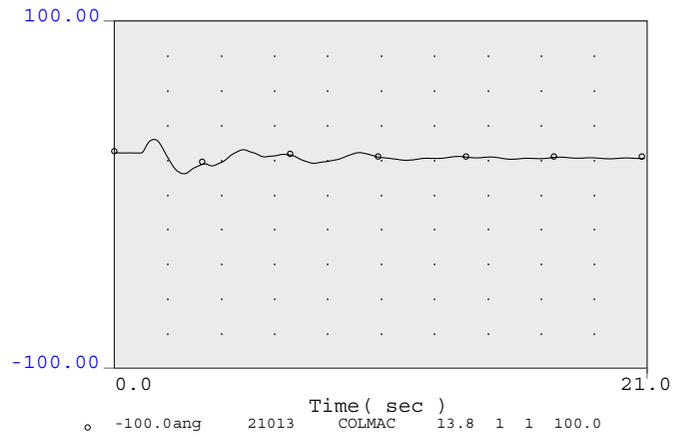
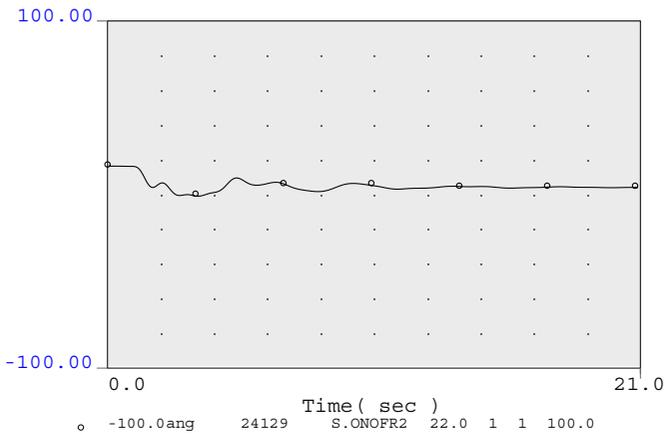
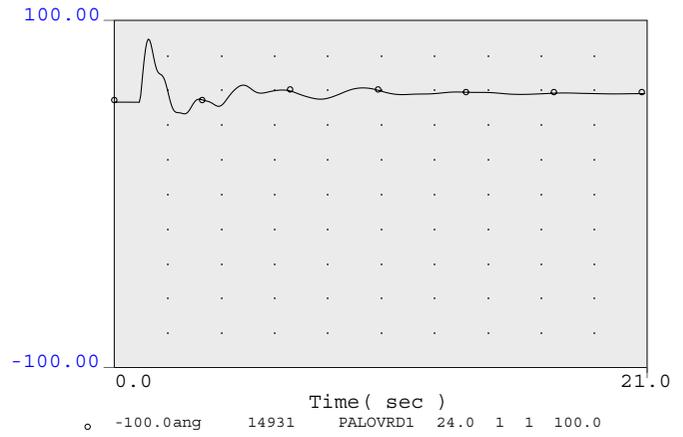
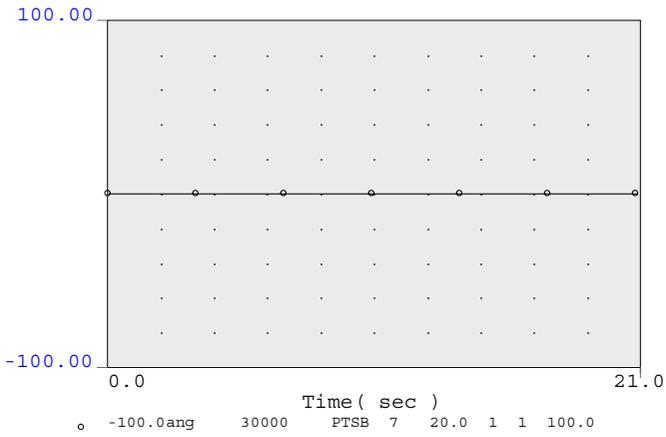
peakers, and old steam units in the SDG&E control area are OFF.
 dpv12_pst.chf
 s OFF, Cabrillo is OFF, Otay Mesa is OFF, South Bay
 generation is at 650 MW.



Fault Devers 500 kV
 Trip DPV1 & DPV2
 This is a Post project Case.
 This case contains ENPEX, Cabrillo, and all Crestwood wind generation.
 This is a high import Case, with All newer generation
 in the SDG&E control area at full output.



peakers, and old steam units in the SDG&E control area are OFF.
 dpv12_pst.chf
 s OFF, Cabrillo is OFF, Otay Mesa is OFF, South Bay
 generation is at 650 MW.

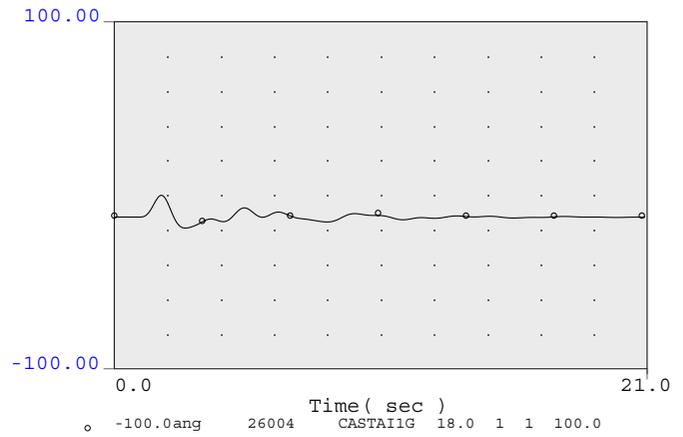
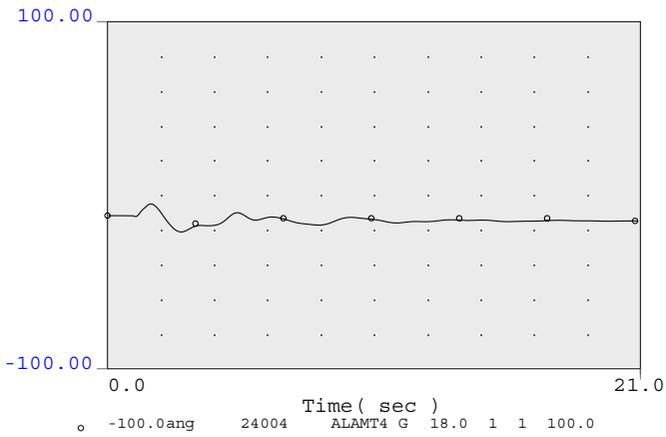
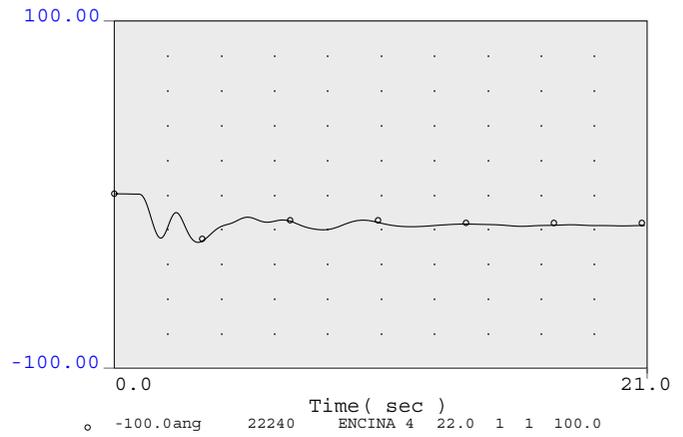
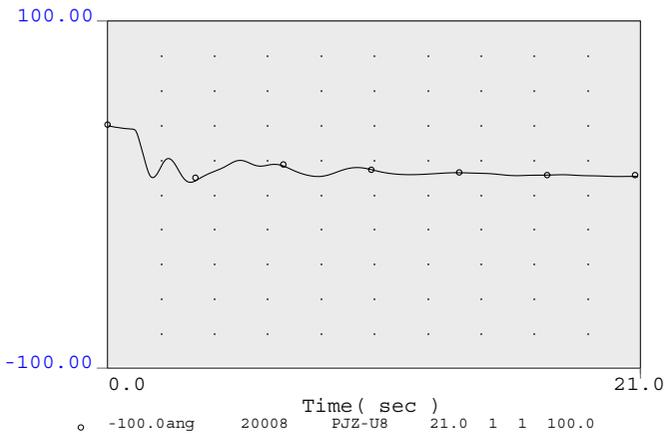
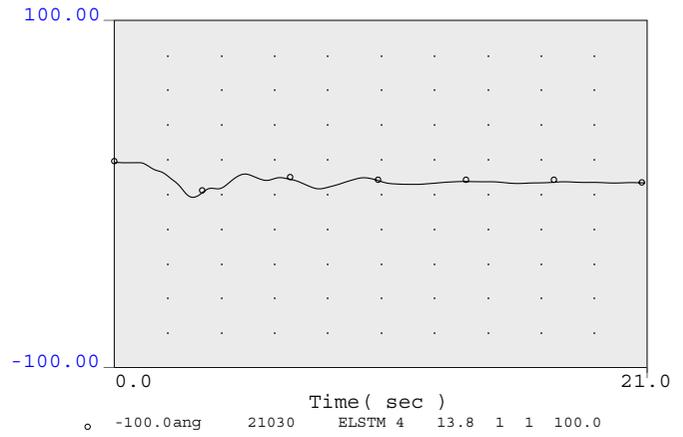
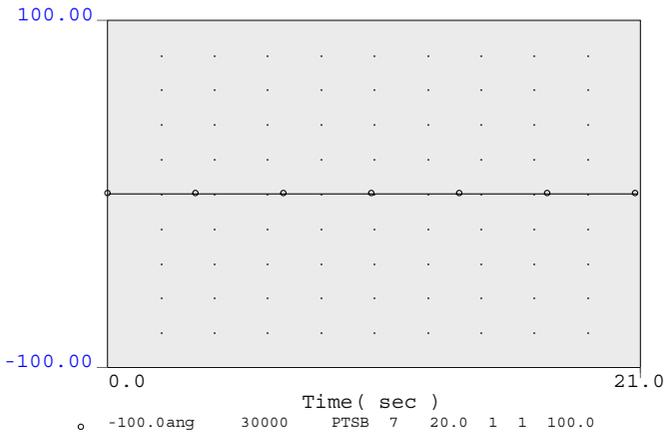


Unit is off-line in the Base Case.

Fault Hassayampa 500 kV
 Trip Hassayampa-N.Gila 500 kV SLO
 This is a Post project Case.
 This case contains ENPEX, Cabrillo, and all Crestwood wind generation.
 This is a high import Case, with All newer generation
 in the SDG&E control area at full output.



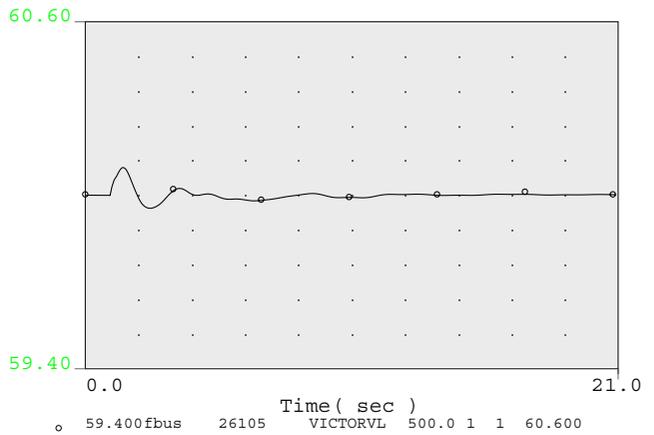
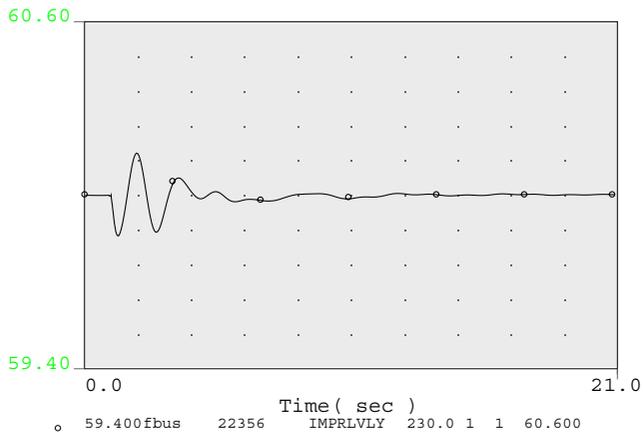
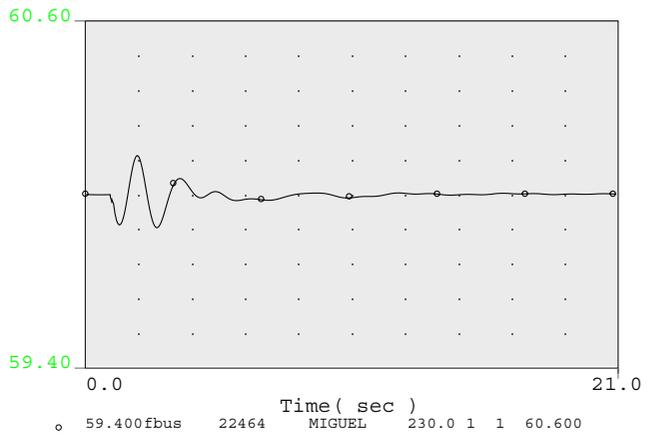
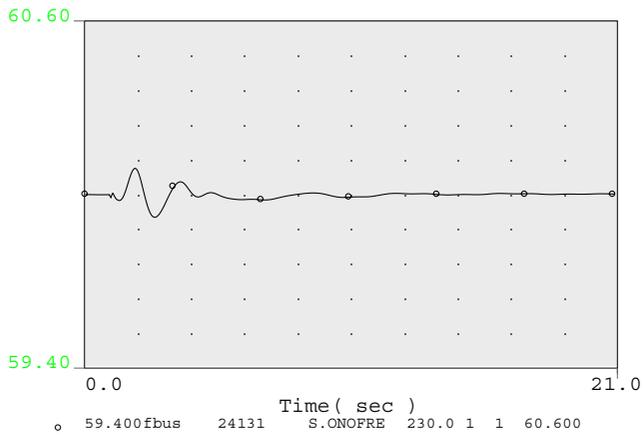
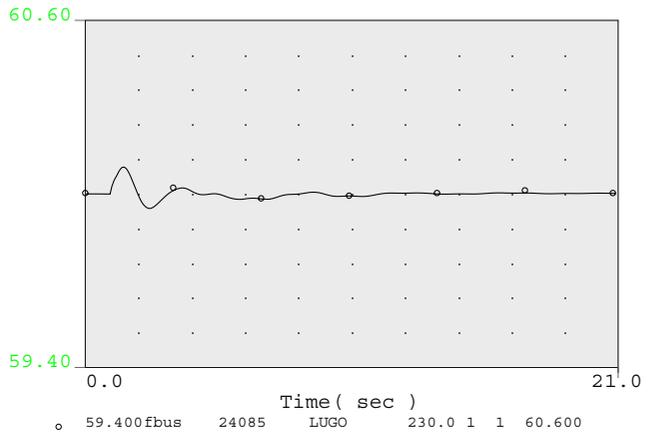
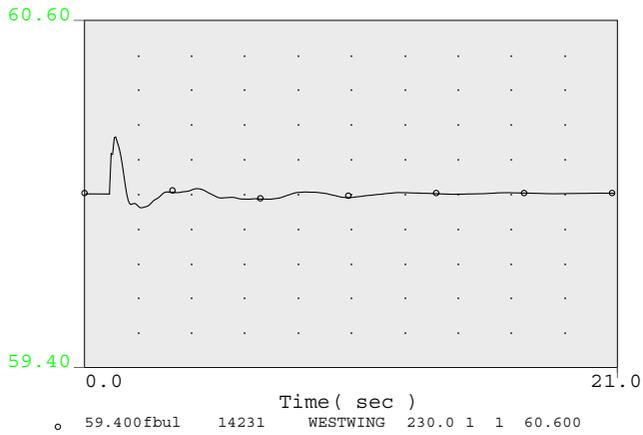
peakers, and old steam units in the SDG&E control area are OFF.
 hang pst.chf
 s OFF, Cabrillo is OFF, Otay Mesa is OFF, South Bay
 generation is at 650 MW.



Fault Hassayampa 500 kV
 Trip Hassayampa-N.Gila 500 kV SLO
 This is a Post project Case.
 This case contains ENPEX, Cabrillo, and all Crestwood wind generation.
 This is a high import Case, with All newer generation
 in the SDG&E control area at full output.



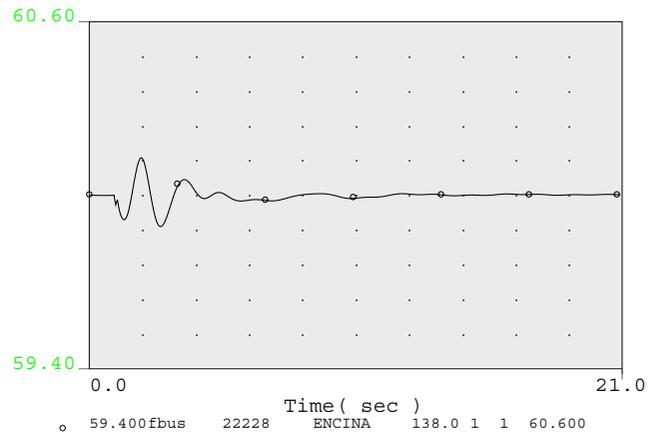
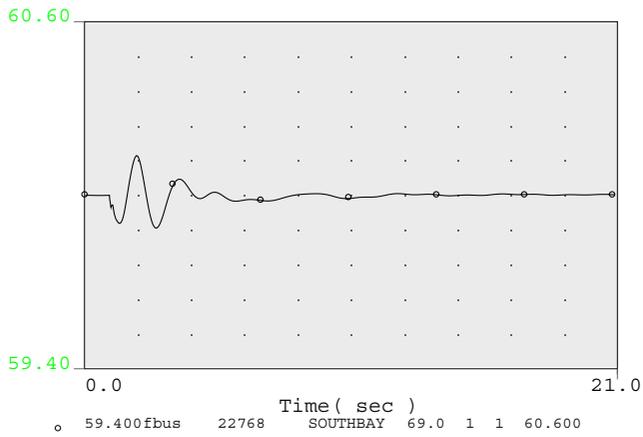
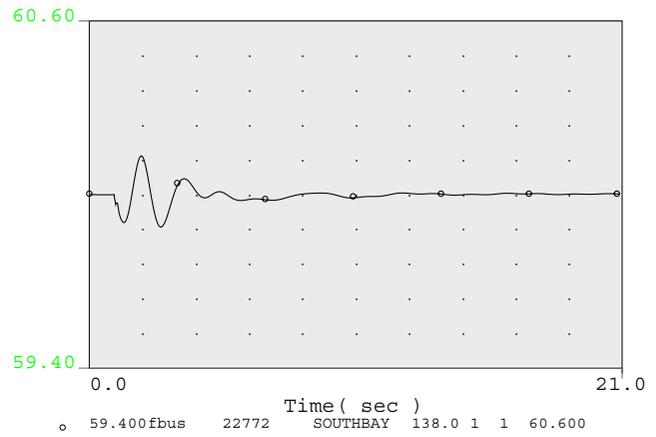
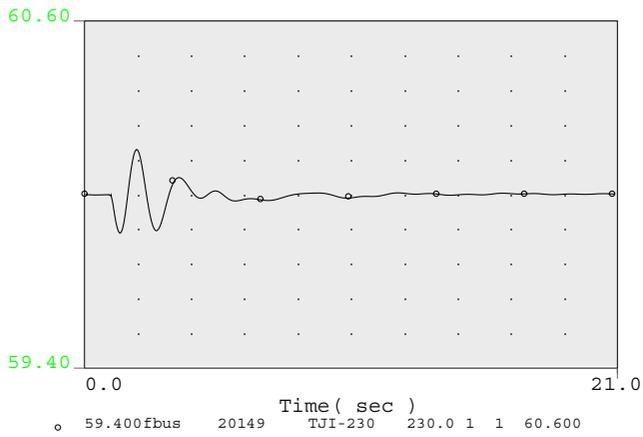
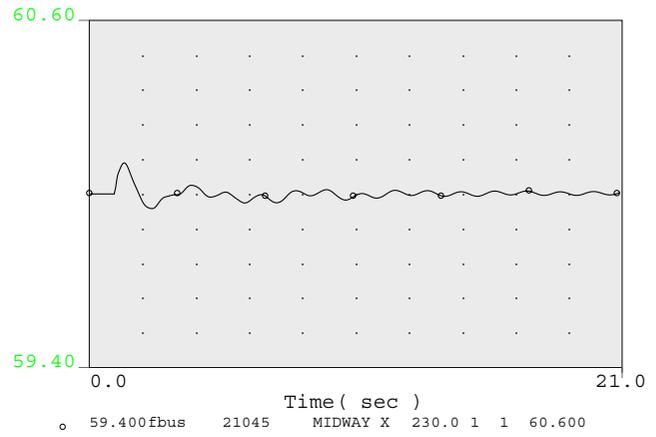
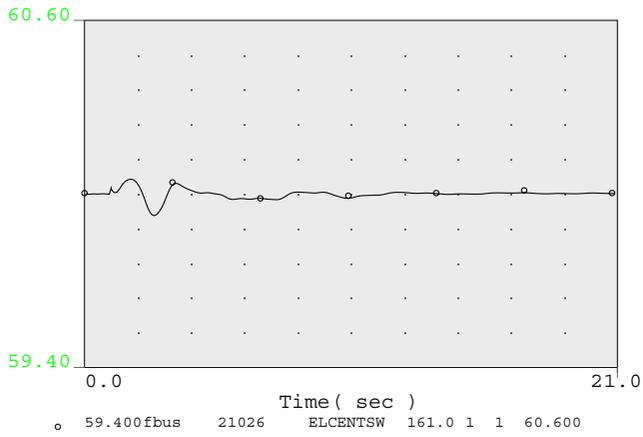
peakers, and old steam units in the SDG&E control area are OFF.
 hang pst.chf
 s OFF, Cabrillo is OFF, Otay Mesa is OFF, South Bay
 generation is at 650 MW.



Fault Hassayampa 500 kV
 Trip Hassayampa-N.Gila 500 kV SLO
 This is a Post project Case.
 This case contains ENPEX, Cabrillo, and all Crestwood wind generation.
 This is a high import Case, with All newer generation
 in the SDG&E control area at full output.



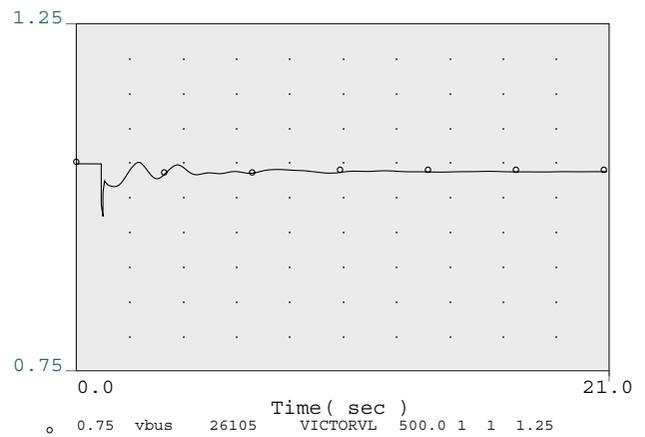
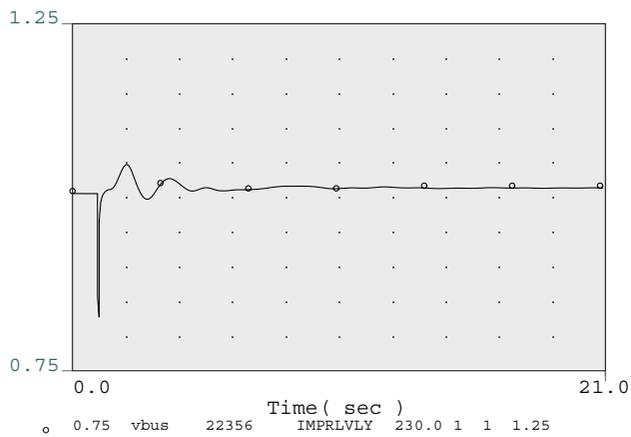
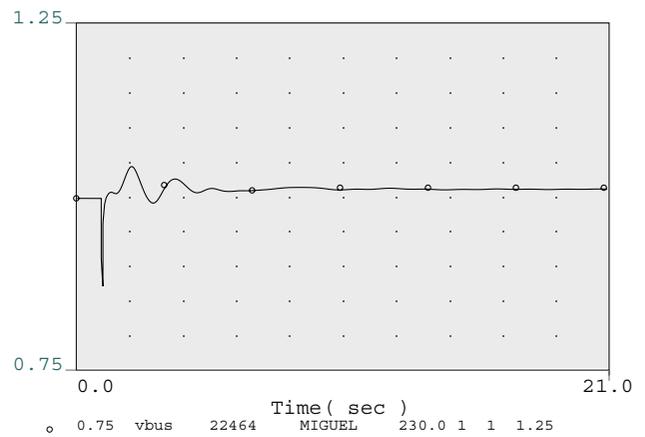
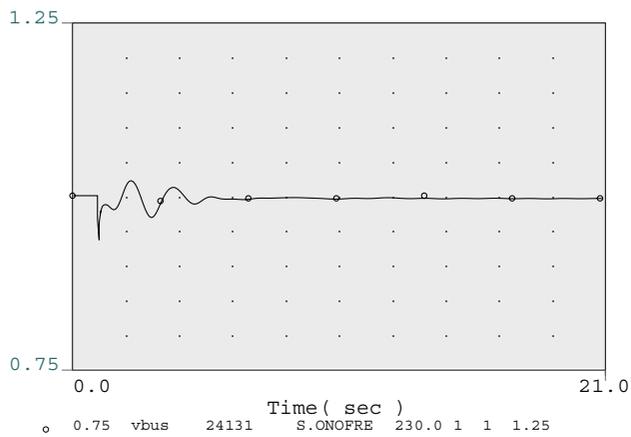
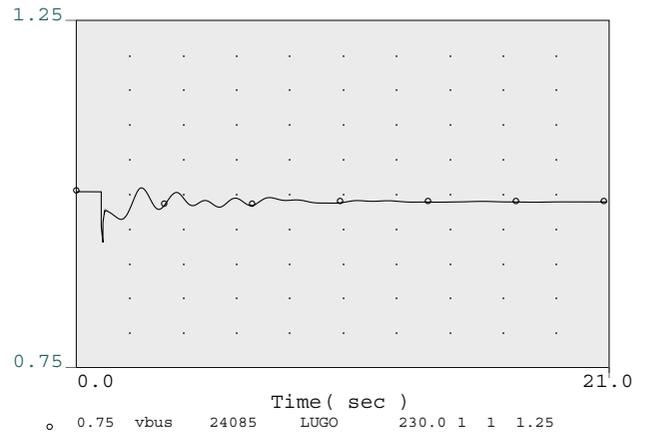
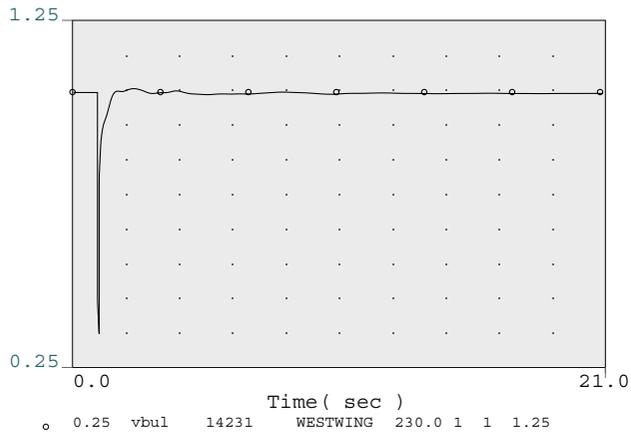
peakers, and old steam units in the SDG&E control area are OFF.
 hang pst.chf
 s OFF, Cabrillo is OFF, Otay Mesa is OFF, South Bay
 generation is at 650 MW.



Fault Hassayampa 500 kV
 Trip Hassayampa-N.Gila 500 kV SLO
 This is a Post project Case.
 This case contains ENPEX, Cabrillo, and all Crestwood wind generation.
 This is a high import Case, with All newer generation
 in the SDG&E control area at full output.



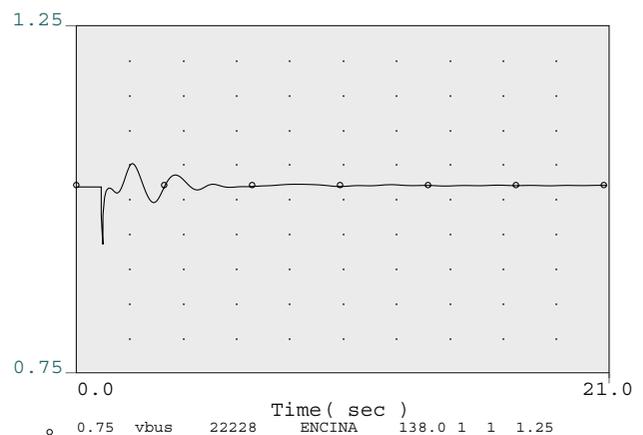
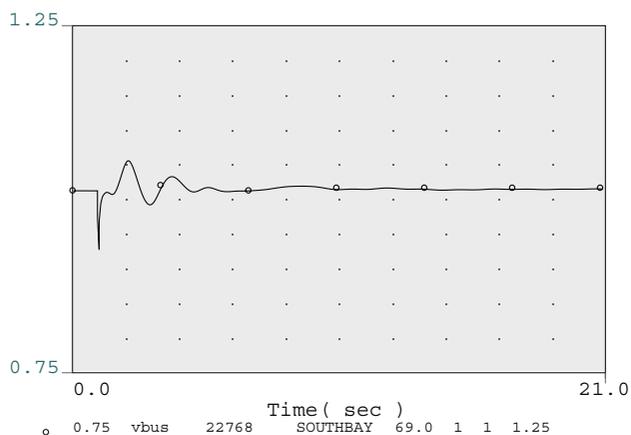
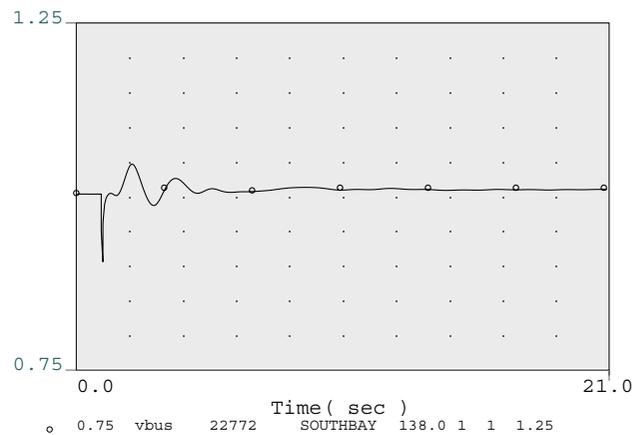
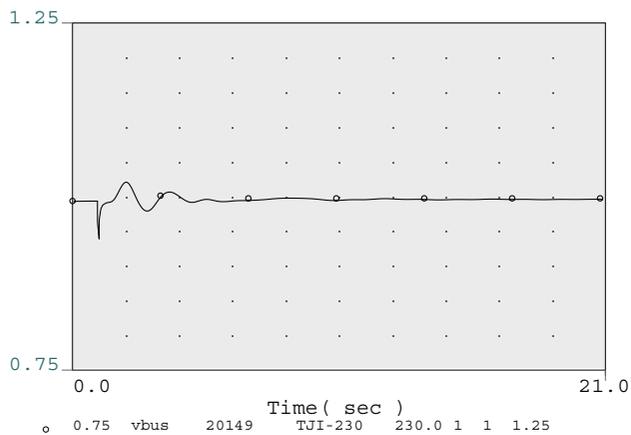
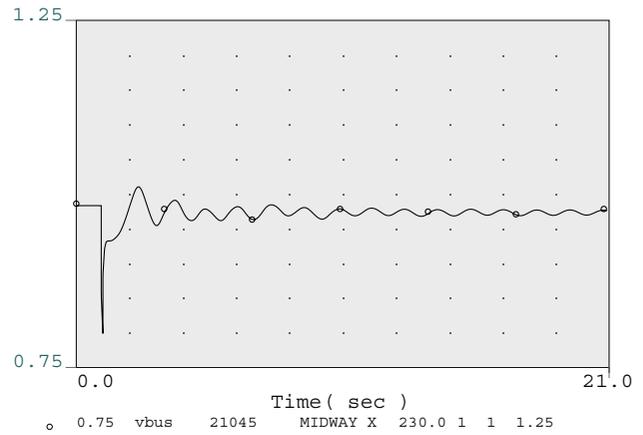
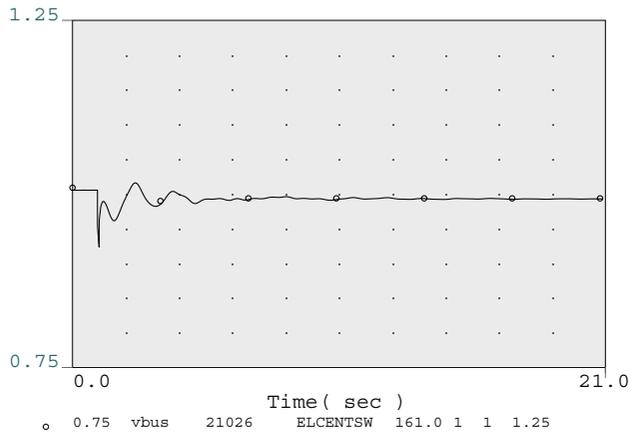
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 hang pst.chf
 s OFF, Cabrillo is OFF, Otay Mesa is OFF, South Bay
 generation is at 650 MW.



Fault Hassayampa 500 kV
 Trip Hassayampa-N.Gila 500 kV SLO
 This is a Post project Case.
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 in the SDG&E control area at full output.



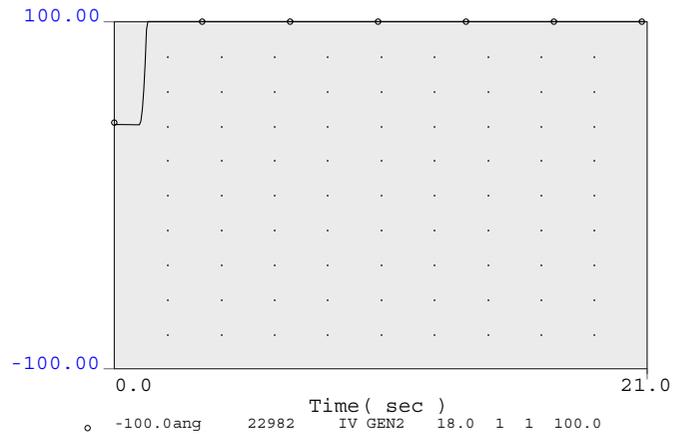
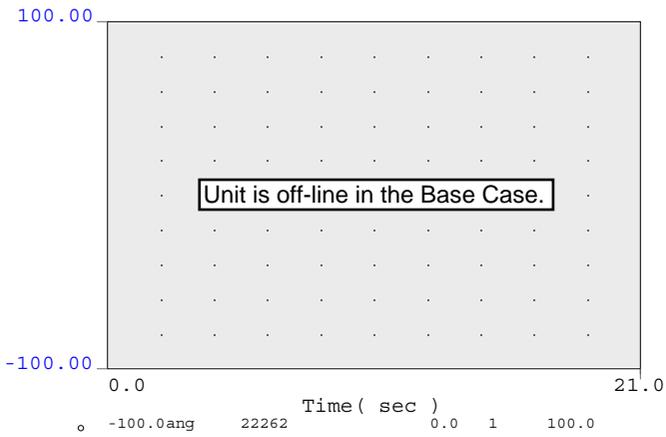
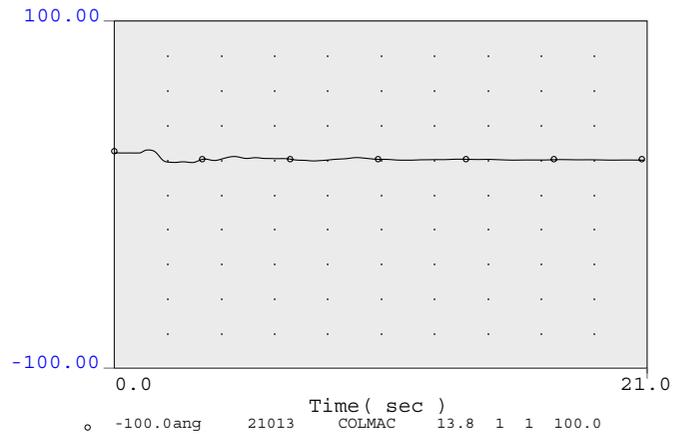
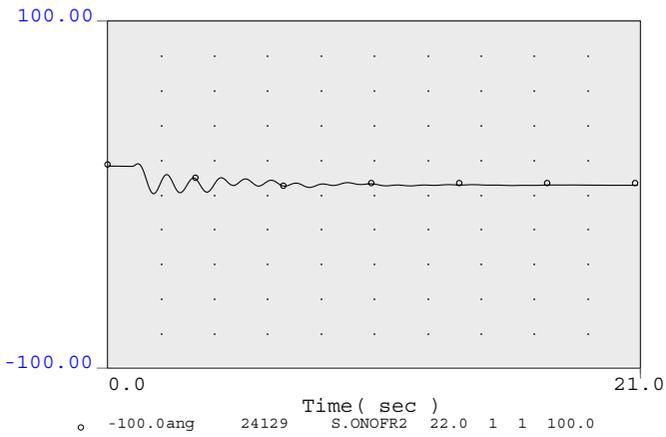
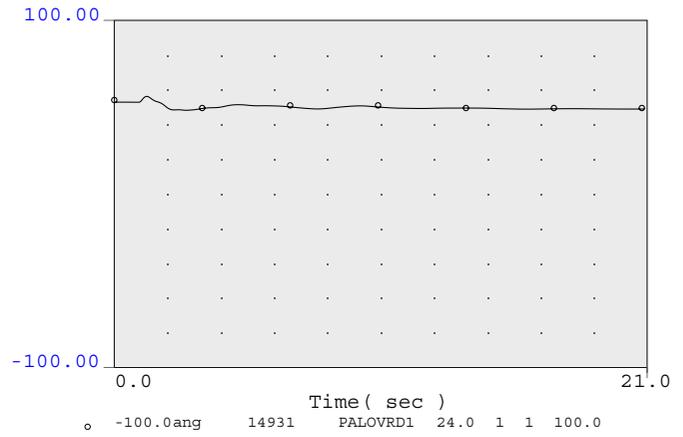
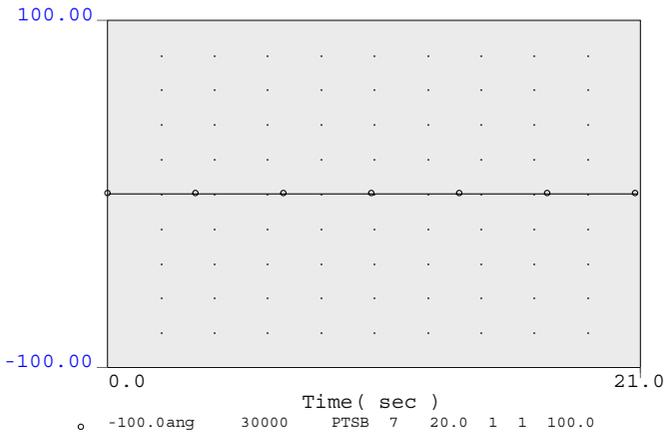
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 s OFF, Cabrillo is OFF, Otay Mesa is OFF, South Bay
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Fault Hassayampa 500 kV
 Trip Hassayampa-N.Gila 500 kV SLO
 This is a Post project Case.
 This case contains ENPEX, Cabrillo, and all Crestwood wind generation.
 This is a high import Case, with All newer generation
 in the SDG&E control area at full output.



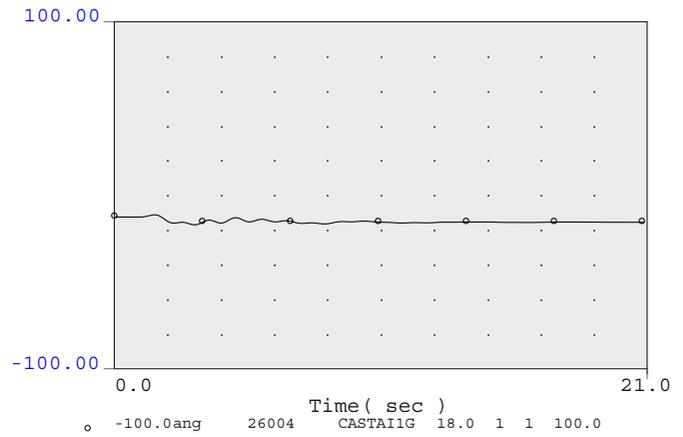
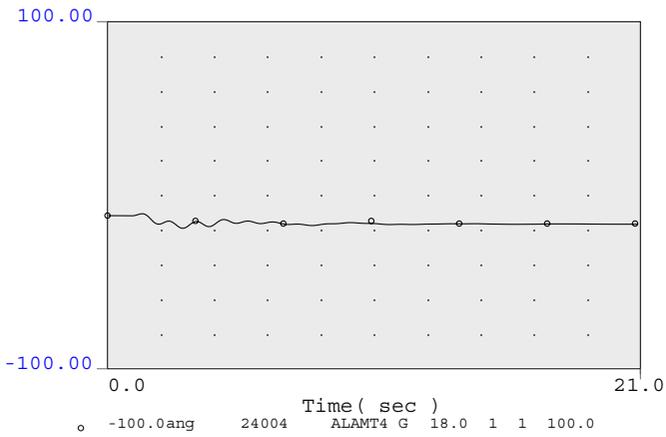
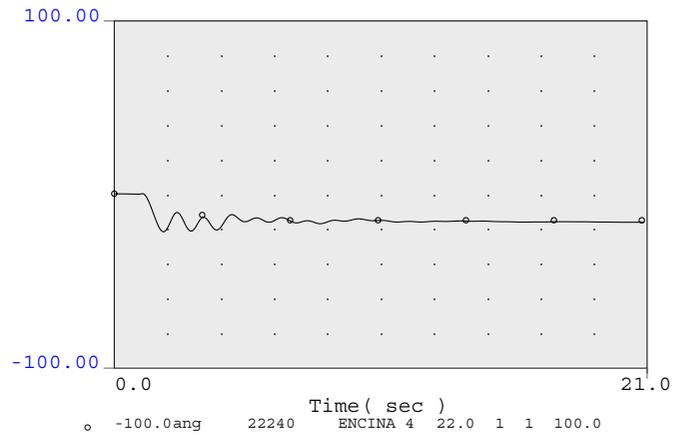
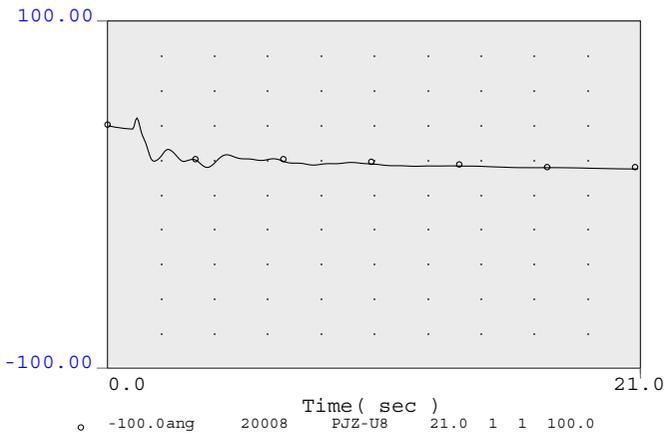
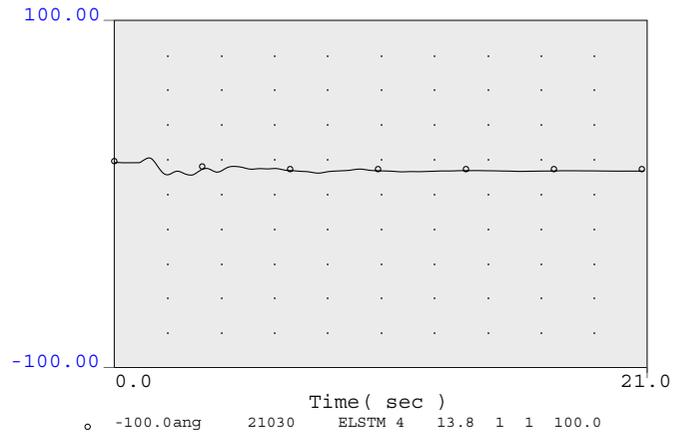
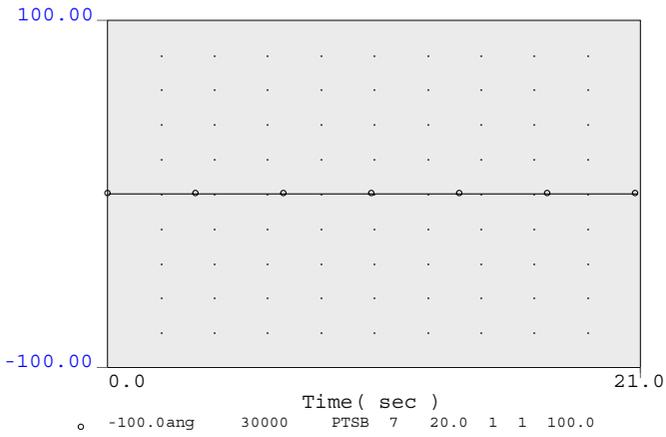
peakers, and old steam units in the SDG&E control area are OFF.
 hang pst.chf
 s OFF, Cabrillo is OFF, Otay Mesa is OFF, South Bay
 generation is at 650 MW.



Fault Imperial Valley 500 kV
 Trip Imperial Valley-Miguel 500 kV SLO
 This is a Post project Case.
 This case contains ENPEX, Cabrillo, and all Crestwood wind generation.
 This is a high import Case, with All newer generation
 in the SDG&E control area at full output.



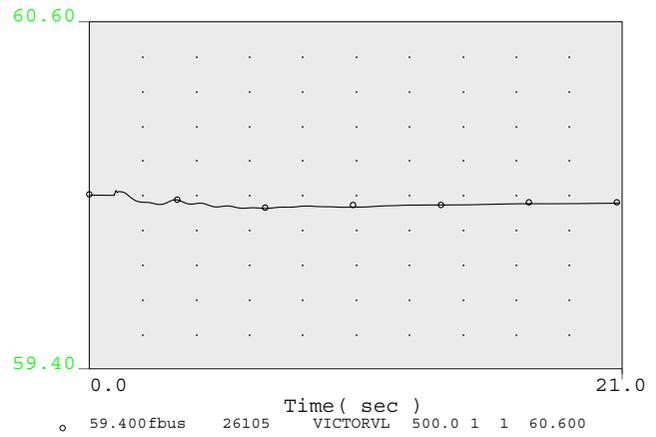
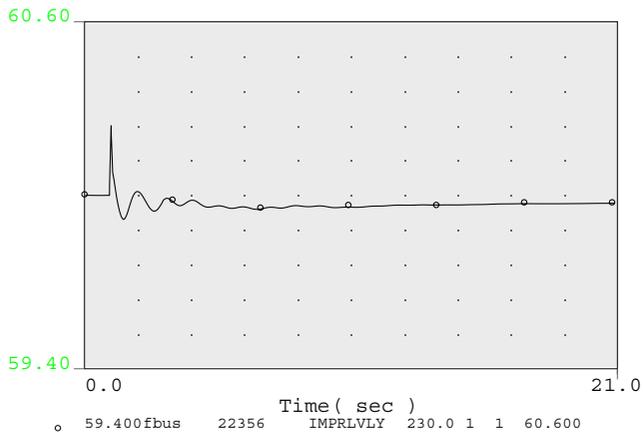
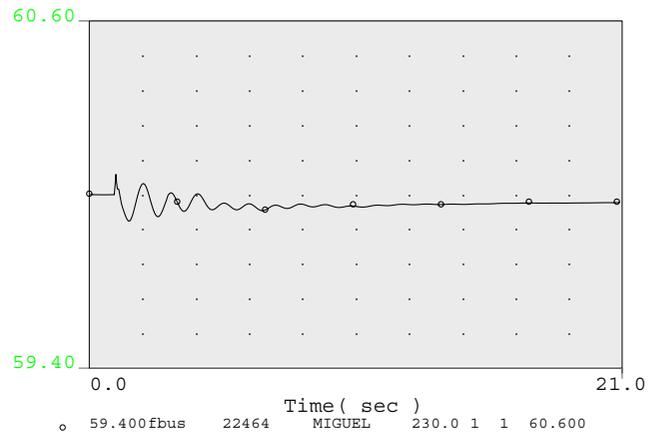
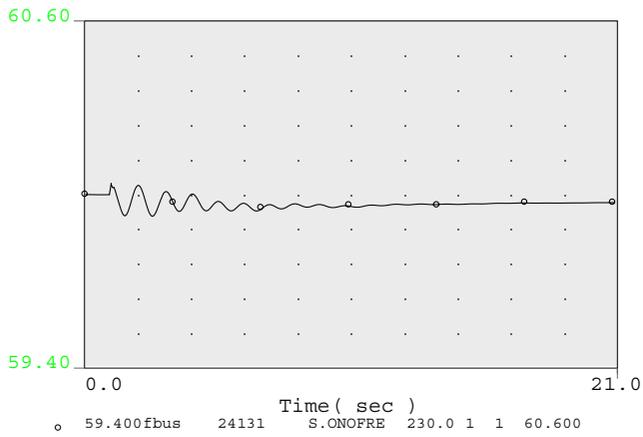
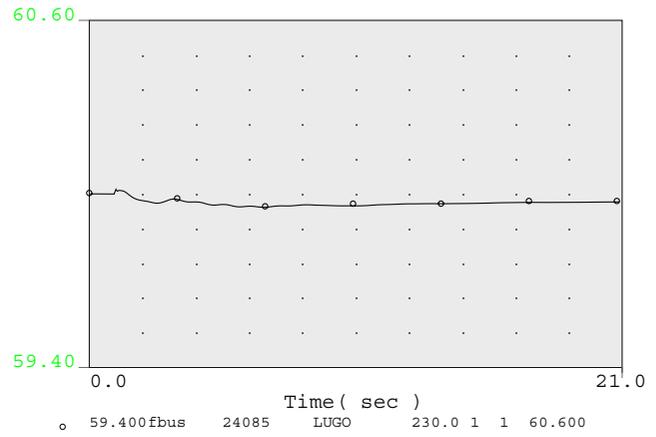
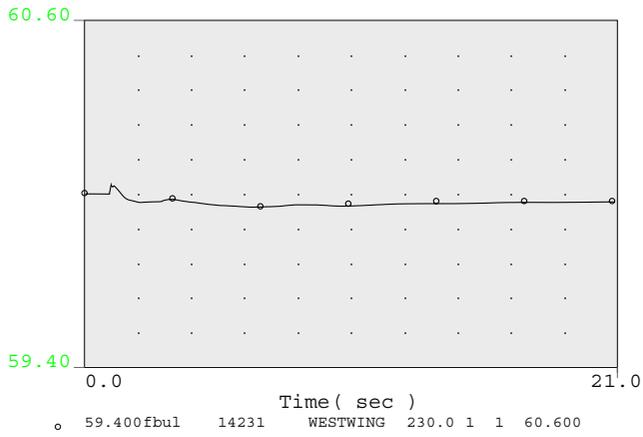
peakers, and old steam units in the SDG&E control area are OFF.
 ivmlras_pst.chf
 s OFF, Cabrillo is OFF, Otay Mesa is OFF, South Bay
 generation is at 650 MW.



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 Trip Imperial Valley-Miguel 500 kV SLO
 This is a Post project Case.
 This case contains ENPEX, Cabrillo, and all Crestwood wind generation.
 This is a high import Case, with All newer generation
 in the SDG&E control area at full output.



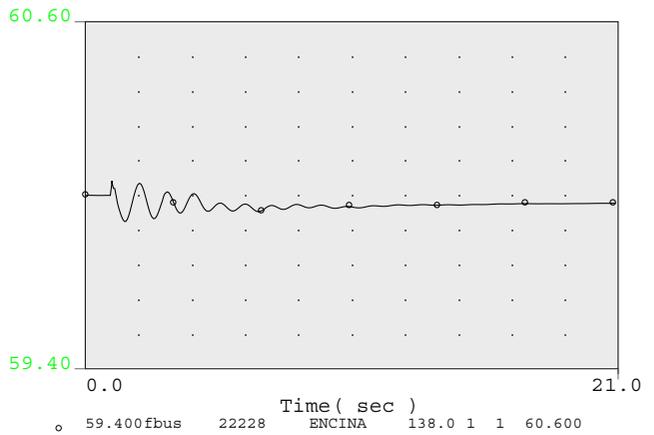
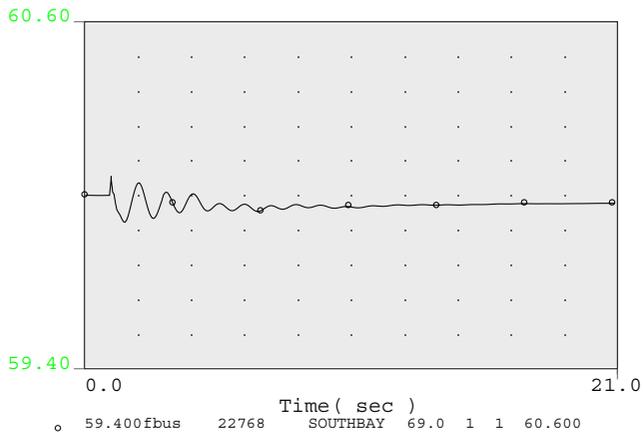
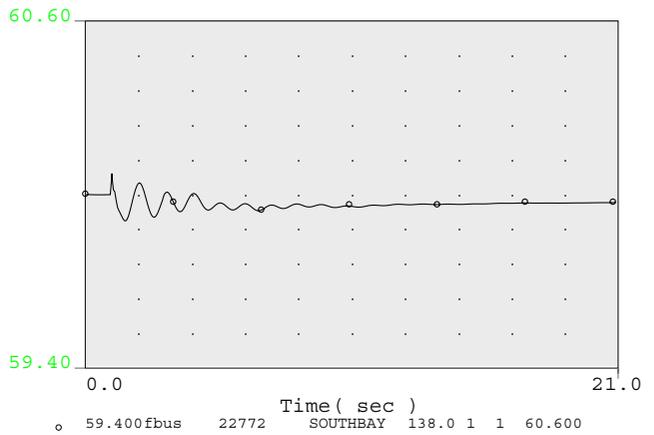
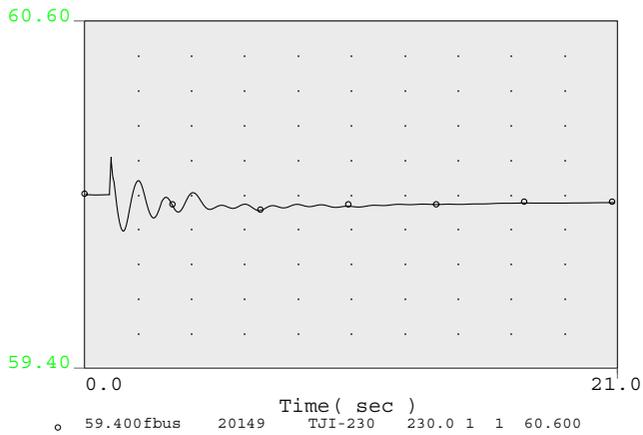
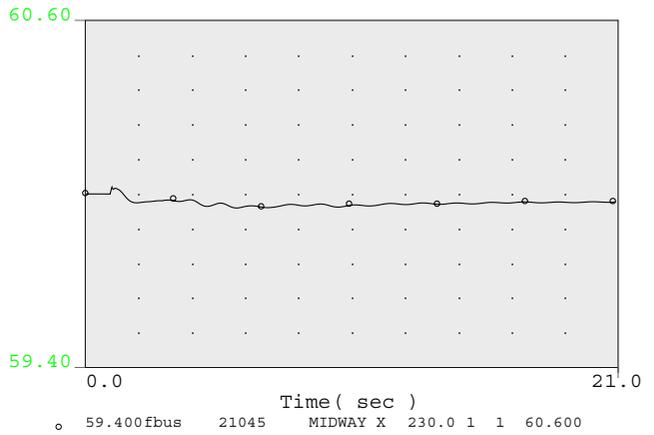
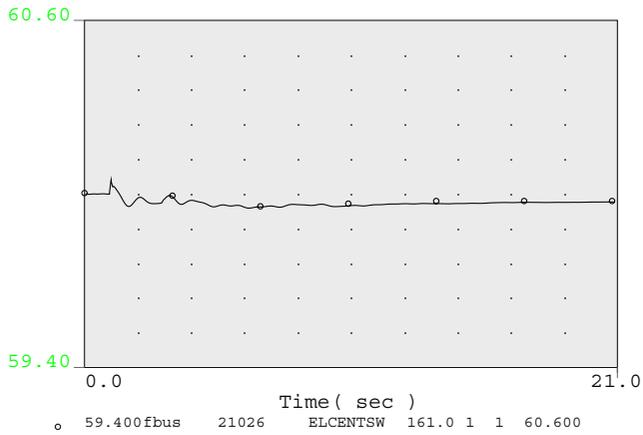
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 ivmlras_pst.chf
 s OFF, Cabrillo is OFF, Otay Mesa is OFF, South Bay
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 Trip Imperial Valley-Miguel 500 kV SLO
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 This is a high import Case, with All newer generation
 in the SDG&E control area at full output.



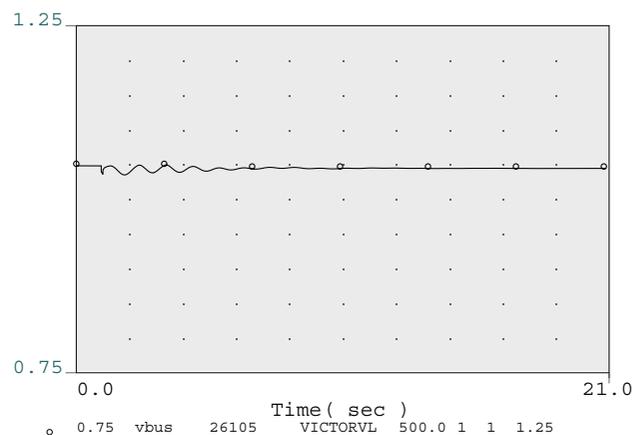
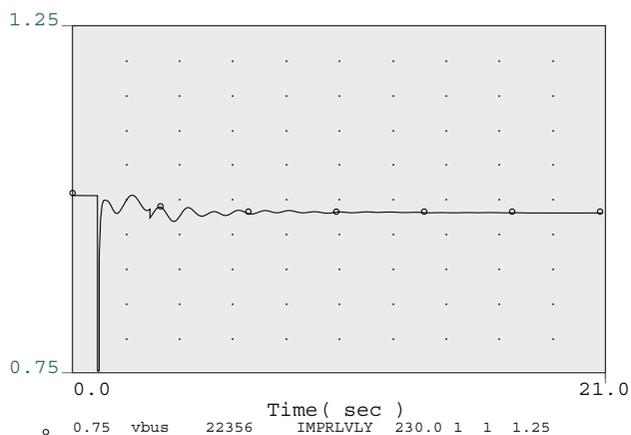
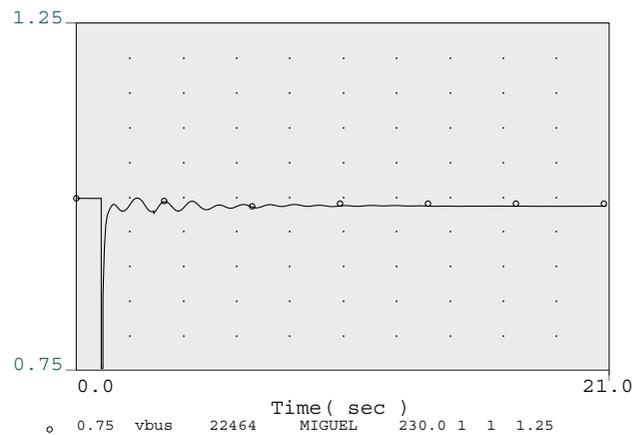
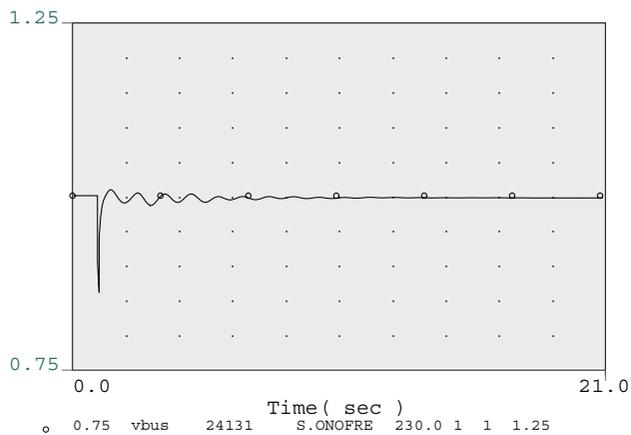
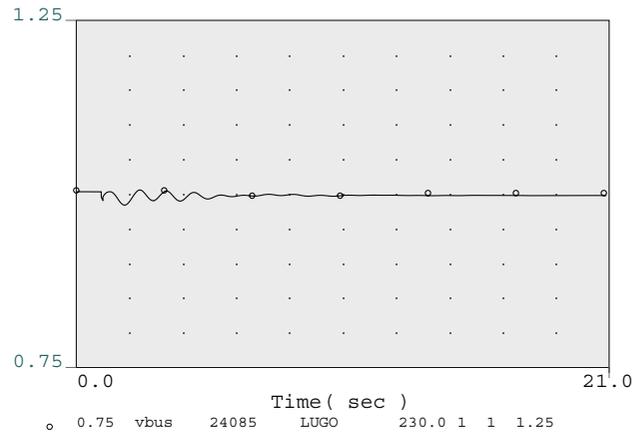
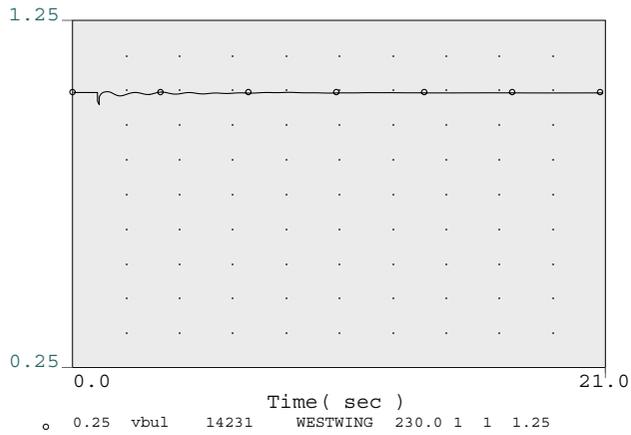
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 Trip Imperial Valley-Miguel 500 kV SLO
 This is a Post project Case.
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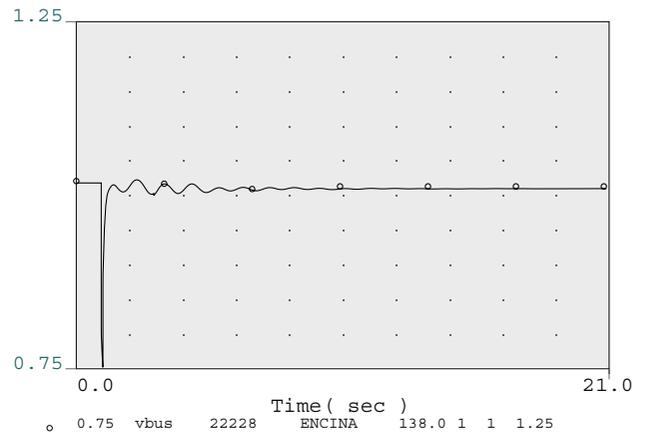
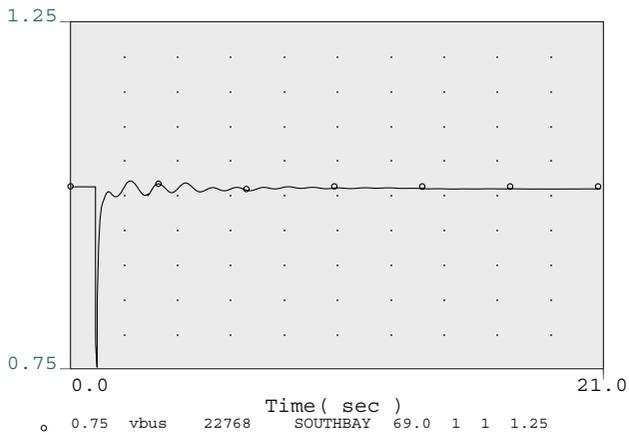
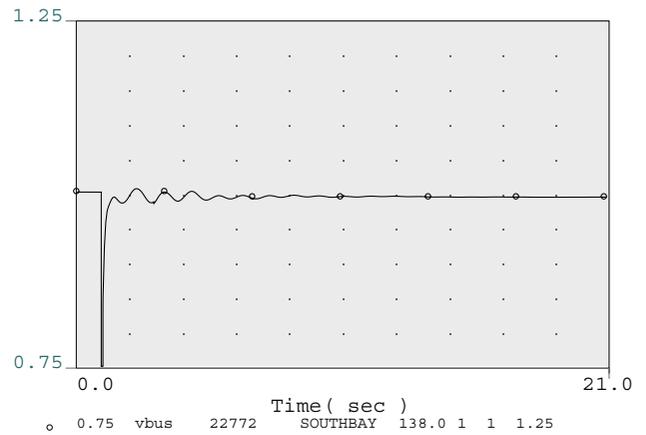
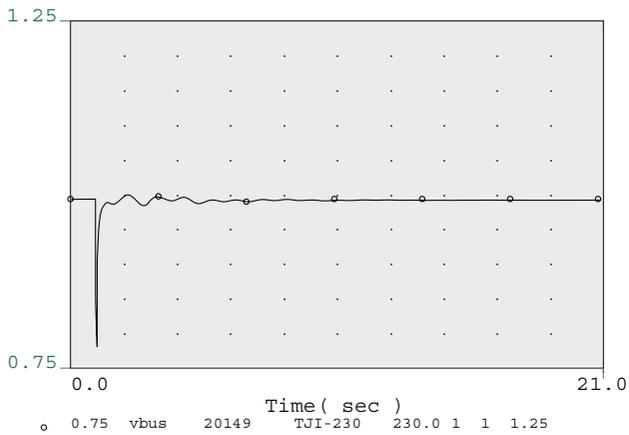
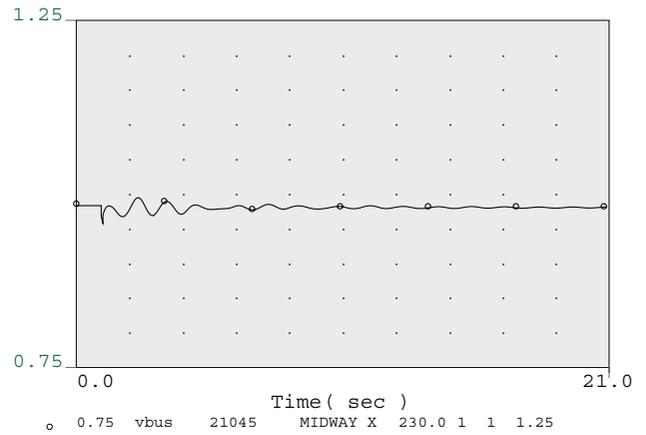
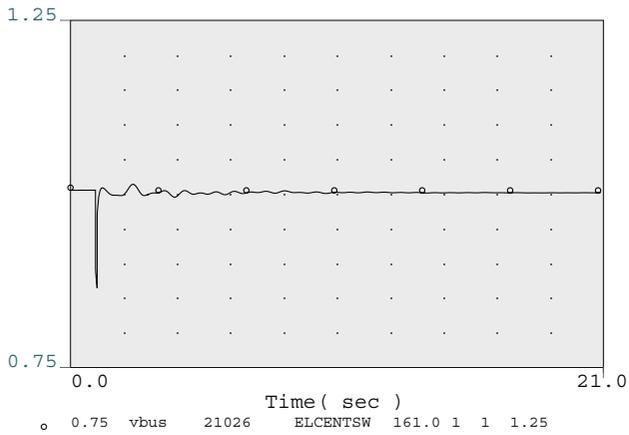
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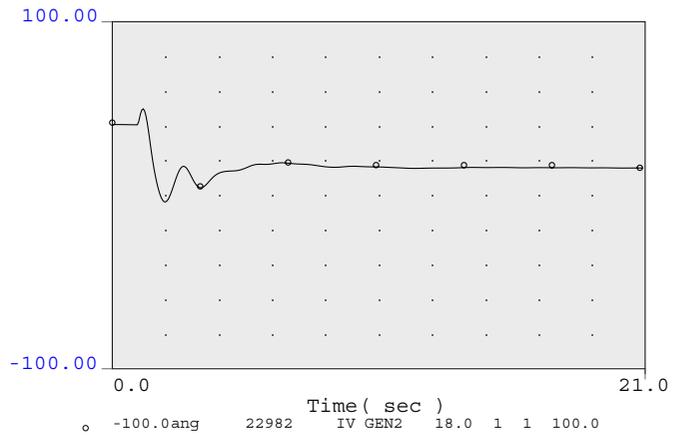
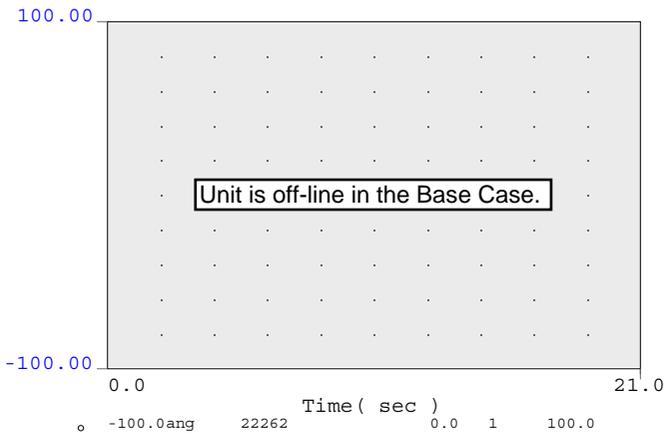
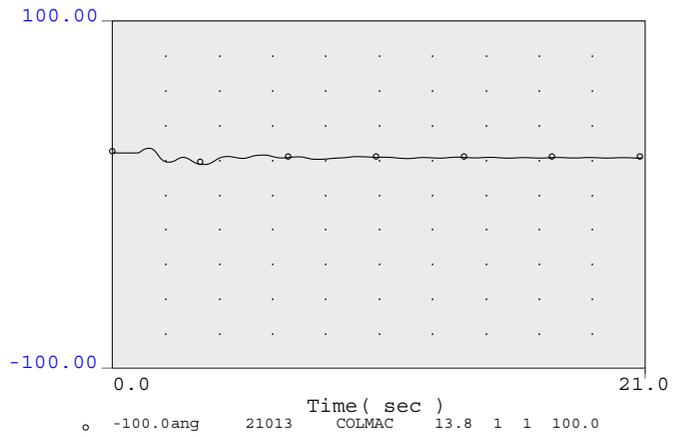
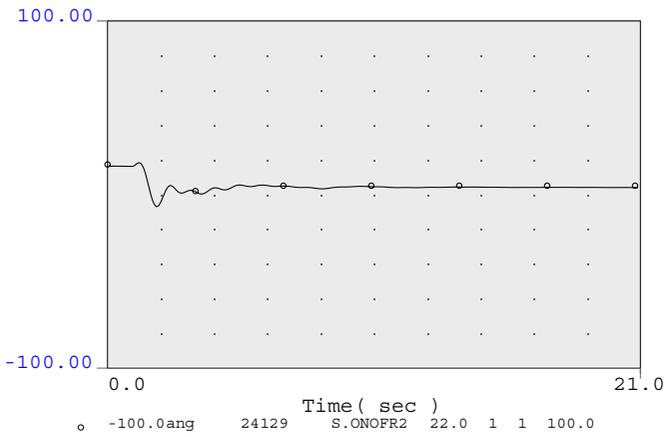
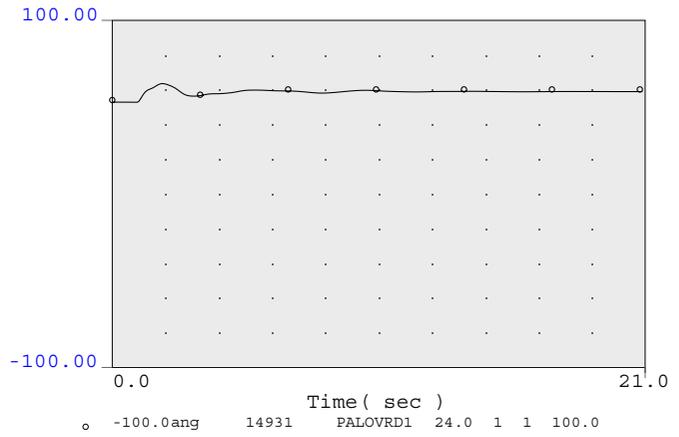
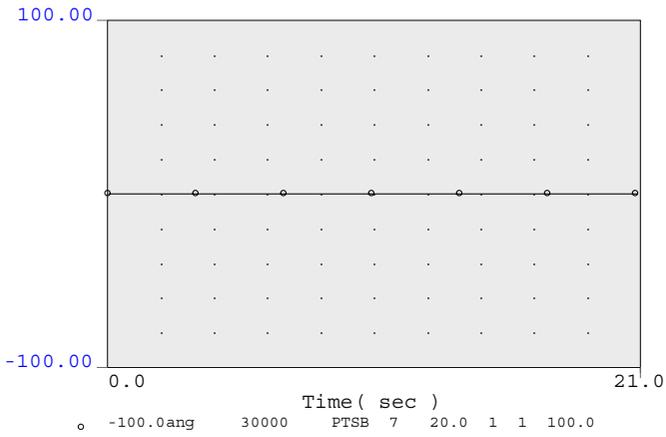
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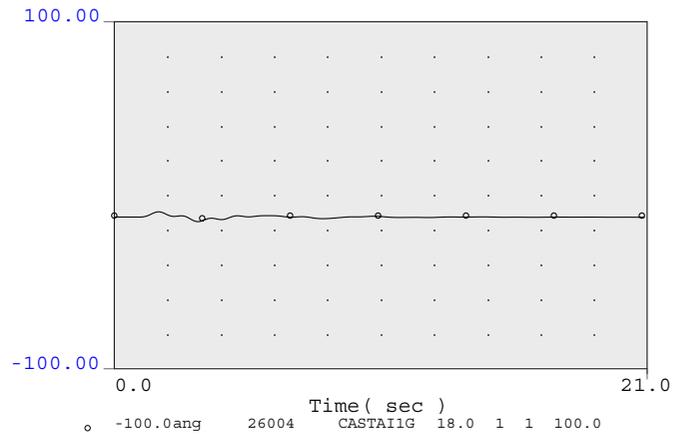
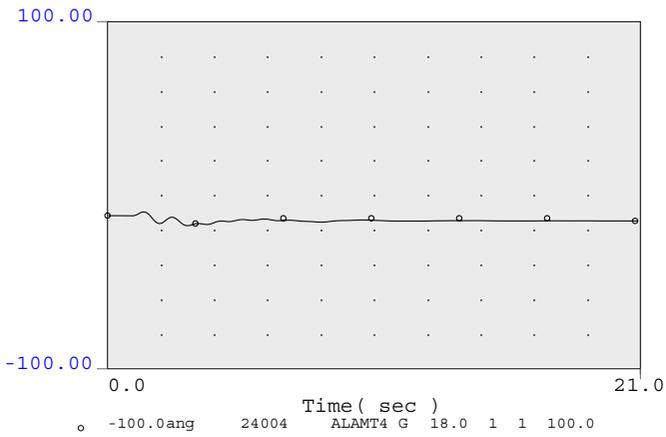
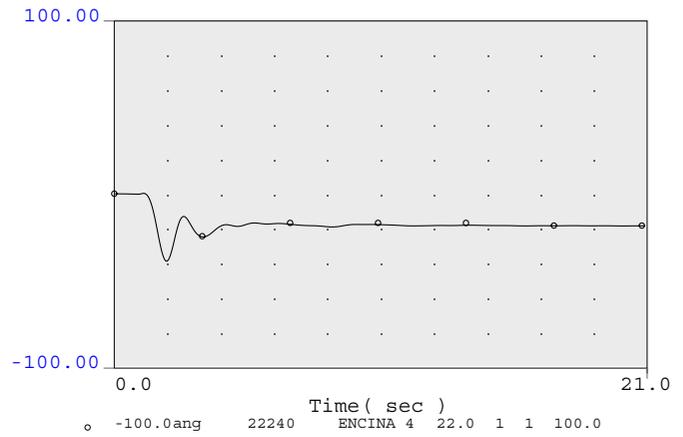
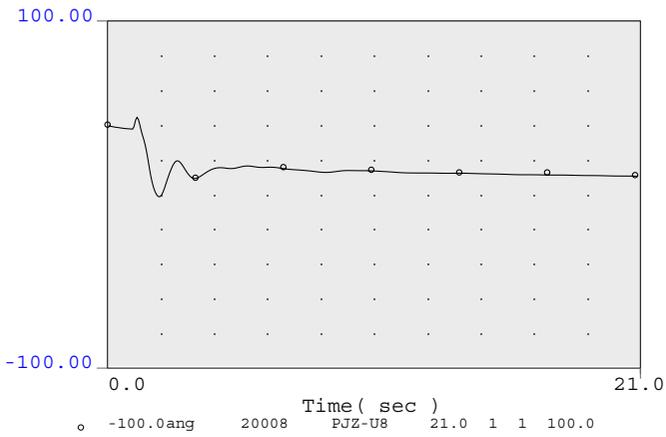
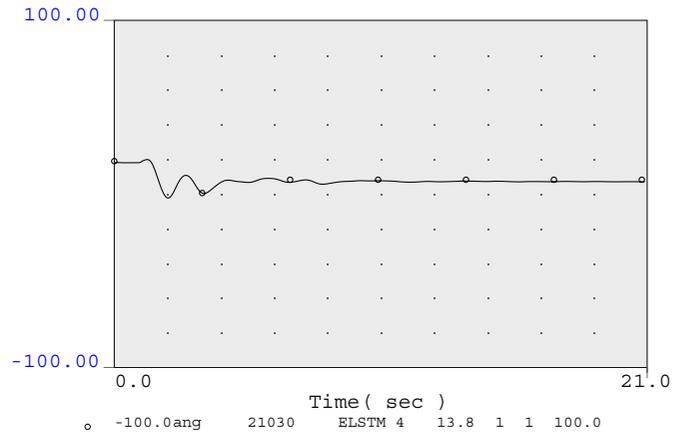
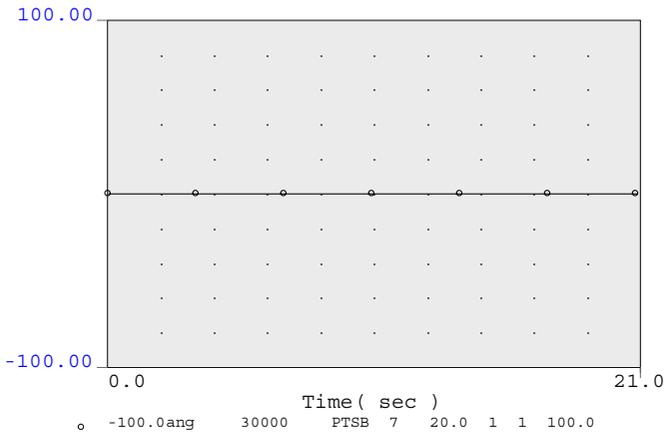
peakers, and old steam units in the SDG&E control area are OFF.
 ivmlras_pst.chf
 s OFF, Cabrillo is OFF, Otay Mesa is OFF, South Bay
 generation is at 650 MW.



Fault Imperial Valley 500 kV
 Trip N.Gila-Imperial Valley 500 kV SLO
 This is a Post project Case.
 This case contains ENPEX, Cabrillo, and all Crestwood wind generation.
 This is a high import Case, with All newer generation
 in the SDG&E control area at full output.



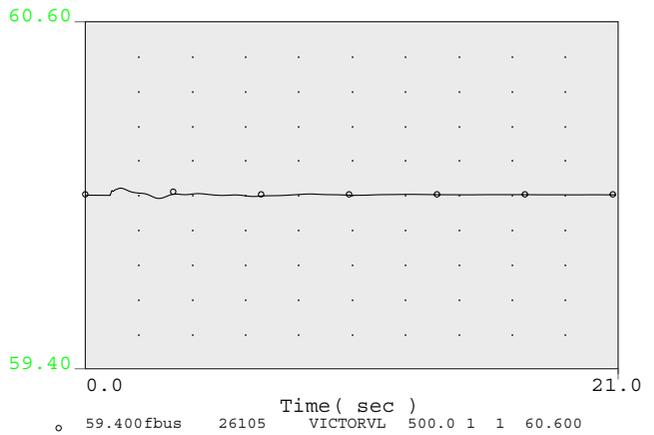
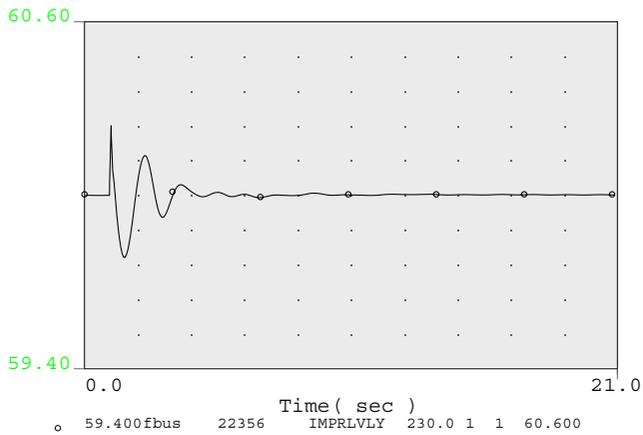
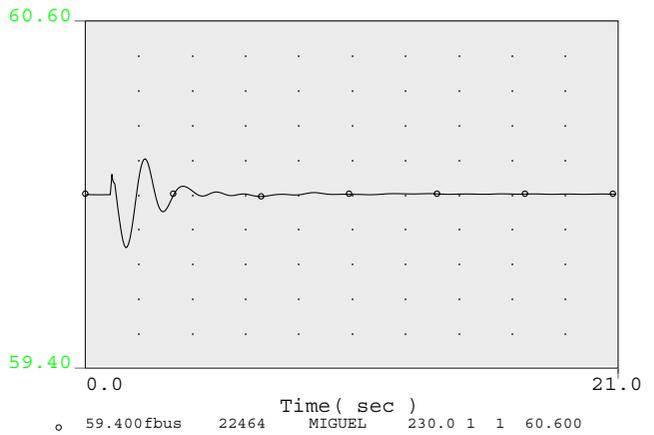
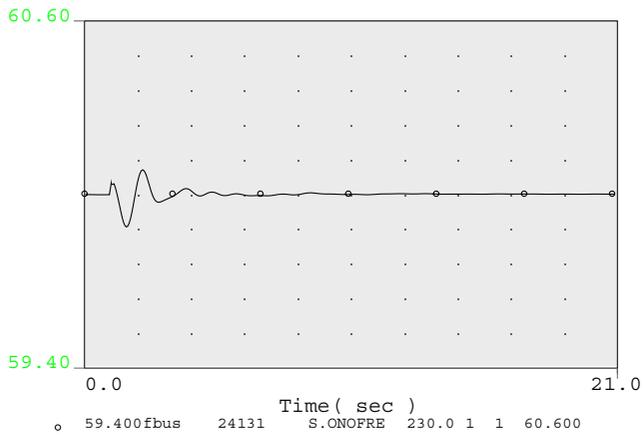
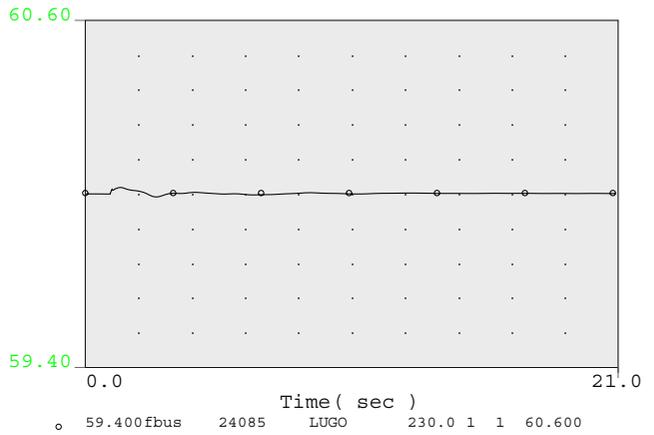
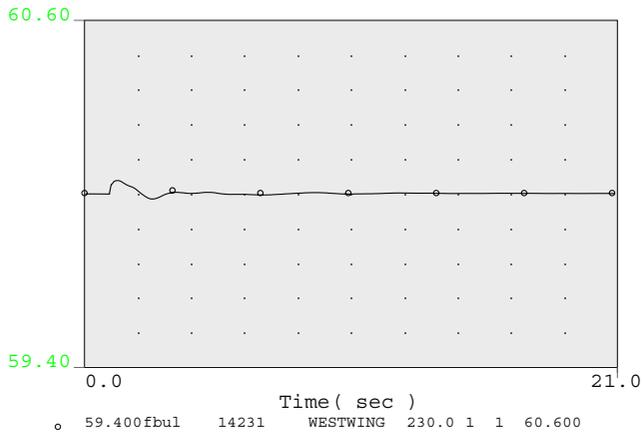
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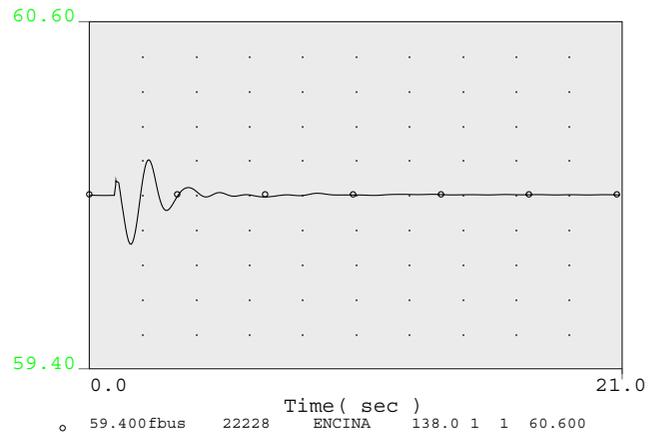
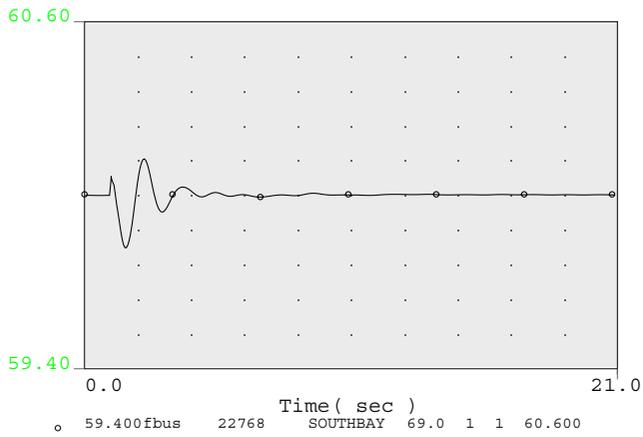
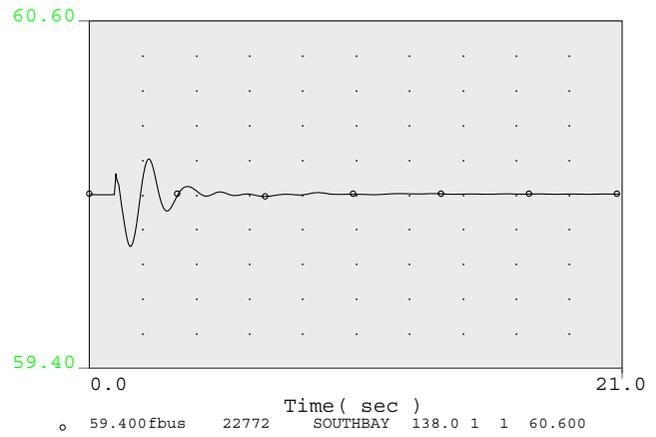
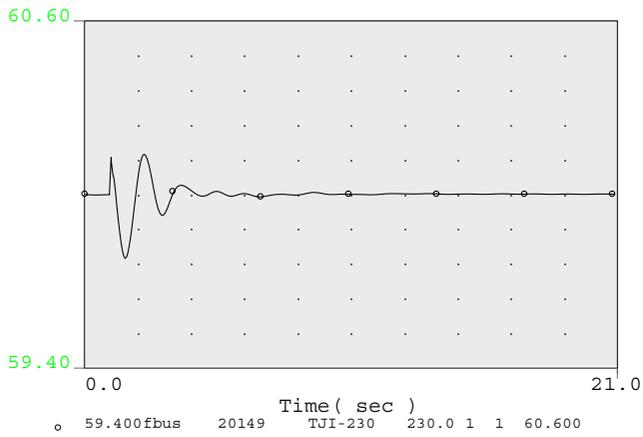
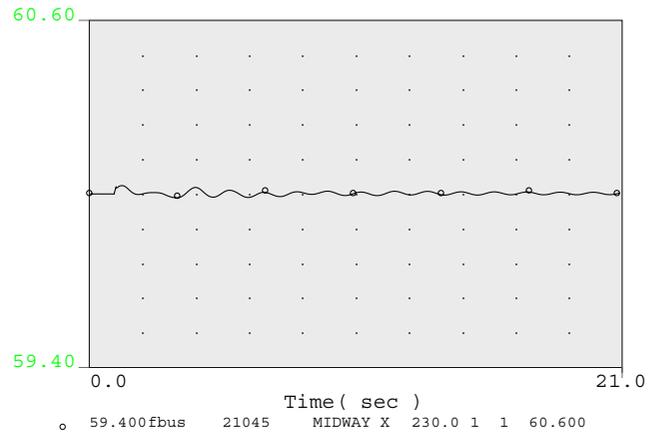
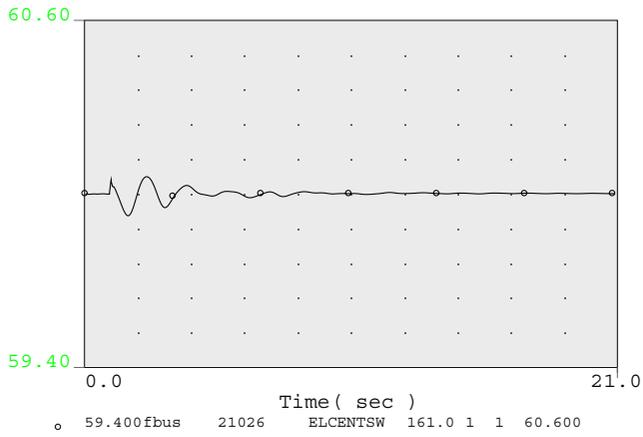
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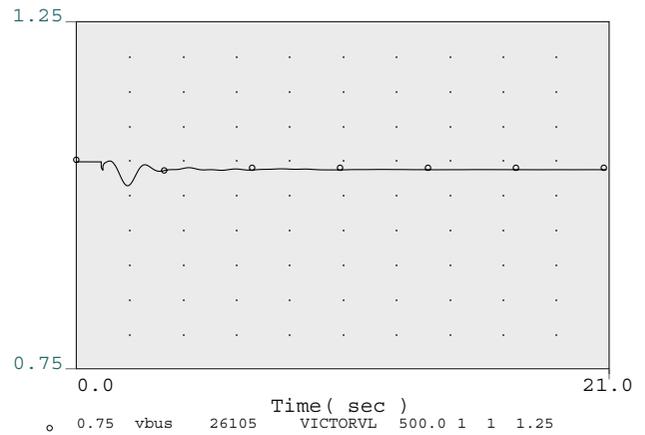
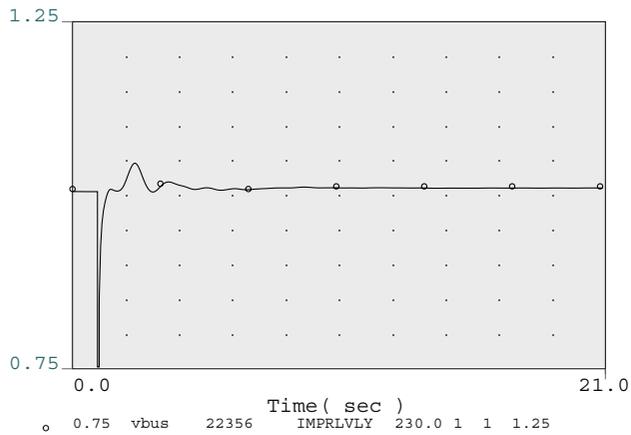
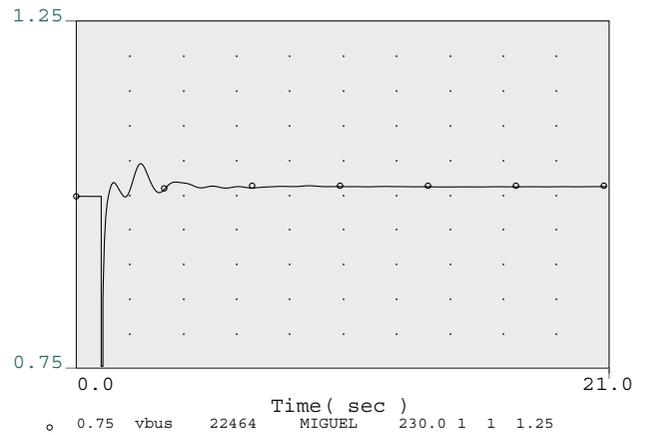
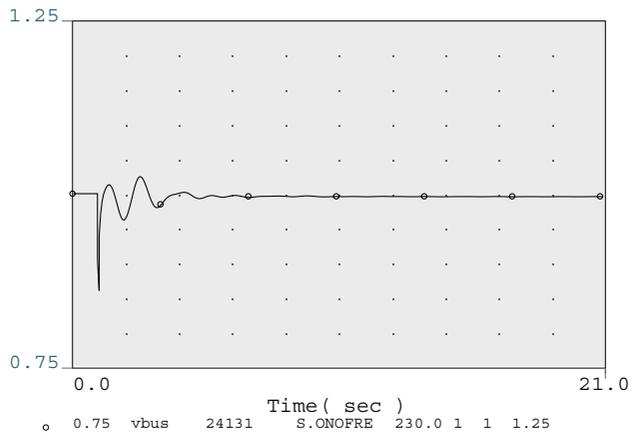
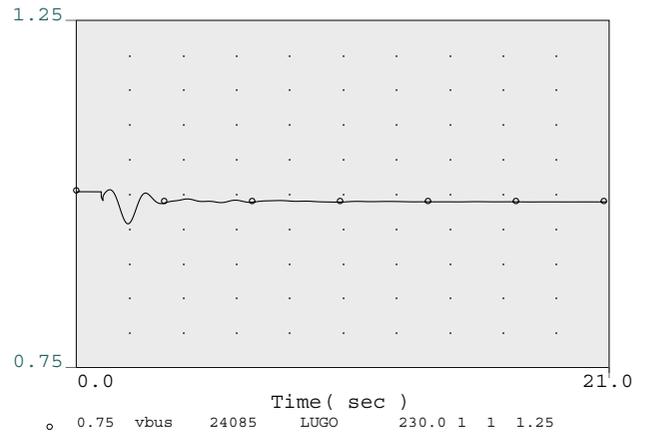
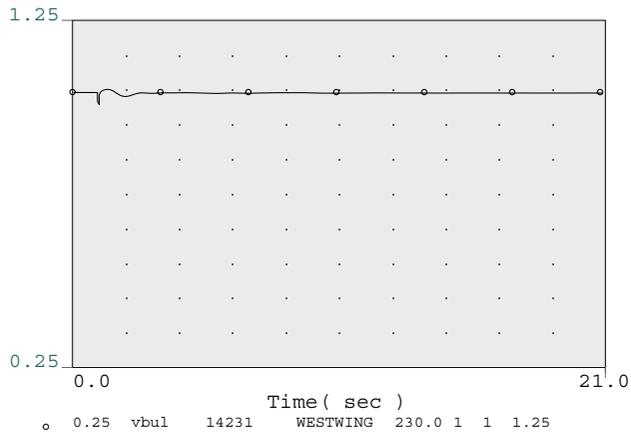
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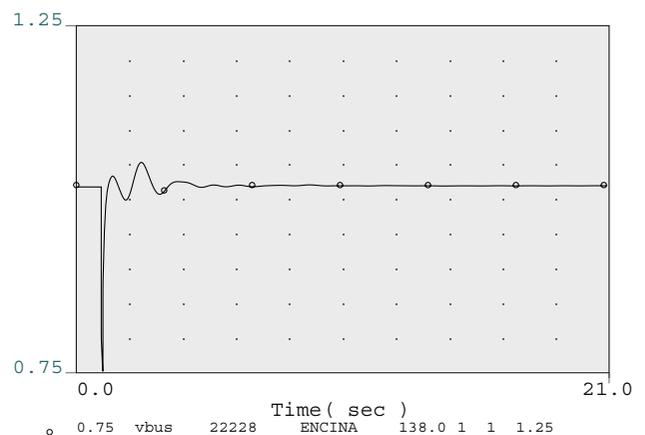
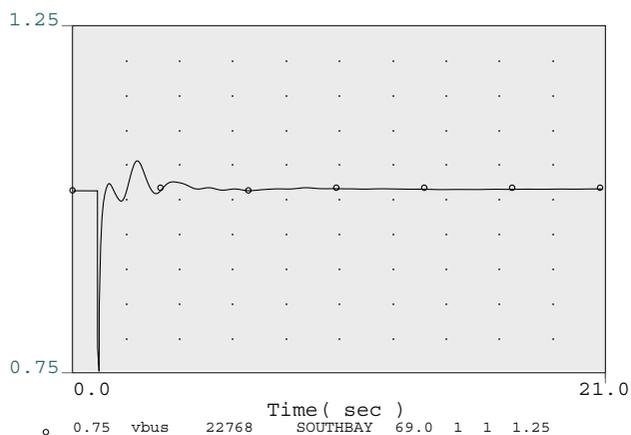
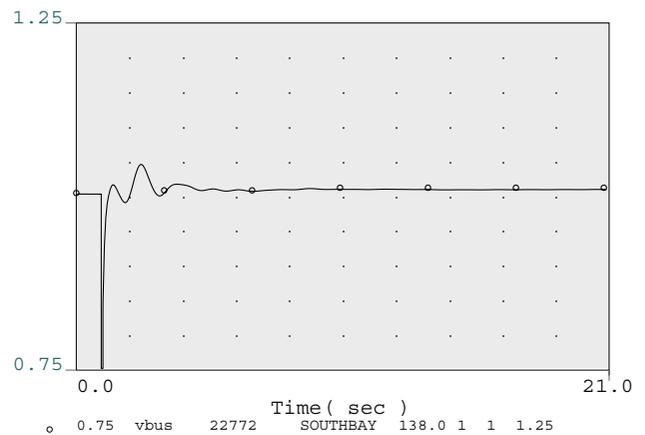
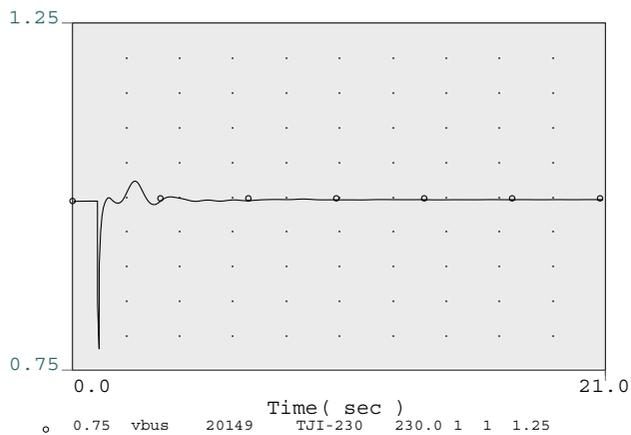
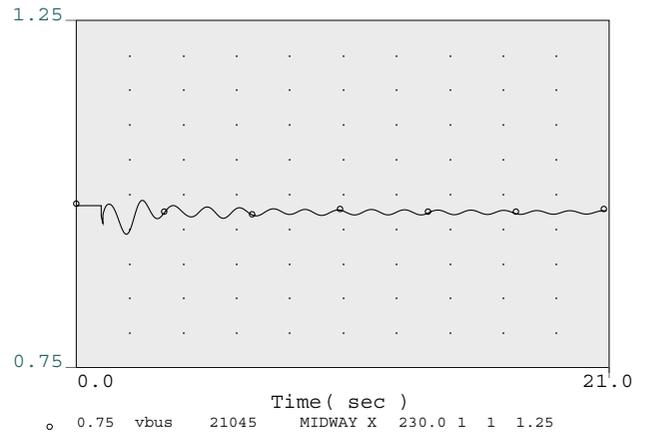
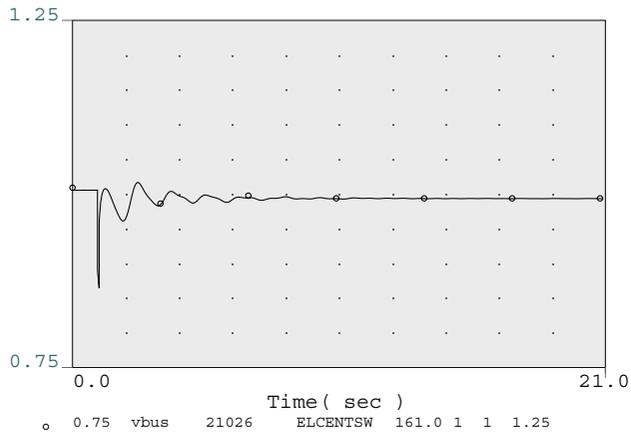
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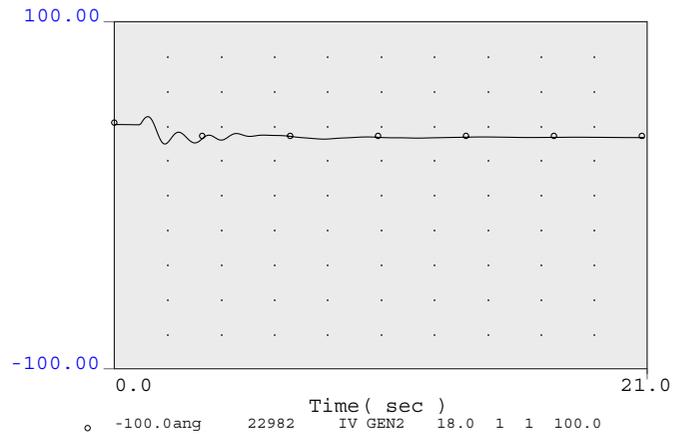
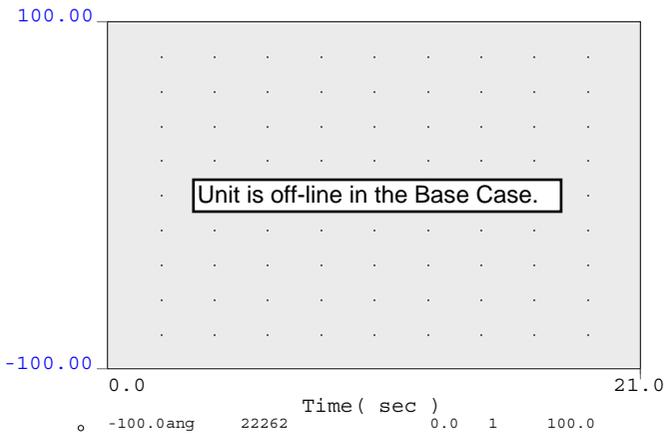
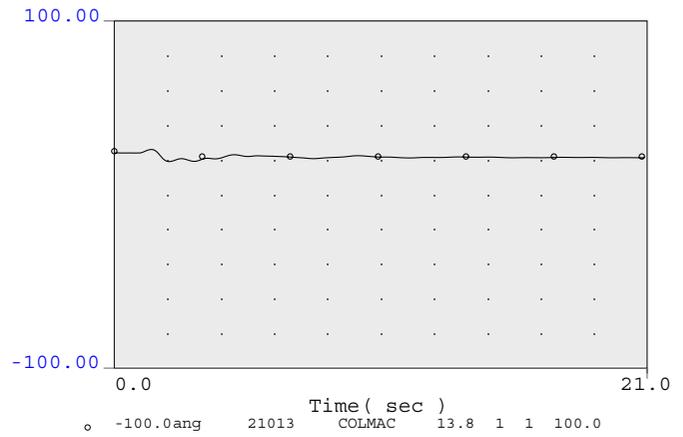
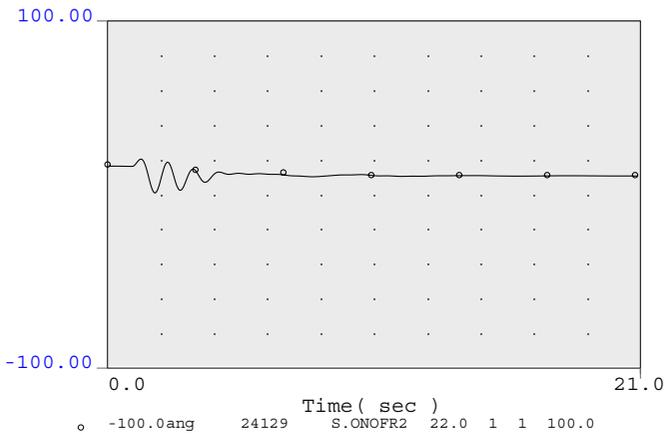
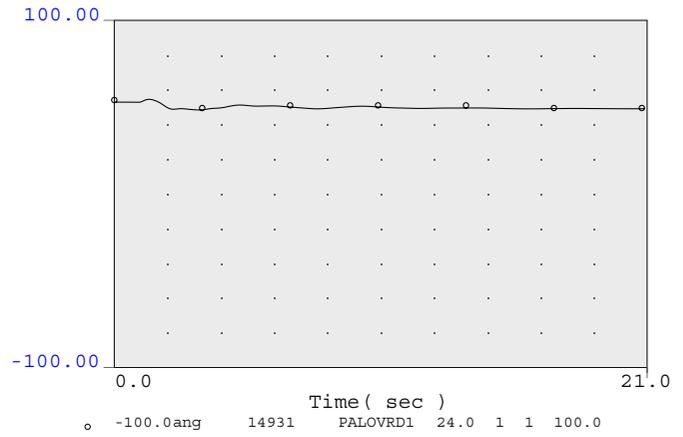
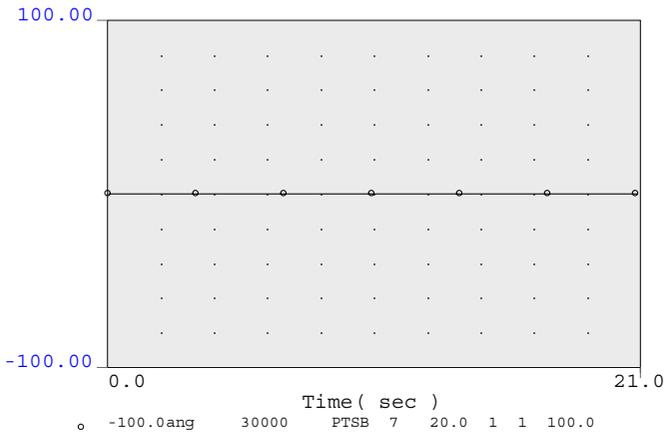
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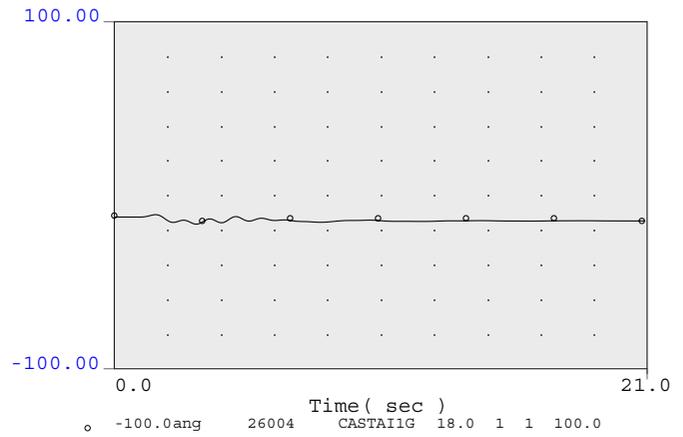
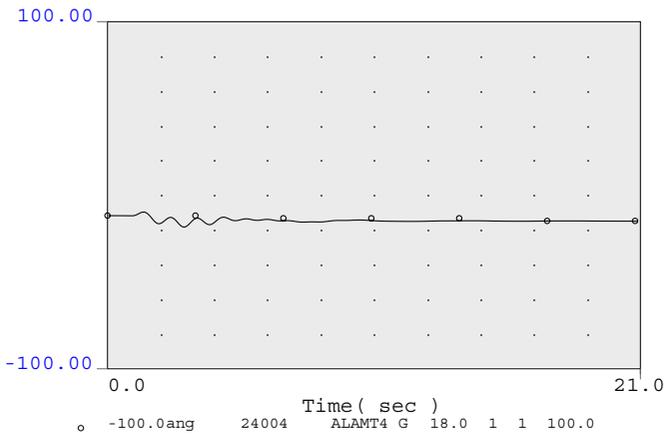
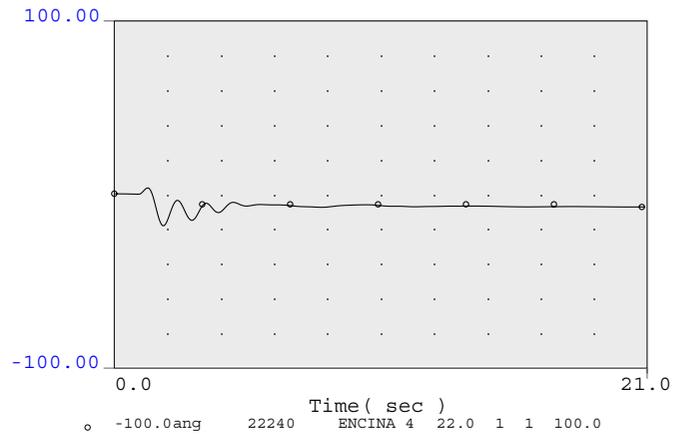
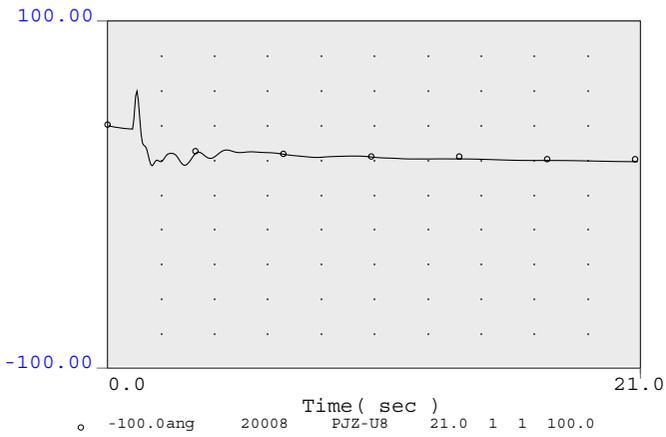
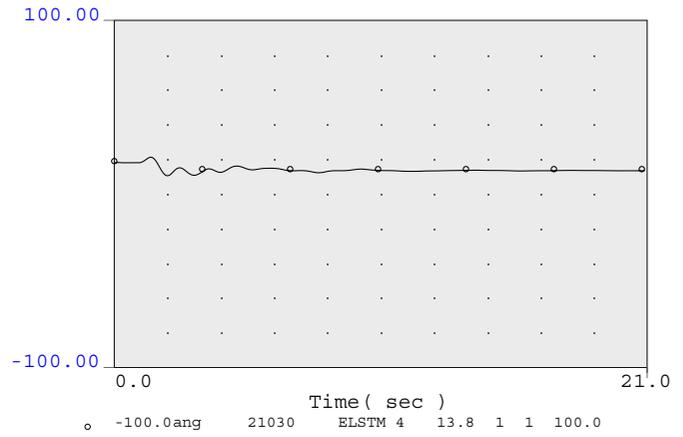
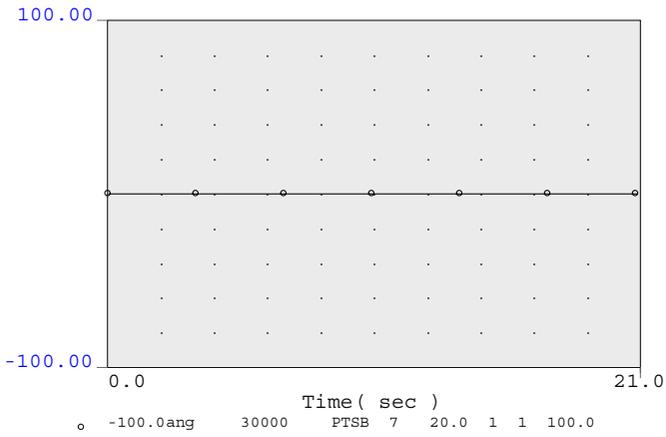
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 ngiv pst.chf
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 generation is at 650 MW.



Fault Otay Mesa 230 kV
 Trip Otay Mesa Units 1, 2 & 3
 This is a Post project Case.
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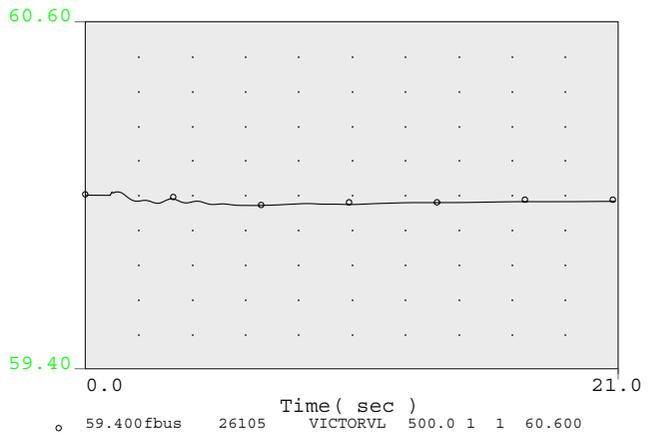
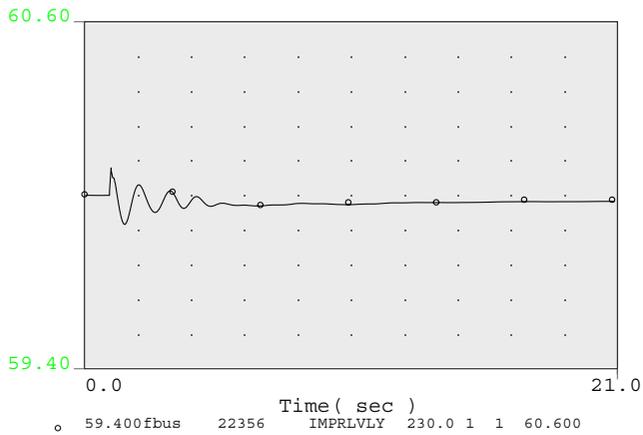
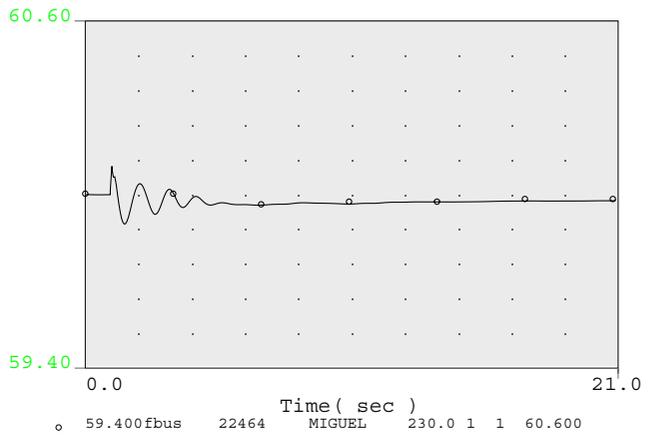
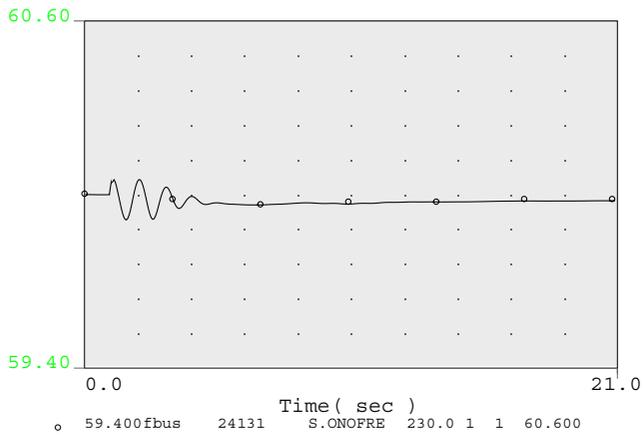
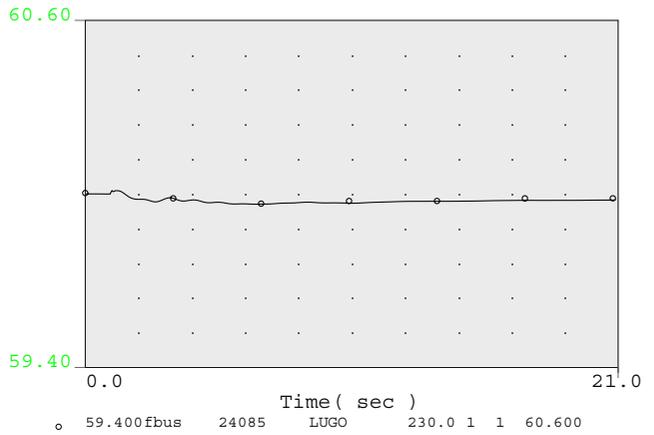
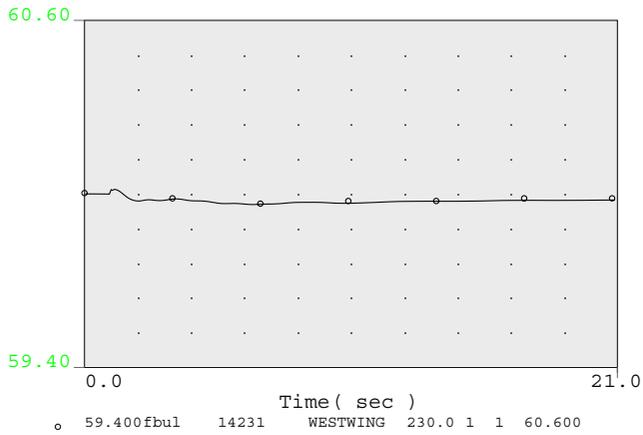
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 otay123_pst.chf
 s OFF, Cabrillo is OFF, Otay Mesa is OFF, South Bay
 generation is at 650 MW.



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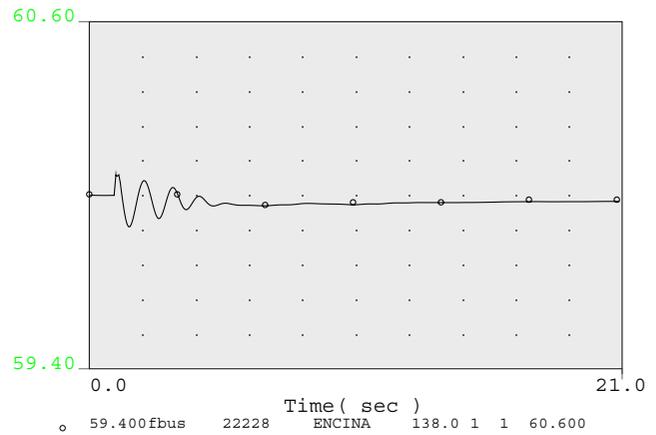
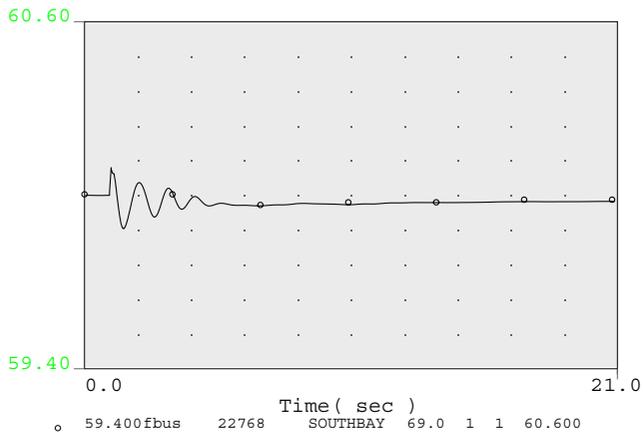
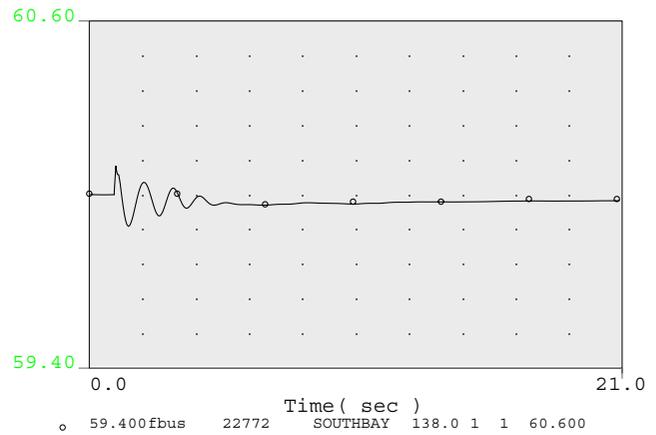
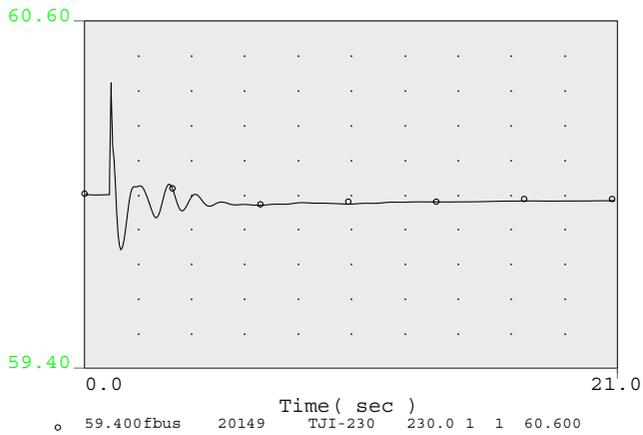
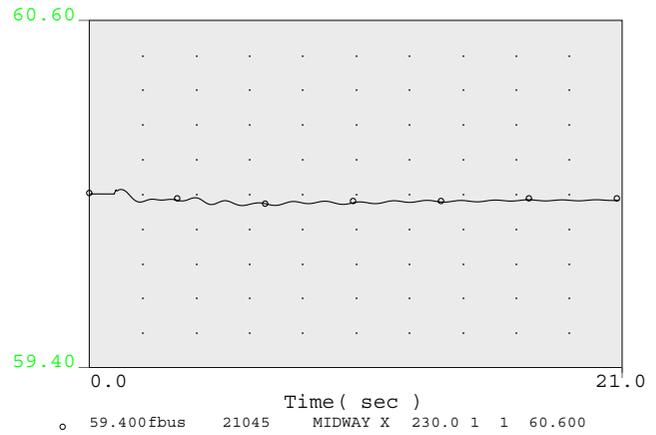
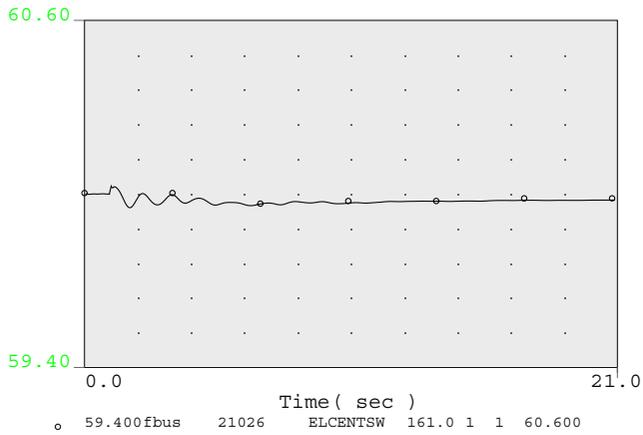
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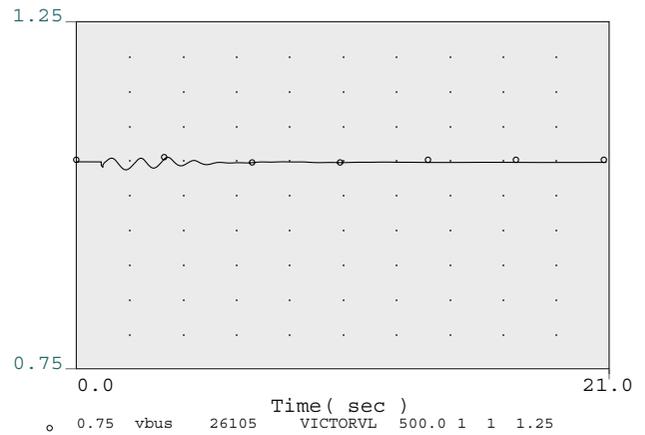
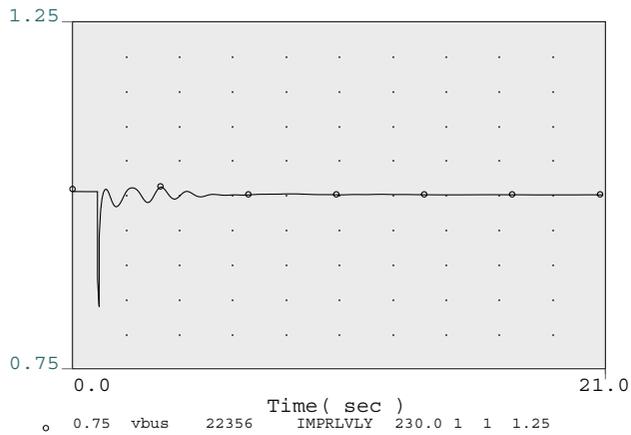
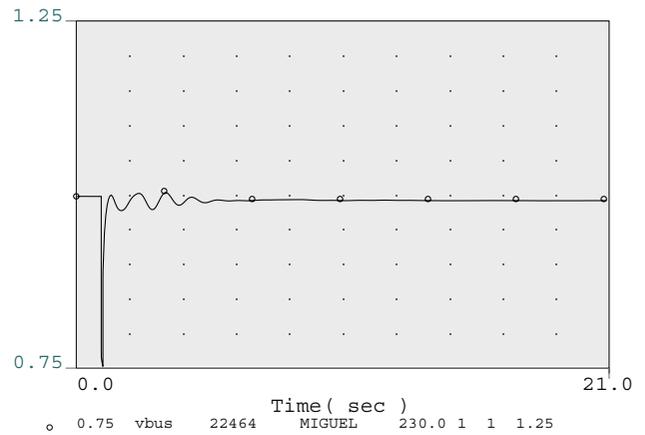
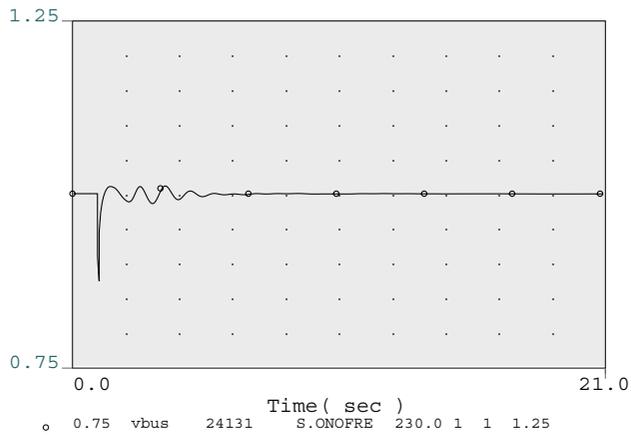
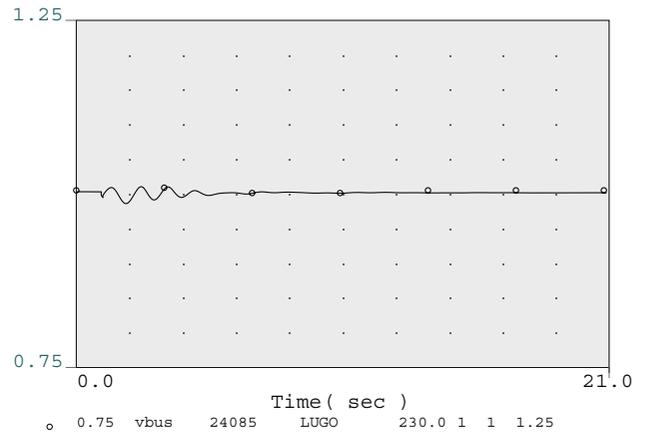
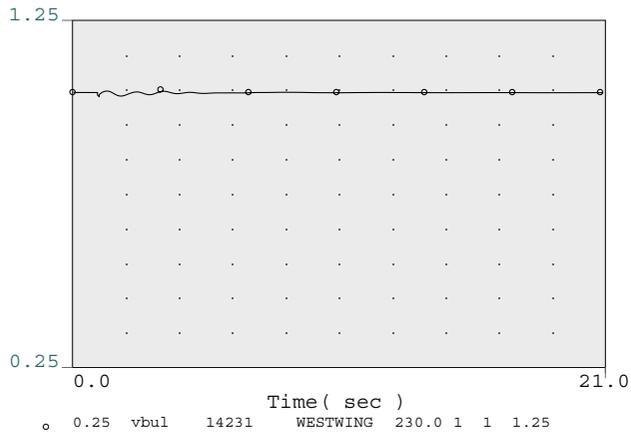
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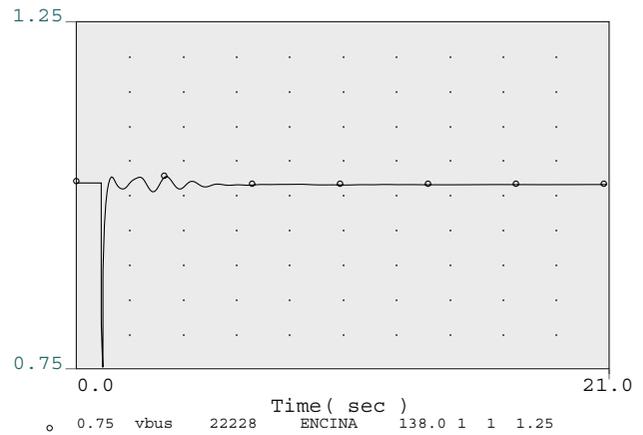
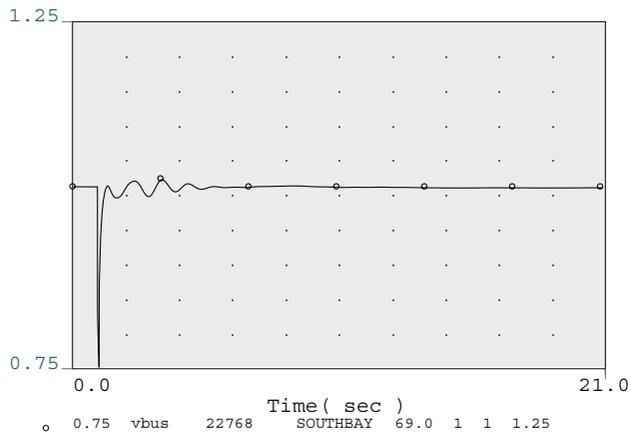
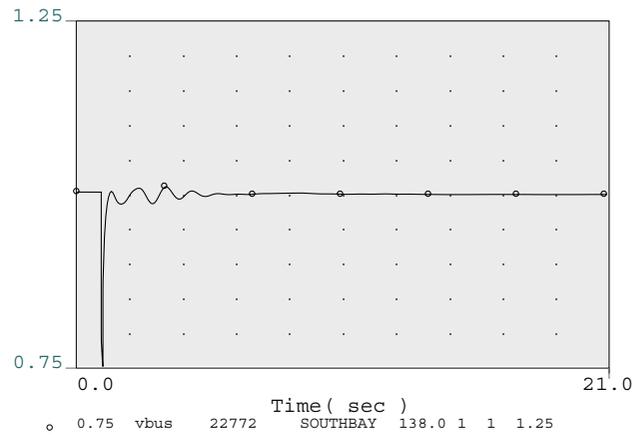
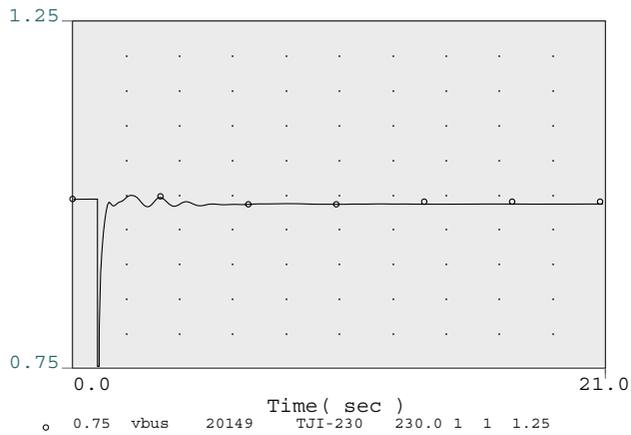
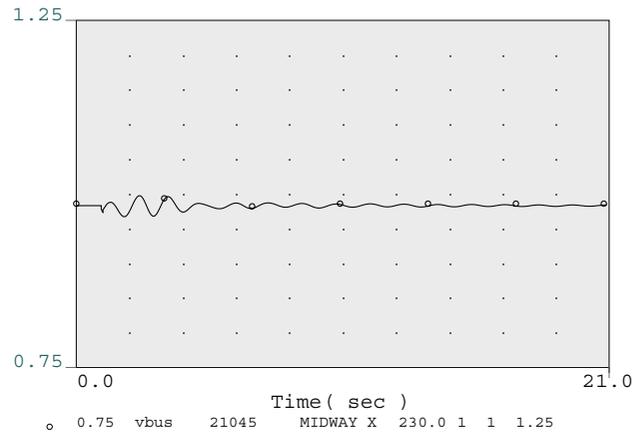
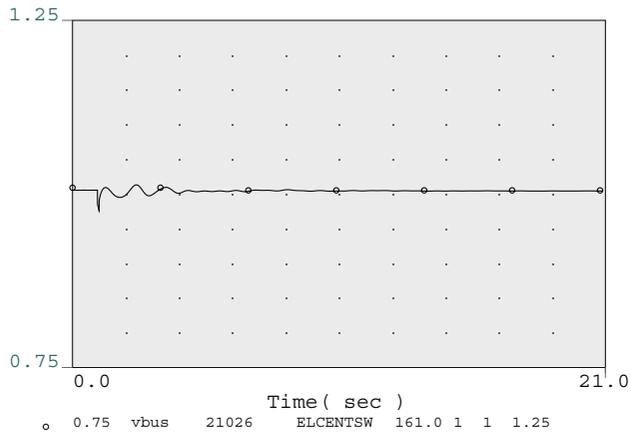
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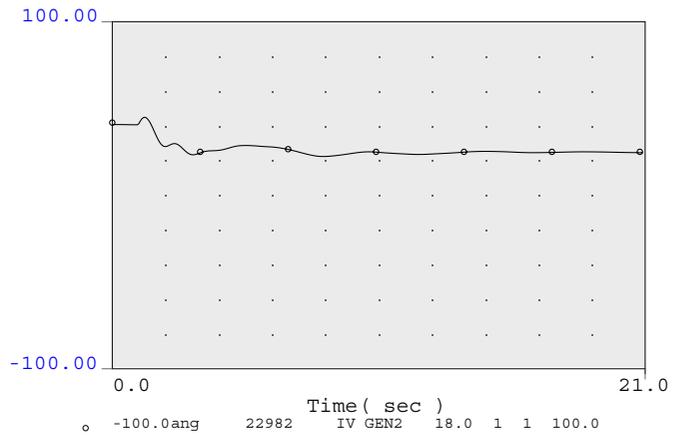
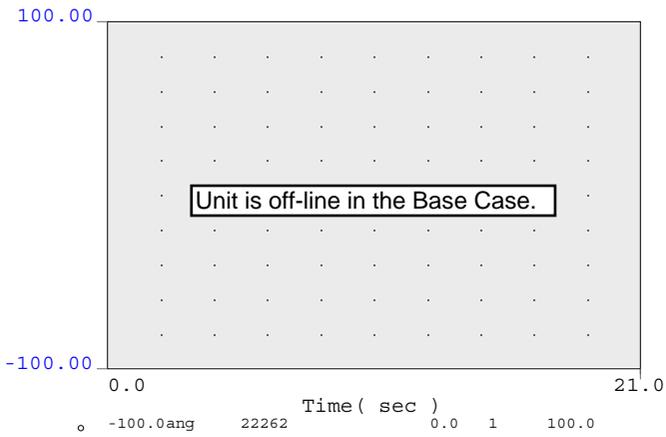
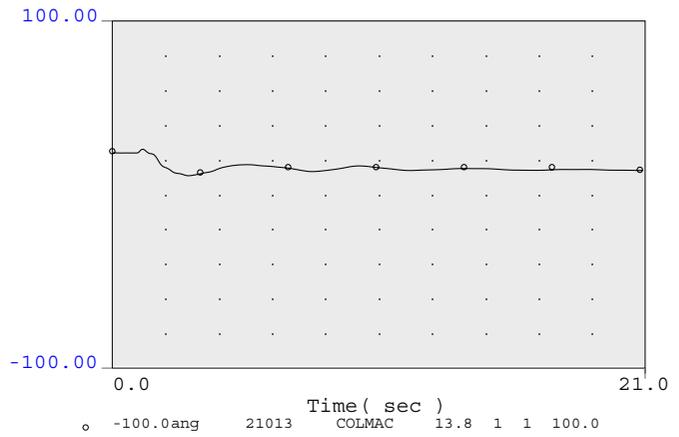
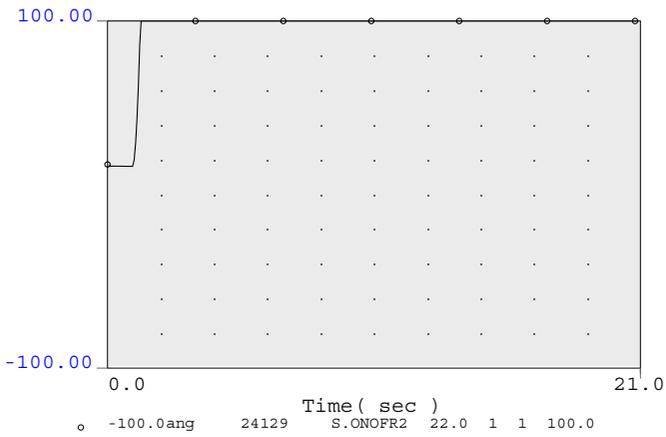
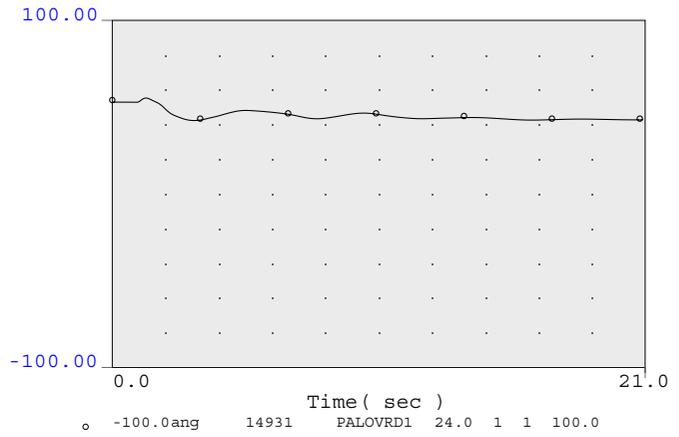
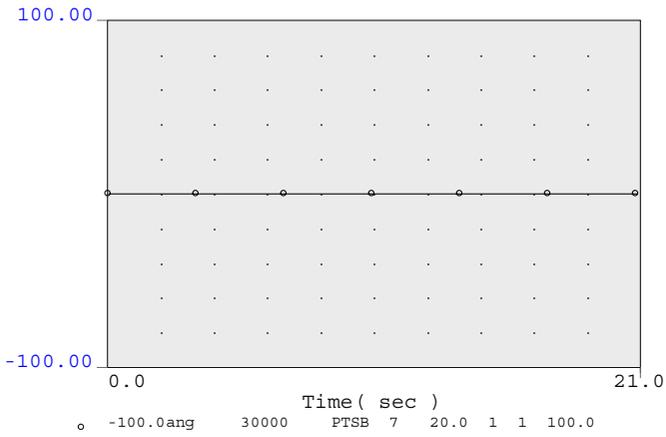
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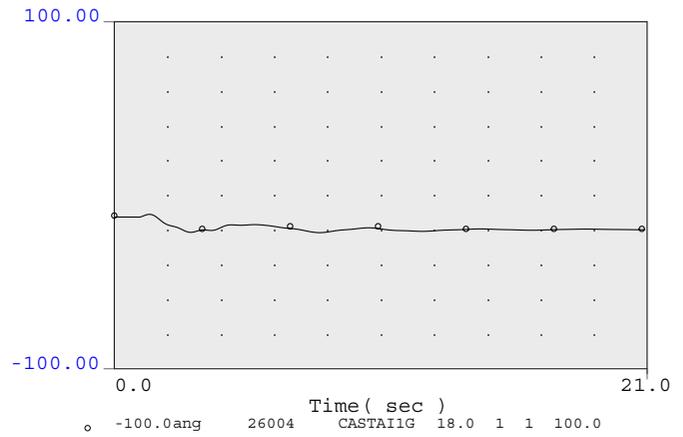
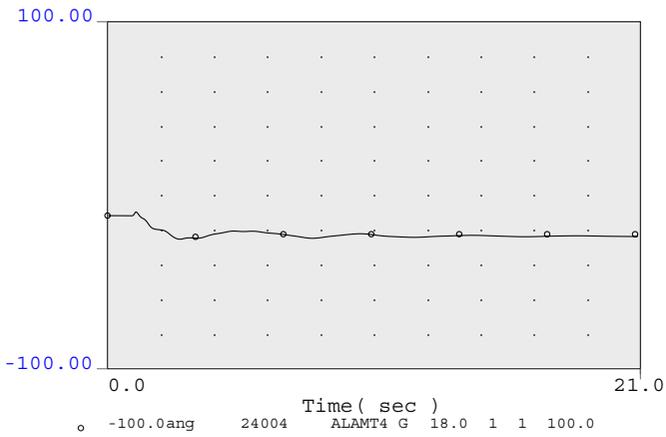
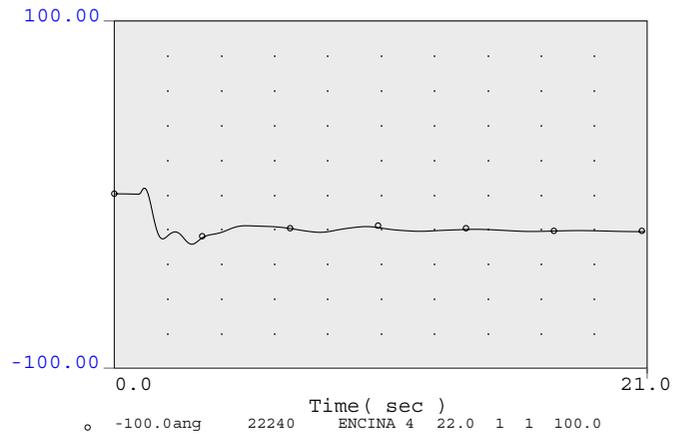
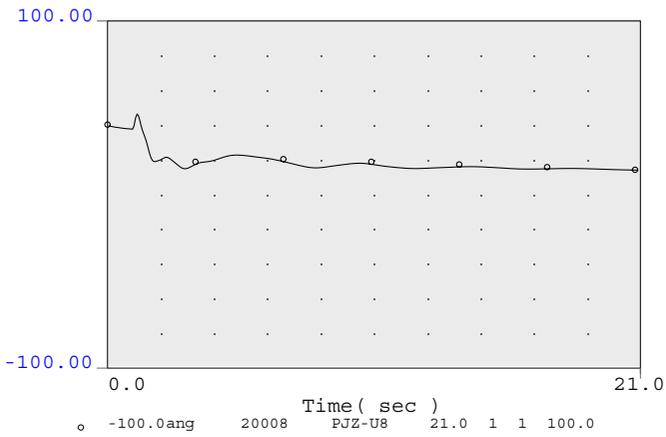
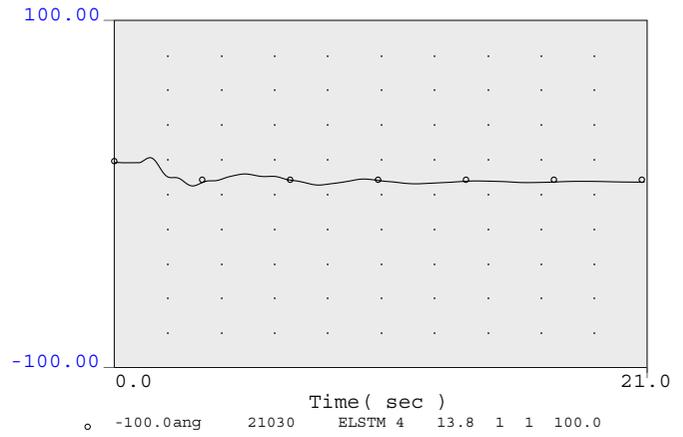
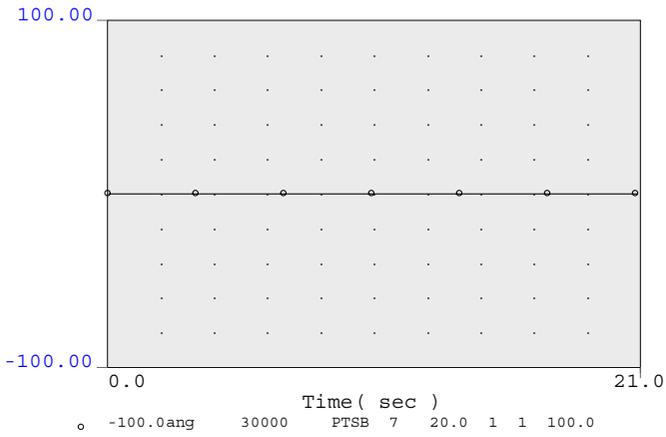
peakers, and old steam units in the SDG&E control area are OFF.
 otay123_pst.chf
 s OFF, Cabrillo is OFF, Otay Mesa is OFF, South Bay
 generation is at 650 MW.



Fault SONGS 230 kV
 Trip SONGS Units 2 & 3
 This is a Post project Case.
 This case contains ENPEX, Cabrillo, and all Crestwood wind generation.
 This is a high import Case, with All newer generation
 in the SDG&E control area at full output.



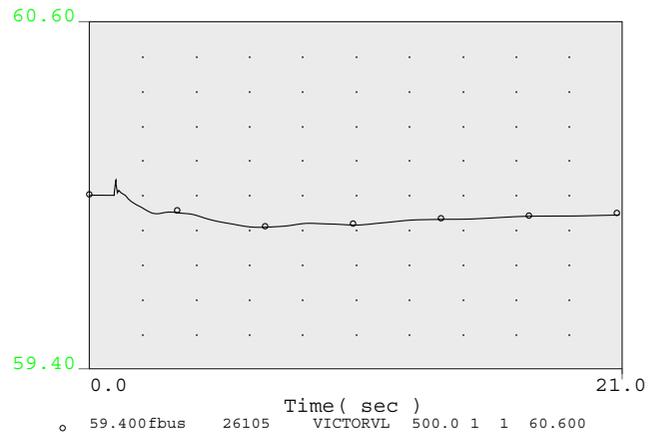
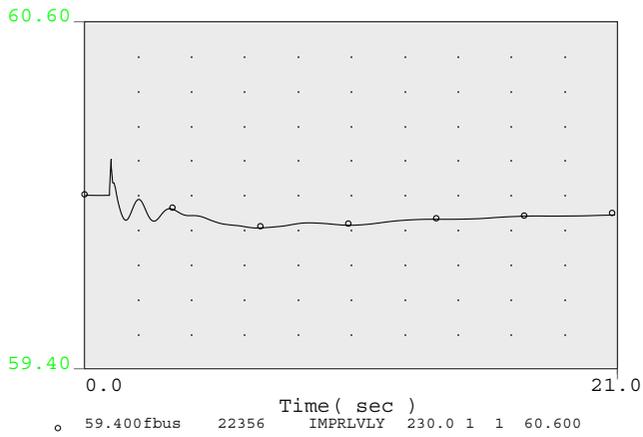
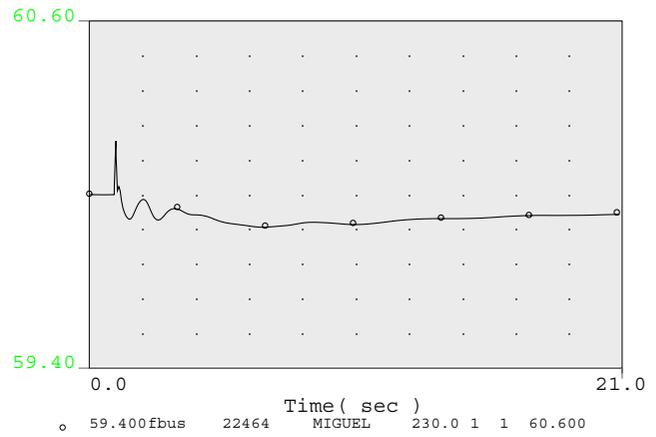
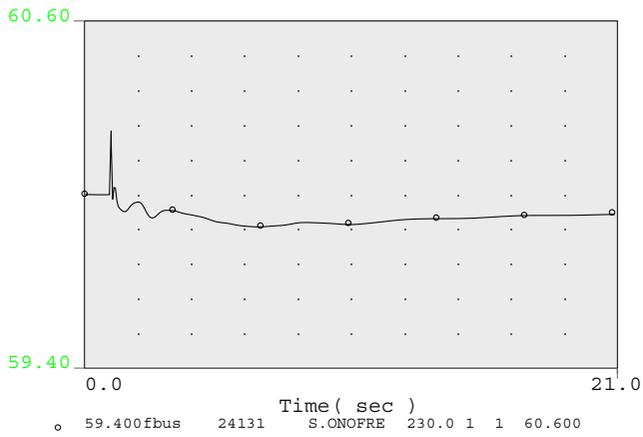
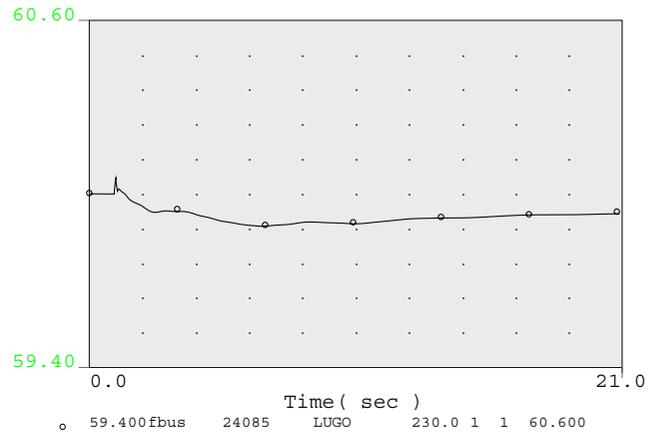
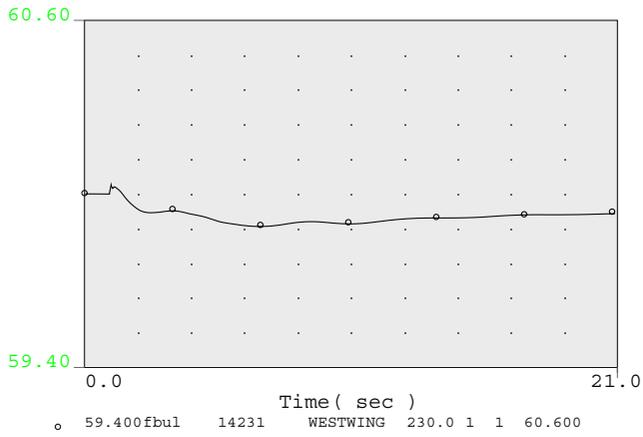
peakers, and old steam units in the SDG&E control area are OFF.
 songs23_pst.chf
 s OFF, Cabrillo is OFF, Otay Mesa is OFF, South Bay
 generation is at 650 MW.



Fault SONGS 230 kV
 Trip SONGS Units 2 & 3
 This is a Post project Case.
 This case contains ENPEX, Cabrillo, and all Crestwood wind generation.
 This is a high import Case, with All newer generation
 in the SDG&E control area at full output.



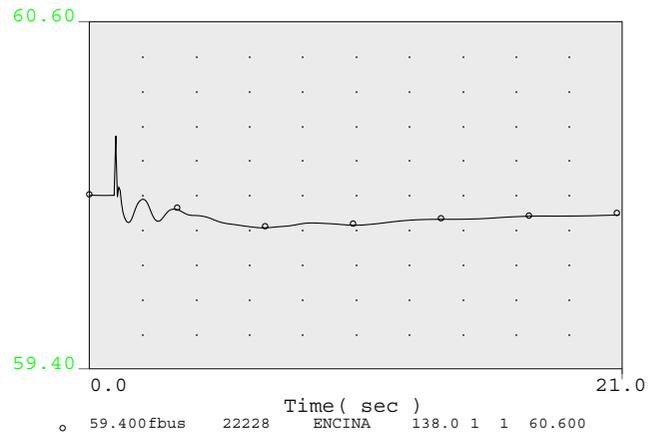
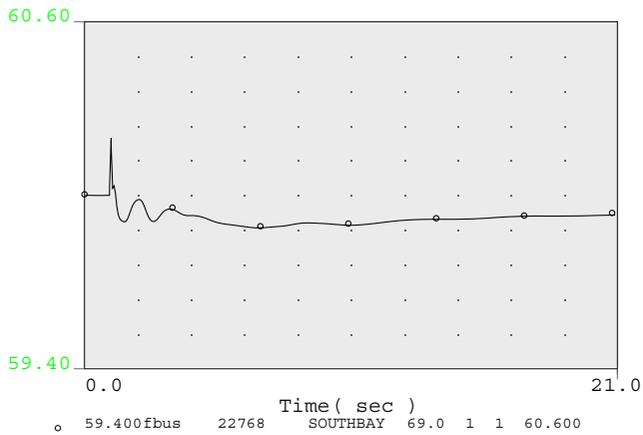
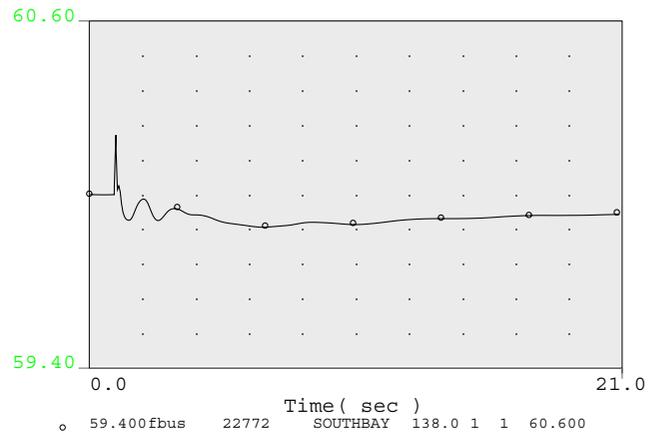
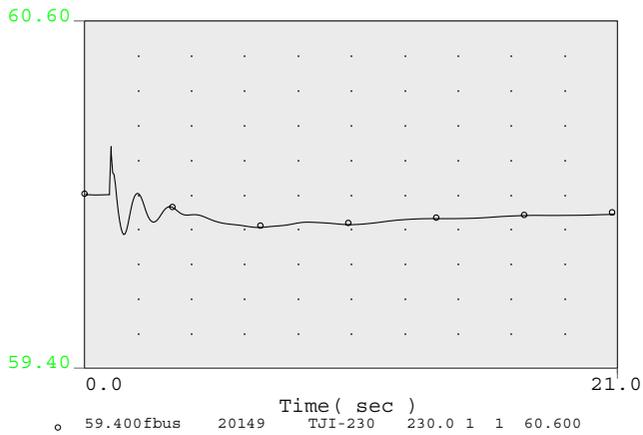
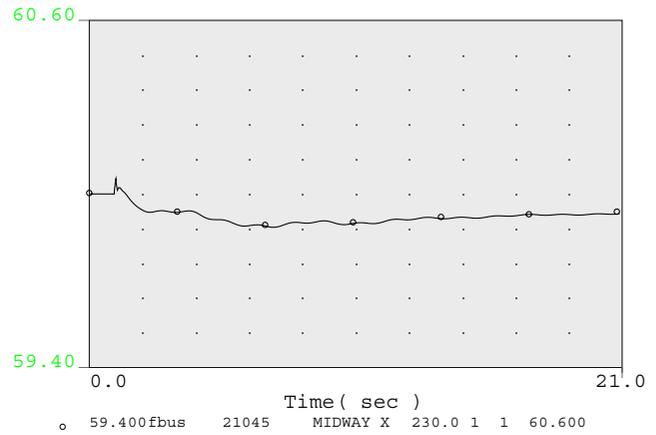
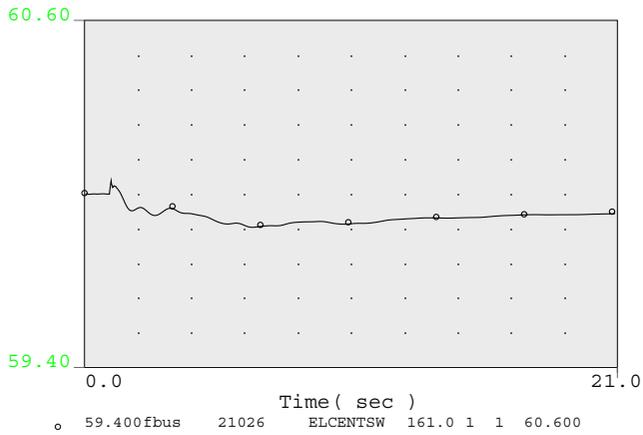
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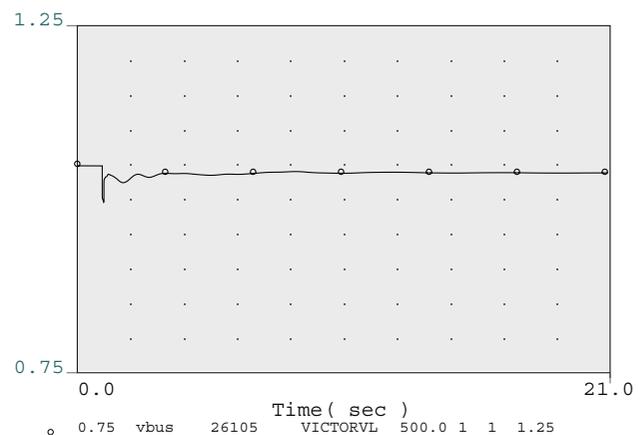
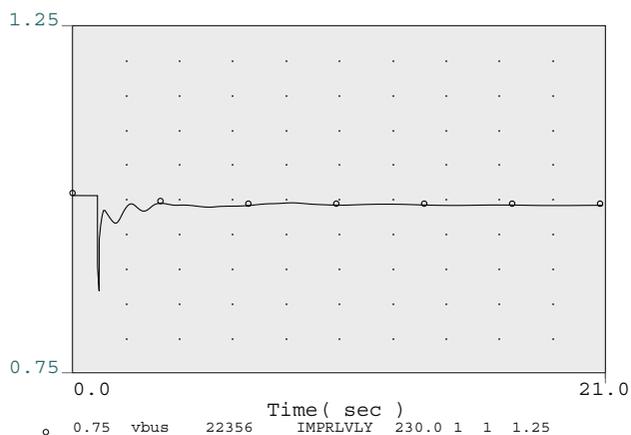
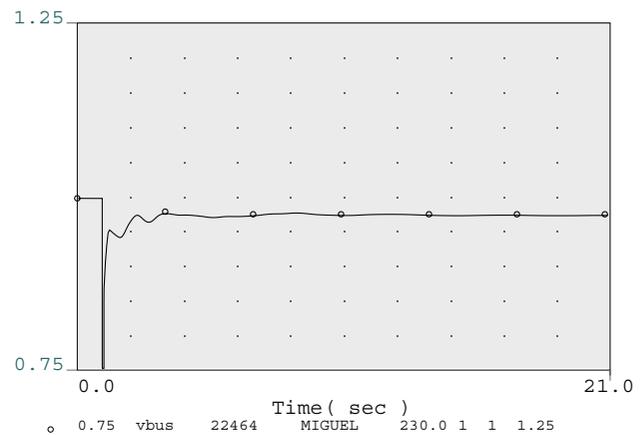
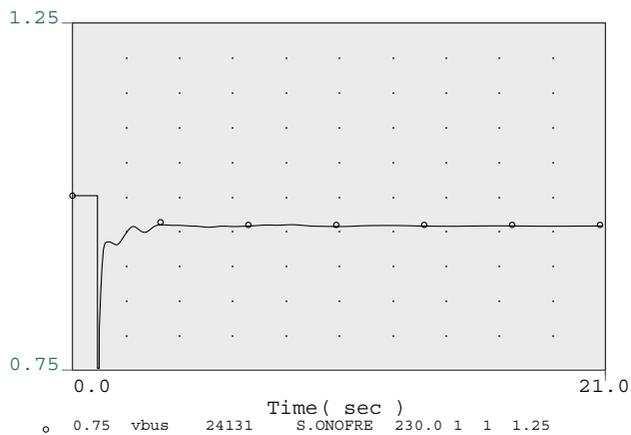
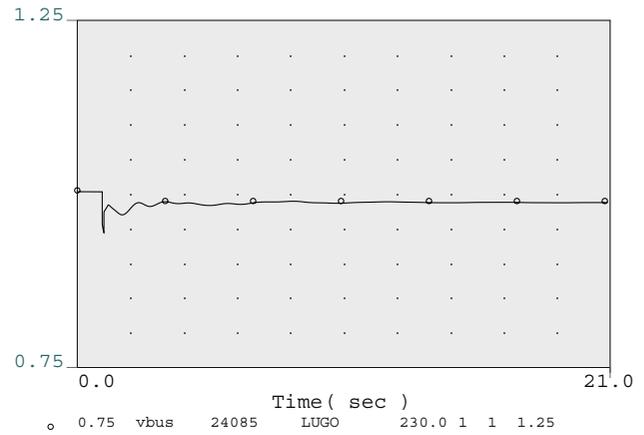
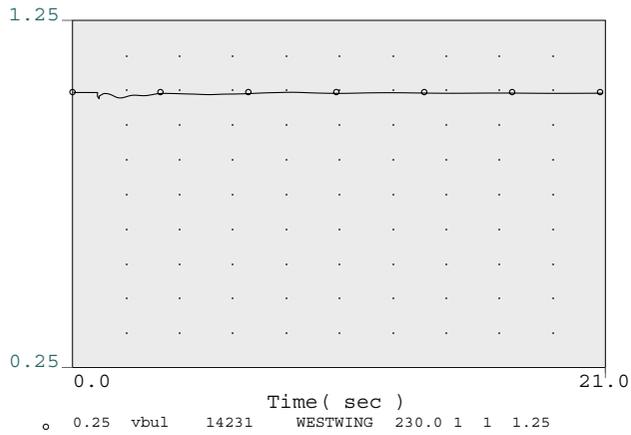
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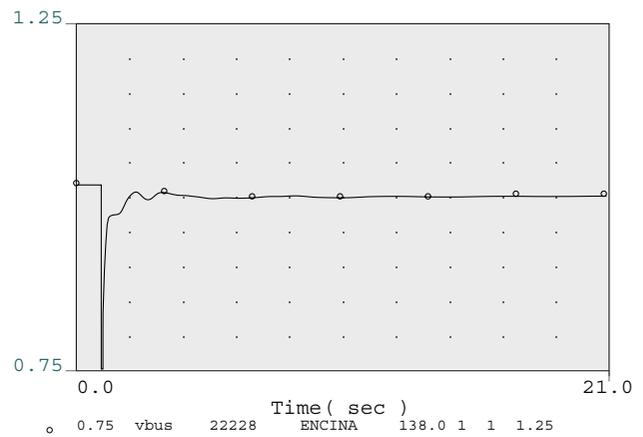
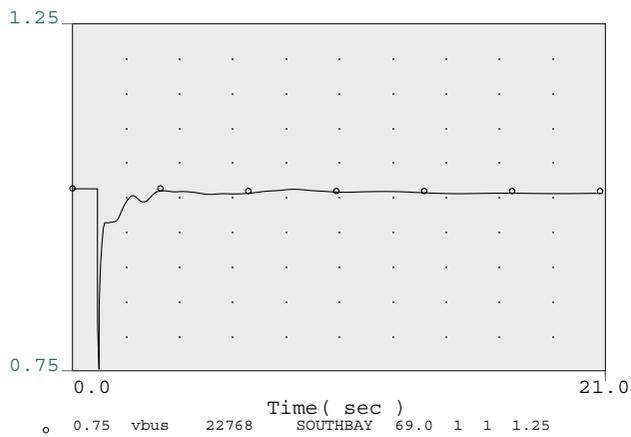
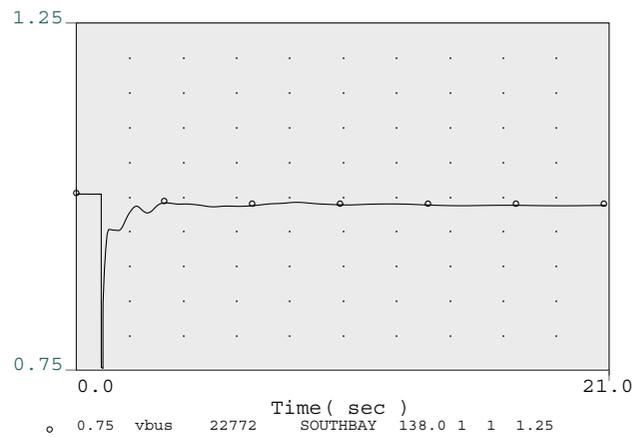
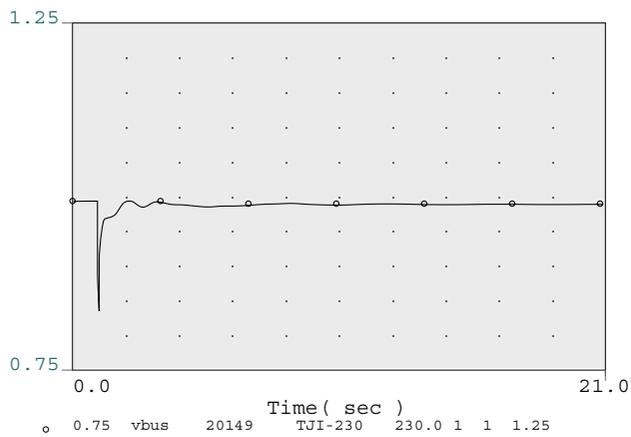
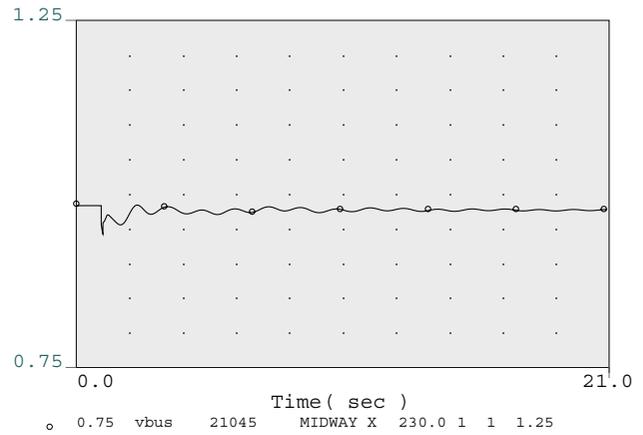
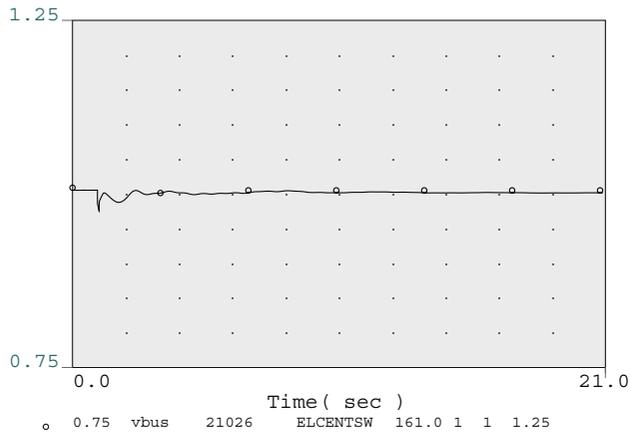
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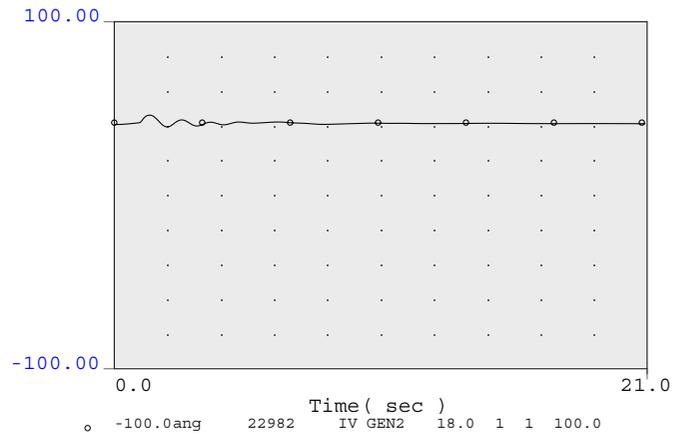
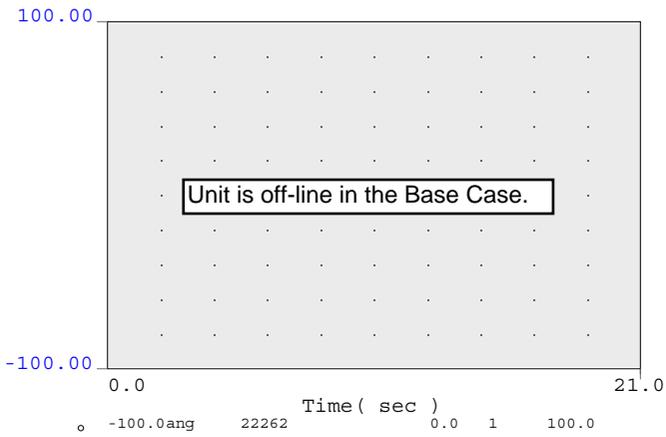
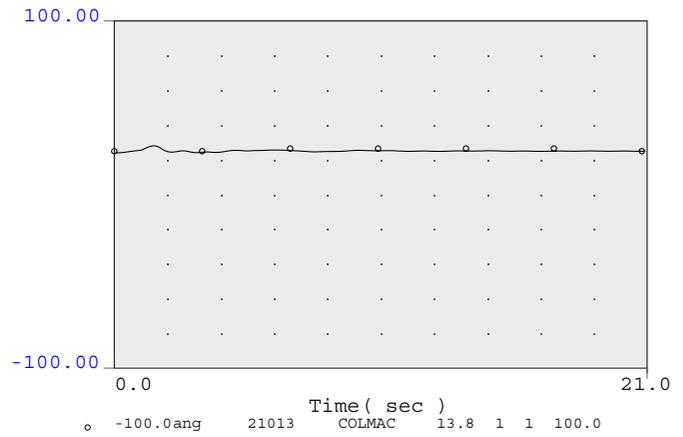
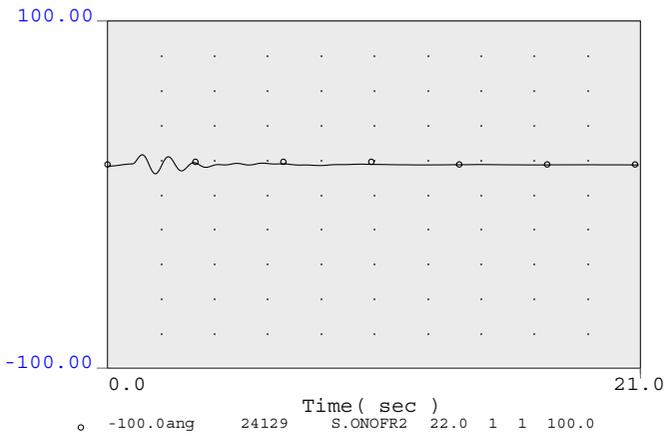
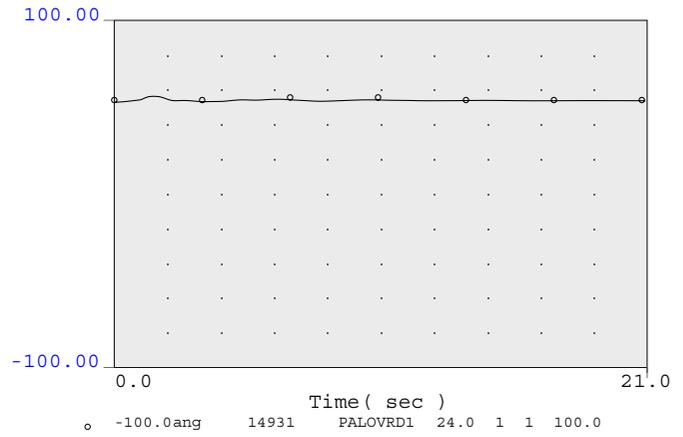
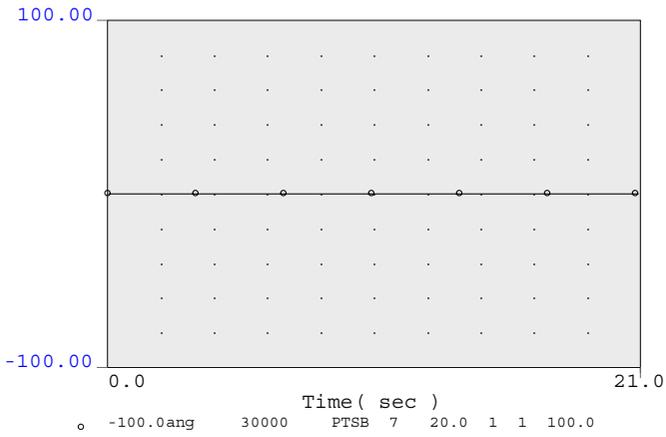
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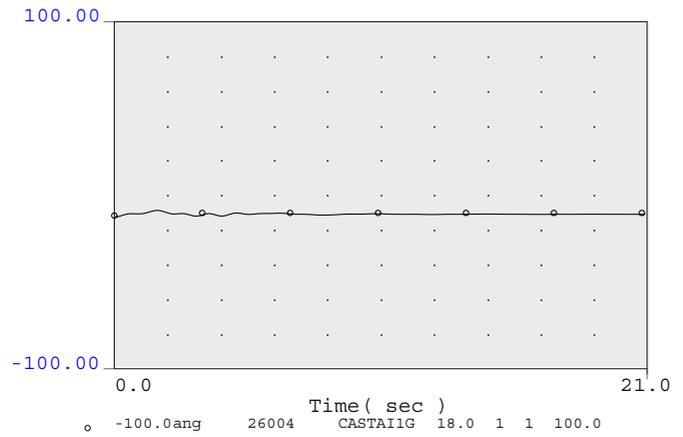
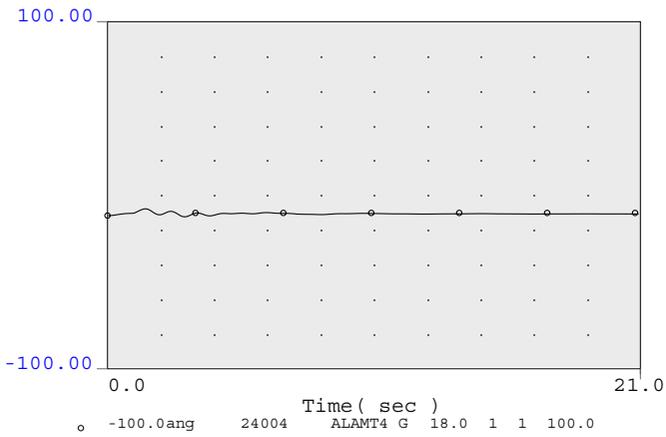
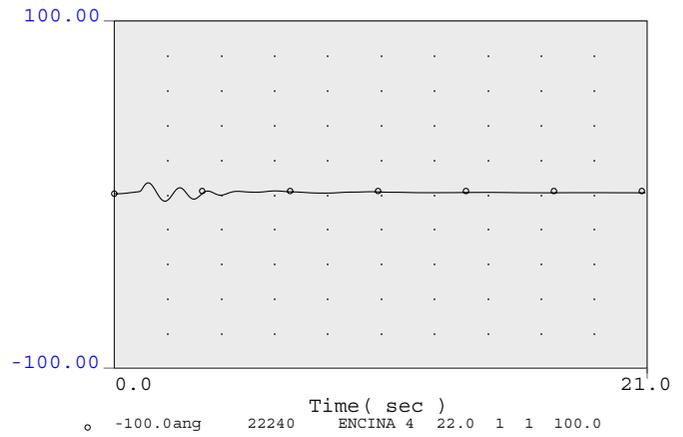
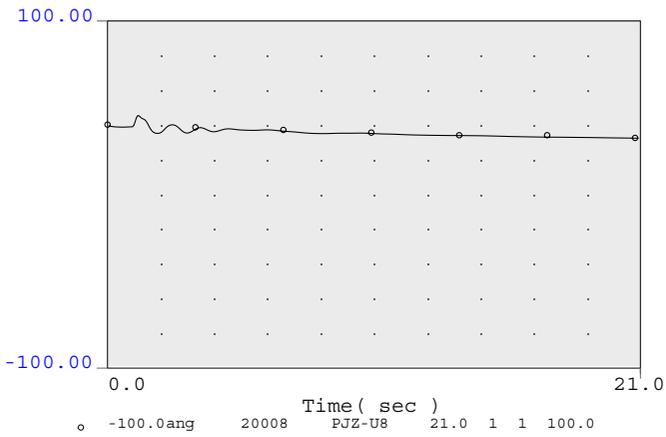
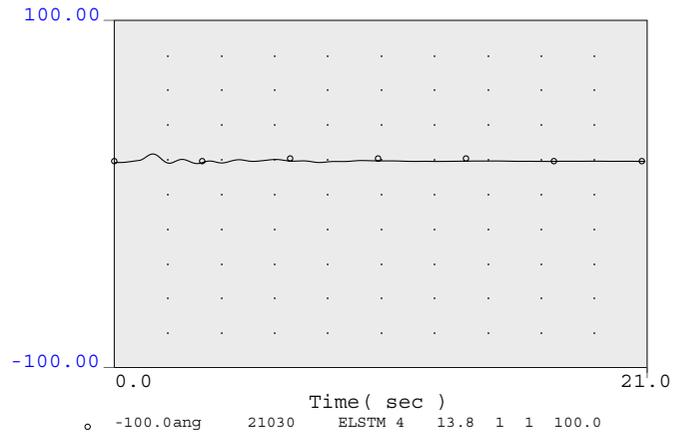
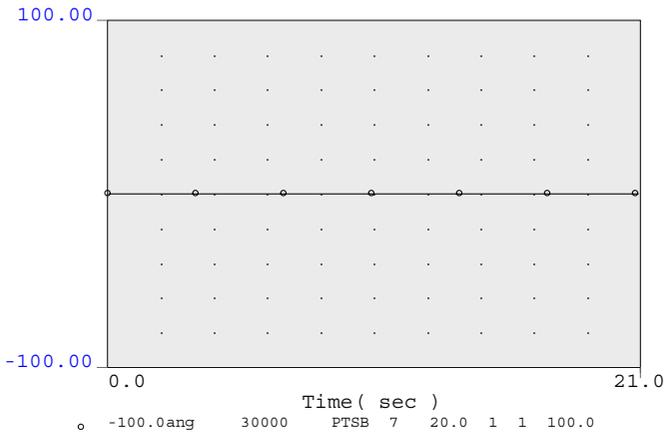
peakers, and old steam units in the SDG&E control area are OFF.
 songs23_pst.chf
 s OFF, Cabrillo is OFF, Otay Mesa is OFF, South Bay
 generation is at 650 MW.



Fault SOUTH BAY 69kV
 No system elements removed post clearing
 This is a Post project Case.
 This case contains ENPEX, Cabrillo, and all Crestwood wind generation.
 This is a high import Case, with All newer generation
 in the SDG&E control area at full output.



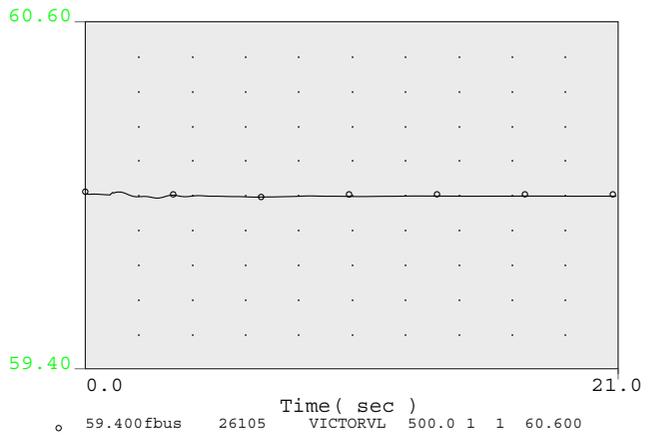
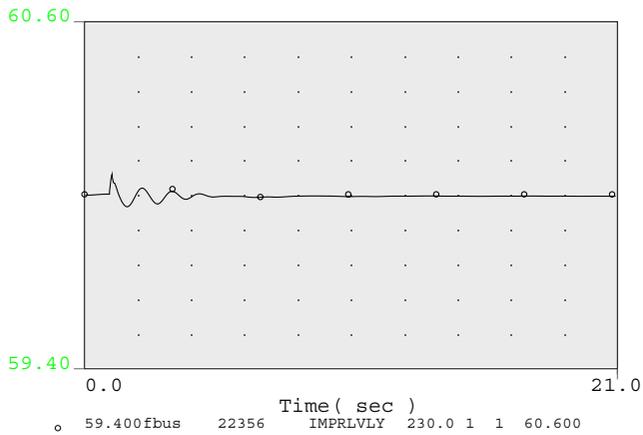
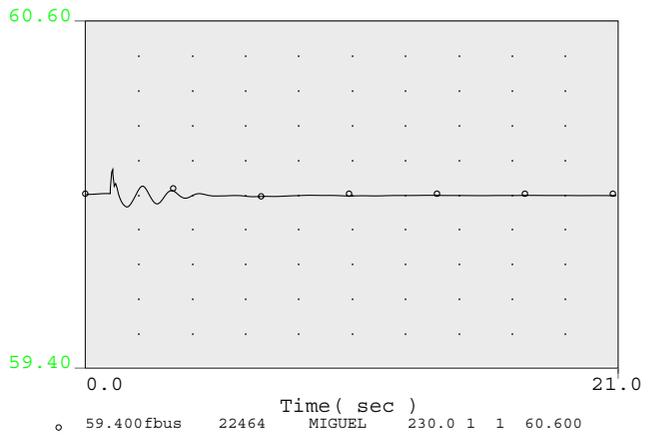
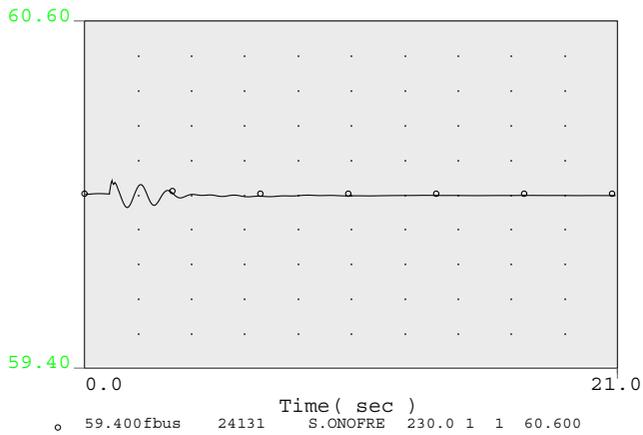
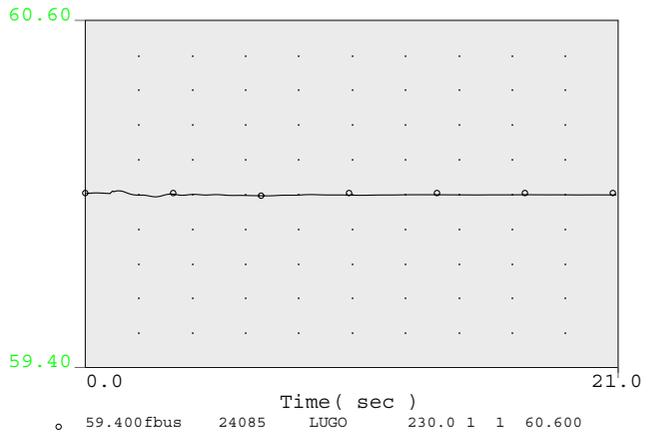
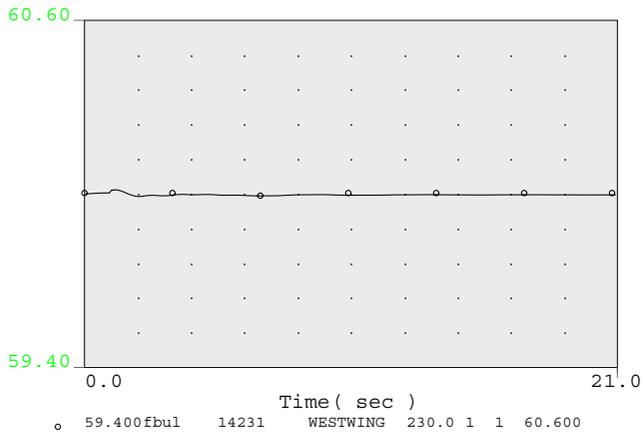
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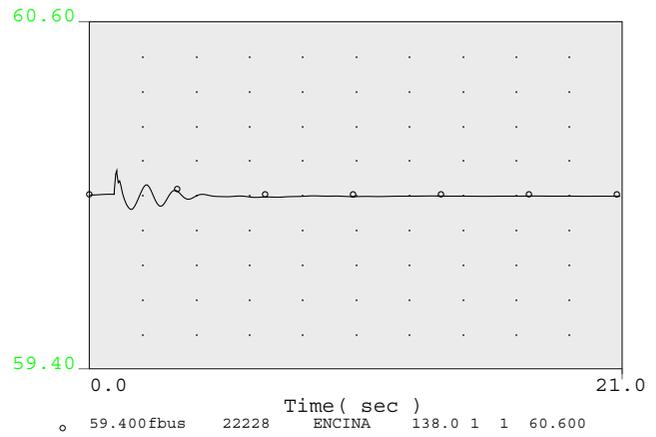
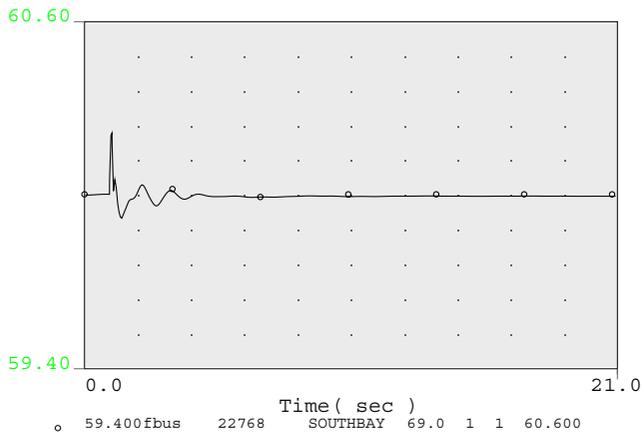
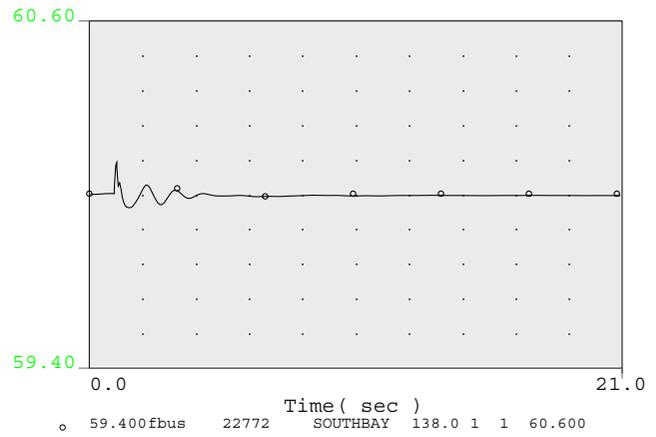
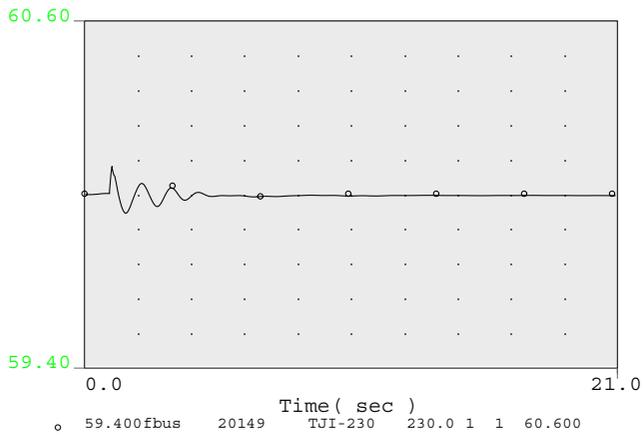
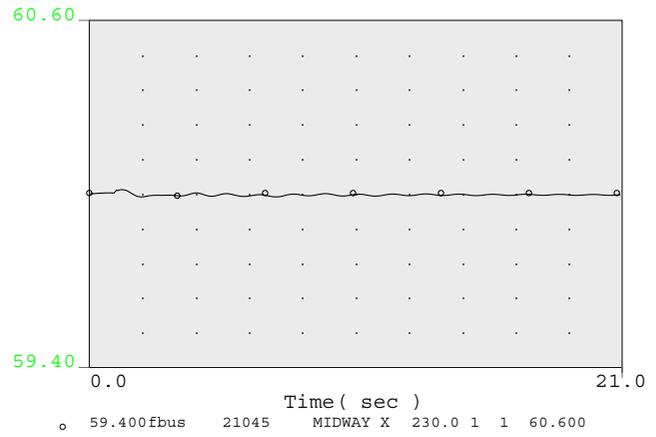
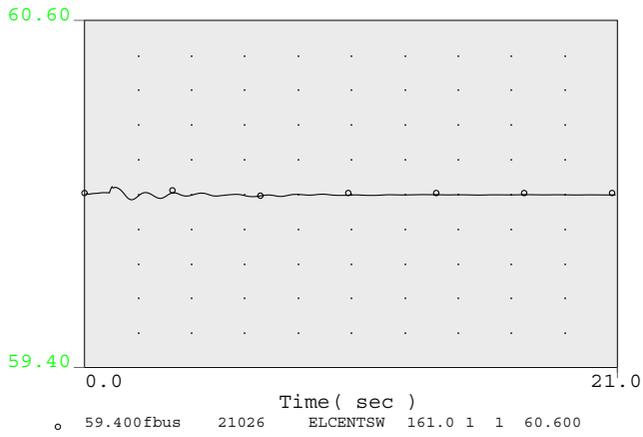
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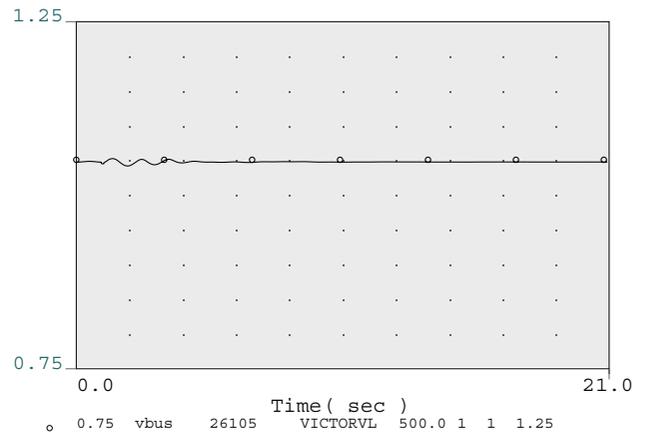
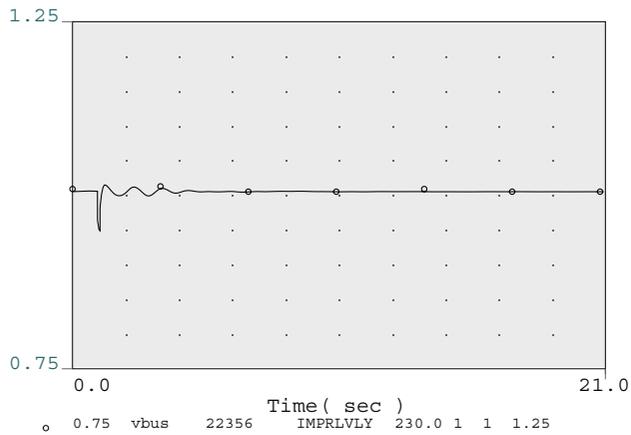
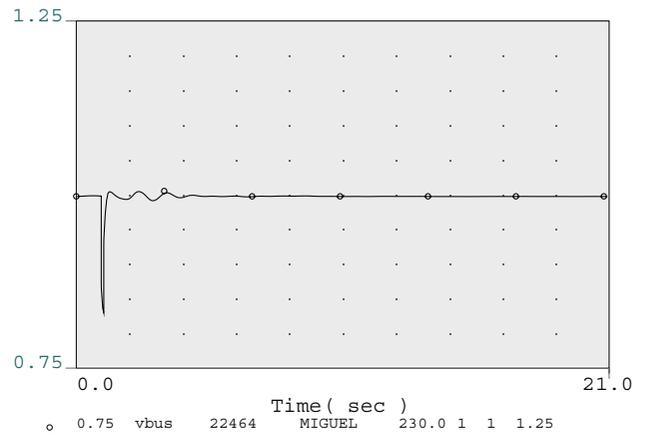
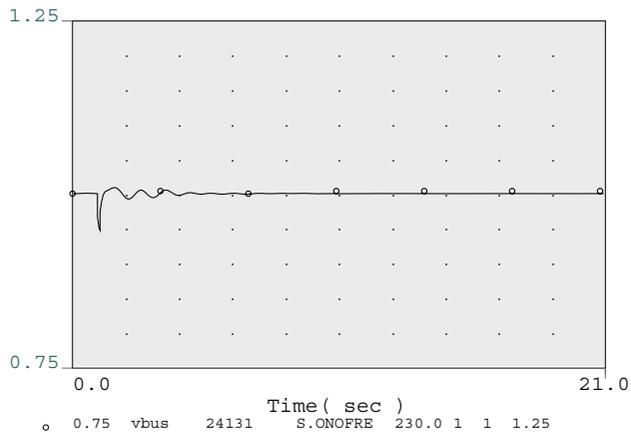
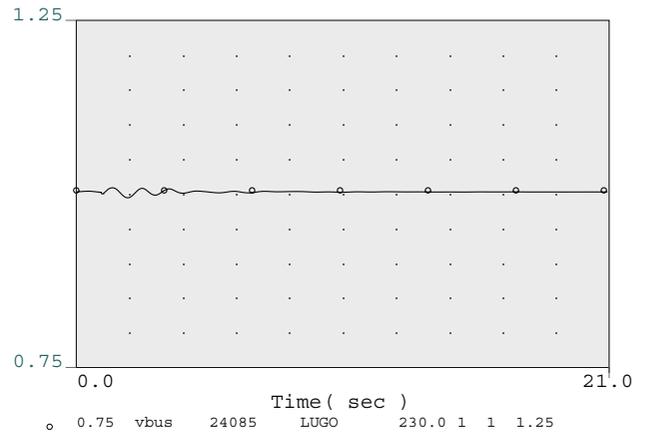
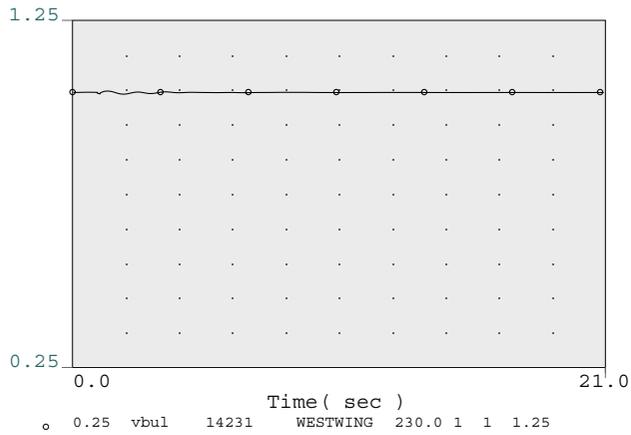
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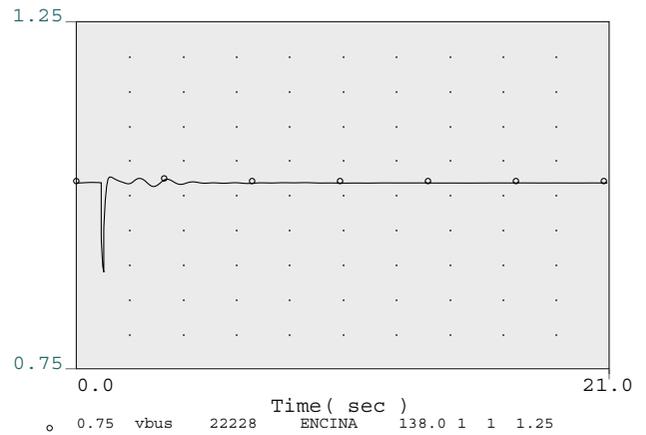
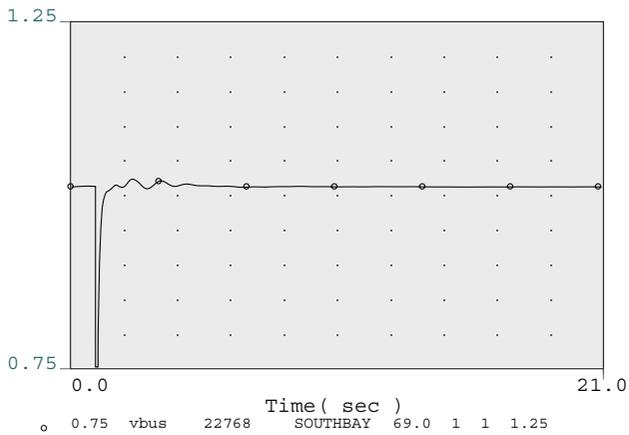
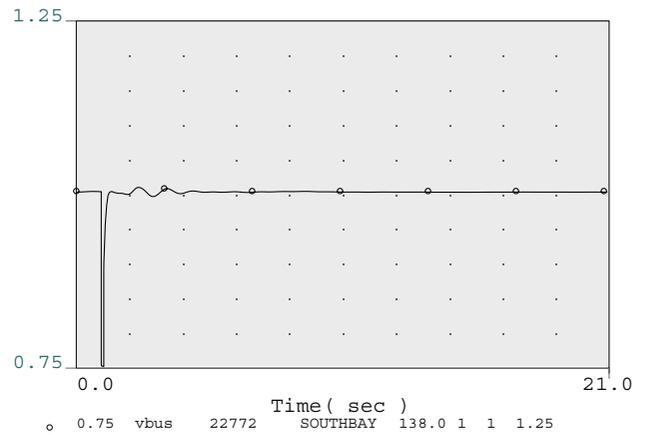
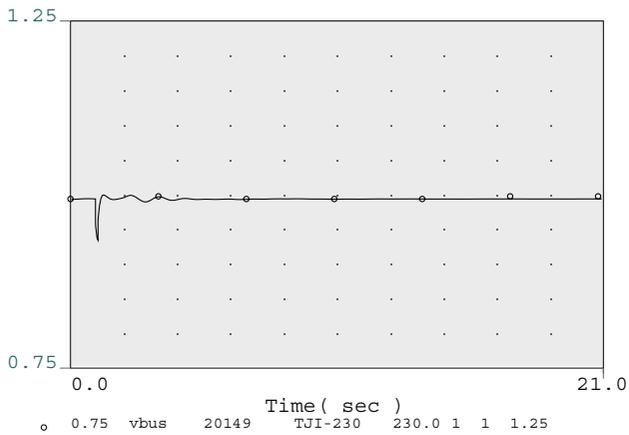
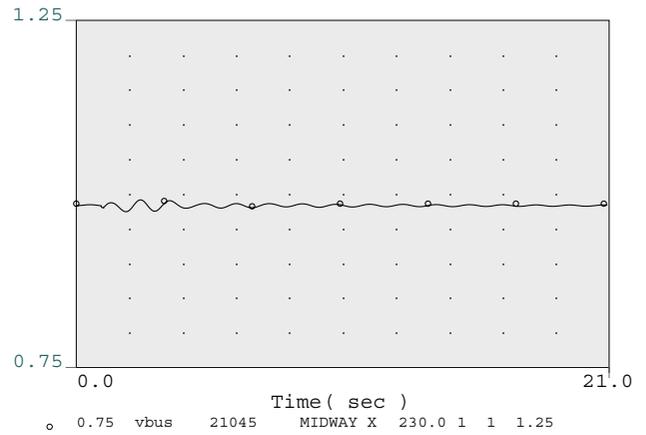
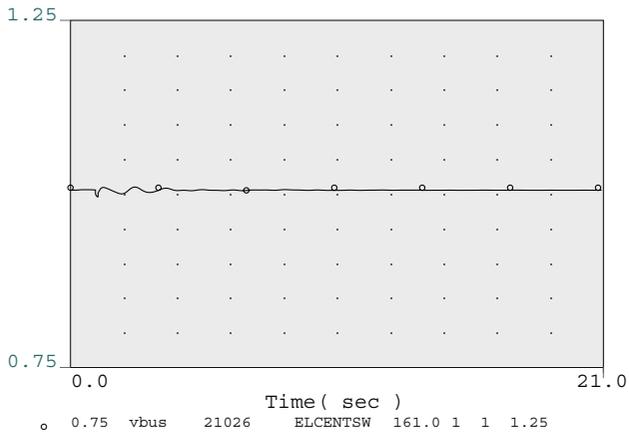
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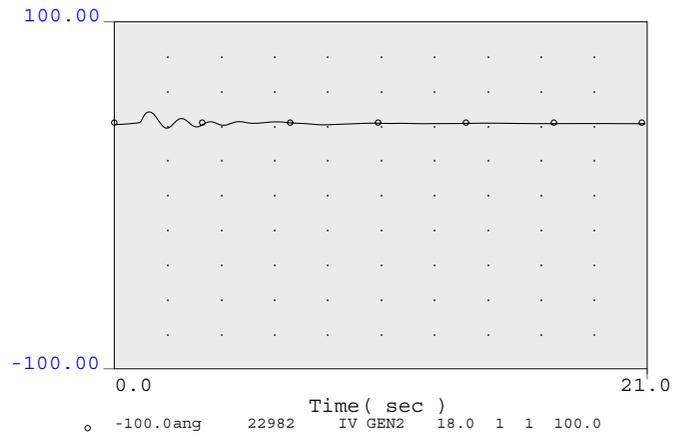
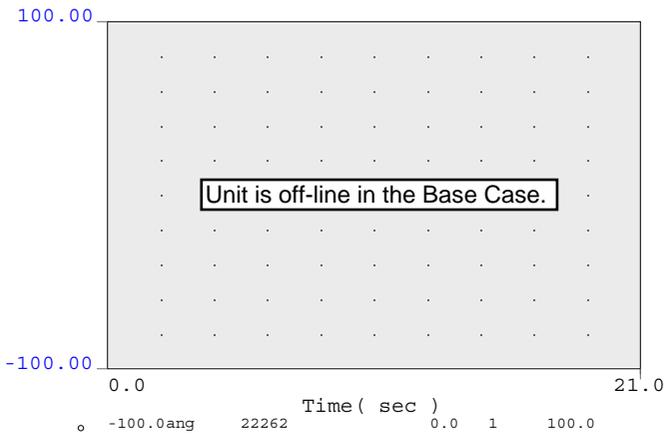
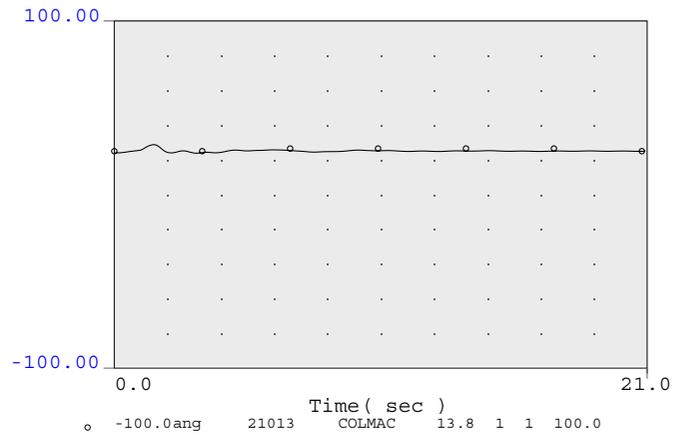
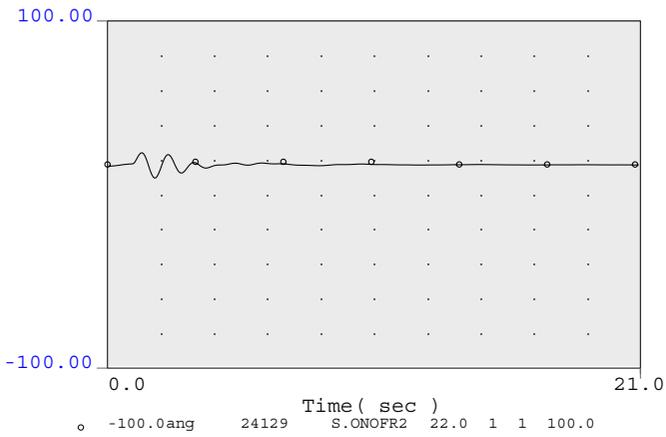
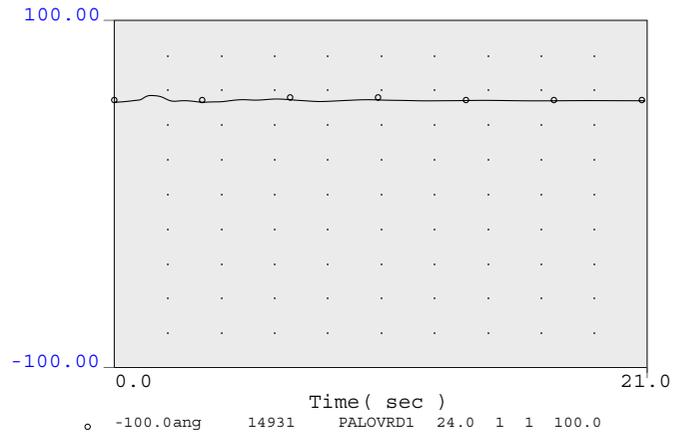
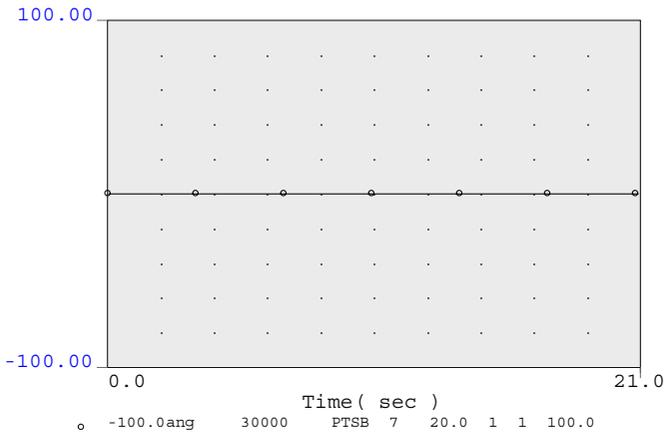
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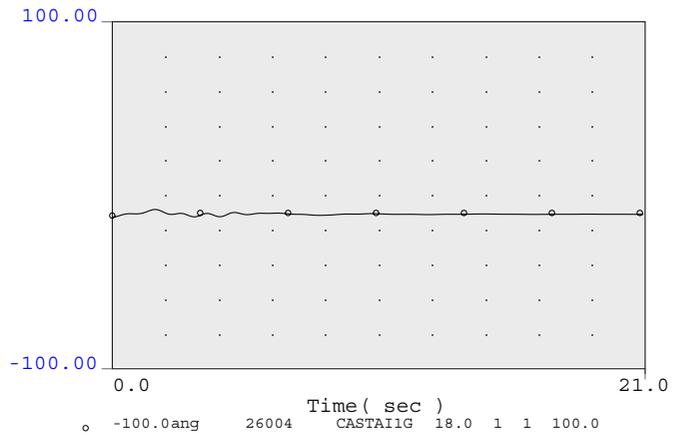
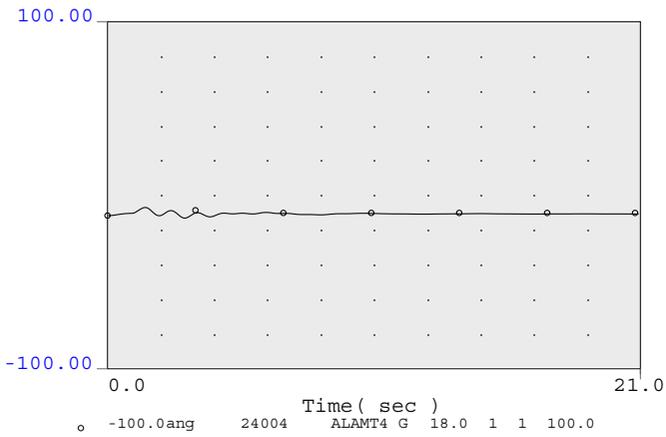
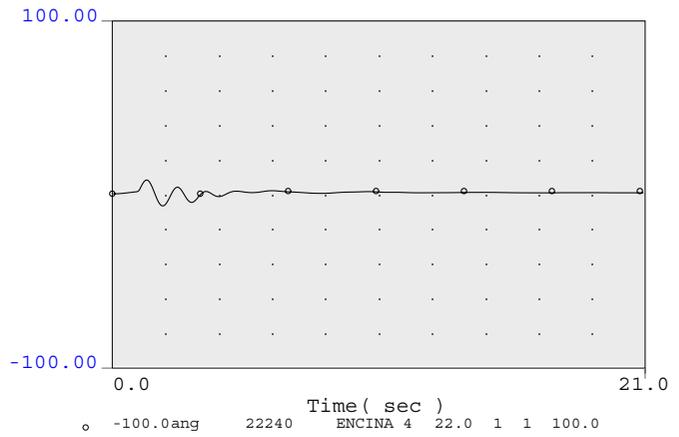
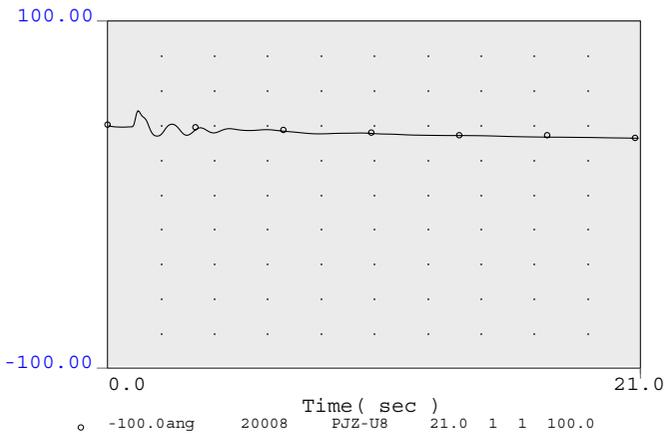
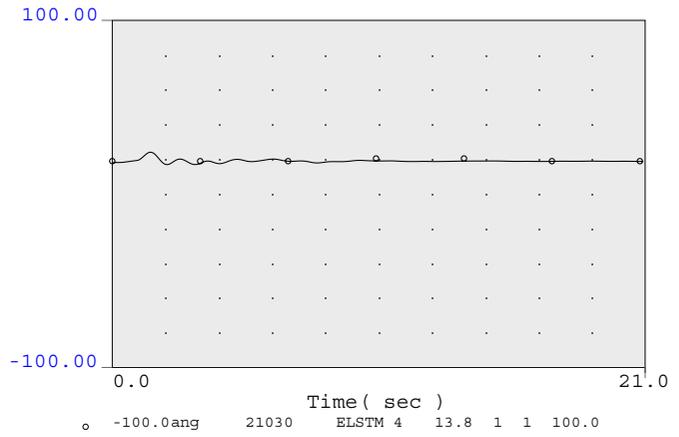
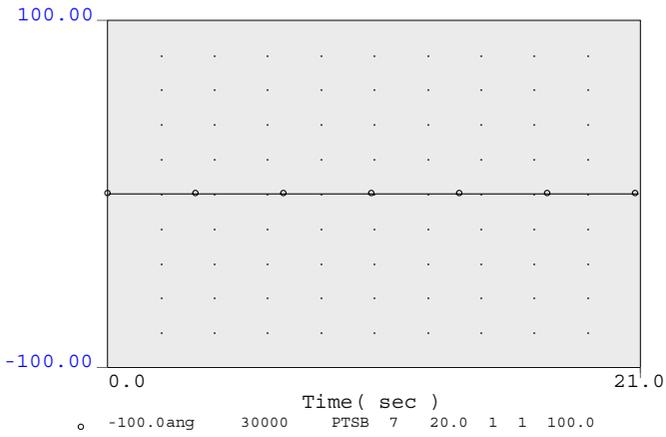


Unit is off-line in the Base Case.

Fault SOUTH BAY 138kV
 No system elements removed post clearing
 This is a Post project Case.
 This case contains ENPEX, Cabrillo, and all Crestwood wind generation.
 This is a high import Case, with All newer generation
 in the SDG&E control area at full output.



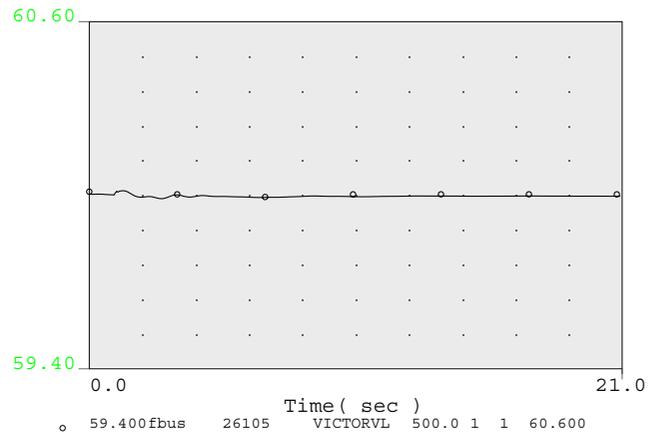
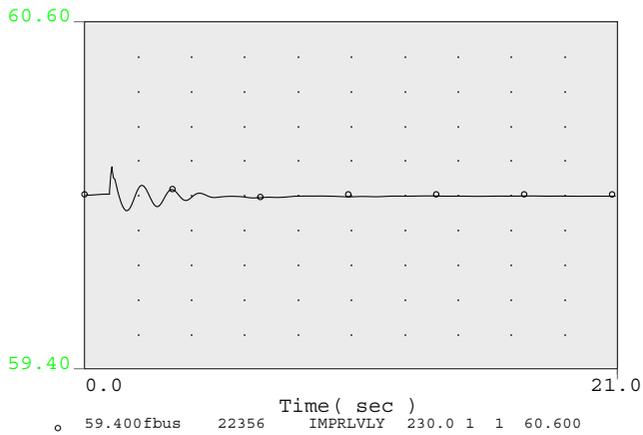
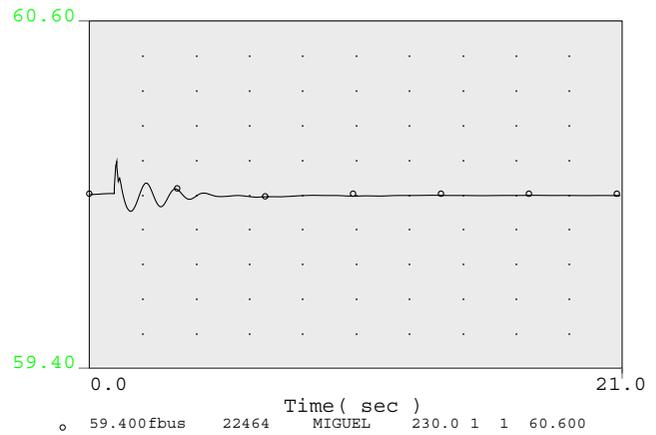
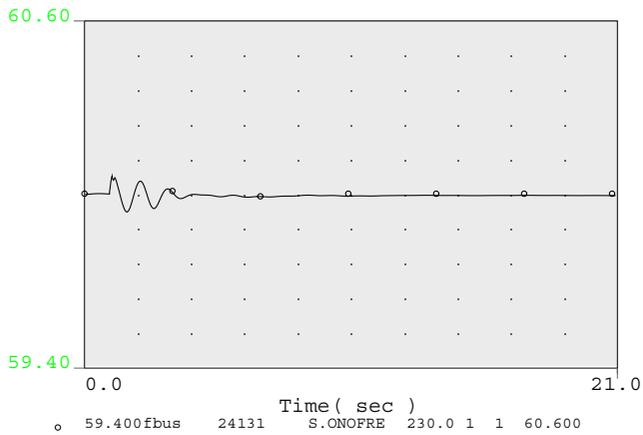
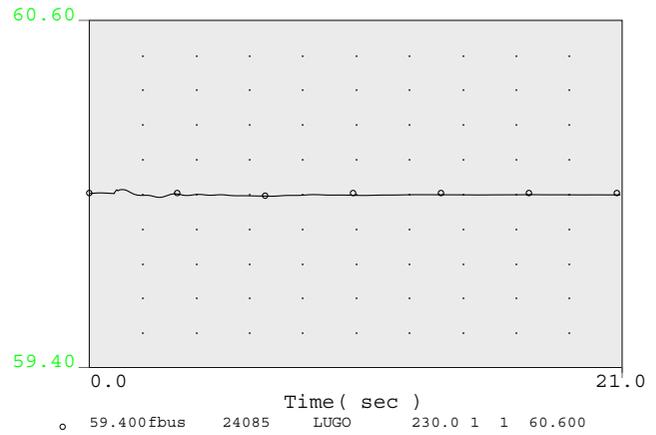
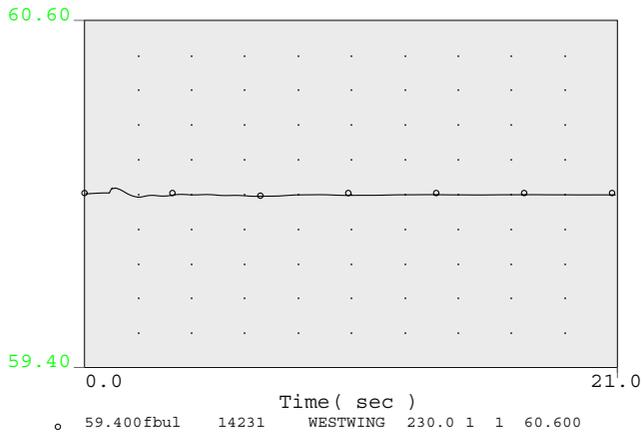
peakers, and old steam units in the SDG&E control area are OFF.
 sy138_pst.chf
 s OFF, Cabrillo is OFF, Otay Mesa is OFF, South Bay
 generation is at 650 MW.



Fault SOUTH BAY 138kV
 No system elements removed post clearing
 This is a Post project Case.
 This case contains ENPEX, Cabrillo, and all Crestwood wind generation.
 This is a high import Case, with All newer generation
 in the SDG&E control area at full output.



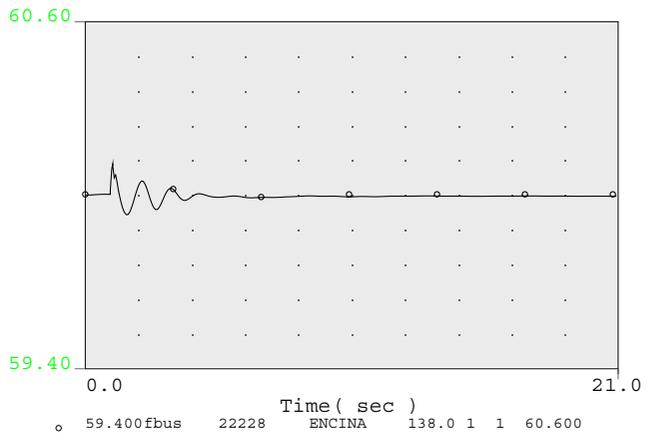
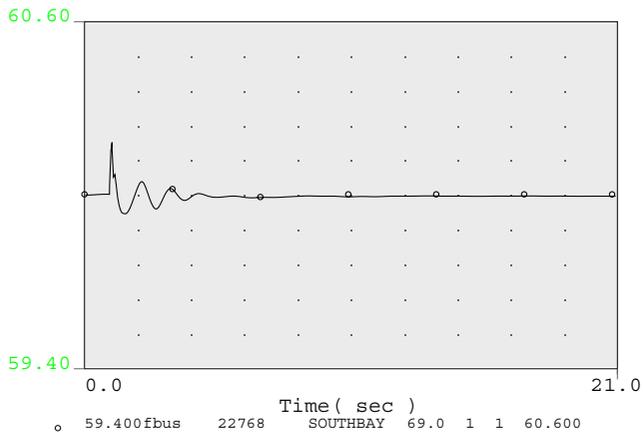
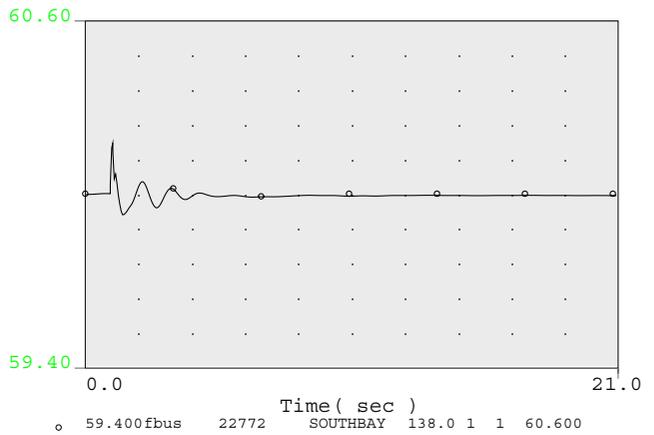
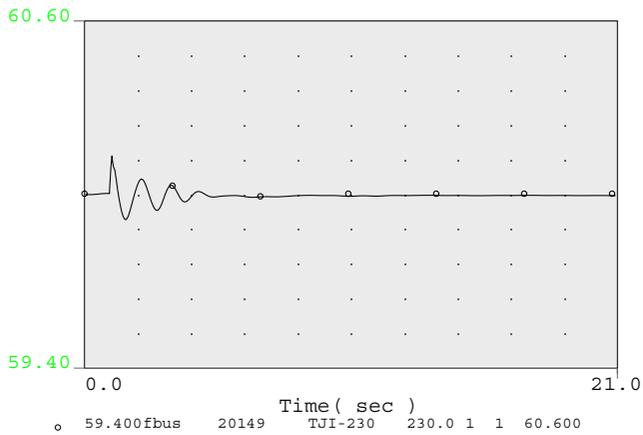
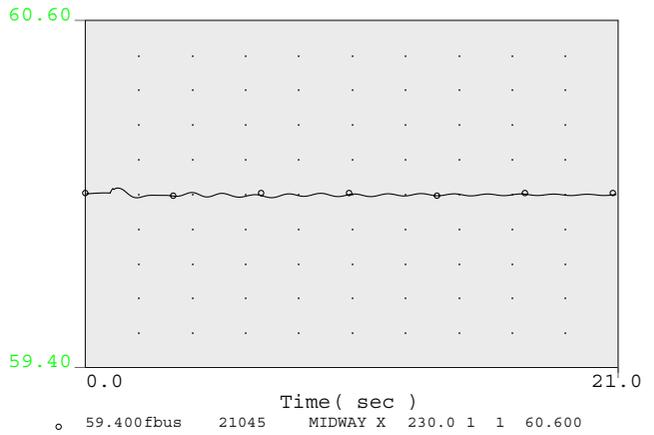
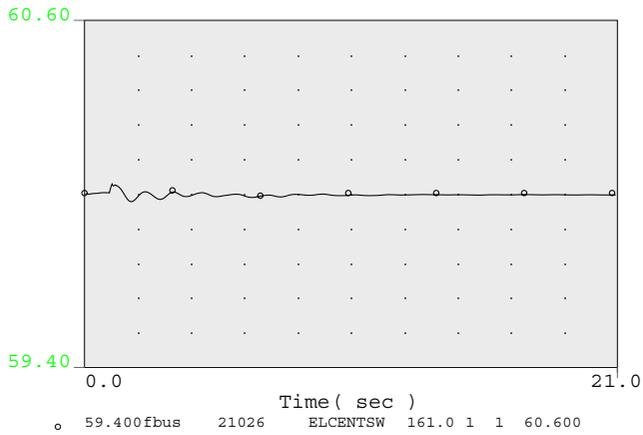
peakers, and old steam units in the SDG&E control area are OFF.
 sy138_pst.chf
 s OFF, Cabrillo is OFF, Otay Mesa is OFF, South Bay
 generation is at 650 MW.



Fault SOUTH BAY 138kV
 No system elements removed post clearing
 This is a Post project Case.
 This case contains ENPEX, Cabrillo, and all Crestwood wind generation.
 This is a high import Case, with All newer generation
 in the SDG&E control area at full output.



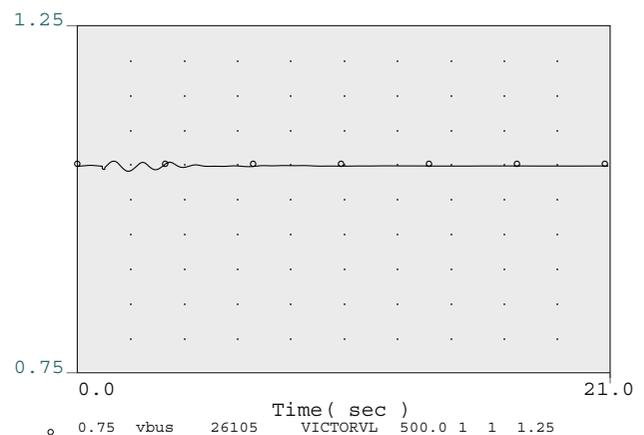
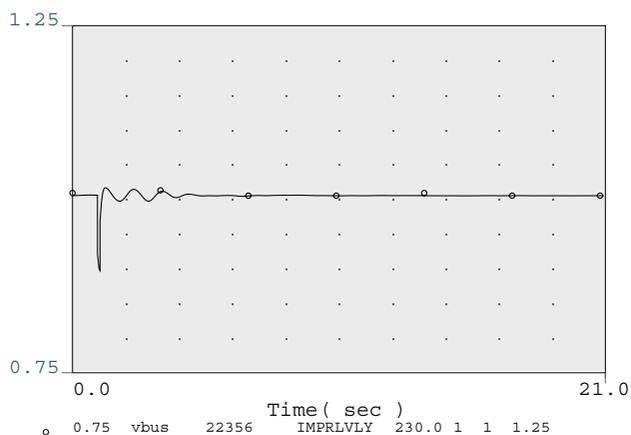
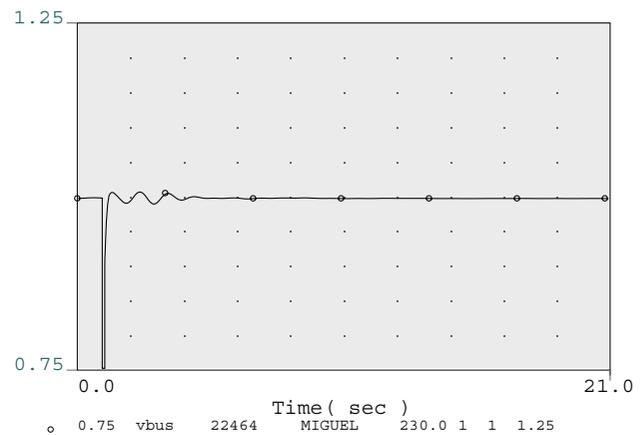
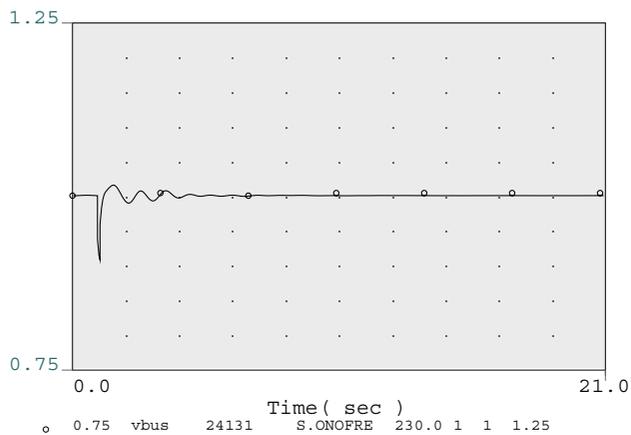
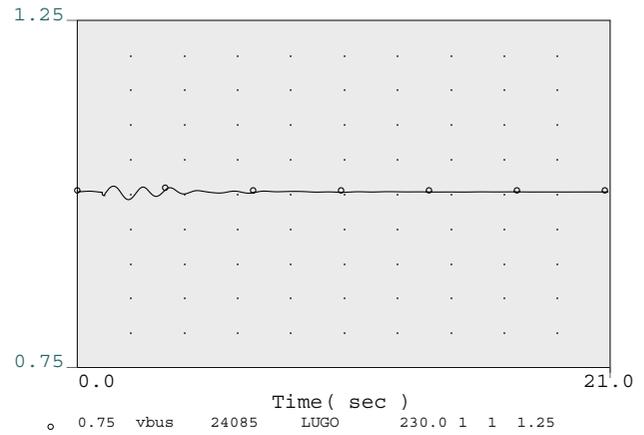
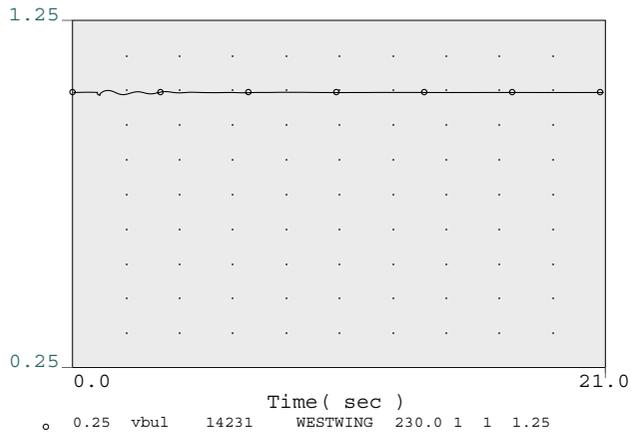
peakers, and old steam units in the SDG&E control area are OFF.
 syl38_pst.chf
 s OFF, Cabrillo is OFF, Otay Mesa is OFF, South Bay
 generation is at 650 MW.



Fault SOUTH BAY 138kV
 No system elements removed post clearing
 This is a Post project Case.
 This case contains ENPEX, Cabrillo, and all Crestwood wind generation.
 This is a high import Case, with All newer generation
 in the SDG&E control area at full output.



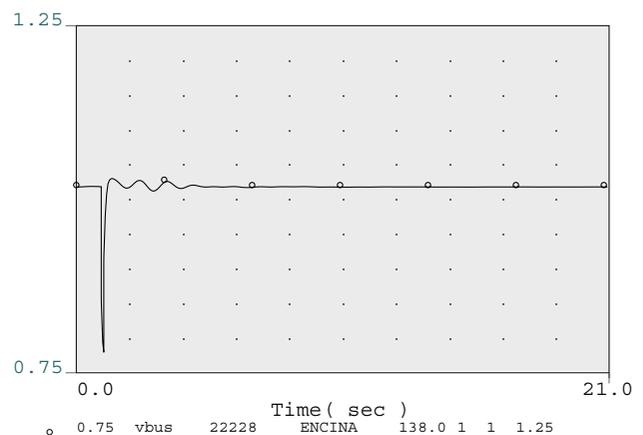
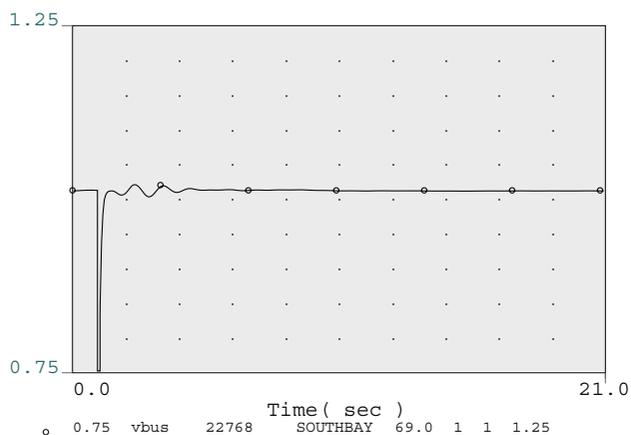
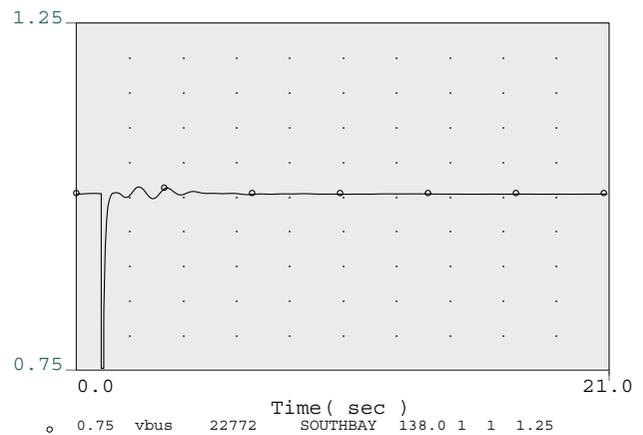
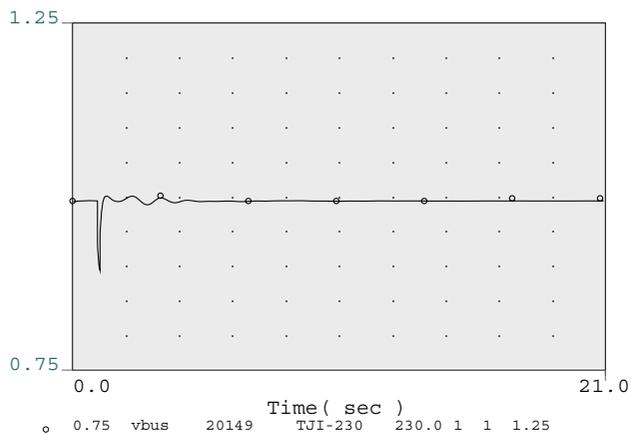
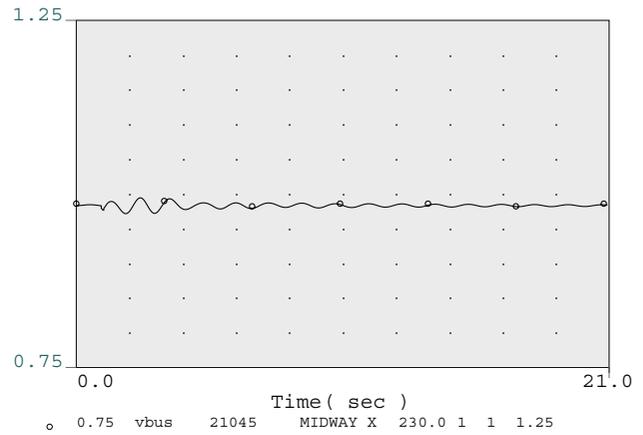
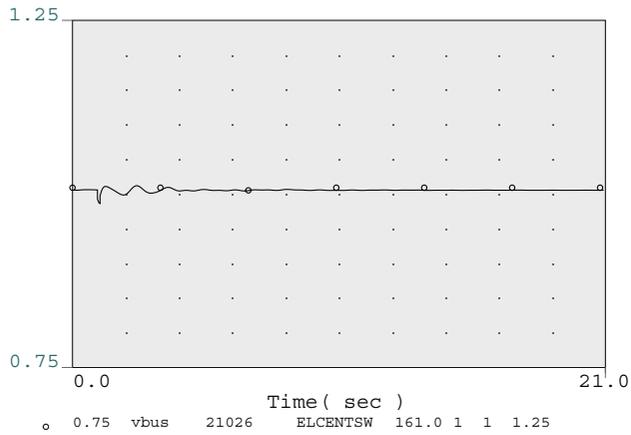
peakers, and old steam units in the SDG&E control area are OFF.
 syl38_pst.chf
 s OFF, Cabrillo is OFF, Otay Mesa is OFF, South Bay
 generation is at 650 MW.



Fault SOUTH BAY 138kV
 No system elements removed post clearing
 This is a Post project Case.
 This case contains ENPEX, Cabrillo, and all Crestwood wind generation.
 This is a high import Case, with All newer generation
 in the SDG&E control area at full output.



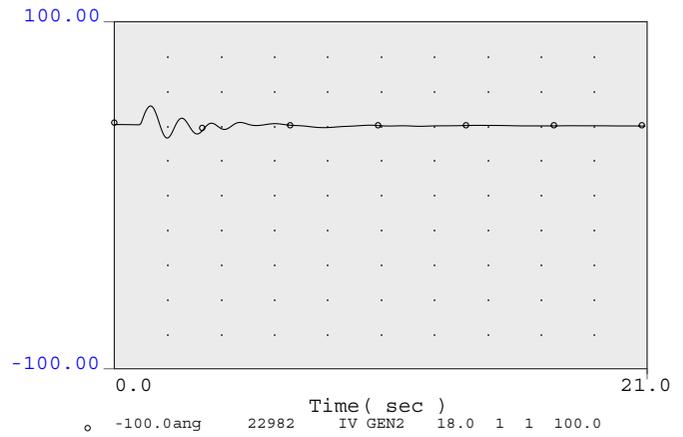
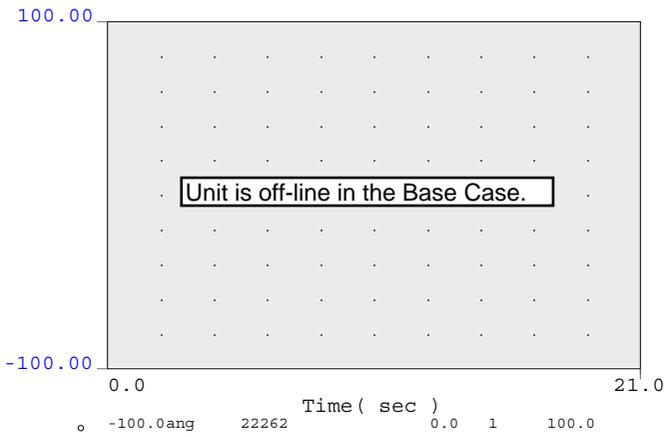
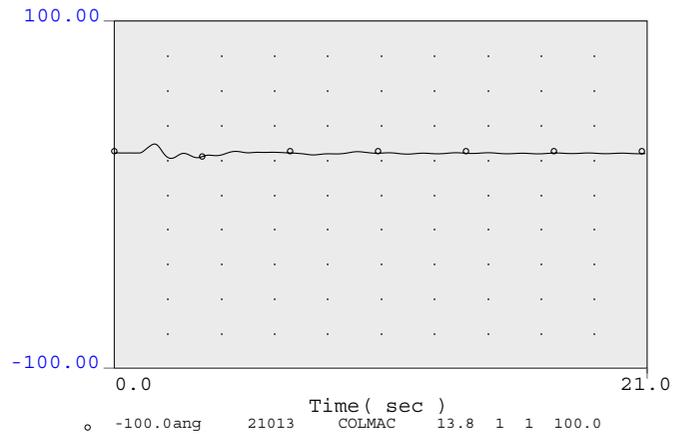
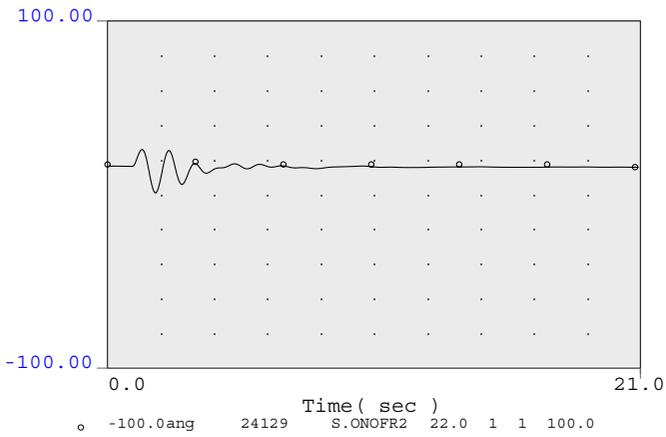
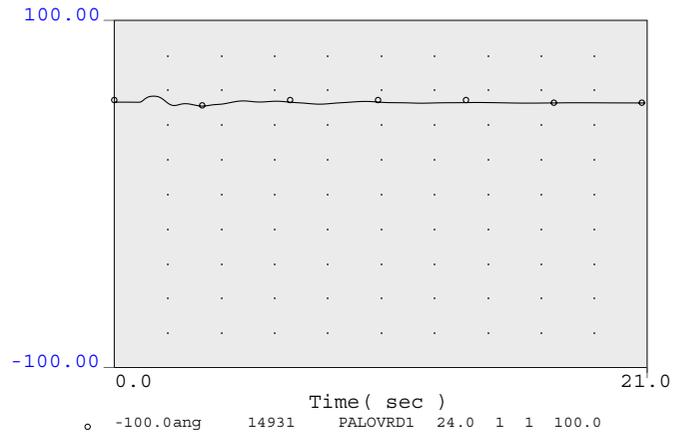
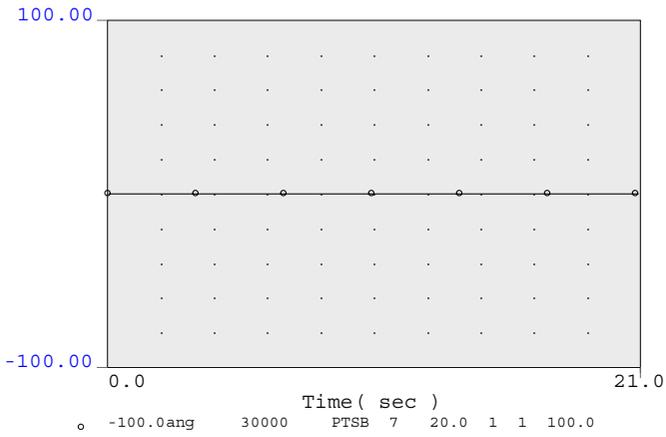
peakers, and old steam units in the SDG&E control area are OFF.
 syl38_pst.chf
 s OFF, Cabrillo is OFF, Otay Mesa is OFF, South Bay
 generation is at 650 MW.



Fault SOUTH BAY 138kV
 No system elements removed post clearing
 This is a Post project Case.
 This case contains ENPEX, Cabrillo, and all Crestwood wind generation.
 This is a high import Case, with All newer generation
 in the SDG&E control area at full output.



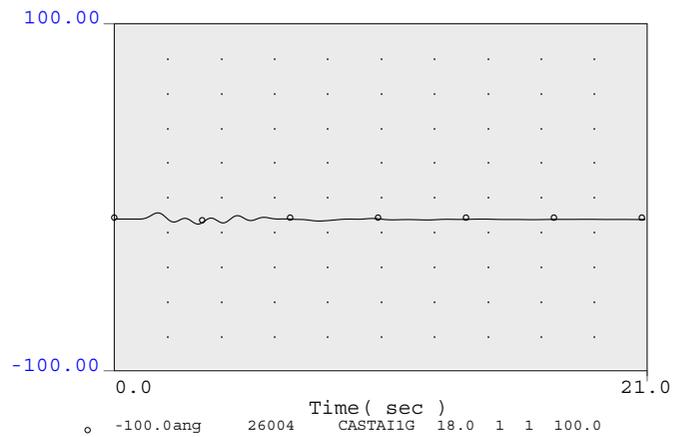
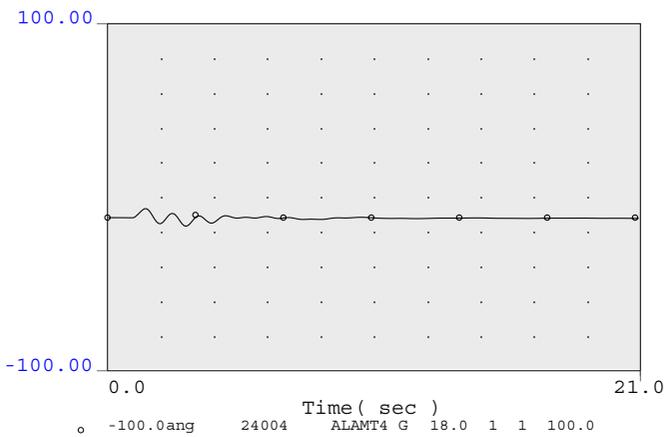
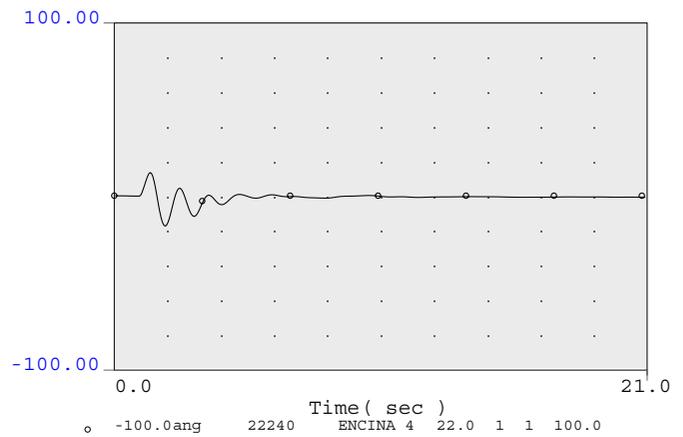
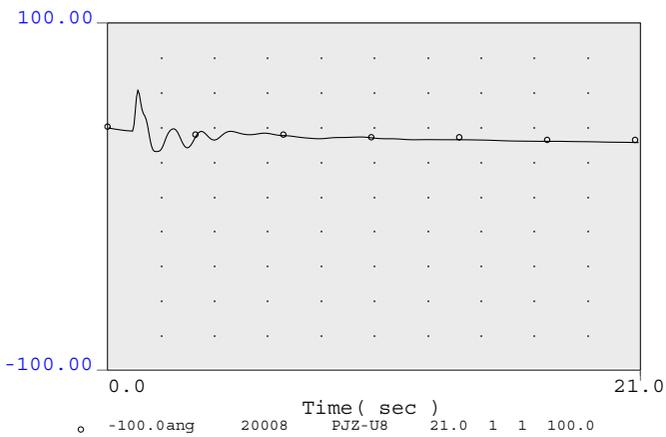
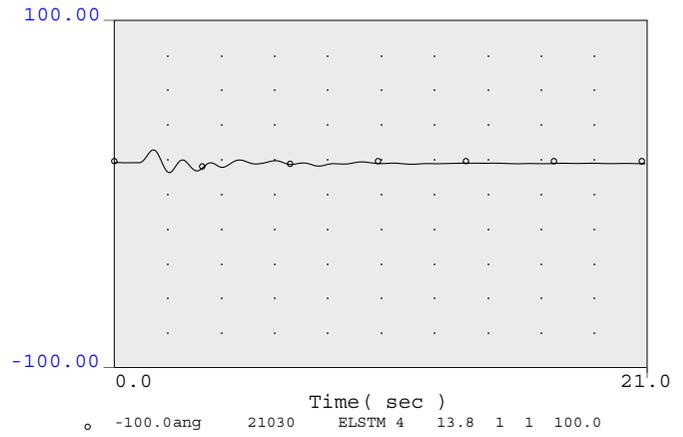
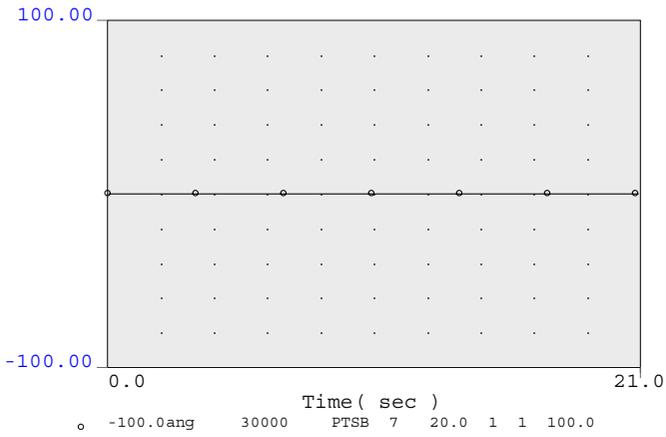
peakers, and old steam units in the SDG&E control area are OFF.
 syl38_pst.chf
 s OFF, Cabrillo is OFF, Otay Mesa is OFF, South Bay
 generation is at 650 MW.



Fault SOUTH BAY 230kV
 No system elements removed post clearing
 This is a Post project Case.
 This case contains ENPEX, Cabrillo, and all Crestwood wind generation.
 This is a high import Case, with All newer generation
 in the SDG&E control area at full output.



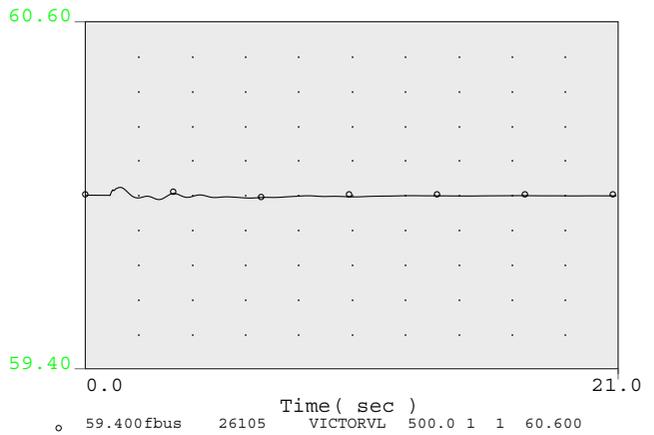
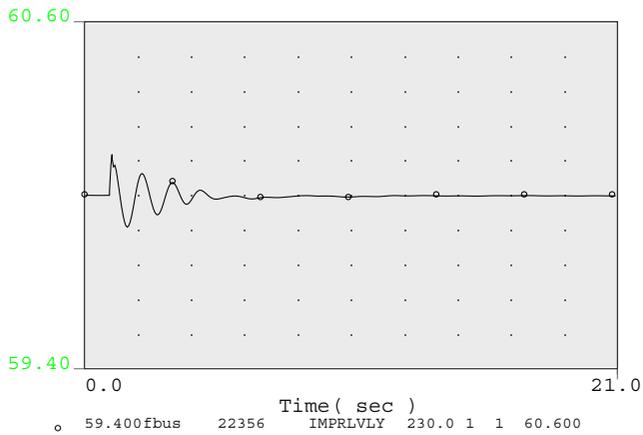
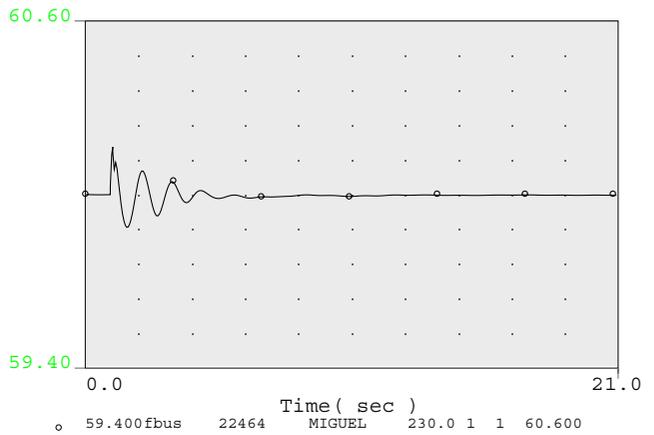
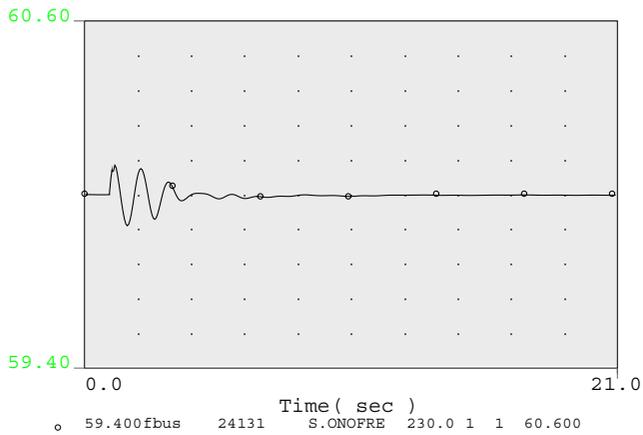
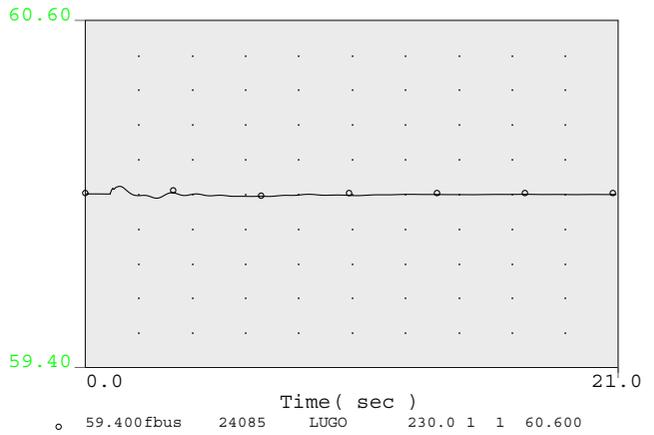
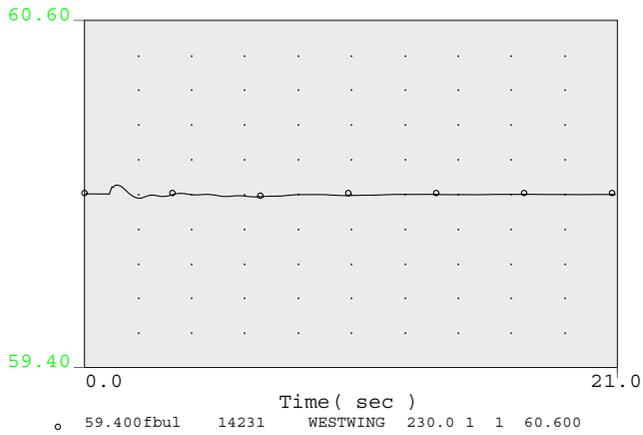
peakers, and old steam units in the SDG&E control area are OFF.
 sy230_pst.chf
 s OFF, Cabrillo is OFF, Otay Mesa is OFF, South Bay
 generation is at 650 MW.



Fault SOUTH BAY 230kV
 No system elements removed post clearing
 This is a Post project Case.
 This case contains ENPEX, Cabrillo, and all Crestwood wind generation.
 This is a high import Case, with All newer generation
 in the SDG&E control area at full output.



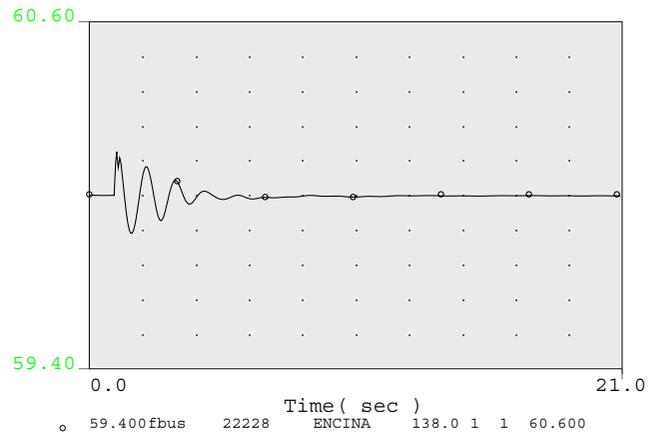
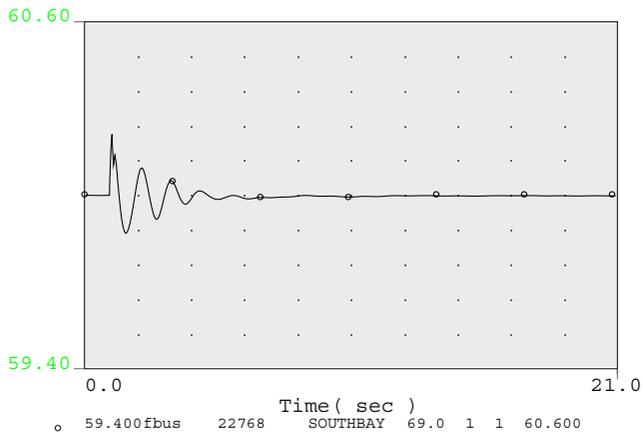
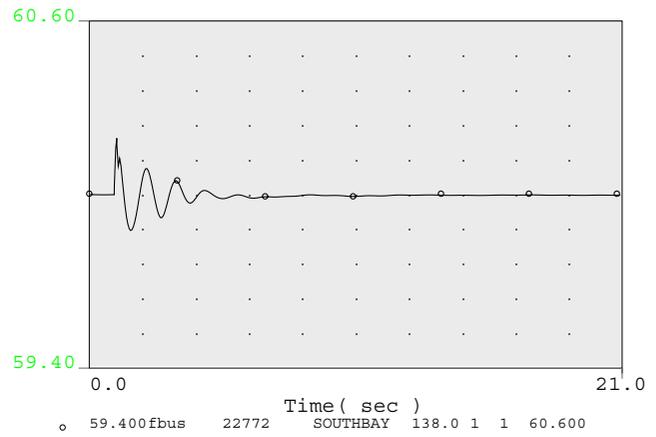
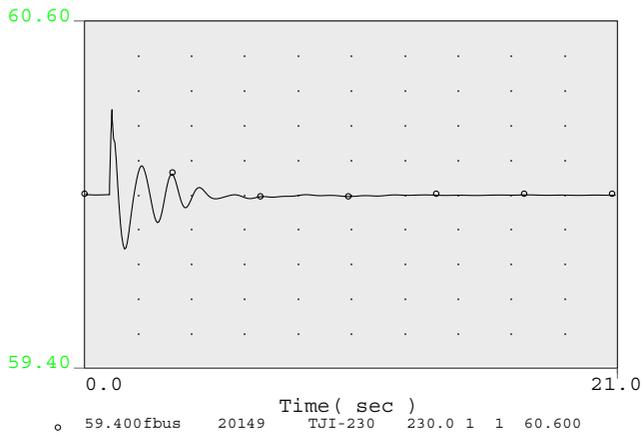
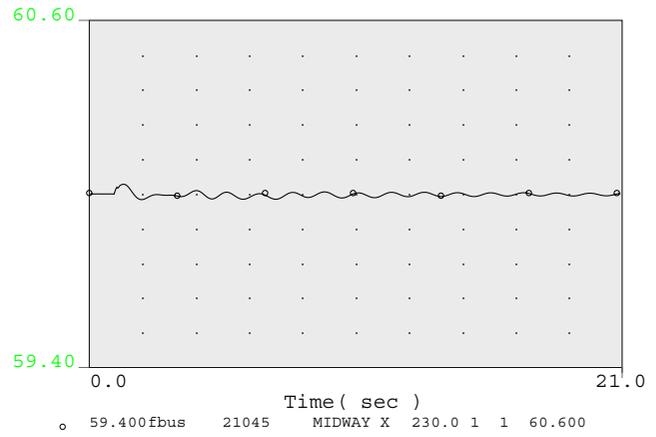
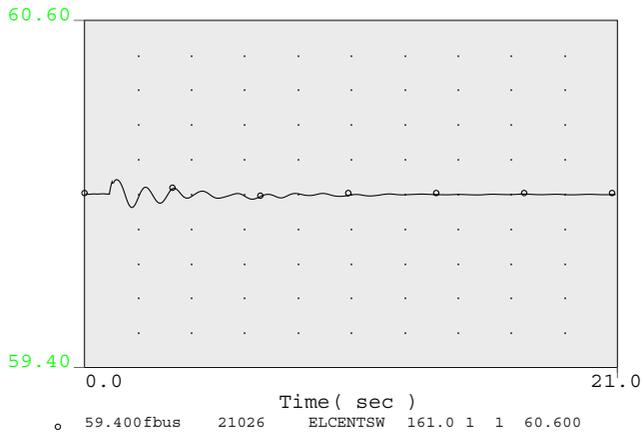
peakers, and old steam units in the SDG&E control area are OFF.
 sy230_pst.chf
 s OFF, Cabrillo is OFF, Otay Mesa is OFF, South Bay
 generation is at 650 MW.



Fault SOUTH BAY 230kV
 No system elements removed post clearing
 This is a Post project Case.
 This case contains ENPEX, Cabrillo, and all Crestwood wind generation.
 This is a high import Case, with All newer generation
 in the SDG&E control area at full output.



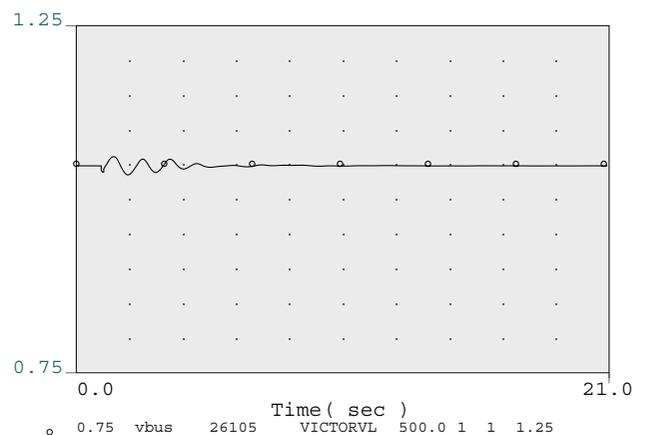
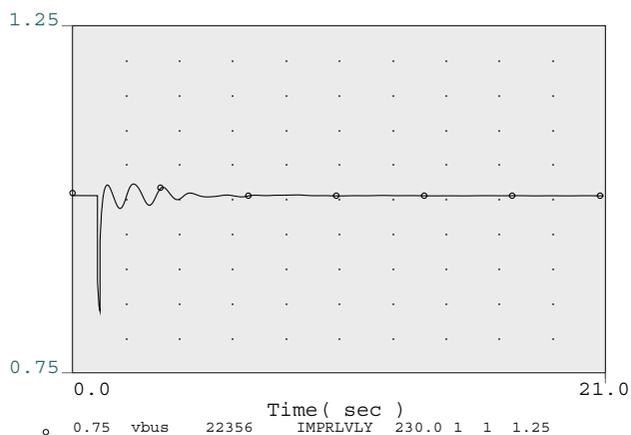
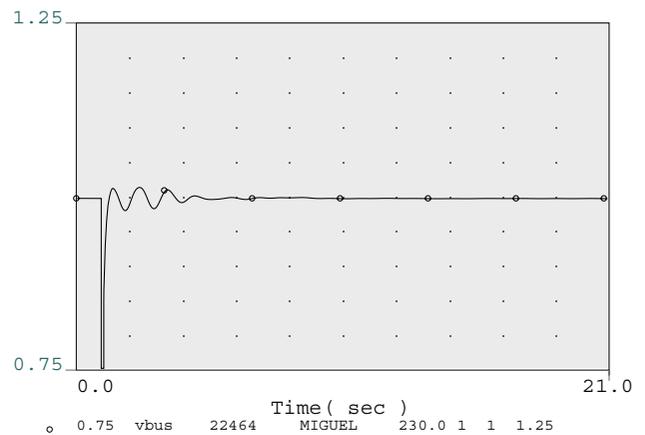
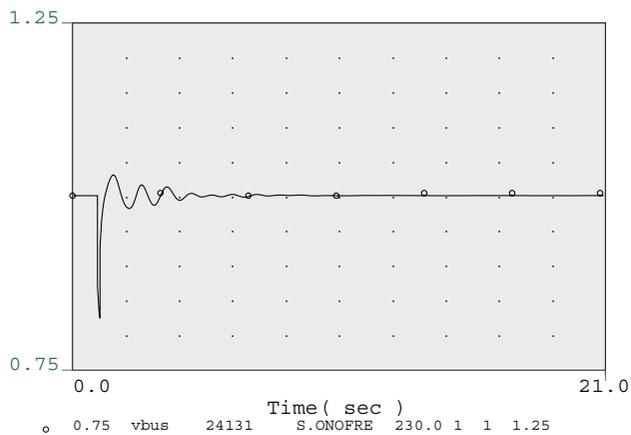
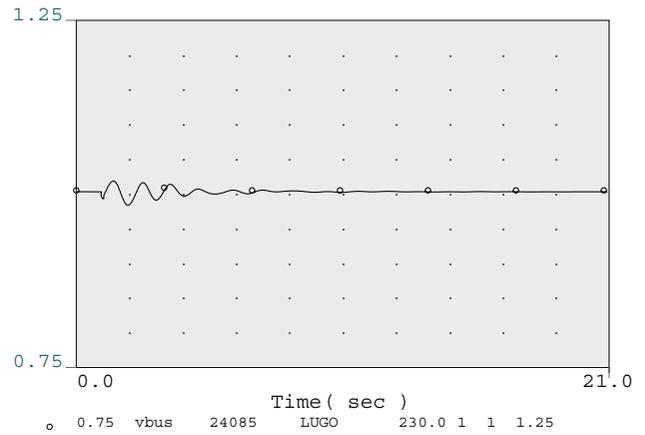
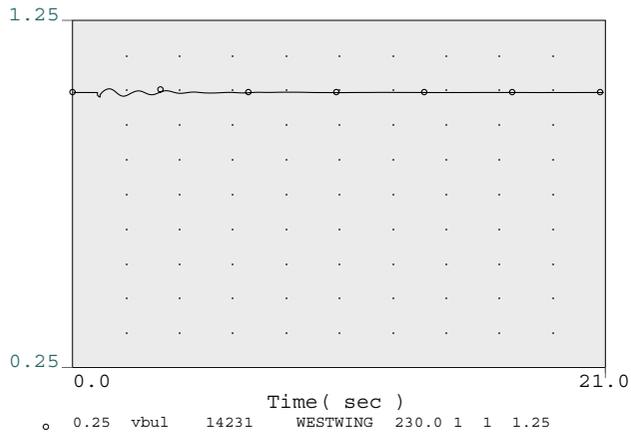
peakers, and old steam units in the SDG&E control area are OFF.
 sy230_pst.chf
 s OFF, Cabrillo is OFF, Otay Mesa is OFF, South Bay
 generation is at 650 MW.



Fault SOUTH BAY 230kV
 No system elements removed post clearing
 This is a Post project Case.
 This case contains ENPEX, Cabrillo, and all Crestwood wind generation.
 This is a high import Case, with All newer generation
 in the SDG&E control area at full output.



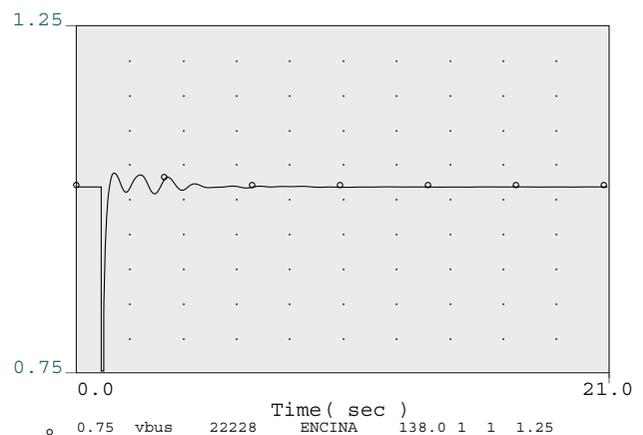
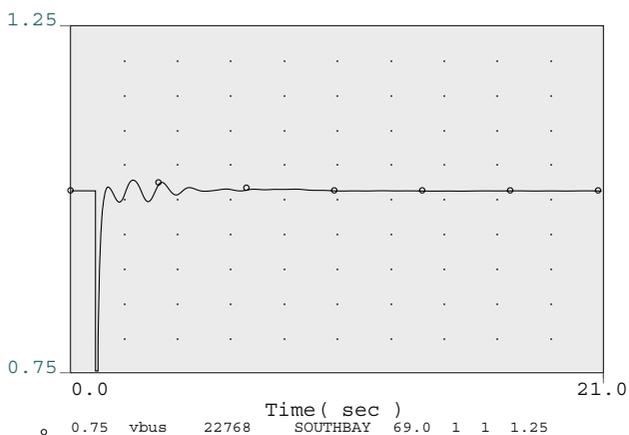
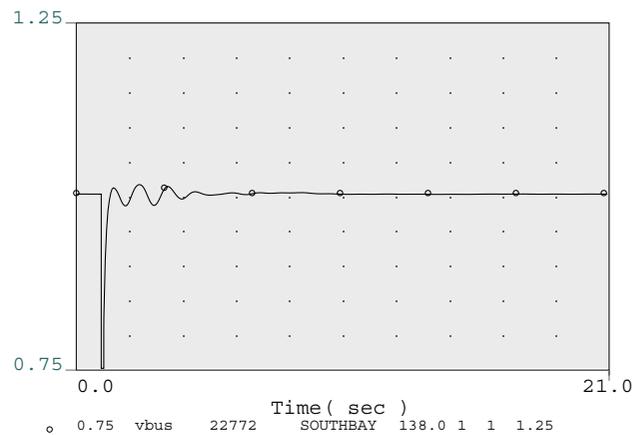
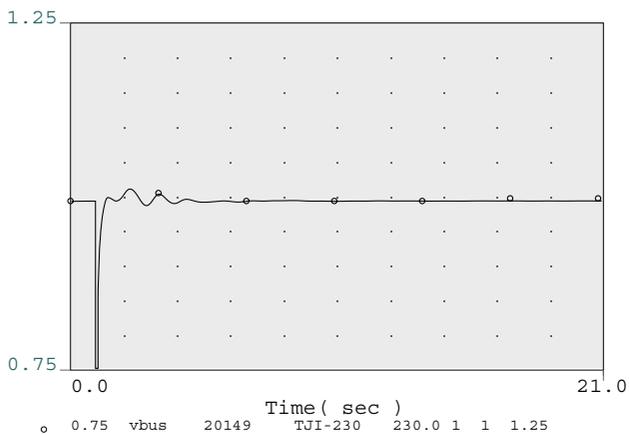
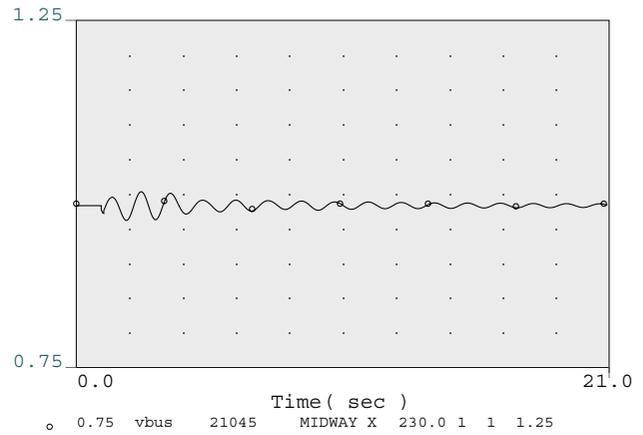
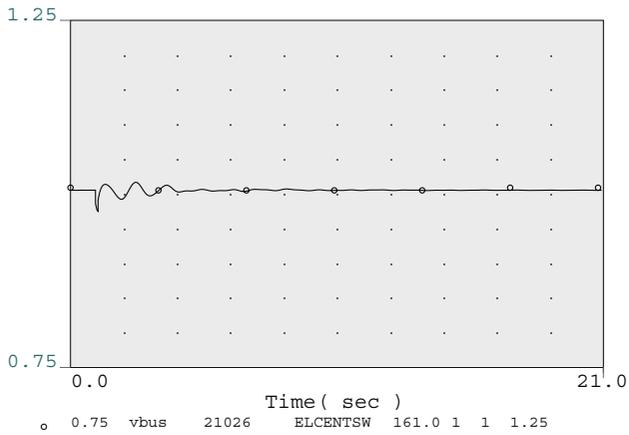
peakers, and old steam units in the SDG&E control area are OFF.
 sy230_pst.chf
 s OFF, Cabrillo is OFF, Otay Mesa is OFF, South Bay
 generation is at 650 MW.



Fault SOUTH BAY 230kV
 No system elements removed post clearing
 This is a Post project Case.
 This case contains ENPEX, Cabrillo, and all Crestwood wind generation.
 This is a high import Case, with All newer generation
 in the SDG&E control area at full output.



peakers, and old steam units in the SDG&E control area are OFF.
 sy230_pst.chf
 s OFF, Cabrillo is OFF, Otay Mesa is OFF, South Bay
 generation is at 650 MW.

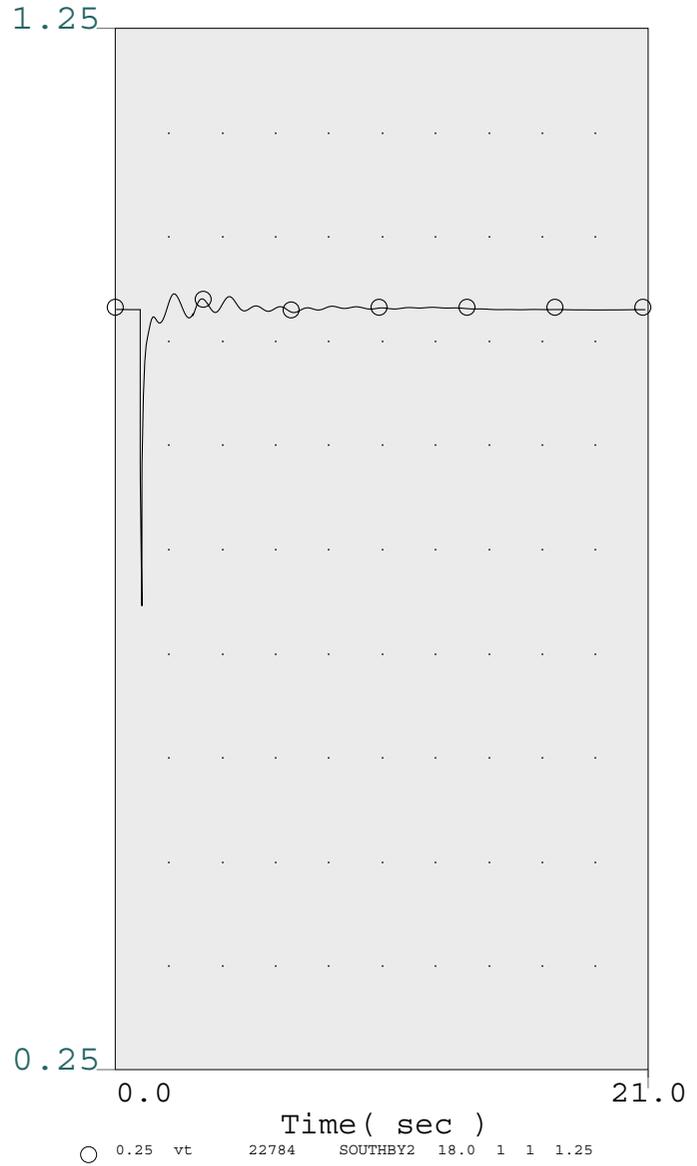
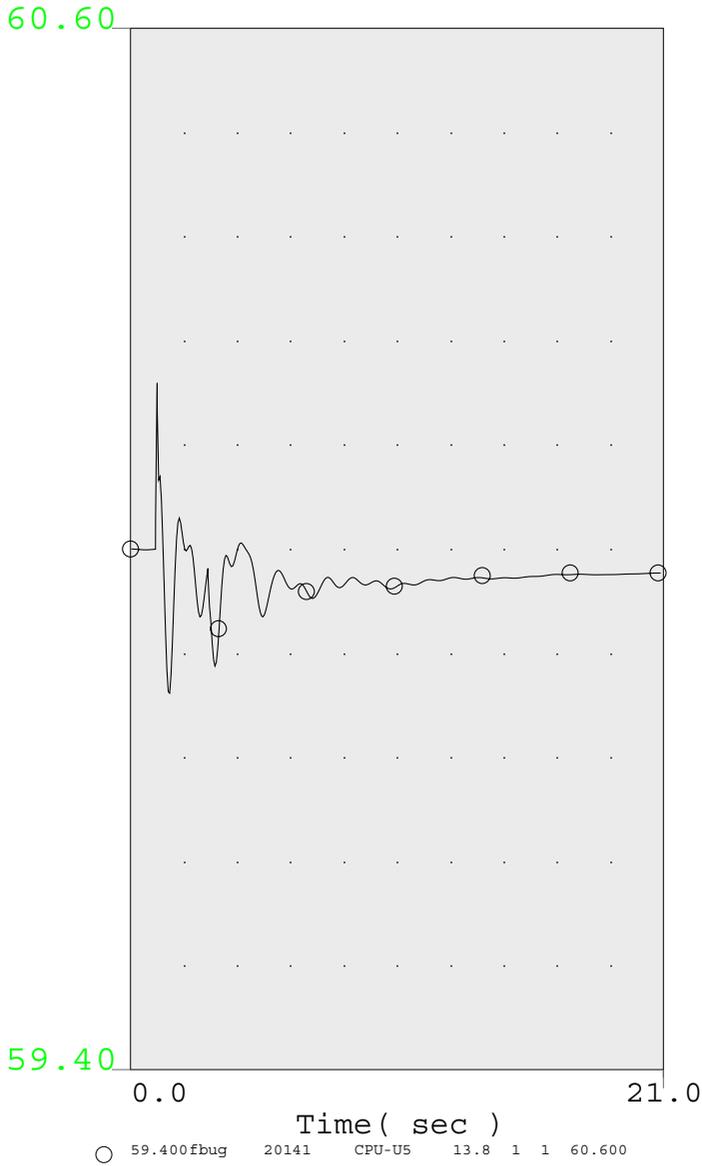


Fault SOUTH BAY 230kV
 No system elements removed post clearing
 This is a Post project Case.
 This case contains ENPEX, Cabrillo, and all Crestwood wind generation.
 This is a high import Case, with All newer generation
 in the SDG&E control area at full output.



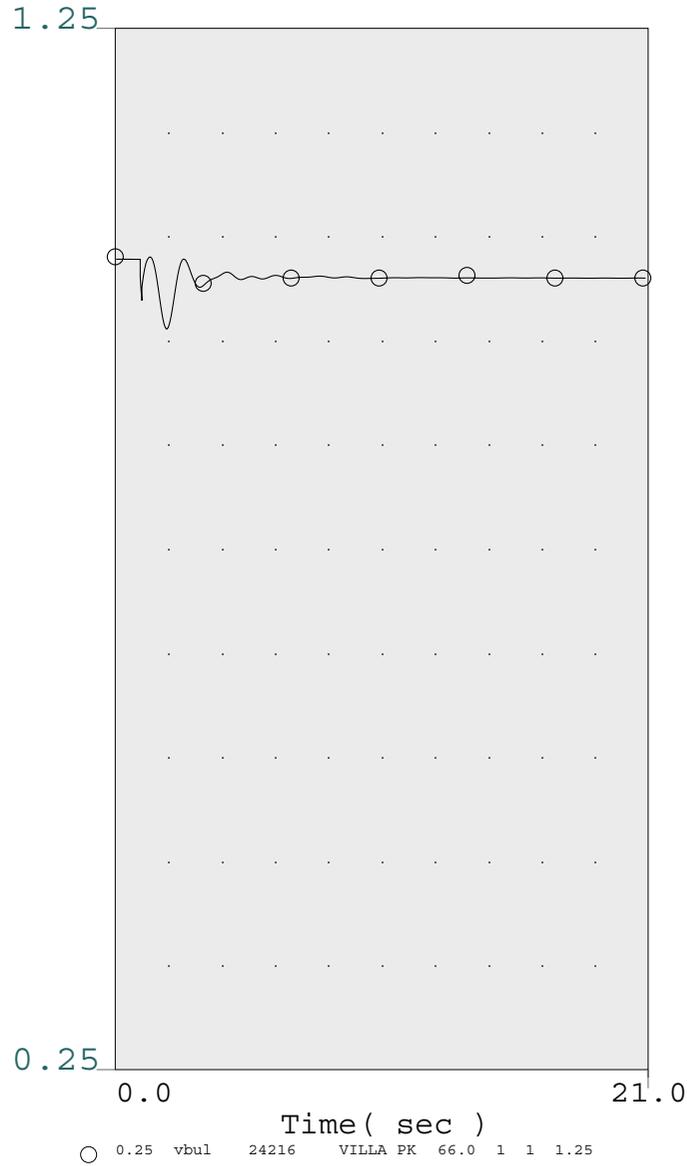
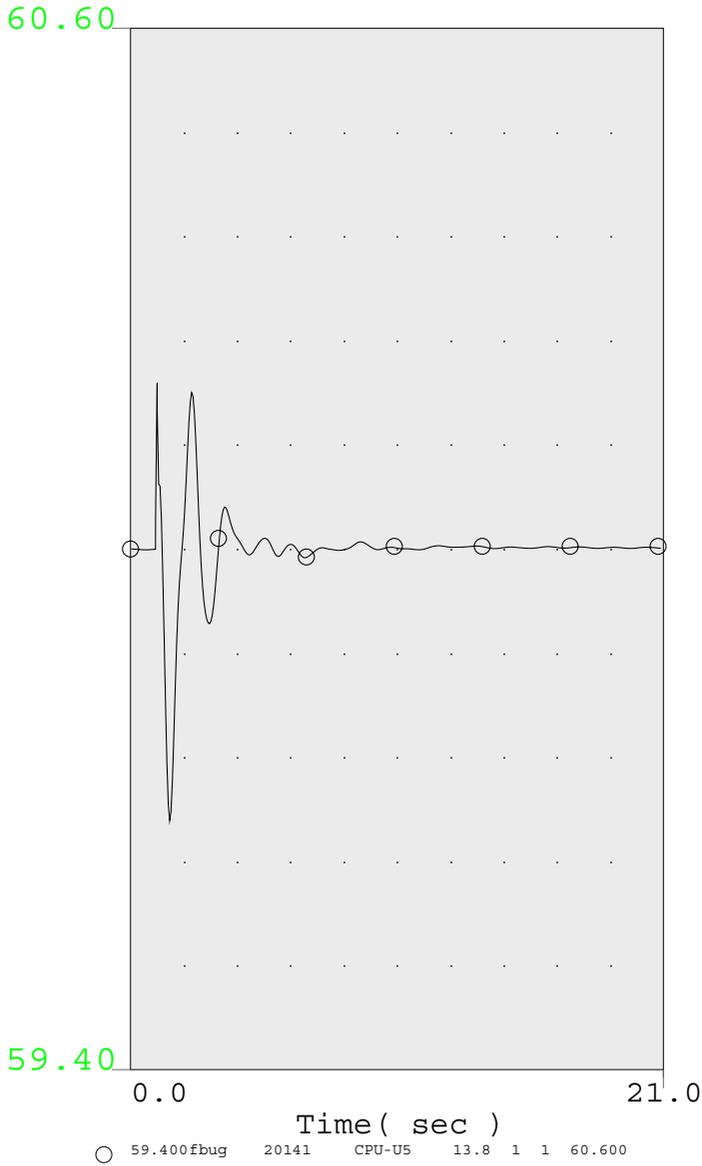
peakers, and old steam units in the SDG&E control area are OFF.
 sy230_pst.chf
 s OFF, Cabrillo is OFF, Otay Mesa is OFF, South Bay
 generation is at 650 MW.

Selected Plots for Worst Condition Analysis



Fault Imperial Valley 500 kV
 Trip Imperial Valley-Miguel 500 kV SLO
 This is a Post project Case.
 This case contains ENPEX, Cabrillo, and all Crestwood wind generation.
 This is a high import Case, with All newer generation
 in the SDG&E control area at full output.

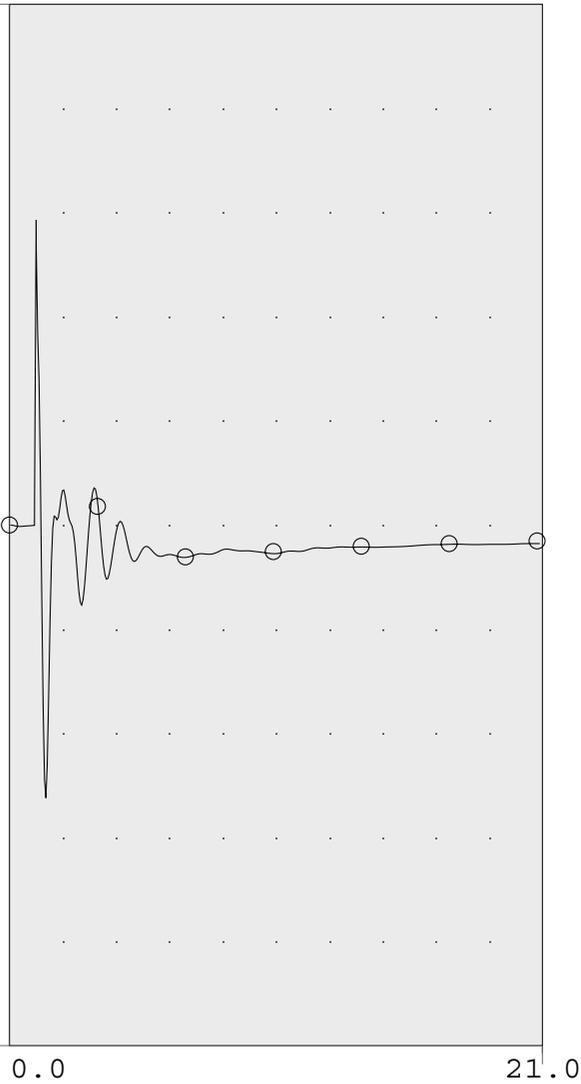
is OFF, Cabrillo is OFF, Otay Mesa is OFF, South Bay
 generation is at 650 MW



Fault Imperial Valley 500 kV
 Trip N.Gila-Imperial Valley 500 kV SLO
 This is a Post project Case.
 This case contains ENPEX, Cabrillo, and all Crestwood wind generation.
 This is a high import Case, with All newer generation
 in the SDG&E control area at full output.

ngiv_pst.chf
 is OFF, Cabrillo is OFF, Otay Mesa is OFF, South Bay
 generation is at 650 MW

60.60

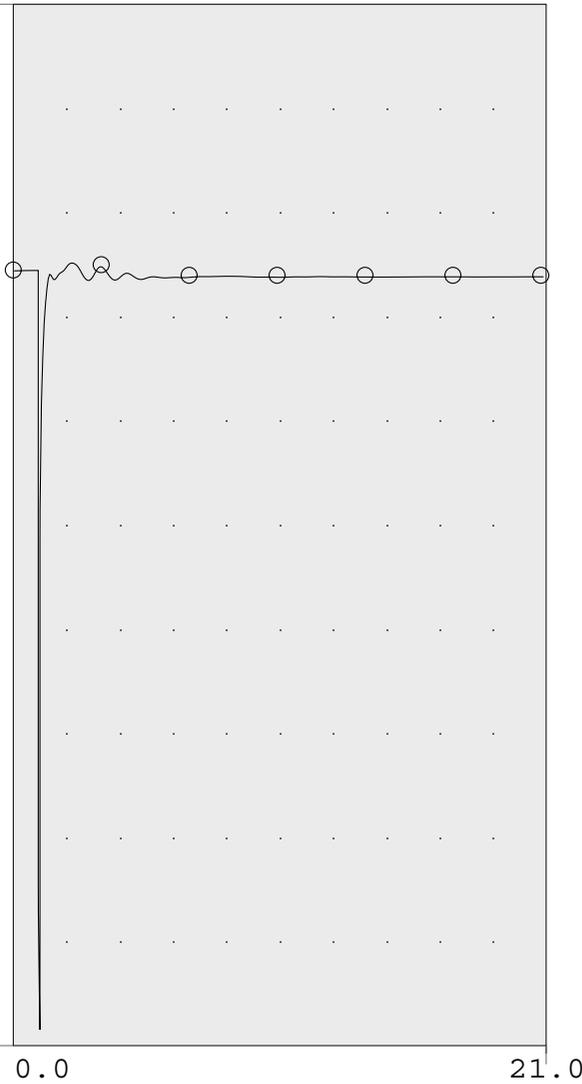


59.40

Time(sec)

○ 59.400fbug 2006 PJZ-U5 15.0 1 1 60.600

1.25



0.25

Time(sec)

○ 0.25 vbul 20030 UND-69 69.0 1 1 1.25

Fault Otay Mesa 230 kV

Trip Otay Mesa Units 1, 2 & 3

This is a Post project Case.

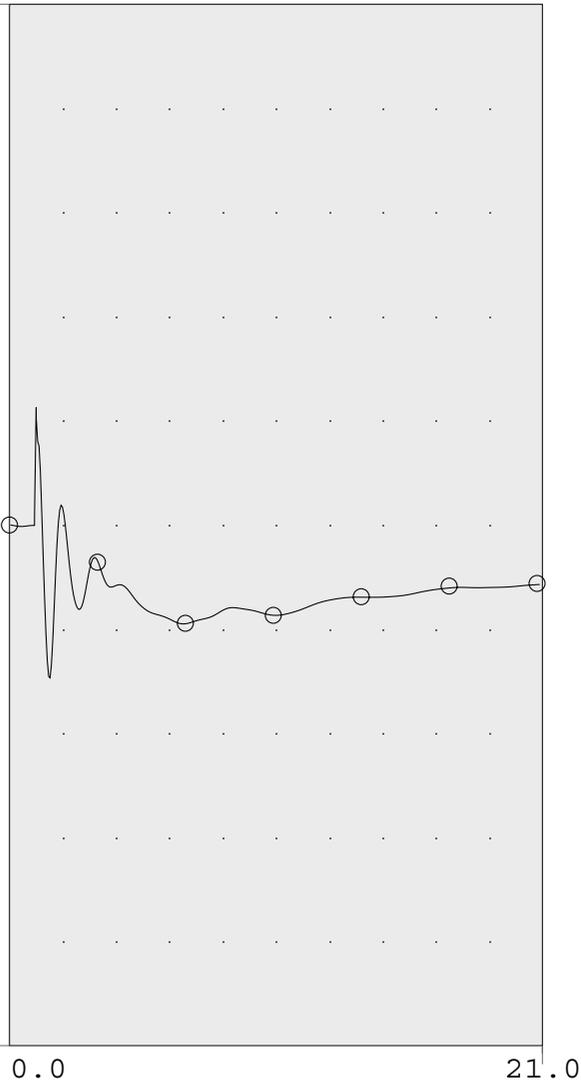
This case contains ENPEX, Cabrillo, and all Crestwood wind generation.

This is a high import Case, with All newer generation in the SDG&E control area at full output.

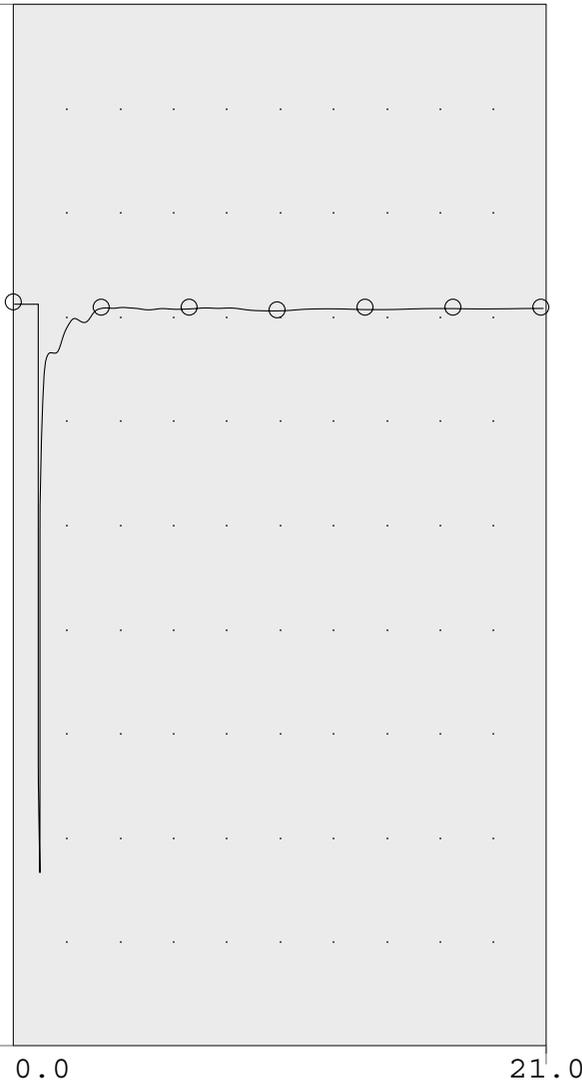


Its peakers, and old steam units in the SDG&E control area are OFF. es1611\m05\F\duke stab
otay123_pst.chf is OFF, Cabrillo is OFF, Otay Mesa is OFF, South Bay
generation is at 650 MW

60.60



1.25



59.40

Time(sec) 0.0 21.0

○ 59.400fbug 20014 PJZ-U7 18.0 1 1 60.600

0.25

Time(sec) 0.0 21.0

○ 0.25 vt 22244 ENCINA 5 24.0 1 1 1.25

Fault SONGS 230 kV

Trip SONGS Units 2 & 3

This is a Post project Case.

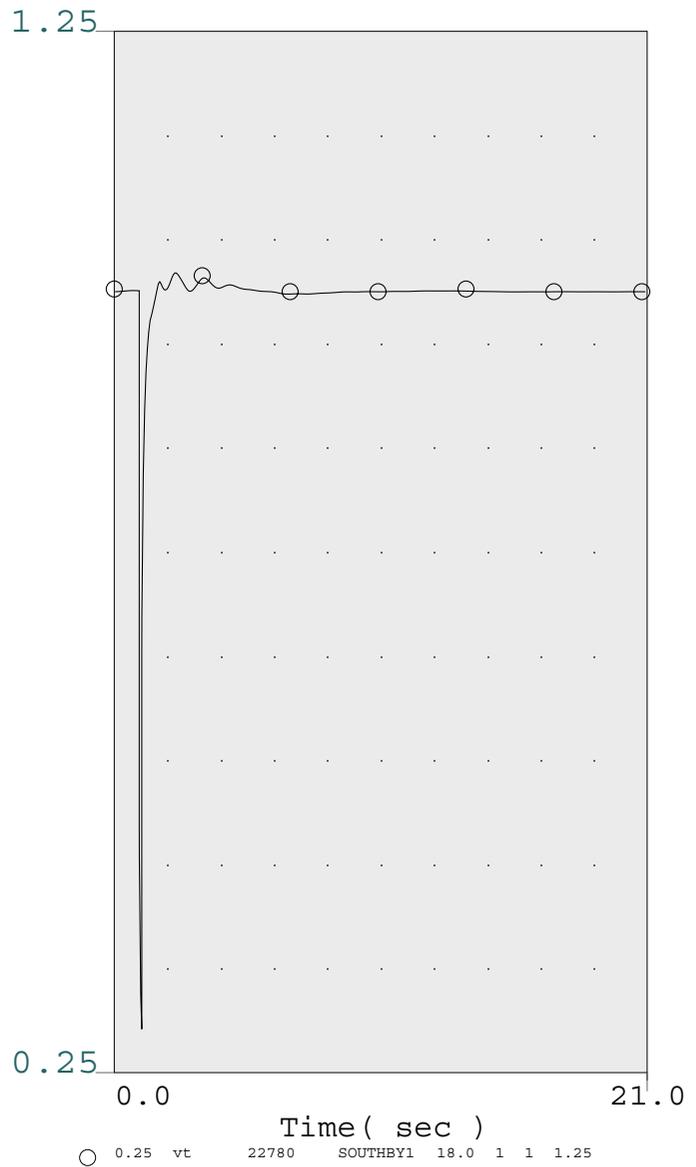
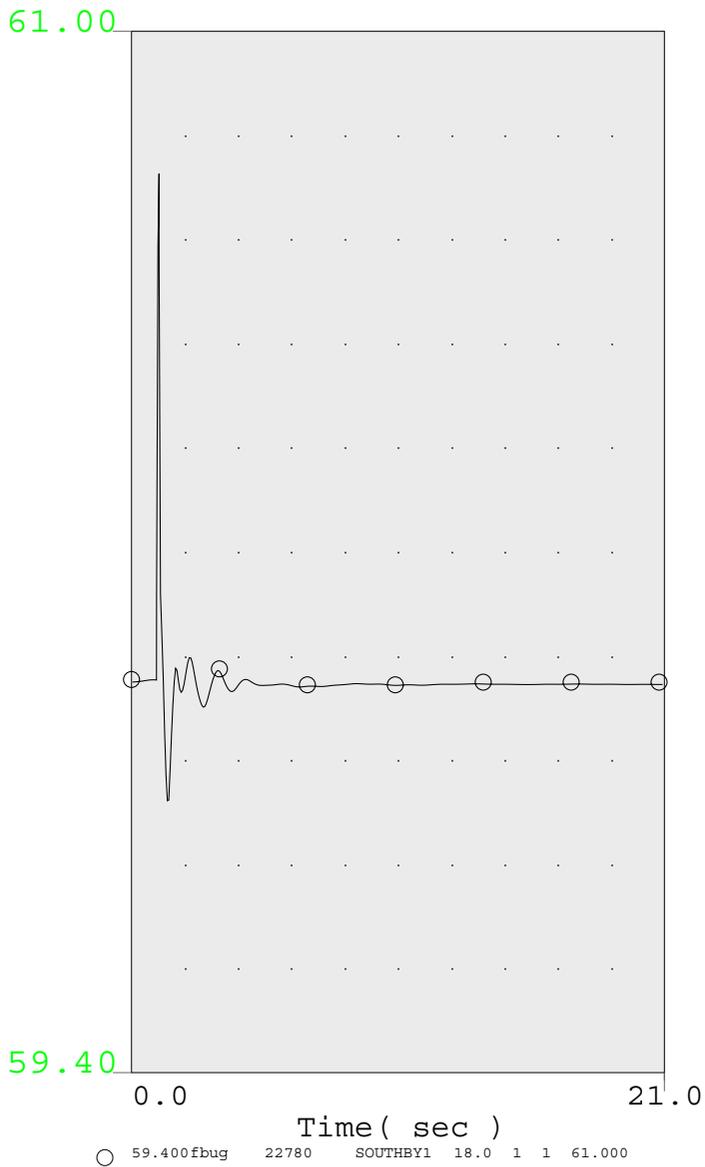
This case contains ENPEX, Cabrillo, and all Crestwood wind generation.

This is a high import Case, with All newer generation in the SDG&E control area at full output.



Is, peakers, and old steam units in the SDG&E control area are OFF.

is OFF, Cabrillo is OFF, Otay Mesa is OFF, South Bay



Fault SOUTH BAY 69kV

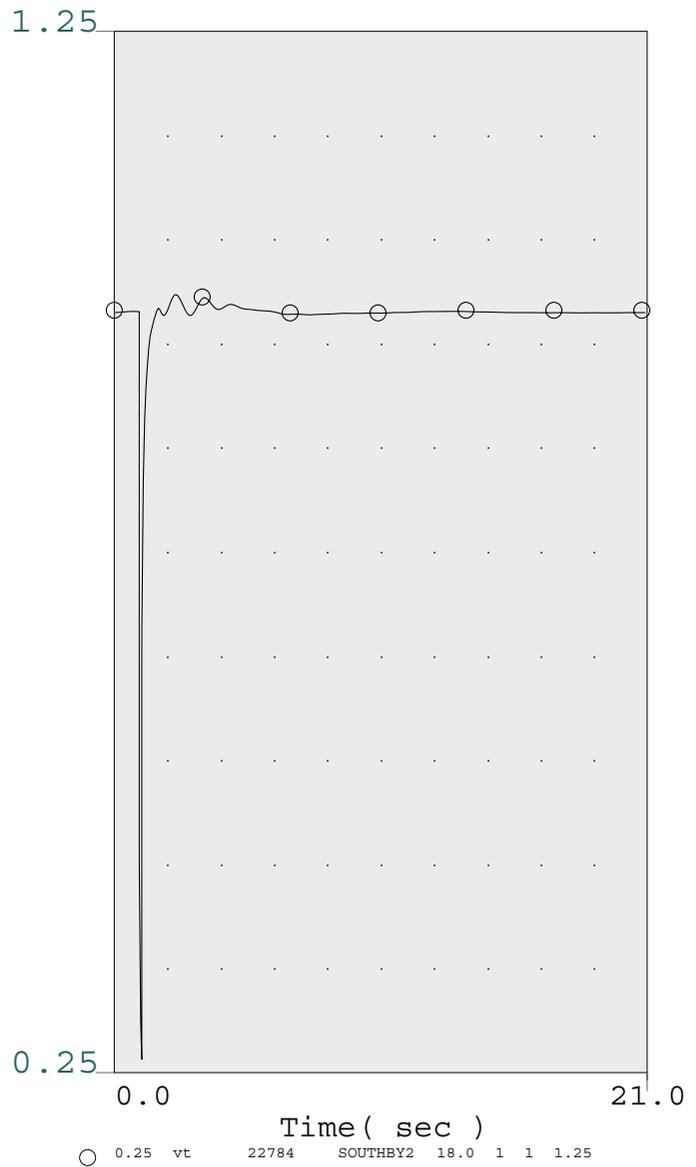
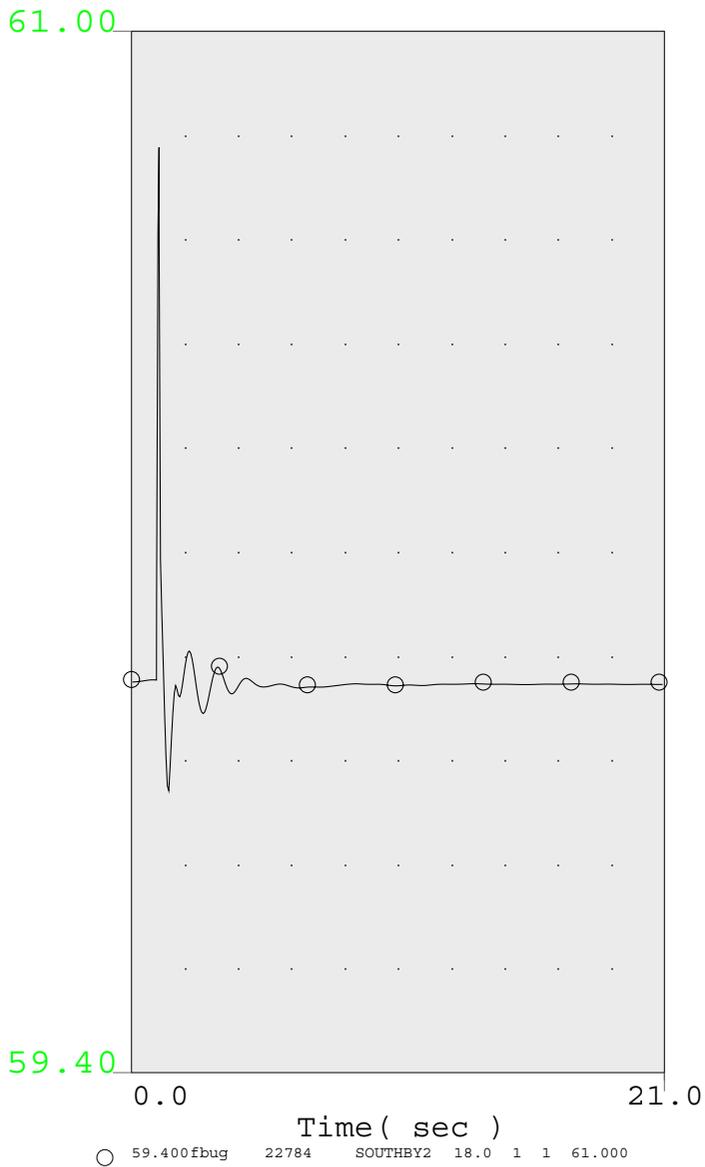
No system elements removed post clearing

This is a Post project Case.

This case contains ENPEX, Cabrillo, and all Crestwood wind generation.

This is a high import Case, with All newer generation in the SDG&E control area at full output.

sy69_pst.chf
 Ts, peakers, and old steam units in the SDG&E control area are OFF, duke stab
 is OFF, Cabrillo is OFF, Otay Mesa is OFF, South Bay



Fault SOUTH BAY 138kV

No system elements removed post clearing

This is a Post project Case.

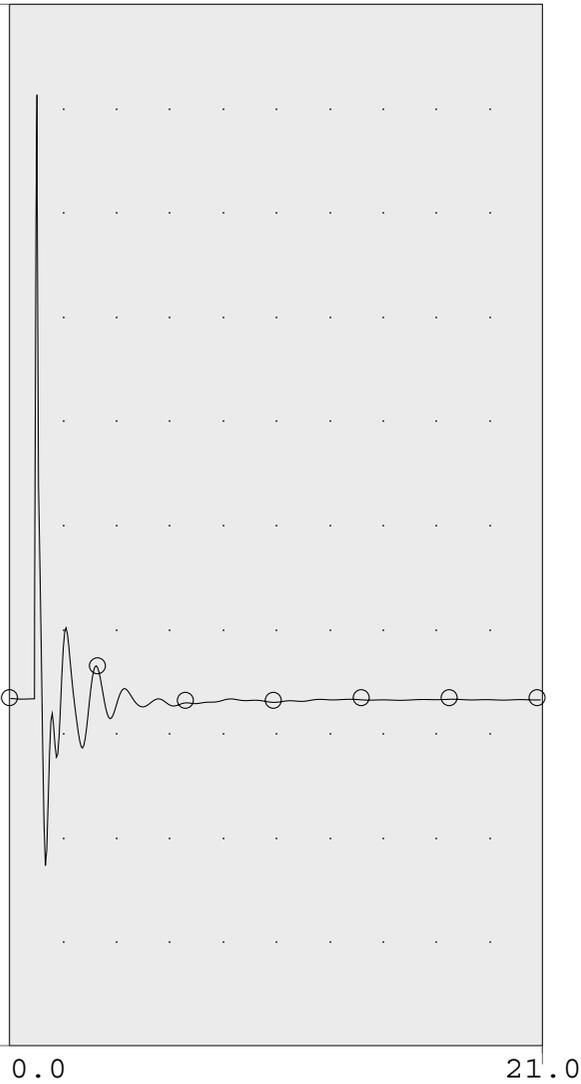
This case contains ENPEX, Cabrillo, and all Crestwood wind generation.

This is a high import Case, with All newer generation in the SDG&E control area at full output.

sy158_pst.chr Ts, peakers, and old steam units in the SDG&E control area are OFF. duke stab is OFF, Cabrillo is OFF, Otay Mesa is OFF, South Bay

generation is at 650 MW

61.20

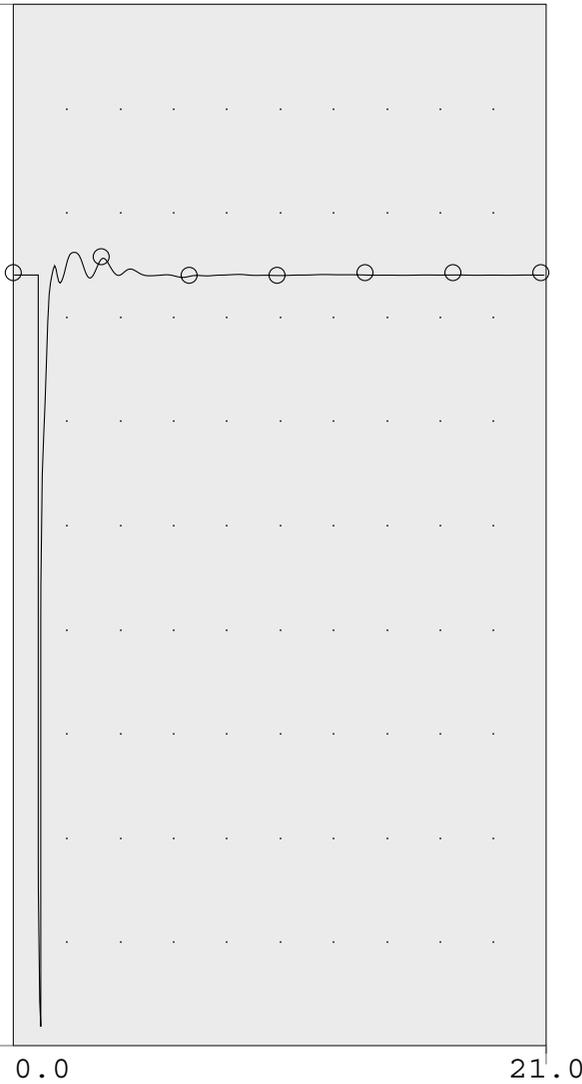


59.40

Time (sec)

○ 59.400fbug 22788 SOUTHBY3 18.0 1 1 61.200

1.25



0.25

Time (sec)

○ 0.25 vt 22788 SOUTHBY3 18.0 1 1 1.25

Fault SOUTH BAY 230kV

No system elements removed post clearing

This is a Post project Case.

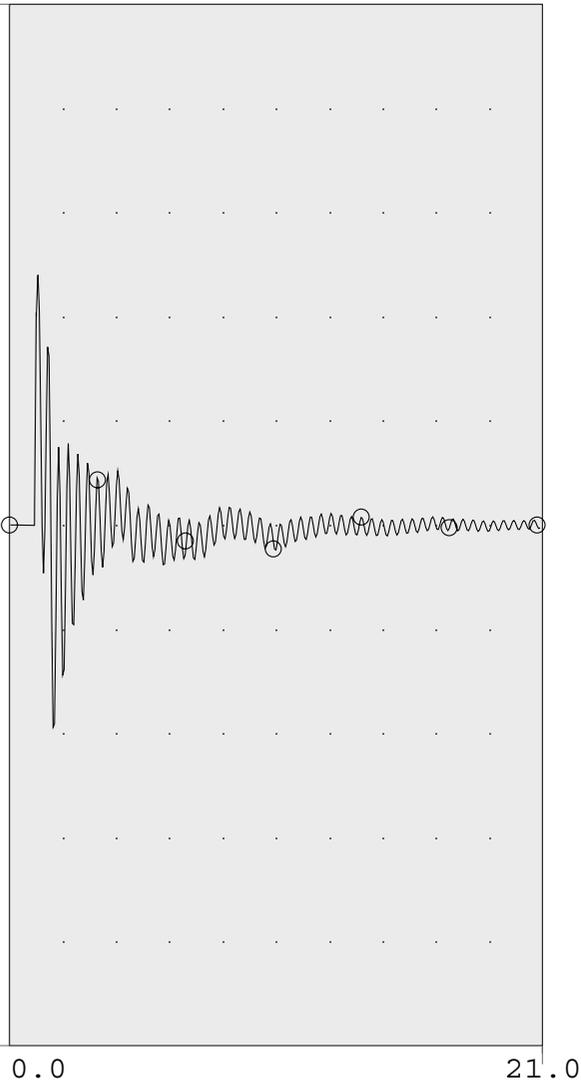
This case contains ENPEX, Cabrillo, and all Crestwood wind generation.

This is a high import Case, with All newer generation in the SDG&E control area at full output.



Is, peakers, and old steam units in the SDG&E control area are OFF. Duke stab
sy230_pst.chr is OFF, Cabrillo is OFF, Otay Mesa is OFF, South Bay

60.60

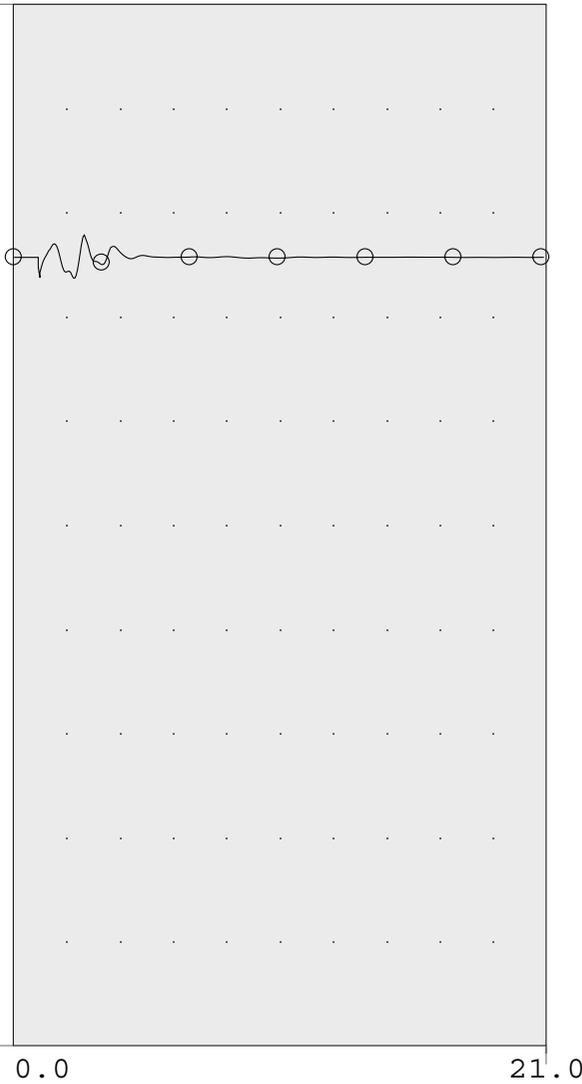


59.40

Time(sec) 0.0 21.0

○ 59.400fbug 14990 SUN G1 13.8 1 1 60.600

1.25



0.25

Time(sec) 0.0 21.0

○ 0.25 vt 11116 NEWMN4G2 13.8 1 1 1.25

Fault Palo Verde 500 kV

Trip Palo Verde-Devers 500 kv SLO

This is a Post project Case.

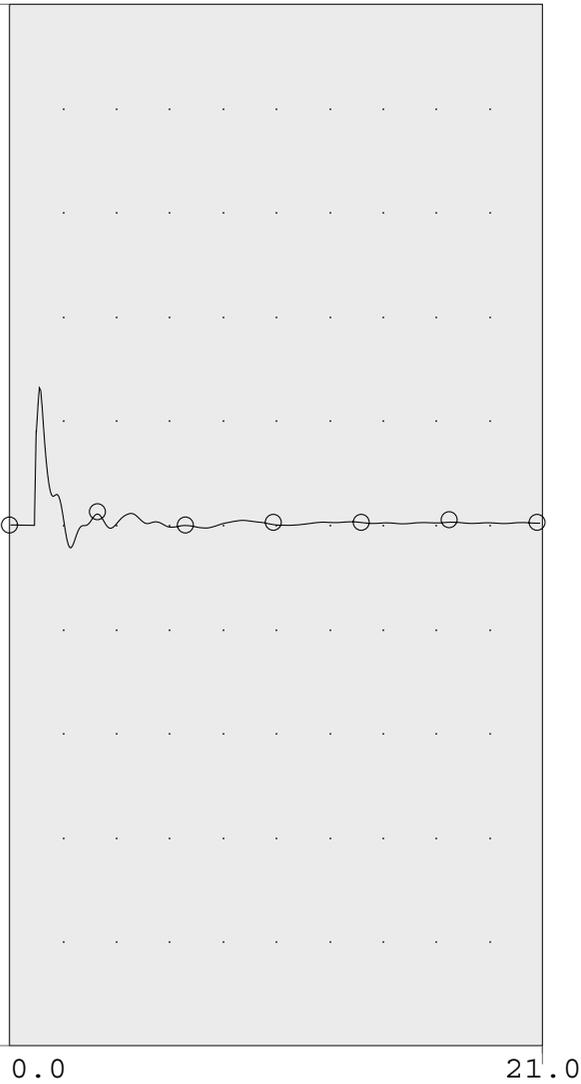
This case contains ENPEX, Cabrillo, and all Crestwood wind generation.

This is a high import Case, with All newer generation in the SDG&E control area at full output.



Is, peakers, and old steam units in the SDG&E control area are OFF. This is OFF, Cabrillo is OFF, Otay Mesa is OFF, South Bay generation is at 650 MW

60.60

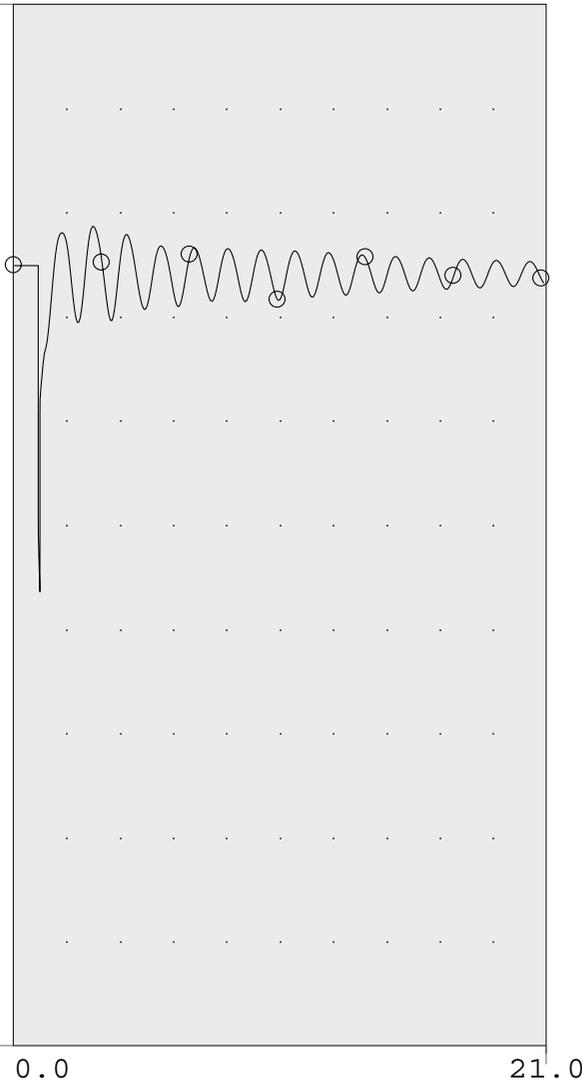


59.40

Time(sec)

○ 59.400fbug 15160 HGC-ST2 13.8 1 1 60.600

1.25



0.25

Time(sec)

○ 0.25 vbul 21046 MIDWAY X 92.0 1 1 1.25

Fault Devers 500 kV

Trip DPV1 & DPV2

This is a Post project Case.

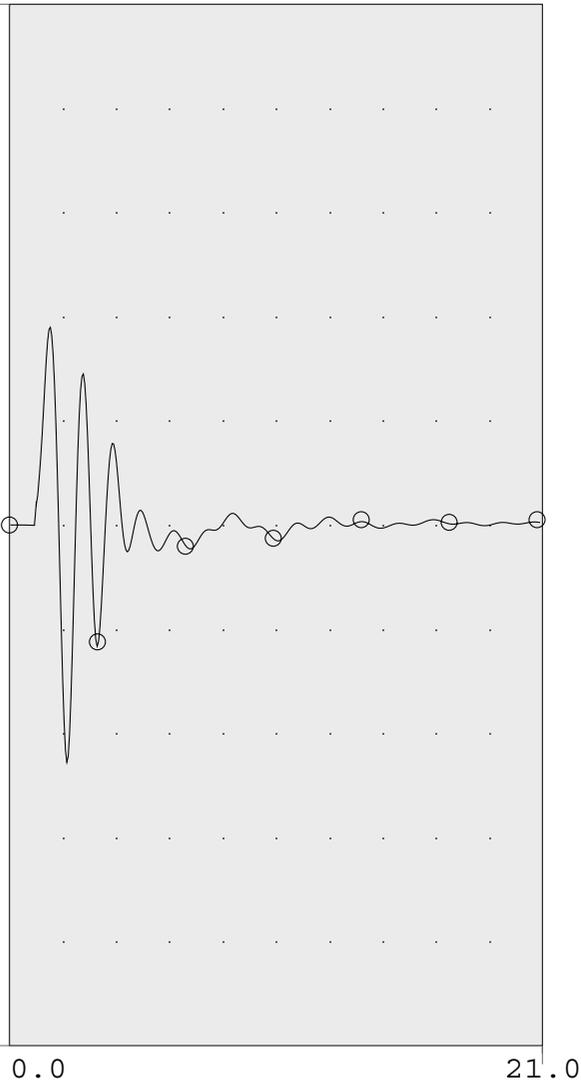
This case contains ENPEX, Cabrillo, and all Crestwood wind generation.

This is a high import Case, with All newer generation in the SDG&E control area at full output.



Is peakers, and old steam units in the SDG&E control area are OFF. This case is OFF, Cabrillo is OFF, Otay Mesa is OFF, South Bay generation is at 650 MW

60.60

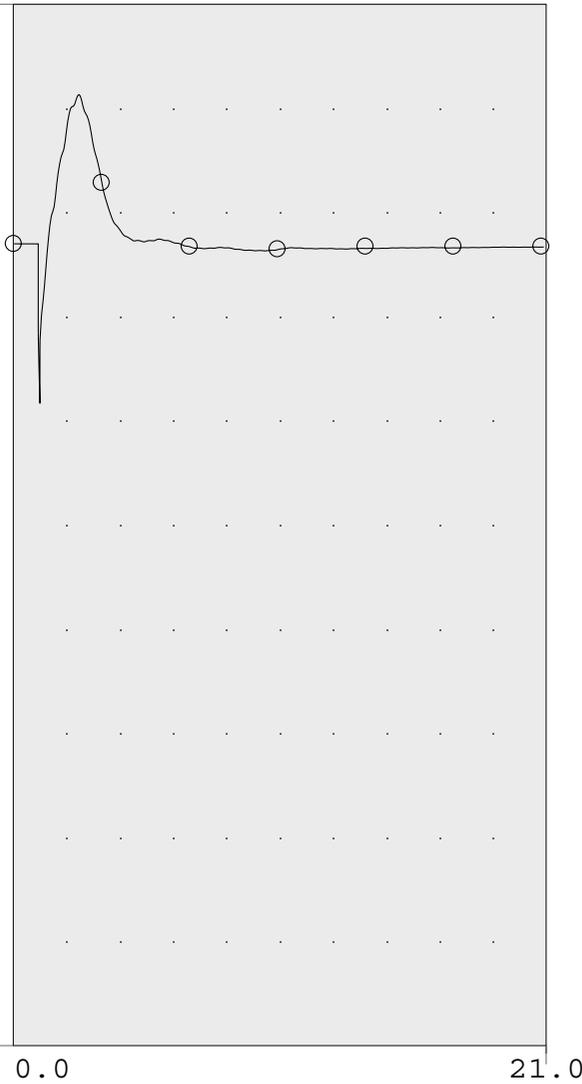


59.40

Time(sec) 0.0 21.0

○ 59.400fbug 11115 NEWMN4G1 13.8 1 1 60.600

1.25



0.25

Time(sec) 0.0 21.0

○ 0.25 vt 14990 SUN G1 13.8 1 1 1.25

Fault Hassayampa 500 kV

Trip Hassayampa-N.Gila 500 kV SLO

This is a Post project Case.

This case contains ENPEX, Cabrillo, and all Crestwood wind generation.

This is a high import Case, with All newer generation in the SDG&E control area at full output.



Its peakers, and old steam units in the SDG&E control area are OFF. es1611\m\OFF\duke stab
hang_pst.chf is OFF, Cabrillo is OFF, Otay Mesa is OFF, South Bay

Appendix D – Post-Transient Voltage Stability Contingency Lists

Post-Transient Voltage Stability

N-1 Contingency List for voltage and Governor Study (105% load level)

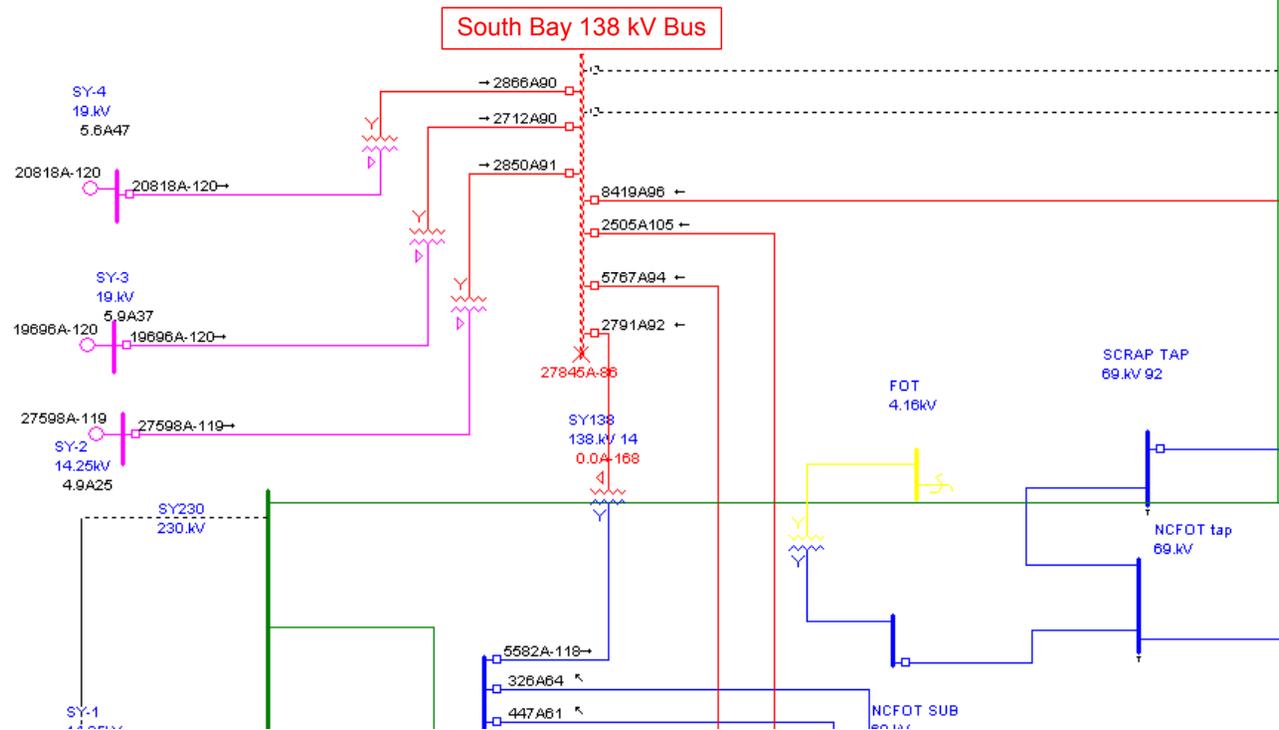
- Case 1
IMPERIAL VALLEY – MIGUEL 500kV / IV-ROA 230kV
- Case 2
HASSAYAMPA - NORTH GILA 500.00
- Case 3
NORTH GILA – IMPERIAL VALLEY 500 kV SLO
- Case 4
IMPRLVLY-CENTRALX 500KV
- Case 5
OTAY MESA – TIJUANA 230 kV SLO
- Case 6
SILVER GATE- OTAY MESA 230KV SLO
- Case 7
SILVERGT-OLD TOWN 230KV SLO
- Case 8
SILVERGT-SOUTH BAY 230KV SLO
- Case 9
SOUTH BAY - OTAY MESA 230KV SLO

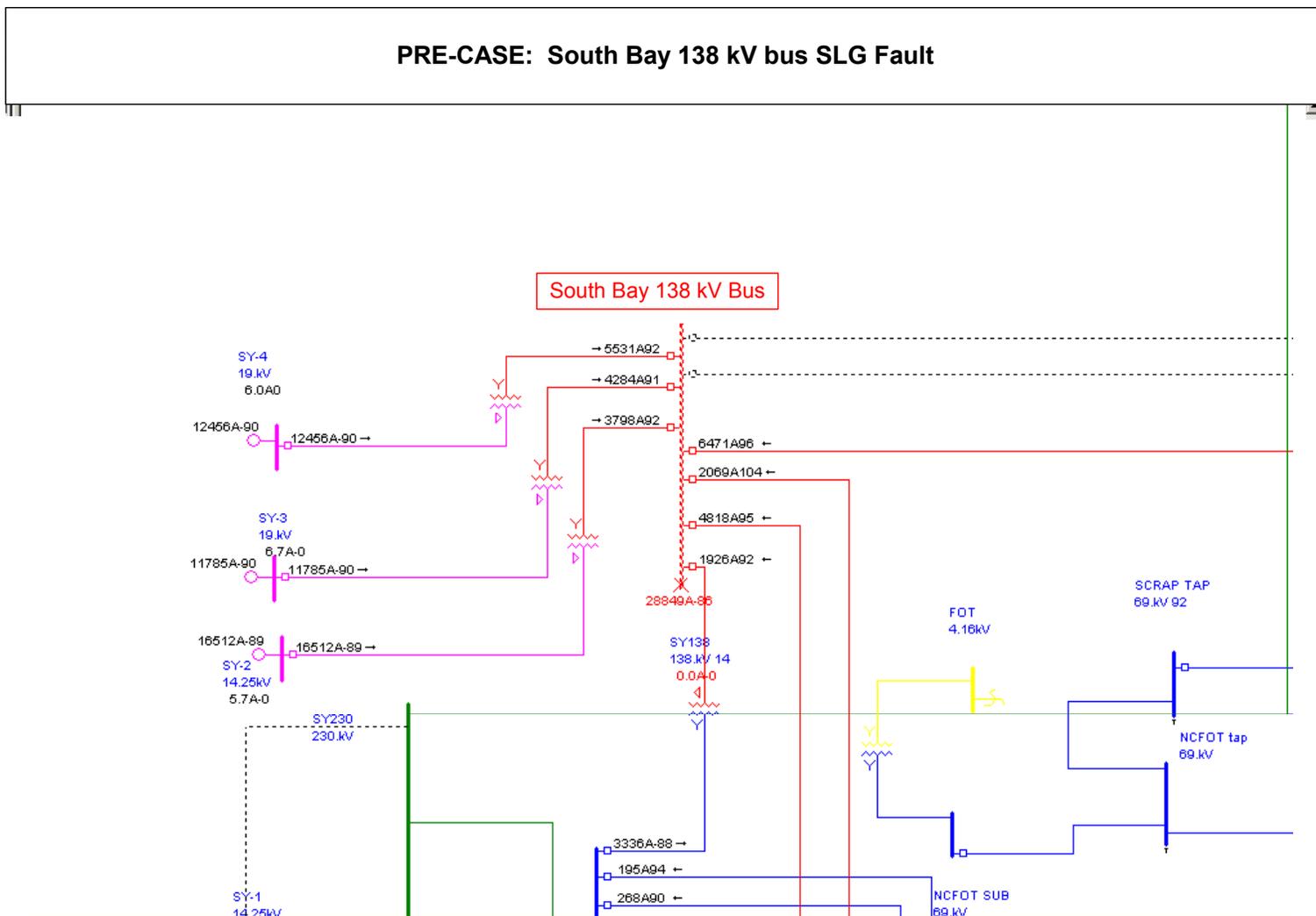
N-2 Contingency List for Governor Study (102.5% load level)

- Case 1
SONGS-TALEGA 1/2 230 kV
- Case 2
SONGS-SAN LUIS REY 2/3 230 kV
- Case 3
MIGUEL-MISSION 230 1/2 230 kV
- Case 4
MIGUEL-SYCAMORE + MIGUEL-MISSION 230 kV
- Case 5
SONGS – SAN LUIS REY 1/3 230 kV DLO
- Case 6
PALOMAR ENERGY-ESCONDIDO 1&2 230 kV
- Case 7
PENASQUITOS-ENCINA & ENCINA-SAN LUIS REY-PALOMAR ENERGY 230
kV

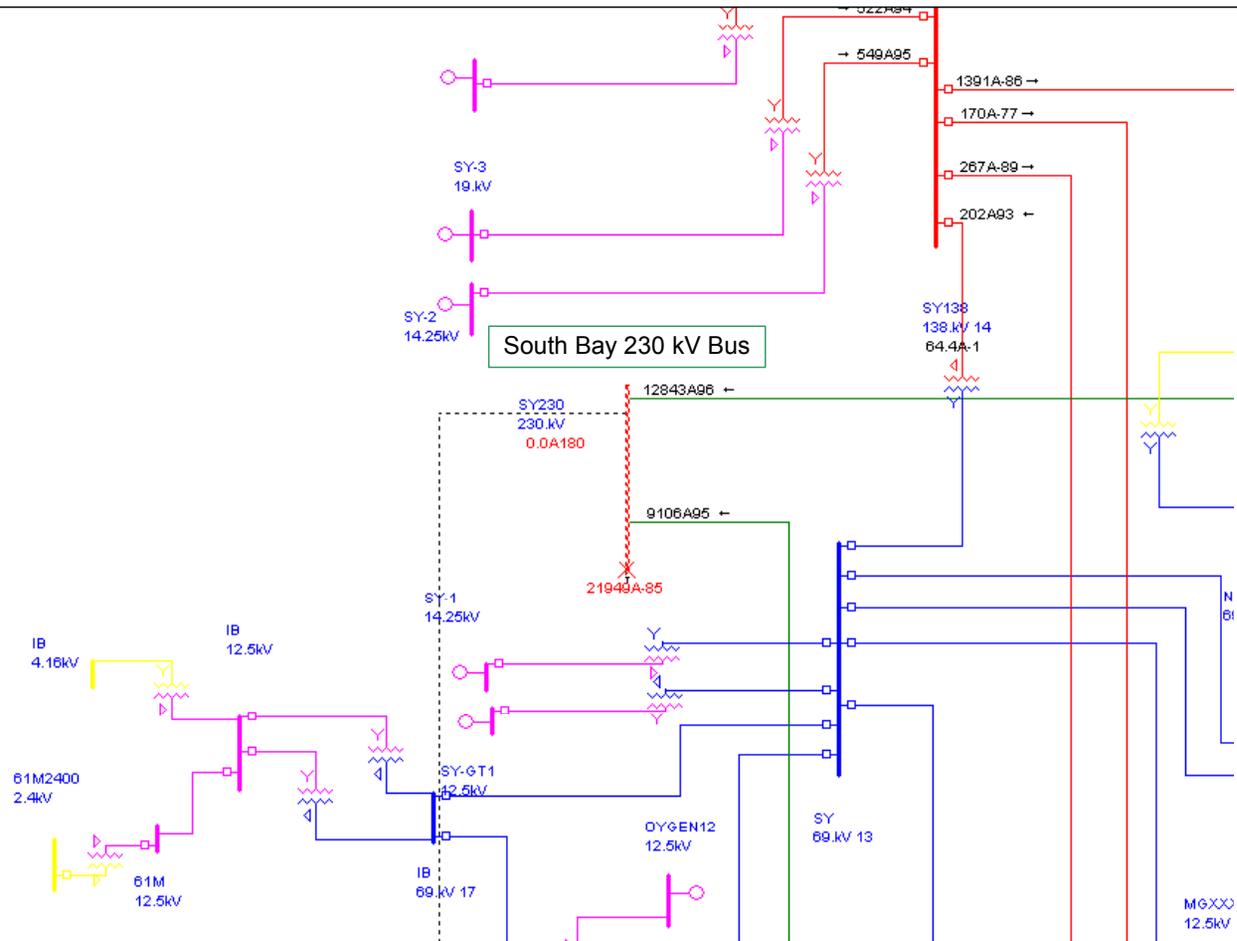
Appendix E – Short Circuit Results

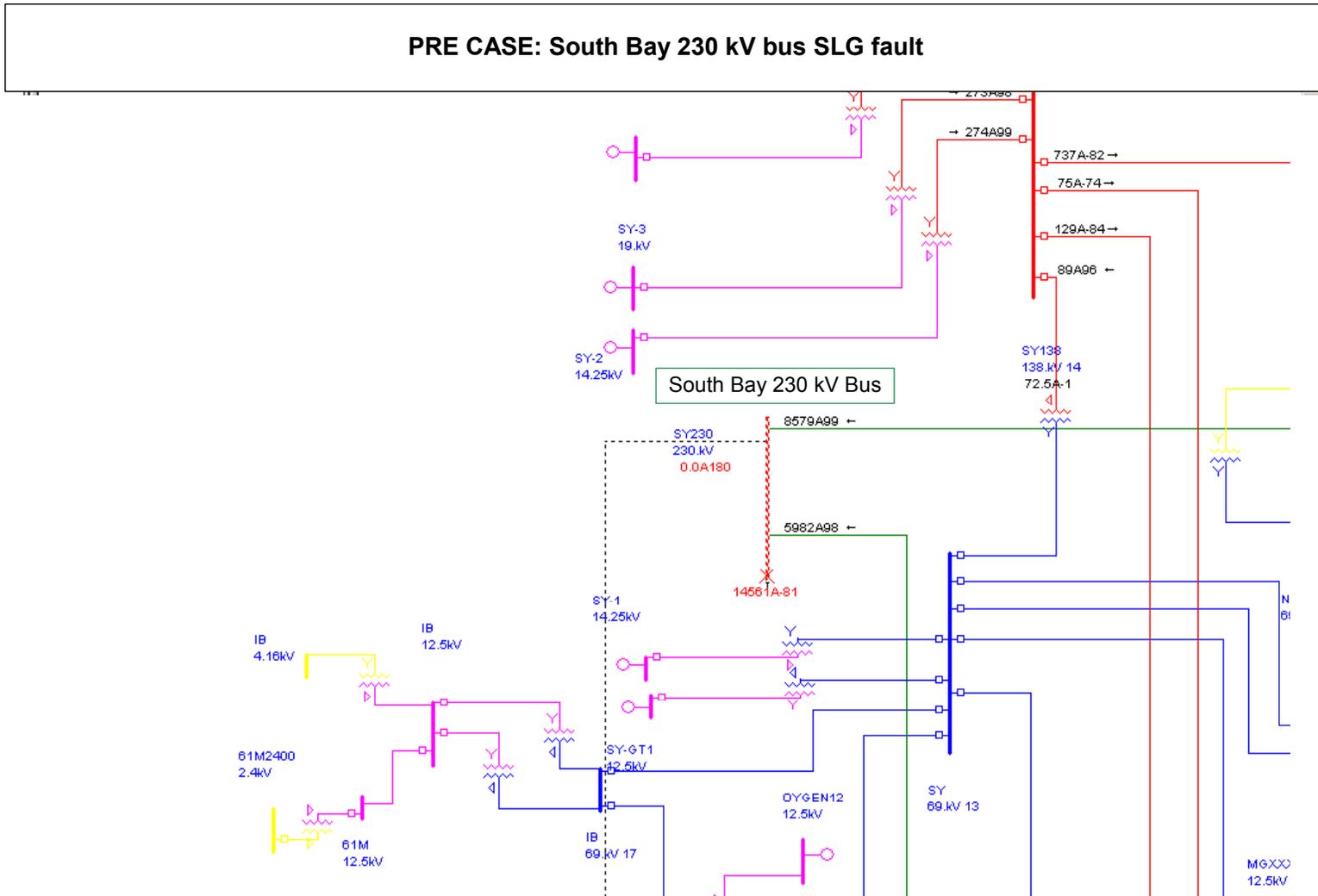
PRE CASE: South Bay 138 kV bus 3 phase fault



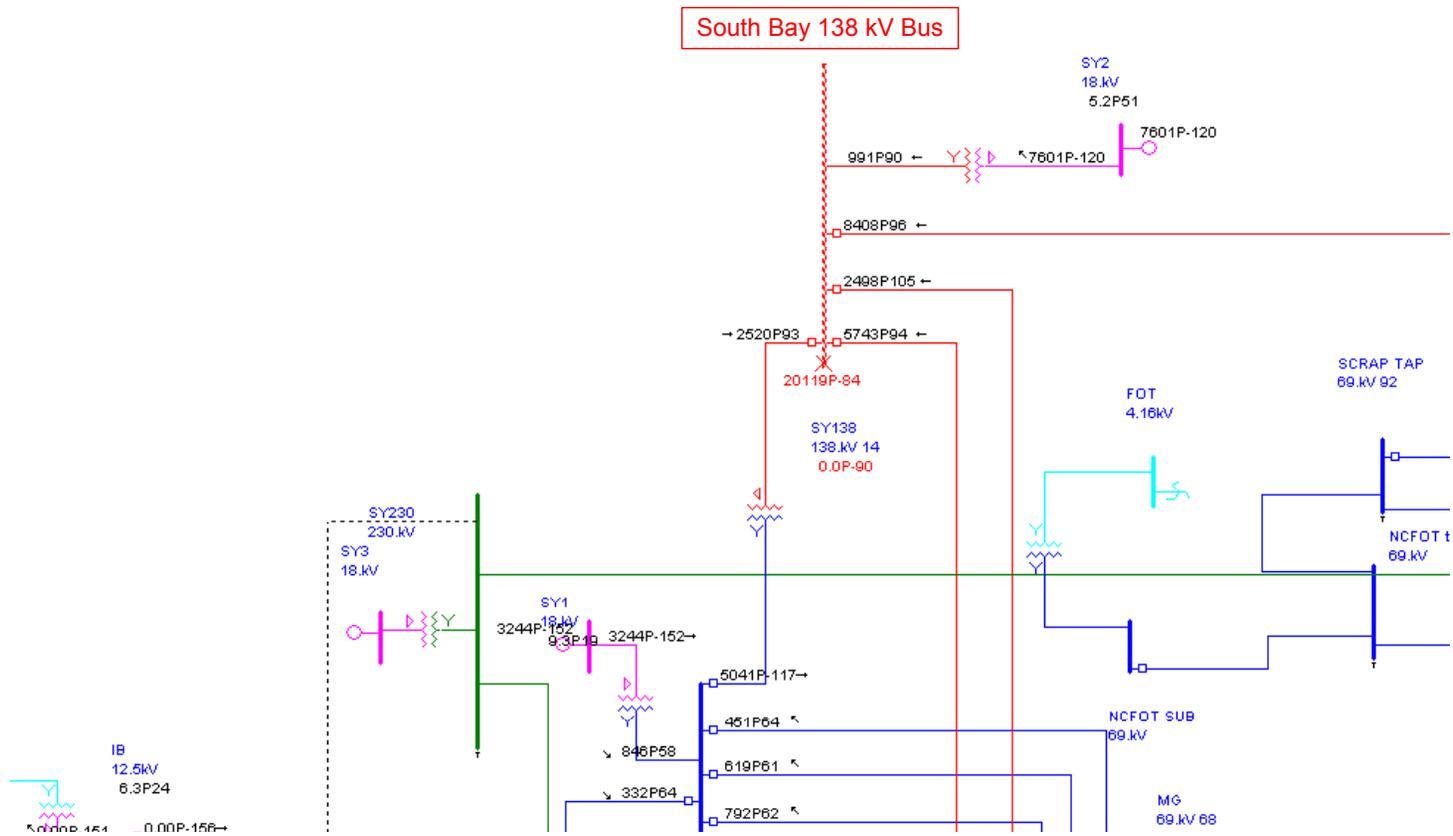


PRE CASE: South Bay 230 kV bus 3 phase fault

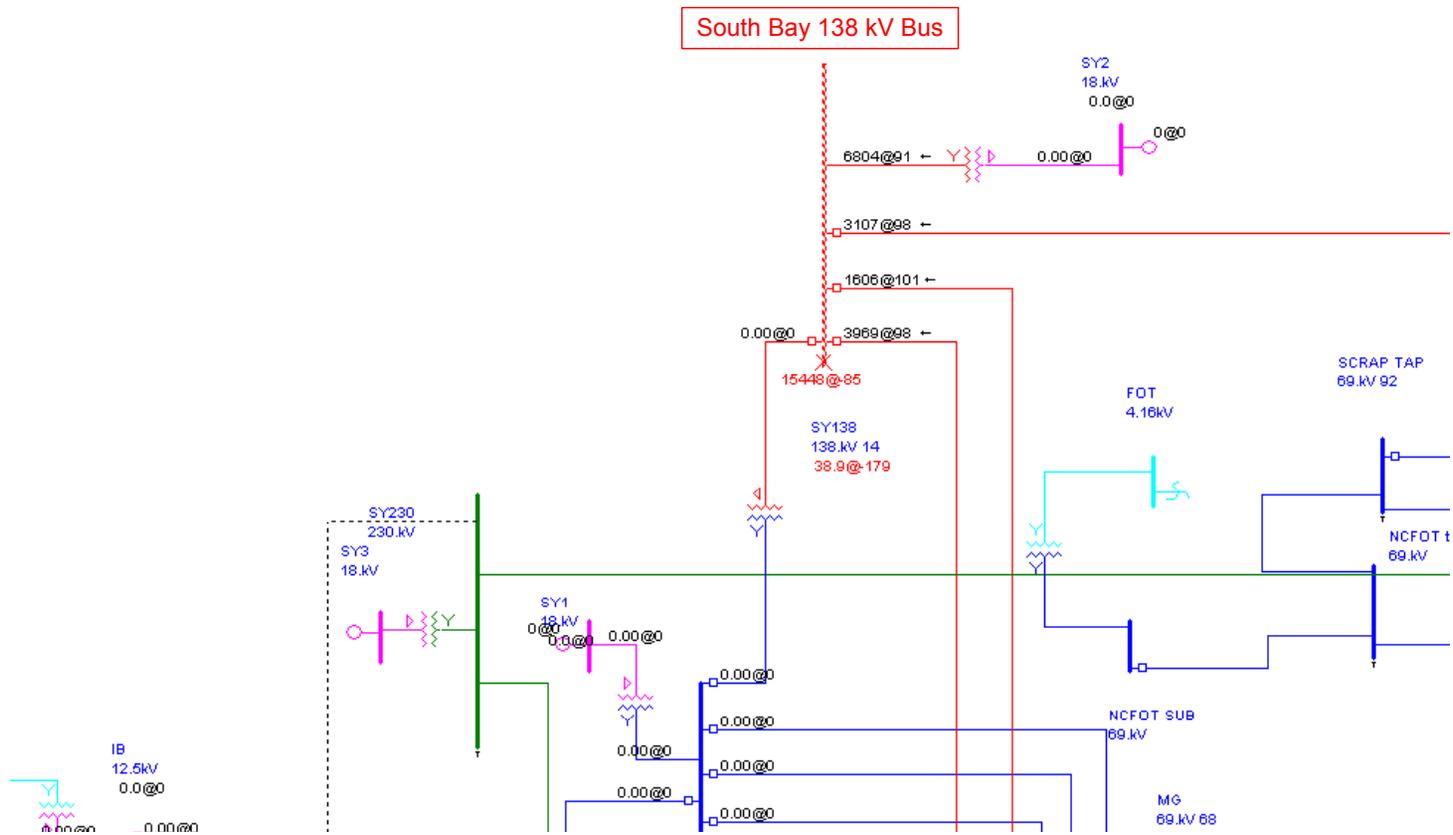




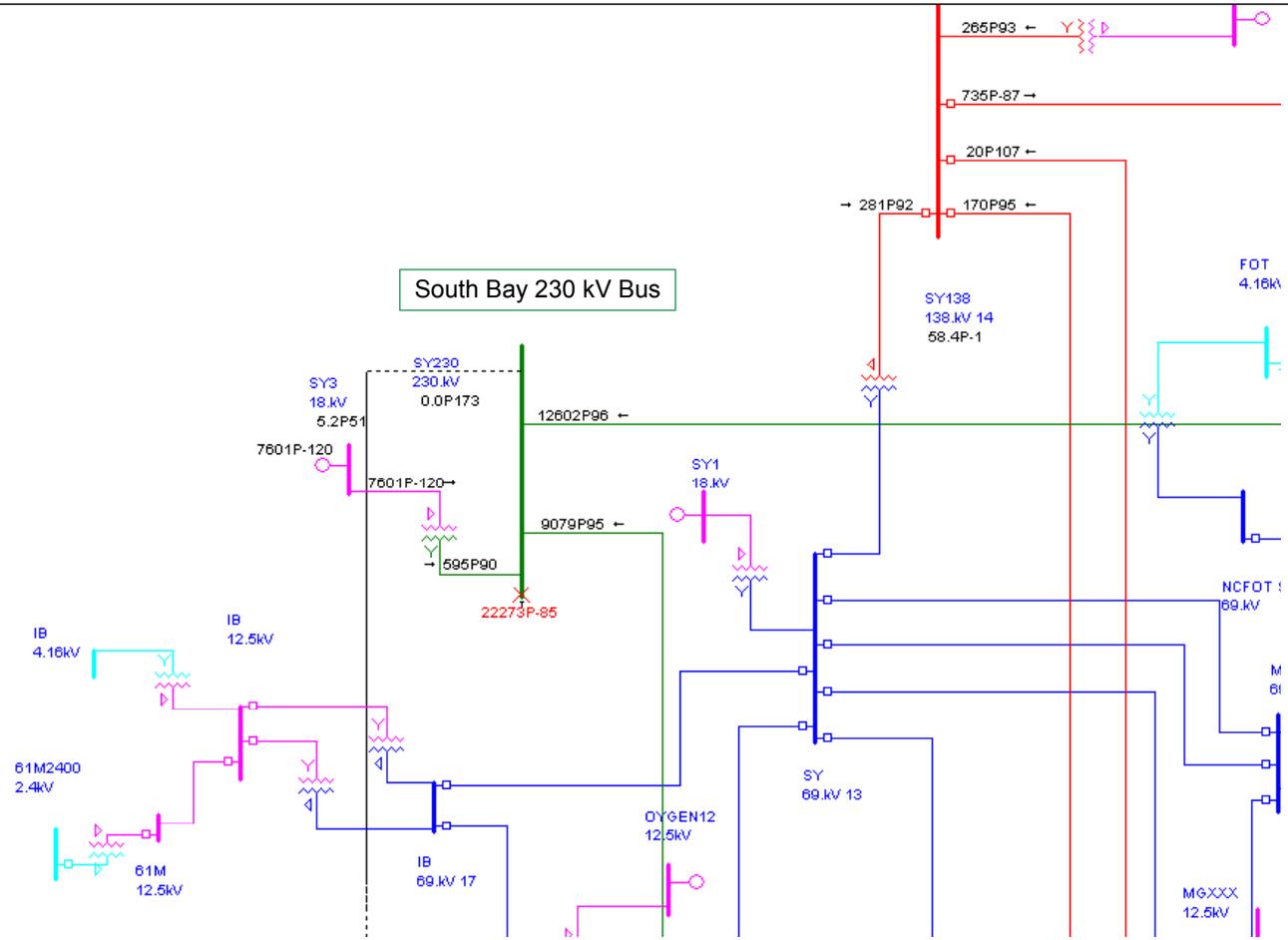
POST CASE: South Bay 138 kV bus 3 phase fault



POST CASE: South Bay 138 kV bus SLG fault



POST CASE: South Bay 230 kV bus 3 phase fault



Appendix F – CAISO Controlled Grid Generation Queue

The California ISO Controlled Grid Generation Queue
 as of: January 13, 2006

Request Status				Generating Facility		Maximum MWe		Location		Point of Interconnection		Study Availability					
Queue Position	Interconnection Request Receive Date	Queue Date	Application Status	Type	Fuel	Summer	Winter	County	State	Utility	Station or Transmission Line	Proposed On-line Date (as filed with IR)	Current On-line Date	Feasibility Study (FS)	System Impact Study (SIS)	Facility Study (FAS)	Optional Study (OS)
1	8/30/1998	8/30/1998	Active	WT	W	16.5		Riverside	CA	SCE	Devers-Garnet 115 kV line (Tap)	3/1/1999	12/31/2005	NA	Complete	Complete	
2	8/12/1999	2/25/2000	Active	CC	NG	590		Contra Costa	CA	PGE	Contra Costa Power Plant 230 kV Bus	2006	1/1/2006	NA	Complete	Complete	
3	4/21/2000	6/14/2000	Active	CC	NG	850		Riverside	CA	SCE	Devers Substation 230 kV Bus	1/1/2004	5/1/2005	NA	Complete	Ready	
4	8/8/2000	8/8/2000	Active	CC	NG	521	545	San Diego	CA	SOGE	Palomar 230 kV	6/1/2001	10/15/2005	NA	Complete	Complete	
5	8/8/2000	8/8/2000	Active	CC	NG	900		San Diego	CA	SOGE	Encina Power Plant Switchyard	6/5/2003	6/1/2005	NA	Complete	Complete	
6	8/23/2000	8/23/2000	Active	CC	NG	1156		San Joaquin	CA	PGE	Terra Substation 230 kV Bus E	6/1/2006	6/2/2005	NA	Complete	In Progress	
7	8/18/2000	10/8/2000	Active	CC	NG	280		Los Angeles	CA	SCE	El Segundo 230 kV Bus	3/1/2005	1/1/2005	NA	Complete	Complete	
8	11/28/2000	11/28/2000	Active	CC	NG	750		San Diego	CA	SOGE	Sycamore Canyon Substation	6/1/2004	Unknown	NA	Complete	Delayed	
9	12/1/2000	12/1/2000	Active	CC	NG	1200		San Luis Obispo	CA	PGE	Mono Bay Substation	1/1/2006	1/1/2005	NA	Complete	Complete	
10	5/2/2001	5/2/2001	Active	CC	NG	820		Kings	CA	PGE	Green Substation (Arco - Green 230 kV line)	1/1/2009	7/1/2005	NA	Complete	Complete	
11	10/16/2002	10/23/2002	Active	WT	W	63		San Bernardino	CA	SCE	Mountain Pass Substation	12/1/2004	3/1/2006	NA	Complete	Complete	
12	12/16/2002	12/16/2002	Active	WT	W	150		Solano	CA	PGE	New Birds Landing Sw Site near Contra Costa PP Sub	10/1/2005	12/31/2005	NA	Complete	Complete	
13	1/5/2003	1/5/2003	Active	H	WTR	40		San Diego	CA	SOGE	Escondido	7/1/2007	1/1/2007	NA	Complete	Complete	
14	1/7/2003	1/7/2003	Active	CC	NG	65		San Diego	CA	SOGE	Miguel Tizama *165 MWe -additional capacity, 615 total MW	12/31/2004	6/1/2007	NA	Complete	Complete	
15	12/31/2002	1/17/2003	Active	WT	W	50		San Bernardino	CA	SCE	Mountain Pass	6/1/2004	12/31/2007	NA	Complete	Complete	
16	3/11/2003	3/11/2003	Active	WT	W	120		Santa Barbara	CA	PGE	Cabrillo	6/1/2006	5/1/2006	NA	Complete	Complete	
17	3/18/2003	3/18/2003	Active	CC	NG	520		Riverside	CA	SCE	Devers-Palo Verde 500 kV line near Bayline	1/1/2006	6/1/2006	NA	In Progress		
18	4/15/2003	4/15/2003	Active	WT	W	200		Los Angeles	CA	SCE	Arntope	12/31/2005	12/1/2007	NA	Complete	Complete	
19	8/4/2003	8/18/2003	Complete	WT	W	46		San Diego	CA	SOGE	Creswood	12/31/2005	10/1/2005	NA	Complete	Complete	
20	8/18/2003	8/4/2003	Active	WT	W	300		Kern	CA	SCE	Arntope	12/31/2006	12/31/2005	NA	Complete	Complete	
21	10/2/2003	10/23/2003	Active	WT	W	37.55		Byron	CA	PGE	Windmill/Microwind Vista Sub	7/1/2004	10/1/2006	NA	n/a	n/a	
22	11/16/2003	11/16/2003	Active	WT	W	38		Solano	CA	PGE	New Birds Landing Sw Site near Contra Costa PP Sub	6/5/2005	3/1/2007	NA	Complete	Complete	
23	11/17/2003	11/24/2003	Active	CC	NG	72		San Bernardino	CA	SCE	San Bernardino * 72 Additional MW	11/1/2004	12/1/2005	NA	Complete	Complete	
24	1/30/2004	1/30/2004	Active	WT	W	150		Solano	CA	PGE	High Winds/Contra Costa PP	12/31/2006	12/1/2006	NA	Complete	Complete	
25	2/5/2004	2/5/2004	Active	WT	W	117		San Diego	CA	SOGE	Creswood	6/6/2006	6/1/2007	NA	In Progress		
26	2/12/2004	2/12/2004	Active	WT	W	36		San Diego	CA	SOGE	Creswood	4/1/2006	3/1/2006	NA	In Progress		
27	2/23/2004	2/23/2004	Active	CC	NG	850		San Diego	CA	SOGE	13869 kV South Bay (690 MW CC)	1/1/2010	9/1/2009	NA	Complete	In Progress	
28	2/25/2004	2/25/2004	Active	CT	NG	145.1		San Francisco	CA	PGE	Palmar 115 kV Sub	12/1/2005	1/1/2006	NA	Complete	Complete	
29	3/8/2004	3/28/2004	Active	WT	W	201		Lake & Sonoma	CA	PGE	Colver Substation at Geysers #17 & Fulton 230 kV line	12/1/2005	10/15/2006	NA	Complete	Complete	
30	4/28/2004	4/28/2004	Active	CT	NG	48.7		San Francisco	CA	PGE	SP Airport Substation	6/1/2006	5/1/2006	NA	Complete	Complete	
31	4/12/2004	5/11/2004	Active	WT	W	201		Kern	CA	SCE	Mondith Substation	12/31/2007	12/31/2009	NA	Complete	In Progress	
32	5/12/2004	5/24/2004	Active	WT	W	201		San Diego	CA	SOGE	Boulevard - Creswood 69-kV transmission line	6/1/2007	7/1/2007	NA	In Progress		
33	7/6/2004	7/12/2004	Active	ST	G	10		Candell	NV	SCE	Bishop Control Sub	7/14/1988	5/31/2006	NA	Complete	Complete	
34	7/18/2004	7/18/2004	Active	WT	W	300		Kern	CA	SCE	Mondith Substation	7/1/2007	12/31/2009	NA	Complete	In Progress	
35	10/25/2004	10/25/2004	Active	CT	NG	59.9		Fresno	CA	PGE	115 kV Fresno Sub	5/21/2005	4/30/2006	NA	Complete		
36	11/1/2004	11/1/2004	Active	CT	NG	59.9		Stanislaus	CA	PGE	115 kV Terra - Stockton Cogeneration Line	5/21/2005	4/30/2006	NA	Complete		
37	11/8/2004	11/8/2004	Active	CT	NG	59.9		San Joaquin	CA	PGE	Terra Substation	1/1/2007	10/31/2006	NA	Complete		
38	10/19/2004	11/11/2004	Active	IC	NG	148.4		Humboldt	CA	PGE	Humboldt Power Plant Substation	6/1/2006	7/1/2006	NA	Being resubmitted		
39	10/11/2004	11/11/2004	Active	WT	W	200		Solano	CA	PGE	New Birds Landing Sw Site near Contra Costa PP Sub	12/31/2006	6/1/2006	NA	Complete		
40	10/19/2004	11/11/2004	Active	IC	NG	118		Alameda	CA	PGE	Eastshore Substation	6/1/2007	3/1/2007	NA	Complete		
41	11/6/2004	11/16/2004	Active	CT	NG	158.8		Kern	CA	SCE	Padonia Substation	7/31/2005	7/31/2006	NA	Complete	In Progress	
42	11/24/2004	11/26/2004	Active	CT	NG	300		Fresno	CA	PGE	McCall Substation	5/21/2007	4/30/2007	NA	Being resubmitted		
43	11/29/2004	11/29/2004	Active	IC	NG	168.7		San Joaquin	CA	PGE	Terra-Delata 230 kV line	1/1/2006	12/1/2007	NA	Complete		
44	11/29/2004	11/29/2004	Active	IC	NG	126.5		Madera	CA	PGE	Border Substation 230 kV Bus	1/1/2006	12/1/2007	NA	Complete		
45	12/1/2004	12/1/2004	Active	CT	NG	381		Alameda	CA	PGE	Eastshore substation	7/31/2007	4/30/2007	NA	Complete		
46	12/1/2004	12/1/2004	Active	CT	NG	531		Contra Costa	CA	PGE	Terra-Tracy #1 230 kV Line - Tracy Sub	7/31/2005	4/30/2006	NA	Complete		
47	12/1/2004	12/1/2004	Active	CT	NG	200.8		Fresno	CA	PGE	Hendon - Kearney 230 kV line	6/5/2005	1/1/2006	NA	Complete		
48	12/1/2004	12/1/2004	Active	CC	NG	590		Contra Costa	CA	PGE	Contra Costa Power Plant 230 kV Substation	1/1/2006	12/1/2006	NA	Complete		
49	12/14/2004	12/14/2004	Active	WT	W	100.5		Riverside	CA	SCE	Devers Substation	12/1/2005	11/1/2006	NA	Complete	In Progress	
50	12/21/2004	12/21/2004	Active	CC	NG	810		Riverside	CA	SCE	SCE Valley Substation	5/21/2005	12/31/2006	NA	Complete		
51	12/29/2004	12/21/2004	Active	IC	NG	0.55		Fresno	CA	PGE	70 kV Kernan-Helm Transmission Line	4/20/2005	On Hold	NA	n/a	n/a	
52	12/1/2004	12/21/2004	Active	CT	NG	401		Fresno	CA	PGE	Panocha Sub Station	6/5/2005	1/1/2006	NA	Complete		
53	12/1/2004	12/22/2004	Active	CT	NG	116.8		Placer	CA	PGE	Pleasant Grove Sub Station	6/1/2006	3/1/2006	NA	Complete		
54	11/11/2004	1/12/2005	Active	CT	NG	124		Fresno	CA	PGE	Panocha Substation	6/1/2006	5/31/2006	NA	Complete		
55	12/1/2004	1/12/2005	Active	CC	NG	791		Fresno	CA	PGE	Helm substation	7/31/2005	4/30/2006	NA	Complete		

Notes:
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 Generator interconnection Requests or applications Completed or Withdrawn prior to this posting are not shown.
 Future withdrawals will be indicated in the Application Status as Withdrawn and their Queue position will be retired.
 Weekly posting is anticipated.

Legend:
 * Generator Type Key: IC=Internal Combustion, ST=Steam Turbine, CT=Combustion Turbine, CC=Combined Cycle, H=Hydro, WT=Wind Turbine, PV=Photovoltaic
 * Fuel Type Key: VM=Wind, NU=Nuclear, NG=Natural Gas, C=Oil, C=Coal, B=Biomass, S=Solar, LFG=Land Fill Gas, WTR=Water

Request Status				Generating Facility		Maximum MWh		Location		Point of Interconnection		Study Availability					
Queue Position	Interconnection Request Receive Date	Queue Date	Application Status	Type	Fuel	Summer	Winter	County	State	Utility	Station or Transmission Line	Proposed On-line Date (as filed with IR)	Current On-line Date	Feasibility Study (IFS)	System Impact Study (SIS)	Facility Study (FAS)	Optional Study (OS)
56	12/21/2004	1/25/2005	Active	CC	NG	824		Clark	NV	PGE	El Dorado 230 kV Substation	6/1/2007	4/0/2006	NA	Complete	Complete	
57	12/10/2004	2/8/2005	Active	CC	NG	715		Colusa	CA	PGE	Between Colwood and Vaca-Doran	1/1/2010	6/1/2009	NA	Complete	Complete	
58	12/2/2005	2/22/2005	Active	ST	G	90		Marina	NV	SCE	Oron-Valley-Orlow 230	10/7/2007	12/9/2007	NA	Complete	In Progress	
59	3/25/2005	3/25/2005	Active	CT	NG	57.2		Kings	CA	PGE	Havilah Substation 70 kV	1/1/2006	12/1/2007	NA	Complete	Complete	
60	3/25/2005	3/25/2005	Active	CT	NG	94		Kern County	CA	PGE	Kern ST Substation 115 kV	3/5/2007	1/5/2006	NA	Complete	Complete	
61	3/25/2005	3/25/2005	Active	ST	NG	73.27		Fresno	CA	PGE	70kV/Helm-Kerman	5/1/2008	5/1/2006	NA	Complete	Complete	
62	3/25/2005	4/13/2005	Active	CC	NG	166.5		Humboldt	CA	PGE	Humboldt Bay-Humboldt #1 115 kV	5/1/2007	4/0/2007	NA	Complete	Complete	
63	3/25/2005	4/18/2005	Active	CC	NG	158		Contra Costa	CA	PGE	Contra Costa (230 kV)	1/1/2006	12/1/2007	NA	Complete	In Progress	
64	3/25/2005	4/28/2005	WITHDRAWN	CT	NG	442		Humboldt	CA	PGE	Humboldt Bay-Helm-Red Gulch	8/1/2006	3/1/2006	NA	Complete	Complete	
65	5/6/2005	5/6/2005	Active	CT	NG	424.8		Los Angeles	CA	SCE	Long Beach Gen Station 220kv switchyard	1/1/2007	1/1/2007	NA	Complete	Agreement Tendered	
66	5/6/2005	5/6/2005	Active	CT	NG	500.5		Los Angeles	CA	SCE	Avalon Substation	9/1/2007	9/1/2007	NA	Complete	Agreement Tendered	
67	3/25/2005	5/6/2005	Active	CC	NG	245		Alameda	CA	PGE	Eastshore Substation	7/5/2008	4/0/2008	NA	Complete	Complete	
68	3/25/2005	5/11/2005	Active	Other	S	850		San Bernardino	CA	SCE	Pingah 230 kV Substation	1/5/2008	12/1/2007	Waived	In Progress	Complete	
69	5/6/2005	8/7/2005	Active	CT	NG	527		San Bernardino	CA	SCE	El Verde 230kV Substation	6/1/2006	5/1/2008	NA	Complete	Complete	
70	5/6/2005	6/14/2005	Active	IC	LFG	10.7		San Mateo	CA	PGE	Hiladale Junction-Hill Moon Bay 60 kV line	12/23/2005	4/1/2006	NA	Complete	Complete	
71	5/6/2005	6/24/2005	WITHDRAWN	CC	NG	551		Clark	NV	SCE	El Dorado 230 kV Substation	3/26/2007	3/1/2007	Complete	Complete	Complete	
72	4/25/2005	6/21/2005	Active	Hydro	WTR	500		Riverside	CA	SCE/SOGE	Proposed Lea Lake Substation	12/1/2008	3/0/2008	NA	In Progress	In Progress	
73	6/8/2005	6/27/2005	Active	WT	W	250		Kern	CA	SCE	Antelope Sub	12/1/2007	12/1/2008	Waived	In Progress	In Progress	
74	7/12/2005	7/12/2005	Active	WT	W	125		Shasta	CA	PGE	230kV line b/n PNB & Round Mt	12/15/2007	9/1/2007	In Progress	In Progress	Complete	
75	4/25/2005	7/15/2005	Active	ST	B	10.5		Madera	CA	PGE	La Grand-Chowella 115 kV	12/1/2005	12/1/2005	NA	Complete	Complete	
76	4/25/2005	7/15/2005	Active	ST	B	10.5		Merced	CA	PGE	PG&E Merced #1 72 kV circuit	12/1/2005	12/1/2005	NA	Complete	Complete	
77	6/15/2005	6/23/2005	Active	WT	W	320		Kern	CA	SCE/SOGE	1100 Backland	11/15/2007	11/15/2007	Agreement Tendered	In Progress	In Progress	
78	6/21/2005	6/21/2005	Active	Other	S	320		Imperial	CA	SOGE	Imperial Valley Substation	12/1/2009	12/1/2009	Waived	In Progress	In Progress	
79	6/24/2005	9/7/2005	Active	WT	W	51		Kern	CA	SCE	Proposed "New" Dushwind Substation	6/1/2006	12/15/2009	In Progress	In Progress	In Progress	
80	6/12/2005	6/12/2005	Active	CC	NG	890		Los Angeles	CA	SCE	Laguna Bell Substation 230 kV	7/1/2008	7/1/2008	Waived	In Progress	In Progress	
81	6/12/2005	6/12/2005	Active	ST	G	55		Lake	CA	PGE	Geyers #17 - Fulton 230 kV Line	6/1/2006	6/1/2006	Waived	In Progress	In Progress	
82	6/12/2005	6/14/2005	Active	ST	B	6.8		Humboldt	CA	PGE	Rio Dell Substation 60 kV	1/1/2006	12/21/2005	Waived	In Progress	ISDA Tendered	
83	6/15/2005	6/15/2005	Active	WT	W	60		San Bernardino	CA	SCE	Lugo-Pingah No. 2 230 kV Iron line	12/1/2008	12/1/2008	In Progress	In Progress	In Progress	
84	11/22/2005	12/1/2005	Active	WT	W	400		Kern	CA	SCE	Cottonwood Substation	12/1/2009	12/1/2009	Agreement Tendered	In Progress	In Progress	
85	12/26/2005	12/26/2005	Active	WT	W	120		Kern	CA	SCE	Segment 3 230 Collector Loop Tehachapi	9/5/2007	8/0/2007	In Progress	In Progress	In Progress	

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Appendix G – Load and Resource Tables

Power Flow Cases

There were eight dispatch scenarios modeled, with a pre and post-project case modeled for each dispatch scenario. The eight dispatch scenarios are shown in the Load and Resource Tables and described below.

Pre-Cases

Alternative 0: This is an extremely high dispatch case, with all generation in the SDG&E basin at full output.

Alternative 1: This is an extremely high dispatch case, with all generation except the small GTs in the SDG&E basin at full output.

Alternative 2: This is a very high dispatch case, with all generation except the small GTs and peakers in the SDG&E basin at full output.

Alternative 3: This is a high dispatch case, with the small GTs, peakers, and old Encina steam units turned off.

Alternative 4: This is a high dispatch case, with the small GTs, peakers, and old Encina steam units turned off. Sycamore Canyon combined cycle output is set at 500 MW.

Alternative 5: This is a medium dispatch case, with the small GTs, peakers, and old Encina steam units turned off. Sycamore Canyon combined cycle output is set at 500 MW. South Bay unit 4 is off, as is the Encina combined cycle plant.

Alternative 6: This is a high import case (3150 MW) with both the Sycamore Canyon and Encina combined cycle plants turned off. For this case, the old steam units at Encina are at full output, and Palomar Energy is off. South Bay is at full output for this case.

Alternative 7: This is a very high import case (3650 MW) with both the Sycamore Canyon and Encina combined cycle plants turned off. For this case, the old steam units at Encina are at full output, and Palomar Energy is off. South Bay is at full output for this case.

Alternative 8: This is a very high dispatch case, with all generation except the small GTs and peakers in the SDG&E basin at full output. This case has all QFs turned off. South Bay is at full output for this case.

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	PRE Alt 0	PRE Alt 1	PRE Alt 2	PRE Alt 3	PRE Alt 4	PRE Alt 5	PRE Alt 6	PRE Alt 7	PRE Alt 8
QF Generation (Always On)									
BOULEVRD	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0
CABRILLO	1	1	1	1	1	1	1	1	0
DIVISION	47	47	47	47	47	47	47	47	0
GOALLINE	49.8	49.8	49.8	49.8	49.8	49.8	49.8	49.8	0
KYOCERA	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0
MIRAMAR	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0
MURRAY	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0
NOISLMTR	33	33	33	33	33	33	33	33	0
OTAY	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	0
POINTLMA	22	22	22	22	22	22	22	22	0
R.SNTAFE	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0
RINCON	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0
SAMPSON	11	11	11	11	11	11	11	11	0
SANMRCOS	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	0
SWEETWTR	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0
CARLTNHS	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	0
Subtotal	173.8	173.8	173.8	173.8	173.8	173.8	173.8	173.8	0
Priority One (Order Top to Bottom)									
LkHodG1	20	20	20	20	0	0	0	0	0
LkHodG2	20	20	20	20	0	0	0	0	0
OTAYMGT1	170	170	170	170	170	170	170	170	170
OTAYMGT2	170	170	170	170	170	170	170	170	170
OTAYMST1	221	221	221	221	221	221	221	221	221
PENCT1	155	155	155	155	150	155	0	0	155
PENCT2	155	155	155	155	150	155	0	0	155
PENST1	231	231	231	231	220	231	0	0	228
Subtotal	1142	1142	1142	1142	1081	1102	561	561	1142
Priority Two (Order Top to Bottom)									
SOUTHBY2	146	146	146	146	146	145	145	145	146
SOUTHBY1	143	143	143	143	143	142	142	142	143
SOUTHBY3	174	174	174	174	174	174	174	174	174
ENCINA5	329	329	329	0	0	0	329	0	329
ENCINA4	298	297	280	3	1	1	175	8	299
SOUTHBY4	221	221	221	221	221	0	221	221	221
CALPK_BD	49	49	0	0	0	0	0	0	0
CALPK_ES	49	49	0	0	0	0	0	0	0
CALPK_EC	42	42	0	0	0	0	0	0	0
LRKSPBD1	46	46	0	0	0	0	0	0	0
LRKSPBD2	46	46	0	0	0	0	0	0	0
MIRAMRGT	17	0	0	0	0	0	0	0	0
MIRAMRGT	16	0	0	0	0	0	0	0	0
KEARN3AB	15	0	0	0	0	0	0	0	0
KEARN3AB	14	0	0	0	0	0	0	0	0
KEARN3CD	14	0	0	0	0	0	0	0	0
KEARN3CD	14	0	0	0	0	0	0	0	0
ELCAJNGT	13	0	0	0	0	0	0	0	0
ENCINAGT	14	0	0	0	0	0	0	0	0
KEARNGT1	15	0	0	0	0	0	0	0	0
KEARN2AB	14	0	0	0	0	0	0	0	0
KEARN2AB	14	0	0	0	0	0	0	0	0
KEARN2CD	14	0	0	0	0	0	0	0	0
KEARN2CD	13	0	0	0	0	0	0	0	0
SOUTHBGT	13	0	0	0	0	0	0	0	0
RAMCO_ES	0	0	0	0	0	0	0	0	0
RAMCO_OY	0	0	0	0	0	0	0	0	0
ENPEX1	250	250	250	250	250	250	0	0	250
ENPEX2	250	250	250	250	250	250	0	0	250
ENPEX3	250	250	250	250	0	0	0	0	250
ENCINA 6	200	200	200	200	200	0	0	0	200
ENCINA 7	200	200	200	200	200	0	0	0	200
ENCINA 8	360	360	360	360	360	0	0	0	360
CAMPO WIND	203	50	50	0	0	0	0	0	0
Subtotal	2693	2492	2243	1637	1385	962	1186	690	2268
Total	4008.8	3807.8	3558.8	2952.8	2639.8	2237.8	1920.8	1424.8	3410
Losses	153	153	153	153	153	153	153	153	153
Load	4916	4916	4916	4916	4916	4916	4916	4916	4916
Load + Losses	5069	5069	5069	5069	5069	5069	5069	5069	5069
IMPORT	1060.2	1261.2	1510.2	2116.2	2429.2	2831.2	3148.2	3644.2	1659

Post-Cases (Alternative 5 is the only one that differs from the Pre-Case)

Alternative 0: This is an extremely high dispatch case, with all generation in the SDG&E basin at full output.

Alternative 1: This is an extremely high dispatch case, with all generation except the small GTs in the SDG&E basin at full output.

Alternative 2: This is a very high dispatch case, with all generation except the small GTs and peakers in the SDG&E basin at full output.

Alternative 3: This is a high dispatch case, with the small GTs, peakers, and old Encina steam units turned off.

Alternative 4: This is a high dispatch case, with the small GTs, peakers, and old Encina steam units turned off. Sycamore Canyon combined cycle output is set at 500 MW.

Alternative 5: This is a medium dispatch case, with the small GTs, peakers, and old Encina steam units turned off. Sycamore Canyon combined cycle output is set at 500 MW. South Bay output is 500 MW, and the Encina combined cycle plant is turned off.

Alternative 6: This is a high import case (3150 MW) with both the Sycamore Canyon and Encina combined cycle plants turned off. For this case, the old steam units at Encina are at full output, and Palomar Energy is off. South Bay is at full output for this case.

Alternative 7: This is a very high import case (3650 MW) with both the Sycamore Canyon and Encina combined cycle plants turned off. For this case, the old steam units at Encina are at full output, and Palomar Energy is off. South Bay is at full output for this case.

Alternative 8: This is a very high dispatch case, with all generation except the small GTs and peakers in the SDG&E basin at full output. This case has all QFs turned off. South Bay is at full output for this case.

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	POST Alt 0	POST Alt 1	POST Alt 2	POST Alt 3	POST Alt 4	POST Alt 5	POST Alt 6	POST Alt 7	POST Alt 8
QF Generation (Always On)									
BOULEVRD	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0
CABRILLO	1	1	1	1	1	1	1	1	0
DIVISION	47	47	47	47	47	47	47	47	0
GOALLINE	49.8	49.8	49.8	49.8	49.8	49.8	49.8	49.8	0
KYOCERA	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0
MIRAMAR	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0
MURRAY	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0
NOISLMTR	33	33	33	33	33	33	33	33	0
OTAY	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	0
POINTLMA	22	22	22	22	22	22	22	22	0
R.SNTAFE	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0
RINCON	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0
SAMPSON	11	11	11	11	11	11	11	11	0
SANMRCOS	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	0
SWEETWTR	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0
CARLTNHS	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	0
Subtotal	173.8	173.8	173.8	173.8	173.8	173.8	173.8	173.8	0
Priority One (Order Top to Bottom)									
LkHodG1	20	20	20	0	0	0	0	0	20
LkHodG2	20	20	20	0	0	0	0	0	20
OTAYMGT1	170	170	170	170	170	170	170	170	170
OTAYMGT2	170	170	170	170	170	170	170	170	170
OTAYMST1	221	221	221	221	221	221	221	221	221
PENCT1	155	155	155	155	155	155	0	0	155
PENCT2	155	155	155	155	155	155	0	0	155
PENST1	231	231	231	231	231	231	0	0	231
Subtotal	1142	1142	1142	1102	1102	1102	561	561	1142
Priority Two (Order Top to Bottom)									
ENCINA5	329	329	329	0	0	0	329	0	0
ENCINA4	298	299	297	3	5	2	177	22	9
CALPK_BD	49	49	0	0	0	0	0	0	0
CALPK_ES	49	49	0	0	0	0	0	0	0
CALPK_EC	42	42	0	0	0	0	0	0	0
LRKSPBD1	46	46	0	0	0	0	0	0	0
LRKSPBD2	46	46	0	0	0	0	0	0	0
MIRAMRGT	17	0	0	0	0	0	0	0	0
MIRAMRGT	16	0	0	0	0	0	0	0	0
KEARN3AB	15	0	0	0	0	0	0	0	0
KEARN3AB	14	0	0	0	0	0	0	0	0
KEARN3CD	14	0	0	0	0	0	0	0	0
KEARN3CD	14	0	0	0	0	0	0	0	0
ELCAJNGT	13	0	0	0	0	0	0	0	0
ENCINAGT	14	0	0	0	0	0	0	0	0
KEARNGT1	15	0	0	0	0	0	0	0	0
KEARN2AB	14	0	0	0	0	0	0	0	0
KEARN2AB	14	0	0	0	0	0	0	0	0
KEARN2CD	14	0	0	0	0	0	0	0	0
KEARN2CD	13	0	0	0	0	0	0	0	0
RAMCO_ES	0	0	0	0	0	0	0	0	0
RAMCO_OY	0	0	0	0	0	0	0	0	0
ENPEX1	250	250	250	250	250	250	0	0	250
ENPEX2	250	250	250	250	250	250	0	0	250
ENPEX3	250	250	250	250	0	0	0	0	250
ENCINA 6	200	200	200	200	200	0	0	0	200
ENCINA 7	200	200	200	200	200	0	0	0	200
ENCINA 8	360	360	360	360	360	0	0	0	360
CAMPO WIND	203	50	50	0	0	0	0	0	0
SOUTHBY1	165	165	165	165	165	150	165	165	165
SOUTHBY2	165	165	165	165	165	150	165	165	165
SOUTHBY3	320	320	320	320	320	200	320	320	320
Total	3409	3070	2836	2163	1915	1002	1156	672	2169
Total	4724.8	4385.8	4151.8	3438.8	3190.8	2277.8	1890.8	1406.8	3311
Losses	153	153	153	153	153	153	153	153	153
Load	4916	4916	4916	4916	4916	4916	4916	4916	4916
Load + Losses	5069	5069	5069	5069	5069	5069	5069	5069	5069
IMPORT	344.2	683.2	917.2	1630.2	1878.2	2791.2	3178.2	3662.2	1758