CH2M HILL
2485 Natomas Park Drive
Suite 600
Sacramento, CA 95833
Tel 916.920.0300
Fax 916.920.8463

CH2MHILL

August 28, 2006

338307

Dr. James Reede
1516 Ninth Street
Sacramento, CA 95814-5512

Subject: Vernon Power Project (06-AFC-4)
Data Adequacy Supplement A

Dear Dr. Reede:

Please find attached the City of Vernon's Data Adequacy Supplement A. This supplement was prepared in response to the Staff's Data Adequacy Recommentation dated July 28, 2006. It is being submitted to fulfill the data adequacy deficiencies identified by staff.

To meet the filing requirements, 65 hard copies are being submitted to the Commission along with 85 CD copies. However, we are only submitting five copies of the following documents:

- Attachment CR-2.2, Historical Resources Inventory and Evaluation Report
- Attachment TSE-2.4A, the 610-MW Final System Impact Study

Complete copies of those attachments are included on the CD-ROMs.

Please let me know if you need anything else.

Sincerely,

CH2M HILL

John L. Carrier, J.D.
Program Manager

VERNON POWER PLANT
DATA ADEQUACY SUPPLEMENT A
(06-AFC-4)

Submitted by:

City of Vernon

August 25, 2006

CH2MHILL

2485 Natomas Park Drive, Suite 600
Sacramento, California 95833-2937

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Section 1.0 Introduction

The City of Vernon (City) submitted an Application for Certification (AFC) for the Vernon Power Plant (VPP) to the California Energy Commission (CEC) for a nominal 914-megawatt (MW) net/943-MW (gross) combined-cycle natural gas-fired power plant on June 30, 2006. The responses are submitted based on the technical disciplines identified by the CEC and are in response to those items identified in the Data Adequacy Worksheets provided by the Staff on July 28, 2006.

Section 2.0 Data Adequacy Responses

The City is providing the data required for a data adequacy determination by the Commission based on the draft Data Adequacy Worksheets provided by CEC Staff.

Section 2.1 Air Quality

Data Adequacy Deficiency – Please identify specific locations and quantity of emission reduction credits (ERCs) that are earmarked for this project (as requested under Appendix B (g)(8)(J)(ii)).

Data Adequacy Response – The details of ERCs held by the Applicant are provided in Appendix 8.1E (Table 8.1E-3) of the Application for Certification. The specific location where an ERC is generated is not relevant under SCAQMD rules, provided that the ERCs meet the zone requirements set forth in SCAQMD Rule 1303(b)(3). The proposed Vernon Power Plant site is located in Zone 1 "Coastal" area of the South Coast Air Basin; thus, VPP can only use ERCs, which originated in Zone 1 "Coastal". All the CO and VOC ERCs procured by the City for the VPP and listed below (certificated ERCs) originated in Zone 1 "Coastal" area of the South Coast Air Basin. In view of the above, the certificated ERCs listed below are not identified with a specific location.

Pollutant	Certificate Number	Quantity (lb/day)
CO	AQ005789	3
VOC	AQ005991	50
VOC	AQ005992	189
VOC	AQ005993	73
VOC	AQ005994	38
VOC	AQ005999	15

Data Adequacy Deficiency – SCAQMD informed staff that they will respond within 30 days with a written letter regarding their determination of whether the project application is sufficient for them to complete their Determination of Compliance. Appendix B(g)(8)(A).

Data Adequacy Response – SCAQMD has evaluated the permit application package and it has been determined that the permit application package is complete. A copy of the SCAQMD letter dated July 28, 2006 is provided as Attachment AQ-2.1A.

Data Adequacy Deficiency – Please provide a list of offset holders you have entered into negotiations with to supplement those already provided in Table 8.1E-3. Provide this list of the ERCs necessary for VOC, CO, PM10 and SO2 emissions and Reclaim Trading Credits necessary for NOx. You may submit this information to the CEC with a request for confidential status. Appendix B(g)(8)(J)(ii).

Data Adequacy Response – City of Vernon is planning to procure all the required CO (if required), PM10, and SOx ERCs from the Priority Reserve (SCAQMD proposed amended Rule 1309.1). As required under this rule, City has initiated due diligence effort to procure available ERCs from the open market. City has sent letters to the following ERC brokers for

supplying CO, PM10, and SOx ERCs from the open market: (1) Advanced Environmental Controls, (2) AQMS LLC, (3) Bluescape Environmental, Inc., (4) Cantor Fitzgerald, (5) E5, Inc., (6) Earthguard Environmental Services, (7) EcoGas, Inc., (8) Emission Credit Brokers, (9) Environ International Corporation, (10) Environmental Compliance Solutions, (11) Element Markets, Inc., (12) Evolution Markets, (13) Justice and Associates, (14) Market-Based Solutions, (15) Multifuels, LP, (16) National Offsets, (17) Natsource, (18) Oceanair Environmental, LLC, (19) Sierra Engineering Services, and (20) United Power. A sample of the letter sent to the approved ERC brokers and a mailing list is provided as Attachment AQ-2.1B.

City has procured 365 lbs/day of ERCs for the VPP and will require an additional 31 lbs/day of VOC ERCs from the open market. All the 365 lbs/day of VOC ERCs procured by the city were through Evolution Markets (ERC Broker). City has therefore sent a letter to Evolution Markets to arrange to supply an additional 31 lbs per day of VOC for the VPP.

City has procured 130,178 lbs of NOx RTCs for the VPP and will require an additional 164,979 lbs of NOx RTCs from the open market. All the 130,178 lbs of NOx RTCs procured by the city were through Evolution Markets (NOx RTC Broker). City has therefore sent a letter to Evolution Markets to arrange to supply an additional 164,979 lbs of NOx RTCs for the VPP.

We also urge the CEC Staff to rely on the SCAQMD Preliminary Determination of Compliance (PDOC), which will demonstrate how the VPP would comply with all District Rules including the emission offset requirements.

ATTACHMENT AQ-2.1A

South Coast
Air Quality Management District
21865 Copley Drive, Diamond Bar, CA 91765-4178
(909) 396-2000 · www.aqmd.gov

RECEIVED
JUL 31 2006

July 28, 2006

Mr. Donal O'Callaghan
Director of Light & Power
City of Vernon
4305 Santa Fe Avenue
Vernon, CA 90058

SUBJECT: Permit Applications for the Vernon Power Project (VPP), CEC 06-AFC-4, to be located at 3200 Fruitland Avenue, Vernon, CA 90058 (Facility ID No. 148553)

Dear Mr. O'Callaghan:

The South Coast Air Quality Management District (AQMD) has received the subject permit applications on June 30, 2006. As a first step of its reviewing process AQMD has briefly evaluated the applications to determine whether the applications are complete and ready for permit evaluation. Based on our initial review of the submitted materials, it has been determined that the application package is complete. The reference application numbers for this project and our initial review determination are provided in the table below.

Application Number	Equipment Description	Completeness Determination
458389	Gas Turbine, CTG, HRSG, Unit 1	Deemed Complete
458392	SCR/CO Catalyst, Unit 1	Deemed Complete
458394	Gas Turbine, CTG, HRSG, Unit 2	Deemed Complete
458397	SCR/CO Catalyst, Unit 2	Deemed Complete
458398	Gas Turbine, CTG, HRSG, Unit 3	Deemed Complete
458400	SCR/CO Catalyst, Unit 3	Deemed Complete
458402	Oil/Water Separator, No. 1	Deemed Complete
458403	Oil/Water Separator, No. 2	Deemed Complete
458404	Aqueous Ammonia Storage Tank No. 1	Deemed Complete
458406	Aqueous Ammonia Storage Tank No. 2	Deemed Complete
458407	Emergency IC Engine (Fire Water Pump)	Deemed Complete
458424	RECLAIM Permit	Deemed Complete
458388	Initial Title V Permit	Deemed Complete

Please be aware that additional information will be needed during the course of our full engineering evaluation. Your cooperation is key to the timely review of these applications. The following issues have been identified during the completeness review.

- Offset: - The application indicates VPP's intent to acquire credits from AQMD's priority reserve for the purpose of emission offsets, subject to AQMD's rule amendment and approval. Please be aware that, as a prerequisite to accessing the priority reserve, the VPP shall conduct a due diligent

effort to secure available ERCs from the open market. VPP shall report to the AQMD on a monthly basis the due diligent efforts. The following is a preliminary estimate of the offsets required for this project based on Table 4-11 of the AFC.

Pollutant	Amount	Source 1	Source 2
NOx	295,157 lbs first year 329 101 lbs normal year	RTCs	-----
CO	1,404 lbs/day	ERCs	Priority Reserve per Rule1309.1
PM_{10}	909 lbs/day	ERCs	Priority Reserve per Rule1309.1
SOx	108 lbs/day	ERCs	Priority Reserve per Rule1309.1
VOC	396 lbs/day	ERCs	----

- VPP needs to hold sufficient offset credits for CO, PM_{10}, SOx and VOC before the permit to construct can be issued. Additionally, the VPP needs to demonstrate that it holds a sufficient amount of NOx RTCs before the project commences operation. The project folder contains a preliminary process flow diagram (PFD) in which VPP shall provide updates to AQMD when a final detailed PFD is drafted.

- Our initial review also indicates that the project will require public notice per Rule 212, 1309.2, and 3006. The AQMD will prepare and distribute the public notice. In accordance with Rule 212, VPP may be required to also distribute the notice to nearby residents.

If you have any questions regarding your permit applications, please contact Mr. Chandrashekhar S. Bhatt at (909) 396-2653.

Sincerely,

Pang Mueller
Senior Manager
Refinery, Energy and RECLAIM Administration
Engineering and Compliance Division

Attachments
CM:TV:JTY:csb

cc: Dr. Krishna Nand, City of Vernon
Mohsen Nazemi, AQMD
Dr. James Reede, CEC
Joe Loyer, CEC

c:\vernon-city-VPP-proj-completeness-ltr

Attachment AQ-2.1B, Sample ERC Letters

CITY COUNCIL

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Mayor

THOMAS A. YBARRA
Mayor Pro-Tem

WM. "BILL" DAVIS
Councilman

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Councilman

W. MICHAEL McCORMICK
Councilman

City of Vernon
100th Year

4305 Santa Fe Avenue, Vernon, California 90058
telephone (323) 583-8811

SOL BENUDIZ
Police Chief

MARK C. WHITWORTH
Acting Fire Chief

LEWIS J. POZZEBON
Director of Environmental Health

S. KEVIN WILSON
Director of Community Services

SHARON L. DUCKWORTH
Acting City Treasurer

August 22, 2006

Ms. Samantha Unger
Evolution Markets
10 Bank Street, 4th Floor
White Plains, NY 10606

Subject: NOx Reclaim Trading Credits for the Vernon Power Plant

Dear Ms. Unger,

The City of Vernon (City) plans to install a new combined cycle power plant at 3200 Fruitland Avenue, in the City of Vernon. The new combined cycle facility will consist of three natural gas fired combustion turbine generators, three heat recovery steam generators, and one steam turbine generator. In addition, there will be one cooling tower and an emergency diesel fuel fired firewater pump. The proposed Vernon Power Plant (VPP) will emit oxides of nitrogen (NOx) in addition to other criteria pollutants. VPP will be under the South Coast Air Quality Management District's (SCAQMD) Regional Clean Air Incentives Market (RECLAIM) program, which requires a demonstration that VPP will hold sufficient amount of NOx Reclaim Trading Credits (RTCs) before the project commences operation.

The City of Vernon has estimated that approximately 295,157 lbs of NOx RTCs will be required during the first year of VPP's operation. It is expected that the initial commissioning phase for the VPP will start in the third quarter of 2009. The City has already procured 130,178 lbs of the required NOx RTCs; thus, the City has to procure only an additional 164,979 lbs of NOx RTCs.

The City of Vernon requests a proposal from your organization for arranging to supply 164,979 lbs of NOx RTCs. Please send your response to Mr. Sergio Rodriguez, Energy and Gas Trading Manager, at the following address: City of Vernon, 4305 Santa Fe Avenue, Vernon, CA 90058. It should be noted that the proposed Vernon Power Plant site is located in Coastal Zone of the South Coast Air Basin.

Please contact Dr. Krishna Nand at (323) 583-8811, Ext 211, if you have any questions or if you need additional information.

Sincerely,

FOR DOC

Donal O'Callaghan
Director of Light & Power
City of Vernon

cc: Dr. Krishna Nand
Sergio Rodriguez
Document Control

CITY COUNCIL

LEONIS C. MALBURG
Mayor

THOMAS A. YBARRA
Mayor Pro-Tem

WM. "BILL" DAVIS
Councilman

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Councilman

W. MICHAEL McCORMICK
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City of Vernon

100th Year

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S. KEVIN WILSON
Director of Community Services

SHARON L. DUCKWORTH
Acting City Treasurer

August 22, 2006

Ms. Samantha Unger
Evolution Markets
10 Bank Street, 4th Floor
White Plains, NY 10606

Subject: VOC Emission Reduction Credits for the Vernon Power Plant

Dear Ms. Unger,

The City of Vernon (City) plans to install a new combined cycle power plant at 3200 Fruitland Avenue, in the City of Vernon. The new combined cycle facility will consist of three natural gas fired combustion turbine generators, three heat recovery steam generators, and one steam turbine generator. In addition, there will be one cooling tower and an emergency diesel fuel fired firewater pump. The proposed Vernon Power Plant (VPP) will emit volatile organic compounds (VOC) in addition to other criteria pollutants. Under South Coast Air Quality Management District (SCAQMD) Regulation XIII, the City of Vernon must offset VOC emissions through the use of emission reduction credits (ERCs).

The City of Vernon has estimated that approximately 396 lbs per day of VOC ERCs will be required for the VPP. The City has already procured 365 lbs/day of VOC ERCs from the open market; thus, the City has to procure only an additional 31 lbs/day of VOC ERCs.

The City of Vernon requests a proposal from your organization for arranging to supply 31 lbs/day of VOC ERCs from the open market. Please send your response to Mr. Sergio Rodriguez, Energy and Gas Trading Manager, at the following address: City of Vernon, 4305 Santa Fe Avenue, Vernon, CA 90058. It should be noted that the proposed Vernon Power Plant site is located in Zone 1 of the South Coast Air Basin; thus, VPP can only use ERCs, which originated in Zone 1.

Please contact Dr. Krishna Nand at (323) 583-8811, Ext 211, if you have any questions or if you need additional information.

Sincerely,

For Doc

Donal O'Callaghan
Director of Light & Power
City of Vernon

cc: Dr. Krishna Nand
Sergio Rodriguez
Document Control

Attachment AQ-2.1B
Mailing List of Brokers for CO, PM10 & SOx

Advanced Environmental Controls 4019 Westerly Place, Suite 102 Newport Beach CA 92660	Mr. Viji Sadasivan aecno1@aol.com (949) 756-3160, (800) 546-1604 www.advancedenvironmentalcontrols.com
AQMS LLC 2001 S Barrington Ave, Suite 200 Los Angeles CA 90025	Mike Heydari mheydari@aqms.com (310) 478-6699, fax (310) 478-6009
Bluescape Environmental, Inc. 9939 Hibert St San Diego CA 92131	James A. Westbrook, CCM jwestbrook@bluescapeinc.com (858) 695-9200, fax (858) 695-9295
Cantor Fitzgerald 27801 Golden Ridge Lane San Juan Capistrano CA 92675	J. Margolis, R. Langdon, C. Grandstaff (800) 228-2955 cgrandstaff@cantor.com
E5, Inc. 11358 Knott St Garden Grove CA 92841	Charles Diep, Steve Walters cdiep@e5.com (714) 373-3800, fax (714) 373-3828
Earthguard Environmental Services PO Box 3220 Manhattan Beach CA 90266	Richard Friedman ricfriedman@aol.com (310) 796-9905, fax same
EcoGas, Inc. 8350 Santa Monica Blvd, Suite 108 Los Angeles CA 90069	Kenneth Scott ken@ecogas.com (323) 650-2882, fax (323) 650-2906
Emission Credit Brokers 6565 W. Loop South, Suite 560 Bellaire, TX 77401	Daniel Sloan credits@emissioncreditbrokers.com (832) 200-9010, ext 104, fax (832) 200-9011
Environ International Corp. 707 Wilshire Blvd., Suite 4950 Los Angeles CA 90017	Joe Hower jhower@environcorp.com (213) 943-6319
Environmental Compliance Solutions 171 Pier Ave., Suite 337 Santa Monica CA 90405	Erin Sheehy envcomp@earthlink.net (310) 664-1396, fax (310) 664-0517
Element Markets, Inc. 1 Sugar Creek Center Blvd, Suite 250 Sugarland, TX 77478	Randy Lack credits@elementmarkets.com (281) 207-7200, cell (281) 773-1115, fax (713) 523-4475 rlack@elementmarkets.com
Evolution Markets 10 Bank Street, 4th Floor White Plains, NY 10606	Samantha Unger sunger@evomarkets.com NY: (914) 323-0267 CA: (415) 955-0561

Justice and Associates 4155 Outer Traffic Circle Long Beach CA 90804-2111	Mike Justice lwoo@justiceassociates.com (562) 961-3494, fax (562) 961-3493
Market-Based Solutions PO Box 29486 Los Angeles CA 90029-0486	Jon Owyang owyang@mbsmail.com (818) 543-5925 x103, fax (818) 548-5740
Multifuels, LP 6363 Woodway, Suite 415 Houston, TX 77057	Liz Paris (832) 251-8750 lparis@multifuels.com
National Offsets 141 North Street Pittsfield, MA 01201	Brian Anderson, Jim Bellmore (413) 442-0776 noffsets@bellatlantic.net
Natsource 100 William Street, Suite 2005 New York NY 10038	David Oppenheimer (888) 562-8762, fax (212) 232-5353 doppenheimer@natsource.com
Oceanair Environmental, LLC 4220 Donlon Rd Somis CA 93066	Mahesh Talwar mahesh@oceanairllc.com (805) 386-1882, fax (805) 504-1618
Sierra Engineering Services 17752 Skypark Circle, Suite 260 Irvine CA 92614	Saeed Ahdout, Shari Isles sahdout@sierraeng.net (949) 833-3455, fax (949) 833-2970
United Power 187 Danbury Road Wilton, CT 06897	Andy Kruger akruger@unitedpwr.com (203) 834-0103, fax (203) 761-9525 Cell (203) 915-9005

CITY COUNCIL

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Director of Environmental Health

S. KEVIN WILSON
Director of Community Services

SHARON L. DUCKWORTH
Acting City Treasurer

August 21, 2006

Mr. Andy Kruger
United Power
187 Danbury Road
Wilton, CT 06897

Subject: CO, PM10 and SOx Emission Reduction Credits for the Vernon Power Plant

Dear Mr. Kruger,

The City of Vernon (City) plans to install a new combined cycle power plant at 3200 Fruitland Avenue, in the City of Vernon. The new combined cycle facility will consist of three natural gas fired combustion turbine generators, three heat recovery steam generators, and one steam turbine generator. In addition, there will be one cooling tower and an emergency diesel fuel fired firewater pump. The proposed Vernon Power Plant (VPP) will emit criteria pollutants. Under South Coast Air Quality Management District (SCAQMD) Regulation XIII, the City of Vernon must offset emissions of criteria pollutants through the use of emission reduction credits (ERCs).

The City of Vernon has estimated that approximately 1,404 pounds per day of carbon monoxide (CO), 909 pounds per day of particulate matter of diameter less than 10 microns (PM10), and 108 pounds per day of oxides of sulfur (SOx) ERCs will be required for the Vernon Power Plant. CO, PM10 and SOx ERCs are difficult to obtain on the open market. Therefore, the City is planning to acquire the emission credits from South Coast Air Quality Management District's (SCAQMD) priority reserve. SCAQMD's proposed amended Rule 1309.1 outlines the conditions that must be met in order to secure emission credits from the priority reserve. This rule requires the completion of a due diligence effort to secure available ERCs from the open market. In order to comply with this proposed amended rule, the City of Vernon requests a proposal from your organization for arranging to supply the required CO, PM10, and SOx ERCs from the open market.

Please send your response to Mr. Sergio Rodriguez, Energy and Gas Trading Manager, at the following address: City of Vernon, 4305 Santa Fe Avenue, Vernon, CA 90058. It should be noted that the proposed Vernon Power Plant site is located in Zone 1 of the South Coast Air Basin; thus, VPP can only use ERCs, which originated in Zone 1.

Please contact Dr. Krishna Nand at (323) 583-8811, Ext 211, if you have any questions or if you need additional information.

Sincerely,

For Doc

Donal O'Callaghan
Director of Light & Power
City of Vernon

Cc: Dr. Krishna Nand
Sergio Rodriguez
Document Control

Section 2.2 Cultural Resources

Data Adequacy Deficiency – The City of Vernon has the potential for containing significant cultural resources, particularly with respect to historic building and related structures.

It is our understanding that a historical architectural survey is currently being conducted, so the report of this survey was not included in the AFC. Separate submission of this report is needed. Appendix B(g) (2) (B)

Data Adequacy Response – A Historical Resources Inventory and Evaluation Report is provided as Attachment CR-2.2. Due to the size of this document, five hard copies are being provided to the CEC. Electronic copies will be provided to others upon request.

ATTACHMENT CR-2.2

Historical Resources Inventory and Evaluation Report

Due to the size of this document, five copies have been submitted to the CEC under separate cover. Complete copies are contained on the CD-ROM version of the Data Adequacy Supplement A and will be provided in hard copy to the parties upon request.

ATTACHMENT CR-2.2

Historical Resources Inventory and Evaluation Report

Vernon Power Plant Project

Prepared for:

CH2MHill

Prepared by:

JRP Historical Consulting
1490 Drew Avenue, Suite 110
Davis, California 95616

July 2006

SUMMARY OF FINDINGS

The City of Vernon proposes to develop the Vernon Power Plant (VPP); a natural-gas-fired generating facility in the south-central portion of the City in Los Angeles County (County), California. The project is located at 3200 Fruitland Avenue, on the southeast corner of Boyle and Fruitland avenues, in the City of Vernon, Los Angeles County, California. The Project site will occupy approximately 13.7 acres in the northern portion of the 27-acre parcel, leaving the southern 13.3 acres available for temporary equipment laydown and construction parking. VPP will be a 914-megawatt net combined-cycle generating facility configured using three natural-gas-fired combustion turbines and one steam turbine. Two transmission line options are being considered to connect the plant to Southern California Edison's Laguna Bell Substation. Natural gas for the facility will be delivered via approximately 2,300 feet of new 24-inch pipeline that will connect to Southern California Gas Company's existing gas transmission line (Line 765). Potable water for drinking, safety showers, fire protection, service water, and sanitary uses will be served from the City's potable water system through two 10-inch pipelines connecting to the City's water mains. One would connect in Boyle Avenue and the other in Fruitland Avenue. Recycled water for industrial purposes will be provided by the Central Basin Municipal Water District through a water line connecting to its recycled water line in Boyle Avenue, adjacent to the plant site. The industrial wastewater and sanitary waste will be sent to Sanitation Districts of Los Angeles County via a new 2,400-foot section of City sanitary sewer line.

The permitting for this project requires the applicant to comply with the Warren-Alquist Act, which has been determined to be the functional equivalent of the California Environmental Quality Act (CEQA). It requires the applicant to assess the impact this project may have on historical resources. JRP Historical Consulting LLC is subcontracted to CH2MHill to assist in the preparation of compliance documents regarding historical resources for this project. JRP inventoried and evaluated the site for the VPP and adjacent parcels to assess whether it includes any properties that could be considered historical resources under CEQA. Historical resources include properties listed in, determined eligible for, or that appear eligible for, listing in the National Register of Historic Places (NRHP), the California Register of Historical Resources (CRHR), or are eligible for local agency historic resource inventories. This study was conducted in accordance with Section 15064.5(a)(2)-(3) of the CEQA Guidelines using the criteria outlined in Section 5024.1 of the California Public Resources Code. Changes to a historical resource could be considered a significant impact on the environment under CEQA.

The general location of the study area for this project that was surveyed for potential historical resources is depicted in the figures provided in **Appendix A**. This inventory included study of the proposed VPP main plant site and adjacent parcels, as well as the routes of linear components of the project (see Sections 1 and 2).

Three historical resources were identified during the inventory for this project: 1) The Station A power plant (located northwest of the VPP main site); 2) the westernmost buildings of the Owens Illinois glass plant (located west of the VPP main site); and 3) the potential Central Manufacturing District (CMD) historic district, southeast of the intersection of Downey Road and District Boulevard (located northeast of the VPP main site). The Station A power plant (Vernon Power & Light Department) was identified as part of a previous study and did not

require additional evaluation for the VPP project, but is a historical resource for the purposes of CEQA. The Owens Illinois glass plant resources and the potential CMD historic district were identified as part of this study. The resources and their historic status are described in Section 4 and copies of the evaluation forms from the previous studies appear in **Appendix B**.

The construction and operation of the proposed VPP project will not cause a significant adverse change to historic architectural resources and will not constitute a significant impact on these resources for the purposes of CEQA.

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1. PROJECT DESCRIPTION

The City of Vernon proposes to develop the Vernon Power Plant (VPP); a natural-gas-fired generating facility in the south-central portion of the City in Los Angeles County (County), California. The project is located at 3200 Fruitland Avenue, on the southeast corner of Boyle and Fruitland avenues, in the City of Vernon, Los Angeles County, California. The Project site will occupy approximately 13.7 acres in the northern portion of the 27-acre parcel, leaving the southern 13.3 acres available for temporary equipment laydown and construction parking. VPP will be a 914-megawatt net combined-cycle generating facility configured using three natural-gas-fired combustion turbines and one steam turbine. Two transmission line options are being considered to connect the plant to Southern California Edison's Laguna Bell Substation. Natural gas for the facility will be delivered via approximately 2,300 feet of new 24-inch pipeline that will connect to Southern California Gas Company's existing gas transmission line (Line 765). Potable water for drinking, safety showers, fire protection, service water, and sanitary uses will be served from the City's potable water system through two 10-inch pipelines connecting to the City's water mains. One would connect in Boyle Avenue and the other in Fruitland Avenue. Recycled water for industrial purposes will be provided by the Central Basin Municipal Water District through a water line connecting to its recycled water line in Boyle Avenue, adjacent to the plant site. The industrial wastewater and sanitary waste will be sent to Sanitation Districts of Los Angeles County via a new 2,400-foot section of City sanitary sewer line.

2. RESEARCH AND FIELD METHODS

The study area for historic architectural resources for this project consists of the main VPP project site, as well as the proposed and alternative linear component routes leading from the main site. The steps taken to identify possible historical resources, and the potential impacts the project may have on historical resources, follow CEQA Guidelines Section 15064.5 and began with literature review and research. JRP reviewed the Office of Historic Preservation Historic Property Data File and coordinated with CH2MHill regarding their records search from the South Central Coastal Information Center of the California Historical Resources Information System at CSU Fullerton for this project. JRP also coordinated with the Director of the Vernon Historic Preservation Society to identify locally inventoried or evaluated resources. JRP reviewed other previous studies and local historical resource inventories conducted within these study areas. JRP reviewed the National Register Information System database for properties listed in the National Register of Historic Places (NRHP), the California Historic Resources Information System, California Historical Landmarks, and California Points of Historical Interest, to identify whether resources in the study area had been previously evaluated.[1] The review of NRHP listed or eligible properties was necessary because these properties would automatically be eligible for listing in the California Register of Historical Resources (CRHR) and would be considered historical resources for the purposes of CEQA.

[1] National Park Service, National Register Information System, online database: http://www.nr.nps.gov/ and http://www.nationalregisterofhistoricplaces.com/CA/state.html (accessed March 2006); Office of Historic Preservation, "Directory of Properties in the Historic Property Data File for Los Angeles County," (December 2005); Department of Parks and Recreation, *California Inventory of Historic Resources* (March 1976); Office of Historic Preservation, *California Historical Landmarks* (Sacramento: California State Parks, 1996); and Office of Historic Preservation, *California Points of Historical Interest* (Sacramento: California State Parks, May 1992).

The results of this research showed that:

- There are no historic properties previously listed in, or determined eligible for listing in, the NRHP within the study area (OHP Status Code 1 or 2).
- One resource, Station A of the Vernon Light & Power Department, has been identified as a historical resource for the purposes of CEQA and is eligible for listing in the CRHR (OHP Status Code 3).
- The La Mesa Battlefield is a California Historical Landmark No. 167. It has not been automatically listed in the CRHR because automatic-listing is reserved for Landmark Nos. 770 and higher. The site is located at 4500 Downey Road. This historical battlefield served as a campsite for California forces during the United States occupation of California during the Mexican War. The last military action on the California front, the battle of La Mesa, was fought here on January 9, 1847. This Landmark is located well outside of the VPP APE and will not be impacted.
- More than 40 other resources within a 0.5 mile radius of the VPP plant site and linear facilities properties have been previously evaluated for historical significance. None of these previously inventoried properties are considered historically significant and all have been determined ineligible for nomination to the NRHP and CRHR (OHP Status Code 6).
- A previous inventory addressed historical resources both in and near the study area for this project, but did not provide adequate evaluations. The CEC has requested re-evaluation of those resources located adjacent to the VPP main site for this project.

The inventory and evaluation of historical resources for this project identified potential historical resources that had not been previously addressed. The summary descriptions and historic status of the evaluated properties are found in Section 4 and evaluation forms appear in **Appendix B**.

The study area is located in a heavily commercial and industrial area. The proposed VPP power plant location was formerly used as an aluminum manufacturing facility operated by the Aluminum Company of America (Alcoa). The linear natural gas supply, sewer, recycled water, and double-circuit 230 kV transmission line routes are generally contained within existing disturbed city streets or asphalted parking areas. JRP conducted an intensive survey of historic architectural resources surrounding the main project site and conducted a reconnaissance level survey of the linear project components. This survey of historic architectural resources and its methodology was developed in consultation with Beverly Bastian of the CEC and included inventory and evaluation of all resources forty-five years old or older immediately adjacent to the VPP project site. The resources in and adjacent to the VPP plant site have been evaluated for individual significance, as well as for their potential to contribute to a possible historic district. The reconnaissance level, or wind-screen survey, of the linear components of the project included streetscape photographs, and a sensitivity analysis of the potential historic district, but did not require inventory of individual resources.

JRP conducted fieldwork and research in Vernon and Los Angeles on June 12-13, 2006 recording buildings and structures within the study area on DPR 523 forms, as well as conducting the reconnaissance level survey of the linear components of the project. JRP prepared a historic context to address the themes and background for resources considered in

both the intensive level and reconnaissance level surveys (see Section 3). JRP evaluated the resources in accordance with Section 15064.5(a)(2)-(3) of the CEQA Guidelines, using the criteria outlined in Section 5024.1 of the California Public Resources Code, and also under NRHP and CRHR criteria, on the attached DPR 523 forms. JRP conducted research in various repositories and online resources, including: Los Angeles County property records; City of Vernon building permit records and aerial photographs; the Los Angeles Public Library; Shields Library at the University of California, Davis; and the California State Library, Sacramento.

The description and historical evaluations of the survey population properties are summarized in Sections 4 and 5. Refer to the references listed in Section 7 for a complete listing of materials consulted, and to Section 6 for JRP staff professional qualifications. The DPR 523 forms are included in **Appendix B.**

3. HISTORIC OVERVIEW

The following section provides historical background and information regarding the history of the development of the City of Vernon, with a focus on the study area surveyed for this project. This information provides the appropriate historical context within which to evaluate the historical significance of the resources within the study area.

3.1. History of Vernon and its Industrial Growth

Early Vernon to 1920

The present City of Vernon is located about five miles southeast of downtown Los Angeles, near the Los Angeles River, in an area that was rural and sparsely populated well into the twentieth century. During these early years, it consisted of large uncultivated areas and a few scattered vegetable, orange and rose farms, and ranches devoted to raising livestock. A French-Basque immigrant named John B. Leonis moved to the area in 1896 and opened a general merchandise store, and later a feed barn and a winery. Leonis located on Downey Avenue, which, along with nearby Santa Fe Avenue, were among the few roads that connected Los Angeles and the port at Long Beach. Rail facilities included the Los Angeles Terminal Railroad's San Pedro Division (later the Union Pacific) that paralleled Downey Avenue, and also connected Los Angeles with Long Beach (Figure 1 and Figure 2). Two other railroads passed in close proximity to what would later become Vernon: the Southern Pacific Railroad, and the Atchison Topeka and Santa Fe (ATSF). The latter's San Diego Branch and Redondo Branch met at Ballona Junction just north of Vernon. Leonis recognized the potential of the site, and in 1905, along with brothers Thomas J. and James J. Furlong, incorporated the City of Vernon. Leonis and the Furlongs conceived of the 2.4 square mile city as an exclusively industrial municipality, although in the year of its creation Vernon's fledging industry consisted of two factories and two lumberyards.[2]

Figure 1. 1900 map of northern part of the future City of Vernon showing buildings and railroads.

[2] James Kilty, *Leonis of Vernon* (New York: Geneva Books, 1963), 17-19, 22, 49; *City of Vernon: A Collection of Oral Histories* (Fullerton, California: CSU, Fullerton, 1995), 8; Greg Hise, "'Nature's Workshop' Industry and Urban Expansion in Southern California, 1900-1950." *Journal of Historical Geography*, 27, no.1 (2001): 84-85; "John B. Leonis, Ex-Mayor of Vernon, Dies," *Los Angeles Times*, 20 October 1953; "More Towns and Prosperous Agricultural Settlements," *Los Angeles Times*, 1 January 1887; "CMD Salutes Vernon—A City of Industry," *Central Manufacturing District Magazine* 38 no. 4 (1961): 9.

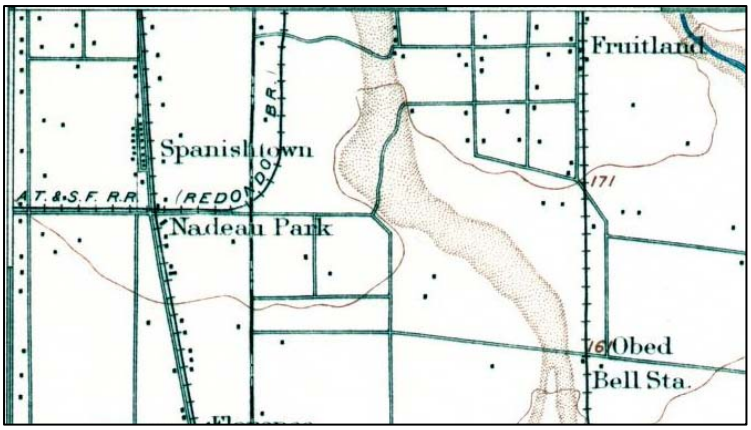

Figure 2. 1902 map of the southern part of the future city of Vernon.

Leonis's vision of a solely industrial city did not happen overnight. In fact, one of its first industries was as an entertainment venue for the rich and famous of Los Angeles. A primary attraction was the sale of alcohol, which remained legal in Vernon even though prohibitionists asserted their control over nearby Los Angeles during the 1910s and made it a dry city. Other entertainment, including championship boxing, golf, professional baseball, musical performances, and the longest bar in the world, lured Los Angeles's middle and upper classes to Vernon for recreation. Some suggest that this early emphasis on entertainment enterprises led to later industrial development because it allowed entrepreneurs like Leonis to court wealthy industrialists and convince them of Vernon's virtues. As the owner of considerable landholdings in Vernon, Leonis initially offered free parcels to prospective businesses to hasten industrial development. The Los Angeles Area Chamber of Commerce also assisted local efforts through its Industrial Department, which was created in 1918 to promote the advantages of Southern California for manufacturing to companies across the nation.[3]

Vernon's assets as a location for industry went beyond inebriated boosterism by the local oligarchy. The city was situated between Los Angeles and the port at Long Beach, was on or near the lines of three major railroads, and it had access to a constantly improving network of roads and highways. Besides transportation infrastructure, the city founders offered inexpensive power, and water, and a tax rate among the lowest in the region. By 1913, Vernon received gas from the Midway gas fields in the southern San Joaquin Valley and electricity from a Pacific Light and Power plant in Fresno. Other factors that contributed to industrialization were a policy prohibiting construction of residences, low labor costs, and the paving of all streets in the city.[4]

In time, the unique combination of characteristics in Vernon did draw industry. Nine industries opened plants in Vernon in 1912 and by the end of the following year, it was home to over thirty industries and referred to by the *Los Angeles Times* as an "industrial suburb." By 1915, the Salt

[3] Kilty, *Leonis of Vernon*, 19, 38, 216, 217, 220; *City of Vernon*, 2, 10; "The Undiscovered City." *Fortune* (June 1949): 82; "John B. Leonis, Ex-Mayor of Vernon, Dies," *Los Angeles Times*, 20 October 1953; Hise, "'Nature's Workshop,'" 76.

[4] Kilty, *Leonis of Vernon*, 41, 239; Pete Moruzzi, "Vernon: Southern California's First "Exclusively Industrial" City." *L.A. Conservancy News*, September/October 1997: 4; "Vernon—The Coming Industrial and Manufacturing Center of Los Angeles County," *Los Angeles Times* 1 January 1915, p.VI 17; Greg Hise, "'Nature's Workshop,'" 76; "Like Smell of Smoke and Freely Admit It," *Los Angeles Times*, 21 December 1913, V1.

Lake Railway laid two miles of switching track in Vernon to connect its industries with the nearby main lines. Some of these first industries were oil refineries, which located in the northern part of the city during the 1910s. A district of stockyards and slaughterhouses also established themselves in the area north of Vernon Avenue and east of Santa Fe Avenue. (These businesses were all located north of the study area for this project.) Oil refining and meat processing were important industries in the early years of Vernon's development, and continued to be for many years.[5]

Other industries such as paper manufacturing, wood processing, and iron works built plants in the area south of Vernon Avenue, with much of this early growth occurring west and south of the study area for this project, between Santa Fe Avenue and Alameda Street and along South Boyle Avenue near Slauson Avenue (Figure 3).

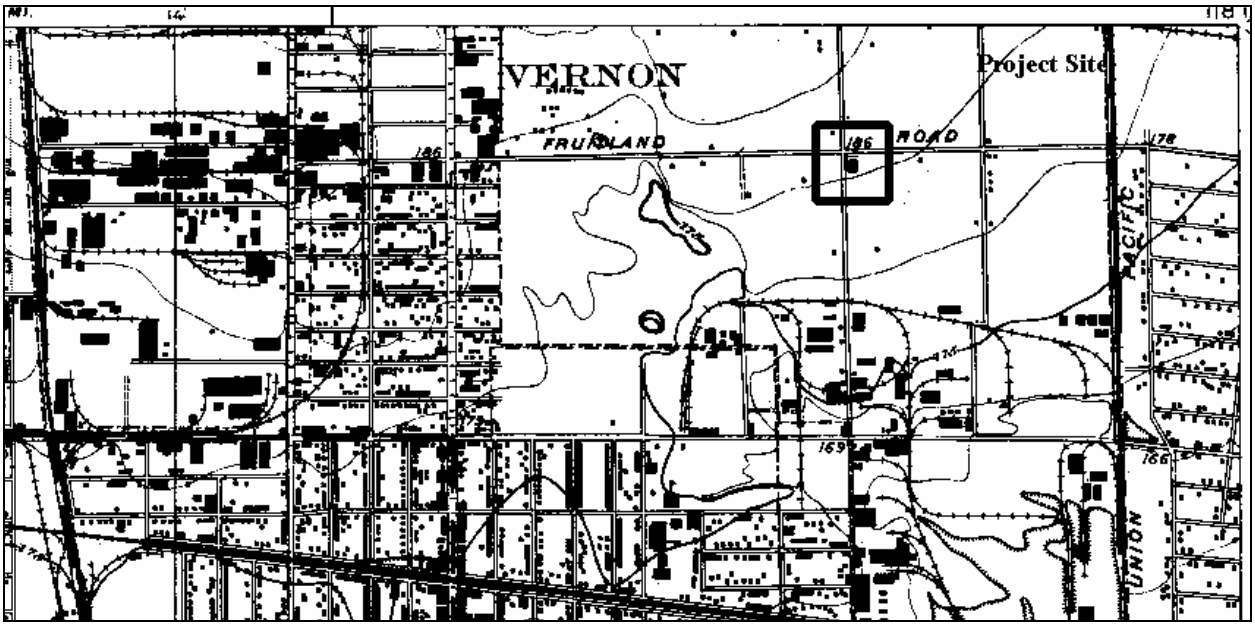

Figure 3. 1924 USGS map showing undeveloped land along Fruitland between Pacific and Downey. The study area is depicted by the square box at the intersection of Fruitland and South Boyle. The Central Manufacturing District was established in the empty area in the top right corner, northeast of Fruitland and Downey. Slauson is the east-west road crossing from side to side at the bottom third of the map and the Whittier line of the Pacific Electric Railway runs at an angle from left to right at the bottom of the map.

The American Can Company constructed a massive plant on five acres at Santa Fe and 48th Street beginning in 1916. The factory was heralded by the *Los Angeles Times* as "one of the most important industrial acquisitions yet made by Los Angeles," and enhanced Vernon's status as an industrial city. The City of Vernon expanded to the east at about the same time to accommodate its growth, subdividing land between Pacific Avenue and Soto Street. The latter forming the eastern boundary of Vernon at that time. The project site and study area for the VPP is located immediately to the east of this tract. This area was subdivided as part of the Five Hundred Acre

[5] "Like Smell of Smoke," V1; "Vernon—The Coming Industrial," VI-17; "Great Can Factory To Be Started This Week," *Los Angeles Times*, 6 February 1916, V1; "Vernon: Southern California's First," 4.

Tract of the Los Angeles Fruitland Association. Research did not reveal the date of this subdivision, but it likely occurred after 1915 as Vernon expanded to the east.[6]

3.1.1. Pacific Electric Railway

In the early twentieth century, the Pacific Electric Railway (PE) built lines near Vernon's western and southern borders. The proposed route of a transmission line for the VPP would parallel Randolph Street and the former PE right-of-way, south of the study area for this project (see Section 4.2.2). Henry E. Huntington, the nephew of the great rail baron Collis P. Huntington of the Southern Pacific Railroad, incorporated the PE on October 29th 1901. At its peak in the 1920s, Pacific Electric operated 6,200 trains daily over 1,061 miles of track. It was without a question, the world's largest interurban electric railway.[7] A handful of influential men stood along side Huntington in the venture, serving as directors and investors: I.W. Hellman, a wealthy banker from Bavaria, A. Borel and Christian deGuigne, associates from Huntington's time spent working for the South Pacific railroad in San Francisco, Epes Randolph, a close friend, former superintendent of Southern Pacific interests in Arizona and generally recognized as the brilliant architect of the southland railway system, as well as John D. Bicknell, an attorney, and J.S. Slauson, owner of the immense Azusa Ranch. The directors elected Randolph as Vice-president, I.W. Hellman as Treasurer, Edward E. Bacon as secretary, while Huntington served as President.[8]

The Pacific Electric Railway began as an electric trolley service, transporting passengers to various parts of the Los Angeles basin. Early on, in 1898, Huntington acquired the declining Los Angeles Railway and renovated and incorporated its interurban system. The Huntington group also bought up other lines in downtown Los Angeles, establishing the Los Angeles Interurban Railway (LAIU), all the while harboring visions of a transportation system that would connect the city with its environs.[9] With the death of his uncle in the summer 1900, Huntington divested himself of his Southern Pacific shares in San Francisco and focused his full attention to his assets in southern California.[10]

Having already established a base in Los Angeles, Huntington made arrangements to construct a line to Long Beach in 1901, then just a village resort. Long Beach citizens were somewhat

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[6] "Like Smell of Smoke," V1; "Vernon—The Coming Industrial," VI-17; "Great Can Factory," V1; "Vernon: Southern California's First," 4; Los Angeles County, Subdivision Maps, "Tract #2836," Map Book 35, page 88; *Security Map of the City of Los Angeles*. Los Angeles: Security Savings Bank, 1908; USGS. *Watts Quadrangle*. Washington, D.C.: USGS, 1924; County of Los Angeles, Assessor's Plat Maps, accessed online at www.lacountyassessor.com.

[7] Raphael Long, *Pacific Electric's Big Red Cars: A Pictorial Account of the Decline of the World's Largest Interurban Electric Railway System*, (Universal City, CA: T.C. Phillips, 1966), 1.

[8] *Pacific Electric Corporate History 1885-1911* Reprinted by Orange Empire Railway Museum, 1998, 237.

[9] Huntington's optimism about development in the Los Angeles area is demonstrated in his 1905 remark: "before many years it will be the largest city in the West…one of the great centers of industrial energy in the country." In 1909 he even asserted "within twenty-five years Los Angeles will be the center of civilization." James Thorpe, *Henry Edwards Huntington: A Biography*, (Berkeley: University of California Press, 1994), 179.

[10] William B. Friedricks, *Henry E. Huntington and the Creation of Southern California*, (Columbus, Ohio: Ohio State University Press, 1992), 55.

hesitant, but approved the plan accepting the winning bid of $9,600 from the Huntington group.[11] The Long Beach route headed directly south from Los Angeles through Slauson Junction (four miles south of the city) and then to Watts before ending at Long Beach. Even before workers began constructing the Long Beach line, Huntington purchased the interurban line from Los Angeles to Pasadena and started planning for a line connecting the latter with Alhambra. With the exception of a brief strike in downtown Los Angeles in April 1903, construction boomed in the following years with lines extending to all centers of the valley, extending out as far as San Bernadino and Riverside. With the purchase of the San Bernadino Valley Traction Company in 1907, Huntington's vast trolley empire stretched beyond the Los Angeles basin.[12]

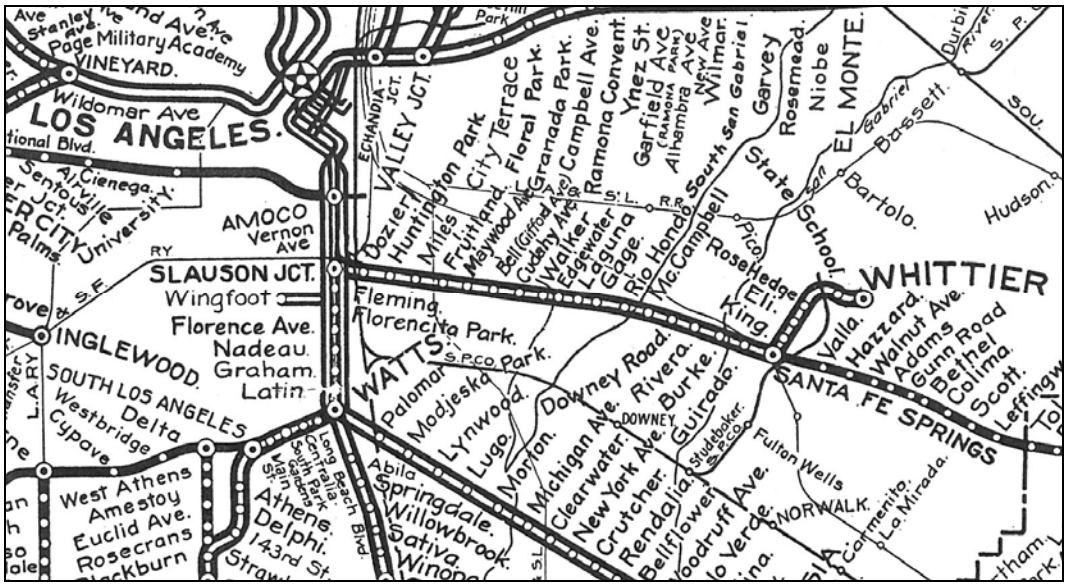

Figure 4. Map showing the Huntington Park, Fruitland, Maywood, and Bell stops along the Whittier line, ca. 1920.

The investment group organized the Huntington Land and Improvement Company in 1902 to buy up "immense tracts of land" in present-day Alhambra, Pasadena, San Marino, and South Pasadena and to manage the real estate transactions for land served by PE. The Huntington group secured large sums of money by selling San Gabriel Valley real estate through the Pacific Electric Land Company, another subsidiary founded in 1903.[13] Huntington was able to avoid bonded indebtedness throughout this aggressive development program, in large part because of his personal involvement. He often surveyed land himself and worked long hours, habits that realized huge profits as the Los Angeles area nearly doubled in population. Rapidly funneling his financial resources into the southland, Huntington increased his investment in the Los Angeles basin from approximately $200,000 in 1901, to over $4.5 million in 1917.[14]

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[11] Spencer Crump, *Ride the Big Red Cars: How Trolleys Helped Build Southern California*, (Costa Mesa, CA: Trans-Anglo Books, 1970), 50.

[12] Charles Wolleberg, "Working on El Traque: The Pacific Electric Strike of 1903," *Pacific Historical Review*, 42:3, 1973, 358-369; William B. Friedricks, "A Metropolitan Entrepreneur Par Excellence: Henry E. Huntington and the Growth of Southern California, 1898-1927," *Business Historical Review*, 63:2, 1989, 329.

[13] *Pacific Electric Corporate History*, 322.

[14] Thorpe, *Henry Edwards Huntington*, 184; Friedricks, "A Metropolitan Entrepreneur Par Excellence…," 329.

Pacific Electric constructed a single line from the junction at Slauson to the industrial complex at Whittier from 1902 to 1903 (Figure 6). The proposed transmission line for the VPP runs along a portion of this former PE Whittier line. Then surrounded by ranch land, development of the Whittier line followed the same methods Huntington and Randolph employed elsewhere in the valley: purchase relatively isolated tracts of land in the Los Angeles basin, then erect power lines and rail to serve the area and thus secure profits from both sale of real estate and transportation service.[15] The PE Whittier line followed the Long Beach line south from Los Angeles to Slauson Junction where it turned east and passed through the recently subdivided Huntington Park. It continued this direction, making the 17.35-mile trip to Whittier in 47 minutes. Constructed of sixty-pound standard-gauge rail and redwood ties, the PE line served both passenger service and freight (mainly agricultural). Even as late as 1935 industries in Whittier constituted nearly seventy-five percent of the freight on the Whittier line.[16]

In 1904, PE turned over control of the Whittier line to the LAIU, and the latter constructed a second parallel line in 1904. In 1908, PE regained control of the Whittier line, incorporating it into the immense southern district of PE under the control of Epes Randolph. Two years later Southern Pacific, Huntington's long time rival in the area, bought out PE completely and maintained the company under the name New Pacific Electric (NPE). Several small cities developed along the Whittier line during the 1910s and 1920s and residents of these communities continued to use the electric line as ownership of the system changed hands. (For a discussion of these communities see Section 3.1.4) Huntington operated the Los Angeles Railway, at one point the largest electric railway in the west, until his death in 1927. The NPE renovated much of its track and cars, and acquired new lines in Ontario and San Antonio Heights.[17]

With the rise of the automobile and construction of avenues in Los Angeles, however, the electric trolley business began to suffer.[18] By 1928, the Whittier line decreased its passenger service, providing only twelve runs with a total of seventy-one trains operating on the line weekly. In 1935, the company cut its service further by making only one daily round-trip to Los Angeles and in March of 1938, passenger service on the line was abandoned altogether. By 1965, Southern Pacific merged NPE lines into its larger system. Despite the fact that the Southern District of the NPE still boasted some 112 miles of track in 1976, electric lines steadily declined.[19]

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[15] *Pacific Electric Corporate History*, 247; Friedricks, *Henry E. Huntington*, 59.

[16] Jim Walker, ed., *Lines of Pacific Electric: Southern and Western Districts*, Interurbans Special 60, (Glendale, CA: Mac Sebree, 1976), 172; Spencer Crump, *Ride the Big Red Cars*, 90, 226.

[17] Harre W. Demoro, ed., *California's Electric Railways: An Illustrated Review*, Interurbans Special 100, (Glendale, CA: Interurban Press, 1986,) 176; Raphael Long, *Pacific Electric's Big Red Cars*, 1.

[18] Tom Hudson, "Pacific Electric," *High Country*, vol. 23, 1972, 37. Some have even put forth conspiratorial notions that automobile and oil companies (primarily General Motors and Standard Oil) allied to force electric trolley service in the Los Angeles area out of business, by buying up lines and closing them. The film *Who Framed Roger Rabbit* is loosely based on this theory. These claims in recent years, however, have been put to rest. See Sy Adler, "The Transformation of the Pacific Electric Railway: Bradford Snell, Roger Rabbit, and the Politics of Transportation in Los Angeles," *Urban Affairs Quarterly*, vol. 27, no. 1, September 1991, 51-86.

[19] Walker, ed. *Lines of Pacific Electric*, 172; For more information concerning this see "Los Angeles Red Car Concept," http://www.redcar-la.com/cmp/home.html. Accessed online on July 27, 2006.

3.1.2. Los Angeles Terminal Railway and the Union Pacific Railroad

The Los Angeles Terminal Railway (LATR) formed in 1890 with the hopes that it would become the terminus for a new transcontinental line from Salt Lake City. The company built tracks south from the San Gabriel Valley to San Pedro gambling that the latter would one day be the location of the Port of Los Angeles. LATR directors spent the 1890s both lobbying Congress for appropriations to build a port at San Pedro and fighting Collis Huntington and the Southern Pacific who wanted the port located at Santa Monica.[20] The LATR line to San Pedro went through present day Vernon on an alignment parallel to what is now Downey Road.

In the early 1900's, under the direction of E. H. Harriman, the Union Pacific (UP) began laying tracks between Salt Lake City and Los Angeles. The LATR also began laying tracks along this route at this time. The LATR could not compete with the UP, which eventually acquired the LATR and completed the line into Los Angeles in 1905, naming the new route the San Pedro, Los Angeles, and Salt Lake Railroad. By the early 1920s, it was labeled a Union Pacific line and it included spur lines running west from the UP alignment along Downey Road reaching the industries north of Slauson Avenue near South Boyle Avenue. Union Pacific extended this spur north and west (Map Reference 7) during the 1920s and 1930s to serve the Alcoa plant, Fruehauf Trailer Company (Map Reference 2), and Norris Stamp and Manufacturing (Map Reference 6).[21]

3.1.3. Community Histories

Several communities developed along the eastern end of the PE's Whittier line, stimulated both by the railway, and by the industrial growth of the area. All of the land in this area was once part of Rancho San Antonio, owned by Don Antonio Maria Lugo and during the late nineteenth century it was divided into farms. The area remained rural and agricultural until the early twentieth century. Huntington Park, initially subdivided into town lots in 1902, was the first of the communities adjacent to what is now Vernon to emerge. Previously known as La Park and Sunrise, the tract was renamed to honor the president of the PE, Henry E. Huntington. The Laguna Land and Water Company laid out 800 lots on 3000 acres near the intersection of Randolph Street and Holmes Avenue, where the Whittier line joined the north-south running Long Beach line at Slauson Junction (See Figure 5).[22]

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[20] William Deverell, *Railroad Crossing: Californians and the Railroad, 1850-1910* (Berkeley: University of California Press, 1994), 102-122; USGS *Pasadena Quadrangle* (Washington: USGS, 1900); *The Southern Pacific, 1901-1985* (College Station, Texas: Texas A & M University Press, 1989), 45, 46.

[21] Don L. Hofsommer, *The Southern Pacific, 1901-1985* (College Station, Texas: Texas A & M University Press, 1989), 45, 46; USGS, *Watts Quadrangle* (Washington: USGS, 1924); "City of Vernon, California," Los Angeles: Spence Air Photos, 1940, 1941. Accessed at City of Vernon Planning Department; "Another Large Boost for Industry in the Area," *Los Angeles Times,* 6 March 1938, A7.

[22] "Bound to Keep Growing," *Los Angeles Times,* 19 July 1914, VI 1.; Leonard Pitt and Dale Pitt, *Los Angeles A to Z: An Encyclopedia of the City and County,* (Berkeley: University of California Press, 1997), 215; "Among Real Estate Owners and Dealers," *Los Angeles Times,* 28 December 1902; "House and Lot: The Times' Weekly Review of Real Estate and Building," *Los Angeles Times,* 22 February 1903, A1; County of Los Angeles, Subdivision Tract Maps, Map Book 4, page 40.

Figure 5. 1952 USGS *South Gate* Quadrangle map showing communities of Huntington Park, Vernon, Bell, Maywood, and Bell Gardens. The PE line is highlighted in yellow.

Huntington Park began to grow after completion of the Whittier line in 1903 and within a few years the community incorporated and its future looked bright. There was the prospect of jobs in the newly created industrial city of Vernon to the north, while farmland still bordered the city on all other sides. Vernon's policy against construction of new residences benefited cities like Huntington Park, which could provide worker housing and consequently it grew to a population of 3,000 residents by 1914. Huntington Park's growth continued at a steady rate, and as it did, the Laguna Land and Water Company subdivided more land for development east of the original tract. The area bounded by Randolph Street, 59th Street, Flora Avenue, and the Union Pacific Railroad line, became residential lots in 1916; and the area along Vernon's southern boundary at Alcoa Avenue was opened in 1922. The proposed Randolph Route transmission line passes through both of these areas. By 1924, Huntington Park had a population of 15,000.[23]

To the north and east of Huntington Park was the community of Maywood. Like Huntington Park, Maywood began as a rural settlement of sparsely distributed farms. The Laguna Land and Water Company subdivided Maywood in phases between 1918 and 1922. Growth in Maywood was closely tied to the rapid industrial development of the Central Manufacturing District (see section 3.1.4 below for discussion of CMD). Proximity to the CMD, the City of Vernon, and Maywood's own industrial development created a demand for housing and Maywood quickly became a residential suburb. Citizens of Maywood voted to incorporate as a city in 1924. The proposed Randolph Street transmission line parallels a portion of Maywood's southern boundary.[24]

[23] "New City Lack School Money," *Los Angeles Times*, 8 September 1906, II2; "Bound to Keep Growing," *Los Angeles Times*, 19 July 1914, VI 1; County of Los Angeles, Subdivision Tract Maps, Map Book 31, page 71, and Map Book 61, page 62; *Fire Insurance Map of Huntington Park* (New York: Sanborn Map Company, 1924).

[24] "Maywood Lauds Rapid Progress," *Los Angeles Times*, 19 December 1923, II25; "Housing Shortage is Cause of Activity," *Los Angeles Times*, 26 November 1922, V9; "Maywood Votes Incorporation by Five to One," *Los*

South of Maywood and east of Huntington Park is the community of Bell. Subdivision of Bell first occurred in 1902 into small farm lots of one to five acres. As in Maywood and Huntington Park, a need for more housing in the area resulted in the further subdivision of Bell into town lots in 1922 by the Laguna Land and Water Company. At this time, the district had a population of 3,000. The town grew in population and became an incorporated city in 1927. The proposed Randolph Street transmission line parallels the northern boundary of Bell.[25]

Bell Gardens developed much later than the above three municipalities. Located on the east side of the Los Angeles River it was a thriving small farm community and the truck gardens of Bell Gardens operated into the 1930s. Industrial development and housing demands reached the Bell Gardens side of the river as industry expanded into that area, and beginning in the late 1930s, land owner O.C. Beck began subdividing the area into residential lots. From 1934 to 1938, the population of Bell Gardens increased by 5000 people to 16,000, but residents did not vote for incorporation as a city until 1962. The proposed transmission line for the VPP parallels a portion of Bell Gardens' northern boundary.[26]

3.1.4. Central Manufacturing District

In 1923, a monumental project broke ground on the land east of Pacific Avenue and ultimately stimulated development in Vernon as a whole. It occurred on an unincorporated part of the county, east of the City of Vernon corporate boundary. The venture, known as the Central Manufacturing District (CMD), was the brainchild of Chicago investors John Spoor, A.G. Leonard, and Halsey Poronto who had ties to a similarly named district in that city, and to its famous stockyards. The original CMD near Vernon was a 300-acre area of land, formerly part of Rancho San Antonio, bounded by Downey Avenue on the west, Fruitland on the south, and the Los Angeles River on the northeast. Cutting through the middle of the district east/west was District Avenue. The CMD is northeast of the study area for VPP project and one of the proposed transmission line routes passes through the CMD along District Avenue.[27]

The Chicago entrepreneurs set out to create a modern industrial district imitating the one they built in Chicago. The project consisted of three parts: constructing buildings suitable for industry and manufacturing, building a switching railroad to connect the all plants in the district with the

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Angeles Times, 17 August 1924; County of Los Angeles, Subdivision Tract Maps, Map Book 36, page 13; Map Book 33, page 51; Map Book 42, page 7; Map Book 48, page 42; Map Book 51, page 29.

[25] *Fire Insurance Map of Bell, California* (New York: Sanborn Map Company, 1922); County of Los Angeles, Subdivision Tract Maps, Map Book 57, page 13; Map Book 61, page 62; Map Book 41, page 3; "House and Lot: The Times' Weekly Review of Real Estate and Building," *Los Angeles Times*, 11 January 1903; "City of Bell Now Regular Municipality," *Los Angeles Times*, 9 November 1927, A10.

[26] County of Los Angeles, Subdivision Tract Maps, Map Book 237, page 24-25; "Population Gain Shown Rapid," Los Angeles Times, 30 January 1938, F2; "Tract Survey Favorable," Los Angeles Times, 1 May 1938, E3; "At the Gates of the City," Los Angeles Times, 2 January 1935, D6; "Los Angeles County," *Los Angeles Times*, 3 January 1939, F6; "Study Shows Cities Exporting Problems to the Suburbs," *Los Angeles Times*, 4 August 1982.

[27] Central Manufacturing District advertisement, *Los Angeles Times*, 15 July 1923, V13; "Opens New Chapter in Industrial History," *Los Angeles Times*, 15 July 1923, V11; "Cabbage Patch Loses Out," *Los Angeles Times*, 16 February 1927, 9; "Centralizing Our Industries," *Los Angeles Times*, 1 January 1925, F6; Hise, "'Nature's Workshop,'" 84, 85.

nearby mainline railroads, and establishing a 100-acre stockyard in the new district. Like nearby Vernon, the CMD was attractive to industry because of its access to transportation and its low taxes. The first industry in the district was the CMD's own stockyard, which was in operation by July of 1923 and was soon furnishing half of the meat for Los Angeles.[28]

From the start, the CMD was a highly successful enterprise. It expanded rapidly and after three years included thirty-five industrial buildings housing seventy-five businesses and miles of heavy-duty concrete streets. Among the most impressive facilities were the six-story Terminal Warehouse and Manufacturing building (1 million square feet) and the six-story Federal Cold Storage building. An important person in this first phase of development of the CMD was William P. Neil, an engineer, contractor, and builder and owner of the Wm. P. Neil Company. Neil worked for the CMD founders in Chicago and came to the new CMD site in California in 1921 when the area was still undeveloped fields. He was involved from the outset in planning and building the district. His firm constructed dozens of buildings in the CMD from its inception to his retirement in 1962, the most prominent being the Terminal Warehouse and Manufacturing Building.[29]

3.1.5. Los Angeles Junction Railway

The Los Angeles Junction Railway (LAJR) is the switching railroad built to serve business owners in the CMD. The Chicago-based founders of the CMD sent railroad engineer George Hegel to California to lay out the rail system and to work with construction engineer William Neil on the initial development of the CMD project. The switching rail system ensured that industries within the CMD would have freight service connections to the mainline railroads, at that time Union Pacific, Southern Pacific, and Atchison, Topeka and Santa Fe Railroad (ATSF). The LAJR was officially incorporated in June of 1923, and when it began service a few months later, the railway operated two steam locomotives on two miles of track. The switching service connected with the Union Pacific line running parallel to Downey Road, and the ATSF via the UP line. It was the only railroad of its kind west of Chicago. Industries using the LAJR did so free of charge because the railroad's revenue came from the main lines it served. ATSF acquired the CMD property, including the LAJR, from the original Chicago investors in 1929 and the LAJR is still owned by ATSF successor BNSF.[30]

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[28] Central Manufacturing District advertisement, V13; "Opens New Chapter," V11; "Cabbage Patch," 9; "Centralizing Our Industries," F6; Hise, "'Nature's Workshop,'" 84, 85.

[29] "William P. Neil—Pioneer Construction Engineer," *Central Manufacturing District Magazine* 36 no. 2 (1958): 36-38; "Wm. P. Neil Retires After 40 Years in Construction Engineering," 40 no.1 (1962): 28-29; "Glass Concern Given Contract," *Los Angeles Times*, 27 June 1928, E9; Neil also was a pioneer in the tilt-up method of concrete building construction.

[30] "New Rail Company to Start," *Los Angeles Times*, 3 June 1923, I 15; "Freight Line Operating," *Los Angeles Times*, 28 October 1923, V14; "Junction Rail Line Operates," *Los Angeles Times*, 4 September 1925, 13; "Junction Railway Serving Local Industrial District, Distributes Record Tonnage," *Los Angeles Times*, 5 September 1926, E7; "Centralizing Our Industries," F6; "William P. Neil – Pioneer Construction Engineer," *Central Manufacturing District Magazine* 36 no. 2 (1958): 37; "Neutral Switching Railroad Does Major Job—Los Angeles Junction Railway Helps CMD Growth," *Central Manufacturing District Magazine* 44 no. 1 (1966): 58-62; Greg Hise, "'Nature's Workshop' Industry and Urban Expansion in Southern California, 1900-1950," *Journal of Historical Geography*, 27, no.1 (2001): 84-88.

LAJR sought permission from the State Railroad Commission to construct an extension west into Vernon from the CMD to the intersection of Santa Fe Avenue and Fruitland Avenue in January of 1925. The new line was designed to serve industries along the route and connect with the Southern Pacific at Santa Fe and Fruitland. The LAJR eventually laid track into Vernon and connected with not only the Southern Pacific, but also with the Pacific Electric Railroad near the Los Angeles River. As the LAJR expanded into Vernon it stimulated further industrial development in that city. By fall of 1926, the LAJR had doubled its business from the previous year, served an area of 1,350 acres, and handled approximately 1,000 cars per month. The following year it handled 50 million pounds of inbound and 8 million pounds of outbound freight and by 1928, it had increased the system to 22 miles of track.

LAJR laid tracks mid-block between Fruitland Avenue and 50th Street, north of the study area for this project, between 1926 and 1928 as part of its westward expansion towards the older part of the City of Vernon. These switch lines served several properties in the study area including 3221 Fruitland (Map Reference 2), 5100 South Boyle (Map Reference 3), and 3063 Fruitland (Map Reference 4). The proposed natural gas line (see Section 4.2.1) crosses LAJR tracks north of Fruitland on Alcoa Avenue.

ATSF purchased the LAJR along with the rest of the CMD properties in 1929 and by 1930 the LAJR served approximately 87 industries and had 34 miles of tracks, exclusive of sidings. The LAJR continued to grow and expand along with Vernon and the CMD. In 1941, the LAJR acquired its first diesel locomotive and by 1961, it had seven.[31] LAJR, ATSF, and later BNSF expanded and altered the facilities and structures of the LAJR system to reach industries in Vernon, Bell, and the City of Commerce with more than 4,000 acres of coverage by the mid 1960s. The tracks, ties, ballast, switches and other equipment have also been maintained, replaced, and upgraded as needed over the years.

3.1.6. Vernon Industrial Growth 1920-1940

Even though Vernon's industrial growth continued at a rapid rate, at the beginning of the 1920s, the area east of Pacific Avenue and south of Vernon Avenue was still largely rural and undeveloped, and in some places, farming and grazing persisted (Figure 6). Stimulated by the establishment of the CMD and the desire of industry to locate in Vernon, the city began to expand onto land between Pacific and the CMD.[32] The City of Vernon grew significantly in January 1926 it annexed the CMD. Mr. and Mrs. A.J. Olsen, the only residents in the CMD, both voted for annexation. At the time, the CMD comprised 300 acres and was home to 28 industries, while the Los Angeles Junction Railway (LAJR) had four and a half miles of tracks. By June of

[31] "Permission Sought For Crossings," *Los Angeles Times*,, 15 January 1925, A3; "Hearing on City Line Finished," *Los Angeles Times*, 11 June 1925, A9; "Extension Given Local Line to Complete Work," *Los Angeles Times*, 30 June 1926, 4; "Junction Railway Serving," E7; "Cabbage Patch," 9; "Vernon Sees Epochal Industrial Growth," *Los Angeles Times*, 25 May 1930, D1; "Neutral Switching Railroad," 58-61; Hise, "Nature's Workshop ...," 85.

[32] Hise, "'Nature's Workshop,'" 83-85; USGS, *Watts Quadrangle*; Los Angeles County. Subdivision Map, "Tract No. 6452," Map Book 94, Page 78, 79, May 1924; Vernon Aerial Photos 1924-1926, Los Angeles Public Library Photo Collection.

1930, Vernon's inclusion of the CMD and its continued industrial growth gave the city over 300 industries employing 15,000 workers.[33]

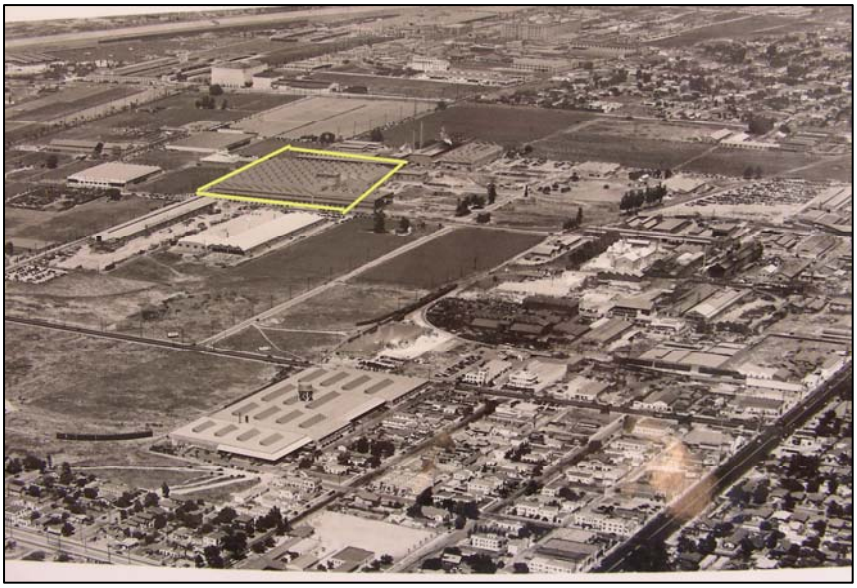

Figure 6. 1941 aerial photo showing the VPP site bounded in yellow. The view is looking toward the northeast, with Slauson Ave. crossing at the lower right corner.

The singular vision of the industrial city did not waver, due in part to a virtually unchanging city government from the time of incorporation into the 1950s. City leaders continued to keep taxes low and power cheap to attract industry. Between 1928 and 1930 alone, 89 industrial firms opened in Vernon bringing the total to more than 300. These included petroleum refineries, packinghouses, can manufacturing plants, building material plants, glass container factories, furniture makers, structural steel and sheet metal plants, potteries, woodworking plants, oil well tool plants, and knitting mills. Even with this remarkable growth, approximately one-third of the city's four square miles was still undeveloped in 1930.[34]

Around this time city officials got into a dispute about electricity rates with Southern California Edison. The city, wishing to remain attractive to business, felt the rates were too high. The two parties could not come to terms, so Vernon decided to build its own power plant on 50th Street and Seville. The plant consisted of five, 7,000 horsepower diesel engines, which began operating June 1933. By 1937, Southern California Edison resumed supplying power to Vernon, but the city continued to maintain the power plant in working order as a backup source. The plant is about two-thirds of a mile northwest of the VPP study area.[35]

Vernon city policy prioritized industrial land use at the expense of residential. Its population at the time of incorporation in 1905 was approximately 1,700 people and ever since that time, the number has steadily decreased. In the 1920s, the city demolished several residences to make way

[33] "Unanimous Vote Cast: Both Ayes," *Los Angeles Times*, 10 January 1926, 23; "Annexation Vote Today," *Los Angeles Times*, 9 January 1926, 5; "Vernon Sees Epochal," D1.

[34] Kilty, *Leonis of Vernon*, p.49; "Owens-Illinois Glass Company Opens New CMD Factory," *Central Manufacturing District Magazine* 32 no.3 (1954): 31; "CMD Salutes Vernon," 12; "Vernon Sees Epochal," D1.

[35] Sanborn Map Company, 1951); Kilty, *Leonis of Vernon*, 238; Moruzzi, "Vernon: Southern California's First "Exclusively Industrial," 4.

for industrial growth. By 1930, it had 200 homes and 1,269 residents, and although 16,000 people worked in Vernon, nearly all of them lived in Los Angeles, or the nearby communities of Huntington Park, Bell, and Maywood. Many workers commuted each day on PE electric rail lines. After World War II, the city constructed several houses for fireman, policemen, and some city officials, but between 1950 and 1960, Vernon lost half of its population. The population and the number of residences continued to shrink until, in the 1980s, it had the smallest population of any city in California, with 90 residents living in 30 houses. At the same time, more than 50,000 people worked in the city on a daily basis.[36]

3.1.7. Vernon Industry After 1940

The stimulus of World War II resulted in substantial economic growth for the state of California. The biggest impact was in southern California, which became home to many new military bases and defense related industries. The increased military presence in the area spawned growth in all sectors of industry. Combined with its transportation infrastructure, low labor costs, and good weather, Los Angeles blossomed as an industrial city.[37] The boom continued into the 1950s and 1960s, partly sustained by the Korean War and the Cold War. Population in southern California grew correspondingly, as defense spending increased and created jobs and fueled industry expansion. Vernon benefited from the economic good times and the city continued to experience industrial growth and diversification, and it became home to a variety of defense contractors, wholesale distributors, and consumer manufacturers.[38]

One Los Angeles area industry that benefited greatly from military contracts was aircraft manufacturing. In the 1920s and 1930s, this industry was in its infancy and on precarious financial ground. It produced a small number of aircraft for military and civilian use. As the U.S. began to anticipate involvement in World War II in the late 1930s, it sought to increase its airpower. In 1938, when President Roosevelt called for the construction of 10,000 planes for the military, Los Angeles was already the leading aircraft-producing region in the nation. In addition to an expansion of the aircraft industry, many aircraft component plants in Los Angeles also increased production, and many new firms that made components moved into the area.[39]

Development occurred in the study area throughout the World War II era, yet in 1941, large tracts of undeveloped land were prevalent (Figure 6). One company that located in the Los Angeles area during the 1930s in response to the aircraft industry boom was the Aluminum Company of America (Alcoa). Alcoa built one of the nation's largest aluminum fabricating

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[36] Hise, 83-85; Kilty, *Leonis of Vernon*, 239; "Vernon Sees Epochal," D1; "Only 229 Residents in Fast Shrinking Vernon," *Los Angeles Times*, 16 October 1961, B1; "Vernon: What You Smell is Money," *Los Angeles Times*, 31 July 1983, SE1.

[37] "Wartime Expansion of the California Airframe Industry," *Monthly Labor Review* 61, no.4 (October 1945): 721; Ann Markusen, et.al., *The Rise of the Gunbelt: The Military Remapping of Industrial America* (New York: Oxford University Press, 1991), 8, 9, 46; "California Historic Military Buildings and Structures Inventory," JRP Historical Consulting Services, March 2000, 7-2; "The Undiscovered City." *Fortune* (June 1949): 80.

[38] *City of Vernon: A Collection of Oral Histories*, 14; "The Undiscovered City." *Fortune* (June 1949): 80.

[39] "Wartime Expansion of the California Airframe Industry," *Monthly Labor Review* 61, no.4 (October 1945): 721; Ann Markusen, et.al., *The Rise of the Gunbelt: The Military Remapping of Industrial America* (New York: Oxford University Press, 1991), 29, 46.

plants on fourteen acres on the southwest corner of Fruitland Avenue and Alcoa Avenue in Vernon in 1938. Its principal reason for opening this new factory was to supply the aircraft industry with aluminum parts. The demand for its products was so great that the company began expanding its facility almost immediately. By 1941, the plant had doubled in size and occupied the adjacent parcel to the west at Fruitland Avenue and South Boyle Avenue, on the site of the current Vernon Power Plant project (Figure 7 and Map Reference 1).[40]

Production continued into the war years, and by 1942, 2,700 people worked at the plant. By the spring of 1945, increased military demands called for increased production. Alcoa of Vernon hired 700 emergency workers and operated around the clock, seven days a week to answer the need. By this time, the plant was producing girders for pontoon bridges, B-29 parts, as well as other equipment for the war effort. The Vernon plant continued to expand into the 1950s and by 1963 had undergone eight major expansions and encompassed 56 acres. Gradually, however, the economics of the aluminum industry changed and production at Alcoa of Vernon began to wane.

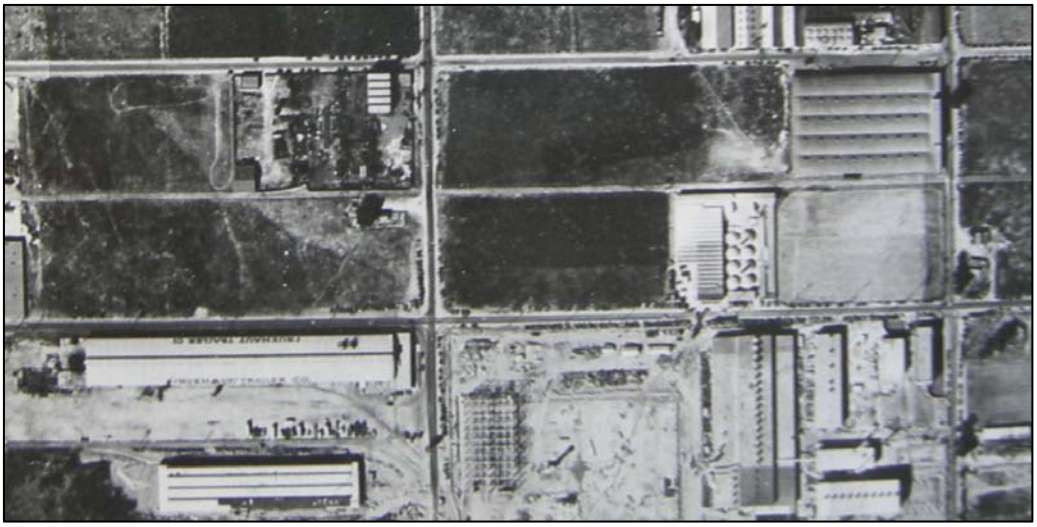

Figure 7. This 1940 photograph shows the study area with the Alcoa building at 3200 Fruitland (Map Reference 1) at the bottom center under construction. Right of it is the original 1938 Alcoa complex. North is at the top.

In the 1990s, the plant only had about 600 employees and in 1994, it closed. Alcoa demolished the buildings of the original plant at Fruitland and Alcoa in 1998, east of the project site. The buildings at Fruitland and South Boyle (Map Reference 1) remain and continued to function as metal fabricating facilities. Pechiney Cast Plate was the most recent business at 3200 Fruitland, occupying the address until March 2006.[41]

[40] "City of Vernon, California," Los Angeles: Spence Air Photos, 1940, 1941. Accessed at City of Vernon Planning Department; "Work Progresses on Huge New Manufacturing Plant," *Los Angeles Times*, 3 October 1937, E1; "Aluminum's Chief Here," *Los Angeles Times*, 23 February 1938, A1; "Another Large Boost for Industry in the Area," *Los Angeles Times*, 6 March 1938, A7.

[41] "Alcoa Strike Comes to an End" *Los Angeles Times*, 23 August 1942, A7; "War Plant Needs 700 New Workers," *Los Angeles Times*, 31 March 1945, A1; "Aluminum Company of America Celebrating 25th Anniversary," CMD

Directly across South Boyle Avenue from the Alcoa plant was another manufacturer that produced military products. Norris Stamping and Manufacturing (Map Reference 6) opened in 1940 at 5215 South Boyle and used hydraulic and mechanical presses to make shell casings and ammunition containers for the Army and Navy during World War II. Almost immediately, Norris Stamping and Manufacturing began building additions to their facility, and continued to do so throughout the 1940s and 1950s. In 1942, the military honored the plant and its 1,200 employees with the Army-Navy Production Award for outstanding performance in the war effort. In the early 1950s, the firm, now known as Norris Industries, merged with another Vernon company, Thermador Electrical Manufacturing Corporation, a manufacturer of household appliances, to form Norris-Thermador. The new company located its headquarters at 5215 South Boyle, which became known as the Norris Division of Norris-Thermador.[42]

The South Boyle plant of Norris-Thermador continued to receive the bulk of its earnings from military contracts. It earned a $6 million defense contract in 1956 and a $5 million contract in 1957 and the arms race of the Cold War kept production high at the South Boyle plant. Another expansion to accommodate increased military production occurred in the early 1960s. In addition to making cartridge casings and ammunition containers, the factory began to fabricate guided missile components. By 1962, it was making rocket chambers for the Polaris missile, the first submarine launched, nuclear tipped, ballistic missile built by the U.S. The Norris Division also built components for the Stinger missile and the Multiple Launch Rocket System.[43]

It changed its name to Norris Industries by 1969 and continued to make military products. By the 1990s MascoTech, Incorporated owned Norris Industries. Curtailments in defense spending prompted MascoTech to halt production at Norris Industries in 1994. Two years later the company had transitioned from the business of missile components to that of property management. It leased its buildings at 5215 South Boyle to tenants such as Atlantic Research Corporation, U.S. Filter Recovery Services, Hollander Home Fashions, and Chemmart Engineering Services.[44]

A third property in the study area engaged in military production was the Fruehauf Trailer Company on the southwest corner of Fruitland and South Boyle (Map Reference 5). The company opened in 1940 to make truck trailers. In the 1950s, the plant employed 375 people and received at least one contract to build heavy trailers for the military. By 1963, Fruehauf had

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Magazine (May-June 1963): 16-17; "Alcoa's Vernon Expansion Starts," *Los Angeles Times*, 2 September 1954, A12; "Alcoa Vernon Press Planned," *Los Angeles Times*, 7 July 1959, 21; Jonathan Peterson, "The Death of a Factory Alcoa Closure Begs the Agonizing Question: Could It Have Been Avoided?" *Los Angeles Times*, 10 July 1994; City of Vernon, Building Permit Records, Vernon City Hall, June 2006.

[42] "Vernon Plant Receives Honor," *Los Angeles Times*, 11 August 1942, A1; *Central Manufacturing District Magazine* 33 no. 4 (1956): 1; "Norris-Thermador Corp. Honored by Ceremony on 25th Anniversary," *Central Manufacturing District Magazine* 33 no. 5 (1956): 21; *Central Manufacturing District Magazine* 34 no.4 (1956): 1.

[43] "$6,000,000 Military Contracts for Norris-Thermador Corp.," *Central Manufacturing District Magazine* 33 no. 6 (1956): 17; "Norris-Thermador Corporation Reports Major Government Contracts," *Central Manufacturing District Magazine* 34 no. 5 (1957): 20; City of Vernon, Building Permit Records, Vernon City Hall, June 2006.

[44] City of Vernon, Building Permit Records, Vernon City Hall, June 2006.

vacated the building and the Owens-Illinois glass company used the facility as a warehouse for its adjacent glass container factory. Owens-Illinois remains the current occupant.[45]

Other industries in the project area were not recipients of defense contracts, but were part of Vernon's general industrial expansion after World War II. The parcel at 3221 Fruitland (Map Reference 2), currently occupied by Barksdale, Incorporated, was once two separate legal parcels and contained two distinct manufacturers. One of the parcels, at the west end of the current parcel, near mid-block, was home to the Refractories Corporation of Los Angeles, which made bricks. In 1943, the General Refractories Company purchased this plant and produced fireclay brick, silica, sillimanite, and glass-house refractories. General Refractories owned other plants and mines in the U.S. and the Vernon plant also functioned as a warehouse and distribution center for its other products.[46]

The other parcel, at the east end Alcoa Avenue, was the Barksdale Valve Company, established in 1949 (Map Reference 2). The company made hydraulic and pneumatic valves and pressure switches. The property served as the manufacturing facility, sales office, and company headquarters. In the 1950s and 1960s, the plant underwent expansions and in 1964, the Transamerica Corporation acquired Barksdale.[47]

The properties at 5100 South Boyle and 3121 Fruitland are currently occupied by the same business and are treated as one property in this report (Map Reference 3). From the early 1950s, the building at 5100 South Boyle was a veneer and plywood warehouse. By 1973, Allied Veneer was the company at the address and remained there until 1989. The subsequent occupant, California By-Products, operated a pet food production and cold storage company. This company made several alterations to the facility. The original occupant of the office and warehouse at 3121 Fruitland was the Newburg Steel Company, which used the facility beginning in 1956. By 1970, Euclid Steel was the tenant and owner. This company was still the owner in 1989, but the Neil Steel Fabricating was the lessee by this time. From 1992 to 2001, several truck and auto repair services have been at the address. California By-Products began leasing the warehouse building beginning in 2005 and is the current tenant.[48]

The property at 3063 Fruitland Avenue, constructed in 1954, originally housed the Wilson Paper Company, makers of paper and cardboard boxes (Map Reference 4). Paper products manufacturing continued into the 1960s when Automotive Wiring Devices moved into the

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[45] *Fire Insurance Map of Los Angeles* (Sanborn Map Company, 1953, 1956); City of Vernon, Building Permit Records, Vernon City Hall, June 2006; "Auto Union Strike Closes Trailer Plant," *Los Angeles Times*, 7 February 1951, 29; County property records; Aerial photographs, 1941.

[46] "Eastern Company Buys Local Plant," 24 May 1943, 13; "Work Finished on $1,000,000 Brick Factory," *Los Angeles Times*, 3 August 1952, E14; *Fire Insurance Map of Los Angeles* (Sanborn Map Company, 1953, 1956); City of Vernon, Building Permit Records, Vernon City Hall, June 2006.

[47] "Barksdale Awarded for Precision Products of Excellence" *Central Manufacturing District Magazine* 41 no. 3 (1964): 124-128; "Barksdale Succeeded by Holcombe" *Central Manufacturing District Magazine* 42 no. 4 (1965): 18; City of Vernon, Building Permit Records, Vernon City Hall, June 2006; *Fire Insurance Map of Los Angeles* (Sanborn Map Company, 1953, 1956).

[48] City of Vernon, Building Permit Records, Vernon City Hall, June 2006; *Fire Insurance Map of Los Angeles* (Sanborn Map Company, 1953, 1956).

building. Beginning in the 1970s, the property housed a variety of firms including roofing material storage and textile manufacturing.[49]

By the 1950s, Vernon reached a highpoint in its industrial development. At the end of that decade, its five square miles supported 949 industries that employed 72,000 people, ten percent of the workforce of the Los Angeles area. As it had since its incorporation, transportation played a large role in the city's success, and the city had 112 miles of railroads, and 28 miles of streets with easy access to Los Angeles's freeways. Seventy-six truck lines with terminals in Vernon were evidence of the city's position in the transportation network. The recession of the 1980s had a significant impact on the Vernon economy and many plants closed, including the city's largest employer, Bethlehem Steel. Nevertheless, the city remains a desirable location for industry, though today fashion design, garment making, film production, electronics, and distribution warehouses have replaced much of the heavy manufacturing and meat processing facilities of the past.[50]

[49] City of Vernon, Building Permit Records, Vernon City Hall, June 2006; *Fire Insurance Map of Los Angeles* (Sanborn Map Company, 1953, 1956).

[50] "Only 229 Residents," B1; "Vernon: What You Smell is Money," SE1; "Industrialized Vernon Resents Brown's Blast," *Los Angeles Times*, 22 November 1959, A1; Moruzzi, "Vernon: Southern California's First "Exclusively Industrial," 4; *City of Vernon: A Collection of Oral Histories*, 3, 14.

4. DESCRIPTION OF RESOURCES

The following section describes the resources found on the parcels surrounding the proposed VPP main site, as well as a characterization of resources found along the routes of the linear components of the project. The resources at and adjacent to the power plant site were inventoried, recorded and evaluated (Section 4.1) and full descriptions and photographs of these resources are provided on DPR 523 forms, which are attached in Appendix B. The linear components of the project were reviewed at the reconnaissance level, which includes a general characterization of buildings and structures and representative photographs (Section 4.2).

4.1. Resources within the Study Area for the VPP Main Power Plant Site

JRP Historical Consulting LLC conducted intensive level survey of extant buildings, structures, objects, and/or potential districts within the main VPP project site on June 12-13, 2006. The survey was performed by qualified architectural historian Meta Bunse. The VPP study area for historic architectural resources included inventory and evaluation of all resources forty-five years old or older immediately adjacent to the VPP project site.

This survey found that three basic types of buildings and structures exist in the study area: manufacturing facilities, warehouses, and infrastructure. Some of the buildings have been converted from one use to another, like the former truck trailer manufacturing plant on Fruitland now serving as a warehouse (Map Reference 5). The building types are various, but are generally durable steel frame, or reinforced brick, concrete masonry unit, or concrete tilt-up construction. Both the warehouse and manufacturing facilities include steel truss roof systems, and often have “sawtooth” or ridge line monitors that ventilate and light the large interior spaces. The warehouse buildings range from one to two stories in height, while the large manufacturing complexes like Norris Industries (Map Reference 6) include three- to four-story buildings. The infrastructure within the study area consists of Union Pacific Railroad spur lines (Map Reference 7).

<u>3200 Fruitland Avenue (Map Reference 1)</u>

The property at 3200 Fruitland Avenue consists of four industrial buildings on two legal parcels (APN 6310-008-013 and 6310-008-012) once used in the manufacture of aluminum products, the first constructed in 1940 (Figures 6, 7, and 8). The two- to three-story buildings adjoin each other and are located at the southeast corner of Fruitland and South Boyle Avenue. Enclosing the property on the north and part of the west side is an eight foot high, poured concrete fence topped with barbed wire. On the southern half of the west property line is a chain link fence. A small parking lot is on the southwest corner of the parcels, buildings occupy nearly all of the remaining land.

Figure 8. 3200 Fruitland Avenue at South Boyle Avenue, camera facing southeast.

The largest building on the parcel is a three-story industrial building of approximately 600,000 square feet. This building is actually two buildings constructed at different times in the early 1940s, beginning at the corner of Fruitland Avenue and Boyle Avenue. The combined buildings housed portions of the extrusion process of aluminum, the tube mill, and shipping operations and have a steel frame with a concrete foundation and are sided with corrugated metal panels. A sawtooth roof covers the buildings with a north facing clerestory. The other two buildings are approximately 200,000 square feet and are adjoining the southwest corner of the 1940 building and face Boyle Avenue. Construction of these two building occurred in 1941, and they housed the aluminum re-melting facilities.

3221 Fruitland Avenue (Map Reference 2)

The property at 3221 Fruitland Avenue is a large parcel comprising half of the block on Fruitland Avenue between Alcoa Avenue and South Boyle Avenue. The parcel is home to Barksdale Incorporated, which occupies numerous buildings including some modern and some more than 50 years old. The older buildings are concentrated on the east side of the lot at the northwest intersection of Fruitland Avenue and Alcoa Avenue. This cluster of older buildings includes four adjoining single-story industrial buildings, a freestanding industrial building, and an office building.

The largest building on the property was built in at least three phases beginning in 1949 and is located along the east side of the parcel. This building and its additions are known as Buildings 1A, 1B, and 1C. Construction types include board form concrete with a bow truss roof, concrete walls with pilasters and a flat roof. Building 2 is concrete masonry unit with a hipped roof and Building 5, is also concrete masonry units with a low pitch, side gable roof. Building 3 is a single-story steel-framed, metal sided, industrial building with a square plan.

5100 South Boyle and 3121 Fruitland Avenue (Map Reference 3)

Map Reference 3 consists of two adjoining buildings on two legal parcels (Figure 9). The business at 5100 South Boyle is currently leasing the building at 3121 Fruitland and has removed a section of interior wall where the buildings meet to create doorway between the two. The buildings are in an industrial area of Vernon. Both buildings are set on rectangular lots facing south onto Fruitland Avenue.

Figure 9. 5100 South Boyle on left, 3121 Fruitland on right, camera facing northeast.

This industrial building at 5100 South Boyle Avenue (APN 6303-028-014) is a roughly two-story, steel arch building of 24,380 square feet. It has a steel frame on a concrete foundation and raised ridge metal siding. Both the east and west sides are buttressed by four foot high concrete block walls. A wood framed, shed roof office addition is on the west side.

The building at 3121 Fruitland Avenue (APN 6303-028-003) has is comprised of two adjoining elements: a single-story office building that faces south onto Fruitland Avenue, and, behind it, a two-story industrial building. The International style office building is red brick topped with a flat roof with boxed eaves. Attached to the north wall of the office building is the two-story industrial warehouse building of approximately 8,800 square feet. The building has a steel frame resting on a concrete foundation and topped by a gently sloping, front gable roof with turbine vents on the ridge. The sides are clad in corrugated metal except for the south façade, which has a stucco covering.

3063 Fruitland Avenue (Map Reference 4)

The industrial building at 3063 Fruitland Avenue is on the northwest corner of Fruitland Avenue and South Boyle Avenue. It is a single-story with a concrete foundation, brick walls, and bow truss roof. It has both truck and rail freight entrances, including the concrete loading dock adjacent to a railroad spur on the north side.

2900 Fruitland (Map Reference 5)

Two parcels share the address of 2900 Fruitland Avenue: APN 6310-009-015, which is on the southwest corner of Fruitland and South Boyle Avenue and is the property evaluated in this report; and APN 6310-009-014, which is on the southeast corner of Fruitland and South Soto Street, west of the evaluated property, and outside of the study area for this survey. Both parcels are now part of the sprawling Owens Illinois glass manufacturing complex, which has additional buildings on the north side of Fruitland at South Soto and on 50th Street. When constructed in 1940, Fruehauf Trailer Company occupied the building and it had the address of 5137 South Boyle. The building is set on a long, rectangular lot whose length runs parallel to Fruitland (Figure 10). This single-story industrial building has a rectangular plan, steel framing, and a steel bow truss roof. At the roof crest is a five-foot-high, flat roof monitor that holds metal sash industrial windows. A flat roof addition runs the length of the south side of the building.

Figure 10. 2900 Fruitland Avenue from South Boyle Avenue, camera facing southwest.

5215 South Boyle Avenue (Map Reference 6)

The property at 5215 South Boyle Avenue is a large industrial complex comprised of several adjoining and freestanding buildings (Figure 11). They are on a rectangular parcel on the west side of South Boyle. Currently there are at least nine buildings on the parcel being leased to various industries. This report evaluates seven buildings on the parcel that are more than fifty years old. On the east end of the parcel, facing South Boyle, is the Administration Building; behind this to the west are three adjoining industrial buildings: Buildings 1, 2, and 3; behind these buildings are Buildings 4, 5, and 6.

Figure 11. 5215 South Boyle, camera facing northwest.

The Administration Building is a vacant, single-story building constructed in 1941 with Art-Deco details, board-formed concrete walls and a sawtooth bow truss roof. The main entrance has a robust concrete post and beam surround with fluting on the rounded walls that accentuate the doorway. Directly behind the Administration Building is Building 1 and Building 1A**,** long, rectangular, single-story industrial buildings with a combined 130,228 square feet. Building 1, constructed in 1940, was the first building built in the complex and Building 1A was a later addition, constructed in 1961. Both have red brick walls and concrete foundations. The earlier building has a sawtooth bowtruss roof, while the 1961 building has a flat roof.

Building 2 is a long, rectangular, single-story industrial building red brick walls and a sawtooth bowtruss roof. Building 3, constructed in 1945, is also a long, rectangular, industrial building, but unlike the others it is approximately two stories and has a four to five-story central element to accommodate a 30-ton crane. The building has a concrete foundation and a reinforced concrete frame; the walls are constructed of red bricks. Buildings 4, 5, and 6**,** are at the west end of the parcel, separated from the project site directly across South Boyle by the buildings discussed above. Building 4 is a single-story steel frame building with metal siding and a gable roof. Building 5 single-story**,** steel frame building with metal siding and a sawtooth roof. Building 6 adjoins Building 4 and is a single-story, roughly rectangular building with a concrete foundation and walls, and steel trusses. Buildings 4, 5, and 6, have all been modified through numerous additions.

Union Pacific Railroad Spur (Map Reference 7)

A spur of the Union Pacific Railroad (UPRR) line runs along the southern boundary of former Alcoa plant (APN 6310-008-012) and then curves north, parallel to the east side of South Boyle Avenue, south of Fruitland Avenue and north of Slauson Avenue in Vernon within the study area for this project. The spur is standard gauge and connects to the UPRR main line to the east that runs north-south through Vernon parallel to Downey Road. The spur lines in the study area were installed by 1940 to serve industrial customers such as Alcoa, Fruehauf Trailer Company, and

Norris Stamping and Manufacturing, which were established about this time. Figure 12 provides a typical view of the spur. The camera is facing north and shows the spur between the former Alcoa plant (Map Reference 1) on the right and South Boyle Avenue on the left, depicting a portion of the spur that has not been used for several years. The segment of this spur along the south side of the former Alcoa plant still carries some rail traffic and serves the NI Industries (Map Reference 6) building on the west side of South Boyle Avenue.

Figure 12. Union Pacific Railroad spur along S. Boyle Avenue, Alcoa plant at right, camera facing north.

4.2. Resources within the Study Area for the Linear Project Components

Architectural reconnaissance level survey of the linear components of the project was conducted by JRP Historical Consulting LLC on June 12 and 13, 2006. The survey was performed by qualified architectural historian Meta Bunse and addresses the general character of extant buildings, structures, objects, and/or potential districts along the linear corridors that are forty-five years old or older. This methodology for architectural resources was developed in consultation with Beverly Bastian of the CEC, who was also present for the reconnaissance survey on February 3, 2006. JRP reviewed and photographed the alignments of the linear facilities, took representative photographs, and developed a general historic context for these alignments for use in the following discussion of sensitivity analysis.

4.2.1. Gas Line

Natural gas will be delivered to the site via a 20-inch diameter pipeline. This approximately one-half mile-long pipeline will extend from the southwest corner of Downey Road and 50th Street, west along 50th Street to Alcoa Avenue, south on Alcoa Avenue to Fruitland Avenue, then west on Fruitland Avenue to the plant site (Figure 8). The optimal trench will be approximately 36 inches wide and 5 to 10 feet deep depending on the location of existing utilities in the road. The line will be installed entirely within the city street and/or sidewalk, within existing asphalt

and concrete. The entire route on both sides was heavily developed and disturbed from previous construction and the entire route is paved in asphalt and concrete, and includes existing transmission lines along the north and portions of the south side of Alcoa Avenue (Figure 13 and Figure 14).

Figure 13. Alcoa Avenue at Fruitland Avenue, looking south.

Approximately 11 parcels along the proposed gas line route contain buildings and structures. Building types include industrial manufacturing facilities, warehouses, and office buildings, as well as the existing substation on the southwest corner of 50th Street and Downey Road. Architectural types and styles represented include reinforced concrete, steel-frame, and some wood-frame industrial buildings that are utilitarian in nature with little architectural ornamentation.

Figure 14. Alcoa Avenue near 50th Street, looking south.

About seven of the parcels along the proposed route were first developed between the 1930s and 1950s. County building records indicate that at least half of the resources of this age have been heavily altered, improved, and or expanded during subsequent years. Approximately three parcels contain development that is less than forty-five years old. The buildings along this route are relatively unadorned. The more recent buildings (less than forty-five years old) tend to be utilitarian structures with few architectural details, although one of the meat processing companies has a new building that illustrates the influence of the Streamline Moderne style seen in other parts of Vernon (Figure 16). The natural gas pipeline will be located entirely within existing disturbed roadbed and none of the buildings or structures that border the roadway will be impacted by installation of the gas pipeline.

Figure 15. 50th street, looking west, between Downey Road and Alcoa Avenue. Building on north side of 50th built ca. 1941.

Figure 16. Recent construction (2003), north side of 50th, between Alcoa and Downey.

4.2.2. Transmission Line

The VPP will connect to the electrical transmission system via a new double-circuit 230 kV transmission line. The two proposed routes for the line are the River Route, and the Randolph Route. Along the River Route the 230-kV transmission line exits the east side of the switchyard and heads east between buildings in an adjacent parcel to a point mid-block between Alcoa Avenue and Downey Road. The route then proceeds north along an existing transmission line alignment to a point mid-block between Fruitland Avenue and 50th Street where it turns east to Downey Road. The route heads north on Downey Road and then east on District Boulevard. Crossing to the east side of the Los Angeles River, it would then follow an existing 66-kV subtransmission line along the river. At Randolph Street, the route turns east and follows an existing transmission line right-of-way between the south side of Randolph Street and the north side of the former Pacific Electric right-of-way, continuing east to Southern California Edison's Laguna Bell substation. The total distance is approximately 4.5 miles.

The Randolph Route would exit the southeast corner of the switchyard and head east between buildings in an adjacent parcel to Alcoa Avenue. From there it would proceed south to Malburg Way where it would turn east to join an existing transmission line that parallels Randolph Street. This transmission line runs between Malburg Way and Randolph Street on the north and the Pacific Electric Railway right-of-way on the south. The proposed Randolph Route transmission line follows the existing alignment east and crosses the Los Angeles River where it joins the proposed River Route alignment discussed above. The total distance is approximately 4.2 miles.

Transmission Line-River Route

The portions of this route on the west side of the Los Angles River pass through heavily developed industrial manufacturing and warehousing areas of the City of Vernon. Dozens of individual buildings are located along this route between the VPP and the river along the route of the proposed transmission line. On the east side of the river, the route follows an existing heavily-developed and maintained transmission corridor. The Randolph Street portion of the River Route passes through industrial and warehouse areas of the City of Commerce, north of a residential area in Bell Gardens. Ground disturbance was extensive for the route from construction of industrial and residential buildings, as well as existing transmission lines, towers, sidewalks, and other utilities.

Between the plant site and the Los Angeles River, there are more than fifty parcels, most of which contain buildings. The buildings along the transmission line route from the VPP to the intersection of Downey Road and District Boulevard were built after World War II (except one building on the east side of Alcoa Avenue, south of Fruitland Avenue that was built in 1943). County property records indicate that several have been altered, improved, or expanded in the years since. Five parcels contain development that is less than forty-five years old, including the two buildings immediately east of the project site constructed within the last ten years. A portion of this section runs along a wide right-of-way that already contains a high voltage power line. A section of the proposed River Route alignment also runs adjacent to a fire station and infrastructure such as an electrical substation and a railroad.

Figure 17. Parking lot between buildings on the west side of Alcoa Avenue south of Fruitland Avenue. Building in background with sawtooth roof is the proposed site of the VPP.

Figure 18. View looking east from Alcoa Boulevard south of Fruitland Avenue along proposed transmission line alignment.

Figure 19. Existing transmission line looking south from Fruitland Avenue between Alcoa Avenue and Downey Road.

Figure 20. Downey Road looking north toward District Boulevard. Federal Cold Storage building at right.

Figure 21. Federal Cold Storage at southeast corner of District and Downey, looking west from District Boulevard.

At intersection of Downey Road and District Boulevard the River Route alignment turns east. This intersection marks the northwestern corner of an industrial area known as the Central Manufacturing District (CMD), the history of which is provided above in Section 3. District Boulevard between Downey and the Los Angeles River was the original northern boundary of the CMD and some of the buildings along this street illustrate this: buildings to the south date from as early as the 1920s, while buildings on the north side of the street date to the 1950s and later, many from as late as the 1990s (see Figure 22 and Figure 23).

Figure 22. 1920s building at right, south side of District Boulevard, 1950s and 1960s buildings at left on the north side of the street.

Many of the CMD buildings of the 1920s and 1930s are reinforced concrete post and beam construction, while others are brick, hollow clay tile, or wood or steel-frame structures. The buildings tend to employ little ornamentation and most are one or two stories in height, on relatively small parcels served by railroad spurs that run throughout the CMD. A few buildings

are larger in scale, three stories tall and taller, including the Federated Cold Storage building at the southeast corner of Downey Road and District Boulevard (Figure 20 and Figure 21), or at the southwest corner of Loma Vista and District Boulevard (Figure 24).

Figure 23. Detail of CMD building built ca. 1928, south side of District Boulevard, east of Everett.

Figure 24. Concrete post and beam 1920s construction in the CMD, south side of District Boulevard, west of Loma Vista.

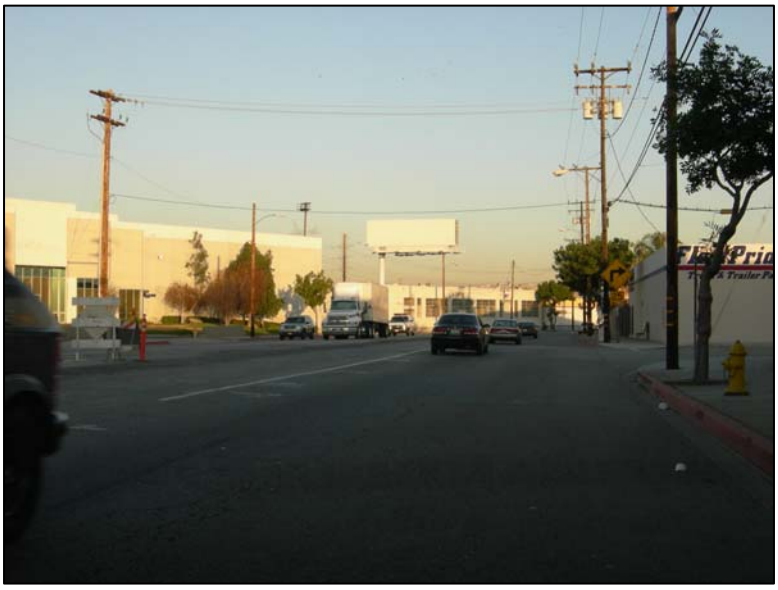

Figure 25. View east on District Boulevard. The River Route transmission line would cross the Los Angeles River just left of the bill board at center.

The north side of District Boulevard consists of one- and two-story, reinforced concrete or steel frame warehouse and manufacturing building that largely date to the 1950s and 1960s, or 1990s. The building at the left side of Figure 25 is typical of the 1990s construction. The alternative transmission line would pass just to the south (right) of this building, just north of the only older building on the route that is north of District Boulevard. The older building (under the billboard in Figure 25, and center in Figure 26) is a one-story brick structure near the west side of the Los Angeles River. The buildings south of District Boulevard near the northeast corner of the former CMD are more recent as well and date to the late 1970s (Figure 27).

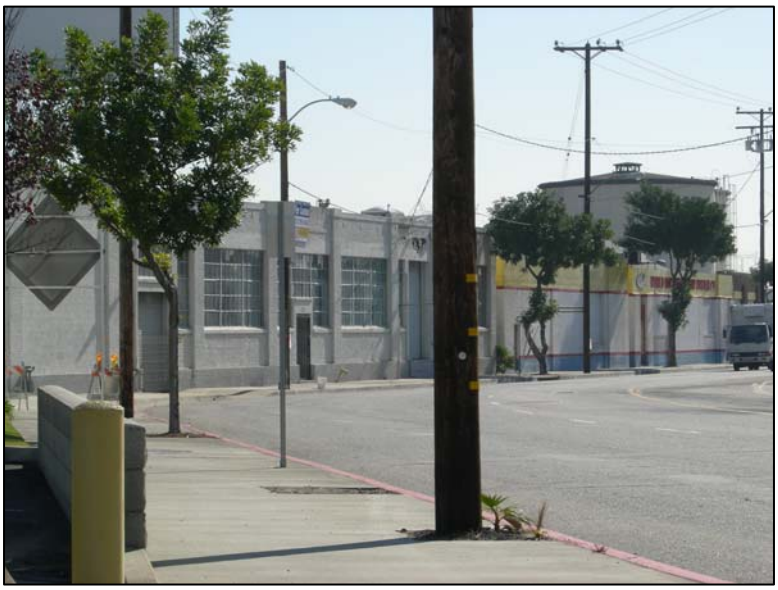

Figure 26. 4717 District Boulevard (ca. 1926) at center, with more modern building at left.

Figure 27. View looking northwest along District Boulevard, near 4717 District.

Figure 28. View south and east behind 4717 District Blvd., along Los Angeles River. Transmission lines are on east bank.

The proposed River Route transmission line follows the east side of the river using an existing transmission line right-of-way. Large warehouse and truck-rail shipping buildings, most less than forty-five years old, are located adjacent to the existing transmission line to the east. South of Atlantic, this right-of-way is located between the river and the I-710 freeway.

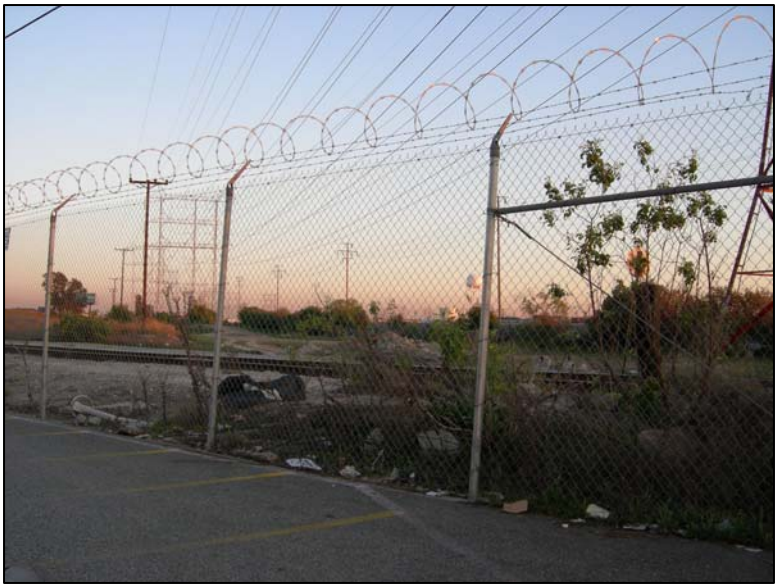

Figure 29. View south along existing transmission line east side of Los Angeles River, near Atlantic.

Figure 30. View of existing transmission line, east side of Los Angeles River looking north from Slauson Street.

The proposed River Route transmission line follows the existing transmission line right-of-way at Randolph Street as the existing line runs east between the communities of Maywood and Bell Gardens. The Globe Foundry complex lines Randolph between the I-710 and Eastern (Figure 31). Large warehouse and shipping facilities, most less than forty-five years old, line the north side of Randolph, east of Eastern Avenue (Figure 32).

Figure 31. Globe Foundry complex lining both sides of Randolph, east of Los Angeles River and I-710.

Figure 32. Randolph Street, looking west toward intersection with Eastern.

The proposed River Route transmission line runs east from the Los Angeles River alignment at Randolph Street. It passes through Globe Foundry complex of steel frame, metal-sided buildings located between the I-710 freeway and Eastern (Figure 31 and Figure 32). Continuing east on Randolph, the existing transmission line right-of-way parallels both the south side of Randolph Street, and the former Pacific Electric Railway (PE) right-of-way (Figure 33 and 45, see Section 3.1.1 for history of PE). This portion of the PE right-of-way from the Los Angeles River west to the Laguna Bell Substation is approximately 100 feet wide and contains double tracking. South of the existing transmission line are residential neighborhoods of Bell Gardens (Figure 33). The proposed River Route transmission line would terminate at the Laguna Bell Substation (Figure 36).

Figure 33. The existing railroad and transmission line right-of-way, looking east from Eastern Avenue. The residential properties in Bell Gardens are visible to the right of the crossing signal equipment.

The existing transmission line paralleling Randolph Street east of the river passes north of single-family homes located on Watcher Street, as well as passing north of Cesar Chavez Elementary (formerly Colmar) School and Bell Gardens High School properties located between Colmar Avenue and Jaboneria Road (Figure 35). The residential construction dates to the post World War II period and is characterized by one-story, wood frame construction, and most buildings have stucco siding and gable roofs (Figure 34). Some units have attached garages, converted garages, and/or second floor additions. Nearly all of these buildings have been modified through the construction of additions, replacement of original windows, installation of security grills, re-roofing and various other changes. The school properties have also been changed and expanded substantially over time, including new construction that was taking place during the field visit for this project in February 2006.

Figure 34. Residences along north side of Watcher Street, west of Colmar Avenue, camera facing northwest. Existing transmission line visible to rear.

Figure 35. School yard and ball courts at the northeast corner of Colmar Avenue and Watcher Street, with transmission lines to the rear.

Figure 36. Laguna Bell Substation at left, view along Randolph looking southeast.

The buildings and infrastructure near the Randolph Street portion of the River Route are outside the area of direct impact and none of the structures that border the alignment will be impacted by installation of the proposed River Route transmission line. Disturbance from construction of the transmission line will be temporary and will be limited to the installation of the transmission towers that carry the lines. Construction activity for the installation of the 230 kV towers will be located entirely within existing disturbed rights-of-way along city streets, existing transmission line alignments, or in parking lots. Should the project scope/limits be expanded to include them, inventory and evaluation of their historical significance would be conducted. No known historical resources will be impacted by construction or operation of the transmission line.

Transmission Line – Randolph Route

The alignment for the alternative transmission line, the Randolph Route, exits the southeast corner of the plant site heading east, then runs south on Alcoa Avenue to Randolph Street. The alignment then turns to parallel Malburg Way, crossing the Union Pacific railroad to continue east paralleling Randolph Street. The alignment crosses the Los Angeles River and again parallels Randolph Street as it heads east to the Laguna Bell Substation. This route passes through heavily developed industrial warehouse areas of the City of Vernon along Alcoa, and then parallels a portion of the corporate boundaries of Vernon, Huntington Park and Maywood before reaching the Los Angeles River. The Randolph Route east of the Los Angeles River follows an existing heavily-developed and maintained transmission corridor in an industrial and warehouse area of the City of Commerce, north of a residential area in Bell Gardens (see the River Route, Figures 31-36, above). Ground disturbance was extensive for the route from construction of industrial and residential buildings, as well as existing transmission lines, towers, sidewalks, and other utilities.

Between the plant site and the Los Angeles River, there are more than one hundred and fifty parcels, most of which contain buildings. The portions of this route along Alcoa Avenue to the existing transmission line alignment south of Malburg Way pass through heavily developed industrial manufacturing and warehousing areas of Vernon. There are over thirty parcels along the proposed Randolph Route transmission line from the VPP site to the intersection of Maywood Avenue and Randolph Street. Thirteen are more than forty-five years old, while eighteen are less than forty-five years old. Along this segment are one- to two-story warehouse and industrial buildings. They consist of largely of metal frame with metal siding, concrete block, concrete post and beam, or reinforced concrete (Figures 37-44). County property records indicate that several have been altered, improved, or expanded. Other resources along the route are a Union Pacific Railroad spur and the Pacific Electric Railroad alignment (Figure 38).

Figure 37. East side of Alcoa Avenue south of Fruitland Avenue, camera facing northeast.

Figure 38. Union Pacific Railroad spur looking east across Alcoa Avenue.

Figure 39. East side of Alcoa Avenue north of Slauson Avenue looking northeast.

Figure 40. East side of Alcoa Avenue north of Slauson Avenue looking southeast.

Figure 41. Alcoa Avenue south of Slauson Avenue, camera facing south.

Figure 42. Alcoa Avenue near Malburg Way looking south.

Figure 43. Former Bethlehem Steel building on west side of Alcoa Avenue near Malburg Way, camera facing south. Malburg Way, the former Pacific Electric right-of-way, and existing transmission line are perpendicular to the south end of Alcoa at center.

Southern California Iron and Steel first developed the Bethlehem Steel site in 1919 on 25 acres. In 1930, Bethlehem Steel purchased this company and expanded the plant to encompass 42 acres. The plant became the west coast exporting headquarters for the company, ultimately closing in the 1980s. It is located between Alcoa Avenue and South Boyle Avenue, north of the Pacific Electric right-of-way. There are currently about eight remaining Bethlehem Steel buildings.[51]

[51] "Steel Company to Build," *Los Angeles Times*, 3 May 1931, 12; "Nearly Two Million for Great New Steel Plant," *Los Angeles Times*, 31 July 1919, II1.

Figure 44. Alcoa Avenue looking north from Malburg Way.

Figure 45. Existing transmission lines along the Pacific Electric Railway right-of-way adjacent to Malburg Way and Randolph Street, camera facing east.

The former Pacific Electric Railway line that ran between Slauson Junction (just south of what is now the intersection of Slauson Avenue and Long Beach Avenue) and what is now South Whittier. The line was completed in 1903 and helped its investors and other land developers to subdivide and sell town lots in the several small communities that were established along the rail line, including: Huntington Park, Maywood, Bell, and eventually Bell Gardens. The PE right-of-way from Alcoa Avenue to the Los Angeles River is approximately 100 feet wide, narrowing to 50 feet wide in some places. Portions of track have been removed, while it is still in place in some areas. Malburg Way, Randolph Street, and Watcher Street parallel its former alignment. Transmission lines have also used the corridor since its inception.

Figure 46. Industrial buildings on north side of Randolph Street near Maywood Avenue, camera facing west.

Figure 47. Randolph Street looking east near Palm Street, north of former Pacific Electric Railway right-of-way (at right).

Between Maywood Avenue and the Los Angeles River, the Randolph Route passes a residential area located north of Randolph Street and north of the former Pacific Electric Railway right-of-way. There are approximately 100 small parcels along this section, which includes portions of Huntington Park, Bell, and Maywood. Houses line the north side of Randolph Street, while a row of trees and the former Pacific Electric Railway alignment are on the south side (Figures 47-52). Transmission lines appear on both sides of Randolph Street, as well as both sides of the former railway alignment.

The majority of the residences on the north side of Randolph Street date to the 1920s (Figures 48 and 49). They are wood frame, single-story cottages with Craftsman Bungalow or Spanish

Revival (Spanish Eclectic) influences. The bungalow buildings have gable or hip roofs forms, unboxed eaves, composition roofing, and either stucco or wood siding. The Spanish Eclectic style buildings generally have flat parapet roofs, some decorative tile roofing accents, and stucco siding. Nearly all of the residences have been altered by the replacement of original siding, windows, and roofing. Room additions, garage conversions, installation of security grills, and various other changes are also common. In addition to the 1920s residences, this section of Randolph Street has a few houses that date to the 1940s-1950s and some new home and apartment construction.

Figure 48. Residences along south side of Randolph Street near Loma Vista Avenue, camera facing northeast.

Figure 49. Residences on the north side of Randolph Street at Carmelita Avenue, camera facing northeast.

On the blocks near the intersection of Randolph Street and Atlantic Avenue, residences give way to other land uses. In the two blocks west of this point are a modern school building and a 1940s era church. A commercial area is located northeast of the intersection and a single-story building on the northeast corner. Further to the east is a 1920s era Mission Revival church (Figure 50). Continuing to the east more residences similar to those described above line Randolph Street interrupted only by a commercial strip is at the northwest corner of Randolph Street and Heliotrope Street.

Figure 50. Church at Randolph and Woodward Avenue, camera facing northeast.

Figure 51. Commercial strip at Randolph and Atlantic on left and Pacific Electric Railway right-of-way on right, camera facing east.

Figure 52. Residences along north side of Randolph Street near Mayflower Avenue, camera facing northwest.

Figure 53. Industrial area on Randolph near Walker Avenue and the Los Angeles River, camera facing east.

On the last block of Randolph Street near the Los Angeles River is a row of one and two-story, 1940s era industrial buildings (Figure 53). Steel frame construction, metal siding, and gable roofs characterize this block. Closest to the river are two large tanks owned by the Maywood Mutual Water Company. At this point, the proposed Randolph Route transmission line crosses the Los Angeles River and joins the proposed River Route transmission line alignment (see above for description).

Sewer Line

The proposed sewer line would exit the southeast corner of the plant and proceed south mid-block between South Boyle Avenue and Alcoa Avenue for approximately 700 feet (Figure 54) where it would follow a Union Pacific Railroad spur right-of-way east approximately 600 feet to Alcoa Avenue (Figure 55). At Alcoa the sewer line would follow that street south, terminating at Slauson Avenue. The total distance for the line would be about one half mile. These alignments are entirely paved with asphalt and concrete except for the railroad right-of-way, which is a gravel surface.

Figure 54. View looking south between buildings along alignment of proposed sewer line. The future site of the VPP is on the right.

Figure 55. View looking west along Union Pacific spur.

JRP conducted a reconnaissance level survey of this route, which generally runs south and east from the VPP site to Slauson Avenue. Approximately 10 parcels face onto this route as it heads south from the VPP plant, along the railroad spur alignment, Alcoa Avenue, and Slauson Avenue. After leaving the VPP plant, the proposed sewer line passes behind and between three buildings built within the last ten years that face onto Alcoa Avenue. Industrial buildings older than forty-five years are also located along Alcoa Avenue. At this point the proposed sewer line route joins the proposed Randolph Route transmission line (see Section 4.2.2 for description of this segment).

The buildings along the sewer line route are outside the area of direct impact. None of the structures that border the alignment will be impacted by installation of the sewer line. Should the project scope/limits be expanded to include them, inventory and evaluation of their historical significance would be conducted.

5. FINDINGS AND CONCLUSIONS

JRP Historical Consulting conducted intensive level survey of extant buildings, structures, objects, and/or potential districts within the main VPP project site on June 12 and 13, 2006. The survey was performed by qualified architectural historian Meta Bunse. The surveyed area is located in a heavily commercial and industrial area. The VPP study area for historic architectural resources includes inventory and evaluation of all resources forty-five years old or older immediately adjacent to the VPP project site. The resources were evaluated for individual significance, as well as for potential to contribute to a possible historic district.

5.1. Evaluation Criteria

JRP used the criteria of the California Register of Historical Resources (CRHR) and the National Register of Historic Places (NRHP) to evaluate the historic significance of the properties within the study area. The State of California references cultural resources in the California Environmental Quality Act (CEQA—Public Resources Code (PRC) Division 13, Sections 21000-21178); archaeological and historical resources are specifically treated under Sections 21083.2 and 21084.1, respectively. California PRC 5020.1 through 5024.6 (effective 1992) creates the California Register of Historical Resources (CRHR) and sets forth requirements for protection of historic cultural resources. The criteria for listing properties in the CRHR are in Section 15064.5(a)(2)-(4) of the CEQA Guidelines, which provide the criteria from Section 5024.1 of the California Public Resources Code. The CRHR is in the California Code of Regulations Title 14, Chapter 11.5. The CRHR criteria closely parallel those of the NRHP. The eligibility criteria for listing properties in the NHRP are codified in Code of Federal Regulations 36 Part 60 and explained in guidelines published by the Keeper of the National Register.

Eligibility for listing in either the NHRP or CRHR rests on twin factors of significance and integrity. A property must have both significance and integrity to be considered eligible. Loss of integrity, if sufficiently great, will overwhelm historical significance a property may possess and render it ineligible. Likewise, a property can have complete integrity, but if it lacks significance, it must also be considered ineligible.

Historic significance is judged by applying the NRHP and CRHR criteria. The NRHP criteria are identified as Criteria A through D, the CRHR as Criteria 1 through 4. The NRHP guidelines explain that a historic resource's "quality of significance in American history, architecture, archeology, engineering, and culture" is determined by meeting at least one of the four main criteria. Properties may be significant at the local, state, or national level:

- NRHP Criterion A (CRHR Criterion 1): association with events or trends significant in the broad patterns of our history;
- NRHP Criterion B (CRHR Criterion 2): association with the lives of significant individuals;
- NRHP Criterion C (CRHR Criterion 3): a property that embodies the distinctive characteristics of a type, period, or method of construction, represents the work of a master, or that possesses high artistic values;

- NRHP Criterion D (CRHR Criterion 4): has yielded, or is likely to yield information important to history or prehistory.

In general, NRHP Criterion D (CRHR Criterion 4) is used to evaluate historic sites and archaeological resources. Although buildings and structures can occasionally be recognized for the important information they might yield regarding historic construction or technologies, the properties within the study area for this Project are building types that are well documented. Thus, these properties are not principal sources of important information in this regard.

Certain property types are usually excluded from consideration for listing in the NRHP, but can be considered if they meet special requirements in addition to meeting the regular criteria. The following are the seven Criteria Considerations that deal with properties usually excluded from listing in the National Register: [52]

- Consideration A: Religious Properties
- Consideration B: Moved Properties
- Consideration C: Birthplaces and Graves
- Consideration D: Cemeteries
- Consideration E: Reconstructed Properties
- Consideration F: Commemorative Properties
- Consideration G: Properties that have Achieved Significance within the Past Fifty Years

Integrity is determined under NRHP guidelines through applying seven factors to the historic resource. Those factors are location, design, setting, workmanship, materials, feeling, and association. These seven can be roughly grouped into three types of integrity considerations. Location and setting relate to the relationship between the property and its environment. Design, materials, and workmanship, as they apply to historic buildings, relate to construction methods and architectural details. Feeling and association are the least objective of the seven criteria, pertaining to the overall ability of the property to convey a sense of the historical time and place in which it was constructed.

The CRHR definition of integrity and its special considerations for certain properties are slightly different than those for the NRHP. Integrity is defined as "the authenticity of an historical resource's physical identity evidenced by the survival of characteristics that existed during the resource's period of significance." The CRHR further states that eligible resources must "retain enough of their historic character or appearance to be recognizable as historical resources and to convey the reasons for their significance" and it lists the same seven aspects of integrity used for evaluating properties under the NRHP criteria. The CRHR's special considerations for certain properties types are limited to: 1) moved buildings, structures, or objects; 2) historical resources achieving significance within the past fifty years; and 3) reconstructed buildings.

[52] USDI, National Park Service, "How to Apply the National Register Criteria for Evaluation," *National Register Bulletin 15*, 25, 41-43; USDI, National Park Service, "Guidelines for Evaluating and Nominating Properties that have Achieved Significance within the Last Fifty Years," *National Register Bulletin No. 22* (Washington, D.C.: Government Printing Officer, 1979, revised 1990 and 1996).

Under CEQA Guidelines, Section 15064.5 (a), a "historical resource" includes:

- A resource listed in or eligible for the California Register of Historical Resources;
- A resource listed in a local register of historical resources, as defined in section 5020.1(k) of the Public Resources Code or identified as significant in an historical resource survey meeting the requirements of section 5024.1(g) of the Public Resources Code;
- Any object, building, structure, site, area, place, record, or manuscript that a lead agency determines historically significant, provided the determination is supported by substantial evidence in light of the whole record;
- A resource so determined by a lead agency as defined in Public Resources Code sections 50203.1(j) or 5024.1.
- Historical resources listed in, or determined eligible for, the NRHP are automatically listed in the CRHR, Section 5024 (d)(1)(2) of the Public Resources Code.

5.2. Historic Evaluation

3200 Fruitland Avenue (Map Reference #1). No historical resources present. This property does not appear to meet the criteria for listing in the National Register of Historic Places (NRHP), nor does it appear to be an historic resource for the purposes of CEQA. The property is located on the southeast corner of Fruitland Avenue and South Boyle Avenue in Vernon, California, and consists of four adjoining buildings, the first built in 1940, with additional buildings constructed in 1941, 1942, and 1950. The first occupant of the property was the Aluminum Company of American (Alcoa), which manufactured aluminum products at the plant. This property operated as part of a larger Alcoa complex, which began production in 1938 on the adjoining parcel to the east. City building permits, historic aerial photographs, and field observations reveal significant alterations to the property, including removal of windows, removal of building sections, alterations, and additions.

This property is generally associated with the growth of military related industry in the Los Angeles region immediately prior to, and during World War II. The plant played a role as a supplier of aluminum products as part of the war effort and its products included aircraft parts and bridge girders. Although the plant has a potentially important role within the context of World War II-related industry, the property does not appear to meet the criteria for listing in the NRHP for its association with important events (Criterion A / Criterion 1) because it lacks integrity to that period of significance. The original complex was located to the east of the buildings evaluated on this form. That group of buildings included the Foundry, Die Shop, Forge Shop, Rivet Plant, Machine Shop, Locker Room, Extrusion Press Building, Administration, and other buildings, all of which are gone. The property under evaluation functioned as part of the complex, and did not operate as an independent entity. The link or association between the former World War II era aluminum production plant, and the remaining buildings is gone. Generally, those buildings that do remain on the property also lack individual integrity. The bands of metal sash industrial windows are gone on some sections, and have been painted over or covered on others. Plastic siding has replaced the original corrugated metal siding on a section of Building 104. The west side of this building also now has louvered vents

installed in 1967. These changes to the Alcoa complex and to the remaining buildings diminish the property's integrity of design, materials, workmanship, setting, feeling, and association.

The property does not have direct associations with persons important to local, state, or national history, and therefore, does not appear to be eligible for the NRHP, or to be a historical resource under CEQA (Criterion B / Criterion 2).

The property is not distinctive for its architecture. Both the sawtooth roof buildings and the flat roof buildings are common types of steel frame industrial architecture. With their bands of metal sash industrial windows and corrugated metal siding, these buildings do not distinguish themselves as representative of a type, period, or method of construction. Furthermore, the changes to the buildings, as stated above, have affected their character defining features and diminished their integrity. The buildings, therefore, do not appear to be eligible for the NRHP, or to be a historic resource under CEQA (Criterion C / Criterion 3). In rare instances, buildings themselves can serve as sources of important information about historic construction materials or technologies (Criterion D / Criterion 4); however, this property is otherwise documented and does not appear to be a principal source of important information in this regard. As such, the property does not appear to meet the criteria for listing in the NRHP or CRHR, nor does it appear to qualify as a historic resource for the purposes of CEQA.

3221 Fruitland Avenue. (Map Reference #2). No historical resources present. This property does not appear to meet the criteria for listing in the NRHP, nor does it appear to be an historical resource for the purposes of CEQA. The property is located on the northwest corner of South Boyle Avenue and Fruitland Avenue in Vernon, California, and consists of several adjoining buildings as well as detached buildings. The buildings date to the 1940s and 1950s, with later additions and alterations. Currently, a single business occupies the parcel: Barksdale, Incorporated. At the time of the buildings construction, two businesses were on the parcel: General Refractories, a valve assembly plant, and a steel warehouse. City building permits, aerial photographs, maps, and field observations reveal significant alterations to the property, including filling of windows, and additions.

This property is associated with the industrial growth and expansion of Vernon during the 1940s and 1950s; however, it is not important within this context. The property is not important within the valve manufacturing industry, nor is it associated with persons important to local, state, or national history. The resources do not have important associations with significant events (Criterion A / Criterion 1), nor do the occupants appear to have made significant contributions to local, state, or national history (Criterion B / Criterion 2).

The property is not distinctive for its architectural details. Building 1C displays some attributes of the Streamline-Moderne Style, which was popular in the 1930s and 1940s and characterized by an emphasis on horizontality and clean, simple lines. Building 1C has the horizontal frieze band, recessed circles that suggest portholes, strong horizontal lines at the entrance, metal pipe supports, and glass block sidelights. Overall, these are modest expressions of the style. The buildings are not important or distinctive examples of the type, period, or method of construction (Criterion C / Criterion 3). In rare instances, buildings themselves can serve as sources of important information about historic construction materials or technologies (Criterion D /

Criterion 4); however, this property is otherwise documented and does not appear to be a principal source of important information in this regard. Finally, many of the buildings have had windows and doors filled, windows painted out, and additions constructed, and do not retain historic integrity.

5100 South Boyle Avenue. (Map Reference #3). No historical resources present. This property does not appear to meet the criteria for listing in the NRHP, nor does it appear to be an historic resource for the purposes of CEQA. Map Reference 3 represents two adjoining legal parcels, 5100 South Boyle Avenue and 3121 Fruitland Avenue, on the northeast corner of Fruitland Avenue and South Boyle Avenue, both leased by California By-Products. Original construction occurred in 1947 at 5100 South Boyle and in 1956 at 3121 Fruitland. The original occupants of these two properties were Allied Veneer and Newburgh Steel Company.

These properties are associated with the industrial growth and expansion of Vernon during the 1940s and 1950s, but they are not important within the context of Vernon's industrial development, the plywood industry, the steel industry, or the pet food industry. Nor are they associated with persons important to local, state, or national history. The properties do not have important associations with significant events (Criterion A / Criterion 1), nor do the occupants appear to have made significant contributions to local, state, or national history (Criterion B / Criterion 2).

The properties are not distinctive for their architectural details. The front office building displays a few International Style details, a style that emphasized austere structural and material honesty.[53] The other buildings on the parcel are prefabricated, steel frame industrial buildings popular for the affordability, ease of construction, and versatility. The two buildings at 5100 South Boyle and 3121 Fruitland are not important examples of their styles and do not have distinctive architectural details or character defining features associated with an important type, period, or method of construction (Criterion C / Criterion 3). In rare instances, buildings themselves can serve as sources of important information about historic construction materials or technologies (Criterion D / Criterion 4); however, these properties are otherwise documented and do not appear to be a principal source of important information in this regard. Finally, the buildings have been altered from their original construction and do not retain historic integrity.

3063 Fruitland Avenue. (Map Reference #4). No historical resources present. This property does not appear to meet the criteria for listing in the NRHP, nor does it appear to be an historic resource for the purposes of CEQA. The property is located on the northwest corner of Fruitland Avenue and South Boyle Avenue in Vernon, California, and dates to 1954. The building originally housed a paper container manufacturing company, and subsequent uses include automotive wire and cable manufacturing, warehousing and garment manufacturing. Currently, a garment manufacturer occupies the property. This building is associated with the general industrial expansion of Vernon during the 1950s. It is not important within that context, nor is it associated with persons important to local, state, or national history (Criterion A / Criterion 1).

[53] David Gebhard, "About Style, Not Ideology," *Architecture*, December 1983, 35-44; David Gebhard and Harriette Von Breton, *Los Angeles in the Thirties: 1931-1941*, Second Edition (Los Angeles: Hennessey & Ingalls, Inc., 1989), 141-145.

The property does not have important associations with individuals who have made significant contributions to local, state, or national history (Criterion B / Criterion 2).

The property is not distinctive for its architectural details. The brick building is utilitarian construction with little architectural detail. The front entrance displays some International Style influence with its narrow bricks and boxy roof. The building at 3063 Fruitland is not an important example of this style and does not have distinctive architectural details or character defining features associated with an important type, period, or method of construction (Criterion C / Criterion 3). In rare instances, buildings themselves can serve as sources of important information about historic construction materials or technologies (Criterion D / Criterion 4); however, this property is otherwise documented and does not appear to be a principal source of important information in this regard.

2900 Fruitland Avenue. (Map Reference #5). No historical resources present. This property does not appear to meet the criteria for listing in the NRHP, nor does it appear to be an historic resource for the purposes of CEQA. The property is located on the southwest corner of Fruitland Avenue and South Boyle Avenue in Vernon, California, and dates to 1940. The building originally housed a truck trailer manufacturing firm, and since at least 1963 has been a warehouse for the Owens Illinois glass manufacturing plant. This building is associated with the general industrial expansion of Vernon during the 1940s. It is not, however, important within that context, or associated with persons important to local, state, or national history. The property does not have important associations with significant events (Criterion A / Criterion 1), nor do the occupants appear to have made significant contributions to local, state, or national history (Criterion B / Criterion 2).

The property is not distinctive for its architectural details. It is a utilitarian style warehouse building with a clerestory monitor, a common type for the 1940s. The building at 2900 Fruitland is not an important example of this style and does not have distinctive architectural details or character defining features associated with an important type, period, or method of construction (Criterion C / Criterion 3). In rare instances, buildings themselves can serve as sources of important information about historic construction materials or technologies (Criterion D / Criterion 4); however, this property is otherwise documented and does not appear to be a principal source of important information in this regard.

Furthermore, this property lacks sufficient integrity to convey its significance. It has undergone many alterations including the demolitions and additions described above. Changes also occurred to the siding of the building, as the current stucco and the raised ridge metal are not original. The metal siding is consistent with other buildings in the Owens-Illinois complex and it is likely that this company made the changes after they took possession of the building sometime between 1956 and 1963. Given these alterations from the building's original construction, the building does not retain historic integrity.

5215 South Boyle Avenue. (Map Reference #6). This property does not appear to meet the criteria for listing in the NRHP, nor does it appear to be an historic resource for the purposes of CEQA. The property is located on the west side of South Boyle Avenue between Fruitland Avenue and East 54th Street in Vernon, California, and consists of several adjoining buildings as well as detached buildings. The buildings date to the 1940s and 1950s, with later additions and alterations. Currently, NI Industries owns the property and leases it to tenants. Originally, Norris Stamping and Manufacturing occupied the building and manufactured products for the defense industry. City building permits, aerial photographs, maps, and field observations reveal significant alterations to the property, particularly building expansions, and additions.

This property is associated with the growth of military-related industry in the Los Angeles region during World War II, the Korean War, and the Cold War. Norris Stamping and Manufacturing supplied military products including cartridge casings, ammunition containers, and high-tech weapon components. It was one of many industrial firms that manufactured such products and was not individually important within this context. The property does not appear to meet the criteria for listing in the NRHP for its association with important events (Criterion A / Criterion 1). In addition, the property is not associated with persons important to local, state, or national history (Criterion B / Criterion 2).

The property is not distinctive for its architectural details. Of the four buildings visible from South Boyle, three are similarly designed brick industrial buildings; the fourth is a reinforced concrete administration building. The industrial buildings are a common style and lack distinctive architectural details, although some Art Deco details were employed on one of the industrial buildings and the Administration Building. This style was popular during the 1920s and 1930s and emphasized strong vertical and horizontal lines, curved corners, and cantilevered concrete awnings. Buildings 4, 5, and 6 also are not distinctive for their architecture and they are of a common, utilitarian industrial style. None of the buildings addressed on this form are important architectural examples. The buildings do not have distinctive architectural details or character defining features associated with an important type, period, or method of construction (Criterion C / Criterion 3). In rare instances, buildings themselves can serve as sources of important information about historic construction materials or technologies (Criterion D / Criterion 4); however, this property is otherwise documented and does not appear to be a principal source of important information in this regard. Finally, growth and expansion resulted in the construction of numerous additions to the complex and alteration of many of the buildings.

Union Pacific Railroad Spur. (Map Reference #7). No historical resources present. This spur of the Union Pacific Railroad (UPRR) line runs parallel to the east side of South Boyle Avenue, south of Fruitland Avenue and north of 54th Street in Vernon does not appear to meet the criteria for listing in the NRHP, nor does this structure appear to be a historical resource for the purposes of CEQA. Components of transportation infrastructure, such as bridges and railroads, are most often found eligible for the National Register or California Register under either Criterion A / Criterion 1, for their role in local or regional history, or Criterion C / Criterion 3, relating to possible significance in the field of engineering. Infrastructure is infrequently, if ever, found to be eligible under Criteria B or D / Criteria 2 or 4. Important historic persons associated with such structures are often involved with their design, which would make them significant under

Criterion C / Criterion 3. This portion of the spur of the UPRR does not appear to have important associations with any historically significant individuals (Criterion B / Criterion 2). Historic structures (and buildings) can occasionally be recognized for the important information they yield, or might yield, regarding historic construction materials or technologies, thus making them significant under Criterion D / Criterion 4. The UPRR system is well documented in manuscript, published, and photographic records, and does not appear to be a principal source of important information in this regard.

This spur was one of many UPRR spurs in the area and served as a typical rail connection to properties in Vernon. This portion of the UPRR system was of limited importance and is not eligible under Criterion A / Criterion 1. Rail lines, like other infrastructure elements, are inherently vital to communities because they support and facilitate communication and the distribution of people, goods, and services that can encourage development at both the local and regional level. To be eligible for listing in the National Register or California Register, rail lines, and other infrastructure, must be shown to have particular importance directly related to events and trends in community development and transportation, with emphasis on a specific demand for such facilities and the cause and effects of its construction. While this railroad spur was vital to the businesses it served, it is not of particular importance to local growth or development and, therefore, it does not appear to be eligible for listing in the National Register or California Register under Criterion A / Criterion 1.

Under Criterion C / Criterion 3, the spur would need to be significant for distinctive characteristics of its type, period, and/or method of construction, and/or be significant for its designer(s). The spur described in this form does not constitute innovative designs, nor are any innovative construction techniques apparent in their construction. This rail segment is not a rare structural type within California, nor does it represent bold or important engineering achievements. This portion of the UPRR system is one of similar railroad spurs built in Los Angeles County, and throughout California, and it does not appear to be significant under Criterion C / Criterion 3.

Potential Historic District(s). Potential historical resources are present outside the study area for the main VPP plant site, but adjacent to linear components of the project. Previous inventory and evaluation of historic architectural resources in Vernon have suggested that large areas of the city are potential historic districts. JRP considered this possibility during the course of its field reconnaissance, inventory, and evaluation efforts for this project and has concluded that while there may be a potential historic district in Vernon, it is a much smaller area than previously suggested. The area of the potential historic district is defined by the boundaries of the original Central Manufacturing District (CMD), that part of Vernon bound by District Boulevard on the north and east, Downey Road on the west, and Fruitland Avenue on the south. For a discussion of the history and development of the CMD, see Section 3.

The only part of the VPP project that would take place in or near the potential CMD historic district is the River Route transmission line. This route would run parallel to the northern boundary of the potential district on District Boulevard, from Downey Road to the Los Angeles River, east of the intersection of Corona Avenue and District Boulevard. All of the other resources reviewed as part of the reconnaissance survey of the linear components of this project

are outside the boundaries of the original CMD. These properties could be eligible as individual resources – if they have both historic significance and integrity – but they are not contributors to a potential CMD historic district.

It is important to note that none of the buildings immediately surrounding the VPP power plant site and evaluated for this project (see Section 5.2 above) are within the original CMD. None of these resources were designed or constructed as part of the original CMD plan and none of them would contribute to the potential CMD historic district. Furthermore, these resources were individually evaluated and none appeared to meet the criteria for listing in the NRHP or CRHR (see Section 5.1 above).

5.3. Impacts Analysis

The CEQA guidelines Section 15064.5(b) states that "a project with an effect that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment." Substantial adverse change is defined as when a historical resource is materially impaired. This can include demolition of the historical resource, or alterations to the physical characteristics of the historical resource that convey its historical significance and which justifies its eligibility for the CRHR. The lead agency in a project is responsible for mitigating the substantial adverse change and may be able to mitigate some types of impacts to a level that is less than significant.

The construction of the proposed VPP project will not cause a significant adverse change to historic architectural resources. The historical resources located in or near the study area for historic architecture are: 1) The Station A property (.59 miles northwest of VPP main site); 2) the westernmost buildings of the Owens Illinois glass plant .37 miles northwest of VPP main site); 3) the potential CMD historic district, adjacent to the River Route Transmission Line for this project (.57 miles northeast of VPP main site); 4) the Southern Pacific Railroad (1.5 miles west of VPP main site), some portion of which was found eligible for the NRHP or the CRHR. The eligible segment of this railroad, however, is not near the study area; and 5) La Mesa Battlefield site (.85 miles northeast of the VPP main site). La Mesa Battlefield is a California Historical Landmark. As such, it has not been automatically listed in the CRHR. This landmark is located well outside of the VPP APE and will not be impacted.

The construction and operation of the proposed VPP project, or its alternatives, will not materially impair these resources. The VPP project would not require the demolition or physical alteration of those characteristics that convey the historical significance of these resources. The construction of the various VPP project components would introduce new architectural and engineering elements near these resources, but the area this introduction would not constitute an substantial adverse change because the city was designed as a industrial area with the attendant infrastructure necessary to support this functional type. Because there are no anticipated adverse changes to historical resources in and near the study area, no mitigation is required under CEQA.

6. PREPARER'S QUALIFICATIONS

JRP partner Meta Bunse (MA in History – Public History, California State University, Sacramento) was the project manager for the preparation of this report. She provided general direction, technical report writing, and project direction. Ms. Bunse reviewed and edited the report, DPR 523 forms, and graphics. Ms. Bunse has more than sixteen years experience working as a consulting historian on a wide variety of historical research and cultural resource management projects as a researcher, author, and project manager. Based on her level of education and experience, Ms. Bunse qualifies as historian and architectural historian under the Secretary of the Interior's Professional Qualification Standards (as defined in 36 CFR Part 61).

Research Assistant Steven Melvin (B. A., History, University of Minnesota; M. A. in progress, Public History, California State University, Sacramento) also conducted field research and recordation, and contributed to historic context, resource evaluation, and preparation of the report and DPR 523 forms.

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APPENDIX A:

Figures

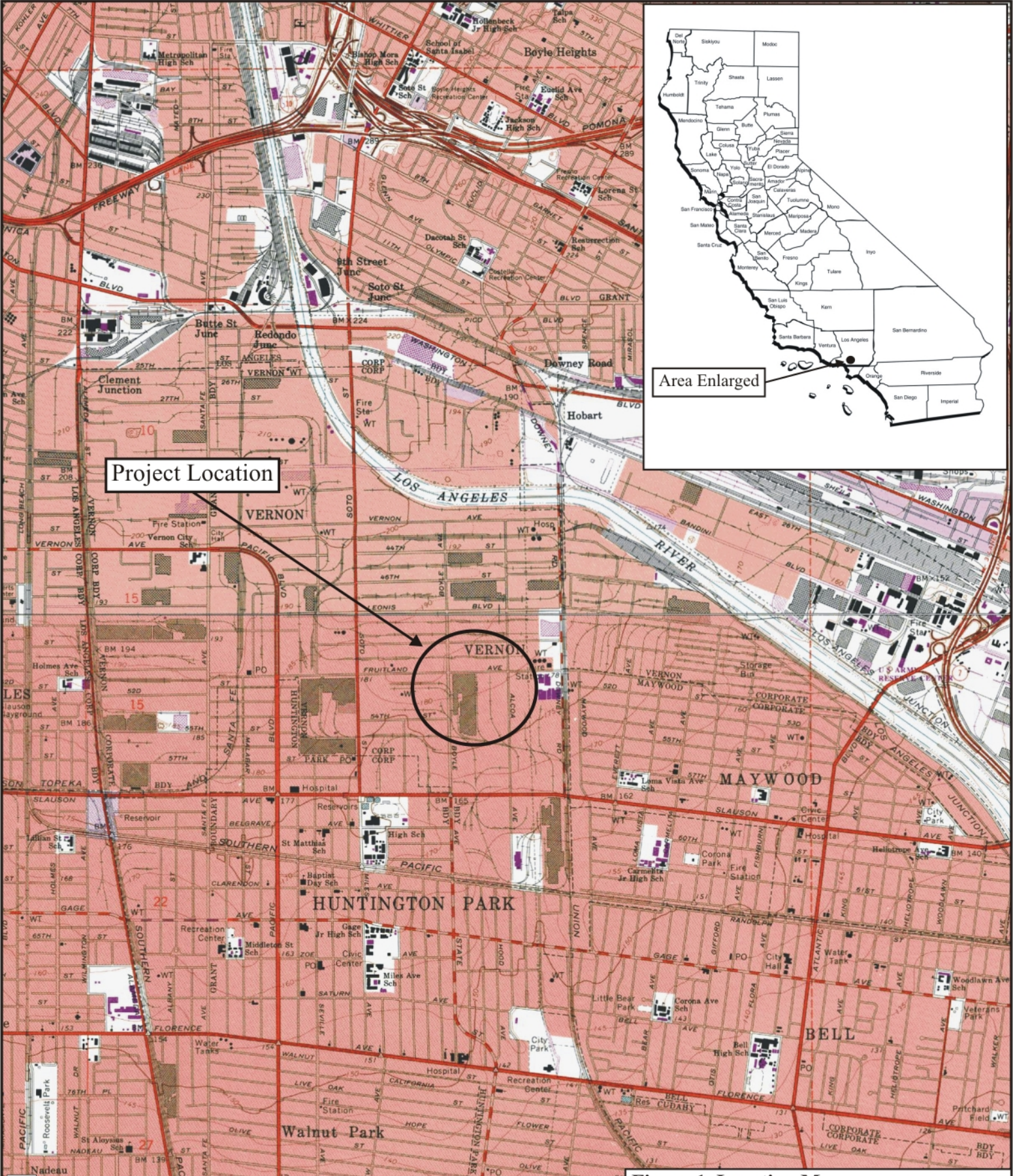


Figure 1. Location Map

Sources: USGS Quadrangles, 7.5" topographic series, *Los Angeles* (1966, photorevised 1994) and *South Gate* (1964, photorevised 1981)

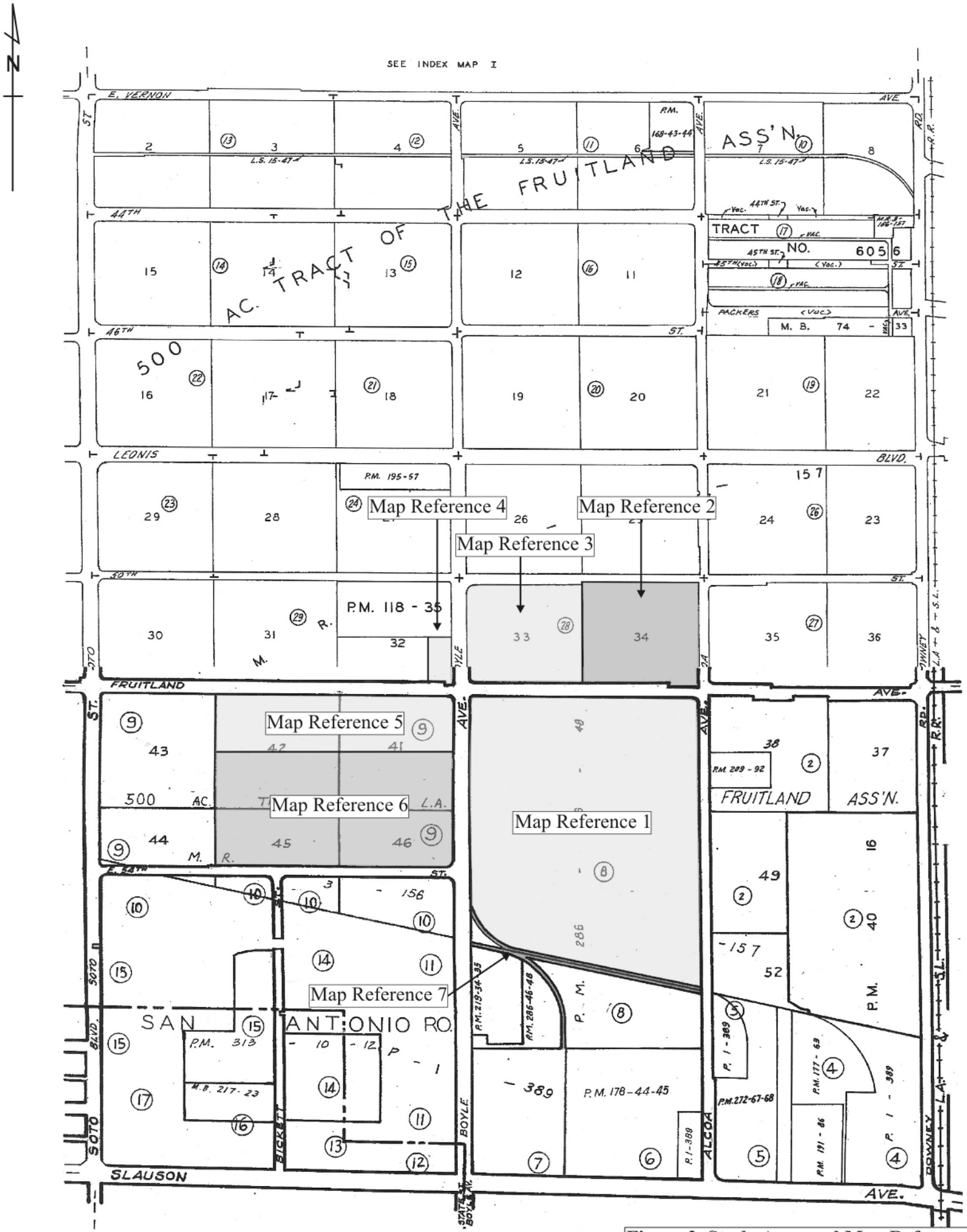


Figure 2. Study Area and Map References

APPENDIX B:

DPR 523 Forms

State of California – The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PRIMARY RECORD

Primary # _____
HRI # _____
Trinomial _____
NRHP Status Code 6

Other Listings _____
Review Code _____ Reviewer _____ Date _____

 *Resource Name or # Map Reference 2

P1. Other Identifier: 3221 Fruitland, 3211 Fruitland, 5125 Alcoa

***P2. Location:** ☐ Not for Publication ☒ Unrestricted *a. County Los Angeles
and (P2b and P2c or P2d. Attach a Location Map as necessary.)

***b. USGS 7.5' Quad** South Gate **Date** 1964 (1981) **T**____; **R** ____; ___ ¼ **of Sec** ____; _____ **B.M.**

c. Address 3221 Fruitland Avenue City Vernon Zip 90058

d. UTM: (give more than one for large and/or linear resources) Zone _____; _____mE/ _____mN

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate)
Assessor's Parcel Number: 6303-028-013

***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)

The property at 3221 Fruitland Avenue is a large parcel comprising half of the block on Fruitland Avenue between Alcoa Avenue and South Boyle Avenue. The parcel is home to Barksdale Incorporated, which occupies numerous buildings including some modern and some more than 50 years old. The older buildings are concentrated on the east side of the lot at the northwest intersection of Fruitland Avenue and Alcoa Avenue. This cluster of older buildings includes four adjoining single story industrial buildings, a freestanding industrial building, and an office building (**Figure 1)**.

***P3b. Resource Attributes:** (List attributes and codes) Industrial Building (HP)

***P4. Resources Present:** ☒ Building ☐ Structure ☐ Object ☐ Site ☐ District ☐ Element of District ☐ Other (Isolates, etc.)

P5b. Description of Photo: (View, date, accession #) Photograph 1. Building 1, east façade (Alcoa Ave.) with Building 1C in the foregrounds, camera facing southwest. 6/12/06.

***P6. Date Constructed/Age and Sources:**
☒ Historic ☐ Prehistoric ☐ Both
ca. 1949, ca. 1954, ca. 1960, Sanborn maps, aerial photographs, building permits.

***P7. Owner and Address:**
Barksdale Incorporated
3211 Fruitland Avenue
Vernon, CA 90058

***P8. Recorded by:** (Name, affiliation, address)
Meta Bunse and Steven J. Melvin
JRP Historical Consulting,
1490 Drew Ave, Suite 110,
Davis, CA 95616

***P9. Date Recorded:** 6/12/06

***P10. Survey Type:** (Describe)
Intensive

***P11. Report Citation:** (Cite survey report and other sources, or enter "none.") Historical Resources Inventory and Evaluation Report: Vernon Power Plant Project.

***Attachments:** ☐ None ☐ Location Map ☐ Sketch Map ☒ Continuation Sheet ☒ Building, Structure, and Object Record ☐ Archaeological Record ☐ District Record ☐ Linear Feature Record ☐ Milling Station Record ☐ Rock Art Record ☐ Artifact Record ☐ Photograph Record ☐ Other (list) _____

State of California – The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary # _____
HRI # _____
Trinomial _____
NRHP Status Code 6
Other Listings _____
Review Code _____ Reviewer _____ Date _____

 ***Resource Name or #** (Assigned by recorder) Map Reference 1

P1. Other Identifier: 3200 Fruitland Avenue

***P2. Location:** ☐ **Not for Publication** ☒ **Unrestricted** ***a. County** Los Angeles
and (P2b and P2c or P2d. Attach a Location Map as necessary.)

***b. USGS 7.5' Quad** South Gate **Date** 1964 (1981) **T**____; **R** ____; ___ ¼ **of Sec** ____; _____ **B.M.**

c. Address 3200 Fruitland Avenue City Vernon Zip 90058

d. UTM: (give more than one for large and/or linear resources) Zone _____; _____mE/ _____mN

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate)
Assessor's Parcel Numbers: 6310-008-013, 6310-008-012

***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)

The property at 3200 Fruitland Avenue consists of four industrial buildings once used in the manufacture of aluminum products, the first constructed in 1940 (**Photograph 1)**. The two to three story buildings adjoin each other and are located at the southeast corner of Fruitland and South Boyle Avenue. Enclosing the property on the north and part of the west side is an eight foot high, poured concrete fence topped with barbed wire. On the southern half of the west property line is a chain link fence. A small parking lot is on the southwest corner of the parcels, buildings occupy nearly all of the remaining land. (See Continuation Sheet)

***P3b. Resource Attributes:** (List attributes and codes) Industrial Building (HP8)
***P4. Resources Present:** ☒ Building ☐ Structure ☐ Object ☐ Site ☐ District ☐ Element of District ☐ Other (Isolates, etc.)

P5b. Description of Photo: (View, date, accession #) Photograph 1. Camera facing southeast, 6/13/06

***P6. Date Constructed/Age and Sources:**
☒ Historic ☐ Prehistoric ☐ Both
1940, 1941, 1942, 1950, county records, building permits, aerial photographs

***P7. Owner and Address:**
Century Cast Plate
3200 Fruitland Ave
Vernon CA 90058

***P8. Recorded by:** (Name, affiliation, address)
Meta Bunse and Steve Melvin
JRP Historical Consulting,
1490 Drew Ave, Suite 110,
Davis, CA 95616

***P9. Date Recorded:** 6/13/06
***P10. Survey Type:** (Describe)
Intensive

***P11. Report Citation:** (Cite survey report and other sources, or enter "none.") Historical Resources Inventory and Evaluation Report: Vernon Power Plant Project.

***Attachments:** ☐ None ☐ Location Map ☐ Sketch Map ☒ Continuation Sheet ☒ Building, Structure, and Object Record ☐ Archaeological Record ☐ District Record ☐ Linear Feature Record ☐ Milling Station Record ☐ Rock Art Record ☐ Artifact Record ☐ Photograph Record ☐ Other (list) _____

***NRHP Status Code** 6

***Resource Name or #** (Assigned by recorder) Map Reference 1

B1. Historic Name: Aluminum Company of America
B2. Common Name: Pechiney Cast Plate
B3. Original Use: Aluminum Fabrication B4. Present Use: vacant
***B5. Architectural Style:** utilitarian
***B6. Construction History:** (Construction date, alteration, and date of alterations) original construction, 1940, additions 1941, 1942, 1950
***B7. Moved?** ☒ No ☐ Yes ☐ Unknown **Date:** _____ **Original Location:** _____
***B8. Related Features:** _____
B9. Architect: unknown b. Builder: 1940 Building: unknown; Building 104: J.P Dearasaugh; Building 112A: A. Huotari
***B10. Significance: Theme** n/a **Area** n/a
Period of Significance n/a **Property Type** n/a **Applicable Criteria** n/a
(Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity.)

This property does not appear to meet the criteria for listing in the National Register of Historic Places (NRHP) or the California Register of Historic Resources (CRHR), nor does it appear to be an historic resource for the purposes of CEQA. The property is located on the southeast corner of Fruitland Avenue and South Boyle Avenue in Vernon, California and consists of four adjoining buildings, the first built in 1940, with additional buildings constructed in 1941, 1942, and 1950. The first occupant of the property was the Aluminum Company of American (Alcoa), which manufactured aluminum products at the plant. This property operated as part of a larger Alcoa complex which began production in 1938 on the adjoining parcel to the east. City building permits, historic aerial photographs, and field observations reveal significant alterations to the property, including removal of windows, removal of building sections, alterations, and additions. (See Continuation Sheet)

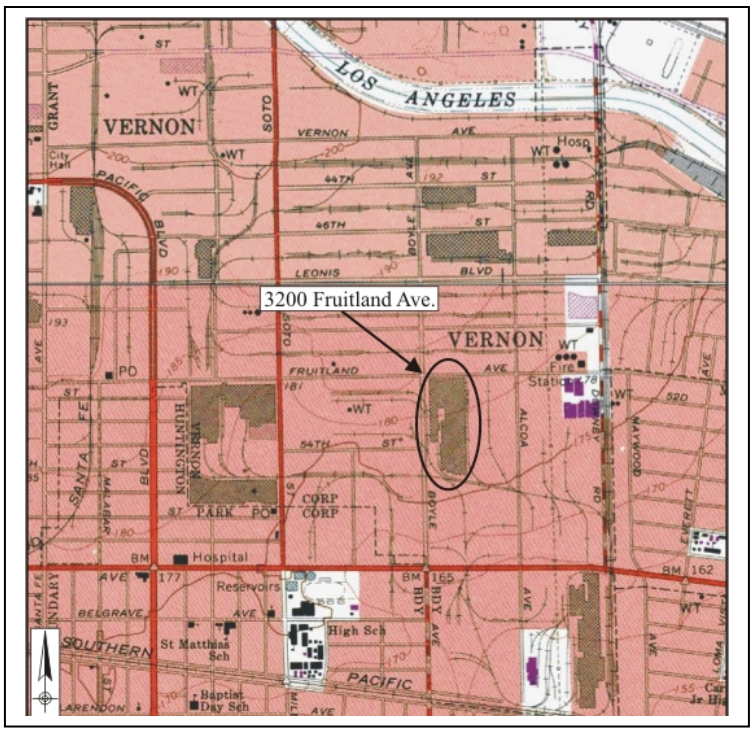
B11. Additional Resource Attributes: (List attributes and codes) _____
***B12. References:** Sanborn maps, 1951, 1953; Aerial photographs, 1941, 1963, 1981, 2006; City of Vernon building permits; Los Angeles County Assessor records; *Los Angeles Times*; See Footnotes.

B13. Remarks:

***B14. Evaluator:** Meta Bunse and Steven J. Melvin

***Date of Evaluation:** July 2006

(This space reserved for official comments.)



P3a. Description (continued):

The largest building on the parcel is a three story industrial building of approximately 600,000 square feet. This building is actually two buildings constructed at different times. Construction of the first building occurred in 1940 at the corner of Fruitland Avenue and Boyle Avenue (**Photograph 2)**. It is approximately 266,000 square feet and has a roughly rectangular foot print. This building was used in the extrusion process of aluminum and different parts of it became known as Building 106, Building 108, Building 110, and Building 112. Construction of an approximately 334,000 square foot building adjoining the first building occurred in 1942 (**Photograph 3)**. It was the tube mill and shipping building and given the name Building 112A. It has a rectangular footprint attached to the southeast corner of the original building giving the two together a roughly L-shaped footprint (**Figure 1)**.

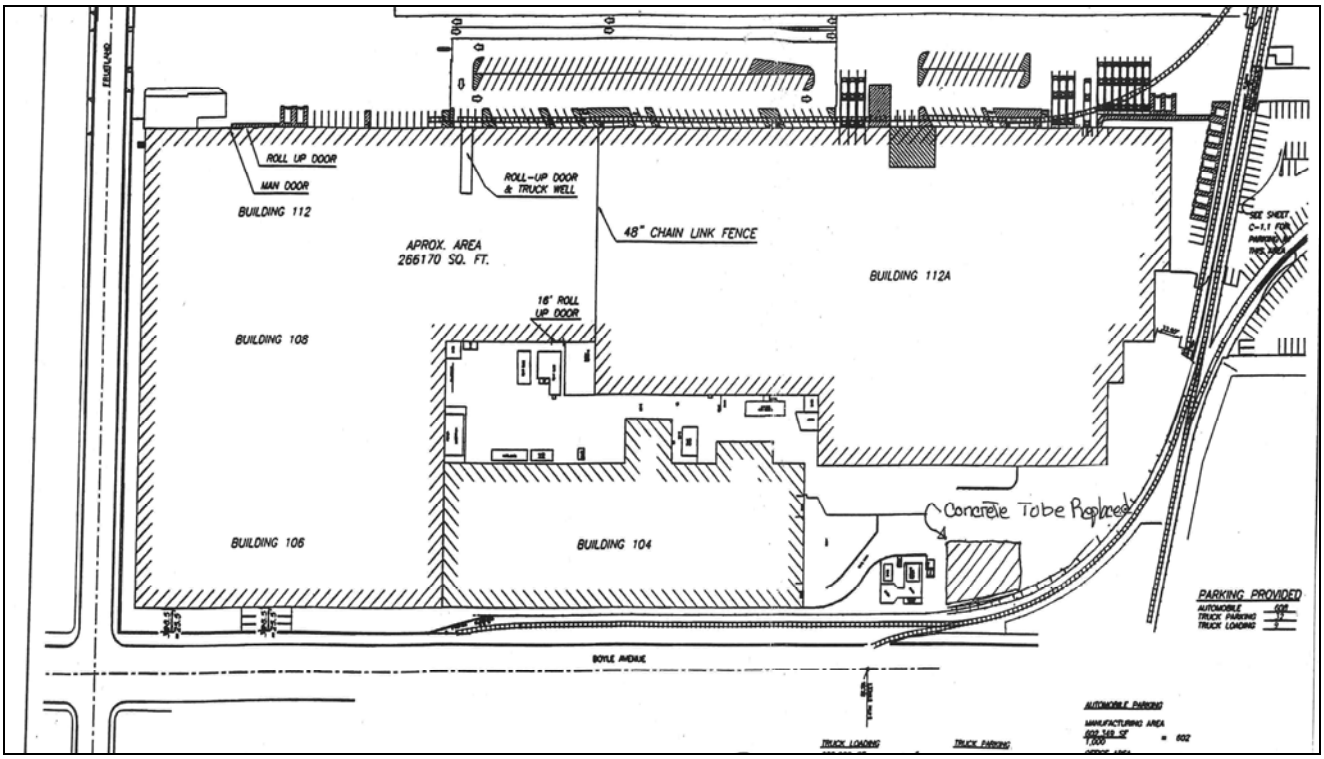


Figure 1. Plan of 3200 Fruitland, Boyle Avenue is at the bottom and Fruitland Avenue is at the left.
The 1940 building is on the left, the 1942 building is on the upper right,
and the 1941 building (Building 104) is center bottom.

These two buildings are identical in style, and appear as one building. They both have a steel frame with a concrete foundation and are sided with corrugated metal panels. A sawtooth roof covers the buildings with a north facing clerestory. The windows are industrial metal sash with pivoting central panes. Those on the north and west sides of the building, are painted out or covered with corrugated metal panels. Paint also covers the windows on the clerestory windows on the north (Fruitland) façade. Translucent fiberglass panels are partly visible behind the cement fence on the Fruitland side. The east side of the building has no windows and four modern roll-up freight doors. Near Fruitland on this side is a small substation. A short concrete foundation wall is visible on the east side with small buttresses. Two features distinguish the 1942 building from the 1940 building: corrugated metal panels cover the vertical sides of the clerestory (which normally contain windows) on the 1942 building; and, the roofs of this building have large vents on top (**Photograph 4)**.

The other two buildings are approximately 200,000 square feet and are adjoining the southwest corner of the 1940 building and face Boyle Avenue (**Photograph 5)**. Construction of these two building occurred in 1941. Together they are known as

Building 104 and they housed the aluminum remelting facilities. They are three stories tall and are roughly rectangular in plan (**Photograph 6)**. Both rest on a concrete foundation and have steel framing clad in corrugated metal siding and corrugated plastic siding. Unlike the other building on the parcel, these two have flat roofs. On the second story of the west side are banks of louvered vents. On the first level are several evenly spaced doorways; also on this side is exterior mounted equipment (**Photograph 7)**. The south façade of the southernmost of these two buildings has bands of metal sash industrial windows on the second and third stories. There are also two large openings in this façade.

B10. Significance (continued):

Historic Context

Early Vernon to 1920

The present City of Vernon is located about five miles southeast of downtown Los Angeles, near the Los Angeles River, in an area that was rural and sparsely populated into the early twentieth century. It consisted of large uncultivated areas and a few scattered vegetable, orange and rose farms, as well as ranches devoted to raising livestock. A French-Basque immigrant named John B. Leonis moved to the area in 1896 and opened a general merchandise store, and later a feed barn and a winery. Leonis located on Downey Avenue, which, along with nearby Santa Fe Avenue, were among the few roads that connected Los Angeles and the port at Long Beach. Also, the Los Angeles Terminal Railroad's San Pedro Division (later the Union Pacific, see below) paralleled Downey Avenue, and it also connected Los Angeles with Long Beach. Two other railroads passed in close proximity to what would later become Vernon: the Southern Pacific (SP) and the Atchison Topeka and Santa Fe (ATSF). The latter's San Diego Branch and Redondo Branch met at Ballona Junction just north of Vernon. Leonis recognized the potential of the site, and in 1905, along with brothers Thomas J. and James J. Furlong, incorporated the City of Vernon. Leonis and the Furlongs conceived of the 2.4 square mile city as an exclusively industrial municipality, although in the year of its creation Vernon industry consisted of two factories and two lumberyards.[1]

The city was situated between Los Angeles and the port at Long Beach, was on or near the lines of three major railroads, and also had access to the constantly improving network of roads and highways. Besides transportation infrastructure, the city founders offered inexpensive power, and water, and a tax rate among the lowest in the region. By 1913, Vernon received gas from the Midway gas fields in the southern San Joaquin Valley and electricity from a Pacific Light and Power plant in Fresno. Other factors that contributed to industrialization were a policy prohibiting construction of residences, low labor costs, and the paving of all streets in the city.[2]

In time, the unique combination of characteristics in Vernon did draw industry. In 1912 nine industries opened plants in Vernon and by the end of the following year, it was home to over thirty industries and referred to by the *Los Angeles Times* as an "industrial suburb." By 1915, the Salt Lake Railway laid two miles of switching track in Vernon to connect its industries with the nearby main lines. Some of these first industries were oil refineries, which located in the northern part of the city during the 1910s. A district of stockyards and slaughterhouses established themselves during this time in the area

[1] James Kilty, *Leonis of Vernon* (New York: Geneva Books, 1963), 17-19, 22, 49; *City of Vernon: A Collection of Oral Histories* (Fullerton, California: CSU, Fullerton, 1995), 8; Greg Hise, "'Nature's Workshop' Industry and Urban Expansion in Southern California, 1900-1950." *Journal of Historical Geography*, 27, no.1 (2001): 84-85; "John B. Leonis, Ex-Mayor of Vernon, Dies," *Los Angeles Times*, 20 October 1953; "More Towns and Prosperous Agricultural Settlements," *Los Angeles Times*, 1 January 1887; "CMD Salutes Vernon—A City of Industry," *Central Manufacturing District Magazine* 38 no. 4 (1961): 9.

[2] Kilty, *Leonis of Vernon*, 41, 239; Pete Moruzzi, "Vernon: Southern California's First "Exclusively Industrial" City." *L.A. Conservancy News*, September/October 1997: 4; "Vernon—The Coming Industrial and Manufacturing Center of Los Angeles County," *Los Angeles Times* 1 January 1915, p.VI 17; Greg Hise, "'Nature's Workshop,'" 76; "Like Smell of Smoke and Freely Admit It," *Los Angeles Times*, 21 December 1913, V1.

north of Vernon Avenue and east of Santa Fe Avenue. Oil refining and meat processing became two important industries in the early years of Vernon's development.[3]

Other industries such as paper manufacturing, wood processing, and iron works built plants in the area south of Vernon Avenue, with much of this early growth occurring between Santa Fe Avenue and Alameda Street and along South Boyle Avenue near Slauson Avenue**.** The parcel containing the resources evaluated on this form was subdivided as part of the Five Hundred Acre Tract of the Los Angeles Fruitland Association. Research did not reveal the date of this subdivision, but it likely occurred after 1915 as Vernon expanded to the east.[4]

Los Angeles Terminal Railway and the Union Pacific Railroad

The Los Angeles Terminal Railway (LATR) formed in 1890 with the hopes that it would become the terminus for a new transcontinental line from Salt Lake City. The company built tracks south from the San Gabriel Valley to San Pedro gambling that the latter would one day be the location of the Port of Los Angeles. LATR directors spent the 1890s lobbying Congress for appropriations to build a port at San Pedro and fighting Collis Huntington and the Southern Pacific who wanted the port located at Santa Monica.[5] The line to San Pedro went through present day Vernon parallel to what is now Downey Road.

In the early 1900's, under the direction of E. H. Harriman, the Union Pacific (UP) began laying tracks between Salt Lake City and Los Angeles. The LATR also began laying tracks along this route at this time. The LATR could not compete with the UP and Harriman's company eventually acquired the LATR and completed the line into Los Angeles in 1905, naming the new route the San Pedro, Los Angeles, and Salt Lake Railroad; by 1922, it was labeled a Union Pacific line. By 1924, there were spur lines running west from the UP alignment along Downey Road reaching the industries north of Slauson Avenue near South Boyle Avenue. Union Pacific extended this spur north and west by 1940 to serve the Alcoa plant at 3200 Fruitland Avenue (Map Reference 1) and neighboring businesses.[6]

Vernon Industrial Growth 1920-1940

Even though Vernon's industrial growth continued at a rapid rate, at the beginning of the 1920s, the area east of Pacific Avenue and south of Vernon Avenue was still largely rural and undeveloped, and in some places, farming and grazing persisted. Stimulated by the establishment of an industrial area to the east called the Central Manufacturing District (CMD) and the desire of industry to locate in Vernon, the city began to expand onto land between Pacific and the CMD.[7] The City of Vernon grew significantly in January 1926 when it annexed the CMD. Mr. and Mrs. A.J. Olsen, the only residents in the CMD, both voted for annexation. At the time, the CMD comprised 300 acres and was home to 28 industries, while the Los

[3] "Like Smell of Smoke," V1; "Vernon—The Coming Industrial," VI-17; "Great Can Factory To Be Started This Week," *Los Angeles Times*, 6 February 1916, V1; "Vernon: Southern California's First…," 4.

[4] "Like Smell of Smoke," V1; "Vernon—The Coming Industrial," VI-17; "Great Can Factory," V1; "Vernon: Southern California's First," 4; Los Angeles County, Subdivision Maps, "Tract #2836," Map Book 35, page 88; *Security Map of the City of Los Angeles.* Los Angeles: Security Savings Bank, 1908; USGS. *Watts Quadrangle*. Washington, D.C.: USGS, 1924; County of Los Angeles, Assessor's Plat Maps, accessed online at www.lacountyassessor.com.

[5] William Deverell, *Railroad Crossing: Californians and the Railroad, 1850-1910* (Berkeley: University of California Press, 1994), 102-122; USGS *Pasadena Quadrangle* (Washington: USGS, 1900); *The Southern Pacific, 1901-1985* (College Station, Texas: Texas A & M University Press, 1989), 45, 46.

[6] Don L. Hofsmmer, *The Southern Pacific, 1901-1985* (College Station, Texas: Texas A & M University Press, 1989), 45, 46; USGS, *Watts Quadrangle* (Washington: USGS, 1924); "City of Vernon, California," Los Angeles: Spence Air Photos, 1940, 1941. Accessed at City of Vernon Planning Department; "Another Large Boost for Industry in the Area," *Los Angeles Times*, 6 March 1938, A7.

[7] Hise, "'Nature's Workshop,'" 83-85; USGS, *Watts Quadrangle*; Los Angeles County. Subdivision Map, "Tract No. 6452," Map Book 94, Page 78, 79, May 1924; Vernon Aerial Photos 1924-1926, Los Angeles Public Library Photo Collection.

Angeles Junction Railway (LAJR) had four and a half miles of tracks. By June of 1930, Vernon's inclusion of the CMD and its continued industrial growth gave the city over 300 industries employing 15,000 workers.[8]

The singular vision of the industrial city did not waver, due in part to a virtually unchanging city government from the time of incorporation into the 1950s. City leaders continued to keep taxes low and power cheap to attract industry. From 1928 to 1930, 89 industrial firms opened in Vernon bringing the total to more than 300. These included petroleum refineries, packinghouses, can manufacturing plants, building material plants, glass container factories, furniture makers, structural steel and sheet metal plants, potteries, woodworking plants, oil well tool plants, and knitting mills. Even with this remarkable growth, approximately one-third of the city's four square miles was still undeveloped in 1930.[9]

Around this time city officials got into a dispute about electricity rates with Southern California Edison. The city, wishing to remain attractive to business, felt the rates were too high. The two parties could not come to terms, so Vernon decided to build its own power plant on 50th Street and Seville. The plant consisted of five, 7,000 horsepower diesel engines, which began operating June 1933. By 1937, Southern California Edison resumed supplying power to Vernon, but the city continued to maintain the power plant in working order as a backup source.[10]

Vernon city policy prioritized industrial land use at the expense of residential. Its population at the time of incorporation in 1905 was approximately 1700 people and ever since that time, the number has steadily decreased. In the 1920s, the city demolished several residences to make way for industrial growth. By 1930, it had 200 homes and 1269 residents, and although 16,000 people worked in Vernon, nearly all of them lived in Los Angeles, or the nearby communities of Huntington Park, Bell, and Maywood. Many workers commuted each day on PE electric rail lines. After World War II, the city constructed several houses for firemen, policemen, and some city officials, but between 1950 and 1960, Vernon lost half of its population. The population and the number of residences continued to shrink until, in the 1980s, it had the smallest population of any city in California, with 90 residents living in 30 houses. At the same time, more 50,000 people worked in the city on a daily basis.[11]

Vernon Industry After 1940

The stimulus of World War II resulted in substantial economic growth for the state of California. The biggest impact was in southern California, which became home to many new military bases and defense related industries. The increased military presence in the area spawned growth in all sectors of industry and its transportation infrastructure, low labor costs, proximity to the military, and good weather, Los Angeles blossomed as an industrial city.[12] The boom continued into the 1950s and 1960s partly sustained by the Korean War and the Cold War. Population in southern California grew, defense spending increased, and industry expanded. Vernon benefited from the economic good times and the city continued to experience industrial growth and diversification, and it became home to a variety of defense contractors, wholesale distributors, and consumer manufacturers.[13]

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[8] "Unanimous Vote Cast: Both Ayes," *Los Angeles Times*, 10 January 1926, 23; "Annexation Vote Today," *Los Angeles Times*, 9 January 1926, 5; "Vernon Sees Epochal," D1.
[9] Kilty, *Leonis of Vernon*, p.49; "Owens-Illinois Glass Company Opens New CMD Factory," *Central Manufacturing District Magazine* 32 no.3 (1954): 31; "CMD Salutes Vernon," 12; "Vernon Sees Epochal," D1.
[10] Sanborn Map Company, 1951); Kilty, *Leonis of Vernon*, 238; Moruzzi, "Vernon: Southern California's First …," 4.
[11] Hise, 83-85; Kilty, *Leonis of Vernon*, 239; "Vernon Sees Epochal," D1; "Only 229 Residents in Fast Shrinking Vernon," *Los Angeles Times*, 16 October 1961, B1; "Vernon: What You Smell is Money," *Los Angeles Times*, 31 July 1983, SE1.
[12] "Wartime Expansion of the California Airframe Industry," *Monthly Labor Review* 61, no.4 (October 1945): 721; Ann Markusen, et.al., *The Rise of the Gunbelt: The Military Remapping of Industrial America* (New York: Oxford University Press, 1991), 8, 9, 46; "California Historic Military Buildings and Structures Inventory," JRP Historical Consulting Services, March 2000, 7-2; "The Undiscovered City." *Fortune* (June 1949): 80.
[13] *City of Vernon: A Collection of Oral Histories*, 14; "The Undiscovered City." *Fortune* (June 1949): 80.

One Los Angeles area industry that benefited greatly from military contracts was aircraft manufacturing. In the 1920s and 1930s, this industry was in its infancy and on precarious financial ground. It produced a small number of aircraft for military and civilian use. The U.S. began to anticipate involvement in World War II by the late 1930s and sought to increase its airpower. In 1938, when President Roosevelt called for the construction of 10,000 planes for the military, Los Angeles was already the leading aircraft-producing region in the nation. In addition to an expansion of the aircraft industry, many aircraft component plants in Los Angeles also increased production, and many new firms that made components moved into the area.[14]

Development occurred in the study area throughout the World War II era, yet in 1941, large tracts of undeveloped land were prevalent. One company that located in the Los Angeles area during the 1930s to feed off the aircraft industry boom was the Aluminum Company of America (Alcoa). Alcoa built one of the nation's largest aluminum fabricating plants on fourteen acres on the southwest corner of Fruitland Avenue and Alcoa Avenue in Vernon in 1938. Its principal reason for opening this new factory was to supply the aircraft industry with aluminum parts. The demand for its products was so great that the company began expanding its facility almost immediately. By 1941, the plant had doubled in size and occupied the adjacent parcel to the west at Fruitland Avenue and South Boyle Avenue, on the site of the current Vernon Power Plant project (Map Reference 1).[15]

Production continued into the war years, and by 1942, 2700 people worked at the plant. By the spring of 1945, increased military demands called for increased production. Alcoa of Vernon hired 700 emergency workers and operated around the clock, seven days a week to answer the need. By this time, the plant was producing girders for pontoon bridges, B-29 parts, as well as other equipment for the war effort. The Vernon plant continued to expand into the 1950s and by 1963 had undergone eight major expansions and encompassed 56 acres. Gradually, however, the economics of the aluminum industry changed and production at Alcoa of Vernon began to wane. In the 1990s, the plant only had about 600 employees and in 1994, it closed. Alcoa demolished the buildings of the original plant at Fruitland and Alcoa in 1998, east of the project site. The buildings at Fruitland and South Boyle (Map Reference 1) remain and continued to function as metal fabricating facilities. Pechiney Cast Plate was the most recent business at 3200 Fruitland, occupying the address until March 2006.[16]

By the 1950s, Vernon reached a highpoint in its industrial development. At the end of that decade, its five square miles supported 949 industries that employed 72,000 people, 10% of the workforce of the Los Angeles area. As it had since its incorporation, transportation played a large role in the city's success, and the city had 112 miles of railroads, and 28 miles of streets with easy access to Los Angeles's freeways. Seventy-six truck lines with terminals in Vernon were evidence of the city's position in the transportation network. The recession of the 1980s had a significant impact on the Vernon economy and many plants closed, including the city's largest employer, Bethlehem Steel. Nevertheless, the city remains a desirable location for industry, though today fashion design, garment making, film production, electronics, and distribution warehouses have replaced much of the heavy manufacturing and meat processing facilities of the past.[17]

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[14] "Wartime Expansion of the California Airframe Industry," *Monthly Labor Review* 61, no.4 (October 1945): 721; Ann Markusen, et.al., *The Rise of the Gunbelt: The Military Remapping of Industrial America* (New York: Oxford University Press, 1991), 29, 46.

[15] "City of Vernon, California," Los Angeles: Spence Air Photos, 1940, 1941. Accessed at City of Vernon Planning Department; "Work Progresses on Huge New Manufacturing Plant," *Los Angeles Times*, 3 October 1937, E1; "Aluminum's Chief Here," *Los Angeles Times*, 23 February 1938, A1; "Another Large Boost for Industry in the Area," *Los Angeles Times*, 6 March 1938, A7.

[16] "Alcoa Strike Comes to an End" *Los Angeles Times*, 23 August 1942, A7; "War Plant Needs 700 New Workers," *Los Angeles Times*, 31 March 1945, A1; "Aluminum Company of America Celebrating 25th Anniversary," CMD Magazine (May-June 1963): 16-17; "Alcoa's Vernon Expansion Starts," *Los Angeles Times*, 2 September 1954, A12; "Alcoa Vernon Press Planned," *Los Angeles Times*, 7 July 1959, 21; Jonathan Peterson, "The Death of a Factory Alcoa Closure Begs the Agonizing Question: Could It Have Been Avoided?" *Los Angeles Times*, 10 July 1994; City of Vernon, Building Permit Records, Vernon City Hall, June 2006.

[17] "Only 229 Residents," B1; "Vernon: What You Smell is Money," SE1; "Industrialized Vernon Resents Brown's Blast," *Los Angeles Times*, 22 November 1959, A1; Moruzzi, "Vernon: Southern California's First "Exclusively Industrial," 4; *City of Vernon: A Collection of Oral Histories*, 3, 14.

Evaluation

This property is associated with the growth of military related industry in the Los Angeles region immediately prior to, and during World War II. The plant played a role as a supplier of aluminum products as part of the war effort and its products included aircraft parts and bridge girders. Despite being important within the context of World War II related industry, the property does not appear to meet the criteria for listing in the NRHP for its association with important events (Criterion A / Criterion 1) because it lacks integrity to this period of significance. The original complex was located to the east of the buildings evaluated on this form. That group of buildings included the Foundry, Die Shop, Forge Shop, Rivet Plant, Machine Shop, Locker Room, Extrusion Press Building, Administration, and other buildings, all of which are gone (**Photograph 8)**. The property under evaluation functioned as part of the complex, and did not operate as an independent entity. The link or association between the former World War II era aluminum production plant, and the remaining buildings is gone. Generally, those buildings that do remain on the property lack individual integrity. The bands of metal sash industrial windows are gone on some sections, and have been painted over or covered on others. Plastic siding has replaced the original corrugated metal siding on a section of Building 104. The west side of this building also now has louvered vents installed in 1967. These changes to the Alcoa complex, and to the remaining buildings diminish the property's integrity of design, materials, workmanship, setting, feeling, and association. As such, the property does not appear to meet the criteria for listing in the NRHP or CRHR, nor does it appear to qualify as a historic resource for the purposes of CEQA.

The property is not associated with persons important to local, state, or national history, and therefore, does not appear to be eligible for the NRHP, or to be a historic resource under CEQA (Criterion B / Criterion 2).

The property is not distinctive for its architecture. Both the sawtooth roof buildings and the flat roof buildings are common types in industrial architecture. With their bands of metal sash industrial windows and corrugated metal siding, these buildings to not distinguish themselves as representative of a type, period, or method of construction. Furthermore, the changes to the buildings, as stated above, have affected their character defining features and diminished their integrity. The buildings addressed on this form, therefore, do not appear to be eligible for the NRHP, or to be a historic resource under CEQA (Criterion C / Criterion 3).

In rare instances, buildings themselves can serve as sources of important information about historic construction materials or technologies (Criterion D / Criterion 4); however, this property is otherwise documented and does not appear to be a principal source of important information in this regard.

Photographs (cont):

Photograph 2. View of north façade of 1940 building (Buildings 106, 108, 112), camera facing southwest. Fruitland Avenue is in the foreground. 6/13/06.

Photograph 3. View of east façade of 1940 building (Building 112) in foreground and 1942 building (Building 122A) in distance, camera facing south. 6/13/06.

Photographs (cont):

Photograph 4. View of west side of 1942 building (Building 112A), camera facing southeast. 6/12/06.

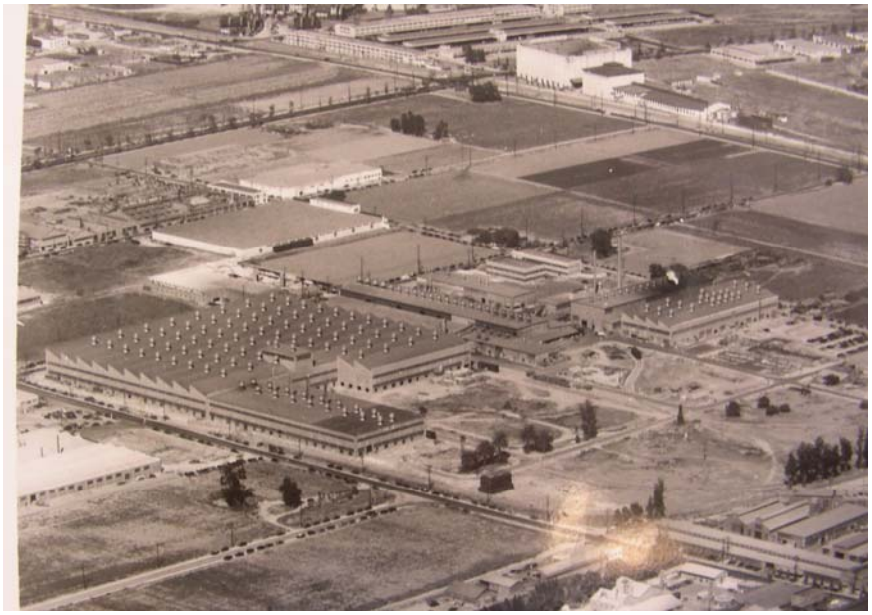
Photograph 5. View showing Building 104 (center) and Building 112A (right), camera facing northeast, Boyle Avenue in foreground. 6/12/06.

Photographs (cont):

Photograph 6. View of south section of Building 104,
camera facing northeast. 6/12/06.

Photograph 7. View of north section of Building 104,
camera facing northeast, 6/12/06.

Photographs (cont):



Photograph 8. 1941 Aerial showing Alcoa plant looking northeast. At the center left of the photo is the 1940 building (106, 108, 112) with the sawtooth roof. Adjoining this building on the Boyle Avenue side is Building 104. To the right of the sawtooth building is the original Alcoa complex. This photo predates the 1942 addition. (Courtesy of City of Vernon)

Photograph 9. 1963 Aerial showing Alcoa complex (north is up). 3200 Fruitland is on the left of the photograph. (Courtesy of City of Vernon)

State of California – The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PRIMARY RECORD

Primary # _____
HRI # _____
Trinomial _____
NRHP Status Code 6

Other Listings _____
Review Code _____ Reviewer _____ Date _____

 *Resource Name or # Map Reference 2

P1. Other Identifier: 3221 Fruitland, 3211 Fruitland, 5125 Alcoa

***P2. Location:** ☐ Not for Publication ☒ Unrestricted *a. County Los Angeles
and (P2b and P2c or P2d. Attach a Location Map as necessary.)

***b. USGS 7.5' Quad** South Gate **Date** 1964 (1981) **T**____; **R** ____; ___ ¼ **of Sec** ____; _____ **B.M.**

c. Address 3221 Fruitland Avenue City Vernon Zip 90058

d. UTM: (give more than one for large and/or linear resources) Zone _____; _____mE/ _____mN

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate)
Assessor's Parcel Number: 6303-028-013

***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)

The property at 3221 Fruitland Avenue is a large parcel comprising half of the block on Fruitland Avenue between Alcoa Avenue and South Boyle Avenue. The parcel is home to Barksdale Incorporated, which occupies numerous buildings including some modern and some more than 50 years old. The older buildings are concentrated on the east side of the lot at the northwest intersection of Fruitland Avenue and Alcoa Avenue. This cluster of older buildings includes four adjoining single story industrial buildings, a freestanding industrial building, and an office building (**Figure 1)**.

***P3b. Resource Attributes:** (List attributes and codes) Industrial Building (HP)

***P4. Resources Present:** ☒ Building ☐ Structure ☐ Object ☐ Site ☐ District ☐ Element of District ☐ Other (Isolates, etc.)

P5b. Description of Photo: (View, date, accession #) Photograph 1. Building 1, east façade (Alcoa Ave.) with Building 1C in the foregrounds, camera facing southwest. 6/12/06.

***P6. Date Constructed/Age and Sources:**
☒ Historic ☐ Prehistoric ☐ Both
ca. 1949, ca. 1954, ca. 1960, Sanborn maps, aerial photographs, building permits.

***P7. Owner and Address:**
Barksdale Incorporated
3211 Fruitland Avenue
Vernon, CA 90058

***P8. Recorded by:** (Name, affiliation, address)
Meta Bunse and Steven J. Melvin
JRP Historical Consulting,
1490 Drew Ave, Suite 110,
Davis, CA 95616

***P9. Date Recorded:** 6/12/06

***P10. Survey Type:** (Describe)
Intensive

***P11. Report Citation:** (Cite survey report and other sources, or enter "none.") Historical Resources Inventory and Evaluation Report: Vernon Power Plant Project.

***Attachments:** ☐ None ☐ Location Map ☐ Sketch Map ☒ Continuation Sheet ☒ Building, Structure, and Object Record ☐ Archaeological Record ☐ District Record ☐ Linear Feature Record ☐ Milling Station Record ☐ Rock Art Record ☐ Artifact Record ☐ Photograph Record ☐ Other (list) _____

***NRHP Status Code** 6

***Resource Name or #** (Assigned by recorder) Map Reference 2

B1. Historic Name: General Refractories Company, Barksdale Valves

B2. Common Name: Barksdale Incorporated

B3. Original Use: warehouse, office, manufacturing B4. Present Use: warehouse, office, manufacturing

***B5. Architectural Style:** utilitarian, Art Deco

***B6. Construction History:** (Construction date, alteration, and date of alterations) original construction ca. 1949; additional buildings constructed ca. 1954, ca. 1960

***B7. Moved?** ☒ **No** ☐ **Yes** ☐ **Unknown** **Date:** _____ **Original Location:** _____

***B8. Related Features:** _____

B9. Architect: unknown b. Builder: unknown

***B10. Significance: Theme** n/a **Area** n/a

Period of Significance n/a **Property Type** n/a **Applicable Criteria** n/a

(Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity.)

This property does not appear to meet the criteria for listing in the National Register of Historic Places, nor does it appear to be an historic resource for the purposes of CEQA. The property is located on the northwest corner of South Boyle Avenue and Fruitland Avenue in Vernon, California and consists of several adjoining buildings as well as detached buildings. The buildings date to the 1940s and 1950s, with later additions and alterations. Currently a single business occupies the parcel: Barksdale, Incorporated. At the time of the buildings construction, two businesses were on the parcel: General Refractories, a valve assembly plant, and a steel warehouse. City building permits, aerial photographs, maps, and field observations reveal significant alterations to the property, including filling of windows, and additions. (See Continuation Sheet)

B11. Additional Resource Attributes: (List attributes and codes)

***B12. References:** City of Vernon Building Permits; Sanborn Maps 1951, 1953; Aerial photographs 1941, 1963, 1981, 2006; Central Manufacturing District Magazine; (See Footnotes).

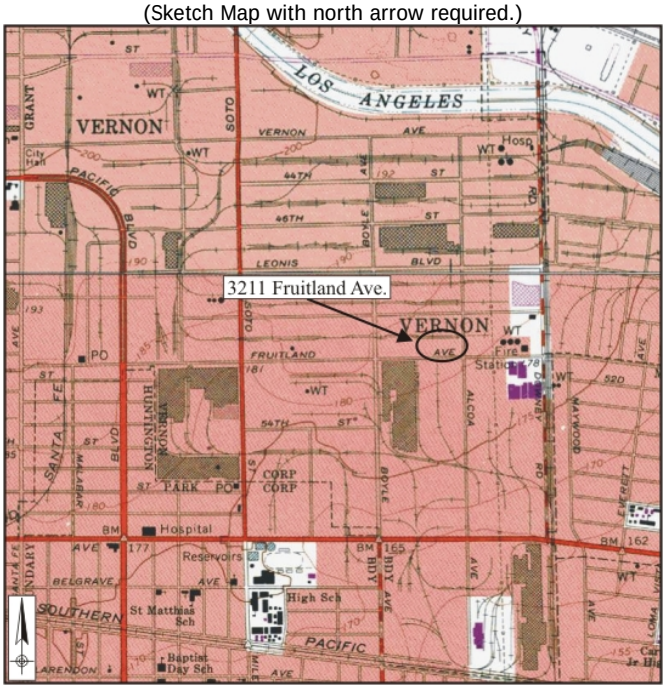
B13. Remarks:

***B14. Evaluator:** Meta Bunse / Steven J. Melvin

***Date of Evaluation:** July 2006

(This space reserved for official comments.)

(Sketch Map with north arrow required.)



P3a. Description (continued):

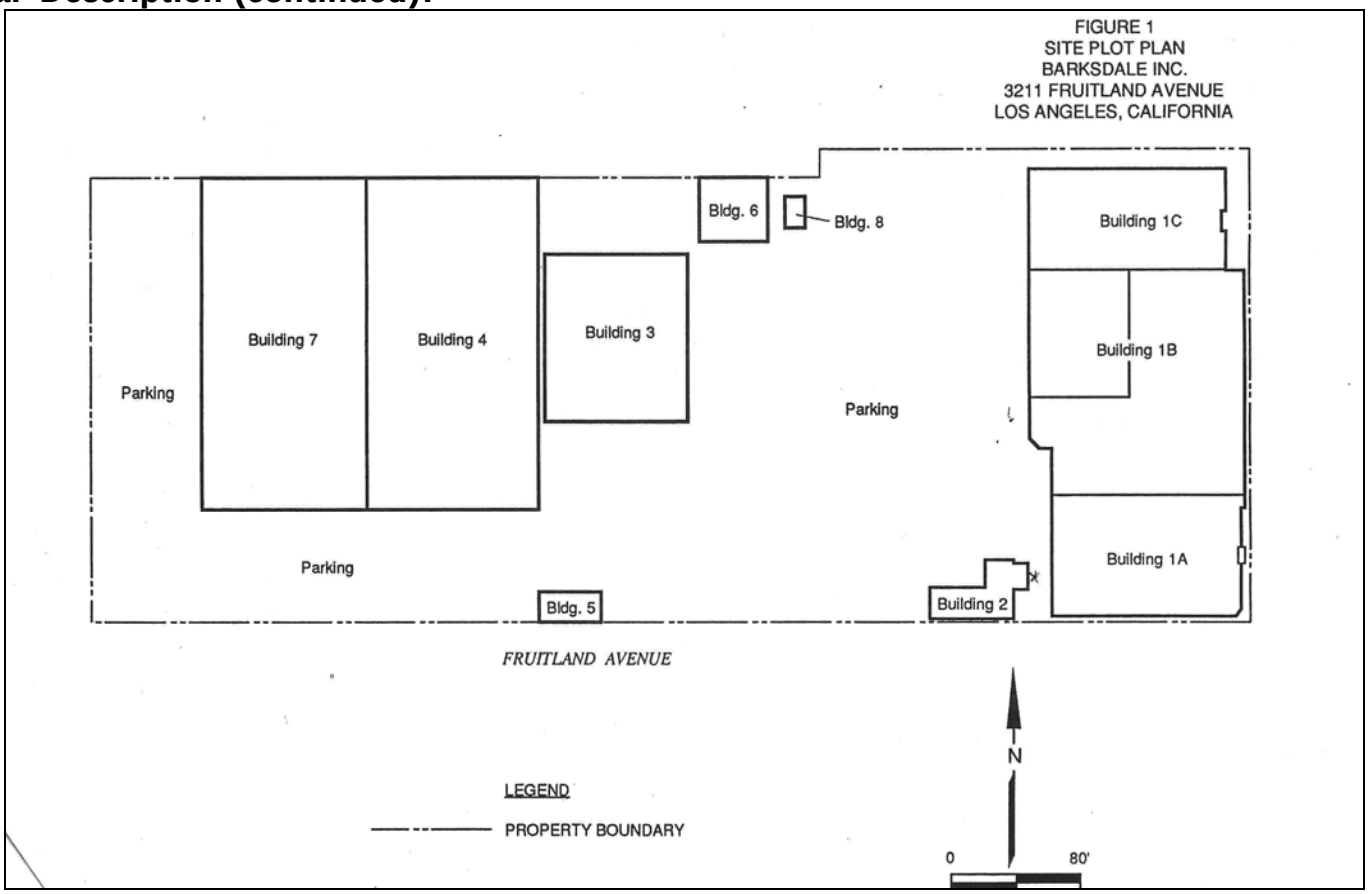


Figure 1. Site plan for 3211 Fruitland Avenue.

The oldest buildings on the property are two, single story industrial buildings that face east onto Alcoa Avenue built about 1949. One is on the northwest corner of Fruitland and Alcoa and known as Building 1A, the other is approximately 150 feet to the north on Alcoa and known as Building 1C. Joining the two is Building 1B, which was constructed at a later date. **Building 1A** is a single story building with a rectangular plan (**Photographs 2 and 3)**. It has a concrete foundation and board form concrete walls. Topping the building is a bow truss roof clad in rolled composition. The entire east façade has a stone panel veneer over the concrete. Also on this side is a personnel entrance with a built out concrete awning and stucco replacement infill in the former doorway. A second doorway is on the south façade and has a metal roll-up door behind a chain link fence. The west façade has a freight entrance with a sliding door and a personnel entrance; a metal awning covers both. The only windows on the building are also on the south and west sides and consist of groups of industrial metal sash, which have been painted out, and a glass block window on the southeast corner. Those on the west side have louvered vents in place of the center panes.

Building 1B is actually two conjoined buildings. A single story industrial building built in the early 1960s has a L-shaped plan that faces east onto Alcoa Avenue (**Photograph 3)**. It has a concrete foundation, concrete walls with pilasters, and a flat roof. The building has no windows and no entrances. The other element of Building 1B consists of building in the northwest corner of the Building 1B built in the mid-1950s. This section has a wood frame, bow truss roof. Attached to its west façade is a shed roof addition with two freight entrances on the west and south sides, which are covered by a sliding door and a metal roll-up door, respectively.

Building 1C is on the north end of the parcel facing on Alcoa Avenue. It is a single story industrial building with a rectangular plan and an understated Streamline-Moderne façade (**Photograph 4)**. The foundation is concrete and the walls are board form concrete. Topping the building is a bow truss roof clad in rolled composition. On the north side of a symmetrical front façade is a pair of industrial metal sash windows; a similar pair once existed south of the entrance, but are now filled in. Midway up the façade is a recessed frieze band and on the upper half of the wall are two symmetrically placed, decorative, recessed circles. The recessed personnel doorway has a flat porch roof with pipe supports on brick pedestals. Within are double flush doors with glass block sidelights. On the north side of Building 1C are two more metal sash industrial windows and three filled in window openings. Also on the north side is a freight door with a modern metal roll-up door. More filled in window openings are on the west side as well as a metal awning.

Immediately west of the Building 1 complex, separated by a narrow driveway, is **Building 2**, constructed about 1952. It is a single story building on Fruitland Avenue with an L-shaped plan, originally used as an office (**Photograph 5)**. Concrete blocks rest on a concrete foundation and support a low pitch, hipped roof clad in composition shingles. On the east side is a small, stuccoed shed roof addition. On the north side is a modern equipment shelter constructed in 1998 with a flat roof and partial grape stake walls.

Approximately 300 feet west of Building 2 on Fruitland Avenue, is **Building 5**, constructed at some point between 1953 and 1963. It is a single story building with a rectangular plan, currently used as a personnel building (**Photograph 6)**. A concrete foundation supports concrete block walls. Topping the building is a low pitch, side gable roof clad in composition shingles. The gable ends have horizontal wood siding and vents at the peak. Fenestration consists of metal casement windows and a flush wood personnel door placed in the center of the south façade opens onto Fruitland.

North of Building 5, across a large parking lot is **Building 3**, constructed about 1952. It is a single story industrial building with a square plan and a south facing façade (**Photograph 7)**. A concrete foundation supports a steel frame clad in corrugated metal siding. Topping the building is a steel bow truss roof with corrugated metal roofing and turbine vents at the crest. On the south façade are two exterior sliding double freight doors. At the southwest corner of the building is a small, corrugated metal shed roof addition with a shed roof shelter on its east side. There are several other modern buildings on the parcel.

B10. Significance (continued):

Historic Context

Early Vernon to 1920

The present City of Vernon is located about five miles southeast of downtown Los Angeles, near the Los Angeles River, in an area that was rural and sparsely populated into the early twentieth century. It consisted of large uncultivated areas and a few scattered vegetable, orange and rose farms, as well as ranches devoted to raising livestock. A French-Basque immigrant named John B. Leonis moved to the area in 1896 and opened a general merchandise store, and later a feed barn and a winery. Leonis located on Downey Avenue, which, along with nearby Santa Fe Avenue, were among the few roads that connected Los Angeles and the port at Long Beach. Also, the Los Angeles Terminal Railroad's San Pedro Division (later the Union Pacific) paralleled Downey Avenue, and it also connected Los Angeles with Long Beach. Two other railroads passed in close proximity to what would later become Vernon: the Southern Pacific (SP) and the Atchison Topeka and Santa Fe (ATSF). The latter's San Diego Branch and Redondo Branch met at Ballona Junction just north of Vernon. Leonis recognized the potential of the site, and in 1905, along with brothers Thomas J. and James J. Furlong, incorporated the City

of Vernon. Leonis and the Furlongs conceived of the 2.4 square mile city as an exclusively industrial municipality, although in the year of its creation Vernon industry consisted of two factories and two lumberyards.[1]

The city was situated between Los Angeles and the port at Long Beach, was on or near the lines of three major railroads, and also had access to the constantly improving network of roads and highways. Besides transportation infrastructure, the city founders offered inexpensive power, and water, and a tax rate among the lowest in the region. By 1913, Vernon received gas from the Midway gas fields in the southern San Joaquin Valley and electricity from a Pacific Light and Power plant in Fresno. Other factors that contributed to industrialization were a policy prohibiting construction of residences, low labor costs, and the paving of all streets in the city.[2]

In time, the unique combination of characteristics in Vernon did draw industry. In 1912 nine industries opened plants in Vernon and by the end of the following year, it was home to over thirty industries and referred to by the *Los Angeles Times* as an "industrial suburb." By 1915, the Salt Lake Railway laid two miles of switching track in Vernon to connect its industries with the nearby main lines. Some of these first industries were oil refineries, which located in the northern part of the city during the 1910s. A district of stockyards and slaughterhouses established themselves during this time in the area north of Vernon Avenue and east of Santa Fe Avenue. Oil refining and meat processing became two important industries in the early years of Vernon's development.[3]

Other industries such as paper manufacturing, wood processing, and iron works built plants in the area south of Vernon Avenue between Santa Fe Avenue and Alameda Street and along South Boyle Avenue near Slauson Avenue**.** The parcel containing the resources evaluated on this form was subdivided as part of the Five Hundred Acre Tract of the Los Angeles Fruitland Association. Research did not reveal the date of this subdivision, but it likely occurred after 1915 as Vernon expanded to the east.[4]

Vernon Industrial Growth 1920-1940

Even though Vernon's industrial growth continued at a rapid rate, at the beginning of the 1920s, the area east of Pacific Avenue and south of Vernon Avenue was still largely rural and undeveloped, and in some places, farming and grazing persisted. Stimulated by the establishment of an industrial area to the east called the Central Manufacturing District (CMD) and the desire of industry to locate in Vernon, the city began to expand onto land between Pacific and the CMD.[5] The City of Vernon grew significantly in January 1926 it annexed the CMD. Mr. and Mrs. A.J. Olsen, the only residents in the CMD,

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[1] James Kilty, *Leonis of Vernon* (New York: Geneva Books, 1963), 17-19, 22, 49; *City of Vernon: A Collection of Oral Histories* (Fullerton, California: CSU, Fullerton, 1995), 8; Greg Hise, "'Nature's Workshop' Industry and Urban Expansion in Southern California, 1900-1950." *Journal of Historical Geography*, 27, no.1 (2001): 84-85; "John B. Leonis, Ex-Mayor of Vernon, Dies," *Los Angeles Times*, 20 October 1953; "More Towns and Prosperous Agricultural Settlements," *Los Angeles Times*, 1 January 1887; "CMD Salutes Vernon—A City of Industry," *Central Manufacturing District Magazine* 38 no. 4 (1961): 9.

[2] Kilty, *Leonis of Vernon*, 41, 239; Pete Moruzzi, "Vernon: Southern California's First "Exclusively Industrial" City." *L.A. Conservancy News*, September/October 1997: 4; "Vernon—The Coming Industrial and Manufacturing Center of Los Angeles County," *Los Angeles Times* 1 January 1915, p.VI 17; Greg Hise, "'Nature's Workshop,'" 76; "Like Smell of Smoke and Freely Admit It," *Los Angeles Times*, 21 December 1913, V1.

[3] "Like Smell of Smoke," V1; "Vernon—The Coming Industrial," VI-17; "Great Can Factory To Be Started This Week," *Los Angeles Times*, 6 February 1916, V1; "Vernon: Southern California's First," 4.

[4] "Like Smell of Smoke," V1; "Vernon—The Coming Industrial," VI-17; "Great Can Factory," V1; "Vernon: Southern California's First," 4; Los Angeles County, Subdivision Maps, "Tract #2836," Map Book 35, page 88; *Security Map of the City of Los Angeles.* Los Angeles: Security Savings Bank, 1908; USGS. *Watts Quadrangle*. Washington, D.C.: USGS, 1924; County of Los Angeles, Assessor's Plat Maps, accessed online at www.lacountyassessor.com.

[5] Hise, "'Nature's Workshop,'" 83-85; USGS, *Watts Quadrangle*; Los Angeles County. Subdivision Map, "Tract No. 6452," Map Book 94, Page 78, 79, May 1924; Vernon Aerial Photos 1924-1926, Los Angeles Public Library Photo Collection.

both voted for annexation. At the time, the CMD comprised 300 acres and was home to 28 industries, while the Los Angeles Junction Railway (LAJR) had four and a half miles of tracks. By June of 1930, Vernon's inclusion of the CMD and its continued industrial growth gave the city over 300 industries employing 15,000 workers.[6]

The singular vision of the industrial city did not waver, due in part to a virtually unchanging city government from the time of incorporation into the 1950s. City leaders continued to keep taxes low and power cheap to attract industry. From 1928 to 1930, 89 industrial firms opened in Vernon bringing the total to more than 300. These included petroleum refineries, packinghouses, can manufacturing plants, building material plants, glass container factories, furniture makers, structural steel and sheet metal plants, potteries, woodworking plants, oil well tool plants, and knitting mills. Even with this remarkable growth, approximately one-third of the city's four square miles was still undeveloped in 1930.[7]

Around this time city officials got into a dispute about electricity rates with Southern California Edison. The city, wishing to remain attractive to business, felt the rates were too high. The two parties could not come to terms, so Vernon decided to build its own power plant on 50th Street and Seville. The plant consisted of five, 7,000 horsepower diesel engines, which began operating June 1933. By 1937, Southern California Edison resumed supplying power to Vernon, but the city continued to maintain the power plant in working order as a backup source.[8]

Vernon city policy prioritized industrial land use at the expense of residential. Its population at the time of incorporation in 1905 was approximately 1700 people and ever since that time, the number has steadily decreased. In the 1920s, the city demolished several residences to make way for industrial growth. By 1930, it had 200 homes and 1269 residents, and although 16,000 people worked in Vernon, nearly all of them lived in Los Angeles, or the nearby communities of Huntington Park, Bell, and Maywood. Many workers commuted each day on PE electric rail lines. After World War II, the city constructed several houses for firemen, policemen, and some city officials, but between 1950 and 1960, Vernon lost half of its population. The population and the number of residences continued to shrink until, in the 1980s, it had the smallest population of any city in California, with 90 residents living in 30 houses. At the same time, more 50,000 people worked in the city on a daily basis.[9]

Vernon Industry After 1940

The stimulus of World War II resulted in substantial economic growth for the state of California. The biggest impact was in southern California, which became home to many new military bases and defense related industries. The increased military presence in the area spawned growth in all sectors of industry and its transportation infrastructure, low labor costs, proximity to the military, and good weather, Los Angeles blossomed as an industrial city.[10] The boom continued into the 1950s and 1960s partly sustained by the Korean War and the Cold War. Population in southern California grew, defense spending increased, and industry expanded. Vernon benefited from the economic good times and the city continued to experience

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[6] "Unanimous Vote Cast: Both Ayes," *Los Angeles Times*, 10 January 1926, 23; "Annexation Vote Today," *Los Angeles Times*, 9 January 1926, 5; "Vernon Sees Epochal," D1.
[7] Kilty, *Leonis of Vernon*, p.49; "Owens-Illinois Glass Company Opens New CMD Factory," *Central Manufacturing District Magazine* 32 no.3 (1954): 31; "CMD Salutes Vernon," 12; "Vernon Sees Epochal," D1.
[8] Sanborn Map Company, 1951); Kilty, *Leonis of Vernon*, 238; Moruzzi, "Vernon: Southern California's First "Exclusively Industrial," 4.
[9] Hise, 83-85; Kilty, *Leonis of Vernon*, 239; "Vernon Sees Epochal," D1; "Only 229 Residents in Fast Shrinking Vernon," *Los Angeles Times*, 16 October 1961, B1; "Vernon: What You Smell is Money," *Los Angeles Times*, 31 July 1983, SE1.
[10] "Wartime Expansion of the California Airframe Industry," *Monthly Labor Review* 61, no.4 (October 1945): 721; Ann Markusen, et.al., *The Rise of the Gunbelt: The Military Remapping of Industrial America* (New York: Oxford University Press, 1991), 8, 9, 46; "California Historic Military Buildings and Structures Inventory," JRP Historical Consulting Services, March 2000, 7-2; "The Undiscovered City." *Fortune* (June 1949): 80.

industrial growth and diversification, and it became home to a variety of defense contractors, wholesale distributors, and consumer manufacturers.[11]

The property at 3221 Fruitland (Map Reference 2) was part of Vernon's general industrial expansion after World War II. The parcel, currently occupied by Barksdale, Incorporated, was once two separate legal parcels and contained two distinct manufacturers. One of the parcels, at the west end of the current parcel, near mid-block, was home to the Refractories Corporation of Los Angeles, which made bricks. In 1943, the General Refractories Company purchased this plant and produced fireclay brick, silica, sillimanite, and glass-house refractories. General Refractories owned other plants and mines in the U.S. and the Vernon plant also functioned as a warehouse and distribution center for its other products.[12]

The other parcel, at the east end of the current parcel, facing Alcoa Avenue, was the Barksdale Valve Company, established in 1949 (Map Reference 2). The company made hydraulic and pneumatic valves and pressure switches. The property served as the manufacturing facility, sales office, and company headquarters. In the 1950s and 1960s, the plant underwent expansions and in 1964, the Transamerica Corporation acquired Barksdale.[13]

By the 1950s, Vernon reached a highpoint in its industrial development. At the end of that decade, its five square miles supported 949 industries that employed 72,000 people, 10% of the workforce of the Los Angeles area. As it had since its incorporation, transportation played a large role in the city's success, and the city had 112 miles of railroads, and 28 miles of streets with easy access to Los Angeles's freeways. Seventy-six truck lines with terminals in Vernon were evidence of the city's position in the transportation network. The recession of the 1980s had a significant impact on the Vernon economy and many plants closed, including the city's largest employer, Bethlehem Steel. Nevertheless, the city remains a desirable location for industry, though today fashion design, garment making, film production, electronics, and distribution warehouses have replaced much of the heavy manufacturing and meat processing facilities of the past.[14]

Evaluation

This property is associated with the industrial growth and expansion of Vernon during the 1940s and 1950s. It is not, however, important within the context of Vernon's development or the valve manufacturing industry, nor is it associated

[11] *City of Vernon: A Collection of Oral Histories*, 14; "The Undiscovered City." *Fortune* (June 1949): 80.
[12] "Eastern Company Buys Local Plant," 24 May 1943, 13; "Work Finished on $1,000,000 Brick Factory," *Los Angeles Times*, 3 August 1952, E14; *Fire Insurance Map of Los Angeles* (Sanborn Map Company, 1953, 1956); City of Vernon, Building Permit Records, Vernon City Hall, June 2006.
[13] "Barksdale Awarded for Precision Products of Excellence" *Central Manufacturing District Magazine* 41 no. 3 (1964): 124-128; "Barksdale Succeeded by Holcombe" *Central Manufacturing District Magazine* 42 no. 4 (1965): 18; City of Vernon, Building Permit Records, Vernon City Hall, June 2006; *Fire Insurance Map of Los Angeles* (Sanborn Map Company, 1953, 1956).
[14] "Only 229 Residents," B1; "Vernon: What You Smell is Money," SE1; "Industrialized Vernon Resents Brown's Blast," *Los Angeles Times*, 22 November 1959, A1; Moruzzi, "Vernon: Southern California's First "Exclusively Industrial," 4; *City of Vernon: A Collection of Oral Histories*, 3, 14.

with persons important to local, state, or national history. The property does not have important associations with significant events (Criterion A / Criterion 1), nor do the occupants appear to have made significant contributions to local, state, or national history (Criterion B / Criterion 2).

The property is not distinctive for its architectural details. Building 1C displays some attributes of the Streamline-Moderne Style. This style, popular in the 1930s and 1940s, is characterized by an emphasis on horizontality and clean, simple lines. Streamline Moderne looked to the future and tried to project a modern appearance. Building 1C has the horizontal frieze band, recessed circles that suggest portholes, strong horizontal lines of the entrance, metal pipe supports, and glass block sidelights. Overall these are modest expression of the style. The buildings are not important or distinctive examples of the type, period, or method of construction (Criterion C / Criterion 3). In rare instances, buildings themselves can serve as sources of important information about historic construction materials or technologies (Criterion D / Criterion 4); however, this property is otherwise documented and does not appear to be a principal source of important information in this regard. Finally, many of the buildings have had windows and doors filled, windows painted out, and additions constructed, and, therefore, they do not retain historic integrity.

Photographs (cont):

Photograph 2. Building 1A, camera facing northwest. 6/12/06.

Photograph 3. Building 1A in foreground and Building 1B, camera facing northwest. 6/12/06.

Photograph 4. Building 1C, camera facing southwest. 6/12/06.

Photograph 5. Building 2, camera facing northwest. 6/12/06.

Photograph 6. Building 5, camera facing northeast. 6/12/06.

Photograph 7. Building 3, camera facing northwest. 6/12/06.

State of California – The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PRIMARY RECORD

Primary # _____
HRI # _____
Trinomial _____
NRHP Status Code 6

Other Listings _____
Review Code _____ Reviewer _____ Date _____

 *Resource Name or # Map Reference 3

P1. Other Identifier: 5100 South Boyle, 3121 Fruitland

*P2. Location: ☐ Not for Publication ☒ Unrestricted *a. County Los Angeles

and (P2b and P2c or P2d. Attach a Location Map as necessary.)

*b. USGS 7.5' Quad South Gate Date 1964 (1981) T____; R ____; ___ ¼ of Sec ____; _____ B.M.

c. Address 5100 South Boyle Avenue City Vernon Zip 90058

d. UTM: (give more than one for large and/or linear resources) Zone _____; _____mE/ _____mN

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate)

6303-028-014, 6303-028-003

*P3a. Description: (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)

The properties described in this form consist of two adjoining buildings on two legal parcels. The business at 5100 South Boyle is currently leasing the building at 3121 Fruitland and has removed a section of interior wall where the buildings meet to create doorway between the two. The buildings are in an industrial area of Vernon. Both buildings are set on rectangular lots facing south onto Fruitland Avenue. (See Continuation Sheet)

*P3b. Resource Attributes: (List attributes and codes) Industrial Building (HP8)

*P4. Resources Present: ☒ Building ☐ Structure ☐ Object ☐ Site ☐ District ☐ Element of District ☐ Other (Isolates, etc.)

P5b. Description of Photo: (View, date, accession #) Photograph 1. View of 5100 South Boyle, camera facing northeast. 6/19/06

*P6. Date Constructed/Age and Sources: ☒ Historic ☐ Prehistoric ☐ Both
5100 South Boyle: 1947; 3121 Fruitland: 1956, county records, city building permits

*P7. Owner and Address:
Euclid Steel Fabricating
22498 Whirlaway Ct.
Canyon Lake, CA 92587

*P8. Recorded by: (Name, affiliation, address)
Meta Bunse and Steven J. Melvin
JRP Historical Consulting,
1490 Drew Ave, Suite 110,
Davis, CA 95616

*P9. Date Recorded: 6/12/06

*P10. Survey Type: (Describe)
Intensive

*P11. Report Citation: (Cite survey report and other sources, or enter "none.") Historical Resources Inventory and Evaluation Report: Vernon Power Plant Project.

*Attachments: ☐ None ☐ Location Map ☐ Sketch Map ☒Continuation Sheet ☒ Building, Structure, and Object Record ☐ Archaeological Record ☐ District Record ☐ Linear Feature Record ☐ Milling Station Record ☐ Rock Art Record ☐ Artifact Record ☐ Photograph Record ☐ Other (list) _____

***NRHP Status Code** 6

***Resource Name or #** (Assigned by recorder) Map Reference 3

B1. Historic Name: Allied Veneer Company

B2. Common Name: California By-Products

B3. Original Use: warehouse B4. Present Use: pet food manufacturing

***B5. Architectural Style:** utilitarian

***B6. Construction History:** (Construction date, alteration, and date of alterations) 5100 South Boyle-original construction: 1947, additions: 1991, 1996; 3121 Fruitland-original construction 1956.

***B7. Moved?** ☒ **No** ☐ **Yes** ☐ **Unknown** **Date:** _____ **Original Location:** _____

***B8. Related Features:** _____

B9. Architect: unknown b. Builder: unknown

***B10. Significance: Theme** n/a **Area** n/a

Period of Significance n/a **Property Type** n/a **Applicable Criteria** n/a

(Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity.)

This property does not appear to meet the criteria for listing in the National Register of Historic Places (NRHP), nor does it appear to be an historic resource for the purposes of CEQA. This form evaluates two adjoining properties, 5100 South Boyle Avenue and 3121 Fruitland Avenue, on the northeast corner of Fruitland Avenue and South Boyle Avenue, both leased by California By-Products. Original construction occurred in 1947 at 5100 South Boyle and in 1956 at 3121 Fruitland. The original occupants of these two properties were Allied Veneer and Newburgh Steel Company. (See Continuation Sheet)

B11. Additional Resource Attributes: (List attributes and codes) _____

***B12. References:** Sanborn maps, 1951, 1953; Aerial photographs, 1941, 1963, 1981, 2006; City of Vernon building permits; Los Angeles County Assessor records; (See Footnotes).

B13. Remarks:

***B14. Evaluator:** Meta Bunse and Steven J. Melvin

***Date of Evaluation:** July 2006

(This space reserved for official comments.)

P3a. Description (continued)

5100 South Boyle Avenue (APN 6303-028-014)

This industrial building is a roughly two story, steel arch building of 24,380 square feet (**Photographs 1 and 2)**. It has a steel frame on a concrete foundation. Both the east and west sides are buttressed by four foot high concrete block walls. Covering the walls are sheets of raised ridge metal siding (**Photograph 3)**. The arched roof is clad in composition shingles and corrugated metal. On the southeast corner of the building is a modern, roll-up freight door and below grade dock with a steel frame shelter. On the north end is a rail dock and a sheltered equipment area. A small shed roof addition with corrugated metal roof and walls is attached to the northwest corner. A wood framed, shed roof office addition is on the west side. This element is clad in corrugated metal siding and rolled composition roofing. It has a carport on its north side.

Fenestration on the building consists of industrial metal sash on the south and north ends; those on the north end are painted out. The office addition also has metal industrial sash windows and flush metal doors on the north and south ends. Portals on the remainder of the building consist of the loading dock on the southeast corner mentioned above, and a freight door on the southwest corner with a metal roll-up door. Defining the edge of the property is a short concrete block wall.

3121 Fruitland Avenue (APN 6303-028-003)

This building has is comprised of two adjoining elements: a single story office building that faces south onto Fruitland Avenue, and, behind it, a two story industrial building (**Photograph 4)**. The International style office building is approximately 1300 square feet and has a roughly square plan. It has a concrete foundation and red brick wall topped with a flat roof with boxed eaves (**Photograph 5)**. The west wall extends above the roofline forming a parapet. On the south façade are concrete, faux stone planters between the building and the sidewalk. Metal fixed frame windows surround a metal framed, glazed front personnel door. Other windows consist of metal casement on the south and east sides. Also on the east side is a metal personnel door.

Attached to the north wall of the office building is the two story industrial warehouse building of approximately 8,800 square feet. The building has a rectangular plan that stretches back to the rear property line. It has a steel frame resting on a concrete foundation and topped by a gently sloping, front gable roof with turbine vents on the ridge. The sides are clad in corrugated metal except for the south façade, which has a stucco covering. On the second story of the east façade is a band of industrial metal sash windows. Also on this side is a sliding metal freight door; a metal roll-up door is on the south façade. Attached to the north end of the east side is a single story, shed roof addition with corrugated metal siding and roof. On the north façade of the building is another single story, shed roof addition, also with corrugated metal siding and roof. It has a sliding door that opens onto the railroad tracks.

B10. Significance (continued):

Historic Context

Early Vernon to 1920

The present City of Vernon is located about five miles southeast of downtown Los Angeles, near the Los Angeles River, in an area that was rural and sparsely populated into the early twentieth century. It consisted of large uncultivated areas and a few scattered vegetable, orange and rose farms, as well as ranches devoted to raising livestock. A French-Basque immigrant named John B. Leonis moved to the area in 1896 and opened a general

merchandise store, and later a feed barn and a winery. Leonis located on Downey Avenue, which, along with nearby Santa Fe Avenue, were among the few roads that connected Los Angeles and the port at Long Beach. Also, the Los Angeles Terminal Railroad's San Pedro Division (later the Union Pacific) paralleled Downey Avenue, and it also connected Los Angeles with Long Beach. Two other railroads passed in close proximity to what would later become Vernon: the Southern Pacific (SP) and the Atchison Topeka and Santa Fe (ATSF). The latter's San Diego Branch and Redondo Branch met at Ballona Junction just north of Vernon. Leonis recognized the potential of the site, and in 1905, along with brothers Thomas J. and James J. Furlong, incorporated the City of Vernon. Leonis and the Furlongs conceived of the 2.4 square mile city as an exclusively industrial municipality, although in the year of its creation Vernon industry consisted of two factories and two lumberyards.[1]

The city was situated between Los Angeles and the port at Long Beach, was on or near the lines of three major railroads, and also had access to the constantly improving network of roads and highways. Besides transportation infrastructure, the city founders offered inexpensive power, and water, and a tax rate among the lowest in the region. By 1913, Vernon received gas from the Midway gas fields in the southern San Joaquin Valley and electricity from a Pacific Light and Power plant in Fresno. Other factors that contributed to industrialization were a policy prohibiting construction of residences, low labor costs, and the paving of all streets in the city.[2]

In time, the unique combination of characteristics in Vernon did draw industry. In 1912 nine industries opened plants in Vernon and by the end of the following year, it was home to over thirty industries and referred to by the *Los Angeles Times* as an "industrial suburb." By 1915, the Salt Lake Railway laid two miles of switching track in Vernon to connect its industries with the nearby main lines. Some of these first industries were oil refineries, which located in the northern part of the city during the 1910s. A district of stockyards and slaughterhouses established themselves during this time in the area north of Vernon Avenue and east of Santa Fe Avenue. Oil refining and meat processing became two important industries in the early years of Vernon's development.[3]

Other industries such as paper manufacturing, wood processing, and iron works built plants in the area south of Vernon Avenue, with much of this early growth occurring between Santa Fe Avenue and Alameda Street and along South Boyle Avenue near Slauson Avenue**.** The parcel containing the resources evaluated on this form was subdivided as part of the Five Hundred Acre Tract of the Los Angeles Fruitland Association. Research did not reveal the date of this subdivision, but it likely occurred after 1915 as Vernon expanded to the east.[4]

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[1] James Kilty, *Leonis of Vernon* (New York: Geneva Books, 1963), 17-19, 22, 49; *City of Vernon: A Collection of Oral Histories* (Fullerton, California: CSU, Fullerton, 1995), 8; Greg Hise, "'Nature's Workshop' Industry and Urban Expansion in Southern California, 1900-1950." *Journal of Historical Geography*, 27, no.1 (2001): 84-85; "John B. Leonis, Ex-Mayor of Vernon, Dies," *Los Angeles Times*, 20 October 1953; "More Towns and Prosperous Agricultural Settlements," *Los Angeles Times*, 1 January 1887; "CMD Salutes Vernon—A City of Industry," *Central Manufacturing District Magazine* 38 no. 4 (1961): 9.

[2] Kilty, *Leonis of Vernon*, 41, 239; Pete Moruzzi, "Vernon: Southern California's First "Exclusively Industrial" City," *L.A. Conservancy News*, September/October 1997: 4; "Vernon—The Coming Industrial and Manufacturing Center of Los Angeles County," *Los Angeles Times* 1 January 1915, p.VI 17; Greg Hise, "'Nature's Workshop,'" 76; "Like Smell of Smoke and Freely Admit It," *Los Angeles Times*, 21 December 1913, V1.

[3] "Like Smell of Smoke," V1; "Vernon—The Coming Industrial," VI-17; "Great Can Factory To Be Started This Week," *Los Angeles Times*, 6 February 1916, V1; "Vernon: Southern California's First…," 4.

[4] "Like Smell of Smoke," V1; "Vernon—The Coming Industrial," VI-17; "Great Can Factory," V1; "Vernon: Southern California's First," 4; Los Angeles County, Subdivision Maps, "Tract #2836," Map Book 35, page 88; *Security Map of the City of Los Angeles.* Los Angeles: Security Savings Bank, 1908; USGS. *Watts Quadrangle*. Washington, D.C.: USGS, 1924; County of Los Angeles, Assessor's Plat Maps, accessed online at www.lacountyassessor.com.

Vernon Industrial Growth 1920-1940

Even though Vernon's industrial growth continued at a rapid rate, at the beginning of the 1920s, the area east of Pacific Avenue and south of Vernon Avenue was still largely rural and undeveloped, and in some places, farming and grazing persisted. Stimulated by the establishment of an industrial area to the east called the Central Manufacturing District (CMD) and the desire of industry to locate in Vernon, the city began to expand onto land between Pacific and the CMD.[5] The City of Vernon grew significantly in January 1926 it annexed the CMD. Mr. and Mrs. A.J. Olsen, the only residents in the CMD, both voted for annexation. At the time, the CMD comprised 300 acres and was home to 28 industries, while the Los Angeles Junction Railway (LAJR) had four and a half miles of tracks. By June of 1930, Vernon's inclusion of the CMD and its continued industrial growth gave the city over 300 industries employing 15,000 workers.[6]

The singular vision of the industrial city did not waver, due in part to a virtually unchanging city government from the time of incorporation into the 1950s. City leaders continued to keep taxes low and power cheap to attract industry. From 1928 to 1930, 89 industrial firms opened in Vernon bringing the total to more than 300. These included petroleum refineries, packinghouses, can manufacturing plants, building material plants, glass container factories, furniture makers, structural steel and sheet metal plants, potteries, woodworking plants, oil well tool plants, and knitting mills. Even with this remarkable growth, approximately one-third of the city's four square miles was still undeveloped in 1930.[7]

Around this time city officials got into a dispute about electricity rates with Southern California Edison. The city, wishing to remain attractive to business, felt the rates were too high. The two parties could not come to terms, so Vernon decided to build its own power plant on 50th Street and Seville. The plant consisted of five, 7,000 horsepower diesel engines, which began operating June 1933. By 1937, Southern California Edison resumed supplying power to Vernon, but the city continued to maintain the power plant in working order as a backup source.[8]

Vernon city policy prioritized industrial land use at the expense of residential. Its population at the time of incorporation in 1905 was approximately 1700 people and ever since that time, the number has steadily decreased. In the 1920s, the city demolished several residences to make way for industrial growth. By 1930, it had 200 homes and 1269 residents, and although 16,000 people worked in Vernon, nearly all of them lived in Los Angeles, or the nearby communities of Huntington Park, Bell, and Maywood. Many workers commuted each day on PE electric rail lines. After World War II, the city constructed several houses for firemen, policemen, and some city officials, but between 1950 and 1960, Vernon lost half of its population. The population and the number of residences continued to shrink until, in the 1980s, it had the smallest population of any city in California, with 90 residents living in 30 houses. At the same time, more 50,000 people worked in the city on a daily basis.[9]

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[5] Hise, "'Nature's Workshop,'" 83-85; USGS, *Watts Quadrangle*; Los Angeles County. Subdivision Map, "Tract No. 6452," Map Book 94, Page 78, 79, May 1924; Vernon Aerial Photos 1924-1926, Los Angeles Public Library Photo Collection.
[6] "Unanimous Vote Cast: Both Ayes," *Los Angeles Times*, 10 January 1926, 23; "Annexation Vote Today," *Los Angeles Times*, 9 January 1926, 5; "Vernon Sees Epochal," D1.
[7] Kilty, *Leonis of Vernon*, p.49; "Owens-Illinois Glass Company Opens New CMD Factory," *Central Manufacturing District Magazine* 32 no.3 (1954): 31; "CMD Salutes Vernon," 12; "Vernon Sees Epochal," D1.
[8] Sanborn Map Company, 1951); Kilty, *Leonis of Vernon*, 238; Moruzzi, "Vernon: Southern California's First …," 4.
[9] Hise, 83-85; Kilty, *Leonis of Vernon*, 239; "Vernon Sees Epochal," D1; "Only 229 Residents in Fast Shrinking Vernon," *Los Angeles Times*, 16 October 1961, B1; "Vernon: What You Smell is Money," *Los Angeles Times*, 31 July 1983, SE1.

Vernon Industry After 1940

The stimulus of World War II resulted in substantial economic growth for the state of California. The biggest impact was in southern California, which became home to many new military bases and defense related industries. The increased military presence in the area spawned growth in all sectors of industry and its transportation infrastructure, low labor costs, proximity to the military, and good weather, Los Angeles blossomed as an industrial city.[10] The boom continued into the 1950s and 1960s partly sustained by the Korean War and the Cold War. Population in southern California grew, defense spending increased, and industry expanded. Vernon benefited from the economic good times and the city continued to experience industrial growth and diversification, and it became home to a variety of defense contractors, wholesale distributors, and consumer manufacturers.[11]

The properties at 5100 South Boyle and 3121 Fruitland are currently occupied by the same business and are treated as one property in this report (Map Reference 3). From the early 1950s, the building at 5100 South Boyle was a veneer and plywood warehouse. By 1973, Allied Veneer was the company at the address and remained there until 1989. The subsequent occupant, California By-Products, operated a pet food production and cold storage company. This company made several alterations to the facility. The original occupant of the office and warehouse at 3121 Fruitland was the Newburg Steel Company, which used the facility beginning in 1956. By 1970, Euclid Steel was the tenant and owner. This company was still the owner in 1989, but the Neil Steel Fabricating was the lessee by this time. From 1992 to 2001, several truck and auto repair services have been at the address. California By-Products began leasing the warehouse building beginning in 2005 and is the current tenant.[12]

By the 1950s, Vernon reached a highpoint in its industrial development. At the end of that decade, its five square miles supported 949 industries that employed 72,000 people, 10% of the workforce of the Los Angeles area. As it had since its incorporation, transportation played a large role in the city's success, and the city had 112 miles of railroads, and 28 miles of streets with easy access to Los Angeles's freeways. Seventy-six truck lines with terminals in Vernon were evidence of the city's position in the transportation network. The recession of the 1980s had a significant impact on the Vernon economy and many plants closed, including the city's largest employer, Bethlehem Steel. Nevertheless, the city remains a desirable location for industry, though today fashion design, garment making, film production, electronics, and distribution warehouses have replaced much of the heavy manufacturing and meat processing facilities of the past.[13]

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[10] "Wartime Expansion of the California Airframe Industry," *Monthly Labor Review* 61, no.4 (October 1945): 721; Ann Markusen, et.al., *The Rise of the Gunbelt: The Military Remapping of Industrial America* (New York: Oxford University Press, 1991), 8, 9, 46; "California Historic Military Buildings and Structures Inventory," JRP Historical Consulting, March 2000, 7-2; "The Undiscovered City." *Fortune* (June 1949): 80.

[11] *City of Vernon: A Collection of Oral Histories,* 14; "The Undiscovered City." *Fortune* (June 1949): 80.

[12] City of Vernon, Building Permit Records, Vernon City Hall, June 2006; *Fire Insurance Map of Los Angeles* (Sanborn Map Company, 1953, 1956).

[13] "Only 229 Residents," B1; "Vernon: What You Smell is Money," SE1; "Industrialized Vernon Resents Brown's Blast," *Los Angeles Times,* 22 November 1959, A1; Moruzzi, "Vernon: Southern California's First "Exclusively Industrial," 4; *City of Vernon: A Collection of Oral Histories,* 3, 14.

Evaluation

These properties are associated with the industrial growth and expansion of Vernon during the 1940s and 1950s. They are not, however, important within the context of Vernon's industrial development, the plywood industry, the steel industry, or the pet food industry. Nor are they associated with persons important to local, state, or national history. The properties do not have important associations with significant events (Criterion A / Criterion 1), nor do the occupants appear to have made significant contributions to local, state, or national history (Criterion B / Criterion 2).

The properties are not distinctive for their architectural details. The front office building displays a few International Style details, a style that emphasized austere structural and material honesty.[14] The other buildings on the parcel are prefabricated, steel frame industrial buildings popular for the affordability, ease of construction, and versatility. The buildings addressed on this form at 5100 South Boyle and 3121 Fruitland, however, are not important examples of their styles and do not have distinctive architectural details or character defining features associated with an important type, period, or method of construction (Criterion C / Criterion 3). In rare instances, buildings themselves can serve as sources of important information about historic construction materials or technologies (Criterion D / Criterion 4); however, these properties are otherwise documented and do not appear to be a principal source of important information in this regard. Finally, the buildings have been altered from their original construction and do not retain historic integrity.

[14] David Gebhard, "About Style, Not Ideology," *Architecture*, December 1983, 35-44; David Gebhard and Harriette Von Breton, *Los Angeles in the Thirties: 1931-1941*, Second Edition (Los Angeles: Hennessey & Ingalls, Inc., 1989), 141-145.

Photographs (cont):

Photograph 2. South façade of 5100 South Boyle, camera facing northwest. 6/12/06.

Photograph 3. 5100 South Boyle, west façade showing buttressed concrete walls and shed roof addition, camera facing northeast. 6/12/06.

Photographs (cont):

Photograph 4. 3121 Fruitland Avenue, camera facing northwest. 6/12/06.

Photograph 5. 3121 Fruitland Avenue front office building, camera facing west. 6/12/06.

State of California – The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary # _____
HRI # _____
Trinomial _____
NRHP Status Code 6
Other Listings _____
Review Code _____ Reviewer _____ Date _____

 *Resource Name or # Map Reference 4

P1. Other Identifier: 3063 Fruitland
*P2. Location: ☐ Not for Publication ☒ Unrestricted *a. County Los Angeles
and (P2b and P2c or P2d. Attach a Location Map as necessary.)
*b. USGS 7.5' Quad South Gate Date 1964 (1981) T____; R ____; ___ ¼ of Sec ____; _____ B.M.
c. Address 3063 Fruitland Avenue City Vernon Zip 90058
d. UTM: (give more than one for large and/or linear resources) Zone _____; _____mE/ _____mN
e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate)
6303-029-006
*P3a. Description: (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)

The industrial building at 3063 Fruitland Avenue is on the northwest corner of Fruitland Avenue and South Boyle Avenue. It has an original construction date of 1954 and a rectangular, 30,000 square foot plan with its length running parallel to South Boyle. The front façade faces south onto Fruitland. (See Continuation Sheet)

*P3b. Resource Attributes: (List attributes and codes) Industrial Building (HP8)
*P4. Resources Present: ☒ Building ☐ Structure ☐ Object ☐ Site ☐ District ☐ Element of District ☐ Other (Isolates, etc.)

P5b. Description of Photo: (View, date, accession #) Photograph 1. Camera facing northwest. 6/12/06.

*P6. Date Constructed/Age and Sources:
☒ Historic ☐ Prehistoric ☐ Both
1954, county records, city building permits

*P7. Owner and Address:
Lilliam Kamph Trust
1320 E, Ocean Front
Newport Beach, CA 92661

*P8. Recorded by: (Name, affiliation, address)
Meta Bunse and Steven J. Melvin
JRP Historical Consulting,
1490 Drew Ave, Suite 110,
Davis, CA 95616

*P9. Date Recorded: 6/12/06
*P10. Survey Type: (Describe)
Intensive

*P11. Report Citation: (Cite survey report and other sources, or enter "none.") Historical Resources Inventory and Evaluation Report: Vernon Power Plant Project.
*Attachments: ☐ None ☐ Location Map ☐ Sketch Map ☒ Continuation Sheet ☒ Building, Structure, and Object Record ☐ Archaeological Record ☐ District Record ☐ Linear Feature Record ☐ Milling Station Record ☐ Rock Art Record ☐ Artifact Record ☐ Photograph Record
☐ Other (list) _____

***NRHP Status Code** 6

***Resource Name or #** (Assigned by recorder) Map Reference 4

B1. Historic Name: Wilson Paper, Vernon Container Corporation

B2. Common Name: Monami Textile Incorporated

B3. Original Use: paper container manufacturing B4. Present Use: textile manufacturing

***B5. Architectural Style:** utilitarian

***B6. Construction History:** (Construction date, alteration, and date of alterations) original construction 1954

***B7. Moved?** ☒ No ☐ Yes ☐ Unknown **Date:** _____ **Original Location:** _____

***B8. Related Features:**

B9. Architect: unknown b. Builder: Ted R. Cooper

***B10. Significance: Theme** n/a **Area** n/a

Period of Significance n/a **Property Type** n/a **Applicable Criteria** n/a

(Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity.)

This property does not appear to meet the criteria for listing in the National Register of Historic Places, nor does it appear to be an historic resource for the purposes of CEQA. The property is located on the northwest corner of Fruitland Avenue and South Boyle Avenue in Vernon, California and dates to 1954. The building originally housed a paper container manufacturing company, and subsequent uses include automotive wire and cable manufacturing, warehousing and garment manufacturing. Currently, a garment manufacturer occupies the property. This building is associated with the general industrial expansion of Vernon during the 1950s. It is not, however, important within that context, or associated with persons important to local, state, or national history. The property does not have important associations with significant events (Criterion A / Criterion 1), nor do the occupants appear to have made significant contributions to local, state, or national history (Criterion B / Criterion 2). (See Continuation Sheet)

B11. Additional Resource Attributes: (List attributes and codes) _____

***B12. References:** Sanborn maps, 1951, 1953; Aerial photographs, 1941, 1963, 1981, 2006; City of Vernon building permits; Los Angeles County Assessor records; See Footnotes.

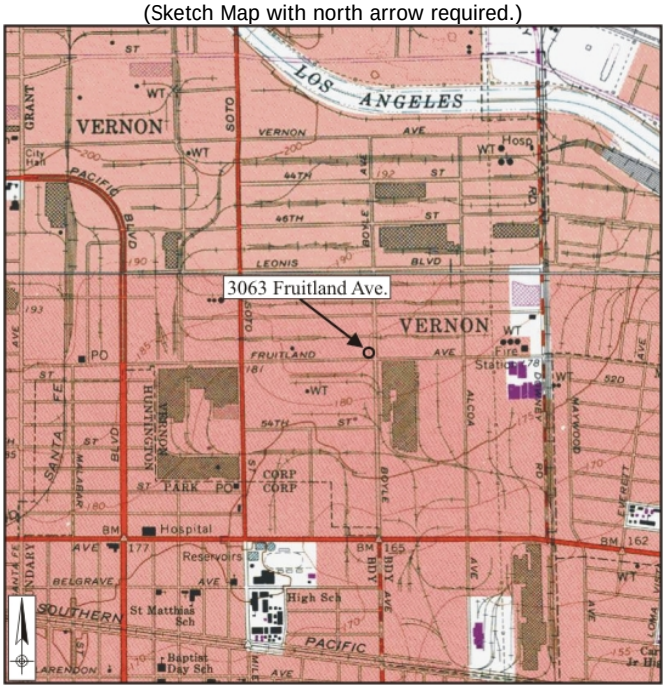
B13. Remarks:

***B14. Evaluator:** Meta Bunse and Steven J. Melvin

***Date of Evaluation:** July 2006

(This space reserved for official comments.)

(Sketch Map with north arrow required.)



P3a. Description (continued):

It is a single story with a concrete foundation and brick walls. Making up the roof are two bow trusses of wood construction clad in rolled composition. On the east slope of each bow truss is a clerestory with metal sash industrial windows and modern fiberglass dome skylights. Supporting the roof are brick pilasters within the building. Near the rear of the east façade is an elevated freight entrance with a sectional wood door. A second freight entrance is on the north façade and is accessed by a concrete loading dock adjacent to a railroad spur. This side also has three metal sash industrial windows covered by safety bars. A metal personnel door is also on the east end of this wall. Recessed into the southeast corner of the building is the main entrance, which is accessed by seven concrete steps leading to a glazed aluminum frame door surrounded by aluminum frame plate glass windows. Forming the perimeter of the entry is a metal pipe railing. A security gate covers the door and windows. The entrance is clad in narrow concrete bricks and sheltered by a boxy poured concrete element supported by metal pipes. On the south side of the parcel is a modern three foot high concrete masonry unit parking lot perimeter fence. The south façade has five awning type metal casement windows. At the west end of this side is a two bay interior freight dock with metal roll-up doors.

B10. Significance (continued):

Historic Context

Early Vernon to 1920

The present City of Vernon is located about five miles southeast of downtown Los Angeles, near the Los Angeles River, in an area that was rural and sparsely populated into the early twentieth century. It consisted of large uncultivated areas and a few scattered vegetable, orange and rose farms, as well as ranches devoted to raising livestock. A French-Basque immigrant named John B. Leonis moved to the area in 1896 and opened a general merchandise store, and later a feed barn and a winery. Leonis located on Downey Avenue, which, along with nearby Santa Fe Avenue, were among the few roads that connected Los Angeles and the port at Long Beach. Also, the Los Angeles Terminal Railroad's San Pedro Division (later the Union Pacific) paralleled Downey Avenue, and it also connected Los Angeles with Long Beach. Two other railroads passed in close proximity to what would later become Vernon: the Southern Pacific (SP) and the Atchison Topeka and Santa Fe (ATSF). The latter's San Diego Branch and Redondo Branch met at Ballona Junction just north of Vernon. Leonis recognized the potential of the site, and in 1905, along with brothers Thomas J. and James J. Furlong, incorporated the City of Vernon. Leonis and the Furlongs conceived of the 2.4 square mile city as an exclusively industrial municipality, although in the year of its creation Vernon industry consisted of two factories and two lumberyards.[1]

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Fresno. Other factors that contributed to industrialization were a policy prohibiting construction of residences, low labor costs, and the paving of all streets in the city.[2]

In time, the unique combination of characteristics in Vernon did draw industry. In 1912 nine industries opened plants in Vernon and by the end of the following year, it was home to over thirty industries and referred to by the *Los Angeles Times* as an "industrial suburb." By 1915, the Salt Lake Railway laid two miles of switching track in Vernon to connect its industries with the nearby main lines. Some of these first industries were oil refineries, which located in the northern part of the city during the 1910s. A district of stockyards and slaughterhouses established themselves during this time in the area north of Vernon Avenue and east of Santa Fe Avenue. Oil refining and meat processing became two important industries in the early years of Vernon's development.[3]

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Vernon Industrial Growth 1920-1940

Even though Vernon's industrial growth continued at a rapid rate, at the beginning of the 1920s, the area east of Pacific Avenue and south of Vernon Avenue was still largely rural and undeveloped, and in some places, farming and grazing persisted. Stimulated by the establishment of an industrial area to the east called the Central Manufacturing District (CMD) and the desire of industry to locate in Vernon, the city began to expand onto land between Pacific and the CMD.[5] The City of Vernon grew significantly in January 1926 it annexed the CMD. Mr. and Mrs. A.J. Olsen, the only residents in the CMD, both voted for annexation. At the time, the CMD comprised 300 acres and was home to 28 industries, while the Los Angeles Junction Railway (LAJR) had four and a half miles of tracks. By June of 1930, Vernon's inclusion of the CMD and its continued industrial growth gave the city over 300 industries employing 15,000 workers.[6]

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Vernon Industry After 1940

The stimulus of World War II resulted in substantial economic growth for the state of California. The biggest impact was in southern California, which became home to many new military bases and defense related industries. The increased military presence in the area spawned growth in all sectors of industry and its transportation infrastructure, low labor costs, proximity to the military, and good weather, Los Angeles blossomed as an industrial city.[10] The boom continued into the 1950s and 1960s partly sustained by the Korean War and the Cold War. Population in southern California grew, defense spending increased, and industry expanded. Vernon benefited from the economic good times and the city continued to experience industrial growth and diversification, and it became home to a variety of defense contractors, wholesale distributors, and consumer manufacturers.[11]

The property at 3063, constructed in 1954, originally housed the Wilson Paper Company, makers of paper and cardboard boxes (Map Reference 4). Paper products manufacturing continued into the 1960s when Automotive Wiring Devices moved into the building. Beginning in the 1970s, the property housed a variety of firms including roofing material storage and textile manufacturing.[12]

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[7] Kilty, *Leonis of Vernon,* p.49; "Owens-Illinois Glass Company Opens New CMD Factory," *Central Manufacturing District Magazine* 32 no.3 (1954): 31; "CMD Salutes Vernon," 12; "Vernon Sees Epochal," D1.
[8] Sanborn Map Company, 1951); Kilty, *Leonis of Vernon*, 238; Moruzzi, "Vernon: Southern California's First …," 4.
[9] Hise, 83-85; Kilty, *Leonis of Vernon*, 239; "Vernon Sees Epochal," D1; "Only 229 Residents in Fast Shrinking Vernon," *Los Angeles Times*, 16 October 1961, B1; "Vernon: What You Smell is Money," *Los Angeles Times*, 31 July 1983, SE1.
[10] "Wartime Expansion of the California Airframe Industry," *Monthly Labor Review* 61, no.4 (October 1945): 721; Ann Markusen, et.al., *The Rise of the Gunbelt: The Military Remapping of Industrial America* (New York: Oxford University Press, 1991), 8, 9, 46; "California Historic Military Buildings and Structures Inventory," JRP Historical Consulting Services, March 2000, 7-2; "The Undiscovered City." *Fortune* (June 1949): 80.
[11] *City of Vernon: A Collection of Oral Histories,* 14; "The Undiscovered City." *Fortune* (June 1949): 80.
[12] City of Vernon, Building Permit Records, Vernon City Hall, June 2006; *Fire Insurance Map of Los Angeles* (Sanborn Map Company, 1953, 1956).

By the 1950s, Vernon reached a highpoint in its industrial development. At the end of that decade, its five square miles supported 949 industries that employed 72,000 people, 10% of the workforce of the Los Angeles area. As it had since its incorporation, transportation played a large role in the city's success, and the city had 112 miles of railroads, and 28 miles of streets with easy access to Los Angeles's freeways. Seventy-six truck lines with terminals in Vernon were evidence of the city's position in the transportation network. The recession of the 1980s had a significant impact on the Vernon economy and many plants closed, including the city's largest employer, Bethlehem Steel. Nevertheless, the city remains a desirable location for industry, though today fashion design, garment making, film production, electronics, and distribution warehouses have replaced much of the heavy manufacturing and meat processing facilities of the past.[13]

Evaluation

This property is associated with the industrial growth and expansion of Vernon during the 1950s. It is not, however, important within the context of Vernon's industrial development, the plywood industry, or the paper container industry. Nor are they associated with persons important to local, state, or national history. The properties do not have important associations with significant events (Criterion A / Criterion 1), nor do the occupants appear to have made significant contributions to local, state, or national history (Criterion B / Criterion 2).

The property is not distinctive for its architectural details. The brick building is utilitarian construction with little architectural detail. The front entrance displays some International Style influence with its narrow bricks and boxy roof. The building at 3063 Fruitland, however, is not an important example of this style and does not have distinctive architectural details or character defining features associated with an important type, period, or method of construction (Criterion C / Criterion 3). In rare instances, buildings themselves can serve as sources of important information about historic construction materials or technologies (Criterion D / Criterion 4); however, this property is otherwise documented and does not appear to be a principal source of important information in this regard.

[13] "Only 229 Residents," B1; "Vernon: What You Smell is Money," SE1; "Industrialized Vernon Resents Brown's Blast," *Los Angeles Times,* 22 November 1959, A1; Moruzzi, "Vernon: Southern California's First "Exclusively Industrial," 4; *City of Vernon: A Collection of Oral Histories,* 3, 14.

Photographs (cont):

Photograph 2. Rear of building, camera facing southwest. 6/12/06.

Photograph 3. Freight bays on south façade, camera facing northeast, 6/12/06.

State of California – The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary # _____
HRI # _____
Trinomial _____
NRHP Status Code 6
Other Listings _____
Review Code _____ Reviewer _____ Date _____

 *Resource Name or # Map Reference 5

P1. Other Identifier: 2900 Fruitland
*P2. Location: ☐ Not for Publication ☒ Unrestricted *a. County Los Angeles
and (P2b and P2c or P2d. Attach a Location Map as necessary.)
*b. USGS 7.5' Quad South Gate Date 1964 (1981) T____; R ____; ___ ¼ of Sec ____; _____ B.M.
c. Address 2900 Fruitland Avenue City Vernon Zip 90058
d. UTM: (give more than one for large and/or linear resources) Zone _____; _____mE/ _____mN
e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate)
Assessor's Parcel Number: 6310-009-015
*P3a. Description: (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)

Two parcels share the address of 2900 Fruitland Avenue: APN 6310-009-015, which is on the southwest corner of Fruitland and South Boyle Avenue and is the property evaluated on this form; and APN 6310-009-014, which is on the southeast corner of Fruitland and South Soto Street, west of the evaluated property, and outside of the study area for this survey. Both parcels are now part of the sprawling Owens Illinois glass manufacturing complex, which has additional buildings on the north side of Fruitland at South Soto and on 50th Street. When constructed in 1940, Fruehauf Trailer Company occupied the building and it had the address of 5137 South Boyle. The building is set on a long, rectangular lot whose length runs parallel to Fruitland. It abuts the sidewalk on the north side and has a low, modern concrete masonry fence defining a parking lot on the east side. (See Continuation Sheet)

*P3b. Resource Attributes: (List attributes and codes) Industrial Building (HP8)
*P4. Resources Present: ☒ Building ☐ Structure ☐ Object ☐ Site ☐ District ☐ Element of District ☐ Other (Isolates, etc.)

P5b. Description of Photo: (View, date, accession #) Photograph 1. Camera facing southwest. 6/12/06.

*P6. Date Constructed/Age and Sources:
☒ Historic ☐ Prehistoric ☐ Both
1940, 1945 county records, historic maps

*P7. Owner and Address:
Owens Illinois, Inc.
One Seagate
Toledo, Ohio

*P8. Recorded by: (Name, affiliation, address)
Meta Bunse and Steven J. Melvin
JRP Historical Consulting,
1490 Drew Ave, Suite 110,
Davis, CA 95616

*P9. Date Recorded: 6/12/06
*P10. Survey Type: (Describe)
Intensive

*P11. Report Citation: (Cite survey report and other sources, or enter "none.") Historical Resources Inventory and Evaluation Report: Vernon Power Plant Project.
*Attachments: ☐ None ☐ Location Map ☐ Sketch Map ☒ Continuation Sheet ☒ Building, Structure, and Object Record ☐ Archaeological Record ☐ District Record ☐ Linear Feature Record ☐ Milling Station Record ☐ Rock Art Record ☐ Artifact Record ☐ Photograph Record
☐ Other (list) _____

***NRHP Status Code** 6
***Resource Name or #** (Assigned by recorder) Map Reference 5

B1. Historic Name: Fruehauf Trailer Company
B2. Common Name: Building 92 – Owens Illinois Glass Containers
B3. Original Use: truck trailer manufacturing B4. Present Use: warehouse
***B5. Architectural Style:** utilitarian
***B6. Construction History:** (Construction date, alteration, and date of alterations) original construction 1940; addition 1945

***B7. Moved?** ☒ No ☐ Yes ☐ Unknown **Date:** _____ **Original Location:** _____
***B8. Related Features:** _____

B9. Architect: unknown b. Builder: unknown
***B10. Significance: Theme** n/a **Area** n/a
Period of Significance n/a **Property Type** n/a **Applicable Criteria** n/a
(Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity.)

This property does not appear to meet the criteria for listing in the National Register of Historic Places, nor does it appear to be an historic resource for the purposes of CEQA. The property is located on the southwest corner of Fruitland Avenue and South Boyle Avenue in Vernon, California and dates to 1940. The building originally housed a truck trailer manufacturing firm, and since at least 1963 has been a warehouse for the Owens Illinois glass manufacturing plant. This building is associated with the general industrial expansion of Vernon during the 1940s. It is not, however, important within that context, or associated with persons important to local, state, or national history. The property does not have important associations with significant events (Criterion A / Criterion 1), nor do the occupants appear to have made significant contributions to local, state, or national history (Criterion B / Criterion 2). (See Continuation Sheet)

B11. Additional Resource Attributes: (List attributes and codes)
***B12. References:** Sanborn maps, 1951, 1953; Aerial photographs, 1941, 1963, 1981, 2006; City of Vernon building permits; Los Angeles County Assessor records; *Los Angeles Times*; See Footnotes.

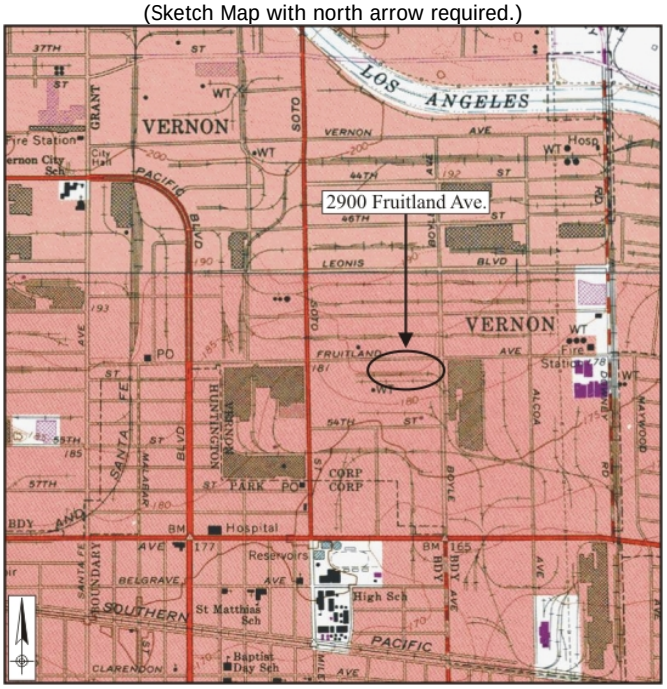
B13. Remarks:

***B14. Evaluator:** Meta Bunse and Steven J. Melvin

***Date of Evaluation:** July 2006

(This space reserved for official comments.)

(Sketch Map with north arrow required.)



P3a. Description (continued):

This 288,761 square foot, single story industrial building has a rectangular plan and an east facing façade (**Photograph 1)**. It has steel framing on a concrete foundation with a steel bow truss roof. At the roof crest is a five foot high, flat roof monitor that holds metal sash industrial windows. Covering the roof is rolled composition. Various materials comprise the building's siding (**Photograph 2)**. The upper part of the east end is stucco, while the lower segment appears to be board form concrete. The north side along Fruitland is a combination of raised ridge siding on the upper part and board form concrete on the lower. A flat roof, 92,000 square foot addition constructed sometime between 1945 is on the south side of the building **(Photograph 3)**. It is set back from the east façade and runs nearly the entire length of the building. Siding on the south side of the addition is also of raised ridge metal, and stucco or board form concrete. A number of freight doors and docks are also along the south side. The property had a single story office building on the east façade along South Boyle Avenue, which was demolished by 1981. Another building south of the current warehouse originally used for storage is now gone. The building appears to have no other windows except those in the monitor.

B10. Significance (continued):

Historic Context

Early Vernon to 1920

The present City of Vernon is located about five miles southeast of downtown Los Angeles, near the Los Angeles River, in an area that was rural and sparsely populated into the early twentieth century. It consisted of large uncultivated areas and a few scattered vegetable, orange and rose farms, as well as ranches devoted to raising livestock. A French-Basque immigrant named John B. Leonis moved to the area in 1896 and opened a general merchandise store, and later a feed barn and a winery. Leonis located on Downey Avenue, which, along with nearby Santa Fe Avenue, were among the few roads that connected Los Angeles and the port at Long Beach. Also, the Los Angeles Terminal Railroad's San Pedro Division (later the Union Pacific) paralleled Downey Avenue, and it also connected Los Angeles with Long Beach. Two other railroads passed in close proximity to what would later become Vernon: the Southern Pacific (SP) and the Atchison Topeka and Santa Fe (ATSF). The latter's San Diego Branch and Redondo Branch met at Ballona Junction just north of Vernon. Leonis recognized the potential of the site, and in 1905, along with brothers Thomas J. and James J. Furlong, incorporated the City of Vernon. Leonis and the Furlongs conceived of the 2.4 square mile city as an exclusively industrial municipality, although in the year of its creation Vernon industry consisted of two factories and two lumberyards.[1]

The city was situated between Los Angeles and the port at Long Beach, was on or near the lines of three major railroads, and also had access to the constantly improving network of roads and highways. Besides transportation infrastructure, the city founders offered inexpensive power, and water, and a tax rate among the lowest in the region. By 1913, Vernon received gas from the Midway gas fields in the southern San Joaquin Valley and electricity from a Pacific Light and Power plant in Fresno. Other factors that contributed to industrialization were a policy prohibiting construction of residences, low labor costs, and the paving of all streets in the city.[2]

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[1] James Kilty, *Leonis of Vernon* (New York: Geneva Books, 1963), 17-19, 22, 49; *City of Vernon: A Collection of Oral Histories* (Fullerton, California: CSU, Fullerton, 1995), 8; Greg Hise, "'Nature's Workshop' Industry and Urban Expansion in Southern California, 1900-1950." *Journal of Historical Geography*, 27, no.1 (2001): 84-85; "John B. Leonis, Ex-Mayor of Vernon, Dies," *Los Angeles Times*, 20 October 1953; "More Towns and Prosperous Agricultural Settlements," *Los Angeles Times*, 1 January 1887; "CMD Salutes Vernon—A City of Industry," *Central Manufacturing District Magazine* 38 no. 4 (1961): 9.

[2] Kilty, *Leonis of Vernon*, 41, 239; Pete Moruzzi, "Vernon: Southern California's First "Exclusively Industrial" City." *L.A. Conservancy News*, September/October 1997: 4; "Vernon—The Coming Industrial and Manufacturing Center of Los Angeles County," *Los Angeles*

In time, the unique combination of characteristics in Vernon did draw industry. In 1912 nine industries opened plants in Vernon and by the end of the following year, it was home to over thirty industries and referred to by the *Los Angeles Times* as an "industrial suburb." By 1915, the Salt Lake Railway laid two miles of switching track in Vernon to connect its industries with the nearby main lines. Some of these first industries were oil refineries, which located in the northern part of the city during the 1910s. A district of stockyards and slaughterhouses established themselves during this time in the area north of Vernon Avenue and east of Santa Fe Avenue. Oil refining and meat processing became two important industries in the early years of Vernon's development.[3]

Other industries such as paper manufacturing, wood processing, and iron works built plants in the area south of Vernon Avenue between Santa Fe Avenue and Alameda Street and along South Boyle Avenue near Slauson Avenue**.** The parcel containing the resources evaluated on this form was subdivided as part of the Five Hundred Acre Tract of the Los Angeles Fruitland Association. Research did not reveal the date of this subdivision, but it likely occurred after 1915 as Vernon expanded to the east.[4]

Vernon Industrial Growth 1920-1940

Even though Vernon's industrial growth continued at a rapid rate, at the beginning of the 1920s, the area east of Pacific Avenue and south of Vernon Avenue was still largely rural and undeveloped, and in some places, farming and grazing persisted. Stimulated by the establishment of an industrial area to the east called the Central Manufacturing District (CMD) and the desire of industry to locate in Vernon, the city began to expand onto land between Pacific and the CMD.[5] The City of Vernon grew significantly in January 1926 it annexed the CMD. Mr. and Mrs. A.J. Olsen, the only residents in the CMD, both voted for annexation. At the time, the CMD comprised 300 acres and was home to 28 industries, while the Los Angeles Junction Railway (LAJR) had four and a half miles of tracks. By June of 1930, Vernon's inclusion of the CMD and its continued industrial growth gave the city over 300 industries employing 15,000 workers.[6]

The singular vision of the industrial city did not waver, due in part to a virtually unchanging city government from the time of incorporation into the 1950s. City leaders continued to keep taxes low and power cheap to attract industry. From 1928 to 1930, 89 industrial firms opened in Vernon bringing the total to more than 300. These included petroleum refineries, packinghouses, can manufacturing plants, building material plants, glass container factories, furniture makers, structural steel and sheet metal plants, potteries, woodworking plants, oil well tool plants, and knitting mills. Even with this remarkable growth, approximately one-third of the city's four square miles was still undeveloped in 1930.[7]

Times 1 January 1915, p.VI 17; Greg Hise, "'Nature's Workshop,'" 76; "Like Smell of Smoke and Freely Admit It," *Los Angeles Times*, 21 December 1913, V1.

[3] "Like Smell of Smoke," V1; "Vernon—The Coming Industrial," VI-17; "Great Can Factory To Be Started This Week," *Los Angeles Times*, 6 February 1916, V1; "Vernon: Southern California's First," 4.

[4] "Like Smell of Smoke," V1; "Vernon—The Coming Industrial," VI-17; "Great Can Factory," V1; "Vernon: Southern California's First," 4; Los Angeles County, Subdivision Maps, "Tract #2836," Map Book 35, page 88; *Security Map of the City of Los Angeles.* Los Angeles: Security Savings Bank, 1908; USGS. *Watts Quadrangle*. Washington, D.C.: USGS, 1924; County of Los Angeles, Assessor's Plat Maps, accessed online at www.lacountyassessor.com.

[5] Hise, "'Nature's Workshop,'" 83-85; USGS, *Watts Quadrangle*; Los Angeles County. Subdivision Map, "Tract No. 6452," Map Book 94, Page 78, 79, May 1924; Vernon Aerial Photos 1924-1926, Los Angeles Public Library Photo Collection.

[6] "Unanimous Vote Cast: Both Ayes," *Los Angeles Times*, 10 January 1926, 23; "Annexation Vote Today," *Los Angeles Times*, 9 January 1926, 5; "Vernon Sees Epochal," D1.

[7] Kilty, *Leonis of Vernon*, p.49; "Owens-Illinois Glass Company Opens New CMD Factory," *Central Manufacturing District Magazine* 32 no.3 (1954): 31; "CMD Salutes Vernon," 12; "Vernon Sees Epochal," D1.

Around this time city officials got into a dispute about electricity rates with Southern California Edison. The city, wishing to remain attractive to business, felt the rates were too high. The two parties could not come to terms, so Vernon decided to build its own power plant on 50th Street and Seville. The plant consisted of five, 7,000 horsepower diesel engines, which began operating June 1933. By 1937, Southern California Edison resumed supplying power to Vernon, but the city continued to maintain the power plant in working order as a backup source.[8]

Vernon city policy prioritized industrial land use at the expense of residential. Its population at the time of incorporation in 1905 was approximately 1700 people and ever since that time, the number has steadily decreased. In the 1920s, the city demolished several residences to make way for industrial growth. By 1930, it had 200 homes and 1269 residents, and although 16,000 people worked in Vernon, nearly all of them lived in Los Angeles, or the nearby communities of Huntington Park, Bell, and Maywood. Many workers commuted each day on PE electric rail lines. After World War II, the city constructed several houses for firemen, policemen, and some city officials, but between 1950 and 1960, Vernon lost half of its population. The population and the number of residences continued to shrink until, in the 1980s, it had the smallest population of any city in California, with 90 residents living in 30 houses. At the same time, more 50,000 people worked in the city on a daily basis.[9]

Vernon Industry After 1940

The stimulus of World War II resulted in substantial economic growth for the state of California. The biggest impact was in southern California, which became home to many new military bases and defense related industries. The increased military presence in the area spawned growth in all sectors of industry and its transportation infrastructure, low labor costs, proximity to the military, and good weather, Los Angeles blossomed as an industrial city.[10] The boom continued into the 1950s and 1960s partly sustained by the Korean War and the Cold War. Population in southern California grew, defense spending increased, and industry expanded. Vernon benefited from the economic good times and the city continued to experience industrial growth and diversification, and it became home to a variety of defense contractors, wholesale distributors, and consumer manufacturers.[11]

The property at 2900 Fruitland (Map Reference 5) on the southwest corner of Fruitland and South Boyle was the Fruehauf Trailer Company. The company opened in 1940 to make truck trailers. In the 1950s, the plant employed 375 people and received at least one contract to build heavy trailers for the military. By 1963, Fruehauf had vacated the building and the Owens-Illinois glass company used the facility as a warehouse for its adjacent glass container factory. Owens-Illinois remains the current occupant.[12]

By the 1950s, Vernon reached a highpoint in its industrial development. At the end of that decade, its five square miles supported 949 industries that employed 72,000 people, 10% of the workforce of the Los Angeles area. As it had since its incorporation, transportation played a large role in the city's success, and the city had 112 miles of railroads, and 28 miles of

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[8] Sanborn Map Company, 1951); Kilty, *Leonis of Vernon*, 238; Moruzzi, "Vernon: Southern California's First "Exclusively Industrial," 4.

[9] Hise, 83-85; Kilty, *Leonis of Vernon*, 239; "Vernon Sees Epochal," D1; "Only 229 Residents in Fast Shrinking Vernon," *Los Angeles Times*, 16 October 1961, B1; "Vernon: What You Smell is Money," *Los Angeles Times*, 31 July 1983, SE1.

[10] "Wartime Expansion of the California Airframe Industry," *Monthly Labor Review* 61, no.4 (October 1945): 721; Ann Markusen, et.al., *The Rise of the Gunbelt: The Military Remapping of Industrial America* (New York: Oxford University Press, 1991), 8, 9, 46; "California Historic Military Buildings and Structures Inventory," JRP Historical Consulting Services, March 2000, 7-2; "The Undiscovered City." *Fortune* (June 1949): 80.

[11] *City of Vernon: A Collection of Oral Histories*, 14; "The Undiscovered City." *Fortune* (June 1949): 80.

[12] *Fire Insurance Map of Los Angeles* (Sanborn Map Company, 1953, 1956); City of Vernon, Building Permit Records, Vernon City Hall, June 2006; "Auto Union Strike Closes Trailer Plant," *Los Angeles Times*, 7 February 1951, 29; County property records; Aerial photographs, 1941.

streets with easy access to Los Angeles's freeways. Seventy-six truck lines with terminals in Vernon were evidence of the city's position in the transportation network. The recession of the 1980s had a significant impact on the Vernon economy and many plants closed, including the city's largest employer, Bethlehem Steel. Nevertheless, the city remains a desirable location for industry, though today fashion design, garment making, film production, electronics, and distribution warehouses have replaced much of the heavy manufacturing and meat processing facilities of the past.[13]

Evaluation

This property is associated with the industrial growth and expansion of Vernon during the 1940s. It is not, however, important within the context of Vernon's industrial development, or the truck trailer manufacturing industry. Nor are they associated with persons important to local, state, or national history. The properties do not have important associations with significant events (Criterion A / Criterion 1), nor do the occupants appear to have made significant contributions to local, state, or national history (Criterion B / Criterion 2).

The property is not distinctive for its architectural details. It is a utilitarian style warehouse building with a clerestory monitor, a common type for the 1940s. The building at 2900 Fruitland, however, is not an important example of this style and does not have distinctive architectural details or character defining features associated with an important type, period, or method of construction (Criterion C / Criterion 3). In rare instances, buildings themselves can serve as sources of important information about historic construction materials or technologies (Criterion D / Criterion 4); however, this property is otherwise documented and does not appear to be a principal source of important information in this regard.

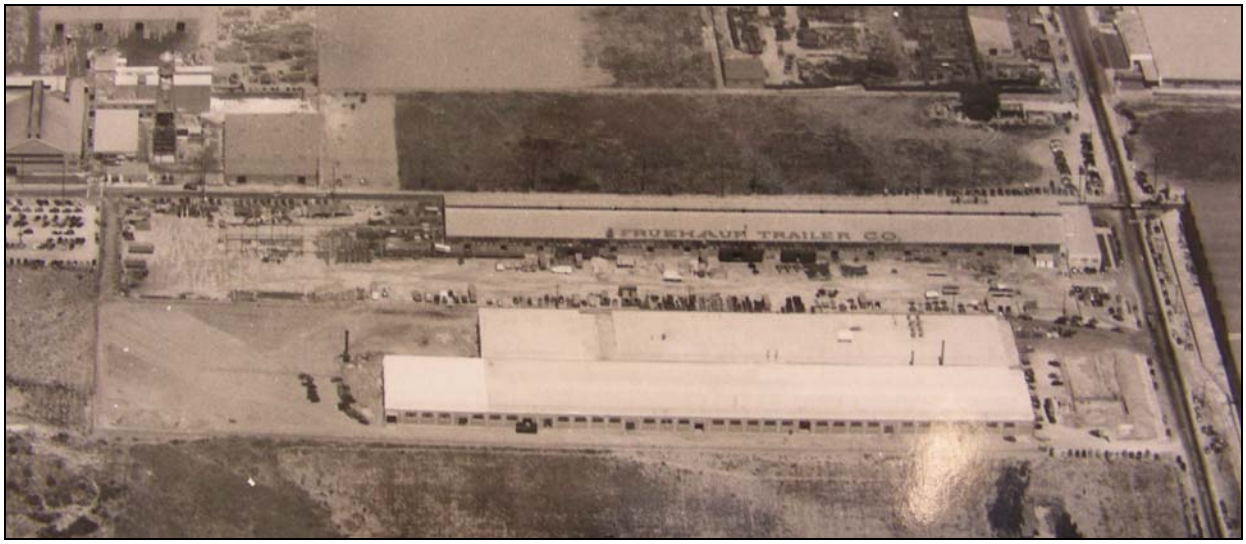
Furthermore, this property lacks sufficient integrity to convey its significance. It has undergone many alterations including the demolitions and additions described above. Changes also occurred to the siding of the building, as the current stucco and the raised ridge metal are not original. The metal siding is consistent with other buildings in the Owens-Illinois complex and it is likely that this company made the changes after they took possession of the building sometime between 1956 and 1963. Given these alterations from the building's original construction, the building does not retain historic integrity.

[13] "Only 229 Residents," B1; "Vernon: What You Smell is Money," SE1; "Industrialized Vernon Resents Brown's Blast," *Los Angeles Times,* 22 November 1959, A1; Moruzzi, "Vernon: Southern California's First "Exclusively Industrial," 4; *City of Vernon: A Collection of Oral Histories,* 3, 14.

Photographs (cont):

Photograph 2. East façade, camera facing northwest. 6/12/06.

Photograph 3. South and east sides, camera facing northwest. 6/12/06.



Photograph 4. Historic Aerial view of 2900 Fruitland Avenue showing Fruehauf Trailer Company, South Boyle Avenue is on the right, 1941.

State of California – The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PRIMARY RECORD

Primary # _____
HRI # _____
Trinomial _____
NRHP Status Code 6

Other Listings _____
Review Code _____ Reviewer _____ Date _____

 *Resource Name or # Map Reference 6

P1. Other Identifier: 5215 South Boyle

*P2. Location: ☐ Not for Publication ☒ Unrestricted *a. County Los Angeles
and (P2b and P2c or P2d. Attach a Location Map as necessary.)

*b. USGS 7.5' Quad South Gate Date 1964 (1981) T____; R ____; ___ ¼ of Sec ____; _____ B.M.

c. Address 5215 South Boyle Avenue City Vernon Zip 90058

d. UTM: (give more than one for large and/or linear resources) Zone _____; _____mE/ _____mN

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate)
Assessor's Parcel Number: 6310-009-019

*P3a. Description: (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)

The property at 5215 South Boyle Avenue is a large industrial complex comprised of several adjoining and freestanding buildings (**Figure 1**). They are on a rectangular parcel on the west side of South Boyle. Currently there are at least nine buildings on the parcel being leased to various industries. This form evaluates nine buildings that are more than fifty years old. On the east end of the parcel, facing South Boyle, is the Administration Building; behind this to the west are three adjoining industrial buildings: Buildings 1, 2, and 3; behind these buildings are Buildings 4, 5, and 6. (See Continuation Sheet)

*P3b. Resource Attributes: (List attributes and codes) Industrial Building (HP8)

*P4. Resources Present: ☒ Building ☐ Structure ☐ Object ☐ Site ☐ District ☐ Element of District ☐ Other (Isolates, etc.)

P5b. Description of Photo: (View, date, accession #) Photograph 1. Building 3, camera facing northwest. 6/12/06.

*P6. Date Constructed/Age and Sources:
☒ Historic ☐ Prehistoric ☐ Both
1940; 1941; 1945; 1947; 1948, county records, city building permits

*P7. Owner and Address:
NI Industries Inc.
5215 South Boyle Avenue
Vernon, CA 90058

*P8. Recorded by: (Name, affiliation, address)
Meta Bunse and Steven J. Melvin
JRP Historical Consulting,
1490 Drew Ave, Suite 110,
Davis, CA 95616

*P9. Date Recorded: 6/12/06

*P10. Survey Type: (Describe)
Intensive

*P11. Report Citation: (Cite survey report and other sources, or enter "none.") Historical Resources Inventory and Evaluation Report: Vernon Power Plant Project.

*Attachments: ☐ None ☐ Location Map ☐ Sketch Map ☒ Continuation Sheet ☒ Building, Structure, and Object Record ☐ Archaeological Record ☐ District Record ☐ Linear Feature Record ☐ Milling Station Record ☐ Rock Art Record ☐ Artifact Record ☐ Photograph Record ☐ Other (list) _____

***NRHP Status Code** 6

***Resource Name or #** (Assigned by recorder) Map Reference 6

B1. Historic Name: Norris Stamping and Manufacturing, Norris Thermador Corporation, Norris Industries

B2. Common Name: NI Industries

B3. Original Use: metal stamping and metal goods manufacturing B4. Present Use: textile distribution and manufacturing, various other tenants

***B5. Architectural Style:** Art-Deco, utilitarian

***B6. Construction History:** 1940, 1941, 1945, 1947, 1948; see Section P3a

***B7. Moved?** ☒ **No** ☐ **Yes** ☐ **Unknown** **Date:** _____ **Original Location:** _____

***B8. Related Features:** _____

B9. Architect: unknown b. Builder: T.R. Cooper and Co.; Webber and Co.; Pacific Iron and Steel

***B10. Significance: Theme** n/a **Area** n/a

Period of Significance n/a **Property Type** n/a **Applicable Criteria** n/a

(Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity.)

This property does not appear to meet the criteria for listing in the National Register of Historic Places, nor does it appear to be an historic resource for the purposes of CEQA. The property is located on the west side of South Boyle Avenue between Fruitland Avenue and East 54th Street in Vernon, California and consists of several adjoining buildings as well as detached buildings. The buildings date to the 1940s and 1950s, with later additions and alterations. Currently, NI Industries owns the property and leases it to tenants. Originally, Norris Stamping and Manufacturing occupied the building and manufactured products for the defense industry. City building permits, aerial photographs, maps, and field observations reveal significant alterations to the property, particularly building expansions, and additions.

B11. Additional Resource Attributes: (List attributes and codes)

***B12. References:** City of Vernon Building Permits; Sanborn Maps 1951, 1953; Aerial photographs 1941, 1963, 1981, 1994, 2006; *Los Angeles Times*; *Central Manufacturing District Magazine*; (See Footnotes).

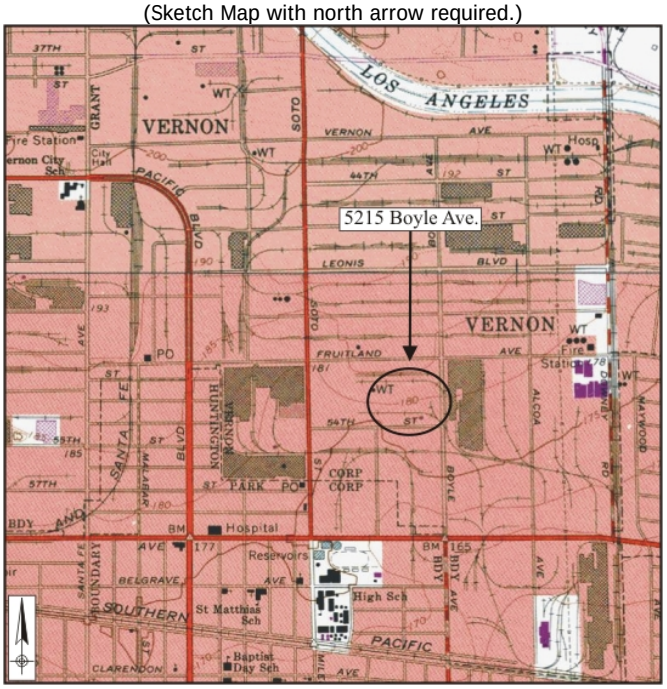
B13. Remarks:

***B14. Evaluator:** Meta Bunse and Steven J. Melvin

***Date of Evaluation:** July 2006

(This space reserved for official comments.)

(Sketch Map with north arrow required.)



P3a. Description (continued):

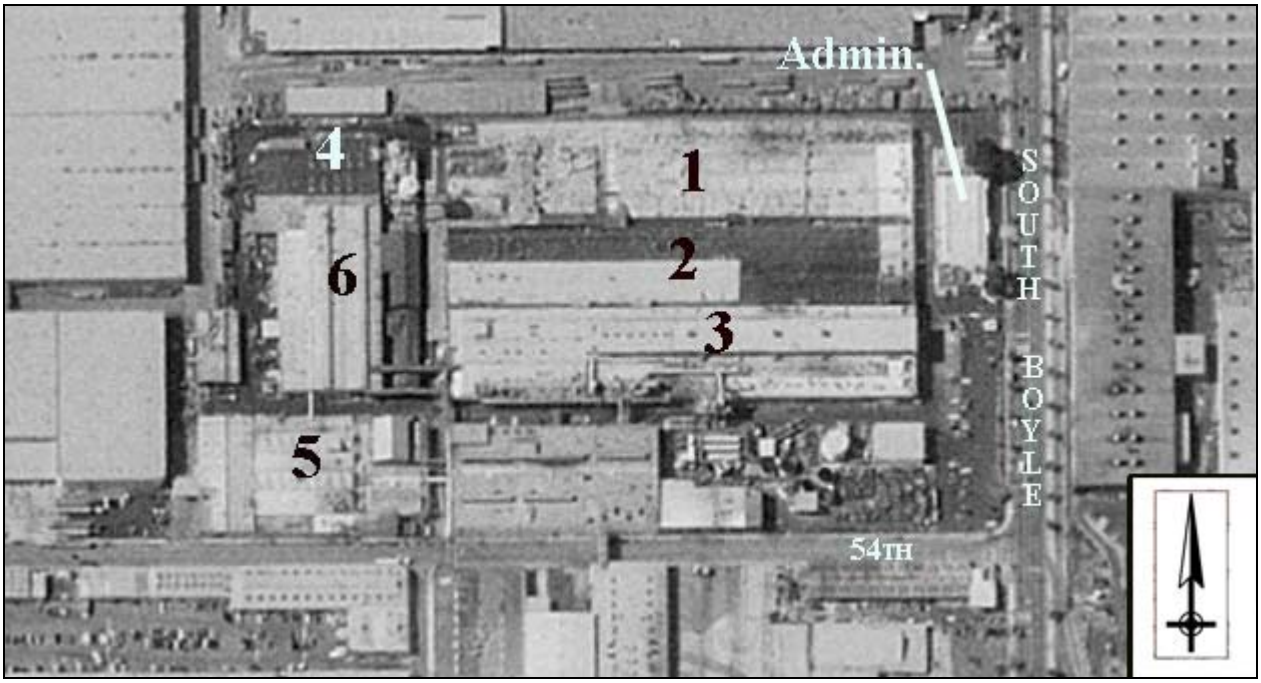


Figure 1. Site plan of 5215 South Boyle with building numbers, 1994.

The **Administration Building** is a vacant, 7605 square foot single story building constructed in 1941 with Art-Deco details and an east facing façade. Board form concrete walls rest on a rectangular concrete foundation and support a sawtooth bow truss roof. Seven concrete steps lead to the main entrance, which has a robust concrete post and beam surround with fluting on the rounded walls that accentuate the doorway (**Photograph 2)**. A modern metal roll-up door covers the doorway. On each side of the centrally placed entrance are rows of metal casement windows with vertical louver shades. The façade has a narrow brick veneer and brick planters below the windows. A hood awning runs above the windows. The façade corners are also rounded, with fluting that suggests columns (**Photograph 3)**. At the south end of the façade is another step-up entrance also covered by a modern, metal roll-up door. On the north end of the building is a modern, single story, addition with a flat roof, stucco siding and metal casement windows.

Directly behind the Administration Building is **Building 1 and Building 1A,** a long, rectangular, single story industrial building with an east facing façade and a combined 130,228 square feet (**Photograph 4)**. Building 1, constructed in 1940, was the first building built in the complex. Building 1A was a later addition, constructed in 1961. Both buildings are similar in design. They have red brick walls and concrete foundations. The earlier building has a sawtooth bowtruss roof with industrial metal sash windows, while the 1961 building has a flat roof. The east side has several freight bays and a stepped parapet. On the north façade is stucco siding and several more loading docks.

Adjoining Building 1, and also behind the Administration Building, is **Building 2,** constructed in 1941. Like Building 1, it is a long, rectangular, single story industrial building of 97,280 square feet with an east facing façade **(Photograph 5)**. It has a concrete foundation, red brick wall, and a sawtooth bowtruss roof. Fenestration on the east façade consists of metal sash industrial window on each side of a personnel entrance sheltered by a concrete hood awning. On the south side of this façade is a freight entrance with a roll-up door.

Adjoining Building 2 to the south is **Building 3**, constructed in 1945. It, too, is a long, rectangular, industrial building with 109,254 square feet and an east facing façade **(Photographs 1 and 5)**. Unlike Buildings 1 and 2, it is approximately two stories and has a four to five story central element to accommodate a 30-ton crane. The building has a concrete foundation and a reinforced concrete frame; the walls are constructed of red bricks. On the building's south side concrete post and beam construction with brick in-fill is evident. The central element has a flat roof, while the rest of the building has a sawtooth roof. This central element has some Art-Deco details with its concrete façade bordered by a raised concrete surround, and both the north and south sides of the east façade feature rounded, cantilevered concrete awnings over freight doorways. On the south façade, concrete post and beam construction with brick walls is also apparent. Fenestration consists of metal sash industrial windows on the east façade and on the north and south sides of the central element. A wide freight entrance is in the center of the east façade. Several more freight doors are along the south side of the building.

Buildings 4, 5, and 6, are at the west end of the parcel, separated from the project site directly across South Boyle by the buildings discussed above. Access to these buildings for photography and visual inspection was not available and the following descriptions are based on historic maps, aerial photographs, county assessor records, and city building permits. **Building 4** is a single story rectangular building of approximately 16,000 square feet constructed in 1947. It is made of steel framing with metal siding and a gable roof. It has additions on its north side. **Building 5** single story**,** roughly rectangular building built in the early 1950s. It has a steel frame, metal siding and a sawtooth roof. It has had numerous additions to all sides. **Building 6** adjoins Building 4 and is a single story, roughly rectangular building with a concrete foundation and walls, and steel trusses. It also dates to the early 1950s and since that time has had many additions to its west side.

B10. Significance (continued):

Historic Context

Early Vernon to 1920

The present City of Vernon is located about five miles southeast of downtown Los Angeles, near the Los Angeles River, in an area that was rural and sparsely populated into the early twentieth century. It consisted of large uncultivated areas and a few scattered vegetable, orange and rose farms, as well as ranches devoted to raising livestock. A French-Basque immigrant named John B. Leonis moved to the area in 1896 and opened a general merchandise store, and later a feed barn and a winery. Leonis located on Downey Avenue, which, along with nearby Santa Fe Avenue, were among the few roads that connected Los Angeles and the port at Long Beach. Also, the Los Angeles Terminal Railroad's San Pedro Division (later the Union Pacific) paralleled Downey Avenue, and it also connected Los Angeles with Long Beach. Two other railroads passed in close proximity to what would later become Vernon: the Southern Pacific (SP) and the Atchison Topeka and Santa Fe (ATSF). The latter's San Diego Branch and Redondo Branch met at Ballona Junction just north of Vernon. Leonis recognized the potential of the site, and in 1905, along with brothers Thomas J. and James J. Furlong, incorporated the City of Vernon. Leonis and the Furlongs conceived of the 2.4 square mile city as an exclusively industrial municipality, although in the year of its creation Vernon industry consisted of two factories and two lumberyards.[1]

[1] James Kilty, *Leonis of Vernon* (New York: Geneva Books, 1963), 17-19, 22, 49; *City of Vernon: A Collection of Oral Histories* (Fullerton, California: CSU, Fullerton, 1995), 8; Greg Hise, "'Nature's Workshop' Industry and Urban Expansion in Southern California, 1900-1950." *Journal of Historical Geography*, 27, no.1 (2001): 84-85; "John B. Leonis, Ex-Mayor of Vernon, Dies," *Los Angeles Times*, 20 October 1953; "More Towns and Prosperous Agricultural Settlements," *Los Angeles Times*, 1 January 1887; "CMD Salutes Vernon—A City of Industry," *Central Manufacturing District Magazine* 38 no. 4 (1961): 9.

The city was situated between Los Angeles and the port at Long Beach, was on or near the lines of three major railroads, and also had access to the constantly improving network of roads and highways. Besides transportation infrastructure, the city founders offered inexpensive power, and water, and a tax rate among the lowest in the region. By 1913, Vernon received gas from the Midway gas fields in the southern San Joaquin Valley and electricity from a Pacific Light and Power plant in Fresno. Other factors that contributed to industrialization were a policy prohibiting construction of residences, low labor costs, and the paving of all streets in the city.[2]

In time, the unique combination of characteristics in Vernon did draw industry. In 1912 nine industries opened plants in Vernon and by the end of the following year, it was home to over thirty industries and referred to by the *Los Angeles Times* as an "industrial suburb." By 1915, the Salt Lake Railway laid two miles of switching track in Vernon to connect its industries with the nearby main lines. Some of these first industries were oil refineries, which located in the northern part of the city during the 1910s. A district of stockyards and slaughterhouses established themselves during this time in the area north of Vernon Avenue and east of Santa Fe Avenue. Oil refining and meat processing became two important industries in the early years of Vernon's development.[3]

Other industries such as paper manufacturing, wood processing, and iron works built plants in the area south of Vernon Avenue between Santa Fe Avenue and Alameda Street and along South Boyle Avenue near Slauson Avenue**.** The parcel containing the resources evaluated on this form was subdivided as part of the Five Hundred Acre Tract of the Los Angeles Fruitland Association. Research did not reveal the date of this subdivision, but it likely occurred after 1915 as Vernon expanded to the east.[4]

Vernon Industrial Growth 1920-1940

Even though Vernon's industrial growth continued at a rapid rate, at the beginning of the 1920s, the area east of Pacific Avenue and south of Vernon Avenue was still largely rural and undeveloped, and in some places, farming and grazing persisted. Stimulated by the establishment of an industrial area to the east called the Central Manufacturing District (CMD) and the desire of industry to locate in Vernon, the city began to expand onto land between Pacific and the CMD.[5] The City of Vernon grew significantly in January 1926 it annexed the CMD. Mr. and Mrs. A.J. Olsen, the only residents in the CMD, both voted for annexation. At the time, the CMD comprised 300 acres and was home to 28 industries, while the Los Angeles Junction Railway (LAJR) had four and a half

[2] Kilty, *Leonis of Vernon*, 41, 239; Pete Moruzzi, "Vernon: Southern California's First "Exclusively Industrial" City." *L.A. Conservancy News*, September/October 1997: 4; "Vernon—The Coming Industrial and Manufacturing Center of Los Angeles County," *Los Angeles Times* 1 January 1915, p.VI 17; Greg Hise, "'Nature's Workshop,'" 76; "Like Smell of Smoke and Freely Admit It," *Los Angeles Times*, 21 December 1913, V1.

[3] "Like Smell of Smoke," V1; "Vernon—The Coming Industrial," VI-17; "Great Can Factory To Be Started This Week," *Los Angeles Times*, 6 February 1916, V1; "Vernon: Southern California's First," 4.

[4] "Like Smell of Smoke," V1; "Vernon—The Coming Industrial," VI-17; "Great Can Factory," V1; "Vernon: Southern California's First," 4; Los Angeles County, Subdivision Maps, "Tract #2836," Map Book 35, page 88; *Security Map of the City of Los Angeles.* Los Angeles: Security Savings Bank, 1908; USGS, *Watts Quadrangle* (Washington, D.C.: USGS, 1924); County of Los Angeles, Assessor's Plat Maps, accessed online at www.lacountyassessor.com.

[5] Hise, "'Nature's Workshop,'" 83-85; USGS, *Watts Quadrangle*; Los Angeles County. Subdivision Map, "Tract No. 6452," Map Book 94, Page 78, 79, May 1924; Vernon Aerial Photos 1924-1926, Los Angeles Public Library Photo Collection.

miles of tracks. By June of 1930, Vernon's inclusion of the CMD and its continued industrial growth gave the city over 300 industries employing 15,000 workers.[6]

The singular vision of the industrial city did not waver, due in part to a virtually unchanging city government from the time of incorporation into the 1950s. City leaders continued to keep taxes low and power cheap to attract industry. From 1928 to 1930, 89 industrial firms opened in Vernon bringing the total to more than 300. These included petroleum refineries, packinghouses, can manufacturing plants, building material plants, glass container factories, furniture makers, structural steel and sheet metal plants, potteries, woodworking plants, oil well tool plants, and knitting mills. Even with this remarkable growth, approximately one-third of the city's four square miles was still undeveloped in 1930.[7]

Around this time city officials got into a dispute about electricity rates with Southern California Edison. The city, wishing to remain attractive to business, felt the rates were too high. The two parties could not come to terms, so Vernon decided to build its own power plant on 50th Street and Seville. The plant consisted of five, 7,000 horsepower diesel engines, which began operating June 1933. By 1937, Southern California Edison resumed supplying power to Vernon, but the city continued to maintain the power plant in working order as a backup source.[8]

Vernon city policy prioritized industrial land use at the expense of residential. Its population at the time of incorporation in 1905 was approximately 1700 people and ever since that time, the number has steadily decreased. In the 1920s, the city demolished several residences to make way for industrial growth. By 1930, it had 200 homes and 1269 residents, and although 16,000 people worked in Vernon, nearly all of them lived in Los Angeles, or the nearby communities of Huntington Park, Bell, and Maywood. Many workers commuted each day on PE electric rail lines. After World War II, the city constructed several houses for firemen, policemen, and some city officials, but between 1950 and 1960, Vernon lost half of its population. The population and the number of residences continued to shrink until, in the 1980s, it had the smallest population of any city in California, with 90 residents living in 30 houses. At the same time, more 50,000 people worked in the city on a daily basis.[9]

Vernon Industry After 1940

The stimulus of World War II resulted in substantial economic growth for the state of California. The biggest impact was in southern California, which became home to many new military bases and defense related industries. The increased military presence in the area spawned growth in all sectors of industry and its transportation infrastructure, low labor costs, proximity to the military, and good weather, Los Angeles blossomed as an industrial city.[10] The boom continued into the 1950s and 1960s partly sustained by the Korean War and the Cold

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[6] "Unanimous Vote Cast: Both Ayes," *Los Angeles Times*, 10 January 1926, 23; "Annexation Vote Today," *Los Angeles Times*, 9 January 1926, 5; "Vernon Sees Epochal," D1.
[7] Kilty, *Leonis of Vernon*, p.49; "Owens-Illinois Glass Company Opens New CMD Factory," *Central Manufacturing District Magazine* 32 no.3 (1954): 31; "CMD Salutes Vernon," 12; "Vernon Sees Epochal," D1.
[8] Sanborn Map Company, 1951); Kilty, *Leonis of Vernon*, 238; Moruzzi, "Vernon: Southern California's First …," 4.
[9] Hise, 83-85; Kilty, *Leonis of Vernon*, 239; "Vernon Sees Epochal," D1; "Only 229 Residents in Fast Shrinking Vernon," *Los Angeles Times*, 16 October 1961, B1; "Vernon: What You Smell is Money," *Los Angeles Times*, 31 July 1983, SE1.
[10] "Wartime Expansion of the California Airframe Industry," *Monthly Labor Review* 61, no.4 (October 1945): 721; Ann Markusen, et.al., *The Rise of the Gunbelt: The Military Remapping of Industrial America* (New York: Oxford University Press, 1991), 8, 9, 46;

War. Population in southern California grew, defense spending increased, and industry expanded. Vernon benefited from the economic good times and the city continued to experience industrial growth and diversification, and it became home to a variety of defense contractors, wholesale distributors, and consumer manufacturers.[11]

Directly across South Boyle Avenue from the Alcoa plant was another manufacturer that produced military products. Norris Stamping and Manufacturing (Map Reference 6) opened in 1940 at 5215 South Boyle and used hydraulic and mechanical presses to make shell casings and ammunition containers for the Army and Navy during World War II. Almost immediately, Norris Stamping and Manufacturing began building additions to their facility, and continued to do so throughout the 1940s and 1950s. In 1942, the military honored the plant, and its 1,200 employees, with the Army-Navy Production Award for outstanding performance in the war effort. In the early 1950s, the firm, now known as Norris Industries, merged with another Vernon company, Thermador Electrical Manufacturing Corporation, a manufacturer of household appliances, to form Norris-Thermador. The new company located its headquarters at 5215 South Boyle, which became known as the Norris Division of Norris-Thermador.[12]

The South Boyle plant of Norris-Thermador continued to receive the bulk of its earnings from military contracts. It earned a $6 million defense contract in 1956 and a $5 million contract in 1957 and the arms race of the Cold War kept production high at the South Boyle plant. Another plant expansion to accommodate increased military production occurred in the early 1960s. In addition to making cartridge casings and ammunition containers, the factory began to fabricate guided missile components. By 1962, it was making rocket chambers for the Polaris missile, the first submarine launched, nuclear tipped, ballistic missile built by the U.S. The Norris Division also built components for the Stinger missile and the Multiple Launch Rocket System.[13]

It changed its name to Norris Industries by 1969 and continued to make military products. By the 1990s MascoTech, Incorporated owned Norris Industries. Curtailments in defense spending prompted MascoTech to halt production at Norris Industries in 1994. Two years later the company had transitioned from the business of property management to that of property management. It leased its buildings at 5215 South Boyle to tenants such as Atlantic Research Corporation, U.S. Filter Recovery Services, Hollander Home Fashions, and Chemmart Engineering Services.[14]

By the 1950s, Vernon reached a highpoint in its industrial development. At the end of that decade, its five square miles supported 949 industries that employed 72,000 people, 10% of the workforce of the Los Angeles area. As it had since its incorporation, transportation played a large role in the city's success, and the city had 112 miles of railroads, and 28 miles of streets with easy access to Los Angeles's freeways. Seventy-six truck lines with terminals in Vernon were evidence of the city's position in the transportation network. The recession of the 1980s

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"California Historic Military Buildings and Structures Inventory," JRP Historical Consulting Services, March 2000, 7-2; "The Undiscovered City." *Fortune* (June 1949): 80.

[11] *City of Vernon: A Collection of Oral Histories*, 14; "The Undiscovered City." *Fortune* (June 1949): 80.

[12] "Vernon Plant Receives Honor," *Los Angeles Times*, 11 August 1942, A1; *Central Manufacturing District Magazine* 33 no. 4 (1956): 1; "Norris-Thermador Corp. Honored by Ceremony on 25th Anniversary," *Central Manufacturing District Magazine* 33 no. 5 (1956): 21; *Central Manufacturing District Magazine* 34 no.4 (1956): 1.

[13] "$6,000,000 Military Contracts for Norris-Thermador Corp.," *Central Manufacturing District Magazine* 33 no. 6 (1956): 17; "Norris-Thermador Corporation Reports Major Government Contracts," *Central Manufacturing District Magazine* 34 no. 5 (1957): 20; City of Vernon, Building Permit Records, Vernon City Hall, June 2006.

[14] City of Vernon, Building Permit Records, Vernon City Hall, June 2006.

had a significant impact on the Vernon economy and many plants closed, including the city's largest employer, Bethlehem Steel. Nevertheless, the city remains a desirable location for industry, though today fashion design, garment making, film production, electronics, and distribution warehouses have replaced much of the heavy manufacturing and meat processing facilities of the past.[15]

Evaluation

This property is associated with the growth of military related industry in the Los Angeles region during World War II, the Korean War, and the Cold War. Norris Stamping and Manufacturing played supplied military products including cartridge casings, ammunition containers, and high-tech weapon components. It was one of many industrial firms that manufactured such products and was not individually important within this context. The property does not appear to meet the criteria for listing in the NRHP for its association with important events (Criterion A / Criterion 1). In addition, the property is not associated with persons important to local, state, or national history (Criterion B / Criterion 2).

The property is not distinctive for its architectural details. Of the four buildings visible from South Boyle, three are similarly designed brick industrial buildings; the fourth is a reinforced concrete administration building. The industrial buildings are a common style and lack distinctive architectural details. One of the industrial buildings and the Administration Building have some Art Deco details. This style was popular during the 1920s and 1930s and emphasized strong vertical and horizontal lines, curved corners, and cantilevered concrete awnings. Buildings 4, 5, and 6 also are not distinctive for their architecture and they are of a common, utilitarian industrial style. None of the buildings addressed on this form are important architectural examples. The buildings do not have distinctive architectural details or character defining features associated with an important type, period, or method of construction (Criterion C / Criterion 3). In rare instances, buildings themselves can serve as sources of important information about historic construction materials or technologies (Criterion D / Criterion 4); however, this property is otherwise documented and does not appear to be a principal source of important information in this regard. Finally, plant growth and expansion resulted in the construction of numerous additions to the complex and alteration of many of the buildings.

[15] "Only 229 Residents," B1; "Vernon: What You Smell is Money," SE1; "Industrialized Vernon Resents Brown's Blast," *Los Angeles Times,* 22 November 1959, A1; Moruzzi, "Vernon: Southern California's First "Exclusively Industrial," 4; *City of Vernon: A Collection of Oral Histories,* 3, 14.

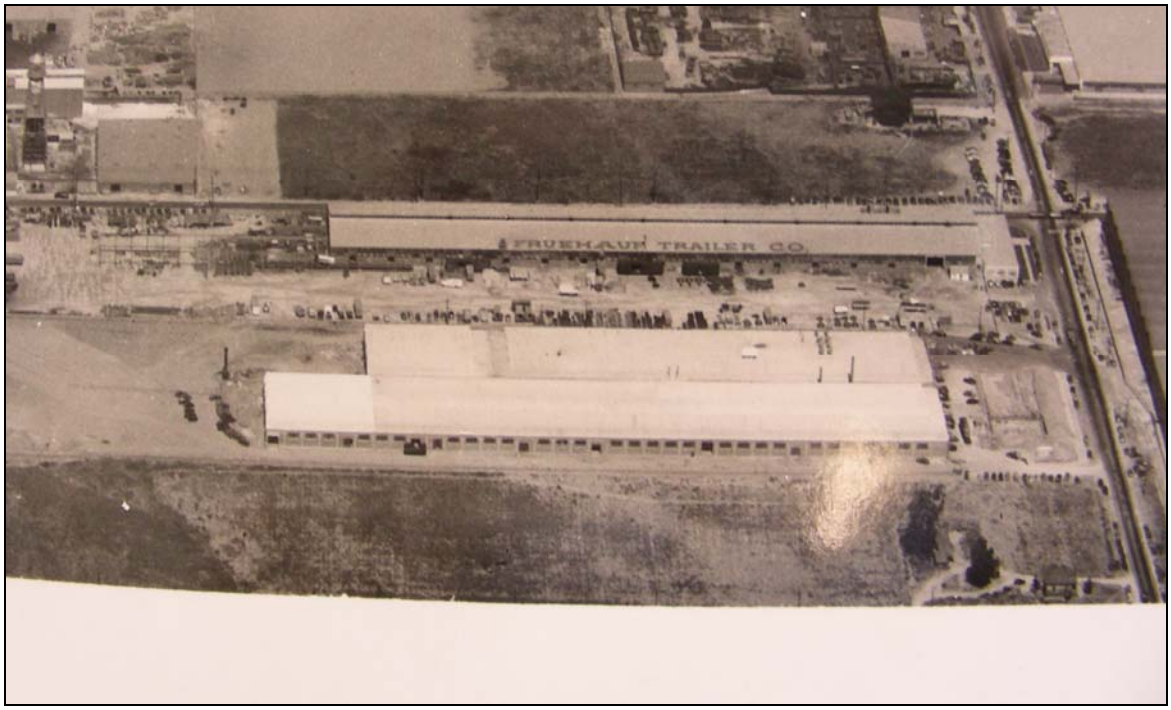
Photographs (cont):

Photograph 2. Administration Building, camera facing southwest. 6/12/06.

Photograph 3. Administration Building entrance, camera facing southwest. 6/12/06.

Photograph 4. Building 1 and 1A, camera facing southwest. 6/12/06.

Photograph 5. Building 2 (right) and Building 3 (left), camera facing northwest. 6/12/06.



Photograph 6. Historic aerial view of 5215 South Boyle showing Building 1 and Building 2, South Boyle Avenue is on the right, 1941.

State of California – The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary # _____
HRI # _____
Trinomial _____
NRHP Status Code 6
Other Listings _____
Review Code _____ Reviewer _____ Date _____

 *Resource Name or # Map Reference 7

P1. Other Identifier: Union Pacific Railroad Spur
*P2. Location: ☐ Not for Publication ☒ Unrestricted *a. County Los Angeles
and (P2b and P2c or P2d. Attach a Location Map as necessary.)
*b. USGS 7.5' Quad South Gate Date 1964 (1981) T____; R ____; ___ ¼ of Sec ____; _____ B.M.
c. Address _____ City Vernon Zip 90058
d. UTM: (give more than one for large and/or linear resources) Zone _____; _____mE/ _____mN
e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate)
Assessor's Parcel Number: 6310-008-800
*P3a. Description: (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries

This form describes a spur of the Union Pacific Railroad (UPRR) line that runs along the southern boundary of former Alcoa plant (APN 6310-008-012) and then curves north, parallel to the east side of South Boyle Avenue, south of Fruitland Avenue and north of Slauson Avenue in Vernon. The spur is standard gauge and connects to the UPRR main line to the east that runs north-south through Vernon parallel to Downey Road. The spur lines in the study area were established about by 1940 to serve industrial customers such as Alcoa, Fruehauf Trailer Company, and Norris Stamping and Manufacturing, which were established about this time. **Photograph 1** provides a typical view of the spur. The camera is facing north and shows the spur between the former Alcoa plant on the right and South Boyle Avenue on the left. (See Continuation Sheet)

*P3b. Resource Attributes: (List attributes and codes) Engineering Structure (HP11)
*P4. Resources Present: ☐ Building ☒ Structure ☐ Object ☐ Site ☐ District ☐ Element of District ☐ Other (Isolates, etc.)

P5b. Description of Photo: (View, date, accession #) Photograph 1. UPRR spur, camera facing north. 6/12/06

*P6. Date Constructed/Age and Sources:
☒ Historic ☐ Prehistoric ☐ Both
ca. 1940, historic maps

*P7. Owner and Address:
Union Pacific Railroad

*P8. Recorded by: (Name, affiliation, address)
Meta Bunse and Steven J. Melvin
JRP Historical Consulting,
1490 Drew Ave, Suite 110,
Davis, CA 95616

*P9. Date Recorded: 6/12/06

*P10. Survey Type: (Describe)
Intensive

*P11. Report Citation: (Cite survey report and other sources, or enter "none.") Historical Resources Inventory and Evaluation Report: Vernon Power Plant Project.
*Attachments: ☐ None ☐ Location Map ☐ Sketch Map ☒ Continuation Sheet ☒ Building, Structure, and Object Record ☐ Archaeological Record
☐ District Record ☐ Linear Feature Record ☐ Milling Station Record ☐ Rock Art Record ☐ Artifact Record ☐ Photograph Record
☐ Other (list) _____

***NRHP Status Code** 6
***Resource Name or #** Map Reference 7

B1. Historic Name: Union Pacific Railroad Spur
B2. Common Name: Union Pacific Railroad Spur
B3. Original Use: railroad spur B4. Present Use: railroad spur
***B5. Architectural Style:** utilitarian
***B6. Construction History:** (Construction date, alteration, and date of alterations) original construction ca. 1940

***B7. Moved?** ☒ **No** ☐ **Yes** ☐ **Unknown** **Date:** _____ **Original Location:** _____
***B8. Related Features:** _____

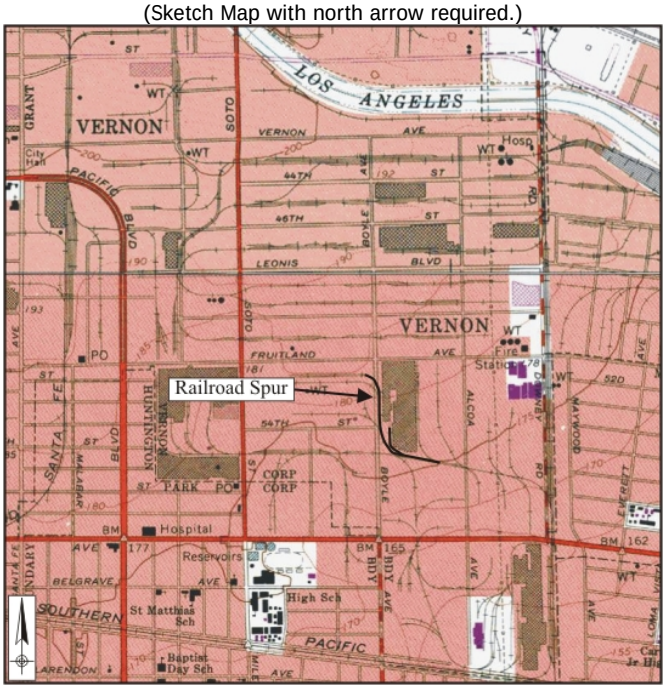
B9. Architect: unknown b. Builder: Union Pacific
***B10. Significance: Theme** n/a **Area** n/a
Period of Significance n/a **Property Type** n/a **Applicable Criteria** n/a
(Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity.)

This spur of the Union Pacific Railroad (UPRR) line that runs parallel to the east side of South Boyle Avenue, south of Fruitland Avenue and north of 54th Street in Vernon does not appear to meet the criteria for listing in the National Register of Historic Places, nor does this structure appear to be a historical resource for the purposes of CEQA. (See continuation sheet)

B11. Additional Resource Attributes: (List attributes and codes)
***B12. References:** USGS *Downey Quadrangle*, 1899; USGS *Watt Quadrangle*, 1924; Aerial photographs 1941; *California Water Atlas*, 1979; Los Angeles County Assessor Maps; Sanborn Maps 1951, 1953; (See Footnotes).

B13. Remarks:

(Sketch Map with north arrow required.)



***B14. Evaluator:** Meta Bunse and Steven J. Melvin

***Date of Evaluation:** July 2006

(This space reserved for official comments.)

P3a. Description (continued):

Weeds grow between the spur segment on the west side of the former Alcoa plant indicating it is currently unused. The segment along the south side still carries some rail traffic and serves the NI Industries building on the west side of South Boyle Avenue.

B10. Significance (continued):

Historic Context

Early Vernon to 1920

The present City of Vernon is located about five miles southeast of downtown Los Angeles, near the Los Angeles River, in an area that was rural and sparsely populated into the early twentieth century. It consisted of large uncultivated areas and a few scattered vegetable, orange and rose farms, as well as ranches devoted to raising livestock. A French-Basque immigrant named John B. Leonis moved to the area in 1896 and opened a general merchandise store, and later a feed barn and a winery. Leonis located on Downey Avenue, which, along with nearby Santa Fe Avenue, were among the few roads that connected Los Angeles and the port at Long Beach. Also, the Los Angeles Terminal Railroad's San Pedro Division (later the Union Pacific) paralleled Downey Avenue, and it also connected Los Angeles with Long Beach. Two other railroads passed in close proximity to what would later become Vernon: the Southern Pacific (SP) and the Atchison Topeka and Santa Fe (ATSF). The latter's San Diego Branch and Redondo Branch met at Ballona Junction just north of Vernon. Leonis recognized the potential of the site, and in 1905, along with brothers Thomas J. and James J. Furlong, incorporated the City of Vernon. Leonis and the Furlongs conceived of the 2.4 square mile city as an exclusively industrial municipality, although in the year of its creation Vernon industry consisted of two factories and two lumberyards.[1]

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[1] James Kilty, *Leonis of Vernon* (New York: Geneva Books, 1963), 17-19, 22, 49; *City of Vernon: A Collection of Oral Histories* (Fullerton, California: CSU, Fullerton, 1995), 8; Greg Hise, "'Nature's Workshop' Industry and Urban Expansion in Southern California, 1900-1950." *Journal of Historical Geography*, 27, no.1 (2001): 84-85; "John B. Leonis, Ex-Mayor of Vernon, Dies," *Los Angeles Times*, 20 October 1953; "More Towns and Prosperous Agricultural Settlements," *Los Angeles Times*, 1 January 1887; "CMD Salutes Vernon—A City of Industry," *Central Manufacturing District Magazine* 38 no. 4 (1961): 9.

[2] Kilty, *Leonis of Vernon*, 41, 239; Pete Moruzzi, "Vernon: Southern California's First 'Exclusively Industrial' City" *L.A. Conservancy News*, September/October 1997: 4; "Vernon—The Coming Industrial and Manufacturing Center of Los Angeles County," *Los Angeles Times* 1 January 1915, p.VI 17; Greg Hise, "'Nature's Workshop,'" 76; "Like Smell of Smoke and Freely Admit It," *Los Angeles Times*, 21 December 1913, V1.

Vernon to connect its industries with the nearby main lines. Some of these first industries were oil refineries, which located in the northern part of the city during the 1910s. A district of stockyards and slaughterhouses established themselves during this time in the area north of Vernon Avenue and east of Santa Fe Avenue. Oil refining and meat processing became two important industries in the early years of Vernon's development.[3]

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Los Angeles Terminal Railway and the Union Pacific Railroad

The Los Angeles Terminal Railway (LATR) formed in 1890 with the hopes that it would become the terminus for a new transcontinental line from Salt Lake City. The company built tracks south from the San Gabriel Valley to San Pedro gambling that the latter would one day be the location of the Port of Los Angeles. LATR directors spent the 1890s lobbying Congress for appropriations to build a port at San Pedro and fighting Collis Huntington and the Southern Pacific who wanted the port located at Santa Monica.[5] The line to San Pedro went through present day Vernon parallel to what is now Downey Road.

In the early 1900's, under the direction of E. H. Harriman, the Union Pacific (UP) began laying tracks between Salt Lake City and Los Angeles. The LATR also began laying tracks along this route at this time. The LATR could not compete with the UP and Harriman's company eventually acquired the LATR and completed the line into Los Angeles in 1905, naming the new route the San Pedro, Los Angeles, and Salt Lake Railroad; by 1922, it was labeled a Union Pacific line. By 1924, there were spur lines running west from the UP alignment along Downey Road reaching the industries north of Slauson Avenue near South Boyle Avenue. To serve the Alcoa plant, Fruehauf Trailer Company (Map Reference 2), and Norris Stamp and Manufacturing (Map Reference 6) Union Pacific extended this spur north and west (Map Reference 7) by 1940.[6]

Vernon Industrial Growth 1920-1940

Even though Vernon's industrial growth continued at a rapid rate, at the beginning of the 1920s, the area east of Pacific Avenue and south of Vernon Avenue was still largely rural and undeveloped, and in some places, farming

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[3] "Like Smell of Smoke," V1; "Vernon—The Coming Industrial," VI-17; "Great Can Factory To Be Started This Week," *Los Angeles Times*, 6 February 1916, V1; "Vernon: Southern California's First," 4.

[4] "Like Smell of Smoke," V1; "Vernon—The Coming Industrial," VI-17; "Great Can Factory," V1; "Vernon: Southern California's First," 4; Los Angeles County, Subdivision Maps, "Tract #2836," Map Book 35, page 88; *Security Map of the City of Los Angeles.* Los Angeles: Security Savings Bank, 1908; USGS. *Watts Quadrangle*. Washington, D.C.: USGS, 1924; County of Los Angeles, Assessor's Plat Maps, accessed online at www.lacountyassessor.com.

[5] William Deverell, *Railroad Crossing: Californians and the Railroad, 1850-1910* (Berkeley: University of California Press, 1994), 102-122; USGS *Pasadena Quadrangle* (Washington: USGS, 1900); *The Southern Pacific, 1901-1985* (College Station, Texas: Texas A & M University Press, 1989), 45, 46.

[6] Don L. Hofsmmer, *The Southern Pacific, 1901-1985* (College Station, Texas: Texas A & M University Press, 1989), 45, 46; USGS, *Watts Quadrangle* (Washington: USGS, 1924); "City of Vernon, California," Los Angeles: Spence Air Photos, 1940, 1941. Accessed at City of Vernon Planning Department; "Another Large Boost for Industry in the Area," *Los Angeles Times,* 6 March 1938, A7.

and grazing persisted. Stimulated by the establishment of an industrial area to the east called the Central Manufacturing District (CMD) and the desire of industry to locate in Vernon, the city began to expand onto land between Pacific and the CMD.[7] The City of Vernon grew significantly in January 1926 it annexed the CMD. Mr. and Mrs. A.J. Olsen, the only residents in the CMD, both voted for annexation. At the time, the CMD comprised 300 acres and was home to 28 industries, while the Los Angeles Junction Railway (LAJR) had four and a half miles of tracks. By June of 1930, Vernon's inclusion of the CMD and its continued industrial growth gave the city over 300 industries employing 15,000 workers.[8]

The singular vision of the industrial city did not waver, due in part to a virtually unchanging city government from the time of incorporation into the 1950s. City leaders continued to keep taxes low and power cheap to attract industry. From 1928 to 1930, 89 industrial firms opened in Vernon bringing the total to more than 300. These included petroleum refineries, packinghouses, can manufacturing plants, building material plants, glass container factories, furniture makers, structural steel and sheet metal plants, potteries, woodworking plants, oil well tool plants, and knitting mills. Even with this remarkable growth, approximately one-third of the city's four square miles was still undeveloped in 1930.[9]

Around this time city officials got into a dispute about electricity rates with Southern California Edison. The city, wishing to remain attractive to business, felt the rates were too high. The two parties could not come to terms, so Vernon decided to build its own power plant on 50th Street and Seville. The plant consisted of five, 7,000 horsepower diesel engines, which began operating June 1933. By 1937, Southern California Edison resumed supplying power to Vernon, but the city continued to maintain the power plant in working order as a backup source.[10]

Vernon city policy prioritized industrial land use at the expense of residential. Its population at the time of incorporation in 1905 was approximately 1700 people and ever since that time, the number has steadily decreased. In the 1920s, the city demolished several residences to make way for industrial growth. By 1930, it had 200 homes and 1269 residents, and although 16,000 people worked in Vernon, nearly all of them lived in Los Angeles, or the nearby communities of Huntington Park, Bell, and Maywood. Many workers commuted each day on PE electric rail lines. After World War II, the city constructed several houses for firemen, policemen, and some city officials, but between 1950 and 1960, Vernon lost half of its population. The population and the number of residences continued to shrink until, in the 1980s, it had the smallest population of any city in California, with 90 residents living in 30 houses. At the same time, more 50,000 people worked in the city on a daily basis.[11]

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[7] Hise, "'Nature's Workshop,'" 83-85; USGS, *Watts Quadrangle*; Los Angeles County. Subdivision Map, "Tract No. 6452," Map Book 94, Page 78, 79, May 1924; Vernon Aerial Photos 1924-1926, Los Angeles Public Library Photo Collection.

[8] "Unanimous Vote Cast: Both Ayes," *Los Angeles Times*, 10 January 1926, 23; "Annexation Vote Today," *Los Angeles Times*, 9 January 1926, 5; "Vernon Sees Epochal," D1.

[9] Kilty, *Leonis of Vernon*, p.49; "Owens-Illinois Glass Company Opens New CMD Factory," *Central Manufacturing District Magazine* 32 no.3 (1954): 31; "CMD Salutes Vernon," 12; "Vernon Sees Epochal," D1.

[10] Sanborn Map Company, 1951; Kilty, *Leonis of Vernon*, 238; Moruzzi, "Vernon: Southern California's First …" 4.

[11] Hise, 83-85; Kilty, *Leonis of Vernon*, 239; "Vernon Sees Epochal," D1; "Only 229 Residents in Fast Shrinking Vernon," *Los Angeles Times*, 16 October 1961, B1; "Vernon: What You Smell is Money," *Los Angeles Times*, 31 July 1983, SE1.

Vernon Industry After 1940

The stimulus of World War II resulted in substantial economic growth for the state of California. The biggest impact was in southern California, which became home to many new military bases and defense related industries. The increased military presence in the area spawned growth in all sectors of industry and its transportation infrastructure, low labor costs, proximity to the military, and good weather, Los Angeles blossomed as an industrial city.[12] The boom continued into the 1950s and 1960s partly sustained by the Korean War and the Cold War. Population in southern California grew, defense spending increased, and industry expanded. Vernon benefited from the economic good times and the city continued to experience industrial growth and diversification, and it became home to a variety of defense contractors, wholesale distributors, and consumer manufacturers.[13]

By the 1950s, Vernon reached a highpoint in its industrial development. At the end of that decade, its five square miles supported 949 industries that employed 72,000 people, 10% of the workforce of the Los Angeles area. As it had since its incorporation, transportation played a large role in the city's success, and the city had 112 miles of railroads, and 28 miles of streets with easy access to Los Angeles's freeways. Seventy-six truck lines with terminals in Vernon were evidence of the city's position in the transportation network. The recession of the 1980s had a significant impact on the Vernon economy and many plants closed, including the city's largest employer, Bethlehem Steel. Nevertheless, the city remains a desirable location for industry, though today fashion design, garment making, film production, electronics, and distribution warehouses have replaced much of the heavy manufacturing and meat processing facilities of the past.[14]

Evaluation

Components of transportation infrastructure, such as bridges and railroads, are most often found eligible for the National Register or California Register under either Criterion A / Criterion 1, for their role in local or regional history, or Criterion C / Criterion 3, relating to possible significance in the field of engineering. Infrastructure is infrequently, if ever, found to be eligible under Criteria B or D / Criteria 2 or 4. Important historic persons associated with such structures are often involved with their design, which would make them significant under Criterion C / Criterion 3. This portion of the spur of the UPRR does not appear to have important associations with any historically significant individuals (Criterion B / Criterion 2). Historic structures (and buildings) can occasionally be recognized for the important information they yield, or might yield, regarding historic construction materials or technologies, thus making them significant under Criterion D / Criterion 4. The UPRR system is well documented in manuscript, published, and photographic records, and does not appear to be a principal source of important information in this regard.

This spur was one of many UPRR spurs in the area and served as a typical rail connection to properties in Vernon. This portion of the UPRR system was of limited importance and is not eligible under Criterion A / Criterion 1. Rail lines, like other infrastructure elements, are inherently vital to communities because they support and facilitate

[12] "Wartime Expansion of the California Airframe Industry," *Monthly Labor Review* 61, no.4 (October 1945): 721; Ann Markusen, et.al., *The Rise of the Gunbelt: The Military Remapping of Industrial America* (New York: Oxford University Press, 1991), 8, 9, 46; "California Historic Military Buildings and Structures Inventory," JRP Historical Consulting Services, March 2000, 7-2; "The Undiscovered City." *Fortune* (June 1949): 80.
[13] *City of Vernon: A Collection of Oral Histories,* 14; "The Undiscovered City." *Fortune* (June 1949): 80.
[14] "Only 229 Residents," B1; "Vernon: What You Smell is Money," SE1; "Industrialized Vernon Resents Brown's Blast," *Los Angeles Times,* 22 November 1959, A1; Moruzzi, "Vernon: Southern California's First …," 4; *Vernon: A Collection of Oral Histories,* 3, 14.

communication and the distribution of people, goods, and services that can encourage development at both the local and regional level. To be eligible for listing in the National Register or California Register, rail lines, and other infrastructure, must be shown to have particular importance directly related to events and trends in community development and transportation, with emphasis on a specific demand for such facilities and the cause and effects of its construction. While this railroad spur was vital to the businesses it served, it is not of particular importance to local growth or development and, therefore, it does not appear to be eligible for listing in the National Register or California Register under Criterion A / Criterion 1.

Under Criterion C / Criterion 3, the spur would need to be significant for distinctive characteristics of its type, period, and/or method of construction, and/or be significant for its designer(s). The spur described in this form does not constitute innovative designs, nor are any innovative construction techniques apparent in their construction. This rail segment is not a rare structural type within California, nor does it represent bold or important engineering achievements. This portion of the UPRR system is one of similar railroad spurs built in Los Angeles County, and throughout California, and it does not appear to be significant under Criterion C / Criterion 3. In rare instances, engineering structures themselves can serve as sources of important information about historic construction materials or technologies (Criterion D / Criterion 4); however, this property is otherwise documented and does not appear to be a principal source of important information in this regard.

Photographs (cont):

Photograph 2. On left is segment that runs along the west side of the former Alcoa plant. On right is segment that crossed South Boyle and serves the NI Industries building, camera facing south. 6/12/06.

Photograph 3. Spur as it curves around the southwest corner of the former Alcoa plant, camera facing southeast. 6/12/06.

Section 2.3 Project Description

Data Adequacy Deficiency – Please provide color photos of the existing site; see the Visual Resources section for an option which would suffice for both areas. Appendix B(a)(1)(D).

Data Adequacy Response –The Applicant has provided photographs of the existing building in response to the Visual Resources data inadequacy request (see Section 2.5 of this Supplement), which (per the checklist) will satisfy this requirement.

Section 2.4 Transmission System Engineering

Data Adequacy Deficiency – Provide a complete electrical one-line diagram of VPP switchyard showing all equipment for generators' interconnection with the switchyard including any bus duct connectors, 15 kV switchgear, disconnect switches, generator step-up transformers, breakers and their respective ratings. Appendix B(i)(2)(B).

Data Adequacy Response – This drawing is provided in the AFC as Figure 5.2-1. We note that a similar diagram was provided in the previous application (for the 610 MW plant) that was withdrawn. CEC staff determined that this diagram met the data adequacy requirements for that project.

Data Adequacy Deficiency – Identify and select the interconnecting 230 kV transmission line between VPP switchyard and Laguna Bell substation between the River Route and Randolph Street Route transmission alternatives. Appendix B(i)(2)(B).

Data Adequacy Response –The City is not presenting these as alternatives, but rather as options and is requesting that the CEC evaluate both options. The Applicant believes that both options lack significant impacts. However, there may be commercial reasons discovered during detailed design that would cause the City to choose one route or the other. To preserve the option to make this choice, the Applicant is asking CEC to evaluate both routes. It will select the preferred route during the detailed design phase. The Applicant has submitted enough information in the AFC for the CEC to evaluate both routes.

Data Adequacy Deficiency – For expansion of Laguna Bell substation provide a description and the necessary drawings with termination breakers in an electrical one-line diagram. Appendix B(i)(2)(B).

Data Adequacy Response – This description is given beginning on page 13 of the 610 MW System Impact Study (Appendix 5A of the AFC). Since filing the AFC, the City has received the Final (610 MW) System Impact Study, dated June 23, 2006. It is provided as Attachment TSE-2.4A. This description is found on page 20 of the Final SIS. While the 610 MW study does not include the system impacts of the full 914 MW, except for immaterial details, the proposed interconnection arrangement is the same.

Two further details should be noted. First, in a strict sense, the City is not proposing an expansion of the Laguna Bell substation. Bays 1 and 2 in Laguna Bell either exist currently or, in the case of bay 1, have been provided for long before VPP was proposed. The addition of VPP will not increase the Laguna Bell substation footprint in any way.

Second, the City has asked SCE to examine alternatives to the interconnection details that it believes would further decrease the potential for any visual impact and also reduce the cost of the interconnection. While this proposal would use different connections to the Laguna Bell bus, it also would not change the Laguna Bell footprint. Although the material provided meets the requirement for "a discussion of the extent to which the proposed electric transmission facilities have been designed, planned, and routed to meet the transmission requirements created by additional generating facilities planned by the applicant or any

other entity" diagrams showing SCE's initial proposal and a VPP alternative are attached as Figures TSE-2.4a and TSE 2.4b, respectively.

Data Adequacy Deficiency – The AFC is for 914 MW net generation output from the proposed Vernon Power Plant (VPP) with a target on-line date of third quarter of 2009. Two System Impact Studies (SIS), one for 610 MW output and the other for 890 MW output (stated as incomplete study), were submitted to the Commission and the studies were conducted under 2008 system conditions instead of 2009 system conditions. Appendix B(b)(2)(C).

In order to demonstrate conformance or non-conformance with the NERC/WSCC, California Independent System Operator (Cal-ISO) and/or Utility planning standards and reliability criteria, please submit a new System Impact study for the nominal 914 MW Vernon Power Plant (VPP) under 2009 summer peak and spring system conditions as follows:

a. List all major study assumptions in the base cases including imports and exports to the system, major Path flows (such as EOR, SCIT etc.), major generations including queue generation projects and hydro, loads in the area systems.
b. Identify the reliability and planning criteria utilized to determine the reliability criteria violations in the area systems.
c. For Power Flow analysis with each base case for N-0, N-1 and critical N-2 contingency conditions, provide a list of overload criteria violations in the SCE area and non-SCE areas. Identify the pre-project existing overloads, and post-project new overloads and incremental overloads. Provide a list of contingencies evaluated.
d. Analyze system for Transient Stability conditions. Provide a list of contingencies studied.
e. Analyze system for Post-transient voltage conditions (such as Governor Power Flow). Provide a list of contingencies evaluated.
f. Analyze system for Short Circuit duties for three and single phase faults, and provide the results along with existing Breaker normal and fault interrupting ratings (if available).
g. List all mitigation measures considered (required) and those selected for all criteria violations
h. Provide Power flow diagrams for all base cases with and without the VPP plant and also N-0, N-1 and N-2 cases where overloads and voltage violations occur.
i. Provide electronic copies of *.sav and *.drw, *.dyd and *.swt GE PSLF files and EPCL contingency files in a CD.67 of those selected for all criteria violations.
j. Provide power flow diagrams (showing MVA, % loading & P. U. voltage) for base cases with and without the VPP project. Power flow diagrams must also be provided for all N-0, N-1 and N-2 studies where overloads or voltage violations occur.
k. Provide electronic copies of *.sav and *.drw, *.dyd and *.swt GE PSLF files and EPCL contingency and comparison files in a CD.

Data Adequacy Response – The Applicant is using the California Independent System Operators Large Generator Interconnection Procedure (LGIP) to obtain interconnection approvals and to provide the studies required by CEC and regulations. The status of the system impact study process was discussed extensively in Section 5.4 of the AFC. We concur

with the need to provide a complete SIS covering all 914 MW prior to the completion of the 12-month process.

Staff requests a "System Impact study for the nominal 914 MW Vernon Power Plant (VPP) under 2009 summer peak and spring system conditions." The SIS for the 304 MW expansion will provide this. The Agreement between the City and SCE for the 304 MW expansion is provided as Attachment TSE-2.4B. The study plan also specifies study of the 2009 summer peak and 2010 spring conditions.

Based on our understanding of what is being requested we are submitting an analysis of the full 914 MW for the 2009 summer peak and 2010 light spring conditions. This analysis is provided as Attachment TSE-2.4C.

Data Adequacy Deficiency – Please describe mitigation measures requiring downstream transmission line modifications, reconductoring or any new transmission line project, provide a full description with one line diagrams showing pre-project and post-project downstream facilities. For their environmental settings and impacts, provide routes and general environmental analysis and any recommended mitigation measures (Note: The System Impact Studies identified in Appendix B (b) (2) (C) will satisfy this requirement). Appendix B(b)(2)(D).

Data Adequacy Response – As shown in Attachment TSE-2.4C, the Applicant does not believe that any mitigation measures are necessary.

Data Adequacy Deficiency – Inform when the CA ISO preliminary and final approvals will be obtained. Appendix B(h)(4).

Data Adequacy Response – The terms CA ISO preliminary and final approvals have been antiquated by the ISO adoption of the LGIP and the more recent shift to direct ISO responsibility for generator interconnection. The LGIP details a schedule for study work and approvals. The SIS for the initial 610 MW is complete and a Facilities Study is being initiated. Barring the need for restudy, as stated in AFC Section 5.4, the SIS for the expansion to 914 MW "will be completed in early fall of 2006."

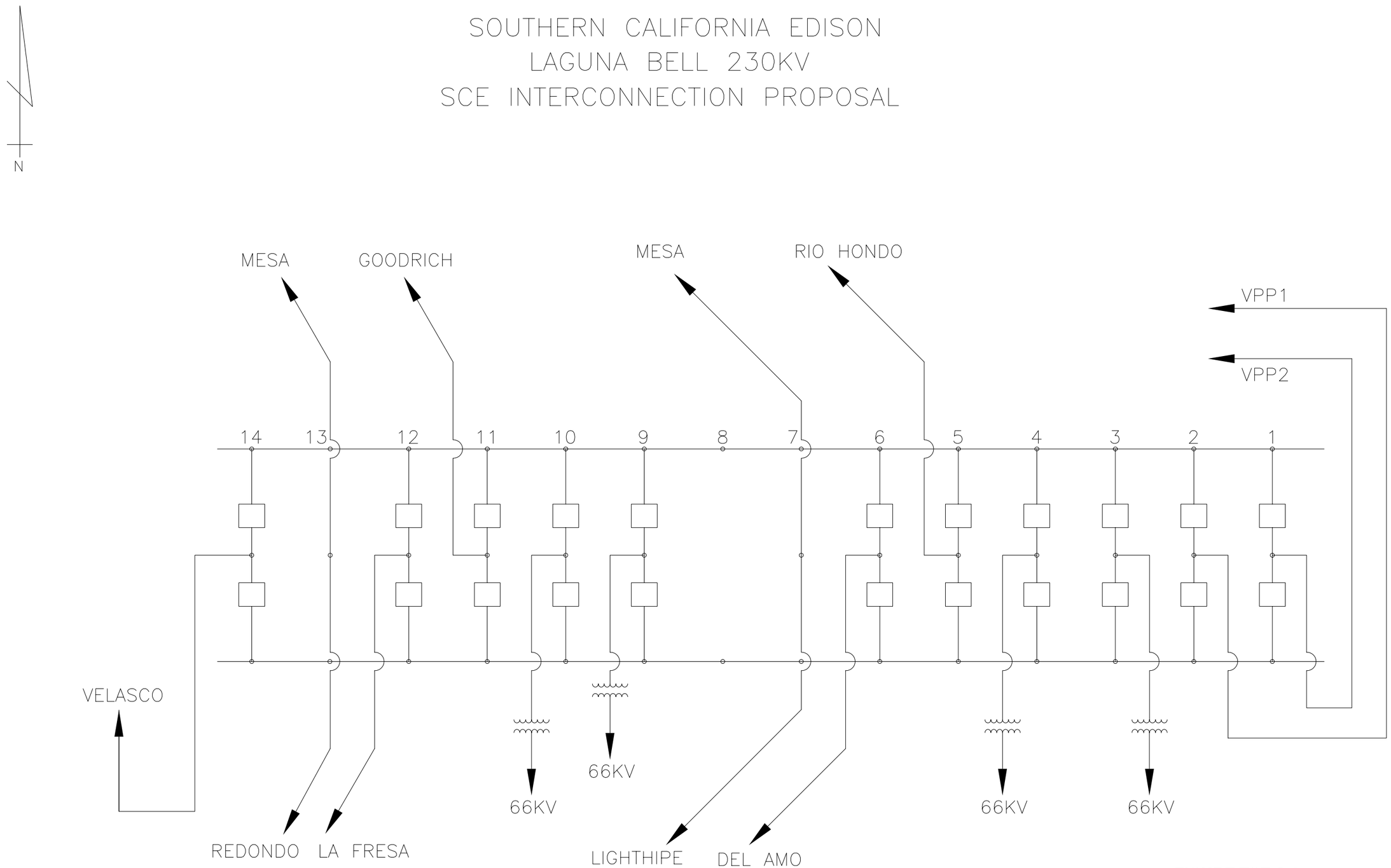

FIGURE TSE-2.4a
SCE's INITIAL PROPOSAL
VERNON POWER PLANT
CITY OF VERNON, CALIFORNIA

Source: Commonwealth Associates, Inc., 7/10/06

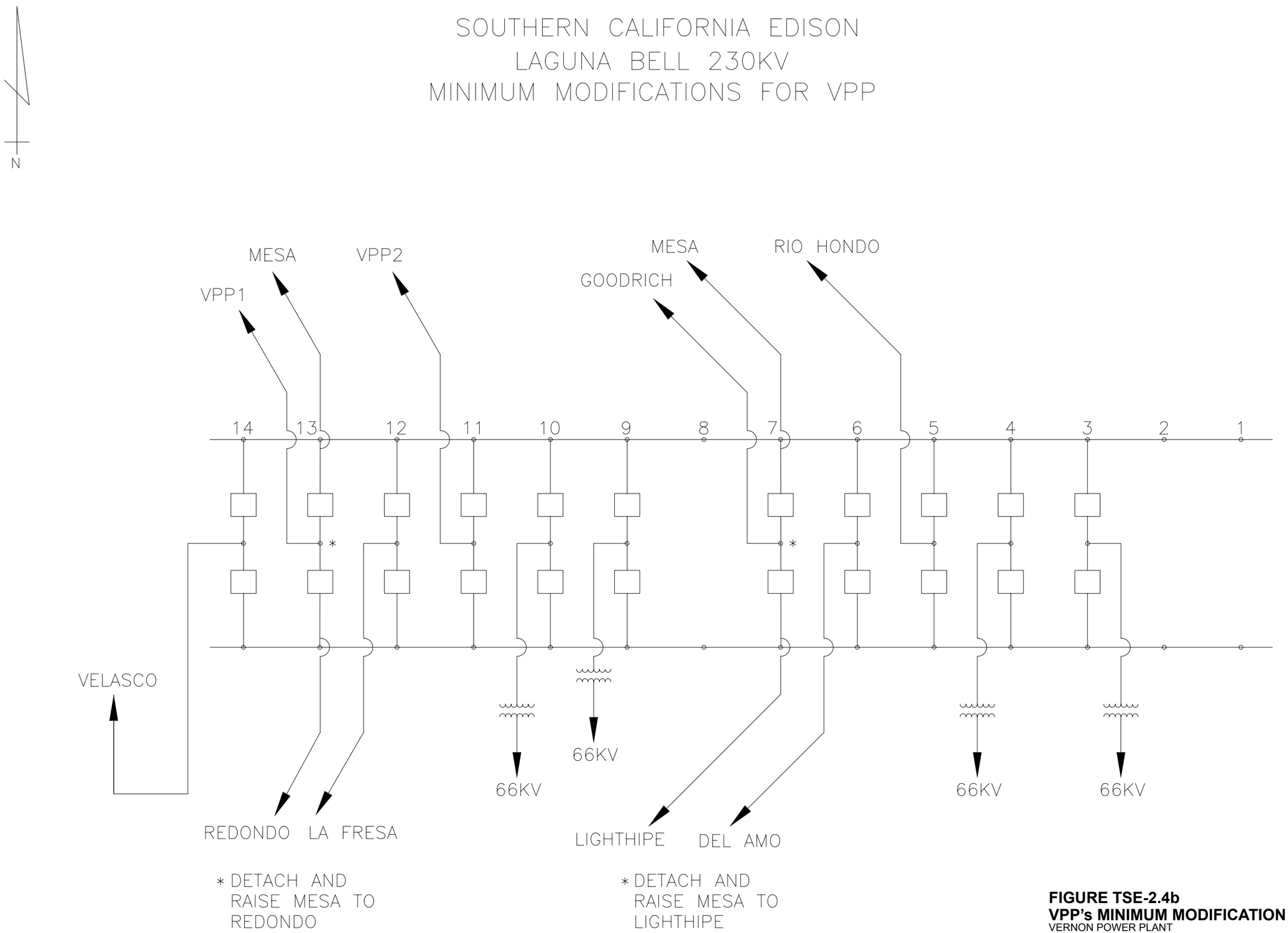

FIGURE TSE-2.4b
VPP's MINIMUM MODIFICATION ALTERNATIVE
VERNON POWER PLANT
CITY OF VERNON, CALIFORNIA

Source: Commonwealth Associates, Inc., 7/10/06

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ATTACHMENT TSE-2.4A

610-MW Final System Impact Study

Due to the size of this document, five copies have been submitted to the CEC under separate cover. Complete copies are contained on the CD-ROM version of the Data Adequacy Supplement A and will be provided in hard copy to the parties upon request.

SOUTHERN CALIFORNIA EDISON®
An EDISON INTERNATIONAL® Company

ATTACHMENT TSE-2.4A

Robert J. Lugo
Mgr., Grid Interconnection
& Contract Development

June 26, 2006

Mr. Donal O'Callaghan
Acting Director of Light & Power
City of Vernon
4305 Santa Fe Avenue
Vernon, California 90058

Re: Interconnection System Impact Study Results for the Vernon Power Plant

Dear Mr. O'Callaghan:

Enclosed is a System Impact Study ("Study") related to the Interconnection Request submitted by the City of Vernon "(Vernon") to the California Independent System Operator ("ISO") to interconnect a proposed 610 MW generating project to Southern California Edison Company's ("SCE") Laguna Bell Substation via a double-circuit 230 kV transmission line.

The Study results indicate that SCE's electrical system is not adequate to accommodate the proposed project, and that facility additions and upgrades are required. The estimated cost of the Interconnection Facilities and Network Upgrades triggered by your project is $30 million. The estimated cost of the Network Upgrades triggered by prior projects in the queue is an additional $17.123 million. Such estimates are preliminary, non-binding good faith estimates. More refined cost and schedule estimates will be provided in a subsequent Facilities Study if Vernon elects to continue with its interconnection. The amounts paid for Network Upgrades are eligible for transmission credit refunds once the project goes into commercial operation.

A meeting among the ISO, SCE and Vernon will be held within the next ten (10) Business Days to discuss the results of the Study and the next steps. If you have any questions regarding this letter, please contact Ms. Teri T. Kondo at (626) 302-8703.

Sincerely,

Teri T. Kondo for

Robert J. Lugo

Enclosures
c: David Le (ISO) via email
Judy Nickel (ISO) via email

P.O. Box 800
2244 Walnut Grove Ave.
Rosemead, CA 91770
626-302-8501/PAX 28501
Fax 626-302-1152
robert.lugo@sce.com

CITY OF VERNON
VERNON POWER PLANT (610 MW)

SYSTEM IMPACT STUDY

June 23, 2006

Prepared by
Jeffery L. Ellis, P.E.
(Consultant)

Southern California Edison Company

Approved by: Patricia L. Arons

EXECUTIVE SUMMARY

Southern California Edison Company ("SCE") performed under direction of the California Independent System Operator ("CAISO"), an Interconnection System Impact Study ("SIS") as requested by the City of Vernon for a proposed Vernon Power Plant ("VPP") pursuant to the Interconnection System Impact Study Agreement entered into by SCE and Vernon on October 13, 2005. The initial VPP project was studied with a net plant output of 890 MW. However, the gross plant output was recently revised to 639 MW, plant auxiliary load of 29 MW and a net project output of 610 MW. The Project will interconnect to the SCE owned Laguna Bell 230 kV Substation. The project is scheduled to be in service by March of 2008.

The results of the System Impact Study will be used as the basis to determine project cost allocation for facility upgrades in the Facilities Study. ***The study accuracy and the results for the assessment of the system adequacy are contingent on the accuracy of the technical data provided by Vernon***. Any changes from the attached data could void the study results.

The study was performed for two system conditions: a 2008 heavy summer one-in-ten load forecast and a 2008 light spring load forecast (65% of the heavy summer load).

The report provides detailed study assumptions and conditions of the system in which the study was conducted. Furthermore power flow contingencies for the SCE 230 kV system, post-transient governor power flow for 500 kV line contingencies, transient stability for significant 230 kV and 500 kV contingencies, and short-circuit duty assessments were completed for this study and are summarized below.

The objective of the System Impact Study is to determine whether SCE's transmission system can accommodate the proposed project. The study result indicated that the SCE system could not accommodate the proposed Vernon Power Plant Project without system modifications.

Power Flow Analysis

Studies identified that with addition of the VPP Project, the Lighthipe-Mesa 230 kV No.1 line was overloaded from 2424Amps/101% to 2671Amps/111% under the outages of Laguna Bell-Rio Hondo 230 kV No.1 line and Mesa-Redondo 230 kV No.1 line.

Post-Transient Power Flow Analysis

There were no post-transient power flow impacts identified with addition of the VPP Project.

Transient Stability Analysis

The transmission system remained in operating equilibrium throughout all transmission contingencies with inclusion of the Project. Also the VPP Project met the Low Voltage Ride-

Through criterion. None of the VPP generators tripped due to the adverse contingencies that were simulated. Phase-to-ground faults were not simulated in this SIS since previously studied projects that had a larger output did not reveal any problems.

Short-Circuit Analysis

In three-phase-to-ground SCD circuit breaker evaluation, the Vernon Power Plant triggered two circuit breakers on the Laguna Bell 230 kV bus with fault duties that increased by 0.1 kA from the pre-project case and exceeded its minimum breaker fault duty of 60%. Preliminary analysis indicated that the VPP Project contributed short circuit duties on several SCE owned circuit breakers, but did not trigger any upgrades or replacement. However, studies indicated that prior projects in the queue triggered upgrade and replacement of 62 SCE owned circuit breakers. Single-Line-to-Ground (SLG) circuit breaker evaluation will be performed in the Facilities Study.

Cost Responsibility

The ***Nonbinding*** Cost Estimate for the interconnection facilities and network upgrades triggered by the VPP Project is $30 million. The ***Nonbinding*** Cost Estimate for VPP's maximum exposure for network upgrades triggered by prior projects is an additional $17,123,000.

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Appendix A - Load Flow Plots

2008 Heavy Summer –Base Case with and without Project

1 - 2008 HS	Without Project
2 - 2008 HS	With City of Vernon project

2008 Light Spring – Base Case with and without Project

3 - 2008 LSpr	Without Project
4 - 2008 LSpr	With City of Vernon project
5 – 2008 LSpr	N-2 contingency
6 – 2008 Lspr	N-2 with City of Vernon project

Appendix B – Complete list of Power Flow Results

Appendix C – List of Power Flow Contingencies

Appendix D – 2008 Heavy Summer & Light Spring Stability Plots

Appendix E – Transient Stability Modeling

Appendix F – Transient Stability Switching Sequences

Appendix G – SCE Project Queue

CITY OF VERNON
VERNON POWER PLANT PROJECT (610 MW)

SYSTEM IMPACT STUDY
June 23, 2006

INTRODUCTION

Southern California Edison Company ("SCE") performed under direction of the California Independent System Operator ("CAISO"), an Interconnection System Impact Study ("SIS") as requested by the City of Vernon for a proposed Vernon Power Plant ("VPP") pursuant to the Interconnection System Impact Study Agreement entered into by SCE and Vernon on October 13, 2005. The initial VPP project was studied with a net plant output of 890 MW. However, the gross plant output was recently revised to 639 MW, plant auxiliary load of 29 MW and a net project output of 610 MW. The Project will interconnect to the SCE owned Laguna Bell 230 kV Substation. The project is scheduled to be in service by March of 2008.

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The study was performed for two system conditions: a 2008 heavy summer one-in-ten load forecast and a 2008 light spring load forecast (65% of the heavy summer load).

The report provides detailed study assumptions and conditions of the system in which the study was conducted. Furthermore, power flow contingencies for the SCE 230 kV system, post-transient governor power flow for 500 kV line contingencies, transient stability for significant 230 kV and 500 kV contingencies, and short-circuit duty assessments were completed for this study.

STUDY CONDITIONS AND ASSUMPTIONS

A. Planning Criteria

The study was conducted by applying the CAISO Reliability Criteria. More specifically, the main criteria applicable to this study are as follows:

Power Flow Assessment

The following contingencies are considered for transmission and sub-transmission lines and 500/230 kV transformer banks ("AA-Banks"):

- Single Contingencies (loss of one line or one AA-Bank)
- Credible Double Contingencies (loss of two lines or one line and one AA-Bank) (Outages of two AA-Banks are beyond the Planning Criteria)

The following reliability criteria are used:

Transmission Lines	Base Case	Limiting Component Normal Rating
	N-1	Limiting Component Emergency-Rating
	N-2	Limiting Component Emergency-Rating
AA-Banks	Base Case	Normal Loading Rating
	Long Term & Short Term	Bank Emergency-Rating

System upgrades for transmission lines are generally recommended for all reliability criteria violations. Special Protection Schemes (SPS) may be allowed for single contingency and credible double contingencies reliability criteria violation in place of system upgrade.

Congestion Assessment

The following principles were used in determining whether congestion management, special protection schemes, or facility upgrades are required to mitigate base case, single contingency, or double contingency overloads:

- Congestion management, as a means to mitigate base case overloads, can be used if it is determined to be manageable and the CAISO concurs with the implementation.

- Facility upgrades will be required if it is determined that the use of congestion management is unmanageable as defined in the congestion management section that follows.

- SPS, in lieu of facility upgrades, will be recommended if the scheme is effective, does not jeopardize system integrity, does not exceed the current CAISO single and double contingency tripping limitations, does not adversely effect existing or proposed special protection schemes in the area, and can be readily implemented.

- Facility upgrades will be required if use of protection schemes is determined to be ineffective, the amount of tripping exceeds the current CAISO single and double contingency tripping limitations, adverse impacts are identified on existing or currently proposed special protection schemes, or the scheme cannot be readily implemented.

- Congestion management in preparation for the next contingency will be required, with CAISO concurrence, if no facility upgrades or special protection schemes are implemented.

The following study method was implemented to assess the extent of possible congestion:

a) Under Base Case with all transmission facilities in service, the system was evaluated with all existing interconnected generation and all generation requests in the area that have a queue position ahead of this request (pre-project).

b) Under Base Case with all transmission facilities in service, the system was reevaluated with the inclusion of the Vernon Project (post-project).

If the normal loading limits of facilities are exceeded in (a), the overload is identified as an existing overload that was triggered by a project in queue ahead of the Vernon Project. If the normal loading limits of facilities are exceeded in (b) and were not exceeded in (a), the overload is identified as triggered by the addition of the Vernon Project. The Vernon Project, assuming it is a market participant, and other market participants in the area may be subjected to congestion management, potential upgrade cost and/or participation of any proposed special protection scheme if the project addition aggravates or triggers the overload. Additionally, the Vernon Project may have to participate in mitigation of overloads triggered by subsequent projects in queue, subject to FERC protocols and policies.

In order for congestion management to be a feasible alternative to system facilities, all of the following factors need to be satisfied:

- Time requirements for necessary coordination and communication between the CAISO operators, scheduling operators and SCE operators.

- Distinct Path/Corridor rating should be well defined so monitoring and detecting congestion and implementing congestion of the contributing generation resources can be performed when limits are exceeded.

- Sufficient amount of market generation in either side of the congested path/corridor should be available to eliminate market power.

- Manageable generation in the affected area is necessary so that operators can implement congestion management if required (i.e. the dispatch schedule is known and controllable).

Results of these studies should identify:

a. if capacity is available to accommodate the proposed Vernon Project and all projects ahead in queue without the need for congestion management, special protection schemes, or facility upgrades

b. if overloads exist in the area after the addition of all projects in queue ahead of the Vernon Project and all facilities in service

c. if congestion exists in the area with the addition of the Vernon Project and all projects ahead in queue under single and double element outage conditions assuming no new special protection schemes are in place

d. if sufficient capacity is maintained to accommodate all Must-Run and Regulatory Must-Take generation resources with all facilities in service

e. if sufficient capacity is maintained to accommodate the total output of any one generation resource which is not classified as Must-Run.

The following system contingencies were simulated and compared between the pre and post project base cases:

N-1 Contingencies

1. Devers – BEP2500 500-kV line
2. Devers – Midpoint #1 500-kV line
3. Devers – Midpoint #2 500-kV line
4. Midpoint – BEP2500 500-kV line
5. BEP2500B – BEP2500 500-kV line
6. El Dorado–Lugo 500-kV line
7. Lugo – Mira Loma #2 500-kV line
8. Lugo – Mira Loma #3 500-kV line
9. Lugo – Mohave 500-kV line
10. Lugo – Rancho Vista 500-kV line
11. Lugo – Victorville 500-kV line
12. Lugo – Vincent #1 500-kV line
13. Lugo – Vincent #2 500-kV line
14. Midway – Vincent #1 500-kV line
15. Midway – Vincent #2 500-kV line
16. Midway – Vincent #3 500-kV line

17. Mira Loma – Serrano 500-kV line.
18. Mohave – El Dorado 500-kV line
19. Rancho Vista – Serrano 500-kV line
20. Rancho Vista – TOT128 #1 500-kV line
21. Rancho Vista – TOT128 #2 500-kV line
22. Valley – Calpine 500-kV line
23. Valley – Devers 500-kV line
24. Valley – Serrano 500-kV line

N-2 Contingencies

25. Lugo – Mira Loma #2 & #3 500-kV lines
26. Lugo – Vincent #1 & #2 500-kV lines
27. Lugo – Rancho Vista 500-kV line & Lugo – Mira Loma #2 500-kV line
28. Serrano – Rancho Vista 500-kV line & Serrano – Mira Loma 500-kV line
29. Midway – Vincent #1 & #2 500-kV lines
30. Devers – Midpoint #1 500-kV line & Valley – Devers 500-kV line
31. Lugo – Mohave 500-kV line & Lugo – Mira Loma #2 500-kV line
32. Lugo – Mohave 500-kV line & Lugo – Mira Loma #3 500-kV line
33. Lugo – Vincent #2 500-kV line & Lugo – Victorville 500-kV line
34. Lugo – Vincent #2 500-kV line & Midway – Vincent #3 500-kV line

Transient Stability Analysis

WECC currently is in the process of adopting The Generator Electrical Grid Fault Ride-Through Capability Criteria. SCE currently supports a Low Voltage Ride-Through Criteria to ensure continued reliable service. A proposed Criteria that SCE supports, is as follows:

1. Generator is to remain in-service during system faults (three phase faults with normal clearing and single-line-to-ground with delayed clearing) unless clearing the fault effectively disconnects the generator from the system.

2. During the transient period, generator is required to remain in-service for the low voltage and frequency excursions specified in WECC Table W-1 (provided below) as applied to load bus constraint. These performance criteria are applied to the generator interconnection point, not the generator terminals.

3. Generators may be tripped after the fault period if this action is intended as part of a special protection scheme.

4. This Standard will not apply to individual units or to a site where the sum of the installed capabilities of all machines is less than 10MVA, unless it can be proven that reliability concerns exist.

5. The performance criteria of this Standard may be satisfied with performance of the generators or by installing equipment to satisfy the performance criteria.

6. The performance criterion of this Standard applies to any generation independent of the interconnected voltage level.

7. No exemption from this Standard will be given because of minor impact to the interconnected system.

8. Existing generators that go through any refurbishments or any replacements are then required to meet this Standard.

In addition to the Low Voltage Ride-Through Criteria, the following criterion was applied for the transient stability analysis:

a.) All machines in the system shall remain in synchronism as demonstrated by their relative rotor angles.

b.) All stability simulation cases will be run for a minimum of 10 seconds.

c.) Generators with a base load flag of zero will not respond to contingencies.

d.) System stability is evaluated based on the damping of the relative rotor angles and the damping of the voltage magnitude swings.

Other transient voltage dips must meet the following CAISO Reliability Criteria:

Performance Level	Disturbance	Transient Voltage Dip Criteria
B	N-1	Transient Voltage Dip: Not to exceed 25% at load buses or 30% at non-load buses. Also, not to exceed 20% for more than 20 cycles at load buses. Minimum Transient Frequency: Not below 59.6 Hz for 6 cycles or more at a load bus.
C	N-2	Transient Voltage Dip: Not to exceed 30% at any bus. Also, not to exceed 20% for more than 40 cycles at load buses. Minimum Transient Frequency: Not below 59.0 Hz for 6 cycles or more at a load bus.
D	N-3	Not Specified

The following system contingencies were simulated for both the 2008 heavy summer and 2008 light spring conditions:

Category "B" Contingencies

A. Full load rejection of the VPP
B. Three-phase fault at the VPP 230 kV bus followed by loss of the VPP STG.

C. Three-phase fault at the VPP 230 kV bus followed by loss of the VPP – Laguna Bell 230 kV #1 circuit.
D. Three-phase fault at the Laguna Bell 230 kV bus followed by loss of the Laguna Bell – Rio Hondo 230 kV #1 circuit.
E. Three-phase fault at the Laguna Bell 230 kV bus followed by loss of the Laguna Bell – Goodrich 230 kV #1 circuit.
F. Three-phase fault at the Laguna Bell 230 kV bus followed by loss of the Laguna Bell – Del Amo 230 kV #1 circuit.
G. Three-phase fault at the Laguna Bell 230 kV bus followed by loss of the Laguna Bell – La Fresa 230 kV circuit.
H. Three-phase fault at the Harbor Gen 230 kV bus followed by loss of the Long Beach – Harbor Gen 230 kV circuit.
I. Three-phase fault at the Lighthipe 230 kV bus followed by loss of the Long Beach – Lighthipe 230 kV circuit.
J. Three-phase fault at the Rio Hondo 230 kV bus followed by loss of the Vincent – Rio Hondo 230 kV circuit.
K. Three-phase fault at the Devers 500 kV bus followed by loss of the Midpoint – Devers 500 kV #1 circuit.
L. Three-phase fault at the Midpoint 500 kV bus followed by loss of the Midpoint – Harquahala 500 kV circuit.
M. Three-phase fault at the Midpoint 500 kV bus followed by loss of the Midpoint – Palo Verde 500 kV circuit.
N. Three-phase fault at the Valley 500 kV bus followed by loss of the Valley – Serrano 500 kV circuit.

Category "C" Contingencies

O. Pre-fault outage of the Laguna Bell – Goodrich 230 kV circuit, then a three-phase fault at the Laguna Bell 230 kV bus followed by loss of the Laguna Bell – Rio Hondo 230 kV circuit.
P. Pre-fault outage of the Laguna Bell – Del Amo 230 kV #1 circuit, then a three-phase fault at the Laguna Bell 230 kV bus followed by loss of the Laguna Bell – La Fresa 230 kV #2 circuit.
Q. Three-phase fault at the Mesa Cal 230 kV bus followed by loss of the Mesa Cal – Antelope 230 kV and Mesa Cal – Rio Hondo 230 kV transmission lines.
R. Three-phase fault at the Long Beach 230 kV bus followed by loss of the Long Beach – Lighthipe 230 kV and Harbor Gen – Hinson 230 kV transmission lines.
S. Three-phase fault at the Rancho Vista 500 kV bus followed by loss of the Rancho Vista – Serrano 500 kV and Mira Loma – Walnut 230 kV transmission lines.
T. Three-phase fault at the Serrano 500 kV bus followed by loss of the Rancho Vista – Serrano 500 kV and Mira Loma – Serrano 500 kV transmission lines.

Category "D" Contingency

U. A pre-fault outage of the Laguna Bell – Rio Hondo 230 kV circuit, then a three-phase fault at the VPP 230 kV bus followed by loss of a double circuit tower removing both the Laguna Bell – Del Amo 230 kV and the Laguna Bell – La Fresa 230 kV circuits.

Short-Circuit Analysis

The following study assumptions were used for conducting the short-circuit analysis:

a) Shunt capacitor banks will be omitted at all stations. Normally, shunt capacitors produce a minimal effect on fault currents. When they are large enough to be significant, their effect is to reduce total fault current. Results are more conservative to neglect them altogether.

b) Shunt reactors will also be neglected since their contribution is minimal.

c) Reactors connected to autotransformer delta tertiary windings will be neglected since they cannot contribute fault current to the system.

d) Phase shifting transformers will be by-passed as this would be the worst case from the fault current standpoint.

e) If zero sequence data is not available, the assumption will be made that Xo=3X1 and Ro=0 or R1.

Circuit breakers exposed to fault currents in excess of 100 percent of their interrupting capacities will be replaced or upgraded, whichever is appropriate.

Sub-synchronous Resonance Analysis (SSR)

It is not anticipated that there will be any SSR impacts. Hence, the SSR studies are not required.

B. City of Vernon – Vernon Power Plant Project

The project is scheduled to be in service by March 2008.

Proposed Vernon Power Plant ("VPP")

Interconnection of the VPP will be achieved with construction of a new double circuit 230 kV line to SCE's Laguna Bell Substation. Unless otherwise agreed to by SCE, such line will be constructed by Vernon. The City of Vernon will also construct the 230 kV bus and substation at the proposed project site. The project will have a gross output of 639 MW, plant auxiliary load of 29 MW and a net project output of 610 MW.

Following is a summary of 2008 project additions modeled in the Project base cases:

1. A new Vernon Power Plant 230 kV substation will be constructed.
2. Two 4 mile VPP – Laguna Bell 230 kV circuits constructed with 2156 ACSR and rated at 786 MVA will be constructed. Per unit impedance for resistance, reactance and line charging are 0.00048, 0.00512 and 0.00064, respectively.
3. Two 230/15 kV, 225 MVA transformers will be installed at the VPP 230 kV Substation to be used for the combustion turbines.

4. One 230/18 kV, 320 MVA transformer will be installed at the VPP 230 kV Substation to be used for the steam turbine.
5. Two 220 MVA combustion turbine generators will be connected to the VPP 230 kV Substation.
6. Two 14.5 MW, 7.63 MVAR plant auxiliary loads will be modeled at the combustion turbine buses for a total plant auxiliary load of 29 MW.
7. One 285 MVA steam turbine generator will be connected to the VPP 230 kV Substation.

Figure 1 illustrates the one-line schematic of the proposed VPP Project and **Figure 2** illustrates the one line diagram of transmission lines emanating from the Laguna Bell 230 kV bus.

Figure 1. One-line Vernon Power Plant ("VPP") Project bus Configuration.

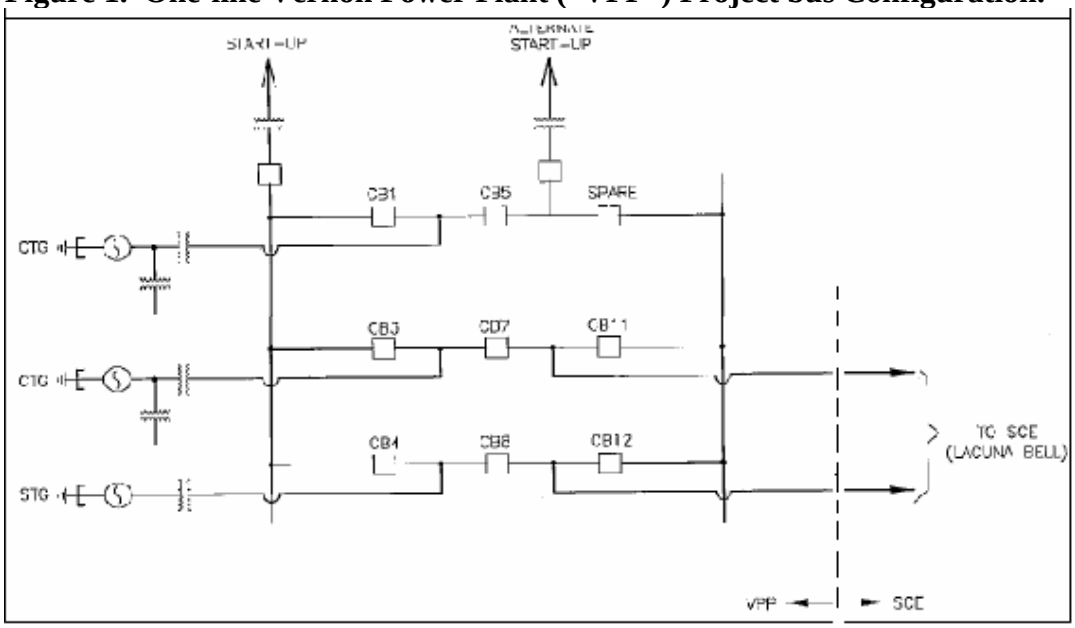
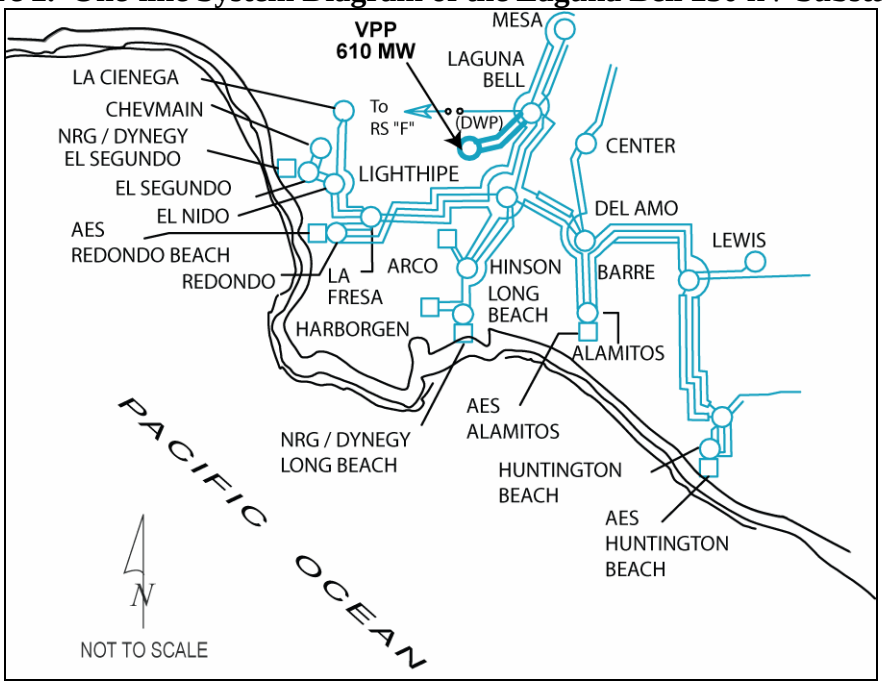


Figure 2. One-line System Diagram of the Laguna Bell 230 kV Substation.



Interconnection Alternatives:

Two alternatives have been identified for connecting the VPP circuits into the Laguna Bell 230 kV substation. The City of Vernon does not anticipate needing the second alternative and does not want it studied in the System Impact Study (SIS). Instead, the City of Vernon would like to preserve the option.

The alternate interconnection would follow the same basic transmission route to the vicinity of Laguna Bell. However, at Laguna Bell the plant would be attached to the Lighthipe - Mesa and Mesa - Redondo 230 kV lines via a new switchyard located in or near Laguna Bell. Presently, these two lines travel through the Laguna Bell switchyard without being "switched" in the Laguna Bell 230 kV switchyard. A time table was not developed for the second alternative, since this alternative is only conceptual at this point. Details of the preferred alternative are documented below.

Preferred Alternative:

Proposed double-circuit 230 kV tower line route at the Laguna Bell 230 kV substation:

-Travel east along the north side of the substation, then;
-Travel south along the east side of the substation passing the 230 kV switch rack, then;
-Turn north to approach the rack from the south side.

To accommodate the new tower line, the Laguna Bell substation would need to be reconfigured as follows:

-Underground fourteen (14) 66 kV circuits on the north/northwest side of the station (includes duct work for two available positions) to the 66 kV rack;
-Underground one (1) 66-16 kV transformer lead to the 66 kV rack;

-Relocate water tank and salt house from north side of substation;
-Raise one double-circuit 230 kV tower for under-crossing.

C. System Conditions

To simulate the SCE transmission system for analysis, the study used a SCE internal planning case that modeled 2008 heavy summer. In addition, an additional SCE internal planning case modeled 2008 Light Spring conditions. Both starting base cases were updated to represent system conditions in 2008. Most significantly, SCE's 2008 heavy summer load was escalated to a one-in-ten load forecast. System generation is based upon the application queue. That is, all projects ahead in SCE's queue regardless of the in-service date of such prior projects are modeled.

The 2008 light spring scenario assumes 65% of the heavy summer load.

D. Load Flow Study

Load flow studies were conducted under 2008 heavy summer and 2008 light spring conditions. Refer to **Appendix G** for a list of SCE Queue projects modeled in all base cases. Further descriptions of each base case follow:

a). 2008 Heavy Summer without the transmission project, Case 1.

Case includes a 2008 heavy summer load level. Generation patterns were maximized in the LA Basin to fully stress the SCE 230 kV system.

b). 2008 Heavy Summer with the VPP Project, Case 2.

Case 1 modified to include the VPP Project with a net generation of 610 MW. The generation connected at Etiwanda 230 kV bus was reduced by 610 MW to accommodate Project generation.

c). 2008 Light Spring without the transmission project, Case 3.

Case includes a 2008 light spring load level. Generation patterns were maximized in the LA Basin to fully stress the SCE 230 kV system.

d). 2008 Light Spring with the transmission project, Case 4.

Case 3 modified to include the VPP Project with a net generation of 610 MW. The generation connected at Etiwanda 230 kV bus was reduced by 610 MW to accommodate Project generation.

Table 1 summarizes SCE area system demand and resources for both the 2008 heavy summer and 2008 light spring cases.

Table 1. Summary of case attributes.

SOUTHERN CALIFORNIA IMPORT TRANSMISSION ("SCIT"), EAST-OF-RIVER ("EOR") AND WEST-OF-RIVER ("WOR") FLOWS SCE AREA TOTAL GENERATION, IMPORT, LOAD AND LOSSES (MW)				
	2008 Heavy Summer		2008 Light Spring	
	Case 1 Pre-project	Case 2 Post-Project	Case 3 Pre-Project	Case 4 Post-Project
SCIT	9,688	9,635	6,190	6,194
EOR	8,158	8,159	8,819	8,831
WOR	6,989	6,998	7,709	7,723
Generation*	18,167	18,171	12,835	12,848
Import	-6,380	-6,380	-2,917	-2,919
Load	24,117	24,146	15,330	15,359
Losses	431	405	422	408

*Changes in generation can be attributed to swing bus adjustments compensating for loss increases.

E. Post-Transient Governor Power Flow Study

All 500 kV contingencies were simulated with the post-transient governor power flow methodology. The governor power flow methodology utilizes Special Protection Scheme ("SPS") for loss of bulk system contingencies. In addition, loss of a significant amount of generation would be spread throughout the system instead of at the system swing bus.

F. Transient Stability Study

Transient stability studies were performed for both the 2008 summer peak and light load base cases to ensure that the transmission system remains in operating equilibrium through abnormal operating conditions after the new facility begins operation.

The "critical clearing" time for the Project will be determined based on the fault clearing time increasing for loss of the VPP – Laguna Bell 230 kV #1 circuit. The "critical clearing" time is the time during which a fault can persist without causing system instability.

G. Short Circuit Duty Study

Short circuit studies were conducted to determine fault duties on existing SCE facilities before and after proposed project additions. Fault duty results were used to identify overstressed equipment, if any, that results solely from addition of the proposed facility.

STUDY RESULTS

A. Load Flow Study

1. Base Case

2008 Heavy Summer
Studies identified that with addition of the VPP Project, there were no base case thermal overloaded elements for the 2008 heavy summer conditions. In addition, no bus voltages in the LA Basin violated the CAISO voltage criteria.

2008 Light Spring
Studies identified that with addition of the VPP Project, there were no base case thermal overloaded elements for the 2008 light spring system conditions. In addition, no bus voltages in the LA Basin violated the CAISO voltage criteria.

Refer to **Appendix A** for pre and post-project power flow plots for the 2008 heavy summer and 2008 light spring cases.

2. Power Flow Contingency Results.

2008 Heavy Summer
Studies identified that with addition of the VPP Project, there were no NERC/WECC Category "B" or "C" contingency affected elements for the 2008 heavy summer conditions.

2008 Light Spring
Studies identified that with addition of the VPP Project, there were no NERC/WECC Category "B" contingency affected elements for the 2008 light spring system conditions. One Category "C" contingency affected element was identified for the 2008 light spring system conditions, which is tabulated in **Table 2**.

Table 2. Power Flow Contingency Analysis – Percent Loading.

			2008 Light Spring	
AFFECTED ELEMENT	**CONTINGENCY**	**Normal/Emergency Rating (Amps)**	**Pre-Project (%)†**	**Post-Project (%)†**
Lighthipe - Mesa #1 230 kV	Laguna Bell - Rio Hondo #1 230 kV and Mesa - Redondo #1 230 kV	2400/2568	101	111

†Percent loading based on the normal rating.

The Lighthipe – Mesa #1 230 kV transmission line is limited by its 2,400 amp wave trap at the Mesa 230 kV substation. Removing the wave traps on the Lighthipe – Mesa No.1 230 kV transmission line would mitigate this overload. Since the wave trap was overloaded in the pre project case, SCE will initiate a project to remove the wave traps and modify the protection for the line.

Note that the entire project will have to be curtailed if the wave traps are not removed.

There were no voltage violations observed with addition of the VPP Project.

Appendix B tabulates all power flow contingency results.

The study focused on identifying system thermal overloads within the SCE service territory. Reported thermal overloads were limited to the condition where a modeled transmission component was loaded over 98% of its appropriate normal rating (as entered in the power flow database). In addition, only element loadings greater than 1% between the pre and post-project cases were reported.

B. Post-Transient Governor Power Flow Study

Results from the post-transient governor power flow analysis did not reveal any thermally overloaded elements.

C. Transient Stability Study

The transmission system remained in operating equilibrium throughout all transmission contingencies with inclusion of the Project. Refer to **Appendix D** for all simulated contingency plots. In an effort to determine a "critical clearing" time for the Project, the clearing time for loss of the VPP-Laguna Bell 230 kV was increased from 4 cycles (normal clearing time for 230 kV transmission lines) until system instability was observed at 62 cycles. Note, the "critical clearing" time is the time during which a fault can persist without causing instability. A typical clearing time of 4 cycles on the SCE system is to be used for clearing a fault on the SCE system and not 62 cycles.

The VPP Project met the Low Voltage Ride-Through criterion; since, none of the VPP generators tripped due to the adverse contingencies that were simulated. Phase-to-ground faults were not simulated in this SIS since previously studied projects that had a larger output did not reveal any problems.

D. Short Circuit Duty Study

The starting short-circuit analysis case includes all projects based on their application date [Project Queue]. Single-phase-to-ground SCD circuit breaker evaluation will be provided in the completed Facilities Study.

In three-phase-to-ground CB evaluation, the Vernon Power Plant triggered two circuit breakers on the Laguna Bell 230 kV bus – highlighted in yellow – with fault duties that increased by 0.1 kA from the pre-project case and exceeded its minimum breaker fault duty of 60%. In addition, several SCE replacement/upgrade circuit breakers were identified by generation projects ahead in the queue, which are listed in **Table 3**. Studies indicate that 21 SCE owned circuit breakers require replacement and 41 SCE owned

circuit breakers require upgrades. It is estimated that circuit breaker replacement/upgrades will yield a total cost of $17.123 million. Generation queue projects that triggered replacement or upgrades to circuit breakers will be identified in the Facilities Study.

Table 3. Summary of Short-Circuit Duties, 3-Phase-to-Ground.

			Pre Case		Post Case		
BUS NAME	BUS kV	CB #	X/R	FAULT CURRENT (kA)	X/R	FAULT CURRENT (kA)	DELTA (kA)
Antelope	220kV	672	12.5	31.4	12.4	31.5	0.1
Barre	220kV	4032	19.1	52.6	19.0	52.8	0.2
Barre	220kV	6032	19.1	52.6	19.0	52.8	0.2
Barre	220kV	4052	19.1	52.6	19.0	52.8	0.2
Barre	220kV	6052	19.1	52.6	19.0	52.8	0.2
Barre	220kV	6012	19.1	52.6	19.0	52.8	0.2
Barre	220kV	4062	19.1	50.1	19.0	50.3	0.2
Barre	220kV	6062	19.1	50.1	19.0	50.3	0.2
Barre	220kV	6072	19.1	50.1	19.0	50.3	0.2
El Nido	220kV	4012	21.2	51.9	21.1	52.8	0.9
El Nido	220kV	6012	21.2	51.9	21.1	52.8	0.9
El Nido	220kV	6022	21.2	51.9	21.1	52.8	0.9
El Nido	220kV	61X2	21.2	51.9	21.1	52.8	0.9
La Fresa	220kV	6092	26.4	53.0	26.6	54.1	1.1
La Fresa	220kV	4062	26.4	53.0	26.6	54.1	1.1
La Fresa	220kV	4112	26.4	53.0	26.6	54.1	1.1
La Fresa	220kV	6062	26.4	53.0	26.6	54.1	1.1
La Fresa	220kV	6112	26.4	53.0	26.6	54.1	1.1
Laguna Bell	220kV	4032	16.8	34.5	19.0	41.8	7.2
Laguna Bell	220kV	4052	16.8	34.5	19.0	41.8	7.2
Laguna Bell	220kV	4112	16.8	34.5	19.0	41.8	7.2
Laguna Bell	220kV	4122	16.8	34.5	19.0	41.8	7.2
Laguna Bell	220kV	4142	16.8	34.5	19.0	41.8	7.2
Laguna Bell	220kV	6032	16.8	34.5	19.0	41.8	7.2
Laguna Bell	220kV	6062	16.8	34.5	19.0	41.8	7.2
Laguna Bell	220kV	6112	16.8	34.5	19.0	41.8	7.2
Laguna Bell	220kV	6122	16.8	34.5	19.0	41.8	7.2
Laguna Bell	220kV	6142	16.8	34.5	19.0	41.8	7.2
Laguna Bell	220kV	4042	16.8	34.5	19.0	41.8	7.2
Laguna Bell	220kV	4062	16.8	34.5	19.0	41.8	7.2

Table 3. (continued) Summary of Short-Circuit Duties, 3-Phase-to-Ground.

			Pre Case		Post Case		
BUS NAME	BUS kV	CB #	X/R	FAULT CURRENT (kA)	X/R	FAULT CURRENT (kA)	DELTA (kA)
Laguna Bell	220kV	6042	16.8	34.5	19.0	41.8	7.2
Laguna Bell	220kV	6052	16.8	34.5	19.0	41.8	7.2
Laguna Bell	220kV	6S012	16.8	34.5	19.00	41.8	7.3
Laguna Bell	220kV	4N102	16.8	34.5	19.00	41.8	7.3
Lewis	220kV	452	21.6	48.8	21.5	48.9	0.1
Lewis	220kV	552	21.6	48.8	21.5	48.9	0.1
Mesa	220kV	4132	15.7	51.7	15.7	52.5	0.8
Mesa	220kV	6132	15.7	51.7	15.7	52.5	0.8
Mesa	220kV	6012	15.7	60.5	15.7	61.4	0.9
Mesa	220kV	4052	15.7	60.5	15.7	61.4	0.9
Mesa	220kV	6052	15.7	60.5	15.7	61.4	0.9
Mesa	220kV	6082	15.7	60.5	15.7	61.4	0.9
Mira Loma E (B)	220kV	4172	22.5	67.4	22.5	67.5	0.1
Mira Loma E (B)	220kV	4102	22.5	67.4	22.5	67.5	0.1
Mira Loma E (B)	220kV	4152	22.5	67.4	22.5	67.5	0.1
Mira Loma E (B)	220kV	6102	22.5	67.4	22.5	67.5	0.1
Mira Loma E (B)	220kV	4142	22.5	67.4	22.5	67.5	0.1
Mira Loma E (B)	220kV	5152	22.5	67.4	22.5	67.5	0.1
Mira Loma E (B)	220kV	5162	22.5	67.4	22.5	67.5	0.1
Mira Loma E (B)	220kV	6142	22.5	67.4	22.5	67.5	0.1
Mira Loma E (B)	220kV	4162	22.5	67.4	22.5	67.5	0.1
Mira Loma E (B)	220kV	5142	22.5	67.4	22.5	67.5	0.1
Mira Loma E (B)	220kV	6152	22.5	67.4	22.5	67.5	0.1
Mira Loma E (B)	220kV	6162	22.5	67.4	22.5	67.5	0.1
Pardee	220kV	4192	17.2	56.0	17.2	56.2	0.2
Pardee	220kV	5062	17.2	56.0	17.2	56.2	0.2
Pardee	220kV	5092	17.2	56.0	17.2	56.2	0.2
Pardee	220kV	5192	17.2	56.0	17.2	56.2	0.2
Pardee	220kV	6062	17.2	56.0	17.2	56.2	0.2
Pardee	220kV	6072	17.2	56.0	17.2	56.2	0.2
Pardee	220kV	6192	17.2	56.0	17.2	56.2	0.2
Vincent	220kV	51X2	19.5	54.7	19.5	55.0	0.3

Table 4. Summary of Short-Circuit Duties, Single-Line-to-Ground.

		PRE CASE		POST CASE		
Bus Name	**Bus KV**	**X/R**	**KA**	**X/R**	**KA**	**DELTA KA**
Rancho_Vista_500	525	6	23.1	6	23.2	0.1
Serrano	525	10.2	28	10.2	28.1	0.1
Vincent	525	14.4	24.5	14.4	24.6	0.1
Arcogen	230	16.5	31.3	16.5	31.5	0.2
Barre	230	13	42.4	13	42.5	0.1
Center	230	14.8	33.1	14.7	33.4	0.3
Del Amo	230	9.6	37.6	9.5	38.4	0.8
Devers	230	18.9	48	18.9	48.1	0.1
El Nido	230	18.1	39.2	18.1	39.6	0.4
El Segundo	230	21.6	35.8	21.5	36.1	0.3
Ellis	230	17.8	35.4	17.8	35.5	0.1
Etiwanda	230	13.7	56.9	13.7	57	0.1
Hinson	230	17.9	38.1	17.8	38.4	0.3
Hunt. Bch. B	230	11	25.1	11	25.2	0.1
La Fresa	230	20.8	43.9	20.9	44.5	0.6
Laguna Bell	230	12.9	31.5	14.8	38.4	6.9
Lewis	230	15.1	39.3	15	39.4	0.1
Lighthipe	230	11.8	40.6	11.7	41	0.4
Long Beach	230	14.8	25.8	14.7	26	0.2
Mesa	230	11.6	40.3	11.3	40.9	0.6
Mira Loma A	230	13.3	53.9	13.3	54	0.1
Mira Loma B	230	12.6	60.8	12.6	60.9	0.1
Olinda	230	11.5	23.2	11.4	23.3	0.1
Pardee	230	13.2	38.2	13.2	38.3	0.1
Pisgah	230	28.4	26.3	28.4	26.4	0.1
Rancho_Vista_230	230	13.4	58.2	13.4	58.3	0.1
Redondo	230	31.2	41.2	31.4	41.6	0.4
Rio Hondo	230	16.4	26.3	16.5	26.8	0.5
Serrano	230	17.1	56.1	17.1	56.2	0.1
Sylmar (SCE)	230	12.7	64.1	12.7	64.3	0.2
Villa Park	230	15.8	42.8	15.8	42.9	0.1
Vincent A	230	16.8	51.4	16.8	51.5	0.1
Walnut	230	15.4	27.8	15.4	27.9	0.1

CONCLUSIONS

A. Power Flow Analysis

2008 Light Spring

Studies identified that there was one (1) Category "C" contingency affected element for the 2008 light spring system conditions.

Existing SCE facilities are not adequate to accommodate the City of Vernon's Vernon Power Plant Project interconnecting at the SCE owned Laguna Bell 230 kV Substation for 2008 operation. In addition, the identified NERC/WECC Category "C" affected element, which was identified in the 2008 light spring conditions, will require system upgrades. Removing wave traps on Lighthipe–Mesa No.1 230 kV line would mitigate this affected element. Since this overload was triggered in the base case, SCE will initiate a project for removal and modify the protection for the line.

Below table indicate the amount of generation that VPP project needs to be curtailed if the wave traps on Lighthip-Mesa 230 kV line are not removed.

Lines to Monitor for Fault	Overloaded Line or Element	Generation to be Curtailed
Laguna Bell-Rio Hondo 230 kV No.1 line and Mesa-Redondo 230 kV No.1 line	Lighthip-Mesa 230 kV No.1 line	610 MW

B. Short-Circuit Analysis

In three-phase-to-ground CB evaluation, the Vernon Power Plant triggered two circuit breakers on the Laguna Bell 230 kV bus with fault duties that increased by 0.1 kA from the pre-project case and exceeded its minimum breaker fault duty of 60%. Preliminary study indicated that these two circuit breakers do not need to be upgraded. Several SCE replacement/upgrade circuit breakers were identified by generation projects ahead in the queue. Studies indicated that 21 SCE owned circuit breakers require replacement and 41 SCE owned circuit breakers require upgrades. It is estimated that circuit breaker replacement/upgrades will yield a total cost of $17.123 million.

Facilities Study

1. Perform circuit breaker evaluation based on the SLG short circuit duty study result provided in table 4.

2. Develop the cost for SCE system and direct assignment facilities that are required to interconnect the VPP project.

    - Construct new line positions at Laguna Bell 230-kV switchrack.
    - SCE owned circuit breakers that need replacement and upgrade.
    - Construct RTU, relay protection, metering and communication equipment.

3. Perform an operational study to determine upgrades, such as wave traps and CBs need to be completed when VPP Project comes on line.

SCOPE OF WORK

Substation Components

- Install equipment at vacant 230 kV Pos. 2 (East end of the 230 kV Switchrack) to terminate Vernon No.2 230 kV Gen. Tie Line
- Extend North 7 South Operating Buses to the East and create a new 230 kV Pos.1 to terminate Vernon No.1 230 kV generator tie line
- The bus extensions require the relocation of the 230 kV conductors presently connecting the No.6 230 kV capacitor bank to the South Bus
- The relocation of the capacitor bank leads would require (at least) two new 230 kV Tubular Steel Poles
- The bus extensions also require the relocation of the existing access road within this area of the station
- The bus extensions also require the relocation of the test shop building
- Install I.T. termination equipment at Laguna Bell and the generating station.

ORDER of MAGNITUDE" SUBSTATION COST: $10,000,000

Transmission Components

- Underground Fourteen (14) 66 kV circuits on the north/northwest side of the station (includes ductwork for two available positions) to the 66 kV rack.
- Underground One (1) 66-16 kV transformer leads to the 66 kV rack.
- Relocate water tank and salt house from north side of substation.
- Raise one double-circuit 230 kV tower for undercrossing.

ORDER of MAGNITUDE" TRANSMISSION COST: $20,000,000

Circuit Breaker Upgrade/Replacement for three-phase-to-ground SCD result

TRANSMISSION SYSTEM
CASE A - Triggered by Vernon Power
All CB's are adequate - No replacements or upgrades required

CASE B - Triggered by earlier Projects ahead of Vernon Power in Application Queue

STATION	Replace	Upgrade	Sets of TRV's required	Cost of CB	Cost of TRV set of 3	Sub-Total CB	Sub-Total TRV	GRAND TOTAL
Antelope	1			$ 460,000		$ 460,000		$ 460,000
Barre		8	8		$ 139,000		$ 1,112,000	$ 1,112,000
El Nido	4			$ 460,000		$ 1,840,000		$ 1,840,000
La Fresa		5	5		$ 139,000		$ 695,000	$ 695,000
Laguna Bell	2	14	9	$ 460,000	$ 139,000	$ 920,000	$ 1,251,000	$ 2,171,000
Lewis	2			$ 460,000		$ 920,000		$ 920,000
Mesa		6	8		$ 139,000		$ 1,112,000	$ 1,112,000
Mira Loma	12			$ 607,000		$ 7,284,000		$ 7,284,000
Pardee		7	9		$ 139,000		$ 1,251,000	$ 1,251,000
Vincent		1	2		$ 139,000		$ 278,000	$ 278,000
	21	41				$11,424,000	$ 5,699,000	$ 17,123,000

NOTES:
All costs in 2007 Dollars
ITCC Tax not included
Costs of upgrading Mira Loma 220kV Switchyard to 83kA not included

Notes: All cost estimates are rough order of magnitude, and are non binding cost estimates.

The transmission schedule would be the controlling element of the Project. All other elements would be well within the 30-Month time frame shown below.

	1 Year				2 Year				3 Year			
	1 Qtr	2 Qtr	3Qtr	4 Qtr	1 Qtr	2 Qtr	3Qtr	4 Qtr	1 Qtr	2 Qtr	3Qtr	4 Qtr
Engineering												
Procurement												
Construction												

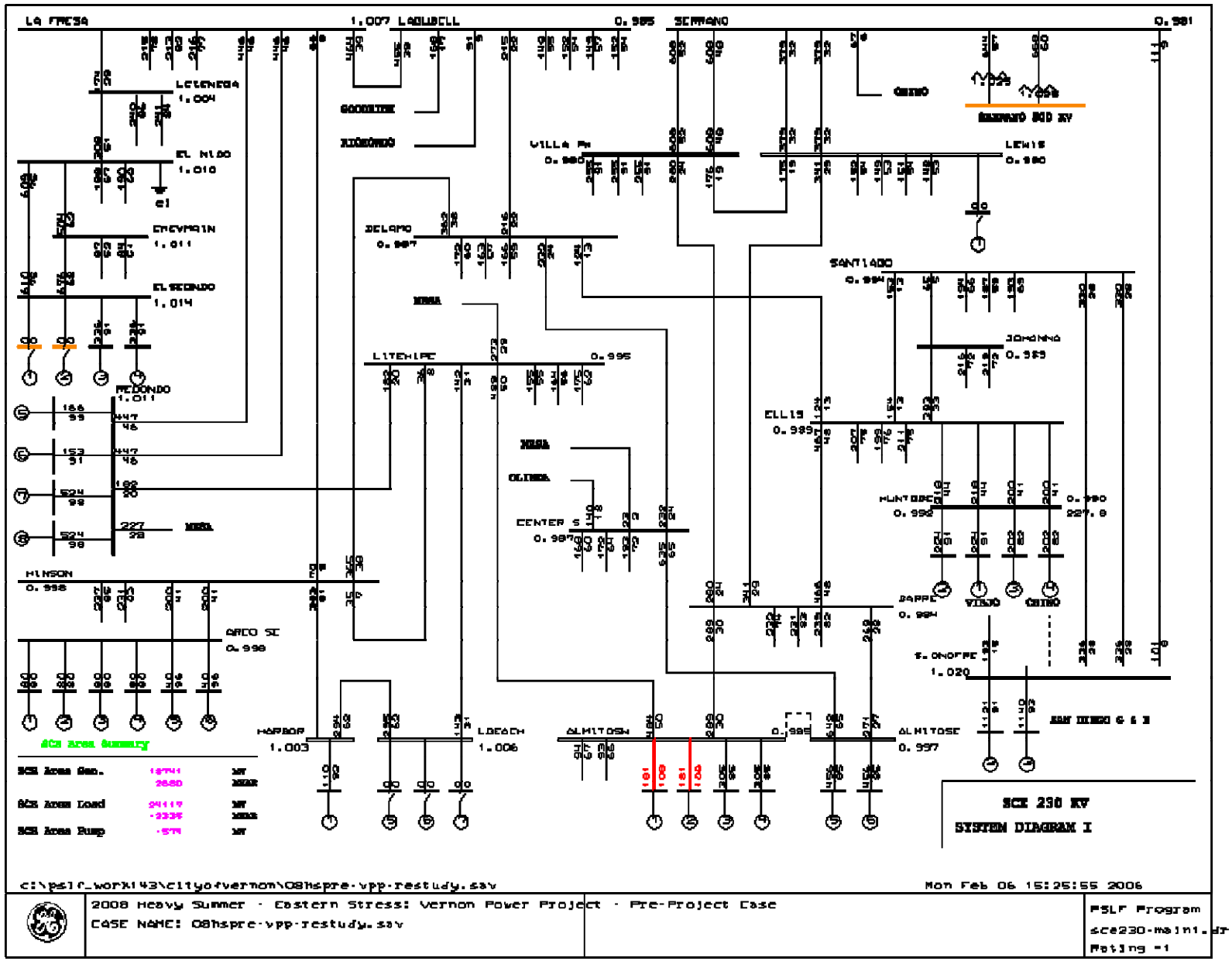
Appendix A

Load Flow Plots

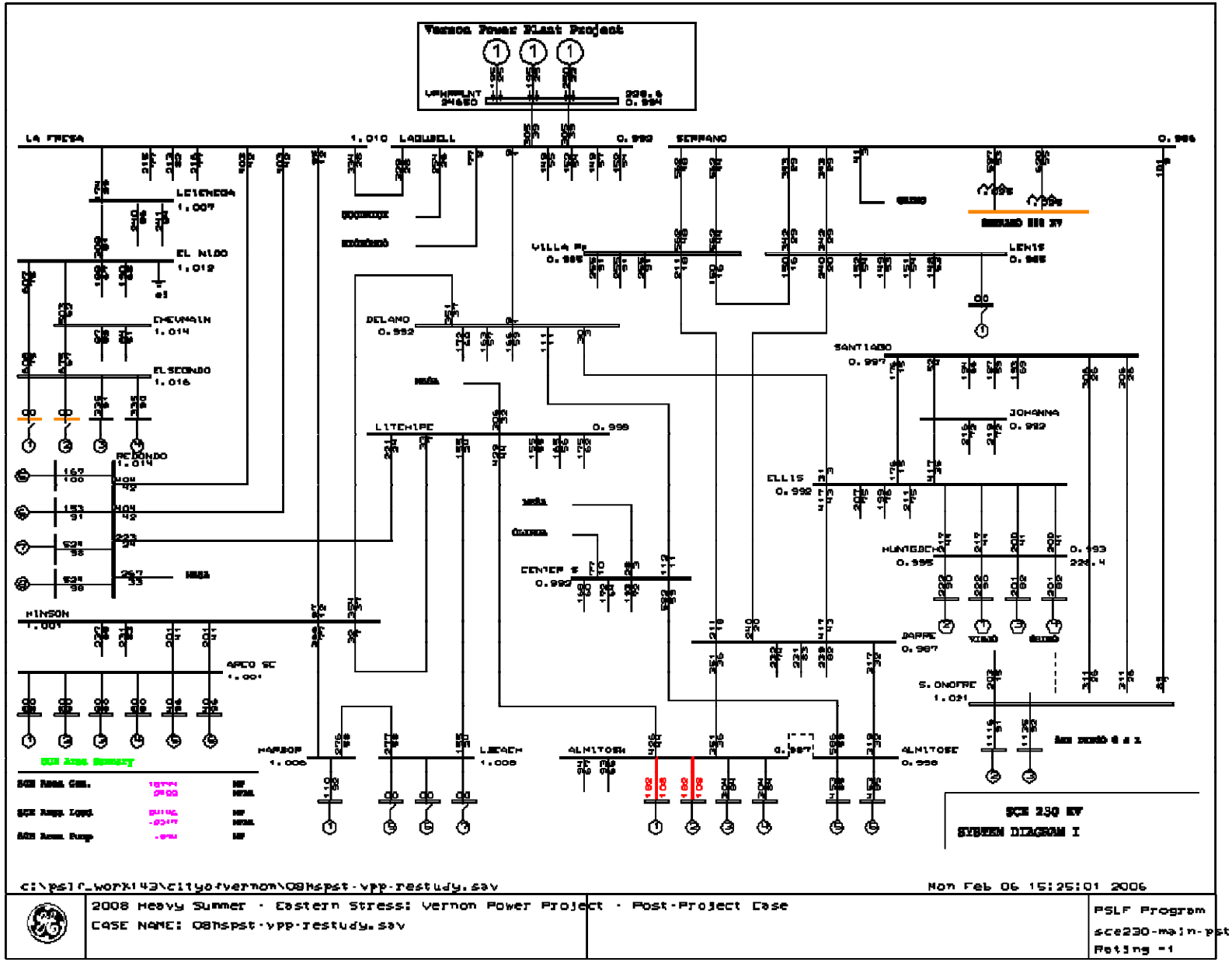
Vernon Power Plant Project SIS Load Flow Plots

Plot	Description
Plot #1	2008 Heavy Summer – Before Project (MVA/%)
Plot #2	2008 Heavy Summer – Vernon Power Project Included (MVA/%)
Plot #3	2008 Light Spring – Before Project (MVA/%)
Plot #4	2008 Light Spring – Vernon Power Project Included (MVA/%)
Plot #5	2008 Light Spring-Before Project-Loss of Laguna Bell-Rio Hondo #1 230kV & Mesa-Redondo #1 230kV (MVA/%)
Plot #6	2008 Light Spring-After Project-Loss of Laguna Bell-Rio Hondo #1 230kV & Mesa-Redondo #1 230kV (MVA/%)

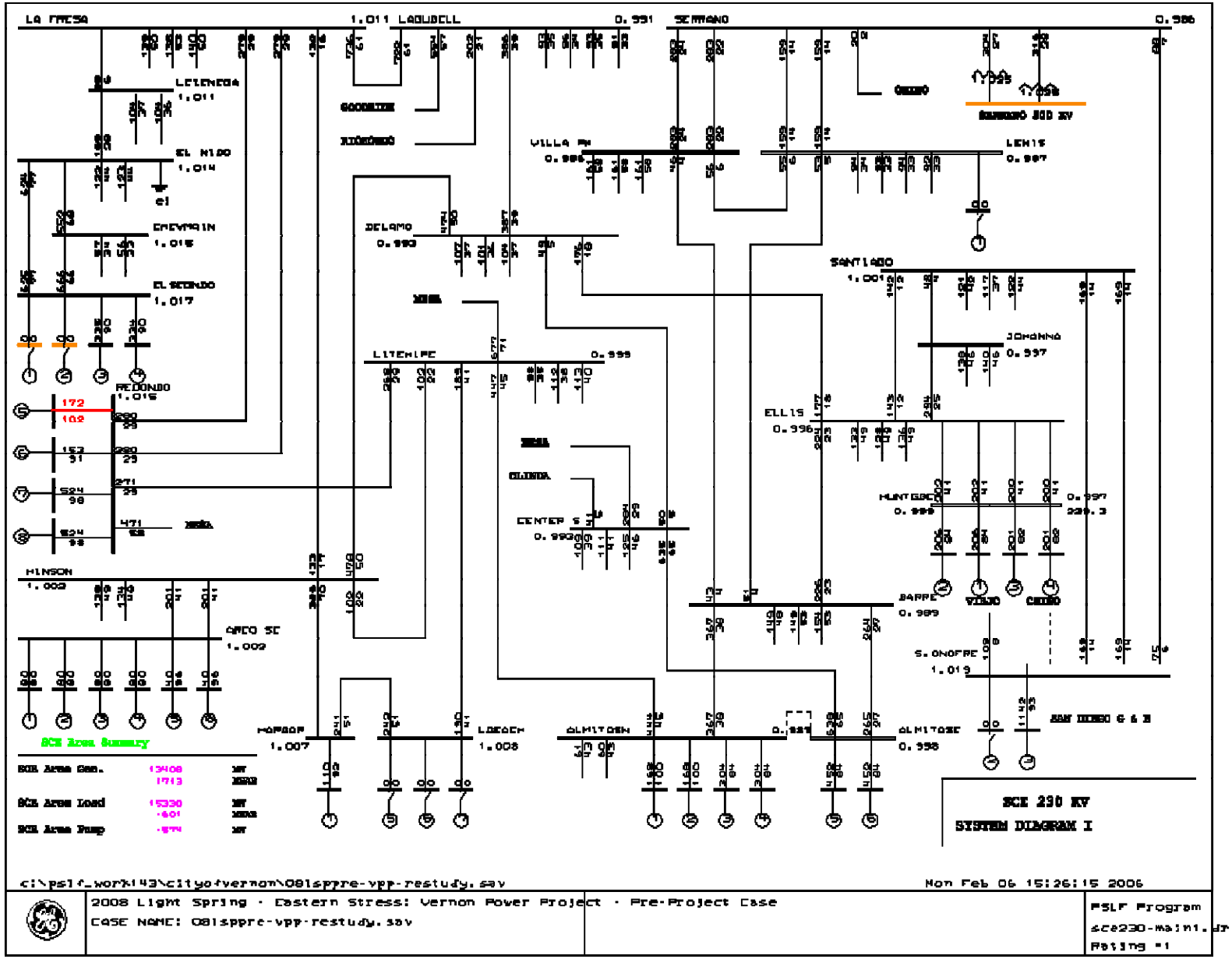
Plot 1 – 2008 Heavy Summer, <u>Without</u> Vernon Power Plant Project.



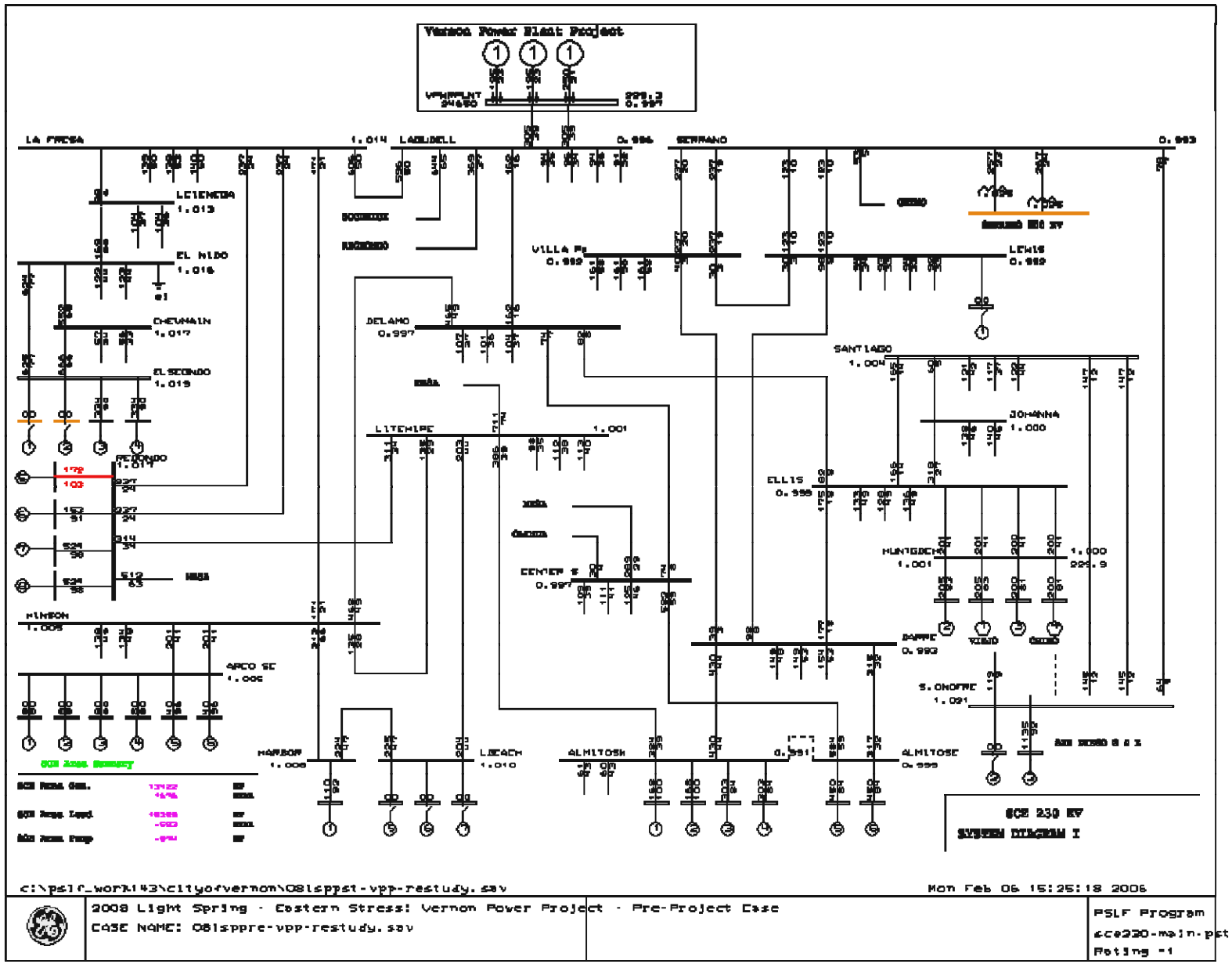
Plot 2 – 2008 Heavy Summer, <u>With</u> Vernon Power Plant Project.



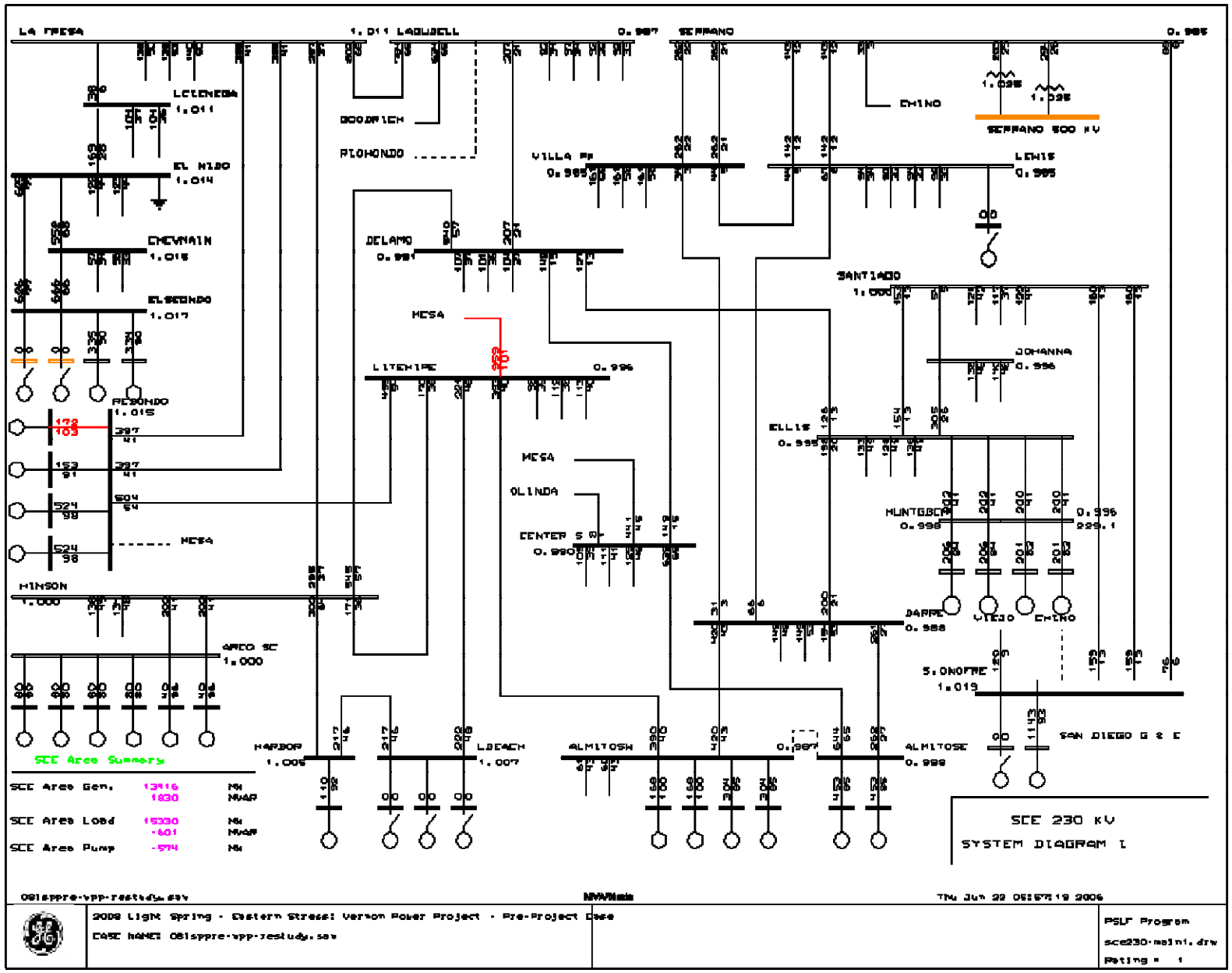
Plot 3 – 2008 Light Spring, <u>Without</u> Vernon Power Plant Project.



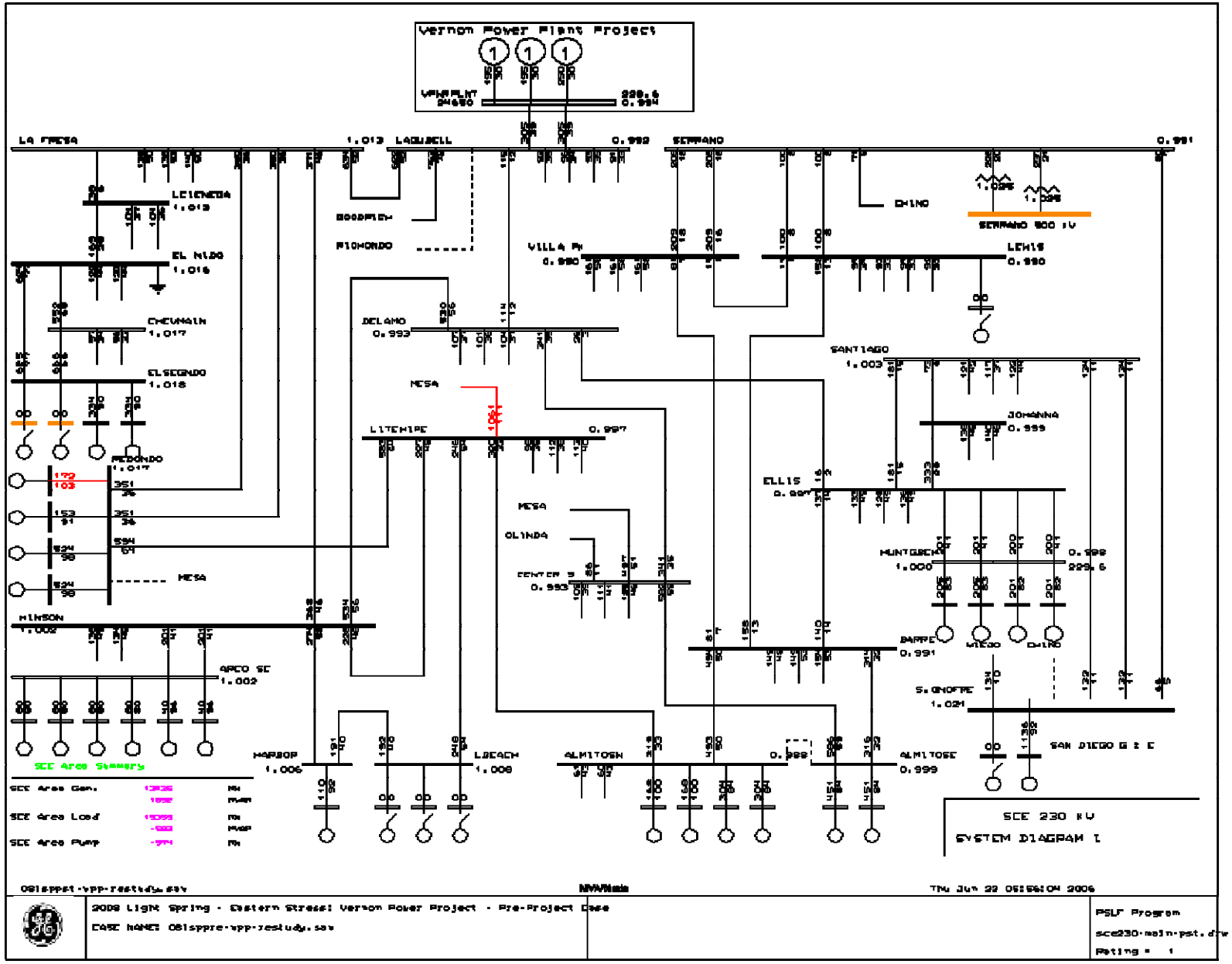
Plot 4 – 2008 Light Spring, <u>With</u> Vernon Power Plant Project.



Plot 5 – 2008 Light Spring, <u>Without</u> Vernon Power Plant Project, Loss of Laguna Bell – Rio Hondo #1 230kV and Mesa – Redondo #1 230kV.



Plot 6 – 2008 Light Spring, <u>With</u> Vernon Power Plant Project, Loss of Laguna Bell – Rio Hondo #1 230kV and Mesa – Redondo #1 230kV.



Appendix B

Complete List of Power Flow Results

Following is a complete list of power flow results for both the 2008 Heavy Summer and 2008 Light Spring system conditions. Only Project transmission lines loaded above their normal/emergency rating of 478 MVA.

Table B-1. NERC/WECC Category "B" Contingencies.

			2008 Heavy Summer		2008 Light Spring	
AFFECTED ELEMENT	**CONTINGENCY**	**N RATE**	**PRE**	**POST**	**PRE**	**POST**
LAGUBELL 230-VPWRPLNT 230 #2	LAGUBELL 230-VPWRPLNT 230 #1	1200	NA	186.9	NA	181.2
LAGUBELL 230-VPWRPLNT 230 #1	LAGUBELL 230-VPWRPLNT 230 #2	1200	NA	186.9	NA	181.2
Element loading decreases.						
HINSON 230-HARBOR 230 #1	LBEACH 230-LITEHIPE 230 #1	1185	109.7	108.6	-	-
LBEACH 230-TOT138 230 #1	ALMITOSW 230-BARRE 230 #2	1067	103.3	101.5	-	-
LBEACH 230-TOT138 230 #1	LA FRESA 230-HINSON 230 #1	1067	103.6	101.5	-	-
LBEACH 230-TOT138 230 #1	REDONDO 230-LITEHIPE 230 #1	1067	103.6	101.6	-	-
LBEACH 230-TOT138 230 #1	TOT135 230-WALNUT 230 #1	1067	103.8	101.8	-	-
RANCHVST 230-ETIWANDA 230 #1	ETIWANDA 230-RANCHVST 230 #2	2480	-	-	118.3	64.5
RANCHVST 230-ETIWANDA 230 #2	ETIWANDA 230-RANCHVST 230 #1	2480	-	-	118.3	64.5
SANBRDNO 230-TOT109 230 #1	TOT109 230-SANBRDNO 230 #2	2289	118.4	116.9	-	-
SANBRDNO 230-TOT109 230 #2	TOT109 230-SANBRDNO 230 #1	2289	118.4	116.9	-	-
VICTORVL 500-VICTORVL 287 #1	EAGLROCK 230-MESA CAL 230 #1	465	-	-	107.3	105.7
VICTORVL 500-VICTORVL 287 #1	EAGLROCK 230-SYLMAR S 230 #1	465	-	-	105.0	103.2
VICTORVL 500-VICTORVL 287 #1	PARDEE 230-VINCENT 230 #1	465	-	-	106.5	104.6
VICTORVL 500-VICTORVL 287 #1	VINCENT 230-S.CLARA 230 #1	465	-	-	104.9	103.0
VINCENT 230-ANTELOPE 230 #1	EAGLROCK 230-MESA CAL 230 #1	1240	-	-	108.0	105.8
VINCENT 230-ANTELOPE 230 #1	EAGLROCK 230-PARDEE 230 #1	1240	-	-	100.4	97.9
VINCENT 230-ANTELOPE 230 #1	EAGLROCK 230-SYLMAR S 230 #1	1240	-	-	100.1	97.6
VINCENT 230-ANTELOPE 230 #1	MESA CAL 230-ANTELOPE 230 #1	1240	-	-	119.0	117.6
VINCENT 230-ANTELOPE 230 #1	PARDEE 230-SYLMAR S 230 #1	1240	-	-	101.3	98.7
VINCENT 230-ANTELOPE 230 #1	PARDEE 230-SYLMAR S 230 #2	1240	-	-	101.3	98.7
VINCENT 230-ANTELOPE 230 #1	PARDEE 230-VINCENT 230 #1	1240	-	-	121.0	117.9
VINCENT 230-ANTELOPE 230 #1	VINCENT 230-S.CLARA 230 #1	1240	-	-	109.1	106.3

Results for the NERC/WECC Category "C" contingencies are tabulated in **Table B-2**.

Table B-2. NERC/WECC Category "C" Contingencies.

			2008 Heavy Summer		2008 Light Spring	
AFFECTED ELEMENT	**CONTINGENCY**	**N RATE**	**PRE**	**POST**	**PRE**	**POST**
ANTELOPE 66-ANTELOPE 230 #2	PARDEE 230-SYLMAR S 230 #1 PARDEE 230-SYLMAR S 230 #2	124 MVA	100.2	102.7	-	-
HINSON 230-LITEHIPE 230 #1	HINSON 230-DELAMO 230 #1 LBEACH 230-LITEHIPE 230 #1	1185	-	-	108.1	120.2
KRAMER 115-SUNGEN 115 #1	VICTOR 230-LUGO 230 #1 VICTOR 230-LUGO 230 #2	920	-	-	97.6	101.9
LBEACH 230-LITEHIPE 230 #1	HINSON 230-DELAMO 230 #1 LITEHIPE 230-HINSON 230 #1	1150	-	-	97.7	107.1
LITEHIPE 230-MESA CAL 230 #1	LAGUBELL 230-RIOHONDO 230 #1 MESA CAL 230-REDONDO 230 #1	2400	-	-	98.8	113.8
LITEHIPE 230-MESA CAL 230 #1	GOODRICH 230-LAGUBELL 230 #1 LAGUBELL 230-RIOHONDO 230 #1	2400	-	-	86.7	100.7
LITEHIPE 230-MESA CAL 230 #1	GOODRICH 230-LAGUBELL 230 #1 MESA CAL 230-REDONDO 230 #1	2400	-	-	99.4	108.7

Table B-2. (continued) NERC/WECC Category "C" Contingencies.

			2008 Heavy Summer		2008 Light Spring	
AFFECTED ELEMENT	**CONTINGENCY**	**N RATE**	**PRE**	**POST**	**PRE**	**POST**
MESA CAL 230-ANTELOPE 230 #1	VINCENT 230-S.CLARA 230 #1 VINCENT 230-ANTELOPE 230 #1	886	-	-	98.9	101.5
MIDPINTS 500-DEVERS 500 #2	VSTA 230-DEVERS 230 #1 DEVERS 500-MIDPINTS 500 #1	2700	119.1	123.2	128.1	131.7
MIDPINTS 500-DEVERS 500 #2	DEVERS 230-MIRAGE 230 #1 DEVERS 500-MIDPINTS 500 #1	2700	119.4	123.7	131.1	135.1
MIDPINTS 500-DEVERS 500 #2	DEVERS 500-MIDPINTS 500 #1 J.HINDS 230-MIRAGE 230 #1	2700	120.0	124.3	130.5	134.5
MIDPINTS 500-DEVERS 500 #2	DEVERS 500-MIDPINTS 500 #1 COACHELA 230-DEVERS 230 #1	2700	121.2	125.4	131.6	135.6
REDONDO 230-MESA CAL 230 #1	LAGUBELL 230-RIOHONDO 230 #1 LITEHIPE 230-MESA CAL 230 #1	2001	-	-	88.3	104.0
REDONDO 230-MESA CAL 230 #1	LA FRESA 230-LAGUBELL 230 #1 REDONDO 230-LITEHIPE 230 #1	2001	-	-	104.9	105.9
VSTA 230-ETIWANDA 230 #1	ETIWANDA230-SANBRDNO 230 #1 MIRALOME 230-VSTA 230 #2	2001	-	-	99.0	103.3
Element loading decreases.						
ANTELOPE 66-ANTELOPE 230 #2	PARDEE 230-S.CLARA 230 #1 VINCENT 230-S.CLARA 230 #1	124 MVA	102.1	101	-	-
ETIWANDA 230-RANCHVST 230 #2	ETIWANDA 230-RANCHVST230 #1 RANCHVST 230-PADUA 230 #1	2480	-	-	118.2	64.4
HINSON 230-DELAMO 230 #1	LA FRESA 230-LAGUBELL 230 #1 LITEHIPE 230-MESA CAL 230 #1	2400	-	-	111.7	103.1
HINSON 230-HARBOR 230 #1	LA FRESA 230-HINSON 230 #1 LBEACH 230-LITEHIPE 230 #1	1185	110.5	109.4	-	-
HINSON 230-HARBOR 230 #1	LA FRESA 230-REDONDO 230 #1 LA FRESA 230-REDONDO 230 #2	1185	114.1	103.7	-	-
MIRALOME 230-CHINO 230 #3	MIRALOME 230-OLINDA 230 #1 RANCHVST 500-SERRANO 500 #1	2480	100.6	86.3	-	-
NAVAJO 500-CRYSTAL 500 #1	MOENKOPI 500-ELDORDO 500 #1 PISGAH 230-ELDORDO 230 #2	2088	-	-	101.1	99.2
NAVAJO 500-CRYSTAL 500 #1	MOENKOPI 500-ELDORDO 500 #1 PISGAH 230-ELDORDO 230 #2	1901	-	-	111.0	109.0
RANCHVST 230-ETIWANDA 230 #2	ETIWANDA-RANCHVST 230 #1 RANCHVST 500-SERRANO 500 #1	2480	-	-	120.9	67.5
SERRANO 230-VILLA PK 230 #2	LEWIS 230-SERRANO 230 #1 SERRANO 230-VILLA PK 230 #1	3000	103.9	91	-	-
SERRANO 230-VILLA PK 230 #2	LEWIS 230-SERRANO 230 #2 SERRANO 230-VILLA PK 230 #1	3000	103.9	91	-	-
VICTORVL 500-VICTORVL 287 #1	EAGLROCK 230-SYLMAR S 230 #1 PARDEE 230-SYLMAR S 230 #1	465	-	-	104.5	102.8
VICTORVL 500-VICTORVL 287 #1	EAGLROCK 230-SYLMAR S 230 #1 PARDEE 230-SYLMAR S 230 #2	465	-	-	104.5	102.8
VICTORVL 500-VICTORVL 287 #1	EAGLROCK 230-SYLMAR S 230 #1 PARDEE 230-SYLMAR S 230 #2	465	-	-	104.5	102.8

Table B-2. (continued) NERC/WECC Category "C" Contingencies.

			2008 Heavy Summer		2008 Light Spring	
AFFECTED ELEMENT	CONTINGENCY	N RATE	PRE	POST	PRE	POST
VICTORVL 500-VICTORVL 287 #1	MESA CAL 230-WALNUT 230 #1 MESA CAL 230-ANTELOPE 230 #1	465	-	-	104.5	102.4
VICTORVL 500-VICTORVL 287 #1	LA FRESA 230-LAGUBELL 230 #1 LITEHIPE 230-MESA CAL 230 #1	465	-	-	104.6	102.5
VICTORVL 500-VICTORVL 287 #1	CENTER S 230-OLINDA 230 #1 MESA CAL 230-WALNUT 230 #1	465	-	-	104.6	102.2
VICTORVL 500-VICTORVL 287 #1	MIRALOME 230-OLINDA 230 #1 MIRALOMW 230-WALNUT 230 #1	465	-	-	104.7	102.3
VICTORVL 500-VICTORVL 287 #1	ALMITOSW 230-LITEHIPE 230 #1 DELAMO 230-LAGUBELL 230 #1	465	-	-	104.7	102.0
VICTORVL 500-VICTORVL 287 #1	CENTER S 230-MESA CAL 230 #1 MESA CAL 230-WALNUT 230 #1	465	-	-	104.7	102.5
VICTORVL 500-VICTORVL 287 #1	EL NIDO 230-CHEVMAIN 230 #1 ELSEGNDO 230-EL NIDO 230 #1	465	-	-	104.8	103.1
VICTORVL 500-VICTORVL 287 #1	ALMITOSE 230-CENTER S 230 #1 DELAMO 230-ELLIS 230 #1	465	-	-	104.9	102.5
VICTORVL 500-VICTORVL 287 #1	PARDEE 230-BAILEY 230 #1 VINCENT 230-S.CLARA 230 #1	465	-	-	104.9	103.0
VICTORVL 500-VICTORVL 287 #1	PARDEE 230-PASTORIA 230 #1 VINCENT 230-S.CLARA 230 #1	465	-	-	104.9	103.0
VICTORVL 500-VICTORVL 287 #1	S.CLARA 230-MOORPARK 230 #2 VINCENT 230-S.CLARA 230 #1	465	-	-	105.0	103.1
VICTORVL 500-VICTORVL 287 #1	PARDEE 230-S.CLARA 230 #1 VINCENT 230-S.CLARA 230 #1	465	-	-	105.0	103.1
VICTORVL 500-VICTORVL 287 #1	EAGLROCK 230-PARDEE 230 #1 VINCENT 230-S.CLARA 230 #1	465	-	-	105.2	103.3
VICTORVL 500-VICTORVL 287 #1	ALMITOSE 230-CENTER S 230 #1 ALMITOSW 230-LITEHIPE 230 #1	465	-	-	105.2	103.0
VICTORVL 500-VICTORVL 287 #1	MESA CAL 230-ANTELOPE 230 #1 VINCENT 230-S.CLARA 230 #1	465	-	-	105.5	103.6
VICTORVL 500-VICTORVL 287 #1	VINCENT 230-ANTELOPE 230 #1 MIDWAY 500-VINCENT 500 #1	465	-	-	106.0	104.0
VICTORVL 500-VICTORVL 287 #1	VINCENT 230-ANTELOPE 230 #1 MIDWAY 500-VINCENT 500 #2	465	-	-	106.0	104.0
VICTORVL 500-VICTORVL 287 #1	VINCENT 230-ANTELOPE 230 #1 MIDWAY 500-VINCENT 500 #3	465	-	-	106.0	104.1
VICTORVL 500-VICTORVL 287 #1	EAGLROCK 230-PARDEE 230 #1 EAGLROCK 230-SYLMAR S 230 #1	465	-	-	106.2	104.6
VICTORVL 500-VICTORVL 287 #1	DELAMO 230-LAGUBELL 230 #1 LA FRESA 230-LAGUBELL 230 #1	465	-	-	106.2	102.8
VICTORVL 500-VICTORVL 287 #1	RANCHVST 500-SERRANO 500 #1 LUGO 500-VINCENT 500 #1	465	-	-	106.3	104.2
VICTORVL 500-VICTORVL 287 #1	PARDEE 230-VINCENT 230 #1 VINCENT 230-MESA CAL 230 #1	465	-	-	106.3	104.4
VICTORVL 500-VICTORVL 287 #1	LUGO 500-VINCENT 500 #2 MIDWAY 500-VINCENT 500 #3	465	-	-	106.5	104.4
VICTORVL 500-VICTORVL 287 #1	EAGLROCK 230-PARDEE 230 #1 PARDEE 230-VINCENT 230 #1	465	-	-	106.9	105.0
VICTORVL 500-VICTORVL 287 #1	EAGLROCK 230-MESA CAL 230 #1 EAGLROCK 230-SYLMAR S 230 #1	465	-	-	107.1	105.5
VICTORVL 500-VICTORVL 287 #1	EAGLROCK 230-MESA CAL 230 #1 VINCENT 230-MESA CAL 230 #1	465	-	-	107.4	105.7

Table B-2. (continued) NERC/WECC Category "C" Contingencies.

			2008 Heavy Summer		2008 Light Spring	
AFFECTED ELEMENT	**CONTINGENCY**	**N RATE**	**PRE**	**POST**	**PRE**	**POST**
VICTORVL 500-VICTORVL 287 #1	EAGLROCK 230-MESA CAL 230 #1 EAGLROCK 230-PARDEE 230 #1	465	-	-	107.4	105.7
VICTORVL 500-VICTORVL 287 #1	MESA CAL 230-ANTELOPE 230 #1 VINCENT 230-ANTELOPE 230 #1	465	-	-	107.9	106.1
VICTORVL 500-VICTORVL 287 #1	VINCENT 230-S.CLARA 230 #1 VINCENT 230-ANTELOPE 230 #1	465	-	-	108.3	106.4
VICTORVL 500-VICTORVL 287 #1	PARDEE 230-VINCENT 230 #1 VINCENT 230-S.CLARA 230 #1	465	-	-	109.0	107.1
VICTORVL 500-VICTORVL 287 #1	LUGO 500-VINCENT 500 #2 LUGO 500-VICTORVL 500 #1	465 MVA	100.9	99.7	-	-
VICTORVL 500-VICTORVL 287 #1	VINCENT 230-S.CLARA 230 #1 VINCENT 230-ANTELOPE 230 #1	465 MVA	101.0	98.8	-	-
VICTORVL 500-VICTORVL 287 #1	PARDEE 230-VINCENT 230 #1 VINCENT 230-S.CLARA 230 #1	465 MVA	101.4	99.3	-	-
VICTORVL 500-VICTORVL 287 #1	LUGO 500-VINCENT 500 #1 LUGO 500-VINCENT 500 #2	465 MVA	106.1	102.5	-	-
VINCENT 230-ANTELOPE 230 #1	CENTER S 230-OLINDA 230 #1 MESA CAL 230-WALNUT 230 #1	1240	-	-	100.0	96.6
VINCENT 230-ANTELOPE 230 #1	MIRALOME 230-OLINDA 230 #1 MIRALOMW 230-WALNUT 230 #1	1240	-	-	100.2	96.7
VINCENT 230-ANTELOPE 230 #1	ALMITOSE 230-CENTER S 230 #1 DELAMO 230-ELLIS 230 #1	1240	-	-	100.3	96.9
VINCENT 230-ANTELOPE 230 #1	ALMITOSE 230-BARRE 230 #1 ALMITOSE 230-CENTER S 230 #1	1240	-	-	100.4	97.3
VINCENT 230-ANTELOPE 230 #1	CENTER S 230-MESA CAL 230 #1 MESA CAL 230-WALNUT 230 #1	1240	-	-	100.6	97.5
VINCENT 230-ANTELOPE 230 #1	EAGLROCK 230-PARDEE 230 #1 PARDEE 230-PASTORIA 230 #1	1240	-	-	100.7	98.1
VINCENT 230-ANTELOPE 230 #1	LITEHIPE 230-MESA CAL 230 #1 MESA CAL 230-REDONDO 230 #1	1240	-	-	100.9	98.3
VINCENT 230-ANTELOPE 230 #1	PARDEE 230-MOORPARK 230 #3 PARDEE 230-SYLMAR S 230 #1	1240	-	-	100.9	98.2
VINCENT 230-ANTELOPE 230 #1	ALMITOSE 230-CENTER S 230 #1 ALMITOSW 230-LITEHIPE 230 #1	1240	-	-	101.0	97.7
VINCENT 230-ANTELOPE 230 #1	EL NIDO 230-CHEVMAIN 230 #1 ELSEGNDO 230-EL NIDO 230 #1	1240	-	-	102.1	98.9
VINCENT 230-ANTELOPE 230 #1	EAGLROCK 230-SYLMAR S 230 #1 PARDEE 230-SYLMAR S 230 #1	1240	-	-	102.2	99.6
VINCENT 230-ANTELOPE 230 #1	EAGLROCK 230-SYLMAR S 230 #1 PARDEE 230-SYLMAR S 230 #2	1240	-	-	102.2	99.6
VINCENT 230-ANTELOPE 230 #1	EAGLROCK 230-SYLMAR S 230 #1 PARDEE 230-SYLMAR S 230 #2	1240	-	-	102.2	99.6
VINCENT 230-ANTELOPE 230 #1	EAGLROCK 230-MESA CAL 230 #1 VINCENT 230-MESA CAL 230 #1	1240	-	-	103.0	99.9
VINCENT 230-ANTELOPE 230 #1	GOODRICH 230-LAGUBELL 230 #1 VINCENT 230-MESA CAL 230 #1	1240	-	-	103.7	102.2
VINCENT 230-ANTELOPE 230 #1	EAGLROCK 230-PARDEE 230 #1 EAGLROCK 230-SYLMAR S 230 #1	1240	-	-	105.6	103.4
VINCENT 230-ANTELOPE 230 #1	GOODRICH 230-LAGUBELL 230 #1 LAGUBELL 230-RIOHONDO 230 #1	1240	-	-	106.1	104.1

Table B-2. (continued) NERC/WECC Category "C" Contingencies.

			2008 Heavy Summer		2008 Light Spring	
AFFECTED ELEMENT	**CONTINGENCY**	**N RATE**	**PRE**	**POST**	**PRE**	**POST**
VINCENT 230-ANTELOPE 230 #1	EAGLROCK 230-MESA CAL 230 #1 EAGLROCK 230-PARDEE 230 #1	1240	-	-	108.0	105.7
VINCENT 230-ANTELOPE 230 #1	S.CLARA 230-MOORPARK 230 #2 VINCENT 230-S.CLARA 230 #1	1240	-	-	109.3	106.4
VINCENT 230-ANTELOPE 230 #1	PARDEE 230-PASTORIA 230 #1 VINCENT 230-S.CLARA 230 #1	1240	-	-	109.3	106.5
VINCENT 230-ANTELOPE 230 #1	EAGLROCK 230-MESA CAL 230 #1 EAGLROCK 230-SYLMAR S 230 #1	1240	-	-	109.4	107.1
VINCENT 230-ANTELOPE 230 #1	PARDEE 230-S.CLARA 230 #1 VINCENT 230-S.CLARA 230 #1	1240	-	-	109.4	106.6
VINCENT 230-ANTELOPE 230 #1	PARDEE 230-BAILEY 230 #1 VINCENT 230-S.CLARA 230 #1	1240	-	-	109.7	106.9
VINCENT 230-ANTELOPE 230 #1	EAGLROCK 230-PARDEE 230 #1 VINCENT 230-S.CLARA 230 #1	1240	-	-	111.9	109.1
VINCENT 230-ANTELOPE 230 #1	PARDEE 230-SYLMAR S 230 #1 PARDEE 230-SYLMAR S 230 #2	1240	-	-	116.9	114.0
VINCENT 230-ANTELOPE 230 #1	LAGUBELL 230-RIOHONDO 230 #1 MESA CAL 230-ANTELOPE 230 #1	1240	-	-	117.4	114.1
VINCENT 230-ANTELOPE 230 #1	PARDEE 230-VINCENT 230 #1 VINCENT 230-MESA CAL 230 #1	1240	-	-	117.5	113.4
VINCENT 230-ANTELOPE 230 #1	MESA CAL 230-ANTELOPE 230 #1 VINCENT 230-RIOHONDO 230 #1	1240	-	-	118.0	115.8
VINCENT 230-ANTELOPE 230 #1	MESA CAL 230-ANTELOPE 230 #1 RIOHONDO 230-VINCENT 230 #2	1240	-	-	118.0	115.8
VINCENT 230-ANTELOPE 230 #1	CENTER S 230-MESA CAL 230 #1 MESA CAL 230-ANTELOPE 230 #1	1240	-	-	118.8	117.4
VINCENT 230-ANTELOPE 230 #1	MESA CAL 230-WALNUT 230 #1 MESA CAL 230-ANTELOPE 230 #1	1240	-	-	119.0	117.6
VINCENT 230-ANTELOPE 230 #1	MESA CAL 230-ANTELOPE 230 #1 MIDWAY 500-VINCENT 500 #1	1240	-	-	119.6	118.1
VINCENT 230-ANTELOPE 230 #1	MESA CAL 230-ANTELOPE 230 #1 MIDWAY 500-VINCENT 500 #2	1240	-	-	119.6	118.1
VINCENT 230-ANTELOPE 230 #1	EAGLROCK 230-PARDEE 230 #1 MESA CAL 230-ANTELOPE 230 #1	1240	-	-	122.3	121.0
VINCENT 230-ANTELOPE 230 #1	EAGLROCK 230-PARDEE 230 #1 PARDEE 230-VINCENT 230 #1	1240	-	-	125.0	121.9
VINCENT 230-ANTELOPE 230 #1	MESA CAL 230-ANTELOPE 230 #1 VINCENT 230-S.CLARA 230 #1	1240	-	-	131.0	129.3
VINCENT 230-ANTELOPE 230 #1	PARDEE 230-VINCENT 230 #1 VINCENT 230-S.CLARA 230 #1	1240	-	-	139.5	136.1
VINCENT 230-ANTELOPE 230 #1	PARDEE 230-VINCENT 230 #1 VINCENT 230-MESA CAL 230 #1	1240	101.1	96.9	-	-
VINCENT 230-ANTELOPE 230 #1	PARDEE 230-VINCENT 230 #1 VINCENT 230-S.CLARA 230 #1	1240	112.5	109.5	-	-
VINCENT 230-ANTELOPE 230 #1	PARDEE 230-SYLMAR S 230 #1 PARDEE 230-SYLMAR S 230 #2	1240	127.2	123.7	-	-

Appendix C

List of Power Flow Contingencies

2008 Heavy Summer and 2008 Light Spring list of contingencies.

```
Category “B” Contingency List.
#   The following contingencies are included.
#   B2 - All single transmission circuit outages (230 kV).
#   B3 - All single transformer outages (500/230kV) under the ISO control.
#   Selected overlapping (single generator unit and transmission circuit outages).
#

#   Base Case -- Case Number 0
0
#
########################## B2 - LINE CONTINGENCIES (230 kV) ############################
# All 500-kV line contingencies were simulated with the governor power flow method.
#
#   Case Number 1
1  "MEAD S   230.00"  "ELDORDO  230.00"  "1"  0
0
#
#   Case Number 2
1  "MEAD S   230.00"  "ELDORDO  230.00"  "2"  0
0
#
#   Case Number 3
1  "ALMITOSE 230.00"  "BARRE    230.00"  "1"  0
0
#
#   Case Number 4
1  "ALMITOSE 230.00"  "CENTER S 230.00"  "1"  0
0
#
#   Case Number 5
1  "ALMITOSW 230.00"  "BARRE    230.00"  "2"  0
0
#
#   Case Number 6
1  "ALMITOSW 230.00"  "LITEHIPE 230.00"  "1"  0
0
#
#   Case Number 7
1  "TOT137   230.00"  "LITEHIPE 230.00"  "1"  0
21
0
#   Case Number 8
1  "ARCO SC  230.00"  "HINSON   230.00"  "1"  0
0
#
#   Case Number 9
1  "ARCO SC  230.00"  "HINSON   230.00"  "2"  0
0
#
#   Case Number 10
1  "BARRE    230.00"  "ELLIS    230.00"  "1"  0
0
#
#   Case Number 11
1  "BARRE    230.00"  "VILLA PK 230.00"  "1"  0
0
#
#   Case Number 12
1  "BARRE    230.00"  "LEWIS    230.00"  "1"  0
0
#
#   Case Number 13
1  "CAMINO   230.00"  "MEAD S   230.00"  "E"  0
0
#
#   Case Number 14
1  "CAMINO   230.00"  "MEAD S   230.00"  "W"  0
```

```
0
#
#   Case Number 15
1  "CAMINO   230.00"  "GENE     230.00"  "1"  0
0
#
#   Case Number 16
1  "CENTER S 230.00"  "MESA CAL 230.00"  "1"  0
0
#
#   Case Number 17
1  "CENTER S 230.00"  "OLINDA   230.00"  "1"  0
0
#
#   Case Number 18
1  "CHINO    230.00"  "MIRALOMW 230.00"  "1"  0
0
#
#   Case Number 19
1  "CHINO    230.00"  "MIRALOMW 230.00"  "2"  0
0
#
#   Case Number 20
1  "CHINO    230.00"  "SERRANO  230.00"  "1"  0
0
#
#   Case Number 21
1  "CHINO    230.00"  "MIRALOME 230.00"  "3"  0
0
#
#   Case Number 22
1  "DELAMO   230.00"  "CENTER S 230.00"  "1"  0
0
#
#   Case Number 23
1  "DELAMO   230.00"  "ELLIS    230.00"  "1"  0
0
#
#   Case Number 24
1  "DELAMO   230.00"  "LAGUBELL 230.00"  "1"  0
0
#
#   Case Number 25
1  "EAGLROCK 230.00"  "MESA CAL 230.00"  "1"  0
0
#
#   Case Number 26
1  "EAGLROCK 230.00"  "PARDEE   230.00"  "1"  0
0
#
#   Case Number 27
1  "EAGLROCK 230.00"  "SYLMAR S 230.00"  "1"  0
0
#
#   Case Number 28
1  "EL NIDO  230.00"  "LA FRESA 230.00"  "3"  0
0
#
#   Case Number 29
1  "EL NIDO  230.00"  "LA FRESA 230.00"  "4"  0
0
#
#   Case Number 30
1  "EL NIDO  230.00"  "LCIENEGA 230.00"  "1"  0
0
#
#   Case Number 31
1  "EL NIDO  230.00"  "CHEVMAIN 230.00"  "1"  0
0
#
```

```
#   Case Number 32
1  "ELLIS    230.00"  "HUNTGBCH 230.00"  "1"  0
0
#
#   Case Number 33
1  "ELLIS    230.00"  "HUNTGBCH 230.00"  "3"  0
0
#
#   Case Number 34
1  "ELLIS    230.00"  "JOHANNA  230.00"  "1"  0
0
#
#   Case Number 35
1  "ELLIS    230.00"  "SANTIAGO 230.00"  "1"  0
0
#
#   Case Number 36
1  "ELLIS    230.00"  "HUNTBCH1 230.00"  "2"  0
0
#
#   Case Number 37
1  "ELLIS    230.00"  "HUNTBCH1 230.00"  "4"  0
0
#
#   Case Number 38
1  "ELSEGNDO 230.00"  "EL NIDO  230.00"  "1"  0
0
#
#   Case Number 39
1  "ELSEGNDO 230.00"  "CHEVMAIN 230.00"  "1"  0
0
#
#   Case Number 40
1  "ETIWANDA 230.00"  "SANBRDNO 230.00"  "1"  0
0
#
#   Case Number 41
1  "ETIWANDA 230.00"  "VSTA     230.00"  "1"  0
0
#
#   Case Number 42
1  "HARBOR   230.00"  "HINSON   230.00"  "1"  0
0
#
#   Case Number 43
1  "HARBOR   230.00"  "LBEACH   230.00"  "1"  0
0
#
#   Case Number 44
1  "HINSON   230.00"  "DELAMO   230.00"  "1"  0
0
#
#   Case Number 45
1  "JOHANNA  230.00"  "SANTIAGO 230.00"  "1"  0
0
#
#   Case Number 46
1  "LA FRESA 230.00"  "HINSON   230.00"  "1"  0
0
#
#   Case Number 47
1  "LA FRESA 230.00"  "LAGUBELL 230.00"  "1"  0
0
#
#   Case Number 48
1  "LA FRESA 230.00"  "REDONDO  230.00"  "1"  0
0
#
#   Case Number 49
1  "LA FRESA 230.00"  "REDONDO  230.00"  "2"  0
```

```
0
#
#   Case Number 50
1  "LAGUBELL 230.00"  "RIOHONDO 230.00"  "1"  0
0
#
#   Case Number 51
1  "LBEACH   230.00"  "LITEHIPE 230.00"  "1"  0
0
#
#   Case Number 52
1  "LCIENEGA 230.00"  "LA FRESA 230.00"  "1"  0
0
#
#   Case Number 53
1  "LITEHIPE 230.00"  "HINSON   230.00"  "1"  0
0
#
#   Case Number 54
1  "LITEHIPE 230.00"  "MESA CAL 230.00"  "1"  0
0
#
#   Case Number 55
1  "MESA CAL 230.00"  "REDONDO  230.00"  "1"  0
0
#
#   Case Number 56
1  "MESA CAL 230.00"  "RIOHONDO 230.00"  "1"  0
0
#
#   Case Number 57
1  "MESA CAL 230.00"  "WALNUT   230.00"  "1"  0
0
#
#   Case Number 58
1  "MESA CAL 230.00"  "ANTELOPE 230.00"  "1"  0
0
#
#   Case Number 59
1  "MIRALOMW 230.00"  "WALNUT   230.00"  "1"  0
0
#
#   Case Number 60
1  "MOORPARK 230.00"  "ORMOND   230.00"  "1"  0
0
#
#   Case Number 61
1  "MOORPARK 230.00"  "ORMOND   230.00"  "2"  0
0
#
#   Case Number 62
1  "MOORPARK 230.00"  "ORMOND   230.00"  "3"  0
0
#
#   Case Number 63
1  "MOORPARK 230.00"  "ORMOND   230.00"  "4"  0
0
#
#   Case Number 64
1  "OLINDA   230.00"  "WALNUT   230.00"  "1"  0
0
#
#   Case Number 65
1  "PARDEE   230.00"  "MOORPARK 230.00"  "1"  0
0
#
#   Case Number 66
1  "PARDEE   230.00"  "MOORPARK 230.00"  "2"  0
0
#
```

```
#   Case Number 67
1  "PARDEE   230.00"  "MOORPARK 230.00"  "3"  0
0
#
#   Case Number 68
1  "PARDEE   230.00"  "PASTORIA 230.00"  "1"  0
0
#
#   Case Number 69
1  "PARDEE   230.00"  "S.CLARA  230.00"  "1"  0
0
#
#   Case Number 70
1  "PARDEE   230.00"  "SYLMAR S 230.00"  "1"  0
0
#
#   Case Number 71
1  "PARDEE   230.00"  "SYLMAR S 230.00"  "2"  0
0
#
#   Case Number 72
1  "PARDEE   230.00"  "VINCENT  230.00"  "1"  0
0
#
#   Case Number 73
1  "PARDEE   230.00"  "SAUG TAP 230.00"  "1"  0
0
#
#   Case Number 74
1  "PARDEE   230.00"  "SAUG TAP 230.00"  "2"  0
0
#
#   Case Number 75
1  "REDONDO  230.00"  "LITEHIPE 230.00"  "1"  0
0
#
#   Case Number 76
1  "RIOHONDO 230.00"  "VINCENT  230.00"  "2"  0
0
#
#   Case Number 77
1  "S.CLARA  230.00"  "GOLETA   230.00"  "1"  0
0
#
#   Case Number 78
1  "S.CLARA  230.00"  "GOLETA   230.00"  "2"  0
0
#
#   Case Number 79
1  "S.CLARA  230.00"  "MANDALAY 230.00"  "1"  0
21
0
#
#   Case Number 80
1  "S.CLARA  230.00"  "MANDALAY 230.00"  "2"  0
21
0
#
#   Case Number 81
1  "S.CLARA  230.00"  "MOORPARK 230.00"  "1"  0
0
#
#   Case Number 82
1  "S.CLARA  230.00"  "MOORPARK 230.00"  "2"  0
0
#
#   Case Number 83
1  "S.ONOFRE 230.00"  "SANTIAGO 230.00"  "1"  0
0
#
```

```
#   Case Number 84
1  "S.ONOFRE 230.00"  "SANTIAGO 230.00"  "2"  0
0
#
#   Case Number 85
1  "S.ONOFRE 230.00"  "SERRANO  230.00"  "1"  0
0
#
#   Case Number 86
1  "SANBRDNO 230.00"  "DEVERS   230.00"  "1"  0
0
#
#   Case Number 87
1  "SERRANO  230.00"  "VILLA PK 230.00"  "1"  0
0
#
#   Case Number 88
1  "SERRANO  230.00"  "VILLA PK 230.00"  "2"  0
0
#
#   Case Number 89
1  "SYLMAR S 230.00"  "GOULD    230.00"  "1"  0
0
#
#   Case Number 90
1  "VINCENT  230.00"  "MESA CAL 230.00"  "1"  0
0
#
#   Case Number 91
1  "VINCENT  230.00"  "RIOHONDO 230.00"  "1"  0
0
#
#   Case Number 92
1  "VINCENT  230.00"  "S.CLARA  230.00"  "1"  0
0
#
#   Case Number 93
1  "VINCENT  230.00"  "SEAWEST  230.00"  "1"  0
0
#
#   Case Number 94
1  "PISGAH   230.00"  "ELDORDO  230.00"  "2"  0
0
#
#   Case Number 95
1  "PISGAH   230.00"  "LUGO     230.00"  "1"  0
0
#
#   Case Number 96
1  "PISGAH   230.00"  "LUGO     230.00"  "2"  0
0
#
#   Case Number 97
1  "PISGAH   230.00"  "CIMA     230.00"  "1"  0
0
#
#   Case Number 98
1  "TOT005   230.00"  "VICTOR   230.00"  "1"  0
21
0
#   Case Number 99
1  "VICTOR   230.00"  "LUGO     230.00"  "1"  0
0
#
#   Case Number 100
1  "VICTOR   230.00"  "LUGO     230.00"  "2"  0
0
#
#   Case Number 101
1  "CIMA     230.00"  "ELDORDO  230.00"  "1"  0
```

```
0
#
#   Case Number 102
1  "KRAMER   230.00"  "LUGO     230.00"  "1"  0
0
#
#   Case Number 103
1  "KRAMER   230.00"  "LUGO     230.00"  "2"  0
0
#
#   Case Number 104
1  "KRAMER   230.00"  "COLWATER 230.00"  "1"  0
0
#
#   Case Number 105
1  "KRAMER   230.00"  "COLWATER 230.00"  "2"  0
0
#
#   Case Number 106
1  "BLM EAST 230.00"  "BLM WEST 230.00"  "1"  0
21
0
#
#   Case Number 107
1  "BLM WEST 230.00"  "KRAMER   230.00"  "1"  0
21
0
#   Case Number 108
1  "LUZ LSP  230.00"  "KRAMER   230.00"  "1"  0
21
0
#   Case Number 109
1  "LUZ8     230.00"  "LUZ LSP  230.00"  "1"  0
0
#
#   Case Number 110
1  "LUZ9     230.00"  "LUZ LSP  230.00"  "1"  0
0
#
#   Case Number 111
1  "OAK_VLLY 230.00"  "SANBRDNO 230.00"  "1"  0
0
#
#   Case Number 112
1  "DEVERS   230.00"  "OAK_VLLY 230.00"  "1"  0
0
#
#   Case Number 113
1  "DEVERS   230.00"  "MIRAGE   230.00"  "1"  0
20
0
#
#   Case Number 114
1  "DEVERS   230.00"  "VSTA     230.00"  "2"  0
0
#
#   Case Number 115
1  "VSTA     230.00"  "SANBRDNO 230.00"  "2"  0
0
#
#   Case Number 116
1  "VSTA     230.00"  "DEVERS   230.00"  "1"  0
0
#
#   Case Number 117
1  "GOODRICH 230.00"  "GOULD    230.00"  "1"  0
0
#
#   Case Number 118
1  "GOODRICH 230.00"  "LAGUBELL 230.00"  "1"  0
```

```
0
#
#   Case Number 119
1  "LEWIS    230.00"  "SERRANO  230.00"  "1"  0
0
#
#   Case Number 120
1  "LEWIS    230.00"  "SERRANO  230.00"  "2"  0
0
#
#   Case Number 121
1  "LEWIS    230.00"  "VILLA PK 230.00"  "1"  0
0
#
#   Case Number 122
1  "EAGLEMTN 230.00"  "IRON MTN 230.00"  "1"  0
0
#
#   Case Number 123
1  "IRON MTN 230.00"  "CAMINO   230.00"  "1"  0
0
#
#   Case Number 124
1  "J.HINDS  230.00"  "MIRAGE   230.00"  "1"  0
0
#
#   Case Number 125
1  "J.HINDS  230.00"  "EAGLEMTN 230.00"  "1"  0
0
#
#   Case Number 126
1  "MIRALOME 230.00"  "MIRALOMW 230.00"  "1"  0
0
#
#   Case Number 127
1  "MIRALOME 230.00"  "OLINDA   230.00"  "1"  0
0
#
#   Case Number 128
1  "MIRALOME 230.00"  "PADUA    230.00"  "1"  0
0
#
#   Case Number 129
1  "MIRALOME 230.00"  "VSTA     230.00"  "2"  0
0
#
#   Case Number 130
1  "CHINO    230.00"  "S.ONOFRE 230.00"  "1"  0
0
#
#   Case Number 131
1  "TOT109   230.00"  "SANBRDNO 230.00"  "1"  0
0
#
#   Case Number 132
1  "TOT109   230.00"  "SANBRDNO 230.00"  "2"  0
0
#
#   Case Number 133
1  "VIEJOSC  230.00"  "CHINO    230.00"  "1"  0
0
#
#   Case Number 134
1  "VIEJOSC  230.00"  "S.ONOFRE 230.00"  "1"  0
0
#
#   Case Number 135
1  "ETIWANDA 230.00"  "RANCHVST 230.00"  "1"  0
0
#
```

```
#   Case Number 136
1  "ETIWANDA 230.00"  "RANCHVST 230.00"  "2"  0
0
#
#   Case Number 137
1  "ETIWANDA 230.00"  "RANCHVST 230.00"  "3"  0
0
#
#   Case Number 138
1  "RANCHVST 230.00"  "PADUA    230.00"  "1"  0
0
#
#   Case Number 139
1  "RANCHVST 230.00"  "PADUA    230.00"  "2"  0
0
#
#   Case Number 140
1  "RANCHVST 230.00"  "MIRALOME 230.00"  "1"  0
0
#
#   Case Number 141
1  "RANCHVST 230.00"  "MIRALOME 230.00"  "2"  0
0
#
#   Case Number 142
1  "MIRALOMW 230.00"  "TOT107   230.00"  "1"  0
0
#
#   Case Number 143
1  "TOT107   230.00"  "VSTA     230.00"  "1"  0
0
#
#   Case Number 144
1  "TOT135   230.00"  "WALNUT   230.00"  "1"  0
21
0
#   Case Number 145
1  "ETIWANDA 230.00"  "TOT139DL 230.00"  "1"  0
21
0
#   Case Number 146
1  "DEVERS   230.00"  "TOT032   230.00"  "1"  0
21
0
#   Case Number 147
1  "TOT138   230.00"  "LBEACH   230.00"  "1"  0
21
0
#
########################## B3 - TRANSFORMER CONTINGENCIES (500/230 kV) ############################
#
#   Case Number 148
2  "ELDORDO  500.00"  "ELDORDO  230.00"  "1"  0
0
#
#   Case Number 149
2  "ELDORDO  500.00"  "ELDORDO  230.00"  "2"  0
0
#
#   Case Number 150
2  "LUGO     500.00"  "LUGO     230.00"  "1"  0
0
#
#   Case Number 151
2  "LUGO     500.00"  "LUGO     230.00"  "2"  0
0
#
#   Case Number 152
2  "MIRALOMA 500.00"  "MIRALOMW 230.00"  "1"  0
0
```

```
#
#   Case Number 153
2  "MIRALOMA 500.00"  "MIRALOMW 230.00"  "2"  0
0
#
#   Case Number 154
2  "MIRALOMA 500.00"  "MIRALOME 230.00"  "3"  0
0
#
#   Case Number 155
2  "MIRALOMA 500.00"  "MIRALOME 230.00"  "4"  0
0
#
#   Case Number 156
2  "SERRANO  500.00"  "SERRANO  230.00"  "1"  0
0
#
#   Case Number 157
2  "SERRANO  500.00"  "SERRANO  230.00"  "2"  0
0
#
#   Case Number 158
2  "SERRANO  500.00"  "SERRANO  230.00"  "3"  0
0
#
#   Case Number 159
2  "VINCENT  500.00"  "VINCENT  230.00"  "1"  0
21
0
#   Case Number 160
2  "VINCENT  500.00"  "VINCENT  230.00"  "2"  0
0
#
#   Case Number 161
2  "VINCENT  500.00"  "VINCENT  230.00"  "3"  0
0
#
#   Case Number 162
2  "VINCENT  500.00"  "VINCENT  230.00"  "4"  0
0
#
#   Case Number 163
2  "DEVERS   500.00"  "DEVERS   230.00"  "1"  0
0
#
#   Case Number 164
2  "DEVERS   500.00"  "DEVERS   230.00"  "2"  0
0
#
#   Case Number 165
2  "RANCHVST 500.00"  "RANCHVST 230.00"  "1"  0
0
#
#   Case Number 166
2  "RANCHVST 500.00"  "RANCHVST 230.00"  "2"  0
0
#
##################################################################################################
#
# PROJECT CONTINGENCIES
#
##################################################################################################
#
#   Case Number 167
1  "LAGUBELL 230.00"  "VPWRPLNT 230.00"  "1"  0
0
#
#   Case Number 168
1  "LAGUBELL 230.00"  "VPWRPLNT 230.00"  "2"  0
0
```

```
#
#   Case Number 169
3  "VERNNST1  18.00"  "0"  "1"  0
0
#
#   Case Number 170
3  "VERNNCT1  18.00"  "0"  "1"  0
0
#
#   Case Number 171
3  "VERNNCT2  18.00"  "0"  "1"  0
0
#
#   Case Number 172
3  "VERNNCT3  18.00"  "0"  "1"  0
0
#
-1
# EOF
```

2008 Heavy Summer and 2008 Light Spring list of contingencies.

Category “C” Contingency List.

```
#   The following contingencies are included.
#   C3 - Selected combination of two successive category B outages (except those included above in Category "B").
#   C5 - Outages of double circuit tower lines.

#   Base Case -- Case Number 0
0
#
########################## C3 & C5 CONTINGENCIES ##############################
#
#   Case Number 1
#
1 24006 24016  "1 "    0      line from ALMITOSE 230.00  to  BARRE    230.00
1 24006 24021  "1 "    0      line from ALMITOSE 230.00  to  CENTER S 230.00
21
0
#
#   Case Number 2
 1 24006 24016  "1 "    0      line from ALMITOSE 230.00  to  BARRE    230.00
 1 24008 24016  "2 "    0      line from ALMITOSW 230.00  to  BARRE    230.00
0
#
#   Case Number 3
 1 24006 24016  "1 "    0      line from ALMITOSE 230.00  to  BARRE    230.00
 1 24008 24084  "1 "    0      line from ALMITOSW 230.00  to  LITEHIPE 230.00
0
#
#   Case Number 4
 1 24006 24016  "1 "    0      line from ALMITOSE 230.00  to  BARRE    230.00
 1 24029 24044  "1 "    0      line from DELAMO   230.00  to  ELLIS    230.00
0
#
#   Case Number 5
 1 24006 24021  "1 "    0      line from ALMITOSE 230.00  to  CENTER S 230.00
 1 24008 24016  "2 "    0      line from ALMITOSW 230.00  to  BARRE    230.00
0
#
#   Case Number 6
# 1 24008 24016  "2 "    0      line from ALMITOSW 230.00  to  BARRE    230.00
# 1 24008 24084  "1 "    0      line from ALMITOSW 230.00  to  LITEHIPE 230.00
#0
#
#   Case Number 7
 1 24008 24016  "2 "    0      line from ALMITOSW 230.00  to  BARRE    230.00
 1 24029 24044  "1 "    0      line from DELAMO   230.00  to  ELLIS    230.00
0
#
#   Case Number 8
 1 24006 24021  "1 "    0      line from ALMITOSE 230.00  to  CENTER S 230.00
 1 24008 24084  "1 "    0      line from ALMITOSW 230.00  to  LITEHIPE 230.00
0
#
#   Case Number 9
 1 24006 24021  "1 "    0      line from ALMITOSE 230.00  to  CENTER S 230.00
 1 24029 24021  "1 "    0      line from DELAMO   230.00  to  CENTER S 230.00
0
#
#   Case Number 10
 1 24006 24021  "1 "    0      line from ALMITOSE 230.00  to  CENTER S 230.00
 1 24029 24044  "1 "    0      line from DELAMO   230.00  to  ELLIS    230.00
0
#
#   Case Number 11
 1 24006 24021  "1 "    0      line from ALMITOSE 230.00  to  CENTER S 230.00
 1 24065 24029  "1 "    0      line from HINSON   230.00  to  DELAMO   230.00
0
```

```
#
#   Case Number 12
 1 24008 24084  "1 "    0      line from ALMITOSW 230.00  to  LITEHIPE 230.00
 1 24029 24076  "1 "    0      line from DELAMO   230.00  to  LAGUBELL 230.00
0
#
#   Case Number 13
 1 24008 24084  "1 "    0      line from ALMITOSW 230.00  to  LITEHIPE 230.00
 1 24065 24029  "1 "    0      line from HINSON   230.00  to  DELAMO   230.00
0
#
#   Case Number 14
 1 24015 24065  "1 "    0      line from ARCO SC  230.00  to  HINSON   230.00
 1 24015 24065  "2 "    0      line from ARCO SC  230.00  to  HINSON   230.00
21
0
#
#   Case Number 15
 1 24029 24021  "1 "    0      line from DELAMO   230.00  to  CENTER S 230.00
 1 24029 24076  "1 "    0      line from DELAMO   230.00  to  LAGUBELL 230.00
0
#
#   Case Number 16
 1 24029 24076  "1 "    0      line from DELAMO   230.00  to  LAGUBELL 230.00
 1 24065 24029  "1 "    0      line from HINSON   230.00  to  DELAMO   230.00
0
#
#   Case Number 17
 1 24029 24076  "1 "    0      line from DELAMO   230.00  to  LAGUBELL 230.00
 1 24074 24076  "1 "    0      line from LA FRESA 230.00  to  LAGUBELL 230.00
0
#
#   Case Number 18
 1 24029 24076  "1 "    0      line from DELAMO   230.00  to  LAGUBELL 230.00
 1 24084 24091  "1 "    0      line from LITEHIPE 230.00  to  MESA CAL 230.00
0
#
#   Case Number 19
 1 24029 24076  "1 "    0      line from DELAMO   230.00  to  LAGUBELL 230.00
 1 24091 24125  "1 "    0      line from MESA CAL 230.00  to  REDONDO  230.00
0
#
#   Case Number 20
 1 24016 24044  "1 "    0      line from BARRE    230.00  to  ELLIS    230.00
 1 24029 24044  "1 "    0      line from DELAMO   230.00  to  ELLIS    230.00
0
#
#   Case Number 21
 1 24016 24154  "1 "    0      line from BARRE    230.00  to  VILLA PK 230.00
 1 24029 24044  "1 "    0      line from DELAMO   230.00  to  ELLIS    230.00
0
#
#   Case Number 22
 1 24016 25201  "1 "    0      line from BARRE    230.00  to  LEWIS    230.00
 1 24029 24044  "1 "    0      line from DELAMO   230.00  to  ELLIS    230.00
0
#
#   Case Number 23
 1 24016 24154  "1 "    0      line from BARRE    230.00  to  VILLA PK 230.00
 1 24016 25201  "1 "    0      line from BARRE    230.00  to  LEWIS    230.00
0
#
#   Case Number 24
 1 24016 24154  "1 "    0      line from BARRE    230.00  to  VILLA PK 230.00
 1 25201 24137  "1 "    0      line from LEWIS    230.00  to  SERRANO  230.00
0
#
#   Case Number 25
 1 24016 24154  "1 "    0      line from BARRE    230.00  to  VILLA PK 230.00
 1 25201 24137  "2 "    0      line from LEWIS    230.00  to  SERRANO  230.00
```

```
0
#
#   Case Number 26
 1 24016 24154  "1 "    0     line from BARRE    230.00  to  VILLA PK 230.00
 1 25201 24154  "1 "    0     line from LEWIS    230.00  to  VILLA PK 230.00
0
#
#   Case Number 27
 1 25201 24137  "1 "    0     line from LEWIS    230.00  to  SERRANO  230.00
 1 25201 24154  "1 "    0     line from LEWIS    230.00  to  VILLA PK 230.00
0
#
#   Case Number 28
 1 25201 24137  "2 "    0     line from LEWIS    230.00  to  SERRANO  230.00
 1 25201 24154  "1 "    0     line from LEWIS    230.00  to  VILLA PK 230.00
0
#
#   Case Number 29
 1 25201 24137  "1 "    0     line from LEWIS    230.00  to  SERRANO  230.00
 1 25201 24137  "2 "    0     line from LEWIS    230.00  to  SERRANO  230.00
0
#
#   Case Number 30
 1 25201 24137  "1 "    0     line from LEWIS    230.00  to  SERRANO  230.00
 1 24137 24154  "1 "    0     line from SERRANO  230.00  to  VILLA PK 230.00
0
#
#   Case Number 31
 1 25201 24137  "1 "    0     line from LEWIS    230.00  to  SERRANO  230.00
 1 24137 24154  "2 "    0     line from SERRANO  230.00  to  VILLA PK 230.00
0
#
#   Case Number 32
 1 25201 24137  "2 "    0     line from LEWIS    230.00  to  SERRANO  230.00
 1 24137 24154  "1 "    0     line from SERRANO  230.00  to  VILLA PK 230.00
0
#
#   Case Number 33
 1 25201 24137  "2 "    0     line from LEWIS    230.00  to  SERRANO  230.00
 1 24137 24154  "2 "    0     line from SERRANO  230.00  to  VILLA PK 230.00
0
#
#   Case Number 34
 1 24137 24154  "1 "    0     line from SERRANO  230.00  to  VILLA PK 230.00
 1 24137 24154  "2 "    0     line from SERRANO  230.00  to  VILLA PK 230.00
0
#
#   Case Number 35
 1 24065 24029  "1 "    0     line from HINSON   230.00  to  DELAMO   230.00
 1 24074 24065  "1 "    0     line from LA FRESA 230.00  to  HINSON   230.00
0
#
#   Case Number 36
 1 24065 24029  "1 "    0     line from HINSON   230.00  to  DELAMO   230.00
 1 24077 24084  "1 "    0     line from LBEACH   230.00  to  LITEHIPE 230.00
0
#
#   Case Number 37
 1 24065 24029  "1 "    0     line from HINSON   230.00  to  DELAMO   230.00
 1 24084 24065  "1 "    0     line from LITEHIPE 230.00  to  HINSON   230.00
0
#
#   Case Number 38
 1 24074 24065  "1 "    0     line from LA FRESA 230.00  to  HINSON   230.00
 1 24084 24065  "1 "    0     line from LITEHIPE 230.00  to  HINSON   230.00
0
#
#   Case Number 39
 1 24077 24084  "1 "    0     line from LBEACH   230.00  to  LITEHIPE 230.00
 1 24084 24065  "1 "    0     line from LITEHIPE 230.00  to  HINSON   230.00
```

```
0
#
#   Case Number 40
 1 24061 24065  "1 "    0      line from HARBOR   230.00  to  HINSON   230.00
 1 24077 24084  "1 "    0      line from LBEACH   230.00  to  LITEHIPE 230.00
21
0
#
#   Case Number 41
 1 24074 24065  "1 "    0      line from LA FRESA 230.00  to  HINSON   230.00
 1 24077 24084  "1 "    0      line from LBEACH   230.00  to  LITEHIPE 230.00
0
#
#   Case Number 42
 1 24061 24065  "1 "    0      line from HARBOR   230.00  to  HINSON   230.00
 1 24061 24077  "1 "    0      line from HARBOR   230.00  to  LBEACH   230.00
21
0
#
#   Case Number 43
 1 24074 24065  "1 "    0      line from LA FRESA 230.00  to  HINSON   230.00
 1 24074 24076  "1 "    0      line from LA FRESA 230.00  to  LAGUBELL 230.00
0
#
#   Case Number 44
 1 24074 24065  "1 "    0      line from LA FRESA 230.00  to  HINSON   230.00
 1 24091 24125  "1 "    0      line from MESA CAL 230.00  to  REDONDO  230.00
0
#
#   Case Number 45
 1 24074 24065  "1 "    0      line from LA FRESA 230.00  to  HINSON   230.00
 1 24125 24084  "1 "    0      line from REDONDO  230.00  to  LITEHIPE 230.00
0
#
#   Case Number 46
 1 24074 24076  "1 "    0      line from LA FRESA 230.00  to  LAGUBELL 230.00
 1 24125 24084  "1 "    0      line from REDONDO  230.00  to  LITEHIPE 230.00
0
#
#   Case Number 47
 1 24074 24125  "1 "    0      line from LA FRESA 230.00  to  REDONDO  230.00
 1 24125 24084  "1 "    0      line from REDONDO  230.00  to  LITEHIPE 230.00
0
#
#   Case Number 48
 1 24074 24125  "2 "    0      line from LA FRESA 230.00  to  REDONDO  230.00
 1 24125 24084  "1 "    0      line from REDONDO  230.00  to  LITEHIPE 230.00
0
#
#   Case Number 49
 1 24091 24125  "1 "    0      line from MESA CAL 230.00  to  REDONDO  230.00
 1 24125 24084  "1 "    0      line from REDONDO  230.00  to  LITEHIPE 230.00
0
#
#   Case Number 50
 1 24074 24125  "1 "    0      line from LA FRESA 230.00  to  REDONDO  230.00
 1 24082 24074  "1 "    0      line from LCIENEGA 230.00  to  LA FRESA 230.00
0
#
#   Case Number 51
 1 24074 24125  "2 "    0      line from LA FRESA 230.00  to  REDONDO  230.00
 1 24082 24074  "1 "    0      line from LCIENEGA 230.00  to  LA FRESA 230.00
0
#
#   Case Number 52
 1 24040 24074  "3 "    0      line from EL NIDO  230.00  to  LA FRESA 230.00
 1 24082 24074  "1 "    0      line from LCIENEGA 230.00  to  LA FRESA 230.00
0
#
#   Case Number 53
```

```
 1 24040 24074  "4 "    0      line from EL NIDO  230.00  to  LA FRESA 230.00
 1 24082 24074  "1 "    0      line from LCIENEGA 230.00  to  LA FRESA 230.00
0
#
#   Case Number 54
 1 24040 24082  "1 "    0      line from EL NIDO  230.00  to  LCIENEGA 230.00
 1 24082 24074  "1 "    0      line from LCIENEGA 230.00  to  LA FRESA 230.00
21
0
#
#   Case Number 55
 1 24040 24198  "1 "    0      line from EL NIDO  230.00  to  CHEVMAIN 230.00
 1 24049 24040  "1 "    0      line from ELSEGNDO 230.00  to  EL NIDO  230.00
21
3  25501     0  "6 "    0
0
#
#   Case Number 56
 1 24040 24198  "1 "    0      line from EL NIDO  230.00  to  CHEVMAIN 230.00
 1 24049 24198  "1 "    0      line from ELSEGNDO 230.00  to  CHEVMAIN 230.00
21
0
#
#   Case Number 57
 1 24040 24074  "3 "    0      line from EL NIDO  230.00  to  LA FRESA 230.00
 1 24040 24074  "4 "    0      line from EL NIDO  230.00  to  LA FRESA 230.00
0
#
#   Case Number 58
 1 24040 24074  "3 "    0      line from EL NIDO  230.00  to  LA FRESA 230.00
 1 24074 24125  "1 "    0      line from LA FRESA 230.00  to  REDONDO  230.00
0
#
#   Case Number 59
 1 24040 24074  "3 "    0      line from EL NIDO  230.00  to  LA FRESA 230.00
 1 24074 24125  "2 "    0      line from LA FRESA 230.00  to  REDONDO  230.00
0
#
#   Case Number 60
 1 24040 24074  "4 "    0      line from EL NIDO  230.00  to  LA FRESA 230.00
 1 24074 24125  "1 "    0      line from LA FRESA 230.00  to  REDONDO  230.00
0
#
#   Case Number 61
 1 24040 24074  "4 "    0      line from EL NIDO  230.00  to  LA FRESA 230.00
 1 24074 24125  "2 "    0      line from LA FRESA 230.00  to  REDONDO  230.00
0
#
#   Case Number 62
 1 24074 24125  "1 "    0      line from LA FRESA 230.00  to  REDONDO  230.00
 1 24074 24125  "2 "    0      line from LA FRESA 230.00  to  REDONDO  230.00
0
#
#   Case Number 63
 1 24040 24074  "3 "    0      line from EL NIDO  230.00  to  LA FRESA 230.00
 1 24091 24125  "1 "    0      line from MESA CAL 230.00  to  REDONDO  230.00
0
#
#   Case Number 64
 1 24040 24074  "4 "    0      line from EL NIDO  230.00  to  LA FRESA 230.00
 1 24091 24125  "1 "    0      line from MESA CAL 230.00  to  REDONDO  230.00
0
#
#   Case Number 65
 1 24074 24125  "1 "    0      line from LA FRESA 230.00  to  REDONDO  230.00
 1 24091 24125  "1 "    0      line from MESA CAL 230.00  to  REDONDO  230.00
0
#
#   Case Number 66
 1 24074 24125  "2 "    0      line from LA FRESA 230.00  to  REDONDO  230.00
```

```
 1 24091 24125  "1 "    0      line from MESA CAL 230.00  to  REDONDO  230.00
0
#
#   Case Number 67
 1 25001 24076  "1 "    0      line from GOODRICH 230.00  to  LAGUBELL 230.00
 1 24091 24125  "1 "    0      line from MESA CAL 230.00  to  REDONDO  230.00
0
#
#   Case Number 68
 1 24074 24076  "1 "    0      line from LA FRESA 230.00  to  LAGUBELL 230.00
 1 24091 24125  "1 "    0      line from MESA CAL 230.00  to  REDONDO  230.00
0
#
#   Case Number 69
 1 24076 24126  "1 "    0      line from LAGUBELL 230.00  to  RIOHONDO 230.00
 1 24091 24125  "1 "    0      line from MESA CAL 230.00  to  REDONDO  230.00
0
#
#   Case Number 70
 1 24084 24091  "1 "    0      line from LITEHIPE 230.00  to  MESA CAL 230.00
 1 24091 24125  "1 "    0      line from MESA CAL 230.00  to  REDONDO  230.00
0
#
#   Case Number 71
 1 24074 24076  "1 "    0      line from LA FRESA 230.00  to  LAGUBELL 230.00
 1 24084 24091  "1 "    0      line from LITEHIPE 230.00  to  MESA CAL 230.00
0
#
#   Case Number 72
 1 25001 24076  "1 "    0      line from GOODRICH 230.00  to  LAGUBELL 230.00
 1 24084 24091  "1 "    0      line from LITEHIPE 230.00  to  MESA CAL 230.00
0
#
#   Case Number 73
 1 24076 24126  "1 "    0      line from LAGUBELL 230.00  to  RIOHONDO 230.00
 1 24084 24091  "1 "    0      line from LITEHIPE 230.00  to  MESA CAL 230.00
0
#
#   Case Number 74
 1 25001 24059  "1 "    0      line from GOODRICH 230.00  to  GOULD    230.00
 1 25001 24076  "1 "    0      line from GOODRICH 230.00  to  LAGUBELL 230.00
0
#
#   Case Number 75
 1 25001 24076  "1 "    0      line from GOODRICH 230.00  to  LAGUBELL 230.00
 1 24076 24126  "1 "    0      line from LAGUBELL 230.00  to  RIOHONDO 230.00
0
#
#   Case Number 76
 1 24036 24091  "1 "    0      line from EAGLROCK 230.00  to  MESA CAL 230.00
 1 25001 24076  "1 "    0      line from GOODRICH 230.00  to  LAGUBELL 230.00
20
0
#
#   Case Number 77
 1 25001 24076  "1 "    0      line from GOODRICH 230.00  to  LAGUBELL 230.00
 1 24155 24091  "1 "    0      line from VINCENT  230.00  to  MESA CAL 230.00
0
#
#   Case Number 78
 1 24021 24091  "1 "    0      line from CENTER S 230.00  to  MESA CAL 230.00
 1 24076 24126  "1 "    0      line from LAGUBELL 230.00  to  RIOHONDO 230.00
0
#
#   Case Number 79
 1 24076 24126  "1 "    0      line from LAGUBELL 230.00  to  RIOHONDO 230.00
 1 24091 24126  "1 "    0      line from MESA CAL 230.00  to  RIOHONDO 230.00
0
#
#   Case Number 80
```

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 1 24076 24126  "1 "    0     line from LAGUBELL 230.00  to  RIOHONDO 230.00
 1 24091 24158  "1 "    0     line from MESA CAL 230.00  to  WALNUT   230.00
0
#
#   Case Number 81
 1 24076 24126  "1 "    0     line from LAGUBELL 230.00  to  RIOHONDO 230.00
 1 24091 24401  "1 "    0     line from MESA CAL 230.00  to  ANTELOPE 230.00
0
#
#   Case Number 82
 1 24091 24126  "1 "    0     line from MESA CAL 230.00  to  RIOHONDO 230.00
 1 24091 24158  "1 "    0     line from MESA CAL 230.00  to  WALNUT   230.00
0
#
#   Case Number 83
 1 24091 24126  "1 "    0     line from MESA CAL 230.00  to  RIOHONDO 230.00
 1 24091 24401  "1 "    0     line from MESA CAL 230.00  to  ANTELOPE 230.00
0
#
#   Case Number 84
 1 24021 24091  "1 "    0     line from CENTER S 230.00  to  MESA CAL 230.00
 1 24091 24126  "1 "    0     line from MESA CAL 230.00  to  RIOHONDO 230.00
0
#
#   Case Number 85
 1 24021 24091  "1 "    0     line from CENTER S 230.00  to  MESA CAL 230.00
 1 24021 24100  "1 "    0     line from CENTER S 230.00  to  OLINDA   230.00
0
#
#   Case Number 86
 1 24021 24091  "1 "    0     line from CENTER S 230.00  to  MESA CAL 230.00
 1 24091 24158  "1 "    0     line from MESA CAL 230.00  to  WALNUT   230.00
0
#
#   Case Number 87
 1 24021 24091  "1 "    0     line from CENTER S 230.00  to  MESA CAL 230.00
 1 24091 24401  "1 "    0     line from MESA CAL 230.00  to  ANTELOPE 230.00
0
#
#   Case Number 88
 1 24091 24158  "1 "    0     line from MESA CAL 230.00  to  WALNUT   230.00
 1 24091 24401  "1 "    0     line from MESA CAL 230.00  to  ANTELOPE 230.00
0
#
#   Case Number 89
 1 24091 24158  "1 "    0     line from MESA CAL 230.00  to  WALNUT   230.00
 1 24093 24158  "1 "    0     line from MIRALOMA 230.00  to  WALNUT   230.00
0
#
#   Case Number 90
 1 24091 24158  "1 "    0     line from MESA CAL 230.00  to  WALNUT   230.00
 1 24100 24158  "1 "    0     line from OLINDA   230.00  to  WALNUT   230.00
0
#
#   Case Number 91
 1 24021 24100  "1 "    0     line from CENTER S 230.00  to  OLINDA   230.00
 1 24091 24158  "1 "    0     line from MESA CAL 230.00  to  WALNUT   230.00
0
#
#   Case Number 92
 1 24021 24100  "1 "    0     line from CENTER S 230.00  to  OLINDA   230.00
 1 25656 24100  "1 "    0     line from MIRALOMA 230.00  to  OLINDA   230.00
0
#
#   Case Number 93
 1 24021 24100  "1 "    0     line from CENTER S 230.00  to  OLINDA   230.00
 1 24093 24158  "1 "    0     line from MIRALOMA 230.00  to  WALNUT   230.00
0
#
#   Case Number 94
```

```
 1 24021 24100  "1 "    0      line from CENTER S 230.00  to  OLINDA   230.00
 1 24100 24158  "1 "    0      line from OLINDA   230.00  to  WALNUT   230.00
0
#
#   Case Number 95
 1 25656 24100  "1 "    0      line from MIRALOMA 230.00  to  OLINDA   230.00
 1 24100 24158  "1 "    0      line from OLINDA   230.00  to  WALNUT   230.00
0
#
#   Case Number 96
 1 24093 24158  "1 "    0      line from MIRALOMA 230.00  to  WALNUT   230.00
 1 24100 24158  "1 "    0      line from OLINDA   230.00  to  WALNUT   230.00
0
#
#   Case Number 97
 1 24036 24091  "1 "    0      line from EAGLROCK 230.00  to  MESA CAL 230.00
 1 25001 24059  "1 "    0      line from GOODRICH 230.00  to  GOULD    230.00
0
#
#   Case Number 98
 1 25001 24059  "1 "    0      line from GOODRICH 230.00  to  GOULD    230.00
 1 24155 24091  "1 "    0      line from VINCENT  230.00  to  MESA CAL 230.00
21
0
#
#   Case Number 99
 1 24036 24091  "1 "    0      line from EAGLROCK 230.00  to  MESA CAL 230.00
 1 24036 24114  "1 "    0      line from EAGLROCK 230.00  to  PARDEE   230.00
0
#
#   Case Number 100
 1 24036 24091  "1 "    0      line from EAGLROCK 230.00  to  MESA CAL 230.00
 1 24036 24147  "1 "    0      line from EAGLROCK 230.00  to  SYLMAR S 230.00
0
#
#   Case Number 101
 1 24036 24091  "1 "    0      line from EAGLROCK 230.00  to  MESA CAL 230.00
 1 24147 24059  "1 "    0      line from SYLMAR S 230.00  to  GOULD    230.00
0
#
#   Case Number 102
 1 24036 24091  "1 "    0      line from EAGLROCK 230.00  to  MESA CAL 230.00
 1 24155 24091  "1 "    0      line from VINCENT  230.00  to  MESA CAL 230.00
0
#
#   Case Number 103
 1 24036 24114  "1 "    0      line from EAGLROCK 230.00  to  PARDEE   230.00
 1 24036 24147  "1 "    0      line from EAGLROCK 230.00  to  SYLMAR S 230.00
0
#
#   Case Number 104
 1 24036 24147  "1 "    0      line from EAGLROCK 230.00  to  SYLMAR S 230.00
 1 24147 24059  "1 "    0      line from SYLMAR S 230.00  to  GOULD    230.00
0
#
#   Case Number 105
 1 24036 24147  "1 "    0      line from EAGLROCK 230.00  to  SYLMAR S 230.00
 1 24114 24147  "1 "    0      line from PARDEE   230.00  to  SYLMAR S 230.00
0
#
#   Case Number 106
 1 24036 24147  "1 "    0      line from EAGLROCK 230.00  to  SYLMAR S 230.00
 1 24114 24147  "2 "    0      line from PARDEE   230.00  to  SYLMAR S 230.00
0
#
#   Case Number 107
 1 24114 24147  "1 "    0      line from PARDEE   230.00  to  SYLMAR S 230.00
 1 24147 24059  "1 "    0      line from SYLMAR S 230.00  to  GOULD    230.00
0
#
```

```
#   Case Number 108
 1 24114 24147  "2 "    0      line from PARDEE   230.00  to  SYLMAR S 230.00
 1 24147 24059  "1 "    0      line from SYLMAR S 230.00  to  GOULD    230.00
0
#
#   Case Number 109
 1 24036 24114  "1 "    0      line from EAGLROCK 230.00  to  PARDEE   230.00
 1 24147 24059  "1 "    0      line from SYLMAR S 230.00  to  GOULD    230.00
0
#
#   Case Number 110
 1 24114 24147  "1 "    0      line from PARDEE   230.00  to  SYLMAR S 230.00
 1 24114 24147  "2 "    0      line from PARDEE   230.00  to  SYLMAR S 230.00
0
#
#   Case Number 111
 1 24044 24069  "1 "    0      line from ELLIS    230.00  to  HUNTGBCH 230.00
 1 24044 24369  "2 "    0      line from ELLIS    230.00  to  HUNTBCH1 230.00
0
#
#   Case Number 112
 1 24044 24369  "2 "    0      line from ELLIS    230.00  to  HUNTBCH1 230.00
 1 24044 24069  "3 "    0      line from ELLIS    230.00  to  HUNTGBCH 230.00
0
#
#   Case Number 113
 1 24044 24069  "3 "    0      line from ELLIS    230.00  to  HUNTGBCH 230.00
 1 24044 24369  "4 "    0      line from ELLIS    230.00  to  HUNTBCH1 230.00
0
#
#   Case Number 114
 1 24044 24072  "1 "    0      line from ELLIS    230.00  to  JOHANNA  230.00
 1 24044 24134  "1 "    0      line from ELLIS    230.00  to  SANTIAGO 230.00
0
#
#   Case Number 115
 1 24044 24134  "1 "    0      line from ELLIS    230.00  to  SANTIAGO 230.00
 1 24072 24134  "1 "    0      line from JOHANNA  230.00  to  SANTIAGO 230.00
0
#
#   Case Number 116
 1 24131 24134  "1 "    0      line from S.ONOFRE 230.00  to  SANTIAGO 230.00
 1 24131 24134  "2 "    0      line from S.ONOFRE 230.00  to  SANTIAGO 230.00
0
#
#   Case Number 117
 1 24131 24134  "1 "    0      line from S.ONOFRE 230.00  to  SANTIAGO 230.00
 1 24131 24137  "1 "    0      line from S.ONOFRE 230.00  to  SERRANO  230.00
0
#
#   Case Number 118
 1 24025 25654  "1 "    0      line from CHINO    230.00  to  VIEJOSC  230.00
 1 24131 24134  "1 "    0      line from S.ONOFRE 230.00  to  SANTIAGO 230.00
0
#
#   Case Number 119
 1 24131 24134  "2 "    0      line from S.ONOFRE 230.00  to  SANTIAGO 230.00
 1 24131 24137  "1 "    0      line from S.ONOFRE 230.00  to  SERRANO  230.00
0
#
#   Case Number 120
 1 24025 25654  "1 "    0      line from CHINO    230.00  to  VIEJOSC  230.00
 1 24131 24134  "2 "    0      line from S.ONOFRE 230.00  to  SANTIAGO 230.00
0
#
#   Case Number 121
 1 24128 24058  "1 "    0      line from S.CLARA  230.00  to  GOLETA   230.00
 1 24128 24058  "2 "    0      line from S.CLARA  230.00  to  GOLETA   230.00
21
0
```

```
#
#   Case Number 122
 1 24128 24088  "1 "    0      line from S.CLARA  230.00  to  MANDALAY 230.00
 1 24128 24088  "2 "    0      line from S.CLARA  230.00  to  MANDALAY 230.00
21
0
#
#   Case Number 123
 1 24099 24106  "1 "    0      line from MOORPARK 230.00  to  ORMOND   230.00
 1 24099 24106  "2 "    0      line from MOORPARK 230.00  to  ORMOND   230.00
0
#
#   Case Number 124
 1 24114 24115  "1 "    0      line from PARDEE   230.00  to  PASTORIA 230.00
 1 24155 24128  "1 "    0      line from VINCENT  230.00  to  S.CLARA  230.00
0
#
#   Case Number 125
 1 24114 24403  "1 "    0      line from PARDEE   230.00  to  BAILEY   230.00
 1 24155 24128  "1 "    0      line from VINCENT  230.00  to  S.CLARA  230.00
0
#
#   Case Number 126
 1 24114 24099  "1 "    0      line from PARDEE   230.00  to  MOORPARK 230.00
 1 24114 24099  "2 "    0      line from PARDEE   230.00  to  MOORPARK 230.00
0
#
#   Case Number 127
 1 24114 24128  "1 "    0      line from PARDEE   230.00  to  S.CLARA  230.00
 1 24128 24099  "1 "    0      line from S.CLARA  230.00  to  MOORPARK 230.00
0
#
#   Case Number 128
 1 24114 24128  "1 "    0      line from PARDEE   230.00  to  S.CLARA  230.00
 1 24155 24128  "1 "    0      line from VINCENT  230.00  to  S.CLARA  230.00
0
#
#   Case Number 129
 1 24128 24099  "1 "    0      line from S.CLARA  230.00  to  MOORPARK 230.00
 1 24128 24099  "2 "    0      line from S.CLARA  230.00  to  MOORPARK 230.00
0
#
#   Case Number 130
 1 24128 24099  "2 "    0      line from S.CLARA  230.00  to  MOORPARK 230.00
 1 24155 24128  "1 "    0      line from VINCENT  230.00  to  S.CLARA  230.00
0
#
#   Case Number 131
 1 24036 24114  "1 "    0      line from EAGLROCK 230.00  to  PARDEE   230.00
 1 24091 24401  "1 "    0      line from MESA CAL 230.00  to  ANTELOPE 230.00
0
#
#   Case Number 132
 1 24036 24114  "1 "    0      line from EAGLROCK 230.00  to  PARDEE   230.00
 1 24114 24155  "1 "    0      line from PARDEE   230.00  to  VINCENT  230.00
0
#
#   Case Number 133
 1 24036 24114  "1 "    0      line from EAGLROCK 230.00  to  PARDEE   230.00
 1 24155 24091  "1 "    0      line from VINCENT  230.00  to  MESA CAL 230.00
0
#
#   Case Number 134
 1 24036 24114  "1 "    0      line from EAGLROCK 230.00  to  PARDEE   230.00
 1 24155 24128  "1 "    0      line from VINCENT  230.00  to  S.CLARA  230.00
0
#
#   Case Number 135
 1 24091 24401  "1 "    0      line from MESA CAL 230.00  to  ANTELOPE 230.00
 1 24155 24401  "1 "    0      line from VINCENT  230.00  to  ANTELOPE 230.00
```

```
0
#
#   Case Number 136
 1 24114 24155  "1 "    0      line from PARDEE   230.00  to  VINCENT  230.00
 1 24155 24128  "1 "    0      line from VINCENT  230.00  to  S.CLARA  230.00
0
#
#   Case Number 137
 1 24091 24401  "1 "    0      line from MESA CAL 230.00  to  ANTELOPE 230.00
 1 24155 24128  "1 "    0      line from VINCENT  230.00  to  S.CLARA  230.00
0
#
#   Case Number 138
 1 24091 24401  "1 "    0      line from MESA CAL 230.00  to  ANTELOPE 230.00
 1 24126 24155  "2 "    0      line from RIOHONDO 230.00  to  VINCENT  230.00
0
#
#   Case Number 139
 1 24091 24401  "1 "    0      line from MESA CAL 230.00  to  ANTELOPE 230.00
 1 24155 24126  "1 "    0      line from VINCENT  230.00  to  RIOHONDO 230.00
0
#
#   Case Number 140
 1 24126 24155  "2 "    0      line from RIOHONDO 230.00  to  VINCENT  230.00
 1 24155 24126  "1 "    0      line from VINCENT  230.00  to  RIOHONDO 230.00
0
#
#   Case Number 141
 1 24025 25654  "1 "    0      line from CHINO    230.00  to  VIEJOSC  230.00
 1 24131 24137  "1 "    0      line from S.ONOFRE 230.00  to  SERRANO  230.00
0
#
#   Case Number 142
 1 24025 24137  "1 "    0      line from CHINO    230.00  to  SERRANO  230.00
 1 24131 24137  "1 "    0      line from S.ONOFRE 230.00  to  SERRANO  230.00
0
#
#   Case Number 143
 1 25656 24100  "1 "    0      line from MIRALOMA 230.00  to  OLINDA   230.00
 1 24093 24158  "1 "    0      line from MIRALOMA 230.00  to  WALNUT   230.00
0
#
#   Case Number 144
 1 24025 25654  "1 "    0      line from CHINO    230.00  to  VIEJOSC  230.00
 1 24093 24158  "1 "    0      line from MIRALOMA 230.00  to  WALNUT   230.00
0
#
#   Case Number 145
 1 24025 24137  "1 "    0      line from CHINO    230.00  to  SERRANO  230.00
 1 24093 24158  "1 "    0      line from MIRALOMA 230.00  to  WALNUT   230.00
0
#
#   Case Number 146
 1 24025 25654  "1 "    0      line from CHINO    230.00  to  VIEJOSC  230.00
 1 25656 24100  "1 "    0      line from MIRALOMA 230.00  to  OLINDA   230.00
0
#
#   Case Number 147
 1 24025 24137  "1 "    0      line from CHINO    230.00  to  SERRANO  230.00
 1 25656 24100  "1 "    0      line from MIRALOMA 230.00  to  OLINDA   230.00
0
#
#   Case Number 148
 1 24025 24093  "1 "    0      line from CHINO    230.00  to  MIRALOMA 230.00
 1 24025 24093  "2 "    0      line from CHINO    230.00  to  MIRALOMA 230.00
0
#
#   Case Number 149
 1 24025 24093  "2 "    0      line from CHINO    230.00  to  MIRALOMA 230.00
 1 24025 25656  "3 "    0      line from CHINO    230.00  to  MIRALOMA 230.00
```

```
0
#
#   Case Number 150
 1 24025 25654  "1 "    0     line from CHINO    230.00  to  VIEJOSC  230.00
 1 24025 24137  "1 "    0     line from CHINO    230.00  to  SERRANO  230.00
0
#
#   Case Number 151
 1 24237 24112  "1 "    0     line from RANCHVST 230.00  to  PADUA    230.00
 1 24237 24112  "2 "    0     line from RANCHVST 230.00  to  PADUA    230.00
0
#
#   Case Number 152
 1 24056 24132  "1 "    0     line from ETIWANDA 230.00  to  SANBRDNO 230.00
 1 25656 24901  "2 "    0     line from MIRALOMA 230.00  to  VSTA     230.00
0
#
#   Case Number 153
 1 24056 24132  "1 "    0     line from ETIWANDA 230.00  to  SANBRDNO 230.00
 1 24056 24901  "1 "    0     line from ETIWANDA 230.00  to  VSTA     230.00
0
#
#   Case Number 154
 1 24804 24132  "1 "    0     line from DEVERS   230.00  to  SANBRDNO 230.00
 1 24056 24132  "1 "    0     line from ETIWANDA 230.00  to  SANBRDNO 230.00
0
#
#   Case Number 155
 1 24804 24901  "2 "    0     line from DEVERS   230.00  to  VSTA     230.00
 1 24056 24132  "1 "    0     line from ETIWANDA 230.00  to  SANBRDNO 230.00
0
#
#   Case Number 156
 1 24056 24132  "1 "    0     line from ETIWANDA 230.00  to  SANBRDNO 230.00
 1 24132 24804  "1 "    0     line from SANBRDNO 230.00  to  DEVERS   230.00
0
#
#   Case Number 157
 1 24056 24132  "1 "    0     line from ETIWANDA 230.00  to  SANBRDNO 230.00
 1 24901 24132  "2 "    0     line from VSTA     230.00  to  SANBRDNO 230.00
0
#
#   Case Number 158
 1 24056 24132  "1 "    0     line from ETIWANDA 230.00  to  SANBRDNO 230.00
 1 24901 24804  "1 "    0     line from VSTA     230.00  to  DEVERS   230.00
0
#
#   Case Number 159
 1 24901 24132  "2 "    0     line from VSTA     230.00  to  SANBRDNO 230.00
 1 24901 24804  "1 "    0     line from VSTA     230.00  to  DEVERS   230.00
0
#
#   Case Number 160
 1 24132 24804  "1 "    0     line from SANBRDNO 230.00  to  DEVERS   230.00
 1 24901 24132  "2 "    0     line from VSTA     230.00  to  SANBRDNO 230.00
0
#
#   Case Number 161
 1 24804 24132  "1 "    0     line from DEVERS   230.00  to  SANBRDNO 230.00
 1 24901 24132  "2 "    0     line from VSTA     230.00  to  SANBRDNO 230.00
0
#
#   Case Number 162
 1 24804 24132  "1 "    0     line from DEVERS   230.00  to  SANBRDNO 230.00
 1 24804 24901  "2 "    0     line from DEVERS   230.00  to  VSTA     230.00
0
#
#   Case Number 163
 1 24804 24132  "1 "    0     line from DEVERS   230.00  to  SANBRDNO 230.00
 1 24901 24804  "1 "    0     line from VSTA     230.00  to  DEVERS   230.00
```

```
0
#
#   Case Number 164
 1 24804 24901  "2 "    0      line from DEVERS   230.00  to  VSTA     230.00
 1 24132 24804  "1 "    0      line from SANBRDNO 230.00  to  DEVERS   230.00
0
#
#   Case Number 165
 1 24132 24804  "1 "    0      line from SANBRDNO 230.00  to  DEVERS   230.00
 1 24901 24804  "1 "    0      line from VSTA     230.00  to  DEVERS   230.00
0
#
#   Case Number 166
 1 24804 24806  "1 "    0      line from DEVERS   230.00  to  MIRAGE   230.00
 1  8311 24804  "1 "    0      line from COACHELA 230.00  to  DEVERS   230.00
20
0
#
#   Case Number 167
 1 24804 24806  "1 "    0      line from DEVERS   230.00  to  MIRAGE   230.00
 1 25406 24806  "1 "    0      line from J.HINDS  230.00  to  MIRAGE   230.00
20
0
#
#   Case Number 168
 1 24601 24085  "1 "    0      line from VICTOR   230.00  to  LUGO     230.00
 1 24601 24085  "2 "    0      line from VICTOR   230.00  to  LUGO     230.00
21
0
#
#   Case Number 169
 1  8695 24806  "1 "    0      line from RAMON    230.00  to  MIRAGE   230.00
 1 25406 24806  "1 "    0      line from J.HINDS  230.00  to  MIRAGE   230.00
0
#
#   Case Number 170
 1  8311 24804  "1 "    0      line from COACHELA 230.00  to  DEVERS   230.00
 1 25406 24806  "1 "    0      line from J.HINDS  230.00  to  MIRAGE   230.00
0
#
#   Case Number 171
 1  8695 24806  "1 "    0      line from RAMON    230.00  to  MIRAGE   230.00
 1  8311 24804  "1 "    0      line from COACHELA 230.00  to  DEVERS   230.00
0
#
#   Case Number 172
 1 19012 24041  "1 "    0      line from MEAD S   230.00  to  ELDORDO  230.00
 1 19012 24041  "2 "    0      line from MEAD S   230.00  to  ELDORDO  230.00
0
#
#   Case Number 173
 1 24019 19012  "E "    0      line from CAMINO   230.00  to  MEAD S   230.00
 1 24019 19012  "W "    0      line from CAMINO   230.00  to  MEAD S   230.00
0
#
#   Case Number 174
 1 24219 24085  "1 "    0      line from PISGAH   230.00  to  LUGO     230.00
 1 24219 24085  "2 "    0      line from PISGAH   230.00  to  LUGO     230.00
0
#
#   Case Number 175
 1 24042 24086  "1 "    0      line from ELDORDO  500.00  to  LUGO     500.00
 1 24219 24041  "2 "    0      line from PISGAH   230.00  to  ELDORDO  230.00
0
#
#   Case Number 176
 1 24042 24086  "1 "    0      line from ELDORDO  500.00  to  LUGO     500.00
 1 24219 24085  "1 "    0      line from PISGAH   230.00  to  LUGO     230.00
0
#
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```
#   Case Number 177
 1 24042 24086  "1 "    0      line from ELDORDO  500.00  to  LUGO     500.00
 1 24219 24085  "2 "    0      line from PISGAH   230.00  to  LUGO     230.00
0
#
#   Case Number 178
 1 24086 24092  "2 "    0      line from LUGO     500.00  to  MIRALOMA 500.00
 1 24086 24092  "3 "    0      line from LUGO     500.00  to  MIRALOMA 500.00
0
#
#   Case Number 179
 1 24086 24092  "2 "    0      line from LUGO     500.00  to  MIRALOMA 500.00
 1 24086 24236  "1 "    0      line from LUGO     500.00  to  RANCHVST 500.00
0
#
#   Case Number 180
 1 24056 24132  "1 "    0      line from ETIWANDA 230.00  to  SANBRDNO 230.00
 1 24086 24092  "2 "    0      line from LUGO     500.00  to  MIRALOMA 500.00
0
#
#   Case Number 181
 1 24056 24901  "1 "    0      line from ETIWANDA 230.00  to  VSTA     230.00
 1 24086 24092  "2 "    0      line from LUGO     500.00  to  MIRALOMA 500.00
0
#
#   Case Number 182
 1 24056 24132  "1 "    0      line from ETIWANDA 230.00  to  SANBRDNO 230.00
 1 24086 24092  "3 "    0      line from LUGO     500.00  to  MIRALOMA 500.00
0
#
#   Case Number 183
 1 24056 24901  "1 "    0      line from ETIWANDA 230.00  to  VSTA     230.00
 1 24086 24092  "3 "    0      line from LUGO     500.00  to  MIRALOMA 500.00
0
#
#   Case Number 184
 1 24086 24097  "1 "    0      line from LUGO     500.00  to  MOHAVE   500.00
 1 24219 24085  "1 "    0      line from PISGAH   230.00  to  LUGO     230.00
0
#
#   Case Number 185
 1 24086 24097  "1 "    0      line from LUGO     500.00  to  MOHAVE   500.00
 1 24219 24085  "2 "    0      line from PISGAH   230.00  to  LUGO     230.00
0
#
#   Case Number 186
 1 24025 24093  "1 "    0      line from CHINO    230.00  to  MIRALOMA 230.00
 1 24236 24138  "1 "    0      line from RANCHVST 500.00  to  SERRANO  500.00
0
#
#   Case Number 187
 1 24025 24093  "2 "    0      line from CHINO    230.00  to  MIRALOMA 230.00
 1 24236 24138  "1 "    0      line from RANCHVST 500.00  to  SERRANO  500.00
0
#
#   Case Number 188
 1 24025 25656  "3 "    0      line from CHINO    230.00  to  MIRALOMA 230.00
 1 24236 24138  "1 "    0      line from RANCHVST 500.00  to  SERRANO  500.00
0
#
#   Case Number 189
 1 24025 24137  "1 "    0      line from CHINO    230.00  to  SERRANO  230.00
 1 24236 24138  "1 "    0      line from RANCHVST 500.00  to  SERRANO  500.00
0
#
#   Case Number 190
 1 24056 24237  "1 "    0      line from ETIWANDA 230.00  to  RANCHVST 230.00
 1 24236 24138  "1 "    0      line from RANCHVST 500.00  to  SERRANO  500.00
0
#
```

```
#   Case Number 191
 1 24056 24132  "1 "    0      line from ETIWANDA 230.00  to  SANBRDNO 230.00
 1 24236 24138  "1 "    0      line from RANCHVST 500.00  to  SERRANO  500.00
0
#
#   Case Number 192
 1 24056 24901  "1 "    0      line from ETIWANDA 230.00  to  VSTA     230.00
 1 24236 24138  "1 "    0      line from RANCHVST 500.00  to  SERRANO  500.00
0
#
#   Case Number 193
 1 25656 24100  "1 "    0      line from MIRALOMA 230.00  to  OLINDA   230.00
 1 24236 24138  "1 "    0      line from RANCHVST 500.00  to  SERRANO  500.00
0
#
#   Case Number 194
 1 24237 24112  "1 "    0      line from RANCHVST 230.00  to  PADUA    230.00
 1 24236 24138  "1 "    0      line from RANCHVST 500.00  to  SERRANO  500.00
0
#
#   Case Number 195
 1 24093 24158  "1 "    0      line from MIRALOMA 230.00  to  WALNUT   230.00
 1 24236 24138  "1 "    0      line from RANCHVST 500.00  to  SERRANO  500.00
0
#
#   Case Number 196
 1 24086 24156  "1 "    0      line from LUGO     500.00  to  VINCENT  500.00
 1 24086 24156  "2 "    0      line from LUGO     500.00  to  VINCENT  500.00
0
#
#   Case Number 197
 1 30060 24156  "1 "    0      line from MIDWAY   500.00  to  VINCENT  500.00
 1 30060 24156  "2 "    0      line from MIDWAY   500.00  to  VINCENT  500.00
0
#
#   Case Number 198
 1 24155 24401  "1 "    0      line from VINCENT  230.00  to  ANTELOPE 230.00
 1 30060 24156  "1 "    0      line from MIDWAY   500.00  to  VINCENT  500.00
0
#
#   Case Number 199
 1 24091 24401  "1 "    0      line from MESA CAL 230.00  to  ANTELOPE 230.00
 1 30060 24156  "1 "    0      line from MIDWAY   500.00  to  VINCENT  500.00
0
#
#   Case Number 200
 1 30060 24156  "2 "    0      line from MIDWAY   500.00  to  VINCENT  500.00
 1 30060 24156  "3 "    0      line from MIDWAY   500.00  to  VINCENT  500.00
0
#
#   Case Number 201
 1 24155 24401  "1 "    0      line from VINCENT  230.00  to  ANTELOPE 230.00
 1 30060 24156  "2 "    0      line from MIDWAY   500.00  to  VINCENT  500.00
0
#
#   Case Number 202
 1 24091 24401  "1 "    0      line from MESA CAL 230.00  to  ANTELOPE 230.00
 1 30060 24156  "2 "    0      line from MIDWAY   500.00  to  VINCENT  500.00
0
#
#   Case Number 203
 1 24155 24401  "1 "    0      line from VINCENT  230.00  to  ANTELOPE 230.00
 1 30060 24156  "3 "    0      line from MIDWAY   500.00  to  VINCENT  500.00
0
#
#   Case Number 204
 1 24025 25654  "1 "    0      line from CHINO    230.00  to  VIEJOSC  230.00
 1 24092 24138  "1 "    0      line from MIRALOMA 500.00  to  SERRANO  500.00
0
#
```

```
#   Case Number 205
 1 24025 24137  "1 "    0      line from CHINO    230.00  to  SERRANO  230.00
 1 24092 24138  "1 "    0      line from MIRALOMA 500.00  to  SERRANO  500.00
0
#
#   Case Number 206
 1 14002 24042  "1 "    0      line from MOENKOPI 500.00  to  ELDORDO  500.00
 1 24219 24041  "2 "    0      line from PISGAH   230.00  to  ELDORDO  230.00
0
#
#   Case Number 207
 1 24097 24042  "1 "    0      line from MOHAVE   500.00  to  ELDORDO  500.00
 1 24219 24041  "2 "    0      line from PISGAH   230.00  to  ELDORDO  230.00
0
#
#   Case Number 208
 1 24804 24806  "1 "    0      line from DEVERS   230.00  to  MIRAGE   230.00
 1 24801 24900  "1 "    0      line from DEVERS   500.00  to  MIDPINTS 500.00
0
#
#   Case Number 209
 1 24801 24900  "1 "    0      line from DEVERS   500.00  to  MIDPINTS 500.00
 1  8311 24804  "1 "    0      line from COACHELA 230.00  to  DEVERS   230.00
0
#
#   Case Number 210
 1 24801 24900  "1 "    0      line from DEVERS   500.00  to  MIDPINTS 500.00
 1 25406 24806  "1 "    0      line from J.HINDS  230.00  to  MIRAGE   230.00
0
#
#   Case Number 211
 1 24131 24137  "1 "    0      line from S.ONOFRE 230.00  to  SERRANO  230.00
 1 24138 24151  "1 "    0      line from SERRANO  500.00  to  VALLEYSC 500.00
0
#
#   Case Number 212
 1 24025 25654  "1 "    0      line from CHINO    230.00  to  VIEJOSC  230.00
 1 24138 24151  "1 "    0      line from SERRANO  500.00  to  VALLEYSC 500.00
0
#
#   Case Number 213
 1 24025 24137  "1 "    0      line from CHINO    230.00  to  SERRANO  230.00
 1 24138 24151  "1 "    0      line from SERRANO  500.00  to  VALLEYSC 500.00
0
#
#   Case Number 214
 1 24025 24093  "1 "    0      line from CHINO    230.00  to  MIRALOMA 230.00
 1 24025 25654  "1 "    0      line from CHINO    230.00  to  VIEJOSC  230.00
0
#
#   Case Number 215
 1 24025 25654  "1 "    0      line from CHINO    230.00  to  VIEJOSC  230.00
 1 24025 24137  "1 "    0      line from CHINO    230.00  to  SERRANO  230.00
0
#
#   Case Number 216
 1 24801 24151  "1 "    0      line from DEVERS   500.00  to  VALLEYSC 500.00
 1 24801 24900  "1 "    0      line from DEVERS   500.00  to  MIDPINTS 500.00
0
#
#   Case Number 217
 1 24901 24804  "1 "    0      line from VSTA     230.00  to  DEVERS   230.00
 1 24801 24900  "1 "    0      line from DEVERS   500.00  to  MIDPINTS 500.00
0
#
#   Case Number 218
 1 24804 24901  "2 "    0      line from DEVERS   230.00  to  VSTA     230.00
 1 24132 24804  "1 "    0      line from SANBRDNO 230.00  to  DEVERS   230.00
0
#
```

```
#   Case Number 219
 1 24804 24806  "1 "    0      line from DEVERS   230.00  to  MIRAGE   230.00
 1  8695 24806  "1 "    0      line from RAMON    230.00  to  MIRAGE   230.00
0
#
#   Case Number 220
 1 19012 24041  "2 "    0      line from MEAD S   230.00  to  ELDORDO  230.00
 1 24219 24041  "2 "    0      line from PISGAH   230.00  to  ELDORDO  230.00
0
#
#   Case Number 221
 1 24627 24041  "1 "    0      line from CIMA     230.00  to  ELDORDO  230.00
 1 19012 24041  "1 "    0      line from MEAD S   230.00  to  ELDORDO  230.00
0
#
#   Case Number 222
 1 24029 24044  "1 "    0      line from DELAMO   230.00  to  ELLIS    230.00
 1 24044 24134  "1 "    0      line from ELLIS    230.00  to  SANTIAGO 230.00
0
#
#   Case Number 223
 1 24016 24044  "1 "    0      line from BARRE    230.00  to  ELLIS    230.00
 1 24044 24072  "1 "    0      line from ELLIS    230.00  to  JOHANNA  230.00
0
#
#   Case Number 224
 1 24061 24065  "1 "    0      line from HARBOR   230.00  to  HINSON   230.00
 1 24061 24077  "1 "    0      line from HARBOR   230.00  to  LBEACH   230.00
21
0
#
#   Case Number 225
 1 24015 24065  "2 "    0      line from ARCO SC  230.00  to  HINSON   230.00
 1 24065 24029  "1 "    0      line from HINSON   230.00  to  DELAMO   230.00
0
#
#   Case Number 226
 1 24086 24092  "3 "    0      line from LUGO     500.00  to  MIRALOMA 500.00
 1 24086 24097  "1 "    0      line from LUGO     500.00  to  MOHAVE   500.00
0
#
#   Case Number 227
 1 24042 24086  "1 "    0      line from ELDORDO  500.00  to  LUGO     500.00
 1 24086 24092  "2 "    0      line from LUGO     500.00  to  MIRALOMA 500.00
0
#
#   Case Number 228
 1 24236 24138  "1 "    0      line from RANCHVST 500.00  to  SERRANO  500.00
 1 24086 24156  "1 "    0      line from LUGO     500.00  to  VINCENT  500.00
0
#
#   Case Number 229
 1 24086 24156  "2 "    0      line from LUGO     500.00  to  VINCENT  500.00
 1 24086 26105  "1 "    0      line from LUGO     500.00  to  VICTORVL 500.00
0
#
#   Case Number 230
 1 24601 24085  "2 "    0      line from VICTOR   230.00  to  LUGO     230.00
 1 24219 24085  "2 "    0      line from PISGAH   230.00  to  LUGO     230.00
0
#
#   Case Number 231
 1 24701 24085  "1 "    0      line from KRAMER   230.00  to  LUGO     230.00
 1 24219 24085  "1 "    0      line from PISGAH   230.00  to  LUGO     230.00
0
#
#   Case Number 232
 1 24025 24093  "2 "    0      line from CHINO    230.00  to  MIRALOMA 230.00
 1 24093 24158  "1 "    0      line from MIRALOMA 230.00  to  WALNUT   230.00
0
```

```
#
#   Case Number 233
 1 24025 25656  "3 "    0      line from CHINO    230.00  to  MIRALOMA 230.00
 1 25656 24100  "1 "    0      line from MIRALOMA 230.00  to  OLINDA   230.00
0
#
#   Case Number 234
 1 24056 24237  "1 "    0      line from ETIWANDA 230.00  to  RANCHVST 230.00
 1 24237 24112  "1 "    0      line from RANCHVST 230.00  to  PADUA    230.00
0
#
#   Case Number 235
 1 24099 24106  "3 "    0      line from MOORPARK 230.00  to  ORMOND   230.00
 1 24114 24099  "1 "    0      line from PARDEE   230.00  to  MOORPARK 230.00
0
#
#   Case Number 236
 1 24099 24106  "4 "    0      line from MOORPARK 230.00  to  ORMOND   230.00
 1 24128 24099  "2 "    0      line from S.CLARA  230.00  to  MOORPARK 230.00
0
#
#   Case Number 237
 1 25656 24100  "1 "    0      line from MIRALOMA 230.00  to  OLINDA   230.00
 1 24100 24158  "1 "    0      line from OLINDA   230.00  to  WALNUT   230.00
0
#
#   Case Number 238
 1 24076 24126  "1 "    0      line from LAGUBELL 230.00  to  RIOHONDO 230.00
 1 24126 24155  "2 "    0      line from RIOHONDO 230.00  to  VINCENT  230.00
0
#
#   Case Number 239
 1 24056 24132  "1 "    0      line from ETIWANDA 230.00  to  SANBRDNO 230.00
 1 24132 24804  "1 "    0      line from SANBRDNO 230.00  to  DEVERS   230.00
0
#
#   Case Number 240
 1 24128 24058  "1 "    0      line from S.CLARA  230.00  to  GOLETA   230.00
 1 24128 24099  "1 "    0      line from S.CLARA  230.00  to  MOORPARK 230.00
0
#
#   Case Number 241
 1 24128 24058  "2 "    0      line from S.CLARA  230.00  to  GOLETA   230.00
 1 24128 24099  "2 "    0      line from S.CLARA  230.00  to  MOORPARK 230.00
0
#
#   Case Number 242
 1 24044 24134  "1 "    0      line from ELLIS    230.00  to  SANTIAGO 230.00
 1 24131 24134  "2 "    0      line from S.ONOFRE 230.00  to  SANTIAGO 230.00
0
#
#   Case Number 243
 1 24036 24114  "1 "    0      line from EAGLROCK 230.00  to  PARDEE   230.00
 1 24114 24115  "1 "    0      line from PARDEE   230.00  to  PASTORIA 230.00
0
#
#   Case Number 244
 1 24114 24099  "3 "    0      line from PARDEE   230.00  to  MOORPARK 230.00
 1 24114 24147  "1 "    0      line from PARDEE   230.00  to  SYLMAR S 230.00
0
#
#   Case Number 245
 1 25201 24137  "2 "    0      line from LEWIS    230.00  to  SERRANO  230.00
 1 24131 24137  "1 "    0      line from S.ONOFRE 230.00  to  SERRANO  230.00
0
#
#   Case Number 246
 1 24025 24137  "1 "    0      line from CHINO    230.00  to  SERRANO  230.00
 1 25201 24137  "2 "    0      line from LEWIS    230.00  to  SERRANO  230.00
0
```

```
#
#   Case Number 247
 1 24025 24137  "1 "    0      line from CHINO    230.00  to  SERRANO  230.00
 1 24137 24154  "2 "    0      line from SERRANO  230.00  to  VILLA PK 230.00
0
#
#   Case Number 248
 1 25201 24137  "1 "    0      line from LEWIS    230.00  to  SERRANO  230.00
 1 24137 24154  "1 "    0      line from SERRANO  230.00  to  VILLA PK 230.00
0
#
#   Case Number 249
 1 24131 24137  "1 "    0      line from S.ONOFRE 230.00  to  SERRANO  230.00
 1 24137 24154  "1 "    0      line from SERRANO  230.00  to  VILLA PK 230.00
0
#
#   Case Number 250
 1 24114 24147  "1 "    0      line from PARDEE   230.00  to  SYLMAR S 230.00
 1 24147 24059  "1 "    0      line from SYLMAR S 230.00  to  GOULD    230.00
0
#
#   Case Number 251
 1 24036 24147  "1 "    0      line from EAGLROCK 230.00  to  SYLMAR S 230.00
 1 24114 24147  "2 "    0      line from PARDEE   230.00  to  SYLMAR S 230.00
0
#
#   Case Number 252
 1 24086 24156  "2 "    0      line from LUGO     500.00  to  VINCENT  500.00
 1 30060 24156  "3 "    0      line from MIDWAY   500.00  to  VINCENT  500.00
0
#
#   Case Number 253
 1 24155 24128  "1 "    0      line from VINCENT  230.00  to  S.CLARA  230.00
 1 24155 24401  "1 "    0      line from VINCENT  230.00  to  ANTELOPE 230.00
0
#
#   Case Number 254
 1 24114 24155  "1 "    0      line from PARDEE   230.00  to  VINCENT  230.00
 1 24155 24091  "1 "    0      line from VINCENT  230.00  to  MESA CAL 230.00
0
#
#   Case Number 255
 1 25201 24137  "1 "    0      line from LEWIS    230.00  to  SERRANO  230.00
 1 25201 24154  "1 "    0      line from LEWIS    230.00  to  VILLA PK 230.00
0
#
#   Case Number 256
 1 24016 25201  "1 "    0      line from BARRE    230.00  to  LEWIS    230.00
 1 25201 24137  "2 "    0      line from LEWIS    230.00  to  SERRANO  230.00
0
#
#   Case Number 257
 1 24016 24154  "1 "    0      line from BARRE    230.00  to  VILLA PK 230.00
 1 24137 24154  "1 "    0      line from SERRANO  230.00  to  VILLA PK 230.00
0
#
##################################################################################################
#
# PROJECT CONTINGENCY
#
##################################################################################################
#
#   Case Number 258
1  "LAGUBELL 230.00"  "VPWRPLNT 230.00"  "1"  0
1  "LAGUBELL 230.00"  "VPWRPLNT 230.00"  "2"  0
21
0
#
-1
# EOF
```

Appendix D

2008 Heavy Summer
And
Light Spring
Transient Stability Plots

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2008 Heavy Summer – Category "B" Contingencies

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Plot 3. Three-phase fault at the VPP 230 kV bus followed by loss of the VPP – Laguna Bell 230 kV #1 circuit.
Plot 4. Three-phase fault at the Laguna Bell 230 kV bus followed by loss of the Laguna Bell – Rio Hondo 230 kV #1 circuit.
Plot 5. Three-phase fault at the Laguna Bell 230 kV bus followed by loss of the Laguna Bell – Goodrich 230 kV #1 circuit.
Plot 6. Three-phase fault at the Laguna Bell 230 kV bus followed by loss of the Laguna Bell – Del Amo 230 kV #1 circuit.
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2008 Heavy Summer – Category "C" Contingencies

Plot 15. Pre-fault outage of the Laguna Bell – Goodrich 230 kV circuit, then a three-phase fault at the Laguna Bell 230 kV bus followed by loss of the Laguna Bell – Rio Hondo 230 kV circuit.
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Plot 17. Three-phase fault at the Mesa Cal 230 kV bus followed by loss of the Mesa Cal – Antelope 230 kV and Mesa Cal – Rio Hondo 230 kV transmission lines.
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Plot 20. Three-phase fault at the Serrano 500 kV bus followed by loss of the Rancho Vista – Serrano 500 kV and Mira Loma – Serrano 500 kV transmission lines.

2008 Heavy Summer – Category "D" Contingency

Plot 21. Pre-fault outage of the Laguna Bell – Rio Hondo 230 kV circuit, then three-phase fault at the VPP 230 kV bus followed by loss of the Laguna Bell – Del Amo 230 kV and the Laguna Bell – La Fresa 230 kV transmission lines.

2008 Light Spring – Category "B" Contingencies

Plot 22. Full load rejection of the VPP.
Plot 23. Three-phase fault at the VPP 230 kV bus followed by loss of the VPP STG.
Plot 24. Three-phase fault at the VPP 230 kV bus followed by loss of the VPP – Laguna Bell 230 kV #1 circuit.
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Plot 29. Three-phase fault at the Harbor Gen 230 kV bus followed by loss of the Long Beach – Harbor Gen 230 kV circuit.
Plot 30. Three-phase fault at the Lighthipe 230 kV bus followed by loss of the Long Beach – Lighthipe 230 kV circuit.
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Plot 32. Three-phase fault at the Devers 500 kV bus followed by loss of the Midpoint – Devers 500 kV #1 circuit.
Plot 33. Three-phase fault at the Midpoint 500 kV bus followed by loss of the Midpoint – Harquahala 500 kV circuit.
Plot 34. Three-phase fault at the Midpoint 500 kV bus followed by loss of the Midpoint – Palo Verde 500 kV circuit.
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2008 Light Spring – Category "C" Contingencies

Plot 36. Pre-fault outage of the Laguna Bell – Goodrich 230 kV circuit, then a three-phase fault at the Laguna Bell 230 kV bus followed by loss of the Laguna Bell – Rio Hondo 230 kV circuit.
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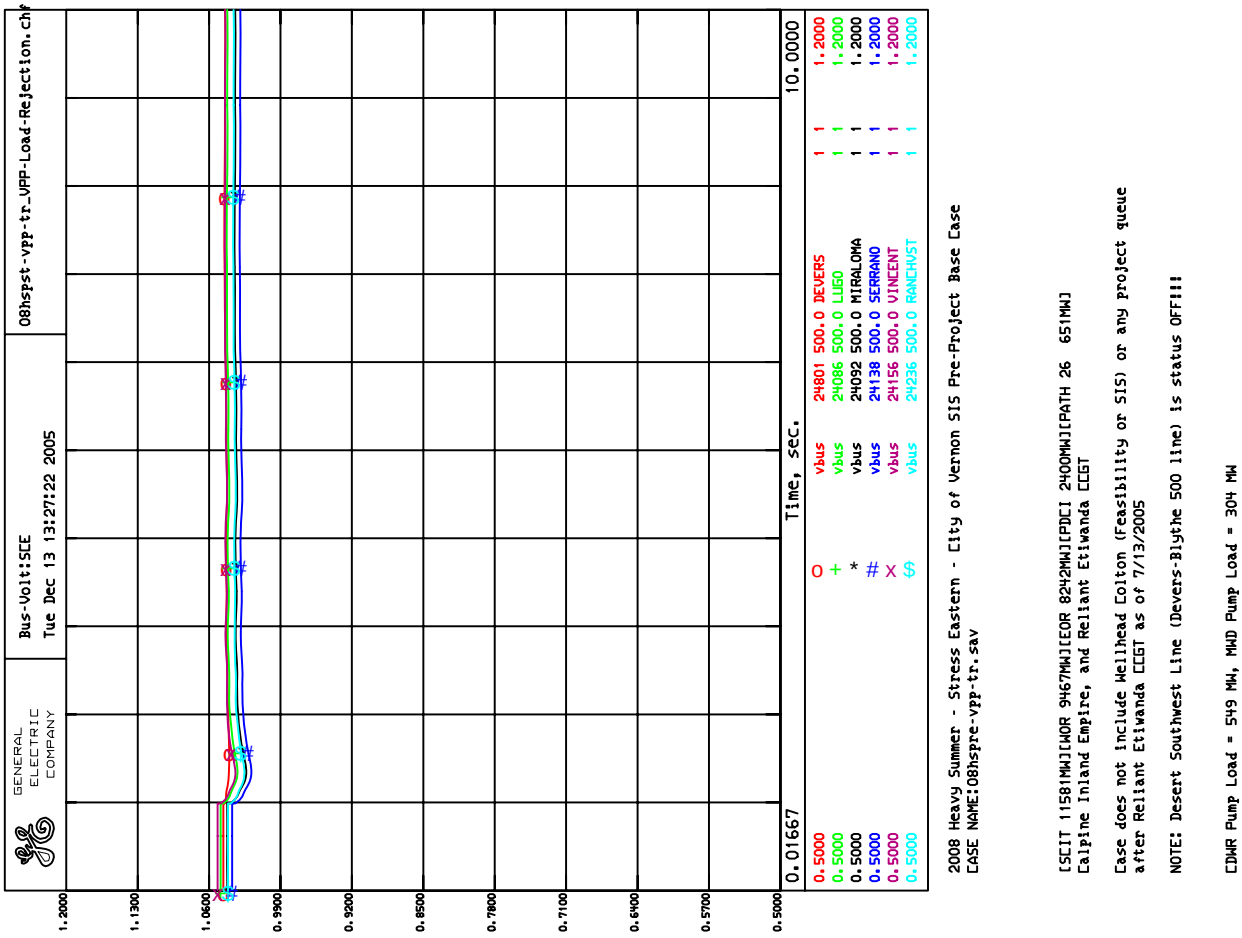
Plot 38. Three-phase fault at the Mesa Cal 230 kV bus followed by loss of the Mesa Cal – Antelope 230 kV and Mesa Cal – Rio Hondo 230 kV transmission lines.
Plot 39. Three-phase fault at the Long Beach 230 kV bus followed by loss of the Long Beach – Lighthipe 230 kV and Harbor Gen – Hinson 230 kV transmission lines.
Plot 40. Three-phase fault at the Rancho Vista 500 kV bus followed by loss of the Rancho Vista – Serrano 500 kV and Mira Loma – Walnut 230 kV transmission lines.
Plot 41. Three-phase fault at the Serrano 500 kV bus followed by loss of the Rancho Vista – Serrano 500 kV and Mira Loma – Serrano 500 kV transmission lines.

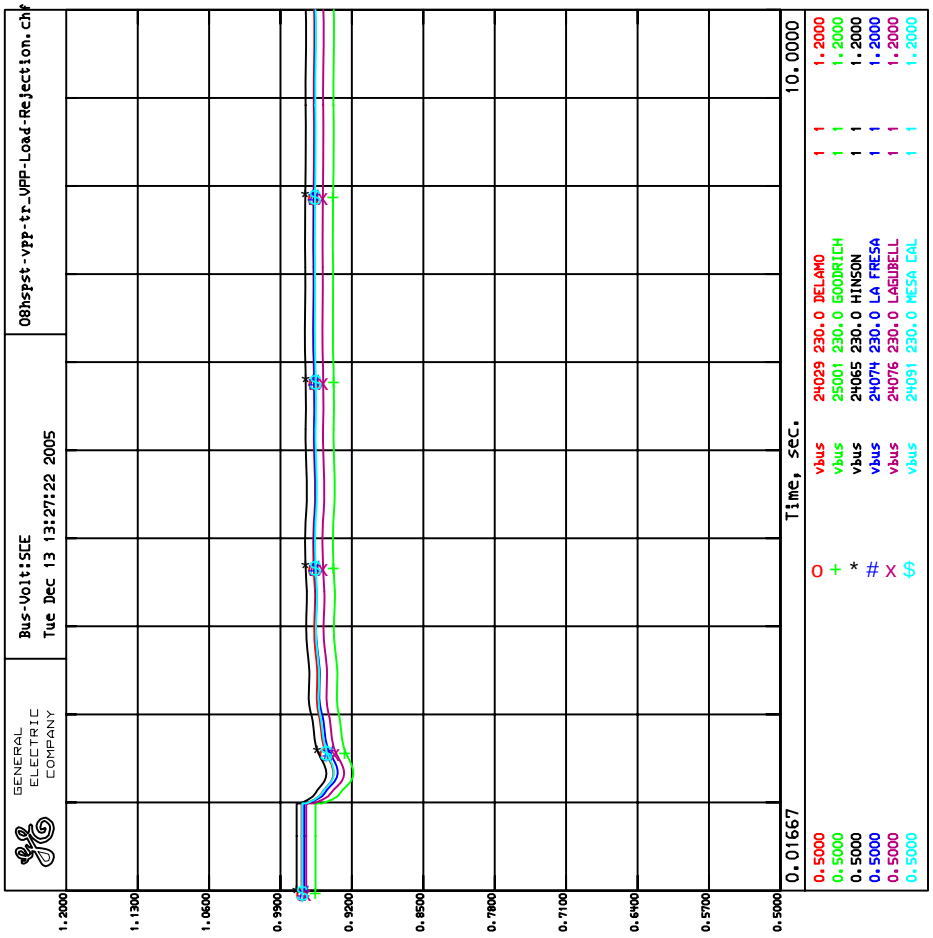
2008 Light Spring – Category "D" Contingency

Plot 42. Pre-fault outage of the Laguna Bell – Rio Hondo 230 kV circuit, then three-phase fault at the VPP 230 kV bus followed by loss of the Laguna Bell – Del Amo 230 kV and the Laguna Bell – La Fresa 230 kV transmission lines.

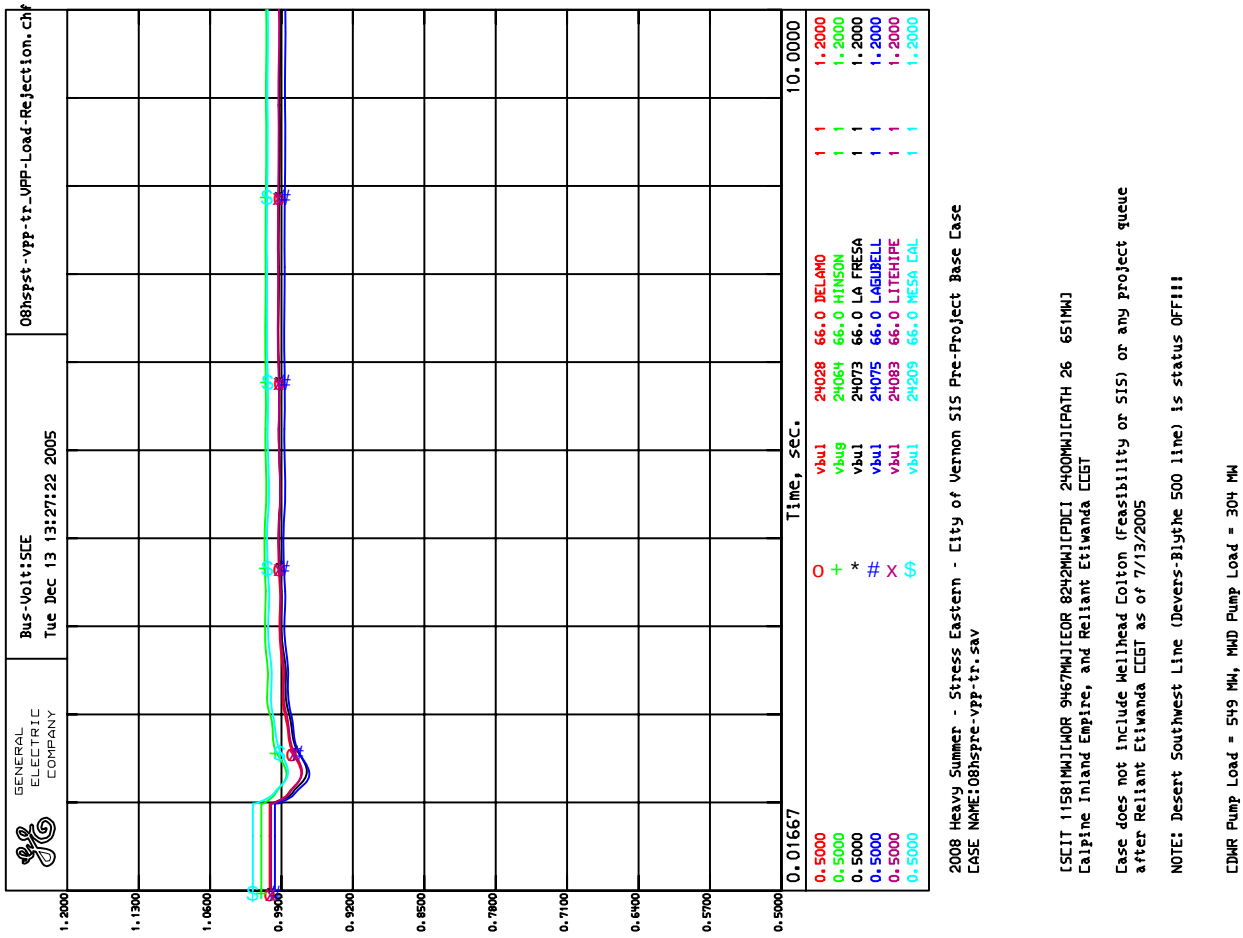
Plot 1 - 1: Full load rejection of the VPP.



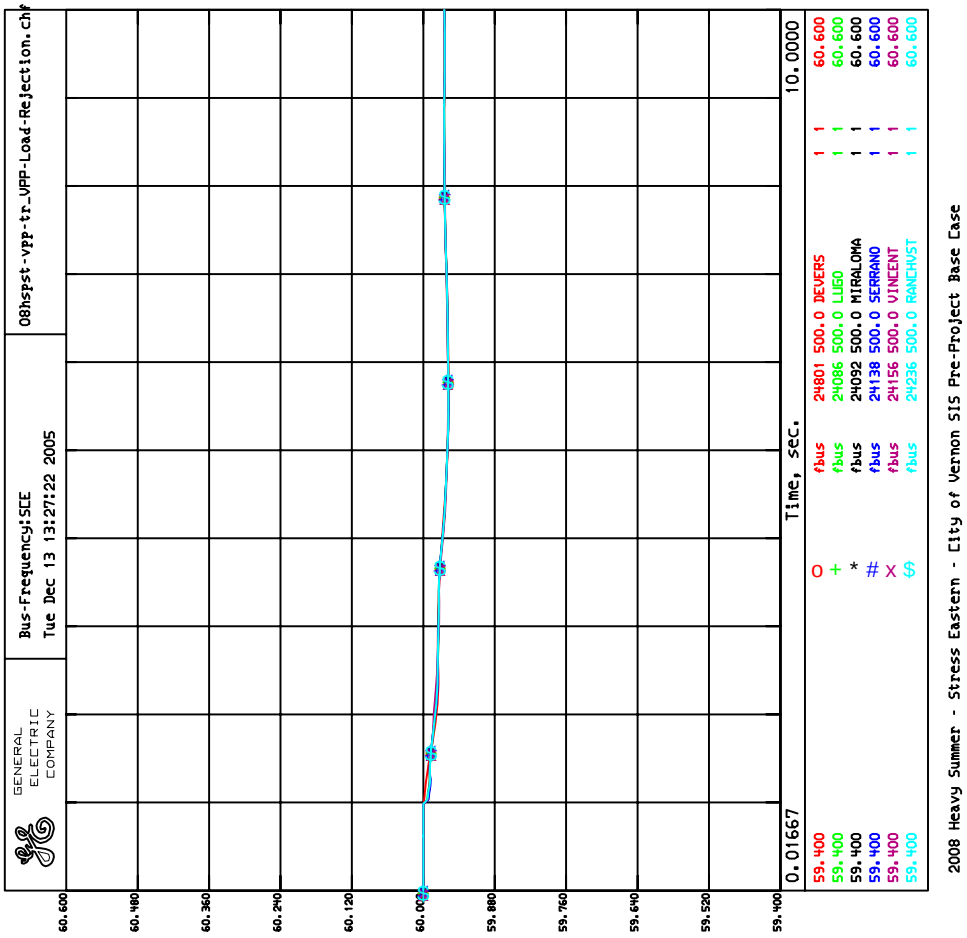
Plot 1 - 2: Full load rejection of the VPP.



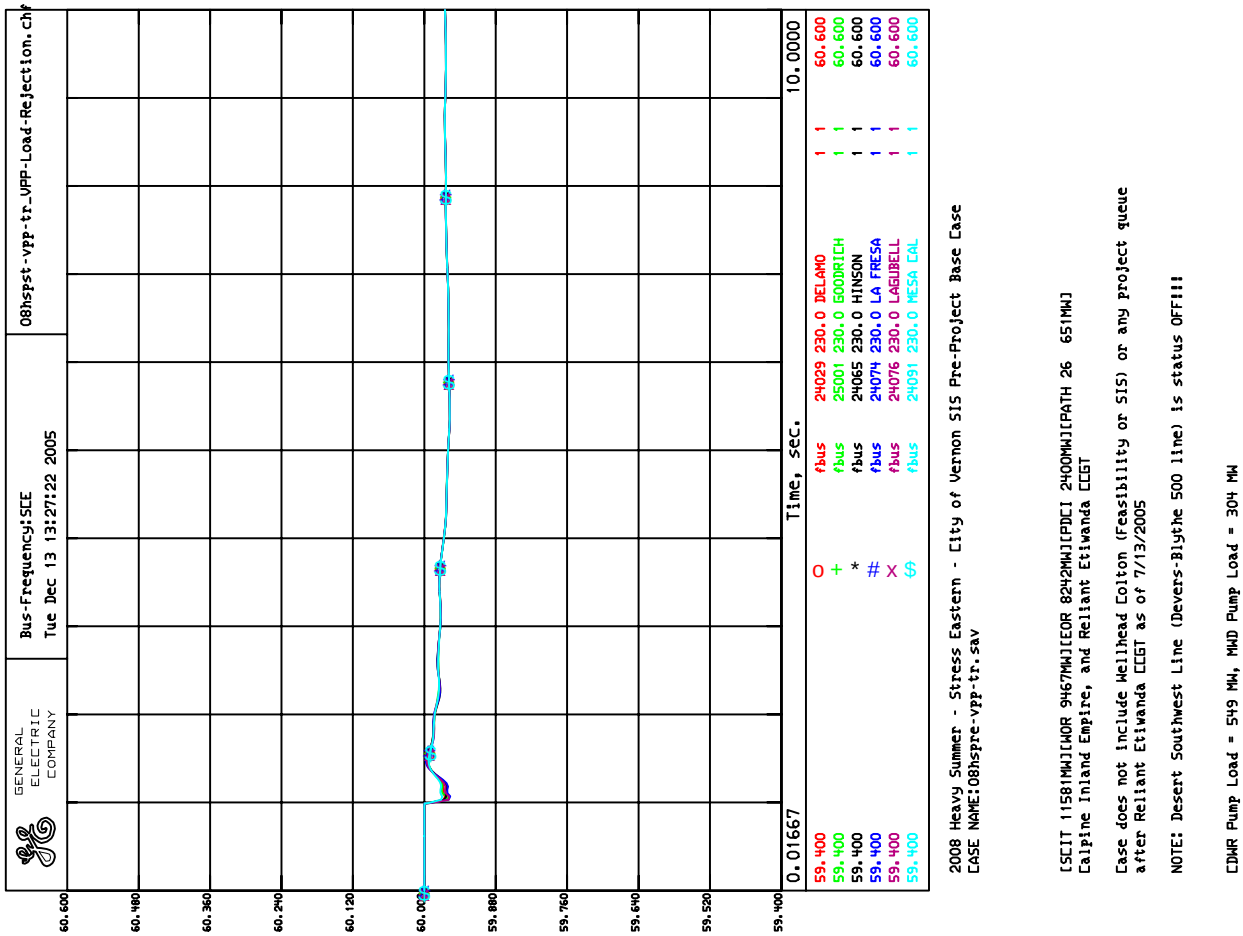
Plot 1 - 3: Full load rejection of the VPP.



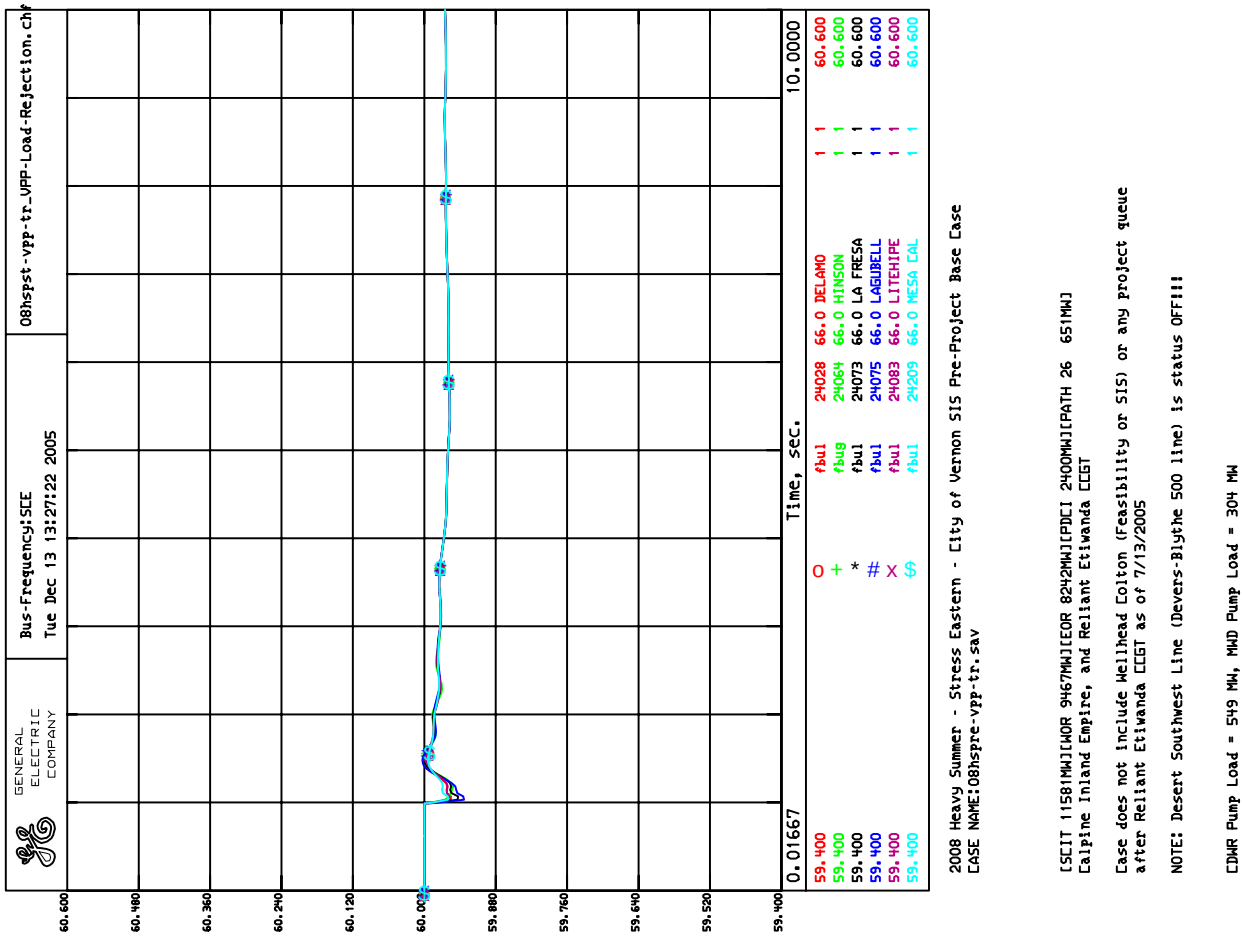
Plot 1 - 4: Full load rejection of the VPP.



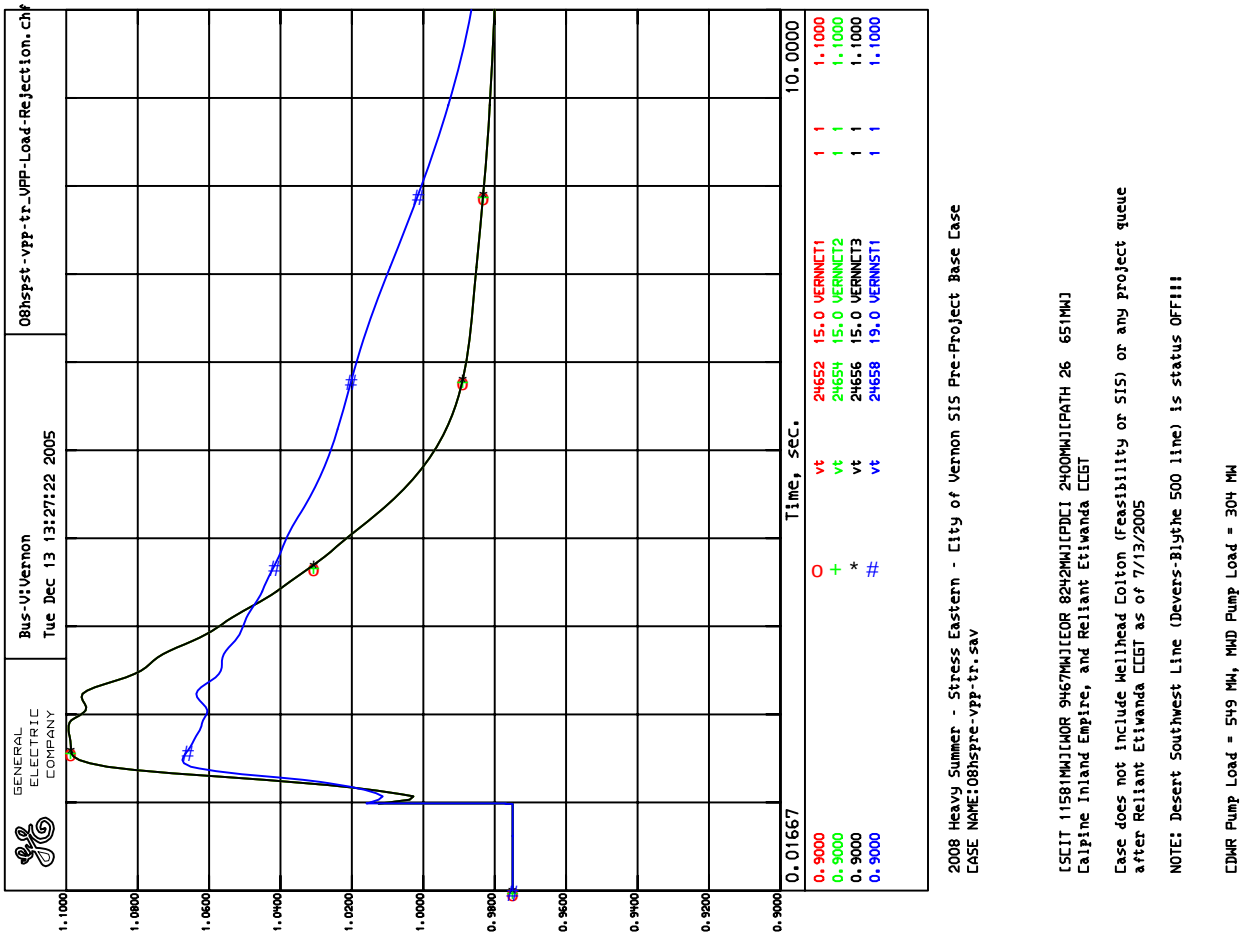
Plot 1 - 5: Full load rejection of the VPP.



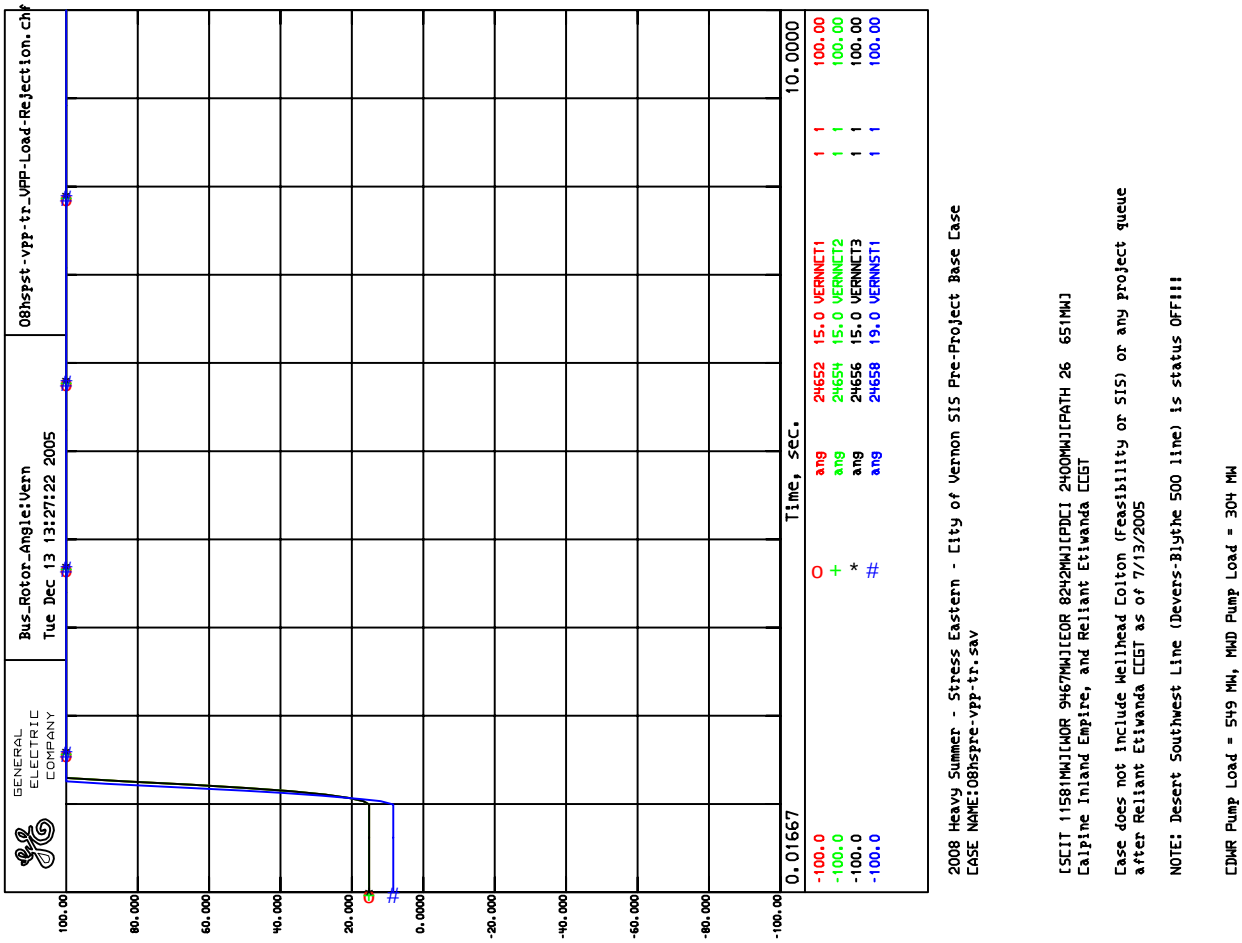
Plot 1 - 6: Full load rejection of the VPP.



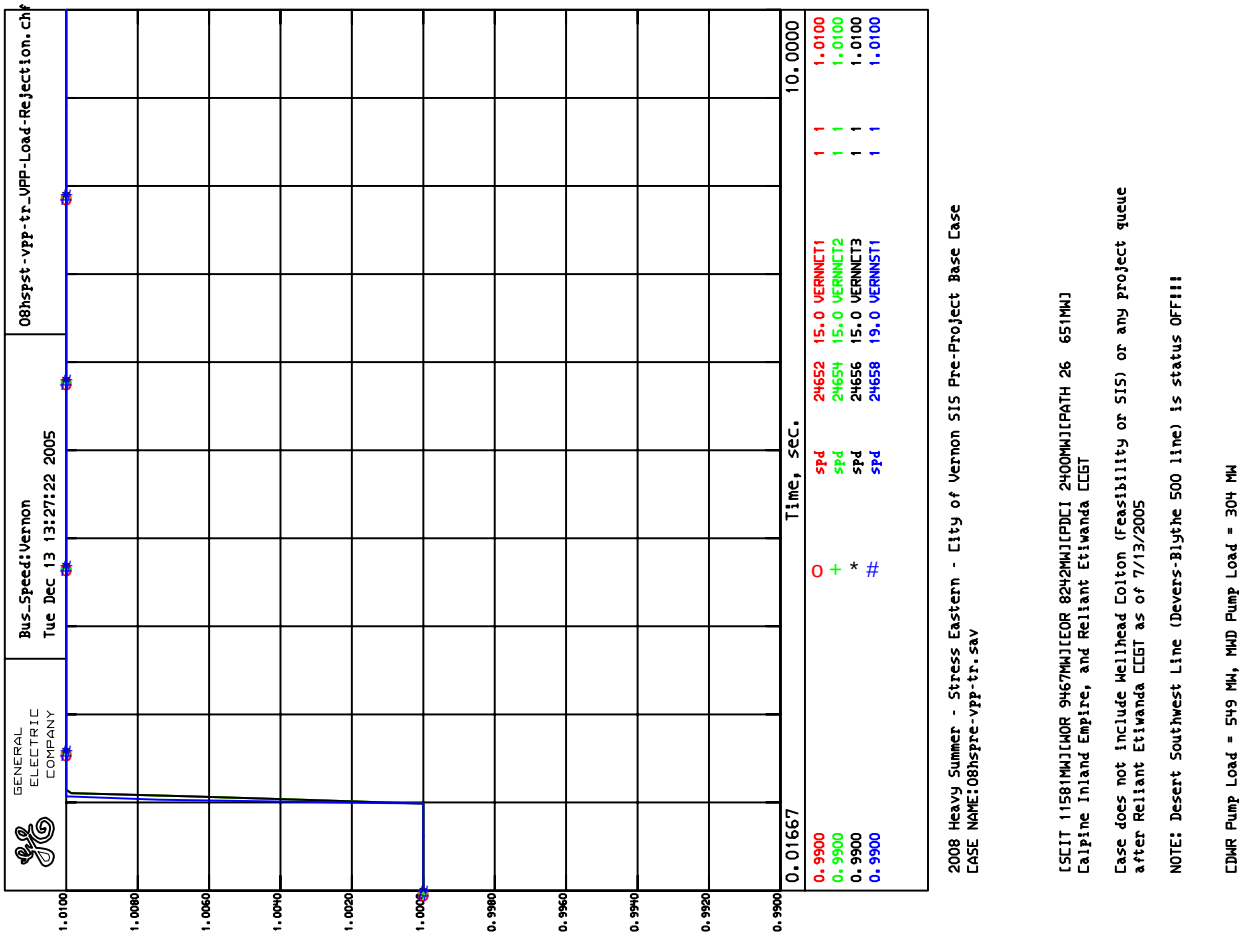
Plot 1 - 7: Full load rejection of the VPP.



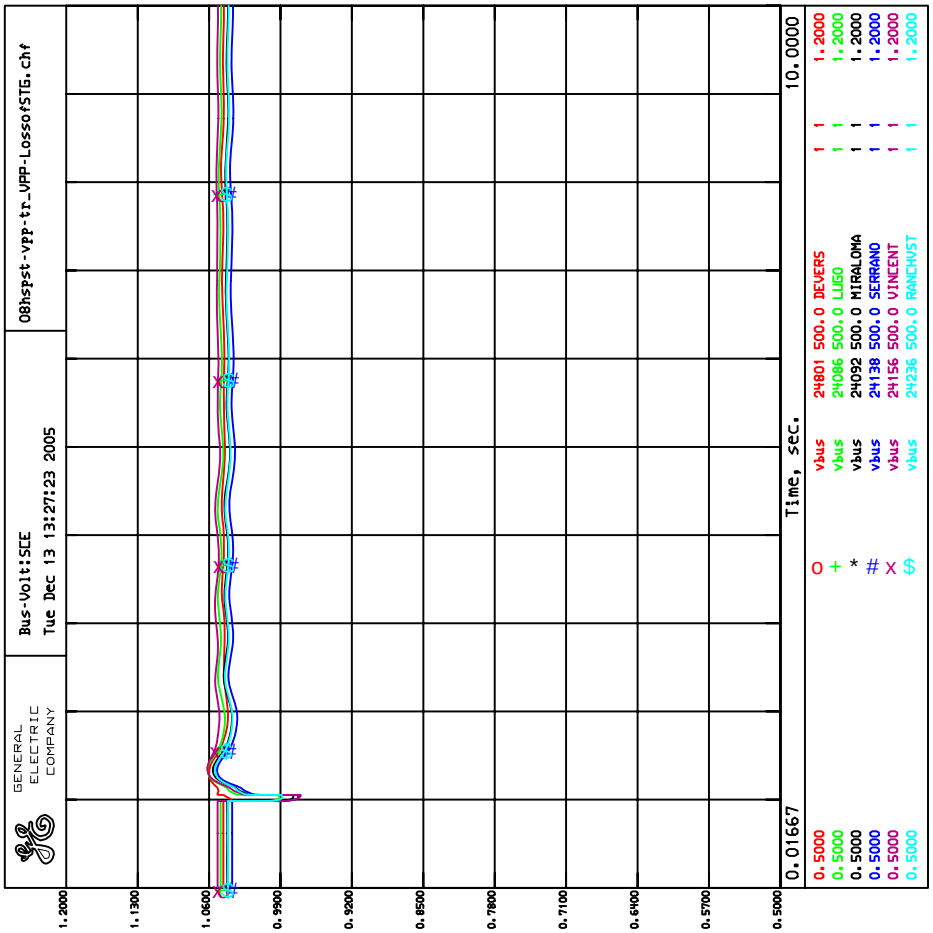
Plot 1 - 8: Full load rejection of the VPP.



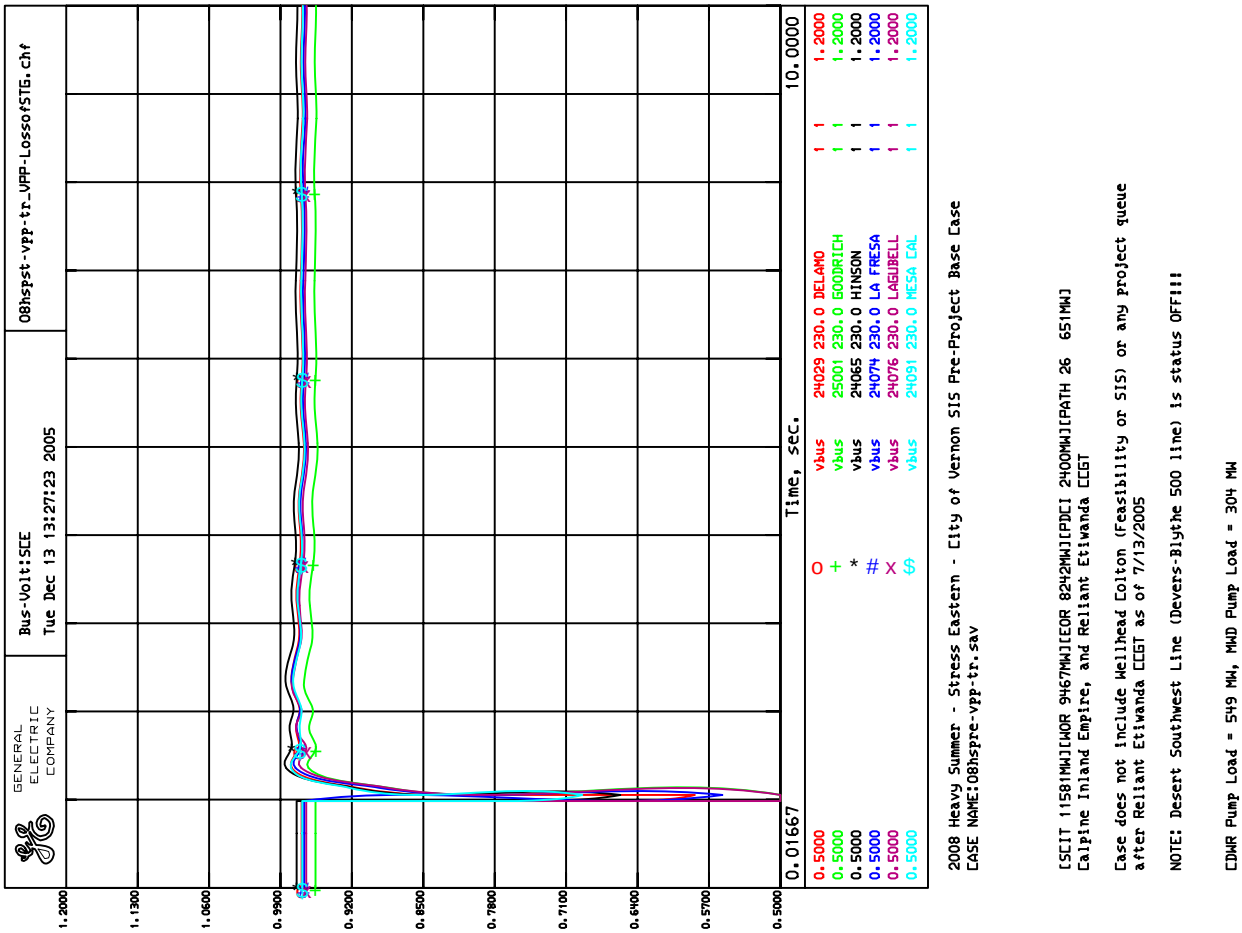
Plot 1 - 9: Full load rejection of the VPP.



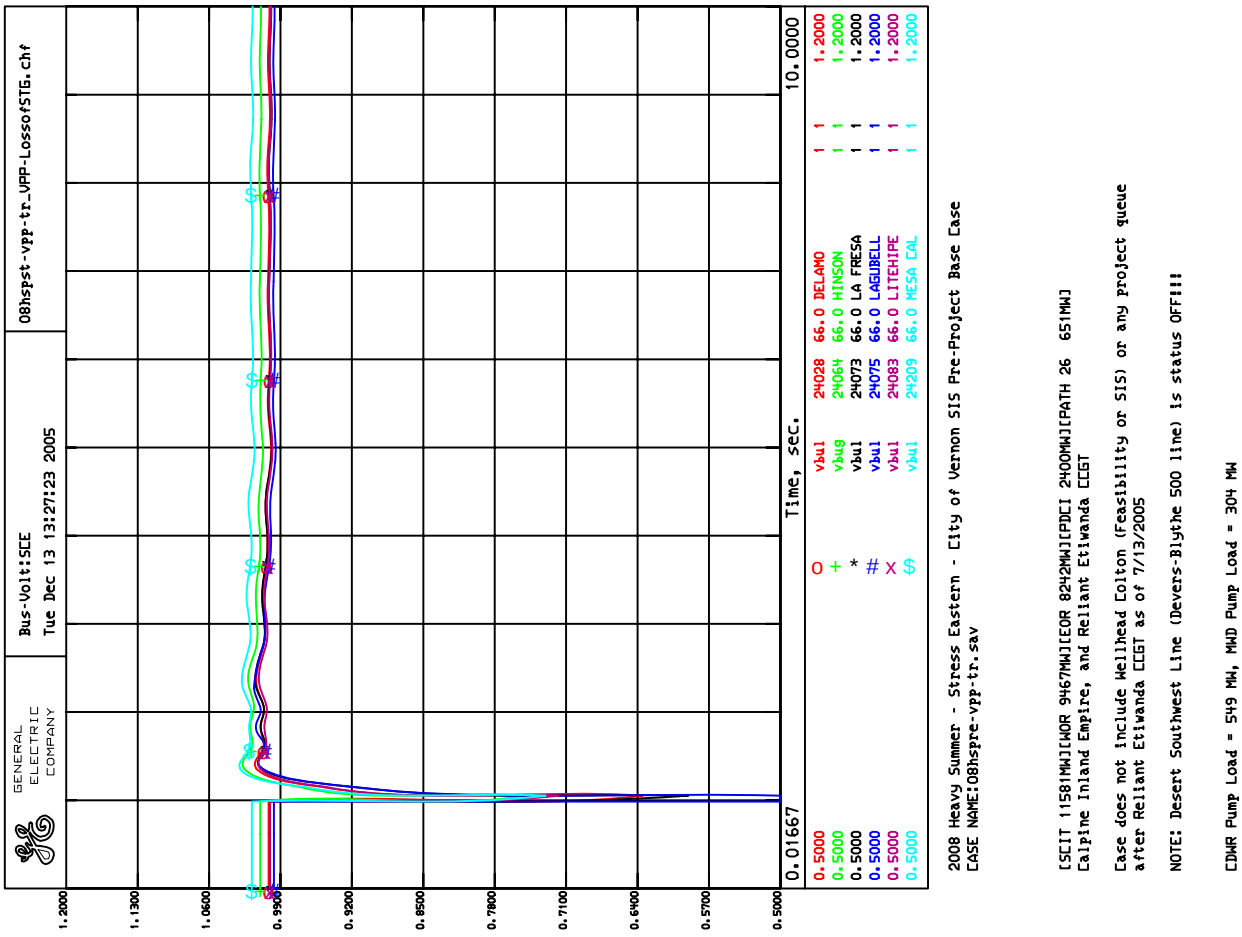
Plot 2 - 1: Three-phase fault at the VPP 230 kV bus followed by loss of the VPP STG.



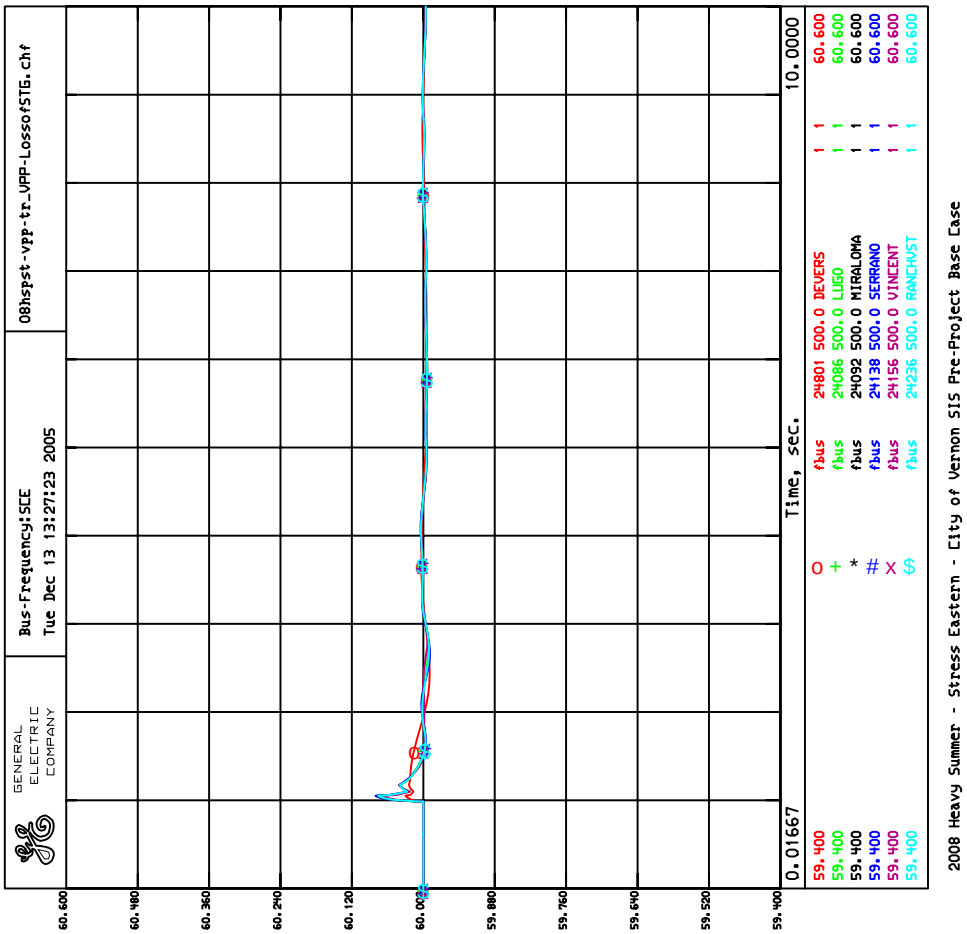
Plot 2 - 2: Three-phase fault at the VPP 230 kV bus followed by loss of the VPP STG.



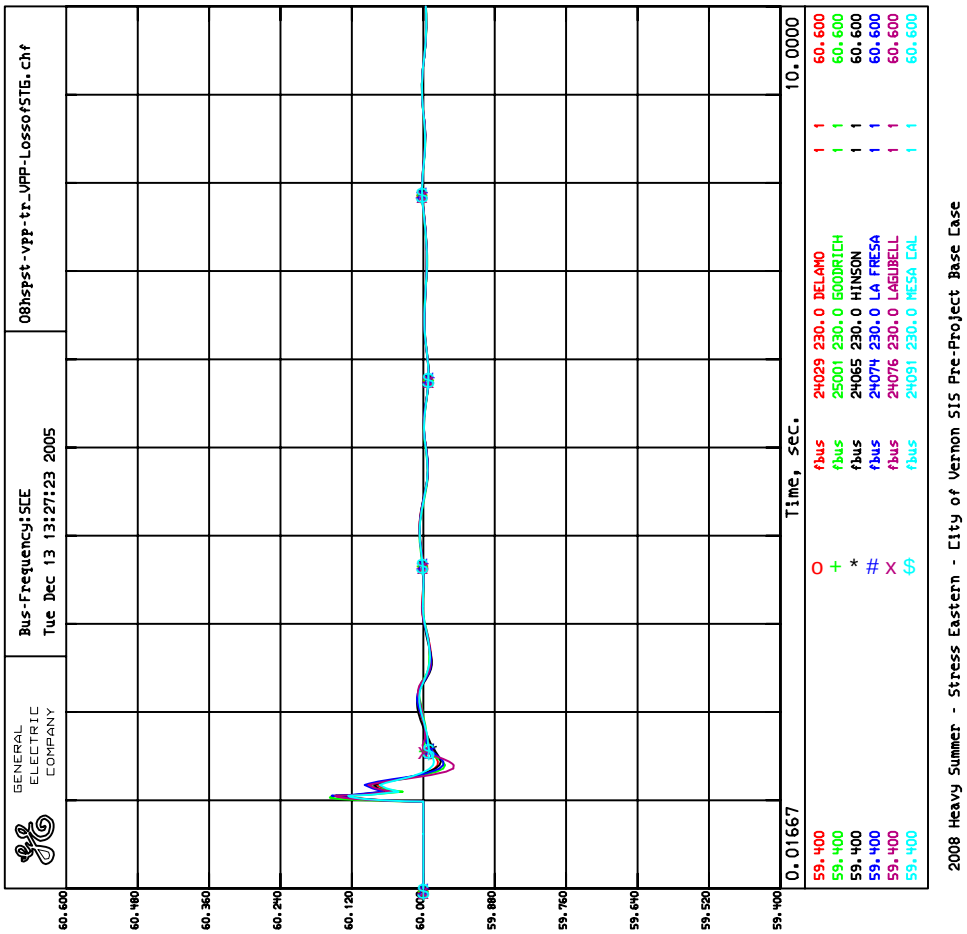
Plot 2 - 3: Three-phase fault at the VPP 230 kV bus followed by loss of the VPP STG.



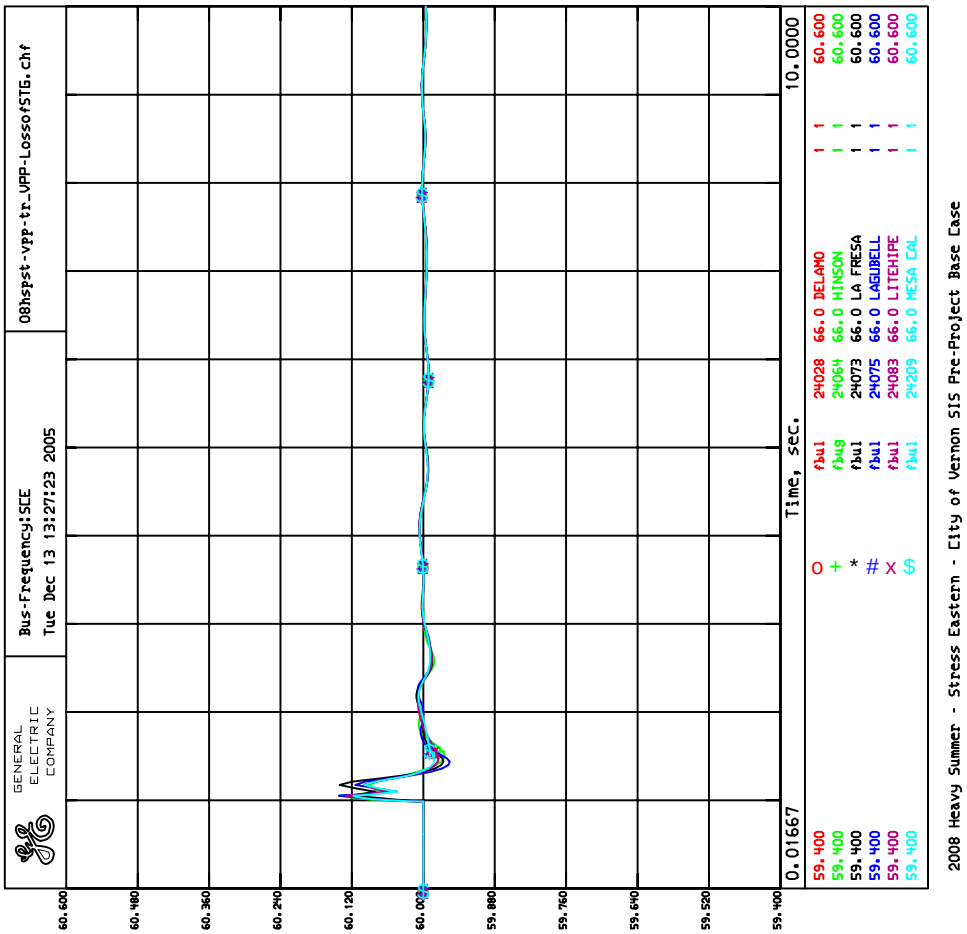
Plot 2 - 4: Three-phase fault at the VPP 230 kV bus followed by loss of the VPP STG.



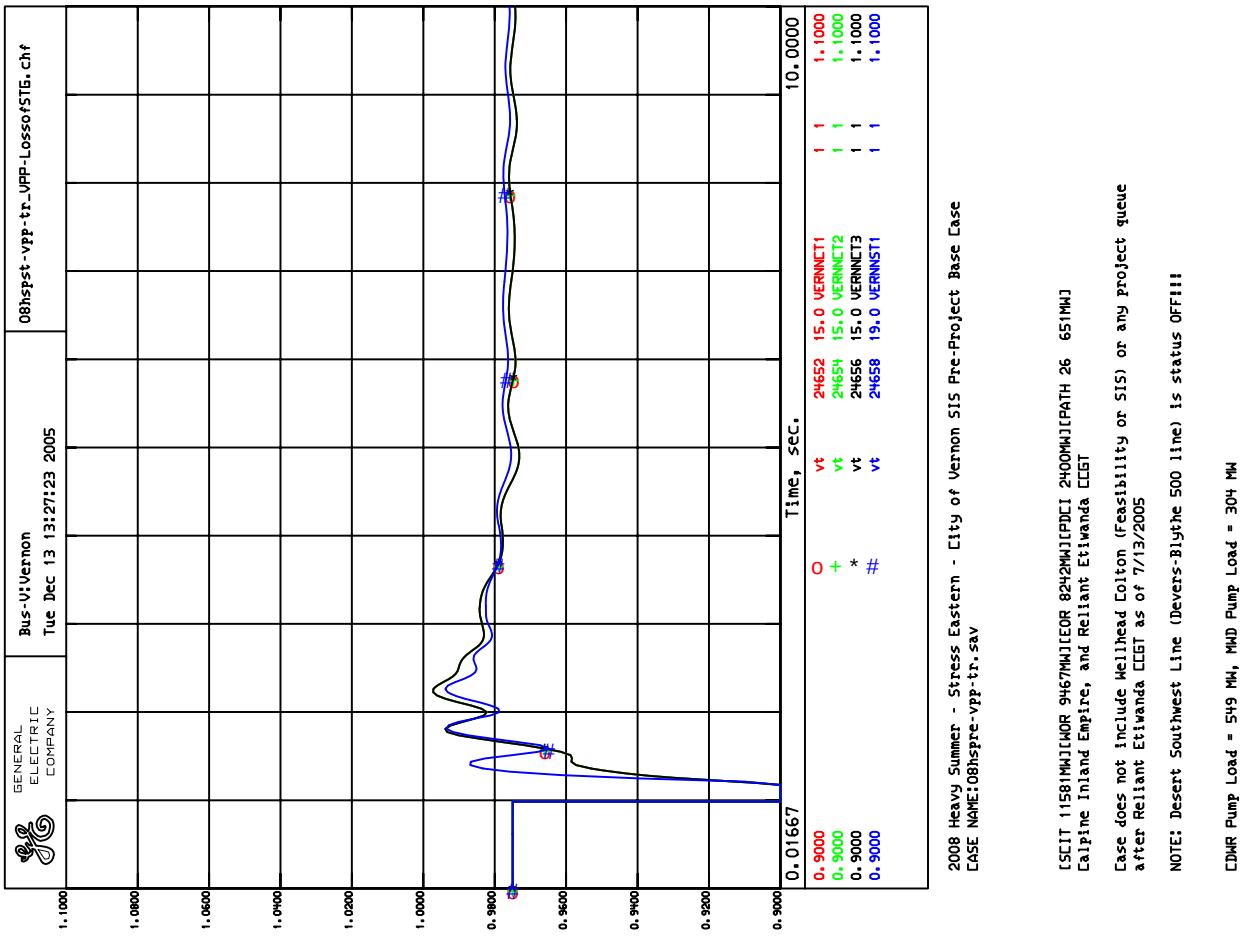
Plot 2 – 5: Three-phase fault at the VPP 230 kV bus followed by loss of the VPP STG.



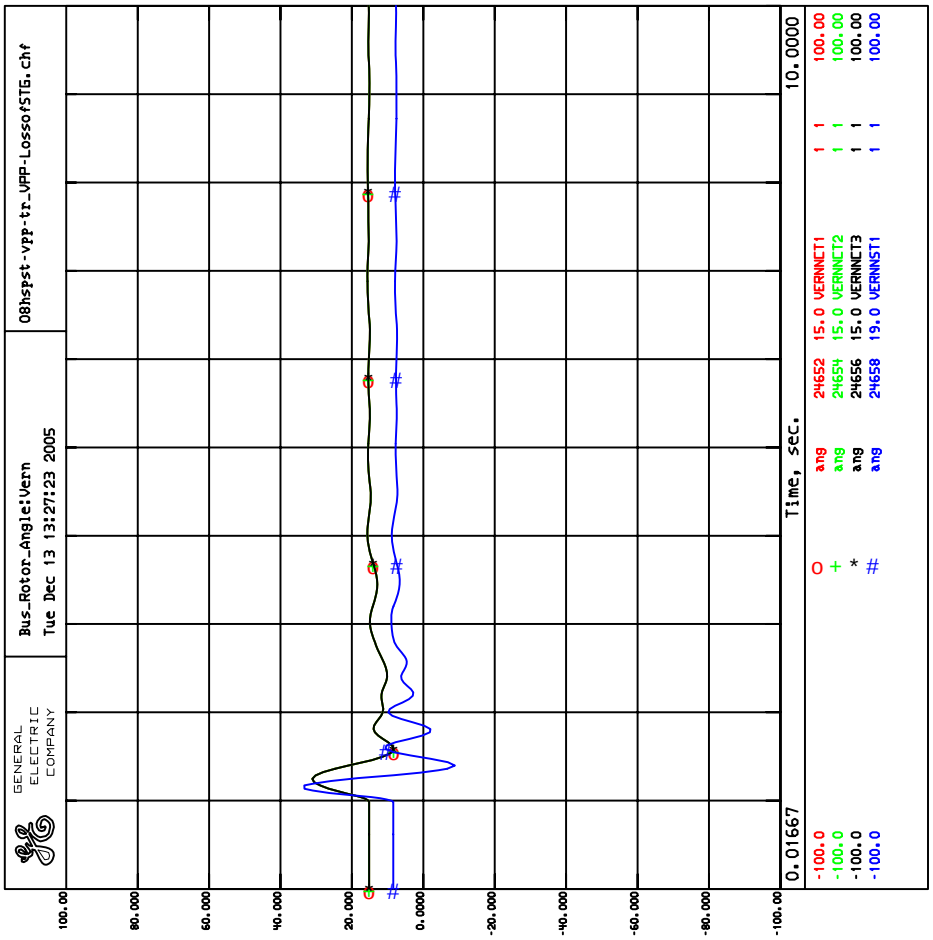
Plot 2 - 6: Three-phase fault at the VPP 230 kV bus followed by loss of the VPP STG.



Plot 2 - 7: Three-phase fault at the VPP 230 kV bus followed by loss of the VPP STG.



Plot 2 - 8: Three-phase fault at the VPP 230 kV bus followed by loss of the VPP STG.



2008 Heavy Summer - Stress Eastern - City of Vernon SIS Pre-Project Base Case
CASE NAME:08hspre-vpp-tr.sav

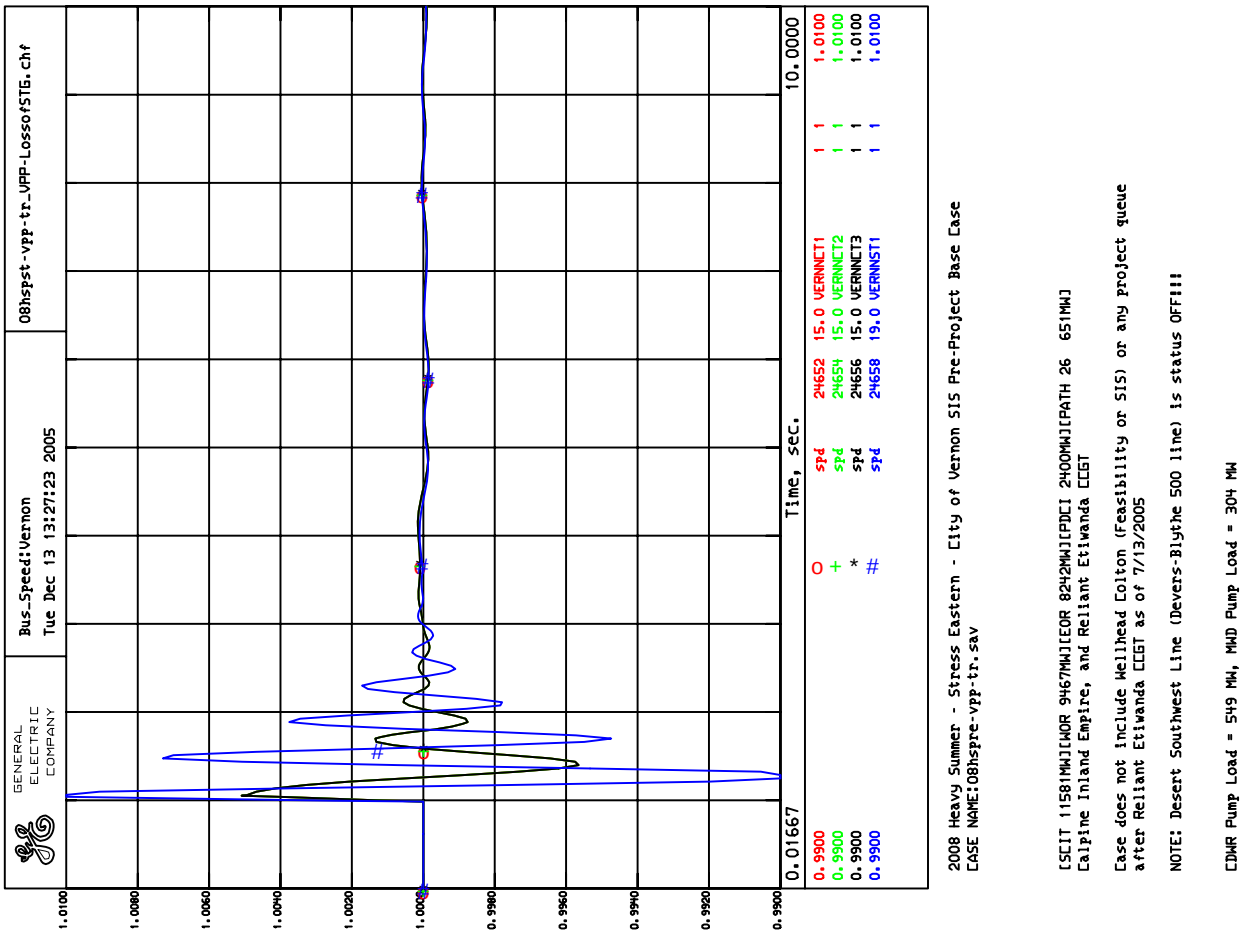
[SCIT 11581MWJICHOR 9467MWJIEOR 8242MWJICPDCI 2400MWJIPATH 26 651MWJ
Calpine Inland Empire, and Reliant Etiwanda CCGT

Case does not include Wellhead Colton (Feasibility or SIS) or any project queue
after Reliant Etiwanda CCGT as of 7/13/2005

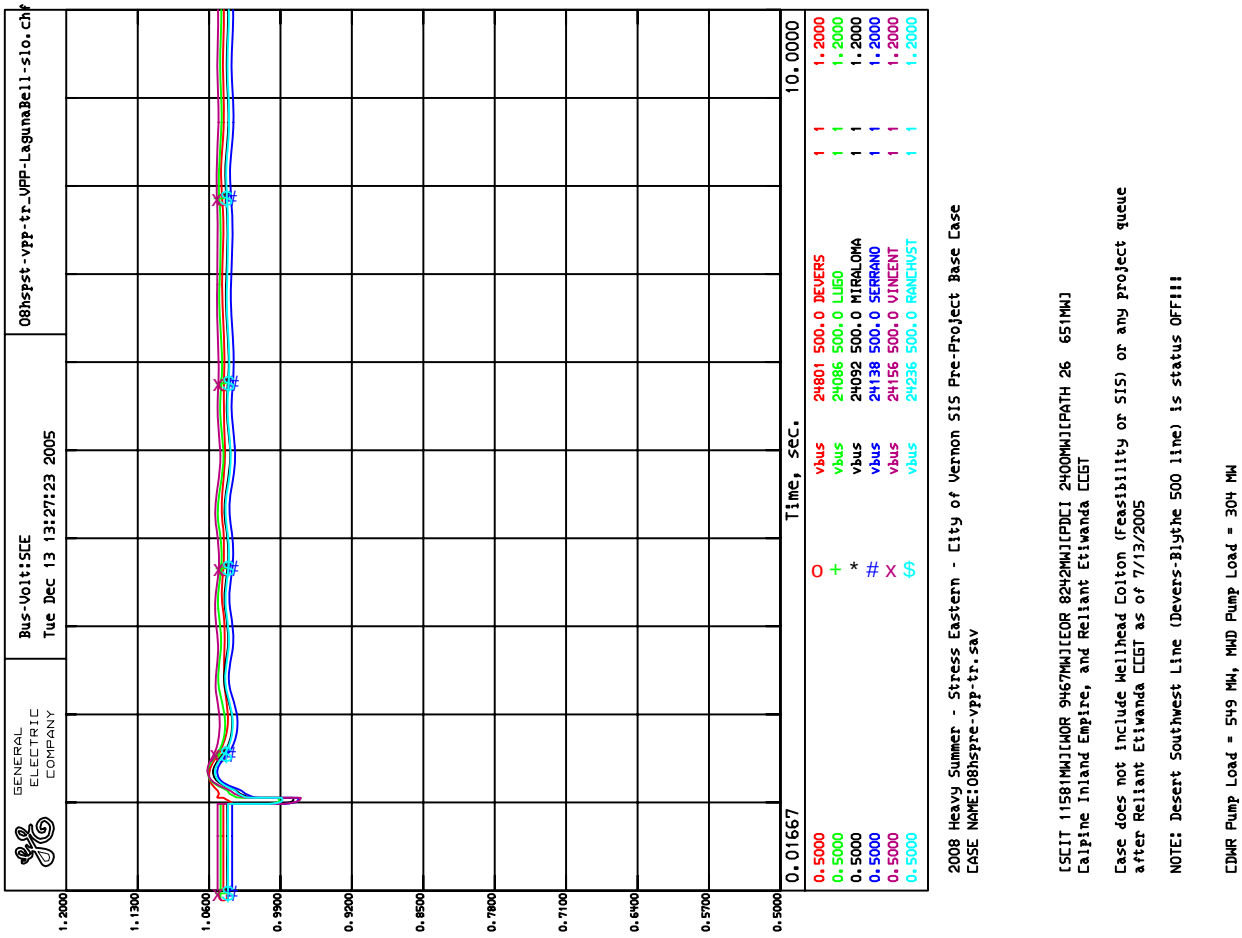
NOTE: Desert Southwest Line (Devers-Blythe 500 line) is status OFF!!!

CDWR Pump Load = 549 MW, MWD Pump Load = 304 MW

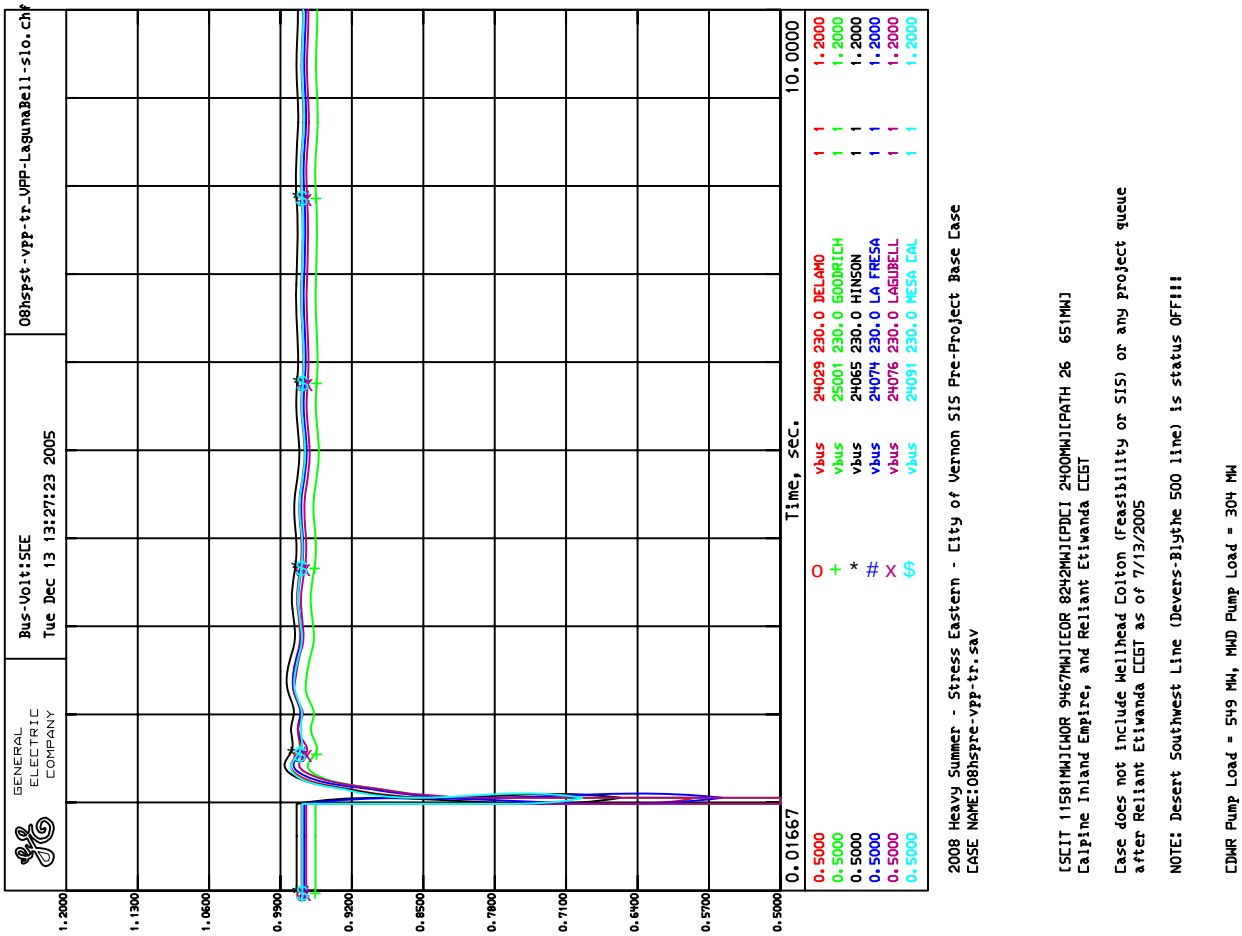
Plot 2 - 9: Three-phase fault at the VPP 230 kV bus followed by loss of the VPP STG.



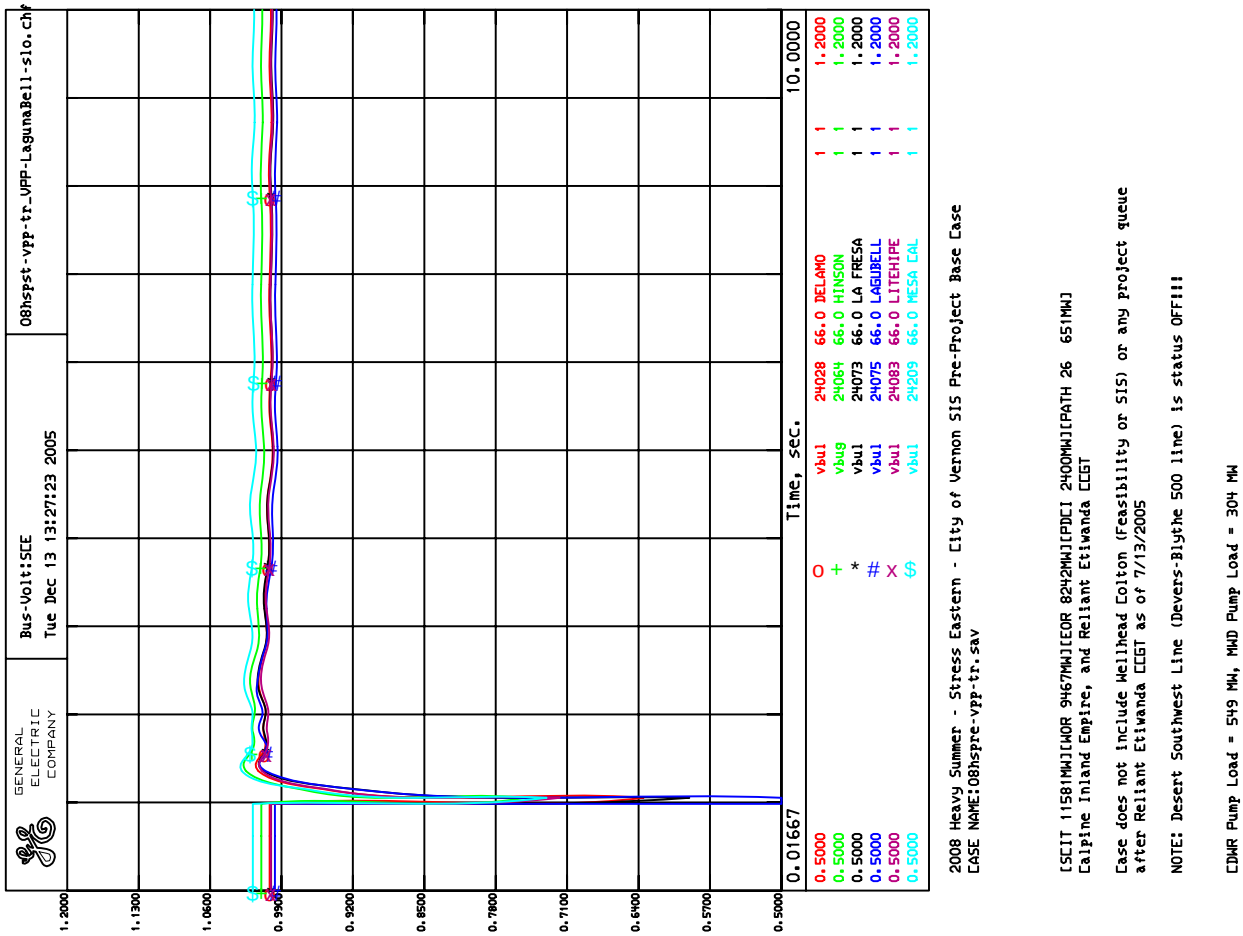
Plot 3 - 1: Three-phase fault at the VPP 230 kV bus followed by loss of the VPP – Laguna Bell 230 kV #1 circuit.



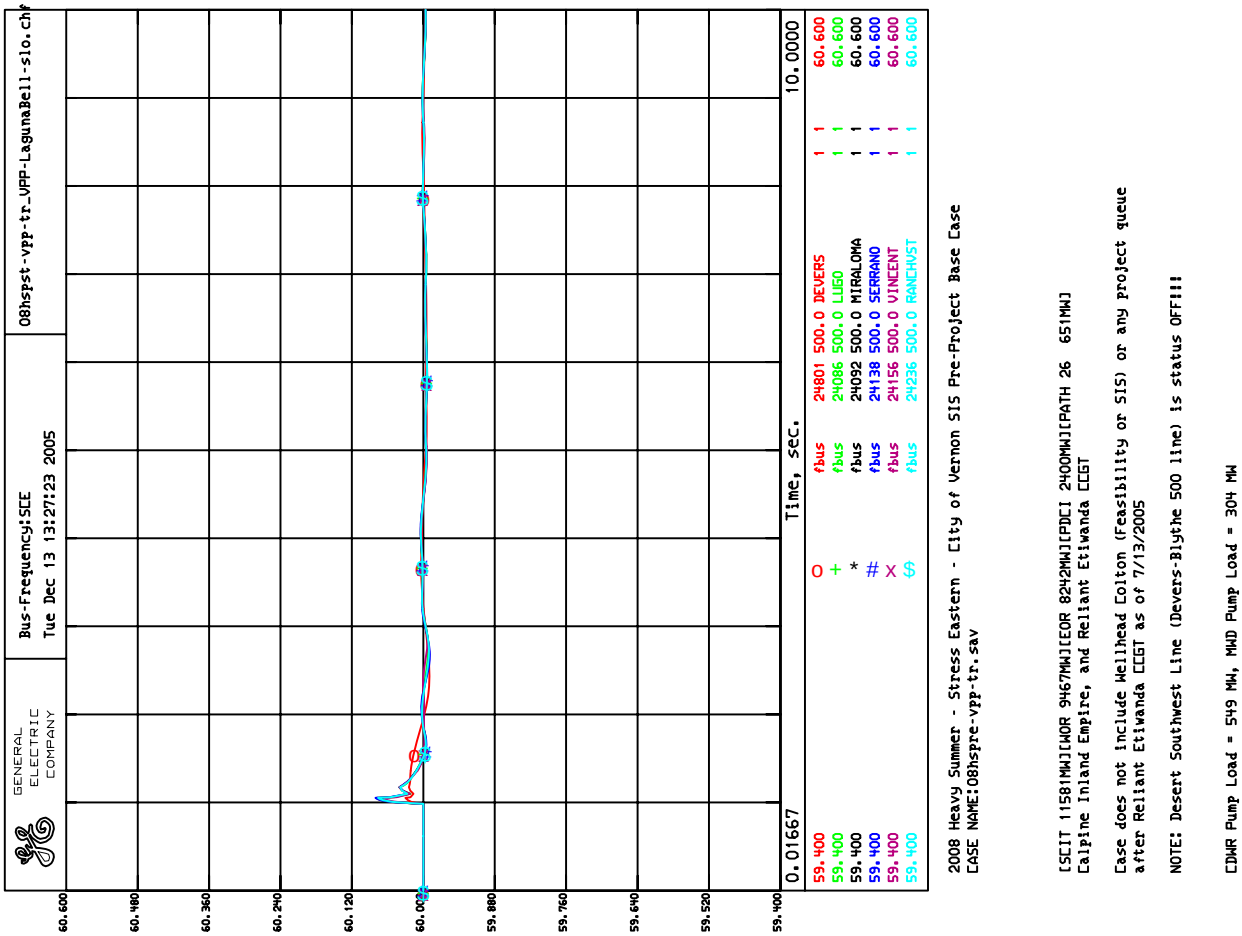
Plot 3 - 2: Three-phase fault at the VPP 230 kV bus followed by loss of the VPP – Laguna Bell 230 kV #1 circuit.



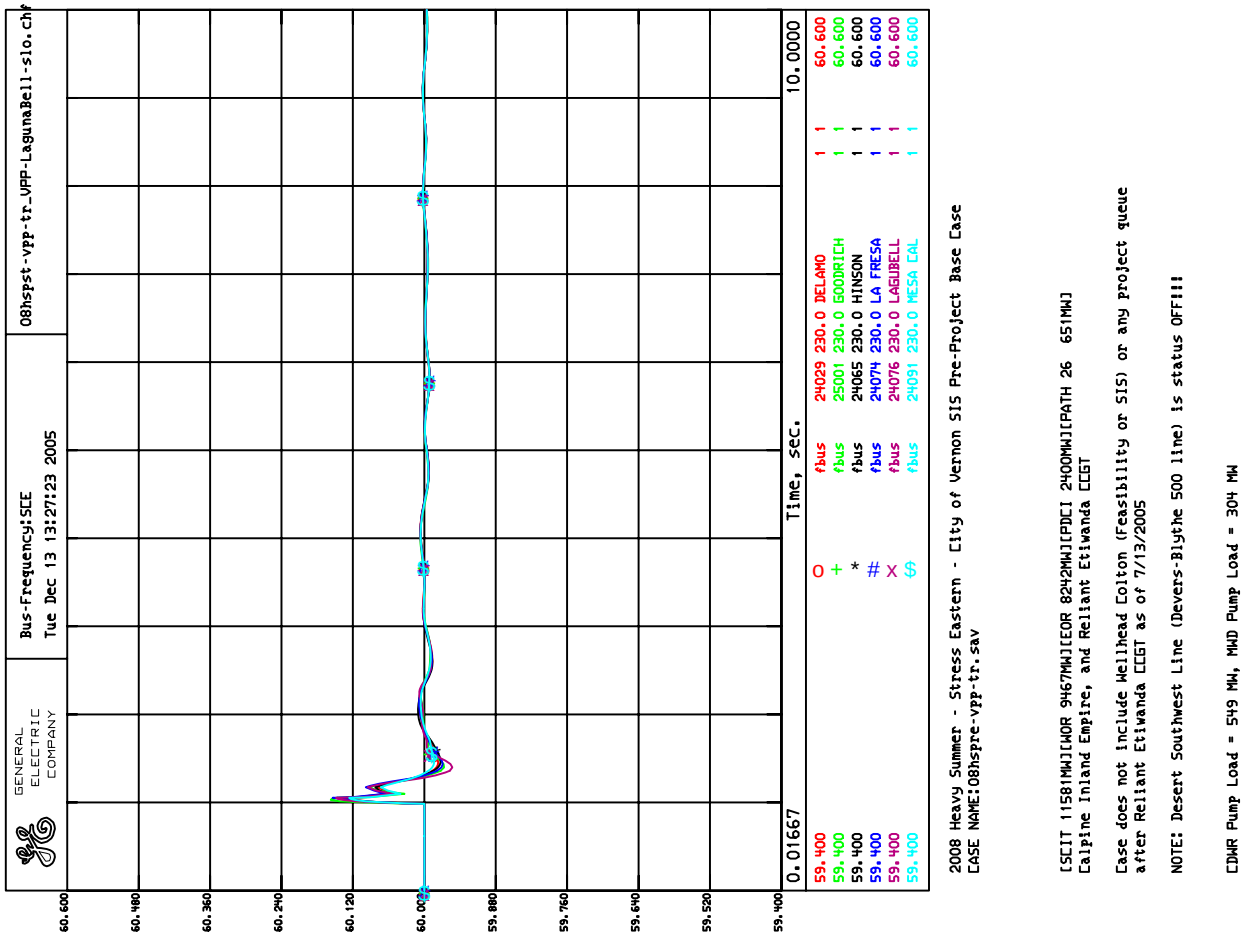
Plot 3 - 3: Three-phase fault at the VPP 230 kV bus followed by loss of the VPP – Laguna Bell 230 kV #1 circuit.



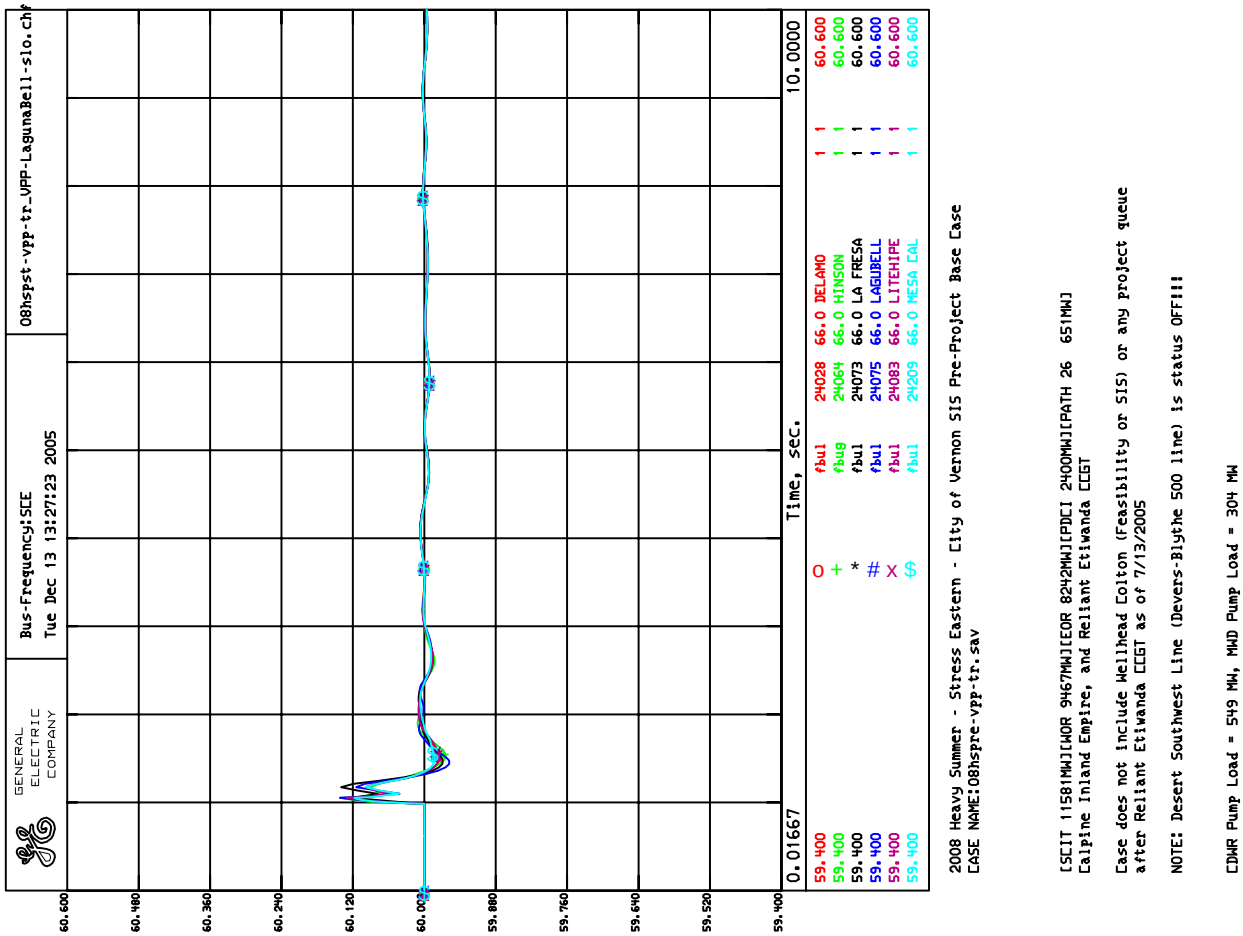
Plot 3 - 4: Three-phase fault at the VPP 230 kV bus followed by loss of the VPP – Laguna Bell 230 kV #1 circuit.



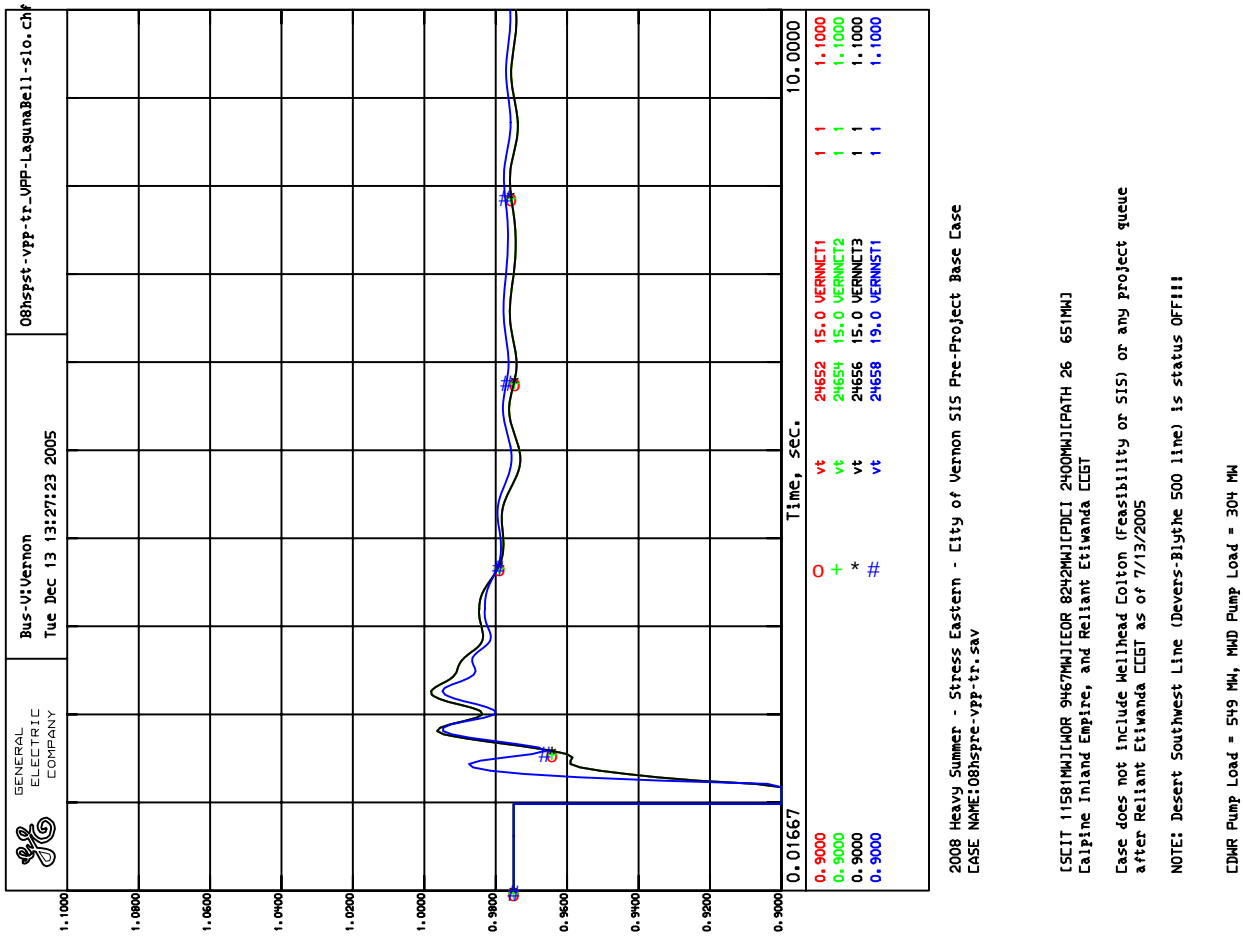
Plot 3 - 5: Three-phase fault at the VPP 230 kV bus followed by loss of the VPP – Laguna Bell 230 kV #1 circuit.



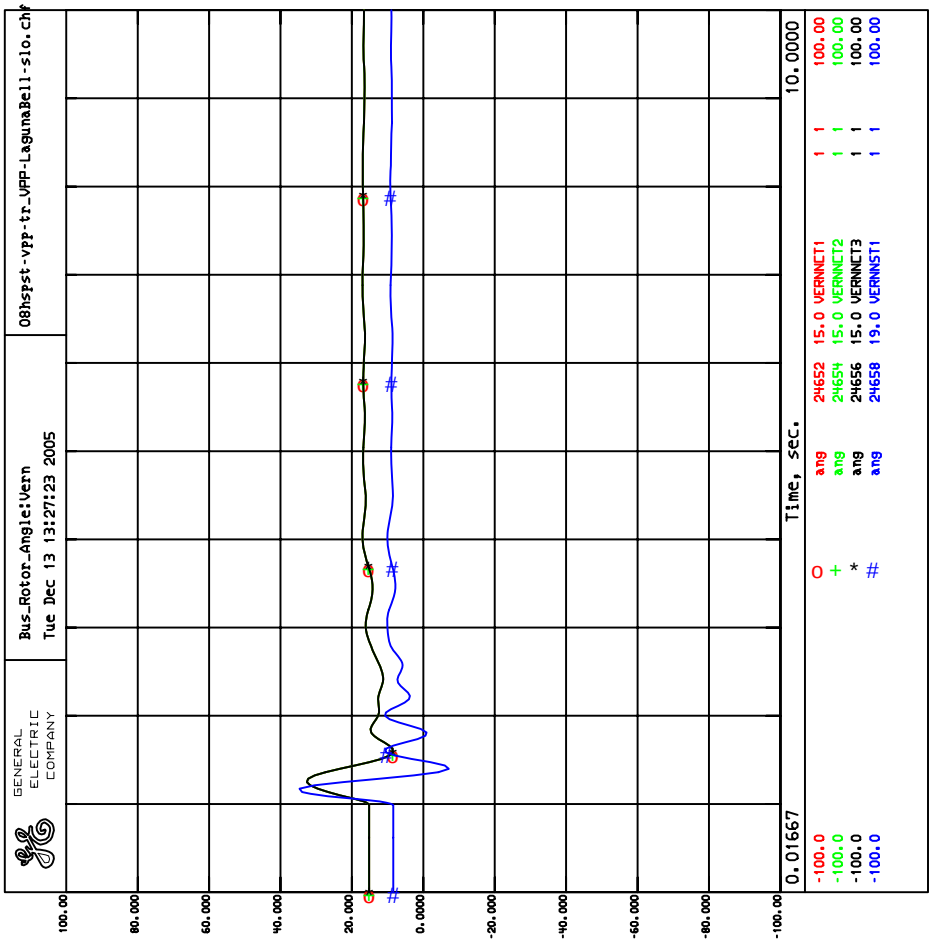
Plot 3 - 6: Three-phase fault at the VPP 230 kV bus followed by loss of the VPP – Laguna Bell 230 kV #1 circuit.



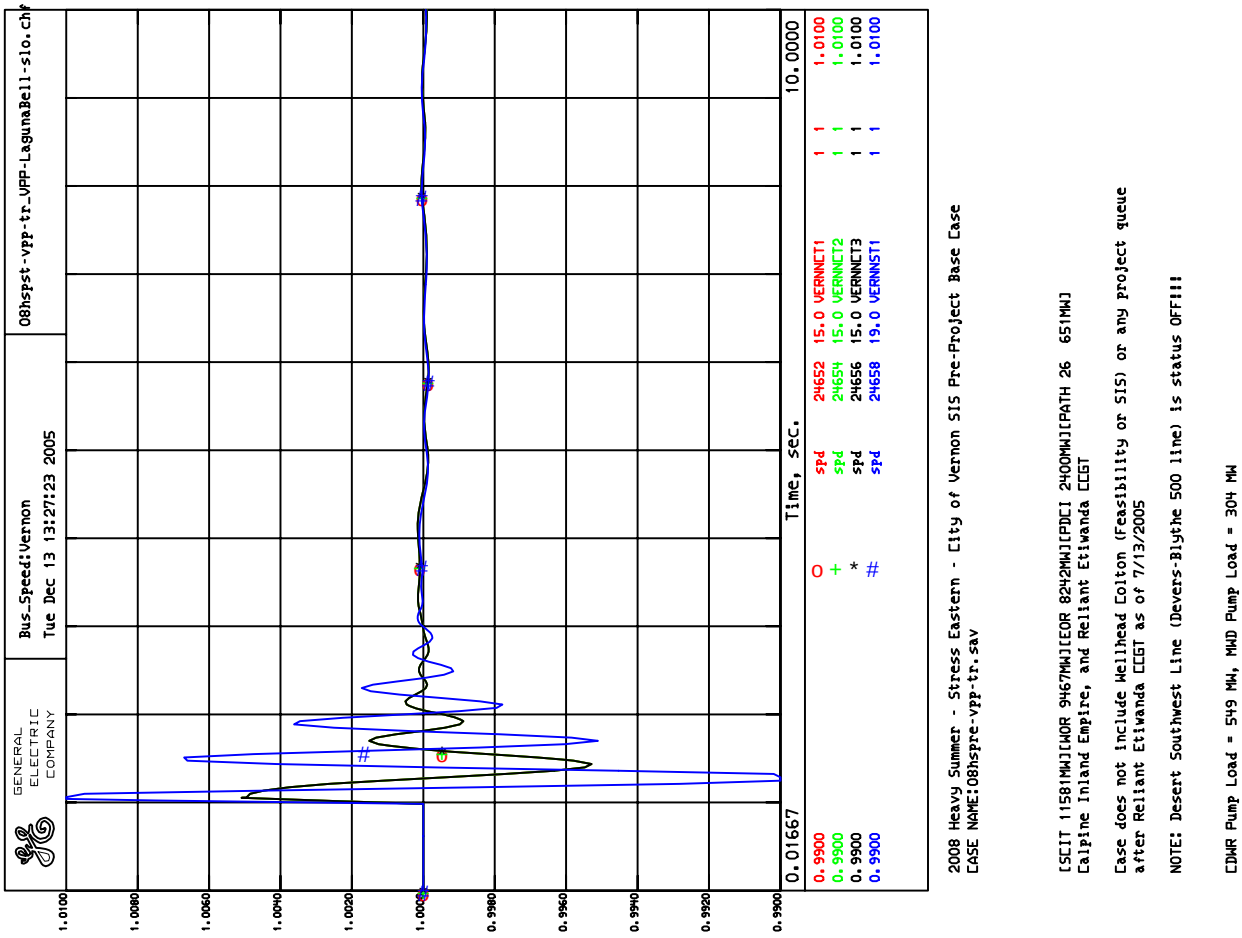
Plot 3 - 7: Three-phase fault at the VPP 230 kV bus followed by loss of the VPP – Laguna Bell 230 kV #1 circuit.



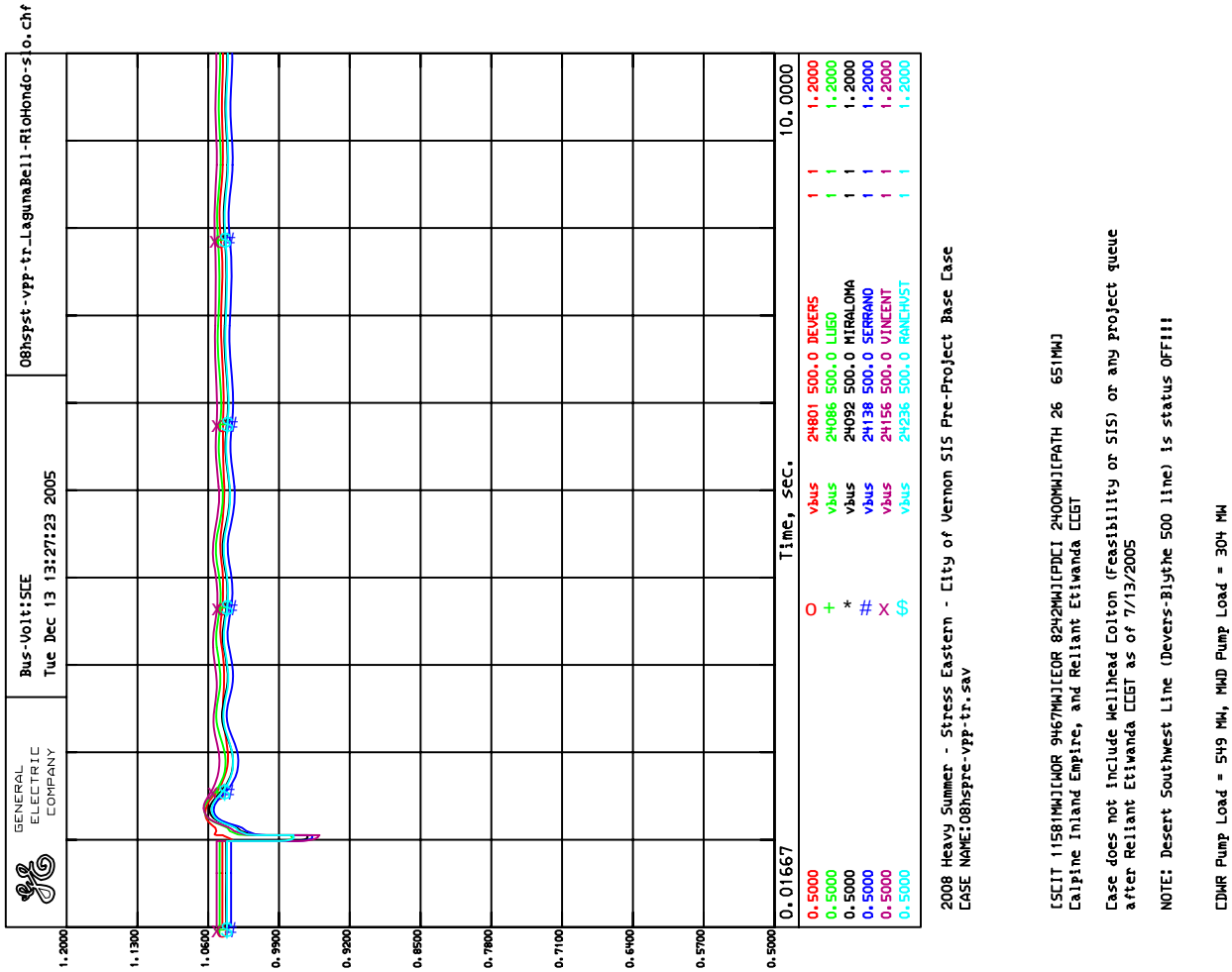
Plot 3 - 8: Three-phase fault at the VPP 230 kV bus followed by loss of the VPP – Laguna Bell 230 kV #1 circuit.



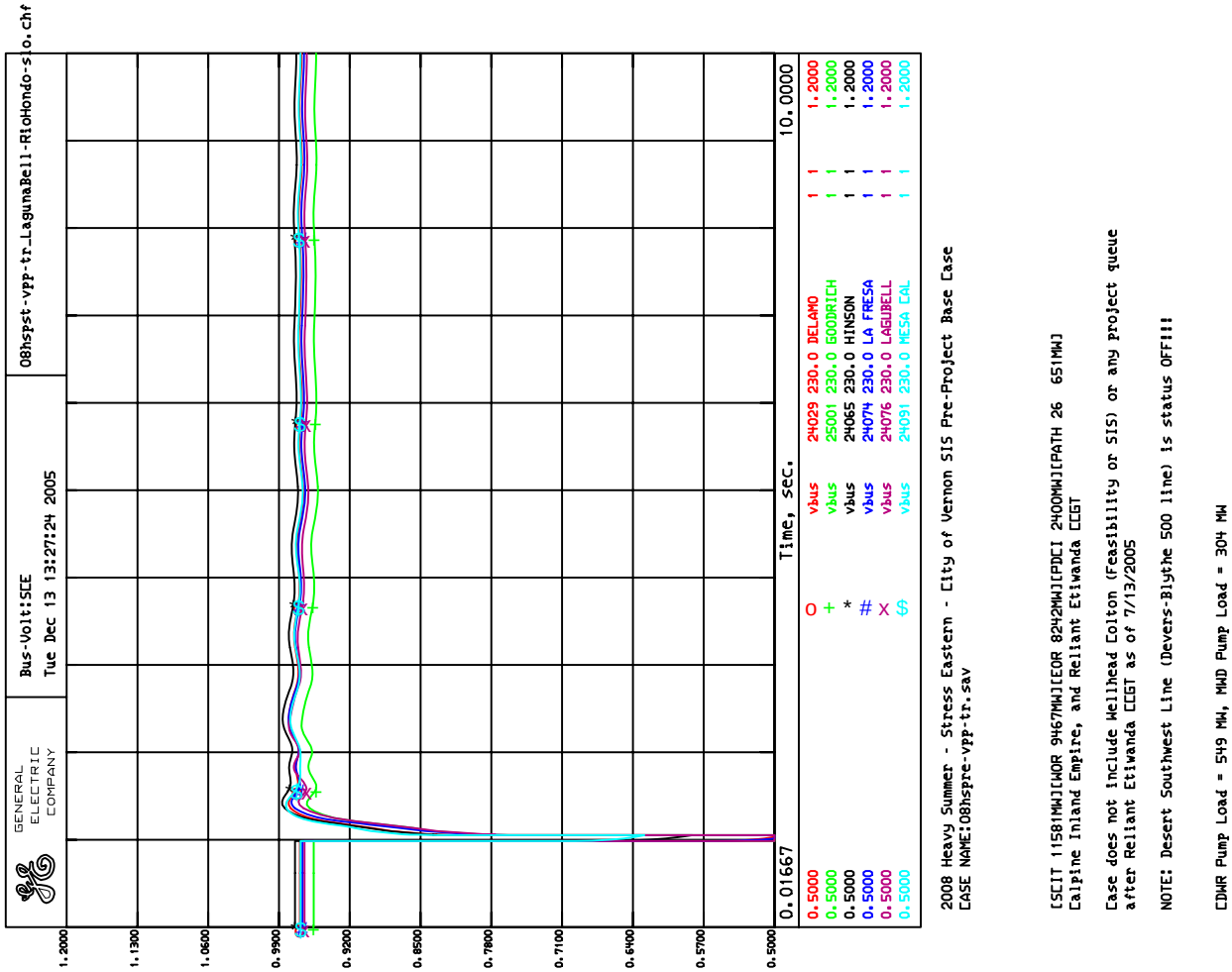
Plot 3 - 9: Three-phase fault at the VPP 230 kV bus followed by loss of the VPP – Laguna Bell 230 kV #1 circuit.



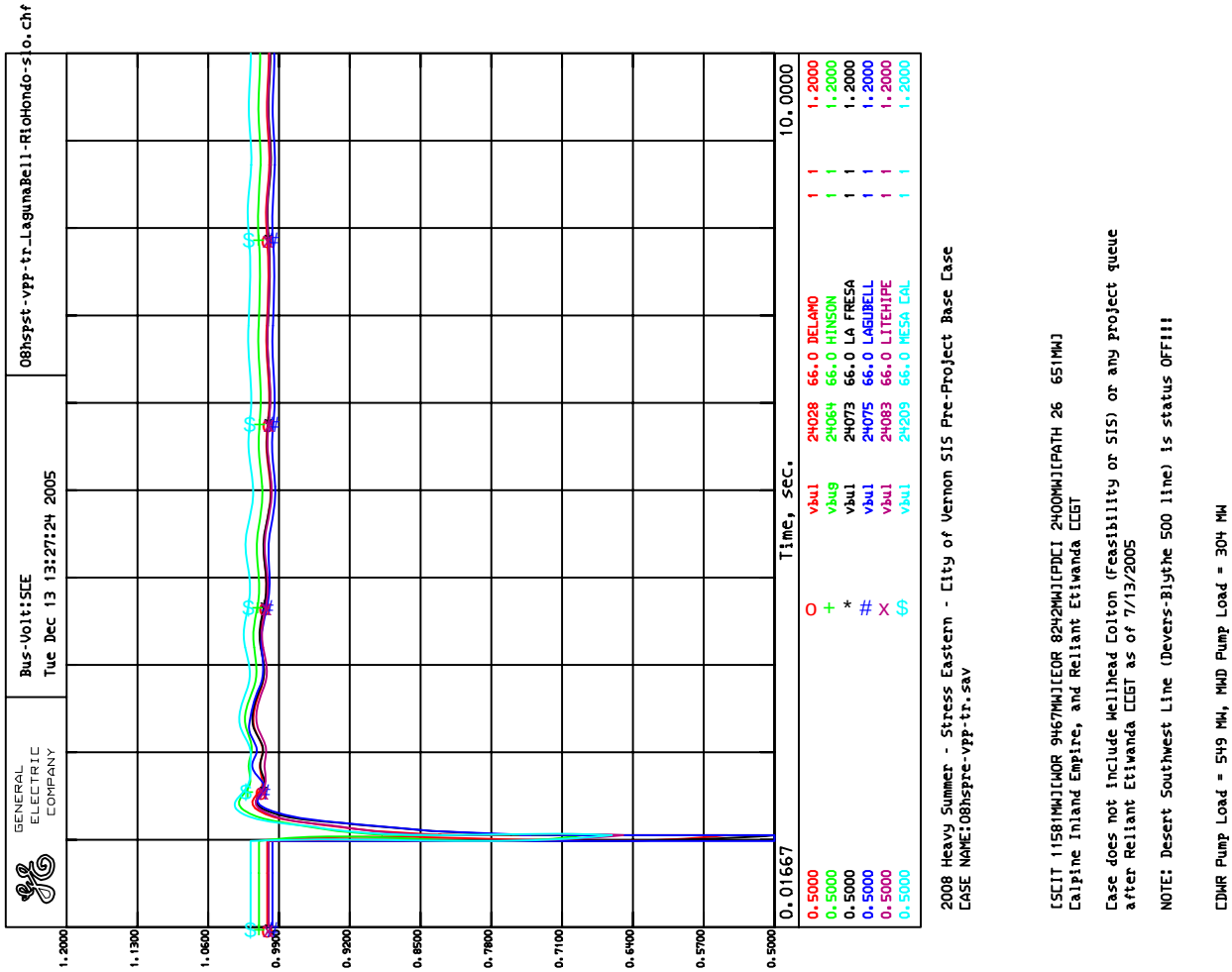
Plot 4 - 1: Three-phase fault at the Laguna Bell 230 kV bus followed by loss of the Laguna Bell – Rio Hondo 230 kV #1 circuit.



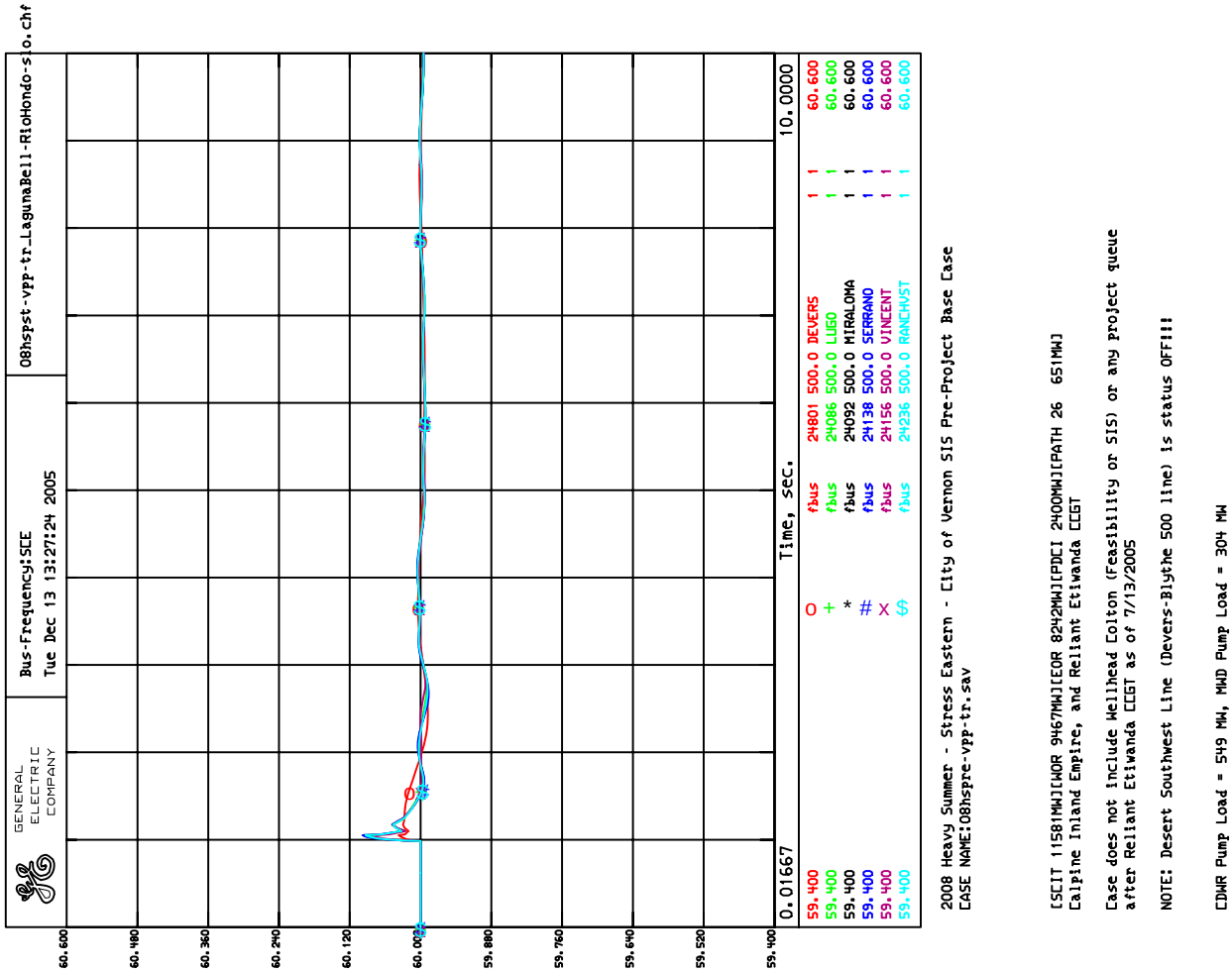
Plot 4 - 2: Three-phase fault at the Laguna Bell 230 kV bus followed by loss of the Laguna Bell – Rio Hondo 230 kV #1 circuit.



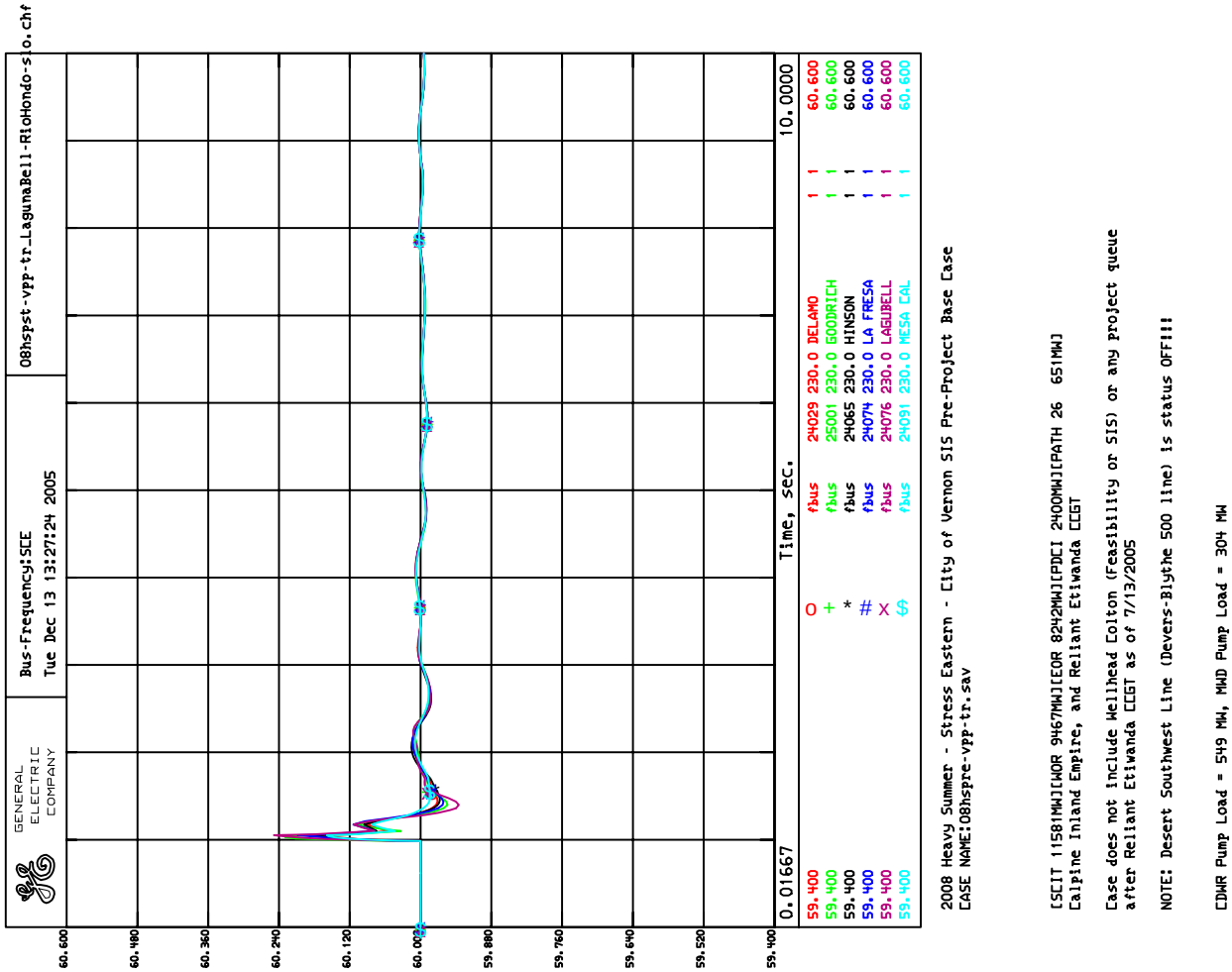
Plot 4 - 3: Three-phase fault at the Laguna Bell 230 kV bus followed by loss of the Laguna Bell – Rio Hondo 230 kV #1 circuit.



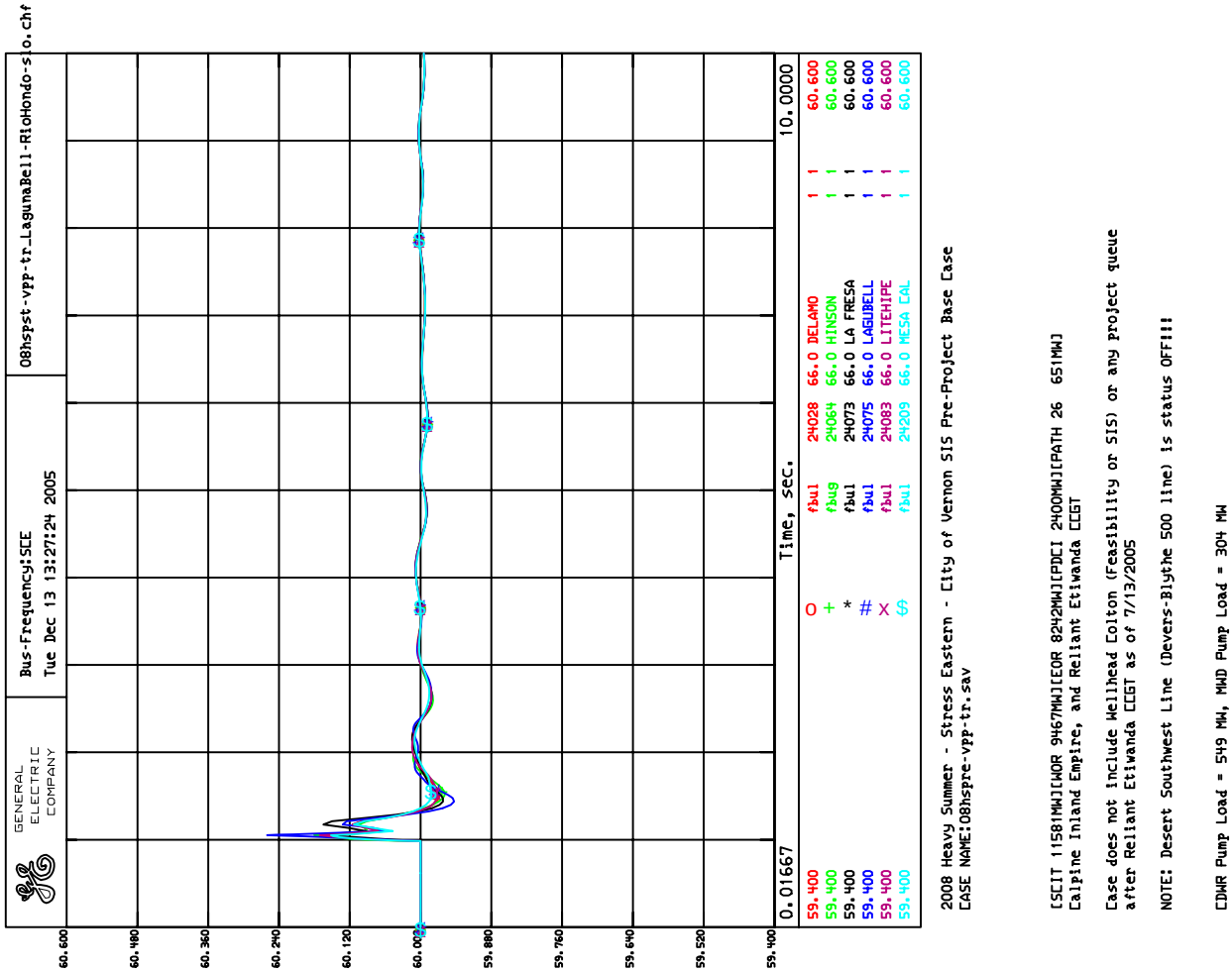
Plot 4 - 4: Three-phase fault at the Laguna Bell 230 kV bus followed by loss of the Laguna Bell – Rio Hondo 230 kV #1 circuit.



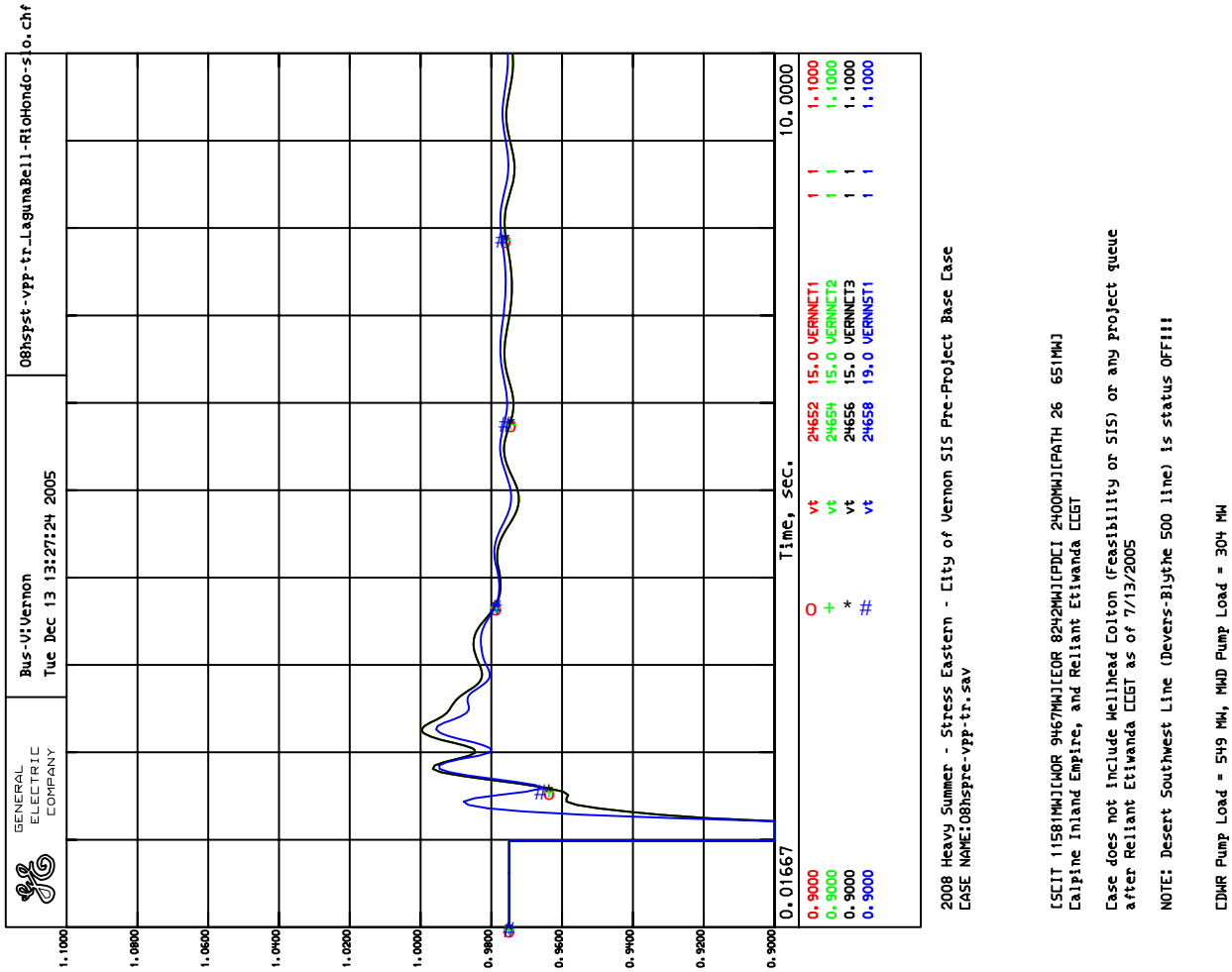
Plot 4 - 5: Three-phase fault at the Laguna Bell 230 kV bus followed by loss of the Laguna Bell – Rio Hondo 230 kV #1 circuit.



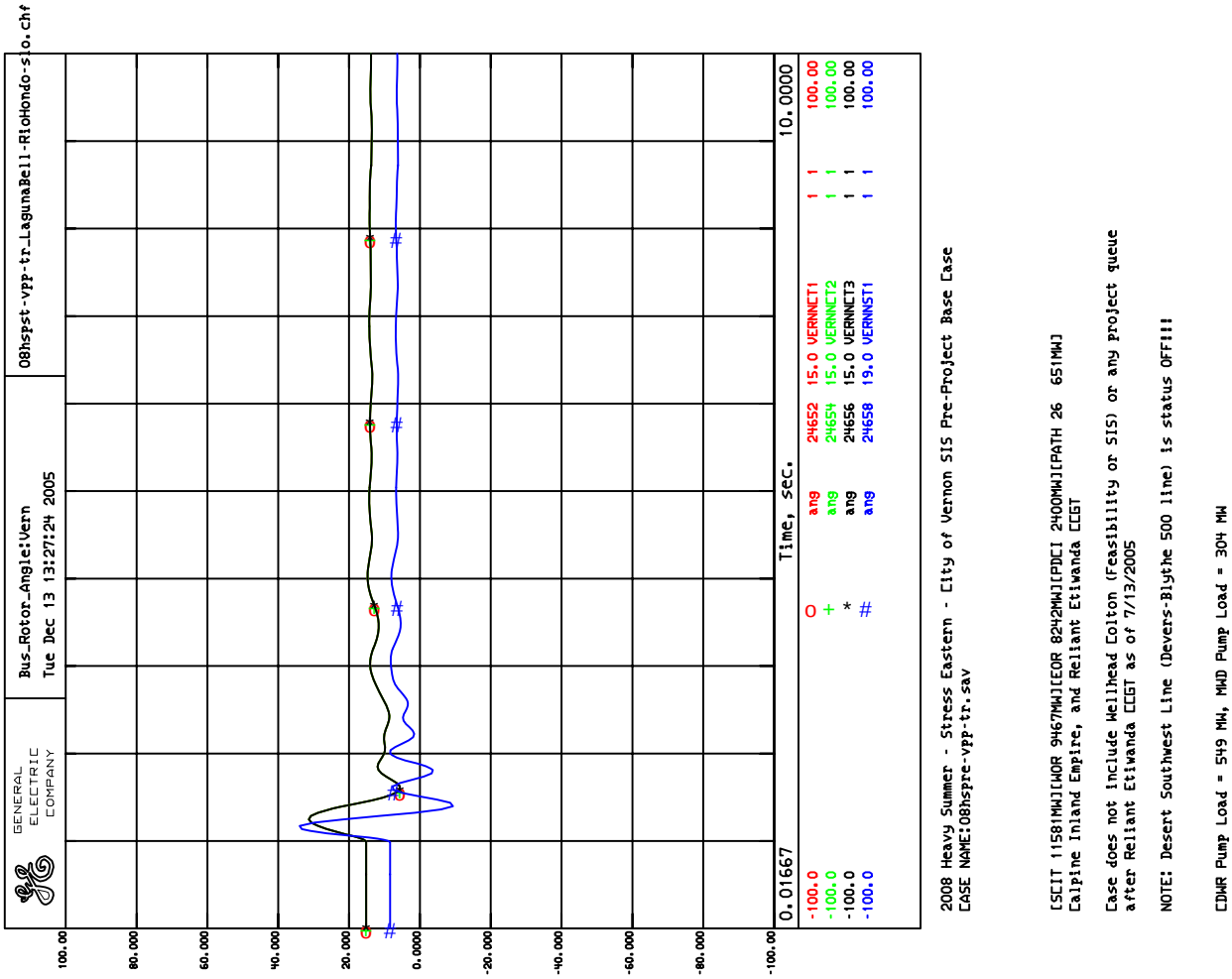
Plot 4 - 6: Three-phase fault at the Laguna Bell 230 kV bus followed by loss of the Laguna Bell – Rio Hondo 230 kV #1 circuit.



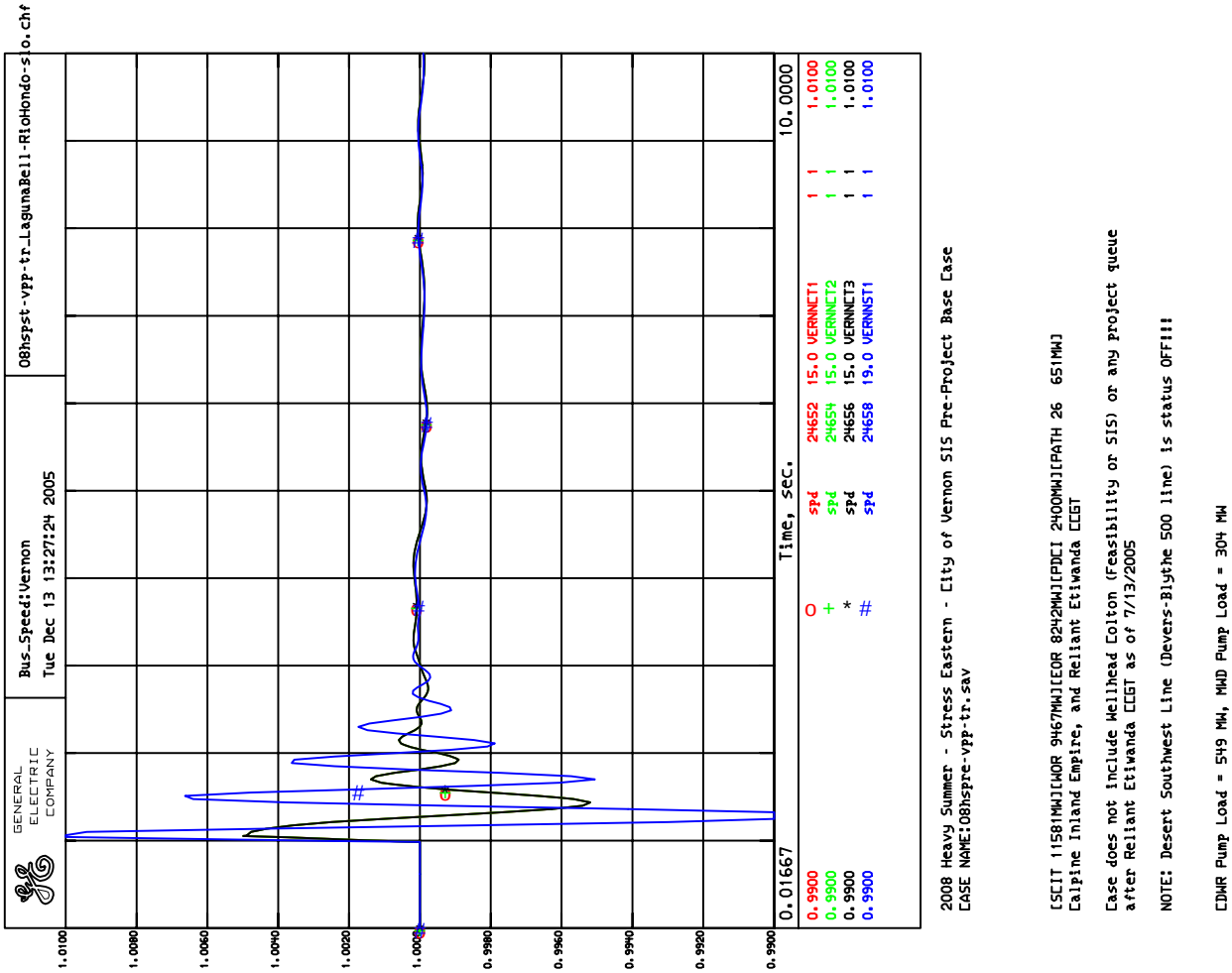
Plot 4 - 7: Three-phase fault at the Laguna Bell 230 kV bus followed by loss of the Laguna Bell – Rio Hondo 230 kV #1 circuit.



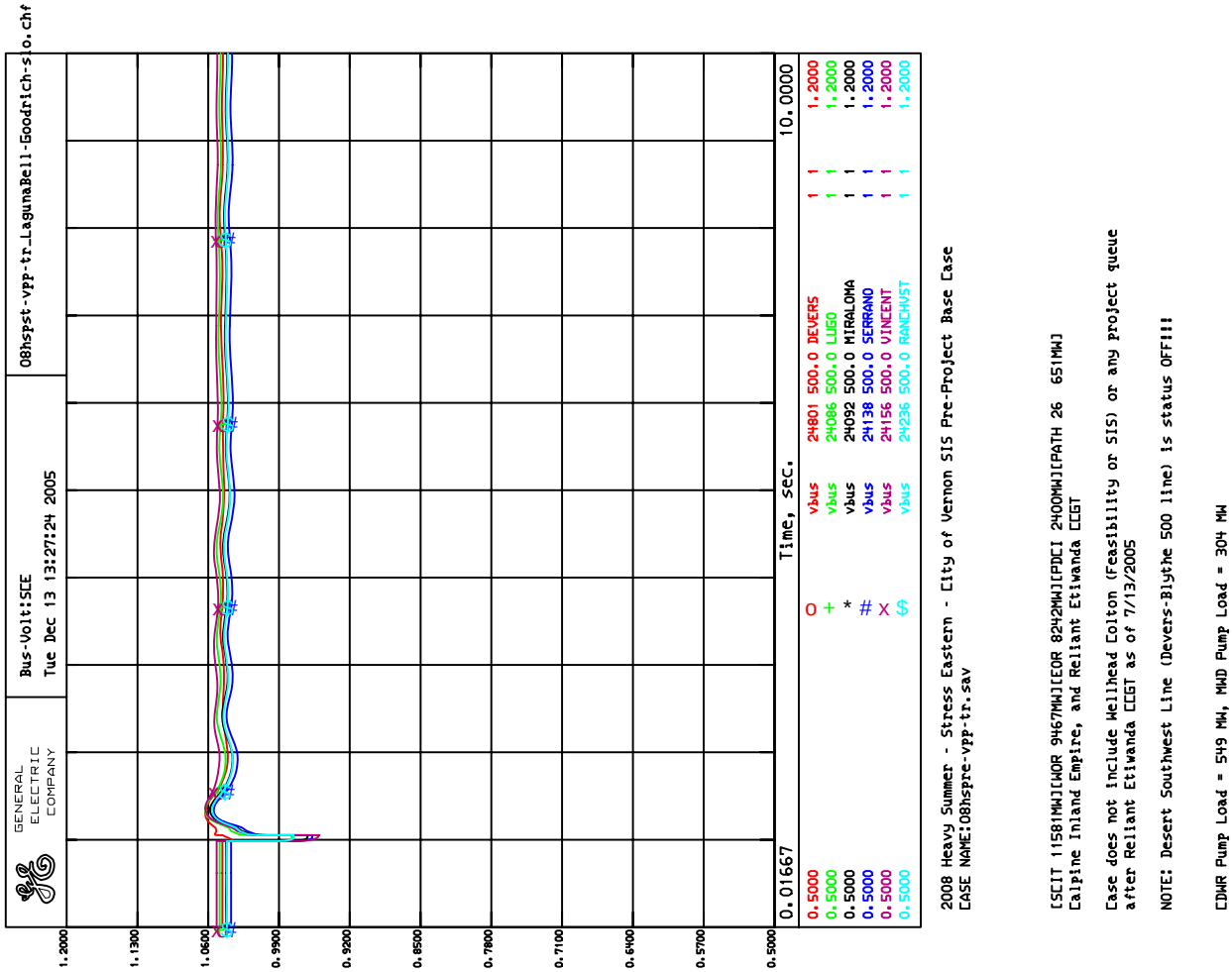
Plot 4 - 8: Three-phase fault at the Laguna Bell 230 kV bus followed by loss of the Laguna Bell – Rio Hondo 230 kV #1 circuit.



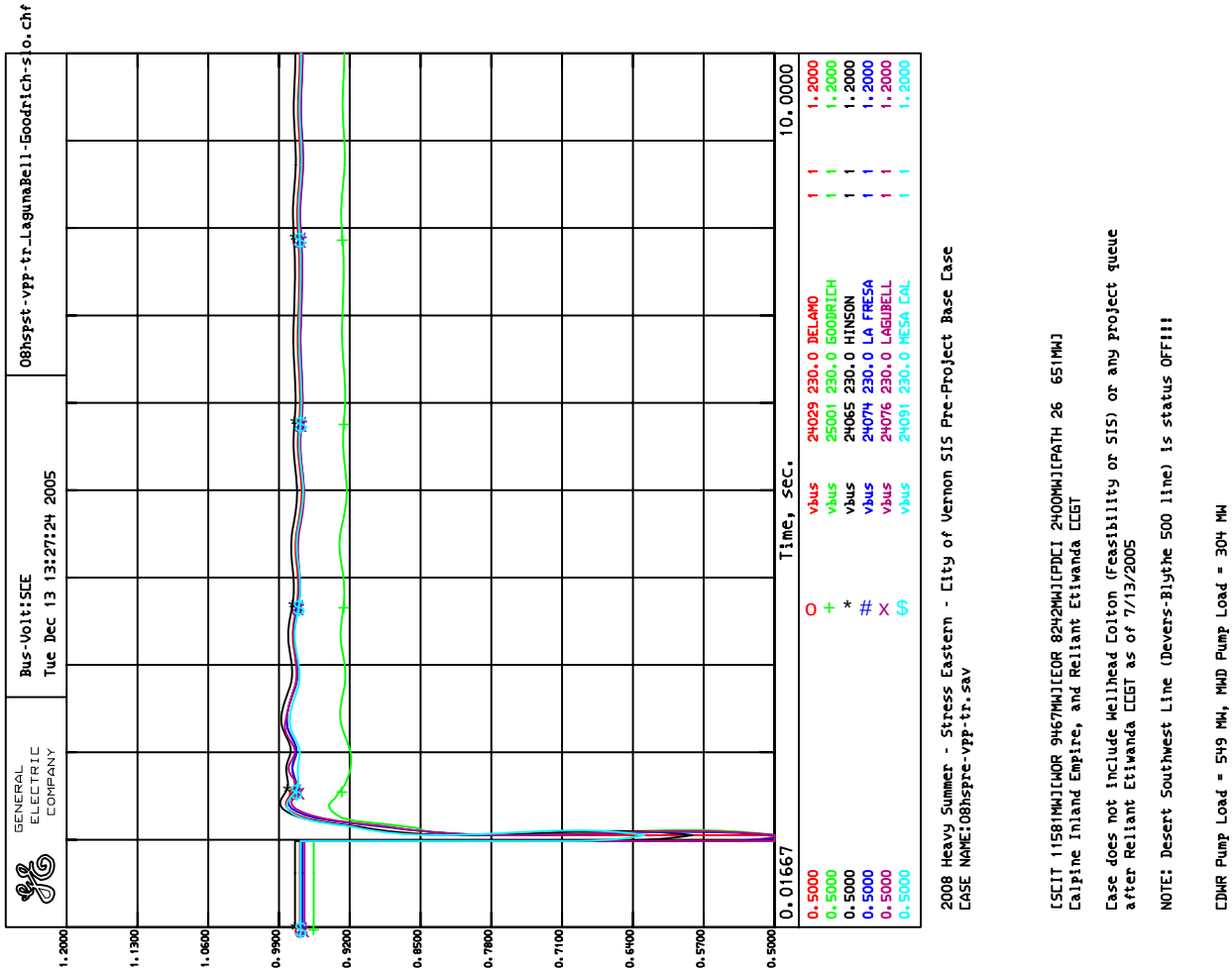
Plot 4 - 9: Three-phase fault at the Laguna Bell 230 kV bus followed by loss of the Laguna Bell – Rio Hondo 230 kV #1 circuit.



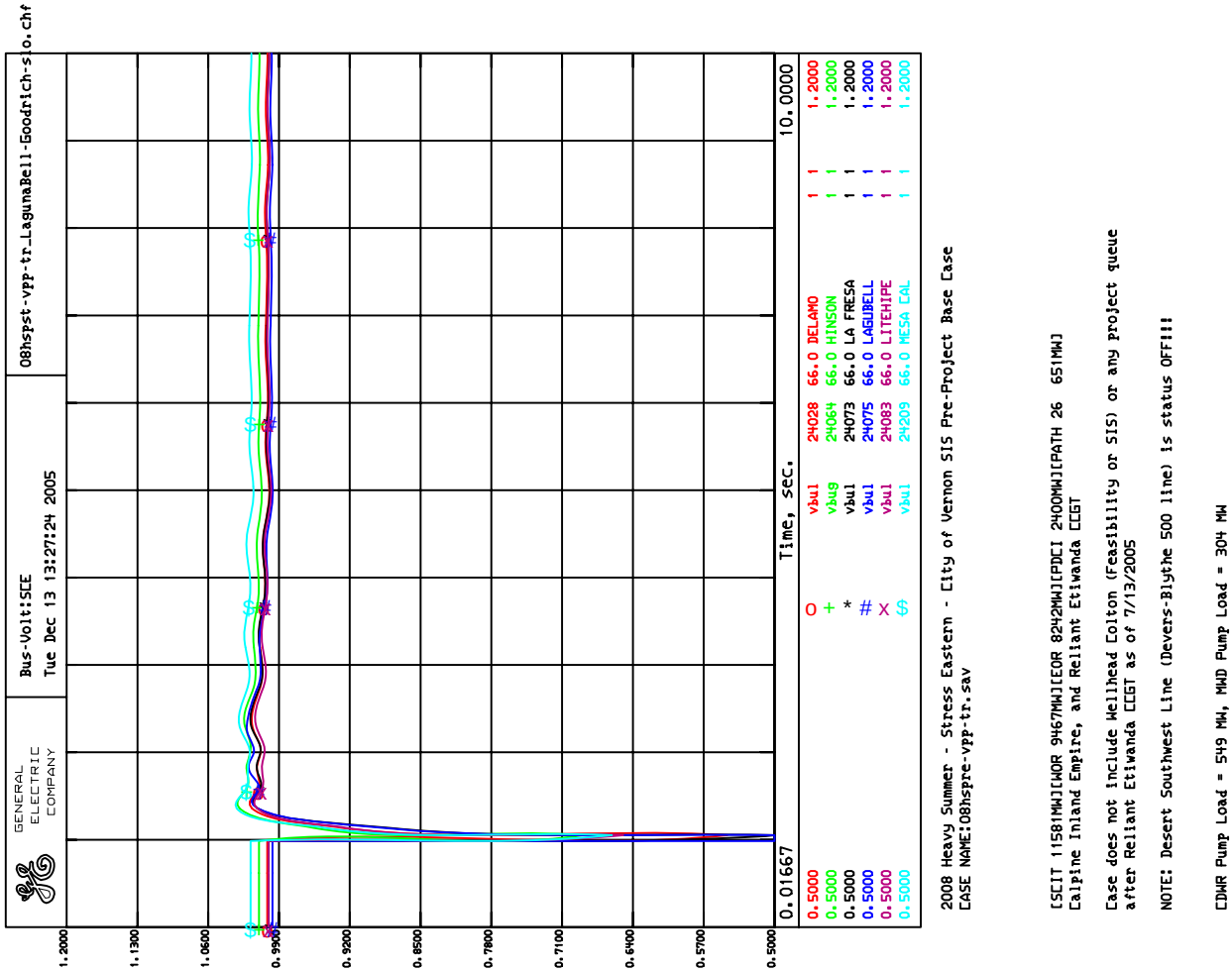
Plot 5 - 1: Three-phase fault at the Laguna Bell 230 kV bus followed by loss of the Laguna Bell – Goodrich 230 kV #1 circuit.



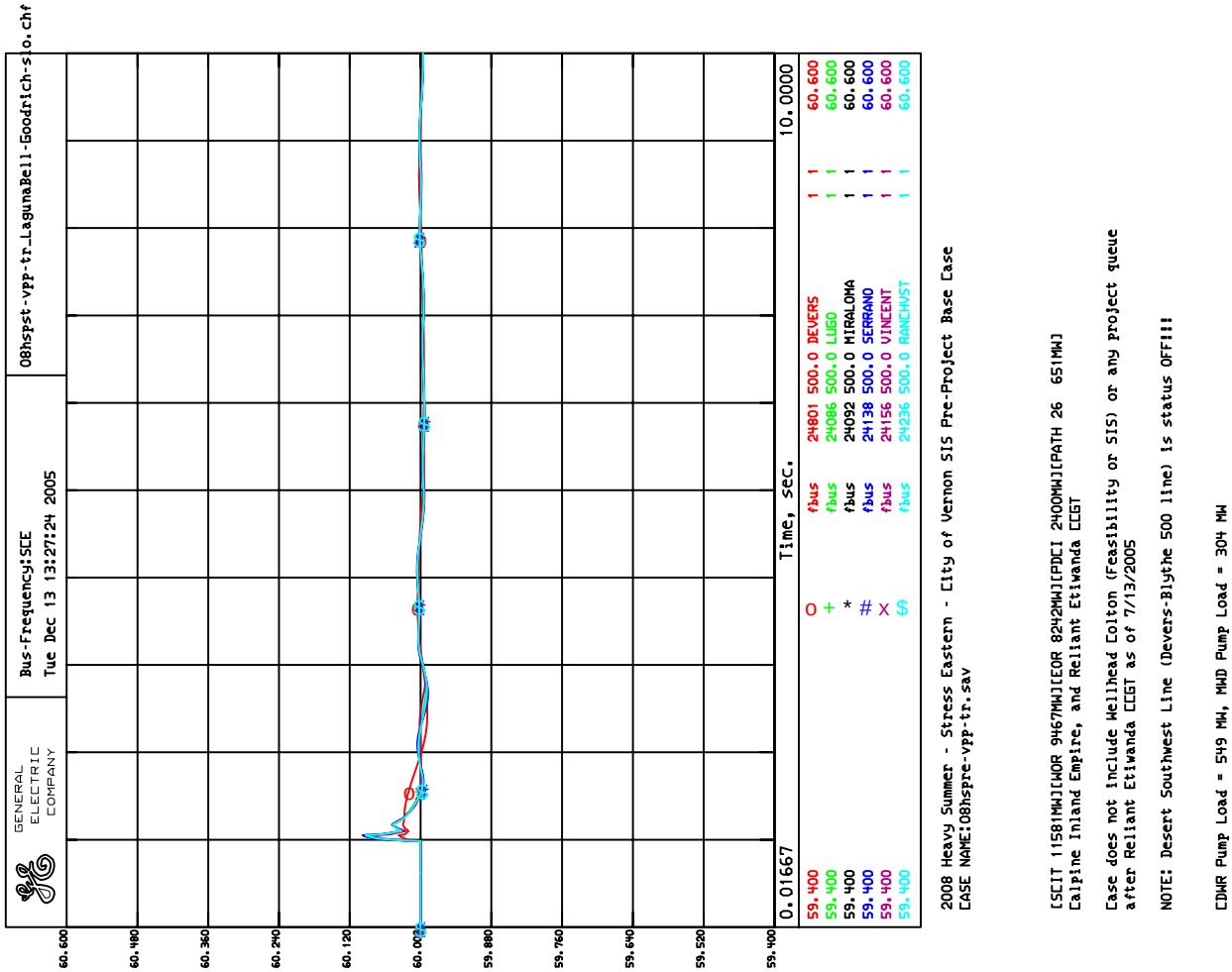
Plot 5 - 2: Three-phase fault at the Laguna Bell 230 kV bus followed by loss of the Laguna Bell – Goodrich 230 kV #1 circuit.



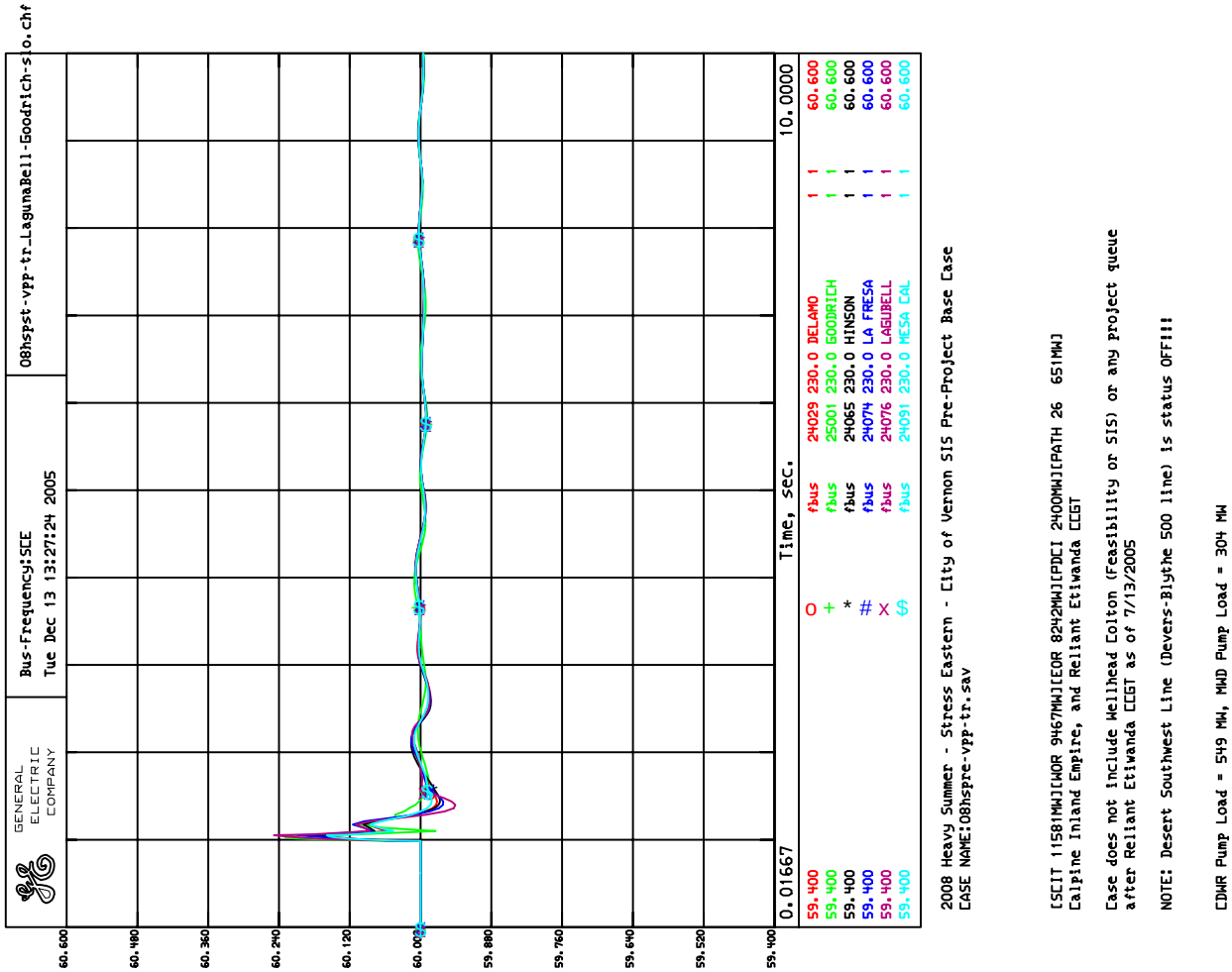
Plot 5 - 3: Three-phase fault at the Laguna Bell 230 kV bus followed by loss of the Laguna Bell – Goodrich 230 kV #1 circuit.



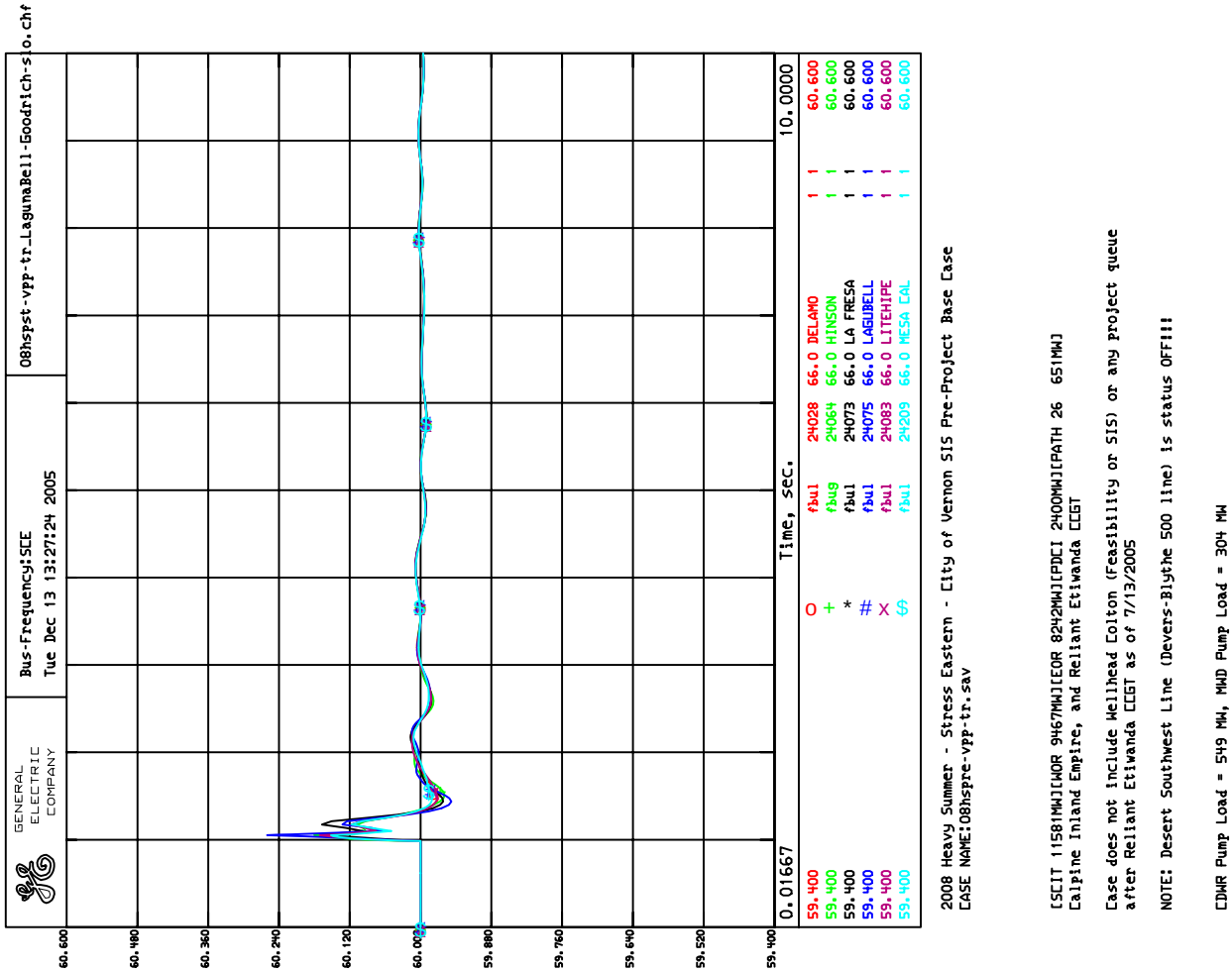
Plot 5 - 4: Three-phase fault at the Laguna Bell 230 kV bus followed by loss of the Laguna Bell – Goodrich 230 kV #1 circuit.



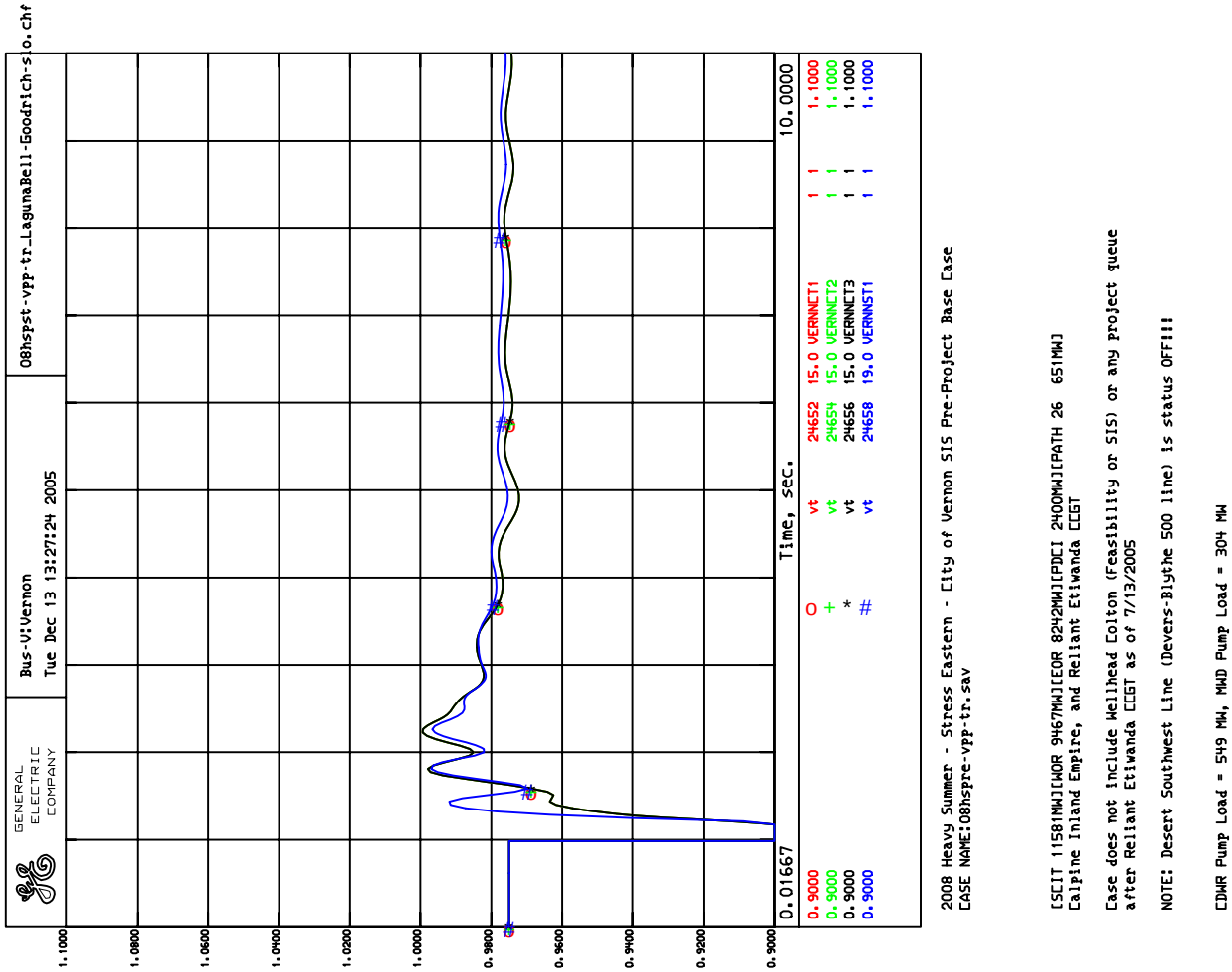
Plot 5 - 5: Three-phase fault at the Laguna Bell 230 kV bus followed by loss of the Laguna Bell – Goodrich 230 kV #1 circuit.



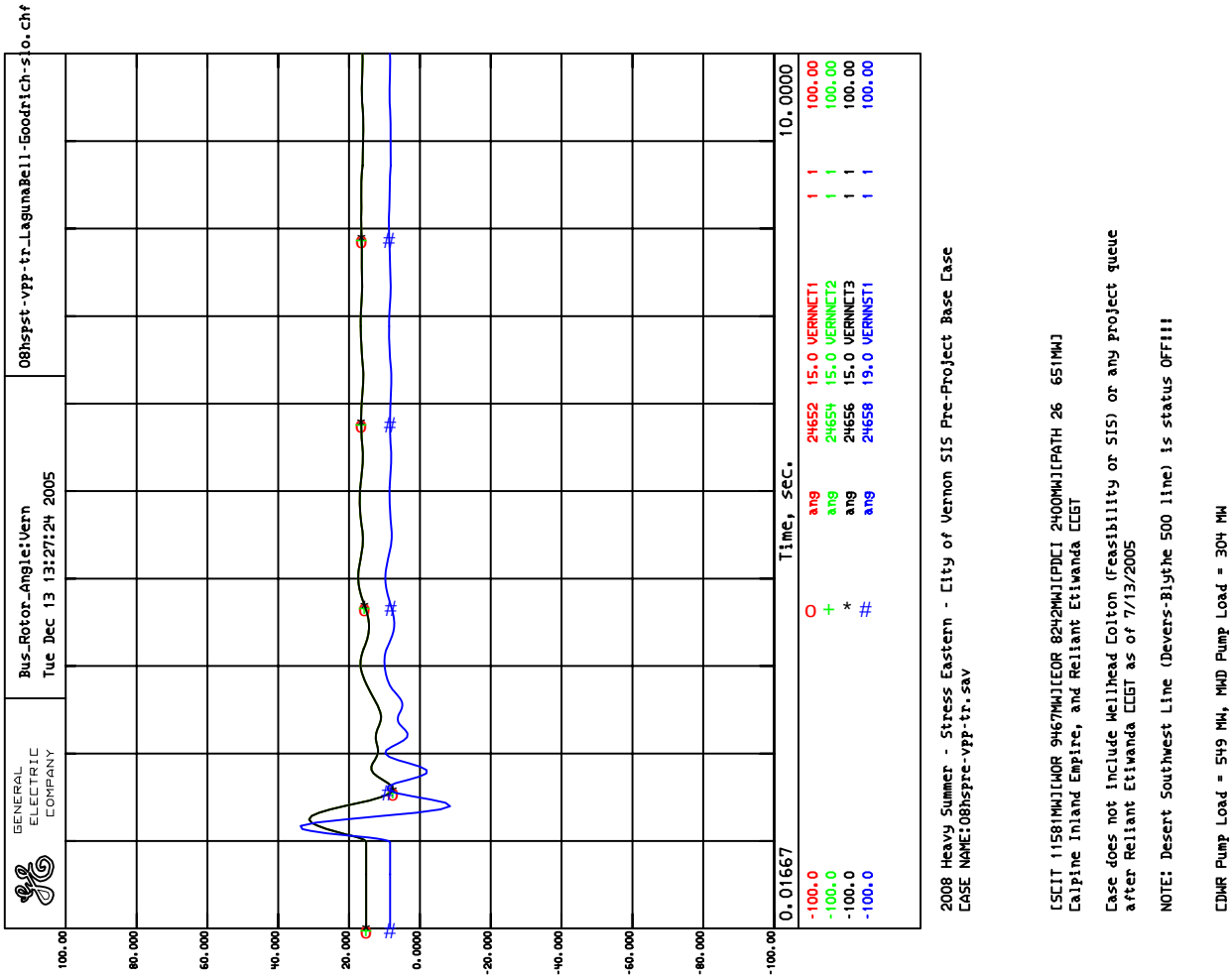
Plot 5 - 6: Three-phase fault at the Laguna Bell 230 kV bus followed by loss of the Laguna Bell – Goodrich 230 kV #1 circuit.



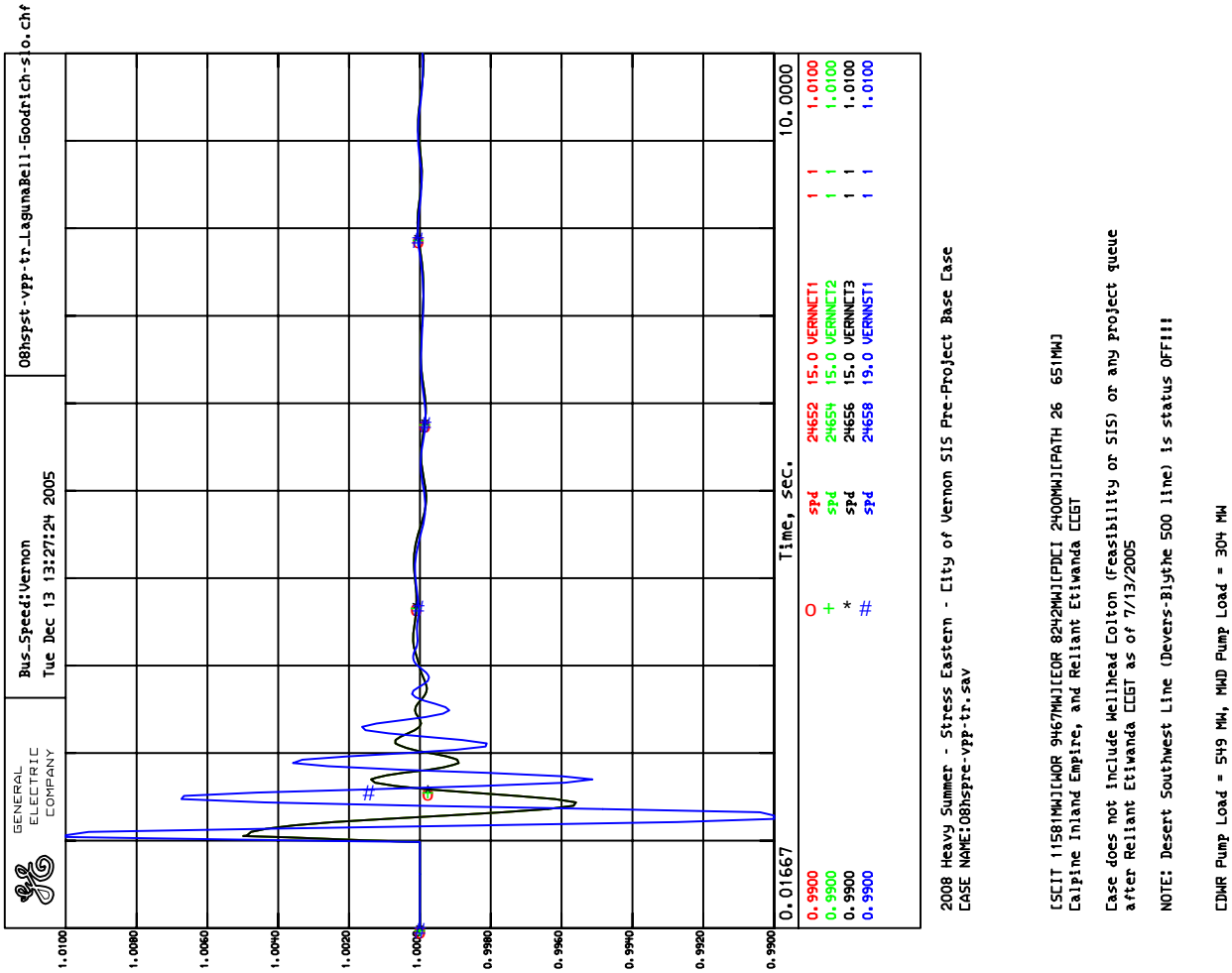
Plot 5 - 7: Three-phase fault at the Laguna Bell 230 kV bus followed by loss of the Laguna Bell – Goodrich 230 kV #1 circuit.



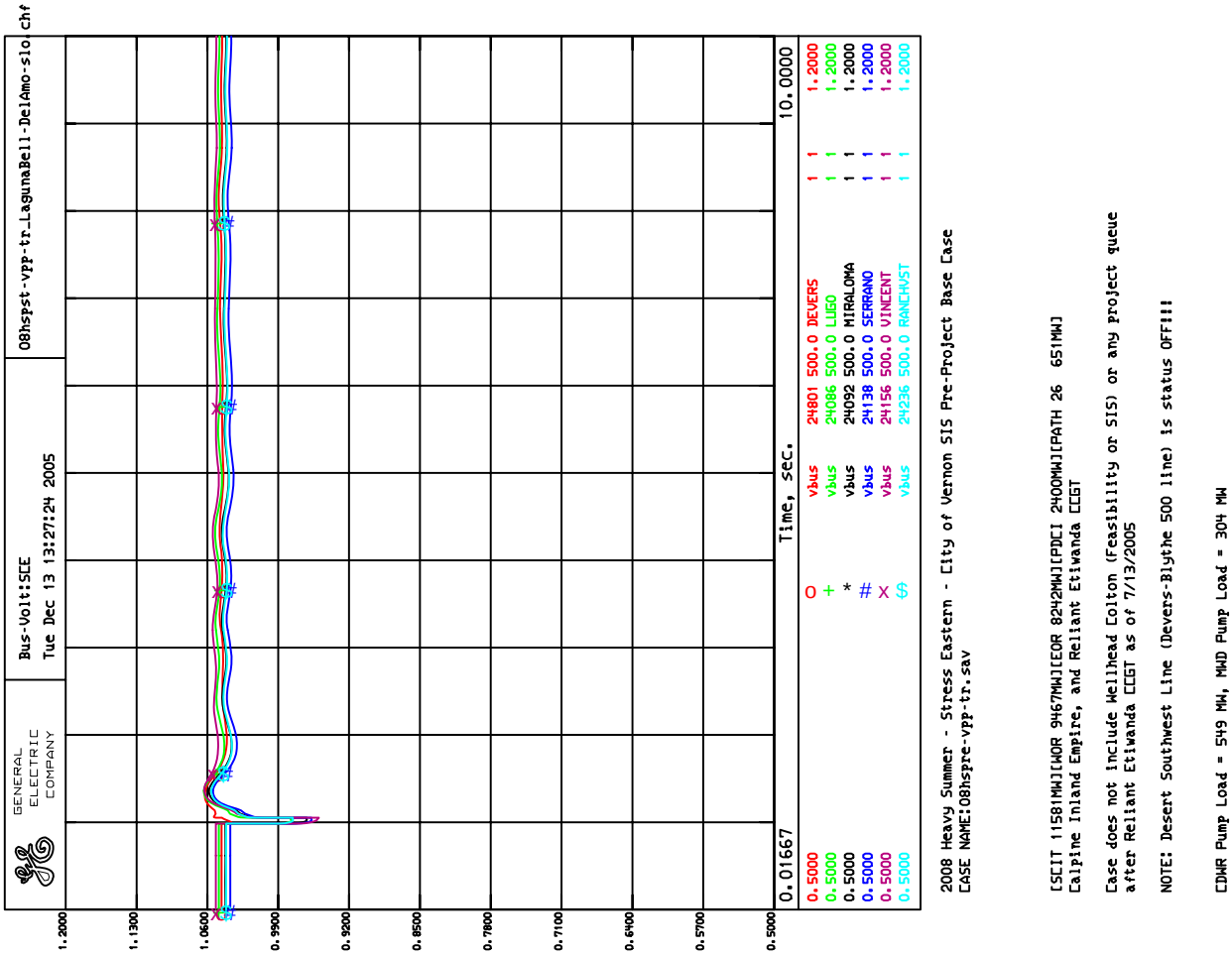
Plot 5 - 8: Three-phase fault at the Laguna Bell 230 kV bus followed by loss of the Laguna Bell – Goodrich 230 kV #1 circuit.



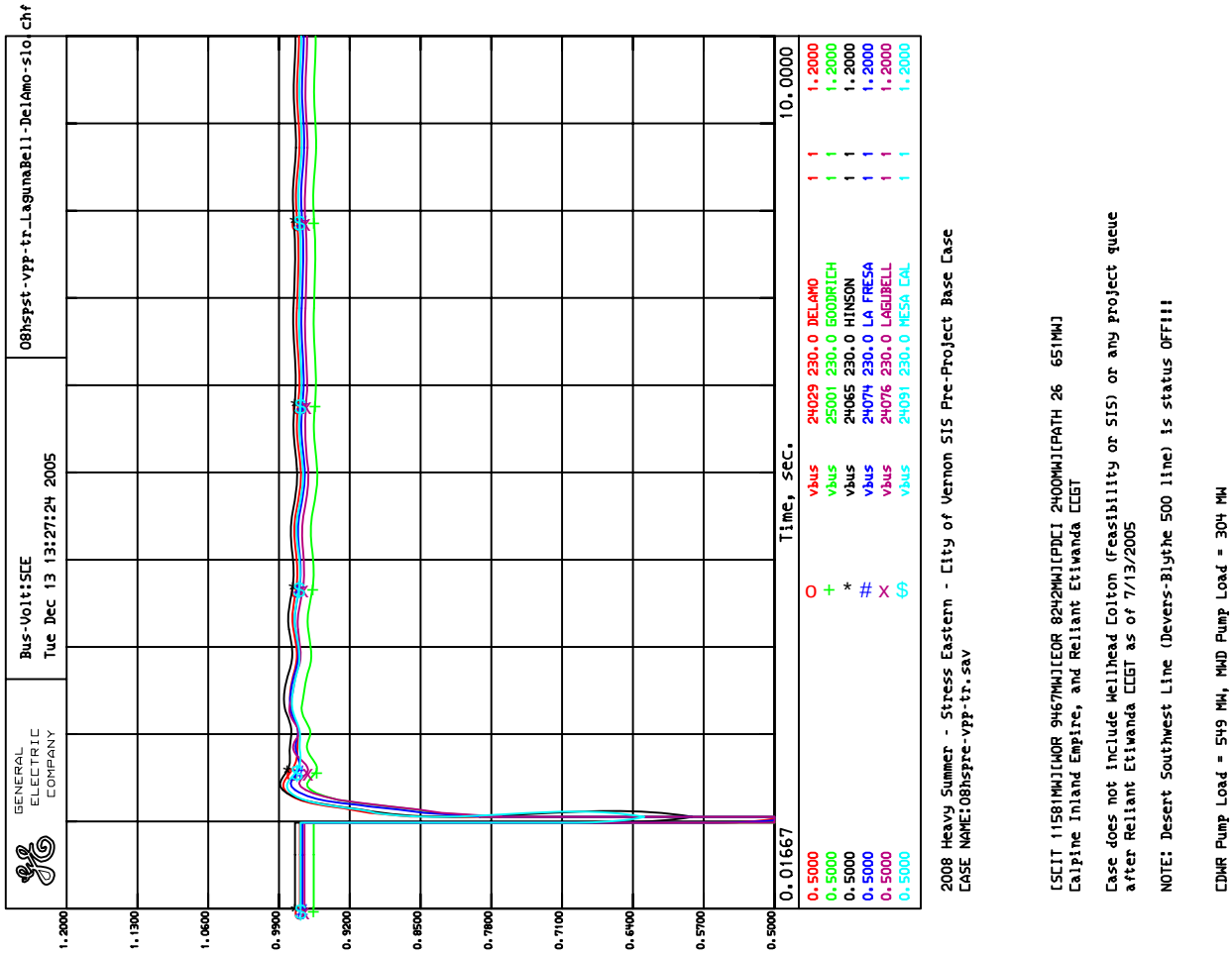
Plot 5 - 9: Three-phase fault at the Laguna Bell 230 kV bus followed by loss of the Laguna Bell – Goodrich 230 kV #1 circuit.



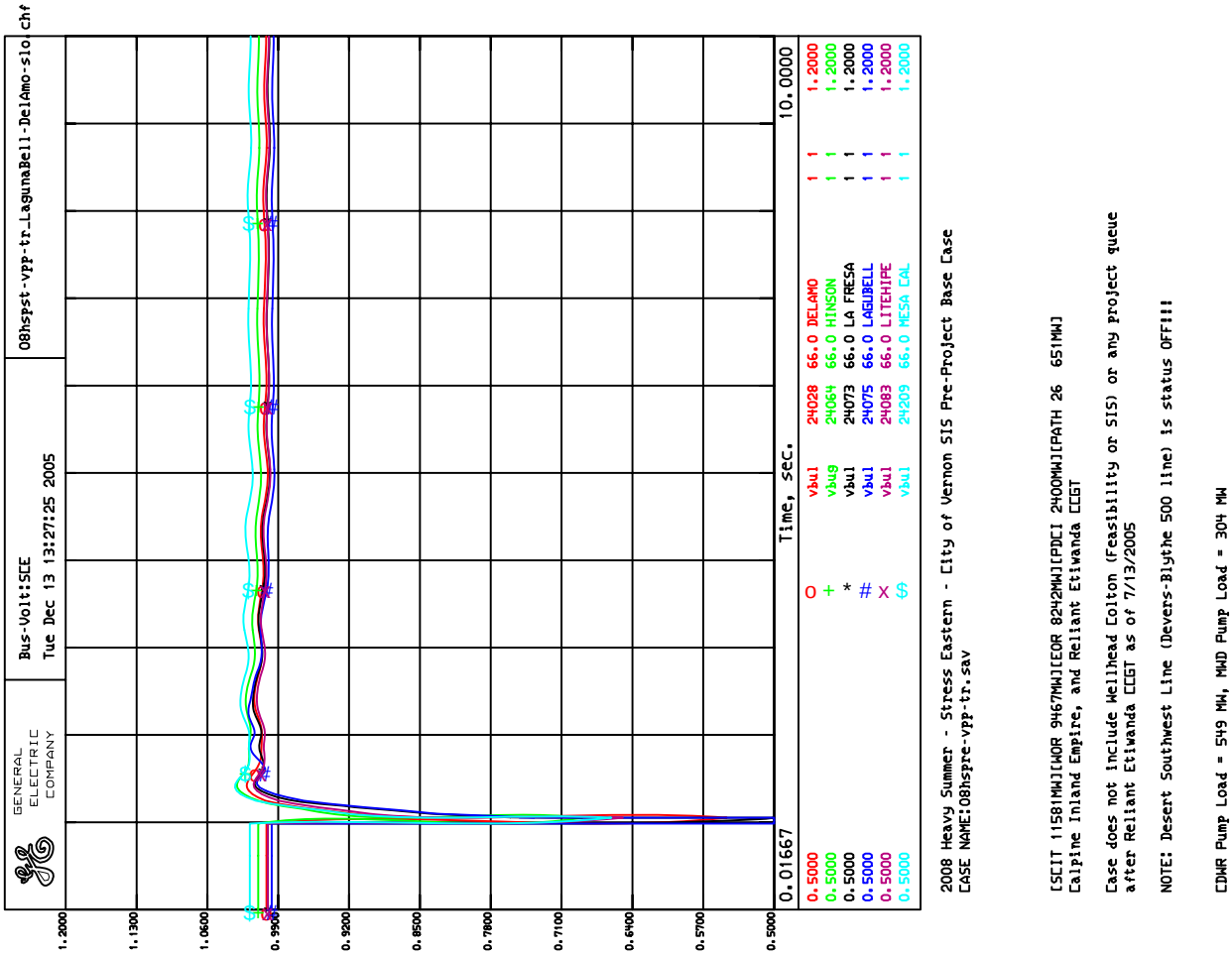
Plot 6 - 1: Three-phase fault at the Laguna Bell 230 kV bus followed by loss of the Laguna Bell – Del Amo 230 kV #1 circuit.



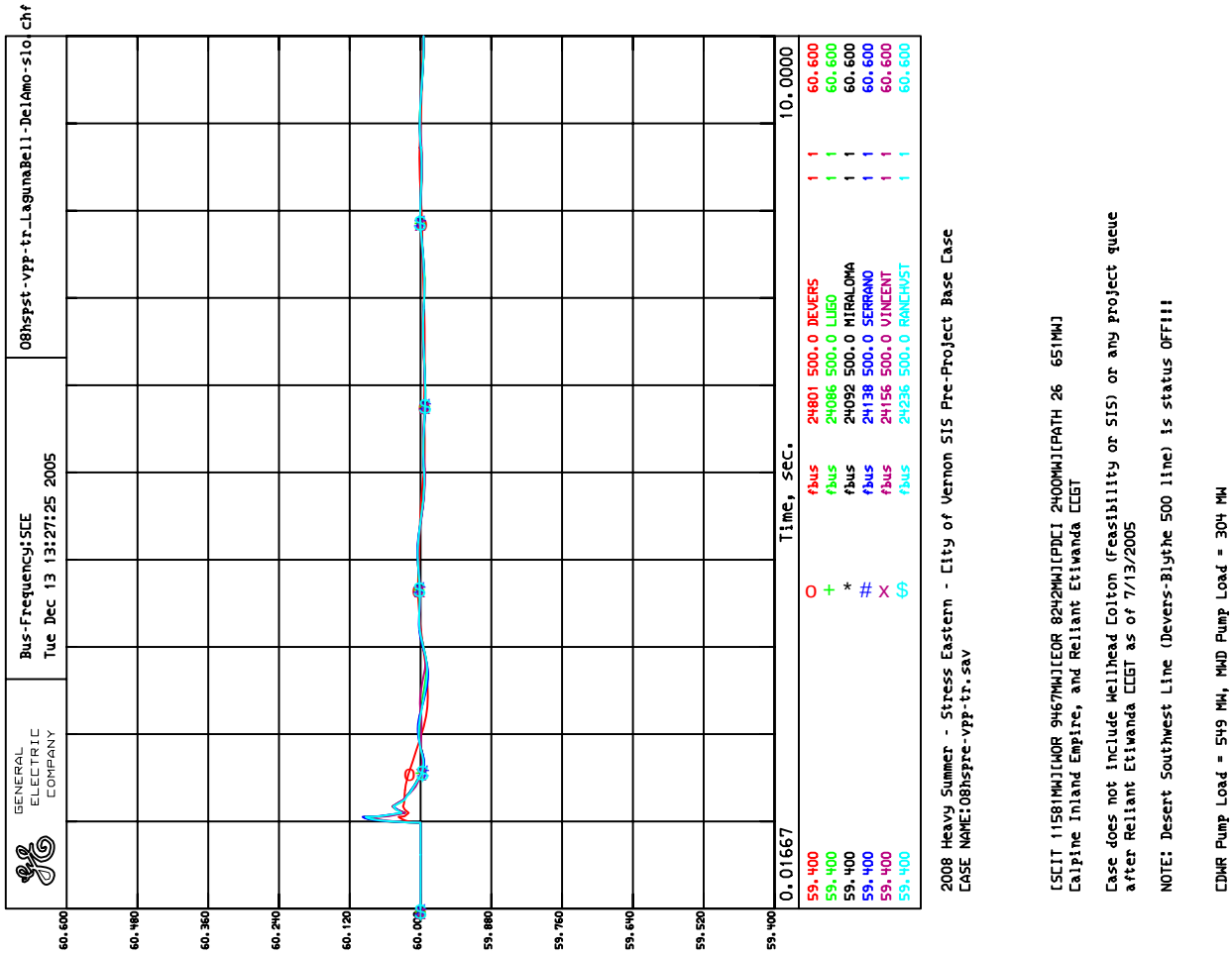
Plot 6 - 2: Three-phase fault at the Laguna Bell 230 kV bus followed by loss of the Laguna Bell – Del Amo 230 kV #1 circuit.



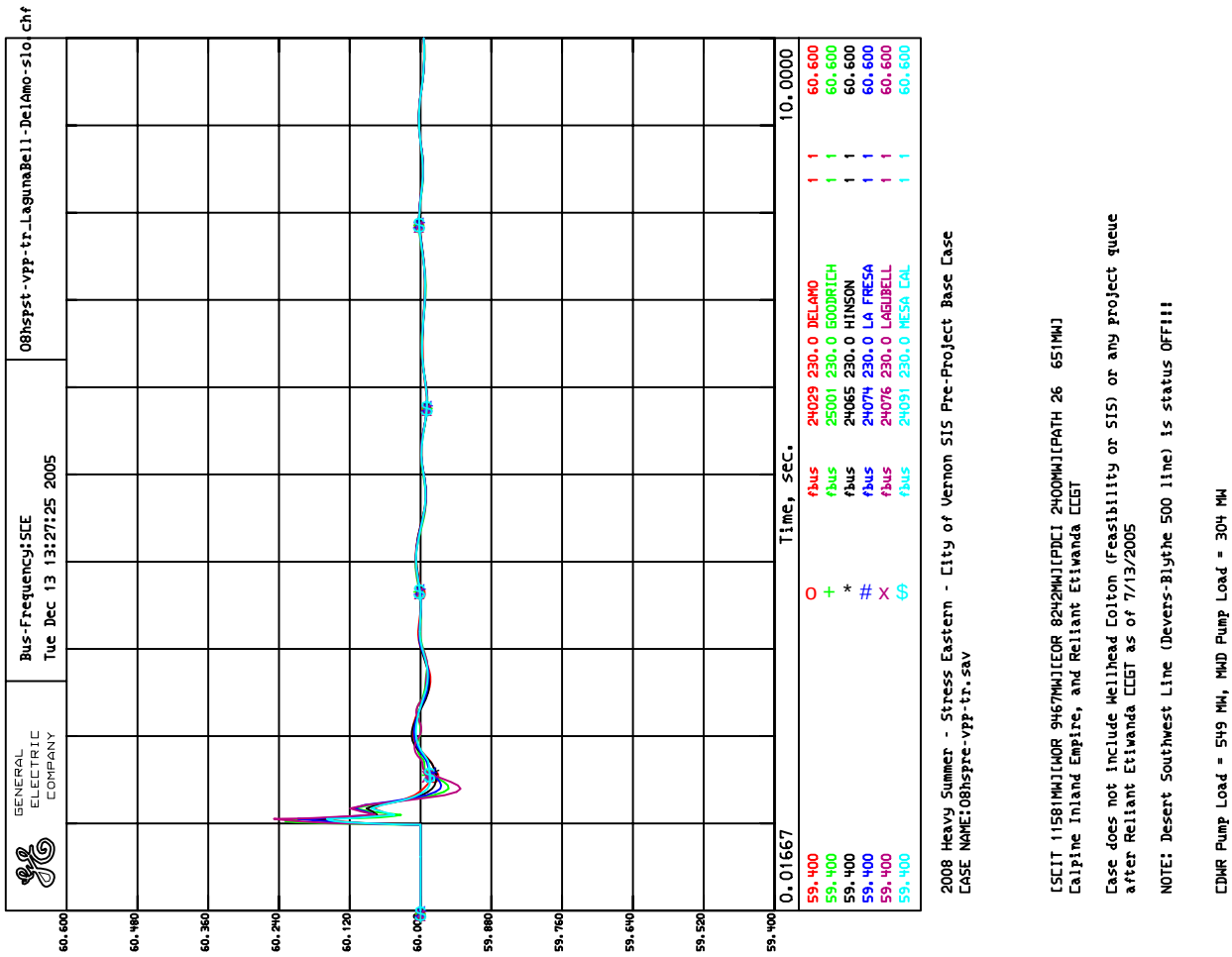
Plot 6 - 3: Three-phase fault at the Laguna Bell 230 kV bus followed by loss of the Laguna Bell – Del Amo 230 kV #1 circuit.



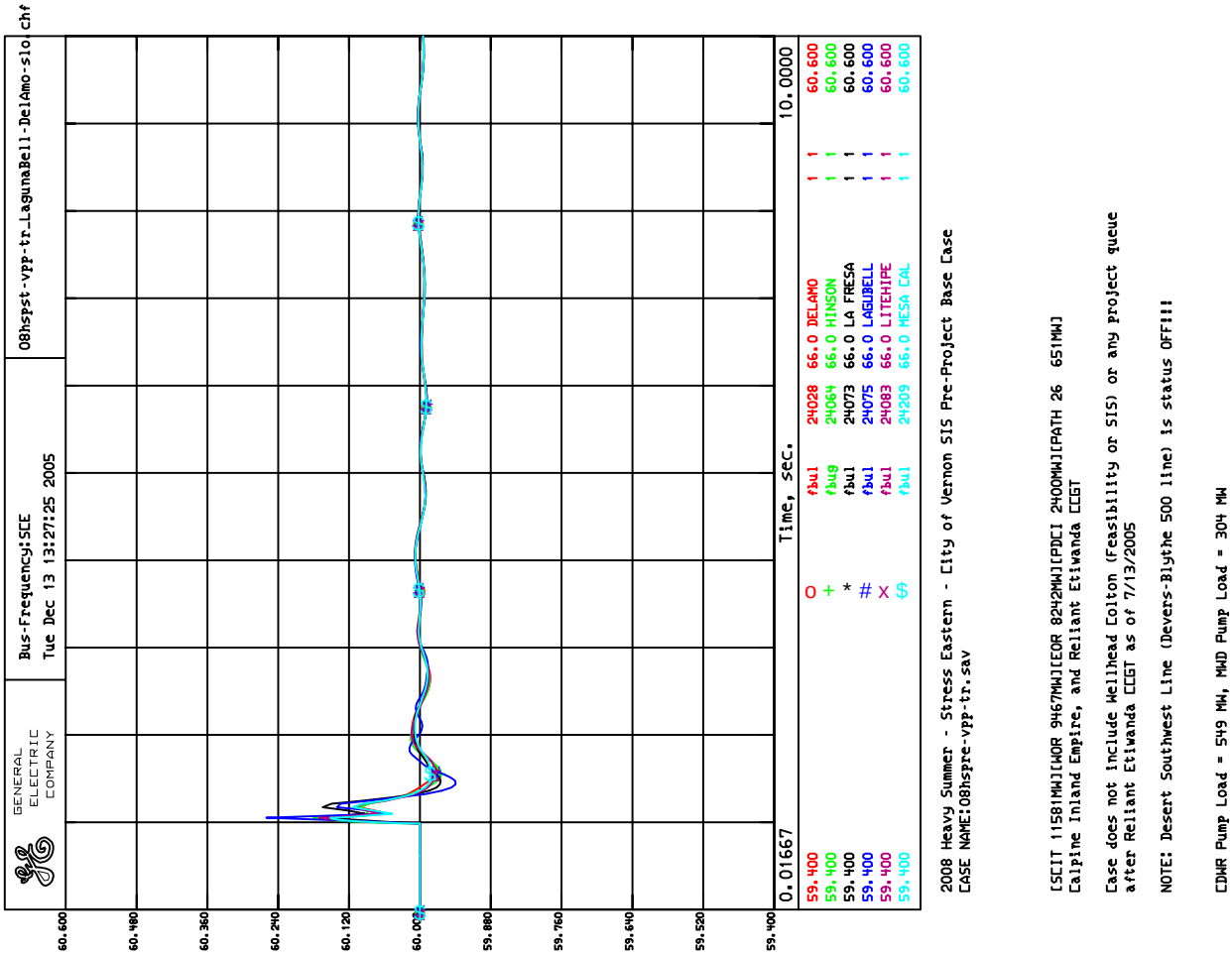
Plot 6 - 4: Three-phase fault at the Laguna Bell 230 kV bus followed by loss of the Laguna Bell – Del Amo 230 kV #1 circuit.



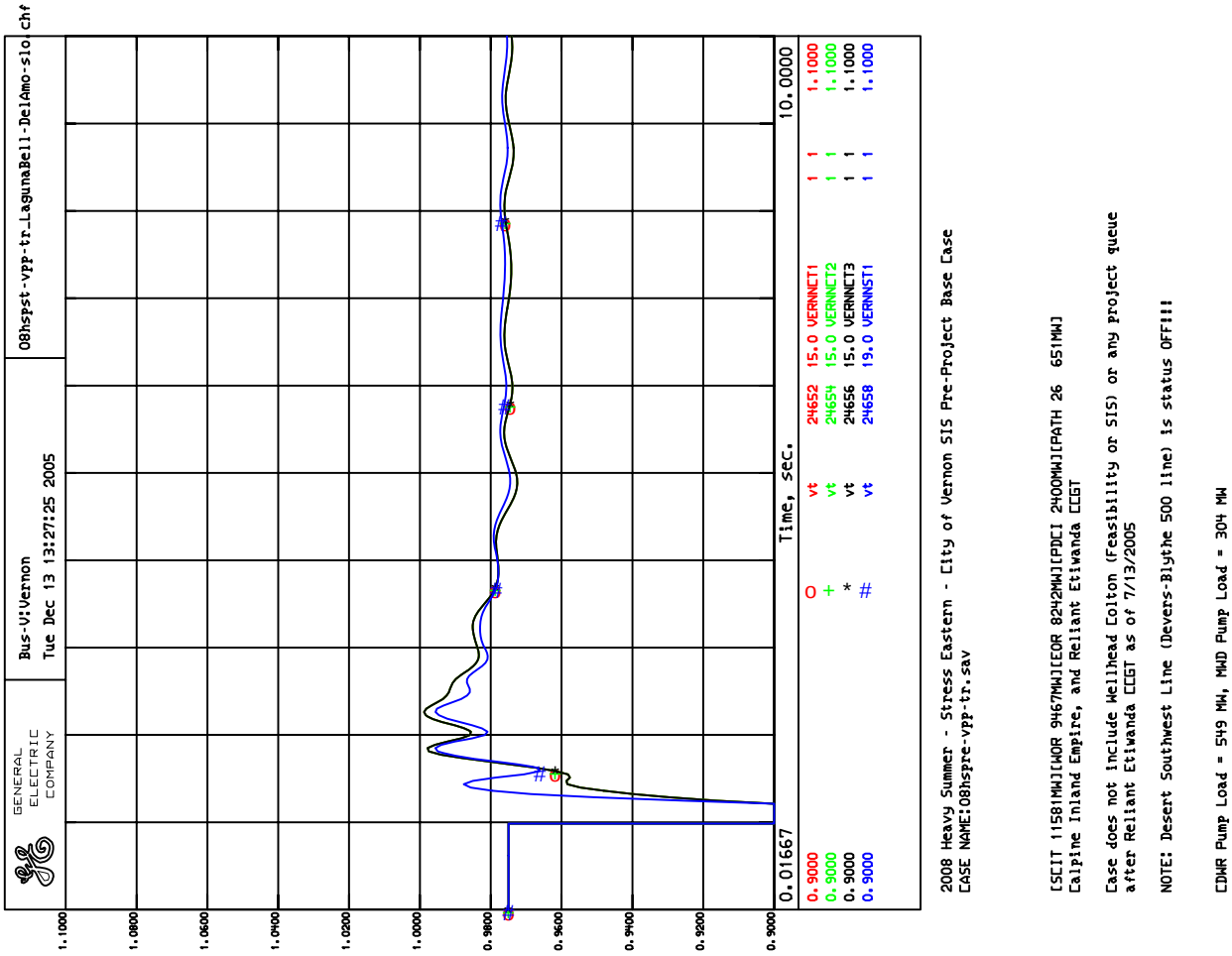
Plot 6 - 5: Three-phase fault at the Laguna Bell 230 kV bus followed by loss of the Laguna Bell – Del Amo 230 kV #1 circuit.



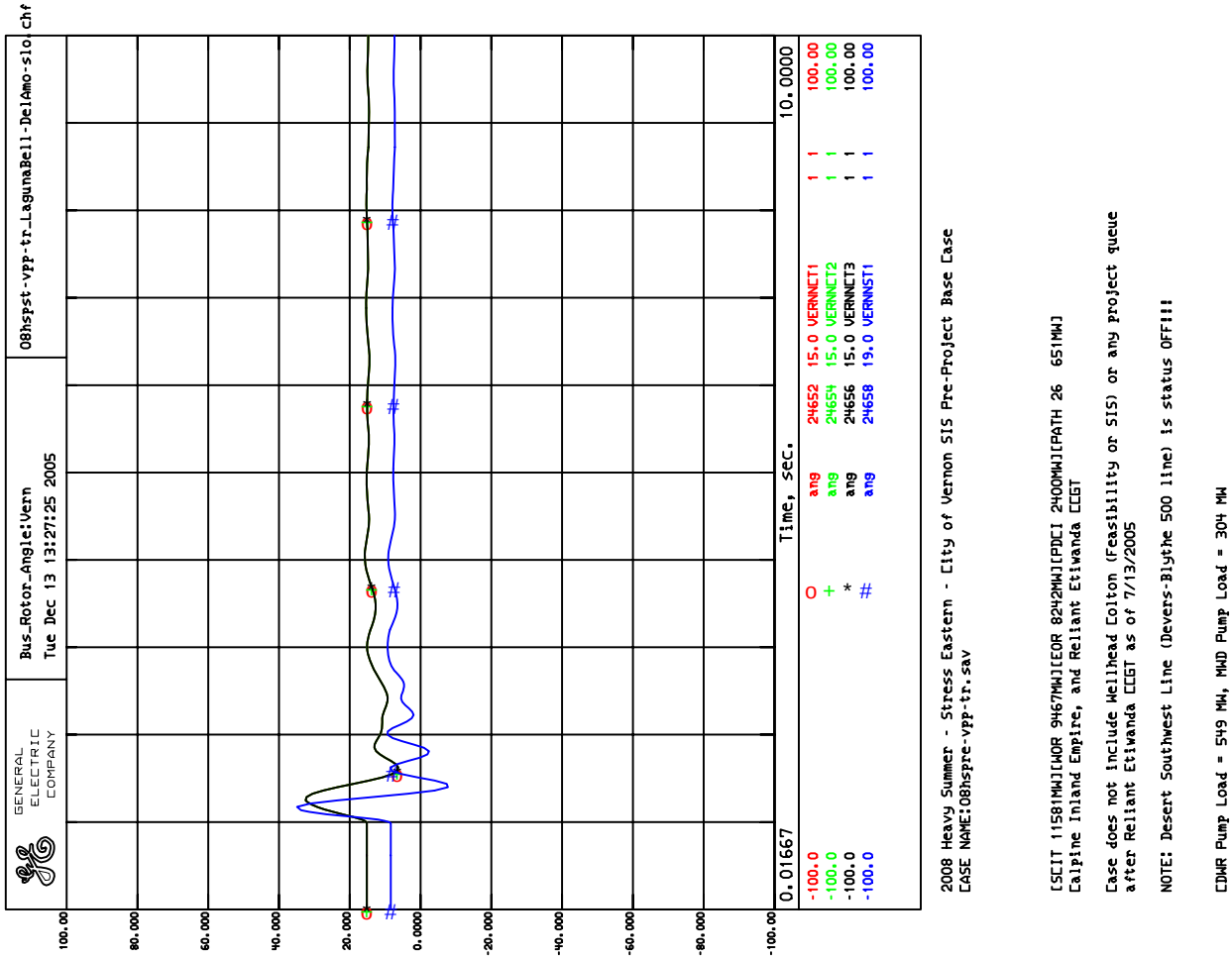
Plot 6 - 6: Three-phase fault at the Laguna Bell 230 kV bus followed by loss of the Laguna Bell – Del Amo 230 kV #1 circuit.



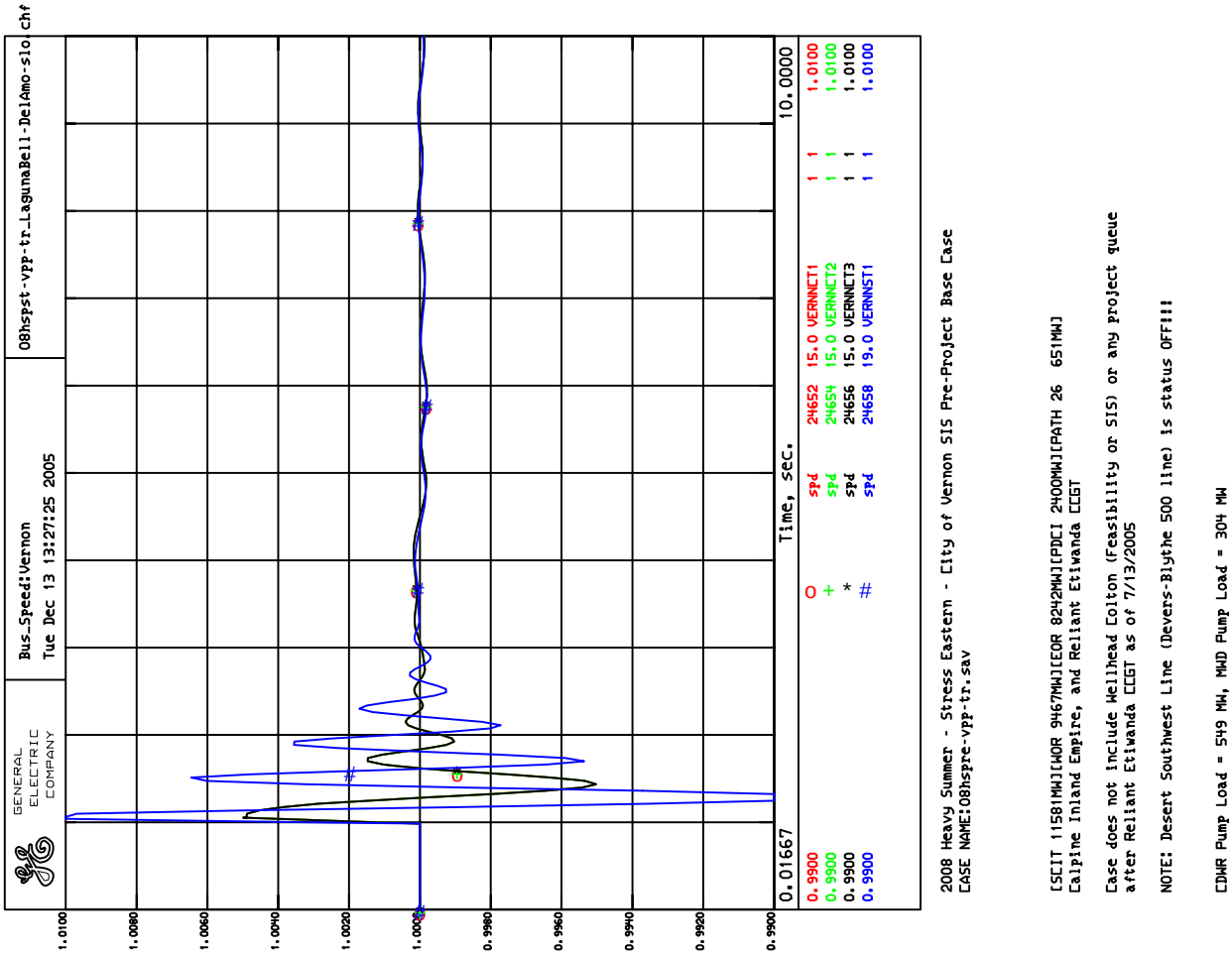
Plot 6 - 7: Three-phase fault at the Laguna Bell 230 kV bus followed by loss of the Laguna Bell – Del Amo 230 kV #1 circuit.



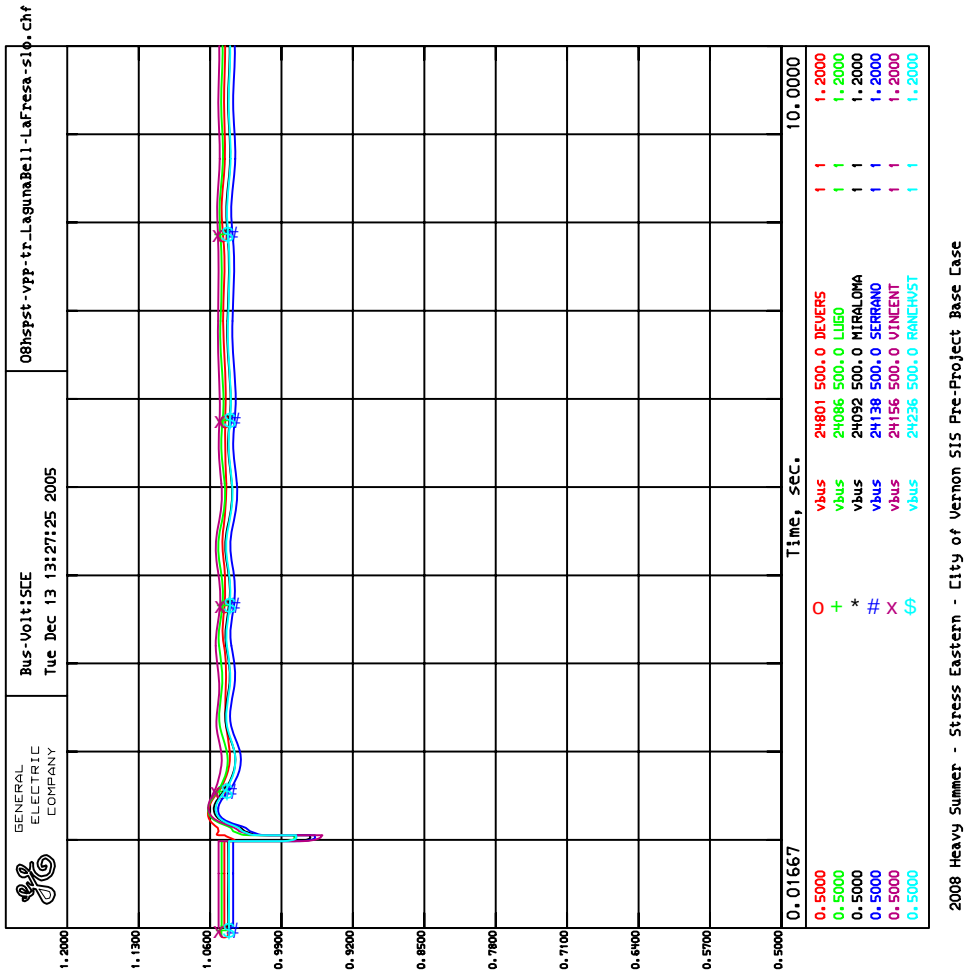
Plot 6 - 8: Three-phase fault at the Laguna Bell 230 kV bus followed by loss of the Laguna Bell – Del Amo 230 kV #1 circuit.



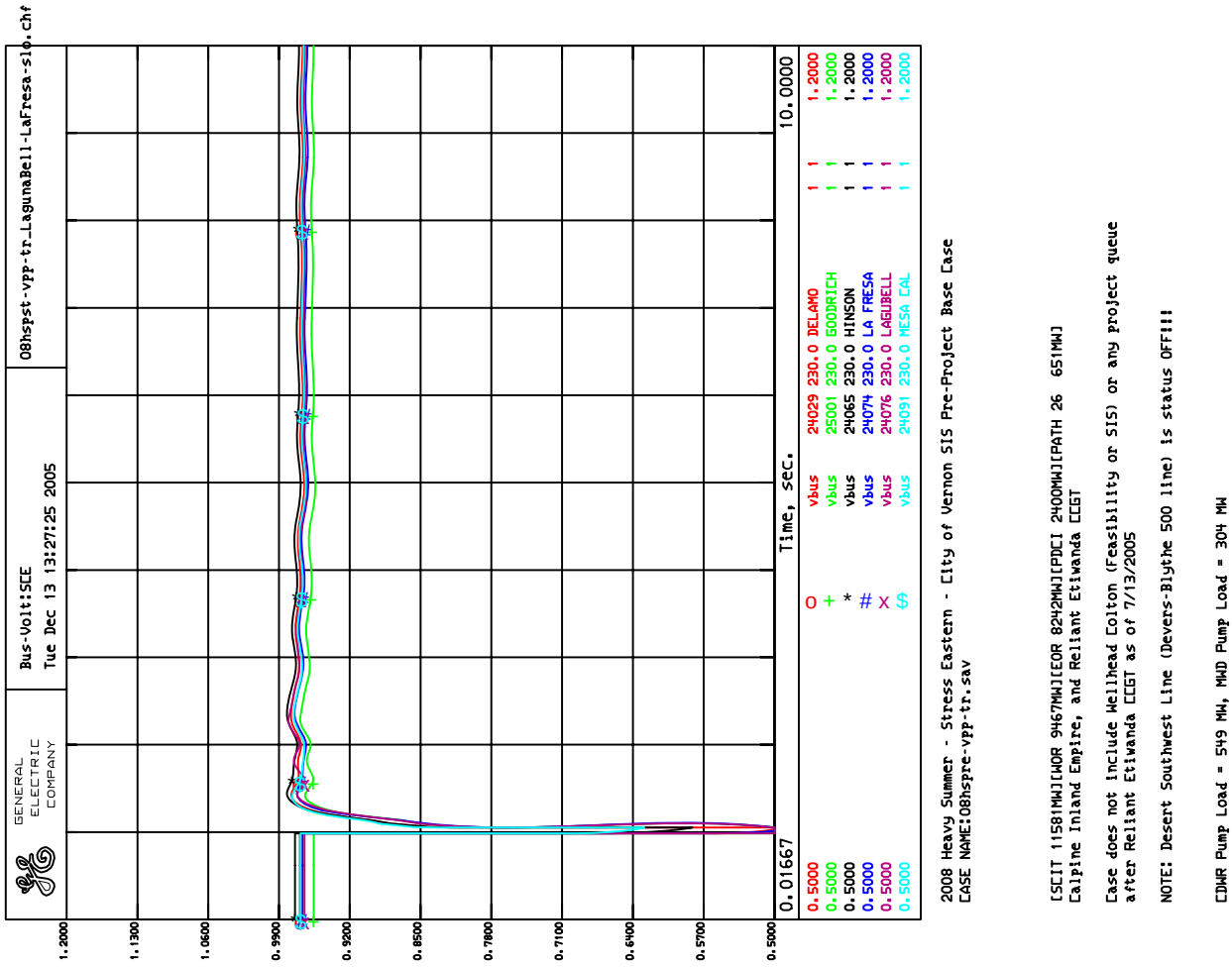
Plot 6 - 9: Three-phase fault at the Laguna Bell 230 kV bus followed by loss of the Laguna Bell – Del Amo 230 kV #1 circuit.



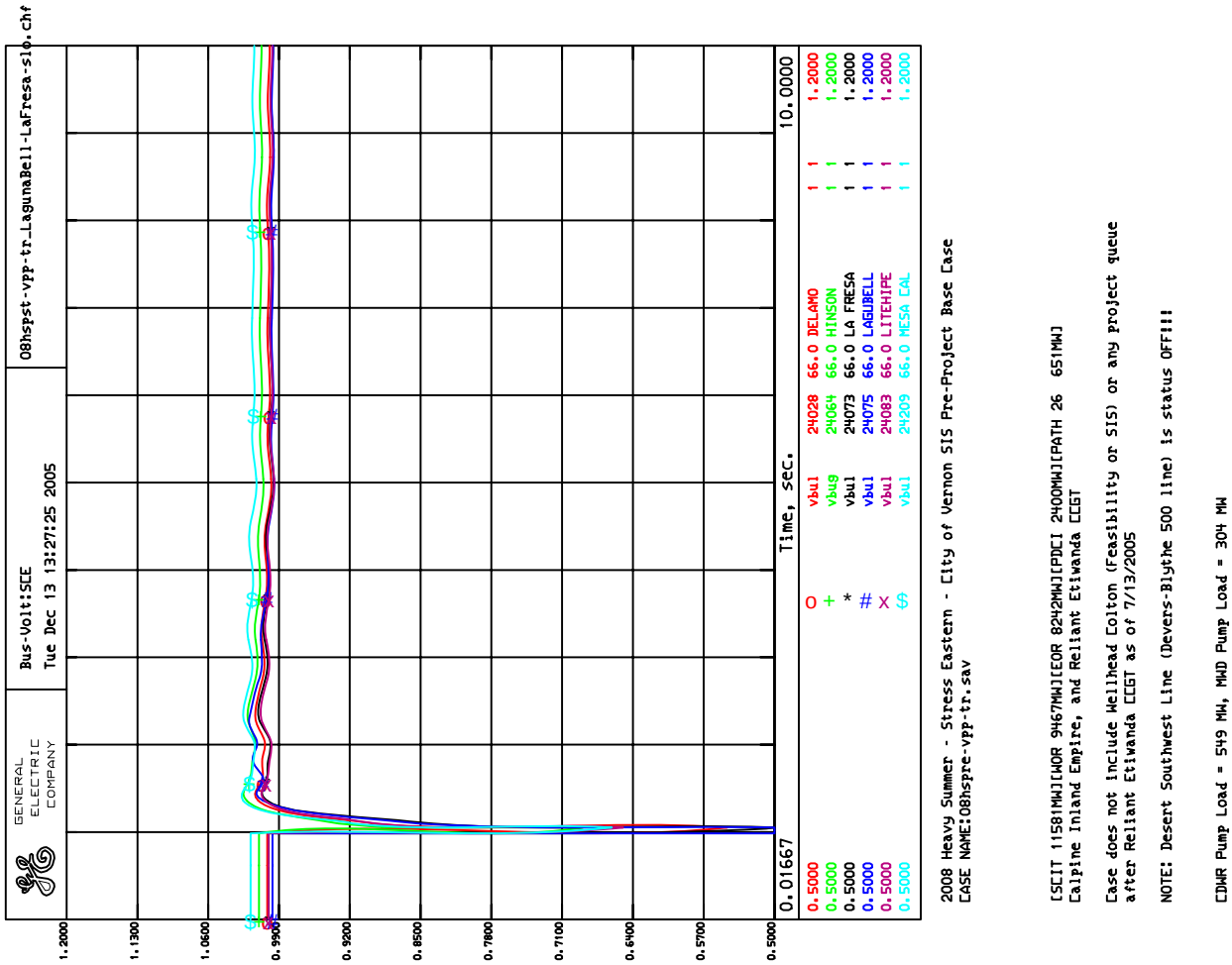
Plot 7 - 1: Three-phase fault at the Laguna Bell 230 kV bus followed by loss of the Laguna Bell – La Fresa 230 kV circuit.



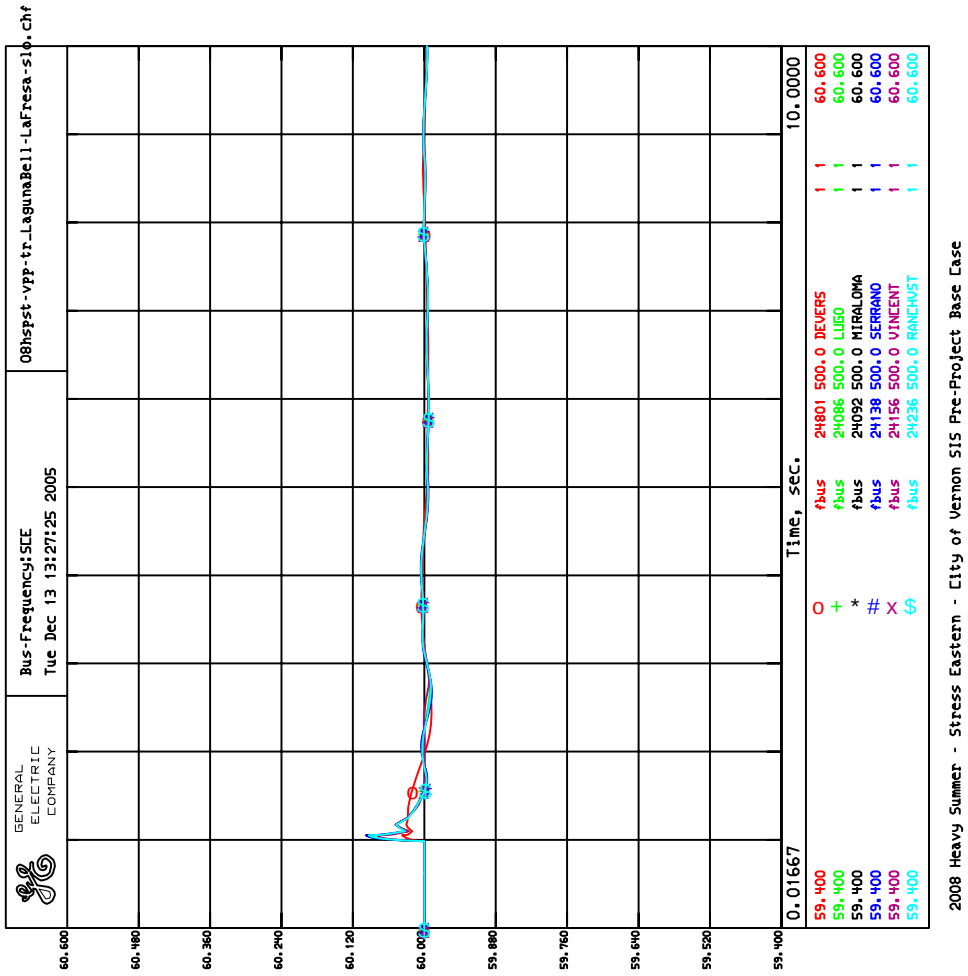
Plot 7 - 2: Three-phase fault at the Laguna Bell 230 kV bus followed by loss of the Laguna Bell – La Fresa 230 kV circuit.



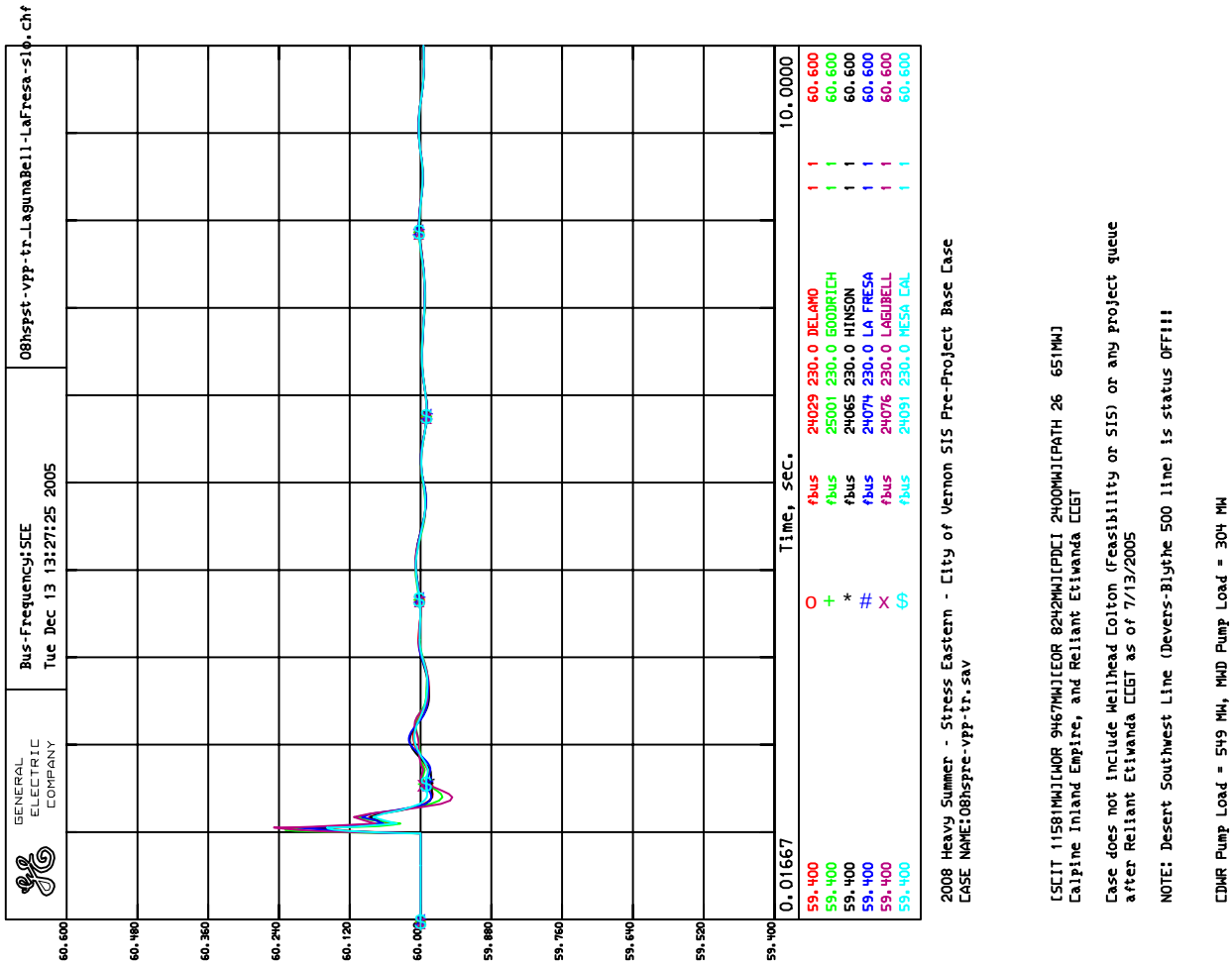
Plot 7 - 3: Three-phase fault at the Laguna Bell 230 kV bus followed by loss of the Laguna Bell – La Fresa 230 kV circuit.



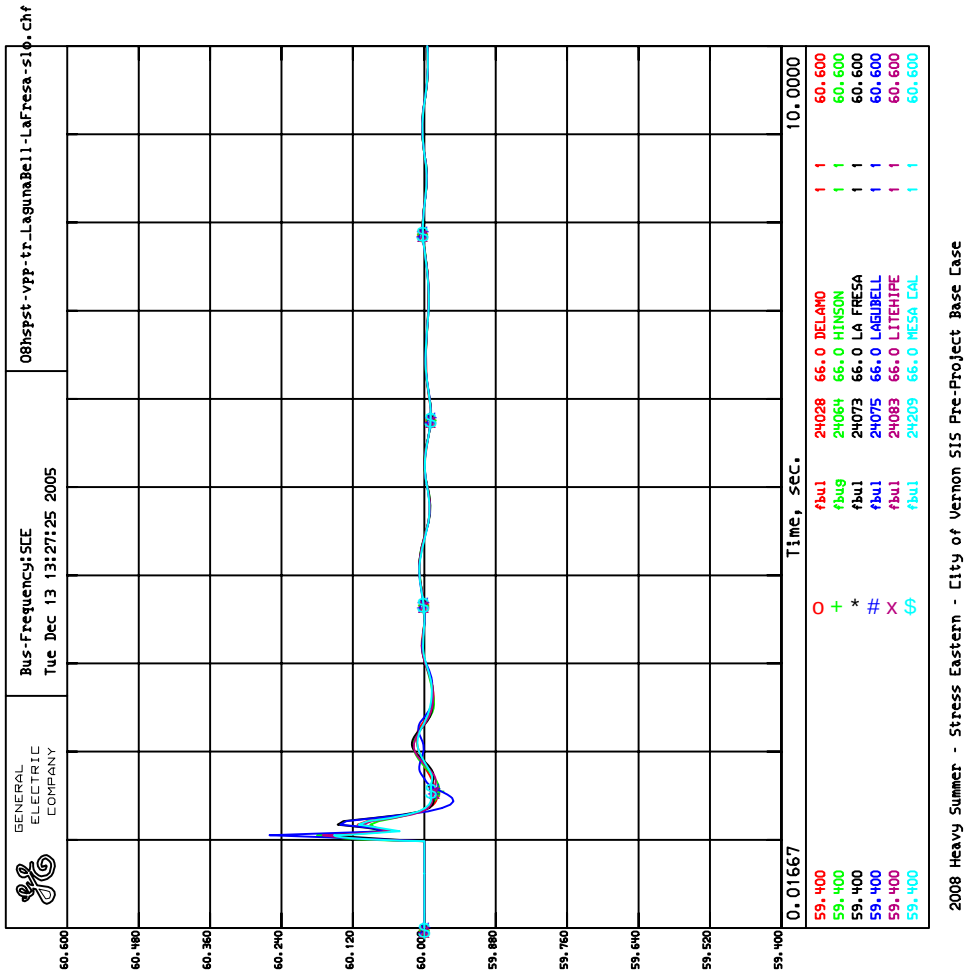
Plot 7 - 4: Three-phase fault at the Laguna Bell 230 kV bus followed by loss of the Laguna Bell – La Fresa 230 kV circuit.



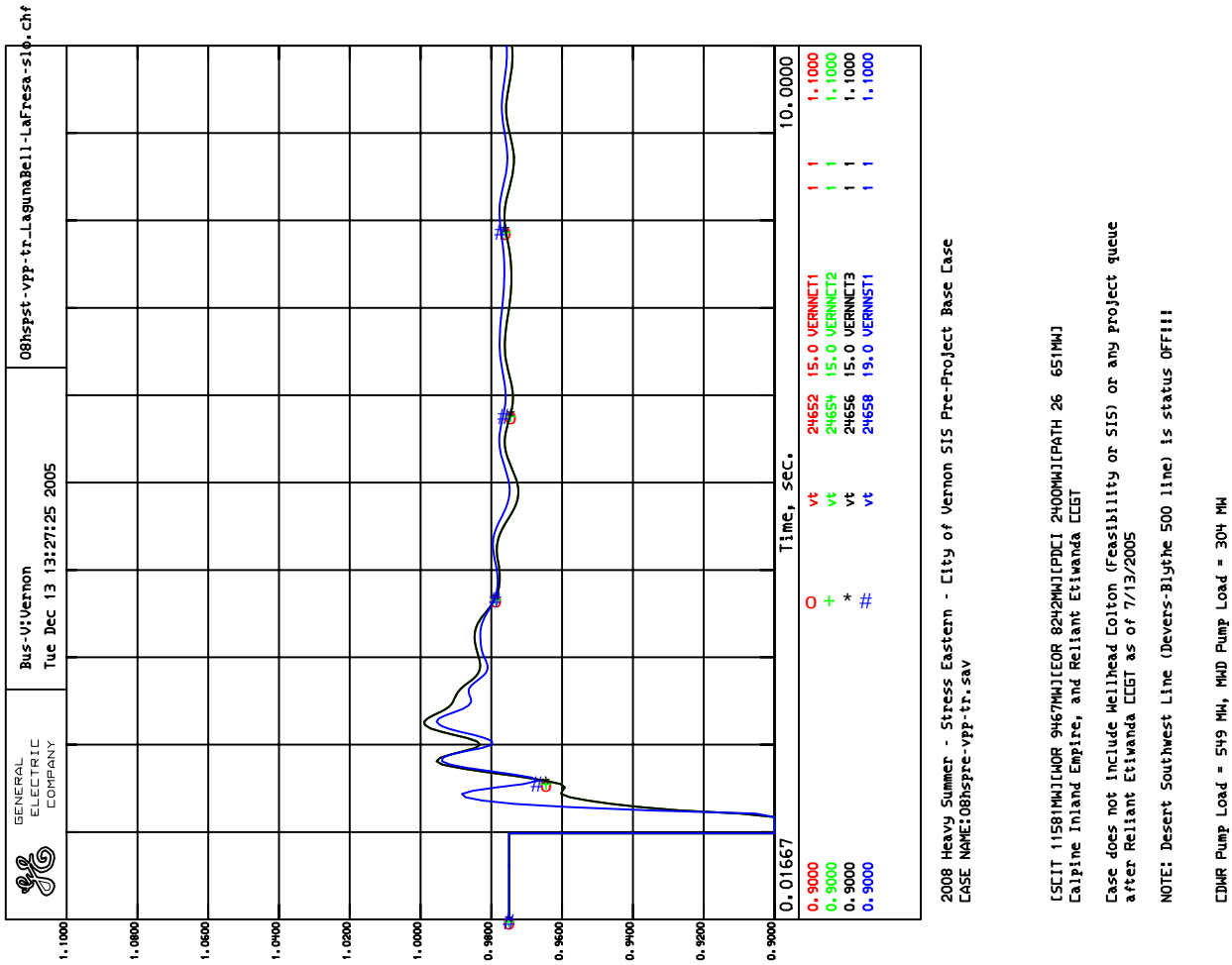
Plot 7 - 5: Three-phase fault at the Laguna Bell 230 kV bus followed by loss of the Laguna Bell – La Fresa 230 kV circuit.



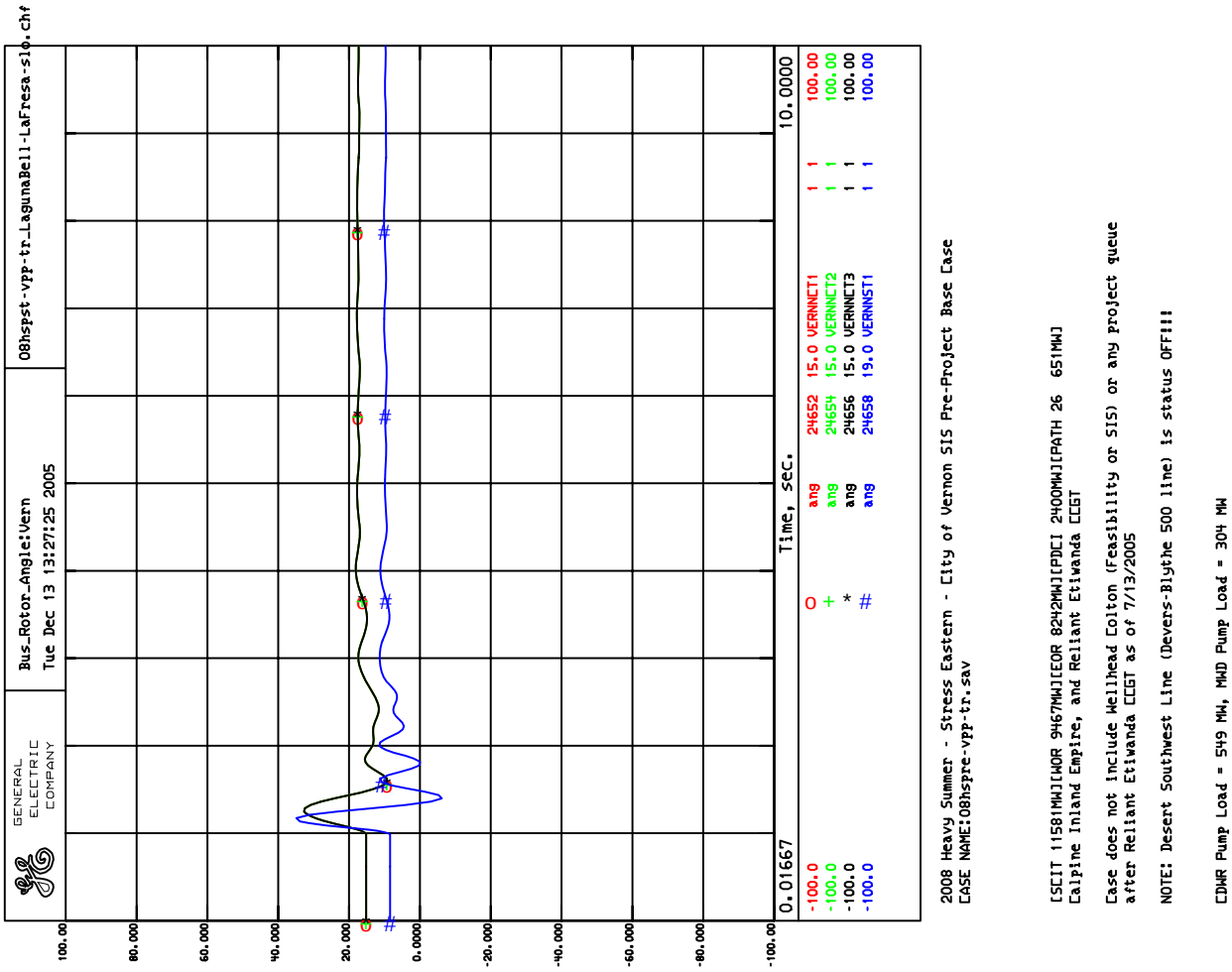
Plot 7 - 6: Three-phase fault at the Laguna Bell 230 kV bus followed by loss of the Laguna Bell – La Fresa 230 kV circuit.



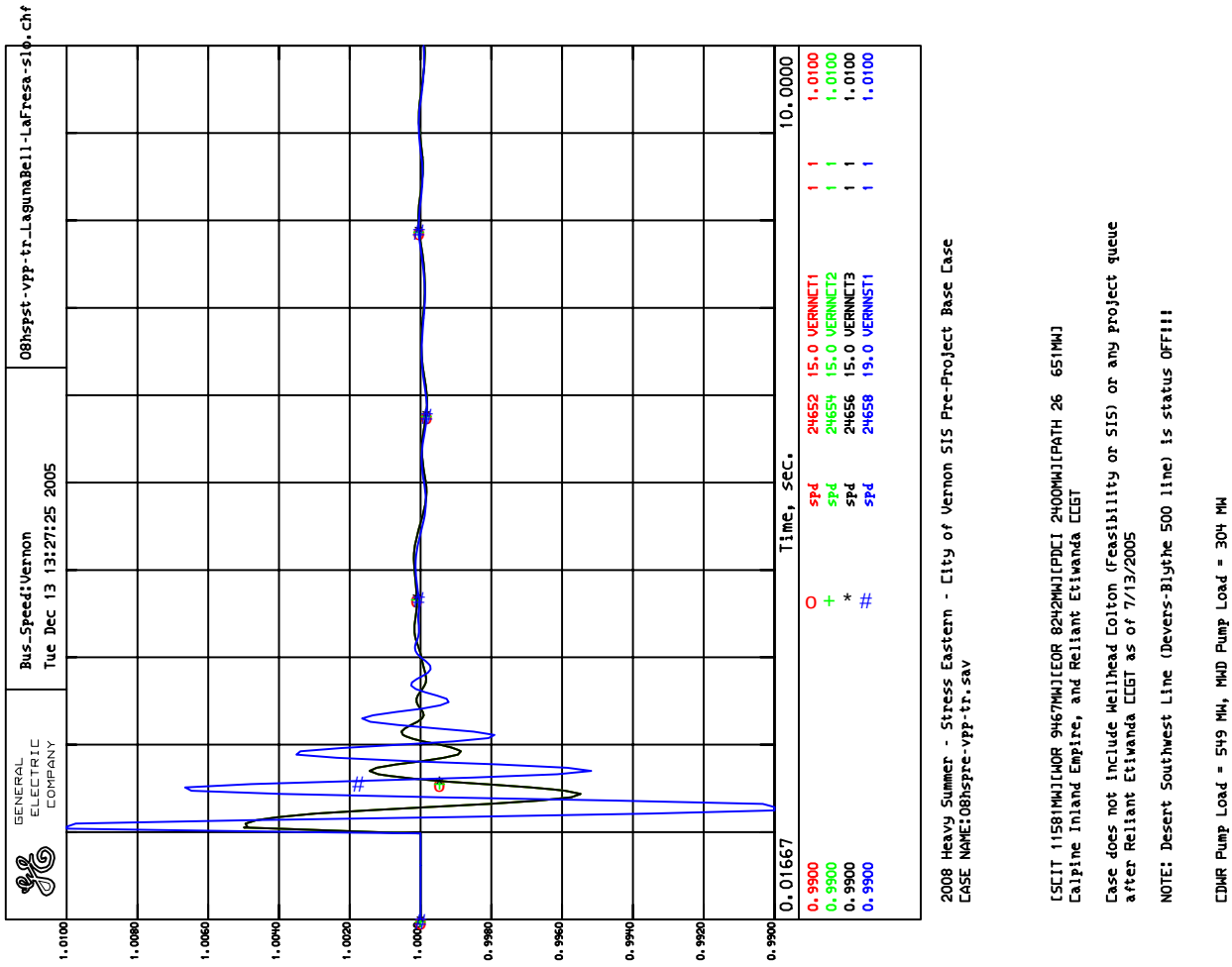
Plot 7 - 7: Three-phase fault at the Laguna Bell 230 kV bus followed by loss of the Laguna Bell – La Fresa 230 kV circuit.



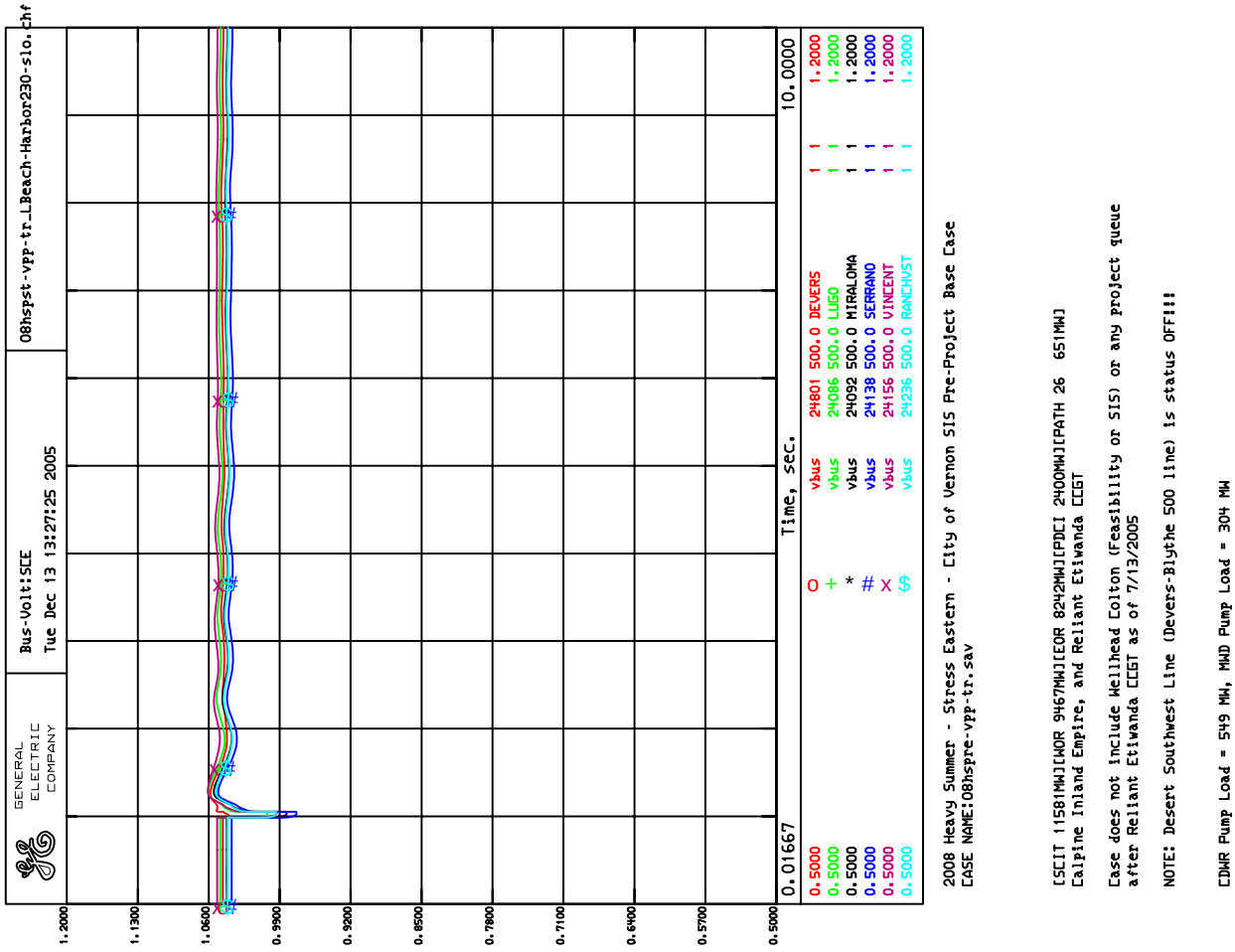
Plot 7 - 8: Three-phase fault at the Laguna Bell 230 kV bus followed by loss of the Laguna Bell – La Fresa 230 kV circuit.



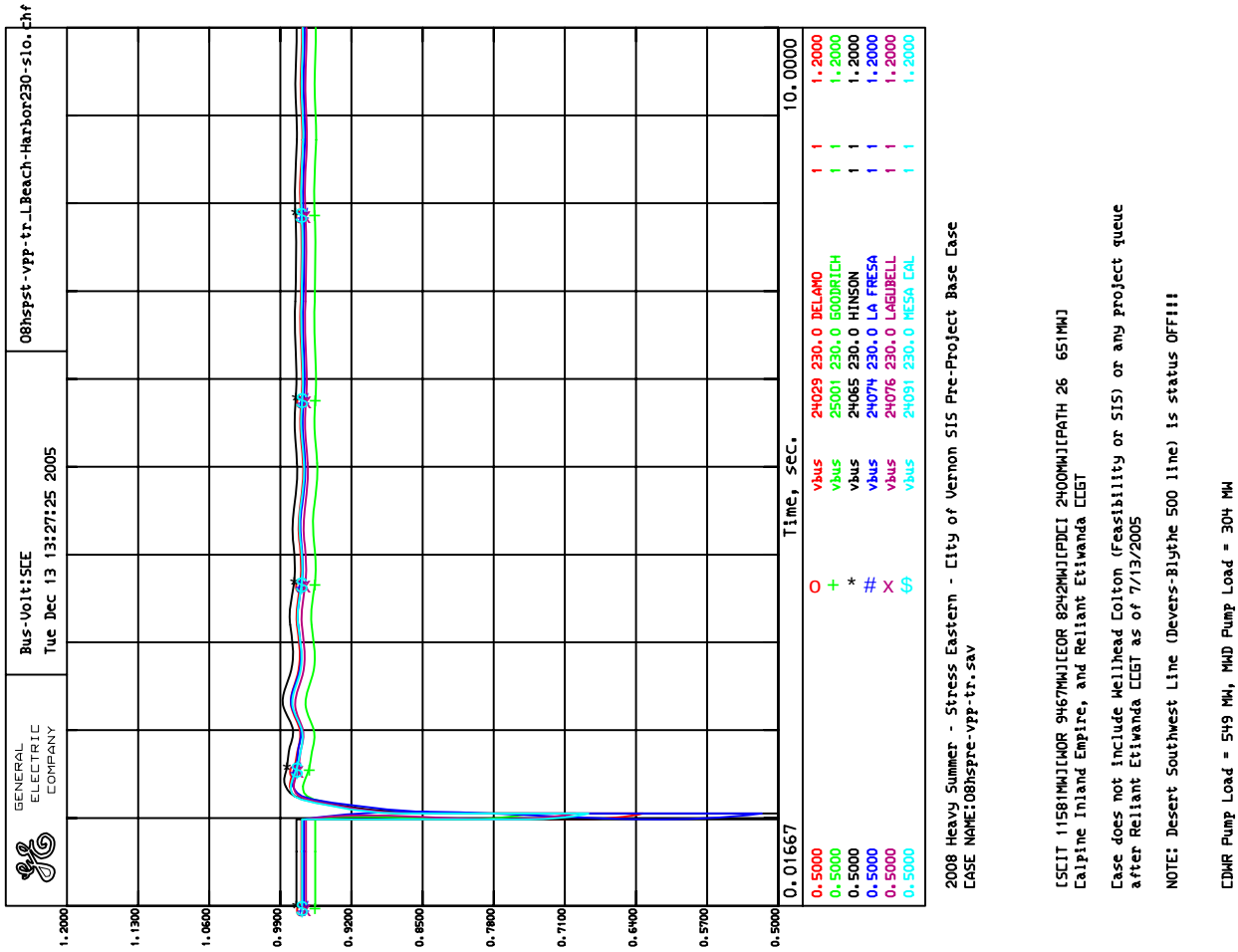
Plot 7 - 9: Three-phase fault at the Laguna Bell 230 kV bus followed by loss of the Laguna Bell – La Fresa 230 kV circuit.



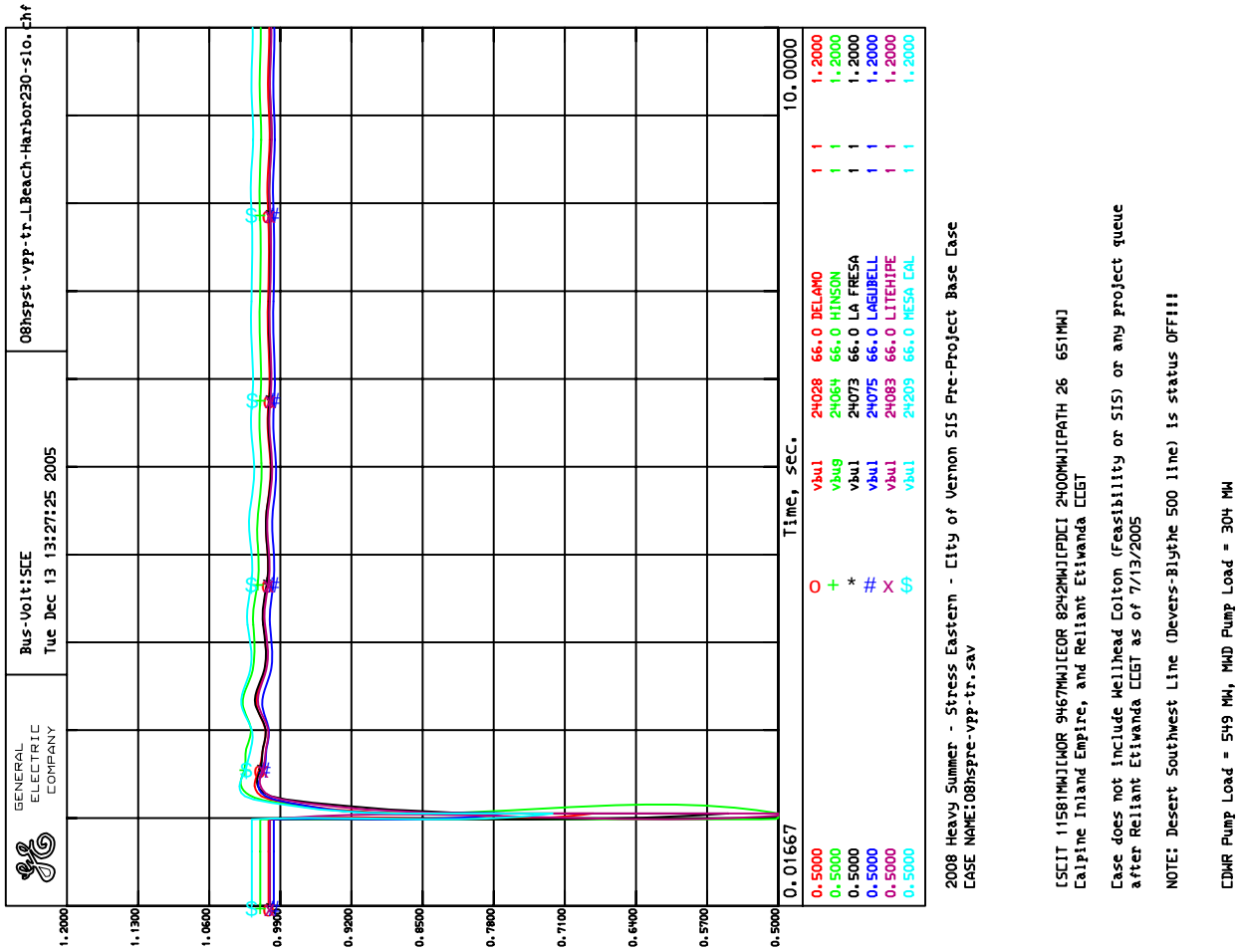
Plot 8 - 1: Three-phase fault at the Harbor Gen 230 kV bus followed by loss of the Long Beach – Harbor Gen 230 kV circuit.



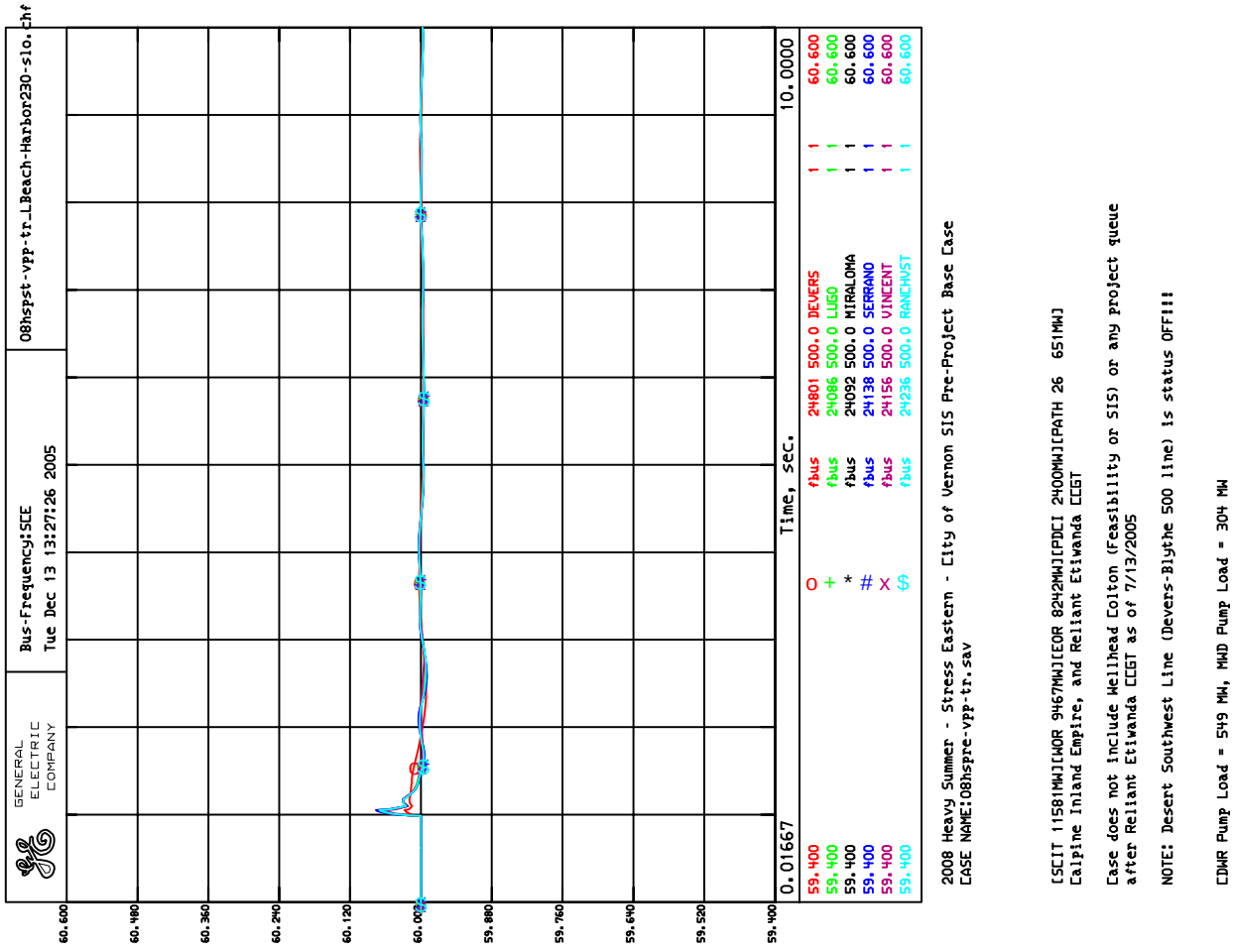
Plot 8 - 2: Three-phase fault at the Harbor Gen 230 kV bus followed by loss of the Long Beach – Harbor Gen 230 kV circuit.



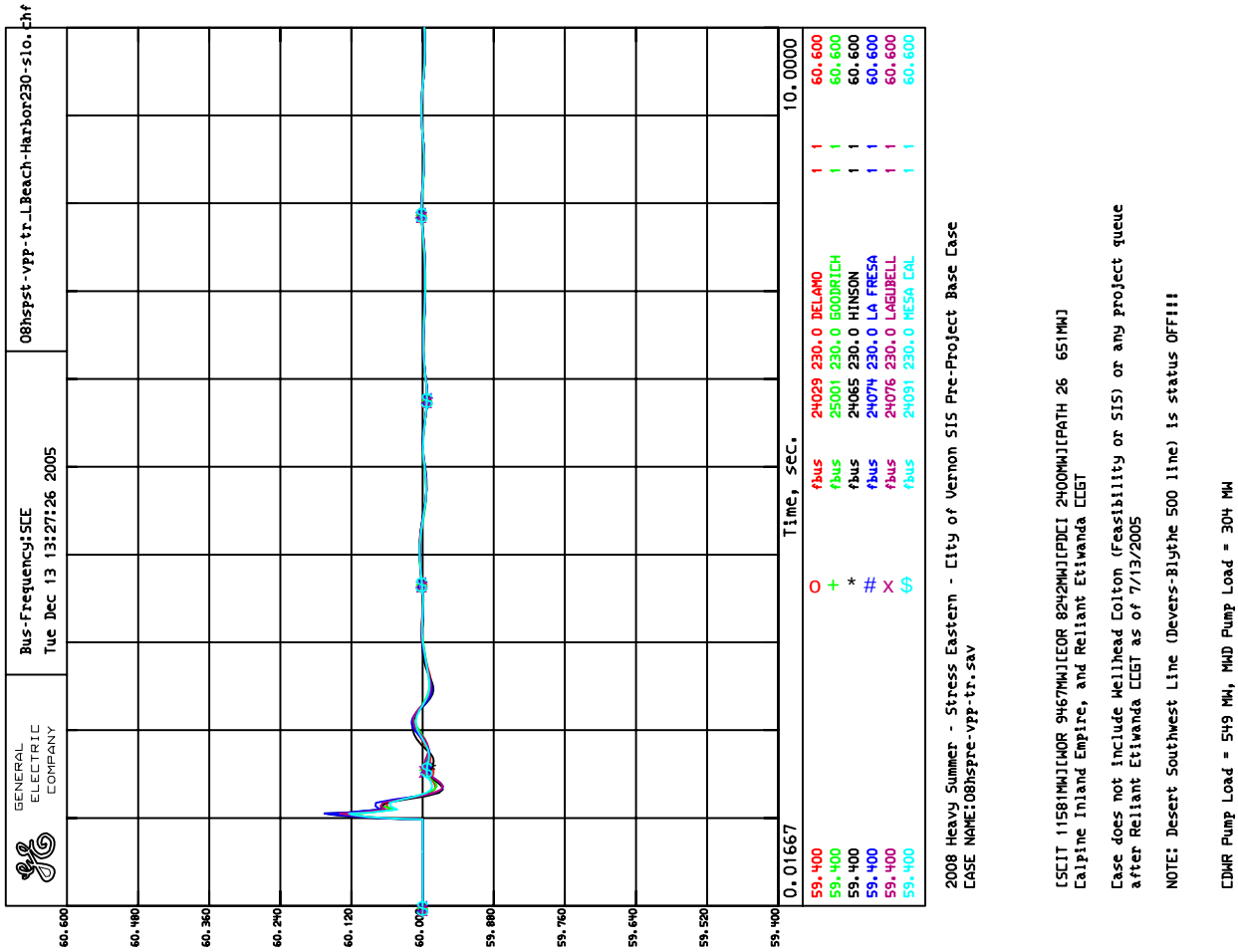
Plot 8 - 3: Three-phase fault at the Harbor Gen 230 kV bus followed by loss of the Long Beach – Harbor Gen 230 kV circuit.



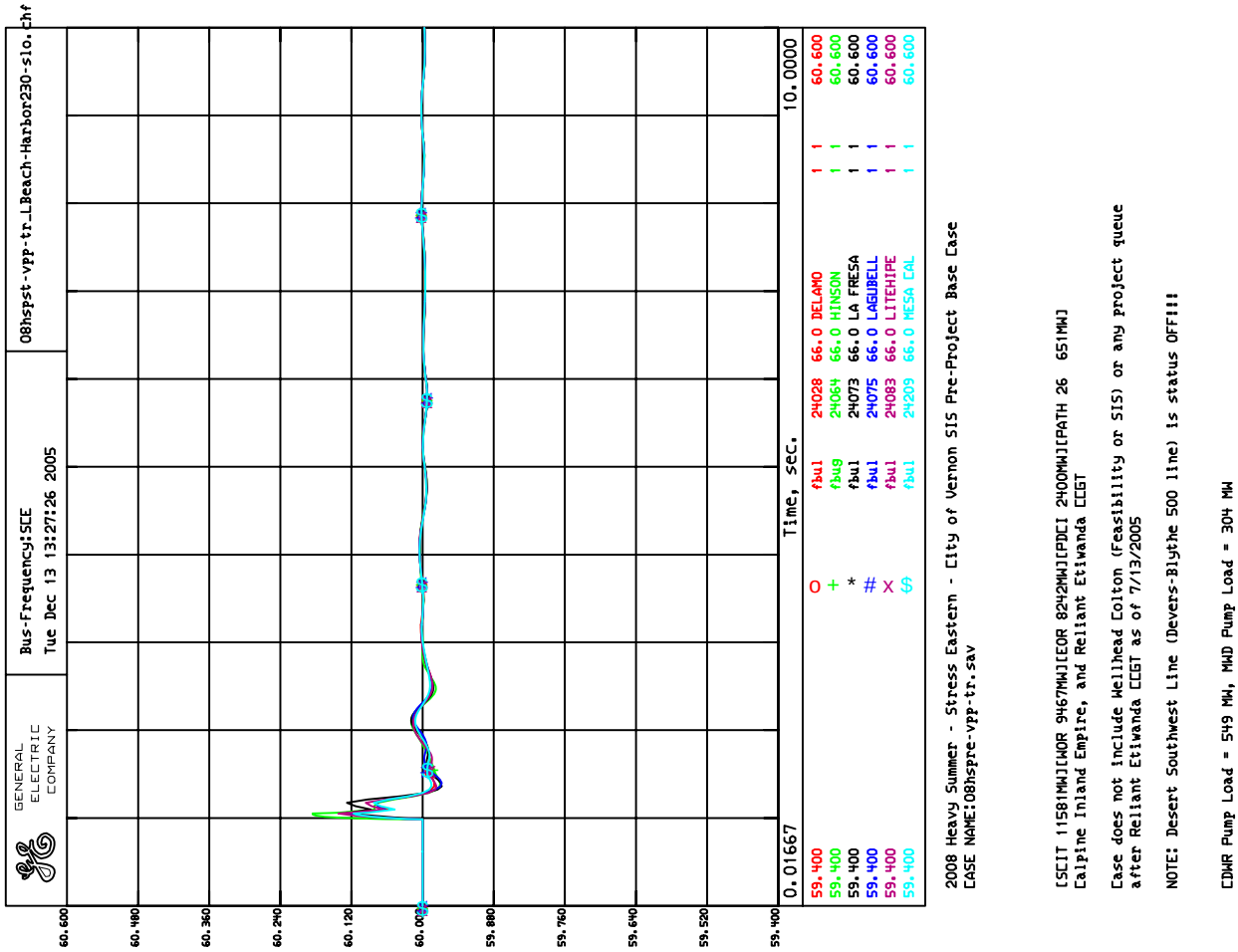
Plot 8 - 4: Three-phase fault at the Harbor Gen 230 kV bus followed by loss of the Long Beach – Harbor Gen 230 kV circuit.



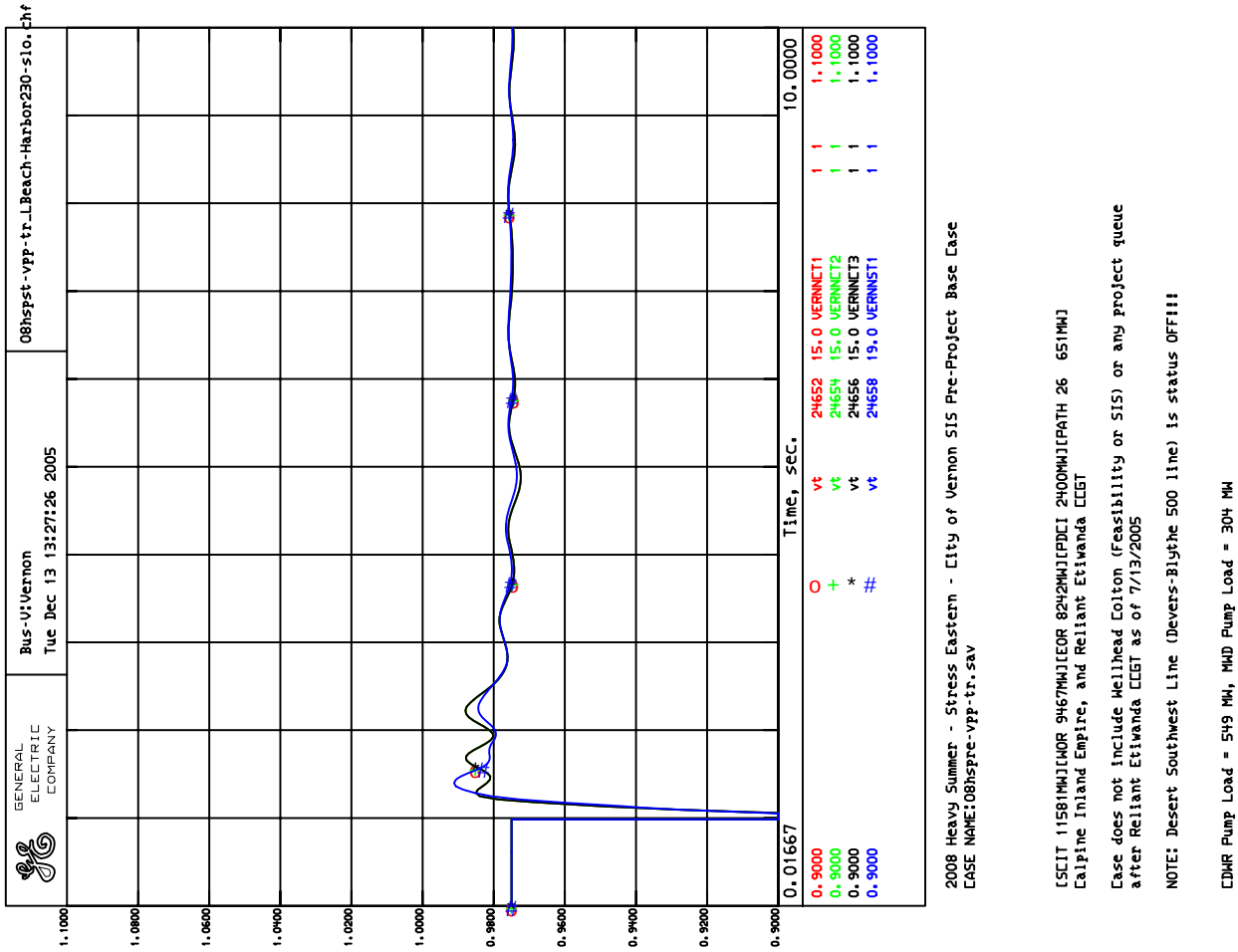
Plot 8 - 5: Three-phase fault at the Harbor Gen 230 kV bus followed by loss of the Long Beach – Harbor Gen 230 kV circuit.



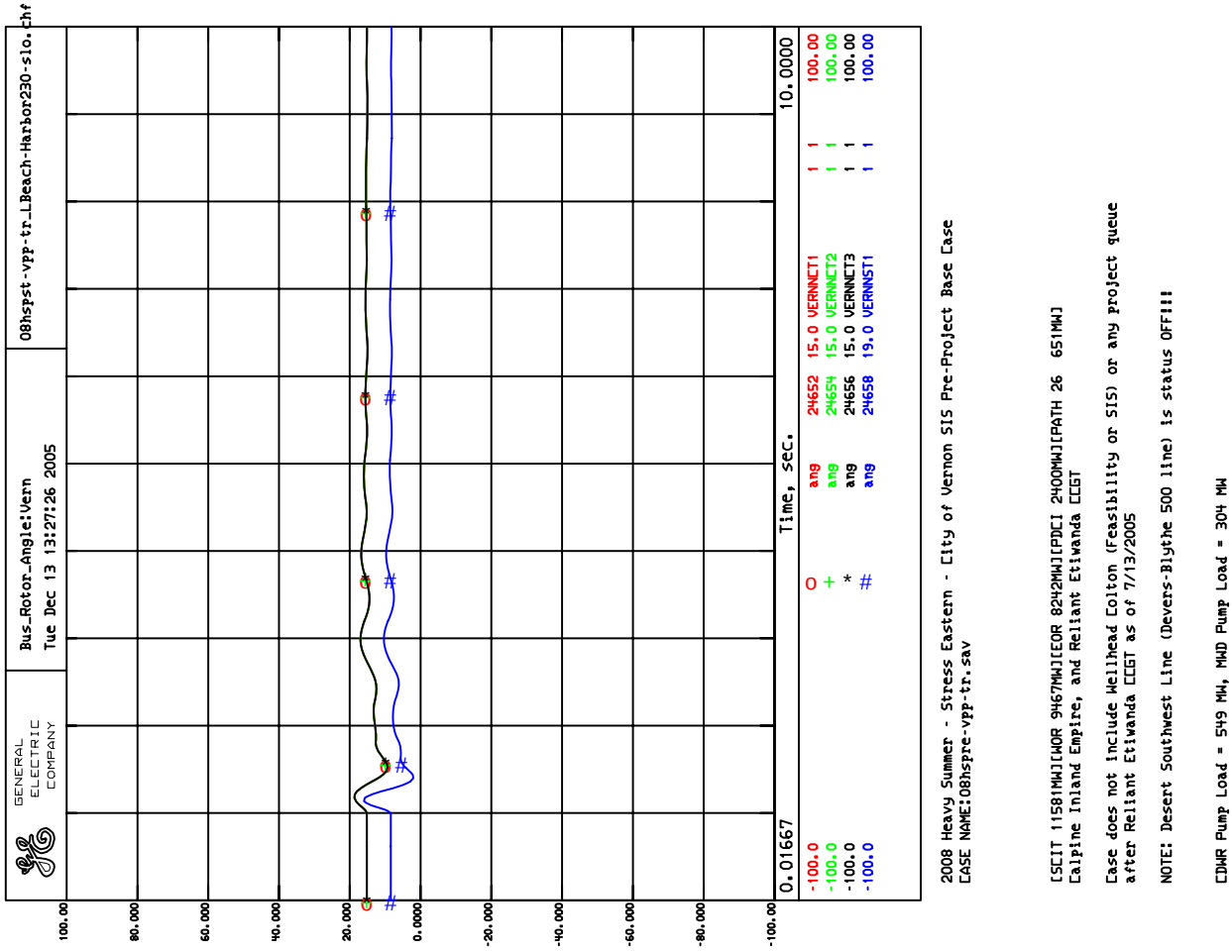
Plot 8 - 6: Three-phase fault at the Harbor Gen 230 kV bus followed by loss of the Long Beach – Harbor Gen 230 kV circuit.



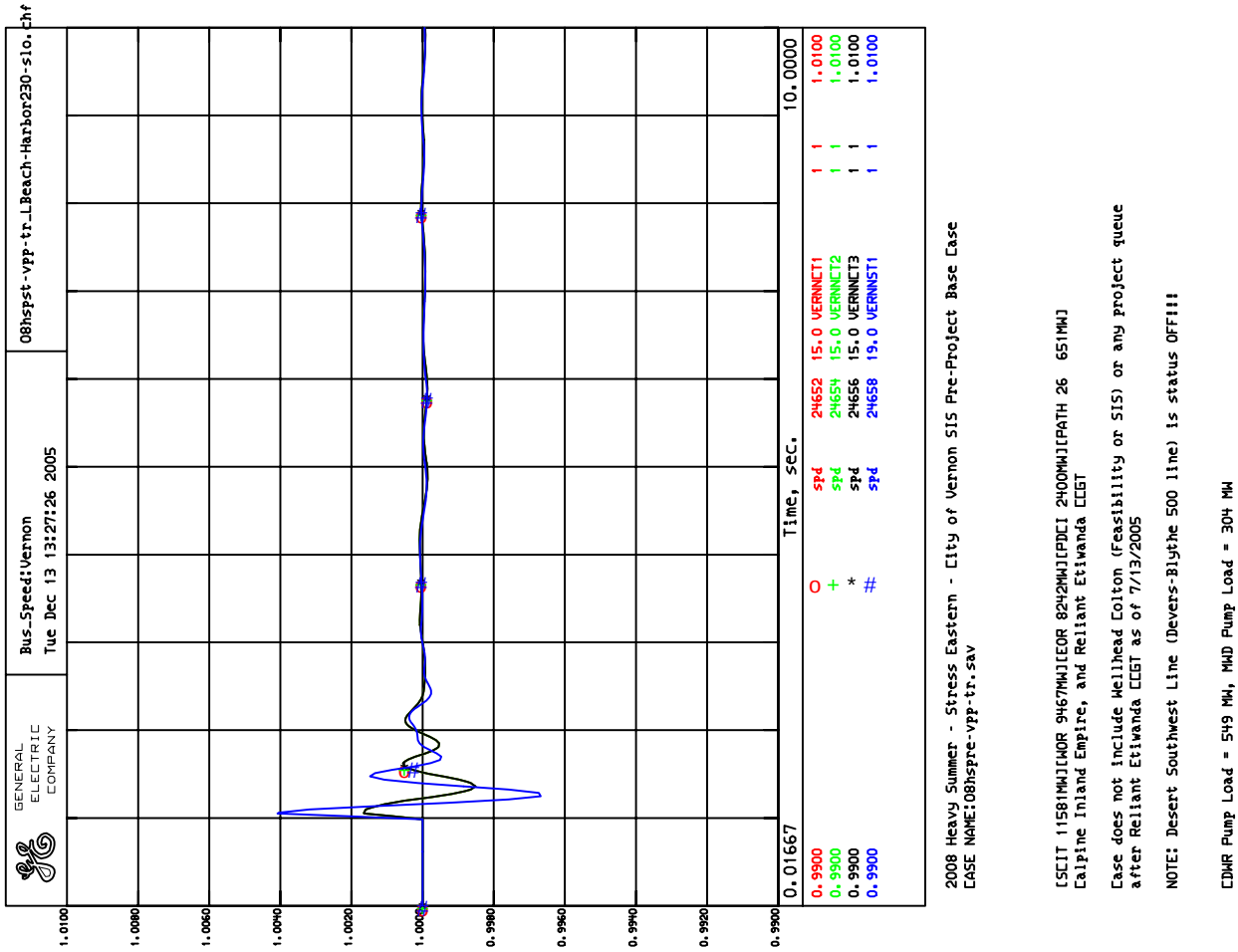
Plot 8 - 7: Three-phase fault at the Harbor Gen 230 kV bus followed by loss of the Long Beach – Harbor Gen 230 kV circuit.



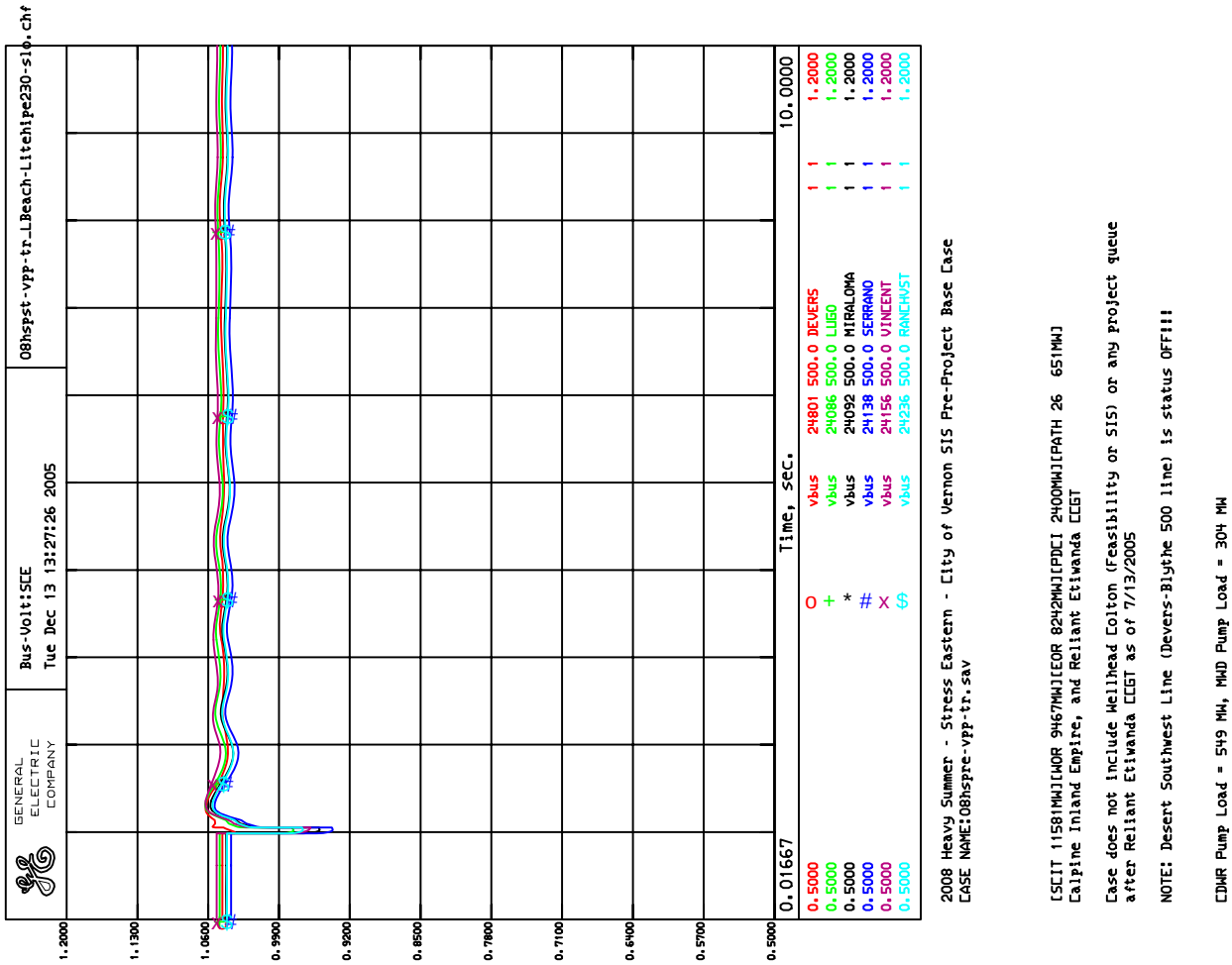
Plot 8 - 8: Three-phase fault at the Harbor Gen 230 kV bus followed by loss of the Long Beach – Harbor Gen 230 kV circuit.



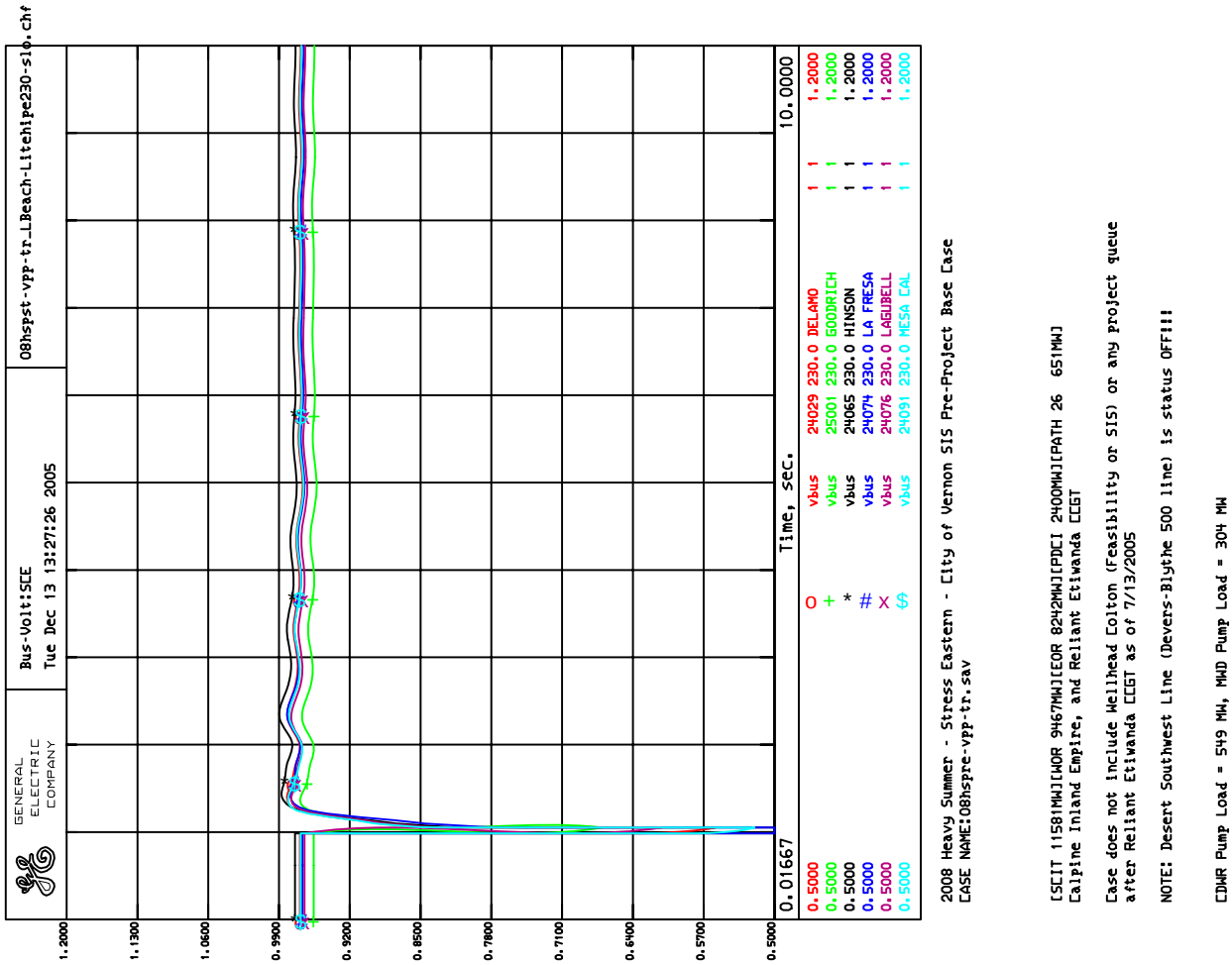
Plot 8 - 9: Three-phase fault at the Harbor Gen 230 kV bus followed by loss of the Long Beach – Harbor Gen 230 kV circuit.



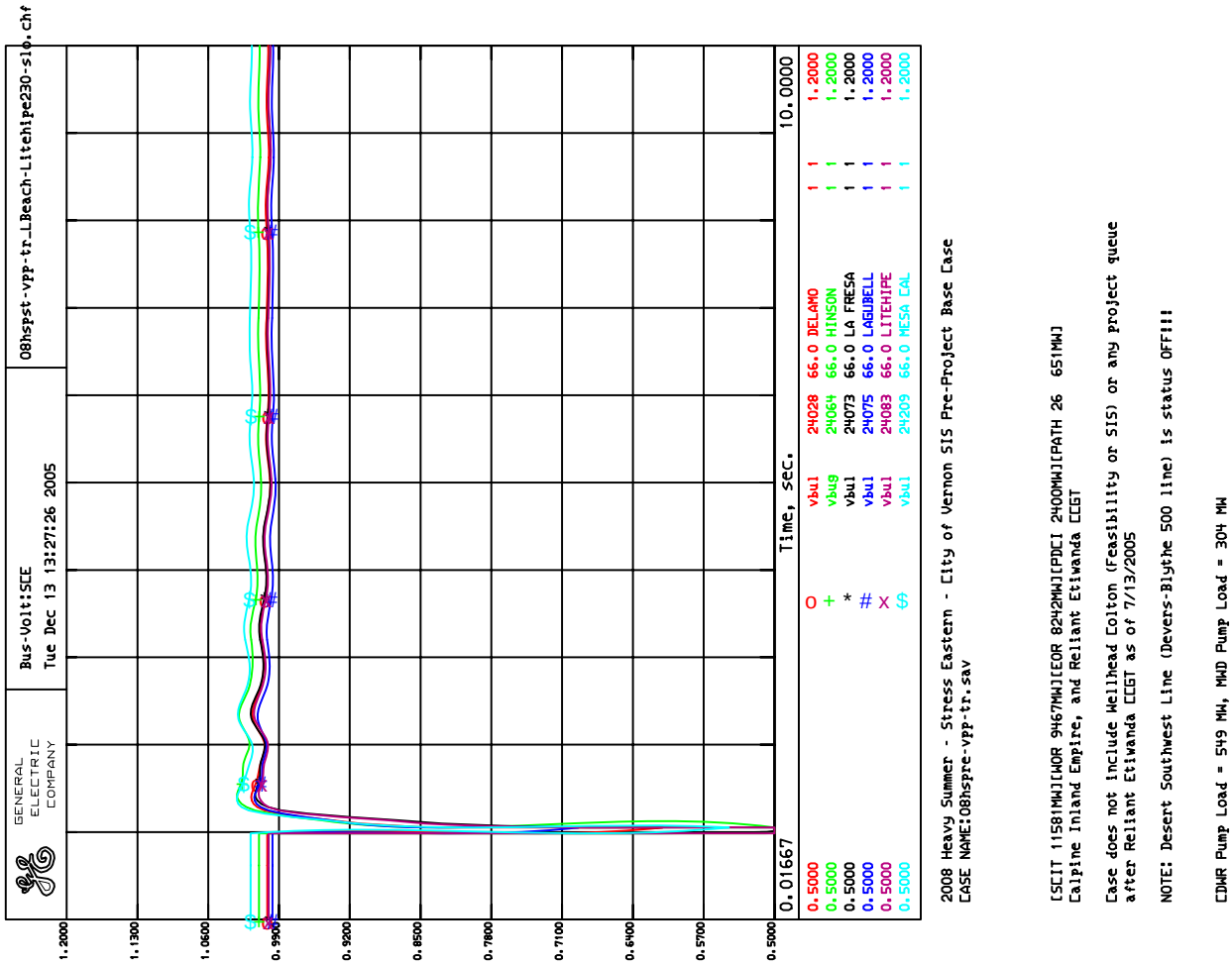
Plot 9 - 1: Three-phase fault at the Lighthipe 230 kV bus followed by loss of the Long Beach – Lighthipe 230 kV circuit.



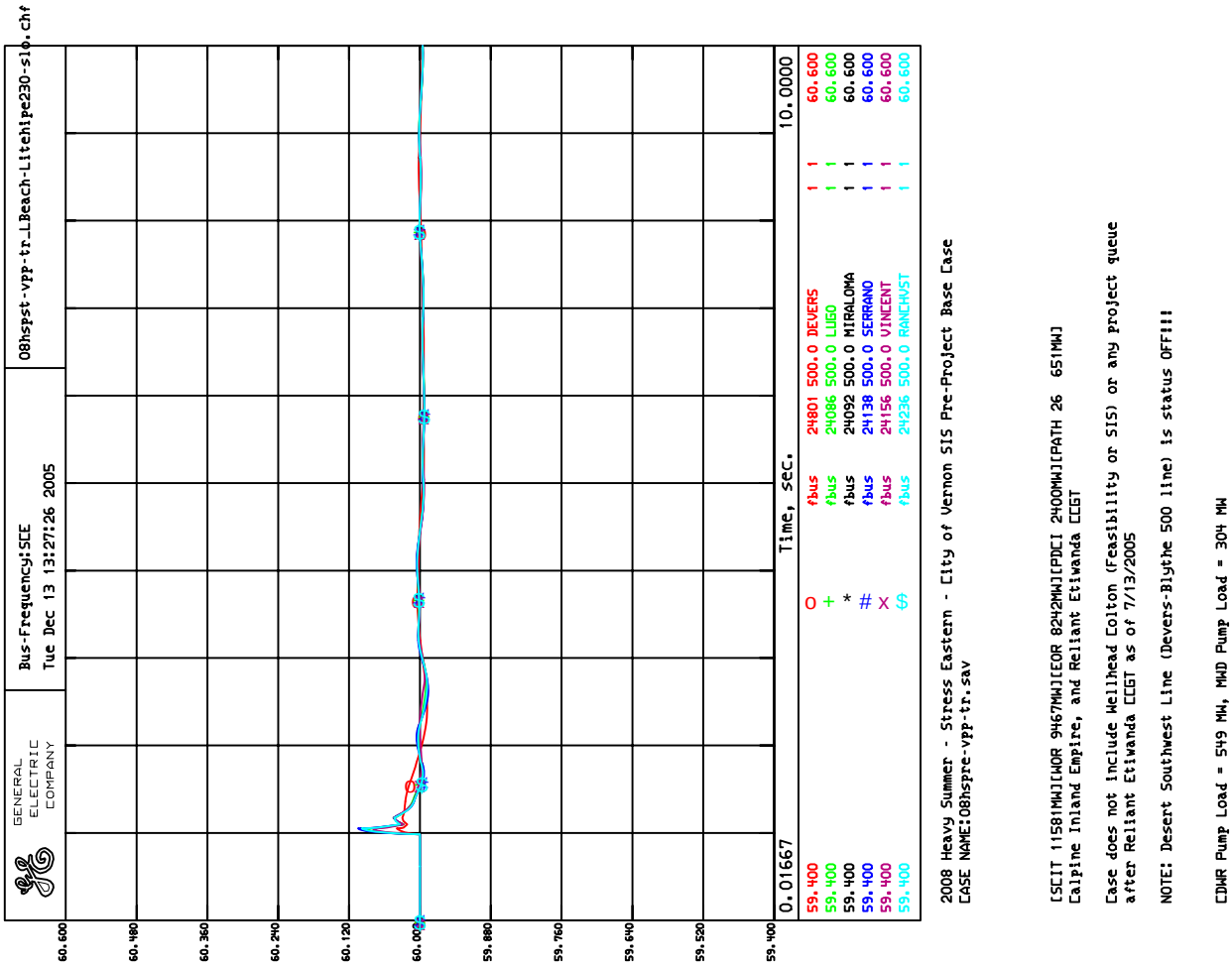
Plot 9 - 2: Three-phase fault at the Lighthipe 230 kV bus followed by loss of the Long Beach – Lighthipe 230 kV circuit.



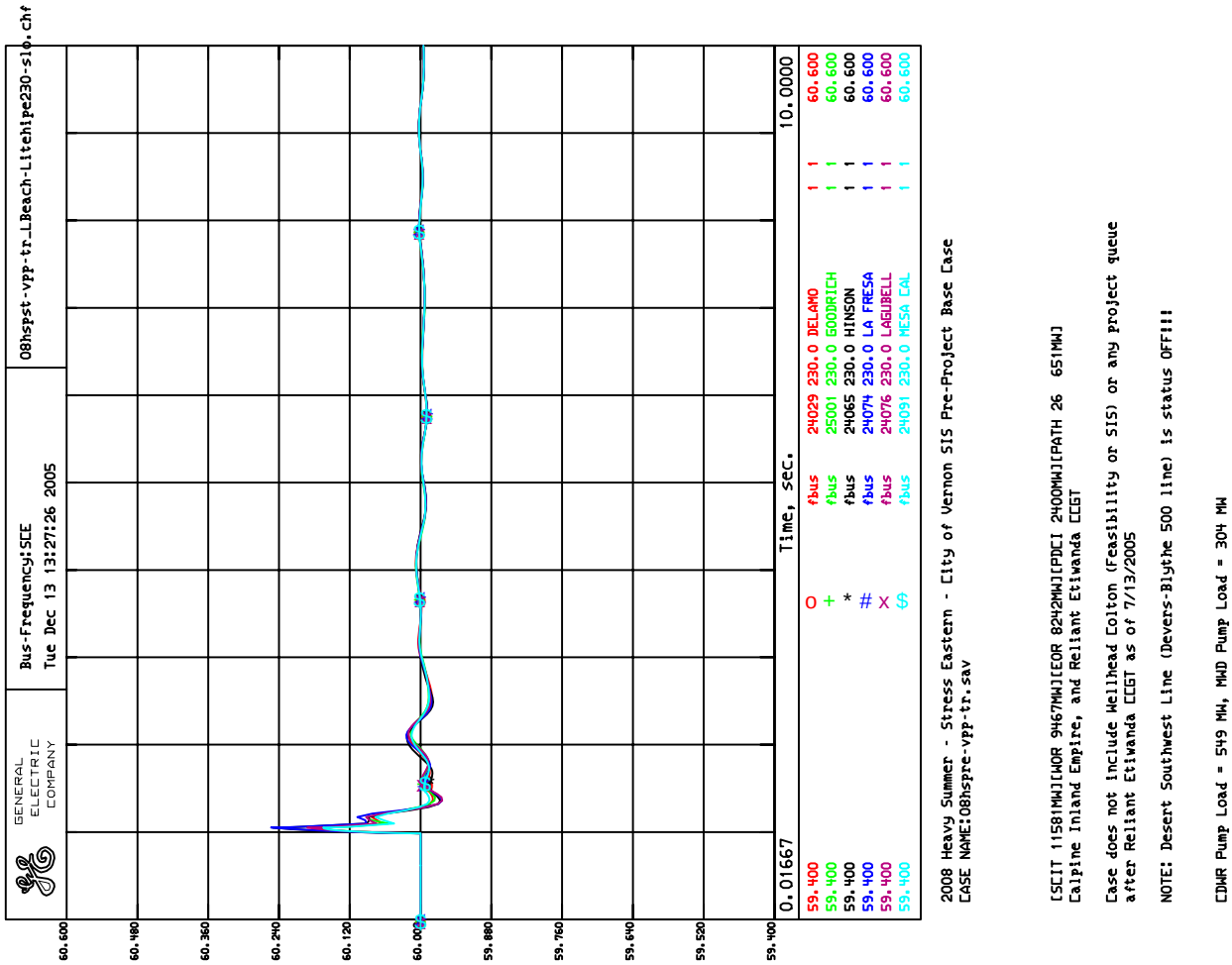
Plot 9 - 3: Three-phase fault at the Lighthipe 230 kV bus followed by loss of the Long Beach – Lighthipe 230 kV circuit.



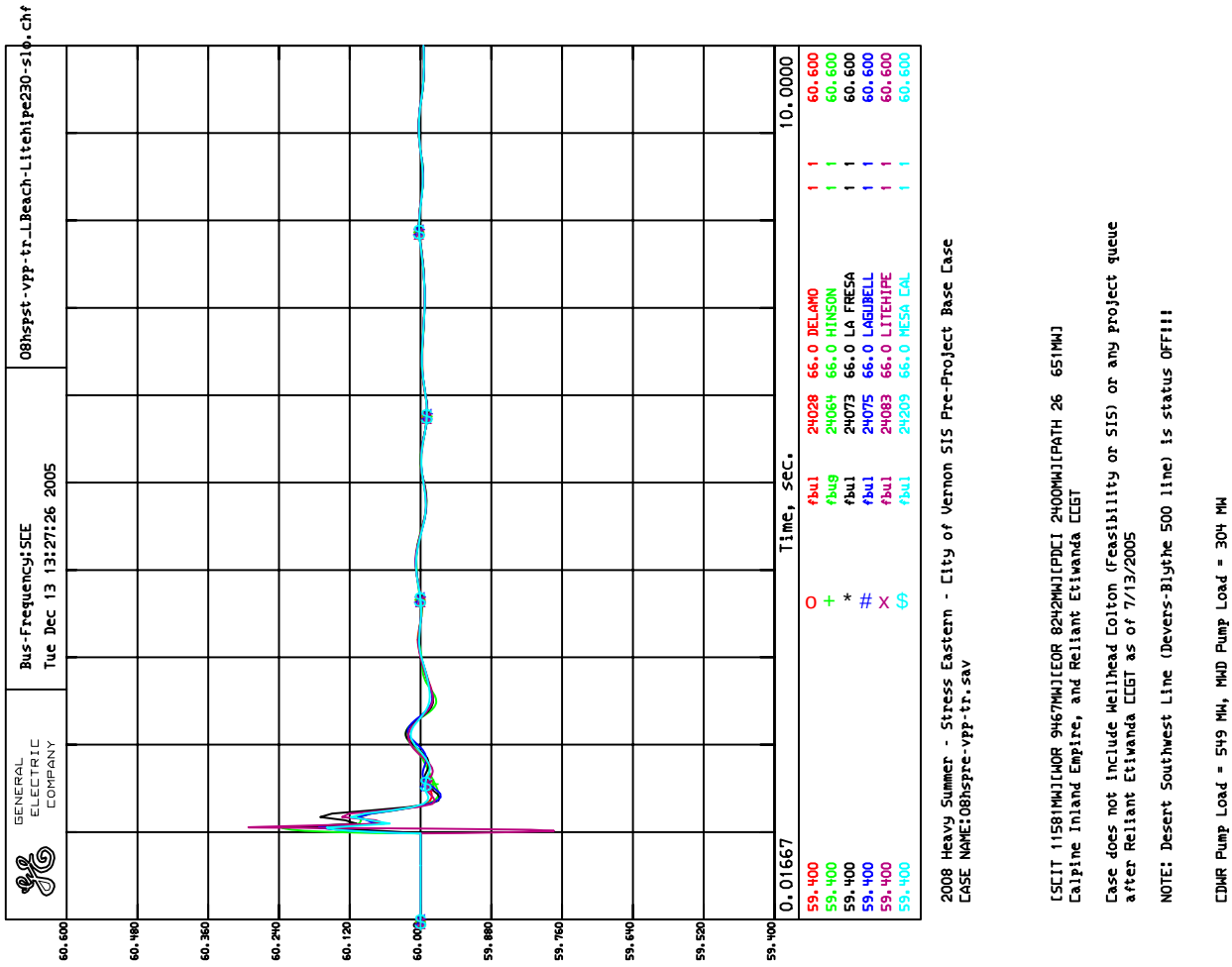
Plot 9 - 4: Three-phase fault at the Lighthipe 230 kV bus followed by loss of the Long Beach – Lighthipe 230 kV circuit.



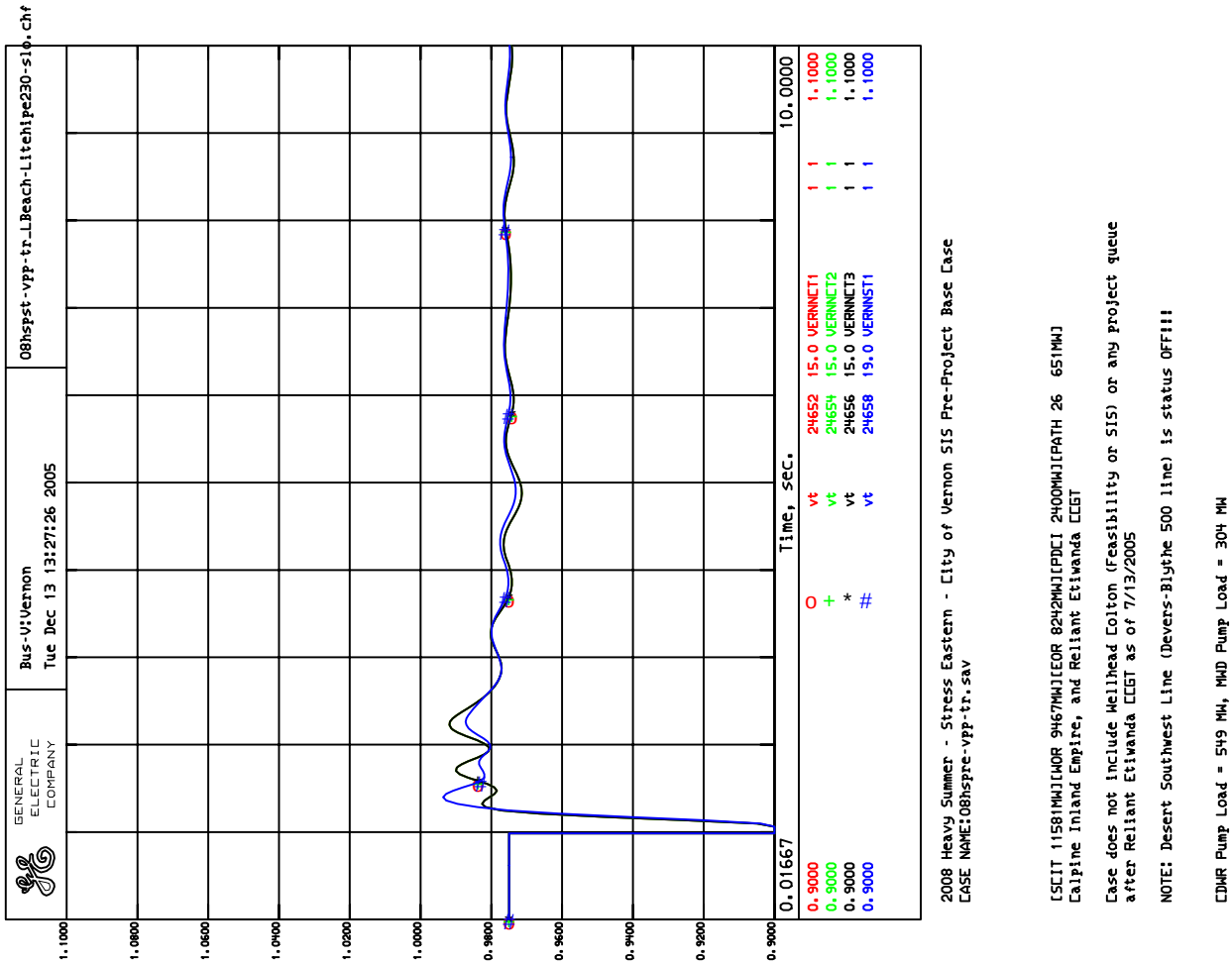
Plot 9 - 5: Three-phase fault at the Lighthipe 230 kV bus followed by loss of the Long Beach – Lighthipe 230 kV circuit.



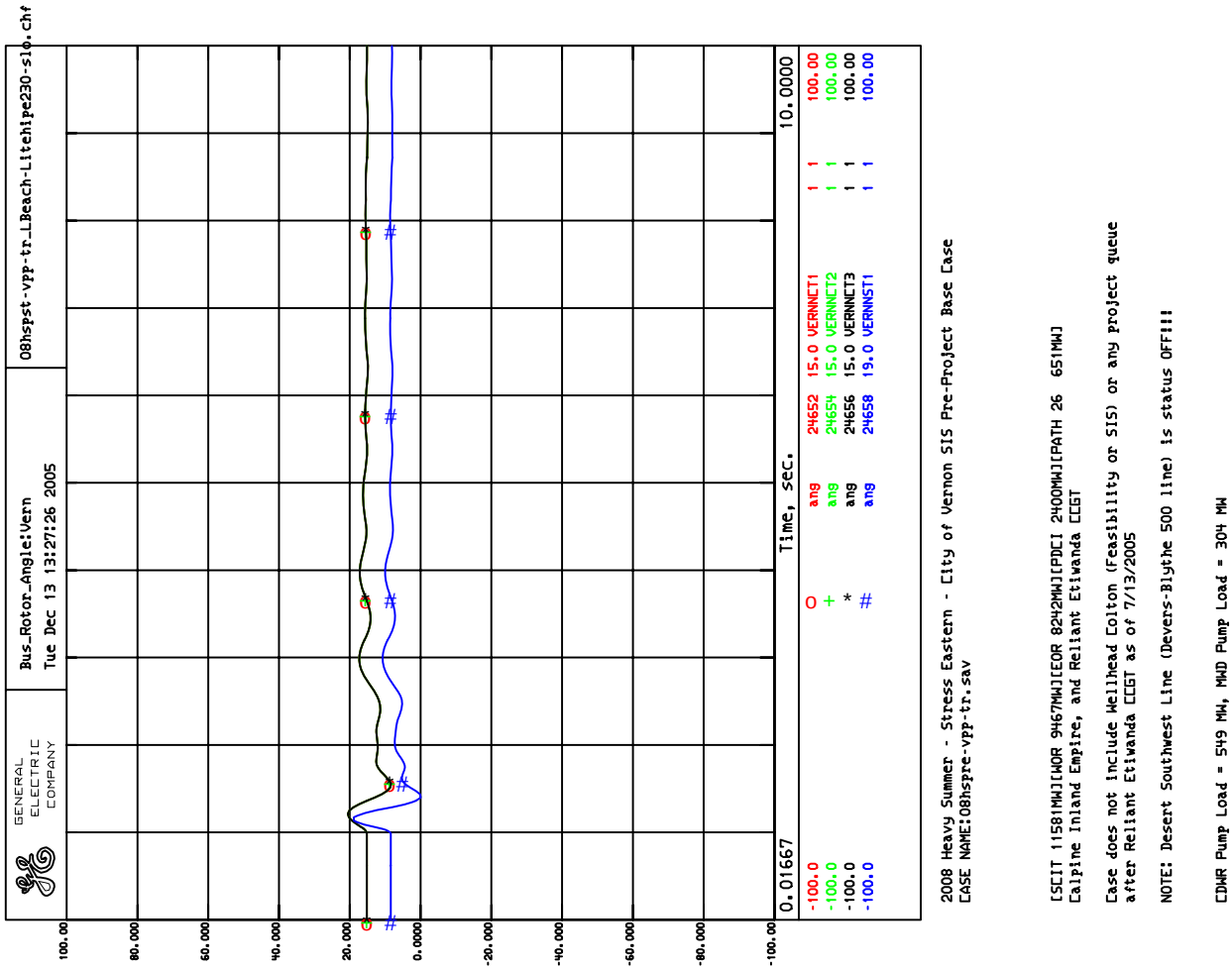
Plot 9 – 6: Three-phase fault at the Lighthipe 230 kV bus followed by loss of the Long Beach – Lighthipe 230 kV circuit.



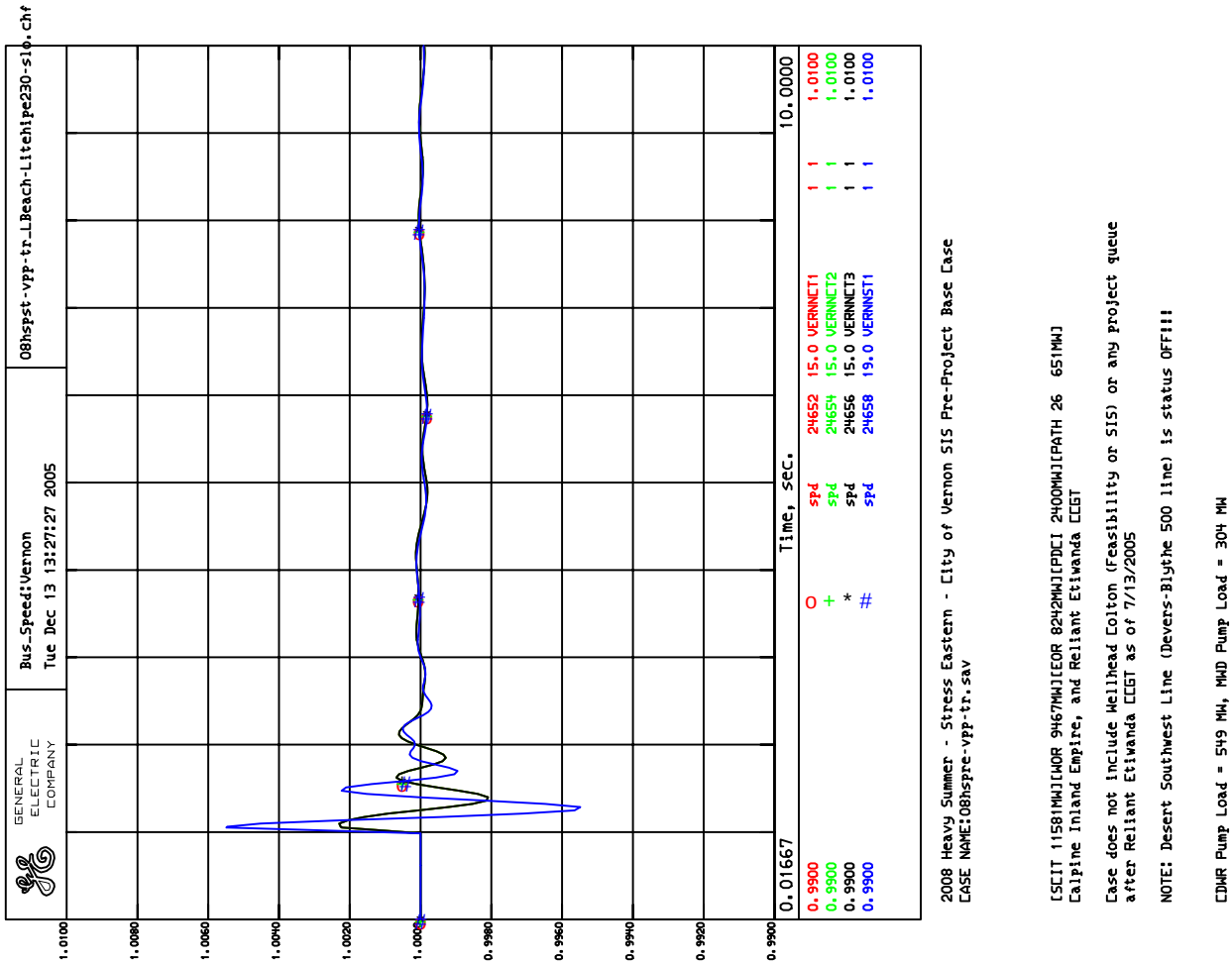
Plot 9 - 7: Three-phase fault at the Lighthipe 230 kV bus followed by loss of the Long Beach – Lighthipe 230 kV circuit.



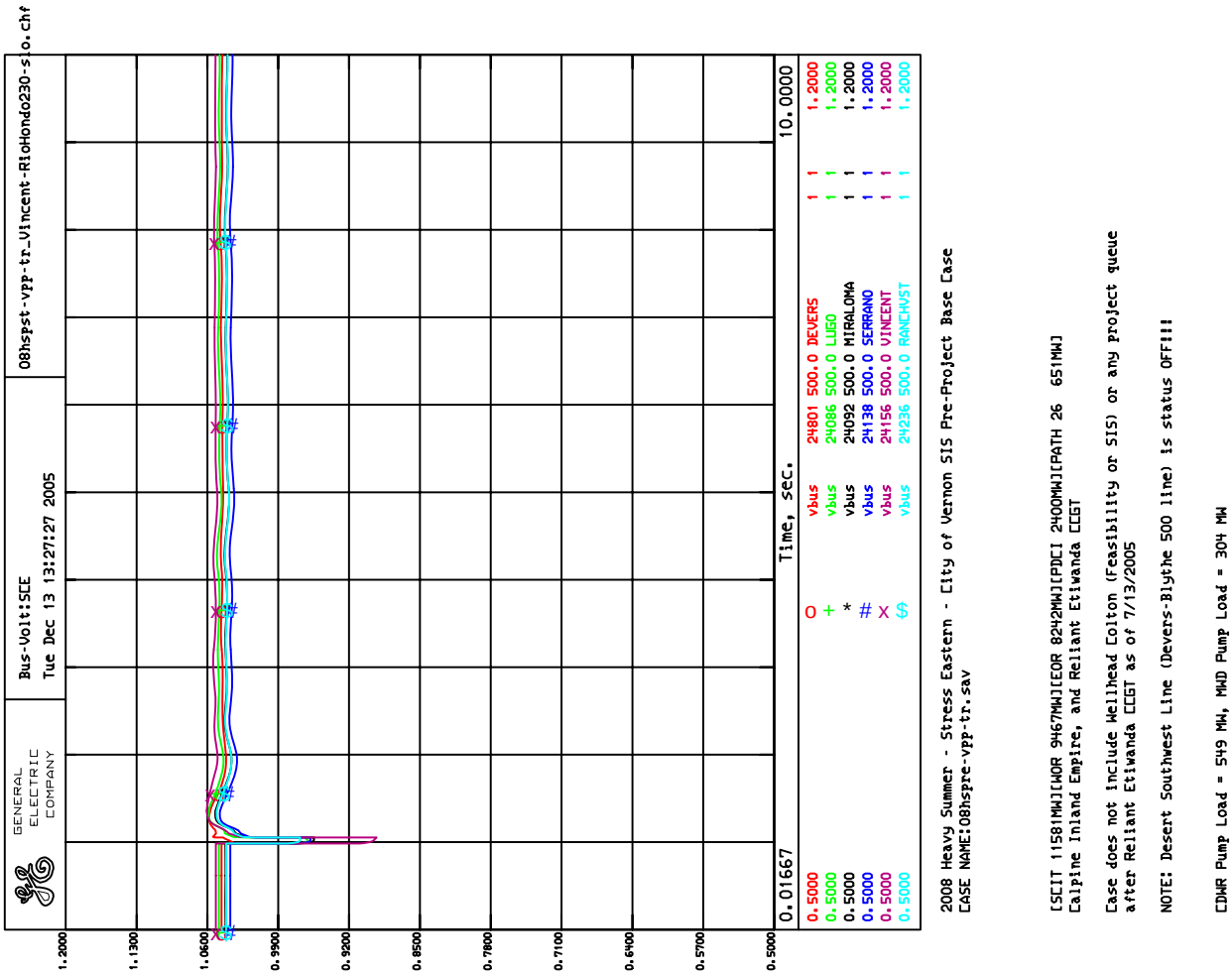
Plot 9 - 8: Three-phase fault at the Lighthipe 230 kV bus followed by loss of the Long Beach – Lighthipe 230 kV circuit.



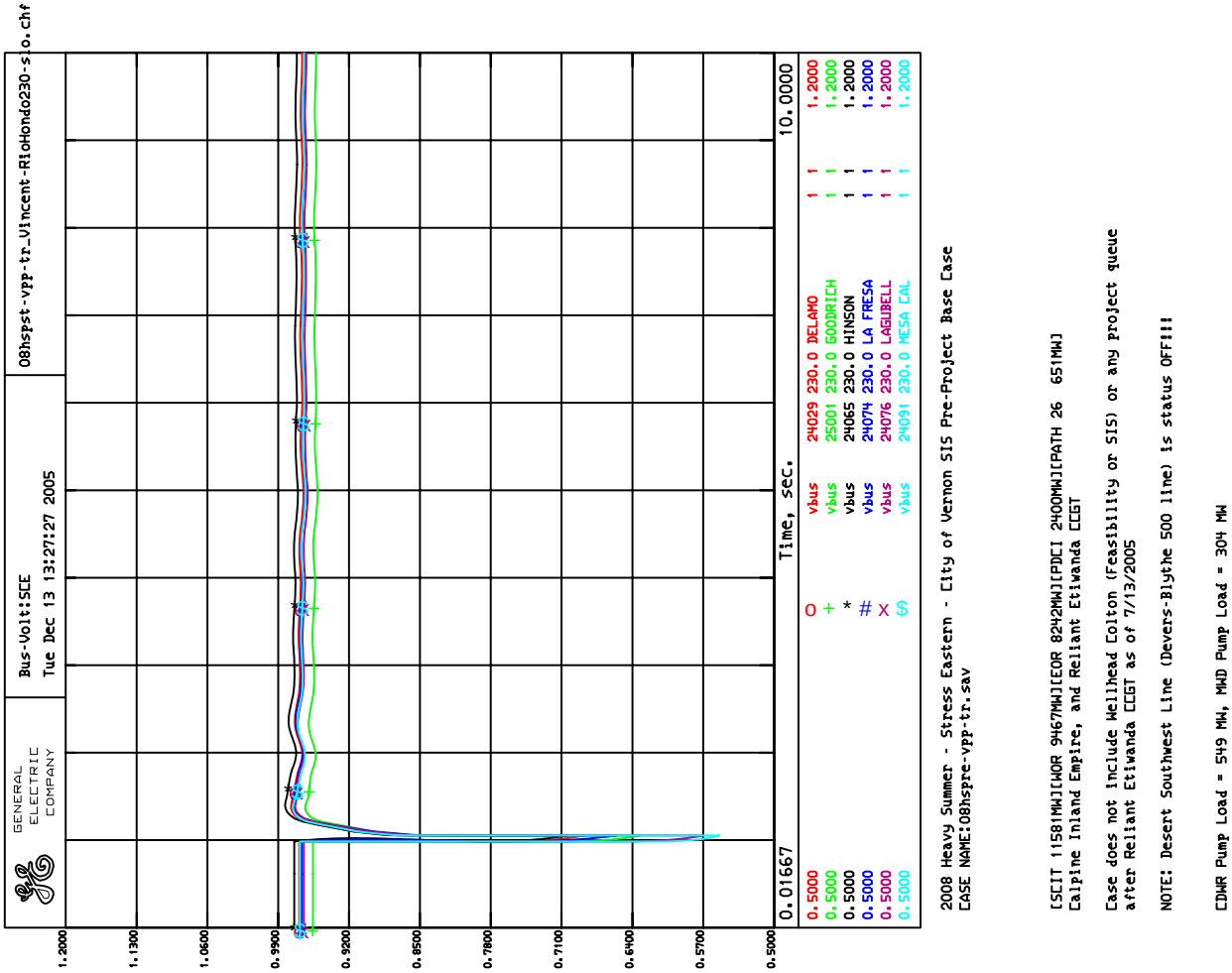
Plot 9 - 9: Three-phase fault at the Lighthipe 230 kV bus followed by loss of the Long Beach – Lighthipe 230 kV circuit.



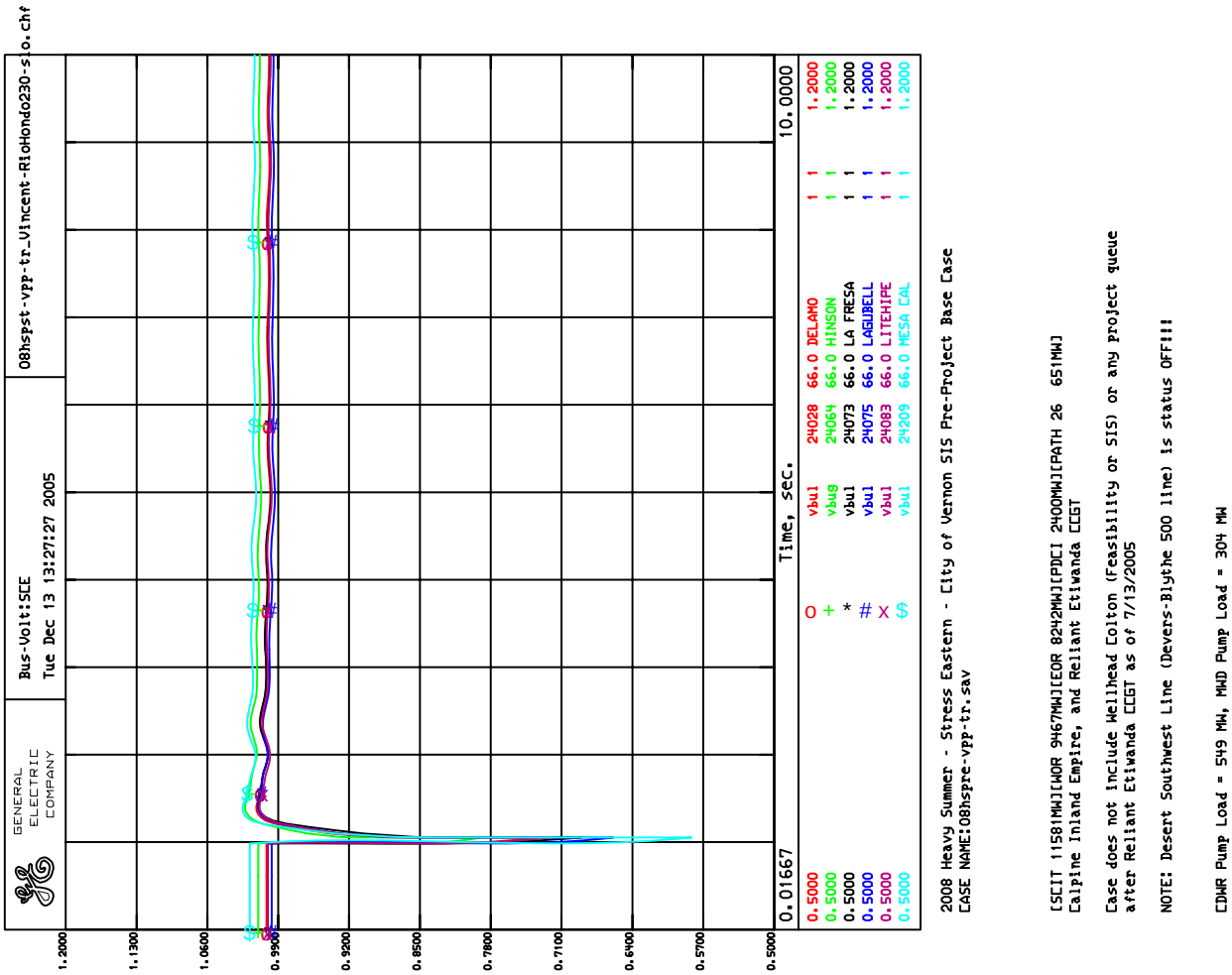
Plot 10 - 1: Three-phase fault at the Rio Hondo 230 kV bus followed by loss of the Vincent – Rio Hondo 230 kV circuit.



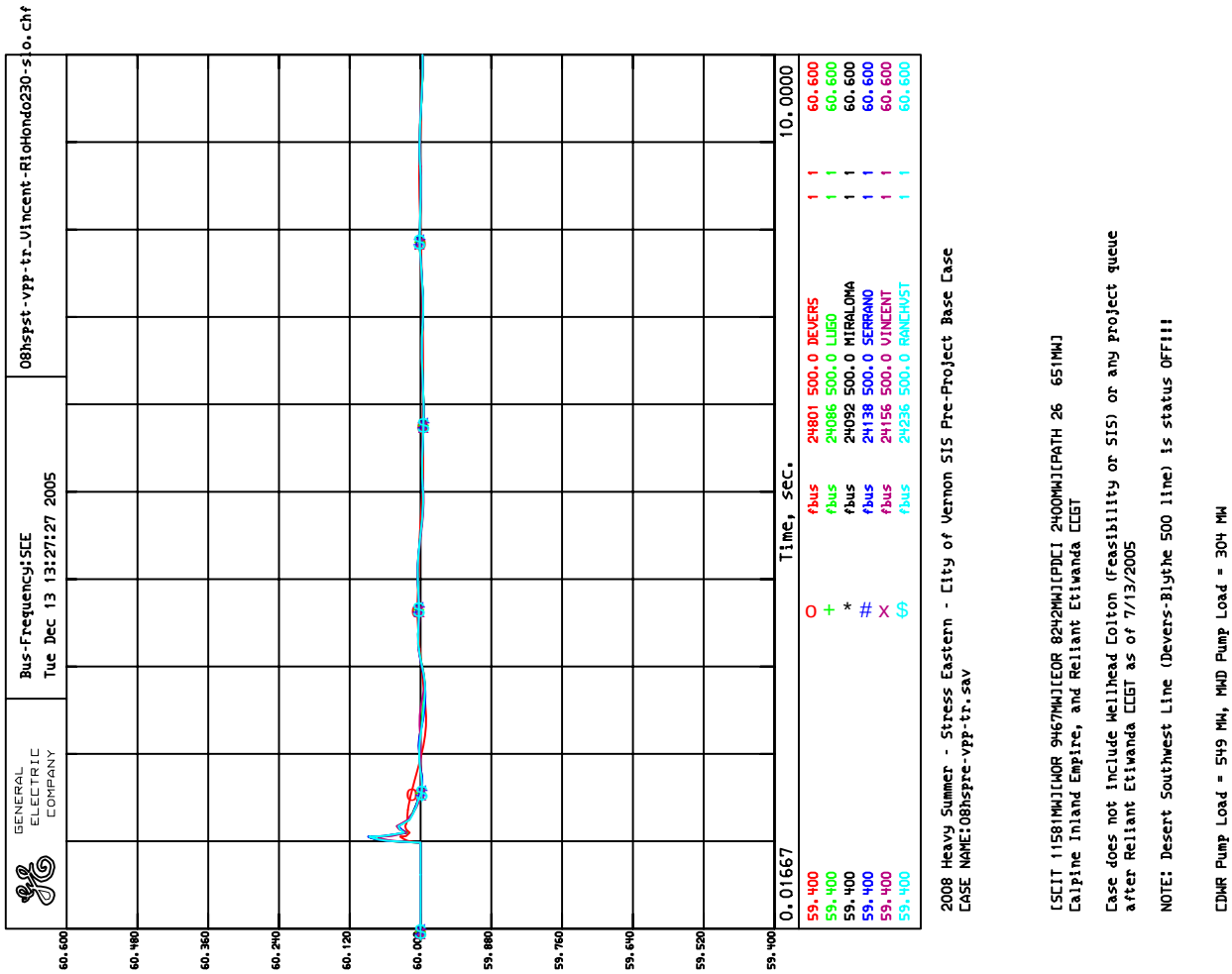
Plot 10 - 2: Three-phase fault at the Rio Hondo 230 kV bus followed by loss of the Vincent – Rio Hondo 230 kV circuit.



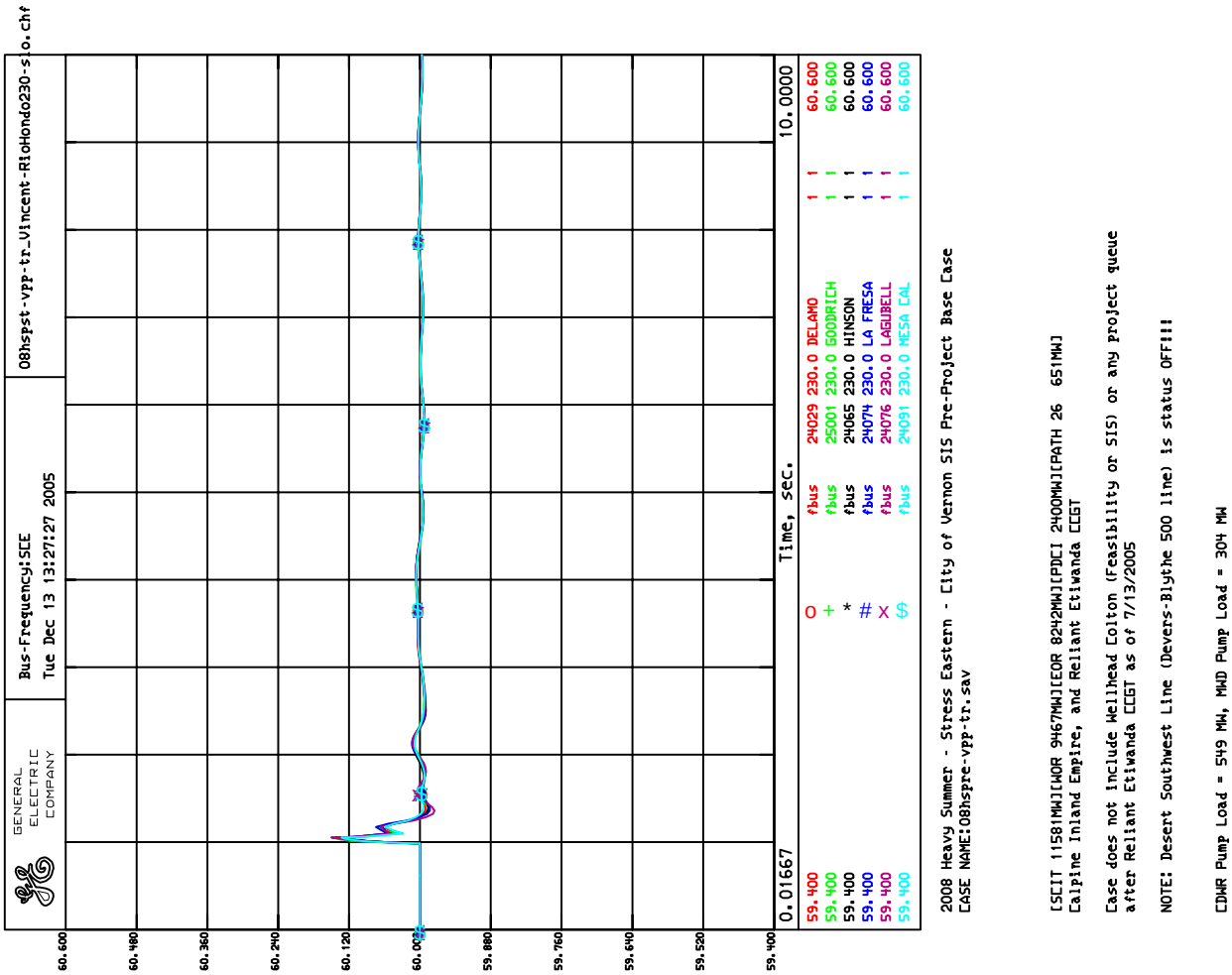
Plot 10 - 3: Three-phase fault at the Rio Hondo 230 kV bus followed by loss of the Vincent – Rio Hondo 230 kV circuit.



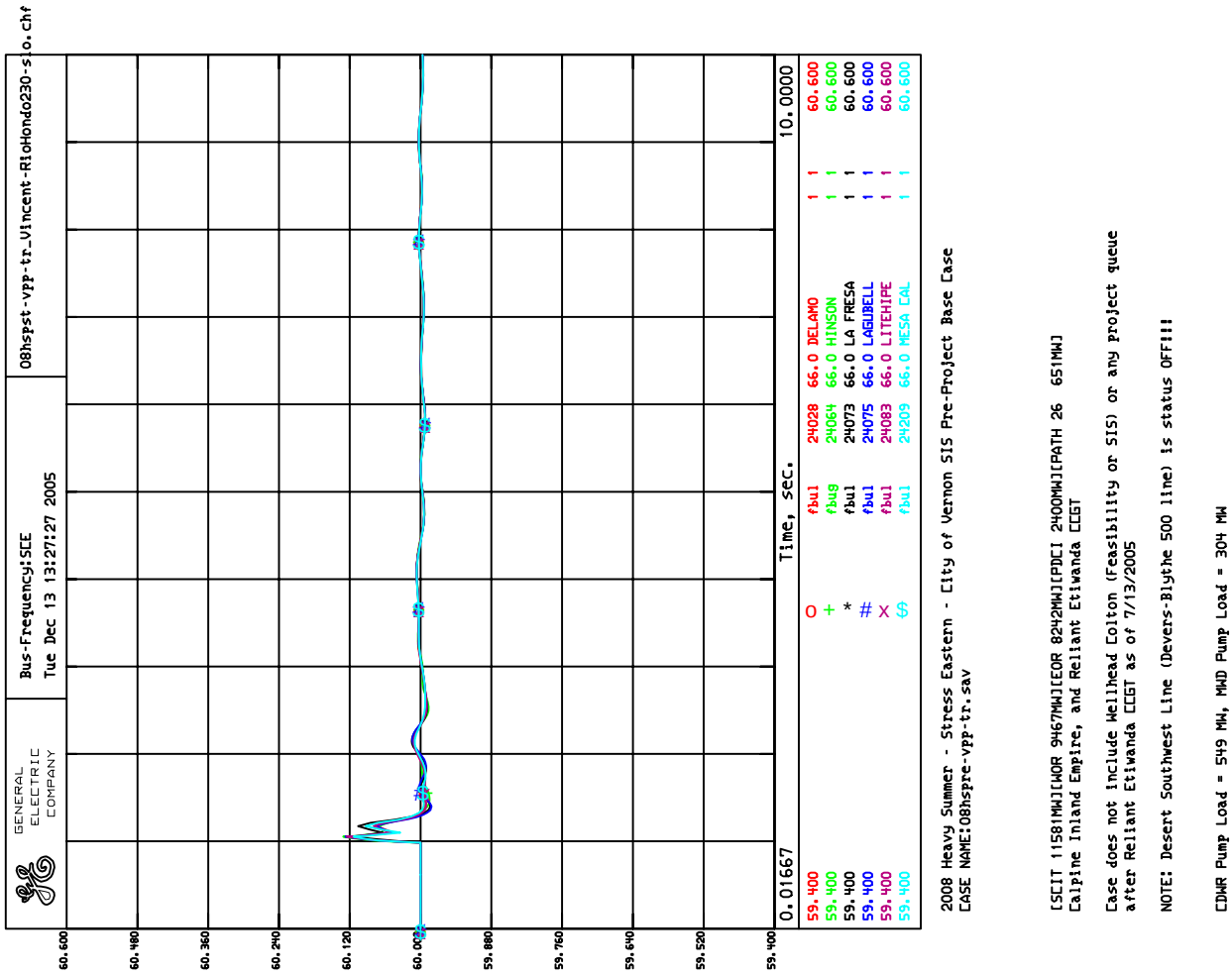
Plot 10 - 4: Three-phase fault at the Rio Hondo 230 kV bus followed by loss of the Vincent – Rio Hondo 230 kV circuit.



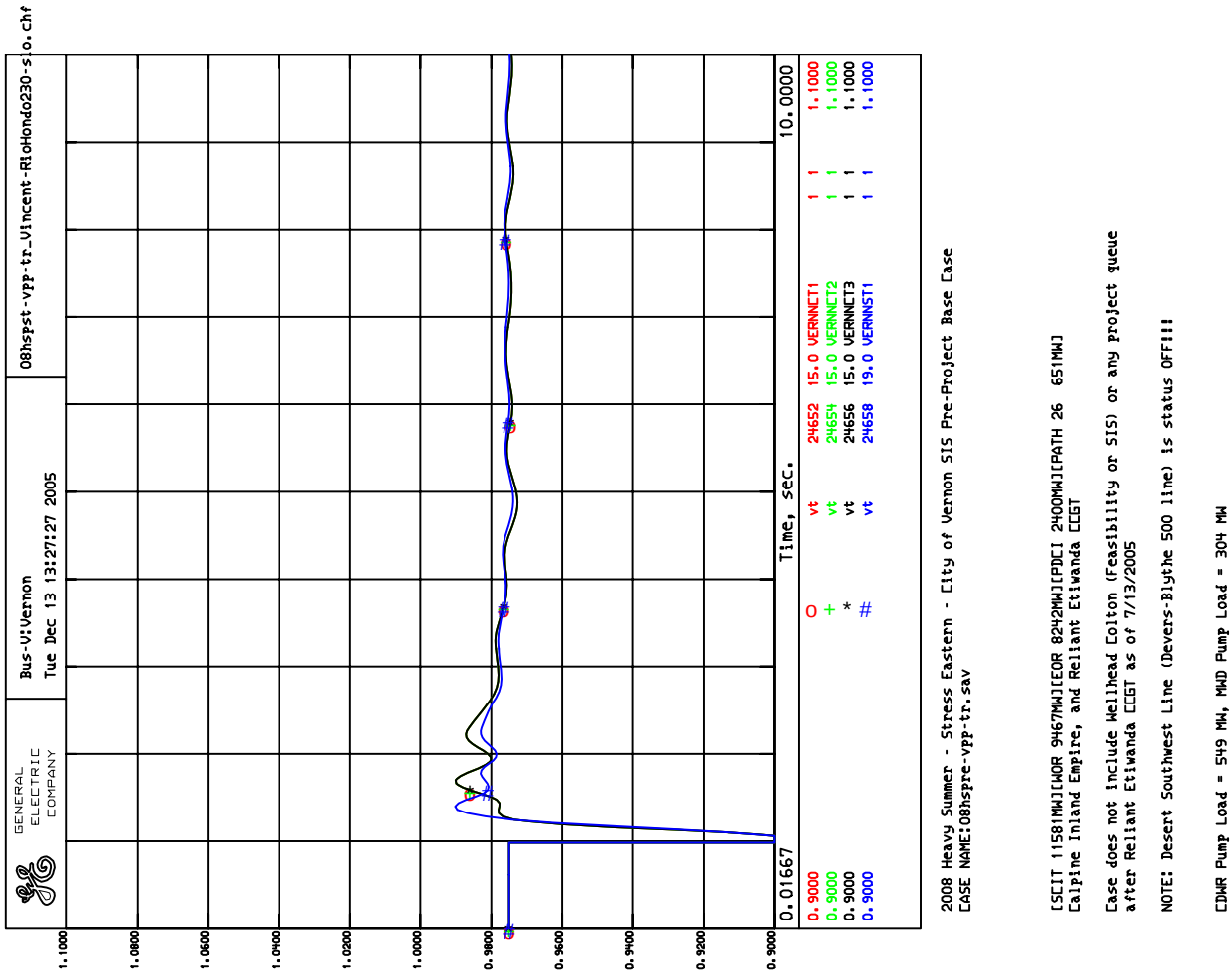
Plot 10 - 5: Three-phase fault at the Rio Hondo 230 kV bus followed by loss of the Vincent – Rio Hondo 230 kV circuit.



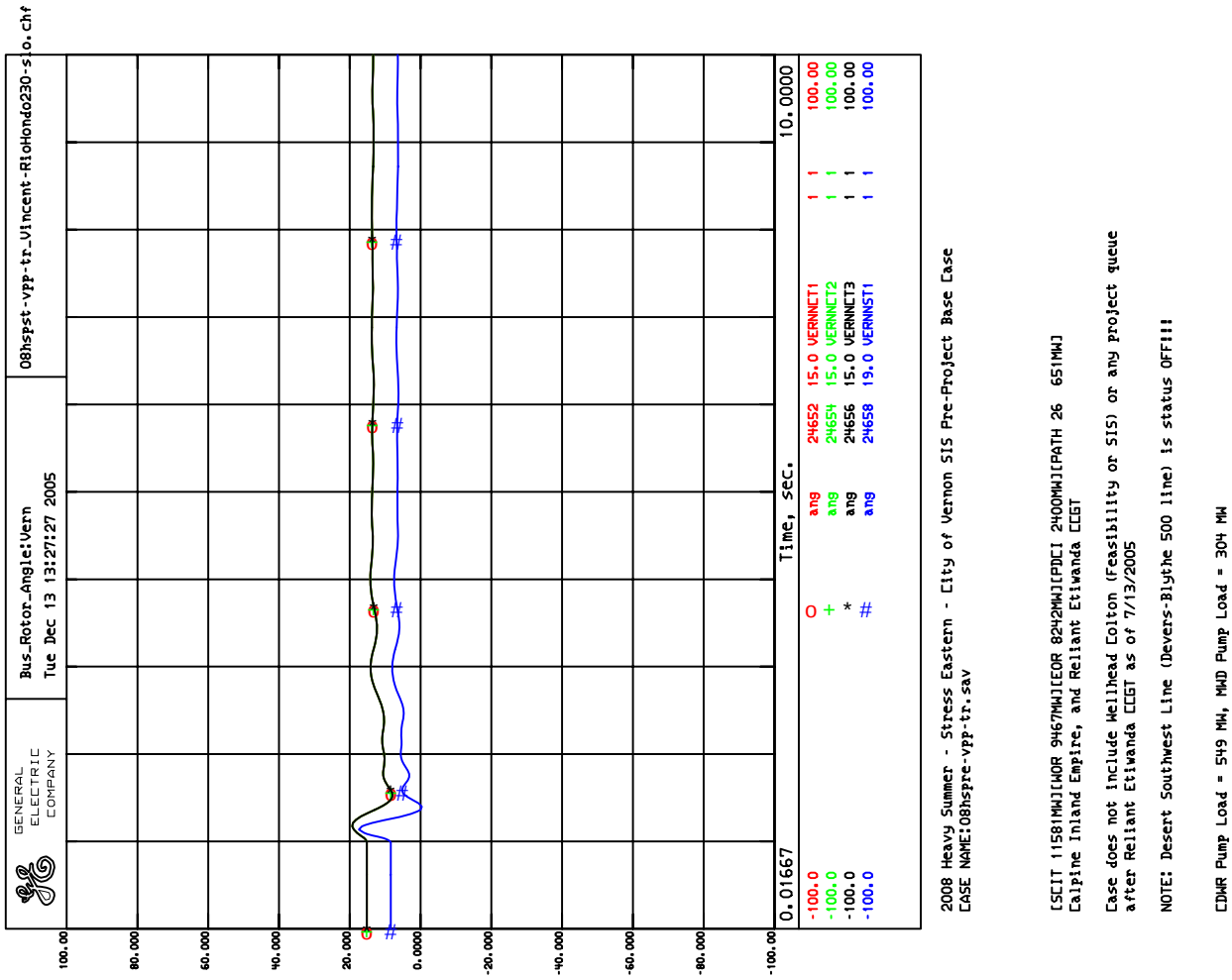
Plot 10 - 6: Three-phase fault at the Rio Hondo 230 kV bus followed by loss of the Vincent – Rio Hondo 230 kV circuit.



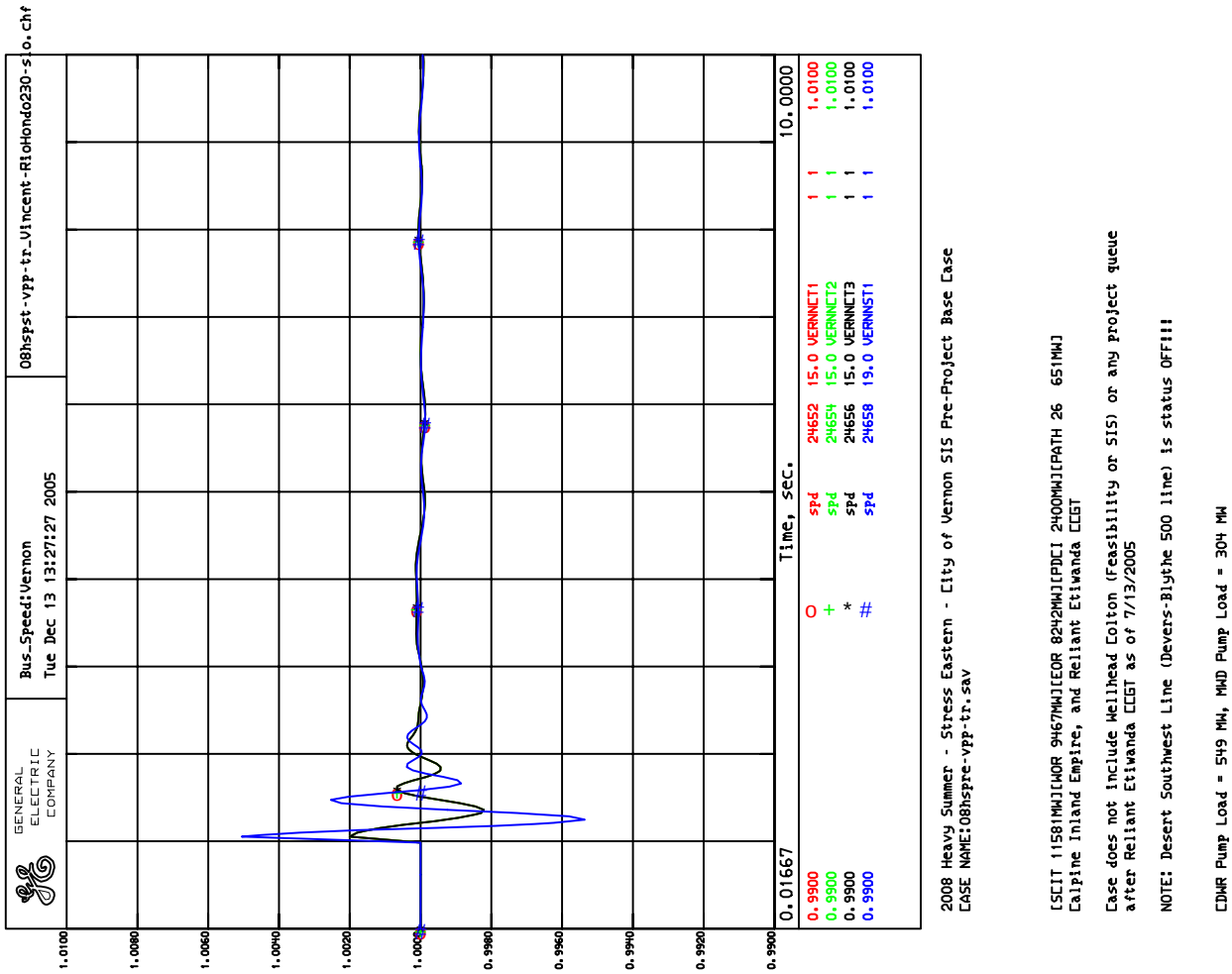
Plot 10 - 7: Three-phase fault at the Rio Hondo 230 kV bus followed by loss of the Vincent – Rio Hondo 230 kV circuit.



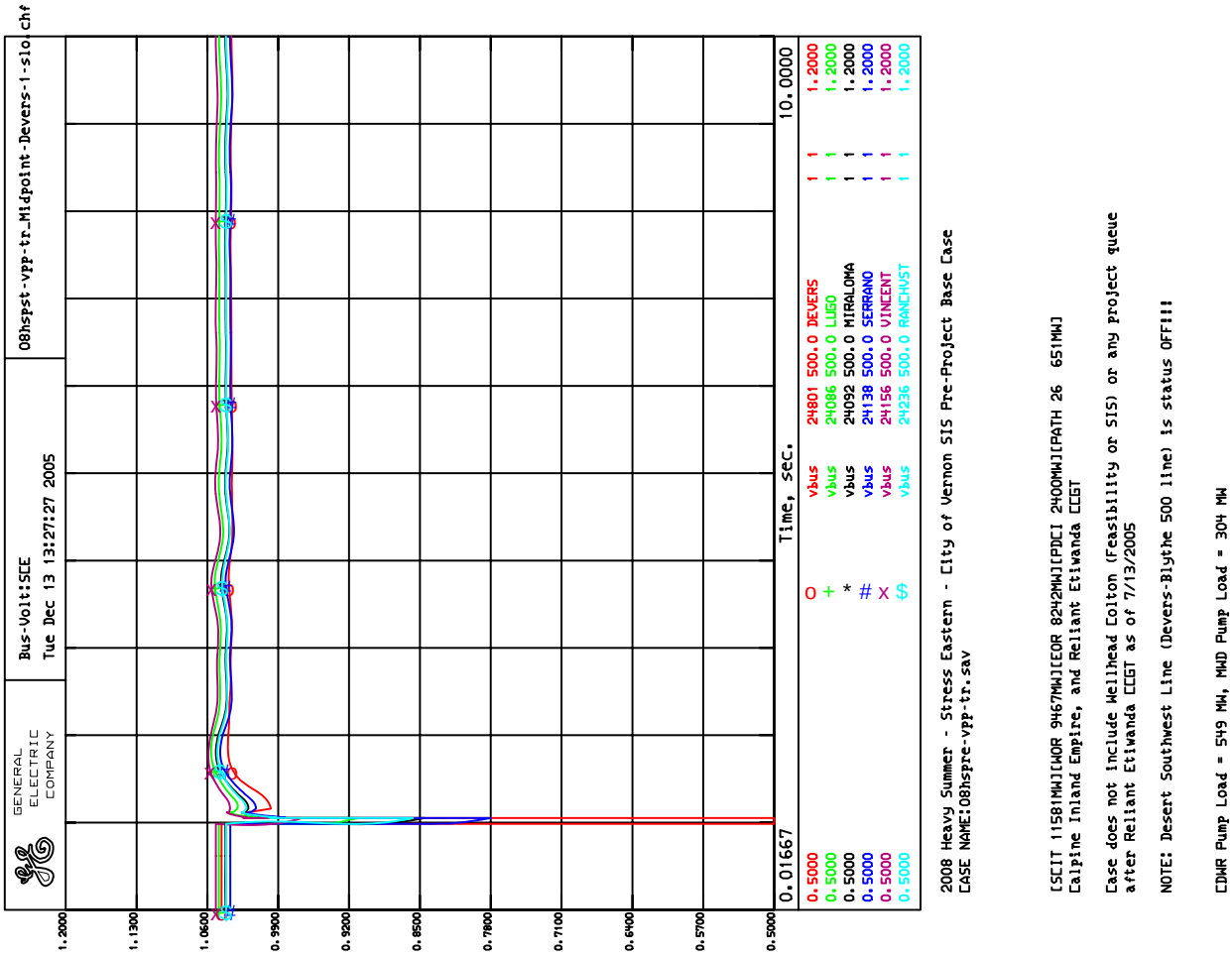
Plot 10 – 8: Three-phase fault at the Rio Hondo 230 kV bus followed by loss of the Vincent – Rio Hondo 230 kV circuit.



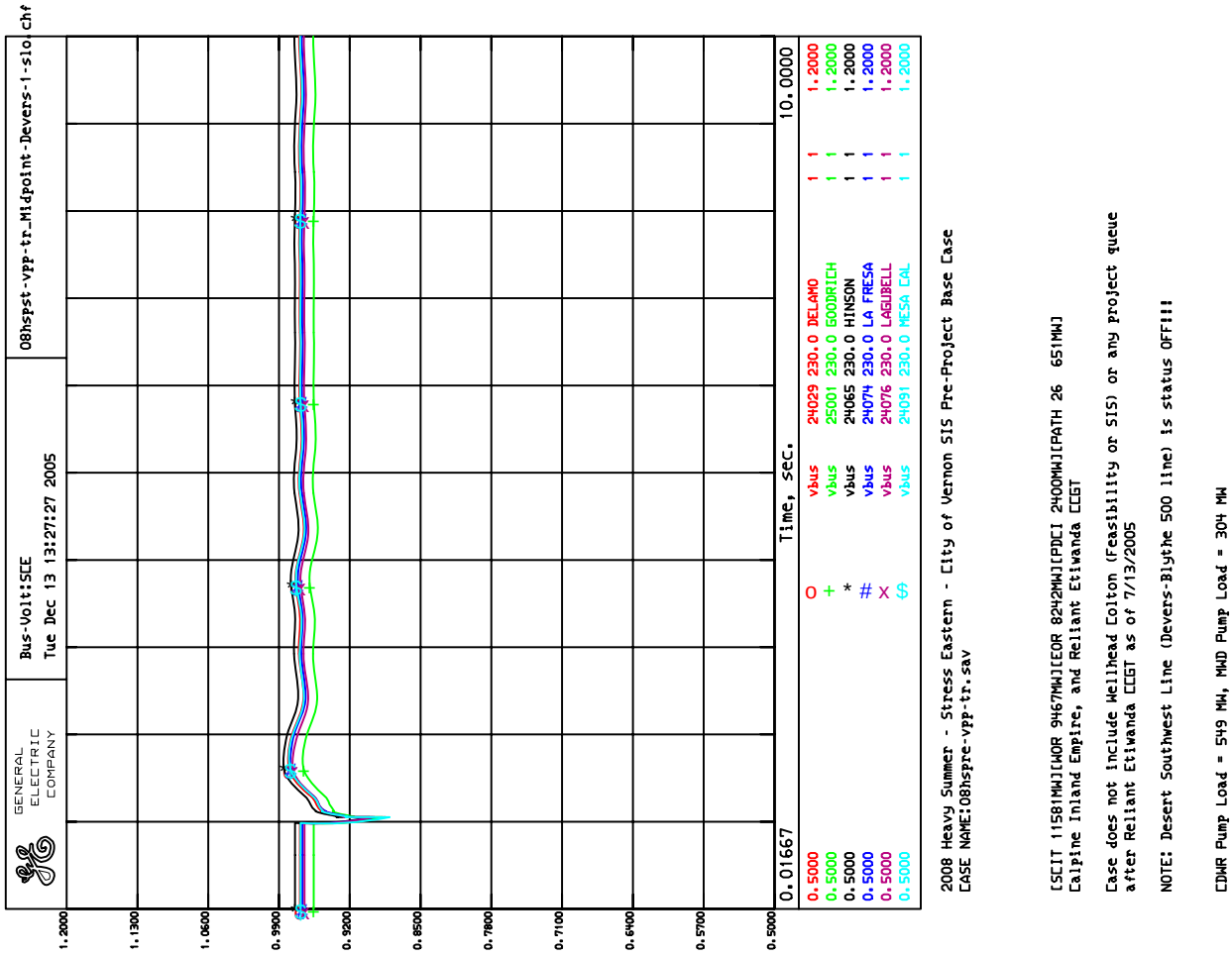
Plot 10 - 9: Three-phase fault at the Rio Hondo 230 kV bus followed by loss of the Vincent – Rio Hondo 230 kV circuit.



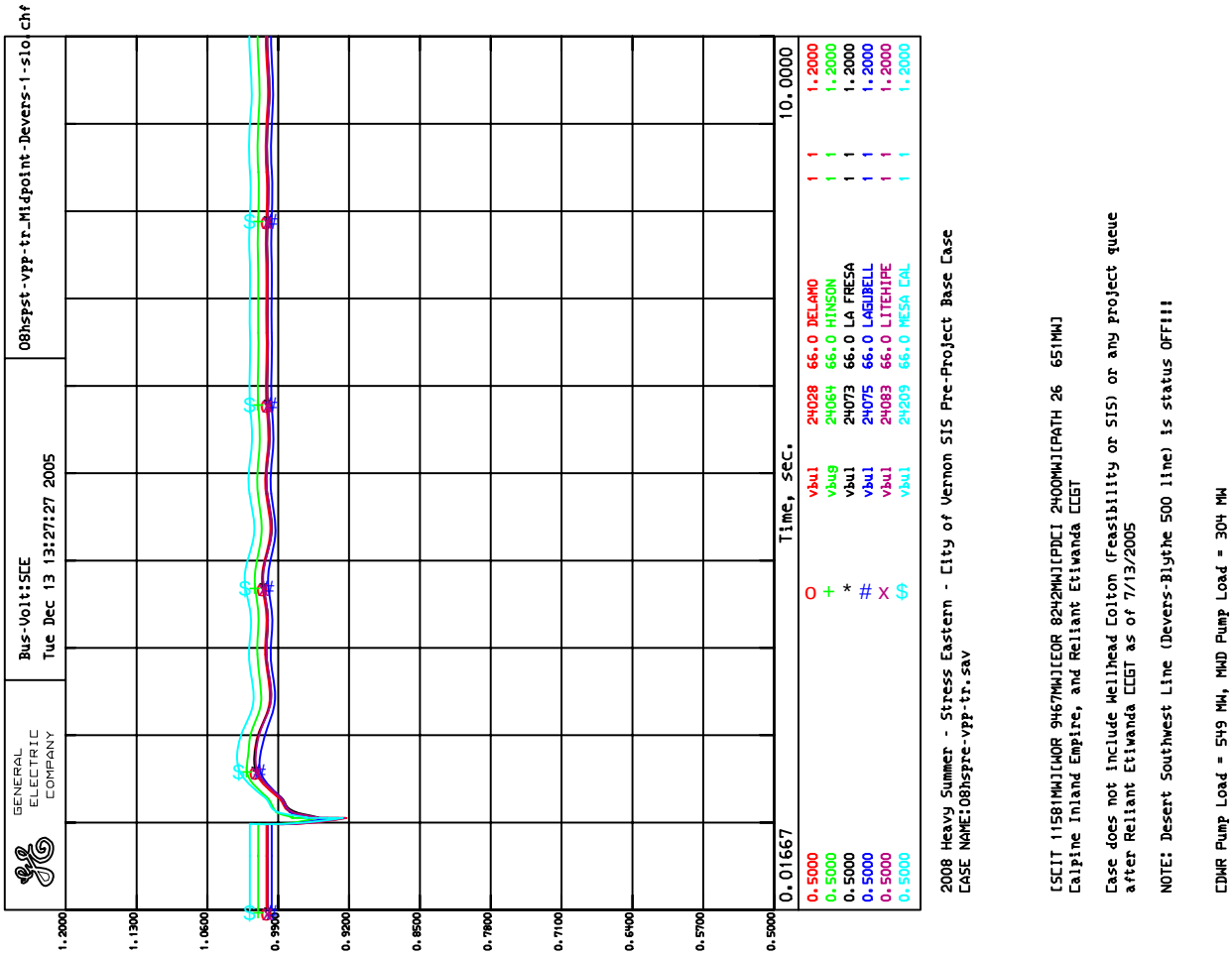
Plot 11 - 1: Three-phase fault at the Devers 500 kV bus followed by loss of the Midpoint – Devers 500 kV #1 circuit.



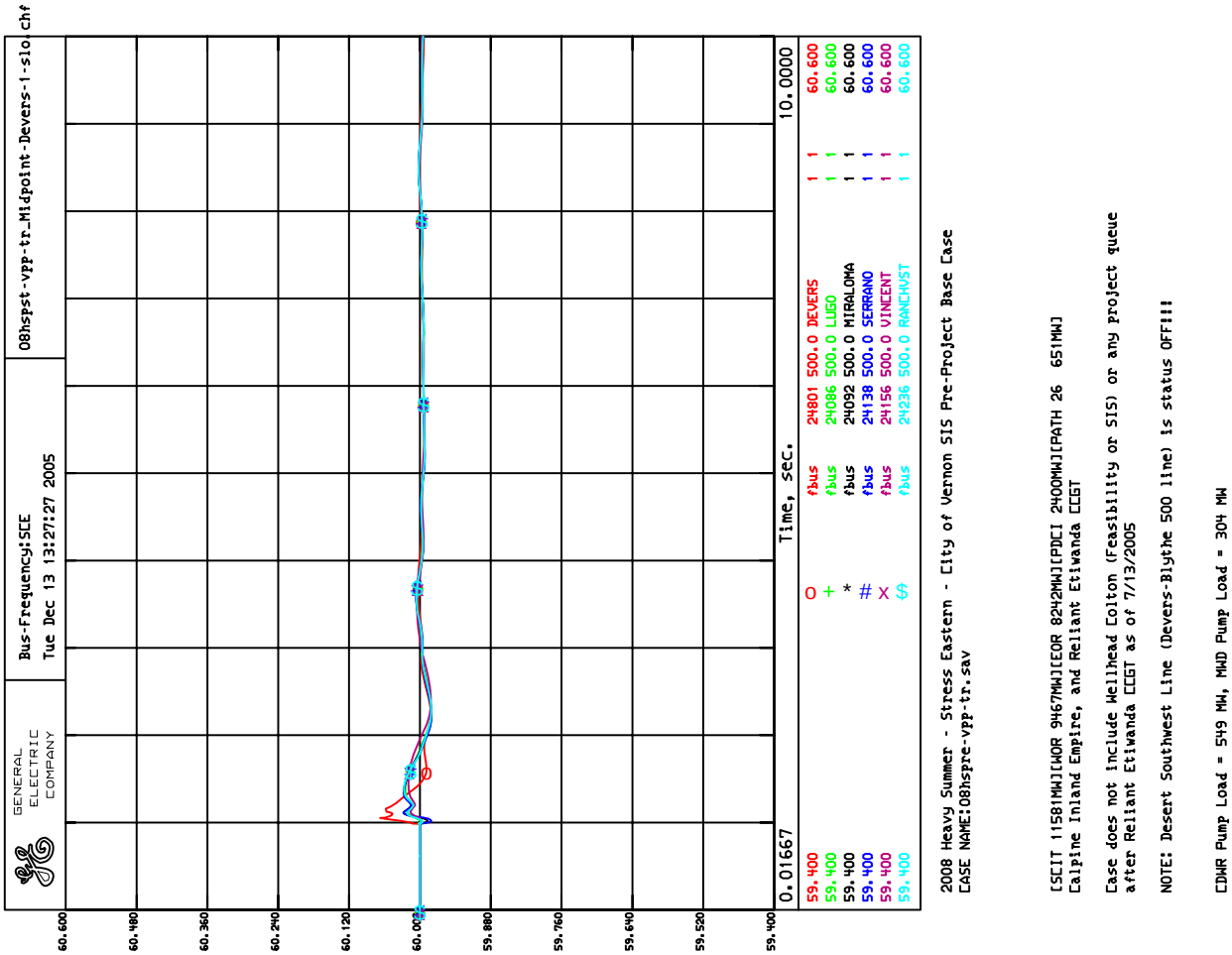
Plot 11 - 2: Three-phase fault at the Devers 500 kV bus followed by loss of the Midpoint – Devers 500 kV #1 circuit.



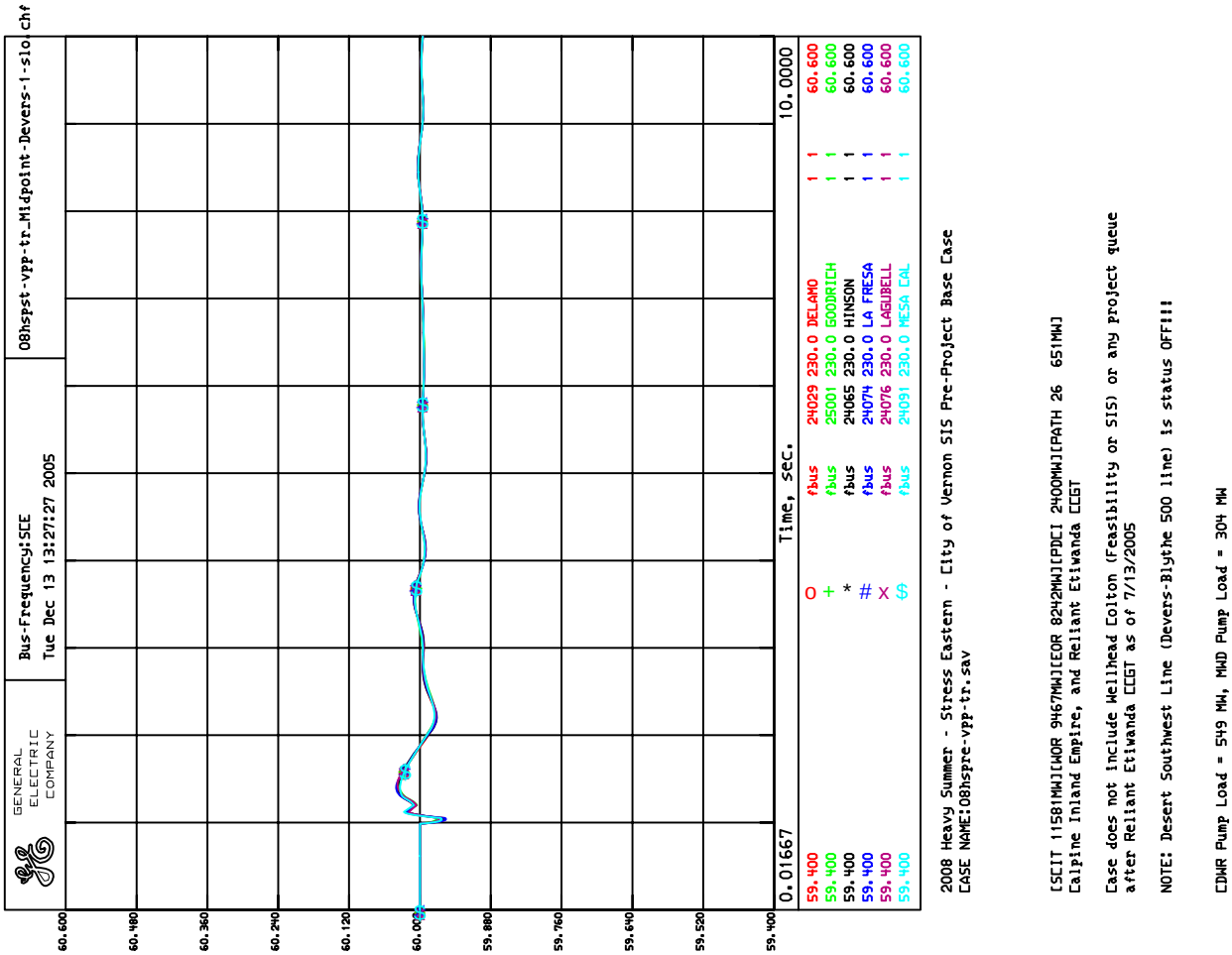
Plot 11 - 3: Three-phase fault at the Devers 500 kV bus followed by loss of the Midpoint – Devers 500 kV #1 circuit.



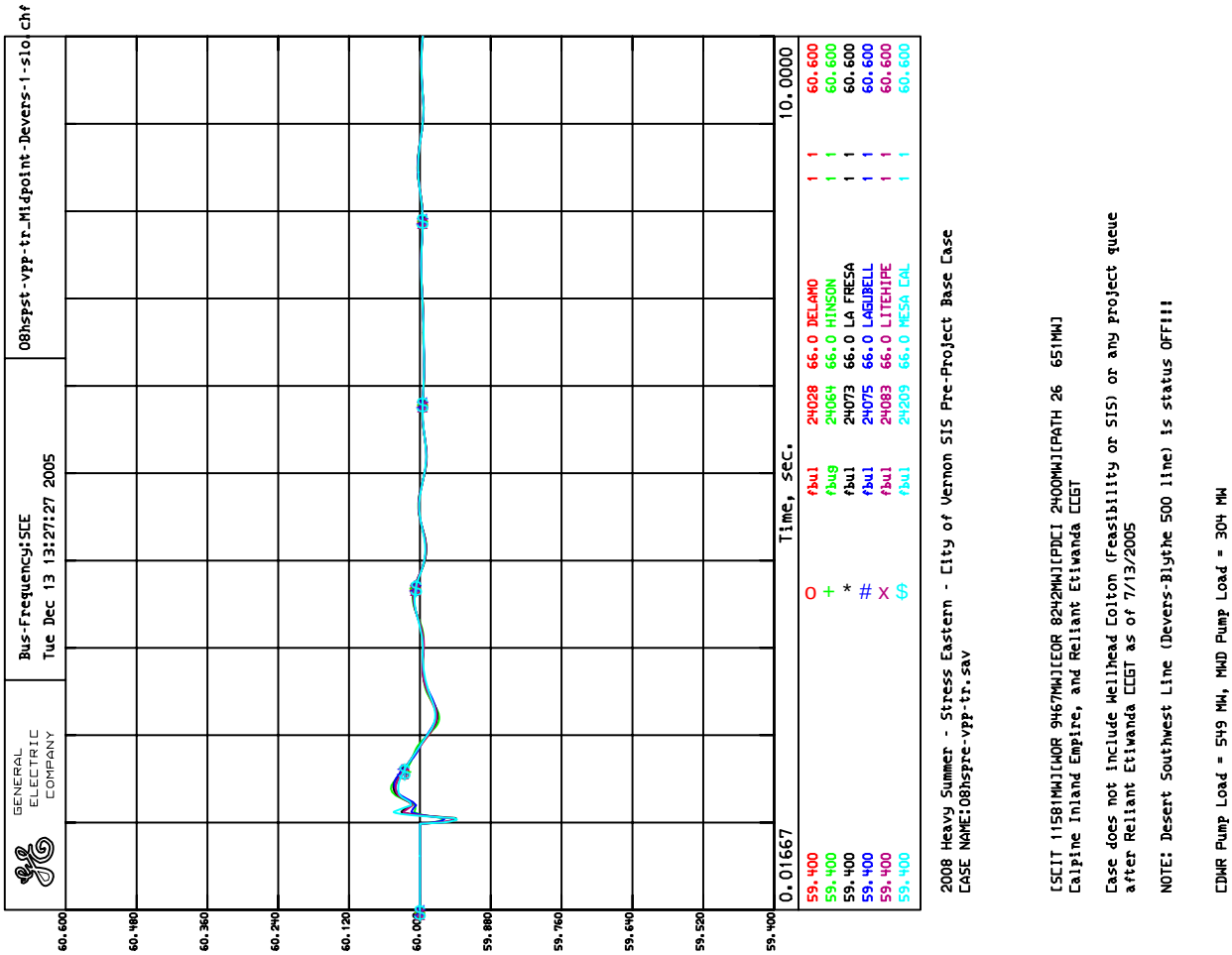
Plot 11 - 4: Three-phase fault at the Devers 500 kV bus followed by loss of the Midpoint – Devers 500 kV #1 circuit.



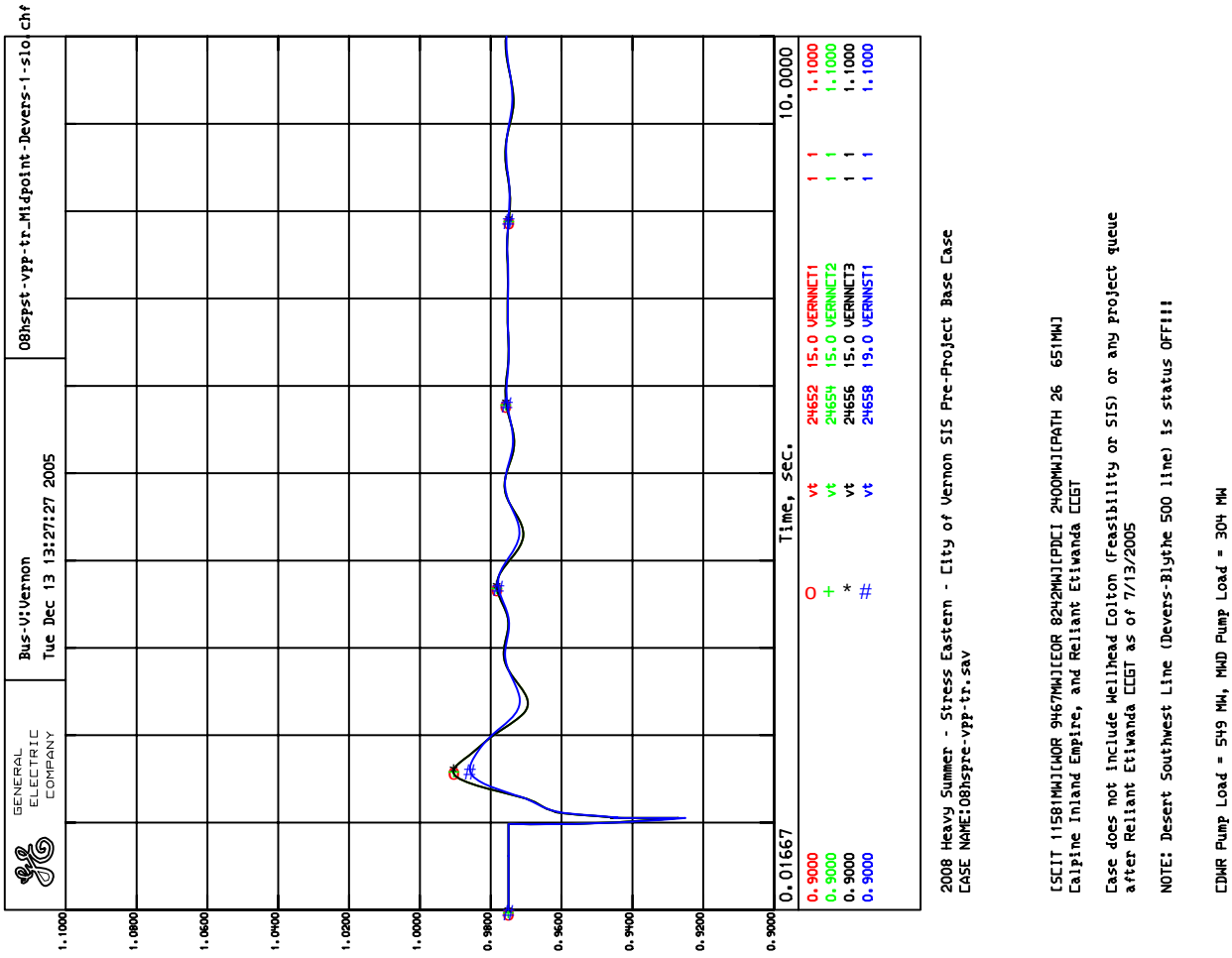
Plot 11 - 5: Three-phase fault at the Devers 500 kV bus followed by loss of the Midpoint – Devers 500 kV #1 circuit.



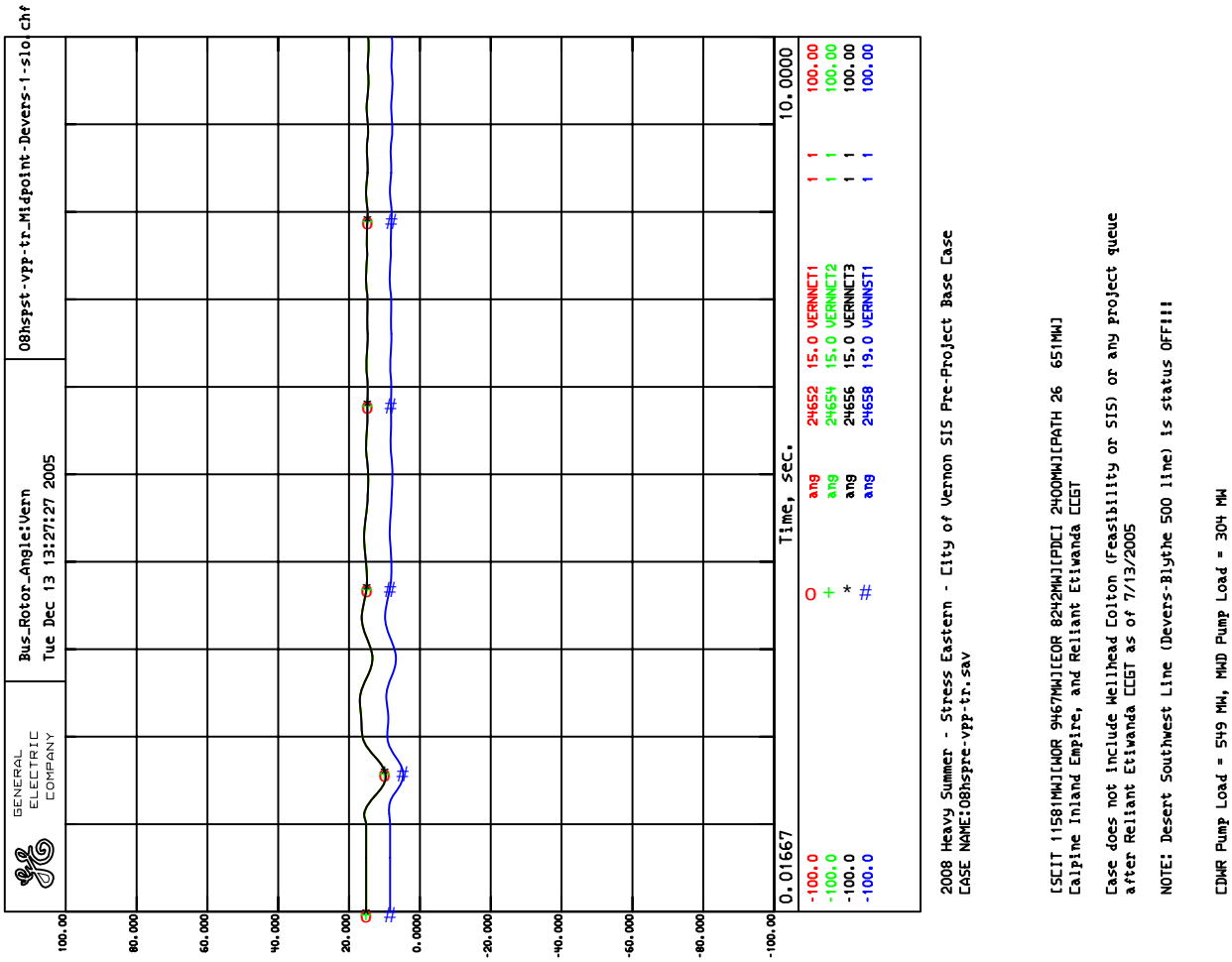
Plot 11 - 6: Three-phase fault at the Devers 500 kV bus followed by loss of the Midpoint – Devers 500 kV #1 circuit.



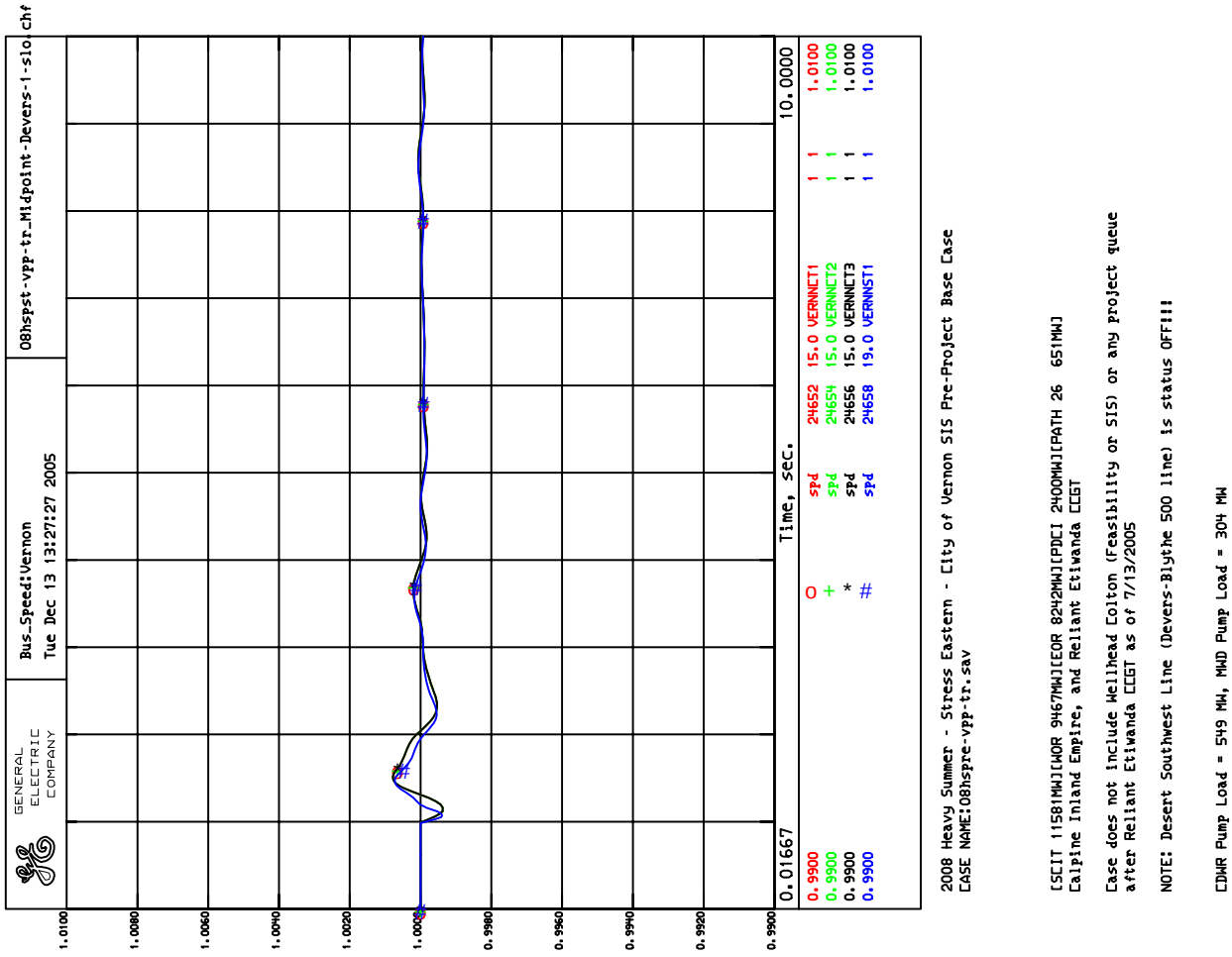
Plot 11 - 7: Three-phase fault at the Devers 500 kV bus followed by loss of the Midpoint – Devers 500 kV #1 circuit.



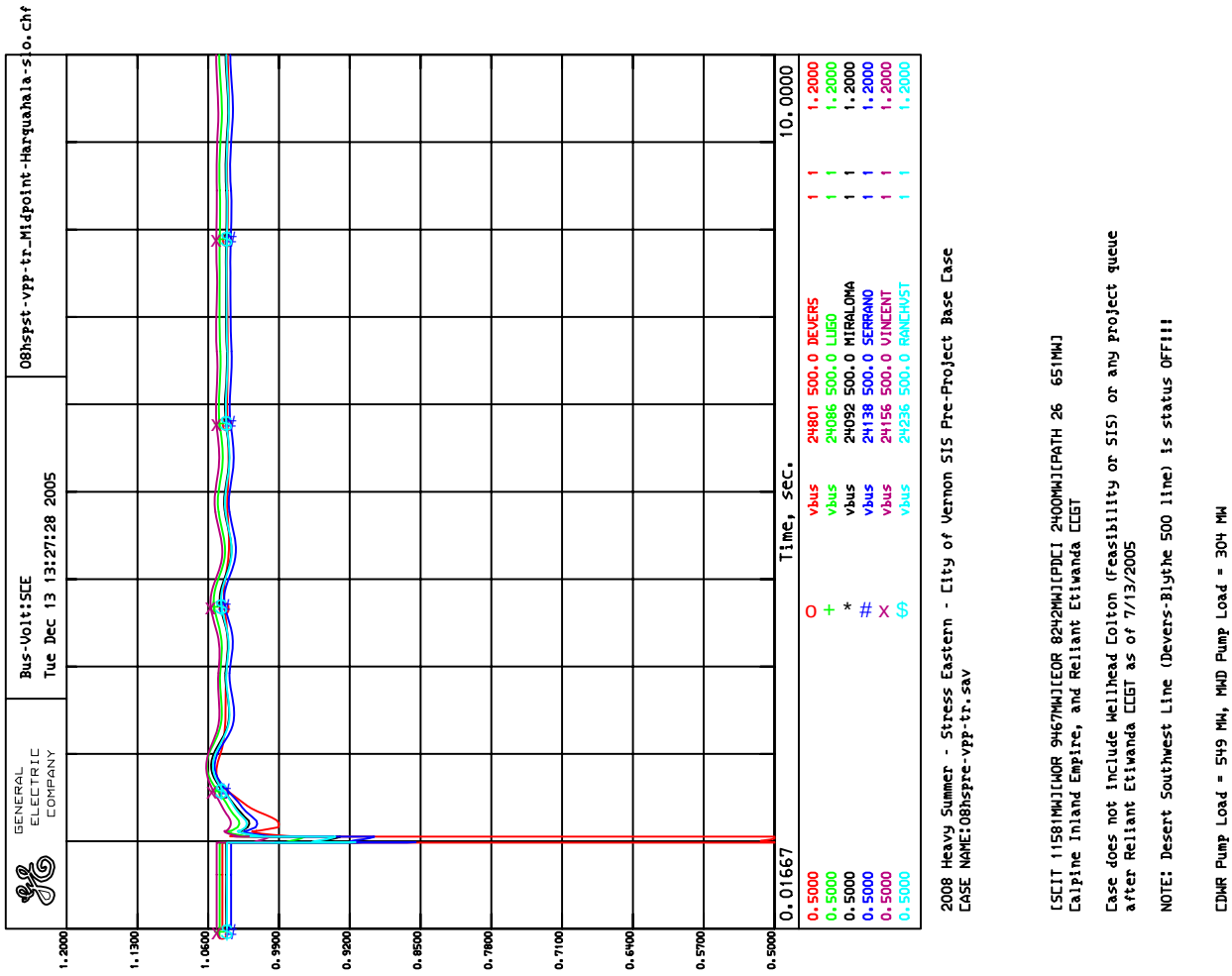
Plot 11 - 8: Three-phase fault at the Devers 500 kV bus followed by loss of the Midpoint – Devers 500 kV #1 circuit.



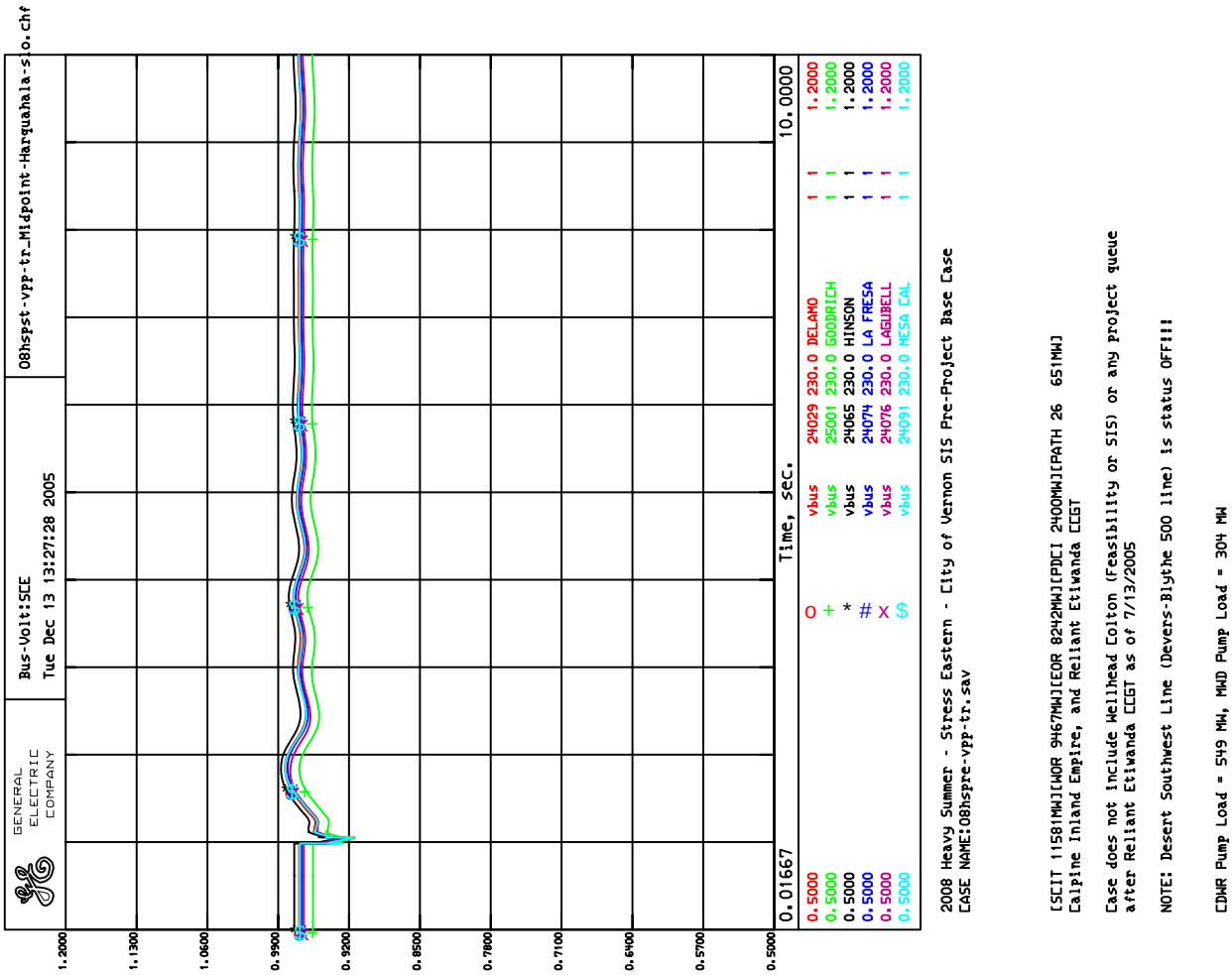
Plot 11 - 9: Three-phase fault at the Devers 500 kV bus followed by loss of the Midpoint – Devers 500 kV #1 circuit.



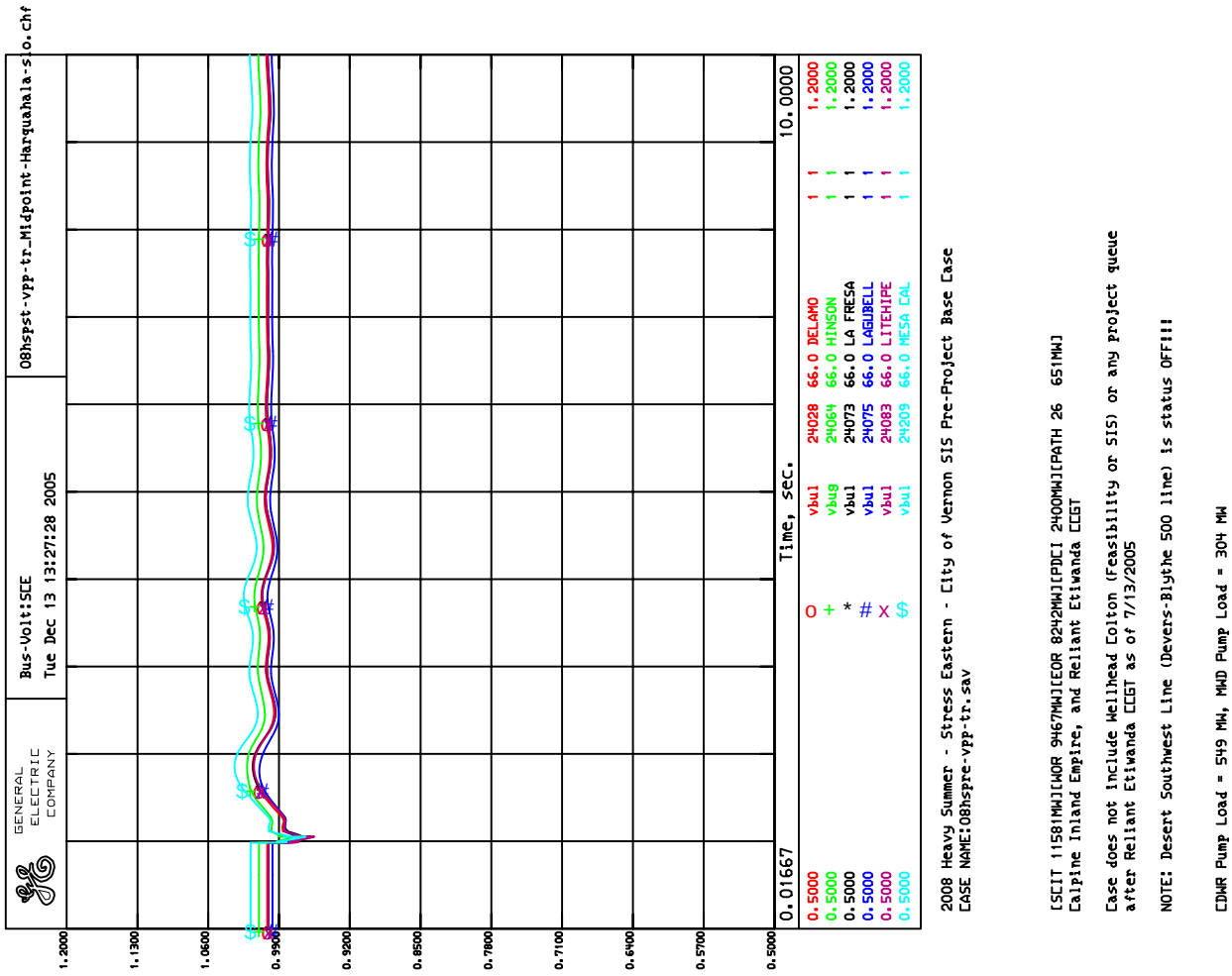
Plot 12 - 1: Three-phase fault at the Midpoint 500 kV bus followed by loss of the Midpoint – Harquahala 500 kV circuit.



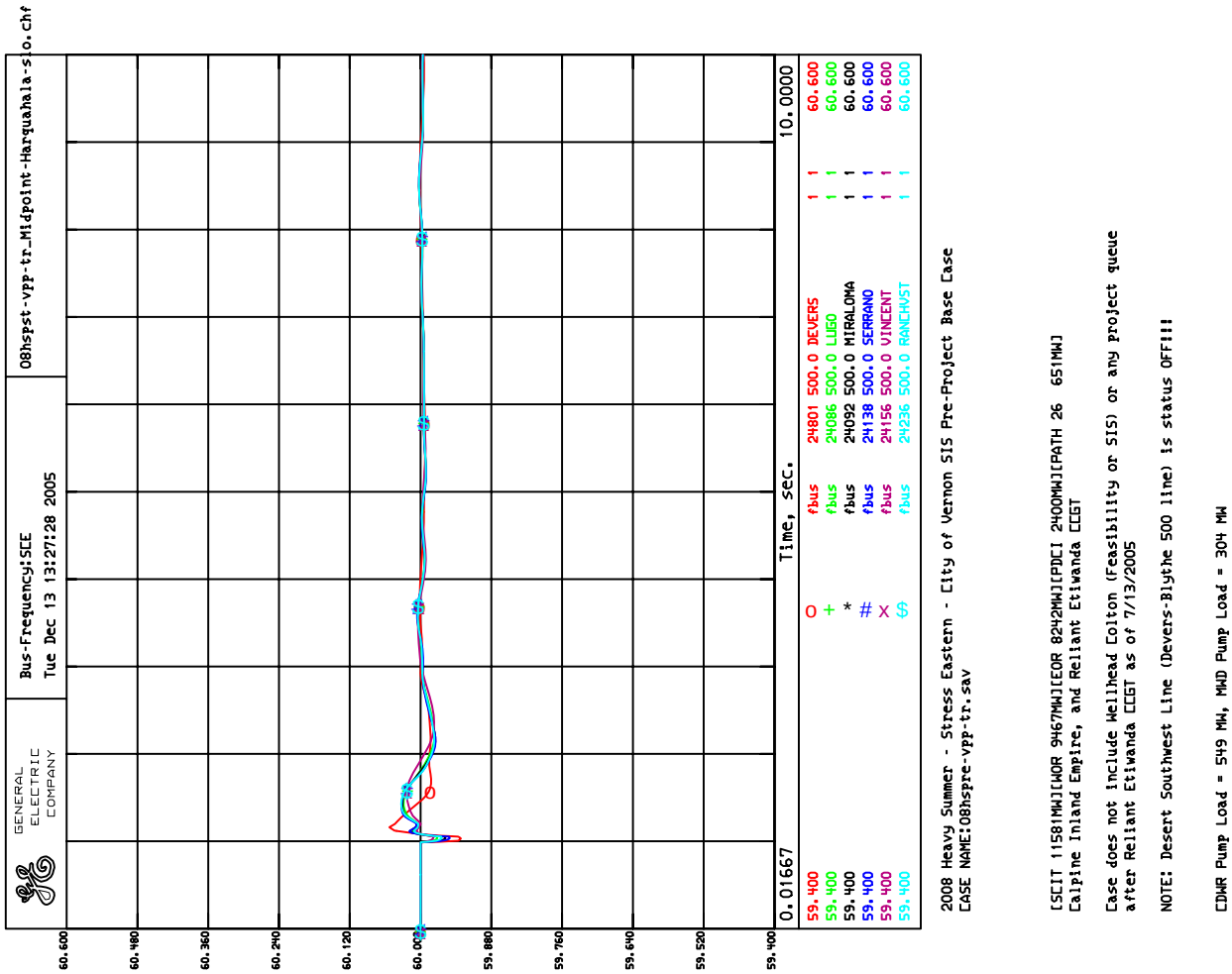
Plot 12 - 2: Three-phase fault at the Midpoint 500 kV bus followed by loss of the Midpoint – Harquahala 500 kV circuit.



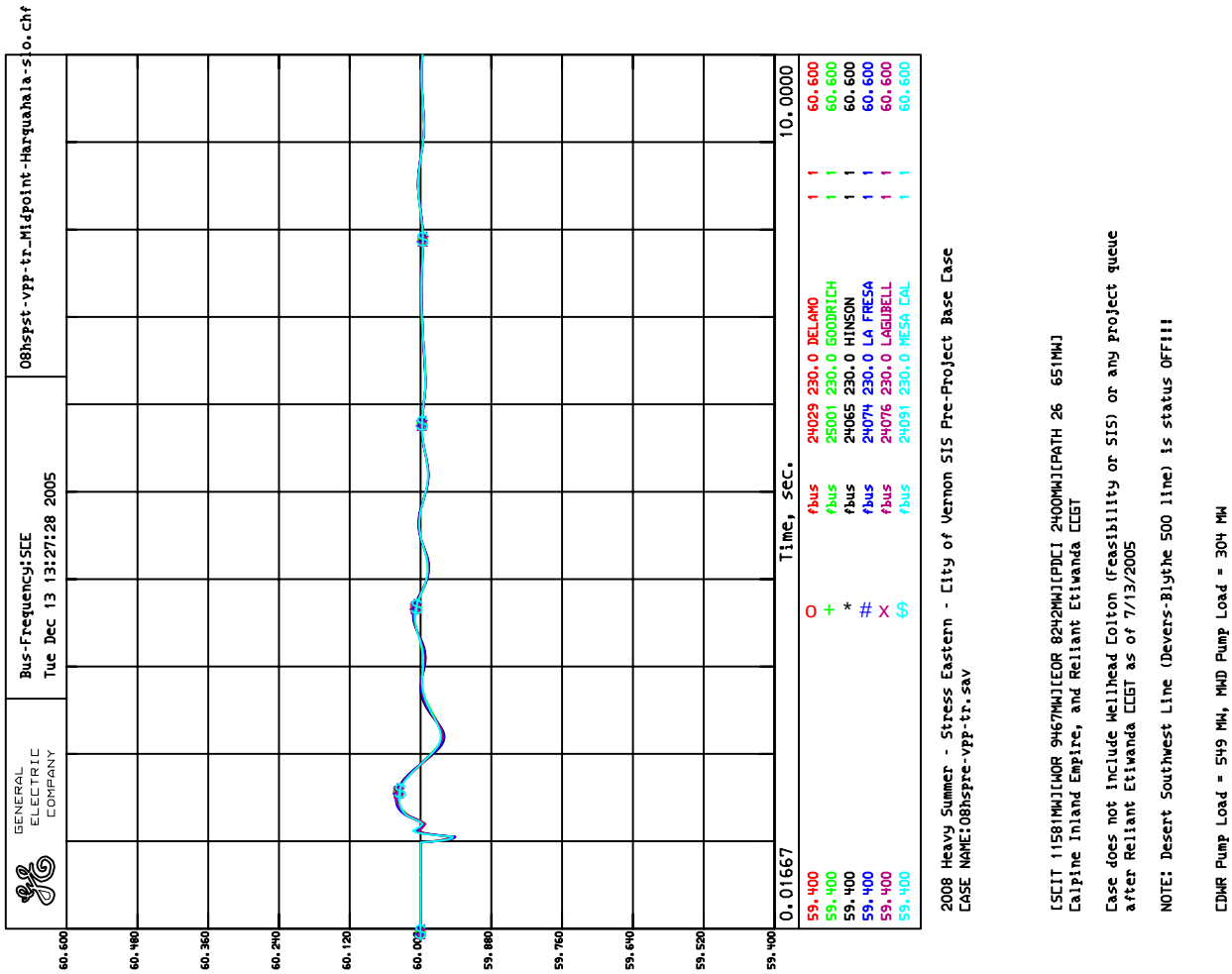
Plot 12 - 3: Three-phase fault at the Midpoint 500 kV bus followed by loss of the Midpoint – Harquahala 500 kV circuit.



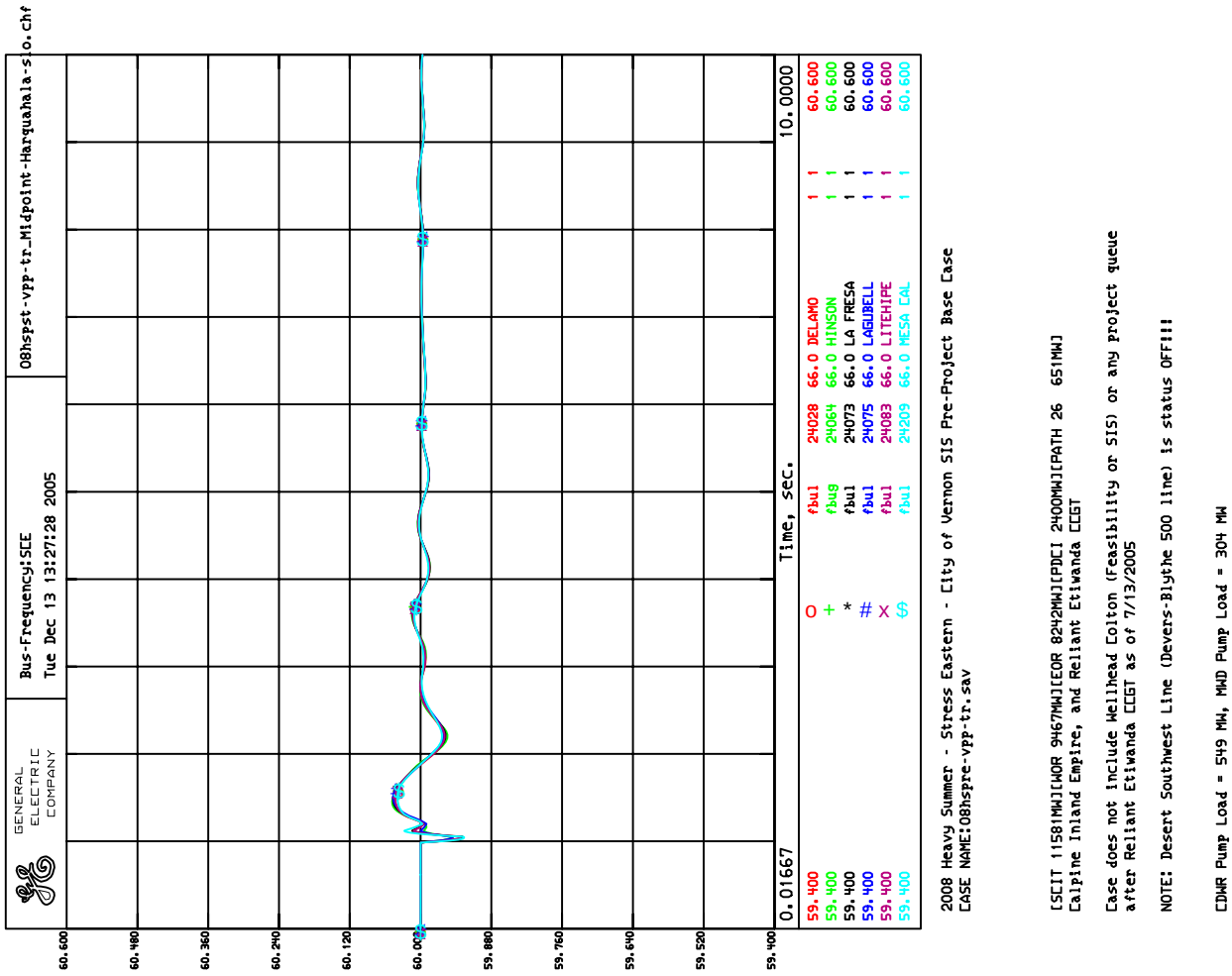
Plot 12 - 4: Three-phase fault at the Midpoint 500 kV bus followed by loss of the Midpoint – Harquahala 500 kV circuit.



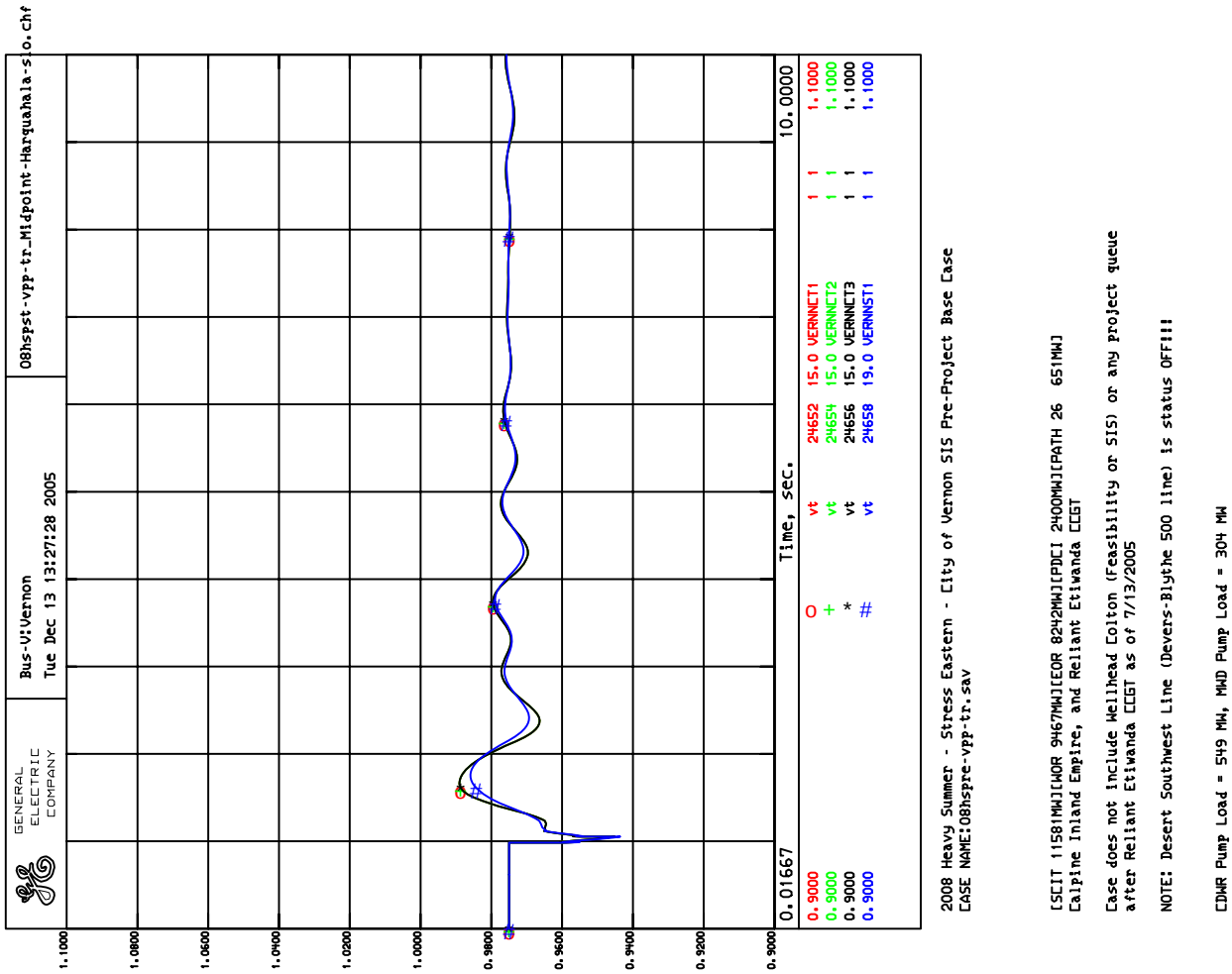
Plot 12 - 5: Three-phase fault at the Midpoint 500 kV bus followed by loss of the Midpoint – Harquahala 500 kV circuit.



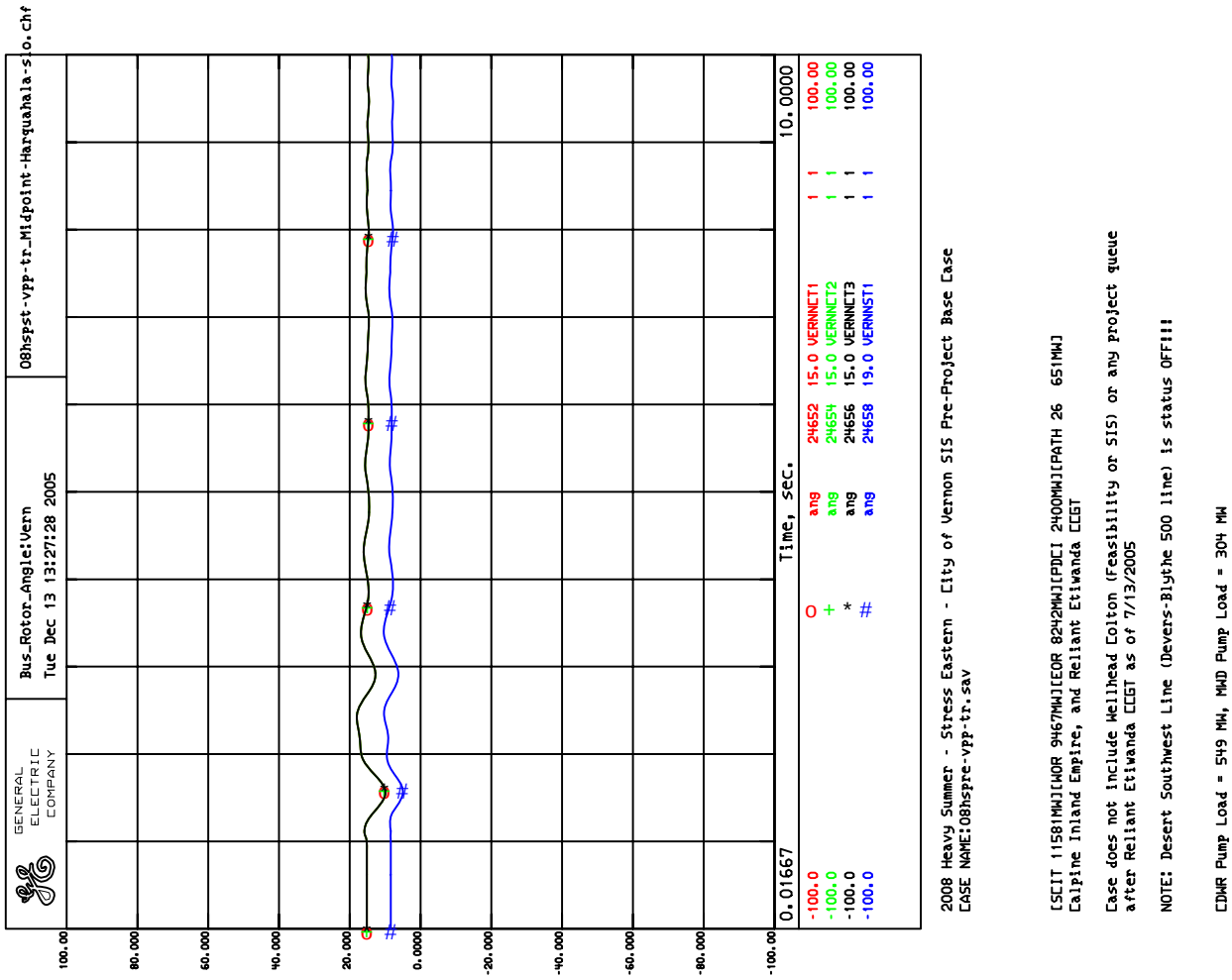
Plot 12 - 6: Three-phase fault at the Midpoint 500 kV bus followed by loss of the Midpoint – Harquahala 500 kV circuit.



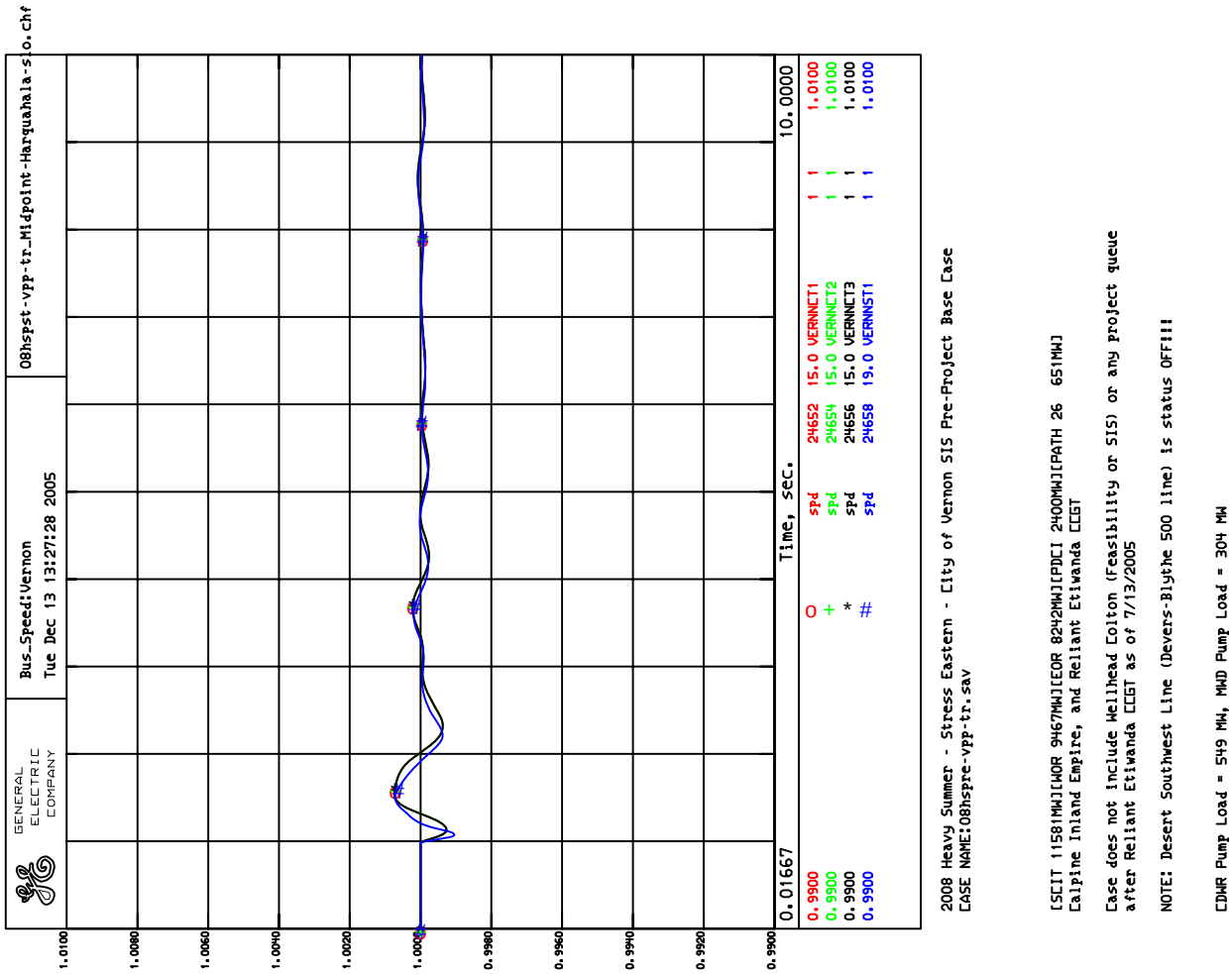
Plot 12 - 7: Three-phase fault at the Midpoint 500 kV bus followed by loss of the Midpoint – Harquahala 500 kV circuit.



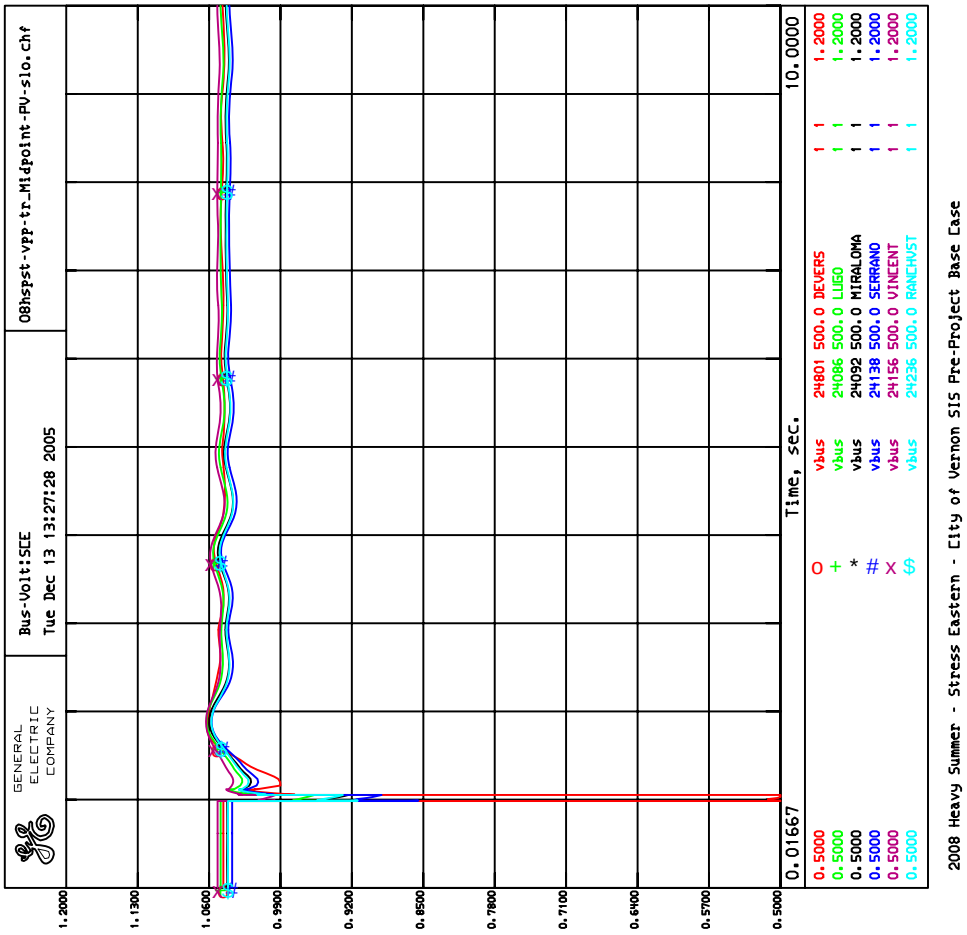
Plot 12 - 8: Three-phase fault at the Midpoint 500 kV bus followed by loss of the Midpoint – Harquahala 500 kV circuit.



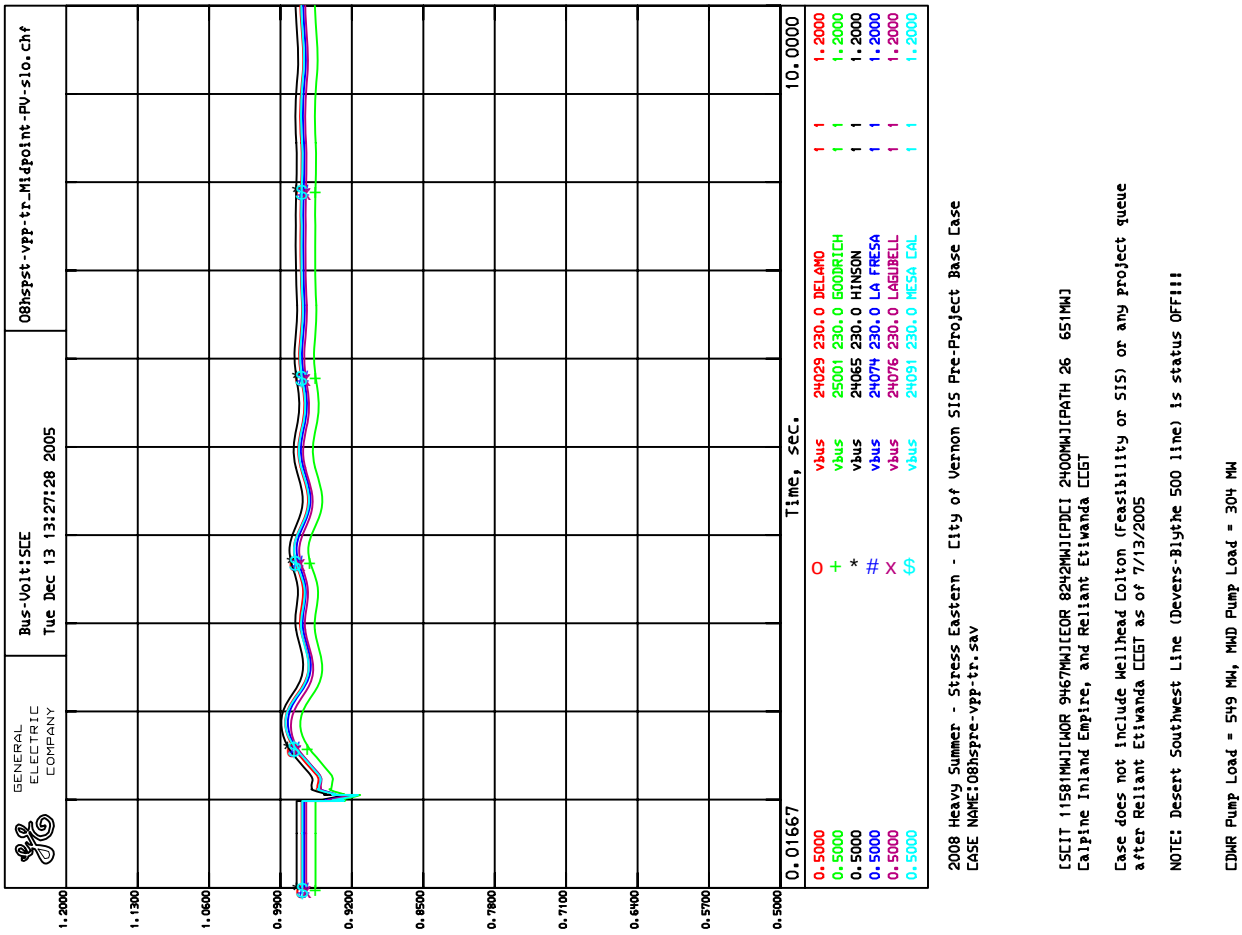
Plot 12 - 9: Three-phase fault at the Midpoint 500 kV bus followed by loss of the Midpoint – Harquahala 500 kV circuit.



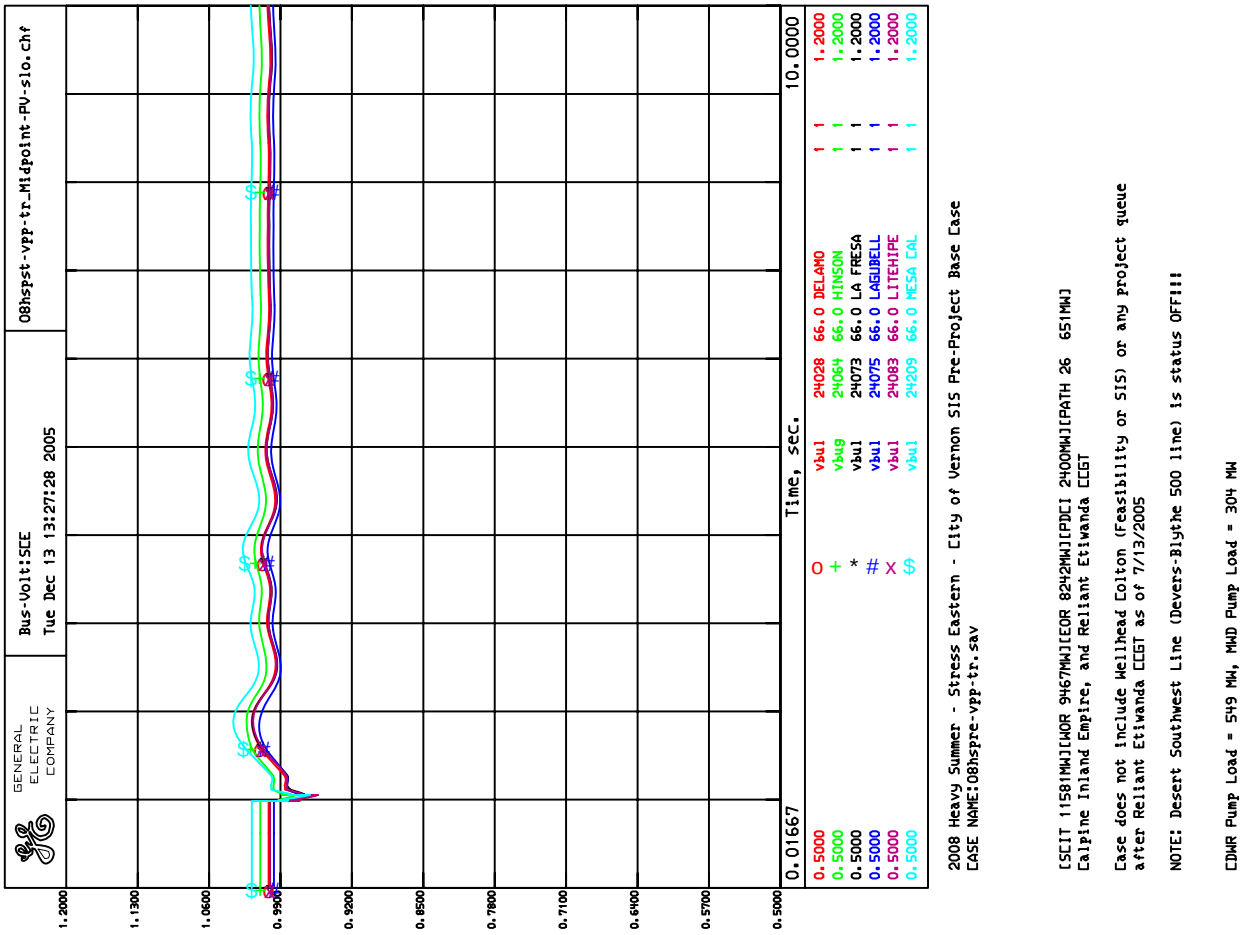
Plot 13 - 1: Three-phase fault at the Midpoint 500 kV bus followed by loss of the Midpoint – Palo Verde 500 kV circuit.



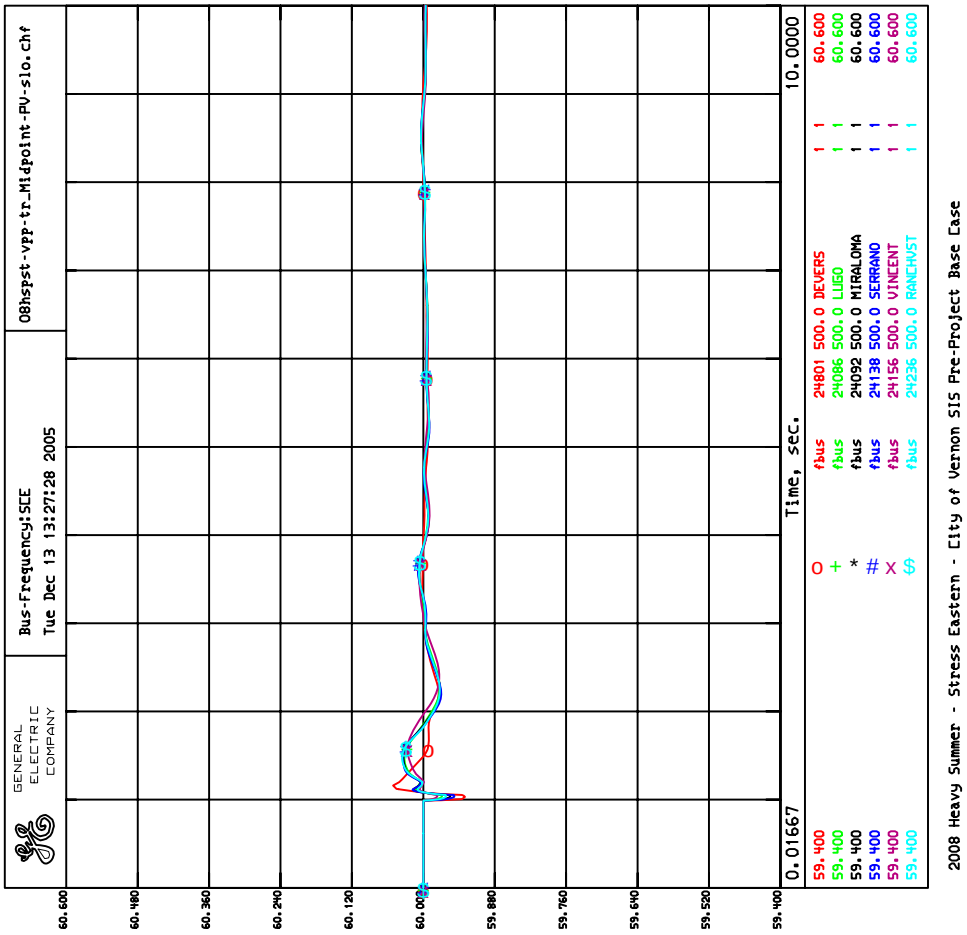
Plot 13 - 2: Three-phase fault at the Midpoint 500 kV bus followed by loss of the Midpoint – Palo Verde 500 kV circuit.



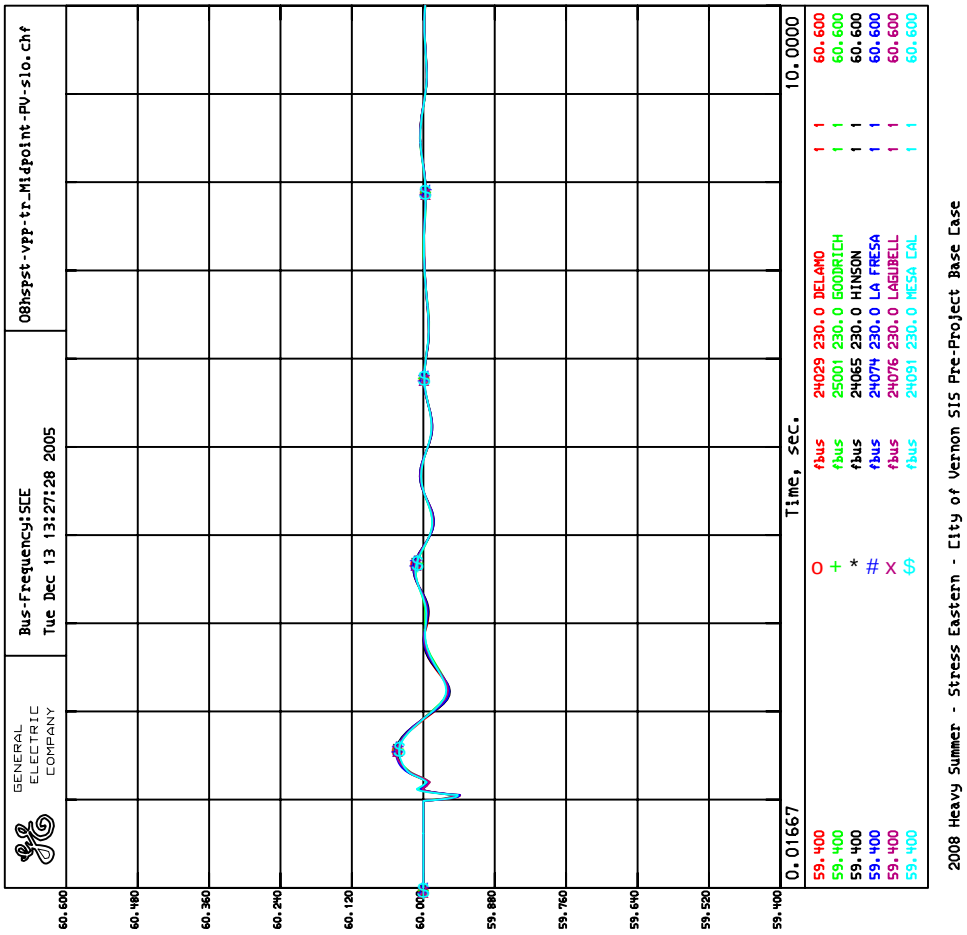
Plot 13 - 3: Three-phase fault at the Midpoint 500 kV bus followed by loss of the Midpoint – Palo Verde 500 kV circuit.



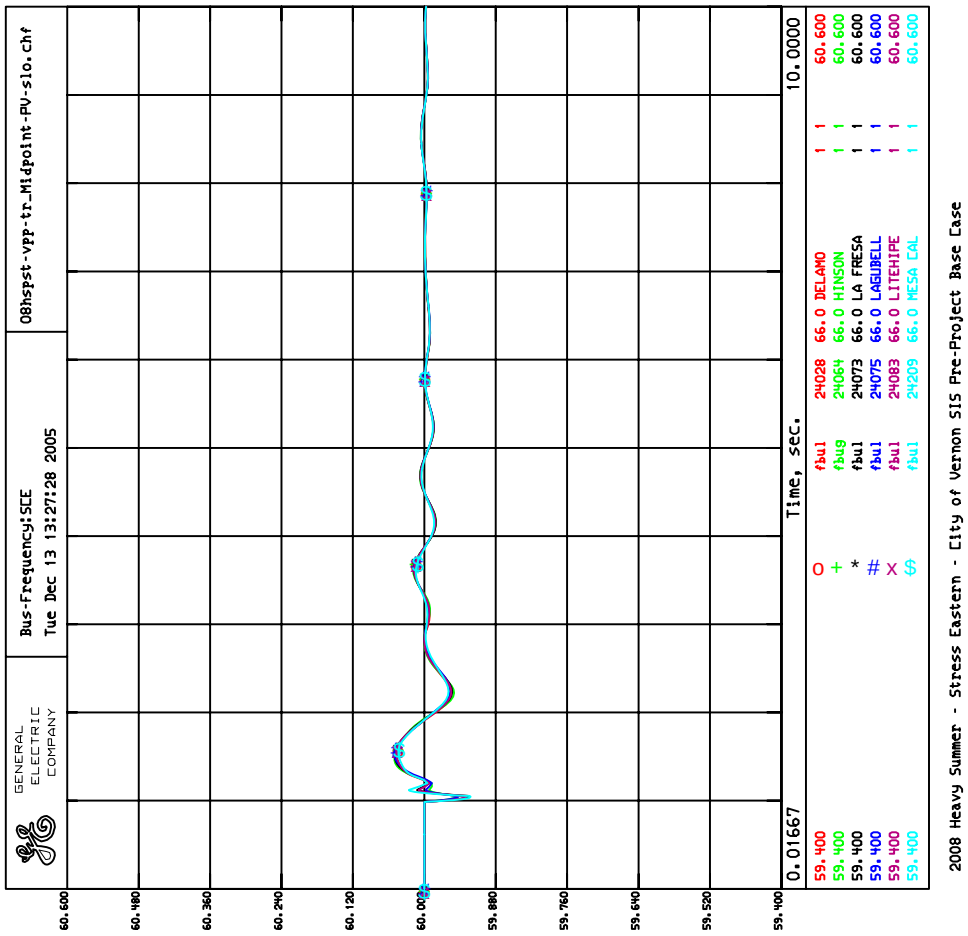
Plot 13 - 4: Three-phase fault at the Midpoint 500 kV bus followed by loss of the Midpoint – Palo Verde 500 kV circuit.



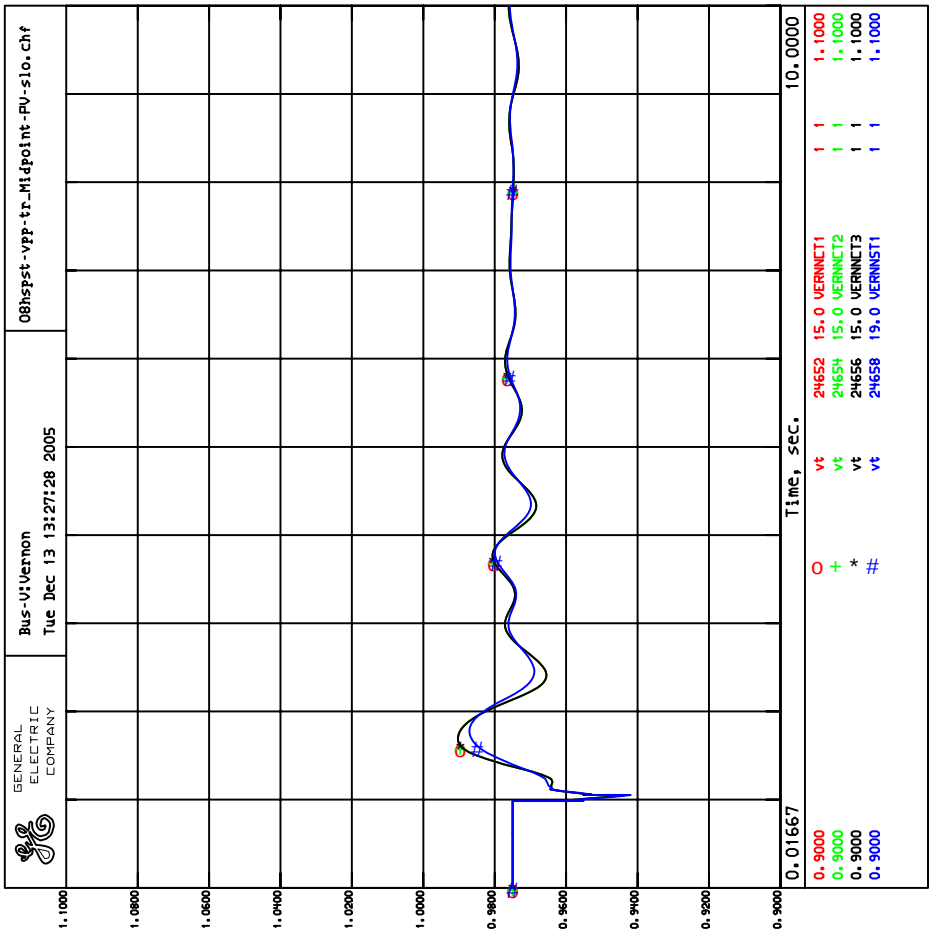
Plot 13 - 5: Three-phase fault at the Midpoint 500 kV bus followed by loss of the Midpoint – Palo Verde 500 kV circuit.



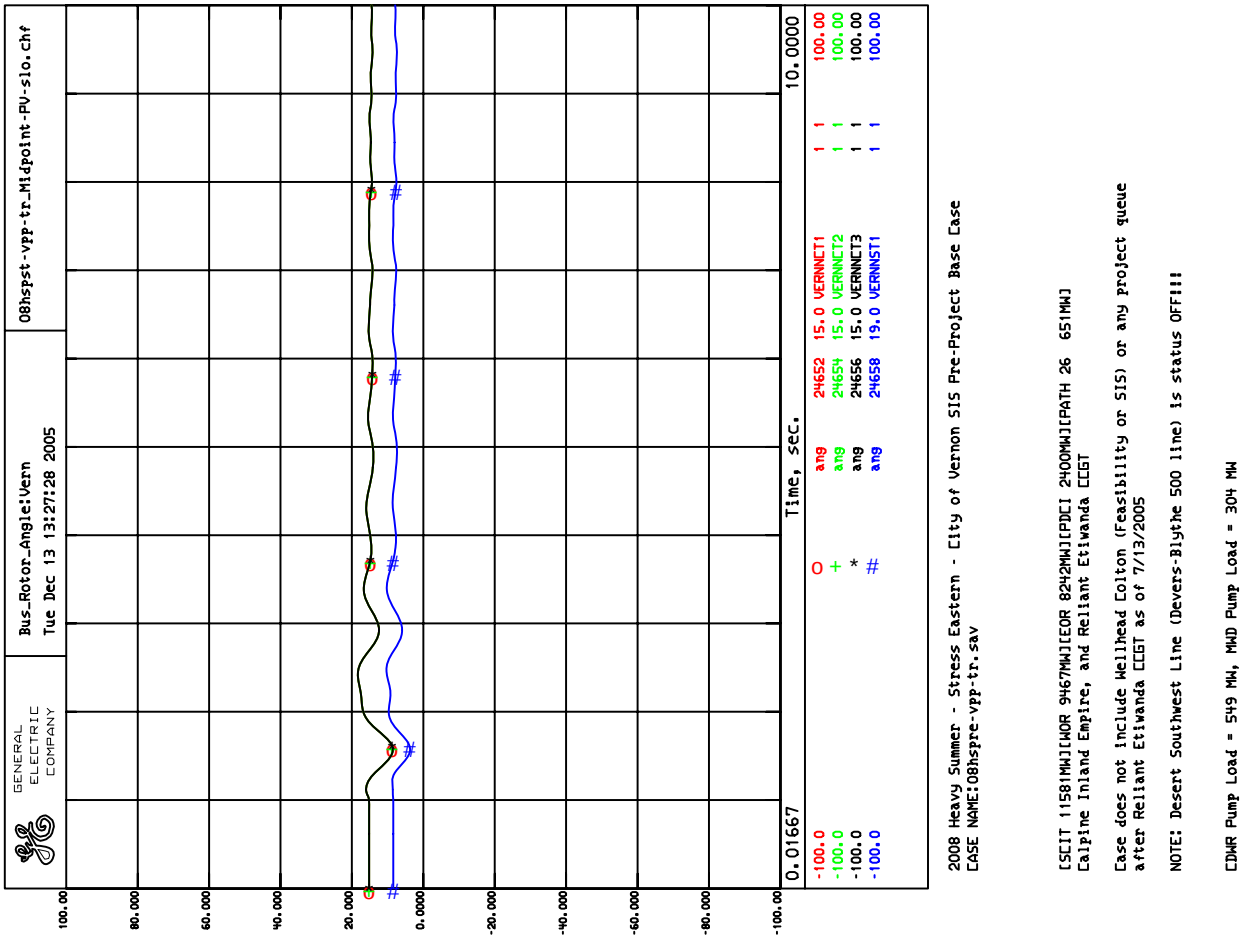
Plot 13 - 6: Three-phase fault at the Midpoint 500 kV bus followed by loss of the Midpoint – Palo Verde 500 kV circuit.



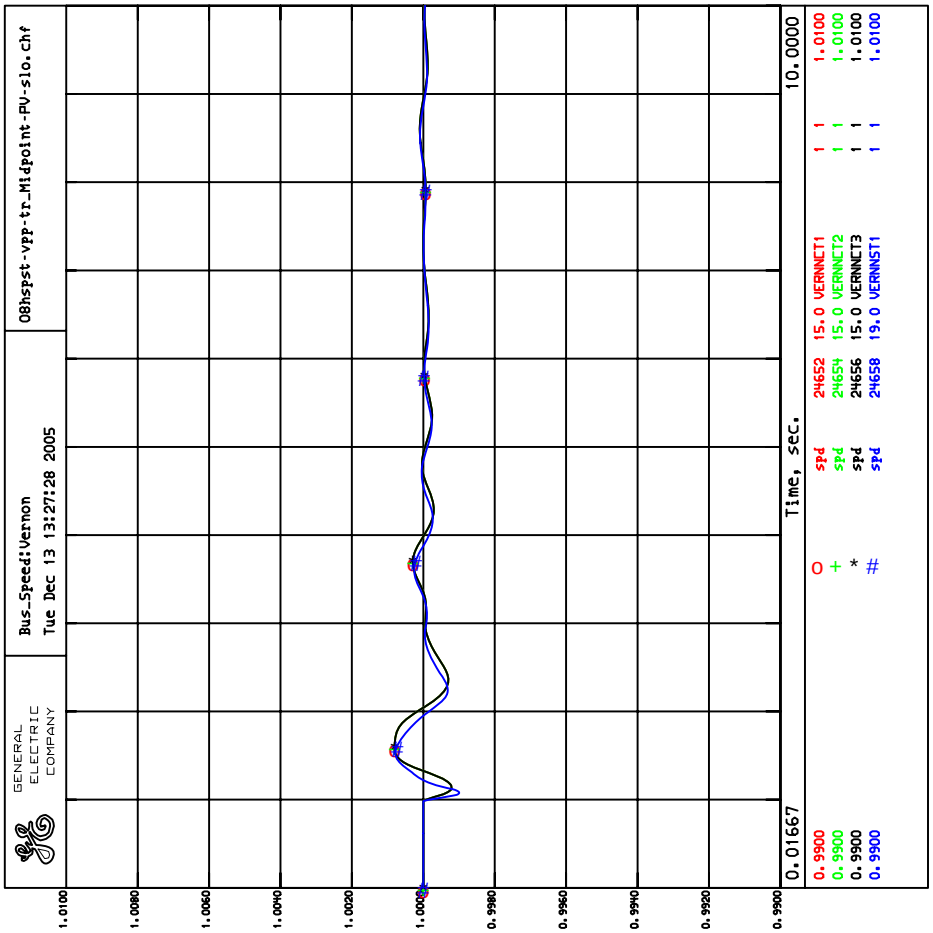
Plot 13 - 7: Three-phase fault at the Midpoint 500 kV bus followed by loss of the Midpoint – Palo Verde 500 kV circuit.



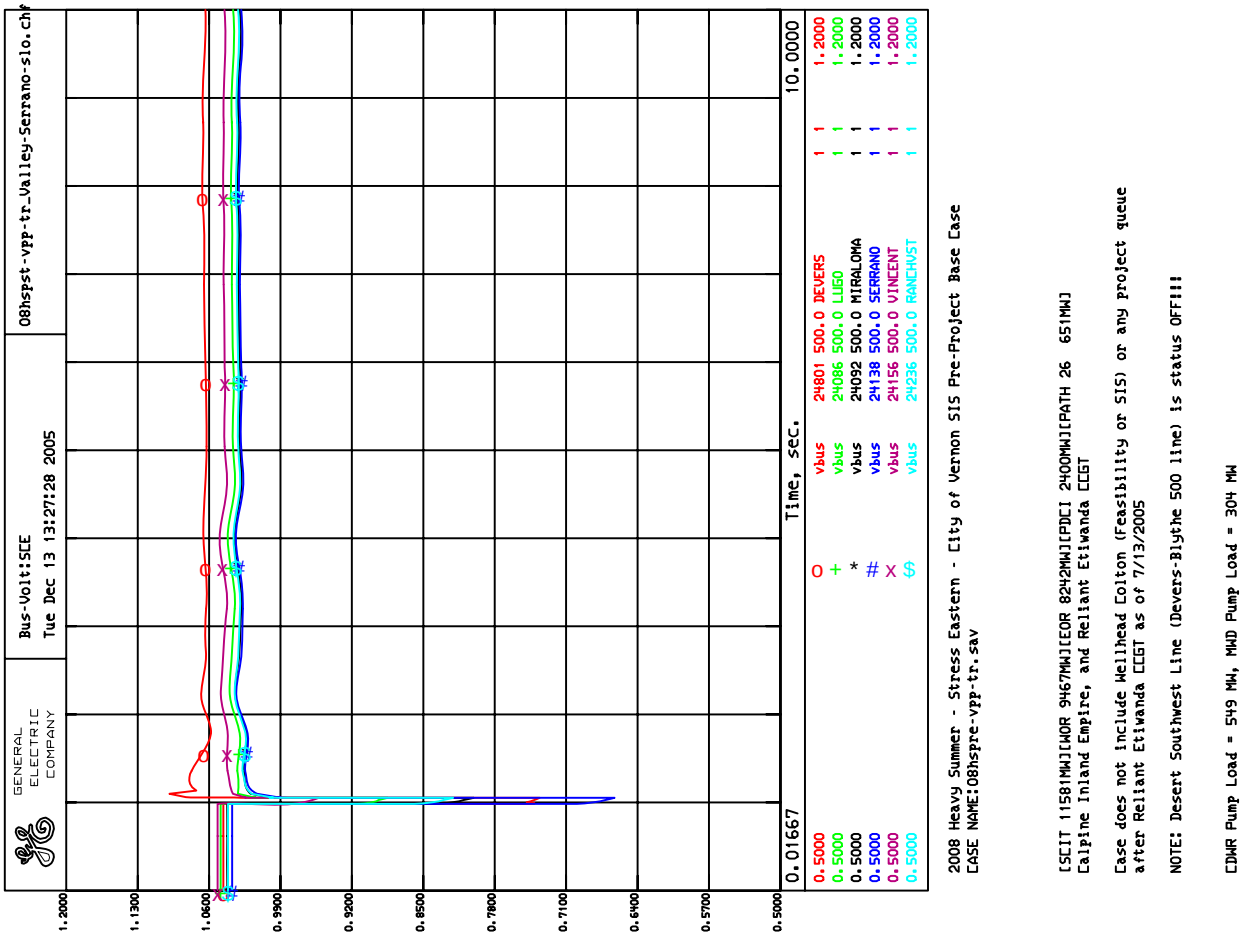
Plot 13 - 8: Three-phase fault at the Midpoint 500 kV bus followed by loss of the Midpoint – Palo Verde 500 kV circuit.



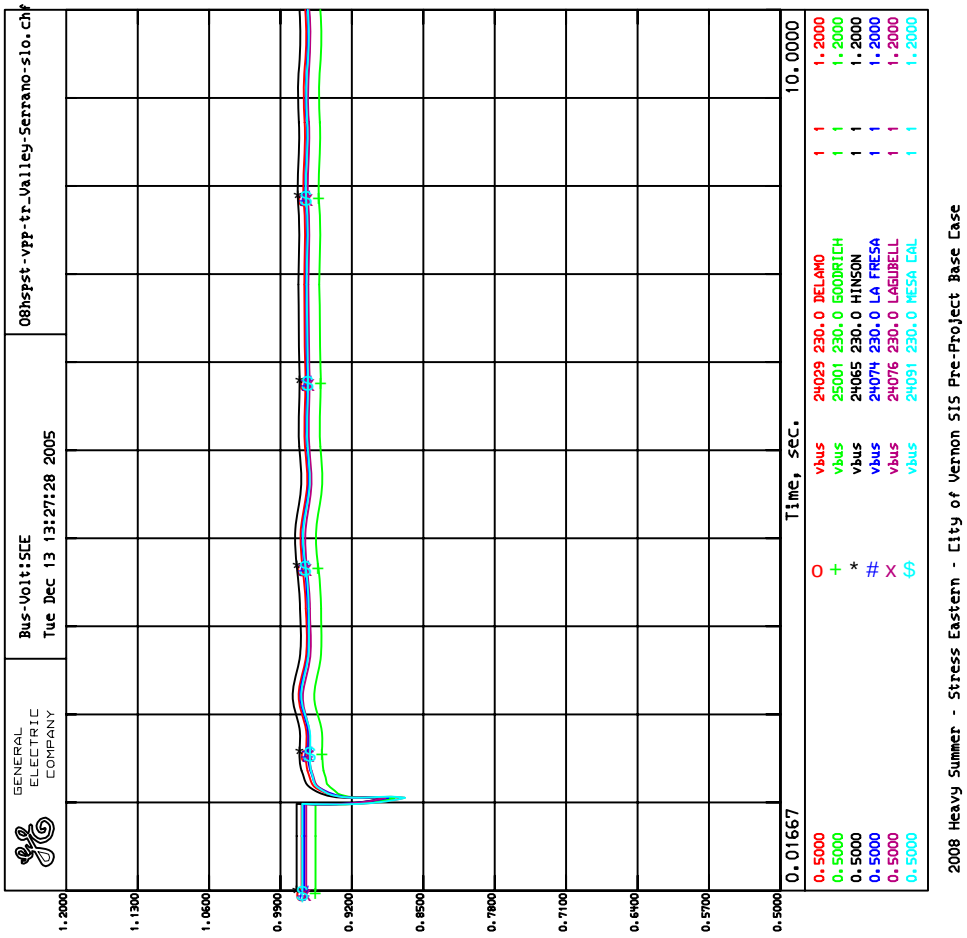
Plot 13 - 9: Three-phase fault at the Midpoint 500 kV bus followed by loss of the Midpoint – Palo Verde 500 kV circuit.



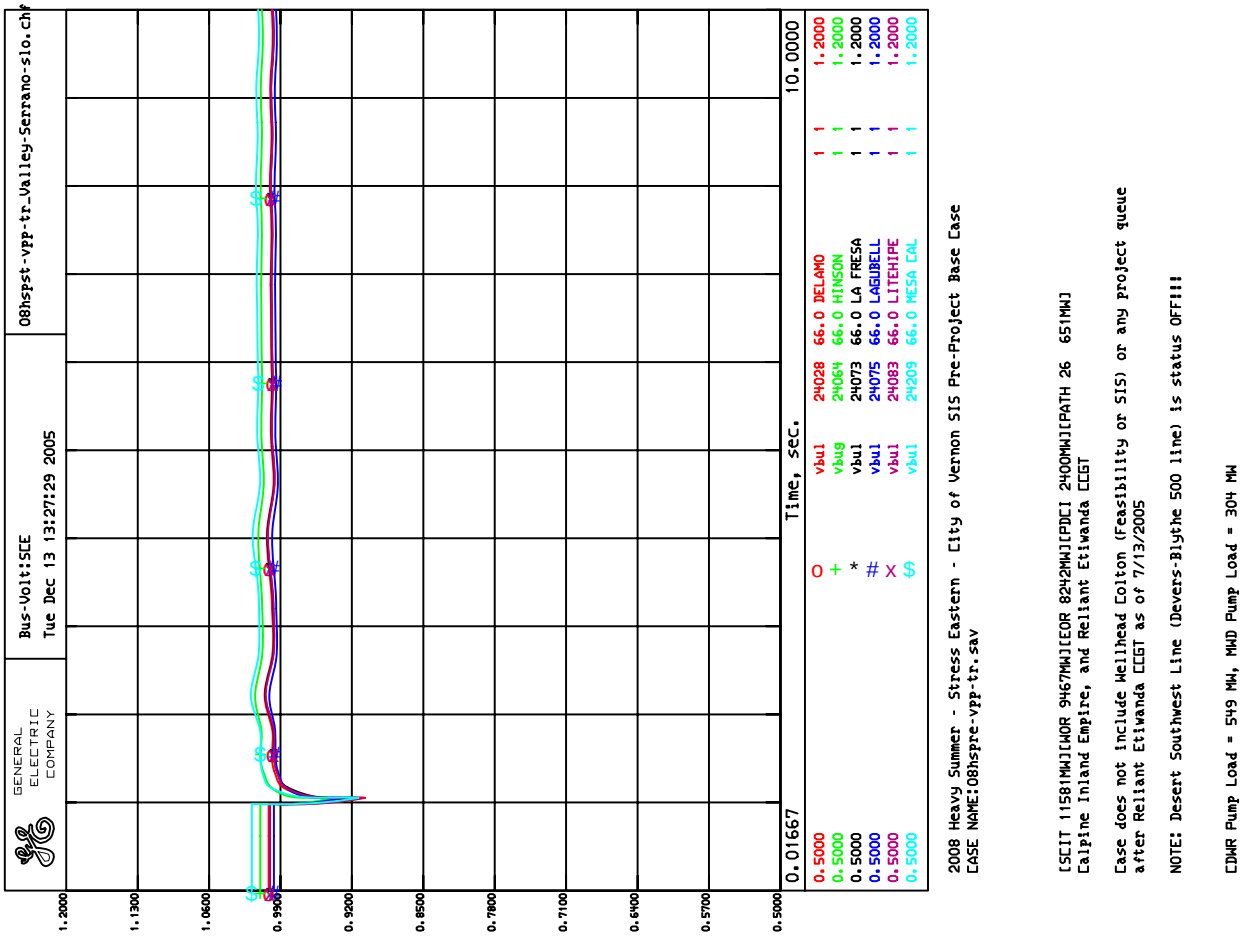
Plot 14 - 1: Three-phase fault at the Valley 500 kV bus followed by loss of the Valley – Serrano 500 kV circuit.



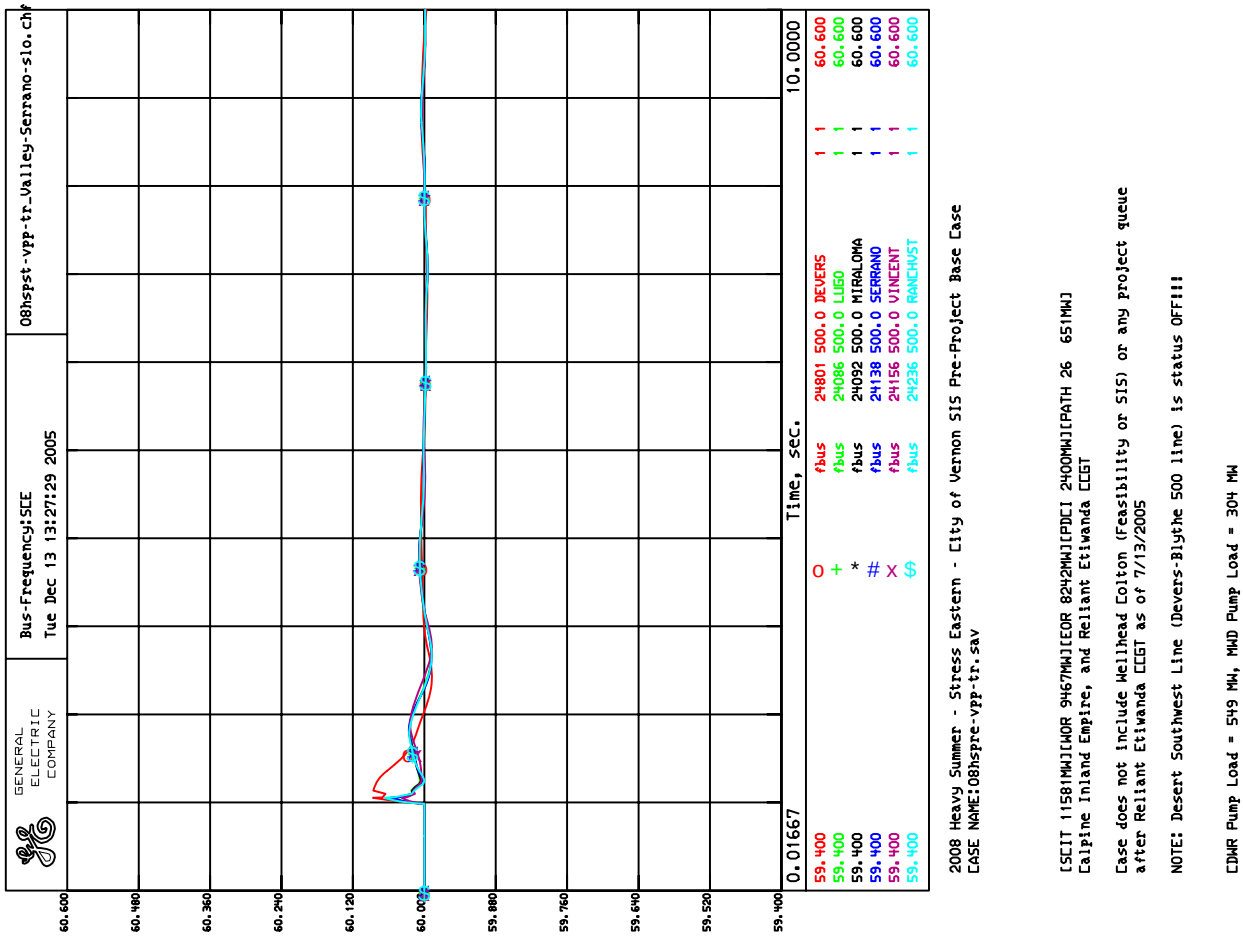
Plot 14 - 2: Three-phase fault at the Valley 500 kV bus followed by loss of the Valley – Serrano 500 kV circuit.



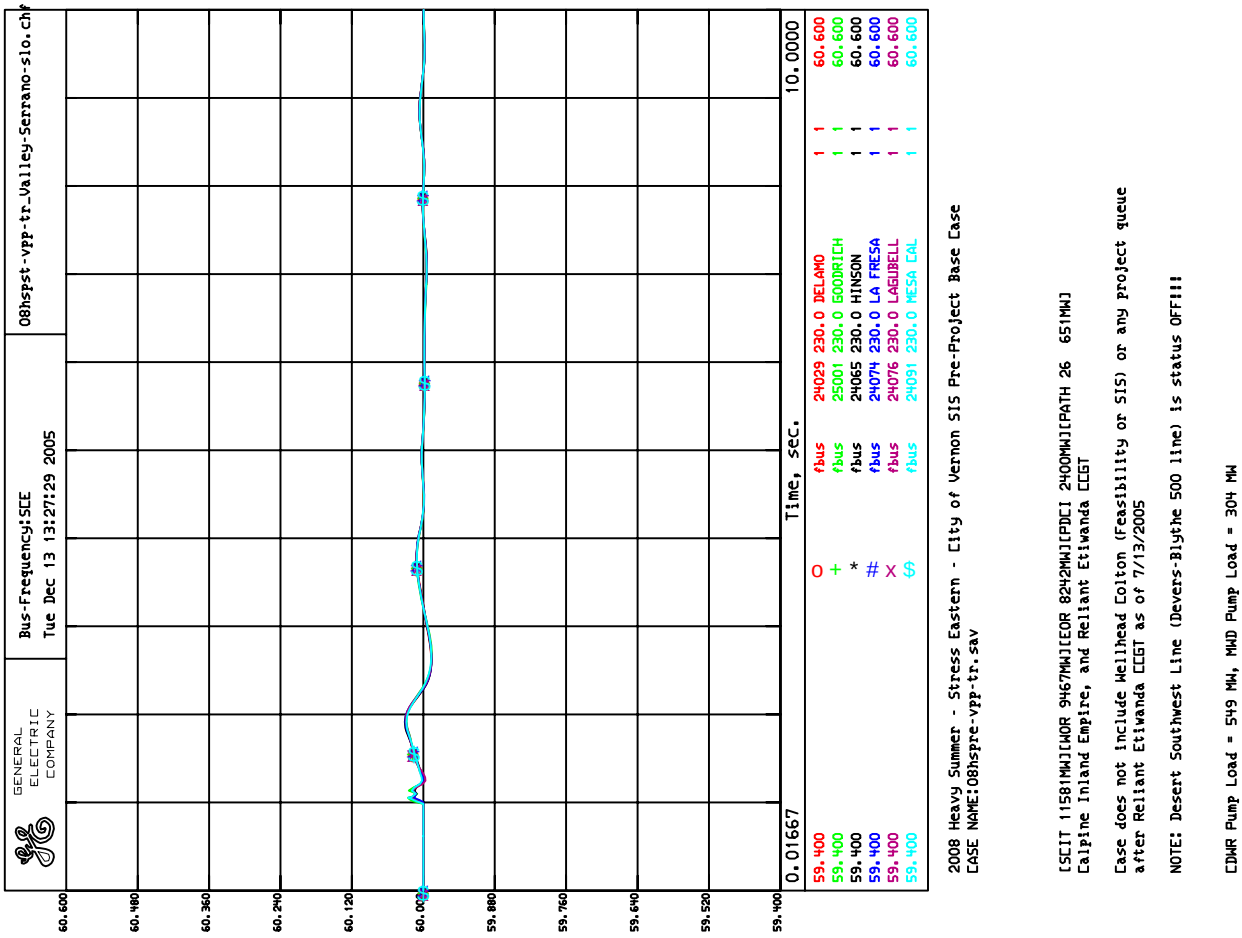
Plot 14 - 3: Three-phase fault at the Valley 500 kV bus followed by loss of the Valley – Serrano 500 kV circuit.



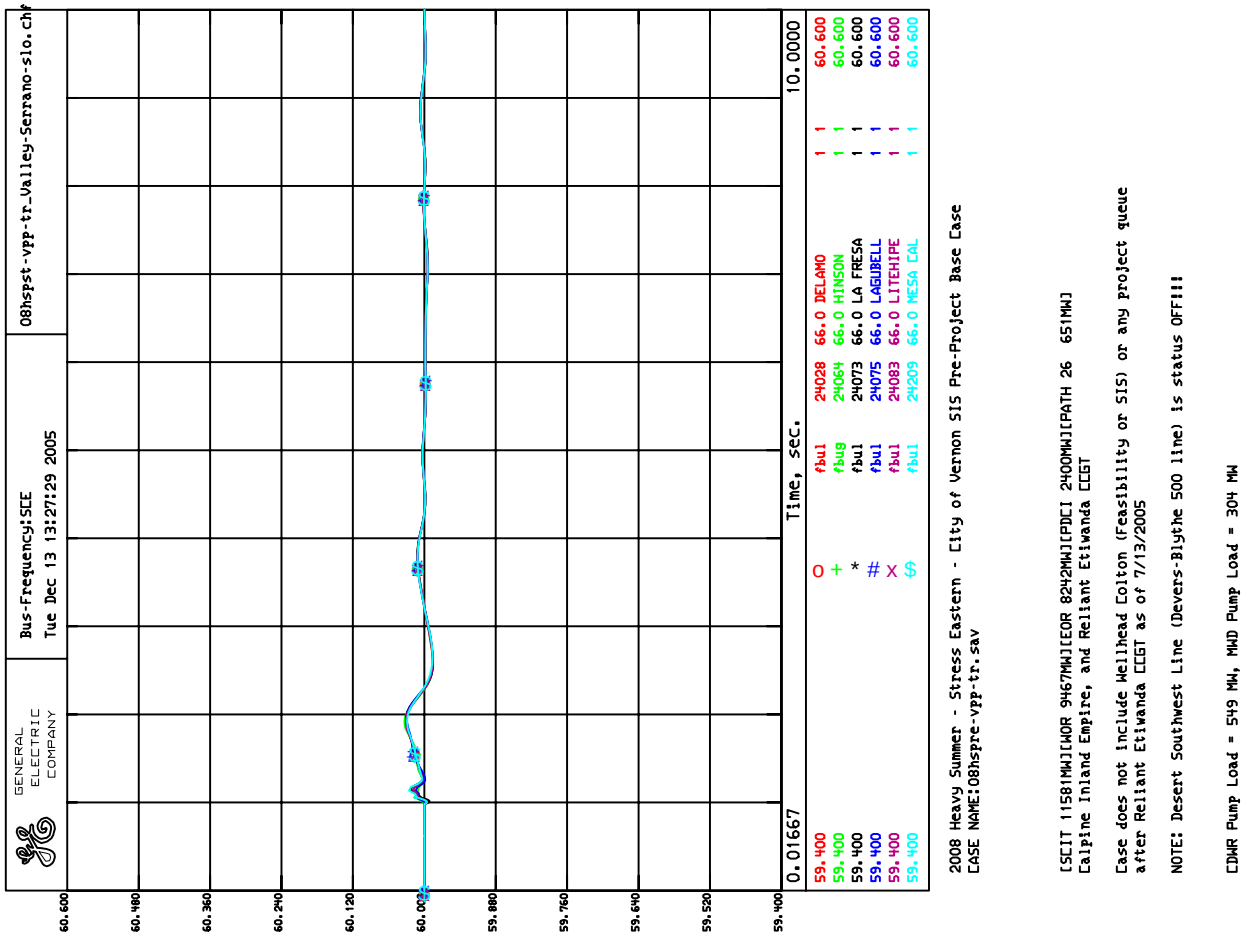
Plot 14 - 4: Three-phase fault at the Valley 500 kV bus followed by loss of the Valley – Serrano 500 kV circuit.



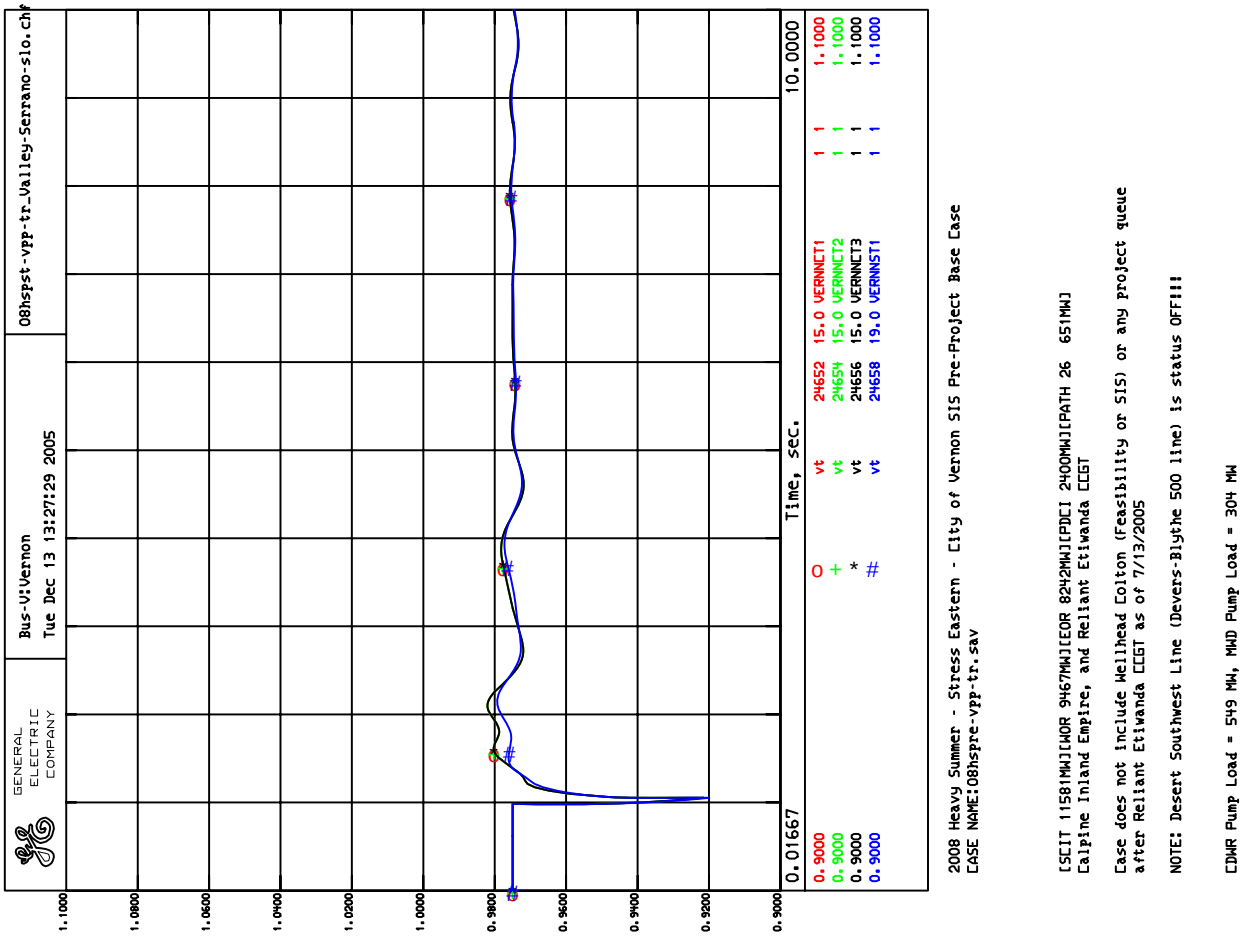
Plot 14 - 5: Three-phase fault at the Valley 500 kV bus followed by loss of the Valley – Serrano 500 kV circuit.



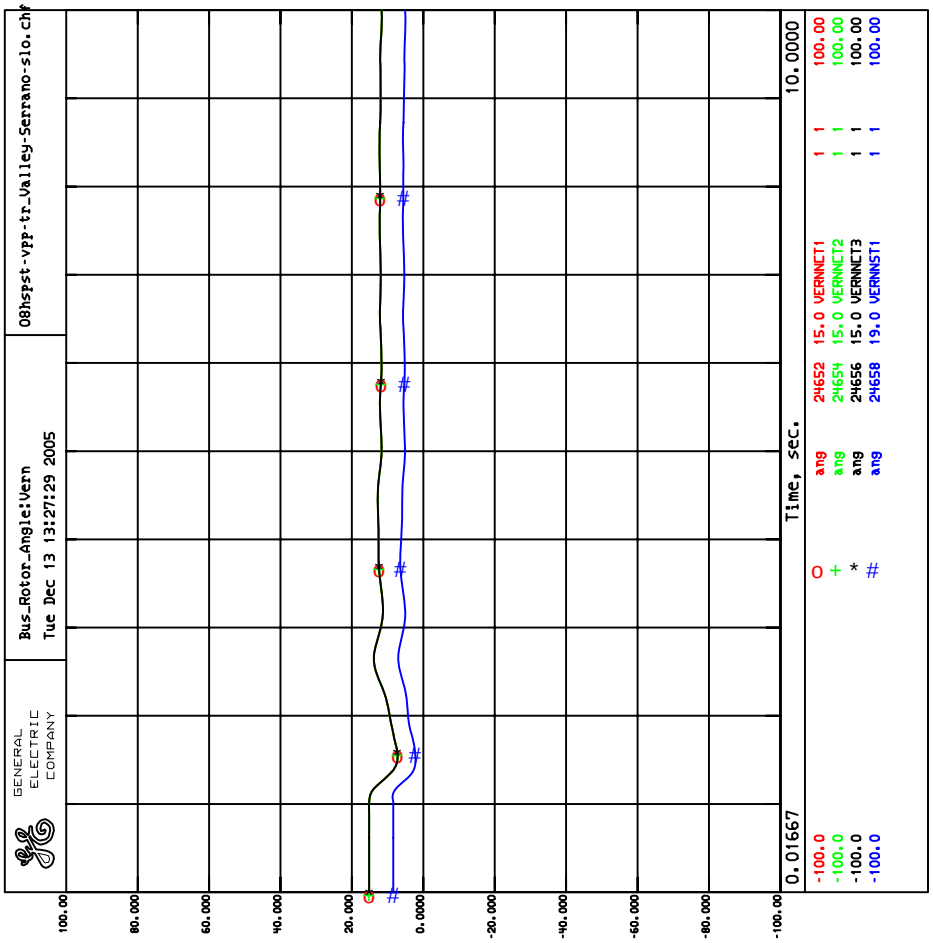
Plot 14 - 6: Three-phase fault at the Valley 500 kV bus followed by loss of the Valley – Serrano 500 kV circuit.



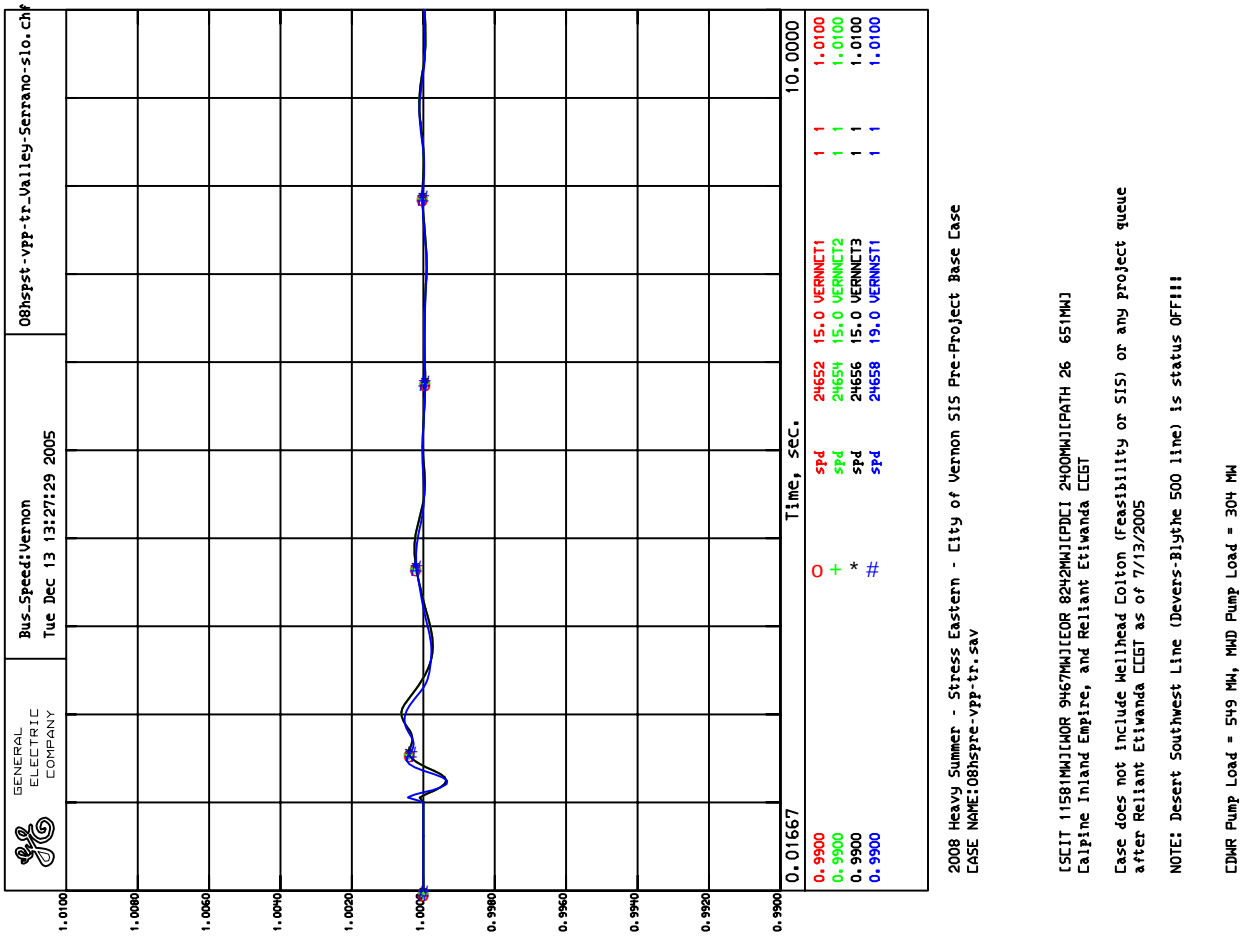
Plot 14 - 7: Three-phase fault at the Valley 500 kV bus followed by loss of the Valley – Serrano 500 kV circuit.



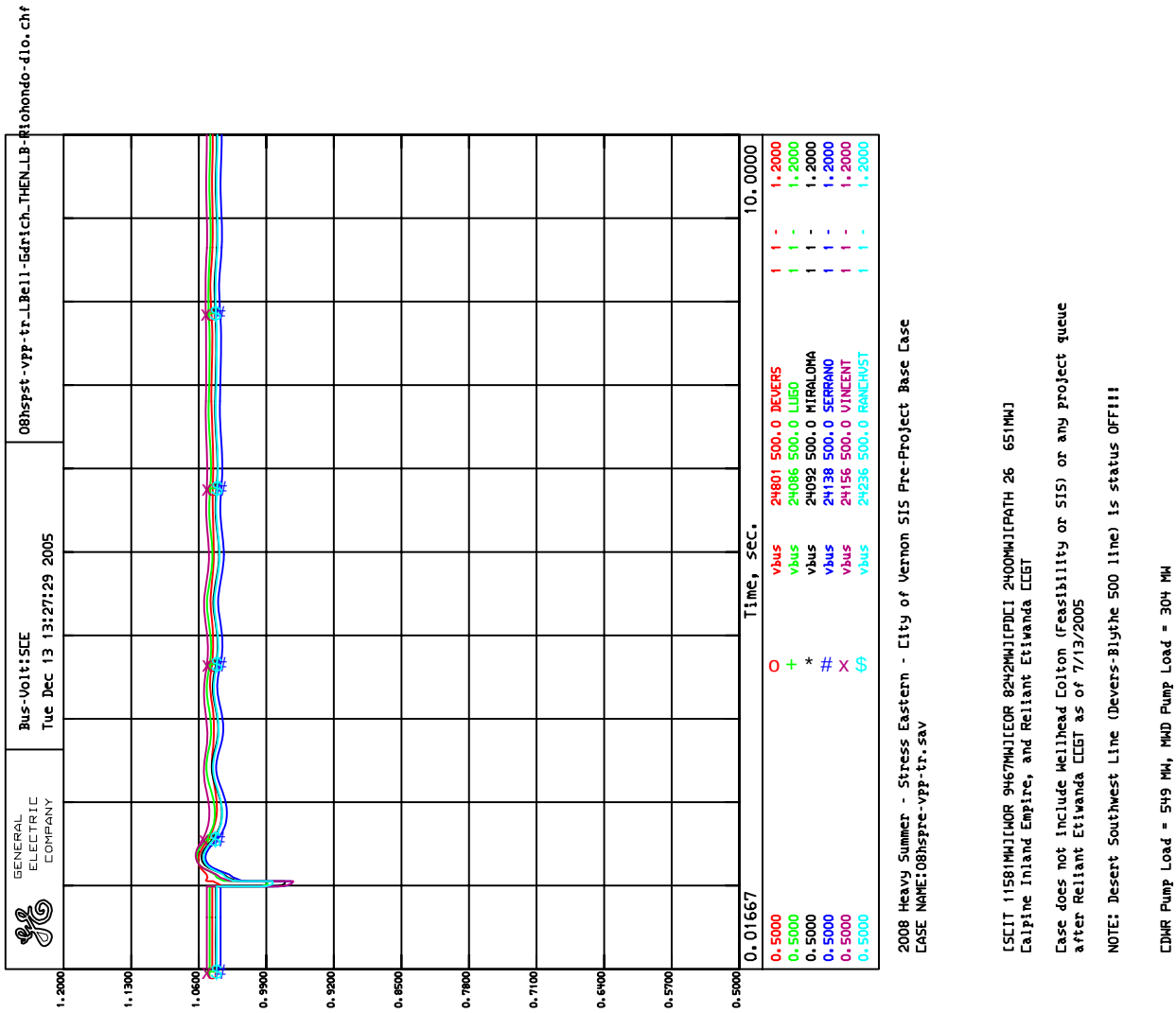
Plot 14 - 8: Three-phase fault at the Valley 500 kV bus followed by loss of the Valley – Serrano 500 kV circuit.



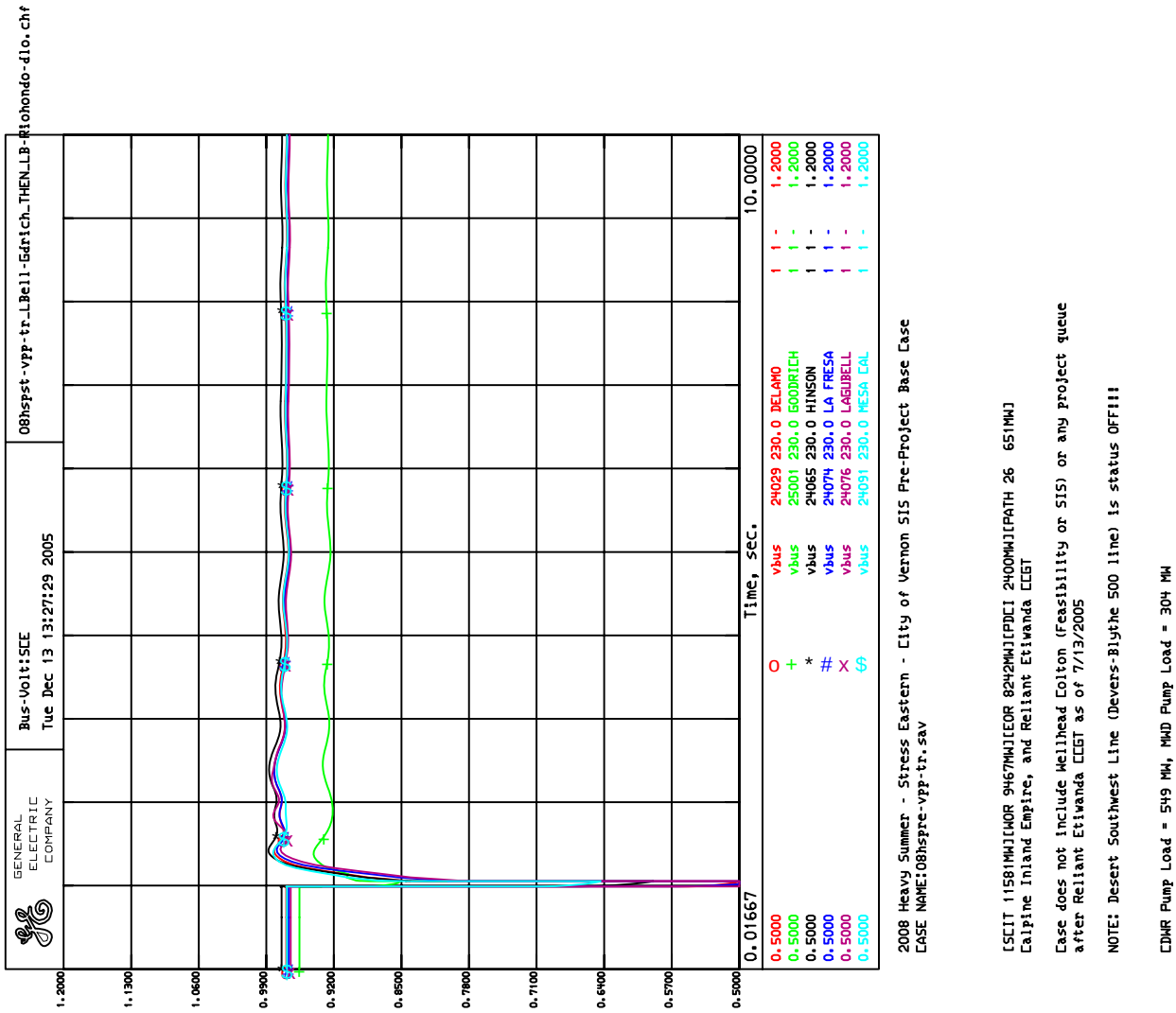
Plot 14 - 9: Three-phase fault at the Valley 500 kV bus followed by loss of the Valley – Serrano 500 kV circuit.



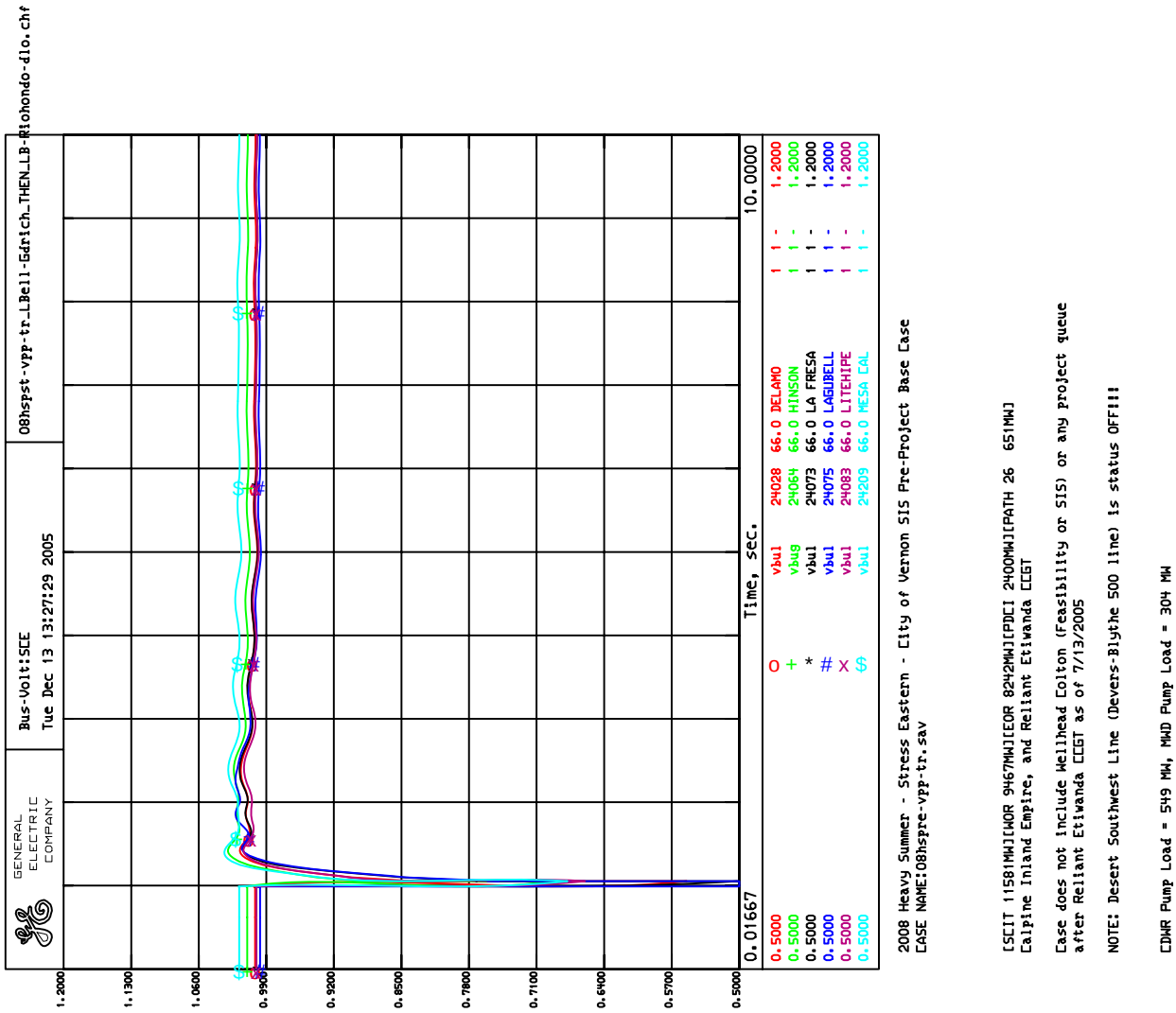
Plot 15 - 1: Pre-fault outage of the Laguna Bell – Goodrich 230 kV circuit, then a three-phase fault at the Laguna Bell 230 kV bus followed by loss of the Laguna Bell – Rio Hondo 230 kV circuit.



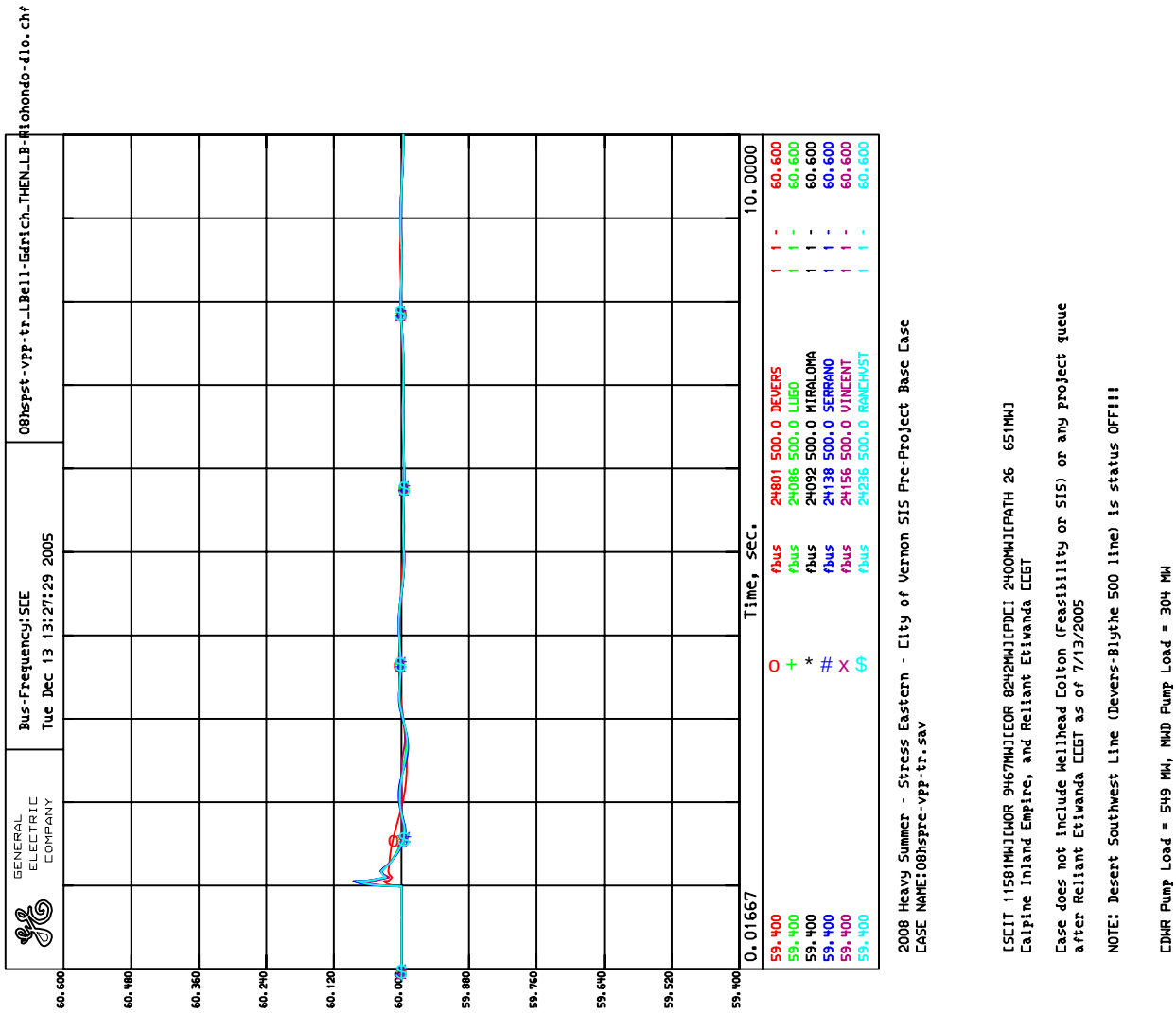
Plot 15 - 2: Pre-fault outage of the Laguna Bell – Goodrich 230 kV circuit, then a three-phase fault at the Laguna Bell 230 kV bus followed by loss of the Laguna Bell – Rio Hondo 230 kV circuit.



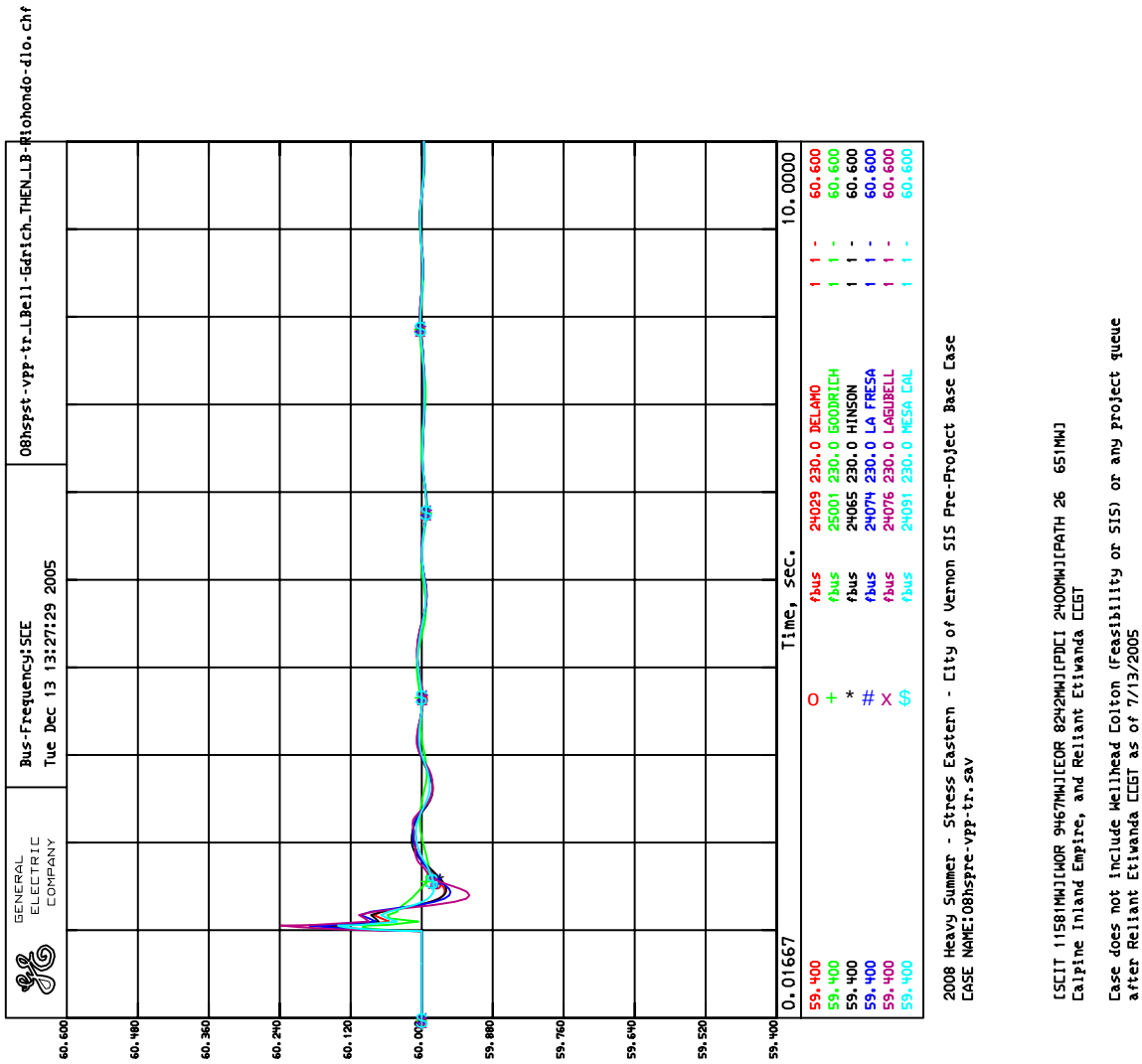
Plot 15 - 3: Pre-fault outage of the Laguna Bell – Goodrich 230 kV circuit, then a three-phase fault at the Laguna Bell 230 kV bus followed by loss of the Laguna Bell – Rio Hondo 230 kV circuit.



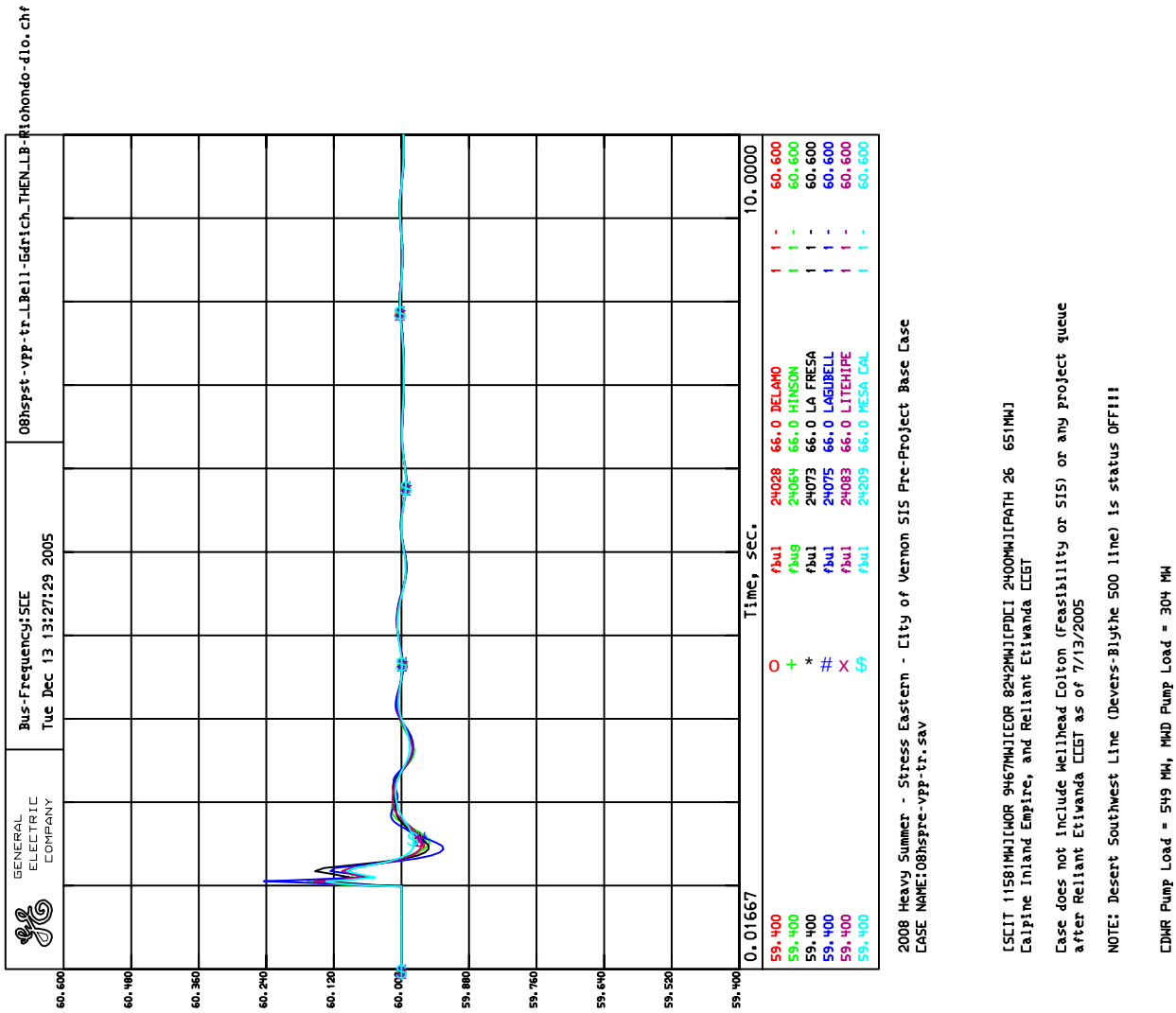
Plot 15 - 4: Pre-fault outage of the Laguna Bell – Goodrich 230 kV circuit, then a three-phase fault at the Laguna Bell 230 kV bus followed by loss of the Laguna Bell – Rio Hondo 230 kV circuit.



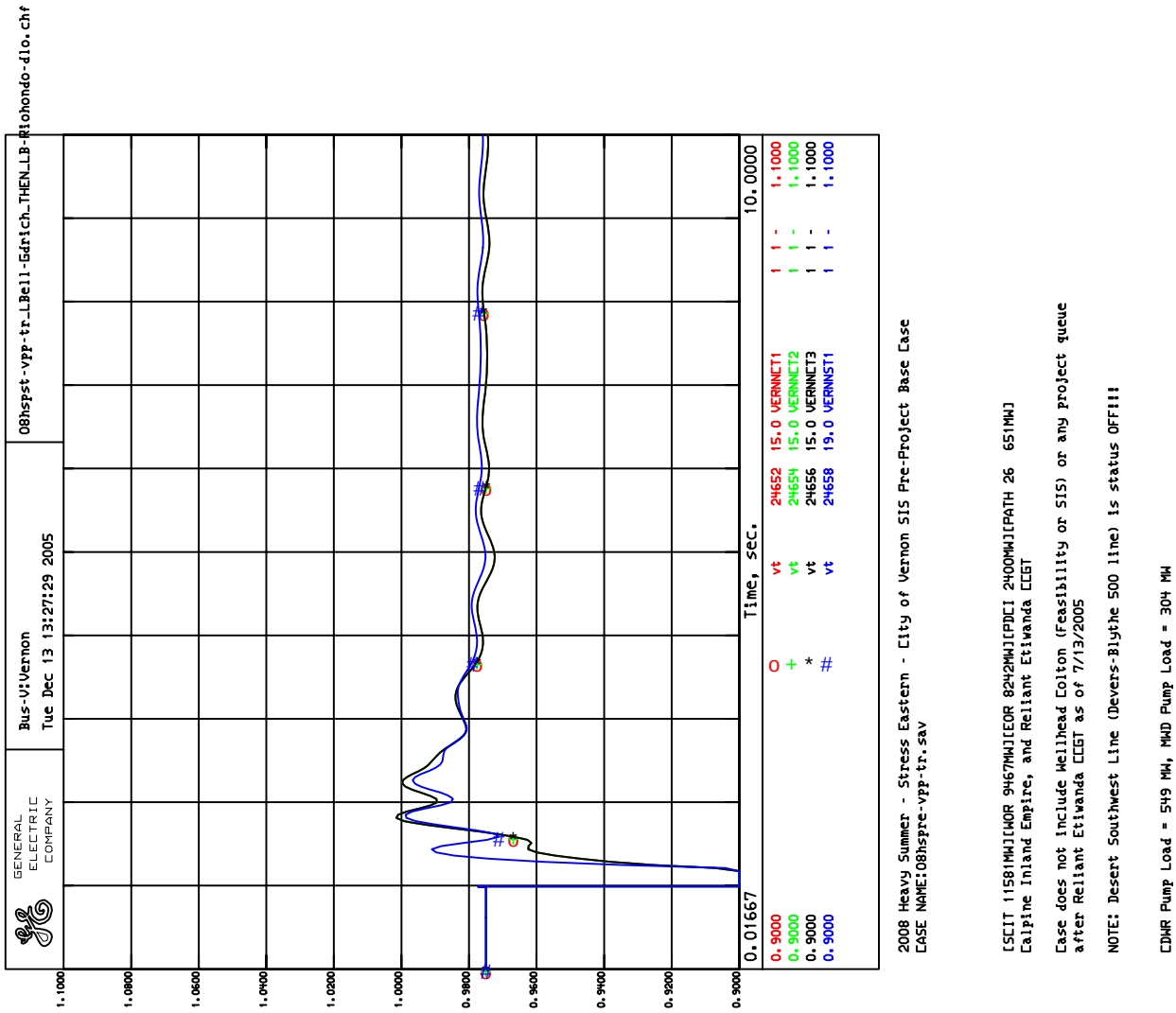
Plot 15 - 5: Pre-fault outage of the Laguna Bell – Goodrich 230 kV circuit, then a three-phase fault at the Laguna Bell 230 kV bus followed by loss of the Laguna Bell – Rio Hondo 230 kV circuit.



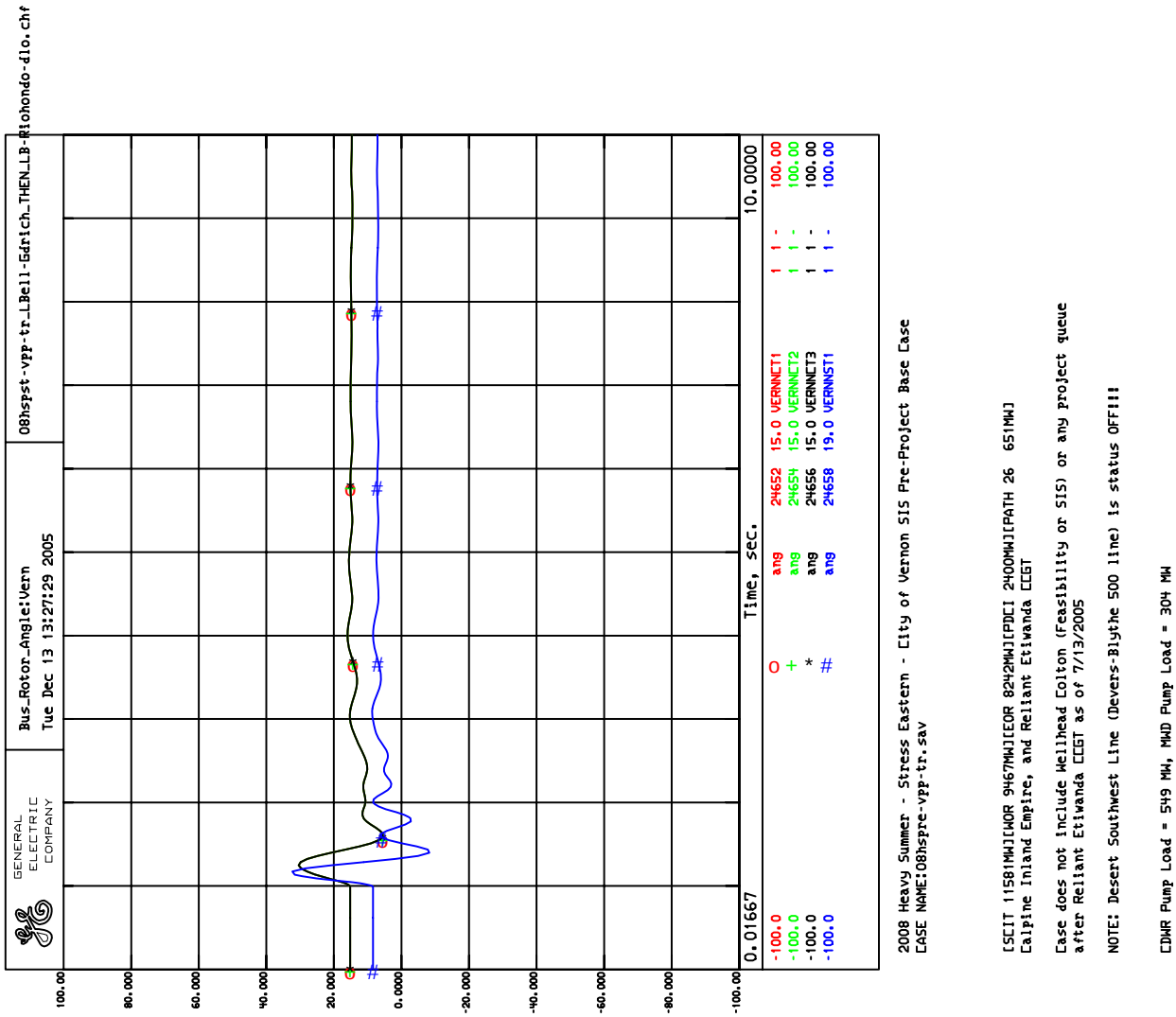
Plot 15 - 6: Pre-fault outage of the Laguna Bell – Goodrich 230 kV circuit, then a three-phase fault at the Laguna Bell 230 kV bus followed by loss of the Laguna Bell – Rio Hondo 230 kV circuit.



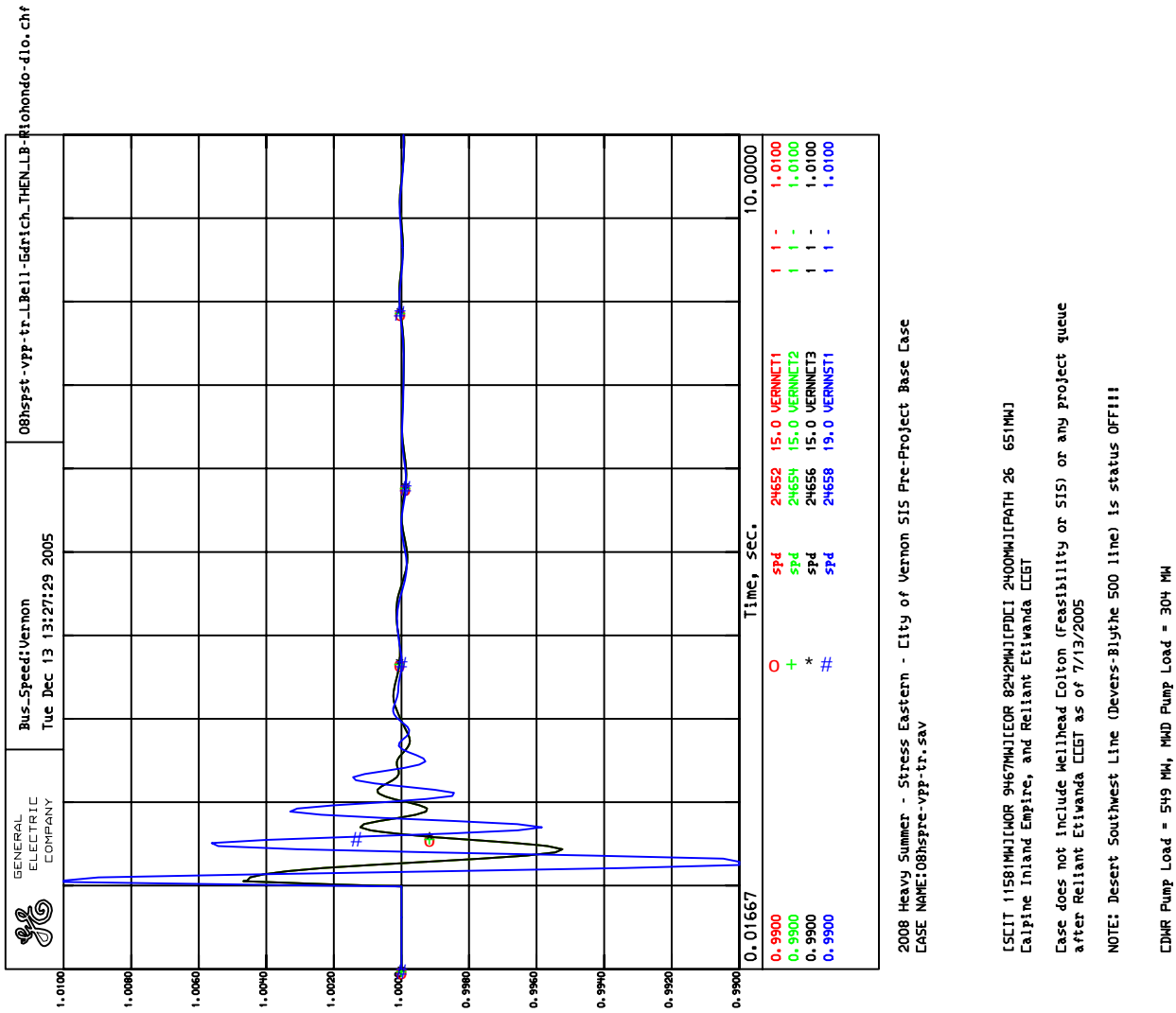
Plot 15 - 7: Pre-fault outage of the Laguna Bell – Goodrich 230 kV circuit, then a three-phase fault at the Laguna Bell 230 kV bus followed by loss of the Laguna Bell – Rio Hondo 230 kV circuit.



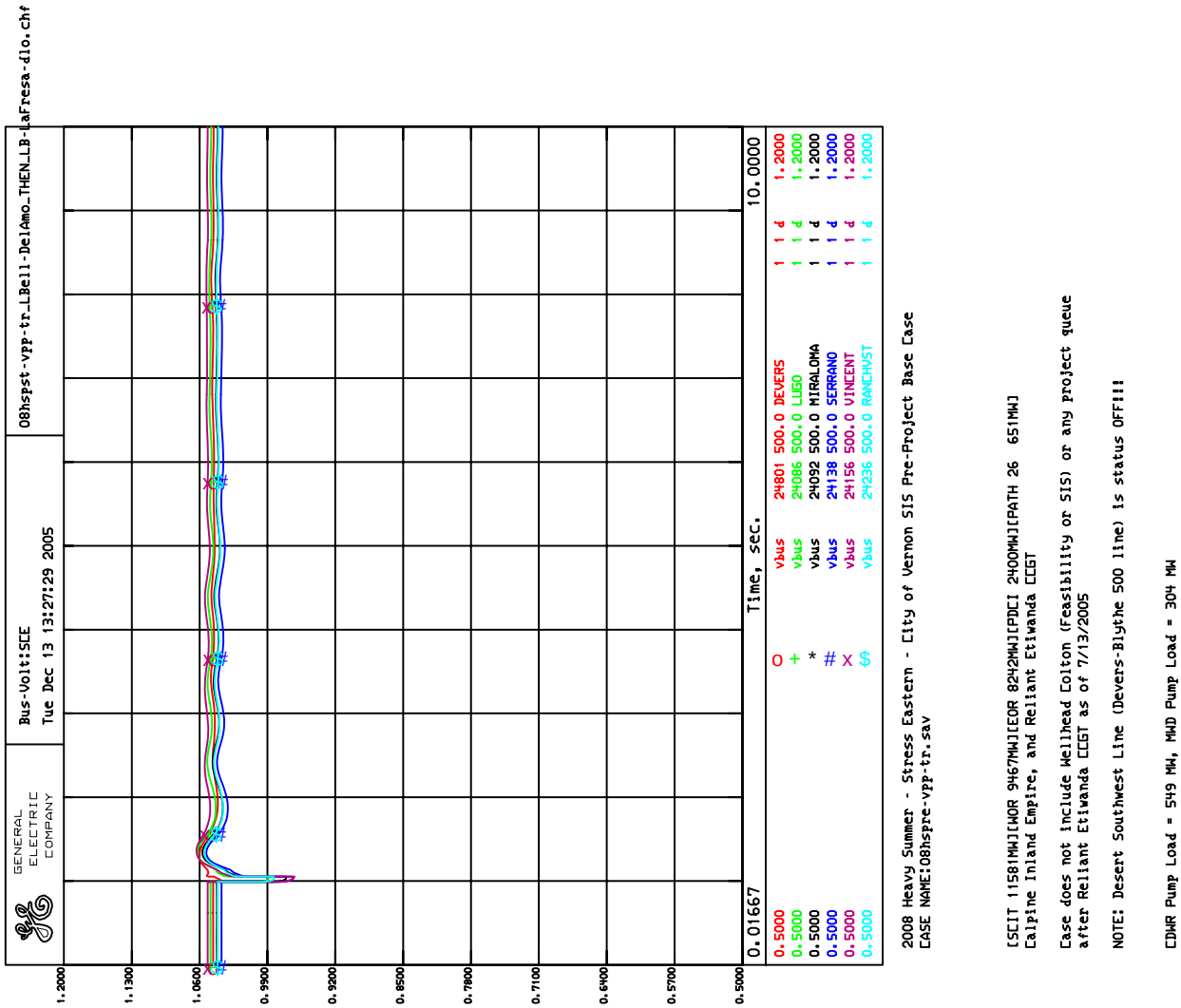
Plot 15 - 8: Pre-fault outage of the Laguna Bell – Goodrich 230 kV circuit, then a three-phase fault at the Laguna Bell 230 kV bus followed by loss of the Laguna Bell – Rio Hondo 230 kV circuit.



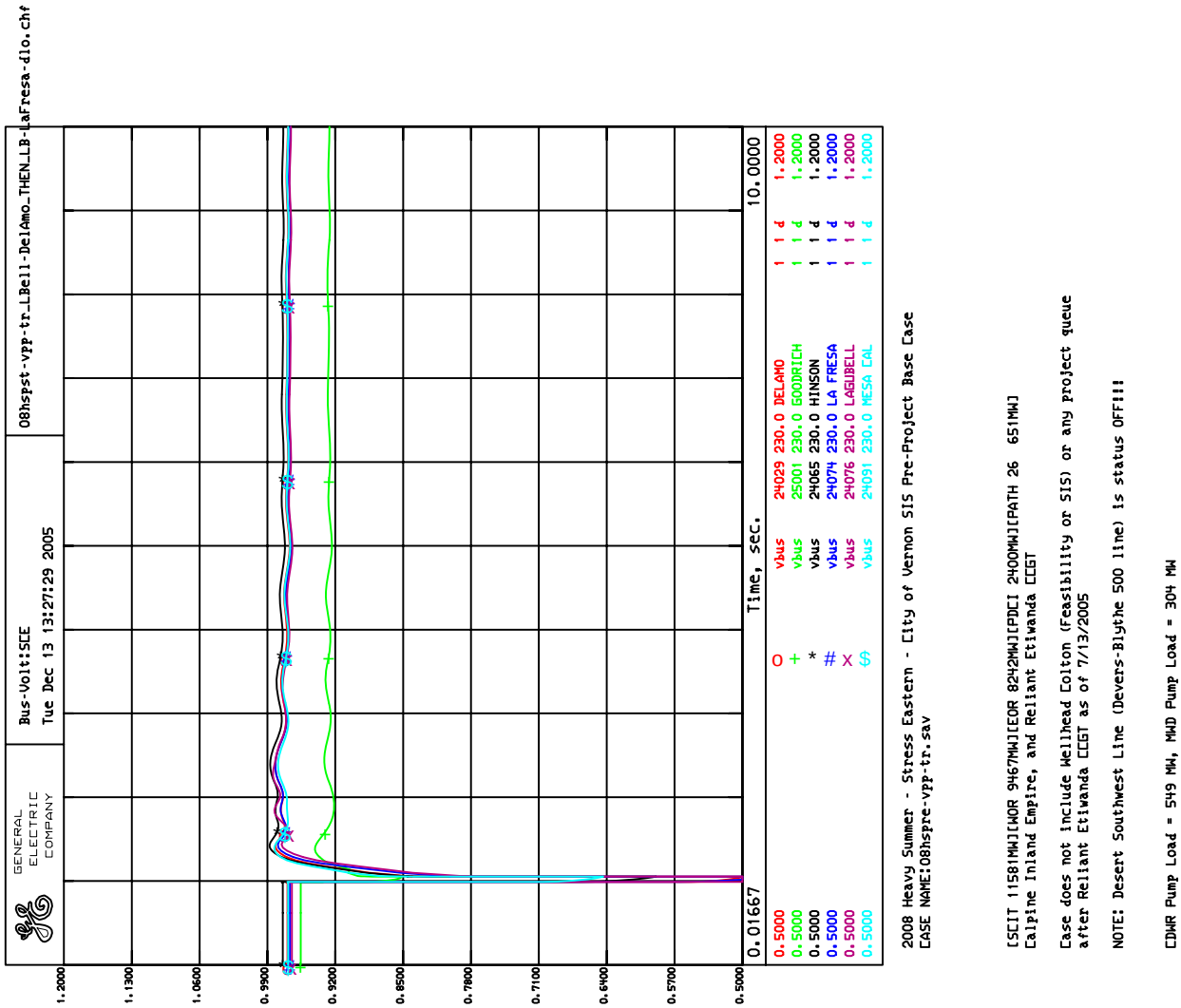
Plot 15 - 9: Pre-fault outage of the Laguna Bell – Goodrich 230 kV circuit, then a three-phase fault at the Laguna Bell 230 kV bus followed by loss of the Laguna Bell – Rio Hondo 230 kV circuit.



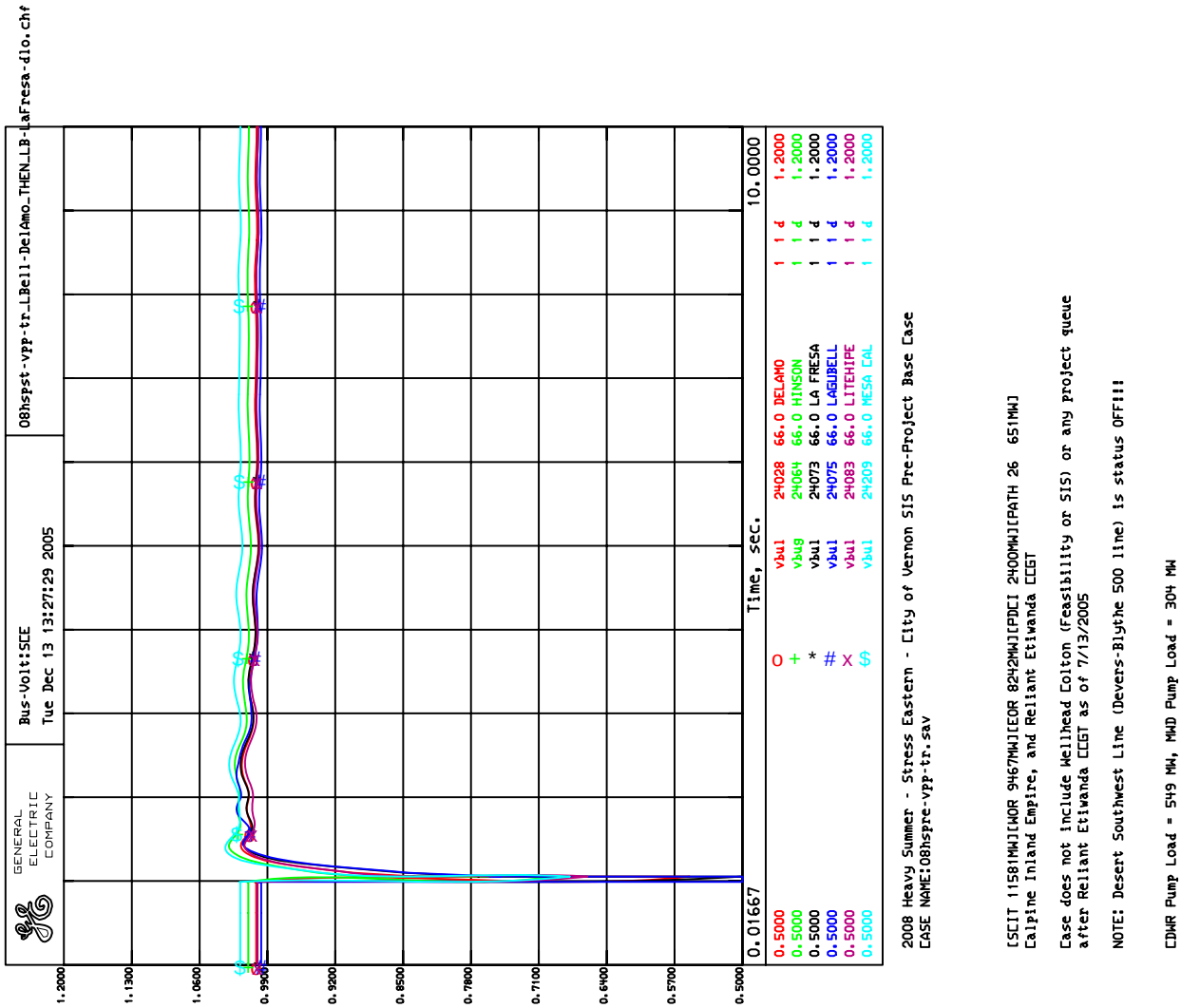
Plot 16 - 1: Pre-fault outage of the Laguna Bell – Del Amo 230 kV #1 circuit, then a three-phase fault at the Laguna Bell 230 kV bus followed by loss of the Laguna Bell – La Fresa 230 kV #2 circuit.



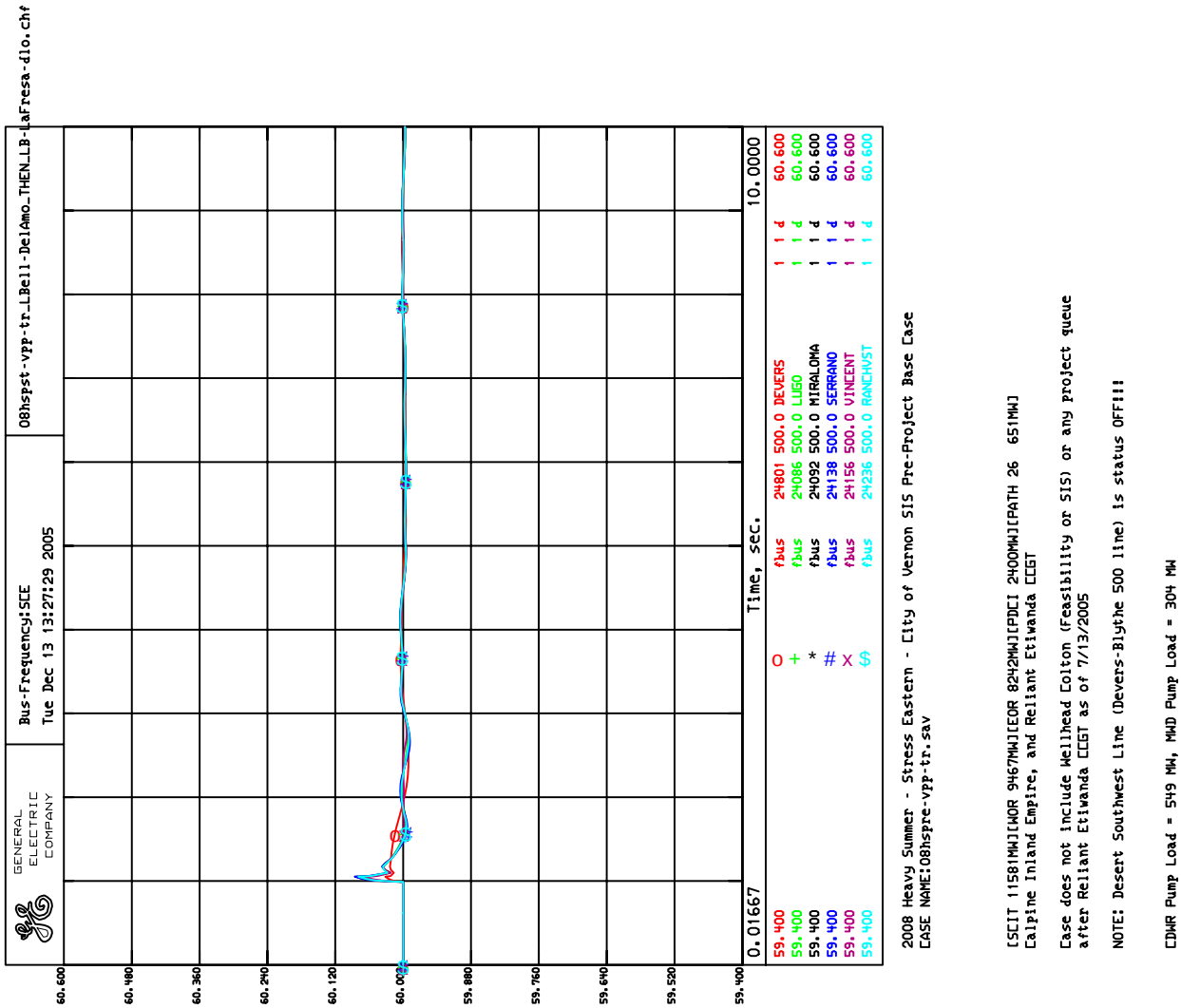
Plot 16 - 2: Pre-fault outage of the Laguna Bell – Del Amo 230 kV #1 circuit, then a three-phase fault at the Laguna Bell 230 kV bus followed by loss of the Laguna Bell – La Fresa 230 kV #2 circuit.



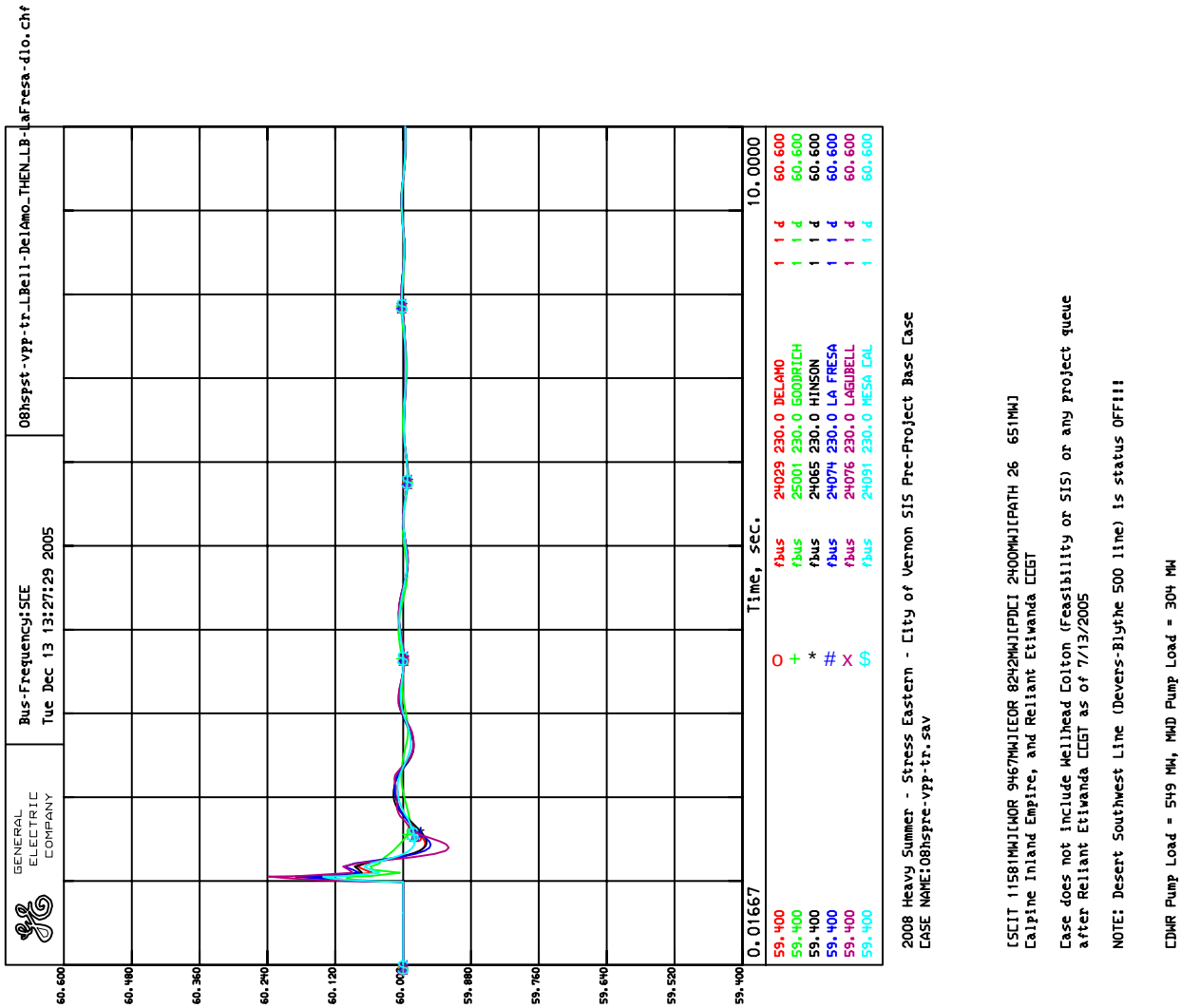
Plot 16 - 3: Pre-fault outage of the Laguna Bell – Del Amo 230 kV #1 circuit, then a three-phase fault at the Laguna Bell 230 kV bus followed by loss of the Laguna Bell – La Fresa 230 kV #2 circuit.



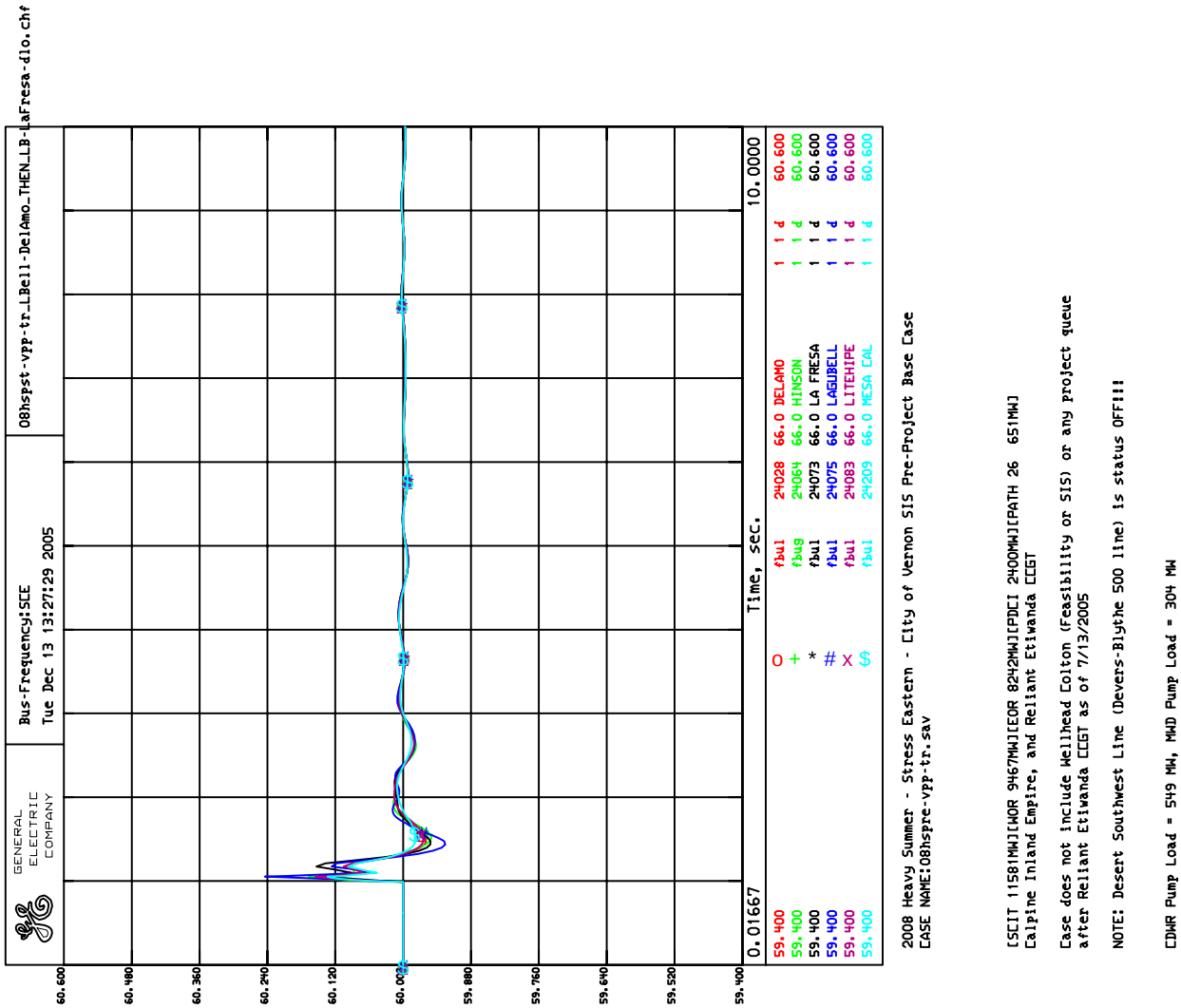
Plot 16 - 4: Pre-fault outage of the Laguna Bell – Del Amo 230 kV #1 circuit, then a three-phase fault at the Laguna Bell 230 kV bus followed by loss of the Laguna Bell – La Fresa 230 kV #2 circuit.



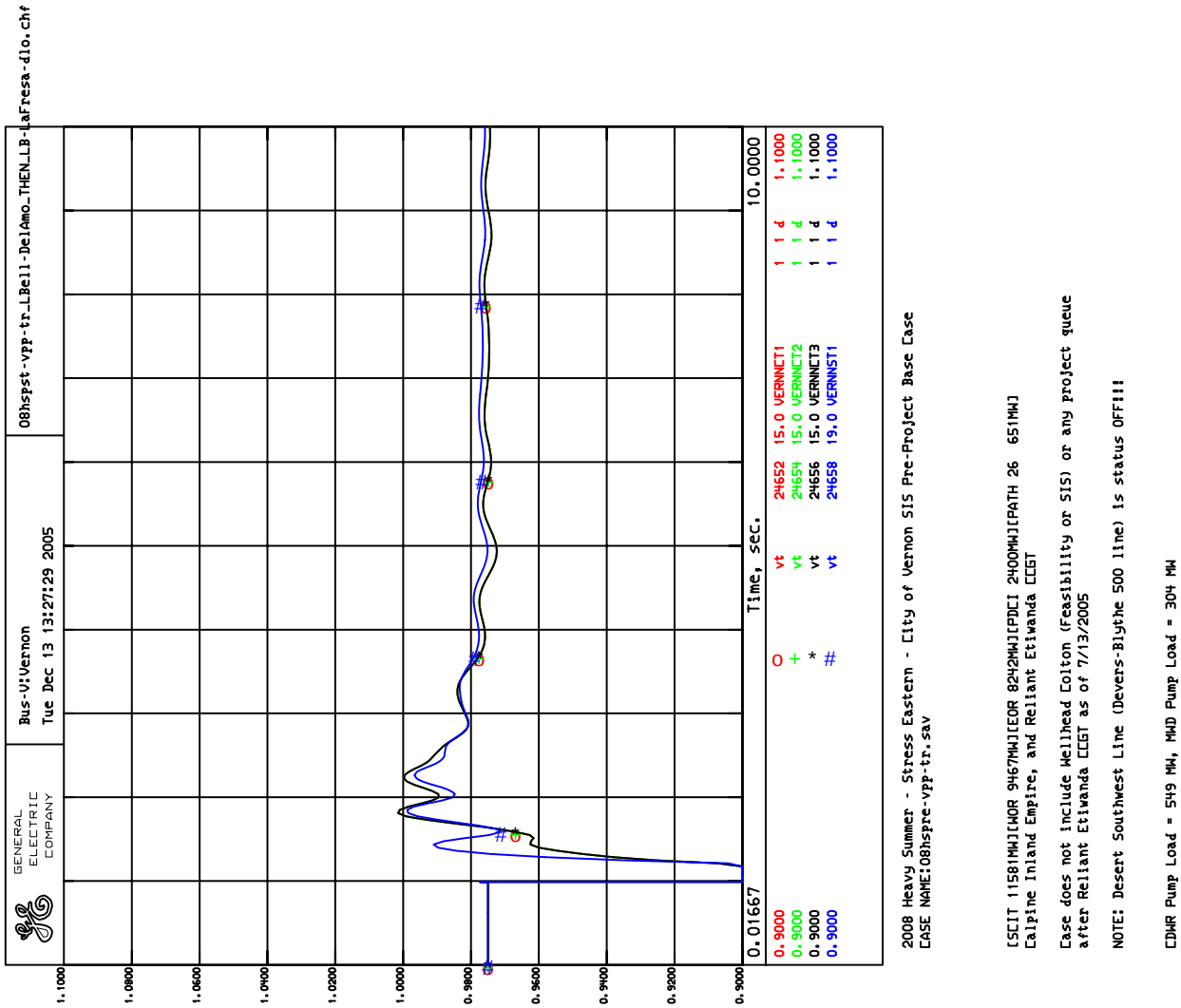
Plot 16 - 5: Pre-fault outage of the Laguna Bell – Del Amo 230 kV #1 circuit, then a three-phase fault at the Laguna Bell 230 kV bus followed by loss of the Laguna Bell – La Fresa 230 kV #2 circuit.



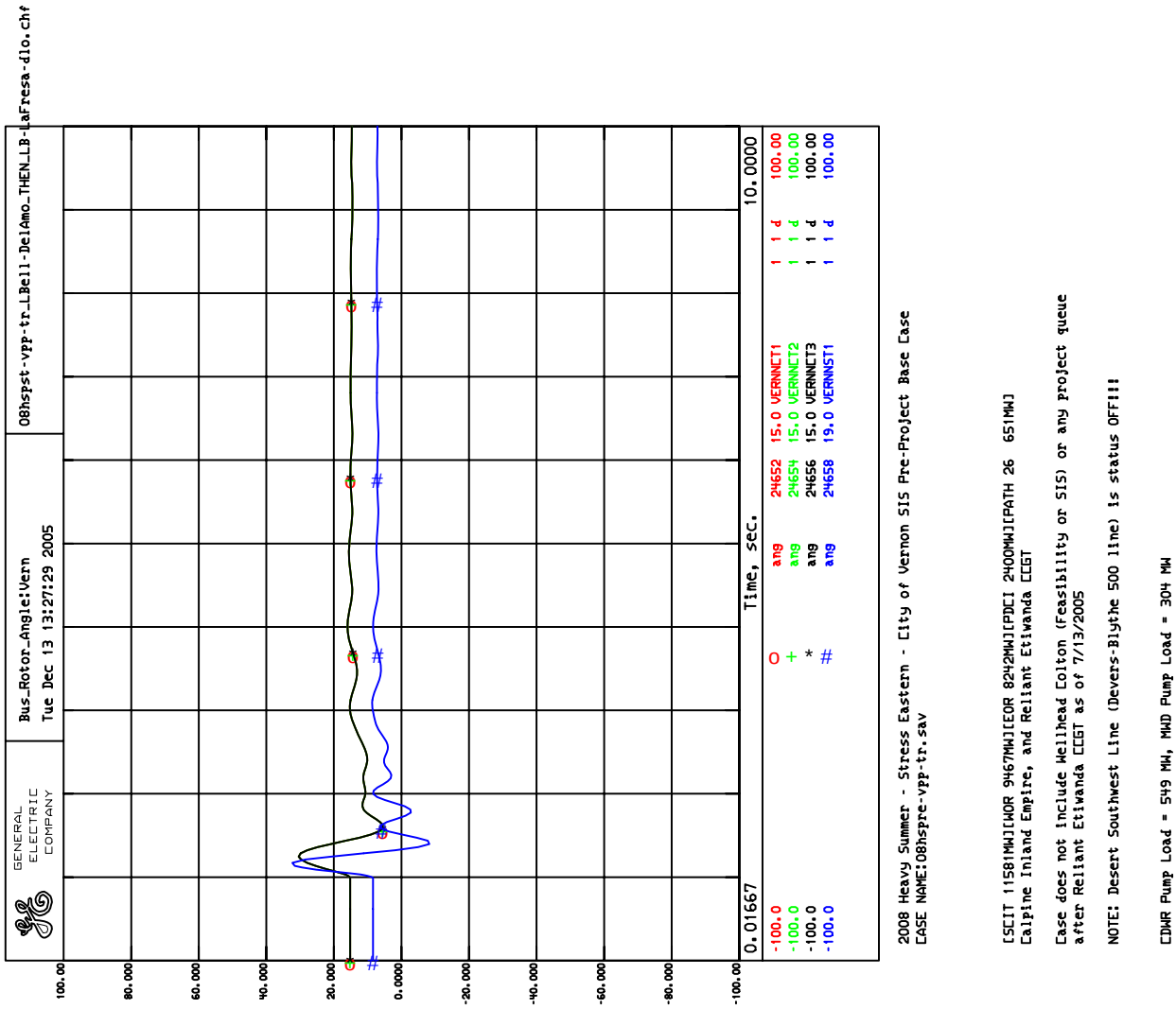
Plot 16 - 6: Pre-fault outage of the Laguna Bell – Del Amo 230 kV #1 circuit, then a three-phase fault at the Laguna Bell 230 kV bus followed by loss of the Laguna Bell – La Fresa 230 kV #2 circuit.



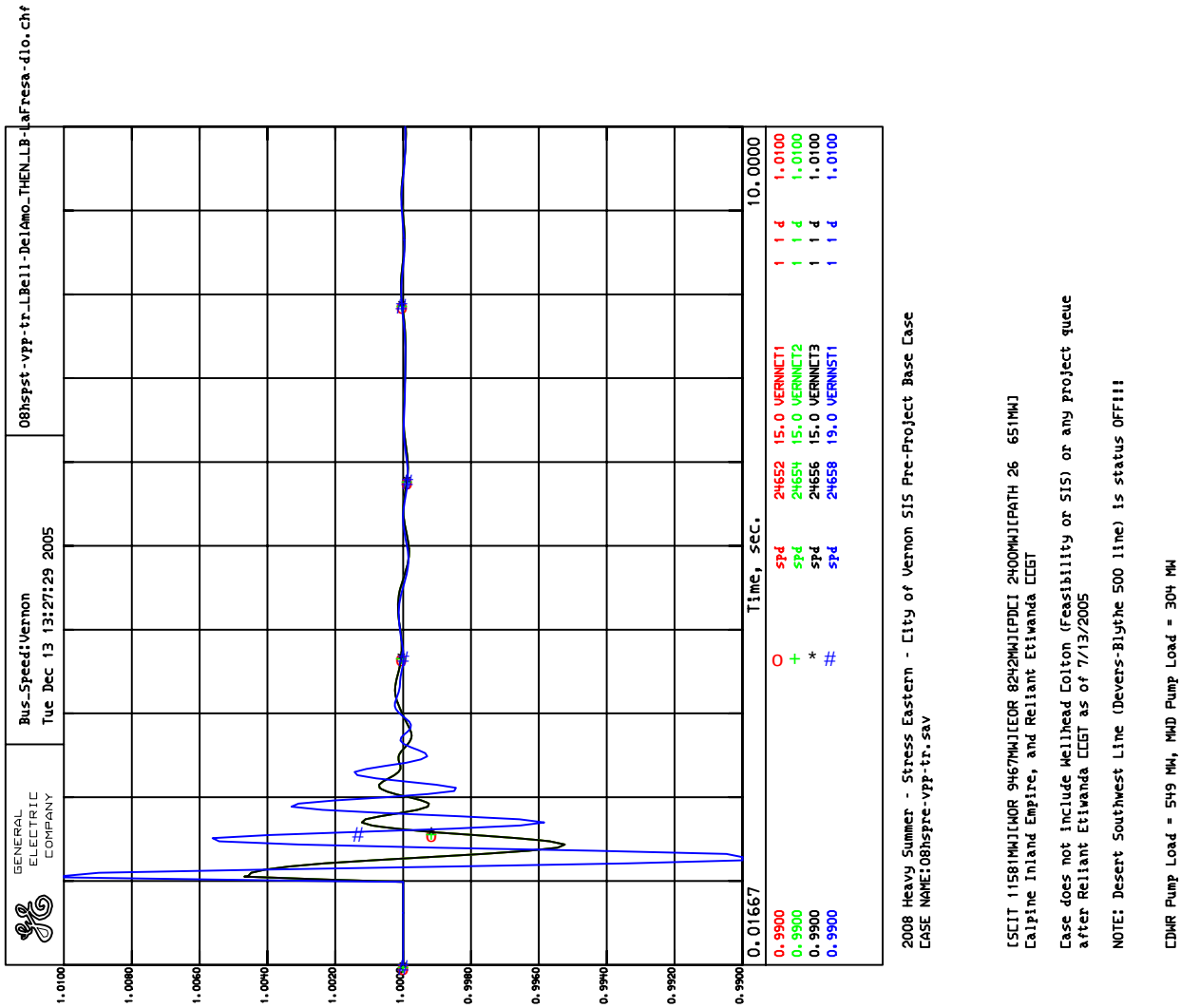
Plot 16 - 7: Pre-fault outage of the Laguna Bell – Del Amo 230 kV #1 circuit, then a three-phase fault at the Laguna Bell 230 kV bus followed by loss of the Laguna Bell – La Fresa 230 kV #2 circuit.



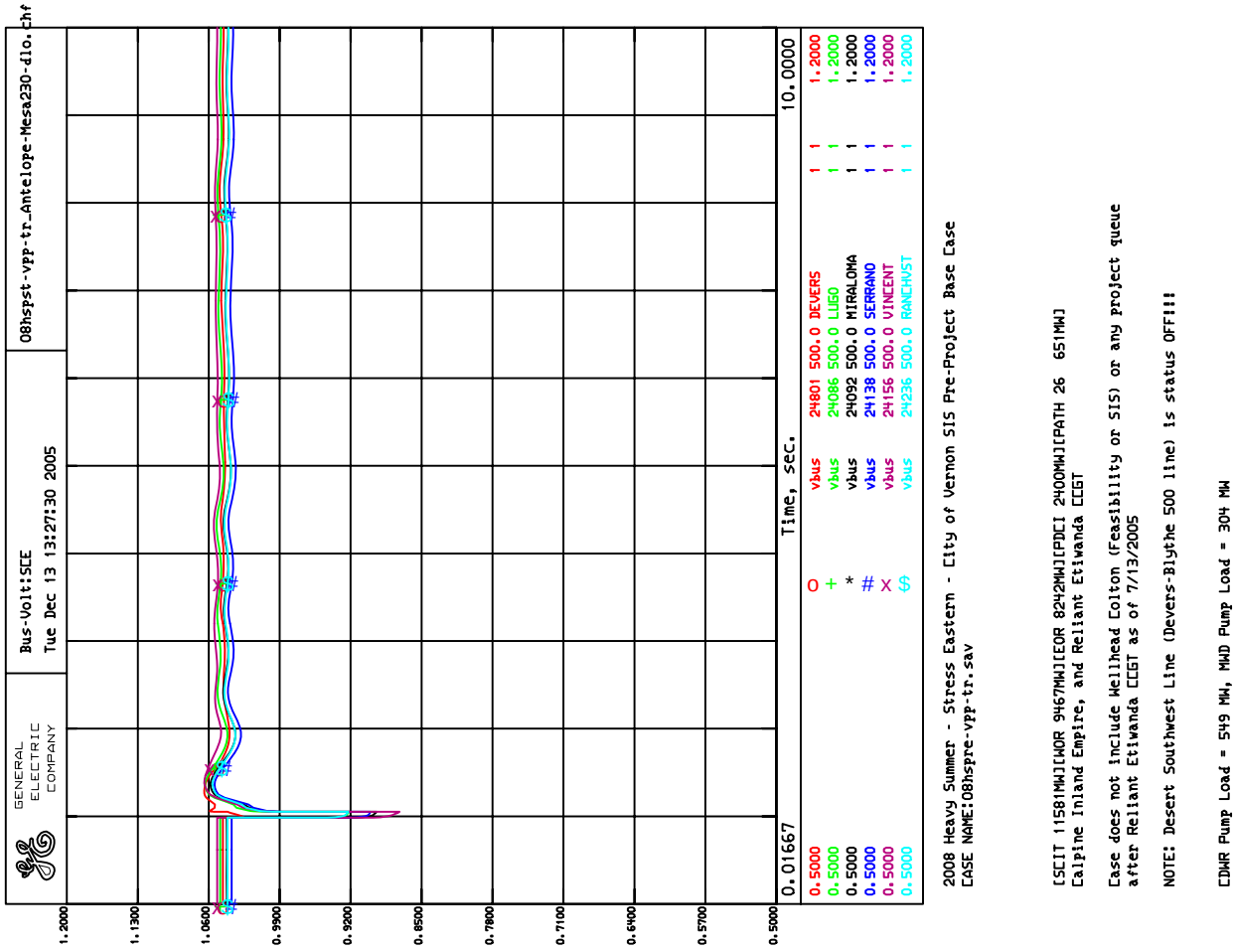
Plot 16 - 8: Pre-fault outage of the Laguna Bell – Del Amo 230 kV #1 circuit, then a three-phase fault at the Laguna Bell 230 kV bus followed by loss of the Laguna Bell – La Fresa 230 kV #2 circuit.



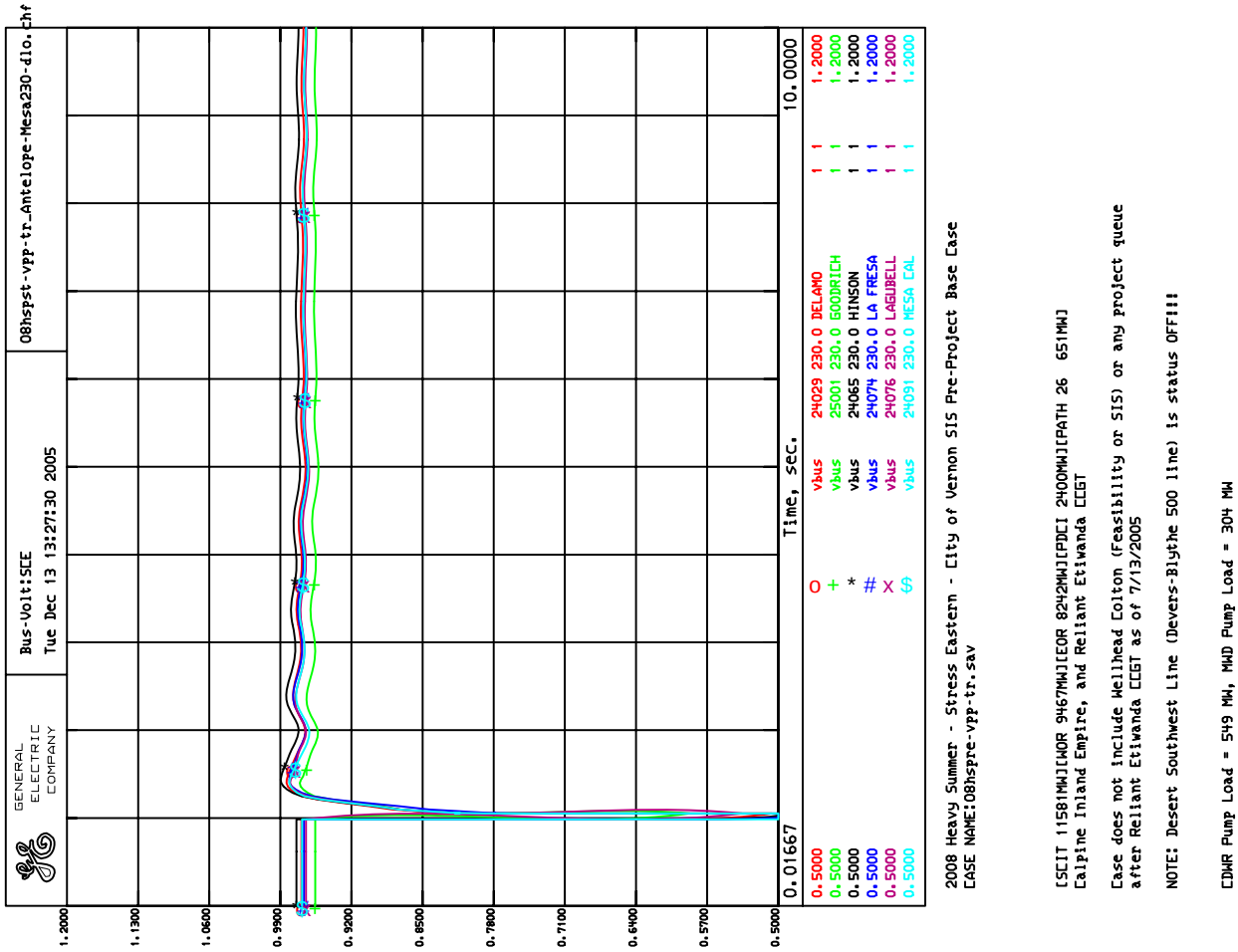
Plot 16 - 9: Pre-fault outage of the Laguna Bell – Del Amo 230 kV #1 circuit, then a three-phase fault at the Laguna Bell 230 kV bus followed by loss of the Laguna Bell – La Fresa 230 kV #2 circuit.



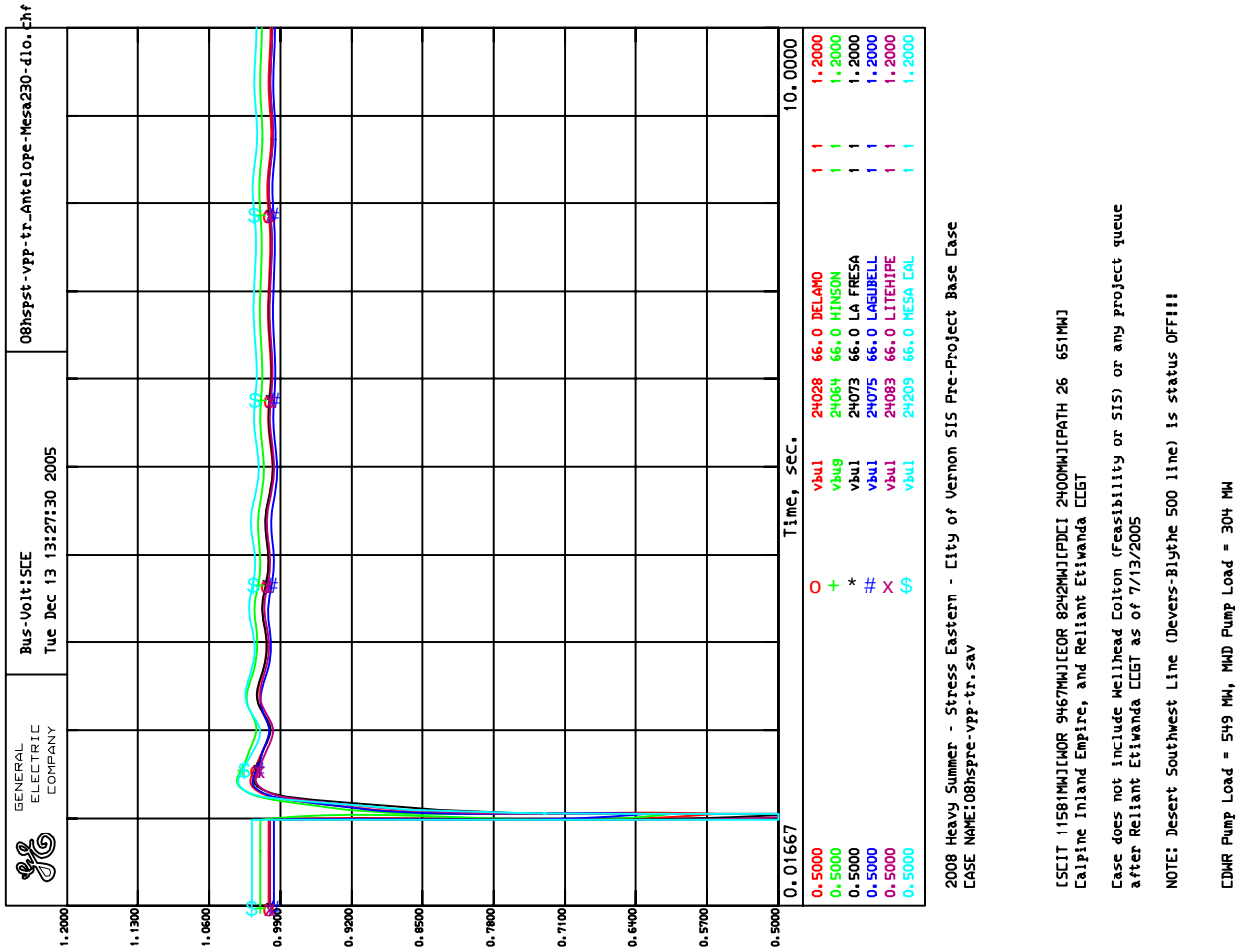
Plot 17 - 1: Three-phase fault at the Mesa Cal 230 kV bus followed by loss of the Mesa Cal – Antelope 230 kV and Mesa Cal – Rio Hondo 230 kV transmission lines.



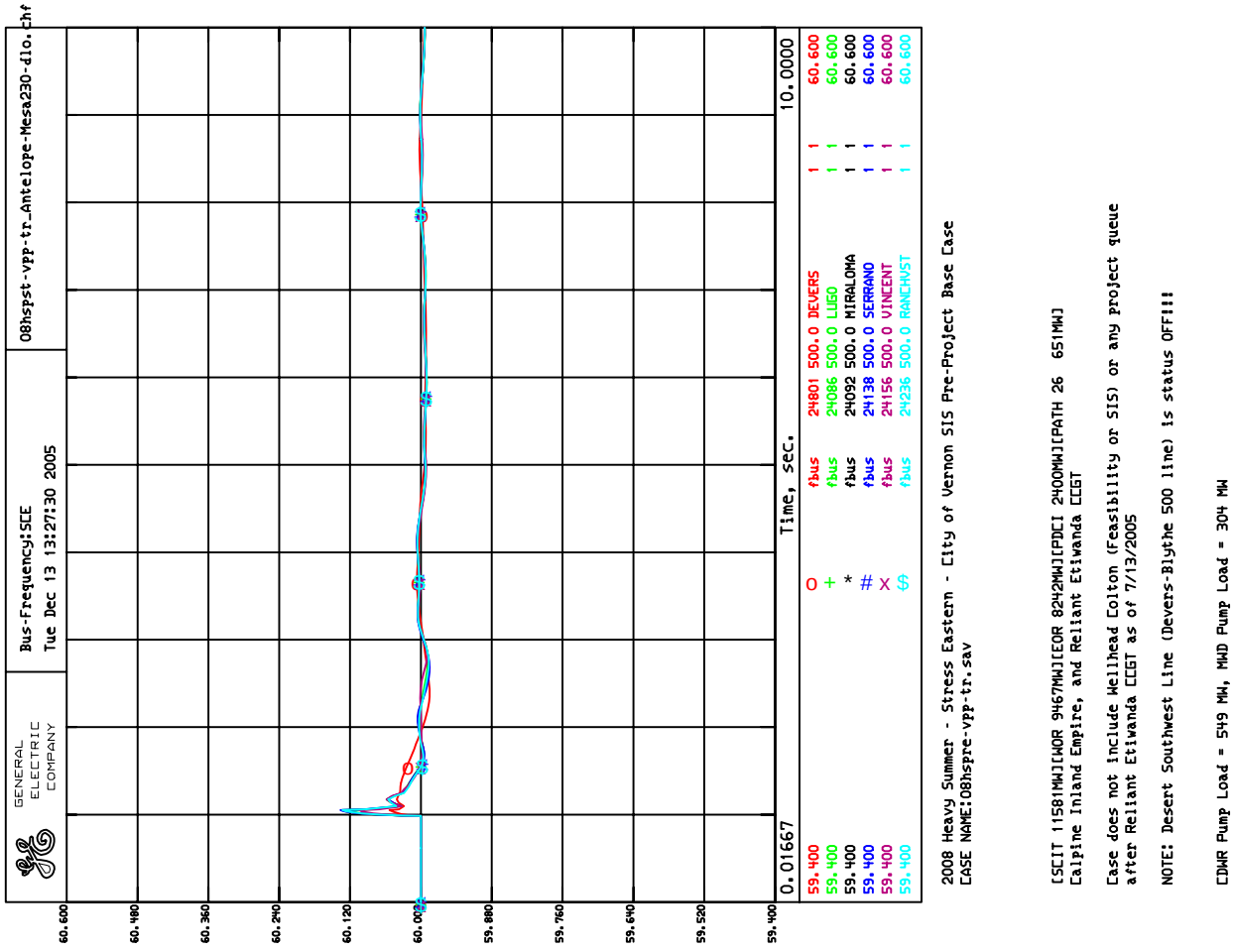
Plot 17 - 2: Three-phase fault at the Mesa Cal 230 kV bus followed by loss of the Mesa Cal – Antelope 230 kV and Mesa Cal – Rio Hondo 230 kV transmission lines.



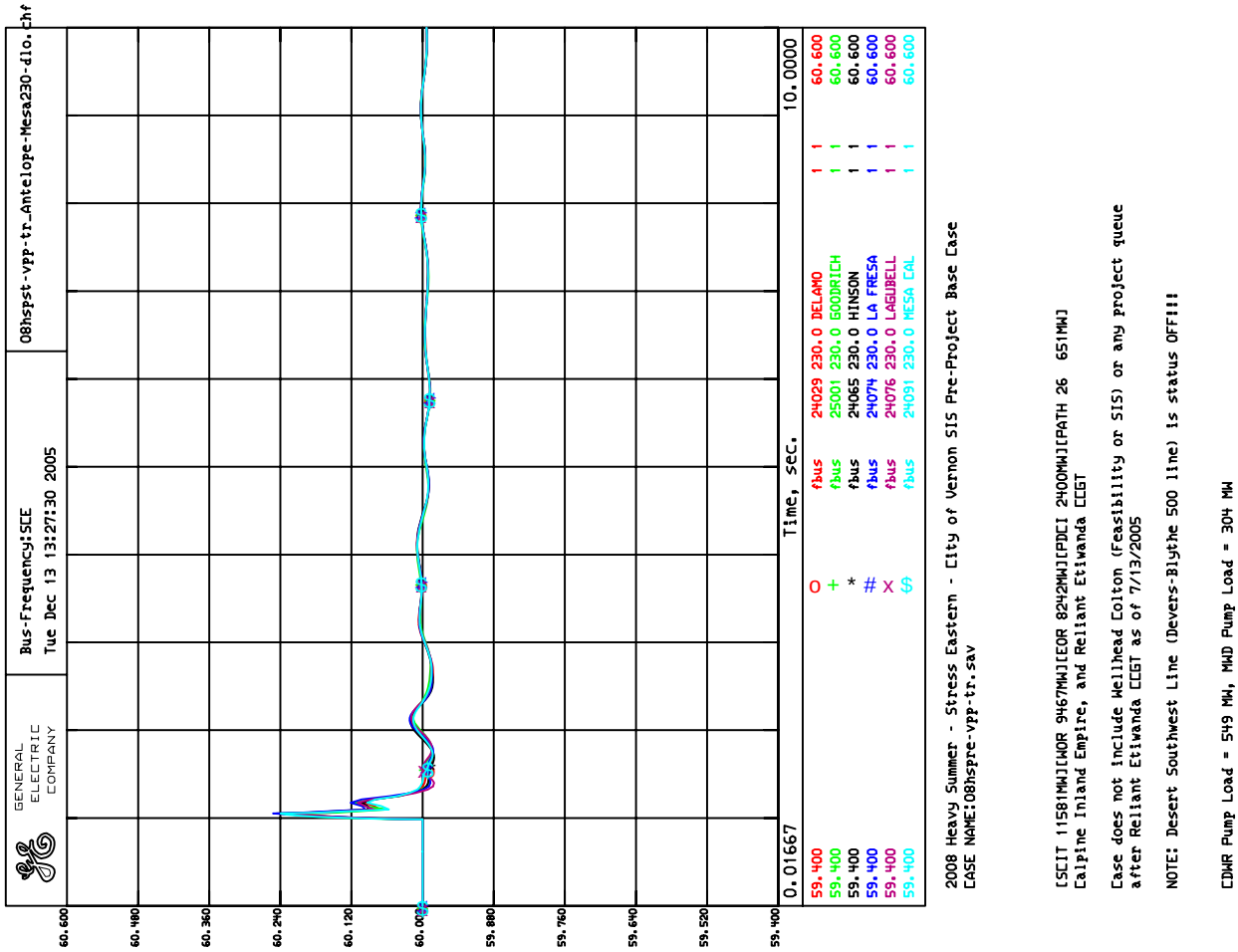
Plot 17 - 3: Three-phase fault at the Mesa Cal 230 kV bus followed by loss of the Mesa Cal – Antelope 230 kV and Mesa Cal – Rio Hondo 230 kV transmission lines.



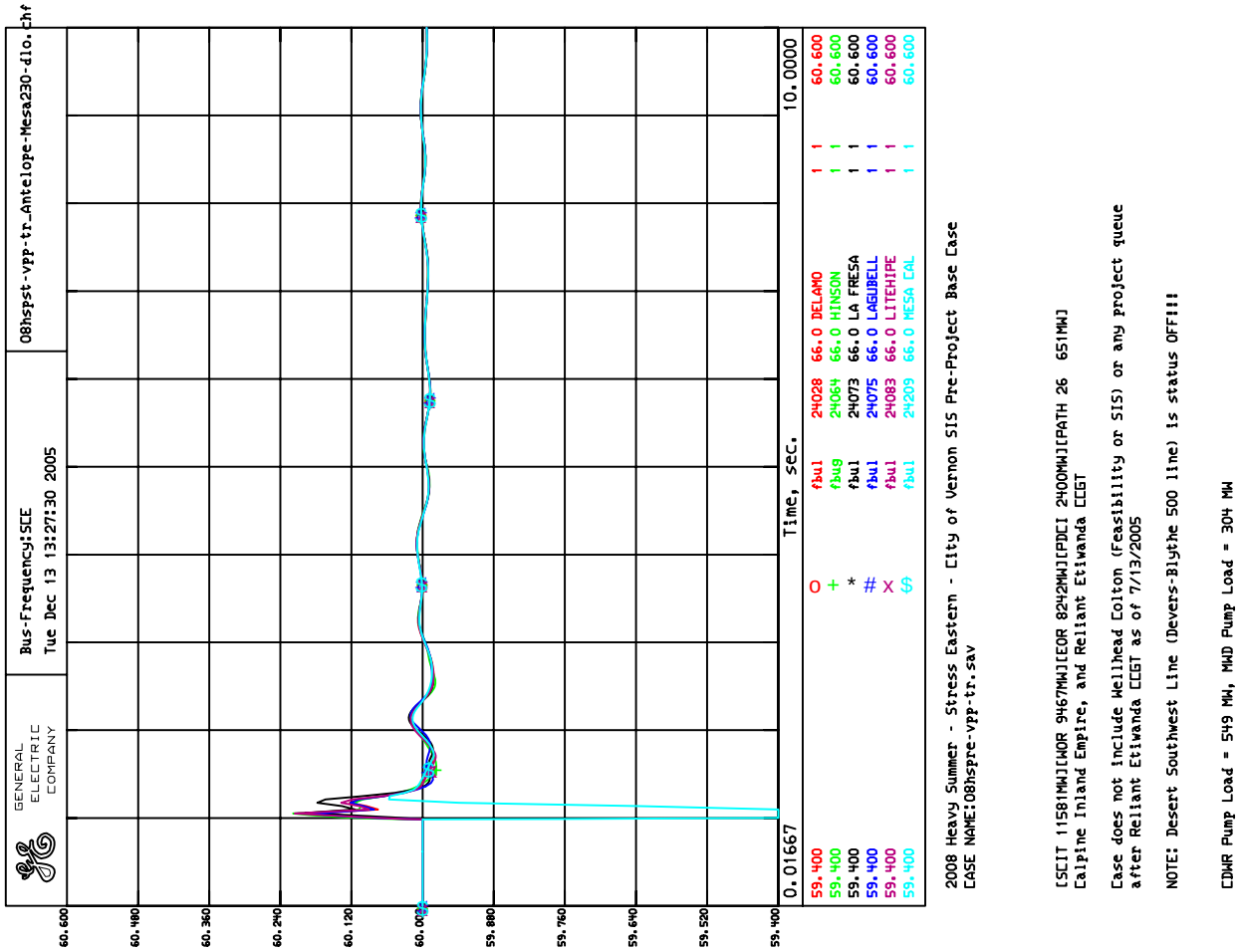
Plot 17 - 4: Three-phase fault at the Mesa Cal 230 kV bus followed by loss of the Mesa Cal – Antelope 230 kV and Mesa Cal – Rio Hondo 230 kV transmission lines.



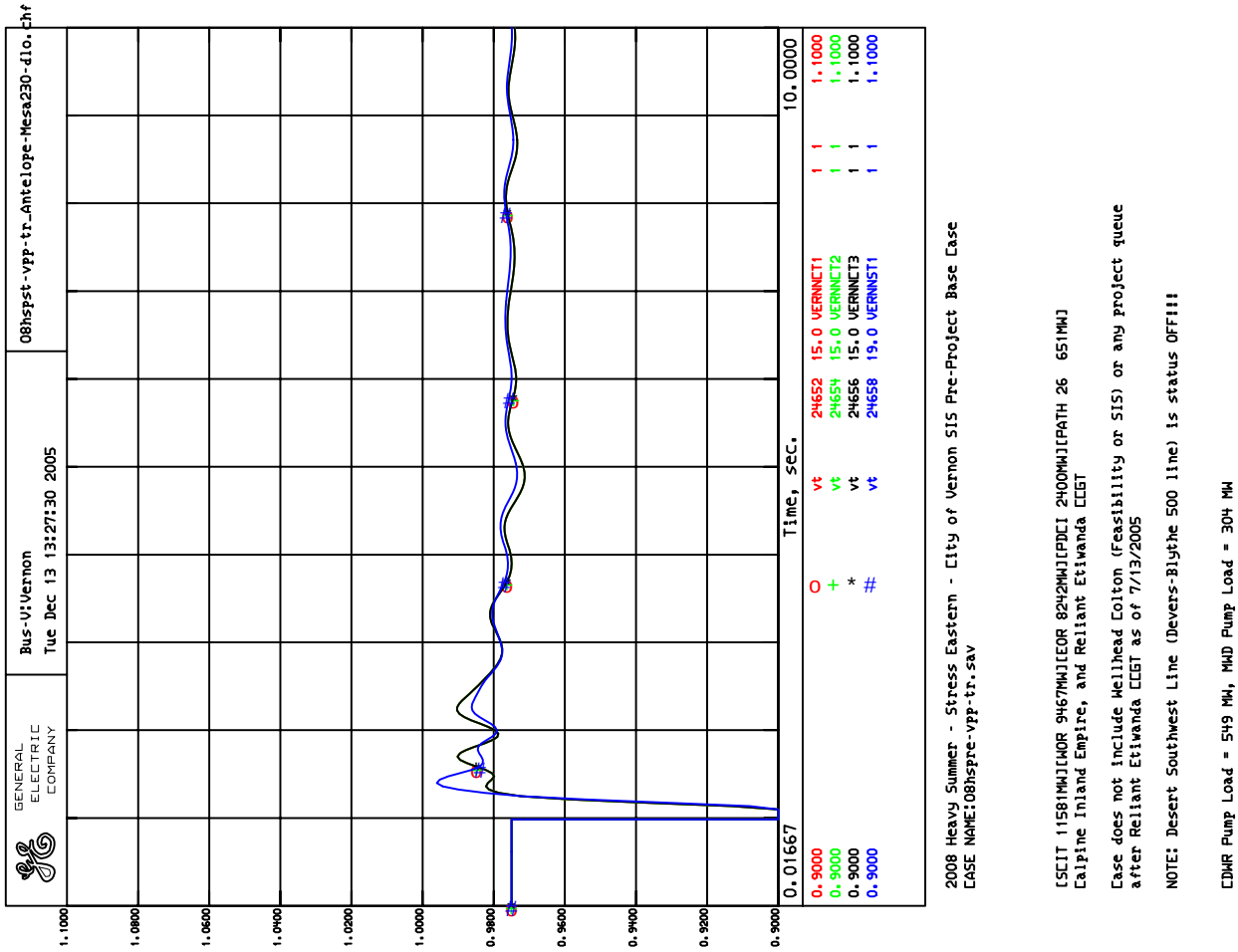
Plot 17 - 5: Three-phase fault at the Mesa Cal 230 kV bus followed by loss of the Mesa Cal – Antelope 230 kV and Mesa Cal – Rio Hondo 230 kV transmission lines.



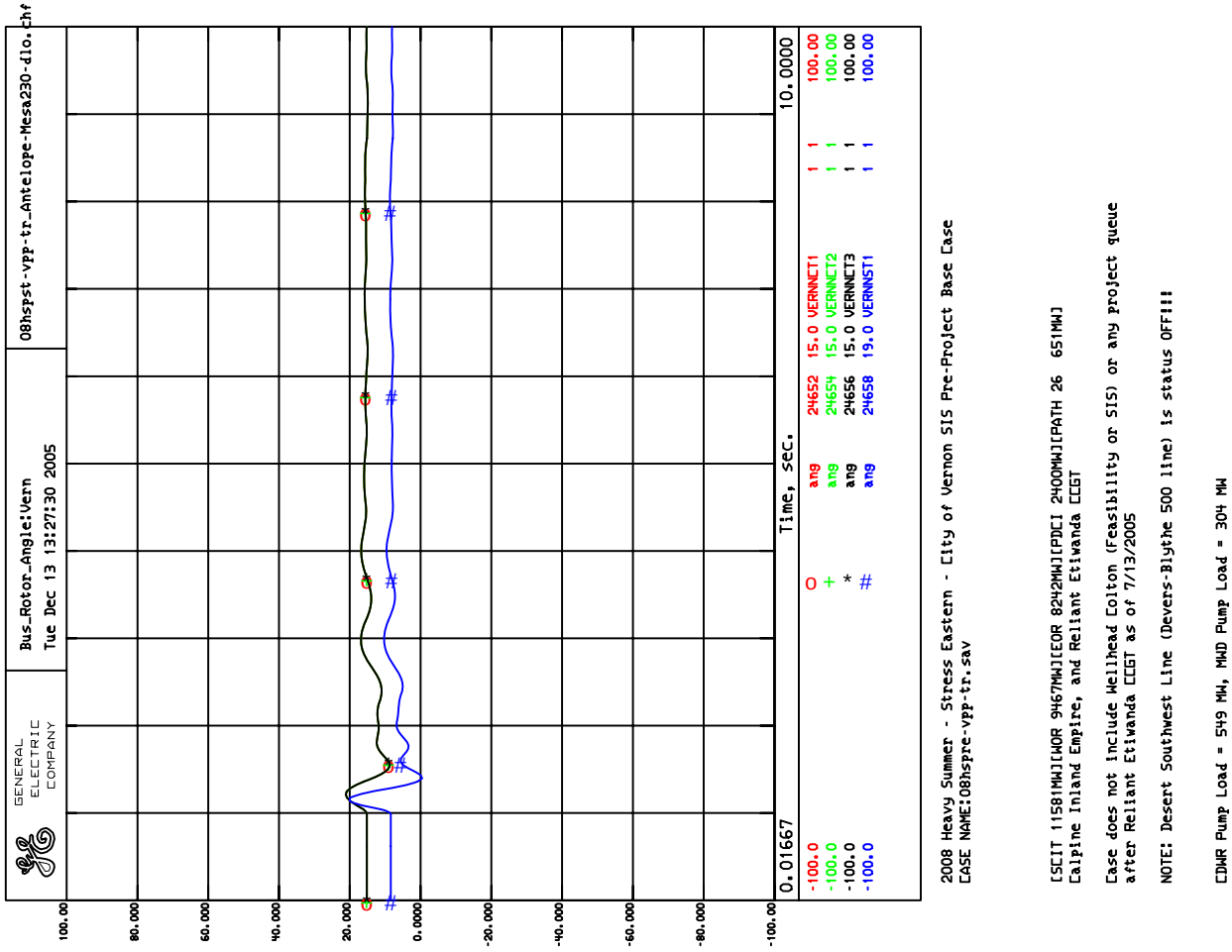
Plot 17 - 6: Three-phase fault at the Mesa Cal 230 kV bus followed by loss of the Mesa Cal – Antelope 230 kV and Mesa Cal – Rio Hondo 230 kV transmission lines.



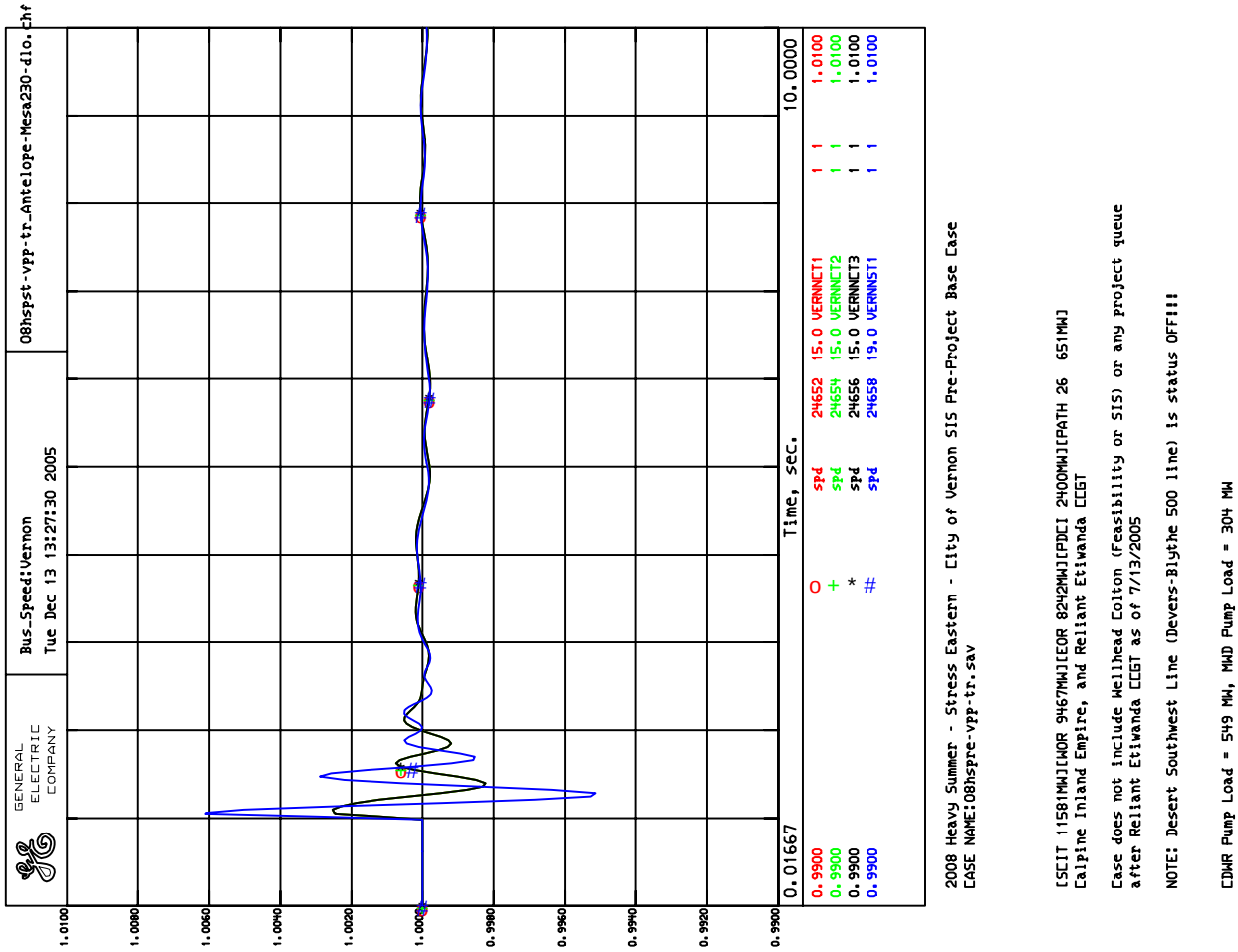
Plot 17 - 7: Three-phase fault at the Mesa Cal 230 kV bus followed by loss of the Mesa Cal – Antelope 230 kV and Mesa Cal – Rio Hondo 230 kV transmission lines.



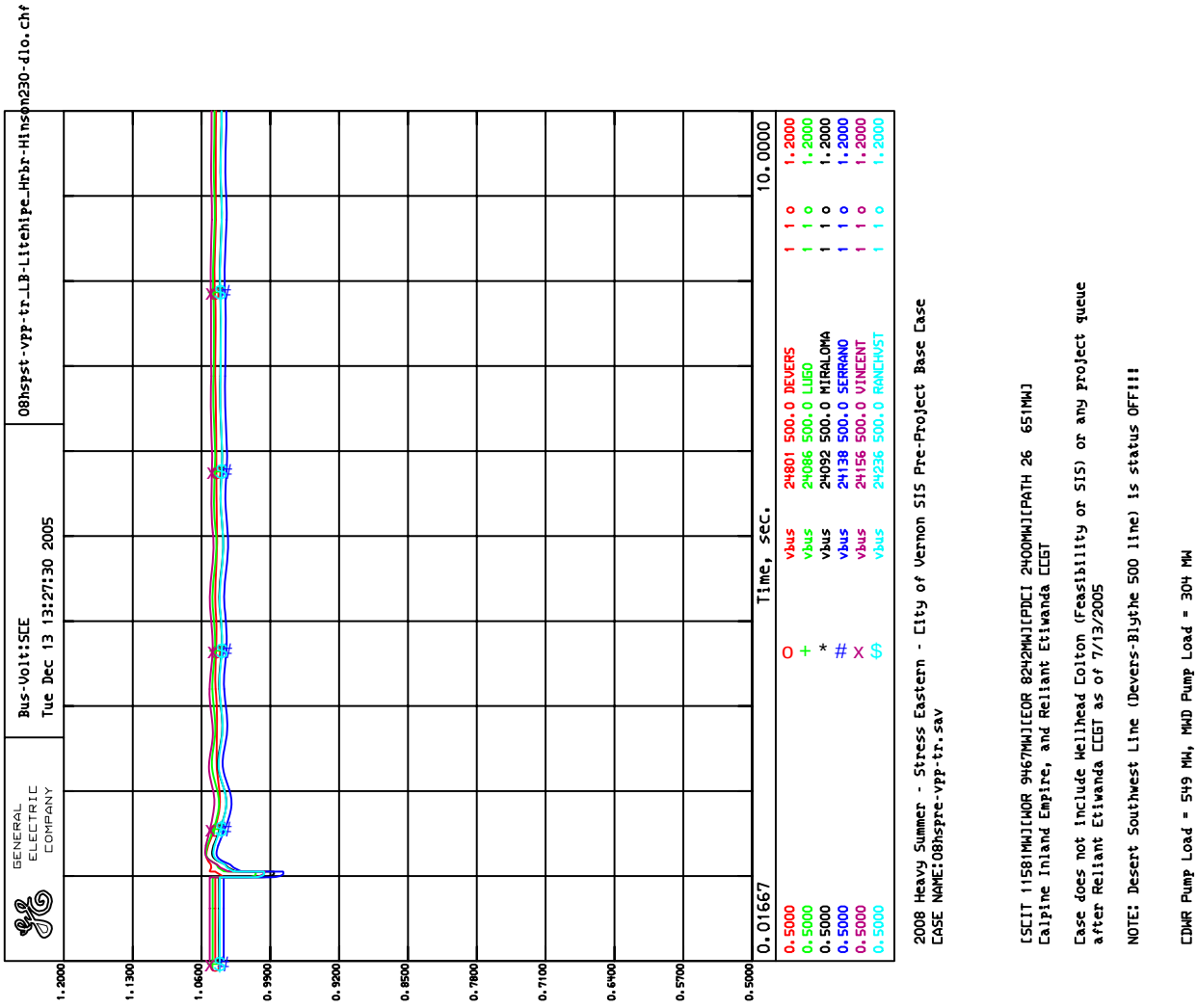
Plot 17 - 8: Three-phase fault at the Mesa Cal 230 kV bus followed by loss of the Mesa Cal – Antelope 230 kV and Mesa Cal – Rio Hondo 230 kV transmission lines.



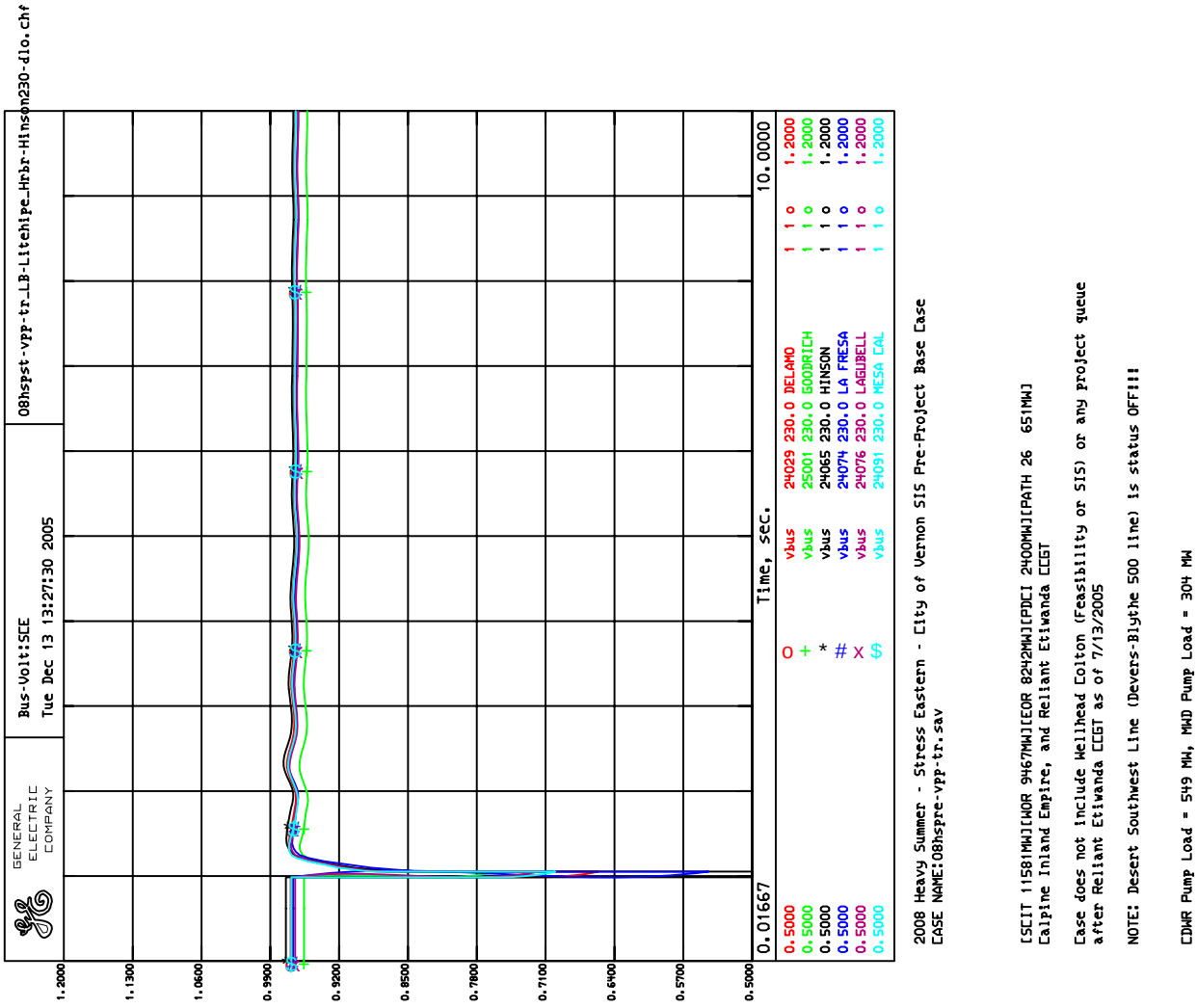
Plot 17 - 9: Three-phase fault at the Mesa Cal 230 kV bus followed by loss of the Mesa Cal – Antelope 230 kV and Mesa Cal – Rio Hondo 230 kV transmission lines.



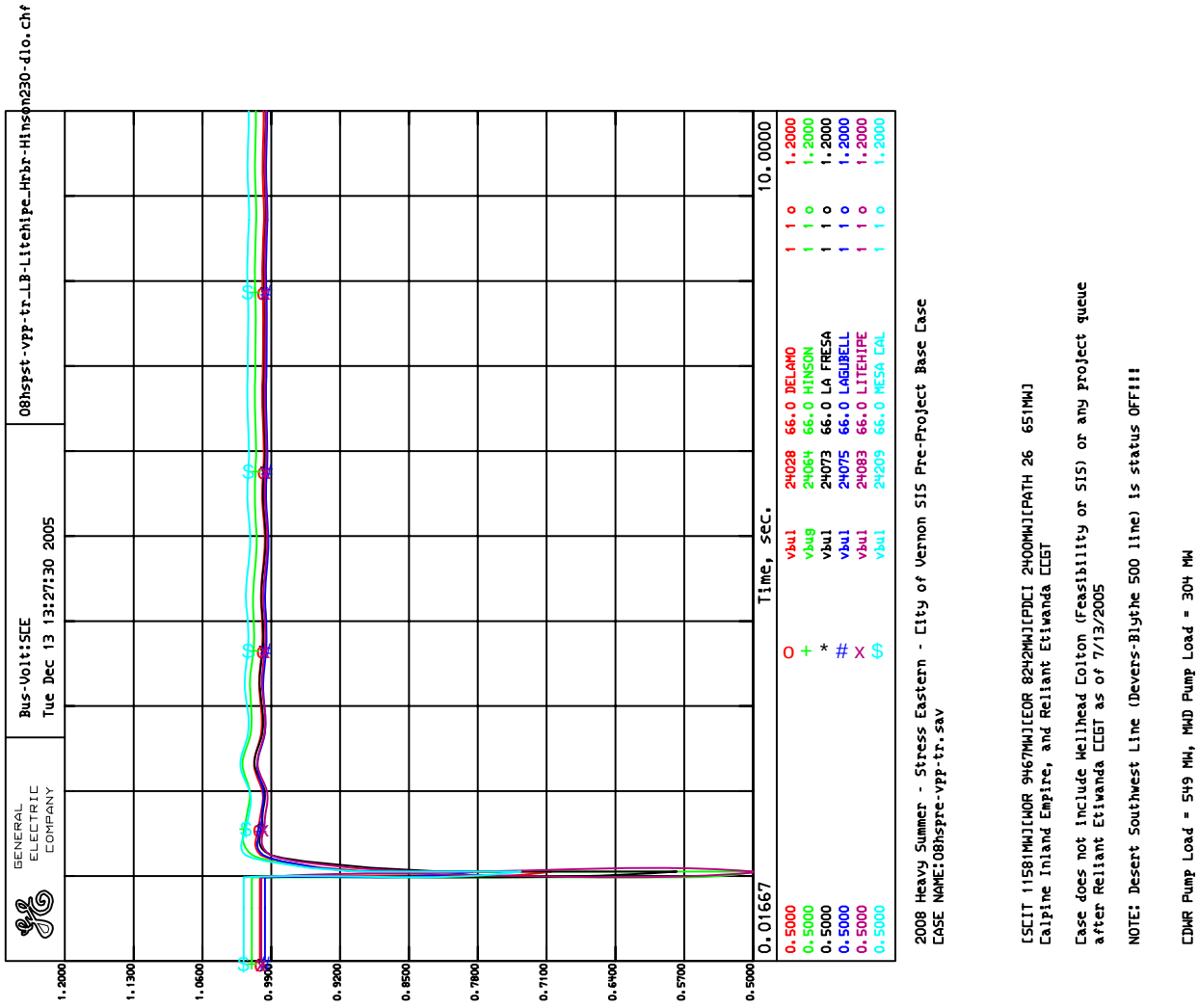
Plot 18 - 1: Three-phase fault at the Long Beach 230 kV bus followed by loss of the Long Beach – Lighthipe 230 kV and Harbor Gen – Hinson 230 kV transmission lines.



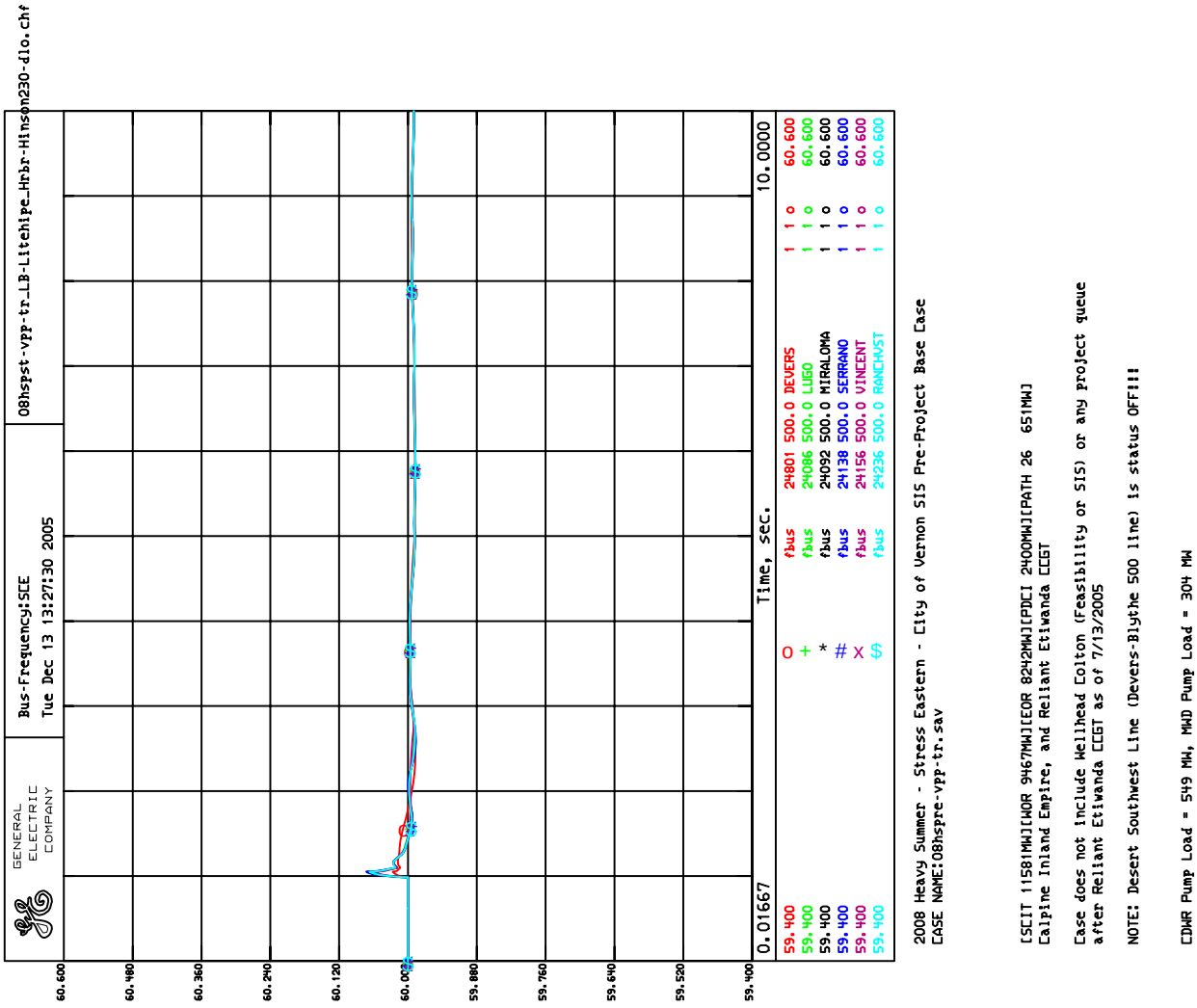
Plot 18 - 2: Three-phase fault at the Long Beach 230 kV bus followed by loss of the Long Beach – Lighthipe 230 kV and Harbor Gen – Hinson 230 kV transmission lines.



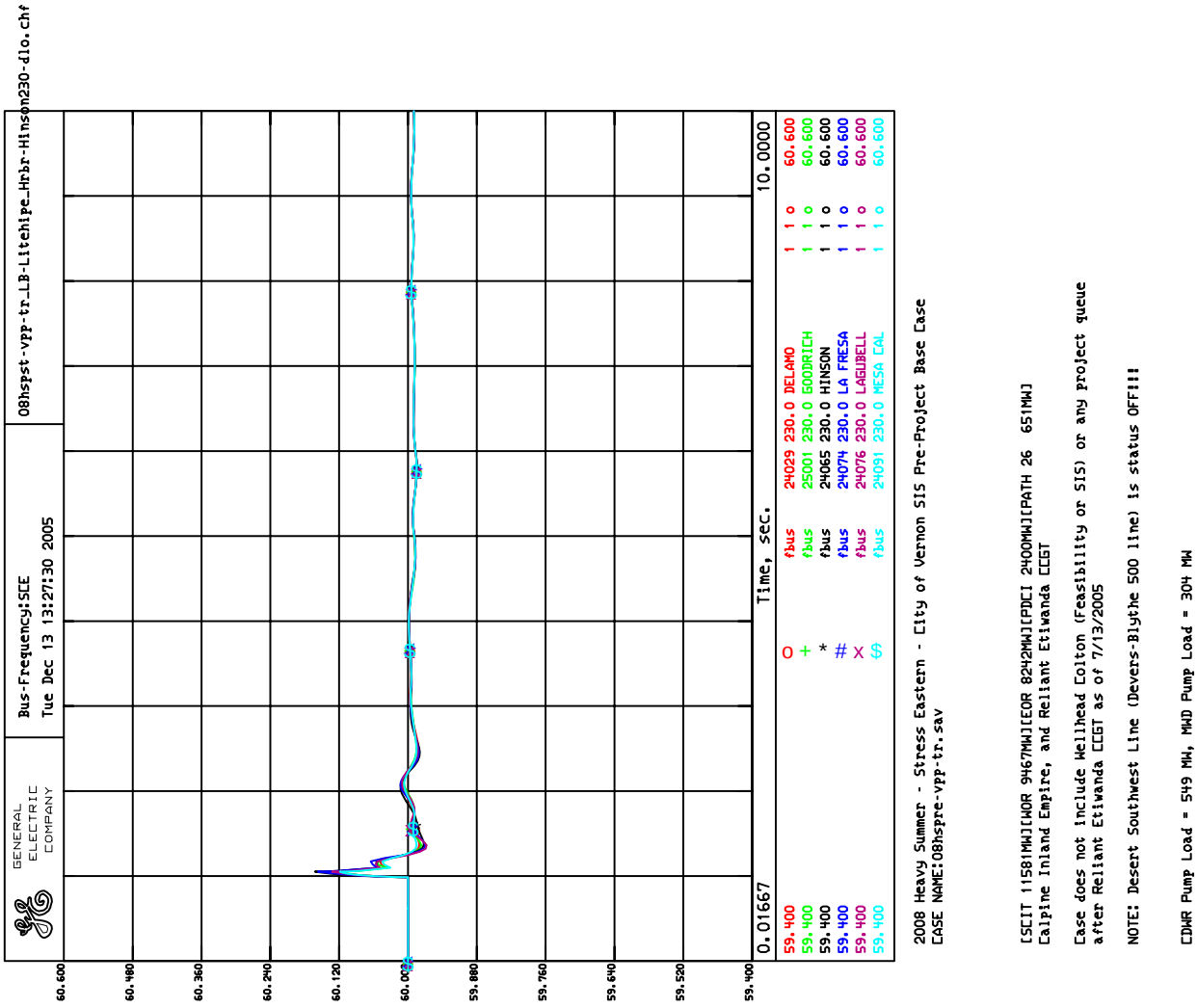
Plot 18 - 3: Three-phase fault at the Long Beach 230 kV bus followed by loss of the Long Beach – Lighthipe 230 kV and Harbor Gen – Hinson 230 kV transmission lines.



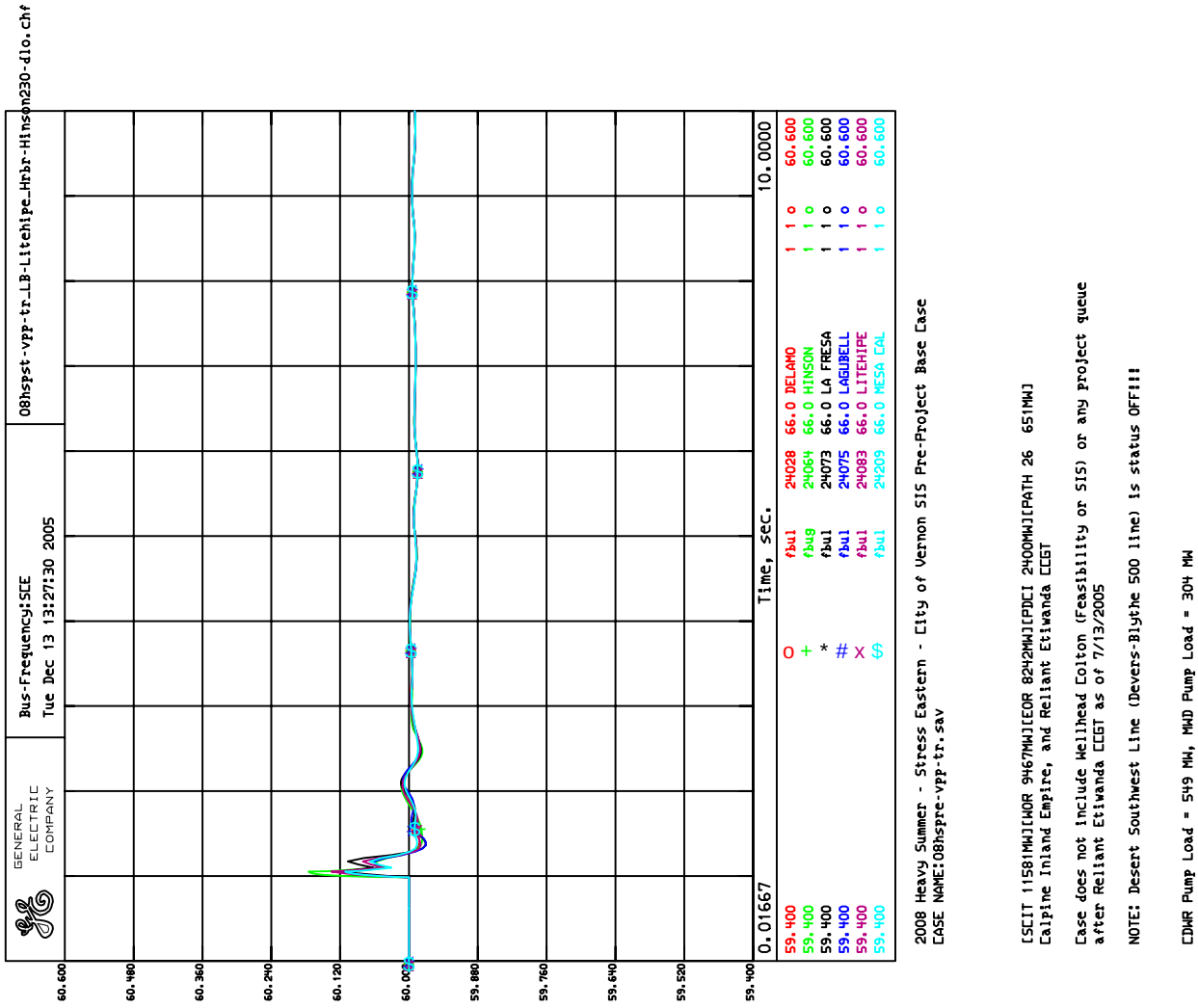
Plot 18 - 4: Three-phase fault at the Long Beach 230 kV bus followed by loss of the Long Beach – Lighthipe 230 kV and Harbor Gen – Hinson 230 kV transmission lines.



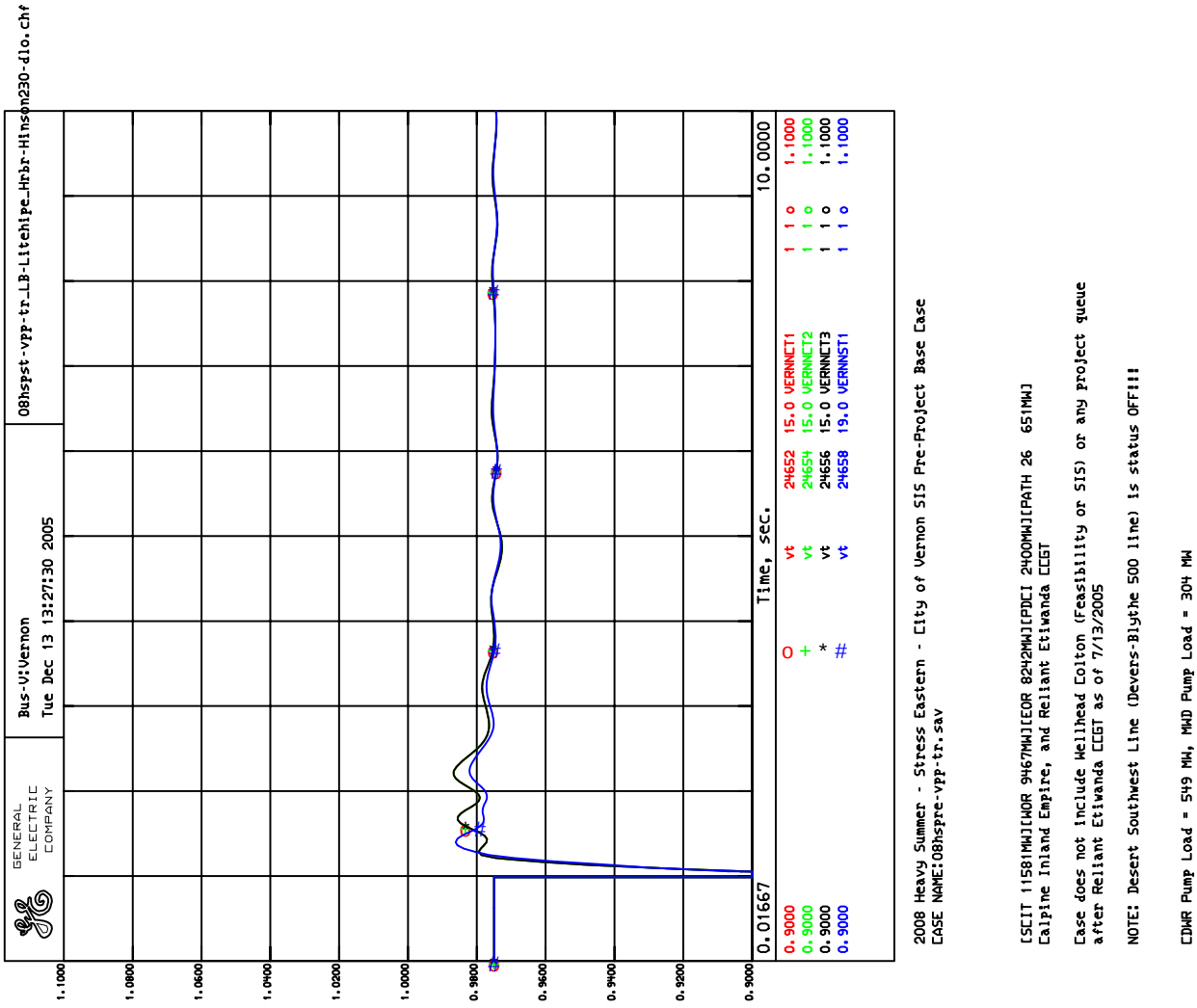
Plot 18 - 5: Three-phase fault at the Long Beach 230 kV bus followed by loss of the Long Beach – Lighthipe 230 kV and Harbor Gen – Hinson 230 kV transmission lines.



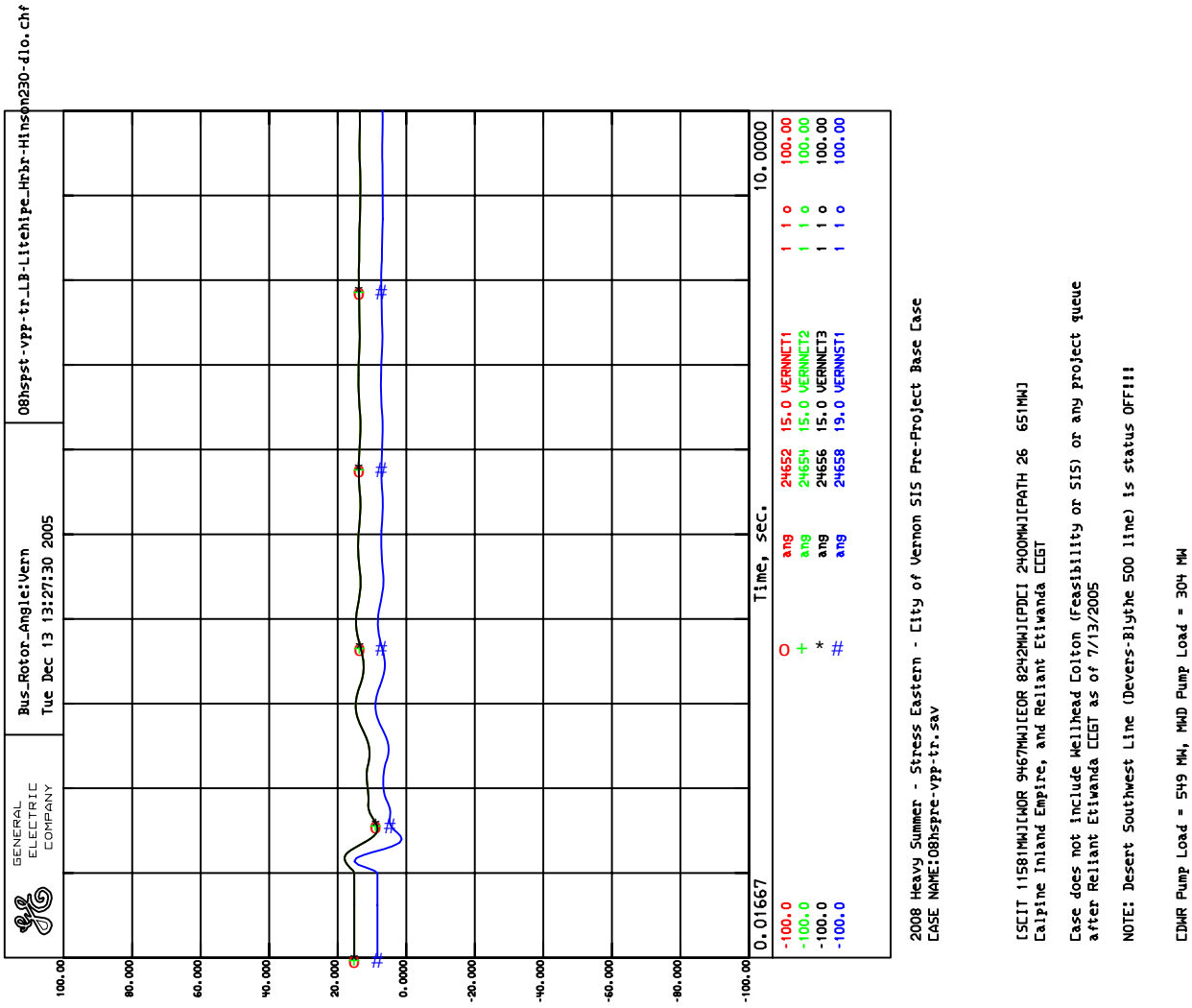
Plot 18 - 6: Three-phase fault at the Long Beach 230 kV bus followed by loss of the Long Beach – Lighthipe 230 kV and Harbor Gen – Hinson 230 kV transmission lines.



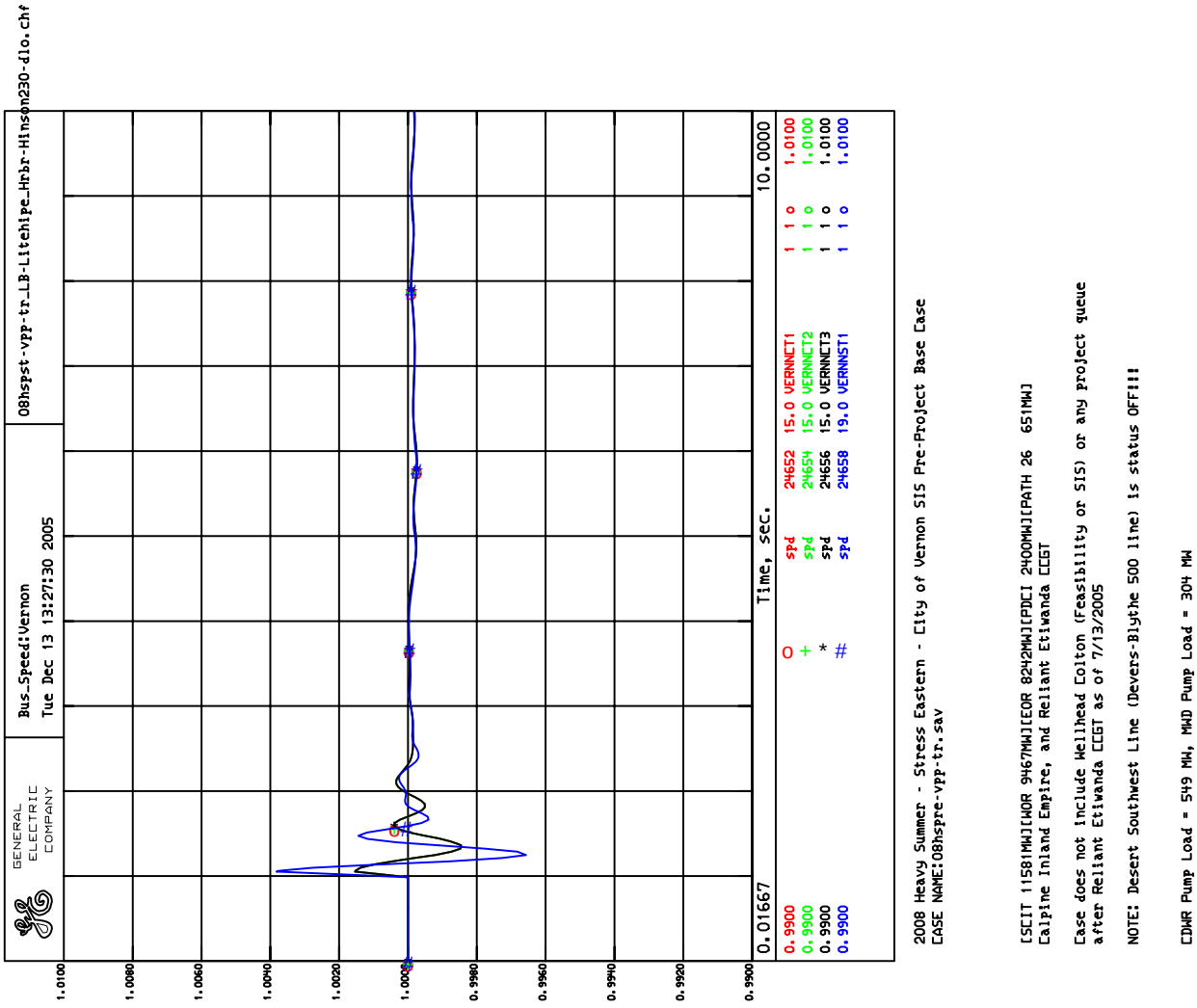
Plot 18 - 7: Three-phase fault at the Long Beach 230 kV bus followed by loss of the Long Beach – Lighthipe 230 kV and Harbor Gen – Hinson 230 kV transmission lines.



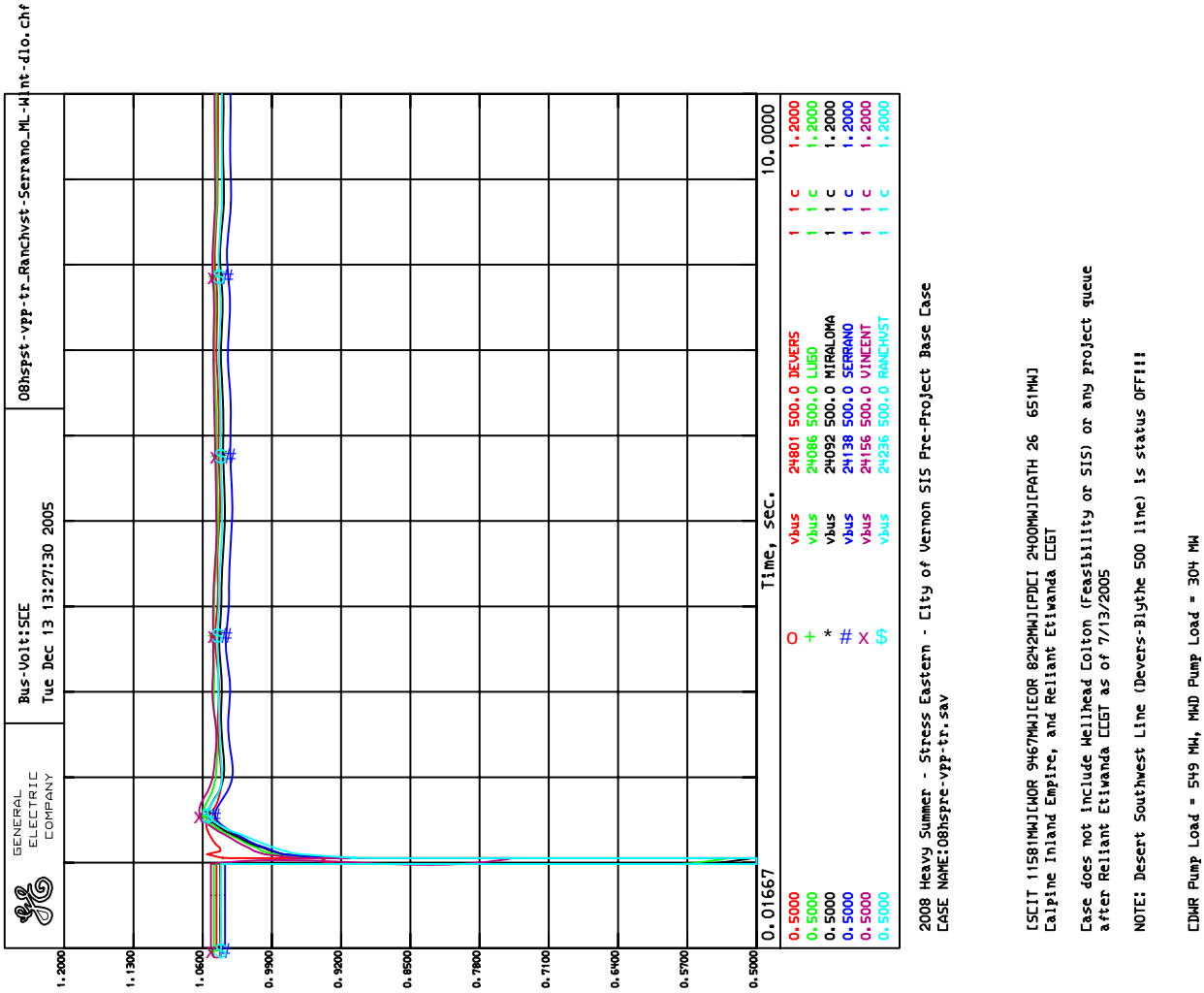
Plot 18 - 8: Three-phase fault at the Long Beach 230 kV bus followed by loss of the Long Beach – Lighthipe 230 kV and Harbor Gen – Hinson 230 kV transmission lines.



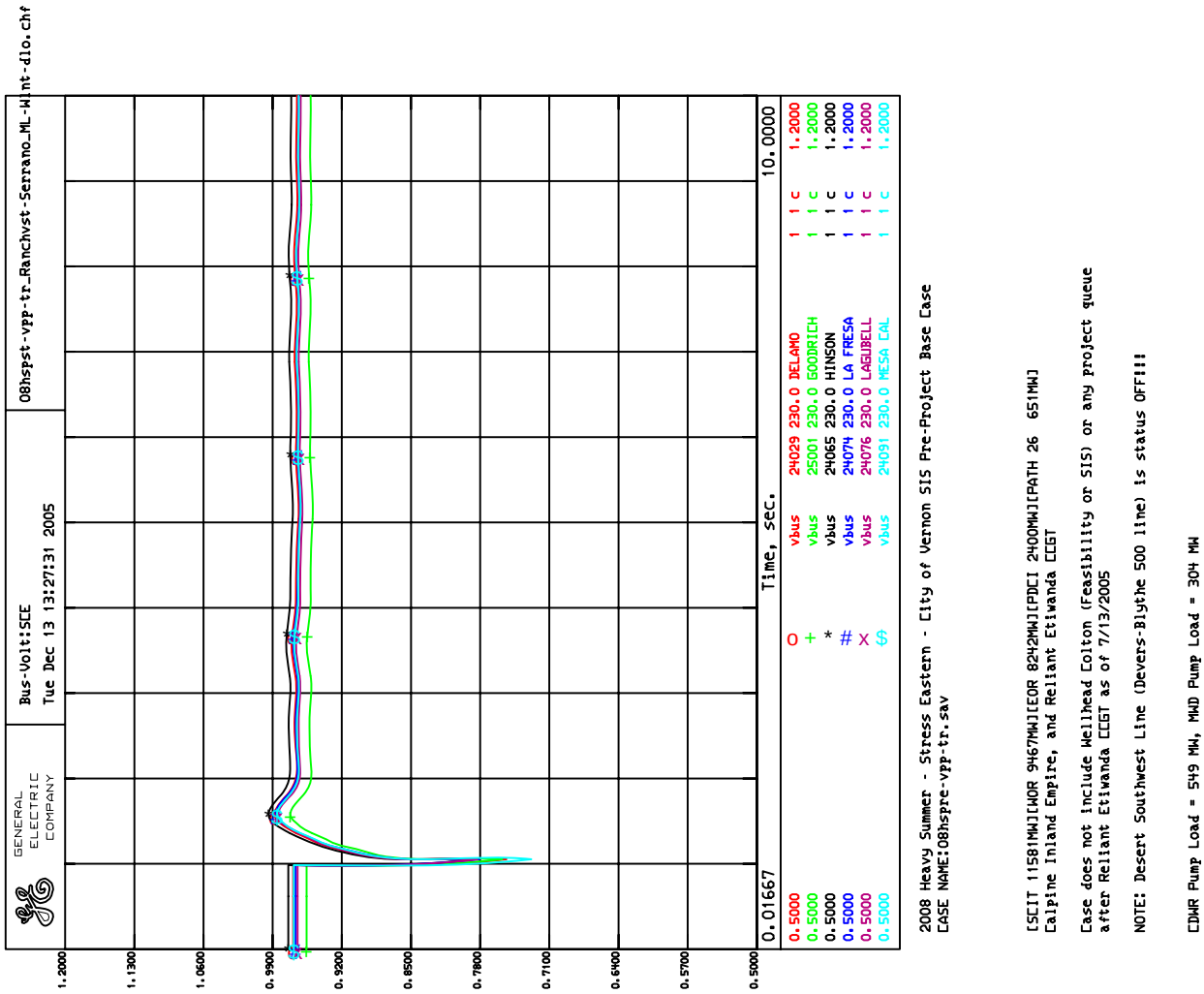
Plot 18 - 9: Three-phase fault at the Long Beach 230 kV bus followed by loss of the Long Beach – Lighthipe 230 kV and Harbor Gen – Hinson 230 kV transmission lines.



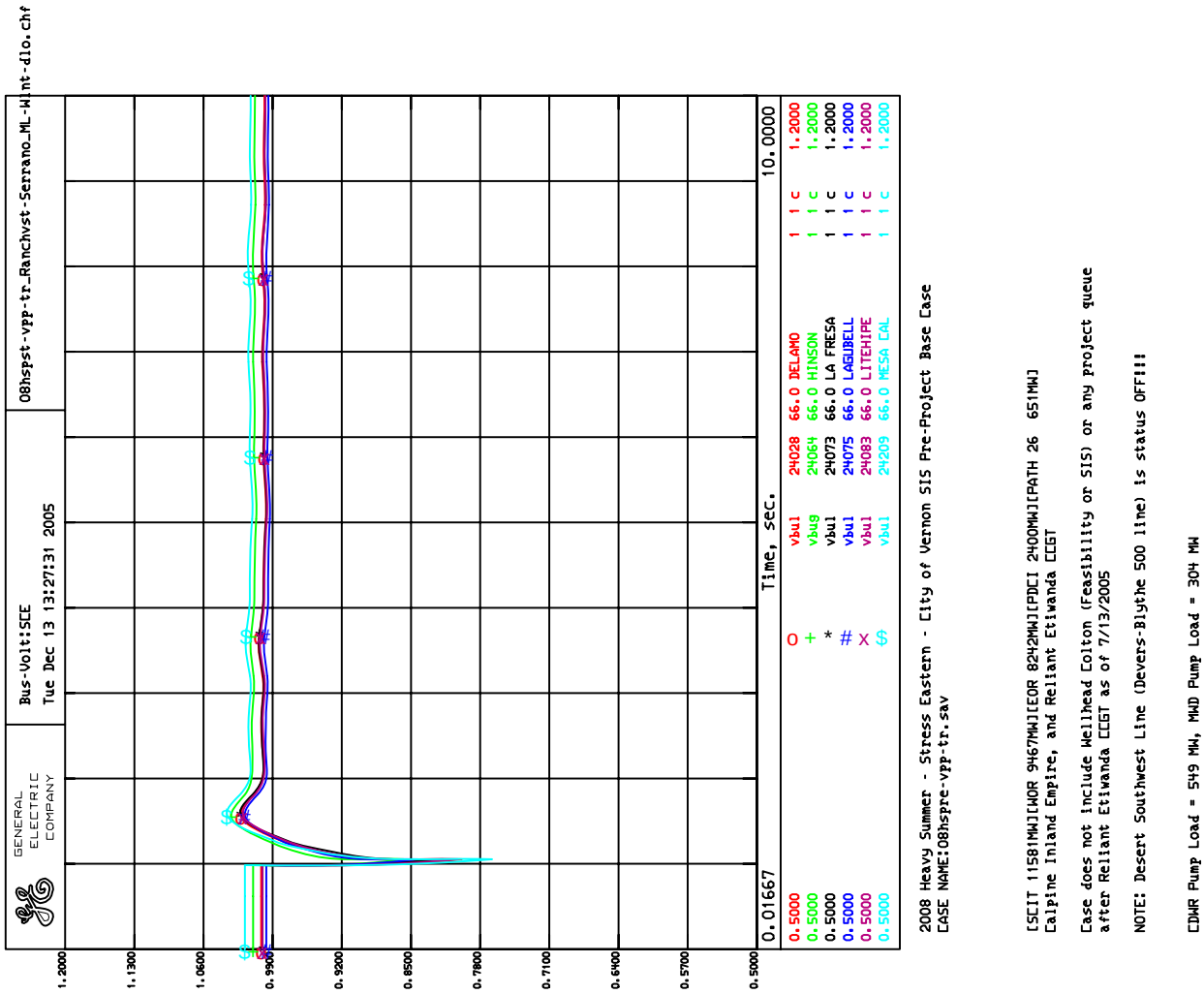
Plot 19 - 1: Three-phase fault at the Rancho Vista 500 kV bus followed by loss of the Rancho Vista – Serrano 500 kV and Mira Loma – Walnut 230 kV transmission lines.



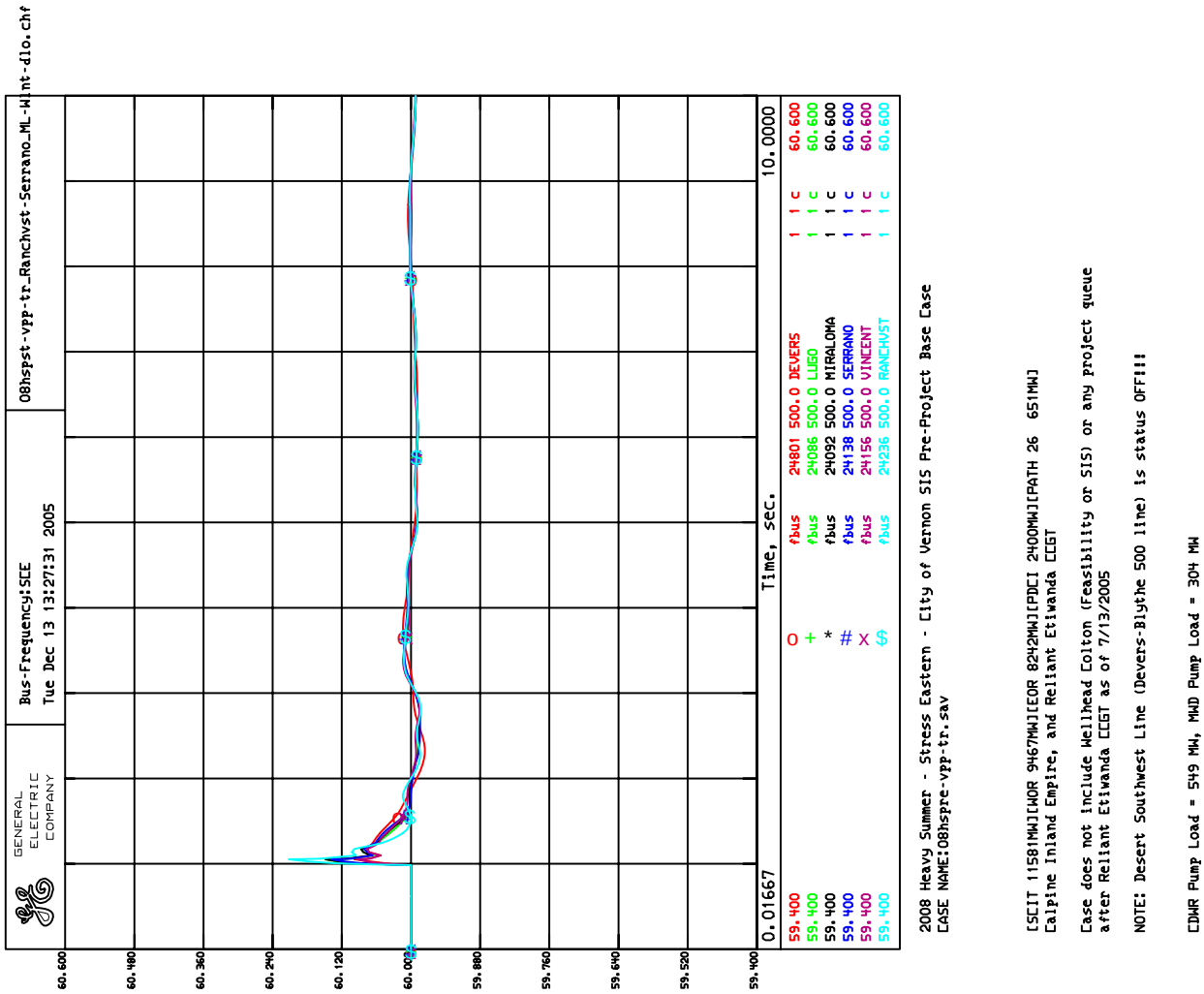
Plot 19 - 2: Three-phase fault at the Rancho Vista 500 kV bus followed by loss of the Rancho Vista – Serrano 500 kV and Mira Loma – Walnut 230 kV transmission lines.



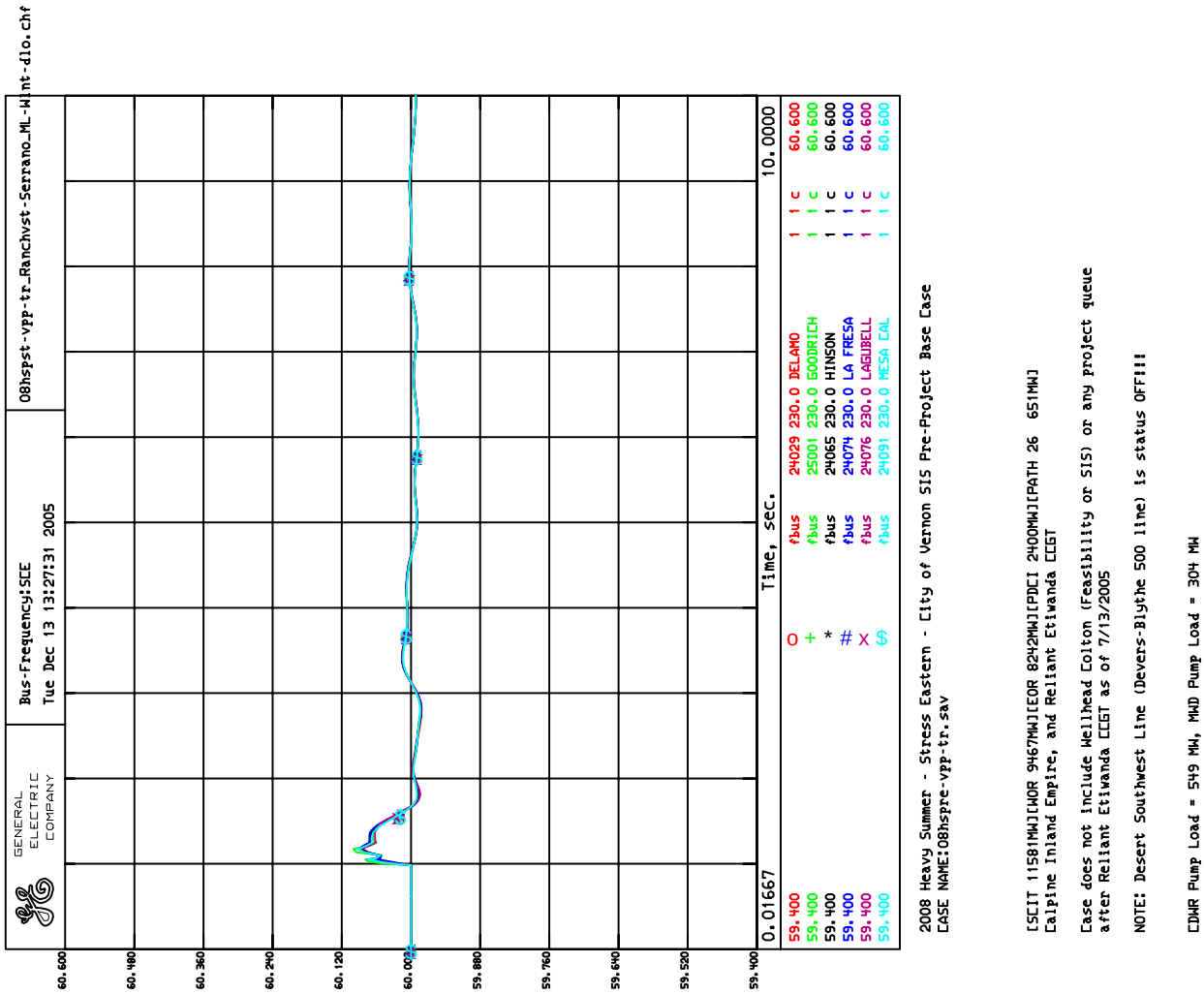
Plot 19 - 3: Three-phase fault at the Rancho Vista 500 kV bus followed by loss of the Rancho Vista – Serrano 500 kV and Mira Loma – Walnut 230 kV transmission lines.



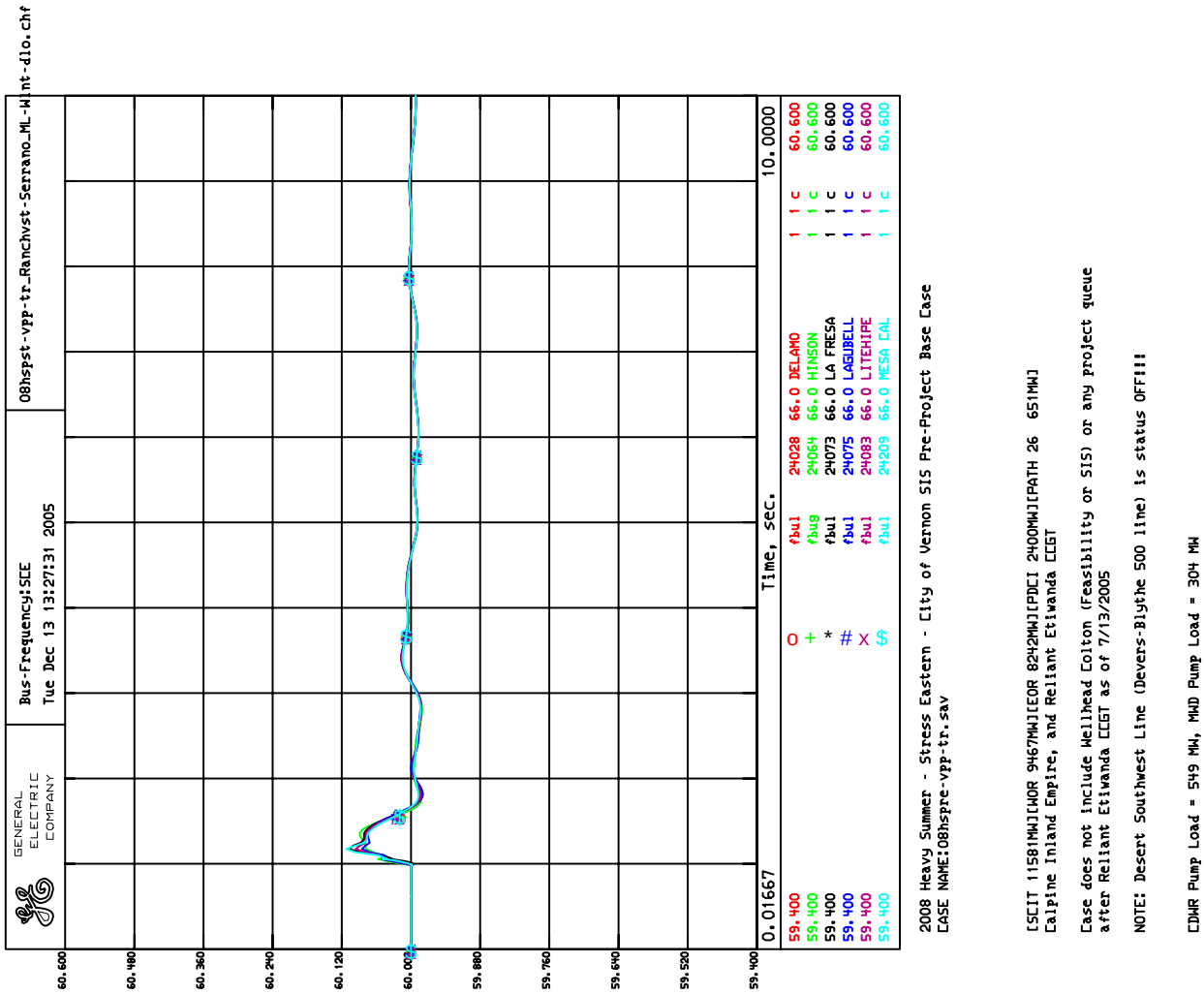
Plot 19 - 4: Three-phase fault at the Rancho Vista 500 kV bus followed by loss of the Rancho Vista – Serrano 500 kV and Mira Loma – Walnut 230 kV transmission lines.



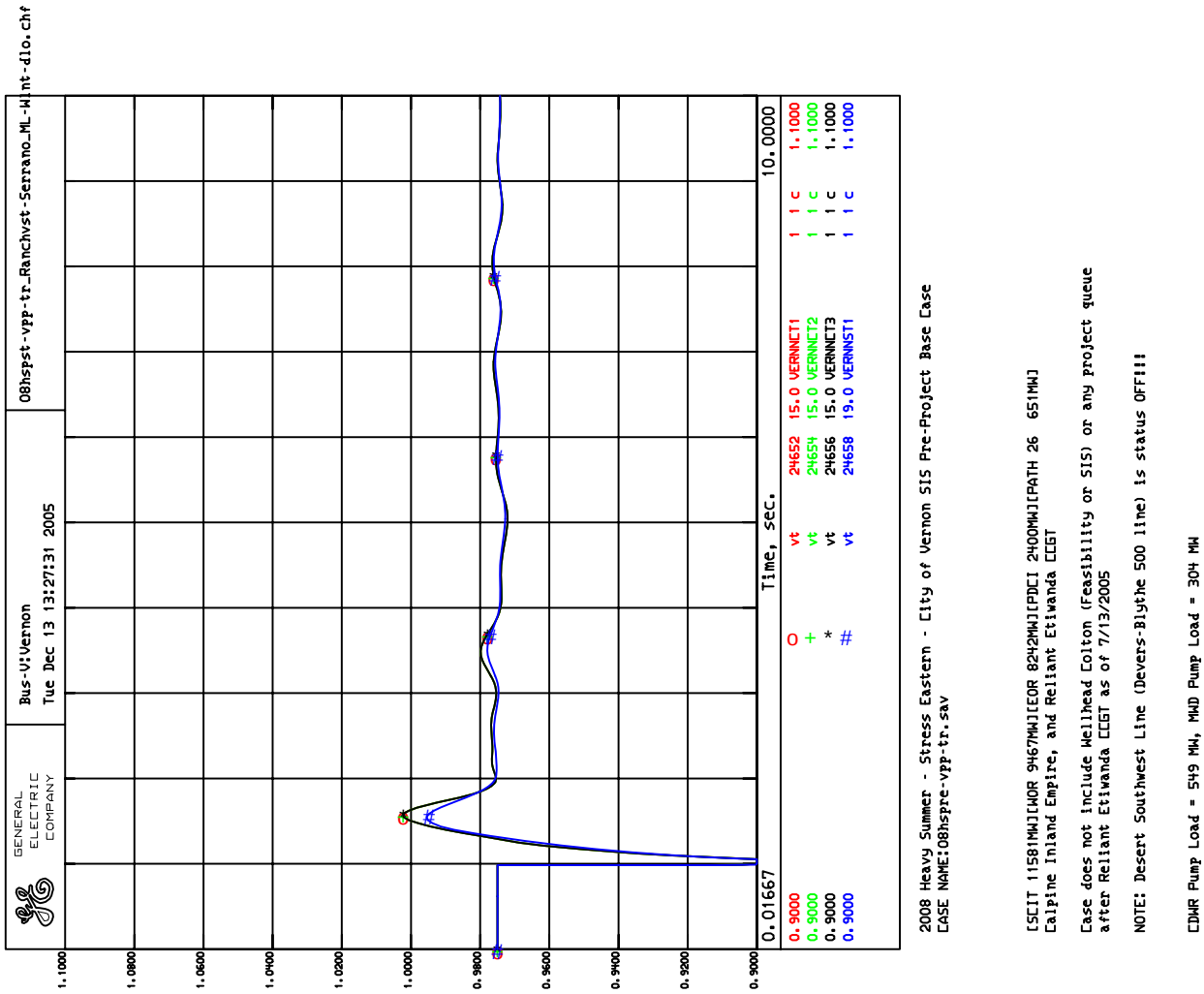
Plot 19 - 5: Three-phase fault at the Rancho Vista 500 kV bus followed by loss of the Rancho Vista – Serrano 500 kV and Mira Loma – Walnut 230 kV transmission lines.



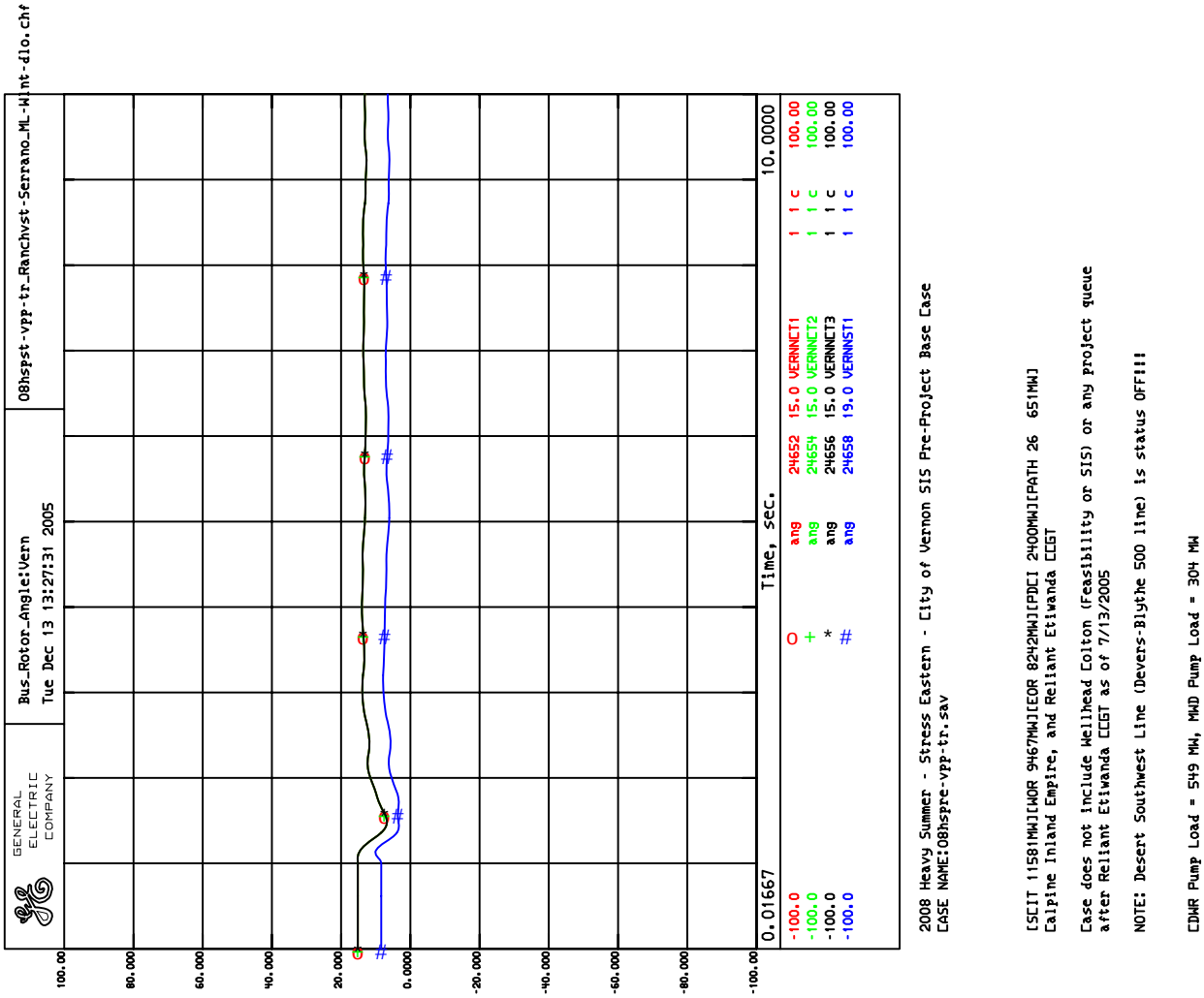
Plot 19 - 6: Three-phase fault at the Rancho Vista 500 kV bus followed by loss of the Rancho Vista – Serrano 500 kV and Mira Loma – Walnut 230 kV transmission lines.



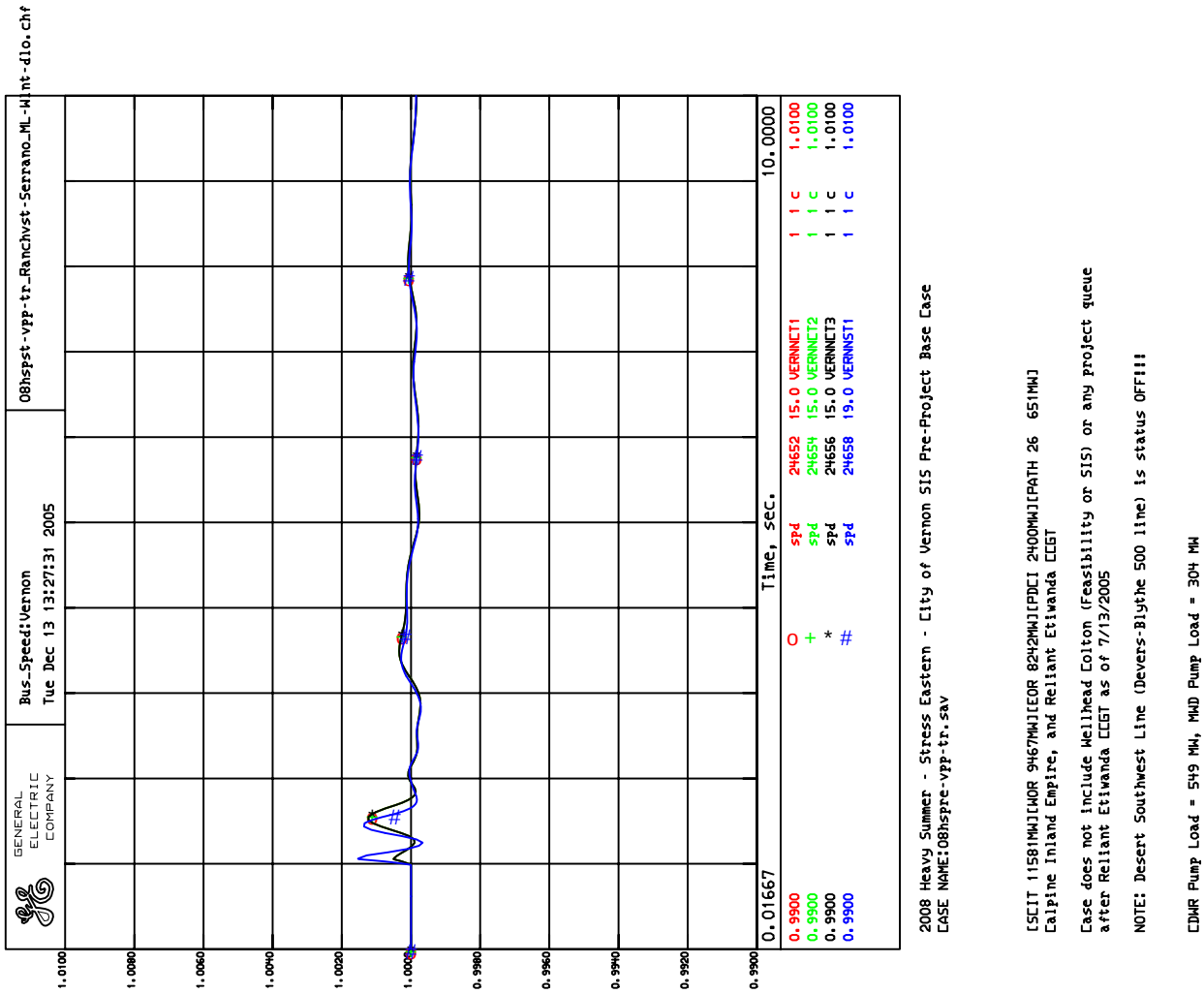
Plot 19 - 7: Three-phase fault at the Rancho Vista 500 kV bus followed by loss of the Rancho Vista – Serrano 500 kV and Mira Loma – Walnut 230 kV transmission lines.



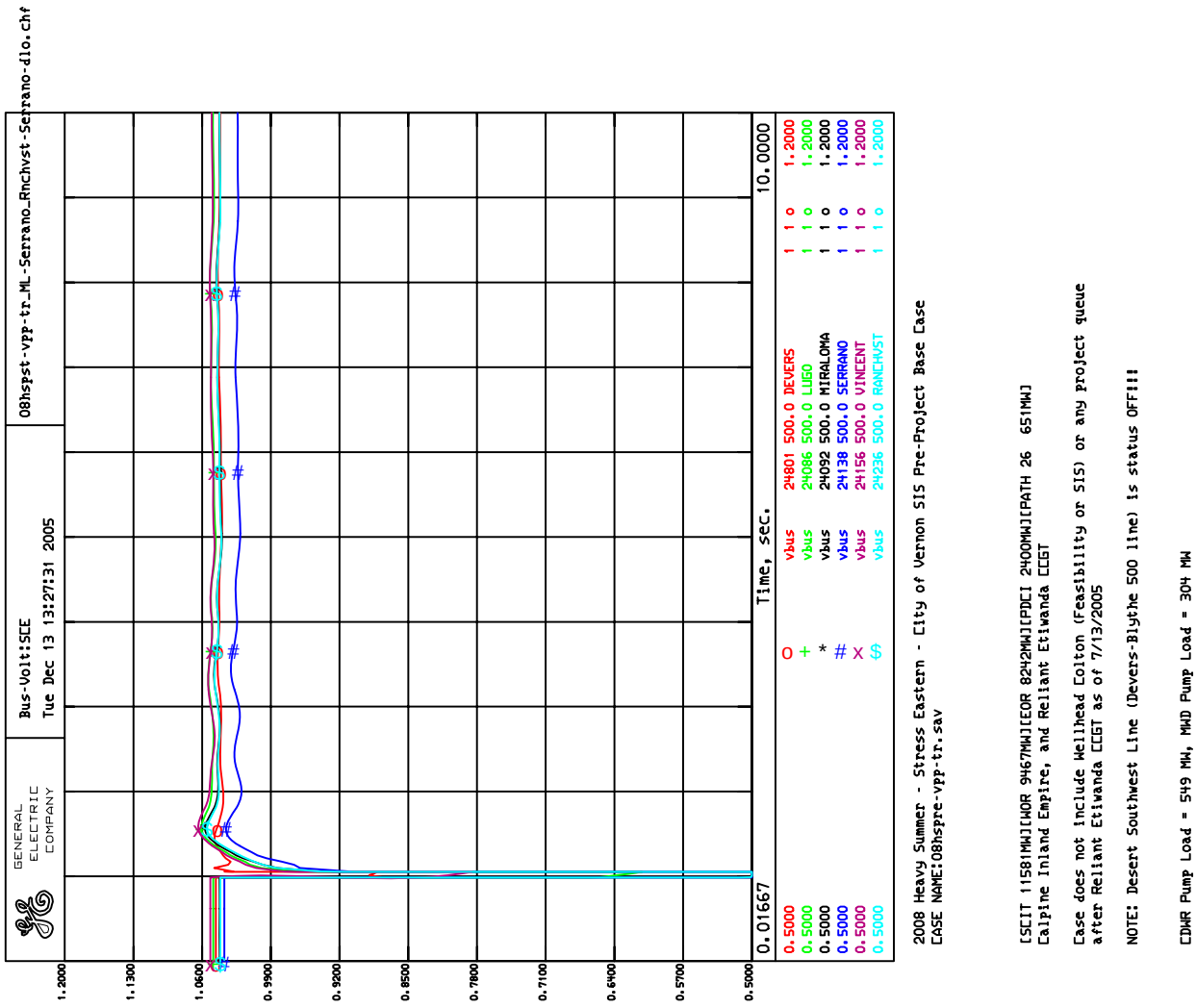
Plot 19 - 8: Three-phase fault at the Rancho Vista 500 kV bus followed by loss of the Rancho Vista – Serrano 500 kV and Mira Loma – Walnut 230 kV transmission lines.



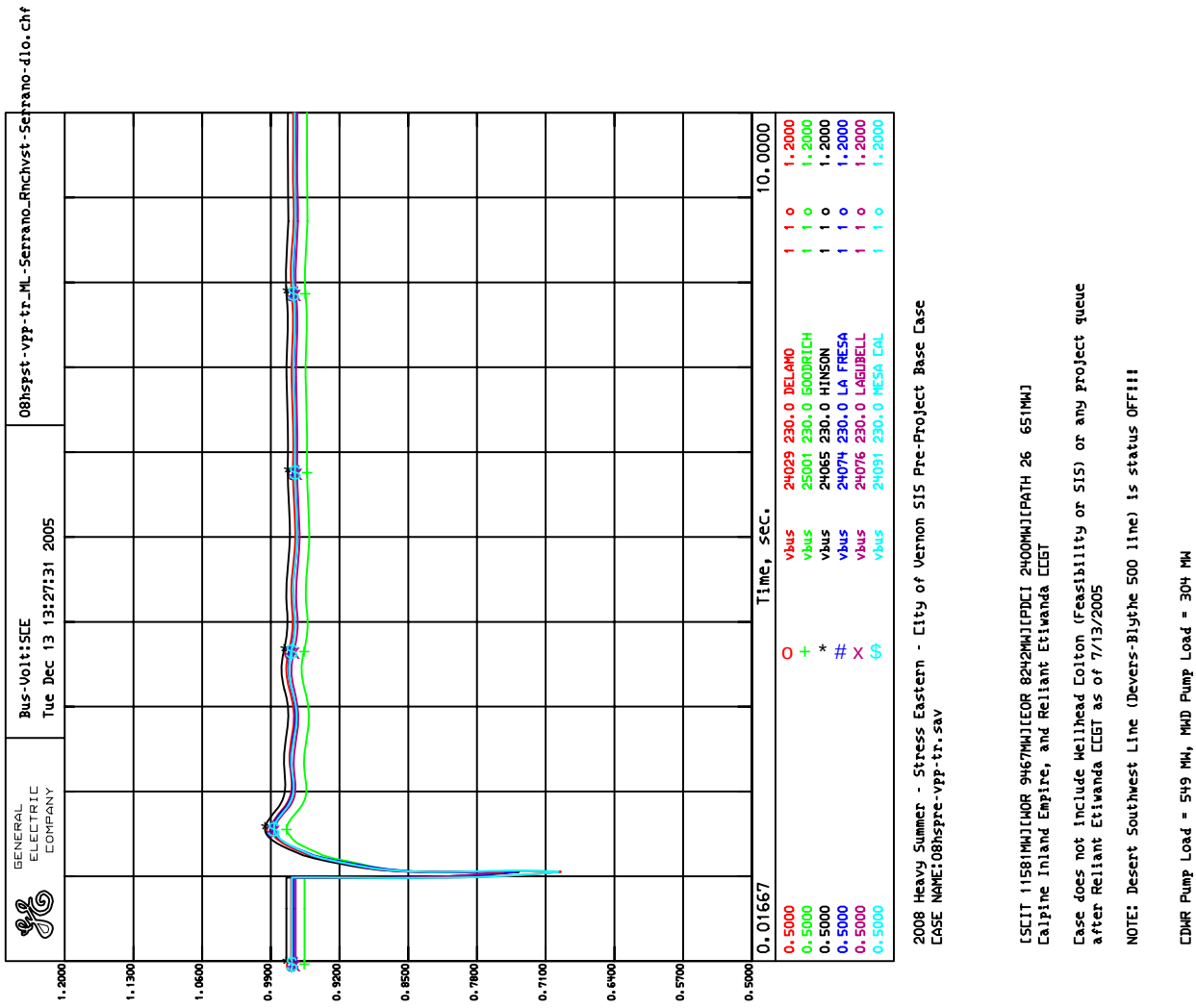
Plot 19 - 9: Three-phase fault at the Rancho Vista 500 kV bus followed by loss of the Rancho Vista – Serrano 500 kV and Mira Loma – Walnut 230 kV transmission lines.



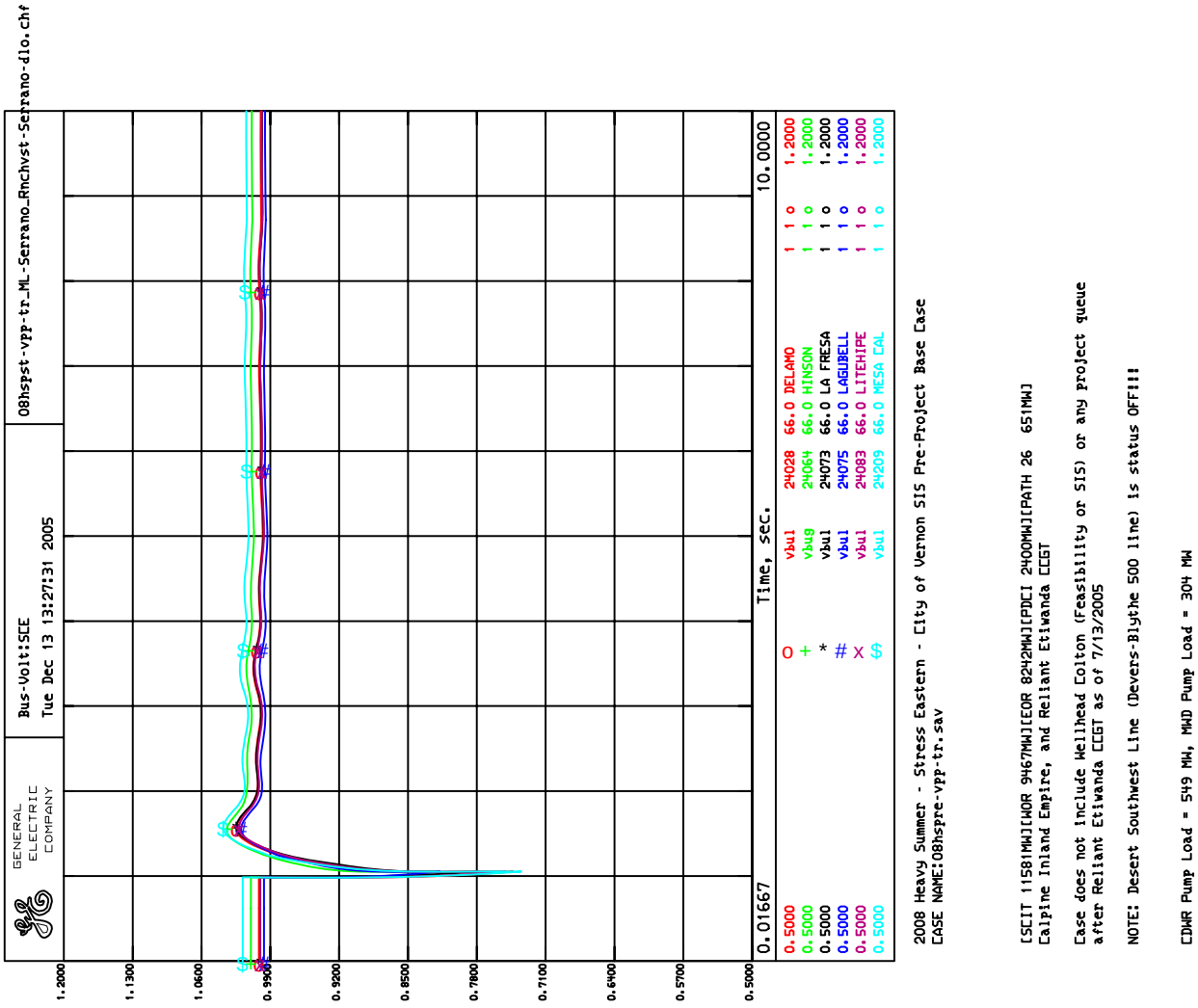
Plot 20 - 1: Three-phase fault at the Serrano 500 kV bus followed by loss of the Rancho Vista – Serrano 500 kV and Mira Loma – Serrano 500 kV transmission lines.



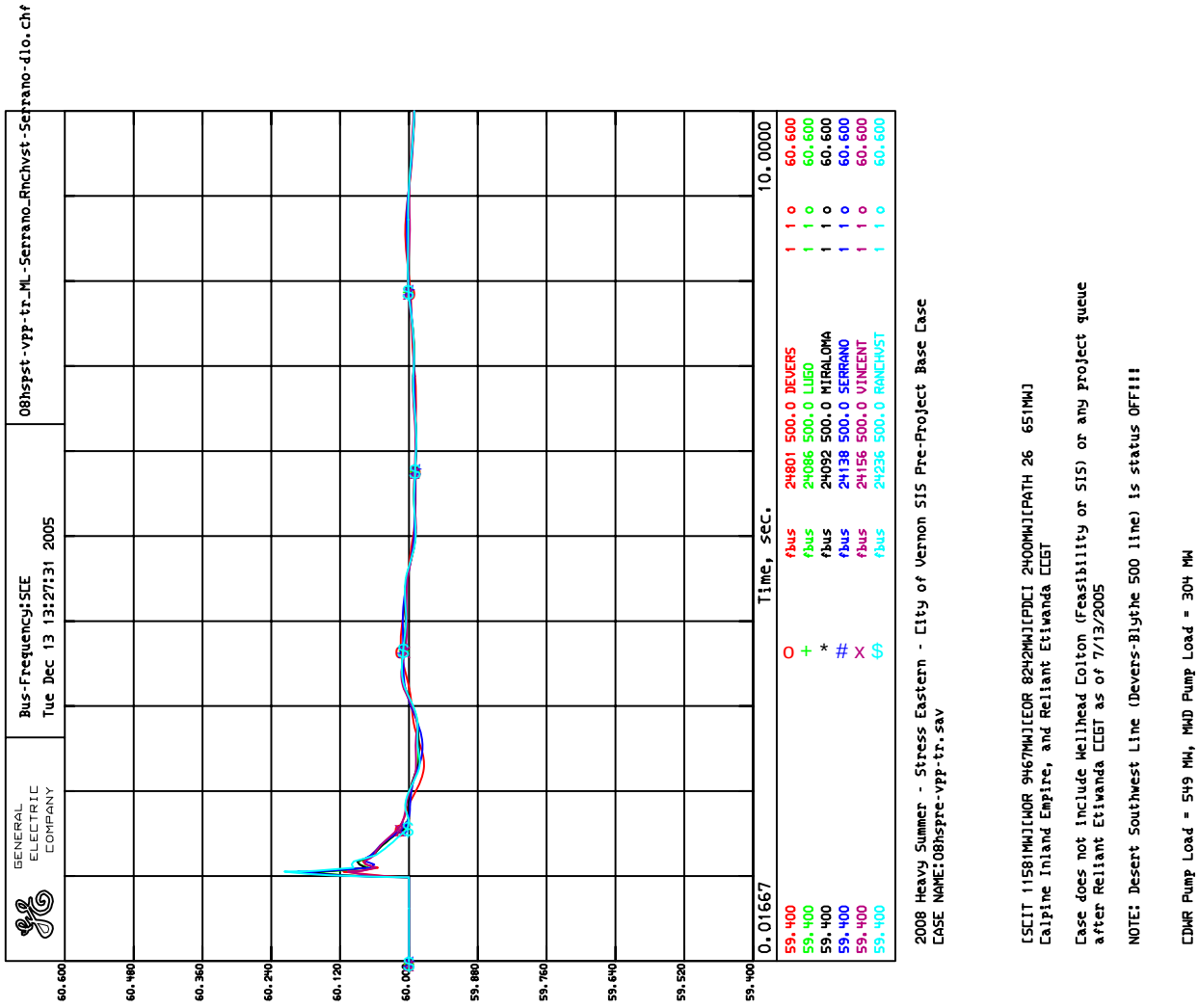
Plot 20 - 2: Three-phase fault at the Serrano 500 kV bus followed by loss of the Rancho Vista – Serrano 500 kV and Mira Loma – Serrano 500 kV transmission lines.



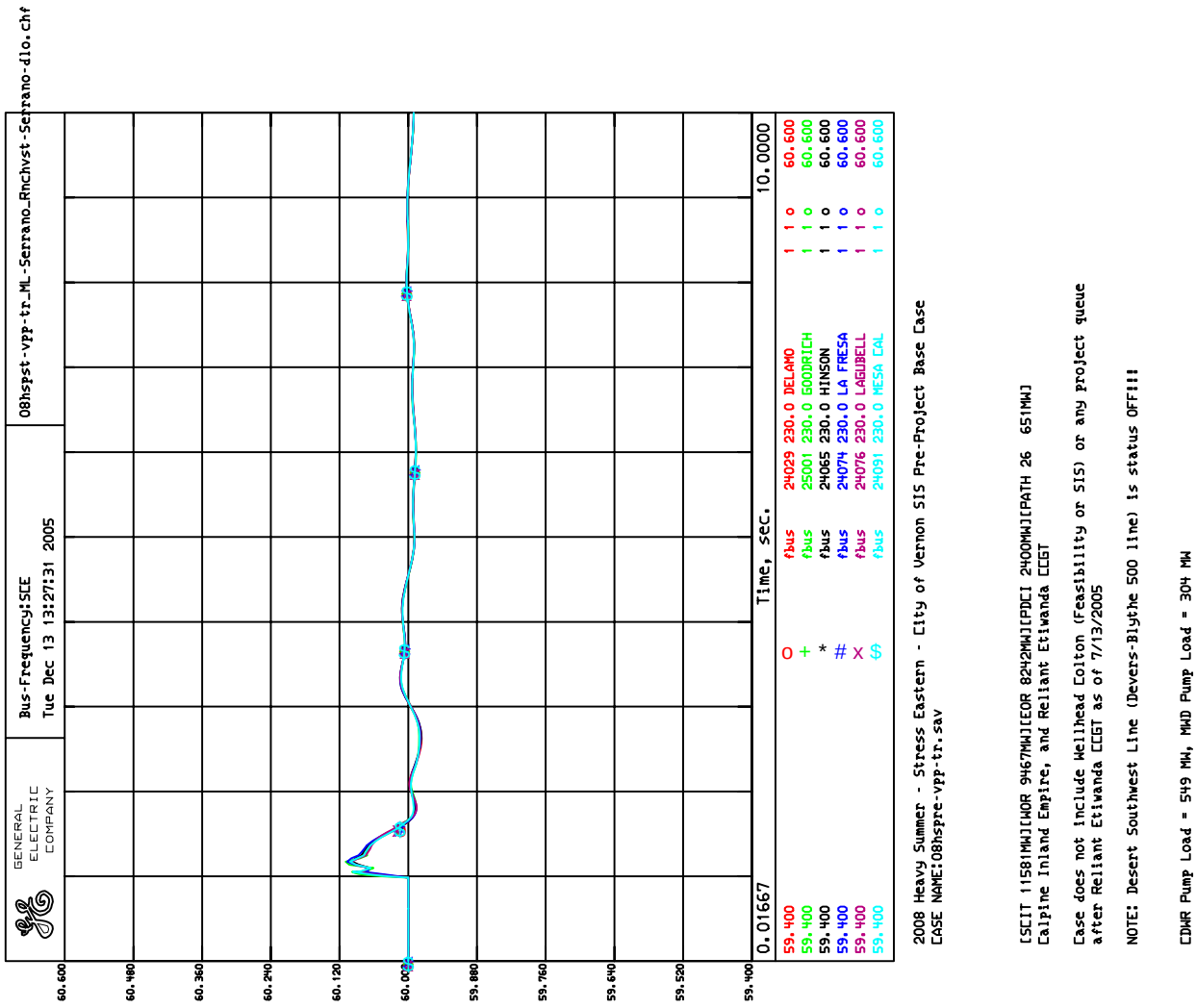
Plot 20 - 3: Three-phase fault at the Serrano 500 kV bus followed by loss of the Rancho Vista – Serrano 500 kV and Mira Loma – Serrano 500 kV transmission lines.



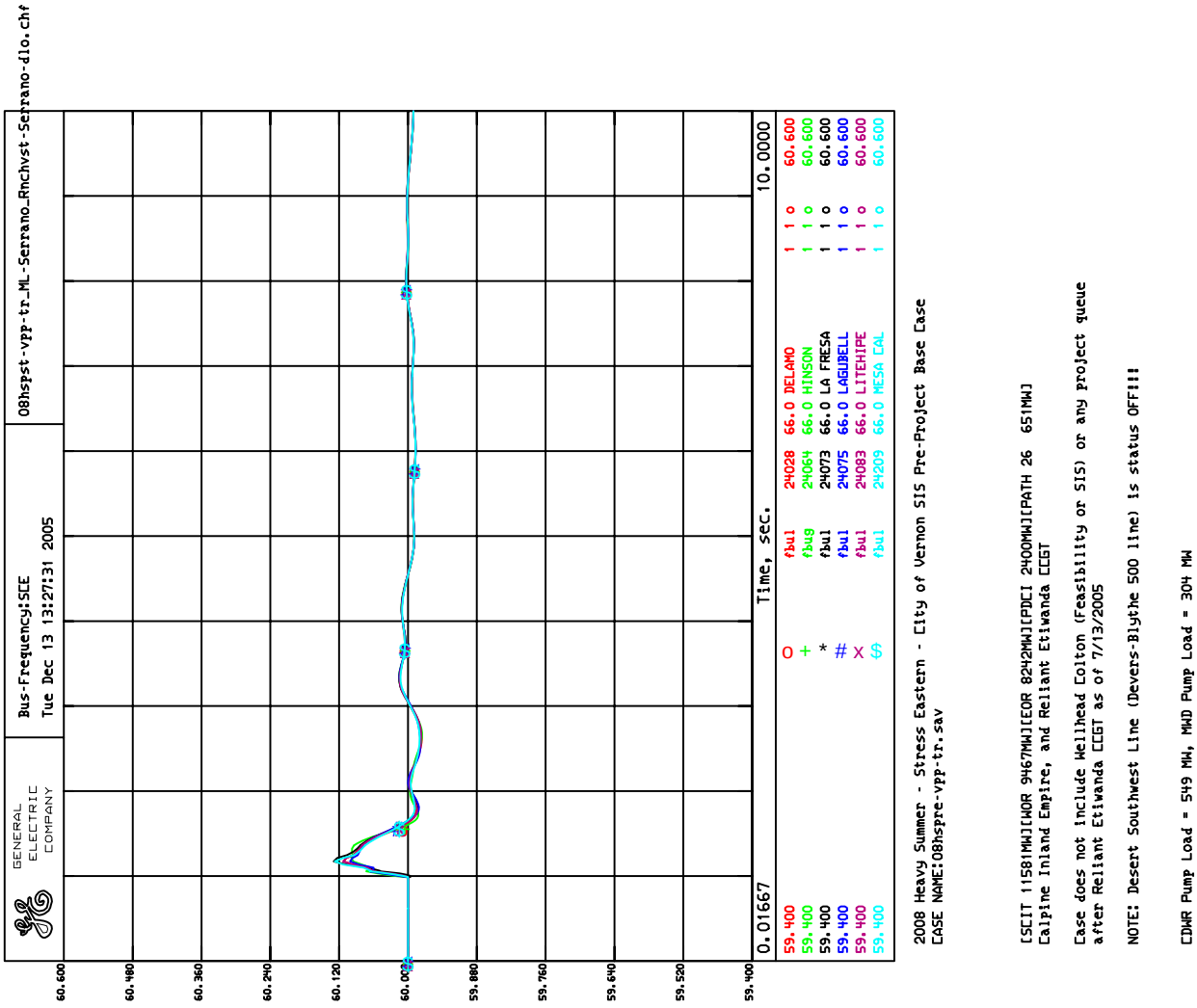
Plot 20 - 4: Three-phase fault at the Serrano 500 kV bus followed by loss of the Rancho Vista – Serrano 500 kV and Mira Loma – Serrano 500 kV transmission lines.



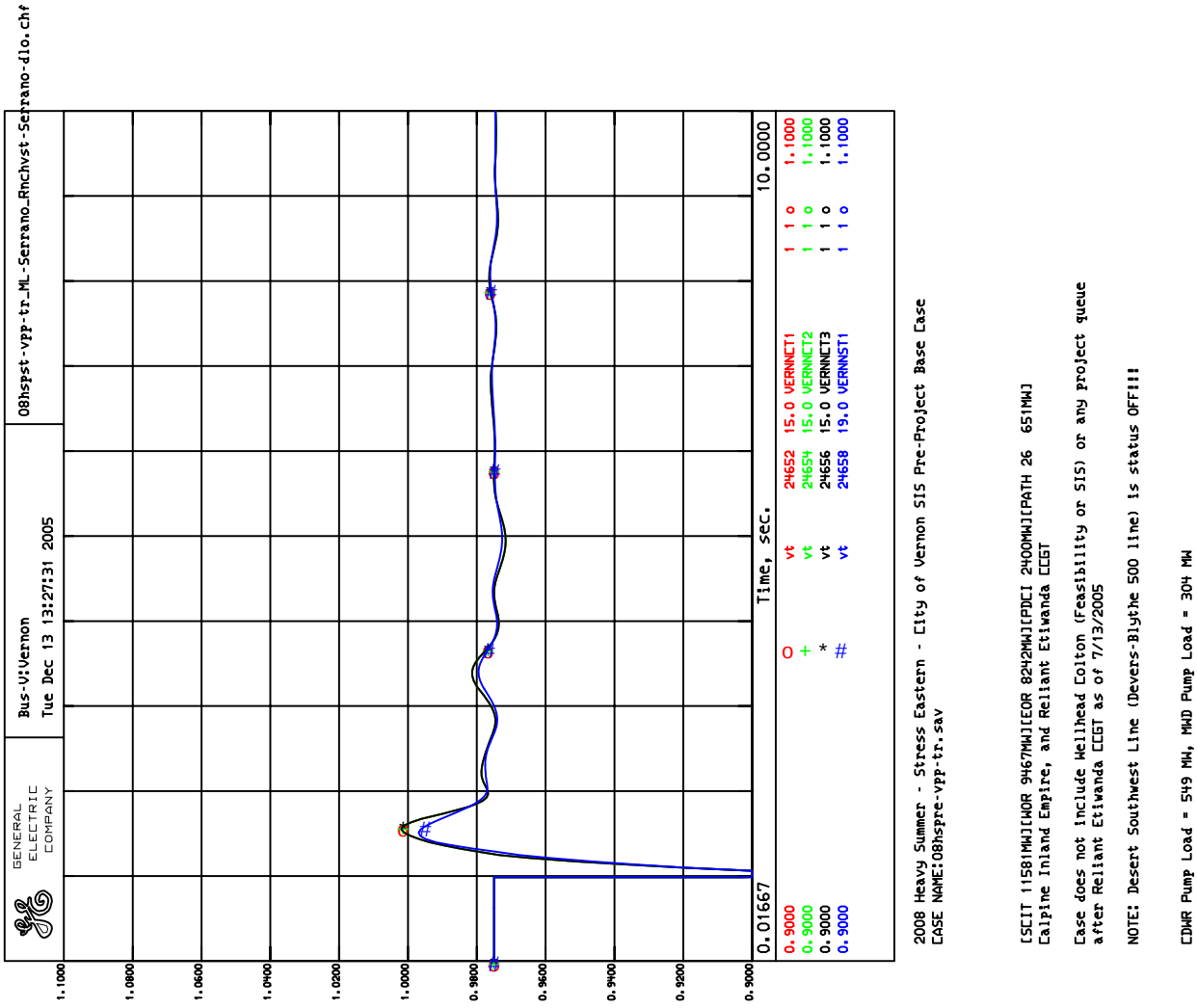
Plot 20 - 5: Three-phase fault at the Serrano 500 kV bus followed by loss of the Rancho Vista – Serrano 500 kV and Mira Loma – Serrano 500 kV transmission lines.



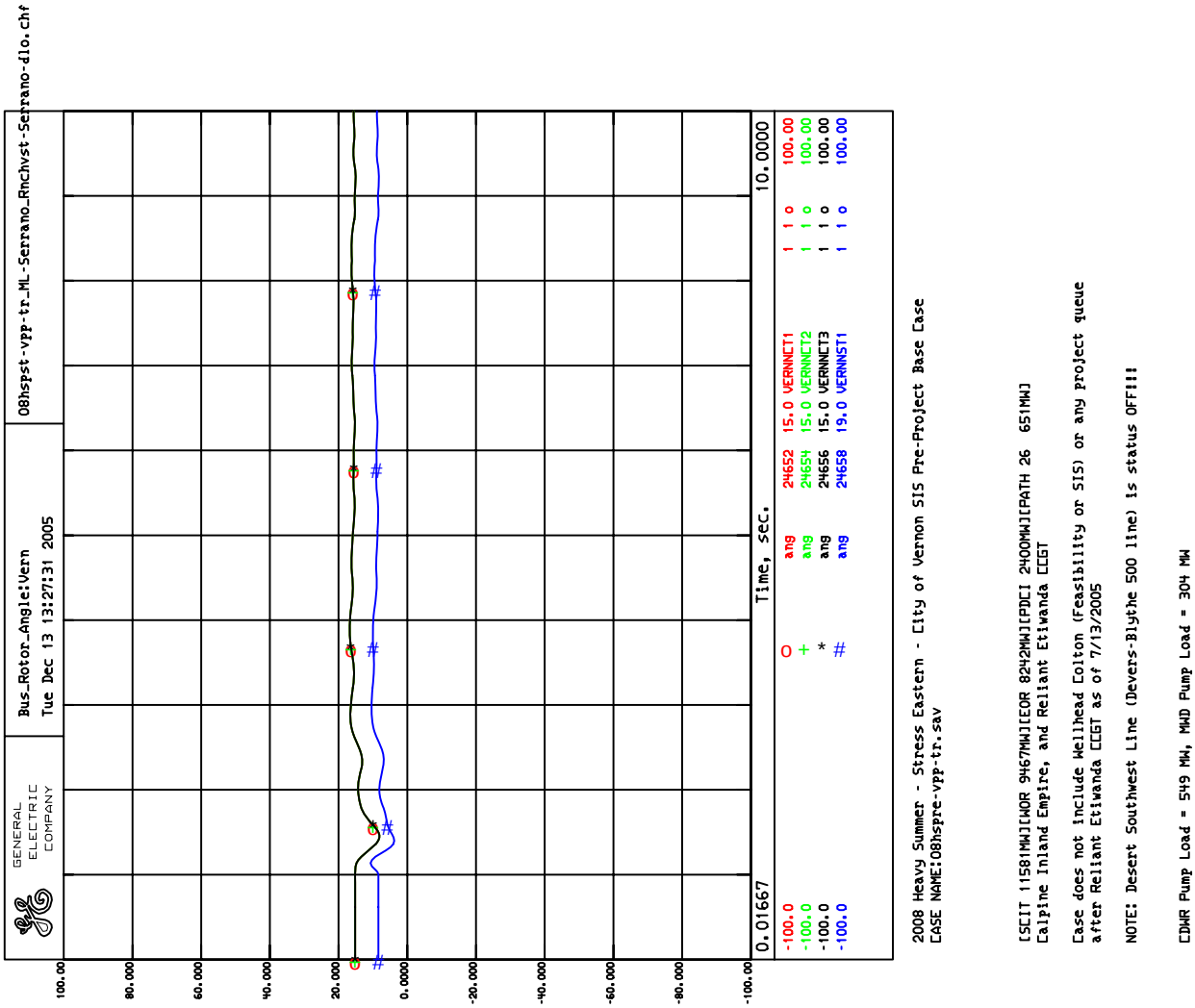
Plot 20 - 6: Three-phase fault at the Serrano 500 kV bus followed by loss of the Rancho Vista – Serrano 500 kV and Mira Loma – Serrano 500 kV transmission lines.



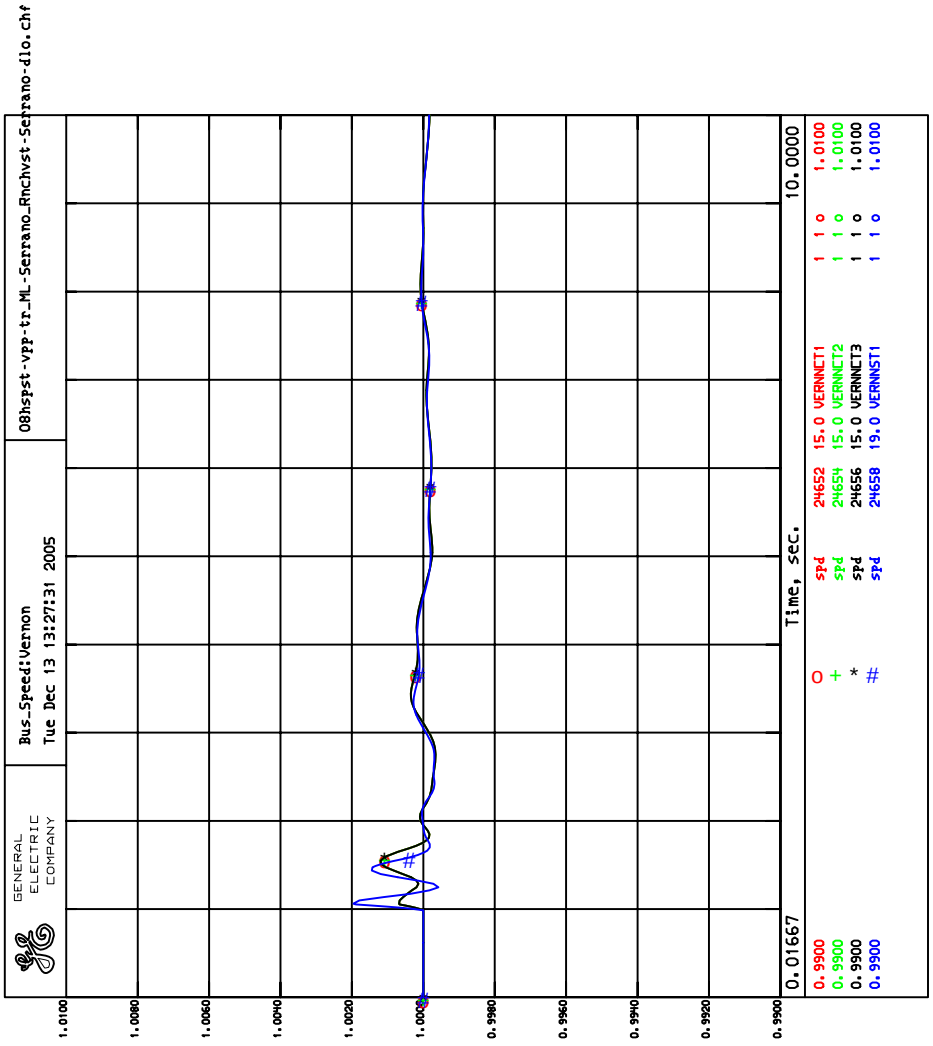
Plot 20 - 7: Three-phase fault at the Serrano 500 kV bus followed by loss of the Rancho Vista – Serrano 500 kV and Mira Loma – Serrano 500 kV transmission lines.



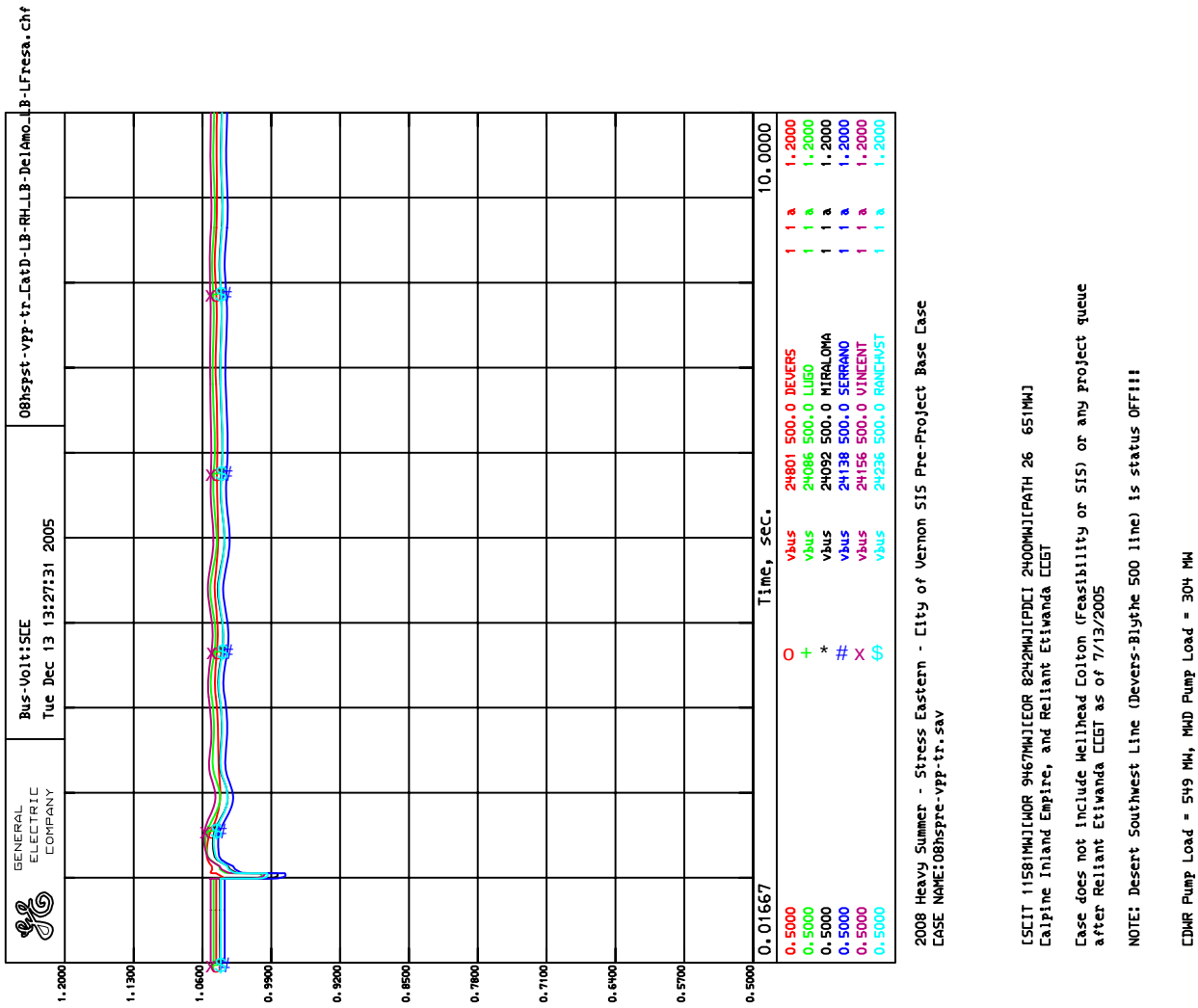
Plot 20 - 8: Three-phase fault at the Serrano 500 kV bus followed by loss of the Rancho Vista – Serrano 500 kV and Mira Loma – Serrano 500 kV transmission lines.



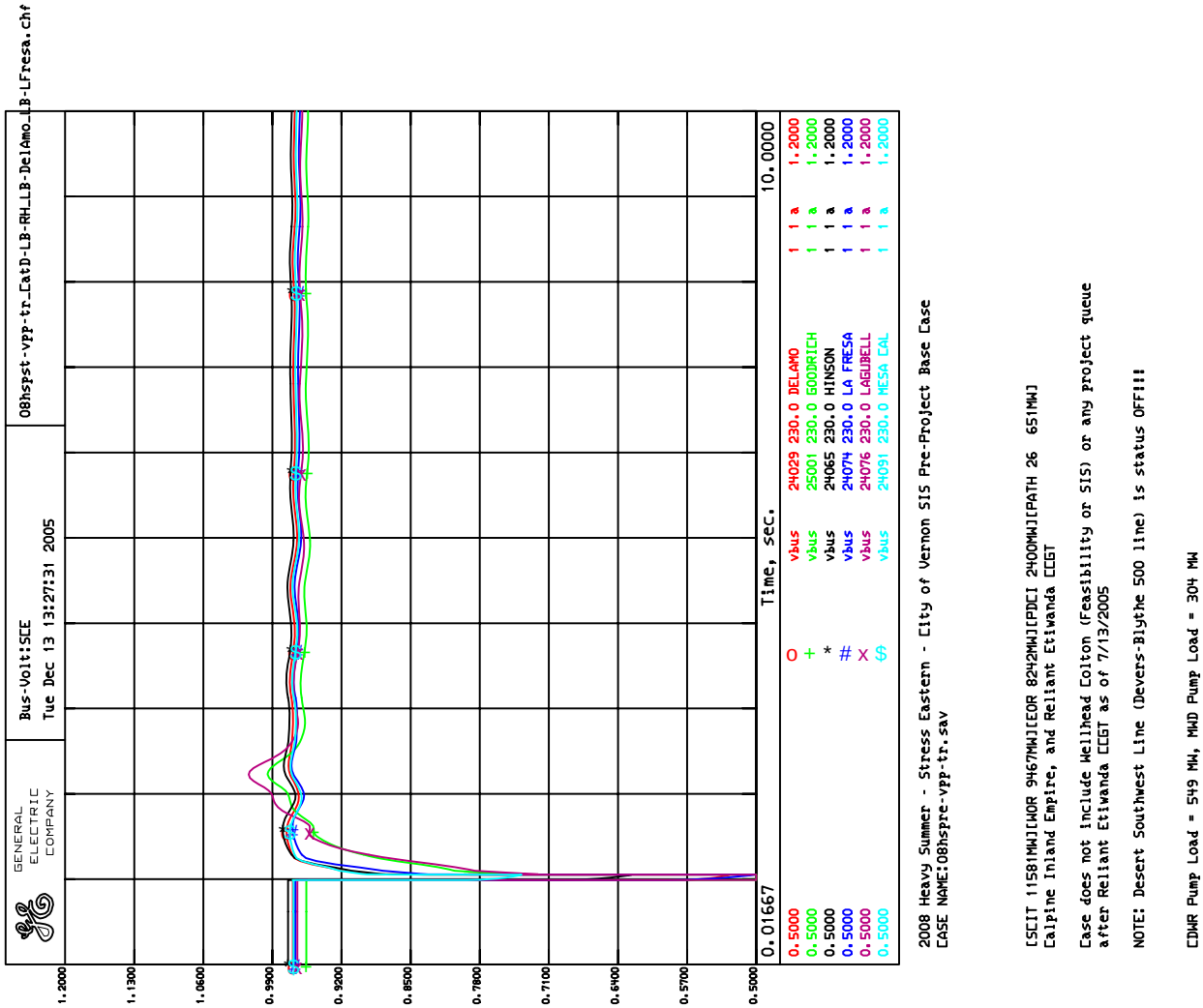
Plot 20 - 9: Three-phase fault at the Serrano 500 kV bus followed by loss of the Rancho Vista – Serrano 500 kV and Mira Loma – Serrano 500 kV transmission lines.



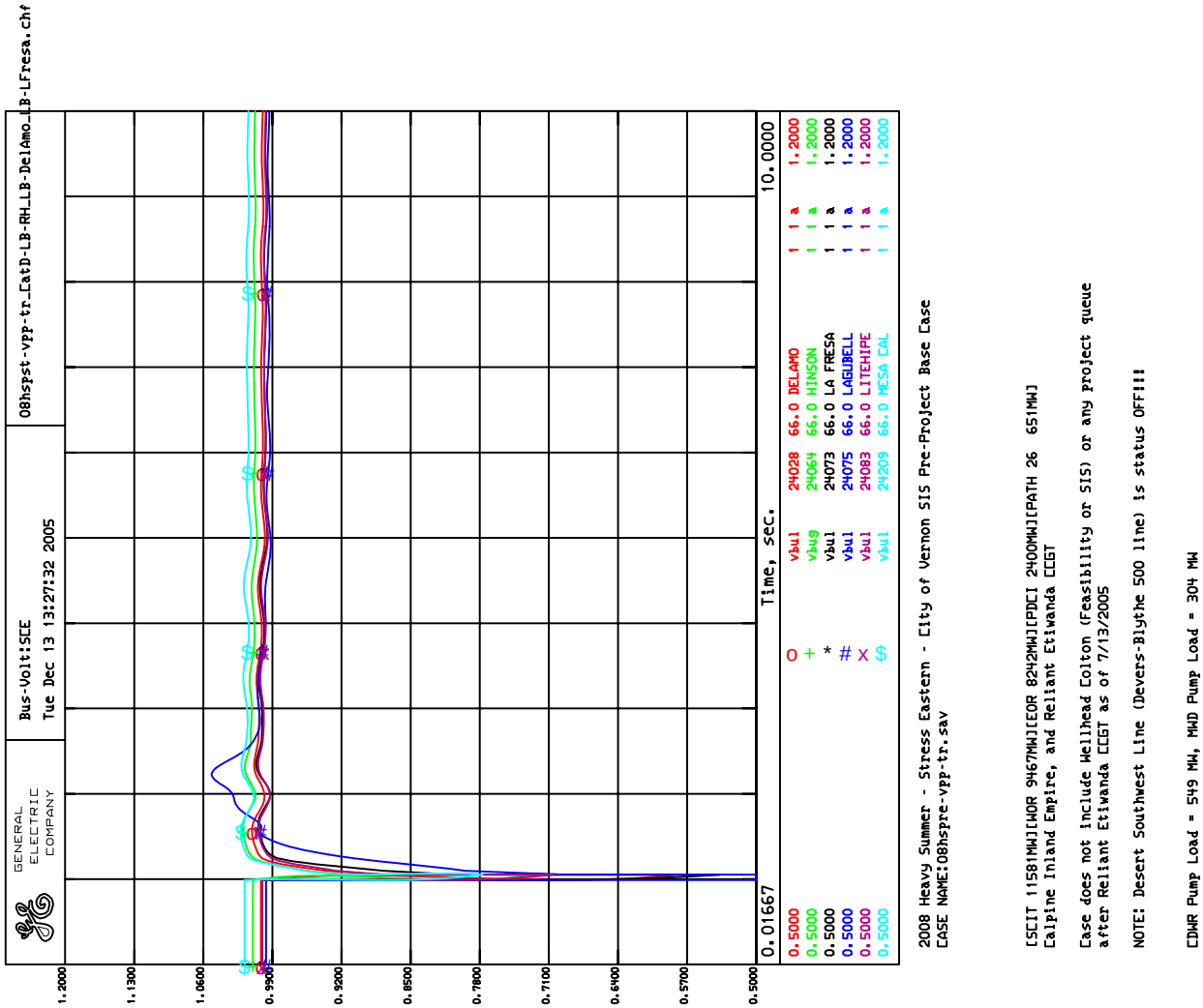
Plot 21 - 1: Pre-fault outage of the Laguna Bell – Rio Hondo 230 kV circuit, then three-phase fault at the VPP 230 kV bus followed by loss of the Laguna Bell – Del Amo 230 kV and the Laguna Bell – La Fresa 230 kV transmission lines.



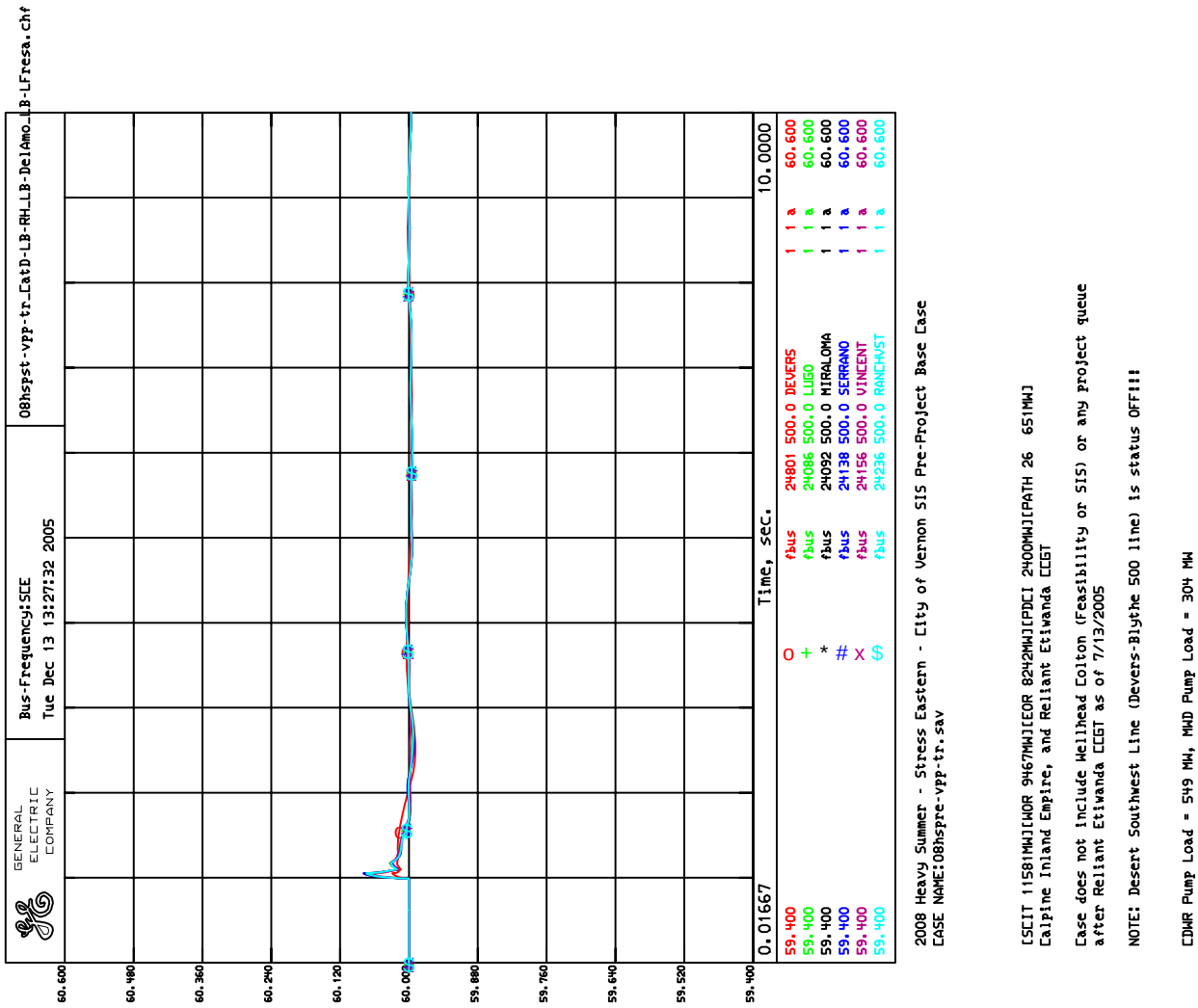
Plot 21 - 2: Pre-fault outage of the Laguna Bell – Rio Hondo 230 kV circuit, then three-phase fault at the VPP 230 kV bus followed by loss of the Laguna Bell – Del Amo 230 kV and the Laguna Bell – La Fresa 230 kV transmission lines.



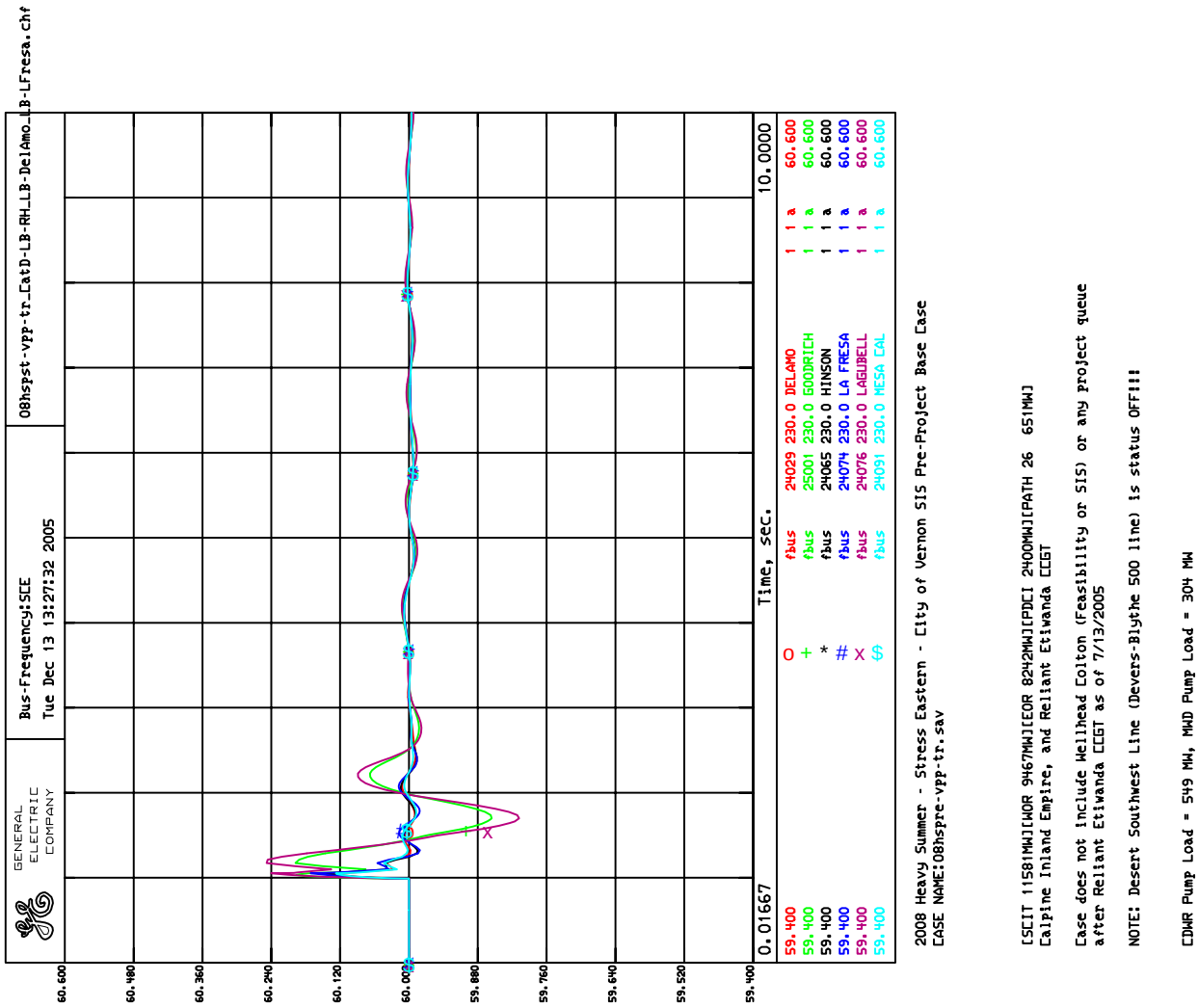
Plot 21 - 3: Pre-fault outage of the Laguna Bell – Rio Hondo 230 kV circuit, then three-phase fault at the VPP 230 kV bus followed by loss of the Laguna Bell – Del Amo 230 kV and the Laguna Bell – La Fresa 230 kV transmission lines.



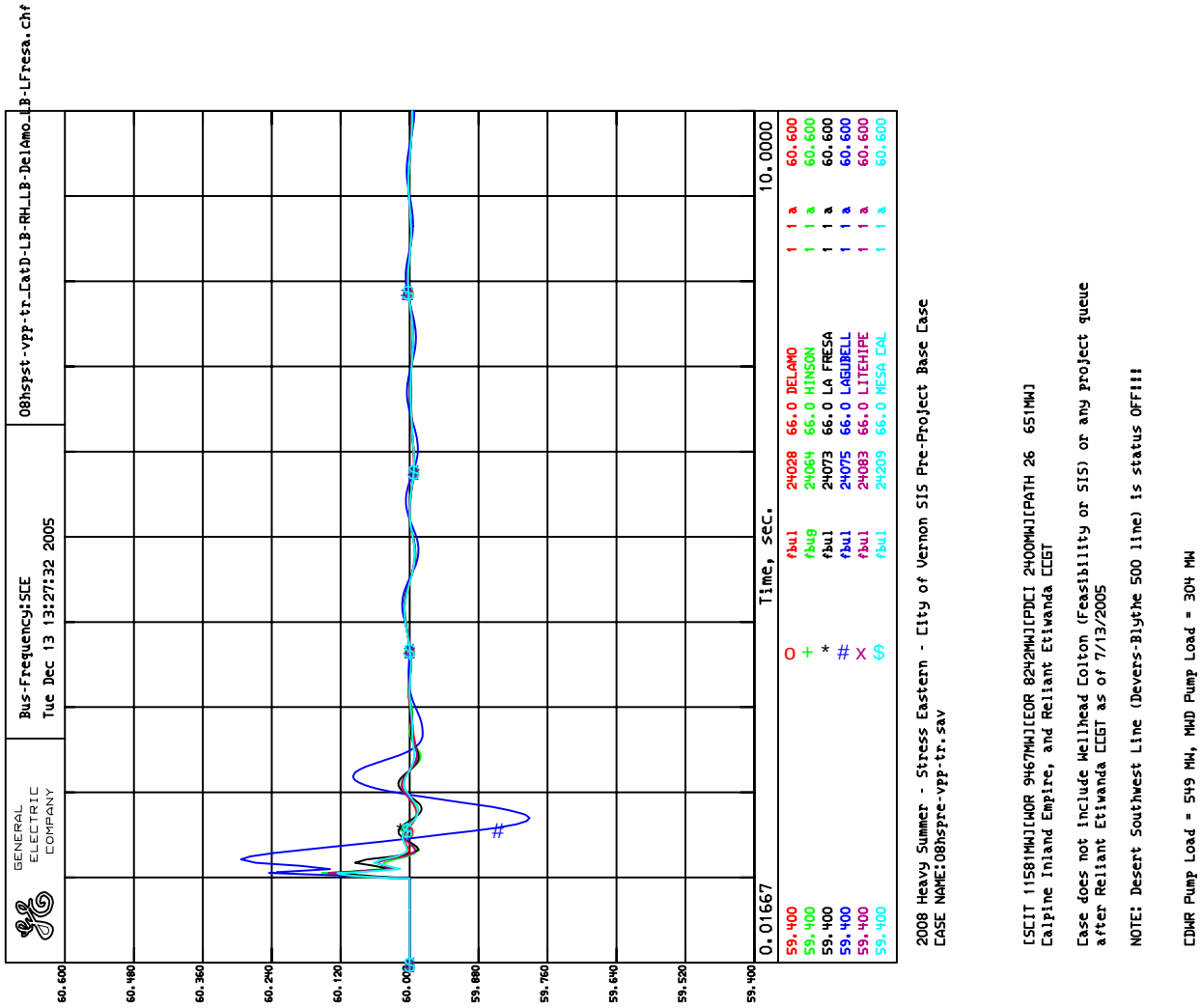
Plot 21 - 4: Pre-fault outage of the Laguna Bell – Rio Hondo 230 kV circuit, then three-phase fault at the VPP 230 kV bus followed by loss of the Laguna Bell – Del Amo 230 kV and the Laguna Bell – La Fresa 230 kV transmission lines.



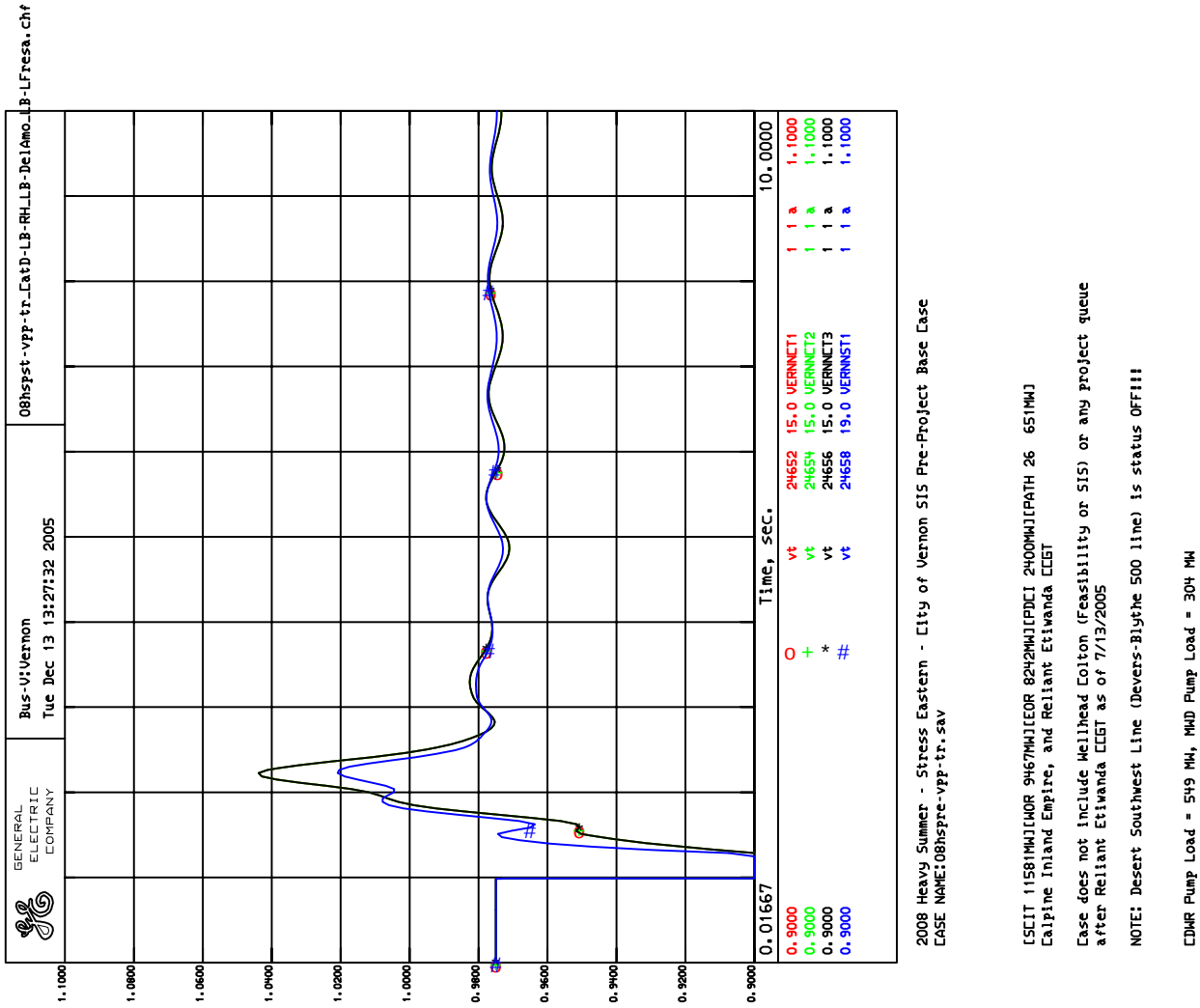
Plot 21 - 5: Pre-fault outage of the Laguna Bell – Rio Hondo 230 kV circuit, then three-phase fault at the VPP 230 kV bus followed by loss of the Laguna Bell – Del Amo 230 kV and the Laguna Bell – La Fresa 230 kV transmission lines.



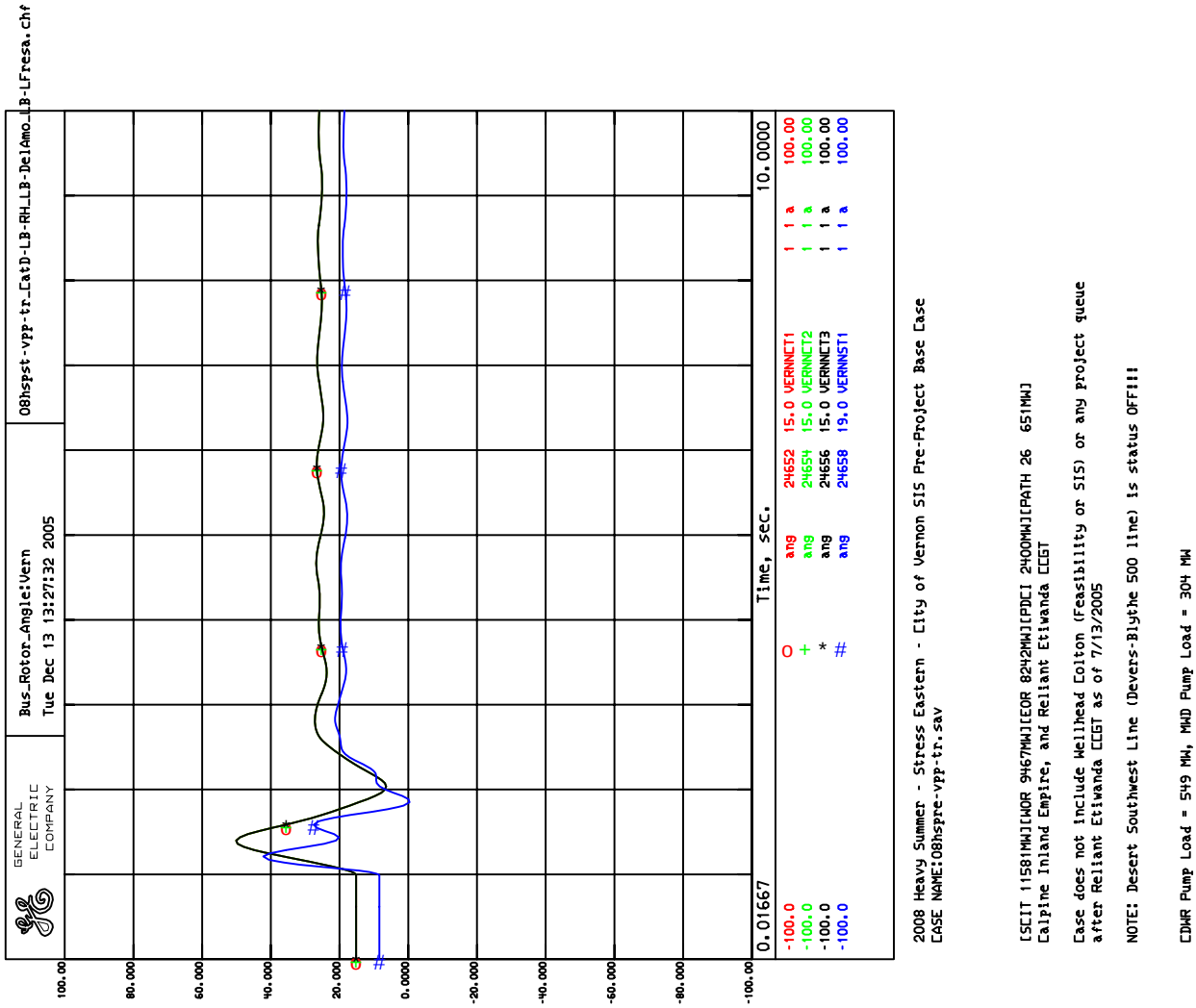
Plot 21 - 6: Pre-fault outage of the Laguna Bell – Rio Hondo 230 kV circuit, then three-phase fault at the VPP 230 kV bus followed by loss of the Laguna Bell – Del Amo 230 kV and the Laguna Bell – La Fresa 230 kV transmission lines.



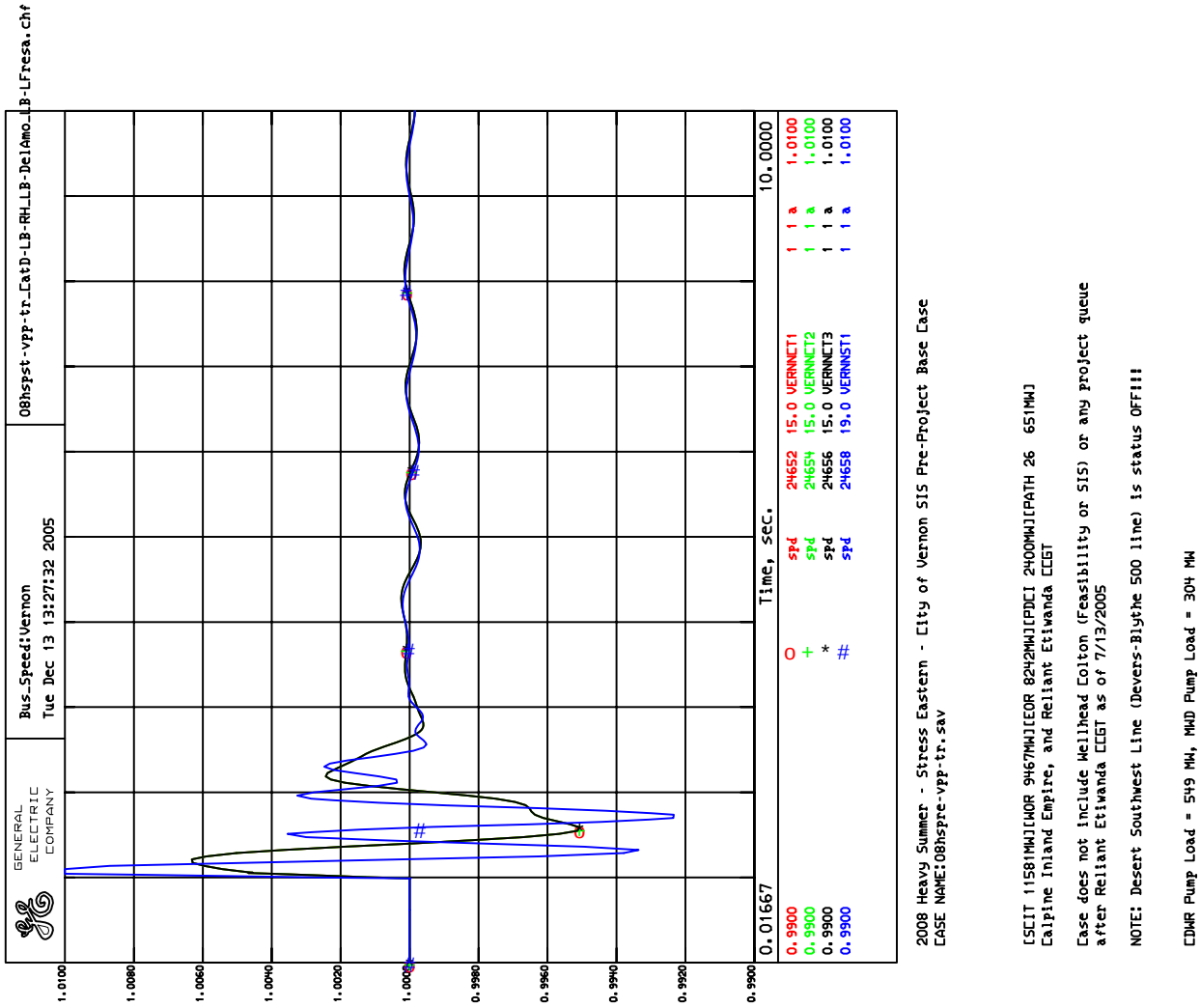
Plot 21 - 7: Pre-fault outage of the Laguna Bell – Rio Hondo 230 kV circuit, then three-phase fault at the VPP 230 kV bus followed by loss of the Laguna Bell – Del Amo 230 kV and the Laguna Bell – La Fresa 230 kV transmission lines.



Plot 21 - 8: Pre-fault outage of the Laguna Bell – Rio Hondo 230 kV circuit, then three-phase fault at the VPP 230 kV bus followed by loss of the Laguna Bell – Del Amo 230 kV and the Laguna Bell – La Fresa 230 kV transmission lines.



Plot 21 - 9: Pre-fault outage of the Laguna Bell – Rio Hondo 230 kV circuit, then three-phase fault at the VPP 230 kV bus followed by loss of the Laguna Bell – Del Amo 230 kV and the Laguna Bell – La Fresa 230 kV transmission lines.



Appendix E

Transient Stability Modeling

```
# General transient stability models used for the Vernon Power Plant SIS study.
#
#MACHINES
gentpf   24658 "VERNNST1"  19.00 "1 " : #9 mva=405.0000  4.1000 0.0450 0.7200 0.0600 2.2070 0.0000 1.9000 1.8500 0.3020 0.3680 0.2230 0.2320 0.2350 0.1850 0.5310 0.0027 0.0000 0.0000 1.0000
gentpf   24652 "VERNNCT1"  15.00 "1 " : #9 mva=220.0000  2.0290 0.0430 1.0030 0.0810 5.6900 0.0000 2.4800 2.3900 0.2400 0.4500 0.1900 0.1900 0.1500 0.1000 0.2820 0.0010 0.0000 0.0000 1.0000
gentpf   24654 "VERNNCT2"  15.00 "1 " : #9 mva=220.0000  2.0290 0.0430 1.0030 0.0810 5.6900 0.0000 2.4800 2.3900 0.2400 0.4500 0.1900 0.1900 0.1500 0.1000 0.2820 0.0010 0.0000 0.0000 1.0000
gentpf   24656 "VERNNCT3"  15.00 "1 " : #9 mva=220.0000  2.0290 0.0430 1.0030 0.0810 5.6900 0.0000 2.4800 2.3900 0.2400 0.4500 0.1900 0.1900 0.1500 0.1000 0.2820 0.0010 0.0000 0.0000 1.0000
#
#EXCITERS
exst1    24658 "VERNNST1"  19.00 "1 " : #9 0.020000 0.300000 -0.300000   5.0000  50.0000   200.00 0.020000   5.2200  -4.6000 0.0 0.0 1.000000 1.000000 1.000000   5.2200  -4.6000 0.0  99.0000 0.0
exst1    24652 "VERNNCT1"  15.00 "1 " : #9 0.0 0.170000 -0.170000 1.000000   8.0000   250.00 0.020000   5.6100  -5.0490 0.111000 0.0 1.000000 0.0 0.0  99.0000 -99.0000 0.0  99.0000 0.0
exst1    24654 "VERNNCT2"  15.00 "1 " : #9 0.0 0.170000 -0.170000 1.000000   8.0000   250.00 0.020000   5.6100  -5.0490 0.111000 0.0 1.000000 0.0 0.0  99.0000 -99.0000 0.0  99.0000 0.0
exst1    24656 "VERNNCT3"  15.00 "1 " : #9 0.0 0.170000 -0.170000 1.000000   8.0000   250.00 0.020000   5.6100  -5.0490 0.111000 0.0 1.000000 0.0 0.0  99.0000 -99.0000 0.0  99.0000 0.0
#
#GOVERNORS
ieeeg1   24658 "VERNNST1"  19.00 "1 " : #9 mwcap=364.5000  20.0000 0.0 0.0 0.100000 1.000000 -1.000000 1.000000 0.0 0.100000 1.000000 0.0  10.0000 0.0 0.210000   5.0000 0.0 0.280000 1.000000 0.0
0.510000 0.0 0.0 0.0 0.0 0.0 0.400000 0.750000 0.500000 0.910000 0.600000 0.980000 1.000000 1.000000   2.0000 1.000000
ggov1    24652 "VERNNCT1"  15.00 "1 " : #9 mwcap=198.0000   0.050000  1.000000 1.000000 0.050000 -0.050000  10.0000   2.0000 0.0 1.000000 1.000000 0.15 0.500000   1.5000 0.180000  0.5000   0.0000
0.0 0.0   3.0000 1.000000 0.200000 1.000000 0.0 1.000000 -1.000000 0.01    0.0  .01000  10.0000 1.000000 0.0
ggov1    24654 "VERNNCT2"  15.00 "1 " : #9 mwcap=198.0000   0.050000  1.000000 1.000000 0.050000 -0.050000  10.0000   2.0000 0.0 1.000000 1.000000 0.15 0.500000   1.5000 0.180000  0.5000   0.0000
0.0 0.0   3.0000 1.000000 0.200000 1.000000 0.0 1.000000 -1.000000 0.01    0.0  .01000  10.0000 1.000000 0.0
ggov1    24656 "VERNNCT3"  15.00 "1 " : #9 mwcap=198.0000   0.050000  1.000000 1.000000 0.050000 -0.050000  10.0000   2.0000 0.0 1.000000 1.000000 0.15 0.500000   1.5000 0.180000  0.5000   0.0000
0.0 0.0   3.0000 1.000000 0.200000 1.000000 0.0 1.000000 -1.000000 0.01    0.0  .01000  10.0000 1.000000 0.0
#
#POWER SYSTEM STABILIZERS
ieeest   24658 "VERNNST1"  19.00 "1 " : #9 1.000000 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.300000 0.030000 0.300000 0.030000   3.0000   3.0000   2.0000 0.050000 -0.050000 99.0 -99.0 0.0
pss2a    24652 "VERNNCT1"  15.00 "1 " : #9 3.0000 0.0   3.0000 0.0 0.200000 0.0 0.200000 0.0 0.020000   2.0000  0.0 0.0 0.0 0.0 0.427000 1.000000 1.000000  -2.0000 0.279600 0.042700  0.280700   1.1577
0.100000 -0.100000 0.0 0.0 0.0
pss2a    24654 "VERNNCT2"  15.00 "1 " : #9 3.0000 0.0   3.0000 0.0 0.200000 0.0 0.200000 0.0 0.020000   2.0000  0.0 0.0 0.0 0.0 0.427000 1.000000 1.000000  -2.0000 0.279600 0.042700  0.280700   1.1577
0.100000 -0.100000 0.0 0.0 0.0
pss2a    24656 "VERNNCT3"  15.00 "1 " : #9 3.0000 0.0   3.0000 0.0 0.200000 0.0 0.200000 0.0 0.020000   2.0000  0.0 0.0 0.0 0.0 0.427000 1.000000 1.000000  -2.0000 0.279600 0.042700  0.280700   1.1577
0.100000 -0.100000 0.0 0.0 0.0
```

Following are all Models from the GE PSLF Program.

Model Name: gentpf

Description Generator represented by uniform inductance ratios rotor modeling to match WSCC type F model; shaft speed effects are neglected

Prerequisites: Generator present in load flow working case

Inputs: Network boundary variables, Field Voltage, Turbine Power

Invocation: `gentpf [<n>] {<name> <kv>} <id> :`

Parameters:

EPCL Variable	*Default Data*	*Description*
Tpdo	7.0	D-axis transient rotor time constant
Tppdo	0.035	D-axis sub-transient rotor time constant
Tpqo	0.75	Q-axis transient rotor time constant
Tppqo	0.035	Q-axis sub-transient rotor time constant
H	3.0	Inertia constant, sec
D	0.0	Damping factor, pu
Ld	2.1	D-axis synchronous reactance
Lq	2.04	Q-axis synchronous reactance
Lpd	0.21	D-axis transient reactance
Lpq	0.4	Q-axis transient reactance
Lppd	0.18	D-axis transient reactance
Lppq	0.18	Q-axis sub-transient reactance
Ll	0.12	Stator leakage reactance, pu
S1	0.05	Saturation factor at 1 pu flux
S12	0.4	Saturation factor at 1.2 pu flux
Ra	0.0	Stator resistance, pu
Rcomp	0.0	Compounding resistance for voltage control, pu
Xcomp	0.0	Compounding reactance for voltage control, pu
accel	0.5	Acceleration factor for network boundary iter.

Notes:

a) To represent a solid rotor machine:
- All rotor time constants must be non-zero
- **Lpd, Lppd, Lpq, Lppq, Ll** must be non-zero
- (**Ra** +j **Lppd**) overwrites the generator subtransient R, X from the load flow

b) To represent a salient pole machine with a single amortisseur circuit on each axis (keeping compatibility with the WSCC program's method of handling such machines)
- Set **Tpdo, Tppdo** and **Tppqo** to non-zero values
- Set **Tpqo** to zero
- Set **Lpq** = **Lq**
- Set **Lppq** to the q-axis subtransient reactance
- (**Ra** +j **Lppd**) overwrites the generator subtransient R, X from the load flow

c) To represent a salient pole machine without amortisseur circuits (keeping compatibility with the WSCC program's method of handling of such machines)
- Set **Tpdo** to a non-zero value
- Set **Tppdo** = **Tpqo** = **Tppqo** = 0
- Set **Lpd** to the transient reactance
- Set **Lppd** = **Lpd** and **Lpq** = **Lppq** = **Lq**
- (**Ra** +j **Lpd**) overwrites the generator subtransient R, X from the load flow

d) All reactances entered in the parameter list must be unsaturated values. Saturated reactances are calculated internally.

e) It is not necessary for **Lppq** to be equal to **Lppd**.

f) **D** has the dimensions p.u. ΔP/ p.u. Δspeed.

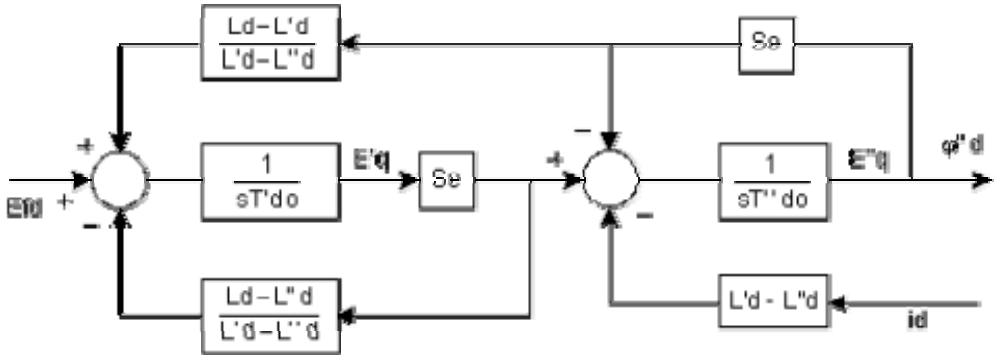
g) **S1** and **S12** are defined in Figure 3.11.2, and must be non- zero.

h) The acceleration factor, **accel**, must be less than unity and should normally be in the range 0.3 to 0.5.

i) If **accel** is absent from the data record read by RDYD, it is set to 0.4. If **Rcomp** and **Xcomp** are also absent, they are set to zero. If **Ra** is also absent, it is set to the resistance part of the machine subtransient impedance from the load flow generator data table.

Output Channels:

Record Level	*Name*	*Description*
1	ang	Rotor angle, degrees
1	vt	Terminal voltage, p.u.
2	efd	Field voltage, p.u.
3	it	Terminal current, p.u.
4	pg	Electrical power, MW
5	spd	Shaft speed, p.u.
6	qg	Reactive power, MVAR



$$Se = 1. + f_{sat}(\varphi_{ag})$$

Q – Axis similar except:

$$Se = 1. + \frac{Lq}{Ld}(\varphi_{ag})$$

Model Name: exst1

Description IEEE type ST1 excitation system

Prerequisites: Generator model ahead of this model in dynamic models table

Inputs: Compounded generator terminal voltage, generator field current, generator speed

Invocation:

```
exst1 [<n>] {<name> <kv>} <id> :
```

Parameters:

EPCL Variable	*Default Data*	*Description*
Tr	0.0	Filter time constant, sec.
Vimax	0.1	Maximum error, p.u.
Vimin	-.1	Minimum error, p.u.
Tc	1.0	Lead time constant, sec.
Tb	10.0	Lag time constant, sec.
Ka	200.0	Gain, p.u.
Ta	.02	Time constant, sec.
Vrmax	5.0	Maximum controller output, p.u.
Vrmin	-5.0	Minimum controller output, p.u.
Kc	.05	Excitation system regulation factor, p.u.
Kf	0.0	Rate feedback gain
Tf	1.0	Rate feedback time constant, sec.
Tc1	1.0	Lead time constant, sec.
Tb1	1.0	Lag time constant, sec.
Vamax	5.0	Maximum control element output, p.u.
Vamin	-5.0	Minimum control element output, p.u
Xe	.04	Excitation transformer effective reactance, p.u.
Ilr	2.8	Maximum field current, p.u.
Klr	5.0	Gain on field current limit

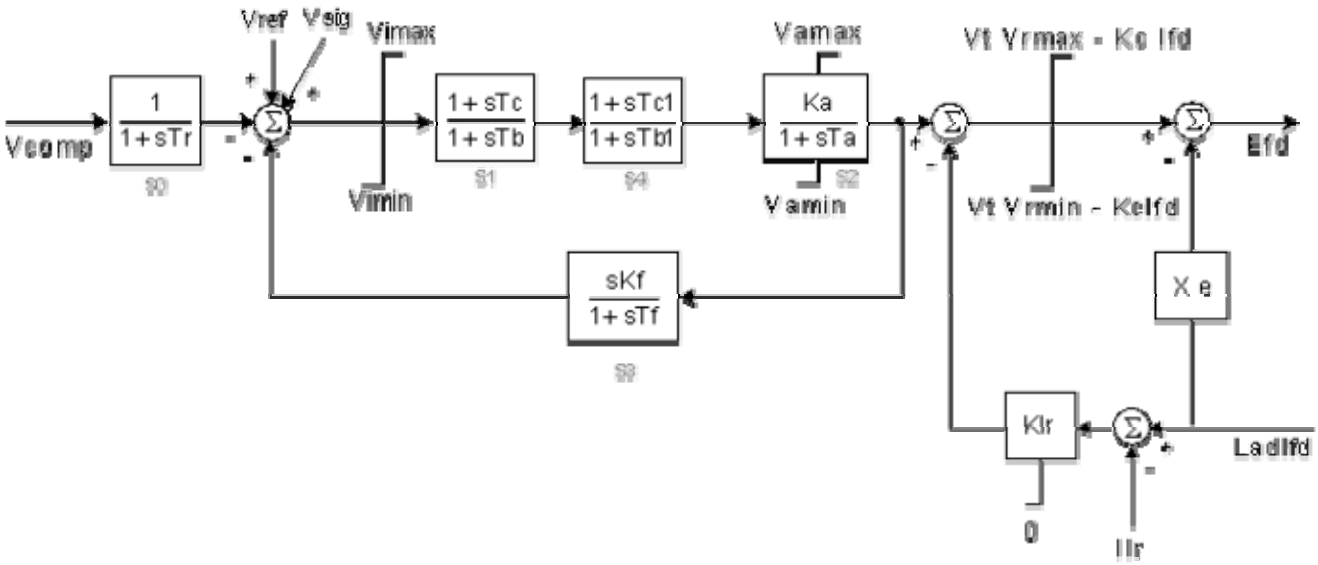
Notes:

a) This model can be used to represent a controlled-rectifier excitation system whose a.c. power source is a simple power transformer fed from the generator terminals. The voltage regulation of the excitation transformer and rectifier are approximated by the parameter Kc.

Output Channels:

Record Level	*Name*	*Description*
1	ifd	Generator field current, p.u.

Block Diagram:



Model Name: ieeeg1

Description IEEE steam turbine/governor model (with deadband and nonlinear valve gain added)

Prerequisites: One or two generator models ahead of this model in the dynamic models table

Inputs: Shaft speed

Invocation:

```
ieeeg1 [<nh>] {<nameh> <kvh>} <idh> [<nl>]
{<namel> <kvl>} <idl> : [mwcap=<value>]
```

Parameters:

EPCL Variable	*Default Data*	*Description*
K	25.0	Governor gain (reciprocal of droop), p.u.
T1	0.0	Governor lag time constant, sec.
T2	0.0	Governor lead time constant, sec.
T3	0.1	Valve positioner time constant, sec.
Uo	1.0	Maximum valve opening velocity, p.u./sec.
Uc	-10.0	Maximum valve closing velocity, p.u./sec (< 0.)
Pmax	1.0	Maximum valve opening, p.u. of mwcap.
Pmin	0.0	Minimum valve opening, p.u. of mwcap
T4	0.0	Inlet piping/steam bowl time constant, sec.
K1	0.0	Fraction of hp shaft power after first boiler pass
K2	0.0	Fraction of lp shaft power after first boiler pass
T5	0.0	Time constant of second boiler pass, sec
K3	0.0	Fraction of hp shaft power after second boiler pass
K4	0.0	Fraction of lp shaft power after second boiler pass
T6	0.0	Time constant of third boiler pass, sec.
K5	0.0	Fraction of hp shaft power after third boiler pass
K6	0.0	Fraction of lp shaft power after third boiler pass
T7	0.0	Time constant of fourth boiler pass, sec
K7	0.0	Fraction of hp shaft power after fourth boiler pass
K8	0.0	Fraction of lp shaft power after fourth boiler pass
db1	0.0	Intentional deadband width, Hz.
eps	0.0	Intentional db hysteresis, Hz.
db2	0.0	Unintentional deadband, MW
GV1	0.0	Nonlinear gain point 1, p.u. gv
Pgv1	0.0	Nonlinear gain point 1, p.u. power
GV2	0.0	Nonlinear gain point 2, p.u. gv
Pgv2	0.0	Nonlinear gain point 2, p.u. power
GV3	0.0	Nonlinear gain point 3, p.u. gv

Pgv3	0.0	Nonlinear gain point 3, p.u. power
GV4	0.0	Nonlinear gain point 4, p.u. gv
Pgv4	0.0	Nonlinear gain point 4, p.u. power
GV5	0.0	Nonlinear gain point 5, p.u. gv
Pgv5	0.0	Nonlinear gain point 5, p.u. power
GV6	0.0	Nonlinear gain point 6, p.u. gv
Pgv6	0.0	Nonlinear gain point 6, p.u. power

Notes:

a) Per unit parameters are on base of total turbine MW capability. If no value is entered for "mwcap", the generator MVA base is used. (If there are two generators, the sum of the MVA bases is used.)

b) T3 must be greater than zero. All other time constants may be zero.

c) <nh> <nameh> <kvh> <idh> identify the first of two generators controlled by this governor. These must identify a generator that is in the working case.

<nl> <namel> <kvl> <idl> identify the second of two generators controlled by this governor. These may be omitted if only one generator is controlled.

d) The two generators identified by the invocation of this model are normally the high and low pressure machines, respectively, of a cross compound steam turbine set, or the gas and steam turbine machines of a combined cycle plant. The second machine may be absent and, in this case, the model can be used to approximate the behavior of a wide range of types of single shaft turbine.

e) The gains K1-K8 and time constants T5-T7 describe the division of power output among turbine stages and the transfer of energy in the boiler or combustion prime mover.

f)) Each generator must be represented in the load flow by data stated on its own MVA base. The values of K1, K3, K5, K7 must be specified to describe the proportionate development of power on the first turbine shaft. K2, K4, K6, K8 must describe the second turbine shaft. Normally

K1 + K3 + K5 + K7 = 1.0
K2 + K4 + K6 + K8 = 1.0

The division of power between the two shafts is in proportion to the values of MBASE of the two generators. The initial condition load flow should, therefore, have the two generators loaded to the same fraction of the MVA base.

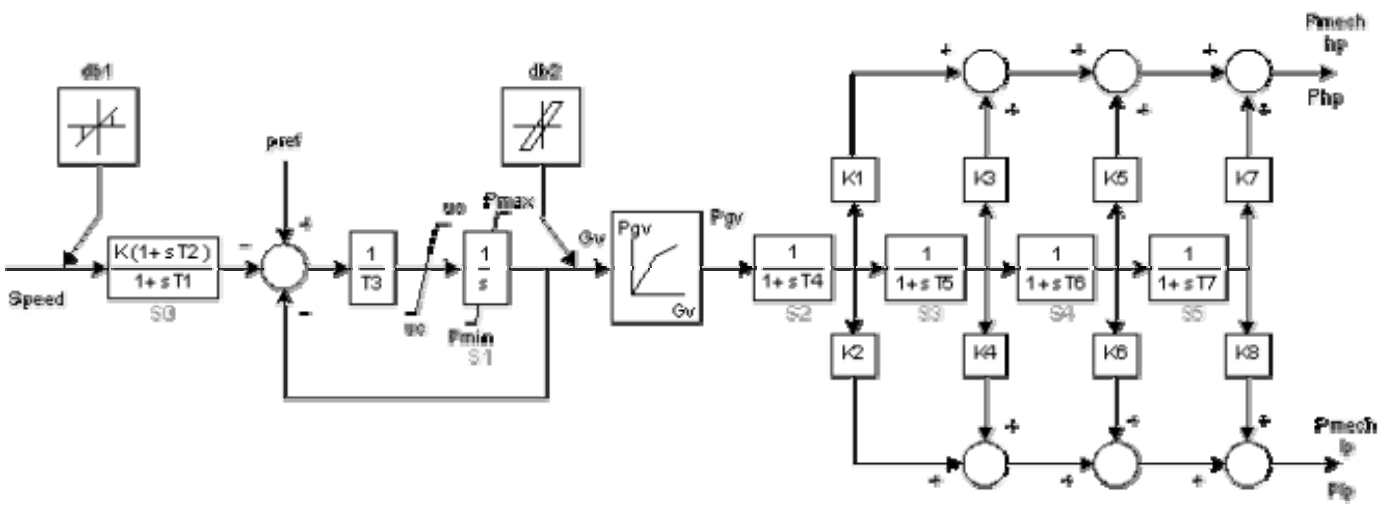
g) The deadbands are implemented as described in section 3.10.2.

h) The nonlinear gain between gate position and power may be input with up to 6 points. The (0.,0.) and (1.,1.) points are assumed and need not be input. The output is not allowed to go beyond 0. and 1. However, if Pmax > 1., the input and output are scaled by Pmax.

If GV1 is input as a negative number, the default full-arc steam valve curve (see section 3.10.2) will be used. If input is omitted or if all zero values are input, a straight line is used.

Output Channels:

Record Level	*Name*	*Description*
1	ph	High pressure turbine shaft power, MW.
1	pl	Low pressure turbine shaft power, MW



Model Name: ieeeg1

Description IEEE steam turbine/governor model (with deadband and nonlinear valve gain added)

Prerequisites: One or two generator models ahead of this model in the dynamic models table

Inputs: Shaft speed

Invocation:

```
ieeeg1 [<nh>] {<nameh> <kvh>} <idh> [<nl>]
{<namel> <kvl>} <idl> : [mwcap=<value>]
```

Parameters:

EPCL Variable	*Default Data*	*Description*
K	25.0	Governor gain (reciprocal of droop), p.u.
T1	0.0	Governor lag time constant, sec.
T2	0.0	Governor lead time constant, sec.
T3	0.1	Valve positioner time constant, sec.
Uo	1.0	Maximum valve opening velocity, p.u./sec.
Uc	-10.0	Maximum valve closing velocity, p.u./sec (< 0.)
Pmax	1.0	Maximum valve opening, p.u. of mwcap.
Pmin	0.0	Minimum valve opening, p.u. of mwcap
T4	0.0	Inlet piping/steam bowl time constant, sec.
K1	0.0	Fraction of hp shaft power after first boiler pass
K2	0.0	Fraction of lp shaft power after first boiler pass
T5	0.0	Time constant of second boiler pass, sec
K3	0.0	Fraction of hp shaft power after second boiler pass
K4	0.0	Fraction of lp shaft power after second boiler pass
T6	0.0	Time constant of third boiler pass, sec.
K5	0.0	Fraction of hp shaft power after third boiler pass
K6	0.0	Fraction of lp shaft power after third boiler pass
T7	0.0	Time constant of fourth boiler pass, sec
K7	0.0	Fraction of hp shaft power after fourth boiler pass
K8	0.0	Fraction of lp shaft power after fourth boiler pass
db1	0.0	Intentional deadband width, Hz.
eps	0.0	Intentional db hysteresis, Hz.
db2	0.0	Unintentional deadband, MW
GV1	0.0	Nonlinear gain point 1, p.u. gv
Pgv1	0.0	Nonlinear gain point 1, p.u. power
GV2	0.0	Nonlinear gain point 2, p.u. gv
Pgv2	0.0	Nonlinear gain point 2, p.u. power
GV3	0.0	Nonlinear gain point 3, p.u. gv

Pgv3	0.0	Nonlinear gain point 3, p.u. power
GV4	0.0	Nonlinear gain point 4, p.u. gv
Pgv4	0.0	Nonlinear gain point 4, p.u. power
GV5	0.0	Nonlinear gain point 5, p.u. gv
Pgv5	0.0	Nonlinear gain point 5, p.u. power
GV6	0.0	Nonlinear gain point 6, p.u. gv
Pgv6	0.0	Nonlinear gain point 6, p.u. power

Notes:

a) Per unit parameters are on base of total turbine MW capability. If no value is entered for "mwcap", the generator MVA base is used. (If there are two generators, the sum of the MVA bases is used.)

b) T3 must be greater than zero. All other time constants may be zero.

c) <nh> <nameh> <kvh> <idh> identify the first of two generators controlled by this governor. These must identify a generator that is in the working case.

<nl> <namel> <kvl> <idl> identify the second of two generators controlled by this governor. These may be omitted if only one generator is controlled.

d) The two generators identified by the invocation of this model are normally the high and low pressure machines, respectively, of a cross compound steam turbine set, or the gas and steam turbine machines of a combined cycle plant. The second machine may be absent and, in this case, the model can be used to approximate the behavior of a wide range of types of single shaft turbine.

e) The gains K1-K8 and time constants T5-T7 describe the division of power output among turbine stages and the transfer of energy in the boiler or combustion prime mover.

f)) Each generator must be represented in the load flow by data stated on its own MVA base. The values of K1, K3, K5, K7 must be specified to describe the proportionate development of power on the first turbine shaft. K2, K4, K6, K8 must describe the second turbine shaft. Normally

K1 + K3 + K5 + K7 = 1.0
K2 + K4 + K6 + K8 = 1.0

The division of power between the two shafts is in proportion to the values of MBASE of the two generators. The initial condition load flow should, therefore, have the two generators loaded to the same fraction of the MVA base.

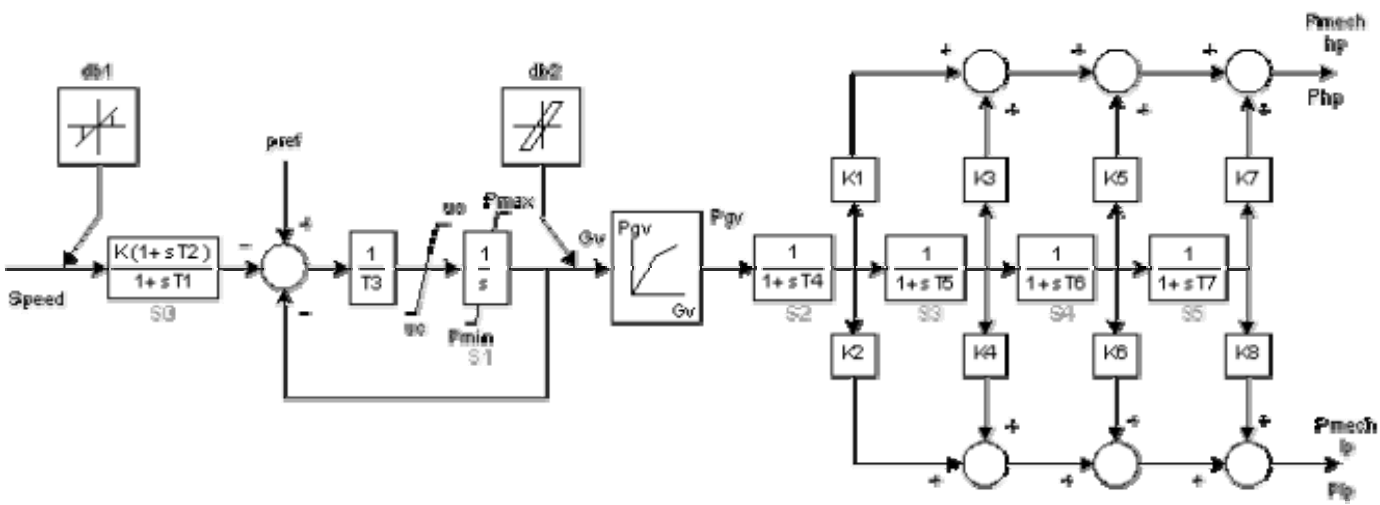
g) The deadbands are implemented as described in section 3.10.2.

h) The nonlinear gain between gate position and power may be input with up to 6 points. The (0.,0.) and (1.,1.) points are assumed and need not be input. The output is not allowed to go beyond 0. and 1. However, if Pmax > 1., the input and output are scaled by Pmax.

If GV1 is input as a negative number, the default full-arc steam valve curve (see section 3.10.2) will be used. If input is omitted or if all zero values are input, a straight line is used.

Output Channels:

Record Level	*Name*	*Description*
1	ph	High pressure turbine shaft power, MW.
1	pl	Low pressure turbine shaft power, MW



Model Name: ieeest

Description Power system stabilizer

Prerequisites: Generator model ahead of this model in dynamic models table

Inputs:

Generator shaft speed

Frequency of generator terminal or system bus voltage

Generator electric power or accelerating power

Voltage amplitude of generator terminal bus or system bus

Current amplitude in generator step-up transformer branch

Invocation:

```
ieeest [<n>] {<name> <kv>} <id> :
```

Parameters:

EPCL Variable	*Default Data*	*Description*
j	0.0	Input signal code
k	0.0	Remote signal bus number
A1	0.0	Notch filter parameters
A2	0.0	Notch filter parameters
A3	0.0	Notch filter parameters
A4	0.0	Notch filter parameters
A5	0.0	Notch filter parameters
A6	0.0	Notch filter parameters
T1	0.0	Lead/lag time constant, sec.
T2	0.0	Lead/lag time constant, sec.
T3	0.0	Lead/lag time constant, sec.
T4	0.0	Lead/lag time constant, sec.
T5	0.0	Washout numerator time constant, sec.
T6	0.0	Washout denominator time constant, sec.
Ks	0.0	Stabilizer gain
Lsmax	0.0	Maximum stabilizer output, p.u.
Lsmin	0.0	Minimum stabilizer output, p.u.
Vcu	0.0	Stabilizer input cutoff threshold, p.u.
Vcl	0.0	Stabilizer input cutoff threshold, p.u.
Tdelay	0.0	Time delay, sec.

Notes:

a) T2, T4, T5, T6 must be greater than zero.

b) T1, T3 and Tdelay may be zero.

c) Set T1 = T2 and/or T3 = T4 to obtain null effect from a lead/lag block.

d) Ks may be positive or negative depending on the input signal that is active. Ks should normally be:

positive	for shaft speed or frequency input
negative	for electrical power input

e) The input signal code, j, and the remote bus number, k, specify the input signal used by the stabilizer. If k is zero the signal is taken from the shaft or terminals of the generator on which the stabilizer is located. If k is non-zero the signal is taken from bus number k (for j = 1, 2, 3, 4, or 5). The input signal code, j, is:

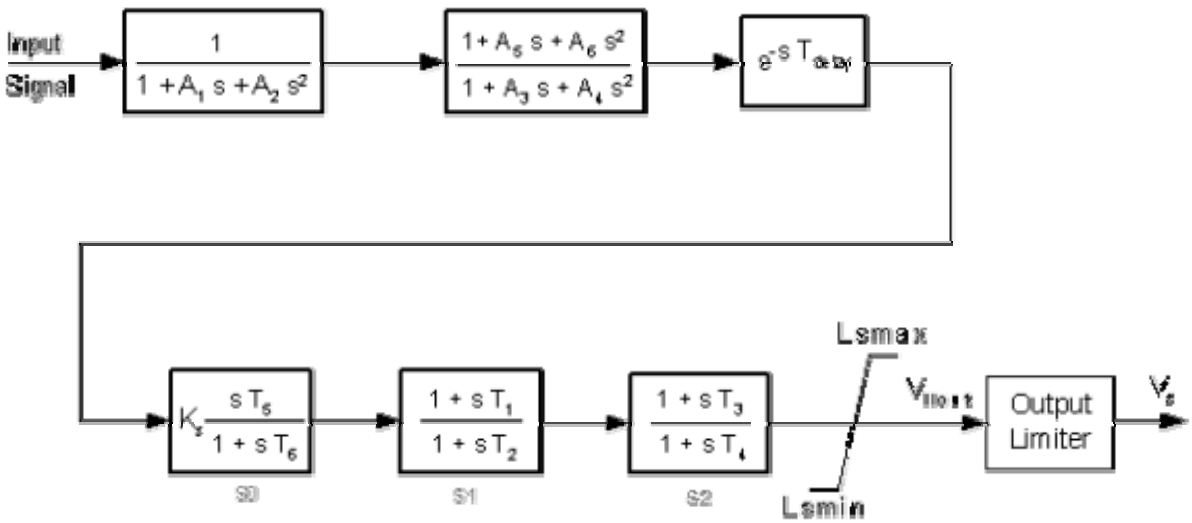
1	for shaft speed deviation
2	for frequency deviation of bus voltage
3	for generator electrical power
4	for generator accelerating power
5	for amplitude of bus voltage
6	not used
7	for amplitude of branch current

f) A1 through A6 may be zero. Set all A values to zero to ignore filter.

g) Tdelay should not exceed ten time steps.

Output Channels:

Record Level	*Name*	*Description*
1	vs	Stabilizer output signal, p.u.



Output Limiter

```
if ( Vcu && ( Vct > Vcu ) )
        Vs = 0.0
if ( Vcl && ( Vct < Vcl ) )
        Vs = 0.0
else
        Vs = Vllout


Vct = Compensating
        voltage
        ( genbc[k].vcomp )
```

Model Name: pss2a

Description Dual input Power system stabilizer (IEEE type PSS2A)

Prerequisites: Generator model ahead of this model in dynamic models table

Inputs: Generator shaft speed Frequency of generator terminal or system bus voltage
Generator electric power or accelerating power

Voltage amplitude of generator terminal bus or system bus
Current amplitude specified branch

Invocation:

```
psssa [<n>] {<name> <kv>} <id> :
```

Parameters:

EPCL Variable	*Default Data*	*Description*
J1	1.0	Input signal #1 code
K1	0.0	Input signal #1 remote bus number
J2	3.0	Input signal #2 code
K2	0.0	Input signal #2 remote bus number
Tw1	2.0	First washout on signal #1, sec.
Tw2	2.0	Second washout on signal #1, sec.
Tw3	2.0	First washout on signal #2, sec.
Tw4	0.0	Second washout on signal #2, sec.
T6	0.0	Time constant on signal #1, sec.
T7	2.0	Time constant on signal #2, sec.
Ks2	0.2	Gain on signal #2
Ks3	1.0	Gain on signal #2
Ks4	1.0	Gain on signal #2
T8	0.5	Lead of ramp tracking filter
T9	0.1	Lag of ramp tracking filter
n	1.0	Order of ramp tracking filter
m	5.0	Order of ramp tracking filter
Ks1	10.0	Stabilizer gain
T1	0.25	Lead/lag time constant, sec.
T2	0.04	Lead/lag time constant, sec.
T3	0.2	Lead/lag time constant, sec.
T4	0.03	Lead/lag time constant, sec.
Vstmax	0.1	Stabilizer output max limit, p.u.

Vstmin	-0.1	Stabilizer output min limit, p.u.
a	1.	Lead/lag num. Gain. (not in IEEE model)
Ta	0.	Lead/lag time constant, sec. (not in IEEE model)
Tb	0.	Lead/lag time constant, sec. (not in IEEE model)

Notes:

a) TW1 and TW3 must be greater than zero.

b) Setting TW2 or TW4 to zero will bypass the washout function.

c) Ta, Tb, a, T1, T2, T3, T4, T6, T7, T8, and T9 may be zero.

d) Set T9 = 0 or n = 0 to get a null effect from the ramp tracking filter.

e) The product of n*m cannot be greater than 10.

f) The input signal code, j, and the remote bus number, k, specify the input signal used by the stabilizer. If k is zero the signal is taken from the shaft or terminals of the generator on which the stabilizer is located. If k is non-zero the signal is taken from bus number k (for j = 1, 2, 3, 4, or 5).

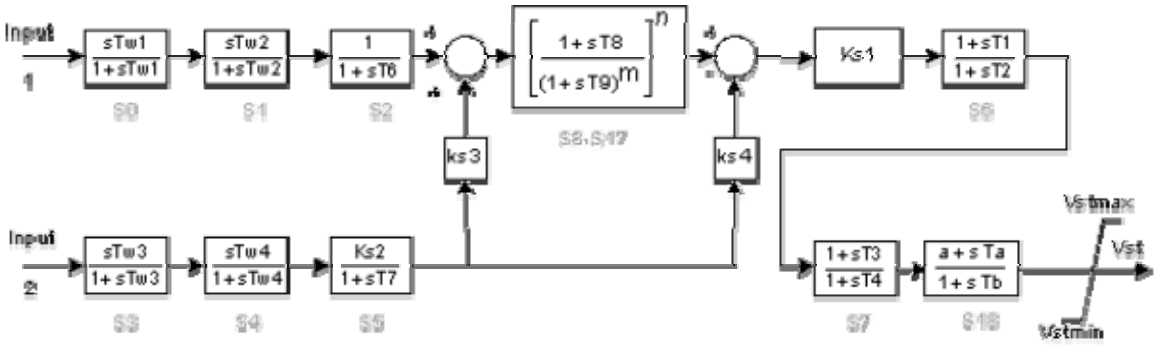
g) To use branch current as an input, the branch is specified using the ([<mon_i>] {<name> <kv>} [<mon_j>] {<name> <kv>} <ck> <sec>) data in the DYD file or in the "edds" table. Note that only one branch current may be used as input to this model.

The input signal code, j, is

1	for shaft speed
2	for frequency of bus voltage
3	for generator electrical power
4	for generator accelerating power
5	for amplitude of bus voltage
6	or amplitude of branch current

Output Channels:

Record Level	***Name***	***Description***
1	vs	Stabilizer output signal, p.u.


Input
1
sTw1
1+sTw1
S0
sTw2
1+sTw2
S1
1
1+sT6
S2
1+sT8
(1+sT9)m
n
S8,S17
ks3
ks4
Ks1
1+sT1
1+sT2
S6
Input
2
sTw3
1+sTw3
S3
sTw4
1+sTw4
S4
Ks2
1+sT7
S5
1+sT3
1+sT4
S7
a+sTa
1+sTb
S18
Vstmax
Vst
Vstmin

Appendix F

Transient Stability Switching Sequences

Full load rejection of the VPP.

```
RUN
*   Vernon Power Plant Full Load Rejection
*
*  CC cards for post-transient only
CC  DRP 908
*
*  Readjust Northwest SVC's
CC  MSV 60.0 "KEEL-SVC" 19.60 "1 "  350. -300.
CC  MSV 60.0 "MV-SVC  " 19.60 "1 "  350. -300.
*  CC  RG  60.0 "DALLES 3"  13.8 "1 "  180. -270.
*
*
*   Trip Vernon Power Plant - Laguna Bell 230kV lines
*
DL   60.0 "LAGUBELL" 230. "VPWRPLNT" 230. "1 "
DL   60.0 "LAGUBELL" 230. "VPWRPLNT" 230. "2 "
*
```

Three-phase fault at the VPP 230 kV bus followed by loss of the VPP STG.

```
RUN
*   Vernon Power Plant, Loss of the VPP STG
*   3 phase 4 cycle fault at VPP 230kV bus
*
*  CC cards for post-transient only
CC  DRP 344
*
*  Readjust Northwest SVC's
CC  MSV 60.0 "KEEL-SVC" 19.60 "1 "  350. -300.
CC  MSV 60.0 "MV-SVC  " 19.60 "1 "  350. -300.
*  CC  RG  60.0 "DALLES 3"  13.8 "1 "  180. -270.
*
*   Fault bus at VPP 230kV bus
*
FB   60.0 "VPWRPLNT" 230.
*
*   Clear fault at VPP 230kV bus
CFB  64.0 "VPWRPLNT" 230.
*
*   Trip Vernon Power Plant STG
*
TG   64.0 "VERNNST1"  19.00 "1 "
*
```

Three-phase fault at the VPP 230 kV bus followed by loss of the VPP – Laguna Bell 230 kV #1 circuit.

```
RUN
*   Vernon Power Plant, Loss of VPP-Laguna Bell 230kV Line
*   3 phase 4 cycle fault at VPP 230kV bus
*
*  CC cards for post-transient only
CC  DRP 0
*
*  Readjust Northwest SVC's
CC  MSV 60.0 "KEEL-SVC" 19.60 "1 "  350. -300.
CC  MSV 60.0 "MV-SVC  " 19.60 "1 "  350. -300.
*  CC  RG  60.0 "DALLES 3"  13.8 "1 "  180. -270.
*
*   Fault bus at VPP 230kV bus
*
FB   60.0 "VPWRPLNT" 230.
*
*   Clear fault at VPP 230kV bus
CFB  64.0 "VPWRPLNT" 230.
*
*   Trip Vernon Power Plant - Laguna Bell 230kV lines
*
DL   64.0 "LAGUBELL" 230. "VPWRPLNT" 230. "1 "
*
```

Three-phase fault at the Laguna Bell 230 kV bus followed by loss of the Laguna Bell – Rio Hondo 230 kV #1 circuit.

```
RUN
*   Vernon Power Plant, Loss of Laguna Bell - Rio Hondo 230kV Line
*   3 phase 4 cycle fault at Laguna Bell 230kV bus
*
*  CC cards for post-transient only
CC  DRP 0
*
*  Readjust Northwest SVC's
CC  MSV 60.0 "KEEL-SVC" 19.60 "1 "  350. -300.
CC  MSV 60.0 "MV-SVC  " 19.60 "1 "  350. -300.
*  CC  RG  60.0 "DALLES 3"  13.8 "1 "  180. -270.
*
*   Fault bus at Laguna Bell 230kV bus
*
FB   60.0 "LAGUBELL" 230.
*
*   Clear fault at Laguna Bell 230kV bus
CFB  64.0 "LAGUBELL" 230.
*
*   Trip Laguna Bell - Rio Hondo 230kV lines
*
DL   64.0 "LAGUBELL" 230. "RIOHONDO" 230. "1 "
*
```

Three-phase fault at the Laguna Bell 230 kV bus followed by loss of the Laguna Bell – Goodrich 230 kV #1 circuit.

```
RUN
*   Vernon Power Plant, Loss of Laguna Bell - Goodrich 230kV Line
*   3 phase 4 cycle fault at Laguna Bell 230kV bus
*
*  CC cards for post-transient only
CC  DRP 0
*
*  Readjust Northwest SVC's
CC  MSV 60.0 "KEEL-SVC" 19.60 "1 "  350. -300.
CC  MSV 60.0 "MV-SVC  " 19.60 "1 "  350. -300.
*  CC  RG  60.0 "DALLES 3"  13.8 "1 "  180. -270.
*
*   Fault bus at Laguna Bell 230kV bus
*
FB   60.0 "LAGUBELL" 230.
*
*   Clear fault at Laguna Bell 230kV bus
CFB  64.0 "LAGUBELL" 230.
*
*   Trip Laguna Bell - Goodrich 230kV lines
*
DL   64.0 "LAGUBELL" 230. "GOODRICH" 230. "1 "
*
```

Three-phase fault at the Laguna Bell 230 kV bus followed by loss of the Laguna Bell – Del Amo 230 kV #1 circuit.

```
RUN
*   Vernon Power Plant, Loss of Laguna Bell - Del Amo 230kV Line
*   3 phase 4 cycle fault at Laguna Bell 230kV bus
*
*  CC cards for post-transient only
CC  DRP 0
*
*  Readjust Northwest SVC's
CC  MSV 60.0 "KEEL-SVC" 19.60 "1 "  350. -300.
CC  MSV 60.0 "MV-SVC  " 19.60 "1 "  350. -300.
*  CC  RG  60.0 "DALLES 3"  13.8 "1 "  180. -270.
*
*   Fault bus at Laguna Bell 230kV bus
*
FB   60.0 "LAGUBELL" 230.
*
*   Clear fault at Laguna Bell 230kV bus
CFB  64.0 "LAGUBELL" 230.
*
*   Trip Laguna Bell - Del Amo 230kV lines
*
DL   64.0 "LAGUBELL" 230. "DELAMO  " 230. "1 "
*
```

Three-phase fault at the Laguna Bell 230 kV bus followed by loss of the Laguna Bell – La Fresa 230 kV circuit.

```
RUN
*   Vernon Power Plant, Loss of Laguna Bell - La Fresa 230kV Line
*   3 phase 4 cycle fault at Laguna Bell 230kV bus
*
*  CC cards for post-transient only
CC  DRP 0
*
*  Readjust Northwest SVC's
CC  MSV 60.0 "KEEL-SVC" 19.60 "1 "  350. -300.
CC  MSV 60.0 "MV-SVC  " 19.60 "1 "  350. -300.
*  CC  RG  60.0 "DALLES 3"  13.8 "1 "  180. -270.
*
*   Fault bus at Laguna Bell 230kV bus
*
FB   60.0 "LAGUBELL" 230.
*
*   Clear fault at Laguna Bell 230kV bus
CFB  64.0 "LAGUBELL" 230.
*
*   Trip Laguna Bell - La Fresa 230kV lines
*
DL   64.0 "LAGUBELL" 230. "LA FRESA" 230. "1 "
*
```

Three-phase fault at the Harbor Gen 230 kV bus followed by loss of the Long Beach – Harbor Gen 230 kV circuit.

```
RUN
*   Loss of Long Beach - Harbor 230 kV Line
*   3 phase 4 cycle fault at Long Beach 230-kV bus
*
*  CC cards for post-transient only
*
DRP 0
*
*  Readjust Northwest SVC's
CC  MSV 60.0 "KEEL-SVC" 19.60 "1 "  350. -300.
CC  MSV 60.0 "MV-SVC  " 19.60 "1 "  350. -300.
*  CC  RG  60.0 "DALLES 3"  13.8 "1 "  180. -270.
*
*   Fault bus at Long Beach 230-kV bus
FB   60.0 "HARBOR  " 230.
*
*   Clear fault at Long Beach 230-kV bus
CFB  64.0 "HARBOR  " 230.
*
*   Trip Long Beach - Harbor 230 kV Line
*
DL   64.0 "HARBOR  " 230. "LBEACH  " 230. "1 "
*
*  Add SVC's at Marketplace and Adelanto
*
CC  MBS  180.0 "ADELSVC " 500. "sv" "A" 0.0 1.320
CC  MBS  180.0 "MKTPSVC " 500. "sv" "A" 0.0 1.320
*
```

Three-phase fault at the Lighthipe 230 kV bus followed by loss of the Long Beach – Lighthipe 230 kV circuit.

```
RUN
*   Loss of Long Beach - Litehipe 230 kV Line
*   3 phase 4 cycle fault at Litehipe 230-kV bus
*
*  CC cards for post-transient only
*
DRP 0
*
*  Readjust Northwest SVC's
CC  MSV 60.0 "KEEL-SVC" 19.60 "1 "  350. -300.
CC  MSV 60.0 "MV-SVC  " 19.60 "1 "  350. -300.
*  CC  RG  60.0 "DALLES 3"  13.8 "1 "  180. -270.
*
*   Fault bus at Litehipe 230-kV bus
FB   60.0 "LITEHIPE" 230.
*
*   Clear fault at Litehipe 230-kV bus
CFB  64.0 "LITEHIPE" 230.
*
*   Trip Long Beach - Litehipe 230 kV Line
*
DL   64.0 "LBEACH  " 230. "LITEHIPE" 230. "1 "
*
*  Add SVC's at Marketplace and Adelanto
*
CC  MBS  180.0 "ADELSVC " 500. "sv" "A" 0.0 1.320
CC  MBS  180.0 "MKTPSVC " 500. "sv" "A" 0.0 1.320
*
```

Three-phase fault at the Rio Hondo 230 kV bus followed by loss of the Vincent – Rio Hondo 230 kV circuit.

```
RUN
*   Loss of Vincent - Rio Hondo 230 kV Line
*   3 phase 4 cycle fault at Rio Hondo 230-kV bus
*
*  CC cards for post-transient only
*
DRP 0
*
*  Readjust Northwest SVC's
CC  MSV 60.0 "KEEL-SVC" 19.60 "1 "  350. -300.
CC  MSV 60.0 "MV-SVC  " 19.60 "1 "  350. -300.
*  CC  RG  60.0 "DALLES 3"  13.8 "1 "  180. -270.
*
*   Fault bus at Rio Hondo 230-kV bus
FB   60.0 "RIOHONDO" 230.
*
*   Clear fault at Rio Hondo 230-kV bus
CFB  64.0 "RIOHONDO" 230.
*
*   Trip Vincent - Rio Hondo 230 kV Line
*
DL   64.0 "VINCENT " 230. "RIOHONDO" 230. "1 "
*
*  Add SVC's at Marketplace and Adelanto
*
CC  MBS  180.0 "ADELSVC " 500. "sv" "A" 0.0 1.320
CC  MBS  180.0 "MKTPSVC " 500. "sv" "A" 0.0 1.320
*
```

Three-phase fault at the Devers 500 kV bus followed by loss of the Midpoint – Devers 500 kV #1 circuit.

```
RUN
*   Loss of Devers - Midpoint #1 500-kV Line
*
*  CC cards for post-transient only
*
*   Readjust Northwest SVC's
*
CC  MSV 60.0 "KEEL-SVC" 19.60 "1 "  350. -300.
CC  MSV 60.0 "MV-SVC  " 19.60 "1 "  350. -300.
*  CC  RG  60.0 "DALLES 3"  13.8 "1 "  180. -270.
*
*   Fault bus at Devers
*
FB   60.0 "DEVERS  " 500.
*
*  Apply fault damping to each Palo Verde Unit
*
GFD   60.0 "PALOVRD1" 24. "1 "  0.072485
GFD   60.0 "PALOVRD2" 24. "1 "  0.072485
GFD   60.0 "PALOVRD3" 24. "1 "  0.072485
*
*   Flash series capacitors in following 500 kV Lines
*
*FC   60.0 "MIDPINTS" 500. "DEVERS  " 500. "1 " 2
FC   60.0 "MIDPINTS" 500. "DEVERS  " 500. "2 " 2
FC   60.0 "PALOVRDE" 500. "MIDPINTS" 500. "1 " 2
FC   60.0 "HARQUAHA" 500. "MIDPINTS" 500. "2 " 2
FC   60.0 "HASSYAMP" 500. "N.GILA  " 500. "1 " 3
FC   60.0 "N.GILA  " 500. "IMPRLVLY" 500. "1 " 2
FC   60.0 "IMPRLVLY" 500. "MIGUEL  " 500. "1 " 1
FC   60.0 "MOENKOPI" 500. "YAVAPAI " 500. "1 " 1
FC   60.0 "YAVAPAI " 500. "WESTWING" 500. "1 " 2
FC   60.0 "NAVAJO  " 500. "WESTWING" 500. "1 " 1
FC   60.0 "NAVAJO  " 500. "WESTWING" 500. "1 " 3
FC   60.0 "MEAD    " 500. "PERKINS " 500. "1 " 1
FC   60.0 "MEAD    " 500. "PERKINS " 500. "1 " 3
*
*   Clear fault at Devers
CFB  64.0 "DEVERS  " 500.
*
*   Trip Devers - Midpoint #1 500 kV Line
*
DL   64.0 "MIDPINTS" 500. "DEVERS  " 500. "1 " 1
*
*  Remove fault damping to each Palo Verde Unit
*
GFD   64.0 "PALOVRD1" 24. "1 " 0.0
GFD   64.0 "PALOVRD2" 24. "1 " 0.0
GFD   64.0 "PALOVRD3" 24. "1 " 0.0
*
*   Reinsert series capacitors in following 500 kV Lines
*
*RC   64.0 "MIDPINTS" 500. "DEVERS  " 500. "1 " 2
RC   64.0 "MIDPINTS" 500. "DEVERS  " 500. "2 " 2
```

```
RC   64.0 "PALOVRDE" 500. "MIDPINTS" 500. "1 " 2
RC   64.0 "HARQUAHA" 500. "MIDPINTS" 500. "2 " 2
RC   64.0 "HASSYAMP" 500. "N.GILA  " 500. "1 " 3
RC   64.0 "N.GILA  " 500. "IMPRLVLY" 500. "1 " 2
RC   64.0 "IMPRLVLY" 500. "MIGUEL  " 500. "1 " 1
RC   68.0 "MOENKOPI" 500. "YAVAPAI " 500. "1 " 1
RC   68.0 "YAVAPAI " 500. "WESTWING" 500. "1 " 2
RC   68.0 "NAVAJO  " 500. "WESTWING" 500. "1 " 1
RC   68.0 "NAVAJO  " 500. "WESTWING" 500. "1 " 3
RC   68.0 "MEAD    " 500. "PERKINS " 500. "1 " 1
RC   68.0 "MEAD    " 500. "PERKINS " 500. "1 " 3
*
*
*  Add SVC's at Marketplace and Adelanto
*
CC  MBS  180.0 "ADELSVC " 500. "sv" "A" 0.0 1.320
CC  MBS  180.0 "MKTPSVC " 500. "sv" "A" 0.0 1.320
```

Three-phase fault at the Midpoint 500 kV bus followed by loss of the Midpoint – Harquahala 500 kV circuit.

```
RUN
*   Loss of Midpoint - Harquahala #1 500-kV Line
*
*  CC cards for post-transient only
*
*   Readjust Northwest SVC's
*
CC  MSV 60.0 "KEEL-SVC" 19.60 "1 "  350. -300.
CC  MSV 60.0 "MV-SVC  " 19.60 "1 "  350. -300.
*  CC  RG  60.0 "DALLES 3"  13.8 "1 "  180. -270.
*
*   Fault bus at Midpoint
*
FB   60.0 "MIDPINTS" 500.
*
*  Apply fault damping to each Palo Verde Unit
*
GFD   60.0 "PALOVRD1" 24. "1 "  0.072485
GFD   60.0 "PALOVRD2" 24. "1 "  0.072485
GFD   60.0 "PALOVRD3" 24. "1 "  0.072485
*
*   Flash series capacitors in following 500 kV Lines
*
FC   60.0 "MIDPINTS" 500. "DEVERS  " 500. "1 " 2
FC   60.0 "MIDPINTS" 500. "DEVERS  " 500. "2 " 2
FC   60.0 "PALOVRDE" 500. "MIDPINTS" 500. "1 " 2
*FC   60.0 "HARQUAHA" 500. "MIDPINTS" 500. "2 " 2
FC   60.0 "HASSYAMP" 500. "N.GILA  " 500. "1 " 3
FC   60.0 "N.GILA  " 500. "IMPRLVLY" 500. "1 " 2
FC   60.0 "IMPRLVLY" 500. "MIGUEL  " 500. "1 " 1
FC   60.0 "MOENKOPI" 500. "YAVAPAI " 500. "1 " 1
FC   60.0 "YAVAPAI " 500. "WESTWING" 500. "1 " 2
FC   60.0 "NAVAJO  " 500. "WESTWING" 500. "1 " 1
FC   60.0 "NAVAJO  " 500. "WESTWING" 500. "1 " 3
FC   60.0 "MEAD    " 500. "PERKINS " 500. "1 " 1
FC   60.0 "MEAD    " 500. "PERKINS " 500. "1 " 3
*
*   Clear fault at Midpoint
CFB  64.0 "MIDPINTS" 500.
*
*   Trip Midpoint - Harquahala #1 500 kV Line
*
DL   64.0 "HARQUAHA" 500. "MIDPINTS" 500. "2 " 1
*
*  Remove fault damping to each Palo Verde Unit
*
GFD   64.0 "PALOVRD1" 24. "1 " 0.0
GFD   64.0 "PALOVRD2" 24. "1 " 0.0
GFD   64.0 "PALOVRD3" 24. "1 " 0.0
*
*   Reinsert series capacitors in following 500 kV Lines
*
RC   64.0 "MIDPINTS" 500. "DEVERS  " 500. "1 " 2
```

```
RC   64.0 "MIDPINTS" 500. "DEVERS  " 500. "2 " 2
RC   64.0 "PALOVRDE" 500. "MIDPINTS" 500. "1 " 2
*RC   64.0 "HARQUAHA" 500. "MIDPINTS" 500. "2 " 2
RC   64.0 "HASSYAMP" 500. "N.GILA  " 500. "1 " 3
RC   64.0 "N.GILA  " 500. "IMPRLVLY" 500. "1 " 2
RC   64.0 "IMPRLVLY" 500. "MIGUEL  " 500. "1 " 1
RC   68.0 "MOENKOPI" 500. "YAVAPAI " 500. "1 " 1
RC   68.0 "YAVAPAI " 500. "WESTWING" 500. "1 " 2
RC   68.0 "NAVAJO  " 500. "WESTWING" 500. "1 " 1
RC   68.0 "NAVAJO  " 500. "WESTWING" 500. "1 " 3
RC   68.0 "MEAD    " 500. "PERKINS " 500. "1 " 1
RC   68.0 "MEAD    " 500. "PERKINS " 500. "1 " 3
*
*
*  Add SVC's at Marketplace and Adelanto
*
CC  MBS  180.0 "ADELSVC " 500. "sv" "A" 0.0 1.320
CC  MBS  180.0 "MKTPSVC " 500. "sv" "A" 0.0 1.320
```

Three-phase fault at the Midpoint 500 kV bus followed by loss of the Midpoint – Palo Verde 500 kV circuit.

```
RUN
*   Loss of Palo Verde - Midpoint #1 500-kV Line
*
*  CC cards for post-transient only
*
*   Readjust Northwest SVC's
*
CC  MSV 60.0 "KEEL-SVC" 19.60 "1 "  350. -300.
CC  MSV 60.0 "MV-SVC  " 19.60 "1 "  350. -300.
*  CC  RG  60.0 "DALLES 3"  13.8 "1 "  180. -270.
*
*   Fault bus at Midpoint
*
FB   60.0 "MIDPINTS" 500.
*
*  Apply fault damping to each Palo Verde Unit
*
GFD   60.0 "PALOVRD1" 24. "1 "  0.072485
GFD   60.0 "PALOVRD2" 24. "1 "  0.072485
GFD   60.0 "PALOVRD3" 24. "1 "  0.072485
*
*   Flash series capacitors in following 500 kV Lines
*
FC   60.0 "MIDPINTS" 500. "DEVERS  " 500. "1 " 2
FC   60.0 "MIDPINTS" 500. "DEVERS  " 500. "2 " 2
*FC   60.0 "PALOVRDE" 500. "MIDPINTS" 500. "1 " 2
FC   60.0 "HARQUAHA" 500. "MIDPINTS" 500. "2 " 2
FC   60.0 "HASSYAMP" 500. "N.GILA  " 500. "1 " 3
FC   60.0 "N.GILA  " 500. "IMPRLVLY" 500. "1 " 2
FC   60.0 "IMPRLVLY" 500. "MIGUEL  " 500. "1 " 1
FC   60.0 "MOENKOPI" 500. "YAVAPAI " 500. "1 " 1
FC   60.0 "YAVAPAI " 500. "WESTWING" 500. "1 " 2
FC   60.0 "NAVAJO  " 500. "WESTWING" 500. "1 " 1
FC   60.0 "NAVAJO  " 500. "WESTWING" 500. "1 " 3
FC   60.0 "MEAD    " 500. "PERKINS " 500. "1 " 1
FC   60.0 "MEAD    " 500. "PERKINS " 500. "1 " 3
*
*   Clear fault at Midpoint
CFB  64.0 "MIDPINTS 500.
*
*   Trip Devers - Midpoint #1 500 kV Line
*
DL   64.0 "PALOVRDE" 500. "MIDPINTS" 500. "1 " 1
*
*  Remove fault damping to each Palo Verde Unit
*
GFD   64.0 "PALOVRD1" 24. "1 " 0.0
GFD   64.0 "PALOVRD2" 24. "1 " 0.0
GFD   64.0 "PALOVRD3" 24. "1 " 0.0
*
*   Reinsert series capacitors in following 500 kV Lines
*
RC   64.0 "MIDPINTS" 500. "DEVERS  " 500. "1 " 2
RC   64.0 "MIDPINTS" 500. "DEVERS  " 500. "2 " 2
```

```
*RC   64.0 "PALOVRDE" 500. "MIDPINTS" 500. "1 " 2
RC   64.0 "HARQUAHA" 500. "MIDPINTS" 500. "2 " 2
RC   64.0 "HASSYAMP" 500. "N.GILA  " 500. "1 " 3
RC   64.0 "N.GILA  " 500. "IMPRLVLY" 500. "1 " 2
RC   64.0 "IMPRLVLY" 500. "MIGUEL  " 500. "1 " 1
RC   68.0 "MOENKOPI" 500. "YAVAPAI " 500. "1 " 1
RC   68.0 "YAVAPAI " 500. "WESTWING" 500. "1 " 2
RC   68.0 "NAVAJO  " 500. "WESTWING" 500. "1 " 1
RC   68.0 "NAVAJO  " 500. "WESTWING" 500. "1 " 3
RC   68.0 "MEAD    " 500. "PERKINS " 500. "1 " 1
RC   68.0 "MEAD    " 500. "PERKINS " 500. "1 " 3
*
*
*  Add SVC's at Marketplace and Adelanto
*
CC  MBS  180.0 "ADELSVC " 500. "sv" "A" 0.0 1.320
CC  MBS  180.0 "MKTPSVC " 500. "sv" "A" 0.0 1.320
```

Three-phase fault at the Valley 500 kV bus followed by loss of the Valley – Serrano 500 kV circuit.

```
RUN
*   Loss of Valley-Serrano 500 kV Line
*   3 phase 4 cycle fault at Valley 500-kV bus
*
*  CC cards for post-transient only
*
DRP 0
*
*  Readjust Northwest SVC's
CC  MSV 60.0 "KEEL-SVC" 19.60 "1 "  350. -300.
CC  MSV 60.0 "MV-SVC  " 19.60 "1 "  350. -300.
*  CC  RG  60.0 "DALLES 3"  13.8 "1 "  180. -270.
*
*   Fault bus at Valley 500-kV bus
FB   60.0 "VALLEYSC" 500.
*
*   Clear fault at Valley 500-kV bus
CFB  64.0 "VALLEYSC" 500.
*
*   Trip Serrano-Valley 500 kV Line
*
DL   64.0 "SERRANO " 500. "VALLEYSC" 500. "1 "
*
*  Add SVC's at Marketplace and Adelanto
*
CC  MBS  180.0 "ADELSVC " 500. "sv" "A" 0.0 1.320
CC  MBS  180.0 "MKTPSVC " 500. "sv" "A" 0.0 1.320
*
```

Pre-fault outage of the Laguna Bell – Goodrich 230 kV circuit, then a three-phase fault at the Laguna Bell 230 kV bus followed by loss of the Laguna Bell – Rio Hondo 230 kV circuit.

```
RUN
*   Vernon Power Plant, Pre-fault loss of Laguna Bell - Goodrich 230kV Line THEN
*   post-fault loss of the Laguna Bell - Rio Hondo 230kV Line.
*   3 phase 4 cycle fault at Laguna Bell 230kV bus
*
*  CC cards for post-transient only
CC  DRP 0
*
*  Readjust Northwest SVC's
CC  MSV 60.0 "KEEL-SVC" 19.60 "1 "  350. -300.
CC  MSV 60.0 "MV-SVC  " 19.60 "1 "  350. -300.
*  CC  RG  60.0 "DALLES 3"  13.8 "1 "  180. -270.
*
*   Trip Laguna Bell - Goodrich 230kV lines
*
DL   60.0 "LAGUBELL" 230. "GOODRICH" 230. "1 "
*
*   Fault bus at Laguna Bell 230kV bus
*
FB   60.0 "LAGUBELL" 230.
*
*   Clear fault at Laguna Bell 230kV bus
CFB  64.0 "LAGUBELL" 230.
*
*   Trip Laguna Bell - Rio Hondo 230kV lines
*
DL   64.0 "LAGUBELL" 230. "RIOHONDO" 230. "1 "
*
```

Pre-fault outage of the Laguna Bell – Del Amo 230 kV #1 circuit, then a three-phase fault at the Laguna Bell 230 kV bus followed by loss of the Laguna Bell – La Fresa 230 kV #2 circuit.

```
RUN
*   Vernon Power Plant, Pre-fault loss of Laguna Bell - Del Amo 230kV Line THEN
*   post-fault loss of the Laguna Bell - La Fresa 230kV Line.
*   3 phase 4 cycle fault at Laguna Bell 230kV bus
*
*  CC cards for post-transient only
CC  DRP 0
*
*  Readjust Northwest SVC's
CC  MSV 60.0 "KEEL-SVC" 19.60 "1 "  350. -300.
CC  MSV 60.0 "MV-SVC  " 19.60 "1 "  350. -300.
*  CC  RG  60.0 "DALLES 3"  13.8 "1 "  180. -270.
*
*   Trip Laguna Bell - Del Amo 230kV lines
*
DL   60.0 "LAGUBELL" 230. "DELAMO  " 230. "1 "
*
*   Fault bus at Laguna Bell 230kV bus
*
FB   60.0 "LAGUBELL" 230.
*
*   Clear fault at Laguna Bell 230kV bus
CFB  64.0 "LAGUBELL" 230.
*
*   Trip Laguna Bell - La Fresa 230kV line
*
DL   64.0 "LAGUBELL" 230. "LA FRESA" 230. "1 "
*
```

Three-phase fault at the Mesa Cal 230 kV bus followed by loss of the Mesa Cal – Antelope 230 kV and Mesa Cal – Rio Hondo 230 kV transmission lines.

```
RUN
*   Loss of Antelope - Mesa 230 kV & Mesa - Rio Hondo 230 kV Lines
*   3 phase 4 cycle fault at Mesa 230-kV bus
*
*  CC cards for post-transient only
*
DRP 0
*
*  Readjust Northwest SVC's
CC  MSV 60.0 "KEEL-SVC" 19.60 "1 "  350. -300.
CC  MSV 60.0 "MV-SVC  " 19.60 "1 "  350. -300.
*  CC  RG  60.0 "DALLES 3"  13.8 "1 "  180. -270.
*
*   Fault bus at Mesa 230-kV bus
FB   60.0 "MESA CAL" 230.
*
*   Clear fault at Mesa 230-kV bus
CFB  64.0 "MESA CAL" 230.
*
*   Trip Antelope - Mesa 230 kV & Mesa - Rio Hondo 230 kV Lines
*
DL   64.0 "MESA CAL" 230. "ANTELOPE" 230. "1 "
DL   64.0 "MESA CAL" 230. "RIOHONDO" 230. "1 "
*
*  Add SVC's at Marketplace and Adelanto
*
CC  MBS  180.0 "ADELSVC " 500. "sv" "A" 0.0 1.320
CC  MBS  180.0 "MKTPSVC " 500. "sv" "A" 0.0 1.320
*
```

Three-phase fault at the Long Beach 230 kV bus followed by loss of the Long Beach – Lighthipe 230 kV and Harbor Gen – Hinson 230 kV transmission lines.

```
RUN
*   Loss of Long Beach - Litehipe 230 kV and Harborgen - Hinson 230 kV Lines
*   3 phase 4 cycle fault at Long Beach 230-kV bus
*
*  CC cards for post-transient only
*
DRP 0
*
*  Readjust Northwest SVC's
CC  MSV 60.0 "KEEL-SVC" 19.60 "1 "  350. -300.
CC  MSV 60.0 "MV-SVC  " 19.60 "1 "  350. -300.
*  CC  RG  60.0 "DALLES 3"  13.8 "1 "  180. -270.
*
*   Fault bus at Long Beach 230-kV bus
FB   60.0 "LBEACH  " 230.
*
*   Clear fault at Long Beach 230-kV bus
CFB  64.0 "LBEACH  " 230.
*
*   Trip Long Beach - Litehipe 230 kV and Harborgen - Hinson 230 kV Lines
*
DL   64.0 "LBEACH  " 230. "LITEHIPE" 230. "1 "
DL   64.0 "HARBOR  " 230. "HINSON  " 230. "1 "
*
*  Add SVC's at Marketplace and Adelanto
*
CC  MBS  180.0 "ADELSVC " 500. "sv" "A" 0.0 1.320
CC  MBS  180.0 "MKTPSVC " 500. "sv" "A" 0.0 1.320
*
```

Three-phase fault at the Rancho Vista 500 kV bus followed by loss of the Rancho Vista – Serrano 500 kV and Mira Loma – Walnut 230 kV transmission lines.

```
RUN
*   Loss of Rancho Vista - Serrano 500 kV Line & Mira Loma - Walnut 230 kV Line
*   3 phase 4 cycle fault at Rancho Vista 500-kV bus
*
*  CC cards for post-transient only
*
DRP 0
*
CC  MSV 60.0 "KEEL-SVC" 19.60 "1 "  350. -300.
CC  MSV 60.0 "MV-SVC  " 19.60 "1 "  350. -300.
*  CC  RG  60.0 "DALLES 3"  13.8 "1 "  180. -270.
*
*   Fault bus at Rancho Vista 500-kV bus
FB   60.0 "RANCHVST" 500.
*
*   Clear fault at Rancho Vista 500-kV bus
CFB  64.0 "RANCHVST" 500.
*
*   Trip Rancho Vista - Serrano 500 kV Line & Mira Loma - Walnut 230 kV Line
*
DL   64.0 "RANCHVST" 500. "SERRANO " 500. "1 "
DL   64.0 "MIRALOMW" 230. "WALNUT  " 230. "1 "
*
*  Add SVC's at Marketplace and Adelanto
*
CC  MBS  180.0 "ADELSVC " 500. "sv" "A" 0.0 1.320
CC  MBS  180.0 "MKTPSVC " 500. "sv" "A" 0.0 1.320
*
```

Three-phase fault at the Serrano 500 kV bus followed by loss of the Rancho Vista – Serrano 500 kV and Mira Loma – Serrano 500 kV transmission lines.

```
RUN
*   Loss of Mira Loma - Serrano 500 kV & Rancho Vista - Serrano 500 kV Lines
*   3 phase 4 cycle fault at Serrano 500-kV bus
*
*  CC cards for post-transient only
*
DRP 0
*
CC  MSV 60.0 "KEEL-SVC" 19.60 "1 "  350. -300.
CC  MSV 60.0 "MV-SVC  " 19.60 "1 "  350. -300.
*  CC  RG  60.0 "DALLES 3"  13.8 "1 "  180. -270.
*
*   Fault bus at Serrano 500-kV bus
FB   60.0 "SERRANO " 500.
*
*   Clear fault at Serrano 500-kV bus
CFB  64.0 "SERRANO " 500.
*
*   Trip Mira Loma - Serrano 500 kV & Rancho Vista - Serrano 500 kV Lines
*
DL   64.0 "MIRALOMA" 500. "SERRANO " 500. "1 "
DL   64.0 "RANCHVST" 500. "SERRANO " 500. "1 "
*
*  Add SVC's at Marketplace and Adelanto
*
CC  MBS  180.0 "ADELSVC " 500. "sv" "A" 0.0 1.320
CC  MBS  180.0 "MKTPSVC " 500. "sv" "A" 0.0 1.320
*
```

Pre-fault outage of the Laguna Bell – Rio Hondo 230 kV circuit, then three-phase fault at the VPP 230 kV bus followed by loss of the Laguna Bell – Del Amo 230 kV and the Laguna Bell – La Fresa 230 kV transmission lines.

```
RUN
*   Vernon Power Plant, Pre-fault loss of Laguna Bell - Rio Hondo 230kV Line THEN
*   post-fault loss of the Laguna Bell - Del Amo and Laguna Bell - La Fresa 230kV Lines.
*   3 phase 4 cycle fault at Laguna Bell 230kV bus
*
*  CC cards for post-transient only
CC  DRP 0
*
*  Readjust Northwest SVC's
CC  MSV 60.0 "KEEL-SVC" 19.60 "1 "  350. -300.
CC  MSV 60.0 "MV-SVC  " 19.60 "1 "  350. -300.
*  CC  RG  60.0 "DALLES 3"  13.8 "1 "  180. -270.
*
*   Trip Laguna Bell - Rio Hondo 230kV lines
*
DL   60.0 "LAGUBELL" 230. "RIOHONDO" 230. "1 "
*
*   Fault bus at Laguna Bell 230kV bus
*
FB   60.0 "LAGUBELL" 230.
*
*   Clear fault at Laguna Bell 230kV bus
CFB  64.0 "LAGUBELL" 230.
*
*   Trip Laguna Bell - Del Amo and Laguna Bell - La Fresa 230kV Lines
*
DL   64.0 "LAGUBELL" 230. "DELAMO  " 230. "1 "
DL   64.0 "LAGUBELL" 230. "LA FRESA" 230. "1 "
*
```

Appendix G

SCE Project Queue

Following is a list of the SCE project queue that is ahead of the City of Vernon Project. All projects listed were modeled in base cases used for the City of Vernon SIS analysis.

Table G-1. SCE Project Queue.

Project Name	Queue Position Date	Project Type
TOT005	06/10/97	Gen
WDT011	03/23/98	Gen
TOT022	09/30/98	Gen
TOT015	04/20/99	Gen
TOT004	05/17/99	Gen
TOT010	06/22/99	Gen
TOT018	07/21/99	Gen
WDT044	08/10/99	Gen
WDT014	09/09/99	Gen
WDT038	09/22/99	Gen
WDT040	10/06/99	Gen
WDT041	12/01/99	Gen
WDT042	01/07/00	Gen
TOT019	01/25/00	Gen
TOT021	01/25/00	Gen
TOT051	01/25/00	Gen
TOT032	06/14/00	Gen
TOT040	08/30/00	Gen
WDT069	09/12/00	Load
TOT041	10/06/00	Gen
WDT054	01/08/01	Gen
Viejo Substation	01/11/01	Trans
TOT048	02/16/01	Gen
TOT056	02/27/01	Gen
WDT073	03/01/01	Gen
WDT075	03/09/01	Gen
Sunset	04/03/01	Gen
WDT082	04/20/01	Gen
WDT080	04/24/01	Gen
TOT005	05/01/01	Gen
WDT086	05/08/01	Gen
TOT081	05/11/01	Trans
SCE Path 49 Series Cap Upgrade -	05/24/01	Trans
WDT053	06/14/01	Gen
TOT067	06/14/01	Gen
WDT092	07/03/01	Gen
7068	10/18/01	Gen
RMR	01/08/02	Trans
WDT098	01/14/02	Gen
TOT089	01/17/02	Trans
EAK049	04/29/02	Gen
TOT017	05/02/02	Gen

Table G-1. (continued) SCE Project Queue.

Project Name	Queue Position Date	Project Type
Valley 4th AA Bank (TRC)	05/13/02	Trans
WDT118	07/15/02	Gen
TOT094	07/26/02	Trans
WDT112	08/15/02	Gen
WDT018	08/26/02	Load
WDT019	08/26/02	Gen
WDT122	09/25/02	Load
TOT100	10/23/02	Gen
WDT133	12/12/02	Gen
TOT096	01/17/03	Gen
WDT124	02/11/03	Gen
TOT004	02/26/03	Gen
WDT082	02/28/03	Gen
WDT128	03/04/03	Load
TOT101	04/03/03	Trans
Reconductor Pastoria - Pardee (TRC)	04/03/03	Trans
TOT099	04/15/03	Gen
TOT079	04/22/03	Gen
TOT102	04/29/03	Gen
TOT106	05/06/03	Trans
TOT104	05/07/03	Trans
TOT108	09/04/03	Gen
Reconductor Mira Loma - Etiwanda (RMR)	09/19/03	Trans
WDT147	12/31/03	Gen
TOT109	01/06/04	Gen
WDT156	03/08/04	Gen
WDT157	03/08/04	Gen
TOT111	03/12/04	Gen
TOT112	03/12/04	Gen
WDT131	04/01/04	Gen
Split Devers - Mirage (ISO)	04/19/04	Trans
Upgrade Antelope A Bank No. 2 (ISO)	04/19/04	Trans
TOT113	05/11/04	Gen
Loop In Big Creek 3 - Springville & SVC at Rector (ISO Board)	06/18/04	Trans
TOT117	07/19/04	Gen
TOT116	07/20/04	Gen
WDT162	08/06/04	Load
Loop In Lugo - Serrano & SPS (ISO)	09/02/04	Trans

Table G-1. (continued) SCE Project Queue.

Project Name	Queue Position Date	Project Type
WDT164	10/21/04	Gen
New Rancho Vista Substation (ISO)	11/01/04	Trans
TOT119	11/18/04	Gen
WDT165	11/23/04	Gen
TOT120	12/14/04	Gen
ERC	01/06/05	Gen
TOT121	01/31/05	Gen
WDT169	02/08/05	Gen
WDT170	02/08/05	Gen
WDT176	02/10/05	Gen
TOT037	02/14/05	Gen
TOT127	02/22/05	Gen
TOT107	02/24/05	Trans
WDT179	03/18/05	Gen
WDT180	04/11/05	Load
TOT130	04/12/05	Gen
TOT128	04/15/05	Gen
WDT181	05/04/05	Gen
TOT138	05/06/05	Gen
TOT135	05/06/05	Gen
WDT182	05/06/05	Gen
TOT137	05/06/05	Gen
WDT188	05/13/05	Gen
TOT131	05/27/05	Gen
TOT139	06/07/05	Gen
TOT143	06/09/05	Gen
TOT142	06/15/05	Gen
TOT132	06/16/05	Gen
WDT187	06/17/05	Gen
WDT190	06/17/05	Gen
WDT192	06/17/05	Gen
TOT148	06/27/05	Gen
TOT072	07/13/05	Gen
Oak Valley 230/115 kV Substation	07/19/05	Trans
WDT206	08/22/05	Gen

ATTACHMENT TSE-2.4B

RESOLUTION NO. 9075

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF VERNON APPROVING AND RATIFYING THE EXECUTION OF AN INTERCONNECTION SYSTEM IMPACT STUDY AGREEMENT BY AND BETWEEN THE CITY OF VERNON AND SOUTHERN CALIFORNIA EDISON COMPANY REGARDING THE VERNON POWER PLANT

WHEREAS, the City of Vernon is in the process of developing a natural gas-fired combined cycle power plant located within City limits and interconnected to Southern California Edison Company's ("SCE") Laguna Bell Substation 230 kV bus officially named the Vernon Power Plant (the "Vernon Power Plant Project") for the purpose of installing additional generating capacity that will yield an efficient, cost-effective, and reliable source of electric generation to the City of Vernon; and

WHEREAS, the City is in the process of obtaining all the necessary certifications and licenses associated with the building of the Vernon Power Plant Project; and

WHEREAS, both the City of Vernon and SCE are Participating Transmission Owners ("PTO") with the California Independent System Operator ("ISO"); and

WHEREAS, on October 12, 2005, the City Council of the City of Vernon adopted Resolution No. 8873 approving an Interconnection System Impact Study with SCE to assess the impact of interconnecting the Vernon Power Plant Project to the ISO Controlled Grid at an output of 610 mW (net); and

WHEREAS, the City of Vernon desires to interconnect an additional 304 mW to the proposed 610 mW Vernon Power Plant, resulting in a total maximum net output of 914 mW (the "VPP Expansion Project");

and

WHEREAS, the Vernon Power Plant Project is considered a Large Generating Facility and in accordance with the Cal-ISO Large Generator Interconnection Procedure, SCE must perform an additional Interconnection System Impact Study to assess the impact of the VPP Expansion Project; and

WHEREAS, the City's Light & Power Department desires to engage the services of SCE to perform the necessary impact study in accordance with the terms and conditions of an Interconnection System Impact Study Agreement (the "Agreement"); and

WHEREAS, in order to maintain the demanding licensing and certification schedule and avoid the delay of SCE's completion of the study which could potentially impact the City's data adequacy responses to the California Energy Commission, the Acting City Clerk executed the Agreement with SCE on June 15, 2006, and paid the deposit of costs of $50,000.00, subject to ratification by the City Council.

WHEREAS, the City Council of the City of Vernon has determined that, pursuant to the provisions of subsection (a) of Section 2.27 of the Vernon City Code, it is in the public interest and necessity to enter into an agreement with SCE.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF VERNON AS FOLLOWS:

SECTION 1: The City Council of the City of Vernon hereby finds and determines that the recitals contained hereinabove are true and correct.

SECTION 2: The City Council of the City of Vernon hereby approves and ratifies the execution of the Interconnection System Impact Study Agreement with Southern California Edison Company by the

Acting City Clerk on June 15, 2006, a copy of which is attached hereto as Exhibit A and incorporated by reference, and approves the payment of costs in advance in the sum of $50,000.00.

SECTION 3: The City Council of the City of Vernon hereby approves and ratifies the payment of costs in advance in the sum of $50,000.00.

SECTION 4: The Acting City Clerk of the City of Vernon shall certify to the passage of this resolution, and thereupon and thereafter the same shall be in full force and effect.

APPROVED AND ADOPTED this 21st day of June, 2006.

Thomas A. Ybarra

THOMAS A. YBARRA, Mayor Pro Tem

ATTEST:

BRUCE V. MALKENHORST, JR.
Acting City Clerk

STATE OF CALIFORNIA)
) ss
COUNTY OF LOS ANGELES)

I, BRUCE V. MALKENHORST, JR., Acting City Clerk of the City of Vernon, do hereby certify that the foregoing Resolution, being Resolution No. 9075, was duly adopted by the City Council of the City of Vernon at a regular meeting of the City Council duly held on Wednesday, June 21, 2006, and thereafter was duly signed by the Mayor Pro Tem of the City of Vernon.

BRUCE V. MALKENHORST, JR.
Acting City Clerk

(SEAL)

CITY OF VERNON –
SOUTHERN CALIFORNIA EDISON COMPANY
INTERCONNECTION SYSTEM IMPACT STUDY AGREEMENT
(Vernon Power Plant Expansion)

THIS AGREEMENT is made and entered into this 19th day of June, 2006 by and between the City of Vernon, a municipal corporation organized and existing under the laws of the State of California, ("Interconnection Customer") and Southern California Edison Company, a corporation existing under the laws of the State of California, ("Participating TO"). The Interconnection Customer and the Participating TO each may be referred to as a "Party," or collectively as the "Parties."

RECITALS

WHEREAS, the Interconnection Customer is proposing to develop a Large Generating Facility or generating capacity addition to an existing Generating Facility consistent with the Interconnection Request submitted by the Interconnection Customer dated April 12, 2006; and

WHEREAS, the Interconnection Customer desires to interconnect the Large Generating Facility with the ISO Controlled Grid; and

WHEREAS, the Interconnection Customer has requested the Participating TO to perform an Interconnection System Impact Study to assess the impact of interconnecting the Large Generating Facility;

NOW, THEREFORE, in consideration of and subject to the mutual covenants contained herein the Parties agree as follows:

1.0 When used in this Agreement, with initial capitalization, the terms specified shall have the meanings indicated in the ISO's FERC-approved Standard Large Generation Interconnection Procedures ("LGIP") or the Master Definitions Supplement, Appendix A to the ISO Tariff, as applicable.

2.0 The Interconnection Customer elects and the Participating TO shall cause to be performed an Interconnection System Impact Study consistent with Section 7 of the LGIP in accordance with the ISO Tariff.

3.0 The scope of the Interconnection System Impact Study shall be subject to the assumptions set forth in Attachment A to this Agreement.

4.0 The Interconnection System Impact Study will be based upon the technical information provided by the Interconnection Customer in the Interconnection Request, subject to any modifications in accordance with Section 4.4 of the LGIP. The Participating TO reserves the right to request additional technical information from the Interconnection

Customer as may reasonably become necessary consistent with Good Utility Practice during the course of the Interconnection System Impact Study. If the Interconnection Customer modifies its designated Point of Interconnection, Interconnection Request, or the technical information provided therein is modified, the time to complete the Interconnection System Impact Study may be extended.

5.0 The Interconnection System Impact Study report shall provide the following information:

- identification of any circuit breaker short circuit capability limits exceeded on the Participating TO's electric system as a result of the interconnection;

- identification of any thermal overload or voltage limit violations on the Participating TO's electric system resulting from the interconnection;

- identification of any instability or inadequately damped response to system disturbances on the Participating TO's electric system resulting from the interconnection;

- a description and non-binding, good faith estimated cost of facilities on the Participating TO's electric system required to interconnect the Large Generating Facility to the Participating TO's portion of the ISO Controlled Grid and to address the identified short circuit, instability, and power flow issues on the Participating TO's portion of the ISO Controlled Grid; and

- if the Participating TO is an interconnecting Participating TO for the Large Generating Facility, a Deliverability Assessment on the ISO Controlled Grid pursuant to Section 3.3 of the LGIP.

6.0 The Interconnection Customer shall provide a deposit of $50,000 for the performance of the Interconnection System Impact Study. The Participating TO's good faith estimate for the time of completion of the Interconnection System Impact Study is one hundred twenty (120) Calendar Days after the receipt of the executed Agreement, $50,000 study payment and technical data in accordance with Attachment A to Appendix 1 of the LGIP.

Following the issuance of the Interconnection System Impact Study, the Participating TO shall charge and the Interconnection Customer shall pay the actual costs of the Interconnection System Impact Study, inclusive of

any re-studies and amendments to the Interconnection System Impact Study, pursuant to Section 9 of this Agreement.

Any difference between the deposit made toward the Interconnection System Impact Study, amendments and re-studies to the Interconnection System Impact Study, and the actual cost of the study shall be paid by or refunded to the Interconnection Customer, as appropriate in accordance with Section 13.3 of the LGIP.

7.0 Pursuant to Section 3.7 of the LGIP, the ISO will coordinate the conduct of any studies required to determine the impact of the Interconnection Request on Affected Systems. The Participating TO may provide a copy of the Interconnection System Impact Study results to an Affected System Operator and the Western Electricity Coordinating Council. Requests for review and input from Affected System Operators or the Western Electricity Coordinating Council may arrive at any time prior to interconnection, and a revision of the Interconnection System Impact Study or re-study may be required in such event.

8.0 Substantial portions of technical data and assumptions used to perform the Interconnection System Impact Study, such as system conditions, existing and planned generation, and unit modeling, may change after the Participating TO provides the Interconnection System Impact Study results to the Interconnection Customer. Study results will reflect available data at the time the Participating TO provides the Interconnection System Impact Study to the Interconnection Customer. The Participating TO shall not be responsible for any additional costs, including, without limitation, costs of new or additional facilities, system upgrades, or schedule changes, that may be incurred by the Interconnection Customer as a result of changes in such data and assumptions.

9.0 In the event that a re-study or amendment of the Interconnection System Impact Study is required, the Participating TO shall provide notification of the need for such re-study or amendment, and the Interconnection Customer shall provide direction as to whether to proceed with the re-study or amendment and any associated deposit payment pursuant to Section 7.6 or Section 12.2.4 of the LGIP, as applicable.

10.0 The Participating TO shall maintain records and accounts of all costs incurred in performing the Interconnection System Impact Study, inclusive of any re-studies or amendments thereto, in sufficient detail to allow verification of all costs incurred, including associated overheads. The Interconnection Customer shall have the right, upon reasonable notice, within a reasonable time at the Participating TO's offices and at its own

expense, to audit the Participating TO's records as necessary and as appropriate in order to verify costs incurred by the Participating TO. Any audit requested by the Interconnection Customer shall be completed, and written notice of any audit dispute provided to the Participating TO representative, within one hundred eighty (180) Calendar Days following receipt by the Interconnection Customer of the Participating TO's notification of the final costs of the Interconnection System Impact Study, inclusive of any re-study or amendment thereto.

11.0 In accordance with Section 3.8 of the LGIP, the Interconnection Customer may withdraw its Interconnection Request at any time by written notice to the ISO. Upon receipt of such notice, this Agreement shall terminate.

12.0 Pursuant to Section 7.2 of the LGIP, this Agreement shall become effective upon the date the fully executed Agreement and deposit specified in Section 6 of this Agreement are received by the Participating TO. If the Participating TO does not receive the fully executed Agreement and payment pursuant to Section 7.2 of the LGIP, then the Interconnection Request will be deemed withdrawn upon the Interconnection Customer's receipt of written notice by the ISO pursuant to Section 3.8 of the LGIP.

13.0 Miscellaneous.

13.1 Dispute Resolution. Any dispute, or assertion of a claim, arising out of or in connection with this Interconnection System Impact Study Agreement, shall be resolved in accordance with Section 13.5 of the LGIP.

13.2 Confidentiality. Confidential Information shall be treated in accordance with Section 13.1 of the LGIP.

13.3 Binding Effect. This Interconnection System Impact Study Agreement and the rights and obligations hereof, shall be binding upon and shall inure to the benefit of the successors and assigns of the Parties hereto.

13.4 Conflicts. In the event of a conflict between the body of this Interconnection System Impact Study Agreement and any attachment, appendices or exhibits hereto, the terms and provisions of the body of this Interconnection System Impact Study Agreement shall prevail and be deemed the final intent of the Parties.

13.5 Rules of Interpretation. This Interconnection System Impact Study Agreement, unless a clear contrary intention appears, shall be construed and interpreted as follows: (1) the singular number includes the plural number and vice versa; (2) reference to any person includes such

person's successors and assigns but, in the case of a Party, only if such successors and assigns are permitted by this Interconnection System Impact Study Agreement, and reference to a person in a particular capacity excludes such person in any other capacity or individually; (3) reference to any agreement (including this Interconnection System Impact Study Agreement), document, instrument or tariff means such agreement, document, instrument, or tariff as amended or modified and in effect from time to time in accordance with the terms thereof and, if applicable, the terms hereof; (4) reference to any applicable laws and regulations means such applicable laws and regulations as amended, modified, codified, or reenacted, in whole or in part, and in effect from time to time, including, if applicable, rules and regulations promulgated thereunder; (5) unless expressly stated otherwise, reference to any Article, Section or Appendix means such Article or Section of this Interconnection System Impact Study Agreement or such Appendix to this Interconnection System Impact Study Agreement, or such Section to the LGIP or such Appendix to the LGIP, as the case may be; (6) "hereunder", "hereof", "herein", "hereto" and words of similar import shall be deemed references to this Interconnection System Impact Study Agreement as a whole and not to any particular Article, Section, or other provision hereof or thereof; (7) "including" (and with correlative meaning "include") means including without limiting the generality of any description preceding such term; and (8) relative to the determination of any period of time, "from" means "from and including", "to" means "to but excluding" and "through" means "through and including".

13.6 Entire Agreement. This Interconnection System Impact Study Agreement, including all Appendices and Schedules attached hereto, constitutes the entire agreement between the Parties with reference to the subject matter hereof, and supersedes all prior and contemporaneous understandings or agreements, oral or written, between the Parties with respect to the subject matter of this Interconnection System Impact Study Agreement. There are no other agreements, representations, warranties, or covenants which constitute any part of the consideration for, or any condition to, any Party's compliance with its obligations under this Interconnection System Impact Study Agreement.

13.7 No Third Party Beneficiaries. This Interconnection System Impact Study Agreement is not intended to and does not create rights, remedies, or benefits of any character whatsoever in favor of any persons, corporations, associations, or entities other than the Parties, and the obligations herein assumed are solely for the use and benefit of the Parties, their successors in interest and, where permitted, their assigns.

13.8 Waiver. The failure of a Party to this Interconnection System Impact Study Agreement to insist, on any occasion, upon strict performance of any provision of this Interconnection System Impact Study Agreement will not be considered a waiver of any obligation, right, or duty of, or imposed upon, such Party.

Any waiver at any time by either Party of its rights with respect to this Interconnection System Impact Study Agreement shall not be deemed a continuing waiver or a waiver with respect to any other failure to comply with any other obligation, right, duty of this Interconnection System Impact Study Agreement. Termination or default of this Interconnection System Impact Study Agreement for any reason by the Interconnection Customer shall not constitute a waiver of the Interconnection Customer's legal rights to obtain an interconnection from the Participating TO. Any waiver of this Interconnection System Impact Study Agreement shall, if requested, be provided in writing.

Any waivers at any time by any Party of its rights with respect to any default under this Interconnection System Impact Study Agreement, or with respect to any other matter arising in connection with this Interconnection System Impact Study Agreement, shall not constitute or be deemed a waiver with respect to any subsequent default or other matter arising in connection with this Interconnection System Impact Study Agreement. Any delay, short of the statutory period of limitations, in asserting or enforcing any right under this Interconnection System Impact Study Agreement shall not constitute or be deemed a waiver of such right.

13.9 Headings. The descriptive headings of the various Articles and Sections of this Interconnection System Impact Study Agreement have been inserted for convenience of reference only and are of no significance in the interpretation or construction of this Interconnection System Impact Study Agreement.

13.10 Multiple Counterparts. This Interconnection System Impact Study Agreement may be executed in two or more counterparts, each of which is deemed an original but all constitute one and the same instrument.

13.11 Amendment. The Parties may by mutual agreement amend this Interconnection System Impact Study Agreement by a written instrument duly executed by both of the Parties.

13.12 Modification by the Parties. The Parties may by mutual agreement amend the Appendices to this Interconnection System Impact Study Agreement by a written instrument duly executed by both of the Parties. Such amendment shall become effective and a part of this Interconnection

System Impact Study Agreement upon satisfaction of all applicable laws and regulations.

13.13 Reservation of Rights. The Participating TO shall have the right to make a unilateral filing with FERC to modify this Interconnection System Impact Study Agreement with respect to any rates, terms and conditions, charges, classifications of service, rule or regulation under section 205 or any other applicable provision of the Federal Power Act and FERC's rules and regulations thereunder, and Interconnection Customer shall have the right to make a unilateral filing with FERC to modify this Interconnection System Impact Study Agreement pursuant to section 206 or any other applicable provision of the Federal Power Act and FERC's rules and regulations thereunder; provided that each Party shall have the right to protest any such filing by another Party and to participate fully in any proceeding before FERC in which such modifications may be considered. Nothing in this Interconnection System Impact Study Agreement shall limit the rights of the Parties or of FERC under sections 205 or 206 of the Federal Power Act and FERC's rules and regulations thereunder, except to the extent that the Parties otherwise mutually agree as provided herein.

13.14 No Partnership. This Interconnection System Impact Study Agreement shall not be interpreted or construed to create an association, joint venture, agency relationship, or partnership between the Parties or to impose any partnership obligation or partnership liability upon any Party. No Party shall have any right, power or authority to enter into any agreement or undertaking for, or act on behalf of, or to act as or be an agent or representative of, or to otherwise bind, another Party.

13.15 Assignment. This Interconnection System Impact Study Agreement may be assigned by a Party only with the written consent of the other Party; provided that a Party may assign this Interconnection System Impact Study Agreement without the consent of the other Party to any Affiliate of the assigning Party with an equal or greater credit rating and with the legal authority and operational ability to satisfy the obligations of the assigning Party under this Interconnection System Impact Study Agreement; and provided further that the Interconnection Customer shall have the right to assign this Interconnection System Impact Study Agreement, without the consent of the other Party, for collateral security purposes to aid in providing financing for the Large Generating Unit, provided that the Interconnection Customer will require any secured party, trustee or mortgagee to notify the other Party of any such assignment. Any financing arrangement entered into by the Interconnection Customer pursuant to this Article will provide that prior to or upon the exercise of the secured party's, trustee's or mortgagee's assignment rights pursuant to said arrangement, the secured creditor, the trustee or mortgagee will

notify the other Party of the date and particulars of any such exercise of assignment right(s). Any attempted assignment that violates this Article is void and ineffective. Any assignment under this Interconnection System Impact Study Agreement shall not relieve a Party of its obligations, nor shall a Party's obligations be enlarged, in whole or in part, by reason thereof. Where required, consent to assignment will not be unreasonably withheld, conditioned or delayed.

IN WITNESS THEREOF, the Parties have caused this Agreement to be duly executed by their duly authorized officers or agents on the day and year first above written.

SOUTHERN CALIFORNIA EDISON COMPANY

By: _____
Gilbert H. L. Tam

Title: Director of Grid Contracts

Date: 6/02/06

APPROVED
STEPHEN E. PICKETT
Sr. Vice President and
General Counsel

By _____
Attorney

6/1, 2006

CITY OF VERNON

By: _____
~~Leonis C. Malburg~~

Title: ~~Mayor~~

Date: June 15, 2006

~~ATTEST:~~

By: _____
Bruce V. Malkenhorst, Jr., Acting
City Clerk

APPROVED AS TO FORM:

_____
~~Eric T. Meyer, City Attorney~~
Willard G. Yamaguchi, Chief Deputy City Attorney

Attachment A

Interconnection System Impact Study Agreement

ASSUMPTIONS USED IN CONDUCTING THE INTERCONNECTION SYSTEM IMPACT STUDY

The Interconnection Customer, Participating TO and ISO have agreed to forego the Interconnection Feasibility Study. The Interconnection System Impact Study will be based upon the information set forth in the Interconnection Request and agreed upon in the Scoping Meeting held on May 24, 2006, and will include the following assumptions:

1. Designation of Point of Interconnection and configuration to be studied.
   a. Point of Interconnection: The Participating TO's Laguna Bell Substation 230 kV bus via a double circuit 230 kV transmission line.
   b. Configuration: The proposed project is a 304 MW incremental increase to the proposed 610 MW Vernon Power Plant (the "Vernon Power Plant Expansion"). The full configuration of the natural gas fired combined cycle plant will consist of three gas turbines and one steam turbine with a total net output of 914 MW; transformation equipment; meters and metering equipment; and appurtenant equipment at the Large Generating Facility site to be located at 3200 Fruitland Avenue, in Vernon, California as specified in the Interconnection Customer's Interconnection Request.

2. Designation of alternative Point(s) of Interconnection and configuration.
   a. Point of Interconnection: The Mesa-Lighthipe and Mesa-Redondo 230 kV transmission lines via a new switchyard near Laguna Bell Substation.
   b. Configuration: Same as above.

3. An Interconnection Customer requested in-service date of March 31, 2009, Trial Operation date of May 31, 2009, and Commercial Operation date of July 31, 2009; however, such assumptions shall be subject to change after study results, permitting requirements, design, land issues and material lead times are known, so that a more accurate determination can be made.

4. The technical data supplied by Interconnection Customer are accurate and complete.

5. Interconnection Customer will install and maintain necessary equipment to meet Participating TO's criteria for power factor correction at the Point of Interconnection.

6. The maximum interconnection capacity requested by Interconnection Customer is 304 MW at 230 kV for the Vernon Power Plant Expansion.

7. Interconnection System Impact Study results will reflect the ISO Tariff, rules and protocols, and the Participating TO's Interconnection Handbook in effect at the time the Participating TO provides the Interconnection System Impact Study to Interconnection Customer.

8. The Interconnection System Impact Study will be performed in accordance with the study plan agreed to by the Participating TO, the Interconnection Customer and the ISO.

Pursuant to Section 7.1 of the LGIP, the estimated cost to complete the Interconnection System Impact Study is $60,000.

The Deliverability Assessment mentioned in Section 5 of the Interconnection System Impact Study Agreement is not yet being performed by the ISO and will not be included in the scope of work.

ATTACHMENT TSE-2.4C

DISCUSSION OF THE IMPACTS OF THE 914 MW VERNON POWER PLANT (VPP) AT LAGUNA BELL

Prepared for

CITY OF VERNON

Prepared by:

Commonwealth Associates, Inc.
engineers • consultants • construction managers

DISCUSSION OF THE IMPACTS OF THE 914 MW VERNON POWER PLANT (VPP) AT LAGUNA BELL

Prepared for

CITY OF VERNON

Prepared by:

Stephen S. Miller, P.E.
Richard D. Cook, P.E.

At the offices of
Commonwealth Associates, Inc.
P.O. Box 1124
Jackson, Michigan 49204

August 31, 2005
351003/306

Approved for submittal:

Stephen S. Miller, P.E.
Section Manager - TRANSMISSION 2000®

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DISCUSSION OF THE IMPACTS OF THE 914 MW VERNON POWER PLANT (VPP) AT LAGUNA BELL

The City of Vernon is proposing a 914 MW 3x1 combined cycle power plant to be interconnected to the California Independent System Operator (CAISO) grid at Southern California Edison's (SCE) Laguna Bell substation. An application for certification has been filed with the California Energy Commission (CEC).[1] To be accepted as Data Adequate, this application must provide:

> "A detailed description of the design, construction, and operation of any electric transmission facilities, such as power lines, substations, switchyards, or other transmission equipment, which will be constructed or modified to transmit electrical power from the proposed power plant to the load centers to be served by the facility. Such description shall include the width of rights of way and the physical and electrical characteristics of electrical transmission facilities such as towers, conductors, and insulators. This description shall include power load flow diagrams which demonstrate conformance or nonconformance with utility reliability and planning criteria at the time the facility is expected to be placed in operation..." [2]

CEC staff has interpreted this regulation to mean that the application should include the following:[3]

- A power flow study for the nominal 914 MW Vernon Power Plant (VPP) under 2009 summer peak and 2010 spring system conditions

- A list of all major study assumptions in the base cases including imports and exports to the system, major Path flows (such as EOR, SCIT etc.), major generations including queue generation projects and hydro, loads in the area systems.

- Identification of the reliability and planning criteria utilized to determine the reliability criteria violations in the area systems.

- A Power Flow analysis of Category A (normal or N-0), Category B (first contingency or N-1) and critical Category C (double or N-2) contingency conditions for each base case. A list of overload criteria violations in the SCE area and non-SCE areas identifying the pre-project existing overloads, the post-project new overloads, and incremental overloads should be provided.

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[1] 06-AFC-4
[2] California Code of Regulations, Title 20, Section 1704, Appendix B (b) (2) (C)
[3] CEC staff data adequacy review of the Vernon Power Plant (VPP) Project Application for Certification (AFC) submitted on June 30, 2006 and subsequent conversations with staff including e-mails between Abraham Alemu and Mark Hesters dated August 17, 2006.

- A list of contingencies evaluated.

- A list of any mitigation measures considered (required) and those selected for all criteria violations

- Power flow diagrams for all base cases with and without the VPP plant and also N-0, N-1 and N-2 cases where overloads and voltage violations occur.

This report and its appendices provide these materials.

These materials will be supplemented and completed by the California Independent System Operator (CAISO) 914 MW System Impact Study (SIS) which is due to be complete early in the fall (nominally on October 11, 2006). Per CEC practice the CAISO approved System Impact Study (SIS) should be completed following a Data Adequacy finding. The CEC timeline for the twelve month process provides for filing the SIS 100 days after a Commission decision on Data Adequacy.[4] It is recognized that "timing of the Cal-ISO comments will depend on when the Transmission Interconnection Study is initiated by the applicant."[5]

ASSUMPTIONS

This study is intended to predict the results of the CAISO SIS and therefore the assumptions used were those outlined in the SIS Study plan. This study plan is included as Appendix A. The base cases used were provided by SCE and are the same cases employed in the SIS.[6]

The pre and post cases were created in accord with the study plan as follows:

> "The initial VPP request for 610 MW (net) was for a 2x1 Combined Cycle unit with particular technical parameters. The expansion by 304 MW (net) is realized by converting to a 3x1 with associated technical parameter changes. For all the studies outlined below (power flow, transient stability, and short circuit) the increment due to the expansion will be determined by studying the full 914 MW (net) at the 304 MW queue position with the original 610 MW 2x1 model removed."

The 610 MW net reduction was compensated by proportionally increasing the generation of other SCE generators. The 304 MW net increase was obtained by proportionally decreasing SCE generation.

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[4] Energy Facility Licensing Process: Developers Guide of Practices & Procedures, California Energy Commission, Staff Report/Draft, November 2000, P700-00-007, Chart on Page 7
[5] Ibid
[6] Cases were provided via e-mail dated August 17, 2006 from Phillip Leung to Abraham Alemu. The Zip file attached to the e-mail was named `PRE-VPP304MW-BASE CASES.zip.`

Transmission facilities in the following areas were monitored for impacts:

Area Number	Name
22	San Diego Gas and Electric
24	Southern California Edison
26	Los Angeles Department of Water and Power
30	Pacific Gas and Electric

The contingency list, provide in Appendix B is the list used by SCE for the SIS. Modification were made to the list to account for any changes in bus naming between the power flow cases used for the 610 MW study and those used here. SCE did not include a list of Category C contingencies in the 610 MW SIS. A list was created bases on the double contingency violations reported in the 610 MW SIS.[7]

RESULTS

A list of overload criteria violations in the monitored areas identifying the pre-project existing overloads, the post-project new overloads, and incremental overloads is shown in Appendix C. One-line Diagrams for the normal system and contingencies causing violations are included in Appendix D.

Category A

There are no new Category A (normal or N-0) criteria violations caused by the addition of VPP. One-line Diagrams of the normal system results are given in Appendix D.

Category B

There were no new Category B criteria violations for the peak case. There were two new minor (less than 3%) violations for the light spring case. These are as follows:

Impacted Element	Contingency	Base Case	VPP 914
Lighthipe to Hinson 230 kV	Hinson to Del Amo 230 kV (44)	0.983	1.008
Lighthipe to Mesa 230 kV	Alimitos to Barre 230 kV (5)	0.970	1.030

The limitation on Lighthipe to Mesa 230 kV was identified as a wave trap in the 610 MW SIS. Since the wave trap was overloaded for a Category C contingency in the pre project case for 610 MW study, SCE was initiating a project to remove the wave traps and modify the protection for the line.

The overload caused by loss of Alimitos to Barre 230 kV is demimus, and should not be attributed to VPP.

[7] One consequence is that if there were Category C contingencies that did not cause any violation whatsoever in the 610 MW study, we may not have studied it. However, we do not believe this is likely. It is also not important because Category C violations rarely lead to transmission system upgrades that require mitigation. In any event these will be covered in the completed SIS.

Should further analysis determine that these criteria analysis are real, we expect that they will be mitigated by simple remedies such as replacing substation terminal equipment such as wave traps or by examining and increasing the rating of the line. Should these measures fail, operating procedures or upgrading the conductor could be used to mitigate these overloads.

Category C

There were no new Category C criteria violations for the peak case. There were two new minor (less than 8%) violations for the light spring case. These are as follows:

Impacted Element	Contingency	Base Case	VPP 914
Lighthipe to Mesa 230 kV	Mesa to Redondo 230 kV (204) Laguna Bell to Rio Hondo 230 kV	0.927	1.064
Lighthipe to Mesa 230 kV	Mesa to Redondo 230 kV (206) Laguna Bell to Goodrich 230 kV	0.980	1.071

As with the Category B violation Lighthipe to Mesa 230 kV is the same line identified in the 610 MW study whose rating will be increased by upgrading the protection to remove the wave traps.

In most cases Category C impacts do not require mitigation because applicable criteria usually permit load dropping for these contingencies. Should further analysis determine that there are other Category C criteria violations not identified here or that removing the wave traps is inadequate, we expect that these violations will be mitigated by simple remedies such as replacing substation terminal equipment such as wave traps or by examining and increasing the rating of the line. Should these measures fail, operating procedures or upgrading the conductor could be used to mitigate these overloads.

APPENDIX A
STUDY PLAN

System Impact Study

Study Plan

City of Vernon

Vernon Power Plant Expansion

July 11, 2006

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Introduction

At the request of the City of Vernon, Southern California Edison (SCE) will perform an Interconnection System Impact Study (SIS) of Vernon's proposed Vernon Power Plant (VPP) pursuant to the Interconnection System Impact Study Agreement entered into by SCE and Vernon on June 19, 2006. This request is for a study of a 304 MW (net) addition to a previous interconnection request of 610 MW (net). The plant will be 914 MW (net) and will interconnect to SCE. The project is scheduled to be online summer of 2009. However, because the requests are separated by projects with intervening queue positions, these requests cannot be combined.

This Study Plan provides scope, content, and assumptions to be included in the performance of the SIS in addition to those provided in the Large Generator Interconnection Procedures (LGIP) and/or the SIS Agreement executed between Vernon and SCE on June 19, 2006. Nothing in this Study Plan is intended to modify, limit or expand any rights and obligations of Vernon, SCE and/or the California Independent System Operator (CAISO) under the SIS Agreement and/or the LGIP. In the event of conflicting language, the language in the LGIP and SIS Agreement, as applicable, shall prevail.

Study Fee

The applicant has submitted a valid interconnection request and paid a non-refundable fee of $10,000. The parties have agreed to waive the Interconnection Feasibility Study and commence with a detailed Interconnection System Impact Study. A study deposit for performing the SIS of $50,000 has been paid.[1]

Schedule

The following schedule shows the milestones associated with the study.

Task	Milestone Description	Target Date*
1	Receipt by SCE of complete technical data from Vernon in accordance with Attachment A to Appendix 1 of the LGIP	6/5/06
2	Draft Study Plan Completed	6/20/06
3	Signed System Impact Study Agreement and Payment of Deposit	6/20/06
4	Receive comments and finalize draft study plan	7/11/06
5	Issue Draft SIS report to CAISO for review	90 CD pursuant to LGIP
6	Issue Final SIS report to Vernon	120 CD pursuant to LGIP and SIS Agreement

[1] Refer to ISO's Standard Large Generator Interconnection Procedures (LGIP) Effective July 1, 2005, Issued on August 30 2005.

SCE received an executed System Impact Study Agreement (SISA) from the Applicant (including the study deposit) on June 20, 2006.

Cost Estimates

As specified in the LGIP, a non-binding good faith estimate of cost responsibility and a non-binding good faith estimate of time to implement the interconnection shall be provided. This estimate shall include both direct interconnection and network upgrade costs.

Interconnection Plan

The interconnection of the VPP to the SCE grid will be via a new double circuit 230 kV line to SCE's Laguna Bell Substation. It is assumed that the Applicant will build the Project, the 230 kV bus and substation at the proposed project site and, unless otherwise agreed to by SCE, the double circuit 230 kV line.

A single-line diagram for VPP is shown in Attachment 2. This diagram was provided along with the project technical data.

Additional Study Assumptions

In addition to the study assumptions specified in the SIS Agreement, SCE will conduct the SIS using the following assumptions:

1) The plant load of 29 MW will be modeled.

2) The City of Vernon will design, construct, own, and maintain its proposed facility.

3) Unless otherwise agreed to by SCE, it is assumed that Vernon will design, build, and own the 230 kV transmission lines (generation tie line) that connect the plant switchyard to the grid.

4) The California-Oregon Intertie (Path 66), Midway-Los Banos path (Path 15), and the Northern-Southern California Intertie (Path 26) transfer limits will not be increased from their current limits to accommodate the VPP. It is assumed that the VPP output can be accommodated within the transfer capabilities of Path 66, Path 15, and Path 26. The published transfer capabilities for the SCE service area are contained in the Path Rating Catalog, available from the WECC.

5) The initial VPP request for 610 MW (net) was for a 2x1 Combined Cycle unit with particular technical parameters. The expansion by 304 MW (net) is realized by converting to a 3x1 with associated technical parameter changes. For all the studies outlined below (power flow, transient stability, and short circuit) the increment due to the expansion will be determined by studying the full 914 MW (net) at the 304 MW queue position with the original 610 MW 2x1 model removed. The incremental impacts due solely to the expansion will be determined by comparing the impacts

from the 610 MW study and the impacts from the 304 MW Expansion study completed as outlined above.

Power Flow Base Case Assumptions

Two power flow scenarios will be used in this study:

1) 2009 Heavy Summer:

   The 2009 Heavy Summer scenario models the SCE transmission system and expected operating conditions during the summer peak that assumes a one-in-ten-year heat wave. The Heavy 2009 Summer scenario will be used for power flow analysis, post transient power flow analysis, and dynamic stability analysis.

2) 2010 Light Spring

   The 2009 Light Spring scenario assumes 65% of the Heavy Summer load. The 2009 Light Spring scenario will be used for power flow analysis, post transient power flow analysis, and dynamic stability analysis.

For each of the load scenarios, a "pre-project" and "post-project" base case will be used to assess the impacts of the interconnection of the VPP.

Base Case Generation Assumptions

Pursuant to Section 7.3 of the LGIP, the base case may include the proposed generating facilities in the Southern California area listed in Attachment 3 [to be updated].

Study Scope

The scope of the SIS will be pursuant to Section 7.3 of the LGIP. The specific studies conducted for the SIS are outlined in this section.

Steady State Power Flow Studies

The base cases will be used to simulate the impact of the new facility during normal operating conditions, as well as single and selected multiple (CAISO Categories "B" and "C") outages. Both conditions immediately following contingencies and post transient conditions will be studied.[2] CAISO Category C contingencies are studied to ascertain VPP potential impact on the possibility of widespread outages. The study will cover the transmission facilities in SCE's planning areas.

The single (CAISO Category "B") and selected multiple (CAISO Category "C") contingencies include the following outages[3]:

[2] Post transient conditions will be modeled with full power flow controls as well as any applicable Special Protection Schemes. Pre-transient conditions will be simulated by locking power flow controls such as transformer controls and area interchange.
[3] As soon as the "B" and "C" outage list is put together, SCE will send it to Cal-ISO and Vernon for review and comment.

CAISO Category "B"

- B2 - All single transmission circuit outages (230 - 500 kV)
- Selected overlapping (single generator unit and transmission circuit) outages

CAISO Category "C"

- C3 - Selected combination of two successive category B outages (except those included above in Category "B")
- C5 - Outages of double circuit tower lines

Short Circuit Duty Study

Short circuit studies will be conducted to determine the fault duties (both three-phase and single-line-to-ground for the bulk power system and three-phase for the subtransmission system) on existing SCE facilities before and after the proposed project addition. The fault duty results will then be used to identify overstressed equipment, if any, that results solely from the addition of the proposed facility.

Dynamic Stability Study

Dynamic stability studies will be conducted using the 2009 Summer Peak and 2010 Light Load Full Loop Base Cases to ensure that the transmission system remains in operating equilibrium through abnormal operating conditions after the new facility begins operation. Other SCE transmission projects and new generation projects that will be operational by 2009 will also be modeled in the base case.

Fault clearing time will be determined by SCE Protection Engineering to determine whether the new facility will create any system instability during the following outages:

Critical Clearing Time (Summer Peak)

Determine the critical clearing time for the following Category "B" Contingency:

a) A three-phase fault cleared within the critical clearing time at the VPP 230 kV bus followed by the loss of the VPP – Laguna Bell 230 kV circuit #1.

Specific Category "B" Contingencies for this Project (Summer Peak and Light Load):

b) Full load rejection of the proposed 914 MW power plant (960 MW light load).

c) A three-phase fault with the normal clearing time at the VPP 230 kV bus followed by the loss of the VPP STG.

d) A three-phase fault with the normal clearing time at the VPP 230 kV bus followed by the loss of the VPP – Laguna Bell 230 kV circuit #1.

Since the new VPP – Laguna Bell 230 kV circuits #1 and #2 are electrically identical we do not need to simulate the outage of circuit #2.

e) A three-phase fault with the normal clearing time at the Laguna Bell 230 kV bus followed by the loss of the Laguna Bell – Rio Hondo 230 kV circuit #1.

f) A three-phase fault with the normal clearing time at the Laguna Bell 230 kV bus followed by the loss of the Laguna Bell – Goodrich 230 kV circuit #1.

g) A three-phase fault with the normal clearing time at the Laguna Bell 230 kV bus followed by the loss of the Laguna Bell – Del Amo 230 kV circuit #1.

h) A three-phase fault with the normal clearing time at the Laguna Bell 230 kV bus followed by the loss of the Laguna Bell – La Fresa 230 kV circuit.

Specific Category "C" Contingency for this Project (Summer Peak and Light Load):

i) A prefault outage of the Laguna Bell – Goodrich 230 kV circuit, then a three-phase fault with the normal clearing time at the Laguna Bell 230 kV bus, followed by the loss of the Laguna Bell – Rio Hondo 230 kV circuit.

j) A prefault outage of the Laguna Bell – Del Amo 230 kV circuit #1, then a three-phase fault with the normal clearing time at the Laguna Bell 230 kV bus, followed by the loss of the Laguna Bell – La Fresa 230 kV circuit #2.

Specific Category "D" Contingency for this Project (Summer Peak and Light Load):

k) A prefault outage of the Laguna Bell – Rio Hondo 230 kV circuit, then a three-phase fault with the normal clearing time at the VPP 230 kV bus, followed by the loss of a double circuit tower removing both the Laguna Bell – Del Amo and the Laguna Bell – La Fresa 230 kV transmission lines.

NERC/CAISO Category "B" Contingencies (Summer Peak and/or Light Load):

Limited selection of NERC/CAISO Category "B" Contingencies for the SCE service territory will be simulated.

NERC/CAISO Category "C" Contingencies

Very limited selection of NERC/CAISO Category "C" contingencies for the SCE service territory will be simulated.

Transmission Line Evaluation

The transmission line evaluation will identify existing transmission lines requiring upgrades in order to mitigate overloading due to the new generation, if any.

Substation Evaluation

The Substation evaluation will identify existing equipment, if any, requiring upgrades to mitigate problems caused by overstress or overload.

Revisions to Study

In the event that the Study Plan requires revision due to changes in the application queue or other reasons, SCE will provide advance notification to Vernon and the ISO.

Attachment 1

Selected Regional Transmission Assets and Routing Links in the Vicinity of the Proposed Vernon Power Plant

Provided with Project Technical Data

Attachment 2

One-Line Schematic of Conceptual Switchyard to
Southern California Edison

Provided with Project Technical Data

Attachment 3

Base Case List

To be expanded to include relevant projects in queue positions between 101 and the new 304 MW request.

Project ID	Queue Position Date	Project Type	Project Size (MW)	Current Service Date	Connection Point	Included in Study?
TOT005	06/10/97	Gen	830	04/21/03	Victor 230 KV	included
TOT004	05/17/99	Gen	1000	10/01/05	San Bernardino 230 KV	included
TOT010	06/22/99	Gen	450	07/17/01	Alamitos / Huntington Beach 230 KV	included
TOT018	07/21/99	Gen	750	05/01/05	Pastoria 230 KV	may be
WDT044	08/10/99	Gen	49.9	01/01/00	Vestal 230 KV: Pandol 66 KV	may be
WDT038	09/22/99	Gen	110	10/12/99	Pardee 230 KV: Appgen 66 KV	may be
WDT040	10/06/99	Gen	17.1	05/30/00	Santiago 230 KV: Santiago 66 KV	included
WDT041	12/01/99	Gen	34	03/17/00	Hinson 230 KV: Carbogen 66 KV	included
WDT042	01/07/00	Gen	40	12/31/03	Devers - Garnet 115 KV: Seawind 115 KV	may be
TOT019	01/25/00	Gen	44.4	03/22/01	Devers - Farrell - Windland 115 KV	may be
TOT021	01/25/00	Gen	22.2	09/15/01	Devers - Farrell - Windland 115 KV	may be
TOT051	01/25/00	Gen	22.44	10/01/03	near Altwind 115 KV	may be
TRA001	06/06/00	Trans	n/a	01/01/02	Reconductor Barre - Lewis & Barre - Villa Park 230 KV	included
TOT032	06/14/00	Gen	850	05/01/07	Devers 230 KV	may be
TOT040	08/30/00	Gen	110	11/10/00	Harborgen 230 KV	may be
TOT041	10/06/00	Gen	280	08/31/07	El Segundo 230 KV	included
WDT054	01/08/01	Gen	16.9	06/01/05	Devers 230 KV: Venwind 33 KV	may be
TRA002	01/11/01	Trans		06/01/05	Loop into San Onofre - Chino 230 KV	included
TOT048	02/16/01	Gen	45.3	07/25/01	Devers - Garnet 115 KV	may be
TOT056	02/27/01	Gen	90.6	07/25/01	Devers - Garnet 115 KV	may be
WDT073	03/01/01	Gen	80	12/01/03	Vista 230 KV: Colton 66 KV	may be
WDT075	03/09/01	Gen	39.6	01/01/01	Valley 500 KV: Eastside 115 KV	may be
WDT082	04/20/01	Gen	19.8	05/31/02	Pardee 230 KV: Tengen 66 KV	may be
WDT080	04/24/01	Gen	28.5	07/04/01	Vista 230 KV: Colton 66 KV	may be
TOT005	05/01/01	Gen	20	04/21/03	Victor 230 kV	included
WDT086	05/08/01	Gen	8	07/01/01	La Fresa 230 KV: Sanitreat 66 KV	included
TOT081	05/11/01	Trans	0	01/01/08	Pastoria 230 KV	included
TRA003	05/24/01	Trans	0	06/01/06	Series capacitor upgrades to 500 KV lines	included
WDT053	06/14/01	Gen	42.6	08/16/02	Garnet 115 KV	may be
TOT067	06/14/01	Gen	330	05/01/05	Sylmar 230 KV	may be
WDT092	07/03/01	Gen	66	08/22/02	Devers 230 KV: Sanwind 33 KV	may be

Project ID	Queue Position Date	Project Type	Project Size (MW)	Current Service Date	Connection Point	Included in Study?
7068	10/18/01	Gen	47	06/01/02	Pico 66 KV	included
TRA004	01/08/02	Trans	n/a	06/01/04	4th Mira Loma Substation AA 1120-MVA 500/230 kV Transformer Bank and Split 230 kV Bus[1]	included
WDT098	01/14/02	Gen	40	06/05/02	Vista 230 KV: 66 KV	included
TOT089	01/17/02	Trans	1200	06/01/09	Devers 500 KV to Hassayampa or Harquahala 500 KV	included
2521	04/26/02	Gen	10.6		Rio Hondo 230 KV: 66 KV	included
EAK049	04/29/02	Gen	134	06/01/05	Vernon 66 kV	included
~~TOT017~~	~~05/02/02~~	~~Gen~~	~~1260~~	~~01/01/06~~	~~Palo Verde - Devers 500 KV~~	~~included~~
TRA005	05/13/02	Trans		2005	Valley 500/115 KV (split low side with 2 A banks on each side)	included
2538	06/21/02	Gen	14.66	07/31/02	Villa Park 230 KV: 66 KV	included
WDT018	08/26/02	Load	28	02/01/04	Rio Hondo 230 KV: 66 KV	included
WDT122	09/25/02	Load	21	02/01/04	Etiwanda 230 KV: 66 KV	included
WDT123	12/12/02	Gen	8.73	08/01/04	Garnet 115 kV: 33 KV	may be
WDT123	12/12/02	Gen	3	08/01/04	Garnet 115 kV: 33 KV	may be
WDT123	12/12/02	Gen	6.75	07/01/04	Garnet 115 kV: 33 KV	may be
WDT115	12/17/02	Load	40	04/01/06	Walnut 230 KV: 66 KV	included
WDT124	02/11/03	Gen	32	10/01/04	Mira Loma 230 KV: Cleargen 66 KV	included
TOT004	02/26/03	Gen	0	10/01/05	San Bernardino 230 KV	included
TOT101	04/03/03	Trans	520	01/01/07	Palo Verde - Devers 500 KV Line	included
TRA006	04/03/03	Trans		2005	Pastoria/Pardee 230 KV	included
~~TOT099~~	~~04/15/03~~	~~Gen~~	~~201~~	~~12/12/07~~	~~Antelope 230 KV~~	~~included~~
TOT079	04/22/03	Gen	520	01/01/07	Palo Verde - Devers 500 KV Line	may be
TOT106	05/06/03	Trans	520	01/01/07	Palo Verde - Devers 500 KV Line	may be
TOT104	05/07/03	Trans	1140	01/01/07	Devers 500 KV	may be
TOT108	09/04/03	Gen	300	08/01/06	New Tehachapi Sub. 5	included
TRA007	09/19/03	Trans		06/01/05	Mira Loma/Etiwanda 230 KV	included
WDT147	12/31/03	Gen	45.6	11/15/04	Valley 115 KV	may be
TOT109	01/06/04	Gen	72	10/01/05	San Bernardino 230 KV	may be
WDT156	03/08/04	Gen	120	01/01/05	Vista 115 KV: Devil Canyon 115 KV	may be
WDT157	03/08/04	Gen	160	01/01/05	Vista 115 KV: Calectric 115 KV	may be

Project ID	Queue Position Date	Project Type	Project Size (MW)	Current Service Date	Connection Point	Included in Study?
TRA008	04/19/04	Trans		06/01/06	Split 115 KV system and new transformer at Mirage	included
TRA009	04/19/04	Trans		06/01/05	Antelope 230/66 KV (120 MVA to 280 MVA No. 3 A bank turned off)	included
TOT113	05/11/04	Gen	201		New Tehachapi Sub. 2	included
TRA010	06/18/04	Trans		2009	Rector 230 KV	may be
TOT117	07/19/04	Gen	300		New Tehachapi Sub. 2	included
TRA011	09/02/04	Trans		06/01/06	Mira Loma 500 KV	included
TRA012	11/01/04	Trans		2009	Loop into Lugo - Serrano 500 KV (includes de-loop of Lugo -Serrano into Mira Loma and several 230 KV line re-arrangements)	included
TOT119	11/18/04	Gen	157	05/01/06	Pastoria Substation	may be
WDT165	11/23/04	Gen	325	01/01/07	Vista 115 kV bus	may be
TOT120	12/14/04	Gen	100.5		Devers Substation	may be
WDT177	01/06/05	Gen	96	08/01/05	City of Riverside	may be
TOT121	01/31/05	Gen	599	04/01/06	El Dorado Substation	may be
~~WDT169~~	~~02/08/05~~	~~Gen~~	~~49.9~~	~~06/01/05~~	~~-~~	~~may be~~
~~WDT170~~	~~02/08/05~~	~~Gen~~	~~49.9~~	~~06/01/06~~	~~66kV bus at Saugus Substation~~	~~may be~~
TOT037	02/14/05	Gen	810	12/01/06	Valley Substation	may be
TOT107	02/24/05	Trans	560	01/01/08	Mira Loma-Vista line	may be
WDT168	03/07/05	Trans	56	04/01/06	New 115 kV substation looping the Moreno-Valley 115 kV line	may be
WDT179	03/18/05	Gen	49.9	03/01/06	66kV line tap between Colton and Bloomington Substations at the project site	may be
~~TOT130~~	~~04/12/05~~	~~Gen~~	~~314~~	~~-~~	~~Magunden Substation~~	~~may be~~
~~TOT128~~	~~04/15/05~~	~~Gen~~	~~1412~~	~~01/01/08~~	~~Rancho Vista 500kV Substation~~	~~may be~~
TOT138	05/06/05	Gen	424.8	01/01/07	Long Beach 220 kV substation bus	included
TOT135	05/06/05	Gen	500.5	09/01/07	Walnut Substation 230 kV Switchyear	included
WDT182	05/06/05	Gen	507	09/01/07	Valley Sub 115 kV	included
~~TOT137~~	~~05/06/05~~	~~Gen~~	~~200.2~~	~~09/01/07~~	~~Lighthipe Substation~~	~~May withdraw~~
~~WDT188~~	~~05/13/05~~	~~Gen~~	~~49.9~~	~~05/01/06~~	~~66kV line between Pedley and Chino Substation~~	~~may be~~
~~TOT139~~	~~06/07/05~~	~~Gen~~	~~543~~	~~05/01/08~~	~~Etiwanda 220 kV substation~~	~~may be~~

Project ID	Queue Position Date	Project Type	Project Size (MW)	Current Service Date	Connection Point	Included in Study?
~~TOT143~~	~~06/09/05~~	~~Gen~~	~~492.5~~	~~05/01/08~~	~~Devers Substation 115kV bus~~	~~may be~~
~~TOT142~~	~~06/15/05~~	~~Gen~~	~~591~~	~~01/01/07~~	~~Eldorado Substation 230kV bus~~	~~may be~~
TOT132	06/16/05	Gen	500	09/01/07	New substation looping the Valley-Serrano 500 kV line	may be
~~WDT187~~	~~06/17/05~~	~~Gen~~	~~49.9~~	~~06/01/06~~	~~66kV line from FedGen into Laguna Bell~~	~~may be~~
WDT190	06/17/05	Gen	49.9	05/01/06	Tap into 66kV line into Browning Substation	may be
TOT148	06/27/05	Gen	250	08/01/07	New Tehachapi Substation No. 5	included
~~TOT072~~	~~07/13/05~~	~~Gen~~	~~50~~	~~11/01/06~~	~~Devers-Farrell-Windland 115 kV line~~	~~may be~~
TRA13	07/19/05	Trans		2009	Devers - San Bernardino 230 KV No. 2	may be
~~WDT206~~	~~08/22/05~~	~~Gen~~	~~174~~	-	~~Etiwanda 66 kV Sub~~	~~may be~~
TRA14	?	Trans		2011	Vincent/Mira Loma 500 KV	may be
~~WDT207~~	~~08/24/05~~	~~Gen~~	~~49.9~~	~~05/01/06~~	~~Walnut 66 kV Sub~~	~~included~~
~~WDT208~~	~~08/24/05~~	~~Gen~~	~~49.9~~	~~05/01/06~~	~~Vista 66 kV Sub~~	~~may be~~
~~WDT209~~	~~08/30/05~~	~~Gen~~	~~49.9~~	~~05/01/06~~	~~Padua 66 kV Sub~~	~~may be~~
TOT146	09/14/05	Gen	51	04/01/06	New Dutchwind Sub	included
Vernon Project	09/12/05	GEN	610	03/31/09	Laguna Bell Sub	Included
TOT151	11/22/05	Gen	400	08/01/09	New Tehachapi Sub. 5	included
TOT152	12/28/05	Gen	120	09/30/07	New Tehachapi Sub. 1	included
TOT166	02/10/06	Gen	613.5	06/01/10	Hinson 230 kV	included
TOT153	02/22/06	Gen	51	12/31/09	New Tehachapi Sub. 1	included
TOT154	02/24/06	Gen	570	03/01/09	Vincent 230 kV	included
TOT161	03/01/06	Gen	220	10/31/08	Tehachapi Substation #1	included
TOT164	03/01/06	Gen	180	10/31/08	Tehachapi Substation #2	included
TOT162	03/01/06	Gen	550	10/31/08	Tehachapi Substation #1	included
TOT163	03/01/06	Gen	600	10/31/09	Tehachapi Substation #1	included
TOT165	03/01/06	Gen	160	10/31/09	Tehachapi Substation #5 (Cottonwind Sub)	included
TOT167	04/17/06	Gen	120	09/30/07	Vincent-Westwind-Eastwind (Sagebrush) 230 kV line at Vincent Substation.	included

Project ID	Queue Position Date	Project Type	Project Size (MW)	Current Service Date	Connection Point	Included in Study?
Vernon Project Expansion	05/10/06	GEN	304	03/31/09	Laguna Bell Sub	Included

APPENDIX B
CONTINGENCIES

Appendix C

List of Power Flow Contingencies

2008 Heavy Summer and 2008 Light Spring list of contingencies.

```
Category “B” Contingency List.
#   The following contingencies are included.
#   B2 - All single transmission circuit outages (230 kV).
#   B3 - All single transformer outages (500/230kV) under the ISO control.
#   Selected overlapping (single generator unit and transmission circuit outages).
#

#   Base Case -- Case Number 0
0
#
########################## B2 - LINE CONTINGENCIES (230 kV) ############################
# All 500-kV line contingencies were simulated with the governor power flow method.
#
#   Case Number 1
1  "MEAD S   230.00"  "ELDORDO  230.00"  "1"  0
0
#
#   Case Number 2
1  "MEAD S   230.00"  "ELDORDO  230.00"  "2"  0
0
#
#   Case Number 3
1  "ALMITOSE 230.00"  "BARRE    230.00"  "1"  0
0
#
#   Case Number 4
1  "ALMITOSE 230.00"  "CENTER S 230.00"  "1"  0
0
#
#   Case Number 5
1  "ALMITOSW 230.00"  "BARRE    230.00"  "2"  0
0
#
#   Case Number 6
1  "ALMITOSW 230.00"  "LITEHIPE 230.00"  "1"  0
0
#
#   Case Number 7
1  "TOT137   230.00"  "LITEHIPE 230.00"  "1"  0
21
0
#   Case Number 8
1  "ARCO SC  230.00"  "HINSON   230.00"  "1"  0
0
#
#   Case Number 9
1  "ARCO SC  230.00"  "HINSON   230.00"  "2"  0
0
#
#   Case Number 10
1  "BARRE    230.00"  "ELLIS    230.00"  "1"  0
0
#
#   Case Number 11
1  "BARRE    230.00"  "VILLA PK 230.00"  "1"  0
0
#
#   Case Number 12
1  "BARRE    230.00"  "LEWIS    230.00"  "1"  0
0
#
#   Case Number 13
1  "CAMINO   230.00"  "MEAD S   230.00"  "E"  0
0
#
#   Case Number 14
1  "CAMINO   230.00"  "MEAD S   230.00"  "W"  0
```

```
0
#
#   Case Number 15
1  "CAMINO   230.00"  "GENE     230.00"  "1"  0
0
#
#   Case Number 16
1  "CENTER S 230.00"  "MESA CAL 230.00"  "1"  0
0
#
#   Case Number 17
1  "CENTER S 230.00"  "OLINDA   230.00"  "1"  0
0
#
#   Case Number 18
1  "CHINO    230.00"  "MIRALOMW 230.00"  "1"  0
0
#
#   Case Number 19
1  "CHINO    230.00"  "MIRALOMW 230.00"  "2"  0
0
#
#   Case Number 20
1  "CHINO    230.00"  "SERRANO  230.00"  "1"  0
0
#
#   Case Number 21
1  "CHINO    230.00"  "MIRALOME 230.00"  "3"  0
0
#
#   Case Number 22
1  "DELAMO   230.00"  "CENTER S 230.00"  "1"  0
0
#
#   Case Number 23
1  "DELAMO   230.00"  "ELLIS    230.00"  "1"  0
0
#
#   Case Number 24
1  "DELAMO   230.00"  "LAGUBELL 230.00"  "1"  0
0
#
#   Case Number 25
1  "EAGLROCK 230.00"  "MESA CAL 230.00"  "1"  0
0
#
#   Case Number 26
1  "EAGLROCK 230.00"  "PARDEE   230.00"  "1"  0
0
#
#   Case Number 27
1  "EAGLROCK 230.00"  "SYLMAR S 230.00"  "1"  0
0
#
#   Case Number 28
1  "EL NIDO  230.00"  "LA FRESA 230.00"  "3"  0
0
#
#   Case Number 29
1  "EL NIDO  230.00"  "LA FRESA 230.00"  "4"  0
0
#
#   Case Number 30
1  "EL NIDO  230.00"  "LCIENEGA 230.00"  "1"  0
0
#
#   Case Number 31
1  "EL NIDO  230.00"  "CHEVMAIN 230.00"  "1"  0
0
#
```

```
#   Case Number 32
1  "ELLIS    230.00"  "HUNTGBCH 230.00"  "1"  0
0
#
#   Case Number 33
1  "ELLIS    230.00"  "HUNTGBCH 230.00"  "3"  0
0
#
#   Case Number 34
1  "ELLIS    230.00"  "JOHANNA  230.00"  "1"  0
0
#
#   Case Number 35
1  "ELLIS    230.00"  "SANTIAGO 230.00"  "1"  0
0
#
#   Case Number 36
1  "ELLIS    230.00"  "HUNTBCH1 230.00"  "2"  0
0
#
#   Case Number 37
1  "ELLIS    230.00"  "HUNTBCH1 230.00"  "4"  0
0
#
#   Case Number 38
1  "ELSEGNDO 230.00"  "EL NIDO  230.00"  "1"  0
0
#
#   Case Number 39
1  "ELSEGNDO 230.00"  "CHEVMAIN 230.00"  "1"  0
0
#
#   Case Number 40
1  "ETIWANDA 230.00"  "SANBRDNO 230.00"  "1"  0
0
#
#   Case Number 41
1  "ETIWANDA 230.00"  "VSTA     230.00"  "1"  0
0
#
#   Case Number 42
1  "HARBOR   230.00"  "HINSON   230.00"  "1"  0
0
#
#   Case Number 43
1  "HARBOR   230.00"  "LBEACH   230.00"  "1"  0
0
#
#   Case Number 44
1  "HINSON   230.00"  "DELAMO   230.00"  "1"  0
0
#
#   Case Number 45
1  "JOHANNA  230.00"  "SANTIAGO 230.00"  "1"  0
0
#
#   Case Number 46
1  "LA FRESA 230.00"  "HINSON   230.00"  "1"  0
0
#
#   Case Number 47
1  "LA FRESA 230.00"  "LAGUBELL 230.00"  "1"  0
0
#
#   Case Number 48
1  "LA FRESA 230.00"  "REDONDO  230.00"  "1"  0
0
#
#   Case Number 49
1  "LA FRESA 230.00"  "REDONDO  230.00"  "2"  0
```

```
0
#
#   Case Number 50
1  "LAGUBELL 230.00"  "RIOHONDO 230.00"  "1"  0
0
#
#   Case Number 51
1  "LBEACH   230.00"  "LITEHIPE 230.00"  "1"  0
0
#
#   Case Number 52
1  "LCIENEGA 230.00"  "LA FRESA 230.00"  "1"  0
0
#
#   Case Number 53
1  "LITEHIPE 230.00"  "HINSON   230.00"  "1"  0
0
#
#   Case Number 54
1  "LITEHIPE 230.00"  "MESA CAL 230.00"  "1"  0
0
#
#   Case Number 55
1  "MESA CAL 230.00"  "REDONDO  230.00"  "1"  0
0
#
#   Case Number 56
1  "MESA CAL 230.00"  "RIOHONDO 230.00"  "1"  0
0
#
#   Case Number 57
1  "MESA CAL 230.00"  "WALNUT   230.00"  "1"  0
0
#
#   Case Number 58
1  "MESA CAL 230.00"  "ANTELOPE 230.00"  "1"  0
0
#
#   Case Number 59
1  "MIRALOMW 230.00"  "WALNUT   230.00"  "1"  0
0
#
#   Case Number 60
1  "MOORPARK 230.00"  "ORMOND   230.00"  "1"  0
0
#
#   Case Number 61
1  "MOORPARK 230.00"  "ORMOND   230.00"  "2"  0
0
#
#   Case Number 62
1  "MOORPARK 230.00"  "ORMOND   230.00"  "3"  0
0
#
#   Case Number 63
1  "MOORPARK 230.00"  "ORMOND   230.00"  "4"  0
0
#
#   Case Number 64
1  "OLINDA   230.00"  "WALNUT   230.00"  "1"  0
0
#
#   Case Number 65
1  "PARDEE   230.00"  "MOORPARK 230.00"  "1"  0
0
#
#   Case Number 66
1  "PARDEE   230.00"  "MOORPARK 230.00"  "2"  0
0
#
```

```
#   Case Number 67
1  "PARDEE   230.00"  "MOORPARK 230.00"  "3"  0
0
#
#   Case Number 68
1  "PARDEE   230.00"  "PASTORIA 230.00"  "1"  0
0
#
#   Case Number 69
1  "PARDEE   230.00"  "S.CLARA  230.00"  "1"  0
0
#
#   Case Number 70
1  "PARDEE   230.00"  "SYLMAR S 230.00"  "1"  0
0
#
#   Case Number 71
1  "PARDEE   230.00"  "SYLMAR S 230.00"  "2"  0
0
#
#   Case Number 72
1  "PARDEE   230.00"  "VINCENT  230.00"  "1"  0
0
#
#   Case Number 73
1  "PARDEE   230.00"  "SAUG TAP 230.00"  "1"  0
0
#
#   Case Number 74
1  "PARDEE   230.00"  "SAUG TAP 230.00"  "2"  0
0
#
#   Case Number 75
1  "REDONDO  230.00"  "LITEHIPE 230.00"  "1"  0
0
#
#   Case Number 76
1  "RIOHONDO 230.00"  "VINCENT  230.00"  "2"  0
0
#
#   Case Number 77
1  "S.CLARA  230.00"  "GOLETA   230.00"  "1"  0
0
#
#   Case Number 78
1  "S.CLARA  230.00"  "GOLETA   230.00"  "2"  0
0
#
#   Case Number 79
1  "S.CLARA  230.00"  "MANDALAY 230.00"  "1"  0
21
0
#
#   Case Number 80
1  "S.CLARA  230.00"  "MANDALAY 230.00"  "2"  0
21
0
#
#   Case Number 81
1  "S.CLARA  230.00"  "MOORPARK 230.00"  "1"  0
0
#
#   Case Number 82
1  "S.CLARA  230.00"  "MOORPARK 230.00"  "2"  0
0
#
#   Case Number 83
1  "S.ONOFRE 230.00"  "SANTIAGO 230.00"  "1"  0
0
#
```

```
#   Case Number 84
1  "S.ONOFRE 230.00"  "SANTIAGO 230.00"  "2"  0
0
#
#   Case Number 85
1  "S.ONOFRE 230.00"  "SERRANO  230.00"  "1"  0
0
#
#   Case Number 86
1  "SANBRDNO 230.00"  "DEVERS   230.00"  "1"  0
0
#
#   Case Number 87
1  "SERRANO  230.00"  "VILLA PK 230.00"  "1"  0
0
#
#   Case Number 88
1  "SERRANO  230.00"  "VILLA PK 230.00"  "2"  0
0
#
#   Case Number 89
1  "SYLMAR S 230.00"  "GOULD    230.00"  "1"  0
0
#
#   Case Number 90
1  "VINCENT  230.00"  "MESA CAL 230.00"  "1"  0
0
#
#   Case Number 91
1  "VINCENT  230.00"  "RIOHONDO 230.00"  "1"  0
0
#
#   Case Number 92
1  "VINCENT  230.00"  "S.CLARA  230.00"  "1"  0
0
#
#   Case Number 93
1  "VINCENT  230.00"  "SEAWEST  230.00"  "1"  0
0
#
#   Case Number 94
1  "PISGAH   230.00"  "ELDORDO  230.00"  "2"  0
0
#
#   Case Number 95
1  "PISGAH   230.00"  "LUGO     230.00"  "1"  0
0
#
#   Case Number 96
1  "PISGAH   230.00"  "LUGO     230.00"  "2"  0
0
#
#   Case Number 97
1  "PISGAH   230.00"  "CIMA     230.00"  "1"  0
0
#
#   Case Number 98
1  "TOT005   230.00"  "VICTOR   230.00"  "1"  0
21
0
#   Case Number 99
1  "VICTOR   230.00"  "LUGO     230.00"  "1"  0
0
#
#   Case Number 100
1  "VICTOR   230.00"  "LUGO     230.00"  "2"  0
0
#
#   Case Number 101
1  "CIMA     230.00"  "ELDORDO  230.00"  "1"  0
```

```
0
#
#   Case Number 102
1  "KRAMER   230.00"  "LUGO     230.00"  "1"  0
0
#
#   Case Number 103
1  "KRAMER   230.00"  "LUGO     230.00"  "2"  0
0
#
#   Case Number 104
1  "KRAMER   230.00"  "COLWATER 230.00"  "1"  0
0
#
#   Case Number 105
1  "KRAMER   230.00"  "COLWATER 230.00"  "2"  0
0
#
#   Case Number 106
1  "BLM EAST 230.00"  "BLM WEST 230.00"  "1"  0
21
0
#
#   Case Number 107
1  "BLM WEST 230.00"  "KRAMER   230.00"  "1"  0
21
0
#   Case Number 108
1  "LUZ LSP  230.00"  "KRAMER   230.00"  "1"  0
21
0
#   Case Number 109
1  "LUZ8     230.00"  "LUZ LSP  230.00"  "1"  0
0
#
#   Case Number 110
1  "LUZ9     230.00"  "LUZ LSP  230.00"  "1"  0
0
#
#   Case Number 111
1  "OAK_VLLY 230.00"  "SANBRDNO 230.00"  "1"  0
0
#
#   Case Number 112
1  "DEVERS   230.00"  "OAK_VLLY 230.00"  "1"  0
0
#
#   Case Number 113
1  "DEVERS   230.00"  "MIRAGE   230.00"  "1"  0
20
0
#
#   Case Number 114
1  "DEVERS   230.00"  "VSTA     230.00"  "2"  0
0
#
#   Case Number 115
1  "VSTA     230.00"  "SANBRDNO 230.00"  "2"  0
0
#
#   Case Number 116
1  "VSTA     230.00"  "DEVERS   230.00"  "1"  0
0
#
#   Case Number 117
1  "GOODRICH 230.00"  "GOULD    230.00"  "1"  0
0
#
#   Case Number 118
1  "GOODRICH 230.00"  "LAGUBELL 230.00"  "1"  0
```

```
0
#
#   Case Number 119
1  "LEWIS    230.00"  "SERRANO  230.00"  "1"  0
0
#
#   Case Number 120
1  "LEWIS    230.00"  "SERRANO  230.00"  "2"  0
0
#
#   Case Number 121
1  "LEWIS    230.00"  "VILLA PK 230.00"  "1"  0
0
#
#   Case Number 122
1  "EAGLEMTN 230.00"  "IRON MTN 230.00"  "1"  0
0
#
#   Case Number 123
1  "IRON MTN 230.00"  "CAMINO   230.00"  "1"  0
0
#
#   Case Number 124
1  "J.HINDS  230.00"  "MIRAGE   230.00"  "1"  0
0
#
#   Case Number 125
1  "J.HINDS  230.00"  "EAGLEMTN 230.00"  "1"  0
0
#
#   Case Number 126
1  "MIRALOME 230.00"  "MIRALOMW 230.00"  "1"  0
0
#
#   Case Number 127
1  "MIRALOME 230.00"  "OLINDA   230.00"  "1"  0
0
#
#   Case Number 128
1  "MIRALOME 230.00"  "PADUA    230.00"  "1"  0
0
#
#   Case Number 129
1  "MIRALOME 230.00"  "VSTA     230.00"  "2"  0
0
#
#   Case Number 130
1  "CHINO    230.00"  "S.ONOFRE 230.00"  "1"  0
0
#
#   Case Number 131
1  "TOT109   230.00"  "SANBRDNO 230.00"  "1"  0
0
#
#   Case Number 132
1  "TOT109   230.00"  "SANBRDNO 230.00"  "2"  0
0
#
#   Case Number 133
1  "VIEJOSC  230.00"  "CHINO    230.00"  "1"  0
0
#
#   Case Number 134
1  "VIEJOSC  230.00"  "S.ONOFRE 230.00"  "1"  0
0
#
#   Case Number 135
1  "ETIWANDA 230.00"  "RANCHVST 230.00"  "1"  0
0
#
```

```
#   Case Number 136
1  "ETIWANDA 230.00"  "RANCHVST 230.00"  "2"  0
0
#
#   Case Number 137
1  "ETIWANDA 230.00"  "RANCHVST 230.00"  "3"  0
0
#
#   Case Number 138
1  "RANCHVST 230.00"  "PADUA    230.00"  "1"  0
0
#
#   Case Number 139
1  "RANCHVST 230.00"  "PADUA    230.00"  "2"  0
0
#
#   Case Number 140
1  "RANCHVST 230.00"  "MIRALOME 230.00"  "1"  0
0
#
#   Case Number 141
1  "RANCHVST 230.00"  "MIRALOME 230.00"  "2"  0
0
#
#   Case Number 142
1  "MIRALOMW 230.00"  "TOT107   230.00"  "1"  0
0
#
#   Case Number 143
1  "TOT107   230.00"  "VSTA     230.00"  "1"  0
0
#
#   Case Number 144
1  "TOT135   230.00"  "WALNUT   230.00"  "1"  0
21
0
#   Case Number 145
1  "ETIWANDA 230.00"  "TOT139DL 230.00"  "1"  0
21
0
#   Case Number 146
1  "DEVERS   230.00"  "TOT032   230.00"  "1"  0
21
0
#   Case Number 147
1  "TOT138   230.00"  "LBEACH   230.00"  "1"  0
21
0
#
########################## B3 - TRANSFORMER CONTINGENCIES (500/230 kV) ############################
#
#   Case Number 148
2  "ELDORDO  500.00"  "ELDORDO  230.00"  "1"  0
0
#
#   Case Number 149
2  "ELDORDO  500.00"  "ELDORDO  230.00"  "2"  0
0
#
#   Case Number 150
2  "LUGO     500.00"  "LUGO     230.00"  "1"  0
0
#
#   Case Number 151
2  "LUGO     500.00"  "LUGO     230.00"  "2"  0
0
#
#   Case Number 152
2  "MIRALOMA 500.00"  "MIRALOMW 230.00"  "1"  0
0
```

```
#
#   Case Number 153
2  "MIRALOMA 500.00"  "MIRALOMW 230.00"  "2"  0
0
#
#   Case Number 154
2  "MIRALOMA 500.00"  "MIRALOME 230.00"  "3"  0
0
#
#   Case Number 155
2  "MIRALOMA 500.00"  "MIRALOME 230.00"  "4"  0
0
#
#   Case Number 156
2  "SERRANO  500.00"  "SERRANO  230.00"  "1"  0
0
#
#   Case Number 157
2  "SERRANO  500.00"  "SERRANO  230.00"  "2"  0
0
#
#   Case Number 158
2  "SERRANO  500.00"  "SERRANO  230.00"  "3"  0
0
#
#   Case Number 159
2  "VINCENT  500.00"  "VINCENT  230.00"  "1"  0
21
0
#   Case Number 160
2  "VINCENT  500.00"  "VINCENT  230.00"  "2"  0
0
#
#   Case Number 161
2  "VINCENT  500.00"  "VINCENT  230.00"  "3"  0
0
#
#   Case Number 162
2  "VINCENT  500.00"  "VINCENT  230.00"  "4"  0
0
#
#   Case Number 163
2  "DEVERS   500.00"  "DEVERS   230.00"  "1"  0
0
#
#   Case Number 164
2  "DEVERS   500.00"  "DEVERS   230.00"  "2"  0
0
#
#   Case Number 165
2  "RANCHVST 500.00"  "RANCHVST 230.00"  "1"  0
0
#
#   Case Number 166
2  "RANCHVST 500.00"  "RANCHVST 230.00"  "2"  0
0
#
##################################################################################################
#
# PROJECT CONTINGENCIES
#
##################################################################################################
#
#   Case Number 167
1  "LAGUBELL 230.00"  "VPWRPLNT 230.00"  "1"  0
0
#
#   Case Number 168
1  "LAGUBELL 230.00"  "VPWRPLNT 230.00"  "2"  0
0
```

```
#
#   Case Number 169
3  "VERNNST1  18.00"  "0"  "1"  0
0
#
#   Case Number 170
3  "VERNNCT1  18.00"  "0"  "1"  0
0
#
#   Case Number 171
3  "VERNNCT2  18.00"  "0"  "1"  0
0
#
#   Case Number 172
3  "VERNNCT3  18.00"  "0"  "1"  0
0
#
-1
# EOF
```

2008 Heavy Summer and 2008 Light Spring list of contingencies.

Category “C” Contingency List.

```
#   The following contingencies are included.
#   C3 - Selected combination of two successive category B outages (except those included above in Category "B").
#   C5 - Outages of double circuit tower lines.

#   Base Case -- Case Number 0
0
#
########################## C3 & C5 CONTINGENCIES ##############################
#
#   Case Number 1
#
1 24006 24016  "1 "    0      line from ALMITOSE 230.00  to  BARRE    230.00
1 24006 24021  "1 "    0      line from ALMITOSE 230.00  to  CENTER S 230.00
21
0
#
#   Case Number 2
 1 24006 24016  "1 "    0      line from ALMITOSE 230.00  to  BARRE    230.00
 1 24008 24016  "2 "    0      line from ALMITOSW 230.00  to  BARRE    230.00
0
#
#   Case Number 3
 1 24006 24016  "1 "    0      line from ALMITOSE 230.00  to  BARRE    230.00
 1 24008 24084  "1 "    0      line from ALMITOSW 230.00  to  LITEHIPE 230.00
0
#
#   Case Number 4
 1 24006 24016  "1 "    0      line from ALMITOSE 230.00  to  BARRE    230.00
 1 24029 24044  "1 "    0      line from DELAMO   230.00  to  ELLIS    230.00
0
#
#   Case Number 5
 1 24006 24021  "1 "    0      line from ALMITOSE 230.00  to  CENTER S 230.00
 1 24008 24016  "2 "    0      line from ALMITOSW 230.00  to  BARRE    230.00
0
#
#   Case Number 6
# 1 24008 24016  "2 "    0      line from ALMITOSW 230.00  to  BARRE    230.00
# 1 24008 24084  "1 "    0      line from ALMITOSW 230.00  to  LITEHIPE 230.00
#0
#
#   Case Number 7
 1 24008 24016  "2 "    0      line from ALMITOSW 230.00  to  BARRE    230.00
 1 24029 24044  "1 "    0      line from DELAMO   230.00  to  ELLIS    230.00
0
#
#   Case Number 8
 1 24006 24021  "1 "    0      line from ALMITOSE 230.00  to  CENTER S 230.00
 1 24008 24084  "1 "    0      line from ALMITOSW 230.00  to  LITEHIPE 230.00
0
#
#   Case Number 9
 1 24006 24021  "1 "    0      line from ALMITOSE 230.00  to  CENTER S 230.00
 1 24029 24021  "1 "    0      line from DELAMO   230.00  to  CENTER S 230.00
0
#
#   Case Number 10
 1 24006 24021  "1 "    0      line from ALMITOSE 230.00  to  CENTER S 230.00
 1 24029 24044  "1 "    0      line from DELAMO   230.00  to  ELLIS    230.00
0
#
#   Case Number 11
 1 24006 24021  "1 "    0      line from ALMITOSE 230.00  to  CENTER S 230.00
 1 24065 24029  "1 "    0      line from HINSON   230.00  to  DELAMO   230.00
0
```

```
#
#   Case Number 12
 1 24008 24084  "1 "    0      line from ALMITOSW 230.00  to  LITEHIPE 230.00
 1 24029 24076  "1 "    0      line from DELAMO   230.00  to  LAGUBELL 230.00
0
#
#   Case Number 13
 1 24008 24084  "1 "    0      line from ALMITOSW 230.00  to  LITEHIPE 230.00
 1 24065 24029  "1 "    0      line from HINSON   230.00  to  DELAMO   230.00
0
#
#   Case Number 14
 1 24015 24065  "1 "    0      line from ARCO SC  230.00  to  HINSON   230.00
 1 24015 24065  "2 "    0      line from ARCO SC  230.00  to  HINSON   230.00
21
0
#
#   Case Number 15
 1 24029 24021  "1 "    0      line from DELAMO   230.00  to  CENTER S 230.00
 1 24029 24076  "1 "    0      line from DELAMO   230.00  to  LAGUBELL 230.00
0
#
#   Case Number 16
 1 24029 24076  "1 "    0      line from DELAMO   230.00  to  LAGUBELL 230.00
 1 24065 24029  "1 "    0      line from HINSON   230.00  to  DELAMO   230.00
0
#
#   Case Number 17
 1 24029 24076  "1 "    0      line from DELAMO   230.00  to  LAGUBELL 230.00
 1 24074 24076  "1 "    0      line from LA FRESA 230.00  to  LAGUBELL 230.00
0
#
#   Case Number 18
 1 24029 24076  "1 "    0      line from DELAMO   230.00  to  LAGUBELL 230.00
 1 24084 24091  "1 "    0      line from LITEHIPE 230.00  to  MESA CAL 230.00
0
#
#   Case Number 19
 1 24029 24076  "1 "    0      line from DELAMO   230.00  to  LAGUBELL 230.00
 1 24091 24125  "1 "    0      line from MESA CAL 230.00  to  REDONDO  230.00
0
#
#   Case Number 20
 1 24016 24044  "1 "    0      line from BARRE    230.00  to  ELLIS    230.00
 1 24029 24044  "1 "    0      line from DELAMO   230.00  to  ELLIS    230.00
0
#
#   Case Number 21
 1 24016 24154  "1 "    0      line from BARRE    230.00  to  VILLA PK 230.00
 1 24029 24044  "1 "    0      line from DELAMO   230.00  to  ELLIS    230.00
0
#
#   Case Number 22
 1 24016 25201  "1 "    0      line from BARRE    230.00  to  LEWIS    230.00
 1 24029 24044  "1 "    0      line from DELAMO   230.00  to  ELLIS    230.00
0
#
#   Case Number 23
 1 24016 24154  "1 "    0      line from BARRE    230.00  to  VILLA PK 230.00
 1 24016 25201  "1 "    0      line from BARRE    230.00  to  LEWIS    230.00
0
#
#   Case Number 24
 1 24016 24154  "1 "    0      line from BARRE    230.00  to  VILLA PK 230.00
 1 25201 24137  "1 "    0      line from LEWIS    230.00  to  SERRANO  230.00
0
#
#   Case Number 25
 1 24016 24154  "1 "    0      line from BARRE    230.00  to  VILLA PK 230.00
 1 25201 24137  "2 "    0      line from LEWIS    230.00  to  SERRANO  230.00
```

```
0
#
#   Case Number 26
 1 24016 24154  "1 "    0     line from BARRE    230.00  to  VILLA PK 230.00
 1 25201 24154  "1 "    0     line from LEWIS    230.00  to  VILLA PK 230.00
0
#
#   Case Number 27
 1 25201 24137  "1 "    0     line from LEWIS    230.00  to  SERRANO  230.00
 1 25201 24154  "1 "    0     line from LEWIS    230.00  to  VILLA PK 230.00
0
#
#   Case Number 28
 1 25201 24137  "2 "    0     line from LEWIS    230.00  to  SERRANO  230.00
 1 25201 24154  "1 "    0     line from LEWIS    230.00  to  VILLA PK 230.00
0
#
#   Case Number 29
 1 25201 24137  "1 "    0     line from LEWIS    230.00  to  SERRANO  230.00
 1 25201 24137  "2 "    0     line from LEWIS    230.00  to  SERRANO  230.00
0
#
#   Case Number 30
 1 25201 24137  "1 "    0     line from LEWIS    230.00  to  SERRANO  230.00
 1 24137 24154  "1 "    0     line from SERRANO  230.00  to  VILLA PK 230.00
0
#
#   Case Number 31
 1 25201 24137  "1 "    0     line from LEWIS    230.00  to  SERRANO  230.00
 1 24137 24154  "2 "    0     line from SERRANO  230.00  to  VILLA PK 230.00
0
#
#   Case Number 32
 1 25201 24137  "2 "    0     line from LEWIS    230.00  to  SERRANO  230.00
 1 24137 24154  "1 "    0     line from SERRANO  230.00  to  VILLA PK 230.00
0
#
#   Case Number 33
 1 25201 24137  "2 "    0     line from LEWIS    230.00  to  SERRANO  230.00
 1 24137 24154  "2 "    0     line from SERRANO  230.00  to  VILLA PK 230.00
0
#
#   Case Number 34
 1 24137 24154  "1 "    0     line from SERRANO  230.00  to  VILLA PK 230.00
 1 24137 24154  "2 "    0     line from SERRANO  230.00  to  VILLA PK 230.00
0
#
#   Case Number 35
 1 24065 24029  "1 "    0     line from HINSON   230.00  to  DELAMO   230.00
 1 24074 24065  "1 "    0     line from LA FRESA 230.00  to  HINSON   230.00
0
#
#   Case Number 36
 1 24065 24029  "1 "    0     line from HINSON   230.00  to  DELAMO   230.00
 1 24077 24084  "1 "    0     line from LBEACH   230.00  to  LITEHIPE 230.00
0
#
#   Case Number 37
 1 24065 24029  "1 "    0     line from HINSON   230.00  to  DELAMO   230.00
 1 24084 24065  "1 "    0     line from LITEHIPE 230.00  to  HINSON   230.00
0
#
#   Case Number 38
 1 24074 24065  "1 "    0     line from LA FRESA 230.00  to  HINSON   230.00
 1 24084 24065  "1 "    0     line from LITEHIPE 230.00  to  HINSON   230.00
0
#
#   Case Number 39
 1 24077 24084  "1 "    0     line from LBEACH   230.00  to  LITEHIPE 230.00
 1 24084 24065  "1 "    0     line from LITEHIPE 230.00  to  HINSON   230.00
```

```
0
#
#   Case Number 40
 1 24061 24065  "1 "    0      line from HARBOR   230.00  to  HINSON   230.00
 1 24077 24084  "1 "    0      line from LBEACH   230.00  to  LITEHIPE 230.00
21
0
#
#   Case Number 41
 1 24074 24065  "1 "    0      line from LA FRESA 230.00  to  HINSON   230.00
 1 24077 24084  "1 "    0      line from LBEACH   230.00  to  LITEHIPE 230.00
0
#
#   Case Number 42
 1 24061 24065  "1 "    0      line from HARBOR   230.00  to  HINSON   230.00
 1 24061 24077  "1 "    0      line from HARBOR   230.00  to  LBEACH   230.00
21
0
#
#   Case Number 43
 1 24074 24065  "1 "    0      line from LA FRESA 230.00  to  HINSON   230.00
 1 24074 24076  "1 "    0      line from LA FRESA 230.00  to  LAGUBELL 230.00
0
#
#   Case Number 44
 1 24074 24065  "1 "    0      line from LA FRESA 230.00  to  HINSON   230.00
 1 24091 24125  "1 "    0      line from MESA CAL 230.00  to  REDONDO  230.00
0
#
#   Case Number 45
 1 24074 24065  "1 "    0      line from LA FRESA 230.00  to  HINSON   230.00
 1 24125 24084  "1 "    0      line from REDONDO  230.00  to  LITEHIPE 230.00
0
#
#   Case Number 46
 1 24074 24076  "1 "    0      line from LA FRESA 230.00  to  LAGUBELL 230.00
 1 24125 24084  "1 "    0      line from REDONDO  230.00  to  LITEHIPE 230.00
0
#
#   Case Number 47
 1 24074 24125  "1 "    0      line from LA FRESA 230.00  to  REDONDO  230.00
 1 24125 24084  "1 "    0      line from REDONDO  230.00  to  LITEHIPE 230.00
0
#
#   Case Number 48
 1 24074 24125  "2 "    0      line from LA FRESA 230.00  to  REDONDO  230.00
 1 24125 24084  "1 "    0      line from REDONDO  230.00  to  LITEHIPE 230.00
0
#
#   Case Number 49
 1 24091 24125  "1 "    0      line from MESA CAL 230.00  to  REDONDO  230.00
 1 24125 24084  "1 "    0      line from REDONDO  230.00  to  LITEHIPE 230.00
0
#
#   Case Number 50
 1 24074 24125  "1 "    0      line from LA FRESA 230.00  to  REDONDO  230.00
 1 24082 24074  "1 "    0      line from LCIENEGA 230.00  to  LA FRESA 230.00
0
#
#   Case Number 51
 1 24074 24125  "2 "    0      line from LA FRESA 230.00  to  REDONDO  230.00
 1 24082 24074  "1 "    0      line from LCIENEGA 230.00  to  LA FRESA 230.00
0
#
#   Case Number 52
 1 24040 24074  "3 "    0      line from EL NIDO  230.00  to  LA FRESA 230.00
 1 24082 24074  "1 "    0      line from LCIENEGA 230.00  to  LA FRESA 230.00
0
#
#   Case Number 53
```

```
 1 24040 24074  "4 "    0      line from EL NIDO  230.00  to  LA FRESA 230.00
 1 24082 24074  "1 "    0      line from LCIENEGA 230.00  to  LA FRESA 230.00
0
#
#   Case Number 54
 1 24040 24082  "1 "    0      line from EL NIDO  230.00  to  LCIENEGA 230.00
 1 24082 24074  "1 "    0      line from LCIENEGA 230.00  to  LA FRESA 230.00
21
0
#
#   Case Number 55
 1 24040 24198  "1 "    0      line from EL NIDO  230.00  to  CHEVMAIN 230.00
 1 24049 24040  "1 "    0      line from ELSEGNDO 230.00  to  EL NIDO  230.00
21
3  25501     0  "6 "    0
0
#
#   Case Number 56
 1 24040 24198  "1 "    0      line from EL NIDO  230.00  to  CHEVMAIN 230.00
 1 24049 24198  "1 "    0      line from ELSEGNDO 230.00  to  CHEVMAIN 230.00
21
0
#
#   Case Number 57
 1 24040 24074  "3 "    0      line from EL NIDO  230.00  to  LA FRESA 230.00
 1 24040 24074  "4 "    0      line from EL NIDO  230.00  to  LA FRESA 230.00
0
#
#   Case Number 58
 1 24040 24074  "3 "    0      line from EL NIDO  230.00  to  LA FRESA 230.00
 1 24074 24125  "1 "    0      line from LA FRESA 230.00  to  REDONDO  230.00
0
#
#   Case Number 59
 1 24040 24074  "3 "    0      line from EL NIDO  230.00  to  LA FRESA 230.00
 1 24074 24125  "2 "    0      line from LA FRESA 230.00  to  REDONDO  230.00
0
#
#   Case Number 60
 1 24040 24074  "4 "    0      line from EL NIDO  230.00  to  LA FRESA 230.00
 1 24074 24125  "1 "    0      line from LA FRESA 230.00  to  REDONDO  230.00
0
#
#   Case Number 61
 1 24040 24074  "4 "    0      line from EL NIDO  230.00  to  LA FRESA 230.00
 1 24074 24125  "2 "    0      line from LA FRESA 230.00  to  REDONDO  230.00
0
#
#   Case Number 62
 1 24074 24125  "1 "    0      line from LA FRESA 230.00  to  REDONDO  230.00
 1 24074 24125  "2 "    0      line from LA FRESA 230.00  to  REDONDO  230.00
0
#
#   Case Number 63
 1 24040 24074  "3 "    0      line from EL NIDO  230.00  to  LA FRESA 230.00
 1 24091 24125  "1 "    0      line from MESA CAL 230.00  to  REDONDO  230.00
0
#
#   Case Number 64
 1 24040 24074  "4 "    0      line from EL NIDO  230.00  to  LA FRESA 230.00
 1 24091 24125  "1 "    0      line from MESA CAL 230.00  to  REDONDO  230.00
0
#
#   Case Number 65
 1 24074 24125  "1 "    0      line from LA FRESA 230.00  to  REDONDO  230.00
 1 24091 24125  "1 "    0      line from MESA CAL 230.00  to  REDONDO  230.00
0
#
#   Case Number 66
 1 24074 24125  "2 "    0      line from LA FRESA 230.00  to  REDONDO  230.00
```

```
 1 24091 24125  "1 "    0      line from MESA CAL 230.00  to  REDONDO  230.00
0
#
#   Case Number 67
 1 25001 24076  "1 "    0      line from GOODRICH 230.00  to  LAGUBELL 230.00
 1 24091 24125  "1 "    0      line from MESA CAL 230.00  to  REDONDO  230.00
0
#
#   Case Number 68
 1 24074 24076  "1 "    0      line from LA FRESA 230.00  to  LAGUBELL 230.00
 1 24091 24125  "1 "    0      line from MESA CAL 230.00  to  REDONDO  230.00
0
#
#   Case Number 69
 1 24076 24126  "1 "    0      line from LAGUBELL 230.00  to  RIOHONDO 230.00
 1 24091 24125  "1 "    0      line from MESA CAL 230.00  to  REDONDO  230.00
0
#
#   Case Number 70
 1 24084 24091  "1 "    0      line from LITEHIPE 230.00  to  MESA CAL 230.00
 1 24091 24125  "1 "    0      line from MESA CAL 230.00  to  REDONDO  230.00
0
#
#   Case Number 71
 1 24074 24076  "1 "    0      line from LA FRESA 230.00  to  LAGUBELL 230.00
 1 24084 24091  "1 "    0      line from LITEHIPE 230.00  to  MESA CAL 230.00
0
#
#   Case Number 72
 1 25001 24076  "1 "    0      line from GOODRICH 230.00  to  LAGUBELL 230.00
 1 24084 24091  "1 "    0      line from LITEHIPE 230.00  to  MESA CAL 230.00
0
#
#   Case Number 73
 1 24076 24126  "1 "    0      line from LAGUBELL 230.00  to  RIOHONDO 230.00
 1 24084 24091  "1 "    0      line from LITEHIPE 230.00  to  MESA CAL 230.00
0
#
#   Case Number 74
 1 25001 24059  "1 "    0      line from GOODRICH 230.00  to  GOULD    230.00
 1 25001 24076  "1 "    0      line from GOODRICH 230.00  to  LAGUBELL 230.00
0
#
#   Case Number 75
 1 25001 24076  "1 "    0      line from GOODRICH 230.00  to  LAGUBELL 230.00
 1 24076 24126  "1 "    0      line from LAGUBELL 230.00  to  RIOHONDO 230.00
0
#
#   Case Number 76
 1 24036 24091  "1 "    0      line from EAGLROCK 230.00  to  MESA CAL 230.00
 1 25001 24076  "1 "    0      line from GOODRICH 230.00  to  LAGUBELL 230.00
20
0
#
#   Case Number 77
 1 25001 24076  "1 "    0      line from GOODRICH 230.00  to  LAGUBELL 230.00
 1 24155 24091  "1 "    0      line from VINCENT  230.00  to  MESA CAL 230.00
0
#
#   Case Number 78
 1 24021 24091  "1 "    0      line from CENTER S 230.00  to  MESA CAL 230.00
 1 24076 24126  "1 "    0      line from LAGUBELL 230.00  to  RIOHONDO 230.00
0
#
#   Case Number 79
 1 24076 24126  "1 "    0      line from LAGUBELL 230.00  to  RIOHONDO 230.00
 1 24091 24126  "1 "    0      line from MESA CAL 230.00  to  RIOHONDO 230.00
0
#
#   Case Number 80
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 1 24076 24126  "1 "    0     line from LAGUBELL 230.00  to  RIOHONDO 230.00
 1 24091 24158  "1 "    0     line from MESA CAL 230.00  to  WALNUT   230.00
0
#
#   Case Number 81
 1 24076 24126  "1 "    0     line from LAGUBELL 230.00  to  RIOHONDO 230.00
 1 24091 24401  "1 "    0     line from MESA CAL 230.00  to  ANTELOPE 230.00
0
#
#   Case Number 82
 1 24091 24126  "1 "    0     line from MESA CAL 230.00  to  RIOHONDO 230.00
 1 24091 24158  "1 "    0     line from MESA CAL 230.00  to  WALNUT   230.00
0
#
#   Case Number 83
 1 24091 24126  "1 "    0     line from MESA CAL 230.00  to  RIOHONDO 230.00
 1 24091 24401  "1 "    0     line from MESA CAL 230.00  to  ANTELOPE 230.00
0
#
#   Case Number 84
 1 24021 24091  "1 "    0     line from CENTER S 230.00  to  MESA CAL 230.00
 1 24091 24126  "1 "    0     line from MESA CAL 230.00  to  RIOHONDO 230.00
0
#
#   Case Number 85
 1 24021 24091  "1 "    0     line from CENTER S 230.00  to  MESA CAL 230.00
 1 24021 24100  "1 "    0     line from CENTER S 230.00  to  OLINDA   230.00
0
#
#   Case Number 86
 1 24021 24091  "1 "    0     line from CENTER S 230.00  to  MESA CAL 230.00
 1 24091 24158  "1 "    0     line from MESA CAL 230.00  to  WALNUT   230.00
0
#
#   Case Number 87
 1 24021 24091  "1 "    0     line from CENTER S 230.00  to  MESA CAL 230.00
 1 24091 24401  "1 "    0     line from MESA CAL 230.00  to  ANTELOPE 230.00
0
#
#   Case Number 88
 1 24091 24158  "1 "    0     line from MESA CAL 230.00  to  WALNUT   230.00
 1 24091 24401  "1 "    0     line from MESA CAL 230.00  to  ANTELOPE 230.00
0
#
#   Case Number 89
 1 24091 24158  "1 "    0     line from MESA CAL 230.00  to  WALNUT   230.00
 1 24093 24158  "1 "    0     line from MIRALOMA 230.00  to  WALNUT   230.00
0
#
#   Case Number 90
 1 24091 24158  "1 "    0     line from MESA CAL 230.00  to  WALNUT   230.00
 1 24100 24158  "1 "    0     line from OLINDA   230.00  to  WALNUT   230.00
0
#
#   Case Number 91
 1 24021 24100  "1 "    0     line from CENTER S 230.00  to  OLINDA   230.00
 1 24091 24158  "1 "    0     line from MESA CAL 230.00  to  WALNUT   230.00
0
#
#   Case Number 92
 1 24021 24100  "1 "    0     line from CENTER S 230.00  to  OLINDA   230.00
 1 25656 24100  "1 "    0     line from MIRALOMA 230.00  to  OLINDA   230.00
0
#
#   Case Number 93
 1 24021 24100  "1 "    0     line from CENTER S 230.00  to  OLINDA   230.00
 1 24093 24158  "1 "    0     line from MIRALOMA 230.00  to  WALNUT   230.00
0
#
#   Case Number 94
```

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 1 24021 24100  "1 "    0      line from CENTER S 230.00  to  OLINDA   230.00
 1 24100 24158  "1 "    0      line from OLINDA   230.00  to  WALNUT   230.00
0
#
#   Case Number 95
 1 25656 24100  "1 "    0      line from MIRALOMA 230.00  to  OLINDA   230.00
 1 24100 24158  "1 "    0      line from OLINDA   230.00  to  WALNUT   230.00
0
#
#   Case Number 96
 1 24093 24158  "1 "    0      line from MIRALOMA 230.00  to  WALNUT   230.00
 1 24100 24158  "1 "    0      line from OLINDA   230.00  to  WALNUT   230.00
0
#
#   Case Number 97
 1 24036 24091  "1 "    0      line from EAGLROCK 230.00  to  MESA CAL 230.00
 1 25001 24059  "1 "    0      line from GOODRICH 230.00  to  GOULD    230.00
0
#
#   Case Number 98
 1 25001 24059  "1 "    0      line from GOODRICH 230.00  to  GOULD    230.00
 1 24155 24091  "1 "    0      line from VINCENT  230.00  to  MESA CAL 230.00
21
0
#
#   Case Number 99
 1 24036 24091  "1 "    0      line from EAGLROCK 230.00  to  MESA CAL 230.00
 1 24036 24114  "1 "    0      line from EAGLROCK 230.00  to  PARDEE   230.00
0
#
#   Case Number 100
 1 24036 24091  "1 "    0      line from EAGLROCK 230.00  to  MESA CAL 230.00
 1 24036 24147  "1 "    0      line from EAGLROCK 230.00  to  SYLMAR S 230.00
0
#
#   Case Number 101
 1 24036 24091  "1 "    0      line from EAGLROCK 230.00  to  MESA CAL 230.00
 1 24147 24059  "1 "    0      line from SYLMAR S 230.00  to  GOULD    230.00
0
#
#   Case Number 102
 1 24036 24091  "1 "    0      line from EAGLROCK 230.00  to  MESA CAL 230.00
 1 24155 24091  "1 "    0      line from VINCENT  230.00  to  MESA CAL 230.00
0
#
#   Case Number 103
 1 24036 24114  "1 "    0      line from EAGLROCK 230.00  to  PARDEE   230.00
 1 24036 24147  "1 "    0      line from EAGLROCK 230.00  to  SYLMAR S 230.00
0
#
#   Case Number 104
 1 24036 24147  "1 "    0      line from EAGLROCK 230.00  to  SYLMAR S 230.00
 1 24147 24059  "1 "    0      line from SYLMAR S 230.00  to  GOULD    230.00
0
#
#   Case Number 105
 1 24036 24147  "1 "    0      line from EAGLROCK 230.00  to  SYLMAR S 230.00
 1 24114 24147  "1 "    0      line from PARDEE   230.00  to  SYLMAR S 230.00
0
#
#   Case Number 106
 1 24036 24147  "1 "    0      line from EAGLROCK 230.00  to  SYLMAR S 230.00
 1 24114 24147  "2 "    0      line from PARDEE   230.00  to  SYLMAR S 230.00
0
#
#   Case Number 107
 1 24114 24147  "1 "    0      line from PARDEE   230.00  to  SYLMAR S 230.00
 1 24147 24059  "1 "    0      line from SYLMAR S 230.00  to  GOULD    230.00
0
#
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#   Case Number 108
 1 24114 24147  "2 "    0      line from PARDEE   230.00  to  SYLMAR S 230.00
 1 24147 24059  "1 "    0      line from SYLMAR S 230.00  to  GOULD    230.00
0
#
#   Case Number 109
 1 24036 24114  "1 "    0      line from EAGLROCK 230.00  to  PARDEE   230.00
 1 24147 24059  "1 "    0      line from SYLMAR S 230.00  to  GOULD    230.00
0
#
#   Case Number 110
 1 24114 24147  "1 "    0      line from PARDEE   230.00  to  SYLMAR S 230.00
 1 24114 24147  "2 "    0      line from PARDEE   230.00  to  SYLMAR S 230.00
0
#
#   Case Number 111
 1 24044 24069  "1 "    0      line from ELLIS    230.00  to  HUNTGBCH 230.00
 1 24044 24369  "2 "    0      line from ELLIS    230.00  to  HUNTBCH1 230.00
0
#
#   Case Number 112
 1 24044 24369  "2 "    0      line from ELLIS    230.00  to  HUNTBCH1 230.00
 1 24044 24069  "3 "    0      line from ELLIS    230.00  to  HUNTGBCH 230.00
0
#
#   Case Number 113
 1 24044 24069  "3 "    0      line from ELLIS    230.00  to  HUNTGBCH 230.00
 1 24044 24369  "4 "    0      line from ELLIS    230.00  to  HUNTBCH1 230.00
0
#
#   Case Number 114
 1 24044 24072  "1 "    0      line from ELLIS    230.00  to  JOHANNA  230.00
 1 24044 24134  "1 "    0      line from ELLIS    230.00  to  SANTIAGO 230.00
0
#
#   Case Number 115
 1 24044 24134  "1 "    0      line from ELLIS    230.00  to  SANTIAGO 230.00
 1 24072 24134  "1 "    0      line from JOHANNA  230.00  to  SANTIAGO 230.00
0
#
#   Case Number 116
 1 24131 24134  "1 "    0      line from S.ONOFRE 230.00  to  SANTIAGO 230.00
 1 24131 24134  "2 "    0      line from S.ONOFRE 230.00  to  SANTIAGO 230.00
0
#
#   Case Number 117
 1 24131 24134  "1 "    0      line from S.ONOFRE 230.00  to  SANTIAGO 230.00
 1 24131 24137  "1 "    0      line from S.ONOFRE 230.00  to  SERRANO  230.00
0
#
#   Case Number 118
 1 24025 25654  "1 "    0      line from CHINO    230.00  to  VIEJOSC  230.00
 1 24131 24134  "1 "    0      line from S.ONOFRE 230.00  to  SANTIAGO 230.00
0
#
#   Case Number 119
 1 24131 24134  "2 "    0      line from S.ONOFRE 230.00  to  SANTIAGO 230.00
 1 24131 24137  "1 "    0      line from S.ONOFRE 230.00  to  SERRANO  230.00
0
#
#   Case Number 120
 1 24025 25654  "1 "    0      line from CHINO    230.00  to  VIEJOSC  230.00
 1 24131 24134  "2 "    0      line from S.ONOFRE 230.00  to  SANTIAGO 230.00
0
#
#   Case Number 121
 1 24128 24058  "1 "    0      line from S.CLARA  230.00  to  GOLETA   230.00
 1 24128 24058  "2 "    0      line from S.CLARA  230.00  to  GOLETA   230.00
21
0
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#
#   Case Number 122
 1 24128 24088  "1 "    0      line from S.CLARA  230.00  to  MANDALAY 230.00
 1 24128 24088  "2 "    0      line from S.CLARA  230.00  to  MANDALAY 230.00
21
0
#
#   Case Number 123
 1 24099 24106  "1 "    0      line from MOORPARK 230.00  to  ORMOND   230.00
 1 24099 24106  "2 "    0      line from MOORPARK 230.00  to  ORMOND   230.00
0
#
#   Case Number 124
 1 24114 24115  "1 "    0      line from PARDEE   230.00  to  PASTORIA 230.00
 1 24155 24128  "1 "    0      line from VINCENT  230.00  to  S.CLARA  230.00
0
#
#   Case Number 125
 1 24114 24403  "1 "    0      line from PARDEE   230.00  to  BAILEY   230.00
 1 24155 24128  "1 "    0      line from VINCENT  230.00  to  S.CLARA  230.00
0
#
#   Case Number 126
 1 24114 24099  "1 "    0      line from PARDEE   230.00  to  MOORPARK 230.00
 1 24114 24099  "2 "    0      line from PARDEE   230.00  to  MOORPARK 230.00
0
#
#   Case Number 127
 1 24114 24128  "1 "    0      line from PARDEE   230.00  to  S.CLARA  230.00
 1 24128 24099  "1 "    0      line from S.CLARA  230.00  to  MOORPARK 230.00
0
#
#   Case Number 128
 1 24114 24128  "1 "    0      line from PARDEE   230.00  to  S.CLARA  230.00
 1 24155 24128  "1 "    0      line from VINCENT  230.00  to  S.CLARA  230.00
0
#
#   Case Number 129
 1 24128 24099  "1 "    0      line from S.CLARA  230.00  to  MOORPARK 230.00
 1 24128 24099  "2 "    0      line from S.CLARA  230.00  to  MOORPARK 230.00
0
#
#   Case Number 130
 1 24128 24099  "2 "    0      line from S.CLARA  230.00  to  MOORPARK 230.00
 1 24155 24128  "1 "    0      line from VINCENT  230.00  to  S.CLARA  230.00
0
#
#   Case Number 131
 1 24036 24114  "1 "    0      line from EAGLROCK 230.00  to  PARDEE   230.00
 1 24091 24401  "1 "    0      line from MESA CAL 230.00  to  ANTELOPE 230.00
0
#
#   Case Number 132
 1 24036 24114  "1 "    0      line from EAGLROCK 230.00  to  PARDEE   230.00
 1 24114 24155  "1 "    0      line from PARDEE   230.00  to  VINCENT  230.00
0
#
#   Case Number 133
 1 24036 24114  "1 "    0      line from EAGLROCK 230.00  to  PARDEE   230.00
 1 24155 24091  "1 "    0      line from VINCENT  230.00  to  MESA CAL 230.00
0
#
#   Case Number 134
 1 24036 24114  "1 "    0      line from EAGLROCK 230.00  to  PARDEE   230.00
 1 24155 24128  "1 "    0      line from VINCENT  230.00  to  S.CLARA  230.00
0
#
#   Case Number 135
 1 24091 24401  "1 "    0      line from MESA CAL 230.00  to  ANTELOPE 230.00
 1 24155 24401  "1 "    0      line from VINCENT  230.00  to  ANTELOPE 230.00
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0
#
#   Case Number 136
 1 24114 24155  "1 "    0      line from PARDEE   230.00  to  VINCENT  230.00
 1 24155 24128  "1 "    0      line from VINCENT  230.00  to  S.CLARA  230.00
0
#
#   Case Number 137
 1 24091 24401  "1 "    0      line from MESA CAL 230.00  to  ANTELOPE 230.00
 1 24155 24128  "1 "    0      line from VINCENT  230.00  to  S.CLARA  230.00
0
#
#   Case Number 138
 1 24091 24401  "1 "    0      line from MESA CAL 230.00  to  ANTELOPE 230.00
 1 24126 24155  "2 "    0      line from RIOHONDO 230.00  to  VINCENT  230.00
0
#
#   Case Number 139
 1 24091 24401  "1 "    0      line from MESA CAL 230.00  to  ANTELOPE 230.00
 1 24155 24126  "1 "    0      line from VINCENT  230.00  to  RIOHONDO 230.00
0
#
#   Case Number 140
 1 24126 24155  "2 "    0      line from RIOHONDO 230.00  to  VINCENT  230.00
 1 24155 24126  "1 "    0      line from VINCENT  230.00  to  RIOHONDO 230.00
0
#
#   Case Number 141
 1 24025 25654  "1 "    0      line from CHINO    230.00  to  VIEJOSC  230.00
 1 24131 24137  "1 "    0      line from S.ONOFRE 230.00  to  SERRANO  230.00
0
#
#   Case Number 142
 1 24025 24137  "1 "    0      line from CHINO    230.00  to  SERRANO  230.00
 1 24131 24137  "1 "    0      line from S.ONOFRE 230.00  to  SERRANO  230.00
0
#
#   Case Number 143
 1 25656 24100  "1 "    0      line from MIRALOMA 230.00  to  OLINDA   230.00
 1 24093 24158  "1 "    0      line from MIRALOMA 230.00  to  WALNUT   230.00
0
#
#   Case Number 144
 1 24025 25654  "1 "    0      line from CHINO    230.00  to  VIEJOSC  230.00
 1 24093 24158  "1 "    0      line from MIRALOMA 230.00  to  WALNUT   230.00
0
#
#   Case Number 145
 1 24025 24137  "1 "    0      line from CHINO    230.00  to  SERRANO  230.00
 1 24093 24158  "1 "    0      line from MIRALOMA 230.00  to  WALNUT   230.00
0
#
#   Case Number 146
 1 24025 25654  "1 "    0      line from CHINO    230.00  to  VIEJOSC  230.00
 1 25656 24100  "1 "    0      line from MIRALOMA 230.00  to  OLINDA   230.00
0
#
#   Case Number 147
 1 24025 24137  "1 "    0      line from CHINO    230.00  to  SERRANO  230.00
 1 25656 24100  "1 "    0      line from MIRALOMA 230.00  to  OLINDA   230.00
0
#
#   Case Number 148
 1 24025 24093  "1 "    0      line from CHINO    230.00  to  MIRALOMA 230.00
 1 24025 24093  "2 "    0      line from CHINO    230.00  to  MIRALOMA 230.00
0
#
#   Case Number 149
 1 24025 24093  "2 "    0      line from CHINO    230.00  to  MIRALOMA 230.00
 1 24025 25656  "3 "    0      line from CHINO    230.00  to  MIRALOMA 230.00
```

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0
#
#   Case Number 150
 1 24025 25654  "1 "    0     line from CHINO    230.00  to  VIEJOSC  230.00
 1 24025 24137  "1 "    0     line from CHINO    230.00  to  SERRANO  230.00
0
#
#   Case Number 151
 1 24237 24112  "1 "    0     line from RANCHVST 230.00  to  PADUA    230.00
 1 24237 24112  "2 "    0     line from RANCHVST 230.00  to  PADUA    230.00
0
#
#   Case Number 152
 1 24056 24132  "1 "    0     line from ETIWANDA 230.00  to  SANBRDNO 230.00
 1 25656 24901  "2 "    0     line from MIRALOMA 230.00  to  VSTA     230.00
0
#
#   Case Number 153
 1 24056 24132  "1 "    0     line from ETIWANDA 230.00  to  SANBRDNO 230.00
 1 24056 24901  "1 "    0     line from ETIWANDA 230.00  to  VSTA     230.00
0
#
#   Case Number 154
 1 24804 24132  "1 "    0     line from DEVERS   230.00  to  SANBRDNO 230.00
 1 24056 24132  "1 "    0     line from ETIWANDA 230.00  to  SANBRDNO 230.00
0
#
#   Case Number 155
 1 24804 24901  "2 "    0     line from DEVERS   230.00  to  VSTA     230.00
 1 24056 24132  "1 "    0     line from ETIWANDA 230.00  to  SANBRDNO 230.00
0
#
#   Case Number 156
 1 24056 24132  "1 "    0     line from ETIWANDA 230.00  to  SANBRDNO 230.00
 1 24132 24804  "1 "    0     line from SANBRDNO 230.00  to  DEVERS   230.00
0
#
#   Case Number 157
 1 24056 24132  "1 "    0     line from ETIWANDA 230.00  to  SANBRDNO 230.00
 1 24901 24132  "2 "    0     line from VSTA     230.00  to  SANBRDNO 230.00
0
#
#   Case Number 158
 1 24056 24132  "1 "    0     line from ETIWANDA 230.00  to  SANBRDNO 230.00
 1 24901 24804  "1 "    0     line from VSTA     230.00  to  DEVERS   230.00
0
#
#   Case Number 159
 1 24901 24132  "2 "    0     line from VSTA     230.00  to  SANBRDNO 230.00
 1 24901 24804  "1 "    0     line from VSTA     230.00  to  DEVERS   230.00
0
#
#   Case Number 160
 1 24132 24804  "1 "    0     line from SANBRDNO 230.00  to  DEVERS   230.00
 1 24901 24132  "2 "    0     line from VSTA     230.00  to  SANBRDNO 230.00
0
#
#   Case Number 161
 1 24804 24132  "1 "    0     line from DEVERS   230.00  to  SANBRDNO 230.00
 1 24901 24132  "2 "    0     line from VSTA     230.00  to  SANBRDNO 230.00
0
#
#   Case Number 162
 1 24804 24132  "1 "    0     line from DEVERS   230.00  to  SANBRDNO 230.00
 1 24804 24901  "2 "    0     line from DEVERS   230.00  to  VSTA     230.00
0
#
#   Case Number 163
 1 24804 24132  "1 "    0     line from DEVERS   230.00  to  SANBRDNO 230.00
 1 24901 24804  "1 "    0     line from VSTA     230.00  to  DEVERS   230.00
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0
#
#   Case Number 164
 1 24804 24901  "2 "    0      line from DEVERS   230.00  to  VSTA     230.00
 1 24132 24804  "1 "    0      line from SANBRDNO 230.00  to  DEVERS   230.00
0
#
#   Case Number 165
 1 24132 24804  "1 "    0      line from SANBRDNO 230.00  to  DEVERS   230.00
 1 24901 24804  "1 "    0      line from VSTA     230.00  to  DEVERS   230.00
0
#
#   Case Number 166
 1 24804 24806  "1 "    0      line from DEVERS   230.00  to  MIRAGE   230.00
 1  8311 24804  "1 "    0      line from COACHELA 230.00  to  DEVERS   230.00
20
0
#
#   Case Number 167
 1 24804 24806  "1 "    0      line from DEVERS   230.00  to  MIRAGE   230.00
 1 25406 24806  "1 "    0      line from J.HINDS  230.00  to  MIRAGE   230.00
20
0
#
#   Case Number 168
 1 24601 24085  "1 "    0      line from VICTOR   230.00  to  LUGO     230.00
 1 24601 24085  "2 "    0      line from VICTOR   230.00  to  LUGO     230.00
21
0
#
#   Case Number 169
 1  8695 24806  "1 "    0      line from RAMON    230.00  to  MIRAGE   230.00
 1 25406 24806  "1 "    0      line from J.HINDS  230.00  to  MIRAGE   230.00
0
#
#   Case Number 170
 1  8311 24804  "1 "    0      line from COACHELA 230.00  to  DEVERS   230.00
 1 25406 24806  "1 "    0      line from J.HINDS  230.00  to  MIRAGE   230.00
0
#
#   Case Number 171
 1  8695 24806  "1 "    0      line from RAMON    230.00  to  MIRAGE   230.00
 1  8311 24804  "1 "    0      line from COACHELA 230.00  to  DEVERS   230.00
0
#
#   Case Number 172
 1 19012 24041  "1 "    0      line from MEAD S   230.00  to  ELDORDO  230.00
 1 19012 24041  "2 "    0      line from MEAD S   230.00  to  ELDORDO  230.00
0
#
#   Case Number 173
 1 24019 19012  "E "    0      line from CAMINO   230.00  to  MEAD S   230.00
 1 24019 19012  "W "    0      line from CAMINO   230.00  to  MEAD S   230.00
0
#
#   Case Number 174
 1 24219 24085  "1 "    0      line from PISGAH   230.00  to  LUGO     230.00
 1 24219 24085  "2 "    0      line from PISGAH   230.00  to  LUGO     230.00
0
#
#   Case Number 175
 1 24042 24086  "1 "    0      line from ELDORDO  500.00  to  LUGO     500.00
 1 24219 24041  "2 "    0      line from PISGAH   230.00  to  ELDORDO  230.00
0
#
#   Case Number 176
 1 24042 24086  "1 "    0      line from ELDORDO  500.00  to  LUGO     500.00
 1 24219 24085  "1 "    0      line from PISGAH   230.00  to  LUGO     230.00
0
#
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#   Case Number 177
 1 24042 24086  "1 "    0      line from ELDORDO  500.00  to  LUGO     500.00
 1 24219 24085  "2 "    0      line from PISGAH   230.00  to  LUGO     230.00
0
#
#   Case Number 178
 1 24086 24092  "2 "    0      line from LUGO     500.00  to  MIRALOMA 500.00
 1 24086 24092  "3 "    0      line from LUGO     500.00  to  MIRALOMA 500.00
0
#
#   Case Number 179
 1 24086 24092  "2 "    0      line from LUGO     500.00  to  MIRALOMA 500.00
 1 24086 24236  "1 "    0      line from LUGO     500.00  to  RANCHVST 500.00
0
#
#   Case Number 180
 1 24056 24132  "1 "    0      line from ETIWANDA 230.00  to  SANBRDNO 230.00
 1 24086 24092  "2 "    0      line from LUGO     500.00  to  MIRALOMA 500.00
0
#
#   Case Number 181
 1 24056 24901  "1 "    0      line from ETIWANDA 230.00  to  VSTA     230.00
 1 24086 24092  "2 "    0      line from LUGO     500.00  to  MIRALOMA 500.00
0
#
#   Case Number 182
 1 24056 24132  "1 "    0      line from ETIWANDA 230.00  to  SANBRDNO 230.00
 1 24086 24092  "3 "    0      line from LUGO     500.00  to  MIRALOMA 500.00
0
#
#   Case Number 183
 1 24056 24901  "1 "    0      line from ETIWANDA 230.00  to  VSTA     230.00
 1 24086 24092  "3 "    0      line from LUGO     500.00  to  MIRALOMA 500.00
0
#
#   Case Number 184
 1 24086 24097  "1 "    0      line from LUGO     500.00  to  MOHAVE   500.00
 1 24219 24085  "1 "    0      line from PISGAH   230.00  to  LUGO     230.00
0
#
#   Case Number 185
 1 24086 24097  "1 "    0      line from LUGO     500.00  to  MOHAVE   500.00
 1 24219 24085  "2 "    0      line from PISGAH   230.00  to  LUGO     230.00
0
#
#   Case Number 186
 1 24025 24093  "1 "    0      line from CHINO    230.00  to  MIRALOMA 230.00
 1 24236 24138  "1 "    0      line from RANCHVST 500.00  to  SERRANO  500.00
0
#
#   Case Number 187
 1 24025 24093  "2 "    0      line from CHINO    230.00  to  MIRALOMA 230.00
 1 24236 24138  "1 "    0      line from RANCHVST 500.00  to  SERRANO  500.00
0
#
#   Case Number 188
 1 24025 25656  "3 "    0      line from CHINO    230.00  to  MIRALOMA 230.00
 1 24236 24138  "1 "    0      line from RANCHVST 500.00  to  SERRANO  500.00
0
#
#   Case Number 189
 1 24025 24137  "1 "    0      line from CHINO    230.00  to  SERRANO  230.00
 1 24236 24138  "1 "    0      line from RANCHVST 500.00  to  SERRANO  500.00
0
#
#   Case Number 190
 1 24056 24237  "1 "    0      line from ETIWANDA 230.00  to  RANCHVST 230.00
 1 24236 24138  "1 "    0      line from RANCHVST 500.00  to  SERRANO  500.00
0
#
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#   Case Number 191
 1 24056 24132  "1 "    0      line from ETIWANDA 230.00  to  SANBRDNO 230.00
 1 24236 24138  "1 "    0      line from RANCHVST 500.00  to  SERRANO  500.00
0
#
#   Case Number 192
 1 24056 24901  "1 "    0      line from ETIWANDA 230.00  to  VSTA     230.00
 1 24236 24138  "1 "    0      line from RANCHVST 500.00  to  SERRANO  500.00
0
#
#   Case Number 193
 1 25656 24100  "1 "    0      line from MIRALOMA 230.00  to  OLINDA   230.00
 1 24236 24138  "1 "    0      line from RANCHVST 500.00  to  SERRANO  500.00
0
#
#   Case Number 194
 1 24237 24112  "1 "    0      line from RANCHVST 230.00  to  PADUA    230.00
 1 24236 24138  "1 "    0      line from RANCHVST 500.00  to  SERRANO  500.00
0
#
#   Case Number 195
 1 24093 24158  "1 "    0      line from MIRALOMA 230.00  to  WALNUT   230.00
 1 24236 24138  "1 "    0      line from RANCHVST 500.00  to  SERRANO  500.00
0
#
#   Case Number 196
 1 24086 24156  "1 "    0      line from LUGO     500.00  to  VINCENT  500.00
 1 24086 24156  "2 "    0      line from LUGO     500.00  to  VINCENT  500.00
0
#
#   Case Number 197
 1 30060 24156  "1 "    0      line from MIDWAY   500.00  to  VINCENT  500.00
 1 30060 24156  "2 "    0      line from MIDWAY   500.00  to  VINCENT  500.00
0
#
#   Case Number 198
 1 24155 24401  "1 "    0      line from VINCENT  230.00  to  ANTELOPE 230.00
 1 30060 24156  "1 "    0      line from MIDWAY   500.00  to  VINCENT  500.00
0
#
#   Case Number 199
 1 24091 24401  "1 "    0      line from MESA CAL 230.00  to  ANTELOPE 230.00
 1 30060 24156  "1 "    0      line from MIDWAY   500.00  to  VINCENT  500.00
0
#
#   Case Number 200
 1 30060 24156  "2 "    0      line from MIDWAY   500.00  to  VINCENT  500.00
 1 30060 24156  "3 "    0      line from MIDWAY   500.00  to  VINCENT  500.00
0
#
#   Case Number 201
 1 24155 24401  "1 "    0      line from VINCENT  230.00  to  ANTELOPE 230.00
 1 30060 24156  "2 "    0      line from MIDWAY   500.00  to  VINCENT  500.00
0
#
#   Case Number 202
 1 24091 24401  "1 "    0      line from MESA CAL 230.00  to  ANTELOPE 230.00
 1 30060 24156  "2 "    0      line from MIDWAY   500.00  to  VINCENT  500.00
0
#
#   Case Number 203
 1 24155 24401  "1 "    0      line from VINCENT  230.00  to  ANTELOPE 230.00
 1 30060 24156  "3 "    0      line from MIDWAY   500.00  to  VINCENT  500.00
0
#
#   Case Number 204
 1 24025 25654  "1 "    0      line from CHINO    230.00  to  VIEJOSC  230.00
 1 24092 24138  "1 "    0      line from MIRALOMA 500.00  to  SERRANO  500.00
0
#
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#   Case Number 205
 1 24025 24137  "1 "    0      line from CHINO    230.00  to  SERRANO  230.00
 1 24092 24138  "1 "    0      line from MIRALOMA 500.00  to  SERRANO  500.00
0
#
#   Case Number 206
 1 14002 24042  "1 "    0      line from MOENKOPI 500.00  to  ELDORDO  500.00
 1 24219 24041  "2 "    0      line from PISGAH   230.00  to  ELDORDO  230.00
0
#
#   Case Number 207
 1 24097 24042  "1 "    0      line from MOHAVE   500.00  to  ELDORDO  500.00
 1 24219 24041  "2 "    0      line from PISGAH   230.00  to  ELDORDO  230.00
0
#
#   Case Number 208
 1 24804 24806  "1 "    0      line from DEVERS   230.00  to  MIRAGE   230.00
 1 24801 24900  "1 "    0      line from DEVERS   500.00  to  MIDPINTS 500.00
0
#
#   Case Number 209
 1 24801 24900  "1 "    0      line from DEVERS   500.00  to  MIDPINTS 500.00
 1  8311 24804  "1 "    0      line from COACHELA 230.00  to  DEVERS   230.00
0
#
#   Case Number 210
 1 24801 24900  "1 "    0      line from DEVERS   500.00  to  MIDPINTS 500.00
 1 25406 24806  "1 "    0      line from J.HINDS  230.00  to  MIRAGE   230.00
0
#
#   Case Number 211
 1 24131 24137  "1 "    0      line from S.ONOFRE 230.00  to  SERRANO  230.00
 1 24138 24151  "1 "    0      line from SERRANO  500.00  to  VALLEYSC 500.00
0
#
#   Case Number 212
 1 24025 25654  "1 "    0      line from CHINO    230.00  to  VIEJOSC  230.00
 1 24138 24151  "1 "    0      line from SERRANO  500.00  to  VALLEYSC 500.00
0
#
#   Case Number 213
 1 24025 24137  "1 "    0      line from CHINO    230.00  to  SERRANO  230.00
 1 24138 24151  "1 "    0      line from SERRANO  500.00  to  VALLEYSC 500.00
0
#
#   Case Number 214
 1 24025 24093  "1 "    0      line from CHINO    230.00  to  MIRALOMA 230.00
 1 24025 25654  "1 "    0      line from CHINO    230.00  to  VIEJOSC  230.00
0
#
#   Case Number 215
 1 24025 25654  "1 "    0      line from CHINO    230.00  to  VIEJOSC  230.00
 1 24025 24137  "1 "    0      line from CHINO    230.00  to  SERRANO  230.00
0
#
#   Case Number 216
 1 24801 24151  "1 "    0      line from DEVERS   500.00  to  VALLEYSC 500.00
 1 24801 24900  "1 "    0      line from DEVERS   500.00  to  MIDPINTS 500.00
0
#
#   Case Number 217
 1 24901 24804  "1 "    0      line from VSTA     230.00  to  DEVERS   230.00
 1 24801 24900  "1 "    0      line from DEVERS   500.00  to  MIDPINTS 500.00
0
#
#   Case Number 218
 1 24804 24901  "2 "    0      line from DEVERS   230.00  to  VSTA     230.00
 1 24132 24804  "1 "    0      line from SANBRDNO 230.00  to  DEVERS   230.00
0
#
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#   Case Number 219
 1 24804 24806  "1 "    0      line from DEVERS   230.00  to  MIRAGE   230.00
 1  8695 24806  "1 "    0      line from RAMON    230.00  to  MIRAGE   230.00
0
#
#   Case Number 220
 1 19012 24041  "2 "    0      line from MEAD S   230.00  to  ELDORDO  230.00
 1 24219 24041  "2 "    0      line from PISGAH   230.00  to  ELDORDO  230.00
0
#
#   Case Number 221
 1 24627 24041  "1 "    0      line from CIMA     230.00  to  ELDORDO  230.00
 1 19012 24041  "1 "    0      line from MEAD S   230.00  to  ELDORDO  230.00
0
#
#   Case Number 222
 1 24029 24044  "1 "    0      line from DELAMO   230.00  to  ELLIS    230.00
 1 24044 24134  "1 "    0      line from ELLIS    230.00  to  SANTIAGO 230.00
0
#
#   Case Number 223
 1 24016 24044  "1 "    0      line from BARRE    230.00  to  ELLIS    230.00
 1 24044 24072  "1 "    0      line from ELLIS    230.00  to  JOHANNA  230.00
0
#
#   Case Number 224
 1 24061 24065  "1 "    0      line from HARBOR   230.00  to  HINSON   230.00
 1 24061 24077  "1 "    0      line from HARBOR   230.00  to  LBEACH   230.00
21
0
#
#   Case Number 225
 1 24015 24065  "2 "    0      line from ARCO SC  230.00  to  HINSON   230.00
 1 24065 24029  "1 "    0      line from HINSON   230.00  to  DELAMO   230.00
0
#
#   Case Number 226
 1 24086 24092  "3 "    0      line from LUGO     500.00  to  MIRALOMA 500.00
 1 24086 24097  "1 "    0      line from LUGO     500.00  to  MOHAVE   500.00
0
#
#   Case Number 227
 1 24042 24086  "1 "    0      line from ELDORDO  500.00  to  LUGO     500.00
 1 24086 24092  "2 "    0      line from LUGO     500.00  to  MIRALOMA 500.00
0
#
#   Case Number 228
 1 24236 24138  "1 "    0      line from RANCHVST 500.00  to  SERRANO  500.00
 1 24086 24156  "1 "    0      line from LUGO     500.00  to  VINCENT  500.00
0
#
#   Case Number 229
 1 24086 24156  "2 "    0      line from LUGO     500.00  to  VINCENT  500.00
 1 24086 26105  "1 "    0      line from LUGO     500.00  to  VICTORVL 500.00
0
#
#   Case Number 230
 1 24601 24085  "2 "    0      line from VICTOR   230.00  to  LUGO     230.00
 1 24219 24085  "2 "    0      line from PISGAH   230.00  to  LUGO     230.00
0
#
#   Case Number 231
 1 24701 24085  "1 "    0      line from KRAMER   230.00  to  LUGO     230.00
 1 24219 24085  "1 "    0      line from PISGAH   230.00  to  LUGO     230.00
0
#
#   Case Number 232
 1 24025 24093  "2 "    0      line from CHINO    230.00  to  MIRALOMA 230.00
 1 24093 24158  "1 "    0      line from MIRALOMA 230.00  to  WALNUT   230.00
0
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#
#   Case Number 233
 1 24025 25656  "3 "    0      line from CHINO    230.00  to  MIRALOMA 230.00
 1 25656 24100  "1 "    0      line from MIRALOMA 230.00  to  OLINDA   230.00
0
#
#   Case Number 234
 1 24056 24237  "1 "    0      line from ETIWANDA 230.00  to  RANCHVST 230.00
 1 24237 24112  "1 "    0      line from RANCHVST 230.00  to  PADUA    230.00
0
#
#   Case Number 235
 1 24099 24106  "3 "    0      line from MOORPARK 230.00  to  ORMOND   230.00
 1 24114 24099  "1 "    0      line from PARDEE   230.00  to  MOORPARK 230.00
0
#
#   Case Number 236
 1 24099 24106  "4 "    0      line from MOORPARK 230.00  to  ORMOND   230.00
 1 24128 24099  "2 "    0      line from S.CLARA  230.00  to  MOORPARK 230.00
0
#
#   Case Number 237
 1 25656 24100  "1 "    0      line from MIRALOMA 230.00  to  OLINDA   230.00
 1 24100 24158  "1 "    0      line from OLINDA   230.00  to  WALNUT   230.00
0
#
#   Case Number 238
 1 24076 24126  "1 "    0      line from LAGUBELL 230.00  to  RIOHONDO 230.00
 1 24126 24155  "2 "    0      line from RIOHONDO 230.00  to  VINCENT  230.00
0
#
#   Case Number 239
 1 24056 24132  "1 "    0      line from ETIWANDA 230.00  to  SANBRDNO 230.00
 1 24132 24804  "1 "    0      line from SANBRDNO 230.00  to  DEVERS   230.00
0
#
#   Case Number 240
 1 24128 24058  "1 "    0      line from S.CLARA  230.00  to  GOLETA   230.00
 1 24128 24099  "1 "    0      line from S.CLARA  230.00  to  MOORPARK 230.00
0
#
#   Case Number 241
 1 24128 24058  "2 "    0      line from S.CLARA  230.00  to  GOLETA   230.00
 1 24128 24099  "2 "    0      line from S.CLARA  230.00  to  MOORPARK 230.00
0
#
#   Case Number 242
 1 24044 24134  "1 "    0      line from ELLIS    230.00  to  SANTIAGO 230.00
 1 24131 24134  "2 "    0      line from S.ONOFRE 230.00  to  SANTIAGO 230.00
0
#
#   Case Number 243
 1 24036 24114  "1 "    0      line from EAGLROCK 230.00  to  PARDEE   230.00
 1 24114 24115  "1 "    0      line from PARDEE   230.00  to  PASTORIA 230.00
0
#
#   Case Number 244
 1 24114 24099  "3 "    0      line from PARDEE   230.00  to  MOORPARK 230.00
 1 24114 24147  "1 "    0      line from PARDEE   230.00  to  SYLMAR S 230.00
0
#
#   Case Number 245
 1 25201 24137  "2 "    0      line from LEWIS    230.00  to  SERRANO  230.00
 1 24131 24137  "1 "    0      line from S.ONOFRE 230.00  to  SERRANO  230.00
0
#
#   Case Number 246
 1 24025 24137  "1 "    0      line from CHINO    230.00  to  SERRANO  230.00
 1 25201 24137  "2 "    0      line from LEWIS    230.00  to  SERRANO  230.00
0
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#
#   Case Number 247
 1 24025 24137  "1 "    0      line from CHINO    230.00  to  SERRANO  230.00
 1 24137 24154  "2 "    0      line from SERRANO  230.00  to  VILLA PK 230.00
0
#
#   Case Number 248
 1 25201 24137  "1 "    0      line from LEWIS    230.00  to  SERRANO  230.00
 1 24137 24154  "1 "    0      line from SERRANO  230.00  to  VILLA PK 230.00
0
#
#   Case Number 249
 1 24131 24137  "1 "    0      line from S.ONOFRE 230.00  to  SERRANO  230.00
 1 24137 24154  "1 "    0      line from SERRANO  230.00  to  VILLA PK 230.00
0
#
#   Case Number 250
 1 24114 24147  "1 "    0      line from PARDEE   230.00  to  SYLMAR S 230.00
 1 24147 24059  "1 "    0      line from SYLMAR S 230.00  to  GOULD    230.00
0
#
#   Case Number 251
 1 24036 24147  "1 "    0      line from EAGLROCK 230.00  to  SYLMAR S 230.00
 1 24114 24147  "2 "    0      line from PARDEE   230.00  to  SYLMAR S 230.00
0
#
#   Case Number 252
 1 24086 24156  "2 "    0      line from LUGO     500.00  to  VINCENT  500.00
 1 30060 24156  "3 "    0      line from MIDWAY   500.00  to  VINCENT  500.00
0
#
#   Case Number 253
 1 24155 24128  "1 "    0      line from VINCENT  230.00  to  S.CLARA  230.00
 1 24155 24401  "1 "    0      line from VINCENT  230.00  to  ANTELOPE 230.00
0
#
#   Case Number 254
 1 24114 24155  "1 "    0      line from PARDEE   230.00  to  VINCENT  230.00
 1 24155 24091  "1 "    0      line from VINCENT  230.00  to  MESA CAL 230.00
0
#
#   Case Number 255
 1 25201 24137  "1 "    0      line from LEWIS    230.00  to  SERRANO  230.00
 1 25201 24154  "1 "    0      line from LEWIS    230.00  to  VILLA PK 230.00
0
#
#   Case Number 256
 1 24016 25201  "1 "    0      line from BARRE    230.00  to  LEWIS    230.00
 1 25201 24137  "2 "    0      line from LEWIS    230.00  to  SERRANO  230.00
0
#
#   Case Number 257
 1 24016 24154  "1 "    0      line from BARRE    230.00  to  VILLA PK 230.00
 1 24137 24154  "1 "    0      line from SERRANO  230.00  to  VILLA PK 230.00
0
#
##################################################################################################
#
# PROJECT CONTINGENCY
#
##################################################################################################
#
#   Case Number 258
1  "LAGUBELL 230.00"  "VPWRPLNT 230.00"  "1"  0
1  "LAGUBELL 230.00"  "VPWRPLNT 230.00"  "2"  0
21
0
#
-1
# EOF
```

```
#Table B-2. NERC/WECC Category "C" Contingencies.
#2009 Heavy Summer and 2010 Light Spring
#
#
  0  "Base Case"
0
#
#### Category "C" Contingencies.
#
201  "Contingency 201 (C)"
1  "PARDEE 230"  "SYLMAR S 230" "1" 0
1  "PARDEE 230"  "SYLMAR S 230" "2" 0
0
#
202  "Contingency 202 (C)"
1  "HINSON 230"  "DELAMO 230  " "1" 0
1  "LBEACH 230"  "LITEHIPE 230" "1" 0
0
#
202a "Contingency 202a (C)"
1  "VICTOR 230"  "LUGO 230" "1" 0
1  "VICTOR 230"  "LUGO 230" "2" 0
0
#
203  "Contingency 203 (C)"
1  "HINSON 230"  "DELAMO 230  " "1" 0
1  "LITEHIPE 230"  "HINSON 230" "1" 0
0
#
204  "Contingency 204 (C)"
1  "LAGUBELL 230"  "RIOHONDO 230" "1" 0
1  "MESA CAL 230"  "REDONDO 230 " "1" 0
0
#
205  "Contingency 205 (C)"
1  "GOODRICH 230"  "LAGUBELL 230" "1" 0
1  "LAGUBELL 230"  "RIOHONDO 230" "1" 0
0
#
206  "Contingency 206 (C)"
1  "GOODRICH 230"  "LAGUBELL 230" "1" 0
1  "MESA CAL 230"  "REDONDO 230 " "1" 0
0
#
#
#### Table B-2. (continued) NERC/WECC Category "C" Contingencies.
#
207  "Contingency 207 (C)"
1  "VINCENT 230"  "S.CLARA 230 " "1" 0
1  "VINCENT 230"  "ANTELOPE 230" "1" 0
0
#
208  "Contingency 208 (C)"
1  "VSTA 230"  "DEVERS 230    " "1" 0
1  "DEVERS 500"  "MIDPINTS 500" "1" 0
0
#
209  "Contingency 209 (C)"
1  "DEVERS 230"  "MIRAGE 230  " "1" 0
1  "DEVERS 500"  "MIDPINTS 500" "1" 0
0
#
210  "Contingency 210 (C)"
1  "DEVERS 500"  "MIDPINTS 500" "1" 0
1  "J.HINDS 230"  "MIRAGE 230 " "1" 0
0
#
211  "Contingency 211 (C)"
1  "DEVERS 500"  "MIDPINTS 500" "1" 0
1  "COACHELA 230"  "DEVERS 230" "1" 0
0
#
```

```
212  "Contingency 212 (C)"
1  "LAGUBELL 230"  "RIOHONDO 230" "1" 0
1  "LITEHIPE 230"  "MESA CAL 230" "1" 0
0
#
213  "Contingency 213 (C)"
1  "LA FRESA 230"  "LAGUBELL 230" "1" 0
1  "REDONDO 230 "  "LITEHIPE 230" "1" 0
0
#
214  "Contingency 214 (C)"
1  "ETIWANDA230 "  "SANBRDNO 230" "1" 0
1  "MIRALOME 230"  "VSTA 230    " "2" 0
0
#
215  "Contingency 215 (C)"
1  "PARDEE 230 "  "S.CLARA 230" "1" 0
1  "VINCENT 230"  "S.CLARA 230" "1" 0
0
#
216  "Contingency 216 (C)"
1  "ETIWANDA 230"  "RANCHVST230" "1" 0
1  "RANCHVST 230"  "PADUA 230  " "1" 0
0
#
217  "Contingency 217 (C)"
1  "LA FRESA 230"  "LAGUBELL 230" "1" 0
1  "LITEHIPE 230"  "MESA CAL 230" "1" 0
0
#
218  "Contingency 218 (C)"
1  "LA FRESA 230"  "HINSON 230  " "1" 0
1  "LBEACH 230  "  "LITEHIPE 230" "1" 0
0
#
219  "Contingency 219 (C)"
1  "LA FRESA 230"  "REDONDO 230" "1" 0
1  "LA FRESA 230"  "REDONDO 230" "2" 0
0
#
220  "Contingency 220 (C)"
1  "MIRALOME 230"  "OLINDA 230 " "1" 0
1  "RANCHVST 500"  "SERRANO 500" "1" 0
0
#
221  "Contingency 221 (C)"
1  "MOENKOPI 500"  "ELDORDO 500" "1" 0
1  "PISGAH 230  "  "ELDORDO 230" "2" 0
0
#
222  "Contingency 222 (C)"
1  "MOENKOPI 500"  "ELDORDO 500" "1" 0
1  "PISGAH 230  "  "ELDORDO 230" "2" 0
0
#
223  "Contingency 223 (C)"
1  "ETIWANDA 230"  "RANCHVST 230" "1" 0
1  "RANCHVST 500"  "SERRANO 500 " "1" 0
0
#
224  "Contingency 224 (C)"
1  "LEWIS 230  "  "SERRANO 230 " "1" 0
1  "SERRANO 230"  "VILLA PK 230" "1" 0
0
#
225  "Contingency 225 (C)"
1  "LEWIS 230  "  "SERRANO 230 " "2" 0
1  "SERRANO 230"  "VILLA PK 230" "1" 0
0
#
#
#
```

```
#
226  "Contingency 226 (C)"
1  "EAGLROCK 230"  "SYLMAR S 230" "1" 0
1  "PARDEE 230  "  "SYLMAR S 230" "1" 0
0
#
227  "Contingency 227 (C)"
1  "EAGLROCK 230"  "SYLMAR S 230" "1" 0
1  "PARDEE 230  "  "SYLMAR S 230" "2" 0
0
#
228  "Contingency 228 (C)"
1  "EAGLROCK 230"  "SYLMAR S 230" "1" 0
1  "PARDEE 230  "  "SYLMAR S 230" "2" 0
0
#
#### APPENDIX B - COMPLETE LIST OF POWER FLOW RESULTS
#    Table B-2. (continued) NERC/WECC Category "C" Contingencies.
#
229  "Contingency 229 (C)"
1  "LA FRESA 230"  "LAGUBELL 230" "1" 0
1  "LITEHIPE 230"  "MESA CAL 230" "1" 0
0
#
230  "Contingency 230 (C)"
1  "CENTER S 230"  "OLINDA 230" "1" 0
1  "MESA CAL 230"  "WALNUT 230" "1" 0
0
#
231  "Contingency 231 (C)"
1  "MIRALOME 230"  "OLINDA 230" "1" 0
1  "MIRALOMW 230"  "WALNUT 230" "1" 0
0
#
232  "Contingency 232 (C)"
1  "ALMITOSW 230"  "LITEHIPE 230" "1" 0
1  "DELAMO 230  "  "LAGUBELL 230" "1" 0
0
#
233  "Contingency 233 (C)"
1  "CENTER S 230"  "MESA CAL 230" "1" 0
1  "MESA CAL 230"  "WALNUT 230  " "1" 0
0
#
234  "Contingency 234 (C)"
1  "EL NIDO 230 "  "CHEVMAIN 230" "1" 0
1  "ELSEGNDO 230"  "EL NIDO 230 " "1" 0
0
#
235  "Contingency 235 (C)"
1  "ALMITOSE 230"  "CENTER S 230" "1" 0
1  "DELAMO 230  "  "ELLIS 230   " "1" 0
0
#
236  "Contingency 236 (C)"
1  "PARDEE 230 "  "BAILEY 230 " "1" 0
1  "VINCENT 230"  "S.CLARA 230" "1" 0
0
#
237  "Contingency 237 (C)"
1  "PARDEE 230 "  "PASTORIA 230" "1" 0
1  "VINCENT 230"  "S.CLARA 230 " "1" 0
0
#
238  "Contingency 238 (C)"
1  "S.CLARA 230"  "MOORPARK 230" "2" 0
1  "VINCENT 230"  "S.CLARA 230 " "1" 0
0
#
#
#
#
```

```
239  "Contingency 239 (C)"
1  "PARDEE 230 "  "S.CLARA 230" "1" 0
1  "VINCENT 230"  "S.CLARA 230" "1" 0
0
#
240  "Contingency 240 (C)"
1  "EAGLROCK 230"  "PARDEE 230 " "1" 0
1  "VINCENT 230 "  "S.CLARA 230" "1" 0
0
#
241  "Contingency 241 (C)"
1  "ALMITOSE 230"  "CENTER S 230" "1" 0
1  "ALMITOSW 230"  "LITEHIPE 230" "1" 0
0
#
242  "Contingency 242 (C)"
1  "MESA CAL 230"  "ANTELOPE 230" "1" 0
1  "VINCENT 230 "  "S.CLARA 230 " "1" 0
0
#
243  "Contingency 243 (C)"
1  "VINCENT 230"  "ANTELOPE 230" "1" 0
1  "MIDWAY 500 "  "VINCENT 500 " "1" 0
0
#
244  "Contingency 244 (C)"
1  "VINCENT 230"  "ANTELOPE 230" "1" 0
1  "MIDWAY 500 "  "VINCENT 500 " "2" 0
0
#
245  "Contingency 245 (C)"
1  "VINCENT 230"  "ANTELOPE 230" "1" 0
1  "MIDWAY 500 "  "VINCENT 500 " "3" 0
0
#
246  "Contingency 246 (C)"
1  "EAGLROCK 230"  "PARDEE 230  " "1" 0
1  "EAGLROCK 230"  "SYLMAR S 230" "1" 0
0
#
247  "Contingency 247 (C)"
1  "DELAMO 230  "  "LAGUBELL 230" "1" 0
1  "LA FRESA 230"  "LAGUBELL 230" "1" 0
0
#
248  "Contingency 248 (C)"
1  "RANCHVST 500"  "SERRANO 500" "1" 0
1  "LUGO 500    "  "VINCENT 500" "1" 0
0
#
249  "Contingency 249 (C)"
1  "PARDEE 230 "  "VINCENT 230 " "1" 0
1  "VINCENT 230"  "MESA CAL 230" "1" 0
0
#
250  "Contingency 250 (C)"
1  "LUGO 500  "  "VINCENT 500" "2" 0
1  "MIDWAY 500"  "VINCENT 500" "3" 0
0
#
251  "Contingency 251 (C)"
1  "EAGLROCK 230"  "PARDEE 230 " "1" 0
1  "PARDEE 230  "  "VINCENT 230" "1" 0
0
#
252  "Contingency 252 (C)"
1  "EAGLROCK 230"  "MESA CAL 230" "1" 0
1  "EAGLROCK 230"  "SYLMAR S 230" "1" 0
0
#
#
#
```

```
#
253  "Contingency 253 (C)"
1  "EAGLROCK 230"  "MESA CAL 230" "1" 0
1  "VINCENT 230 "  "MESA CAL 230" "1" 0
0
#
#### APPENDIX B - COMPLETE LIST OF POWER FLOW RESULTS
#    Table B-2. (continued) NERC/WECC Category "C" Contingencies.
#
254  "Contingency 254 (C)"
1  "MESA CAL 230"  "ANTELOPE 230" "1" 0
1  "VINCENT 230 "  "ANTELOPE 230" "1" 0
0
#
255  "Contingency 255 (C)"
1  "VINCENT 230"  "S.CLARA 230 " "1" 0
1  "VINCENT 230"  "ANTELOPE 230" "1" 0
0
#
256  "Contingency 256 (C)"
1  "PARDEE 230 "  "VINCENT 230" "1" 0
1  "VINCENT 230"  "S.CLARA 230" "1" 0
0
#
257  "Contingency 257 (C)"
1  "LUGO 500"  "VINCENT 500 " "2" 0
1  "LUGO 500"  "VICTORVL 500" "1" 0
0
#
258  "Contingency 258 (C)"
1  "VINCENT 230"  "S.CLARA 230 " "1" 0
1  "VINCENT 230"  "ANTELOPE 230" "1" 0
0
#
259  "Contingency 259 (C)"
1  "PARDEE 230 "  "VINCENT 230" "1" 0
1  "VINCENT 230"  "S.CLARA 230" "1" 0
0
#
260  "Contingency 260 (C)"
1  "LUGO 500"  "VINCENT 500" "1" 0
1  "LUGO 500"  "VINCENT 500" "2" 0
0
#
261  "Contingency 261 (C)"
1  "CENTER S 230"  "OLINDA 230" "1" 0
1  "MESA CAL 230"  "WALNUT 230" "1" 0
0
#
262  "Contingency 262 (C)"
1  "MIRALOME 230"  "OLINDA 230" "1" 0
1  "MIRALOMW 230"  "WALNUT 230" "1" 0
0
#
263  "Contingency 263 (C)"
1  "ALMITOSE 230"  "CENTER S 230" "1" 0
1  "DELAMO 230  "  "ELLIS 230   " "1" 0
0
#
264  "Contingency 264 (C)"
1  "ALMITOSE 230"  "BARRE 230   " "1" 0
1  "ALMITOSE 230"  "CENTER S 230" "1" 0
0
#
265  "Contingency 265 (C)"
1  "CENTER S 230"  "MESA CAL 230" "1" 0
1  "MESA CAL 230"  "WALNUT 230  " "1" 0
0
#
#
#
#
```

```
266  "Contingency 266 (C)"
1  "EAGLROCK 230"  "PARDEE 230  " "1" 0
1  "PARDEE 230  "  "PASTORIA 230" "1" 0
0
#
267  "Contingency 267 (C)"
1  "LITEHIPE 230"  "MESA CAL 230" "1" 0
1  "MESA CAL 230"  "REDONDO 230 " "1" 0
0
#
268  "Contingency 268 (C)"
1  "PARDEE 230"  "MOORPARK 230" "3" 0
1  "PARDEE 230"  "SYLMAR S 230" "1" 0
0
#
269  "Contingency 269 (C)"
1  "ALMITOSE 230"  "CENTER S 230" "1" 0
1  "ALMITOSW 230"  "LITEHIPE 230" "1" 0
0
#
270  "Contingency 270 (C)"
1  "EL NIDO 230 "  "CHEVMAIN 230" "1" 0
1  "ELSEGNDO 230"  "EL NIDO 230 " "1" 0
0
#
271  "Contingency 271 (C)"
1  "EAGLROCK 230"  "SYLMAR S 230" "1" 0
1  "PARDEE 230  "  "SYLMAR S 230" "1" 0
0
#
272  "Contingency 272 (C)"
1  "EAGLROCK 230"  "SYLMAR S 230" "1" 0
1  "PARDEE 230  "  "SYLMAR S 230" "2" 0
0
#
273  "Contingency 273 (C)"
1  "EAGLROCK 230"  "SYLMAR S 230" "1" 0
1  "PARDEE 230  "  "SYLMAR S 230" "2" 0
0
#
274  "Contingency 274 (C)"
1  "EAGLROCK 230"  "MESA CAL 230" "1" 0
1  "VINCENT 230 "  "MESA CAL 230" "1" 0
0
#
275  "Contingency 275 (C)"
1  "GOODRICH 230"  "LAGUBELL 230" "1" 0
1  "VINCENT 230 "  "MESA CAL 230" "1" 0
0
#
276  "Contingency 276 (C)"
1  "EAGLROCK 230"  "PARDEE 230  " "1" 0
1  "EAGLROCK 230"  "SYLMAR S 230" "1" 0
0
#
277  "Contingency 277 (C)"
1  "GOODRICH 230"  "LAGUBELL 230" "1" 0
1  "LAGUBELL 230"  "RIOHONDO 230" "1" 0
0
#
#### APPENDIX B - COMPLETE LIST OF POWER FLOW RESULTS
#    Table B-2. (continued) NERC/WECC Category "C" Contingencies.
#
278  "Contingency 278 (C)"
1  "S.CLARA 230"  "MOORPARK 230" "2" 0
1  "VINCENT 230"  "S.CLARA 230 " "1" 0
0
#
279  "Contingency 279 (C)"
1  "PARDEE 230 "  "PASTORIA 230" "1" 0
1  "VINCENT 230"  "S.CLARA 230 " "1" 0
0
```

```
#
280  "Contingency 280 (C)"
1  "EAGLROCK 230"  "MESA CAL 230" "1" 0
1  "EAGLROCK 230"  "SYLMAR S 230" "1" 0
0
#
281  "Contingency 281 (C)"
1  "PARDEE 230 "  "S.CLARA 230" "1" 0
1  "VINCENT 230"  "S.CLARA 230" "1" 0
0
#
282  "Contingency 282 (C)"
1  "PARDEE 230 "  "BAILEY 230 " "1" 0
1  "VINCENT 230"  "S.CLARA 230" "1" 0
0
#
283  "Contingency 283 (C)"
1  "EAGLROCK 230"  "PARDEE 230 " "1" 0
1  "VINCENT 230 "  "S.CLARA 230" "1" 0
0
#
284  "Contingency 284 (C)"
1  "PARDEE 230"  "SYLMAR S 230" "1" 0
1  "PARDEE 230"  "SYLMAR S 230" "2" 0
0
#
285  "Contingency 285 (C)"
1  "LAGUBELL 230"  "RIOHONDO 230" "1" 0
1  "MESA CAL 230"  "ANTELOPE 230" "1" 0
0
#
286  "Contingency 286 (C)"
1  "PARDEE 230 "  "VINCENT 230 " "1" 0
1  "VINCENT 230"  "MESA CAL 230" "1" 0
0
#
287  "Contingency 287 (C)"
1  "MESA CAL 230"  "ANTELOPE 230" "1" 0
1  "VINCENT 230 "  "RIOHONDO 230" "1" 0
0
#
288  "Contingency 288 (C)"
1  "MESA CAL 230"  "ANTELOPE 230" "1" 0
1  "RIOHONDO 230"  "VINCENT 230 " "2" 0
0
#
289  "Contingency 289 (C)"
1  "CENTER S 230"  "MESA CAL 230" "1" 0
1  "MESA CAL 230"  "ANTELOPE 230" "1" 0
0
#
290  "Contingency 290 (C)"
1  "MESA CAL 230"  "WALNUT 230  " "1" 0
1  "MESA CAL 230"  "ANTELOPE 230" "1" 0
0
#
291  "Contingency 291 (C)"
1  "MESA CAL 230"  "ANTELOPE 230" "1" 0
1  "MIDWAY 500  "  "VINCENT 500 " "1" 0
0
#
292  "Contingency 292 (C)"
1  "MESA CAL 230"  "ANTELOPE 230" "1" 0
1  "MIDWAY 500  "  "VINCENT 500 " "2" 0
0
#
293  "Contingency 293 (C)"
1  "EAGLROCK 230"  "PARDEE 230  " "1" 0
1  "MESA CAL 230"  "ANTELOPE 230" "1" 0
0
#
#
```

```
#
#
294  "Contingency 294 (C)"
1  "EAGLROCK 230"  "PARDEE 230 " "1" 0
1  "PARDEE 230  "  "VINCENT 230" "1" 0
0
#
295  "Contingency 295 (C)"
1  "MESA CAL 230"  "ANTELOPE 230" "1" 0
1  "VINCENT 230 "  "S.CLARA 230 " "1" 0
0
#
296  "Contingency 296 (C)"
1  "PARDEE 230 "  "VINCENT 230" "1" 0
1  "VINCENT 230"  "S.CLARA 230" "1" 0
0
#
297  "Contingency 297 (C)"
1  "PARDEE 230 "  "VINCENT 230 " "1" 0
1  "VINCENT 230"  "MESA CAL 230" "1" 0
0
#
298  "Contingency 298 (C)"
1  "PARDEE 230 "  "VINCENT 230" "1" 0
1  "VINCENT 230"  "S.CLARA 230" "1" 0
0
#
299  "Contingency 299 (C)"
1  "PARDEE 230"  "SYLMAR S 230" "1" 0
1  "PARDEE 230"  "SYLMAR S 230" "2" 0
0
#
-1
# EOF
```

APPENDIX C
POWER FLOW RESULTS

** colct ** Page 1 Thu Aug 24 14:10:07 2006

	Reference Case (VPP @ 610 MW)	Base Case (VPP @ 0 MW)	Study Case (VPP @ 914 MW)
2009 Heavy Summer:	2009HS-PRE-VPP304MW.sav	Vpp09HSBaseCaseR2.sav	Vpp09HSVpp914R2.sav
2010 Light Spring:	2010LSP-PRE-VPP304MW.sav	Vpp10LspBaseCaseR2.sav	Vpp10LspVpp914R2.sav

From	BkV	Area	Zone	To	BkV	Area	Zone	CK	TYPE	Rate MVA	Vpp 2009 Heavy Summer BaseCase	Vpp 2009 Heavy Summer Vpp914	Vpp 2010 Light Spring BaseCase	Vpp 2010 Light Spring Vpp914	Contingency Description
8695 RAMON	230.0	8	162	24806 MIRAGE	230.0	24	248	1	line	389.0	1.063	1.058	0.000	0.000	Case Number 113
19399 BUCK161	161.0	19	999	19407 BUCKPS1	161.0	19	999	1	tran	62.0	0.000	0.000	3.830	3.850	Case Number 125
22424 MAINST50	138.0	22	222	22772 SOUTHBAY	138.0	22	222	1	line	150.8	1.087	1.060	0.000	0.000	Case Number 146
22428 MAINST51	138.0	22	222	22772 SOUTHBAY	138.0	22	222	1	line	150.8	1.018	0.986	0.000	0.000	Case Number 144
22428 MAINST51	138.0	22	222	22772 SOUTHBAY	138.0	22	222	1	line	150.8	1.174	1.145	0.000	0.000	Case Number 146
22500 MISSION	138.0	22	221	22772 SOUTHBAY	138.0	22	222	1	line	382.4	1.254	1.194	0.000	0.000	Case Number 146
24040 EL NIDO	230.0	24	240	24198 CHEVMAIN	230.0	24	240	1	line	1000.0	1.215	1.186	1.268	1.231	Case Number 38
24049 ELSEGNDO	230.0	24	240	24040 EL NIDO	230.0	24	240	1	line	1000.0	1.215	1.186	1.268	1.230	Case Number 31
24049 ELSEGNDO	230.0	24	240	24040 EL NIDO	230.0	24	240	1	line	1000.0	1.276	1.249	1.287	1.251	Case Number 39
24076 LAGUBELL	230.0	24	240	24650 VPWRPLNT	230.0	24	240	1	line	786.0	0.000	1.164	0.000	1.152	Case Number 168
24076 LAGUBELL	230.0	24	240	24650 VPWRPLNT	230.0	24	240	2	line	786.0	0.000	1.164	0.000	1.152	Case Number 167
24084 LITEHIPE	230.0	24	240	24065 HINSON	230.0	24	240	1	line	637.0	0.000	0.000	0.983	1.008	Case Number 44
24084 LITEHIPE	230.0	24	240	24091 MESA CAL	230.0	24	240	1	line	1023.0	0.000	0.000	0.970	1.030	Case Number 5
24100 OLINDA	230.0	24	240	24211 OLINDA	66.0	24	240	3	tran	129.0	1.040	1.040	0.000	0.000	Base system (n-0)
24100 OLINDA	230.0	24	240	24211 OLINDA	66.0	24	240	4	tran	129.0	1.040	1.040	0.000	0.000	Base system (n-0)
24114 PARDEE	230.0	24	240	24200 SAUG TAP	230.0	24	240	1	line	568.1	1.288	1.289	0.000	0.000	Case Number 74
24114 PARDEE	230.0	24	240	24200 SAUG TAP	230.0	24	240	2	line	568.1	1.289	1.289	0.000	0.000	Case Number 73
24155 VINCENT	230.0	24	240	29700 TEH_GENS	230.0	24	240	1	line	3000.0	1.004	0.985	1.036	1.007	Base system (n-0)
24156 VINCENT	500.0	24	240	25003 MESA CAL	500.0	24	240	2	line	956.0	1.001	0.846	0.000	0.000	Base system (n-0)
24156 VINCENT	500.0	24	240	25003 MESA CAL	500.0	24	240	2	line	1023.0	1.076	0.914	0.000	0.000	Case Number 90
24156 VINCENT	500.0	24	240	25003 MESA CAL	500.0	24	240	2	line	1023.0	1.101	0.926	0.000	0.000	Case Number 91
24401 ANTELOPE	230.0	24	244	24402 ANTELOPE	66.0	24	244	2	tran	124.0	1.120	1.120	0.920	0.920	Base system (n-0)
24401 ANTELOPE	230.0	24	244	24402 ANTELOPE	66.0	24	244	3	tran	121.0	1.080	1.080	0.890	0.890	Base system (n-0)
24411 DEL SUR	66.0	24	244	24477 TAP 50	66.0	24	244	1	line	57.2	1.033	1.031	0.000	0.000	Base system (n-0)
24430 HELIJET	66.0	24	244	24445 TAP 60	66.0	24	244	1	line	46.3	1.220	1.217	0.000	0.000	Base system (n-0)
24781 NAVYCOSO	230.0	24	247	24706 BLM EAST	230.0	24	247	1	line	1480.1	2.138	2.138	2.138	2.138	Case Number 106
24781 NAVYCOSO	230.0	24	247	24706 BLM EAST	230.0	24	247	1	line	1480.1	2.138	2.138	2.138	2.138	Case Number 107
24904 HIGROVE	115.0	24	249	24903 VSTA	115.0	24	248	1	line	217.1	1.012	0.993	0.000	0.000	Base system (n-0)
24904 HIGROVE	115.0	24	249	24903 VSTA	115.0	24	248	2	line	217.1	1.002	0.984	0.000	0.000	Base system (n-0)
26068 STJOHN	230.0	26	260	26081 ATWATER	230.0	26	260	1	line	478.0	1.067	1.076	0.000	0.000	Base system (n-0)
26087 OLYMPC	230.0	26	260	26093 TARZANA	230.0	26	260	1	line	381.6	1.104	1.115	0.000	0.000	Base system (n-0)
26105 VICTORVL	500.0	26	260	26104 VICTORVL	287.0	26	260	1	tran	465.0	0.000	9.000	1.010	1.010	Case Number 118
26105 VICTORVL	500.0	26	260	26104 VICTORVL	287.0	26	260	1	tran	465.0	0.000	0.000	1.000	1.000	Case Number 25
26105 VICTORVL	500.0	26	260	26104 VICTORVL	287.0	26	260	1	tran	465.0	0.000	0.000	1.000	0.990	Case Number 72
28200 TOT135	230.0	24	240	24158 WALNUT	230.0	24	240	1	line	318.7	0.000	0.000	1.579	1.538	Base system (n-0)
30525 C.COSTA	230.0	30	308	30585 LS PSTAS	230.0	30	316	1	line	353.0	1.019	1.017	0.000	0.000	Base system (n-0)
30580 ALTM MDW	230.0	30	311	30625 TESLA D	230.0	30	311	1	line	373.3	0.918	0.932	1.045	1.050	Base system (n-0)

From	BkV	Area	Zone	To	BkV	Area	Zone	CK	TYPE	Rate MVA	Vpp 2009 Heavy Summer BaseCase	Vpp 2009 Heavy Summer Vpp914	Vpp 2010 Light Spring BaseCase	Vpp 2010 Light Spring Vpp914	Contingency Description
30624 TESLA E	230.0	30	311	30703 RAVENSWD	230.0	30	310	1	line	733.0	1.046	1.053	0.875	0.880	Base system (n-0)
30630 NEWARK D	230.0	30	316	30703 RAVENSWD	230.0	30	310	1	line	733.0	1.023	1.031	0.000	0.000	Base system (n-0)
30640 TESLA C	230.0	30	311	30655 ADCC	230.0	30	311	1	line	682.8	1.154	1.161	0.948	0.954	Base system (n-0)
30655 ADCC	230.0	30	311	30631 NEWARK E	230.0	30	316	1	line	657.3	1.202	1.210	0.986	0.992	Base system (n-0)
30670 WESTLEY	230.0	30	324	30765 LOSBANOS	230.0	30	313	1	line	592.0	1.042	1.084	0.000	0.000	Base system (n-0)
30700 SANMATEO	230.0	30	310	30695 MARTIN C	230.0	30	309	1	line	637.4	1.081	1.100	0.000	0.000	Base system (n-0)
30735 METCALF	230.0	30	318	30750 MOSSLND2	230.0	30	319	1	line	354.9	1.040	1.049	0.000	0.000	Base system (n-0)
30735 METCALF	230.0	30	318	30755 MOSSLND1	230.0	30	319	1	line	354.9	1.037	1.046	0.000	0.000	Base system (n-0)
33310 SANMATEO	115.0	30	310	33315 RAVENSWD	115.0	30	310	1	line	91.8	1.099	1.109	0.000	0.000	Base system (n-0)
33312 BELMONT	115.0	30	310	33313 BAIR	115.0	30	310	1	line	98.5	1.049	1.058	0.000	0.000	Base system (n-0)
35107 DUMBARTN	115.0	30	316	35120 NEWARK D	115.0	30	316	1	line	167.0	1.145	1.153	0.932	0.941	Base system (n-0)
35642 MTCALF D	115.0	30	318	30735 METCALF	230.0	30	318	4	tran	420.0	1.030	1.030	0.000	0.000	Base system (n-0)
36850 KIFER	115.0	30	321	36852 SCOTT	115.0	30	321	1	line	167.0	1.175	1.179	0.854	0.862	Base system (n-0)
37585 TRCY PMP	230.0	30	325	30625 TESLA D	230.0	30	311	1	line	333.8	1.067	1.090	1.116	1.135	Base system (n-0)
37585 TRCY PMP	230.0	30	325	30625 TESLA D	230.0	30	311	2	line	333.8	1.067	1.090	1.116	1.135	Base system (n-0)
38610 DELTAPMP	230.0	30	327	30580 ALTM MDW	230.0	30	311	1	line	373.3	0.918	0.932	1.045	1.050	Base system (n-0)

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	Reference Case (VPP @ 610 MW)	Base Case (VPP @ 0 MW)	Study Case (VPP @ 914 MW)
2009 Heavy Summer:	2009HS-PRE-VPP304MW.sav	Vpp09HSBaseCaseR2.sav	Vpp09HSVpp914R2.sav
2010 Light Spring:	2010LSP-PRE-VPP304MW.sav	Vpp10LspBaseCaseR2.sav	Vpp10LspVpp914R2.sav

From	BkV	Area	Zone	To	BkV	Area	Zone	CK	TYPE	Rate MVA	Vpp 2009 Heavy Summer BaseCase	Vpp 2009 Heavy Summer Vpp914	Vpp 2010 Light Spring BaseCase	Vpp 2010 Light Spring Vpp914	Contingency Description
8695 RAMON	230.0	8	162	24806 MIRAGE	230.0	24	248	1	line	389.0	1.057	1.052	0.000	0.000	Contingency 209 (C)
19399 BUCK161	161.0	19	999	19409 BUCKPS2	161.0	19	999	1	tran	62.0	0.000	0.000	8.300	8.320	Contingency 209 (C)
19399 BUCK161	161.0	19	999	19409 BUCKPS2	161.0	19	999	1	tran	62.0	0.000	0.000	8.310	8.330	Contingency 210 (C)
22412 LOSCOCHS	138.0	22	223	22772 SOUTHBAY	138.0	22	222	1	line	204.1	1.215	1.148	1.073	1.017	Contingency 234 (C)
22412 LOSCOCHS	138.0	22	223	22772 SOUTHBAY	138.0	22	222	1	line	204.1	1.006	0.962	0.851	0.815	Contingency 264 (C)
22412 LOSCOCHS	138.0	22	223	22772 SOUTHBAY	138.0	22	222	1	line	204.1	1.215	1.148	1.073	1.017	Contingency 270 (C)
22424 MAINST50	138.0	22	222	22772 SOUTHBAY	138.0	22	222	1	line	150.8	1.326	1.264	1.098	1.047	Contingency 234 (C)
22424 MAINST50	138.0	22	222	22772 SOUTHBAY	138.0	22	222	1	line	150.8	1.134	1.095	0.898	0.865	Contingency 264 (C)
22424 MAINST50	138.0	22	222	22772 SOUTHBAY	138.0	22	222	1	line	150.8	1.326	1.264	1.098	1.047	Contingency 270 (C)
22428 MAINST51	138.0	22	222	22420 MAIN ST	69.0	22	222	1	tran	199.0	1.040	1.000	0.880	0.850	Contingency 234 (C)
22428 MAINST51	138.0	22	222	22420 MAIN ST	69.0	22	222	1	tran	199.0	1.040	1.000	0.880	0.850	Contingency 270 (C)
22428 MAINST51	138.0	22	222	22772 SOUTHBAY	138.0	22	222	1	line	150.8	1.431	1.365	1.185	1.130	Contingency 234 (C)
22428 MAINST51	138.0	22	222	22772 SOUTHBAY	138.0	22	222	1	line	150.8	1.224	1.182	0.969	0.934	Contingency 264 (C)
22428 MAINST51	138.0	22	222	22772 SOUTHBAY	138.0	22	222	1	line	150.8	1.431	1.365	1.185	1.130	Contingency 270 (C)
22500 MISSION	138.0	22	221	22772 SOUTHBAY	138.0	22	222	1	line	382.4	1.783	1.651	1.676	1.563	Contingency 234 (C)
22500 MISSION	138.0	22	221	22772 SOUTHBAY	138.0	22	222	1	line	382.4	1.365	1.277	1.228	1.155	Contingency 264 (C)
22500 MISSION	138.0	22	221	22772 SOUTHBAY	138.0	22	222	1	line	382.4	1.783	1.651	1.676	1.563	Contingency 270 (C)
22768 SOUTHBAY	69.0	22	222	22772 SOUTHBAY	138.0	22	222	1	tran	164.0	1.160	1.120	1.100	1.060	Contingency 234 (C)
22768 SOUTHBAY	69.0	22	222	22772 SOUTHBAY	138.0	22	222	1	tran	164.0	1.020	0.980	0.930	0.900	Contingency 264 (C)
22768 SOUTHBAY	69.0	22	222	22772 SOUTHBAY	138.0	22	222	1	tran	164.0	1.160	1.120	1.100	1.060	Contingency 270 (C)
24065 HINSON	230.0	24	240	24029 DELAMO	230.0	24	240	1	line	1023.0	0.870	0.000	1.002	0.867	Contingency 213 (C)
24065 HINSON	230.0	24	240	24029 DELAMO	230.0	24	240	1	line	1023.0	0.998	0.875	1.330	1.193	Contingency 217 (C)
24065 HINSON	230.0	24	240	24029 DELAMO	230.0	24	240	1	line	1023.0	0.998	0.875	1.330	1.193	Contingency 229 (C)
24065 HINSON	230.0	24	240	24029 DELAMO	230.0	24	240	1	line	1023.0	0.828	0.827	1.168	1.151	Contingency 267 (C)
24077 LBEACH	230.0	24	240	24084 LITEHIPE	230.0	24	240	1	line	617.0	1.011	1.044	1.253	1.272	Contingency 203 (C)
24084 LITEHIPE	230.0	24	240	24065 HINSON	230.0	24	240	1	line	637.0	1.162	1.207	1.471	1.499	Contingency 202 (C)
24084 LITEHIPE	230.0	24	240	24091 MESA CAL	230.0	24	240	1	line	1023.0	0.000	0.000	0.927	1.064	Contingency 204 (C)
24084 LITEHIPE	230.0	24	240	24091 MESA CAL	230.0	24	240	1	line	1023.0	0.000	0.000	0.980	1.071	Contingency 206 (C)
24091 MESA CAL	230.0	24	240	24125 REDONDO	230.0	24	240	1	line	853.0	0.000	0.000	1.073	1.049	Contingency 213 (C)
24091 MESA CAL	230.0	24	240	24125 REDONDO	230.0	24	240	1	line	853.0	0.000	0.000	1.151	1.134	Contingency 217 (C)
24091 MESA CAL	230.0	24	240	24125 REDONDO	230.0	24	240	1	line	853.0	0.000	0.000	1.151	1.134	Contingency 229 (C)
24100 OLINDA	230.0	24	240	24211 OLINDA	66.0	24	240	3	tran	129.0	1.040	1.040	0.000	0.000	Base system (n-0)
24100 OLINDA	230.0	24	240	24211 OLINDA	66.0	24	240	4	tran	129.0	1.040	1.040	0.000	0.000	Base system (n-0)

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2010 Light Spring - PRE Vernon Power Project 304 MW Expansion
CASE NAME:2010LSP-PRE-VPP304MW.sav

From	BkV	Area	Zone	To	BkV	Area	Zone	CK	TYPE	Rate MVA	Vpp 2009 Heavy Summer BaseCase	Vpp 2009 Heavy Summer Vpp914	Vpp 2010 Light Spring BaseCase	Vpp 2010 Light Spring Vpp914	Contingency Description
24155 VINCENT	230.0	24	240	29700 TEH_GENS	230.0	24	240	1	line	3000.0	1.004	0.985	1.036	1.007	Base system (n-0)
24156 VINCENT	500.0	24	240	25003 MESA CAL	500.0	24	240	2	line	956.0	1.001	0.846	0.000	0.000	Base system (n-0)
24156 VINCENT	500.0	24	240	25003 MESA CAL	500.0	24	240	2	line	1023.0	1.013	0.865	0.000	0.000	Contingency 234 (C)
24156 VINCENT	500.0	24	240	25003 MESA CAL	500.0	24	240	2	line	1023.0	1.134	0.970	0.000	0.000	Contingency 249 (C)
24156 VINCENT	500.0	24	240	25003 MESA CAL	500.0	24	240	2	line	1023.0	1.063	0.893	0.000	0.000	Contingency 253 (C)
24156 VINCENT	500.0	24	240	25003 MESA CAL	500.0	24	240	2	line	1023.0	1.015	0.867	0.000	0.000	Contingency 256 (C)
24156 VINCENT	500.0	24	240	25003 MESA CAL	500.0	24	240	2	line	1023.0	1.015	0.867	0.000	0.000	Contingency 259 (C)
24156 VINCENT	500.0	24	240	25003 MESA CAL	500.0	24	240	2	line	1023.0	1.129	0.946	0.000	0.000	Contingency 260 (C)
24156 VINCENT	500.0	24	240	25003 MESA CAL	500.0	24	240	2	line	1023.0	1.013	0.865	0.000	0.000	Contingency 270 (C)
24156 VINCENT	500.0	24	240	25003 MESA CAL	500.0	24	240	2	line	1023.0	1.063	0.893	0.000	0.000	Contingency 274 (C)
24156 VINCENT	500.0	24	240	25003 MESA CAL	500.0	24	240	2	line	1023.0	1.047	0.861	0.000	0.000	Contingency 275 (C)
24156 VINCENT	500.0	24	240	25003 MESA CAL	500.0	24	240	2	line	1023.0	1.134	0.970	0.000	0.000	Contingency 286 (C)
24156 VINCENT	500.0	24	240	25003 MESA CAL	500.0	24	240	2	line	1023.0	1.101	0.926	0.000	0.000	Contingency 287 (C)
24156 VINCENT	500.0	24	240	25003 MESA CAL	500.0	24	240	2	line	1023.0	1.015	0.867	0.000	0.000	Contingency 296 (C)
24156 VINCENT	500.0	24	240	25003 MESA CAL	500.0	24	240	2	line	1023.0	1.134	0.970	0.000	0.000	Contingency 297 (C)
24156 VINCENT	500.0	24	240	25003 MESA CAL	500.0	24	240	2	line	1023.0	1.015	0.867	0.000	0.000	Contingency 298 (C)
24401 ANTELOPE	230.0	24	244	24402 ANTELOPE	66.0	24	244	2	tran	124.0	1.120	1.120	0.920	0.920	Base system (n-0)
24401 ANTELOPE	230.0	24	244	24402 ANTELOPE	66.0	24	244	3	tran	121.0	1.080	1.080	0.890	0.890	Base system (n-0)
24403 BAILEY	230.0	24	244	24115 PASTORIA	230.0	24	240	1	line	373.0	1.012	0.974	0.000	0.000	Contingency 237 (C)
24403 BAILEY	230.0	24	244	24115 PASTORIA	230.0	24	240	1	line	373.0	1.012	0.974	0.000	0.000	Contingency 279 (C)
24411 DEL SUR	66.0	24	244	24477 TAP 50	66.0	24	244	1	line	57.2	1.033	1.031	0.000	0.000	Base system (n-0)
24430 HELIJET	66.0	24	244	24445 TAP 60	66.0	24	244	1	line	46.3	1.220	1.217	0.000	0.000	Base system (n-0)
24904 HIGROVE	115.0	24	249	24903 VSTA	115.0	24	248	1	line	217.1	1.012	0.993	0.000	0.000	Base system (n-0)
24904 HIGROVE	115.0	24	249	24903 VSTA	115.0	24	248	2	line	217.1	1.002	0.984	0.000	0.000	Base system (n-0)
26068 STJOHN	230.0	26	260	26081 ATWATER	230.0	26	260	1	line	478.0	1.067	1.076	0.000	0.000	Base system (n-0)
26087 OLYMPC	230.0	26	260	26093 TARZANA	230.0	26	260	1	line	381.6	1.104	1.115	0.000	0.000	Base system (n-0)

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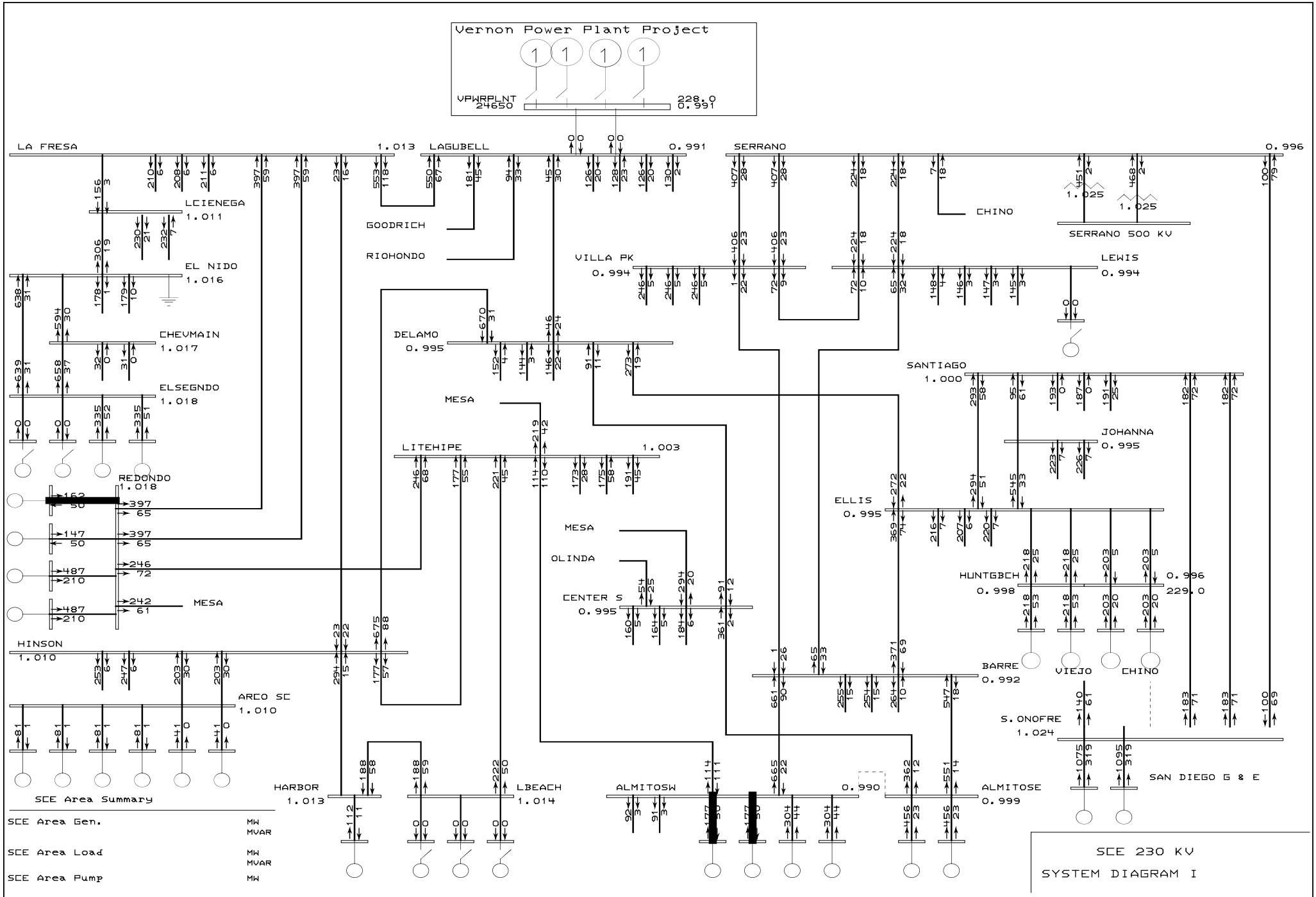
2010 Light Spring - PRE Vernon Power Project 304 MW Expansion
CASE NAME:2010LSP-PRE-VPP304MW.sav

From	BkV	Area	Zone	To	BkV	Area	Zone	CK	TYPE	Rate MVA	Vpp 2009 Heavy Summer BaseCase	Vpp 2009 Heavy Summer Vpp914	Vpp 2010 Light Spring BaseCase	Vpp 2010 Light Spring Vpp914	Contingency Description
26105 VICTORVL	500.0	26	260	26104 VICTORVL	287.0	26	260	1	tran	465.0	0.000	0.000	1.010	0.990	Contingency 201 (C)
26105 VICTORVL	500.0	26	260	26104 VICTORVL	287.0	26	260	1	tran	465.0	0.000	9.000	1.010	1.010	Contingency 205 (C)
26105 VICTORVL	500.0	26	260	26104 VICTORVL	287.0	26	260	1	tran	465.0	0.000	0.000	1.010	1.010	Contingency 206 (C)
26105 VICTORVL	500.0	26	260	26104 VICTORVL	287.0	26	260	1	tran	465.0	0.000	0.000	1.000	0.990	Contingency 249 (C)
26105 VICTORVL	500.0	26	260	26104 VICTORVL	287.0	26	260	1	tran	465.0	0.000	0.000	1.000	0.990	Contingency 251 (C)
26105 VICTORVL	500.0	26	260	26104 VICTORVL	287.0	26	260	1	tran	465.0	0.000	0.000	1.000	0.990	Contingency 252 (C)
26105 VICTORVL	500.0	26	260	26104 VICTORVL	287.0	26	260	1	tran	465.0	0.000	0.000	1.000	1.000	Contingency 253 (C)
26105 VICTORVL	500.0	26	260	26104 VICTORVL	287.0	26	260	1	tran	465.0	0.900	0.900	1.020	1.020	Contingency 256 (C)
26105 VICTORVL	500.0	26	260	26104 VICTORVL	287.0	26	260	1	tran	465.0	0.900	0.900	1.020	1.020	Contingency 259 (C)
26105 VICTORVL	500.0	26	260	26104 VICTORVL	287.0	26	260	1	tran	465.0	0.000	0.000	1.000	1.000	Contingency 274 (C)
26105 VICTORVL	500.0	26	260	26104 VICTORVL	287.0	26	260	1	tran	465.0	0.000	0.000	1.010	1.010	Contingency 275 (C)
26105 VICTORVL	500.0	26	260	26104 VICTORVL	287.0	26	260	1	tran	465.0	0.000	9.000	1.010	1.010	Contingency 277 (C)
26105 VICTORVL	500.0	26	260	26104 VICTORVL	287.0	26	260	1	tran	465.0	0.000	0.000	1.000	0.990	Contingency 280 (C)
26105 VICTORVL	500.0	26	260	26104 VICTORVL	287.0	26	260	1	tran	465.0	0.000	0.000	1.010	0.990	Contingency 284 (C)
26105 VICTORVL	500.0	26	260	26104 VICTORVL	287.0	26	260	1	tran	465.0	0.000	0.000	1.000	0.990	Contingency 286 (C)
26105 VICTORVL	500.0	26	260	26104 VICTORVL	287.0	26	260	1	tran	465.0	0.000	0.000	1.000	0.990	Contingency 294 (C)
26105 VICTORVL	500.0	26	260	26104 VICTORVL	287.0	26	260	1	tran	465.0	0.900	0.900	1.020	1.020	Contingency 296 (C)
26105 VICTORVL	500.0	26	260	26104 VICTORVL	287.0	26	260	1	tran	465.0	0.000	0.000	1.000	0.990	Contingency 297 (C)
26105 VICTORVL	500.0	26	260	26104 VICTORVL	287.0	26	260	1	tran	465.0	0.900	0.900	1.020	1.020	Contingency 298 (C)
26105 VICTORVL	500.0	26	260	26104 VICTORVL	287.0	26	260	1	tran	465.0	0.000	0.000	1.010	0.990	Contingency 299 (C)
28200 TOT135	230.0	24	240	24158 WALNUT	230.0	24	240	1	line	318.7	0.000	0.000	1.579	1.538	Base system (n-0)
30525 C.COSTA	230.0	30	308	30585 LS PSTAS	230.0	30	316	1	line	353.0	1.019	1.017	0.000	0.000	Base system (n-0)
30580 ALTM MDW	230.0	30	311	30625 TESLA D	230.0	30	311	1	line	373.3	0.918	0.932	1.045	1.050	Base system (n-0)
30624 TESLA E	230.0	30	311	30703 RAVENSWD	230.0	30	310	1	line	733.0	1.046	1.053	0.875	0.880	Base system (n-0)
30630 NEWARK D	230.0	30	316	30703 RAVENSWD	230.0	30	310	1	line	733.0	1.023	1.031	0.000	0.000	Base system (n-0)
30640 TESLA C	230.0	30	311	30655 ADCC	230.0	30	311	1	line	682.8	1.154	1.161	0.948	0.954	Base system (n-0)
30655 ADCC	230.0	30	311	30631 NEWARK E	230.0	30	316	1	line	657.3	1.202	1.210	0.986	0.992	Base system (n-0)
30670 WESTLEY	230.0	30	324	30765 LOSBANOS	230.0	30	313	1	line	592.0	1.042	1.084	0.000	0.000	Base system (n-0)
30700 SANMATEO	230.0	30	310	30695 MARTIN C	230.0	30	309	1	line	637.4	1.081	1.100	0.000	0.000	Base system (n-0)
30735 METCALF	230.0	30	318	30750 MOSSLND2	230.0	30	319	1	line	354.9	1.040	1.049	0.000	0.000	Base system (n-0)
30735 METCALF	230.0	30	318	30755 MOSSLND1	230.0	30	319	1	line	354.9	1.037	1.046	0.000	0.000	Base system (n-0)
33310 SANMATEO	115.0	30	310	33315 RAVENSWD	115.0	30	310	1	line	91.8	1.099	1.109	0.000	0.000	Base system (n-0)
33312 BELMONT	115.0	30	310	33313 BAIR	115.0	30	310	1	line	98.5	1.049	1.058	0.000	0.000	Base system (n-0)
35107 DUMBARTN	115.0	30	316	35120 NEWARK D	115.0	30	316	1	line	167.0	1.145	1.153	0.932	0.941	Base system (n-0)
35642 MTCALF D	115.0	30	318	30735 METCALF	230.0	30	318	4	tran	420.0	1.030	1.030	0.000	0.000	Base system (n-0)
36850 KIFER	115.0	30	321	36852 SCOTT	115.0	30	321	1	line	167.0	1.175	1.179	0.854	0.862	Base system (n-0)
37585 TRCY PMP	230.0	30	325	30625 TESLA D	230.0	30	311	1	line	333.8	1.067	1.090	1.116	1.135	Base system (n-0)
37585 TRCY PMP	230.0	30	325	30625 TESLA D	230.0	30	311	2	line	333.8	1.067	1.090	1.116	1.135	Base system (n-0)
38610 DELTAPMP	230.0	30	327	30580 ALTM MDW	230.0	30	311	1	line	373.3	0.918	0.932	1.045	1.050	Base system (n-0)

APPENDIX D
ONE-LINE DIAGRAMS



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CASE NAME: Vpp09hsBaseCase914.sav

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[S.LUGO 2658MW][N.LUGO 231MW][N.SONGS 360MW][S.SONGS 1780MW]

[SYLMAR -712][VIC-LUGO 755][EL-LUGO 556][MHV-LUGO 537][DV IMPORT 1432]MW

PSLF Program

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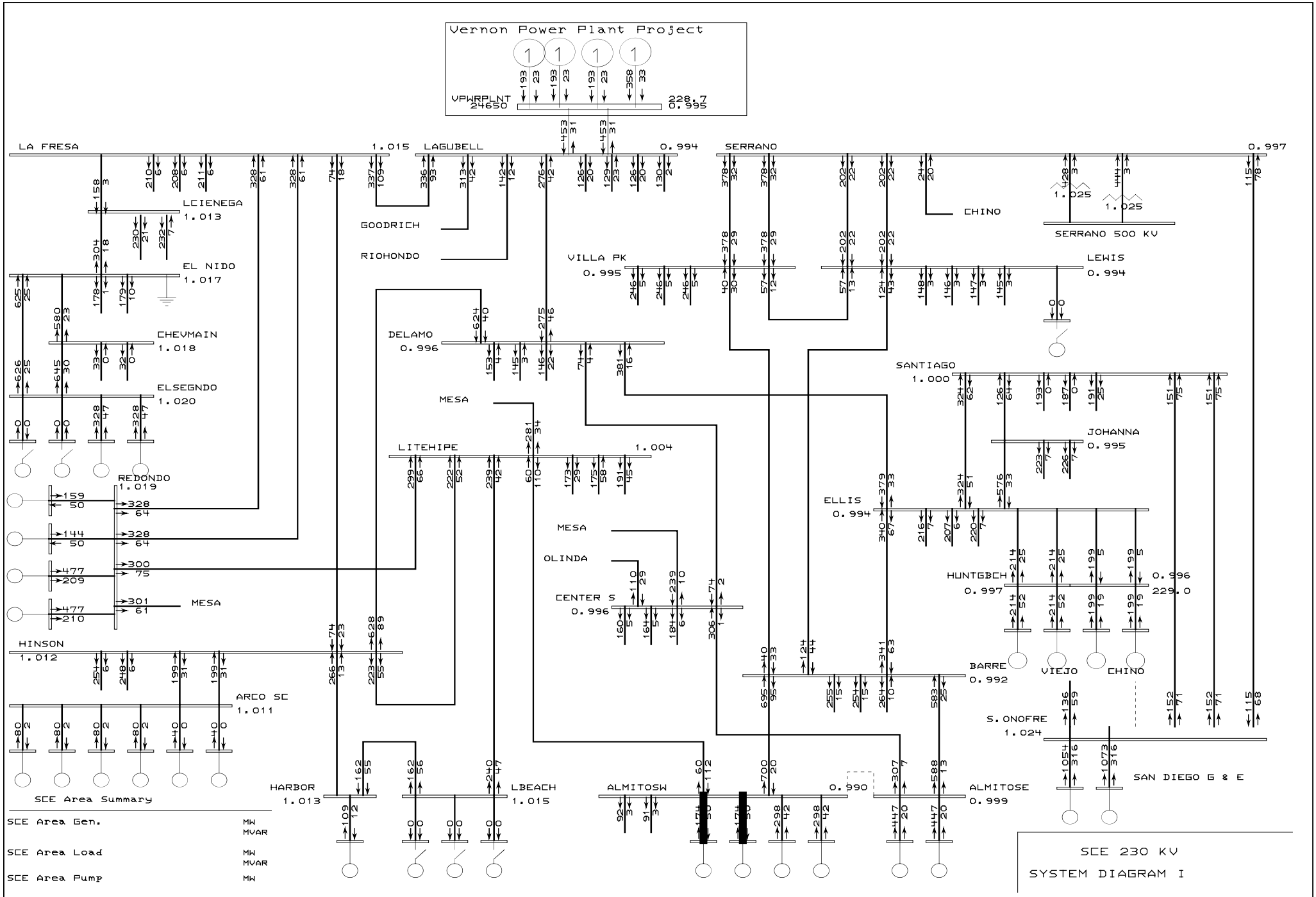

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MW/MVAR

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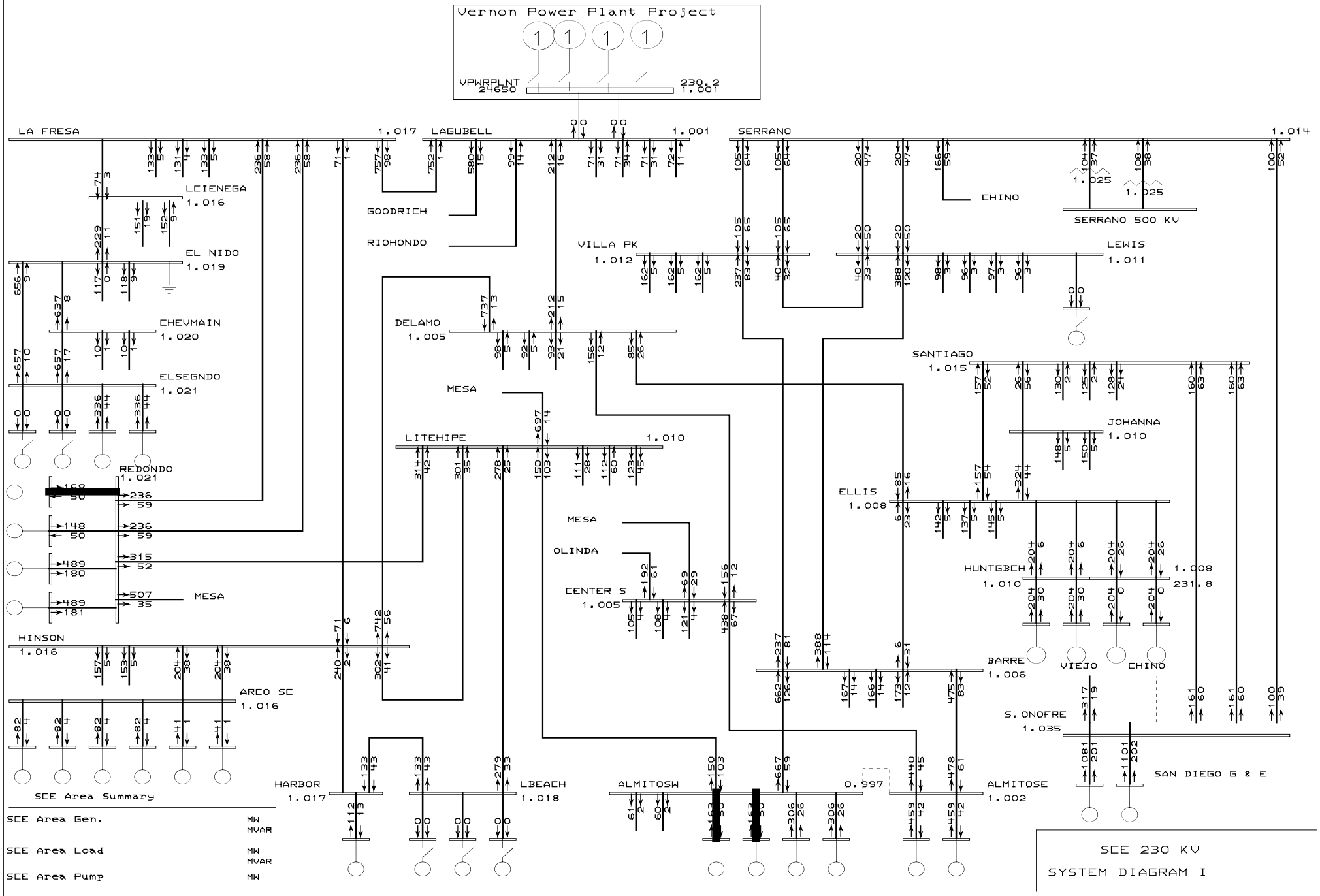

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[S.LUGO 735MW][N.LUGO 152MW][N.SONGS 676MW][S.SONGS 1464MW]

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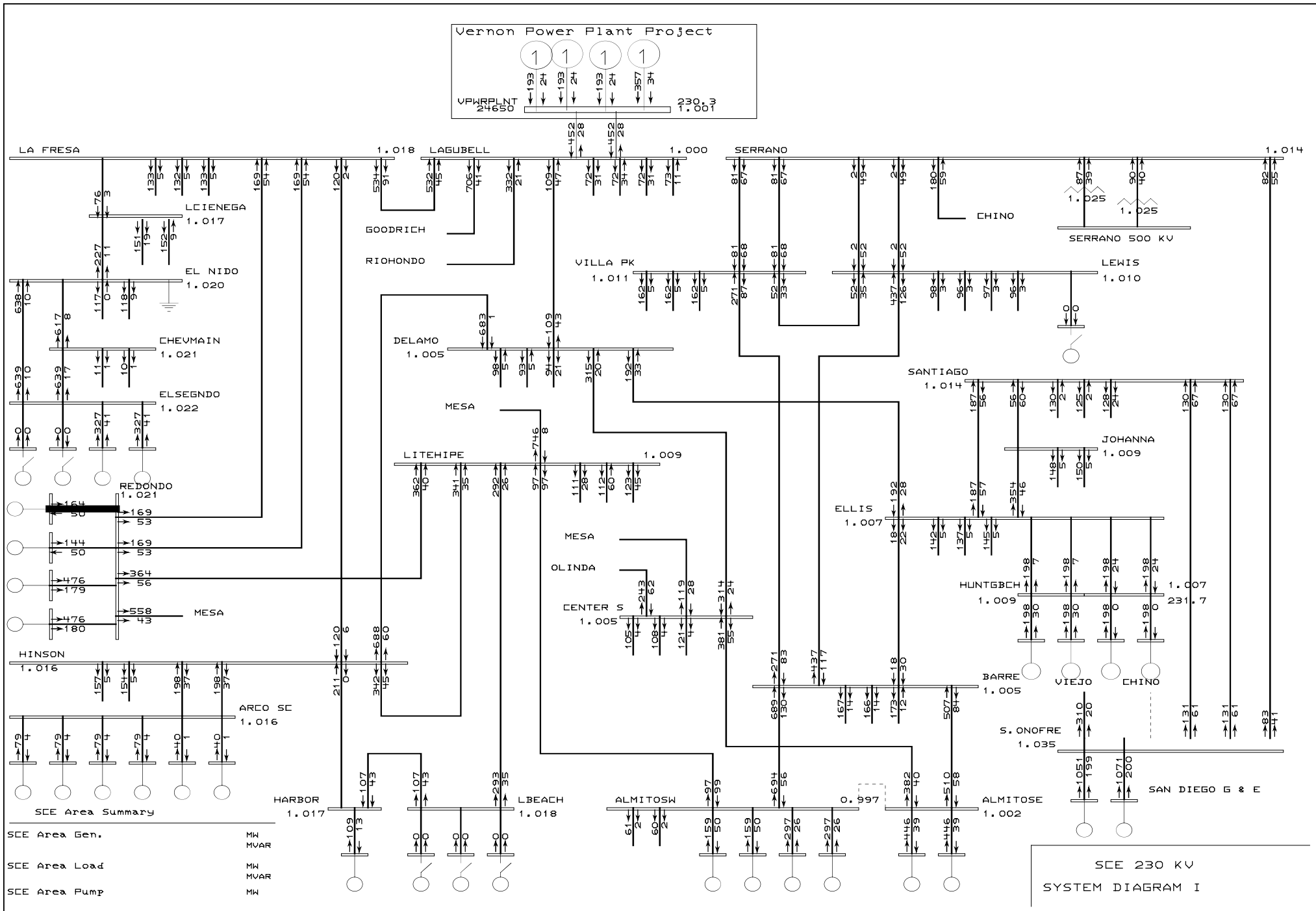

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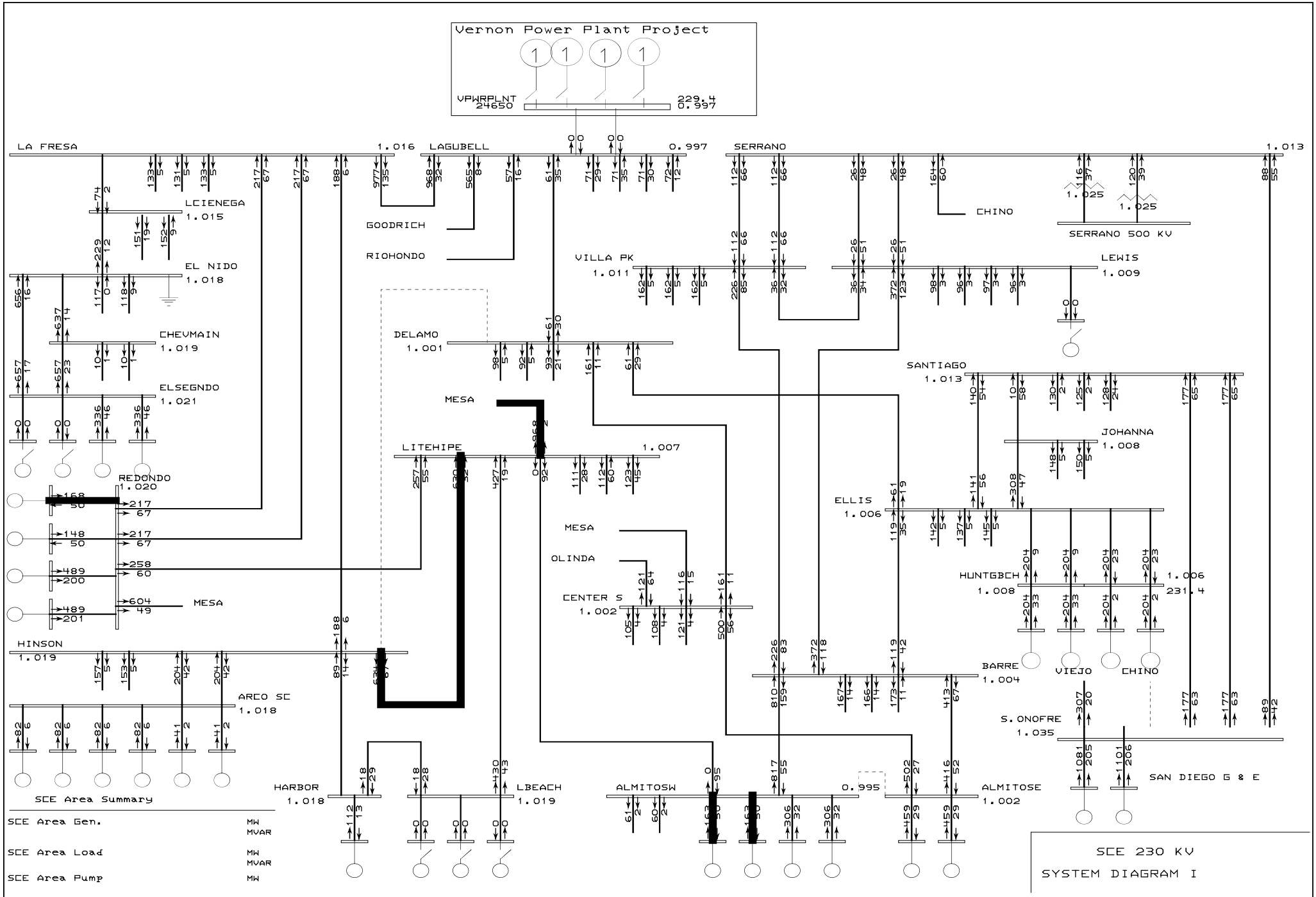

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MW/MVAR

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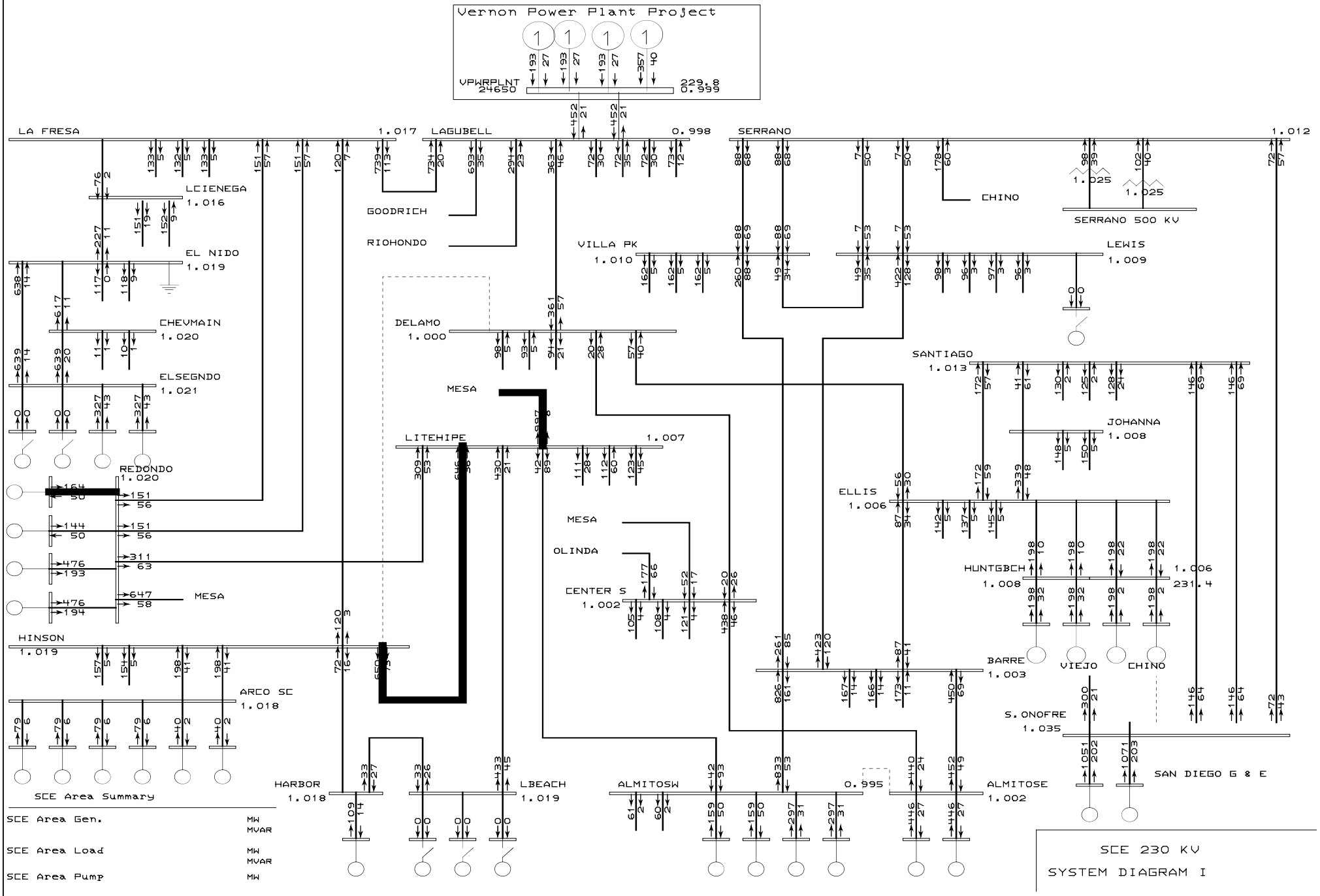

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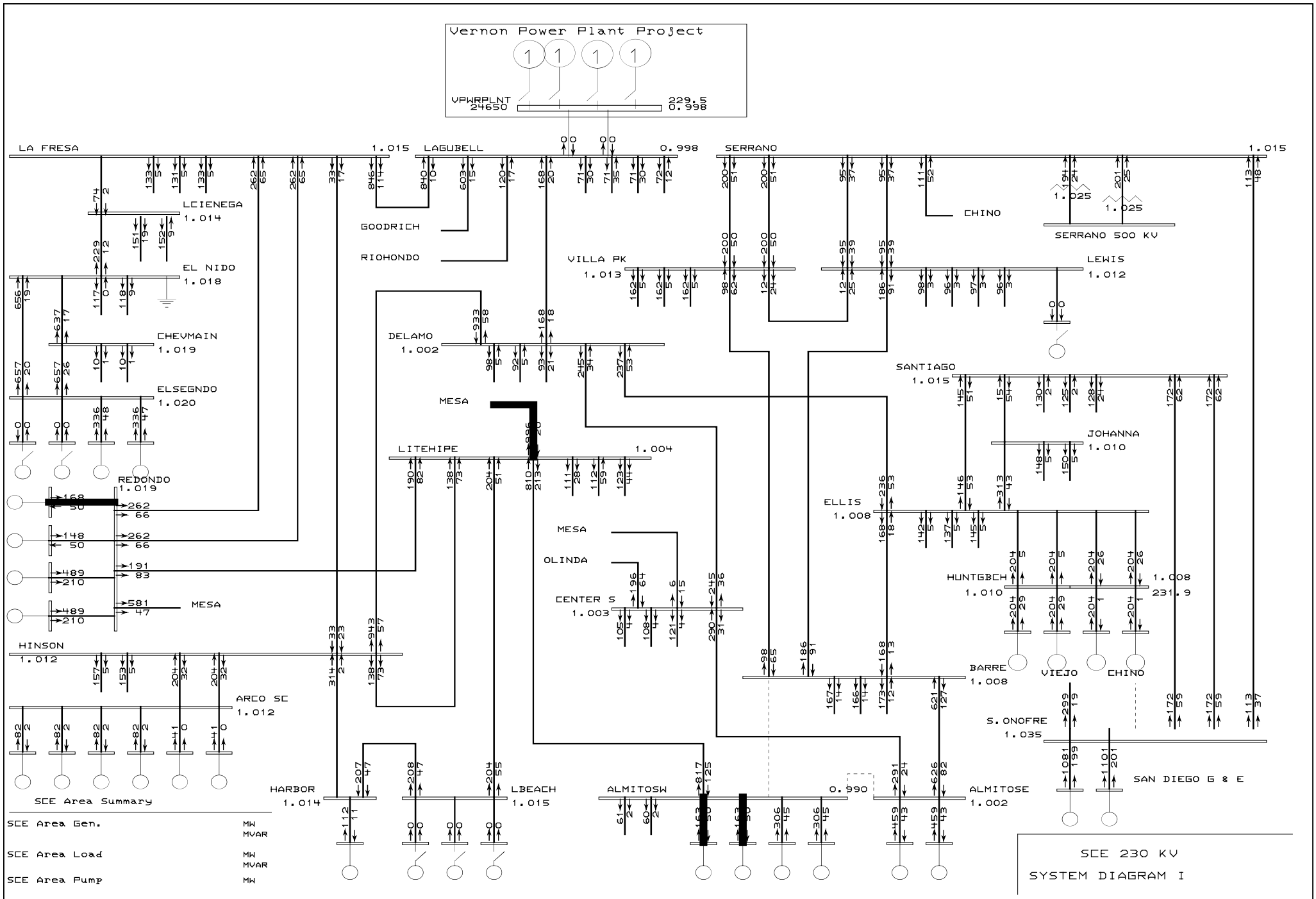

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2010 Light Spring - PRE Base Case

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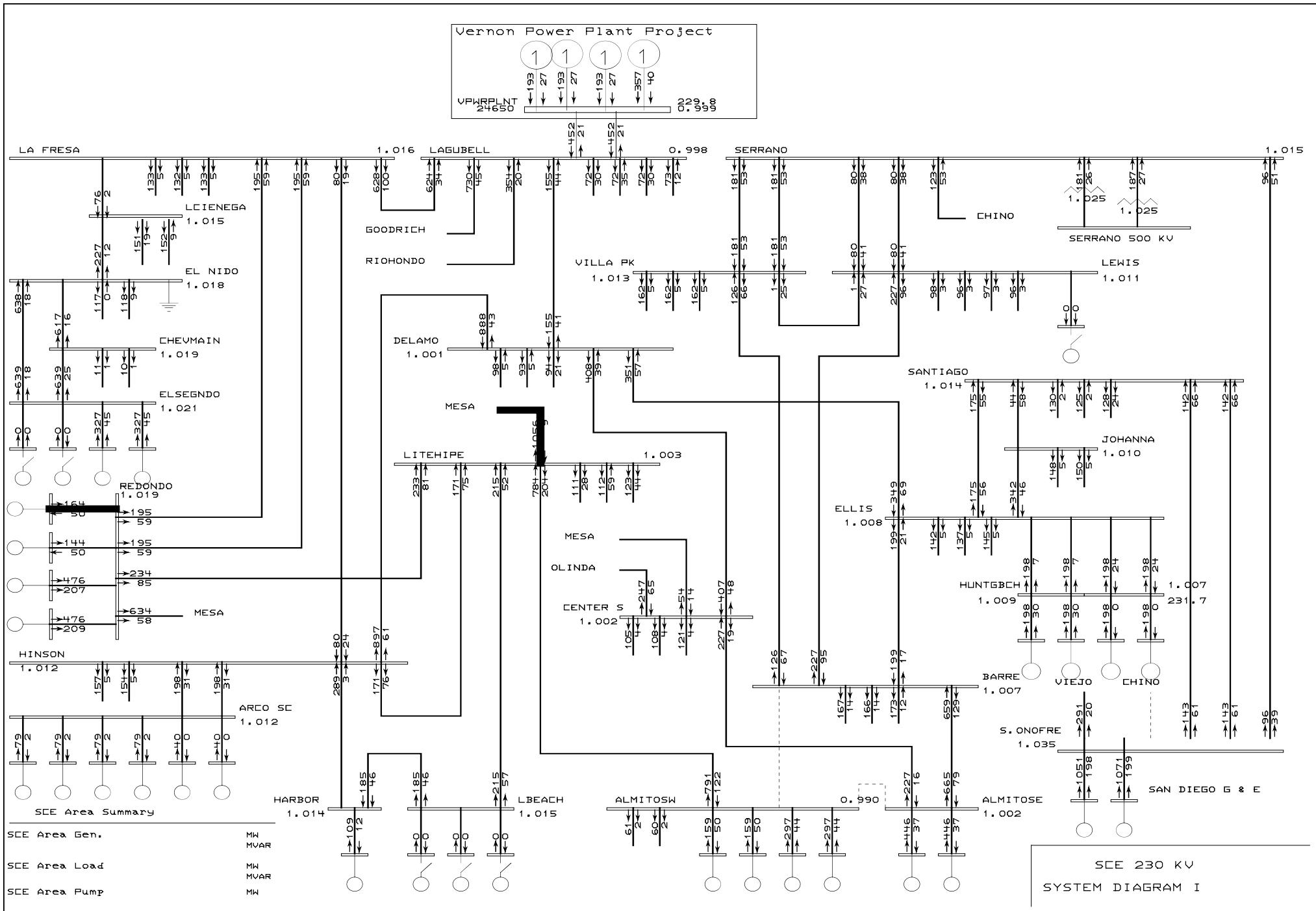
Rating = 1



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2010 Light Spring - Vernon Power Project 914 MW

Contingency No. 5: Altimos W to Barre 230 kV

PSLF Program

sce230-vpp914-pst.

Rating = 1

Section 2.5 Visual Resources

Data Adequacy Deficiency – Please provide elevation drawings or photographs with dimensions of the existing aluminum processing facility located on the project site. If photographs with dimensions are chosen, such a response would suffice for Project Description item Appendix B (a)(1)(D) also. Appendix B(g)(6)(A)(ii).

Data Adequacy Response – Seven photos and one Figure of the Century Cast Plate building located at 3200 Fruitland Avenue, Vernon, California are provided below.

Century Cast Plate
3200 Fruitland Ave
Vernon CA 90058

Photo 1.

View of the northwest corner. Camera is facing south along Boyle Avenue. Fruitland Avenue is cross street in the foreground.

This section of the building is three stories tall.

Photo 2.

View of north façade of 1940 building (Buildings 106, 108, 112).

Camera is facing southwest. Fruitland Avenue is in the foreground.

This section of the building is three stories tall.

Photo 3.

View of east façade of 1940 building (Building 112) in foreground and 1942 building (Building 122A) in distance.

Camera is facing south.

This section of the building is three stories tall.

Photo 4.

View of west side of 1942 building (Building 112A).

Camera is facing southeast.

This section of the building is three stories tall.

Photo 5.

View showing Building 104 (center) and Building 112A (right).

Camera is facing northeast; Boyle Avenue is in the foreground.

Photo 6.

View of south section of Building 104.

Camera is facing northeast.

This section of the building is two stories tall.

Photo 7.

View of north section of Building 104.

Camera is facing northeast.

This section of the building is two stories tall.

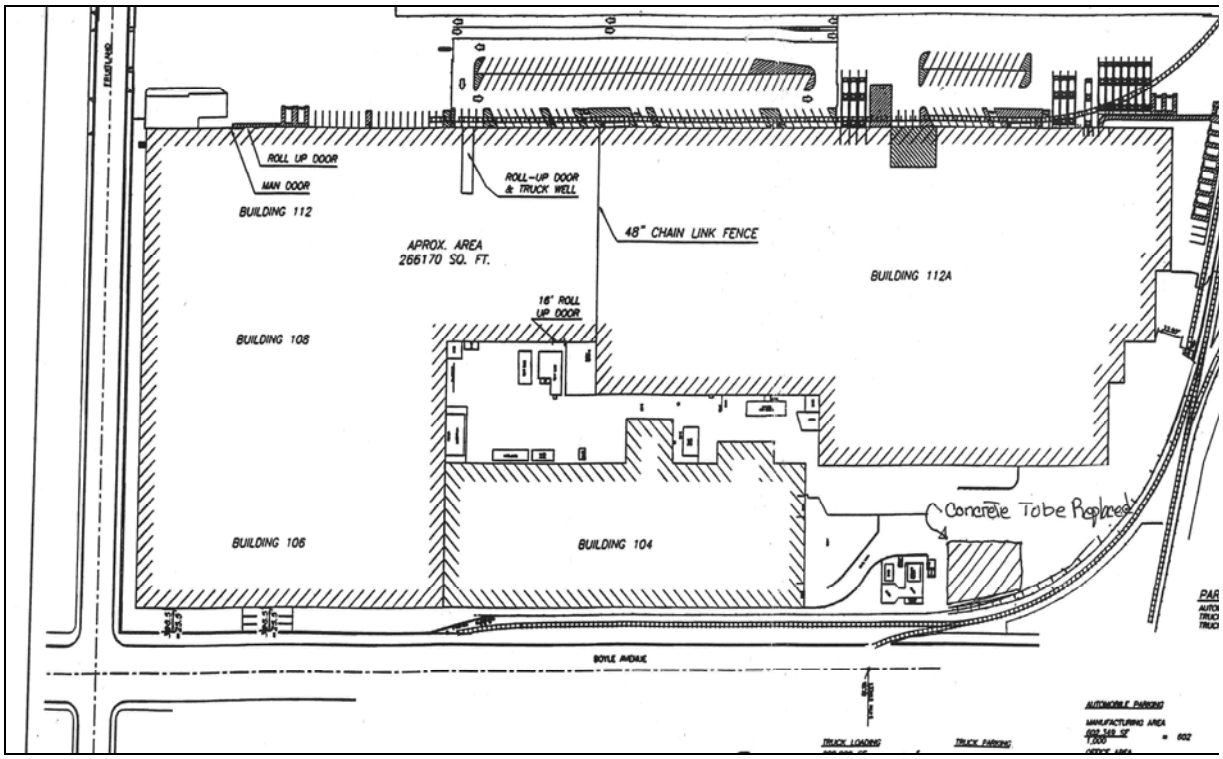

Figure 1. Plan of 3200 Fruitland Avenue.

Boyle Avenue is at the bottom and Fruitland Avenue is at the left. The 1940 building is on the left, the 1942 building is on the upper right, and the 1941 building (Building 104) is center bottom.

Section 2.6 Waste Management

Data Adequacy Deficiency – Staff requires copies of the Phase I and Phase II Environmental Site Assessments mentioned on pg 8.13-5 Section 8.13.3 of the AFC. Appendix B(g)(12)(A).

Data Adequacy Response – A copy of the Phase I Environmental Site Assessment is provided as Attachment WM-2.6.

RECEIVED
SEP 14 2005
HEALTH DEPARTMENT

ATTACHMENT WM-2.6

PHASE I ENVIRONMENTAL SITE ASSESSMENT
PECHINEY CAST PLATE FACILITY
Vernon, California

CONFIDENTIAL

Prepared for:

Alcan, Inc.
Chicago, Illinois

Prepared by:

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(949) 642-0245

September 1, 2005

Project No. 10627.000.0

Geomatrix

Geomatrix

PHASE I ENVIRONMENTAL SITE ASSESSMENT
Pechiney Cast Plate Facility
Vernon, California

September 1, 2005
Project No. 10627

This report was prepared by the staff of Geomatrix Consultants, Inc., under the supervision of the Engineer and/or Geologist whose signature appears hereon.

The findings, recommendations, specifications, or professional opinions are presented within the limits described by the client, after being prepared in accordance with generally accepted professional engineering and geologic practice. No warranty is expressed or implied.

Linda Conlan, PG
Senior Geologist

Anthony Daus, PG 4267, REA 179
Principal Hydrogeologist

Geomatrix

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Figure 2 Current Site Plan
Figure 3 Site Plan with Historical Features

APPENDIXES

Appendix A Sanborn Map Report
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PHASE I ENVIRONMENTAL SITE ASSESSMENT
Pechiney Cast Plate Facility
Vernon, California

1.0 INTRODUCTION

Geomatrix Consultants, Inc. (Geomatrix) was retained by Alcan, Inc. (Alcan) to conduct a Phase I Environmental Site Assessment (Phase I) for the Pechiney Cast Plate Facility (Vernon facility) located at 3200 Fruitland Avenue in the City of Vernon, County of Los Angeles, California (subject property, site, or Vernon Facility). Phase I assessment activities described herein were performed in general conformance with the Geomatrix proposal dated April 29, 2005 which was authorized by Jenkens & Gilchrest LLP on behalf of Alcan on May 4, 2005.

1.1 PURPOSE AND SCOPE

This Phase I was performed in general conformance with the scope and limitations of the American Society of Testing and Materials (ASTM) E1527-00 standard (ASTM Standard). The purpose of this assessment was to evaluate subject property history, existing observable conditions, and current and historical uses of the subject property and surrounding properties to identify the potential presence of Recognized Environmental Conditions (RECs) in connection with the subject property. RECs are defined by ASTM as "the presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of a release of any hazardous substances or petroleum products into structures on a property or into the ground, groundwater, or surface water of the property." The term is not intended to include de minimis conditions that generally do not present a material risk of harm to public health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies. Conditions interpreted to be de minimis are not RECs. In addition, the standard requires that historical RECs (HRECs) and known or suspect environmental conditions (referred to herein as other environmental conditions [OECs]) be identified in the Phase I report. The standard defines HRECs as environmental conditions "which in the past would have been considered a REC, but which may or may not be considered a REC currently."

Our conclusions are intended to assist Alcan in evaluating the "business environmental risk" associated with the site, defined by the ASTM E1527-00 standard as "a risk that can have a

material environmental or environmentally-driven financial impact on the business associated with the current or planned use of a parcel of commercial real estate." Evaluation of business environmental risk may involve addressing issues outside the scope of this Phase I assessment.

1.2 SITE IDENTIFICATION

The site is located within the City of Vernon in the County of Los Angeles, California (Figure 1). The site, which consists of two main buildings that are used for manufacturing aluminum cast plates, warehouses, and offices, is located at the southeastern corner of the intersection of Fruitland Avenue and Boyle Avenue (Figure 2). The site was once part of a 56-acre aluminum manufacturing facility operated by Aluminum Company of America (Alcoa). The original Alcoa facility extended farther east to Alcoa Avenue. The historical layout of the Alcoa facility is shown on Figure 3.

1.3 SCOPE OF SERVICES

Geomatrix performed the following scope of services to complete this Phase I assessment:

- visual observation of site conditions and of adjacent property uses to assess the nature and type of activities being conducted at and adjacent to the site in terms of the potential for release or threat of release of hazardous substances or petroleum products;
- review of federal and state environmental database information within the ASTM-specified radii and extending another 1/2 mile from the site using a database service to access records;
- review of selected local and State regulatory agency files for the site;
- review of previous environmental assessments of the site;
- review of a 7.5-minute topographic map to evaluate the site's physical setting;
- interviews of persons knowledgeable about historic and current facility operations;
- review of sources of historical site use information, including historical aerial photographs, fire insurance maps, and topographic maps;
- review of previous reports related to asbestos containing materials (ACM), lead-based paint (LBP), and polychlorinated biphenyls (PCB)-containing electrical equipment and materials; and

- interpretation of information and data gathered during the above tasks, and formulation of conclusions regarding the potential presence of RECs and HRECs as defined by the ASTM Standard, and OECs.

1.4 NON-SCOPE CONSIDERATIONS

The ASTM E1527-00 standard includes the following list of "additional issues" that are outside of the scope of the ASTM Phase I practice: testing and inspection for ACM (including galbestos[1] siding), LBP, radon, lead in drinking water, wetlands, regulatory compliance, cultural and historic risks, industrial hygiene, health and safety, ecological resources, endangered species, indoor air quality, and high voltage power lines. The non-scope items listed above were not included in our assessment of the site. Geologic hazards such as seismicity, liquefaction, and landslides also were not evaluated in this Phase I.

1.5 EXCEPTIONS AND DEVIATIONS

Geomatrix has completed this Phase I assessment in general conformance with ASTM E1527-00 with the following exceptions:

- a title search for the site was not obtained;
- observation of the interior of Building 64 (Dross Storage) was not conducted because dross was cooling and access to the building was restricted;
- observation of the below grade trenches and machine pits within Buildings 112A and 104 was not conducted because the associated equipment, furnaces, and machines were in operation at the time of the site visit;
- observation of the immediate areas surrounding the melt furnace was not conducted because it was in operation at the time. For safety reasons we were requested to maintain a specified distance from the area; and
- building roofs were not observed due to safety considerations and general roof configuration.

1.6 LIMITATIONS

The observations and conclusions presented in this report are based on the information obtained through the work described herein. Geomatrix's assessment did not include ACM, LBP, PCB-containing electrical equipment and materials, indoor air, soil, groundwater, mold, or radon sampling. Any conclusions regarding the history and environmental conditions of the

[1] Galbestos is a term for flat or corrugated galvanized iron sheets that have a coating of chrysotile on each side, covered by a coat of paint or bitumen.

site and nearby properties rely on the completeness and accuracy of the information available at the time of our assessment as well as the cooperation and knowledge of persons contacted. As such, no absolute determination can be made of all environmental risks. Opinions presented herein apply to site conditions observed or from data obtained at the time of our assessment and cannot apply to site conditions or changes of which we are not aware or which we have not had the opportunity to evaluate. The findings do not constitute a warranty, guarantee, or positive assertion as to the presence, absence, or extent of hazardous materials at the site. Geomatrix has prepared this Phase I for the sole beneficial use of Alcan. The findings of this study may not be relied upon by or distributed to any third party without the written consent of Geomatrix.

2.0 PROPERTY DESCRIPTION AND SETTING

This section presents information regarding the site ownership and location, as well as current subject and adjacent property uses.

2.1 SITE LOCATION AND OWNERSHIP

Figure 2 presents a map of the site. The site is located at the southeastern corner of the intersection of Fruitland Avenue and Boyle Avenue and is owned by Alcan; the facility is operated by Pechiney Cast Plate Inc.. The Assessor Parcel Numbers (APNs) for the site are 6301-008-010, -011, -012, and -013. For the purpose of consistency with historical documents and reports, the APN designations refer to parcel numbers as follows:

- APN #6301-008-010 – Parcel 6 Lot 10;
- APN #6301-008-011 – Parcel 6 Lot 11;
- APN #6301-008-012 – Parcel 7; and
- APN #6301-008-013 – Parcel 8.

The facility is used to manufacture high-precision cast aluminum plates and lies within an area zoned as industrial and commercial.

2.2 CURRENT SITE USE AND BACKGROUND

The site is comprised of approximately 26.9 acres of land that currently is occupied by approximately 600,000 square feet of building area. At the time of this assessment, the site consisted of parking lots, manufacturing and associated buildings, offices, outside storage areas, and partially paved vacant lots (Figure 2).

The site was originally part of a larger aluminum manufacturing facility operated by Alcoa. Historical addresses for the Alcoa facility were 5151 and 5401 Alcoa Avenue. Documents reviewed by Geomatrix indicate Alcoa's operations began in approximately 1937. In approximately 1997, Alcoa sold the eastern half of the facility, which subsequently was razed and redeveloped as industrial and commercial properties. In December 1998, Alcoa sold the western portion of the facility (3200 Fruitland Avenue) to Century Aluminum Company. In 1999, Pechiney Cast Plate purchased the subject property.

The original building and area designations formerly used by Alcoa were retained for the western portion of the former facility and are still used today. These original building and area designations are used to discuss current and historical operations throughout the text of this report and are summarized in Table 1, which also includes historical designations for buildings and areas located on the eastern portion of the former Alcoa facility. The current and historical facility layout is shown on Figures 2 and 3, respectively.

2.3 ADJACENT PROPERTY USE

The site is located in an area of industrial and commercial use. The properties surrounding the site include:

- North: Fruitland Avenue borders the site to the north. A vacant building (3063 Fruitland Avenue), Vernon Refrigerator Corp. (3100 Fruitland Avenue), an unidentified industrial property (3121 Fruitland Avenue), Franks Tractor & Automotive Restoration, Extra Express (3151 Fruitland Avenue), and Barksdale Crane – Barksdale Inc. (3211 Fruitland Avenue) are located along the northern side of Fruitland Avenue. Other industrial and commercial properties are located farther north.

- East: Industrial and commercial development is present along the eastern boundary of the site in the area that formerly was occupied by the eastern portion of the Alcoa facility. The businesses that occupy these newer structures along Alcoa Boulevard (north to south) include: Rose & Shore and Riteway RBR Meats (5151 Alcoa Boulevard); Lucky Brand Jeans (5233 Alcoa Boulevard); JDS Inc. (5383 - 5389 Alcoa Boulevard (chemical storage observed along the south side of the building); and a vacant building (5563 Alcoa Boulevard). Sandberg Furniture (5685 and 5705 Alcoa Boulevard) and Black Brothers & Son Distributing Co. (at 5725 Alcoa Boulevard) are located farther south along Alcoa Boulevard.

- South: Industrial and commercial development is present along the southern boundary of the site, including unidentified industrial properties (3251, 3215, and 3171 Slauson Avenue), and Sandberg Furniture (5725 Slauson Avenue). At the northeast corner of Slauson Avenue and Boyle Avenue, ten 55-gallon steel drums were observed in the parking lot adjacent to the building located at 5813 Boyle Avenue. Labels on these drums were not observed. Along Boyle Avenue, Norton (5800 Boyle Avenue) and an unidentified industrial property (5500 Boyle Avenue) were observed.

- West: Boyle Avenue borders the site to the west. The west side of Boyle Avenue includes: Reed Electric (5611, 5503, and 5511 Boyle Avenue); an unidentified industrial property (5455 Boyle Avenue); Best Mexican Foods (5401 Boyle Avenue); US Filter (5375 Boyle Avenue); NI Industries (5215 Boyle Avenue); and Owens Glass of Illinois (2901 Fruitland Avenue).

3.0 GEOLOGIC AND HYDROGELOGIC SETTING

The physical setting of the site, including site topography, surface water, geology, and hydrogeology, is discussed in the following subsections.

3.1 TOPOGRAPHY AND SURFACE WATER

Site topography is shown on the United States Geological Survey (USGS) South Gate, California 7.5 minute series Topographic Quadrangle (1964, photorevised 1981). The site is located in Township 2 South, Range 13 West, Section 14, San Bernardino Base & Meridian (SBBM) at approximately 180 feet above mean sea level (amsl). The local topographic gradient is gentle, sloping toward the south at approximately 25 feet per mile.

The Los Angeles River, the surface water body nearest the site, is located approximately 4000 feet north-northeast of the site.

3.2 GEOLOGY AND HYDROGEOLOGY

The site is located within the Los Angeles Forebay Area within the Central Basin of the Los Angeles County Costal Plain (Department of Water Resources [DWR], 1961). The Central Basin is bound on the northwest by the Santa Monica Mountains, on the north and northeast by the Repetto, Merced and Puente Hills, on the east by approximately the Coyote Creek (Orange County line), and the Pacific Ocean on the south and west. The Central Basin is largely composed of sediments shed from the surrounding hills and mountains as alluvial fan deposits.

The site is located between the poorly-defined Paramount Syncline and Boyle Heights Anticline. In the vicinity of the site, underlying soils are associated with Recent Alluvium, the Lakewood Formation, and the underlying San Pedro Formation. The area surrounding the site is underlain by approximately 250 feet of Recent Alluvium; approximately 150 to 300 feet of the Upper Pleistocene Lakewood Formation, which consists of alternating sequences of fine- and coarse-grained flood plain and alluvial sediments; and 600 to 900 feet of the Lower Pleistocene San Pedro Formation, which consists of sand and gravel interbedded with fine-grained clays of marine origin.

Based on information in the State of California Department of Water Resources Bulletin 104 (DWR, 1961), aquifers in the San Pedro Formation include the Hollydale, Jefferson, Lynwood, Silverado, and Sunnyside. Aquifers in the Lakewood Formation include the Artesia, Exposition, Gage, and Gardena. Within the Recent alluvium, perched groundwater may be associated with the Bellflower Aquitard.

Previous investigations conducted at the Alcoa facility suggest the site is underlain by fine- and coarse-grained soils composed of silt and sand (referred to by others as Recent Alluvium) from approximately 0 to 40 feet below ground surface (bgs), fine-grained soils composed of silt and clay (referred to by others as the Bellflower Aquitard) from approximately 40 to 85 feet bgs, and coarse-grained soils composed of sand (referred to by others as the Lakewood Formation) to a depth of at least 161.5 feet, the total depth of the deepest soil boring drilled at the site according to documents reviewed by Geomatrix (Geraghty & Miller, 1991). Historical boring logs indicate groundwater beneath the property was encountered within a sand unit, interpreted to be the Exposition Aquifer, between depths of 145 and 150 feet bgs. Perched groundwater was not reported above sediments interpreted as the Bellflower Aquitard on boring logs reviewed by Geomatrix (Geraghty & Miller, 1991 and 1995).

Nine groundwater monitoring wells were installed at the former Alcoa facility. Six of these wells AOW-1, AOW-3, AOW-6, AOW-7, AOW-8 and AOW-9 were located on the subject property (Figure 2). According to documents reviewed, all but three wells (AOW-6, AOW-8, and AOW-9) have been destroyed under the oversight of the City of Vernon. Groundwater monitoring conducted between 1990 and 1997 indicates the depth to groundwater beneath the site has ranged from approximately 135 to 158 feet bgs (Enviro-Wise, 1998). Groundwater flow direction was reported as west-northwesterly (Geraghty & Miller, 1991 and 1995; Enviro-Wise, 1998).

Groundwater monitoring data collected between 1990 and 1997 indicate trichloroethylene (TCE), 1,2-dichloroethylane (DCA), and chloroform (CF) are present in groundwater beneath the site with historical concentrations up to 160 micrograms per liter (µg/l), 370 µg/l, and 105 µg/l, respectively (Enviro-Wise, 1998).

4.0 HISTORICAL DOCUMENT REVIEW

This section summarizes uses of the site and neighboring properties that were assessed through review of historical documents, including historical Sanborn Fire Insurance maps, aerial photographs, topographic maps, and city directories. Due to the large size of the site, the following discussion is presented with reference to parcel numbers and/or historical building numbers, where appropriate. The building references are shown on Figure 3 and listed in Table 1. Parcel designations 6, 7, and 8 are shown on Figure 2.

4.1 SANBORN FIRE INSURANCE MAPS

Geomatrix requested copies of historical Sanborn fire insurance maps from EDR (2005a) to provide additional information on past uses of the site and neighboring properties. EDR provided Sanborn maps of the site for the years 1920, 1929, 1949, and 1966; Sanborn maps of adjoining properties also were provided for other years. Sanborn maps obtained from EDR are included in Appendix A and the findings are summarized below.

Sanborn Map Date	Summary
1920	The 1920 map shows South Boyle Avenue and East Slauson Avenue, and includes Parcel 6 (Lots 10 and 11). Parcel 6. No features are shown on Parcel 6 Lot 10. At the southern end of the site, on Parcel 6 Lot 11 (referred to as the emergency easement), are five small structures. Two structures are identified as single story automobile garages, one structure notes a "centrifg pump;" a fourth structure notes paints, and a fifth structure notes "LP 4," which likely indicates a 4-foot lumber pile. In addition, the northern portion of a building noted as a sash and door factory is also seen on this map. The structures seen on the site appear to be related to the facility to the south, identified on the map as Pacific Portable Construction Co. Inc. (PPC), a company that manufactures ready-cut houses. Adjacent Properties. The structures at the PPC property include a square structure labeled "oil" approximately 50 feet east of the automobile garages, a loft (5702 S Boyle Avenue), an oil cloth storage building, a plumbing structure, a sash and door factory, lumber piles, two assembling and storage structures, a cabinet shop, a planing mill, lumber storage areas, and a dry kiln. On the east side of the rail line near the southern boundary of Parcel 6 Lot 10 is the PPC lumber yard with numerous lumber piles indicated. South of PPC is the West Coast Glass Co., a milk bottle manufacturer along Slauson Avenue. The property west of Boyle Avenue shows two structures belonging to the Western Malleable

Sanborn Map Date	Summary
	Casting Co. (5715, 5719, and 5723 S. Boyle Avenue). One structure is labeled as a foundry and core room, the other a cleaning room. Two oil tanks are indicated on this property to the south and southwest of the foundry structure. To the north is the Western Forge and Manufacturing Co. (5616 S. Boyle Avenue) and one structure is labeled as a foundry. The Atlas Fire Brick Company's brick storage yard is just to the north of Western Forge at 5601 and 5607 Boyle Avenue. The structures farther north along Boyle Avenue are not legible.
1929	The 1929 map shows South Boyle Avenue, East Slauson Avenue, and Magnolia Avenue (known as Alcoa Avenue today) and includes Parcel 6 (lots 10 and 11) and the southern-most corner of Parcel 7. Parcel 7. In the far southeastern corner of Parcel 7 is a rail road spur that curves east and north along the boundaries of Parcel 7. To the southeast of the rail road spur is an area identified as a "Contractor's Storage Yard" containing three storage structures and a small dwelling (5500 Magnolia Avenue). Parcel 6. In the center of Parcel 6 Lot 10 is what appears to be a small structure and lumber storage belonging to the Ready Cut Homes Inc. & Construction Supply Co. (RCH). The use of the small structure is not clear on the map. Most of Parcel 6 Lot 11 lies within the area labeled Brash-Ross Tool Co. (BRT) at 5306 S. Boyle Avenue. BRT buildings were formerly referred to as part of the PPC facility on the 1920 map. Two features are shown in the center of Parcel 6 Lot 11: a pipe cutting structure and an unlabeled single story structure. In addition, there are several smaller hydrant structures. In the far southwestern corner of Parcel 6 Lot 11, in the area of the emergency access easement, are several features belonging to RCH, including an office building, three small illegible features, a paint warehouse, and two lumber storage structures. Adjacent Properties. On the north side of the emergency easement and west of Parcel 6 Lot 11 is the remainder of the BRT facility, which includes a machine shop (former Building 131) and office (former Building 130), blacksmith and heat treating room (former Building 134), switch room and storage room (former Building 133), and another machine shop (former Building 132). Transformers are indicated between former Buildings 133 and 134. South of Parcel 6 Lot 11 are several structures belonging to Pacific Ready Cut Homes Inc. (PRCH) and Construction Supply Co. (formerly identified as PPC on the 1920 map). This facility extends from Boyle Avenue to Magnolia Avenue, and includes two lumber storage buildings, a sash manufacturing building, a saw room, and cement storage. Additional structures are indicated on the PPC property including two assembling and storage structures with a screen department, a cabinet shop, a planing mill, lumber storage areas, three offices, and a mill. On the east side of the rail line south of Parcel 6 Lot 10 and toward the east side of Lot 11 are several structures associated with PRC and include lumber storage areas, a saw mill, and an oil storage structure. Farther south towards Slauson Avenue, is the West Coast Glass Co. and Mike Bottle Manufacturing (3235 3255 Slauson Avenue) seen on the 1920 map, and the Weaver-Henry Manufacturing Co., a roofing paper and composition shingles manufacturer (offices, shingle storage structures, automobile garage, factory, paint shed, at least five oil tanks, and a tar dip room). To the east of Parcel 7 is Brombacher Iron Works (5549 or 5555 Magnolia Avenue) and includes building noted as erecting, machine, and blacksmith shops, storage structures, offices, and two automobile garages in the area of former Buildings 40, 41, and 58.
1949	The 1949 map shows South Boyle Avenue, East Slauson Avenue, Alcoa Avenue (formerly Magnolia Avenue), and Fruitland Avenue, and covers Parcels 6, 7, and 8.

Sanborn Map Date	Summary
	Parcels 7 and 8. Parcels 7 and 8 are identified as Alcoa. The dominant feature is the present-day large, rectangular structure that is divided into several smaller buildings, with a central courtyard. The buildings shown on the 1949 map are generally consistent with the current layout of the facility for Buildings 106, 108, 110, 104, 64, 112, 112A, 114, and 12. Differences are seen at the cooling tower area, Building 124, and the eastern boundary of the site. The eastern boundary of Parcel 7 includes additional structures including a maintenance shop (adjacent to the south of Building 12), oil storage drum area, salvage building (former Building 20), store room (former Building 62), offices (former Building 60), lumber piles, and brick storage (former Building 52). Major features seen on site on the 1949 map are summarized below by building, parcel, and use (historical features no longer existing are denoted by an H): • Building 64, Parcel 7, no use listed • Building 104, Parcel 7, Remelting • Building 106, Parcel 8, Press • Building 108, Parcel 8, Runout • Building 110, Parcel 8, Heat treating • Building 112, Parcel 8, Finishing and Shipping • Building 112A, Parcel 7, Tube mill with shipping department, heat treating room, box shop and woodworking. Just to the south of the box shop a small structure is indicated as "grinder dust" • Between Buildings 64, 104, and 112A, Parcel 7, Three fuel oil underground storage tanks (USTs) • Main Substation #1, Parcel 8, Transformers • Substation #2, Parcel 7, Transformers • Substation #5, Parcel 7, Transformers • Cooling Tower, Parcel 7, Cooling tower with a sump and pump house adjacent to the north. A larger rectangular feature identified as a "sump" is located to the south of the cooling tower near the current propane station. • Chip Storage Area/Building 124 (H), Parcel 7, Four 10,000 gallon USTs and a pump house located approximately 20 feet to the south of the USTs (Building 124) • East of Southern Entrance, Parcel 7, Office building (Building 60), brick storage structure (Building 26), and lumber piles. • Building 12 (H) and 114 (H), Parcel 8, Foundry (Building 12), office (Building 103), maintenance shop (part of Building 12), salvage structure, portion of an oil drum storage area, and a portion of a store room (Building 62) Parcel 6. Parcel 6 Lot 11 still remains as a portion of the BRT facility. Many of the features are the same as on the 1929 map, but there are several new features shown on this parcel including a power saw building (former Building 136) in the northwest corner of the parcel, a testing building near the former loading dock, an old metal storage shed near the curve in the railroad spur, a carpentry and pattern shop near the southern border of the parcel (former Building 135), a small storage shed, and a paint spray booth west of former Building 135. The clarity of the map in the area of Parcel 6 Lot 10 is poor and the features can not be determined.

Sanborn Map Date	Summary
	Adjacent Properties. Features on the adjacent property to the east (Alcoa) include, from north to south, a die shop and die storage (former Building 6), transformers, compressor and power house, hammer building (former Building 9), metal storage, press building, acid case storage, incinerator, concrete settling tanks (former Building 10), incinerator, offices and warehouses (e.g., former Buildings 1, 5, 46, 45), canteen (former Building 63), carpentry shops (former Building 48), machine shop (former Building 50), and grinding room and magnesium foundry (former Building 58). West of Parcel 6 (Lot 11) is still the BRT facility and the features include an office (former Building 130), machine shops (former Building 131 and 132), assessable and electrical switch room (former Building 133), and heat treating (former Building 134). The area to the east of Parcel 6 Lot 10 is not legible. West of the Boyle Avenue and west of Parcel 6, 7 and 8 are a number of manufacturing facilities that include from north to south (Based on the map coverage provided by EDR, information for these facilities were obtained from Sanborn maps from 1949, 1953, 1955, 1956, and 1960): • Fruehauf Trailer Co. of California (5137 and 5351 Boyle Avenue), a truck trailer and body manufacturer. Features include maintenance shops, a spray painting and drying building, stock rooms, and offices (included on maps from 1953, 1955, 1956, and 1960). • Norris Stamping and Manufacturing Co., (5215 Boyle Avenue) a metal stamping and metal goods manufacturer. Features include hydraulic presses, storage buildings, porcelain enameling ovens, a press, a stamping and annealing building, and at least two oil storage structures. A smudge pot testing building is located in the southeast corner of the property (included on maps from 1953, 1955, 1956, and 1960). • Industrial Manufactures Ltd. (on a 1953 map), a manufacture of wood tanks and furnaces, and Santa Fe Tank & Tower Co., Mfg. (on a 1955 and 1956 map). • Reed Electric Co. (5501, 5503 and 5505 Boyle Avenue) with machine shops, winding, repair shop, offices and storage buildings (included on maps from 1953, 1955, and 1956). • Aero Alloys and Parts Manufacture (5511 Boyle Avenue) with heat treating and aluminum foundry with an earthen floor (included on maps from 1953, 1955, and 1956). • Pioneer Flintkote Granular Division (formerly Atlas Fire Brick) with sand casting, heat treating, kilns, milling and storage buildings (included on maps from 1953, 1955, and 1956). • General Metal Corporation (formerly Western Forge and Western Malleable Casting Co.) with forging, annealing, hammer shop, heat treating, and die shop structures (included on maps from 1953, 1955, 1956, and 1960). To the south, where PRCH was located on the 1929 Sanborn map is Penbertry Lumber Company, Plumbing Heating & Supply Company and NOX Weed Killing and Acid Plant (5755 Alcoa Avenue), and Sandberg Furniture Manufacturing Co., Inc. (5705 Alcoa Avenue). Farther south along Slauson Avenue are Production Pattern & Manufacturing Co. (formerly West Coast Glass Co. and Mike Bottle Manufacturing) and John Manville Products Co. (formerly Weaver-Henry Manufacturing Co.). To the north across Fruitland Avenue is General Refractories Co. – Los Angeles Works (3363 and 3367 Fruitland Avenue) with kilns, brick storage, dryers, and offices.

Sanborn Map Date	Summary
1966	Parcels 7 and 8. Parcels 7 and 8 are occupied by Alcoa. Many of the features appear the same as seen in 1949; changes or additions observed between the 1949 and 1966 maps are presented below by building, parcel, and use (Historical features no longer existing are denoted by (H): • Building 64, Parcel 7, Aluminum reclaiming • Building 106, Parcel 8, Extrusion press building • Building 112, Parcel 8, Extrusion finishing building with a die shop in the northeast corner • Building 112A, Parcel 7, Scrap metal storage is indicated on an approximately 40 foot wide section along the eastern side of this building. • Cooling Tower/Propane Station, Parcel 7, the rectangular "sump" feature is no longer present. • Chip Storage Area/Building 124 (H), Parcel 7, A gas pump is indicated north of the four 10,000 gallon USTs • East of South Entrance, Parcel 7, Die storage area is indicated instead of lumber piles. • Building 12 (H) and 114 (H), Parcel 8, The foundry indicated on the 1949 map has been divided into sections: a melting room, extrusion plant, foundry, and core ovens. South of these structures is the western portion of a mill supplies storeroom (former Building 62). Parcel 6. For Parcel 6 Lot 10, the quality of the map is poor and no features could be identified. The areas on Parcel 6 Lot 11 and the surrounding parcels formerly labeled as BRT have apparently transferred ownership to Alcoa. Features indicated on Lot 11 appear to be the same as seen in 1949, but their use is not labeled. Adjacent Properties. Features on the property to the east of the site are generally the same as seen on the 1949 map (Alcoa). Adjacent to the mill supplies storeroom (former Building 62) is an "L" shaped structure indicating an oil storage area. The magnesium foundry (former Building 58) to the southeast of Parcel 7 is now labeled as a maintenance shop. The facilities to the west of Boyle Avenue and west of Parcel 6, 7, and 8 are similar to those seen on the 1949 map. Based on the map coverage provided by EDR, information for these facilities were obtained from several Sanborn maps dated 1960, 1963, 1967, and 1968. The following differences were observed on the 1960s maps (from north to south): • On a 1967 and 1968 map, Owens of Illinois storage is present where Fruehauf Trailer Co. of California (5137 and 5351 Boyle Avenue) was formerly located. • On a 1960, 1963, and 1967 map, Norris Thermador Corporation is present where Industrial Manufacturers Ltd. and Santa Fe Tank & Tower were formerly located (a manufacturer of wood tanks and furnaces). • On a 1960 map, Aero Alloys (nut and bolt manufacturing) is present where Pioneer Flintkote Granular Division (formerly Atlas Fire Brick) was formerly located. To the north across Fruitland Avenue is General Refractories Co. – Los Angeles Works (3363 and 3367 Fruitland Avenue) with kilns, brick storage, dryers, and offices, a Veneer & Plywood warehouse, and a steel warehouse (3010 Fruitland Avenue). To the south are Penberty Lumber Company; Plumbing, Heating & Supply Company; and Sandberg Furniture Manufacturing Co., Inc. (5705 Alcoa Avenue). Farther south along Slauson Avenue are Catalina Steel Co. (formerly Production Pattern & Manufacturing Co.) and

Sanborn Map Date	Summary
	John Manville Products Co. (formerly Weaver-Henry Manufacturing Co.).

4.2 AERIAL PHOTOGRAPHS

Past uses of the site and the adjacent properties were further assessed through a review of historical aerial photographs provided by EDR (2005b) for the years 1928, 1938, 1947, 1956, 1965, 1976, 1989, 1994, and 2002. EDR photograph scales ranged from 1 inch equals 400 feet to 1 inch equals 666 feet (Appendix B). A summary of the aerial photograph findings is included below.

Aerial Photograph Date	Summary
1928	The site is bounded to the north and west by roads at locations similar to where Boyle and Fruitland Avenues are today. A rail line is seen along the eastern boundary of the site. An east-west trending rail line is present in southern portion of the property dividing Parcels 6 and 7. Parcels 7 and 8. The northern portion of the site appears to be dominated by agricultural activities. A surface impoundment, which may have been an irrigation pond, is located in the northwestern corner of the site in the area of present day Buildings 106/108. A small residential-like structure is shown in the northeastern portion of the property in the area of former Buildings 12/114, and another small residential-like structure is in the area of present day Building 112A (within the central portion of Parcel 7). In the area shown southwest of Building 112A, within the southern portion of the eastern parking lot, are small buildings and what appear to be storage areas. Parcel 6. To the south of the rail line is Parcel 6, which is divided by a rail spur. On the west side of the rail spur is a small building and unpaved areas (Lot 11). East of the rail spur is mostly unpaved, with what appears to be a storage area in the southern portion of Lot 10. Adjacent Properties. The properties to the west, north, and east appear to be agricultural land with small residential-like structures. Approximately 1/3 mile to the north, a number of aboveground storage tanks (ASTs) surrounded by bermed structures are seen. East of the southern portion of Parcel 7 are a number of large, well-developed industrial buildings, with three of the buildings located in the same area as former Buildings 40, 41, and 58 (referred to as Brombacher Iron Works on a 1929 Sanborn map). The property to the east of Parcel 6 appears to be associated with the activities seen on Lot 11 on Parcel 6. To the south are additional industrial properties. In the area between the western side of Parcel 6 and Boyle Avenue are six structures (associated with the BRT facility in a 1929 Sanborn map). These structures are similar in layout to former Buildings 130, 131, 132, 133, and 134, although slightly different in size.
1938	Parcels 6, 7, and 8. The site and surrounding streets appear similar to those seen in the 1928 photograph, with only a few exceptions. The apparent changes include the small residential-like structure seen in the northeastern portion of the property has been replaced by former Alcoa Buildings 12/114; the small residential-like structure within the central portion of Parcel 7 has expanded; additional structures are seen on Parcel 6 Lot 10; and Parcel 6 Lot 11 appears to be undeveloped with one small rectangular structure present.

	Adjacent Properties. The properties to the west, north, and east of the site appear similar to the 1929 photograph, with a few new features. These new features include additional industrial structures to the east of Parcel 8, in the general area of former Alcoa Buildings 1, 2, 6, 7 and the southern portion of from Building 9. An industrial structure with what appear to be 8 small ASTs (identified as kilns on the 1949 Sanborn map) are located north of former Buildings 12/114 and Fruitland Avenue. The property to east of Parcel 6 appears to be mostly vacant with possible storage along the southern perimeter, and former Building 133 has expanded to the east on Parcel 6 Lot 11. The ASTs previously seen to the north of the site are still present; however, seventeen circular patterns on the ground indicate where ASTs were previously located.
1947	The site is surrounded by industrial properties on all sides, and the area has undergone much development since 1938. Parcels 7 and 8. The buildings (108, 106, 112, 112A, 124, and cooling tower) associated with the western portion of the Alcoa facility are present on Parcels 7 and 8, with railroad spurs connecting to the east-southeast trending railroad. A rectangular structure and square pond-like feature are seen in the area of the present day cooling tower. South of the rectangular structure is a visibly darker feature is seen in the area identified as a "sump" on the 1949 Sanborn map. The area surrounding these features appears to be unpaved. Former Alcoa Buildings 12 and 114 appear to have been expanded to the south, and Building 62 and the small office building are present. Parcel 6. Parcel 6 Lot 10 appears to be graded and vacant, and additional small structures are present along the rail spur on Lot 11 similar in configuration to former Building 135. Adjacent Properties. A number of newer industrial buildings are present on the adjacent parcels east of the site, which are consistent with the layout of the former eastern portion of the Alcoa facility with the exception of Building 10. In addition, the area between former Buildings 9, 114, and 62 sharply contrasts with its immediate surroundings and may be a storage area. The properties to the south, west, and north are fully developed with industrial buildings. None of the ASTs previously seen to the north are present, although most of the tank outlines are still apparent.
1956	This photograph shows that the area in general has continued to develop since 1947. Parcels 6, 7 and 8. With few exceptions, structures seen at the site do not appear to have changed. The visibly darkened feature noted in the 1947 aerial photograph south of the present day cooling tower is no longer visible, but Building 124 is seen in this area along with a road from Building 124 to the southern entrance of Building 104. The area around Building 124 appears to be unpaved. A number of smaller features are present along the west side of Buildings 104 and 106. Parcel 6 Lot 10 appears to be part of a paved parking lot that extends to Alcoa Avenue. The areas between buildings on Parcel 6 Lot 11 also appear to be paved. Adjacent Properties. The industrial structure with the eight small ASTs (identified as kilns on the 1949 Sanborn map) are no longer present north of Buildings 12/114 and Fruitland Avenue. On the adjacent property to the east, Building 10 is present. The remainder of the buildings associated with the Alcoa facility are present. Properties west of the site contain several new structures. Properties to the east of Alcoa Avenue, north of Fruitland Avenue, and west of Boyle Avenue have been extensively developed as industrial and/or manufacturing facilities.

1965	This photograph shows conditions similar to those shown in 1956. Parcel 6. Structures within the site do not appear to have changed much with only a few exceptions. Parcel 6 Lot 10 appears to have reverted back to an unpaved, unused area. The small structure to the west of former Building 135 on Parcel 6 Lot 11, identified as a storage building on the 1949 Sanborn map, has been demolished. Building 12 on Parcel 8 has been built out to its full historical size, extending to the north side of Building 62 east of the site. Adjacent Properties. Properties surrounding the site to the north, east, south, and west have been further developed.
1976	This photograph shows the site a similar state to that in 1965. Parcel 6. The photograph is very dark, but with few exceptions, structures within the site do not appear to have changed. Parcel 6 Lot 10 shows a few very bright features that might be structures or bare ground. Adjacent Properties. Conditions of the properties surrounding the site appear similar to those in the 1965 photograph.
1989	This photograph shows the site similar to that shown in the 1976 photograph. Parcel 6. The ground to the north of former Building 135 in Parcel 6 Lot 11 appears to be very dark, and it is difficult to tell whether it is paved. Adjacent Properties. The buildings on the parcel just west of Parcel 6 Lot 11 have all been demolished; building outlines are vaguely visible. Conditions of the properties surrounding the site appear similar to those in the 1976 photograph.
1994	This photograph shows the site similar to that shown in the 1989 photograph with no major changes apparent. Parcel 6. The ground to the north of former Building 135 in Parcel 6 Lot 11 appears to have many small features scattered across it, which may indicate the area is being used for miscellaneous storage. Adjacent Properties. A new rectangular structure has been built on the property just west of Parcel 6 Lot 11.
2002	This photograph shows the site similar to the condition it appears today. The area between Building 112 and the eastern property boundary is paved. A parking lot is located where Buildings 12 and 114 were located. The major changes since 1994 have occurred on the parcels just east of the site. It appears that these buildings have been demolished, and four new structures have been built. With the exception of the property immediately adjacent to the east of the site, conditions of the properties surrounding the site appear similar to those in the 1994 photograph.

4.3 TOPOGRAPHIC MAPS

Past uses of the site and adjacent properties were assessed through a review of USGS historical topographic maps provided by Environmental Data Resources, Inc. (EDR, 2005c) for the years 1902, 1937, 1947, 1949, 1952, 1953, 1964, 1972, and 1981. Topographic maps reviewed are presented in Appendix C. A summary of the topographic map findings is included below.

Date	Summary
1902	The area of the site is referred to as the City of Fruitland. Parcels 6, 7 and 8. Two residential size structures are shown within the site boundaries (Parcels 7 and 8). Two roads are apparent at the western (Boyle Avenue) and northern (Fruitland Avenue) property boundaries; a third road cuts through the eastern portion of the site. Surrounding Area. Most of the surrounding areas appear undeveloped. A railroad line, running north-south, labeled Los Angeles (LA) Terminal R.R. is located approximately 1/3 mile east of the site, and is shown crossing the Los Angeles River near Workman Avenue to the southeast. The Obed Bell Station is identified to the south of the property along the rail line. Several additional roads and residential-size structures are shown to the west, north, and east of the site.
1937	Parcels 6, 7, and 8. Roads currently adjacent to the site are shown on this map. The road cutting through the eastern portion of the site in 1902 appears to have been converted into a rail line with several spurs of varying lengths linking adjacent properties. The rail line also has a branch running to the south within the property boundaries and connects to the LA Terminal railroad referenced above. The two on-site residential-sized structures appear to be in the same locations as shown on the 1902 map, and a square reservoir is denoted in the northwest corner of the site on Parcel 8. Several additional structures are present in the southern portion of the site, and there are at least five small shed- or residential-sized structures, two of which appear to be located within Parcel 6 on Lot 11. Surrounding Area. Additional medium-sized structures are present on the south, west, and east of the property boundaries, but for the most part they appear relatively undeveloped. The site vicinity appears more developed than shown on the 1902 topographic map. The City of Vernon is indicated, and 33 oil tanks are indicated approximately ⅓ mile north of the site.
1947	Parcels 6, 7, and 8. This map shows no structures within the site boundaries, which is inconsistent with the aerial photograph from the same year (discussed in Section 4.2). Surrounding Area. The rail lines in the site vicinity depicted on the 1937 topographic map appear to be the same, and the main rail lines east of the site appear to have expanded.
1949	Parcels 6, 7, and 8. This map shows two structures within the site boundaries. Two structures in the northern half of the site in Parcels 7 and 8 consist of a large roughly rectangular building and a smaller rectangular structure in the eastern portion of Parcel 8. Surrounding Area. Six elongated structures are present in the property to the south of the site, and two rectangular buildings are located to the east of Parcel 7, which correspond roughly to former Alcoa Buildings 8 and 9. Four unspecified ASTs are located north of the intersection of Fruitland Avenue and Soto Street, one east (approximately 1300 feet from the site) and three west of Soto Street (approximately 2500 feet from the site). Two reservoirs are located approximately 1800 feet from the site at the intersection of Soto Street and Slauson Avenue. Two apparent ASTs are seen next to the reservoirs.
1952	This map shows structures in the site vicinity similar to those shown on the 1949 topographic map.

1953	This map truncates at the western border of the site, but shows structures in the eastern site vicinity similar to those on the 1952 topographic map. Surrounding Area. An adjoining 1953 topographic map to the north indicates the oil tanks that were depicted in the 1928 topographic map are no longer present; instead, several railroad spurs run across the properties, and a rectangular structure is present fronting Boyle Avenue, north of Leonis Boulevard.
1964	This map shows only one structure on the site in contrast to a 1965 aerial photograph that shows numerous buildings within the site and in the surrounding areas. Surrounding Area. The map shows a fire station with three water tanks located at the corner of Downey Road and Fruitland Avenue. The fire station shown on the map is bounded to the east and north by undeveloped land. Another parcel of land across Fruitland Avenue to the south of the fire station is shown as undeveloped. Additional structures are depicted on the 1966 adjoining quadrangle map to the north: at the southeast corner of 44th Street and Boyle Avenue and between 46th Street and Leonis Boulevard fronting Downey Road.
1972	This map shows structures in the site vicinity similar to those shown on the 1964 topographic map. Surround Area. An AST is depicted in the southeastern corner of the parcel west of the site, between Fruitland Avenue and 54th Street.
1981	Conditions at the site appear similar to those shown on the 1972 topographic map. Surrounding Area. Five structures are shown on property east of Alcoa Avenue, to the south of the fire station. Two small structures are depicted on the properties north of the fire station that were shown as undeveloped on the 1964 and 1972 topographic maps.

4.4 CITY DIRECTORY LISTINGS

Geomatrix requested a historical city directory search from EDR, which searched directories at approximately five-year intervals for the years spanning 1920 through 2003 (EDR, 2005d). The report compiled information concerning addresses within approximately ⅛ mile of the site. Addresses were found between 1950 and 2000. Surrounding property business listings include refractory companies, food services, automotive repair, steel companies, tool companies, bottler manufacturers, paper manufacturers, audio companies, construction companies, and printers. The EDR city directory abstract is presented in Appendix D.

The site was not listed in any of the directories searched by EDR between 1920 and 2003. Alcoa was listed in the Pacific Bell Telephone Directory in 1986 and 1995 at the address of 5151 Alcoa Avenue.

5.0 ENVIRONMENTAL RECORDS REVIEW

The findings of the environmental record research and review are presented in this section.

5.1 STANDARD ENVIRONMENTAL DATABASE RECORDS REVIEW

Geomatrix utilized the EDR electronic database search service to conduct an environmental records review (EDR, 2005e). The database search was used to identify properties that may be listed in the referenced agency records and located within the search radius. The search radii used by EDR was specified by Geomatrix as ASTM standard plus ½ mile. A summary of the radius search results are presented below. The complete EDR environmental database report is provided in Appendix E.

Database	Search Radius	Total Sites Plotted within Search Radius
CERCLIS - Comprehensive Environmental Response, Compensation, and Liability Information System	1 mile	2
CERCLIS-NFRAP - CERCLIS No Further Remedial Action Planned	¾ mile	8
CORRACTS - A list of handlers with RCRA Corrective Action Activity	1 ½ mile	9
RCRA – TSD - Resource Conservation and Recovery Act (RCRA) treat, store, or dispose of waste	1 mile	5
RCRA – LQG - Large quantity generator	¾ mile	17
RCRA – SQG - Small quantity generator	¾ mile	66
CA SLIC - California Spills, Leaks, Investigations and Cleanup	1 ½ mile	6
LUST - Leaking underground storage tank	1 mile	31
SWF/LF - Solid waste facility/landfill site	1 mile	1
WMUDS/SWAT - waste management unit database system	1 mile	1
CHMIRS - California Hazardous Material Incident Report System	½ mile	13
CORTESE - Database for public drinking water wells with detectable levels of contamination, hazardous substance sites selected for remedial action, sites with known toxic material identified through the abandoned site assessment program, sites with USTs having a reportable release and all solid waste disposal facilities from which there is known migration.	1 mile	32
UST - Underground Storage Tank	¾ mile	6
HIST UST - Historical UST Registered	¾ mile	57
ERNS - Emergency Response Notification System	½ mile	15

Database results for the site are presented first, followed by a brief summary for adjacent and nearby facilities listed in the environmental database report that may have a potential impact on the site. In addition, facilities located within approximately ½ mile of the site and identified by EDR as having documented soil or groundwater impacts are included in Table 2.

5.1.1 Site Database Results

The site was identified in four databases: FINDS, HAZNET, RCRA-LQG, and CA-WDS (EDR, 2005e). Table 2 summarizes database information for these records.

Although the relationship to the site is not clear from the records, database entries listed for Alcoa with the addresses 5151 and 5401 Alcoa Avenue included ERNS, Cortese, LUST, EMI, RCRA-LQG, FINDS, and HIST UST. Two of the entries, both in the ERNS database, do not specifically state Alcoa as the property owner, but list the origin as Alcoa. Table 2 summarizes database information for these records.

5.1.2 Surrounding Properties

EDR (2005e) database listings for properties adjacent to and immediately surrounding the site include RCRA-SQG, RCRA-LQG, HIST UST, LUST, and Cortese. In the vicinity of the site, the following facilities were listed with soil and/or groundwater contamination (Table 2):

- Detrex Corporation located at 3027 Fruitland Avenue;
- Bethlehem Steel (Vernon Industrial Plaza) located at 3300 Slauson Avenue;
- Trico Industries, Inc. located at 3040 East Slauson Avenue; and
- Herny Company located at 2911 Slauson Avenue.

In addition, two RCRA-TSD facilities are located within ¼ mile of the site:

- US Filter located at 5375 South Boyle Avenue; and
- Chemclear of Los Angeles located at 3165 East Slauson Avenue.

Facilities within ½ mile of the site are summarized in Table 2.

5.2 Previous Assessments at the Site

This section summarizes additional information on potential environmental conditions at the site obtained from reports on assessments previously conducted. Documents reviewed by Geomatrix were provided by Jenkens & Gilchrist LLP and by various public agencies contacted by Geomatrix. A summary of potential environmental concerns identified from reports on previous investigations reviewed by Geomatrix is provided in Table 3.

The majority of reports reviewed by Geomatrix were prepared by consultants to Alcoa and were related to the closure of its facilities on and east of the site. These assessments were

conducted under the oversight of the City of Vernon Health & Environmental Control (H&EC). With the exception of Stoddard solvent impacted soil detected beneath Parcel 7, the City of Vernon concurred with Alcoa's recommendations to close the facilities on Parcels 6, 7, and 8 with no further action required at that time (City of Vernon, 1999). In addition, groundwater, is being assessed under the oversight of the Los Angeles Regional Water Quality Control Board (RWQCB) Underground Storage Tank (UST) Division (RWQCB, 2002).

5.2.1 Hazardous Building Materials

Based on the documents reviewed by Geomatrix hazardous building materials identified at the site include: PCB-containing electrical equipment and hydraulic equipment, PCBs on building material and floor coverings, ACM, LBP, and surface dust. A survey or testing of these materials was not conducted as part of this Phase I assessment. A summary of the information obtained from previous reports is discussed below.

PCB-Containing Electrical Equipment and Materials. Substations #1, #2, and #5 located on the site have been reported to be non-Toxic Substance Control Act-regulated (e.g. oils containing less than 50 parts per million [ppm] of PCBs). Two former substations #6 and #8 were located in Building 106 and outside Building 106 along Boyle Avenue.

PCBs may be present in the remaining wood block flooring and underlying concrete located in Buildings 112A and 112, and the galbestos siding on Buildings 112 and 104. According to Mr. Clinkenbeard, Engineering Specialist with Pechiney Cast Plate, no PCB-containing oils are used at the facility. PCB-containing oils still remain within the deep vertical hydraulic pits in Building 104 (two have been closed in-place by backfilling). Hydraulic equipment associated with historical operations used PCB-containing hydraulic oils.

Asbestos Containing Building Materials. Based on information obtained during the site interviews and records review, asbestos is preset in the galbestos coatings on the exterior surfaces of the corrugated steel siding (Enviro-Wise, 1998). According to Mr. Clinkenbeard, ACM is present in the outer black coating around the bag house, furnace ventilation and roofing materials in Building 64. ACM may also be present in remaining floor tiles and mastic, roofing tars and felts, and window putty (Environmental Management Consultants, 1996). With the exception of the homogenizing furnace and preheat furnace, the furnaces at the facility were updated in the 1990s and reportedly do not contain ACM (Mr. Clinkenbeard).

Lead-Based Paint. Based on the age of the buildings and other onsite structures, it is likely that lead-based paints are present. Lead-based paint previously was identified in Buildings 106, 108, and 112 on painted interior walls, steel columns, corrugated panel doors, yellow bumper paint, and window panes (MFG, 1998).

5.3 ADDITIONAL ENVIRONMENTAL RECORDS REVIEW

In conformance with the ASTM standard, Geomatrix conducted inquiries with public agencies regulating environmental issues. Files on the subject property and 5151 and 5401 Alcoa Avenue were requested from the following agencies: City of Vernon H&EC; City of Vernon Fire Administration (Fire Administration); City of Vernon Building Department (Building Department); RWQCB UST Division; RWQCB Storm Water Permit Division; and the Office of the State Fire Marshal; Los Angeles City Fire Department (LACFD), Department of Toxic Substance Control (DTSC) in Glendale and Cypress, Los Angeles County Sanitation District (LACSD), South Coast Air Quality Management District (SCAQMD), and RWQCB remediation program.

The following agencies responded that they did not have files for the site: LACFD; DTSC Glendale; DTSC Cypress; and RWQCB remediation program.

5.3.1 City of Vernon Health & Environmental Control

A summary of findings of the review of documents obtained from the City of Vernon H&EC is included in Table 3 because most of the information obtained from these files is related to assessments previously conducted at the site.

In addition, the following information was obtained from the City of Vernon H&EC files.

Record Date	Information
6/01/90	A Superfund Amendments and Reauthorization Act (SARA) III Tier II reporting summary dated 6/01/90 for the Alcoa facility located at 5151 Alcoa Boulevard included a summary of hazardous materials used at the facility at that time. These materials included petroleum based products (diesel fuel, gasoline, kerosene, and mineral oils), paints, paint thinners, methanol based thinners, acids/bases, crystalline silica, Stoddard solvent, chlorine, ammonium bifluoride, mixed phosphate esters, propane, compressed gases, alcohols, liquid argon and nitrogen, acetone, lime, "aliphatic HDC" (containing 1,1,1-tricholorethane [1,1,1-TCA]), and coal tar pitch (containing tetrachloroethene [PCE]), and ML-580, -606, -803, and -680.

7/3/03 – 6/20/03	A summary of the hazardous materials used at the Vernon facility by Pechiney Cast Plate was included in a Hazardous Materials Business Application to the City of Vernon dated 7/01/03 through 6/20/04. The materials listed included: compressed gasses (acetylene, nitrogen, and oxygen), soda ash, cristobalite, chlorine, petroleum based products (diesel, gasoline, kerosene, castor oil, hydraulic fluid, motor oil, and transmission fluids), propane, liquid argon, waste oil, oil and water based paints, ethylene glycol, Wise Chem E-212F Paint (containing methyl ethyl ketone [MEK]), sodium bromide, aluminum oxides, sodium hypochlorite, and CWT SI-008 water treatment chemicals (containing sodium hydroxide).
11/6/03	A letter from the DTSC to the City of Vernon provided documentation related to US EPA RCRA Compliance Evaluation of the Pechiney Cast Plate facility. The compliance evaluation was conducted on March 26 and 27, 2003. The letter contained EPA's inspection report, a warning letter for RCRA and non-RCRA violations, a certification of violation corrections for RCRA issues (dated 8/28/03), and Pechiney's documentation addressing efforts made to return to compliance. Potential RCRA violations reported by EPA included a failure to make waste determination for an unlabeled drum, and failure to meet satellite container labeling and closing containers requirements related to a drum of paint-related waste. Non-RCRA violations reported by EPA were related to storage of hazardous waste over 90-days (waste refractory brick, baghouse waste, and PCB-contaminated wood block flooring) hazardous waste container labeling, open waste containers, containers, weekly inspections, maintaining access to emergency equipment, lack of emergency communication devices (Building 124), land disposal restriction notices and certifications (baghouse waste), training, and lack of a complete contingency plan. EPA listed Pechiney as a large quantity generator of California-only hazardous waste and a conditionally-exempt generator of RCRA waste (and a one time large quantity generator in 2002). The waste streams identified by EPA included: - RCRA wastes - recuperator waste containing chromium (Cr) (as a one time disposal in 2002), paint-related waste (D001), - California hazardous waste - refractory brick containing Cu and Zn, baghouse dust, mold shop header boards (containing caster oil), used oil/mixed oil, oily debris, cooling water/rinseate (skimmed oil and water), PCB-contaminated waste, and - non-hazardous waste - dross and other scrap aluminum (non-hazardous based on recycling). Additional facility observations included a mold dump area outside Building 104 where aluminum was removed from the molds, potential oil spill noted near the skimmer oil drum at the cooling tower area, an oil/water separator used with a compressor in Building 104, and plant reclamation work being conducted on tract 4 (with 4 55-gallon drums of hydraulic oil were stored).

5.3.2 City of Vernon Fire Administration

Based on files reviewed at the Fire Administration, a number of fires and/or spills were reported for the facility between 1978 and 1996. A summary of selected findings from our review of the Fire Administration files are listed below.

Permit or Record Date	Permit Information
3/27/78	A molten ingot spill was reported in Building 104 (Alcoa).
7/23/82	Flammable liquid fire occurred at the solvent wash tank in the Tube Mill. The cause of fire was not specified.
6/3/83	300 gallon Stoddard solvent spill reported in ingot area. Solvent pumped to driveway by tanker truck and the spill was covered with production sand (The location of the spill was not specified).
10/10/84	Site sketch showing the locations of USTs at the subject property included: - Three 10,000 gallon Fuel Oil # 2 tanks south of substation #2 (tanks 012, 013, and 014) - Two 10,000 gallon emergency tanks (typically empty) located north of the still house (Building 124) - Two 10,000 gallon Stoddard Solvent tanks located north of the still house (Building 124). Four other USTs were noted on the former portion of the Alcoa facility to the east of the subject property (fuel oil, waste oil, and gasoline).
12/18/87	10,000 gallon diesel fuel tank fire occurred during tank removal. Cutting torch and welding activities were conducted too close to the tank. The location of the UST was not specified.
5/13/88	Flash fire in a blower resulted in a fire in Bag House #1. The Building location was not specified.
2/16/89	Boiler house fire occurred while changing natural gas to diesel fuel. The location of the boiler house was not referenced.
4/22/92	Letter to City of Vernon H&EC from Alcoa. The letter stated no PCB-containing transformers were on site; all PCB-containing capacitors were removed; no PCB-containing heat transfer fluids were present; and all PCB-containing hydraulic fluids have been removed. PCB-containing light ballasts were present. Historically, some equipment contained PCB oils/fluids, and remediation of old spill areas was undertaken (concrete floors, press pits, and wood floor blocks). Under a Consent Decree with EPA Region IX, remediation of Building 114, Building 40, burial of a 1000-ton forging press, and remediation of several press pit areas and tunnels in the extrusion and forging facilities were conducted. Outside the Consent Decree area an 80-foot exhaust stack was removed. A letter from EPA (12/23/91) acknowledged that Alcoa had met the conditions outlined in the Consent Decree (referenced reports dated 4/6/90, 7/10/90, 10/17/90, 1/14/91, 9/5/91 and 11/6/91 – Final report/PCB Remediation/ No. 10 Extrusion press/Building #14). The letter also indicated that the EPA was looking forward to reviewing pending information regarding the cleanup of Building 112 extrusion facility, and all other areas planned for replacement or removal in areas out the consent decree.
10/6/95	8,000 ton hydraulic press was located in main building. An ember from press machine was vented through the exhaust system into the baghouse.
12/16/96	A molten aluminum leak was reported at #5 remelt unit.

5.3.3 City of Vernon Building Department Files

Based on files reviewed at the Building Department, a number of building improveme[redacted] modifications were noted. A summary of selected findings from our review of the Bu[redacted] Department files are listed below.

Permit or Record Date	Permit Information
7/31/28	A permit for frame addition to a Japanese school (5401 Alcoa Avenue).
4/9/87	Permit for installation of process piping for replacement of a solvent distillation unit and thermal boiler (Alcoa).
1/6/89	Installation of additional power supply to Building 135 (Alcoa).
7/24/95	Installation of wiring for a waste oil storage building after relocation (Alcoa, Building 124).
1/8/98	Installation of electrical system for a steam cleaning station (Alcoa). The location of the station was not referenced.
4/21/98	Permit for closure of existing pits and trenches and foundations (locations not specified) (Alcoa).
2/1/99	Letter from the City of Vernon H&EC – Partial closure of parcel 8 located at 5151 Alcoa Avenue. Closure pending review of final remediation report dated 8/18/99.
8/24/99	Letter from the City of Vernon H&EC – Partial closure of parcel 6 located at 5151 Alcoa Avenue. Closure pending review of final remediation report dated 8/18/99.
9/2/99	Letter from the City of Vernon H&EC – Final closure of Parcels 6, 7 and 8 located at 5151 Alcoa Avenue. Closure was granted with no further assessment or remediation, with the understanding that Alcoa would continue to address the Stoddard solvent soil impacted areas.
3/9/99	Letter from the City of Vernon regarding an official address change from 5151 and 5401 Alcoa Avenue to 3200 Fruitland Avenue.

5.3.4 RWQCB UST Division

Based on files reviewed at the RWQCB UST Division, in 1999 the RWQCB requested additional information from Alcoa regarding a summary of the site history and investigations conducted. In a letter dated May 20, 2002, the RWQCB requested additional groundwater testing for methyl tertiary butyl ether (MTBE). No additional groundwater sampling has been conducted at the subject property. Groundwater results are discussed in Section 3.2 and are

summarized in Table 3. A summary of selected findings from our review of the RWQCB files are listed below.

Record Date	Information
2/18/99	Letter from Alcoa – *Recommendations for Site Closure, Request for No Further Action (NFA) Designation.* The letter provides a summary of groundwater well installation and sampling activities conducted at the Alcoa facility under the oversight of the City of Vernon and the findings of an evaluation of potential off-site sources to groundwater (e.g. based on file reviews). Partial closure was granted by the City of Vernon and complete closure was pending. Three groundwater wells were installed in 1990 (AOW-1, -2, and -3), and six more wells (AOW-4 through AOW-9) were installed between 1990 and 1991. Groundwater monitoring data indicated groundwater impacts related to chlorinated volatile organic compounds (VOCs) TCE, 1,2-DCA, and CF were identified in the northeastern and southwestern portions of the facility. The request for a groundwater NFA was based on the following points: - Subsurface investigations conducted by Alcoa at the facility indicated no source of chlorinated VOCs in soil. - Groundwater impacts related to chlorinated VOCs below the facility were attributed to an upgadient source (namely the Bethlehem Steel facility/Lot 18). Potential sources for groundwater impacts were obtained through agency files reviews conducted by Gheraghty & Miller, Inc. (April 10, 1995). Reportedly, perched groundwater was encountered at the Bethlehem Steel facility/Lot 18 at 45 to 65 feet. Perched groundwater reportedly contained TCE, PCE, 1,1-DCA, 1,2-DCA, dichloroethene (DCE), benzene (B), toluene (T), carbon tetrachloride (CCL_4) and 1,1,1-TCA at concentrations up to 4,600 µg/l. Lower concentrations of TCE, PCE, DCE, 1,2-DCA, CCL_4, and CF were detected in one deeper groundwater well (B-15). The concentrations ranged from below the detection limit to 270 µg/l (B-15). A location map included in the file suggests that B-15 was located southeast of the intersection between Boyle and Slauson Avenues. - Similar compounds detected in groundwater at the Alcoa facility were detected in groundwater at the Bethlehem Steel facility (Lot 18). - Chlorinated VOCs in groundwater were reportedly widespread based on the detection of these compounds in water supply wells located to the north and east of the Alcoa facility. - Target compounds detected in groundwater are not generally used by Alcoa. - City of Vernon has acknowledged the presence of an upgadient source.
2/18/99	Letter from Alcoa – *Historical File for Closure* of the Alcoa facility. The letter provides an overall summary of the removal, remediation, and demolition activities conducted at the Alcoa facility under the oversight of the City of Vernon. The summary included the Forge plant (east of the site) and Cast Plate facility (site). Information related to the Cast Plate facility indicated: - Three10,000 gallon Diesel USTs were removed in 1992 by OHM. The USTs were located in the courtyard between Buildings 104 and 112. - Three solvent USTs and a pump house were removed in 1994 by CCC. The USTs and pump house were located southwest of Building 112A. - An investigation and removal of the Stoddard solvent vault in Building 112A was conducted. A discovered steel vault box contained residual Stoddard solvent and aluminum cuttings that had not been used for the last 10 to 20 years. The vault was cleaned, emptied, slurry backfilled, and sealed with concrete (CCC, Final Report – Stoddard Solvent Vault Closure May 1995). The City closed the vault (12/96).

	- The Stoddard solvent system was identified as an REC in a 1990 Phase I. An investigation related to the Stoddard solvent system was conducted in Building 112A with the advancement of 26 soil borings and 41 CPT/ROST points. The data indicated that the lateral extent of impacted soil was limited. Vertical migration was limited by fine-grained soils (silty-clay to clayey silt) found at about 45 feet bgs. - Five groundwater monitoring wells were destroyed to accommodate demolition of the Forge Plant (AOW-1 to AOW-5). The City approved the closure of the wells (2/98).
3/3/99	Letter from Alcoa – *Supplemental Information / Data Supporting Recommendations for Site Closure and No Further Action Designation.* The letter provides additional investigation results, RWQCB Case Closure Request Form, MTBE information, and a 1993 chemical inventory. The supporting information stated: - Phase II soil investigation conducted in the vicinity of the Stoddard solvent areas indicated 1,2-DCA (7 microgram per kilogram [µg/kg]) and methylene chloride (53 µg/kg) as the only chlorinated VOCs detected in soil (Geraghty & Miller, Inc., 1990). - Chlorinated VOCs TCE, 1,2-DCA, and CF were identified in the northeastern (near the intersection of Fruitland and Alcoa Avenues) and southwestern (near the Stoddard Solvent USTs) corners of the facility (G&M March 1991). Although soil near the USTs was not tested for VOCs, total petroleum hydrocarbons (TPH) was detected in soil during the installation of wells AOW-8 and AOW-9 at a concentration up to 13,000 mg/kg. - Soil gas results from a depth of 5-feet bgs at 31 sample points in the area of the USTs indicated elevated concentrations of TPH related to Stoddard solvent (G&M October 1991). VOC concentrations were low (up to 2 parts per million by volume [ppmv]) and not indicative of a release or source of the VOCs. - A 1993 chemical inventory listed CRC 3-36 (containing 1,1,1-TCA), Deltaglaz (containing xylenes), methyl chloroform, MicroBiocide (NALCO 7320), PCB wastes, Stoddard solvent, and Wise-Chem E 212-F. - A case closure summary form provided by Alcoa noted that 1,2-DCA, CF, and TCE were not used at the facility; all studies have shown no connection between minor subsurface releases and groundwater contamination, and the RWQCB acknowledged Bethlehem Steel and beyond as potential sources to groundwater contamination (author of the information contained on the form was not specified).
5/20/02	Letter from the RWQCB to Alcoa – Underground Tank Program – Closure Request. Alcoa Aluminum, 5151 Alcoa Avenue, Los Angeles (ID#900580043). RWQCB indicated that soil and/or groundwater have not been tested for MTBE, and that there was insufficient data to determine the impact on water quality. Therefore, the RWQCB could not grant closure at that time. RWQCB requested a quarterly groundwater monitoring event and submittal of a quarterly report by July 15, 2002. In addition: - Wells required redevelopment before gauging and sampling because they were last tested in 1992. - Groundwater samples must be analyzed for gasoline range hydrocarbons by EPA 8015M, aromatic compounds, MTBE and other fuel oxygenates by EPA 8260B (including all other constituents detected between the method detection limit and practice quantitation limit), and additional monitored natural attenuation parameters.

5.3.5 RWQCB Storm Water Permit Division

Based on files reviewed at the RWQCB Storm Water Division, annual storm water sampling took place between 1999 and 2003. A summary of selected findings from our review of the RWQCB files is listed below.

Record Date	Information
9/30/99	Notice of Intent submitted for ownership change. A notice for sampling storm water was sent on 12/14/00.
8/22/00	Notice to comply for failure to submit annual reports for 1999 – 2000. However, the report for this period was submitted by Century Cast Plate.
1999 - 2003	Annual storm water monitoring reports for permit #15422. Monitoring was conducted at outfall #6 for selected metals, oil and grease, PCBs and other chemical properties (pH, conductance, etc.). Metals (Al, Ba, Cr, Cu, Pb, Zn and Ni) were detected, and oil and grease were periodically detected. PCBs were reported as not detected.

5.3.6 LACSD

Based on files reviewed at the LACSD, the Vernon facility holds a temporary industrial waste water discharge permit (#16885) for contact and non-contact cooling water, with oil skimming listed for pretreatment, and a monitoring point listed as the overflow value. The permit is dated May 12, 2005, with a condition that the discharger will apply for an Industrial Wastewater Discharge permit by June 13, 2005 and comply with LACSD discharge conditions. According to Mr. Clinkenbeard, information has been provided to the LACSD for an Industrial Wastewater Discharge permit. A summary of other selected findings from our review of the LACSD files is listed below.

Record Date	Information
3/18/76	Critical Parameter Reports (CPRs) prepared by Alcoa for permits 629, 630, 631, 634, 635, 636 and 637 for the period of 12/75 – 2/76 noted that continuous flow monitoring equipment was not installed at that time. Wastewater testing for oil and grease; selected metals, and other chemical properties (pH, COD, suspended solids, etc.) was conducted. Based on other information contained in the records, sampling associated with permits 629, 630, and 631 are related to the subject property (outlets 13, 14 and 16 later listed under permit 629-R). Zn and oil and grease were detected in the wastewater.
10/22/76	Plan Evaluation Form for 629R (11/1/76) for Alcoa lists sewer 13, 14 and 16 under permit 629R. Notes provided on the form listed: - Building 106 – "operations of hydraulic presses and some etching of Al with caustic. Some lubrication oil and grease discharge to the sewer."

	- Building 112 – "Some HNO_3 and caustic discharged through a 6-inch sewer line, some simple extrusions are worked in this area, spent acid and caustic tanks transferred to Building 10." - "Gale oil separators are to be removed and replaced with new sumps and pumps." - "Sewer #13 and 14 will only have sanitary waste as soon as lines are sealed." - "Some occasional floor washdown in Building 124 and south of Building 112A." - "No single pass cooling water."
5/16/77	Notice of non-compliance for submittal of CPRs for permits 629, 630, and 631.
10/19/77	County Sanitation Memorandum for permit 629 for Alcoa noted a fire on the east side of the plant, and indicated that some oil and grease were discharged to the sewer while putting out the fire and washing up afterwards.
11/2/77	Notice of non-compliance for submittal of CPRs for permits 630 and 631.
2/15/78	Notice to Alcoa to amend their permit 629R-1. During the period of 1976 to 1977 a significant increase in flow rate was observed (greater than 25% or more than 25,000 gallons).
5/1/79	Approved Industrial Wastewater Discharge Permit 629R-2 was obtained by Alcoa.
10/17/79	Notice of violation of Industrial Wastewater Discharge Regulations for failure to properly operate and maintain sampling and flow measurement facilities for the west outfall at the Vernon facility on 10/3/79 (permit 629R-2). Reported oil and grease values from recent sampling periods ranged from 73 to 712 milligrams per liter (mg/l). Subsequent correspondence from Alcoa indicted that they were working with Certified Testing Laboratories, Inc. to correct the monitoring equipment. The equipment was returned to operational status on 10/29/79.
4/25/80	County Sanitation Memorandum. Permit 629R-2 issued in 10/78, was for wastewater from the Tube Mill-Extrusion Plant operations, primarily from the quenching operations. Wastewater passes through a number of grease traps before entering the sewer system. According to the memorandum, Federal Pretreatment Standards apply to Permit 629R-2.
5/22/80	Letter from County Sanitation District to Alcoa for noting that the Federal Pretreatment Standards apply to permit 629. The Sanitation District's review of the CPR submitted by Alcoa over the past years shows that they were in compliance with the standard.
10/29/99	A former discharge permit (15377) for Pechiney Cast Plate was obtained on October 29, 1999, for contact and non-contact cooling water, with oil-skimming and pH monitoring listed for pretreatment, and a monitoring sample point listed as "pond." Self-monitoring requirements were included with the 1999 permit.
2/08/00	Letter to Pechiney Cast Plate indicated a deficiency in the self-monitoring report for critical parameters evaluated during the period of 7/01/99 to 12/31/99 for discharge permit 15377. Resampling was requested. A self-monitoring report for the period of 01/01/00 – 06/30/00 was submitted (dated 7/13/00).

2003 - 2000	At the Vernon facility self monitoring was conducted by Pechiney Cast Plate for oil and grease, selected metals, VOCs, semi-volatile organic compounds (SVOCs), and other chemical properties (pH, conductance, total cyanide, total phenols, soluble sulfide, etc.). The metals Cu, Zn, Cr, Ni, and As and oil and grease were periodically detected. Total cyanide (12/19/00), chloroform (7/13/00), and SVOCs (1/15/03) were each detected once.

5.3.7 SCAQMD

A summary of the information provided by SCAQMD is listed below.

	Information
12/15/99	Facility #121240 – for Pechiney Cast Plate, Inc. included a list of inactive permits for three furnace reverb aluminum, two baghouses, three cyclones, two heat treating furnaces, a natural gas furnace, and two furnaces for other aluminum melt operations. Application date of November 15, 1999.
12/15/99	Facility #119920 – for Pechiney Cast Plate, Inc. included a list of active permits for two furnace reverb aluminum, two baghouses, three cyclones, two heat treating furnaces, a natural gas heater/furnace, two furnaces for other aluminum melt operations, and one inactive permit for a furnace reverb aluminum. Application date of June 17, 1999.
12/16/99	Initial Title V permit application banking/plan granted.
6/30/04	Facility #119920 – for Pechiney Cast Plate, Inc. addition of an active permit for one furnace reverb aluminum with the Facility permit amended - Reclaim/Title V with application banking/plan granted. Application date of November 29, 2001.
5/25/04	Facility inspection conducted for the year 2003 for "Reclaim." Four large source units were noted in the inspection report (three reverbatory furnaces and one homogenizing furnace) and three process units for fluxing, annealing, and drying. A source test was conducted on November 13th and 14th of 2002. SCAQMD inspector calculated the total NO_X emissions to be 11,980 pounds rather than the 12,000 pounds reported by the facility, which is below the facilities RTC balance of 15,640 pounds. The difference in calculated emissions was reported to be the emission factor used for one of the reverbatory furnace. The inspector reported that Mr. Clinkenbeard stated that they used an emission factor of 71.0 lbs/MMCF to pad their NOx emission calculations. Mr. Clinkenbeard was informed by the inspector to use the emission factor of 68.90 lbs/MMCF. Violations listed from the inspection included a failure to submit second and third Quarterly Certification of Emission Reports within 30 calendar days after each quarter, failure to report total monthly emissions of NOx with 15 days following the end of each calendar month during the period of October 2003, and failure to submit semi-annual reports in a timely manner.
12/07/04	Title V permit renewal application.

5.3.8 Office of the State Fire Marshal

The California Office of the State Fire Marshal (OSFM) was contacted to assess whether underground oil, gas, natural gas, or refined petroleum hydrocarbon pipelines are present beneath the site. OSFM indicated that two pipelines are located in the vicinity of the site and operated by BP Pipeline Los Angeles Basin District: one refined product pipeline and a mud pipeline. Geomatrix contacted BP to obtain additional information on the locations and contents of these pipelines (personal communication with Rob Streed of BP Pipeline on June 22, 2005). According to Mr. Streed, the petroleum pipeline is an idle 4-inch diameter steel pipeline that runs north-south between the western border of the site and the centerline of Boyle Avenue. The mud pipeline is located approximately ¼ mile north and east of the site, running east-west along Leonis Boulevard and turning to the south along Downey Road. Detailed information on the contents of the pipelines was not available.

5.4 WATER SUPPLY WELL INFORMATION SEARCH

Information on water supply wells in the vicinity of the site was obtained from EDR (2005e). Fifteen municipal water supply wells, nine USGS monitoring wells, and one well from the Aquiflow Database were identified within a 1-mile radius of the site. Eleven (11) wells belong to the City of Vernon Water Department (VWD) and four wells belong to the City of Huntington Park Water Department (HPWD). The remaining 10 wells did not have ownership or analytical information listed in the EDR report. Fifteen (15) designated municipal wells are located more than ½ mile away from the site and are briefly summarized below. Detailed information for the wells is presented in the EDR report in Appendix E.

Two VWD municipal well clusters are located within a one-mile radius of the site and consist of six active wells (well numbers 11, 12, 15, 16, 17, and 19); two inactive wells (well numbers 5 and 7); and three destroyed wells (well numbers 9, 10, and 13). One well cluster is located approximately ½ mile northwest of the site and the other well cluster is located approximately ⅓ mile northeast of the site. Based on analytical data provided by EDR (2005a), samples collected between 1987 and 1997 from active VWD wells contained iron and manganese approaching or exceeding their California Department of Health Services (DHS) maximum contaminant levels (MCLs) of 300 and 50 mg/l, respectively. Low concentrations of lead, dichloromethane, chloroform, dibromochloromethane, and trihalomethane also were reported.

HPWD municipal wells located within a 1-mile radius of the site consist of two active wells (well numbers 14 and 17); one inactive well (well number 9); and one destroyed well (well

number 11). One active well is approximately ½ mile southwest of the site, and the other active well is approximately one mile southeast of the site. Analytical data from the two active HPWD wells reported carbon tetrachloride at a concentration (1.3 µg/l), which exceeds the MCL (0.5 µg/l) for this compound. Low concentrations of dichloromethane, PCE, TCE, bromoform, dibromochloromethane, trihalomethane, and nitrate/nitrite also were reported.

5.5 DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES

Abandoned oil and gas wells can present an environmental concern due to potential methane migration or soil and groundwater contamination from mud pits, storage pits, or other features. Additionally, crude oil pipelines in areas of oil production are a potential source of near-surface releases. Based on maps available from the Department of Conservation Division of Oil, Gas, and Geothermal Resources (DOGGR), the site does not lie within the mapped limits of local oil fields and no oil or gas wells are documented within ½ mile of the site (DOGGR, 1999).

6.0 RECONNAISSANCE AND INTERVIEW FINDINGS

This section summarizes findings of our interviews with representatives of the current site owner and of our site reconnaissance.

6.1 INTERVIEWS WITH REPRESENTATIVES OF THE PROPERTY OWNERS

The ASTM standard requires disclosure in the Phase I report whether the property owner, or representatives of the property owner, have specialized knowledge about previous ownership or uses of the property that may be material to identifying RECs, or whether the property's title contains environmental liens or other information related to environmental condition of the property, including engineering and institutional controls and activity and use limitations.

On June 6, 2005, Geomatrix conducted interviews with Mr. Earl Clinkenbeard, Engineering Specialist, with Pechiney Cast Plate, and Mr. A.J. Ursic Jr., Principal, with Environmental Protection and Compliance. A representative of Jenkens & Gilchrist LLP was in attendance during the interviews. Mr. Clinkenbeard has been at the facility since 1974 and began at the facility while Alcoa was in operation. Mr. Ursic began working at the facility in 1997 while Alcoa was in operation. Mr. Ursic is working with Alcoa and Pechiney Cast Plate on the bioremediation of the Stoddard solvent soil impacts.

Pertinent information provided by the interviewees is included throughout the report. Additional, interview information is summarized below:

- There are no environmental liens against the property (Mr. Clinkenbeard).
- Two Notice of Violations (NOVs) were received in May 2004 and April 2005 from the SCAQMD. The NOVs in May 2004 were issued for a failure to submit quarterly reports, monthly mass emissions of NOx reports, and semi-annual reports in a timely manner. The NOV from April 2005 was issued for a failure to accurately report fourth quarter emissions. According to Mr. Clinkenbeard the NOVs have been addressed.

6.2 SITE RECONNAISSANCE

Ms. Linda Conlan and Ms. Nancy Boschetto of Geomatrix conducted a reconnaissance of the site on June 6 and 7, 2005, and the surrounding area on June 7, 2005. During portions of the on-site reconnaissance, Geomatrix was accompanied by Mr. Clinkenbeard. For the most part, housing keeping appeared in good condition during the site visit, with the exception of a few items (miscellaneous oil staining, leaking equipment, pooling oil, surplus equipment and materials storage, aluminum chip debris, etc.). Photographs taken during the site reconnaissance are provided in Appendix F. No photographs of equipment, furnaces, or process activities were permitted. A summary of the site observations is presented below.

During the site visit, the following areas were not accessible during our reconnaissance: the interior of Building 64 (Dross Storage), the below grade trenches and machine pits within Building 112A and 104, the areas immediately surrounding the melt furnace, and building roofs.

Parcel 6 – (Lots 10 and 11)

Parcel 6 (including the emergency easement) is located at the southern end of the site, south of the rail spur and Building 112A. Another rail spur separates Lot 10 (east side) and Lot 11 (west side). Access to this area is restricted by locked fences and appears to be at a lower elevation (about 1 to 2 feet) relative to the adjacent properties. For the most part the asphalt and concrete in this area is in poor to fair condition. Lot 10 is approximately 60 percent vacant with the remaining area used for the storage of empty and full chip and dross hoppers (Photograph 1), large aluminum slag, empty small portable buildings (Photograph 2), plastic sheet rolls, and metal carts. Also in this area are a truck scale (Photograph 3) and rail road switches. Lot 11, to the west, is covered with asphalt and a concrete slab associated with former structures, including Building 135 (Photograph 4) and the loading dock (Photograph 5). The rail spurs associated with the loading dock are still present. Other features observed on Parcel 6 are listed below:

- An unknown gray-white powdery material was observed on the asphalt between two empty chip hoppers on Lot 10 (Photograph 6).
- A small burn area was observed on the asphalt and adjacent palm tree along the western fence line on Lot 10 (Photograph 7). According to Mr. Clinkenbeard, the fire resulted from a third party cutting metal equipment.
- Two large areas of oil staining were observed on Lot 11 (Photographs 8 and 9).
- Two waste dumpsters containing trash and debris and an old cyclone were observed on Lot 11.
- According to Mr. Clinkenbeard, at one time Lot 11 was vacant and periodically used to store scrap, drums (occasionally), refractory materials, motors, and equipment.

Northeastern and Eastern Parking lots

The northeastern and eastern parking lots are partially secured by locked fencing (Photograph 10). The main entrance to the facility is located on Fruitland Avenue. The area is covered with asphalt, and the asphalt is in good condition. The main substation is present along the east side of Building 112 (Photograph 11). Storm water catch basins and a groundwater monitoring well (AOW-6) were observed in the southern portion of the parking lot (Photographs 12 and 13, respectively). In addition an abandoned loading dock was observed off the southeast corner of Building 112A, and the concrete and asphalt in this area was in poor condition.

Main Manufacturing Building (Buildings 112/112A, 106, 108 and 110)

Building 112A

Building 112A (Cast Plate Area) is located in the southern portion of the main building and contains a small fenced parts storage area (Photograph 14), shipping and receiving and loading dock, a fenced and concrete bermed hazardous materials storage area (Photograph 15), satellite hazardous waste accumulation area (Photograph 16), aluminum scalper, planer, rotator, saws and mill areas, a plate inspection area, wood pallets and finished aluminum plate storage area, pre-melt furnace, packaging areas, locker room and restrooms, a fenced small parts storage and tooling area (Photograph 17), and dust removal tent. The contents of the hazardous materials storage area is discussed in Section 6.2.1 (Table 4), and the hazardous waste satellite accumulation areas are discussed in Section 6.2.2 (Table 5).

An excess equipment and materials storage area was observed with a number of pallets, containers and boxes containing various materials, empty drums, and old equipment and parts (Photographs 18, 19, 20, 21, 22, 23, 24, 25, and 26). Dark staining was observed on the concrete floor in this area.

Cyclones that collect aluminum chips into steel hoppers from the milling areas are located outside the building along its west side (Photograph 27). Smaller collection systems for the chips are found at each of the machines and are contained in 55-gallon drums (Photograph 28).

Other features observed in Building 112A are listed below:

- Oily chips and oil staining was observed on the concrete floor around the pallets holding 55-gallon drums in the satellite hazardous waste accumulation area (Photograph 29).
- Well boxes were observed in the area of the former Stoddard solvent operations in the southeast corner of the building (Photograph 30).
- Linear concrete patches were observed throughout the building, and appear to be related to former trenches and machine pits that were backfilled with concrete (Photograph 31 and 32).
- Oily chips and oil staining was observed around the base of the plate rotator (Photograph 33) and water/oil collection sump at the Hyde mechanical saw (Photograph 34). Concrete slab appeared to be in poor condition adjacent to the Hyde mechanical saw where waste oil drums were stored (Photograph 35).
- Trenches and pits covered with steel plates were observed around most of the cutting machines, including the scalper, planer, saws, and mills (example of the plated trenches is seen in Photograph 36 outside the saw room). Visual inspection of the interior of the trenches was not conducted.
- Floor covering in this building is a combination of concrete and black stained wood blocks (Photograph 37and 38).
- Black stained concrete flooring was observed west of the hazardous material storage area (Photograph 39). The concrete was in poor condition in this area.
- Radial and circular cracks were observed in the concrete slab around a sump in the hazardous materials storage area (Photograph 40). Minor staining was observed on the concrete flooring within the storage area and around the sump. According to Mr. Clinkenbeard, the sump is not connected to a discharge pipe (e.g. a blind sump).

- A former hazardous waste storage area was observed in the area of columns E35 and F40 as designated by a posted sign on the columns. Labeling indicated waste dross storage. The concrete floor appeared stained, and some chips and dross were observed on the floor.

- A metal hopper containing silica-based refractory materials was observed in one of the truck loading bays.

Buildings 112/108/106/110

Buildings 112/108/106/110 are located within the northern portion of the main building, and for the most part they are one continuous structure. The majority of Building 112 is vacant, with some storage of equipment and materials (Photograph 41). The far northern end of Building 112 and Buildings 108/106 is leased to Douglas Steel (5232 Alcoa Avenue) for storage of spooled coiled sheet steel (Photograph 42). Building 110, which is located along the south side of Buildings 106/108, is used for storage of flammable cabinets and paints (Photograph 43, a number of open containers were observed in this area), 12-volt batteries, hoppers with crushed rock-like material, and used and unused small and large machines and parts (Photograph 44).

Other features observed in Buildings 112/108/106/110 are listed below:

- A front end loader was leaking oil/fuel on the concrete floor in Building 110 (Photograph 45). The concrete floor was in fair condition.

- A square sump/drain was observed along the southern wall in the general area of Building 110 (Photograph 46) near two aboveground concrete pads. Historical records indicate that these pads were related to two former swindell pits (Ursic, 1999a). The concrete floor surrounding the sump was in fair condition.

- The floor in this area of the building was a combination of concrete and asphalt pavement, which was in fair condition and appeared to be stained and dusty throughout.

Exterior Courtyard between Building 112/112A and Building 104

This area is occupied by small portable office buildings, conference rooms, a lunch area, forklift parking (Photograph 47), compressed gas storage (Photograph 48), and Substation #2 (Photograph 49). Storm water catch basins were observed in this area (Photographs 50). According to the facility maps, storm water from this area of the facility is conveyed to outfall #6 through underground piping. Storm water outfall #6 is located south of the cooling tower.

Building 64 (Dross Storage)

The Dross[2] storage area is located in Building 64, along the east side on Building 104. Access to Building 64 was restricted due to the dross cooling process (Photograph 51 taken from the north entrance to the building). The concrete flooring appeared to be in poor condition. Gray earthen materials were seen on the floor in the southern portion of the building. The furnace baghouse is located in the ceiling along the west wall of the building. Ventilation ducting to the baghouse connects to Remelt Furnace #5 located inside Building 104 (Photograph 52 taken from the northern doorway into Building 64). According to Mr. Clinkenbeard, the duct work was replaced in the 1990s and contains no ACM-gaskets.

Building 104 (Ingot Plant)

The northern portion of this building includes a truck shop (Photograph 53) with a hydraulic lift, hazardous waste satellite accumulation area, air compressors and AST with condensate (Photograph 54), a small machine shop (Photograph 55), and aluminum chip hoppers. Minor oil staining was observed around the base of work tables (Photograph 55). In the southwestern corner of the machine shop cage was a 6- to 8-inch diameter circular feature with a perforated steel lid (Photograph 56). Another steel ring surrounds the features, and the concrete slab in this area was corroded and chipped. Concrete patches were observed throughout the building (Photograph 57).

Along the west side of the building were mold machine storage and hydraulic pump systems for the three deep vertical pits formerly used at the facility (Photograph 58). One of the vertical pits remains in front of the Remelt Furnace #3 (Photographs 59 and 60). According to Mr. Clinkenbeard, the other two pits were backfilled in place, including associated hydraulic cylinder containing PCB-oils (the cylinders are encapsulated in concrete and are located at a depth between 30 and 70 feet bgs). The remaining pit was last used in about 1994.

Remelt Furnaces (#2, #3 and #5) and Preheat/Homogenizing Furnace #4 (Photograph 61) are located within the central portion of the building, as are all the operations related to the aluminum melting, horizontal saws, plate forming, and raw materials storage. The only furnace in operation is Remelt Furnace #5. Raw materials observed in Building 104 included boron nitride (mold lubricant), zinc and magnesium ingots, iron oxide briquettes, alloy ingots, and

[2] Dross is a mass of solid impurities floating on top of molten aluminum.

recycled chips (Photographs 62, 63, and 64). Recycled aluminum chips from the milling and grinding process at the facility are also used as an aluminum source (Photograph 62).

Trenches and pits covered with steel plates were observed around Remelt Furnaces (#2, #3 and #5), Preheat/Homogenizing Furnace #4, and horizontal saws (examples of a plated pit is seen in Photograph 65). Visual inspection of the trenches could not be preformed, but they reportedly contain a piping network for electric, water, argon, chlorine, natural gas, and hydraulic oil. According to Mr. Clinkenbeard, these trench features range in depth between 5 and 16 feet.

Storage of aluminum slabs, battle boards, and alloy ingots; a small scale (with a 4-foot deep pit below Photograph 66) and a loading dock are also located at the southern end of the building. Peeling and flaking wall material was observed inside Building 104 (Photograph 67). According to Mr. Clinkenbeard, the flaking material is galbestos.

Outside Building 104, along Boyle Avenue is storm water outfall #7 (Photograph 68).

Cooling Tower Area (Referred to as "Palm Springs") and Building 124

The cooling tower is located south of Building 104 and receives heated water from the mold process (Photograph 69). Heated water is transferred to the hot water containment unit (referred to as "hot well") where oil is skimmed into a 55-gallon drum (Photograph 70). The water is cooled and transferred to the cold water containment unit (referred to as "cold well" and shown in Photograph 71) for recirculation back to Building 104. Adjacent to the cooling tower is a liquid argon AST, water treatment chemical tanks, an empty cylinder storage area and propane storage, and a concrete pad for former chlorine AST (Photograph 72).

Storm water outfall #6 is located just south of the cooling tower area (Photograph 72), and the remainder of the area is used for bin and hopper storage of chips and scrap materials (Photograph 73). The former waste pit sump is located in this area (Photograph 73). Aluminum chip debris was observed scattered on the pavement and concrete throughout this area. Minor dark staining was observed on the concrete near the storm water outfall (Photograph 72).

Groundwater monitoring well (AOW-8) was observed just west of Building 112A (Photograph 74). Other groundwater and vapor wells were reported in this area but were not seen due to the storage of chip hoppers and bins.

Along the south side of Building 112A, is a free-standing, locked hazardous waste storage shed (Building 124 [Photograph 75]). Along the outside of the building is an empty yellow plastic containment unit ("Fuel Oil") and a 55-gallon drum containing a spill kit. The building floor is concrete with a 1 to 2 foot concrete berm around the base of building (Photographs 76 and 77). The concrete appears to be in good condition. A list of the hazardous waste stored in the building is included in Section 6.2.2 and summarized in Table 5.

6.2.1 Hazardous Materials and Petroleum Products

Hazardous materials are stored in a fenced and concrete-bermed area located within the southern end of Building 112A. A small concrete collection sump is located in the center of the storage area. According to Mr. Clinkenbeard, the sump is not connected to any underground piping (e.g. blind sump). Minor staining was observed on the epoxy coated concrete floor, and, small open radial and circular cracks were observed in the concrete floor around the sump.

The hazardous materials and petroleum products observed at the site include petroleum based products and lubricants, compressed gases (acetylene, nitrogen, and oxygen), chlorine, propane, liquid argon, paints, aluminum oxides and metal oxides, and cooling tower treatment chemicals. In addition, a liquid carburetor cleaner is used periodically for cleaning oily parts. The Material Safety Data Sheet provided by Mr. Clinkenbeard (product name "Carburetor Cold Dip #50208") lists the ingredients of the cleaner as methylene chloride, mineral sprits, PCE, dichlorobenzene, cresylic acid, and methyl alcohol. According to Mr. Clinkenbeard, they use a small amount of the cleaner, on the order of 5 gallons every few years.

Hazardous materials and petroleum products observed at the site during the site reconnaissance are summarized in Table 4.

6.2.2 Hazardous Waste

According to hazardous waste information provided by the facility, hazardous wastes that are disposed of from the facility include: oily rags and absorbent materials, oily water, refractory bricks, dross, baghouse dust (solids), mineral spirits, kerosene, aerosols, lubricating, hydraulic and cutting oils, and header material with oils. Hazardous wastes observed at the site during the site reconnaissance are summarized in Table 5.

Hazardous waste at the facility is stored in an enclosed, stand-alone, concrete-bermed building located outside the south side of Building 112A and at three satellite hazardous waste accumulation areas (truck shop and mold shop in Building 104 and milling area in

Building 112A). At the satellite accumulation areas, drums and containers were stored on secondary containment units or on pallets. Spilled oils were observed within the base of secondary containment units. Oil staining was observed on the concrete in the satellite accumulation areas.

According to hazardous waste information provided by Mr. Clinkenbeard, hazardous waste is removed from the facility by M&B Trucking/Arts Disposal, Asbury Environmental Services and Ecology Control Industries (ECI). Waste records from 2003 included the disposal of asbestos materials (approximately 250 pounds) by Asbury Environmental Services. Waste manifests included in Ursic (1999b) indicate disposal of PCB-impacted wood floor blocks.

6.2.3 Wastewater

The facility holds a temporary industrial waste water discharge permit (#16885) for contact and non-contact cooling tower water. Oil entrained in the hot water is skimmed in an oil trap located in the northwest corner of the hot well. The oil is transferred to a 55-gallon drum located adjacent to the hot well at the cooling tower.

6.2.4 Storm Water

Storm water flow at the site is controlled by catch basins and roof drains/gutters on the buildings. Storm water from the roof drains and eastern parking lots discharges to outfall #7 (on Boyle Avenue) and #8 (Alcoa Boulevard), respectively. Storm water from the central portion of the facility discharges to outfall #6 (on Boyle Avenue). Outfall #6 is the monitoring point for the facility under the State General permit (Waste Discharge Identification [WDID] #15422, Facility WDID #4195015422).

6.2.5 Aboveground Storage Tanks (ASTs), Drums, or Containers

One AST containing liquid argon is located adjacent to the cooling tower. Drums and containers that might contain hazardous materials or waste were described in Section 6.2.1 and 6.2.2. During the site reconnaissance, a number of empty drums and containers were observed throughout the facility. In addition, a number of plastic drums containing varying amounts of liquids that were not labeled were located within the excess equipment and materials storage area in Building 112A.

6.2.6 Underground Storage Tanks (USTs)

According to documents reviewed and discussions with Mr. Clinkenbeard, no USTs remain at the site.

6.2.7 Drains, Sumps, or Clarifiers

In addition to storm water catch basins, one drain was observed within the Building 110 (excluding janitorial floor drains and restroom floor drains). A circular feature with a perforated lid was observed in the machine shop within Building104.

Hot water generated during the aluminum mold process is conveyed through underground piping located within below-grade trenches within Building 104 to the hot well at the cooling tower. Heated water is cooled, transferred to the cold well, and recycled back to the molding operations in Building 104. Oil skimming is conducted at the hot well as discussed under Section 6.2.3.

6.2.8 Pits, Ponds, or Lagoons

Pits, ponds or lagoons were not observed at the site during the site reconnaissance, with the possible exception of the hot and cold wells associated with the cooling tower.

6.2.9 Wells

Two groundwater monitoring wells (AOW-6 and AOW-8) and a number of vadose zone wells were observed during the site reconnaissance. Documents reviewed indicate that there are three groundwater monitoring wells at the site, and that the wells were installed when Alcoa owned the facility. The locations of the groundwater wells are shown on Figure 2. According to Mr. Ursic, the three groundwater wells will be sampled for anticipated closure by the RWQCB.

The vadose zone wells are located inside Building 112A and outside of Building 112A in the area of the former Stoddard solvent operations and storage area still under remediation by Alcoa. The approximate location of the Stoddard solvent areas are shown on Figure 2.

6.2.10 Discolored/Stained Pavement or Soil/Stressed Vegetation

No stressed or discolored vegetation were observed at the site (except for the area of the small fire at Parcel 6). The majority of the facility is paved or covered with buildings.

6.2.11 Air Emissions

Air emissions from the furnace at the facility are controlled and operate under a SCAQMD Reclaim and Title V permit (Facility ID #119920). A baghouse is associated with the air emission system. A discussion of NOVs received by the facility is provided in Section 6.1.

7.0 SUMMARY AND CONCLUSIONS

Our conclusions are intended to help Alcan evaluate the "business environmental risk" associated with the site, as defined in the ASTM E1527-00 standard and discussed in this report. Geomatrix has performed this Phase I in general accordance with the scope and limitations of the ASTM E1527-00 standard. Based on the finding of the Phase I assessment we evaluated the results with respect to releases that would constitute RECs, HRECs, and OECs. A summary of the RECs, HRECs and OECs are provided in Table 3 along with the potential chemicals of concern and comments. A brief summary of the RECs, HRECs, and OECs are provided below by area or building as listed in Table 3.

Site Wide or Multiple Locations:

- PCB-impacted concrete, wood block flooring materials, and soil inside buildings, at storm water outfalls, cooling tower area, and current and former substations.
- Groundwater impacts related to VOCs were previously reported for the subject property. In addition, groundwater impacted with chlorinated VOCs in the area in the area of the former waste disposal pit and Stoddard solvent USTs and Still House (former Building 124, southwest corner of Building 112a). Alcoa is addressing these groundwater issues.
- Current and former transformers and substations may contain PCBs.

Building 112:

- PCB-impacted concrete floor.

Building 112A:

- Former stoddard solvent vault, dip tank, and associated equipment (Tube Mill). Alcoa is addressing these areas.
- Former stoddard solvent and gasoline USTs, and solvent still house (USTs and still house were removed in 1995). Alcoa is addressing these areas.
- Former tube mill swindle.
- Former drawbench pits.
- Current scalper, planer and other finishing equipment located in southwest corner of building.
- Oily cuttings and chips reported outside of building.

- Former etching station located along east wall of building.
- Former paint shop reported in the northern portion of building.
- Former No. 11 stretcher.
- Former pits and sumps.
- Hazardous materials storage area included a blind sump. Radial and circular cracks observed in the concrete around the sump.
- Oil stained concrete flooring and oily chips observed in the satellite hazardous waste accumulation area.
- Black stained concrete flooring between the hazardous materials storage area and satellite accumulation area.
- Current pits and trenches for existing machines.
- Oily chips, oil, and oil staining around the base of the plate rotator and Hyde-Mechanical saw.
- Tool and saw cage contained square sump covered with a steel plate.

Building 106:

- Former pits, sumps, and trenches, and truck shop.
- Common press trench, press pit, and bottle bays and concrete vaults.
- PCB-impacted concrete floor.

Building 108:

- Former Press 4.
- PCB-impacted concrete floor.

Building 110:

- Former deep swindell pits.
- A sump/drain observed along the southern wall in the building.

Building 114:

- Former press #9 pit, extractor car pit, and impacted fill material.

Building 104:

- Storm water outfall #7.
- Stoddard solvent spill on the driveway.
- Current pits and trenches.
- Deep vertical pits (2 backfilled/abandoned and 1 current).
- Unknown circular feature (possible floor drain) observed in far western portion of the machine shop.

Building 64:

- Dross storage and cooling.

Cooling Tower Area:

- Historic water treatment chemicals (may have included hexavalent chromium).
- PCB-impacted soil near the hot well of the cooling tower.
- Spill reported from the oil skimmer.
- Storm water outfall No. 6.
- Former waste disposal pit located south of the cooling tower.

Parcel 6:

- Historical use and features (rail spur and associated loading dock, historical buildings from Brass-Ross Tool Co., and historical buildings from Ready Cut Homes Inc. Construction supply).
- Two areas of oil staining observed on asphalt and concrete.

Adjacent and Upgadient Properties:

- Impacted soil and/or groundwater from surrounding industrial properties.
- Inactive BP pipeline.

The following HRECs were identified at the site:

Building 112:

- Former scale pit and unknown sump.

Building 112A:

- Former tube mill dip tank and discovered drawbench.
- Former pits, sumps, and trenches.
- Former tube mill solvent tank fire.

Building 108:

- Former Press Pit 2 french drain.

Building 114:

- Former pits, trenches, and tunnels (parking lot today).
- Historical well located during demolition (parking lot today).

Building 12:

- Former foundry located (parking lot today).

Building 104:

- Former degassing precipitate located outside the western wall of the building.
- Former lubricating oils ASTs.

Courtyard:

- Former diesel fuel USTs removed from the site in 1992 with closure granted by the City of Vernon.

Cooling Tower Area:

- Former waste disposal pit.

Parcel 6:

- Former standpipe.
- Former waste ceramic dump located below former Building 135.

The following OECs were identified at the site:

Site Wide:

- Buildings materials potentially containing ACM, galbestos, LBP, and dust/residue.
- Historical chemical usage.
- Railroad spurs and associated ballasts.
- Historical agricultural use.

Building 112A:

- Former waste asbestos and refractory brick pit located southeast of the building.
- Management of unlabeled waste and materials containers.
- Management of waste containers and secondary containment units filled with oils.
- Scattered aluminum chips outside the building.

Building 112:

- Management of unlabeled waste and materials containers.
- Management of waste containers and secondary containment units filled with oils.

Building 110:

- Front end loader leaking oil on the concrete floor.

Parcel 6:

- Unknown gray-white powder observed on asphalt.
- Former burn area located near the railroad tracks.

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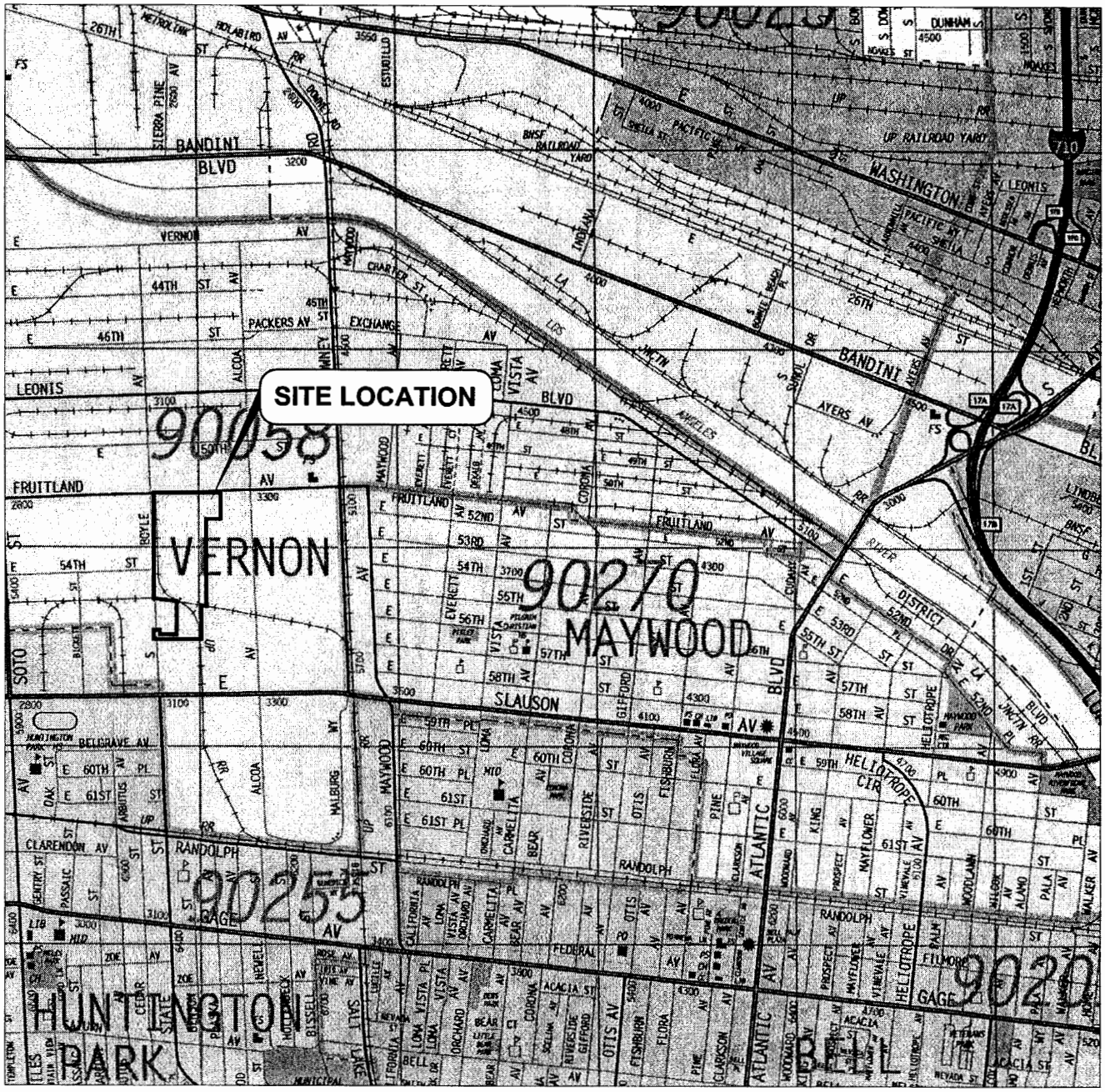

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APPROXIMATE SCALE IN FEET

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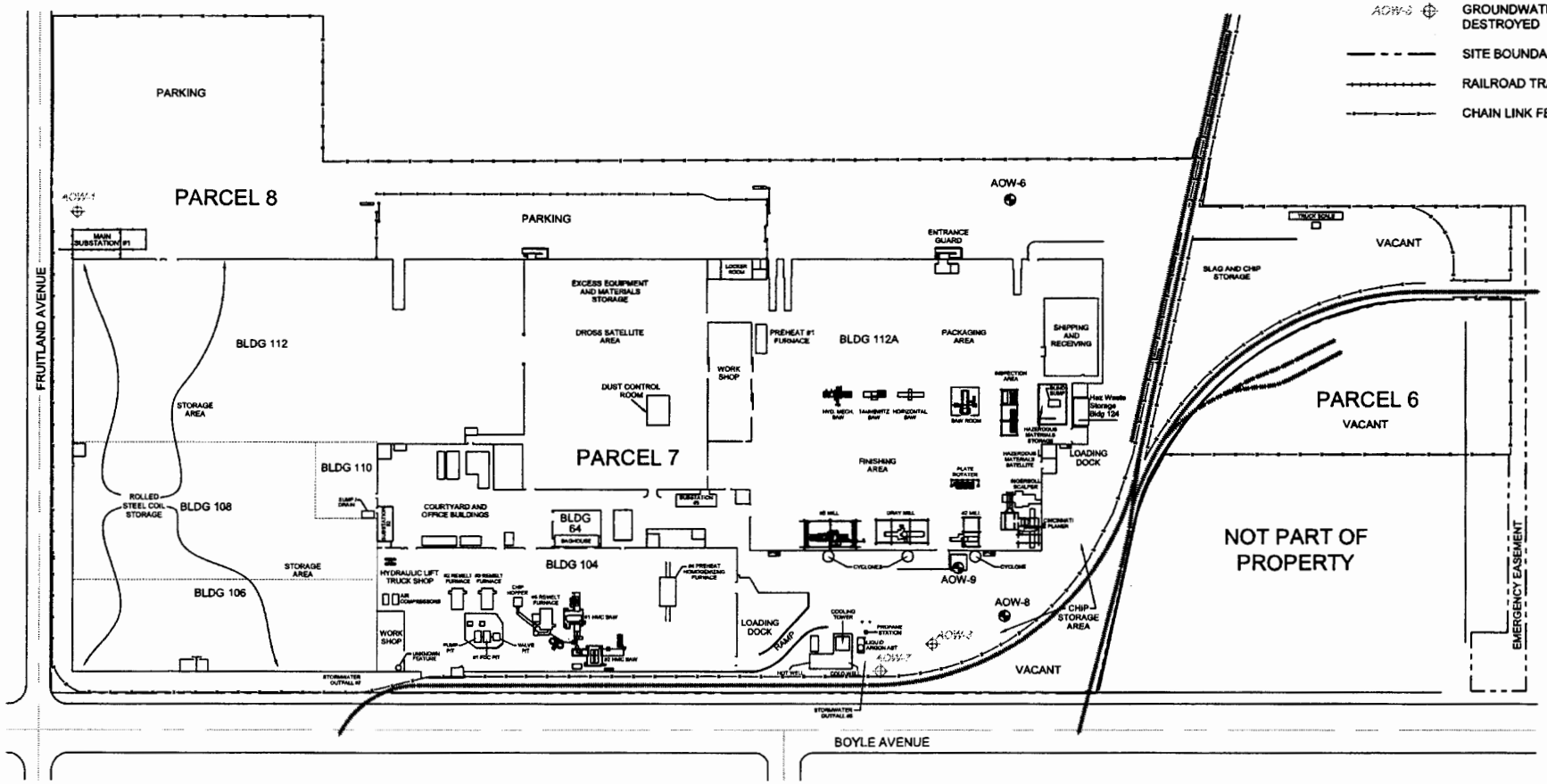
GEOMATRIX

SITE LOCATION MAP

PECHINEY CAST PLATE
Vernon Facility, 3200 Fruitland Avenue
Vernon, California

Figure By	Project No.
jrw	10627
Date 8/31/05	Figure 1

Filepath: Y:\10627.000.01\acad\PechineyPlateLocationMap.dwg
Plot Time: Aug 31, 2005 - 3:56pm, Plotted By: pherring



EXPLANATION

- AOW-9 — GROUNDWATER MONITORING WELL
- AOW-3 — GROUNDWATER MONITORING WELL DESTROYED
- SITE BOUNDARY
- RAILROAD TRACK
- CHAIN LINK FENCE

BASEMAP MODIFIED FROM PECHINEY CAST PLATE, INC. SITE PLAN DATED 08 JAN 02, GERAGHTY & MILLER, INC. "GROUNDWATER ELEVATION AND VOLATILE ORGANIC COMPOUND CONCENTRATIONS DECEMBER 8, 1994" FIGURE DATED 2-2-95, ALUMINUM COMPANY OF AMERICA "WORKS GENERAL-MAP" FIGURE DATED 10-10-84, AND LOS ANGELES COUNTY ASSESSOR'S OFFICE PARCEL MAP 6310 / SHEET 8 DATED 11-5-58.

NOTE:

1. SITE BOUNDARY AND GROUNDWATER MONITORING WELL LOCATIONS ARE APPROXIMATE.

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APPROXIMATE SCALE IN FEET

SITE PLAN

PECHINEY CAST PLATE
Vernon Facility
3200 Fruitland Avenue
Vernon, California

GEOMATRIX

Figure By	Project No.	Figure
jrw	10627	2
Date 8/31/05		

Filename: Y:\10627.000.0\acad\SITE Plan.dwg
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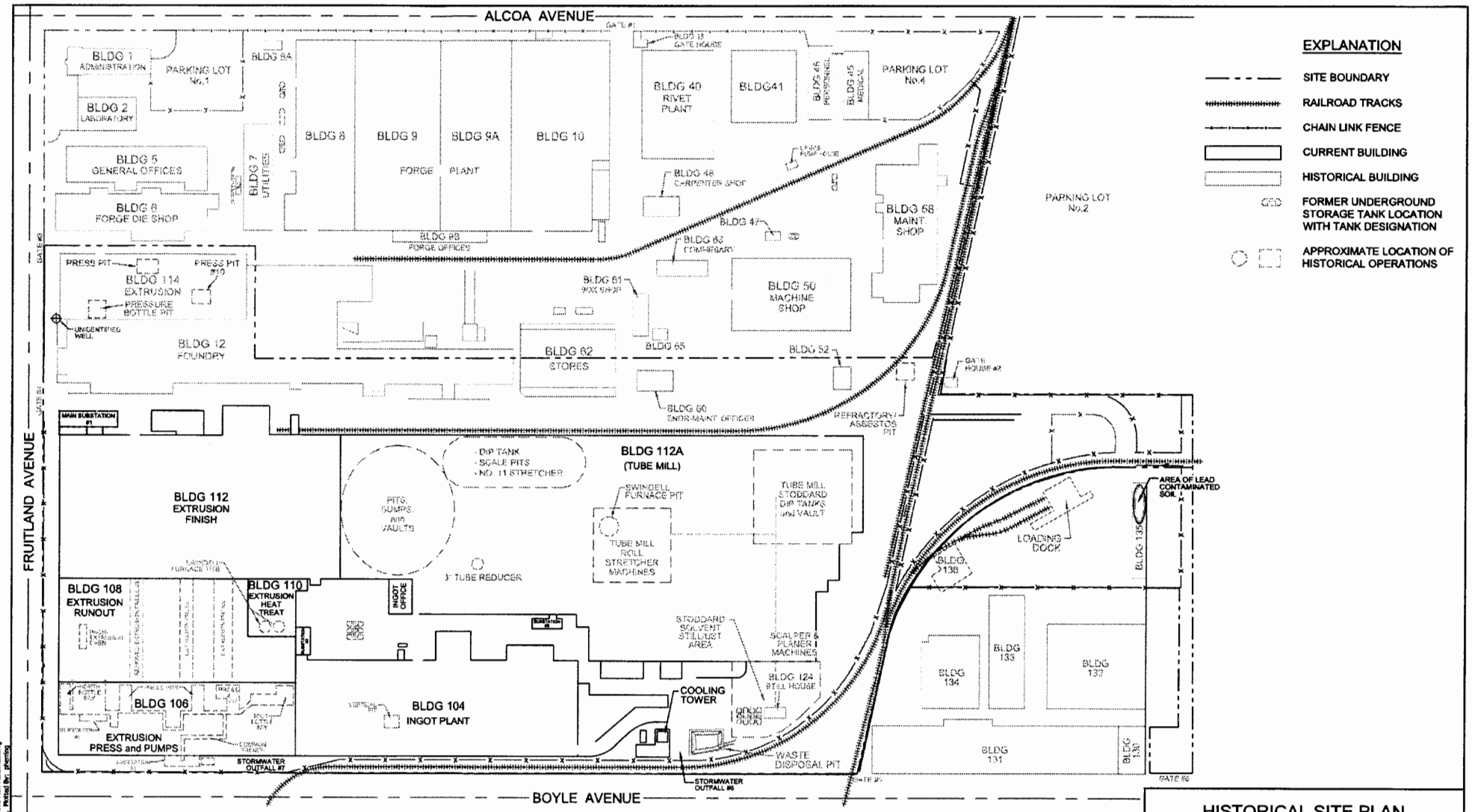

SITE PLAN PROVIDED BY PECHINEY CAST PLATE, INC., AND BASED ON AN ALUMINUM COMPANY OF AMERICA "WORKS GENERAL-MAP" FIGURE DATED SEPT 16,1969. ADDITIONAL HISTORICAL FEATURES BASED ON DOCUMENT REVIEW.

NOTE:

1. SITE BOUNDARY IS APPROXIMATE.

HISTORICAL SITE PLAN

PECHINEY CAST PLATE
Vernon Facility
3200 Fruitland Avenue
Vernon, California

GEOMATRIX

Figure By	Project No.	Figure
jrw	10627	3
Date 8/31/05		

Filepath: Y:\10627.000.0\acad\SITE Plan-Historical.dwg
Plot Time: Aug 31, 2005 - 4:25pm, Plotted By: pherring

Geomatrix

TABLE 1
SUMMARY OF CURRENT AND HISTORICAL FACILITY BUILDINGS/AREAS
Pechiney Cast Plate Facility
Vernon, California

Area/Building	Parcel/Lot	Current Use	Historical Use[a]
Northeastern Parking Lot	Eastern Portion of Parcel 8	Parking	Building 12 (Foundry) and Building 114 (Extrusion)
Eastern Parking lot	Eastern Portion of Parcel 7	Parking, monitoring well AOW-6 (southeastern portion of the parking lot), and storm water catch basins that discharge to outfall #8 located on Alcoa Avenue	Former railroad spur, western portions of Buildings 52 and 60, miscellaneous storage, oil drum storage
Building 112 (northern portion of the main building)	Parcels 7 and 8	General storage, roll coil storage (leased by Douglas Steel)	Extrusion finish and dye shop
Building 112A (southern portion of the main building)	Parcels 7 and 8	Grinders, mills, saws, miscellaneous storage, hazardous materials storage area, satellite hazardous waste accumulation areas, and shipping and receiving	Tube mill, Stoddard solvent distillation area and aboveground dip tanks, shipping department, heat treat room, box shop, and wood working area
Buildings 106/108/110	Parcels 7 and 8	Roll coil storage (leased by Douglas Steel) and miscellaneous paint and equipment storage. Storm water outfall # 7 is located outside Building 106 on Boyle Avenue	Building 108 (Extrusion Runout), Building 110 (Extrusion Heat Treat), and Building 106 (Extrusion Presses and Pumps)
Building 124	Parcel 7	Hazardous waste storage	Building was formerly located off the southwest corner of Building 112A and was the Stoddard solvent Still House
Courtyard between Buildings 104, 112A, and 112	Parcel 7	Offices, conference rooms, forklift parking, and lunch room	Ingot storage. Diesel fuel underground storage tanks (USTs) were located in the forklift storage area
Building 104/64	Parcel 7	Furnace melt areas (104) and dross storage and baghouse (64)	Ingot and dross plant (including vertical extrusion pits).
Substations	Parcels 7 and 8	Substations 1 (main), 2 and 5	Same. Substations 6 and 8 were located inside and outside Building 106, respectively
Cooling Tower and Surrounding Area	Southern Portion of Parcel 7	Cooling tower and pump house ("Palm Springs"), chip hopper storage, propane storage, monitoring wells AOW-8 and -9, and storm water outfall #6 adjacent to Boyle Avenue	Cooling tower and pump house, former waste disposal pit sump, former Building 124 (still house and solvent USTs), and propane storage

TABLE 1
SUMMARY OF CURRENT AND HISTORICAL FACILITY BUILDINGS/AREAS
Pechiney Cast Plate Facility
Vernon, California

Area/Building	Parcel/Lot	Current Use	Historical Use[a]
Southern End (south of rail road spur)	Parcel 6 (Lots 10 and 11)	Truck scale, hopper storage for chips, aluminum slag storage, and emergency access easement	Loading dock and ancillary rail spurs, Building 135 (dross storage and carpentry shop on a 1949 Sanborn map) and Building 136 (power saw use on a 1949 Sanborn map). Portions of Pacific Portable Construction Co. (1920 Sanborn map), Ready Cut Homes Inc. & Construction Company (1929 Sanborn map), and Brass-Ross Tool Co. (1929 and 149 Sanborn maps). Alcoa operations noted on a 1966 Sanborn map

Notes:

(a) Historical information was obtained from an Aluminum Company of America (Alcoa) "Works General Map" figure (September 16, 1969), and from 1949 and 1966 Sanborn maps (EDR 2005).

Additional Notes:

Because a number of the former buildings that are not part of the site are discussed in the report, a summary of these buildings that were associated with the eastern portion of the original Alcoa facility is presented below:

Building 6 – Forge Die Shop
Building 5 – General offices
Building 2 – Laboratory
Building 1 – Administration
Building 7 – Utilities
Building 8, 9, 9A, and 10 – Forge Plant
Building 40 – Rivet Plant
Building 41 – Unknown
Building 44 and 45 – Presses and Medical
Building 48 – Carpenter Shop
Buildings 60, 61, 63 and 65 – Engineering offices, Box shop, and commissary
Building 50 – Machine shop
Building 58 – Maintenance shop

Additional Buildings west of Parcel 6 (from 1949 Sanborn map):

Building 130 – Office
Building 131 – Machine shop
Building 132 – Machine shop
Building 133 – Electrical switch room, stock room, and assembly
Building 134 – Black smith and heat treating

TABLE 2
SUMMARY OF ENVIRONMENTAL DATABASE RECORDS
PHASE I Environmental Site Assessment
Pechiney Cast Plate Facility
Vernon, California

Property Location	Distance (in miles) and Direction from Subject Property	Database Record	Notes
Subject Property			
3200 Fruitland Avenue (Pechiney)	Target Property	FINDS	Listed in the AIRS/AIRS Facility System
		RCRA-LQG	The subject property is a LQG of hazardous waste. Two violations were reported on 3/26/2003. One is listed as violation "09SRV" and the other as "Generator-General Requirements." Both violations reportedly achieved compliance on 8/28/2003.
		CA-WDS	California State Water Resource Control Waste Discharge System (WDS) reports that the subject property is an active facility and is under State General National Pollution Discharge Elimination System (NPDES) regulations.
		HAZNET	40 occurrences of known hazardous waste removal and disposal of at least 12 types of hazardous waste from the subject property, and include ACM, PCBs-containing materials, waste oils, other inorganic solid waste, alkaline solution with metals, hydrocarbon solvent mixtures (Stoddard, etc.), baghouse waste, and unspecified oil-containing waste.
5151 Alcoa Avenue. (Alcoa)	Target Property (former)	ERNS	On 5/17/1990 an unknown amount of rinse water from an etching facility was released to the soil, apparently due to a broken drain line. The drain line was being repaired and the soil was sampled to determine if there were any chemicals from the rinse water released into the soil. Results of testing not reported. An additional comment states the caller reported that "this problem has been going on for several weeks and suspects that some nitric acid may have been in the line at some point." Location not reported.
		ERNS	On 5/18/1990 an unknown amount of nitric acid was leaking from a drain line to soil. Soil samples were taken; cleanup pending test results.
		CORTESE	No information provided
		LUST	A solvent leak to soil was discovered on 4/27/1984. The leak was apparently coming from corroded piping. The LUST status is indicated as "post remedial action monitoring." An additional note states that Alcoa is meeting closure requirements and closure is on hold pending submittal of additional information.
		EMI	Indicates that the facility is in the SCAQMD and lists the following emissions: total organic hydrocarbon gases, reactive organic gases, carbon monoxide emissions, NOx, SOx, particulate matter, and particulate matter less than or equal to 10 micrometers.
5401 Alcoa Avenue. (Alcoa)	Target Property (former)	RCRA-LQG	This facility is listed as a LQG of hazardous waste. Two violations were found on 3/26/2003: "09SRV" and "Generator-General Requirements", and reportedly achieved compliance on 8/28/2003. This appears to be the same entry as that listed for 3200 Fruitland Avenue.
		FINDS	This facility is listed in the EMI and RCRAinfo databases. No details provided.
		HIST UST	107 USTs have been registered at this site. The number and contents of the USTs were listed as: 1 containing unleaded fuel, 5 containing diesel fuel, 41 containing product (unspecified), 9 containing waste oil, 47 containing waste (unspecified) and 4 containing unspecified material. Tank capacities ranged from 110 gallons to 245,000 gallons.
Adjacent Properties and Properties with Documented Releases			
3027 Fruitland Ave (Detrex Corp)	1/4 - 1/2 mi NW	CERCLIS-NFRAP	Solvent Distributor and recycler; no onsite disposal; RCRA regulated generator, TSD, transporter. Preliminary assessment completed in 12/1985, site archived 12/1985. This site is not on the NPL.
		CORRACTS	7 events recorded: 12/01/1985 CA Prioritization, facility or area was assigned low corrective action priority; 6/29/2000 RFI Approved (listed twice); 10/25/2001 CMS Approved (listed twice); 10/25/2001 Date for remedy selection (CM imposed); 12/13/2001 CMI work plan approved.
		RCRA-LQG	The property is a LQG of hazardous waste. Biennial Report from 2001 indicate Waste F001 and F002 (24,347 lbs each). This site apparently used 1,1,1-TCA. Eleven violations are reported: TSD-Other Requirements (Oversight) 1988-06-16; Generator-Land Ban Requirements 1988-09-23; TSD-Land Ban Requirements 1988-09-23; TSD-Other Requirements (Oversight) 1989-12-01; TSD-Financial Responsibility Requirements 1990-01-02; Generator-All Requirements (Oversight) 1993-01-25; TSD-Financial Responsibility Requirements 1994-12-20; Transporter-All Requirements (Oversight) 1995-03-22; TSD-Other Requirements (Oversight); TSD-Other Requirements (Oversight); TSD-Financial Responsibility Requirements.
		HAZNET	58 occurrences of known hazardous waste removal and disposal of at least 12 types of hazardous waste from the property including: alkaline solution w/o metals, aqueous solution >=10% total organic residues, contaminated soil from site clean-ups, halogenated solvents (chloroform, methyl chloride, etc.), hydrocarbon solvents (benzene, hexane, etc.), liquids with pH <UN->2, not reported, off-spec, aged, or surplus inorganics, off-spec, aged, or surplus organics, organic solids w/halogens, other organic solids, oxygenated solvents (acetone, butanol, etc.), solids or sludges w/halogenated organic compounds >1000 ppm, unspecified aqueous solution, unspecified oil containing waste, unspecified organic liquid mixture, unspecified solvent mixture waste, and waste oil and mixed oil.
		DEED	No information provided. Deed restriction in place

TABLE 2
SUMMARY OF ENVIRONMENTAL DATABASE RECORDS
PHASE I Environmental Site Assessment
Pechiney Cast Plate Facility
Vernon, California

Property Location	Distance (in miles) and Direction from Subject Property	Database Record	Notes
3211 Fruitland Ave (Barksdale Inc.):	1/8 - 1/4 mi NNE	CHMIRS	A nitric acid release due to a chemical reaction in an "empty" container on 5/5/1999.
		RCRA-SQG	SQG of hazardous waste. No violations found.
		HIST UST	Site has two registered USTs, both 8000 gallon regular gasoline tanks.
		FINDS	HAZNET, Integrated compliance information system, EMI, RCRAinfo, TCRIS.
		RCRA-LQG	LQG of hazardous waste. No violations found.
		EMI	Reports to SCAQMD. SIC Codes 3822 (Auto controls - regulating environments) and 3499 (Fabricated metal products). Site has documented emissions of total organic hydrocarbon gases and reactive organic gases.
		CA-WDS	Active industrial facility. Threat to water not reported. Complexity category C: must comply with best management practices. Under State General NPDES.
3055 E Fruitland Ave:	1/8 - 1/4 mi NW	CHMIRS	Reports that on 3/14/2003, diesel was released from a tractor trailer that tore open its saddle tank on a curb. Two gallons may have gotten into the flood control system.
3320 Fruitland Ave (Chris Stones & Assoc.):	1/4 - 1/2 mi NE	ERNS	Reports that on 7/1/1993, approximately 500-gallons of water-based ink spilled into the flood control system.
3007 Fruitland Ave (Western Gasket Co.):	1/4 - 1/2 mi NW	ERNS	Reports that on 6/3/1994, 20-gallons of glue washed into the storm drain.
2901 Fruitland Ave (Owens Brockway Glass):	1/4 - 1/2 mi WNW	ERNS	On 9/1/1999 an unknown material and unknown oil was released to the ground. The County tested a nearby storm drain and found high pH and residual oil.
		ERNS	On 5/27/1994 approximately 1 gallon of tin-tetrachloride was released to ground due to broken valve on drum. Spill was cleaned up.
		FINDS	AIRS, National compliance database system, EMI, Permit compliance system, RCRAinfo, TCRIS.
		RCRA-LQG	The property is a LQG of hazardous waste. Biennial Report from 2001 indicate Wastes D001 (ignitable hazardous wastes), D006 (cadmium), D007 (chromium), D008 (lead), D010 (selenium), D035 (methyl ethyl ketone), F003 (non-halogenated solvents; xylene...), and F005 (non-halogenated solvents; toluene...). One violation exists: Generator-All Requirements (Oversight) 2001-01-25.
		HIST UST	Four waste oil USTs are reported for this site ranging in capacity from 4100 to 18,900 gallons.
2923 Fruitland Ave:	1/4 -1/2 mi WNW	CHMIRS	On 11/8/2002, a punctured fuel tank released diesel fuel into a nearby storm drain. Approximately 14 gallons entered storm drain with considerable rainfall. Clean up not determined.
5375 S Boyle Ave (US Filter):	1/4 -1/2 mi NNW	CHMIRS	A toxic cloud of nitric acid was created on 5/24/2000 from pouring 500-gallons of Class D002 acid (corrosive waste) into a tank with other acids. Clean up was completed by US Filter.
		CERCLIS-NFRAP	Discovery reported on 5/21/1991. Preliminary assessment completed on 9/17/1991; site archived 1/23/1996. Site not listed on NPL.
		CORRACTS	Two entries found: 9/19/1994 the site was assigned a low corrective action priority; 9/15/1991 the site was assigned a medium corrective action priority.
		Finds	Listed on AIRS, Integrated Compliance Information System, National Compliance Database System, EMI, HAZNET, TCRIS, and RCRAInfo.
		HAZNET	Waste oil and mixed oil
		RCRA-LQG	LQG of hazardous waste. 72 violations from 7/1990 to 5/2004 found with monetary penalties totaling at least $447,840.
		RCRA-TSDF	Waste Category and Quantity, in lbs: D001 (ignitable hazardous wastes), 6205, D002 (corrosive waste), 1741409, D003 (reactive hazardous waste), 1435611, D004 (arsenic), 17048529, D005 (barium), 13468135, D006 (cadmium), 6271533, D007 (chromium), 7389265, D008 (lead), 9104905, D009 (mercury), 9520, D010 (selenium), 10794329, D011 (silver), 3473109, F001 (halogenated solvents used in degreasing), 819600, F002 (halogenated solvents), 820234, F003 (non-halogenated solvents; xylene...), 819600, F004 (non-halogenated solvents; creosols...), 819600: F005 (non-halogenated solvents; toluene...), 819600, F006 (wastewater treatment sludge from electroplating), 16418088, F007 (spent cyanide plating bath solutions), 12640706, F008 (plating bath residues), 10228884, F009 (spent stripping and cleaning bath solutions), 4303364, F010 (quenching bath residues from oil baths), 12033, F011 (spent cyanide solutions from salt bath pot cleaning), 13267605, F012 (quenching wastewater treatment sludge), 10753105, D010 (selenium), 10794329, D011 (silver), 3473109, F001 (halogenated solvents used in degreasing), 819600, F002 (halogenated solvents), 820234, F003 (non-halogenated solvents; xylene...), 819600, F004 (non-halogenated solvents;
		HIST UST	26 UST reported for this location ranging in capacity: 1 Product - Regular gasoline, 1 Product - Unleaded, 9 Product - Diesel, 4 Product - Not reported, 2 Not reported, 9 Waste - Not reported.
		EMI	Reports to South Coast Air Quality Management District. SIC Code 3489 (ordnance & accessories NEC): Total Organic Hydrocarbon Gases, Reactive Organic Gases, NOX, SOX, Carbon monoxide, Particulate matter tons/yr, Particulate matter <= 10 microns, tons/yr.

TABLE 2
SUMMARY OF ENVIRONMENTAL DATABASE RECORDS
PHASE I Environmental Site Assessment
Pechiney Cast Plate Facility
Vernon, California

Property Location	Distance (in miles) and Direction from Subject Property	Database Record	Notes
5375 S Boyle Ave (Westates Carbon Arizona Inc)	1/4 -1/2 mi NNW	Finds	Listed on HAZNET and RCRAInfo.
		HAZNET	Hazardous Waste Generator: Other organic solids, Organic solids with halogens.
		RCRA-LQG	LQG of hazardous waste. No violations found.
		CA-WDS	Active industrial facility. Threat to water not reported. Complexity category C: must comply with best management practices. Under State General NPDES.
4900 S. Boyle (NI Industries)	1/4 -1/2 mi NNW	CERCLA	Site status is high. Non NPL site. Discovery reported on 7/1/1998, preliminary assessment completed on 9/22/2000. Other names: Norris Industries, Masco Tech.
5215 S Boyle Ave (Norris Industries):	1/8 - 1/4 mi NNW	CHMIRS	An incident occurred on 12/6/1991, but no details are presented.
		ERNS	An unknown amount of chlorine gas was released on 3/9/1993 originating from Norris Industries. No cleanup was reported; gas dissipated. This incident is also reported in the CHMIRS database.
			Approximately 250 pounds of hypochlorous and cyanuric acids were released from a 55-gallon drum. Employees from the facility and from Alcoa were evacuated as a precaution. Substance decomposed with water and reacted.
			A nail from a palette punctured a 55-gallon drum and released approximately 5-gallons of copper chloride on 12/28/1994. The facility used sorbents for cleanup.
54th and S Boyle Ave:	1/8 -1/4 mi WNW	ERNS	A 110-gallon nitrous oxide plume was created on 10/7/1992. No other information was available.
Slauson & Boyle Ave (Bethlehem Steel, Vernon Lot 18):	1/4 -1/2 mi SSW	CHMIRS	Reports that on 10/2/1993, a vehicle accident released approximately 20 gallons of gasoline. A waterway was involved, but details are not presented.
		CA BOND EXP. PLAN	The soil at Lot 18 was contaminated with heavy metals, primarily lead and zinc. The source of this contamination is believed to be paint chips which flaked off of scrap metal, alloys in solder and bearings, dust from electric furnaces, and possibly some windblown sources. In addition, one portion of the site is contaminated by diesel fuel, apparently from a leaking underground tank which was removed in 1955. The RP implemented an approved RAP. The RAP consisted of removal of contaminated soil, and regrading and covering the site with clean, imported soil. The RP has also placed a voluntary notice on the deed. The Dept certified the site in Nov. 1987.
3300 Slauson Ave (Bethlehem Steel):	1/4 -1/2 mi SSW	CA BOND EXP. PLAN	Site listed in 1989 BEP for cost recovery only. Expected to be completed by Jan 1989.
		LA COUNTY HMS	Facility status: removed. No further details reported.
		Cal-SITES	Status as of 11/1/1987: certified as having been remediated satisfactorily under DTSC oversight.
		CORTESE	No details reported.
		HIST UST	8 registered USTs ranging in capacity from 3000 gallons to 500,000 gallons.
		LUST	Diesel leak to groundwater first reported on 12/4/1986. Case closed.
		CA-SLIC	Case closed. Details not reported.
3300 Slauson Ave, Vernon Industrial Plaza (Lots 1-6)	1/4 -1/2 mi SSW	CA-SLIC	Status as of 12/24/1985: certified as having been remediated satisfactorily under DTSC oversight.
		DEED	The Vernon Industry Plaza Lots 1-6 is a facility of the Bethlehem Steel Corporation (BSC). The site had been used for scrap steel and spare parts storage until BSC closed it in 1983. Lead and PCB contaminated soil was discovered in lots 1-6. A 1000 ppm total lead and 4 ppm PCB cleanup level was established with the conditions that after soil removal activities were completed, additional clean soil would be added and the entire site would be paved and covered with buildings. This site was certified on 12/24/1985 and over 42,250 cubic yard of lead and PCB-contaminated soil were removed. 11/18/1987 Deed Restriction: A voluntary deed restriction is in place. This property went through the Hazardous Waste/Border Zone Property process, but was not formally designated as either a hazardous waste property or border zone property. 12/24/1985: 45,250 cubic yards of lead and PCB-contaminated soil removed.
3300 Slauson Ave (Vernon Industrial Plaza Lot 7)	1/4 -1/2 mi SSW	CAL-SITES	Status as of 11/21/1985: certified as having been remediated satisfactorily under DTSC oversight. Vernon Industry Plaza - Lot 7, is a facility of the BSC. The site, contaminated with lead, had been used for scrap steel and spare parts storage until BSC closed it in 1983. A 1000 parts per million total lead cleanup level was established with the condition that after soil removal activities were completed, additional clean soil would be added and the entire site would be paved and covered with buildings. 11/21/1985: Over 640 cubic yards of lead contaminated soil were removed and disposed at the E.P.C. landfill.
Boyle Ave & Leonis Blvd:	1/4 - 1/2 mi NNW	ERNS	On 1/24/1992, approximately 75 gallons of fuel were released to the ground at the intersection of Boyle Avenue and Leonis Boulevard when a truck fuel tank ruptured. The release was cleaned up by the fire department.

TABLE 2
SUMMARY OF ENVIRONMENTAL DATABASE RECORDS
PHASE I Environmental Site Assessment
Pechiney Cast Plate Facility
Vernon, California

Property Location	Distance (in miles) and Direction from Subject Property	Database Record	Notes
3165 E. Slauson (Chemclear of Los Angeles Inc.)	1/4 - 1/2 mi S	RCRA-SQG	No details reported.
		FINDS	RCRAinfo.
		RCRA-TSDF	No details reported.
		CORRACTS	Facility or area was assigned a low corrective action priority.
3040 E Slauson Ave (Trico Industries, Inc.):	1/4 - 1/2 SSW	LUST	Waste oil leaked to soil in 10/1994. The case is reportedly closed, although no action was ever taken.
		CA SLIC	Two incidents listed only as volatile organic compounds (VOCs) and post remediation monitoring of Total volatile petroleum hydrocarbons (TPH/V).
		FINDS	National compliance database system, EMI, RCRAinfo, TCRIS.
		EMI	Reports to South Coast Air Quality Management District. Reported emissions: Total Organic Hydrocarbon Gases, Reactive Organic Gases, NOX, Carbon monoxide.
		RCRA-LQG	LQG. No violations reported.
3050 E Slauson Ave (All Star)	1/4 - 1/2 mi SSW	CERCLIS-NFRAP	Discovery, preliminary assessment and archived site. No additional information
3080 E. Slauson Ave (Walley's Union Service)	1/4 - 1/2 mi SSW	LUST	Gasoline leak to soil confirmed on 2/27/1990. Soil not tested for MTBE. Global ID: T0603703733. Case closed.
		HIST UST	7 registered USTs are reported for this site: 2 4000 gallon unleaded fuel, 1 4000 gallon diesel fuel, 1 6000 gallon premium fuel, 1 100 gallon waste oil, and 2 unspecified quantity waste tanks.
		CORTESE	No details reported.
2911 Slauson Ave (Henry Company):	1/4 -1/2 mi SW	LUST	A gasoline leak was confirmed on 4/3/2000. Contamination was reported in soil and groundwater (perched groundwater at 48 feet bgs). MTBE was detected in groundwater at 20 part per billion (ppb), and VOCs were present. Four USTs were removed in 5/3/2000. Mineral spirits were detected in soil at a concentration of 68,800 parts per million (ppm) and 703 ppb of 1,1-DCE was detected in groundwater. The site is reportedly in the remediation planning stage.
		UST	one UST; no further details reported.
		HIST UST	11 registered product USTs ranging in capacity from 5000 gallons to 15,000 gallons.
		CA-SLIC	Status: pollution characterization, VOCs, TPH.
		LA COUNTY HMS	Permit number 293992. Facility and permit closed.
5731 Bickett St (Henry Company)	1/4 -1/2 mi WSW	RCRA-SQG	SQG. One violation reported on 10/5/1994, Generator-All Requirements (oversight) achieved compliance on 10/5/1999.
		FINDS	Facility on AIRS, HAZNET, EMI, RCRAinfo, TCRIS.
		TRIS	No details reported.
5600 Bickett St (Air Reduction)	1/4 -1/2 mi WSW	WMUDS/SWAT	Solid Waste Assessment Test Program
5715 Bickett St (Dresser Industries)	1/4 -1/2 mi WSW	LUST	2/9/1990 case entered into system. Diesel leaked to soil. Case is now closed. Global ID: T0603703615.
		CORTESE	No details reported.
5401 Soto St:	1/4 - 1/2 mi W	CHMIRS	On 5/10/1996 approximately 22-gallons of diesel spilled to a storm drain from a tractor trailer rig.
5601 Downey Rd (Downey Road Partnership):	1/4 - 1/2 mi ENE	CHMIRS	On 3/5/1994 a fork lift broke a 1-1/4 inch natural gas line that leaked for approximately 15 minutes.
5601 Downey Rd (John Deere Killefer):	1/4 - 1/2 mi ENE	CERCLIS-NFRAP	Discovery on 6/1/1981, preliminary assessment and archived site on 5/1/1985. NFRAP.
5353 Downey Rd (JJ Snack Food):	1/4 - 1/2 mi NE	CHMIRS	On 3/21/2001 a sewer line backed up into the parking lot and ran into the street. Sewage entered the storm drain to the Los Angeles River. Clean up was conducted by the RP, but it is not stated who that was.
		CHMIRS	On 8/6/1991, approximately 825 gallons of solvent and oil mixed with water was released to the ground and reportedly came from JJ Snack Food. Clean up was conducted by Safety Clean.
5304 Alcoa Ave (Western Metals Finishers)	1/8-1/4 mi NE	CORTESE	No details reported.
		RCRA-LQG	LQG. No violations reported. Biennial report from 2001 reports waste categories as D001 (ignitable hazardous waste), D035 (methyl ethyl ketone), F003 (non-halogenated solvents), F005 (non-halogenated solvents).
		CERCLIS-NFRAP	Not on NPL. Discovery on 6/1/1986, preliminary assessments 7/1/1987 and 3/23/1990, archived on 3/23/1990. Other names: Olympic Spring Co., Ideal Springs, Kay Springs.
		NFA	No further action required by DTSC. Electroplating company.

TABLE 2
SUMMARY OF ENVIRONMENTAL DATABASE RECORDS
PHASE I Environmental Site Assessment
Pechiney Cast Plate Facility
Vernon, California

Property Location	Distance (in miles) and Direction from Subject Property	Database Record	Notes
5610 Alcoa Ave (Modern Pattern Foundry)	1/4 -1/2 mi WSW	CERCLIS-NFRAP	Not on NPL. Discovery on 12/6/2000. No further details reported.
		FINDS	Listed in CERCLIS.
5705 Alcoa Avenue (Sandberg Furniture)	1/8 - 1/4 mi SE	FINDS	Listed on HAZNET, AIRS, EMI, Ract/bact/laer clearinghouse.
		HAZNET	Hazardous Waste Generator: other inorganic solid waste, other organic solids, paint sludge, unspecified aqueous solution, unspecified organic liquid mixture, waste oil and mixed oil, and waste not specified.
		RCRA-LQG	LQG of hazardous waste. One violation found on 4/7/1999: Generator-all requirements (oversight). Date of compliance 4/7/1999. Waste Category and Quantity, in lbs: D001 (ignitable hazardous waste), 13092, D035 (methyl ethyl ketone), 8032, F003 (non-halogenated solvents), 8032, F005 (non-halogenated solvents), 8032.
		HIST UST	One diesel tank (7700 gallons), two unleaded tanks (280 gallon and 550 gallon).
		EMI	Reports to SCAQMD. SIC Codes 2511 (wood household furnishings except upholstered): total organic hydrocarbon gases, reactive organic gases, NOx, carbon monoxide, particulate matter tons/yr, particulate matter <= 10 microns, tons/yr.
5127 Maywood Avenue (Food Express Inc)	1/4 - 1/2 mi ENE	UST	One tank registered with the state UST database.
		CAL-WDS	Active industrial facility
5127 Maywood Avenue (Pascusso and Honeyman Trucking)	1/4 - 1/2 mi ENE	HIST UST	Four registered USTs are reported for this site: 3 diesel fuel (appx 10,000 gallons each), 1 10,000 gallon waste oil.
		HAZNET	Hazardous Waste Generator: off-specification, aged, or surplus organics.

TABLE 3
SUMMARY OF POTENTIAL ENVIRONMENTAL ISSUES

PHASE I Environmental Site Assessment
Pechiney Cast Plate Facility
Vernon, California

Area/ Building	Potential Environmental Issue	Summary	Reference	Source	REC Assessment	Potential COCs	Comments
Site Wide or Multiple Locations	VOC-impacted groundwater	Groundwater monitoring data collected between 1990 and 1997 indicate TCE, 1,2-DCA, and chloroform are present in groundwater beneath the site with historical concentrations up to 160, 370, and 105 ug/l, respectively. Groundwater flow direction was reported to be toward the west-northwest. As approved by the City of Vernon, on-site wells AOW-1 and AOW-3 were destroyed in August 1997, leaving four wells on site (AOW-6 through AOW-9). RWQCB is listed as the lead agency for groundwater assessment at the site for the UST closures.	Enviro-Wise (1998)	J&G	REC	VOCs, TPH, and Metals	Groundwater monitoring wells remain in the area south of the cooling tower and east of Building 112A. Wells that have been abandoned were done so under the City of Vernon oversight and with RWQCB's knowledge. Historical data indicate groundwater is impacted with VOCs, but existing data are inconclusive whether operations conducted at the site have contributed to impacts. Documents reviewed by Geomatrix do not indicate groundwater monitoring requested by the RWQCB has been conducted and RWQCB closure of the USTs appears to be pending. Groundwater does not appear to have been analyzed for dissolved metals.
		Groundwater monitoring data collected in 1997 indicated a decrease in groundwater concentrations for TCE, 1,2-DCA, and chloroform.	WWC (1997)	J&G			
		An evaluation for potential off-site, upgradient sources of groundwater impact was conducted between 1992 and 1995. The evaluation was based on agency records and file reviews. Based on the evaluation, two upgadient properties were identifed with soil and/or groundwater impacted with chlorinated VOCs. One of the properties, Bethlehem Steel (Vernon Industrial Plaza) located at 3270 Slauson Avenue, exhibited perched groundwate between 45 and 65 feet bgs and deeper groundwater at 150 feet bgs. Perched groundwater contained chlorinated VOCs (TCE, PCE, 1,1-DCA, 1,2-DCA, DCE, benzene, toluene, CCL_4, and 1,1,1-TCA) at concentrations up to 4600 ug/l (TCE). Perched goundwater was reported with a northwesterly flow direction. Deeper groundwater contained VOCs (TCE, PCE, DCE, 1,2-DCA, CCL_4 and CF) at concentrations up to 270 ug/l. Although the souce of the VOCs in groundwater was not determined, a groundwater extraction and treatment system was proposed for perched groundwater. The report also references City of Vernon water supply wells with groundwater containing VOCs, and another property (King Metal Finishing), located at 4820 Alcoa Avenue, with TCE in soil at concentrations up to 0.027 mg/kg.	G&M (1995)	H&EC and RWQCB			
		Following cave-ins during excavation of the former waste disposal pit south of the cooling tower, groundwater monitoring well AOW-7 was destroyed in April 1999, leaving three wells (AOW-6, AOW-8, and AOW-9) on site.	Ursic (1999a)	J&G			
		LFR (1998) recommended further evaluation of potential chlorinated VOC impacts at the site.	LFR (1998)	J&G			
		In a letter dated May 20, 2002, the RWQCB responded to a request from Alcoa for UST closure by requesting additional groundwater monitoring be conducted at the site. The RWQCB requested groundwater analysis for TVPH, BTEX, and fuel oxygenates including MTBE and other VOCs. A quarterly groundwater monitoring report was required to be submitted to the RWQCB by July 15, 2002.	RWQCB (2002)	H&EC and RWQCB			
	PCB-impacted flooring	Wood and concrete flooring were reported to contain PCBs. Phase II assessment of flooring in Buildings 104, 106, 108, 110, 112, and 112A was recommended.	Enviro-Wise (1998)	J&G	REC	PCBs	PCB-contaminated concrete and underlying soil may remain below existing and removed wood block flooring. Closure by the City of Vernon was based on hazardous waste disposal, not risk-based, criteria.
		PCBs were detected in 25 of 32 concrete cores collected from flooring in Buildings 104, 106, 108, 110, 112, and 112A. Reported PCB concentrations ranged from 35 to 71,000 ug/kg.	MFG (1998)	J&G			
		Manifests dated from 1995 to 1997 included in the referenced document are reported to be for disposal of PCB-impacted wood floor block removed from buildings in Parcel 7, which includes Buildings 112A and 104.	Ursic (1999a)	J&G			
		Portions of the concrete flooring in Building 106 were steam cleaned and capped with concrete in June 1999. No further action was requested from the City of Vernon.	Ursic (1999b)	J&G			
		Manifests dated from 1998 to 1999 included in the referenced document are reported to be for disposal of PCB-impacted wood floor block removed from buildings in Parcel 8, which includes Buildings 106, 108, and 112.	Ursic (1999b)	J&G			
		LFR (1998) recommended using a more conservative health-based level, such as the industrial PRG for PCB in soil, instead of the hazardous waste disposal standard of 50 mg/kg to guide removal of PCB-impacted flooring. Documents reviewed do not indicate that implementation of this recommendation occurred.	LFR (1998)	J&G			
	Galbestos building siding	Galbestos siding at the site reportedly contains PCBs and asbestos.	Enviro-Wise (1998)	J&G	OEC	ACM and PCBs	Galbestos covering on corrugated steel building siding still remains on Building 112, 112A, and 104, and also may be present on other building siding.
		According to the referenced document, a 1995 Galbestos siding survey identified 17,000 square feet of Galbestos siding that exhibited flaking. Approximately 9000 square feet were removed, leaving more than 7000 square feet left in place	AD Little (1999)	J&G			
		Flaking siding was observed inside Building 104 near the southwest corner of the building.	–	Site Visit			
	Asbestos	ACMs were removed in 1999 from portions of Building 106, 108, 110, and 112. Descriptions of ACM removed were not included in the referenced report. This report also indicates that transite utility piping was removed from the subsurface near the Fruitland Avenue entrance and at the intersection Fruitland and Boyle Avenues.	Ursic (1999b)	J&G	OEC	ACM	ACM may still be present in floor tiles and mastic, roofing felts and sealants, window putty, black exterior coating on the bag house and ventilation ducts (Building 64), in older furnaces and ovens not replaced in 1990s and in other locations in on-site buildings.
		According to Mr. Clinkenbeard the black exterior coating on the baghouse and ventilation ducts (Building 64), and the older furnaces and ovens that were not replaced in 1990s contain ACM.	–	Site Visit			
	Surface dust and debris	Dust and debris on overhead structures reportedly contained PCBs and heavy metals.	Enviro-Wise (1998)	J&G	OEC	ACM, PCBs, and Metals	Impacted dust and debris may remain.
		The referenced document contains waste manifests dated 1999 for vacuum-collected dust from Buildings 104, 112A, and part of 112.	Ursic (1999a)	J&G			

TABLE 3
SUMMARY OF POTENTIAL ENVIRONMENTAL ISSUES

Area/ Building	Potential Environmental Issue	Summary	Reference	Source	REC Assessment	Potential COCs	Comments
Site Wide or Multiple Locations	Lead-based paint	Lead is potentially present in paint due to the age of the buildings. Paint sampling was recommended.	Enviro-Wise (1998)	J&G	OEC	Lead	Based on age of buildings LBP may still be present on painted surfaces.
		Six samples of paint collected from Buildings 106, 108, and 112 contained 277 to 121,000 mg/kg lead. LBP was associated with flaking interior paints, painted columns, yellow bumper paint, and window pains.	MFG (1998)	J&G			
		The referenced document contains waste manifests dated 1999 for vacuum-collected peeling paint from Buildings 104, 112A, and part of 112.	Ursic (1999a)	J&G			
	Substations	Soil adjacent to transformers was discolored and potentially impacted with PCBs. Phase II assessment was recommended.	Enviro-Wise (1998)	J&G	REC	PCBs	No documentation was found for the removal of PCB-impacted soil adjacent to the transformers.
		Soils adjacent to Substation Nos. 1, 2, 5, and 8 were sampled and analyzed for PCBs. Soil samples collected near ground surface from Substation 2 contained 1000 ug/kg PCBs, but PCBs were not detected in a sample collected at a depth of 5 feet bgs in the same boring. Soil samples collected near ground surface from Substation 5 contained 60 ug/kg PCBs, and near surface soil adjacent to Substation 1 was reported as not detected for PCBs. A composite surface soil sample collected adjacent to Substation No. 8 (located along Boyle avenue near storm water outfall #7) contained PCBs up to 42,000 ug/kg (total).	MFG (1998)	J&G			
	Historical chemical usage	An on-site materials chemical inventory dated May 31, 1990 included the following chemicals: Aliphatic HDC (containing 1,1,1-TCA), MEK, methylene chloride, coal tar pitch (containing PCE), coal tar naphtha, zinc chromates, perchloric acid, petroleum solvent, and solvent treated oil.	Alcoa (1990)	Fire Dept.	OEC	111-TCA, PCE and PAHs	These secondary chemicals indicate a potential for historical use of chlorinated VOCs.
	Rail line spurs	Rail line spurs are located along the west side of the subject property and through the center of Parcel 6; rail spurs formerly were located along the east side of Building 112A. Topographic maps indicate the rail lines and spurs were present on the subject property as early as 1902.	EDR (2005b)	EDR	OEC	Metals and SVOCs	Railroad ballast may contain heavy metals and SVOCs (creosote).
	Historical agricultural use	A 1929 aerial photograph indicates Parcels 7 and 8 of the subject property were used for agricultural purposes at that time.	EDR (2005c)	EDR	OEC	Pesticides	Subsurface materials beneath the site may be impacted with pesticides and herbicides, but the potential for significant impact from routine use of agricultural chemicals is considered low by Geomatrix.
Building 112	Scale pit and unknown sump	The surfaces of these pits were steam cleaned and chipped. Following cleaning, each was inspected by the City of Vernon and backfilled with pea gravel and/or concrete. No further action was recommended in the referenced document.	Ursic (1999b)	J&G	HREC	PCBs, TPH, and Metals	Former location not documented. No soil testing appears to have been conducted around this structure.
	Site reconnaissance observations - stained flooring	The floor in this area of the building was a combination of concrete and asphalt. The floor covering was in fair to poor condition, and appeared to be stained and dusty throughout. PCB-impacted wood blocking flooring was previously removed. PCBs were detected in concrete samples at concentrations between 33 and 1800 ug/kg (MFG, 1998).	--	Site Visit	REC	PCBs	PCB-containing wood block flooring was removed from this area and the underlying concrete contained PCBs. Soil may contain PCBs.
Building 112A	Stoddard solvent vault, dip tank, and associated equipment (Tube Mill)	In 1990, releases of Stoddard solvent to soil were documented in this area of the site, which is in the southeast portion of Building 112A. Soil sampling conducted in 1995 reported concentrations of Stoddard solvent up to 76,000 mg/kg in subsurface soils; based on these data, 11 vadose zone wells were installed in the area of this release.	Enviro-Wise (1998)	J&G	REC	Stoddard solvent (TPH) and VOCs	Remediation of this area is being conducted by Alcoa using passive bioremediation through vadose zone wells.
		In April 1995, the Stoddard solvent vault was cleaned and certified by a marine chemist, inspected by the City of Vernon, then backfilled with concrete slurry. Wipe samples of the interior concrete surface were reported as non-detected for PCBs. Analytical results for a soil sample collected at 5 feet were not included in the report.	CCC (1995a)	H&EC			
		Soil sampling conducted in April 1995 indicated that in addition to impacts beneath the former Stoddard vault location, solvent was present beneath the former tube mill solvent dip tank and drying rack, located in the south-central part of Building 112A, north of the former vault. The volume of impacted soil for these two areas was estimated to be more than 43,000 cubic yards and the depth of impact was interpreted to be controlled by a silty clay at 45 feet bgs. In addition, aromatic hydrocarbons were detected in soil at concentrations between 0.02 mg/kg and 370 mg/kg (xylenes).	MKC (1995)	H&EC			
		Alcoa Technical Center conducted a bench-scale study to demonstrate the feasibility of intrinsic bioremediation of Stoddard solvent at the site.	ATC (1996)	H&EC			
		In a letter dated December 18, 1996, the City of Vernon acknowledged removal of the Stoddard solvent vault and requested continued monitoring and sampling of impacted soil beneath the vault.	Ursic (1999a)	J&G			
	Stoddard solvent USTs, gasoline UST, and solvent still house	Soil borings completed in 1987 indicated a release of solvent to the subsurface in the vicinity of the solvent recovery still outside the southwest corner of Building 112A. Concentrations up to 5700 mg/kg TRPH were reported in soil samples collected from 40 feet bgs.	Stankov (1987)	H&EC	REC	Stoddard solvent (TPH) and VOCs	Remediation of this area is being conducted by Alcoa using passive bioremediation through vadose zone wells. Although soil gas results for chlorinated VOCs were low (2 ppmv and less), samples were collected at 5 feet bgs. Based on 1947 and 1956 aerial photographs, this area appeared to be unpaved. Confirmation of historical soil gas data recommended.
		31 soil gas samples were collected at 5 feet bgs to assess the potential source of chlorinated VOCs detected in groundwater in the vicinity of the Stoddard solvent still house. Soil gas sampling conducted in 1991 reported vapor concentrations of TPH (Stoddard solvent and gasoline) up to 1300 ppmv, chlorinated VOCs MC, 1,2,DCA, TCE, 1,1,1-TCA, PCE, and CF up to 2 ppmv, and methane up to 4500 ppmv.	G&M (1995 and 1992)	H&EC and RWQCB			
		According to the referenced document, releases of Stoddard solvent to soil from the USTs and associated still house and piping formerly located outside the southwest corner of Building 112A were documented in 1990. Depth of impact was reported to be approximately 50 feet bgs based on samples collected from the soil boring for groundwater monitoring well AOW-9, which was installed in 1991. Four vadose zone wells were installed in 1991 to monitor subsurface vapor concentrations; light-end hydrocarbons were reported in vapor samples collected from these wells and were attributed to a release from the "filled-in-place" gasoline UST. Four 10,000-gallon Stoddard solvent USTs and one 1500-gallon gasoline UST were removed in 1995 (CCC, 1995b). As agreed upon by the City of Vernon, the UST excavation was backfilled with contaminated soil provided Alcoa would remediate this area of the site.	Enviro-Wise (1998)	J&G			
		Based on soil sampling conducted in April 1995, the volume of impacted soil in this area was estimated to be approximately 15,000 cubic yards. As at the former vault and dip tank areas, the depth of impact was interpreted to be controlled by a silty clay at 45 feet bgs.	MKC (1995)	H&EC			
		In a letter dated November 8, 1995, the City of Vernon acknowledged removal of the Stoddard solvent USTs and requested a remedial action plan to address impacted media in "several areas" near the former USTs.	Ursic (1999a)	J&G			
		Alcoa Technical Center conducted a bench-scale study to demonstrate the feasibility of intrinsic bioremediation of Stoddard solvent at the site.	ATC (1996)	H&EC			

TABLE 3
SUMMARY OF POTENTIAL ENVIRONMENTAL ISSUES

Area/ Building	Potential Environmental Issue	Summary	Reference	Source	REC Assessment	Potential COCs	Comments
	Tube mill swindell	The City of Vernon acknowledged satisfactory closure of the tube mill swindell in a letter dated February 23, 1998. Documentation regarding closure activities, such as cleaning or soil sampling, was not included in documents reviewed by Geomatrix. A map in the referenced report shows the swindell was formerly located in the central portion of Building 112A.	Ursic (1999a)	J&G	REC	PCBs	No further action was granted by the City of Vernon. Remediation for Stoddard solvent soil impacts in this area is being conducted by Alcoa.
Building 112A	Tube mill dip tank and Discovered drawbench pit	The tube mill dip tank, which formerly was located in the northeast corner of Building 112A (G38-37), was used to contain a "light oil" into which tubes were dipped for corrosion prevention. The tank was constructed of steel and had a concrete secondary containment vault. In April 1998, the tank and surrounding soils were removed. Concentrations of TRPH in soils removed ranged up to 59,000 mg/kg beneath the tank. Confirmation samples contained a maximum of 21 mg/kg TRPH. A formerly unknown wood-lined concrete trench containing scrap aluminum, oily rags, and work gloves was discovered during the excavation (referred to as the "discovered drawbench pit")(G37). After removing the wood lining, the trench was steam cleaned and backfilled with concrete. The excavation was backfilled with concrete and clean soil and closure was requested from the City of Vernon. The City of Vernon acknowledged satisfactory closure of the "discovered drawbench pit" in a letter dated February 23, 1998.	Ursic (1999a)	J&G	HREC	TPH	Closure of this tank was requested by Alcoa. Soil impacted with TRPH below RWQCB screening level of 1000 mg/kg. Closure of the "discovered drawbench pit" granted by the City of Vernon.
	Drawbench pits	A map in the referenced report shows six pits formerly located in the southeast portion of Building 112A. Documentation indicates the pits contained lubricating oil, which was pumped out before pit removal. Samples of the oil did not contain PCBs above the laboratory reporting limit of 500 ug/kg. After removing the oil, the pits reportedly were steam cleaned and excavated. TRPH was detected at concentrations ranging from 10.5 to 1075 mg/kg in four of the six soil samples collected beneath the pits.	City of Vernon (1997)	H&EC	REC	TPH	Closure was granted by the City of Vernon. Soil impacted with TRPH remains in place at concentrations just above 1000 mg/kg, the RWQCB screening level for TEPH.
		The City of Vernon acknowledged satisfactory closure of these three pits in a letter dated December 12, 1996.	Ursic (1999a)	J&G			
	Scalper, planer, and other finishing equipment in the southwest corner of Building 112A	Cutting oil was observed on the ground surface at the horizontal planer in the southwest corner of Building 112A. Oil had run outside and "saturated" the pavement surface as well. Surfaces beneath the scalper and other equipment in the finishing area also were noted as "saturated" with oil. Phase II assessment was recommended.	Enviro-Wise (1998)	J&G	REC	TPH, VOCs, PCBs, and Metals	Soil removal does not appear to have been completed in these areas and TPH, PCB, aromatic VOCs, and metals remain in soil. PCBs in soil area above PRGs. Removal of soil defferred to demolition. Soil near railroad spur containing arsenic has not been addressed. The impacted soil is in close proximity to the Stoddard solvent area (inside and outside Building 112A).
		TEPH, TRPH, and PCBs were reported at concentrations up to 9200 mg/kg, 19,000 mg/kg, and 1.2 mg/kg, respectively, in shallow (1 to 5 feet bgs) soil samples collected adjacent to scalper and planer sumps. Six volatile aromatic hydrocarbons were detected at concentrations up to 100,000 ug/kg in one soil sample collected at a depth of 5 feet bgs. Except for 7.8 ug/kg 1,2,4-trimethylbenzene at 15 feet bgs, deeper soil samples collected from these areas did not contain analytes above laboratory reporting limits. Shallow soil samples (between 1 and 5 feet bgs) collected outside the southwest corner of Building 112A contained 3400 mg/kg TEPH and 14,000 mg/kg TRPH. A near-surface soil sample collected near the rail line south of Building 112A reportedly contained 74 mg/kg arsenic at 1-foot bgs.	MFG (1998)	J&G			
		Nine additional borings were completed to depths between 25 and 45 feet bgs around the scalper and planer units in the southwest corner of Building 112A. Soil samples from these borings were analyzed for TEPH, PCBs, metals, and phenols. The referenced report contains original laboratory reports, but only the TEPH and PCB data were tabulated and discussed. Except for TEPH in one soil boring near and attributed to the adjacent Stoddard solvent release, TEPH and PCBs were not detected at depths below 1 foot bgs. Maximum reported TEPH and PCB concentrations in soil were 222 and 0.25 mg/kg, respectively. Ursic (1999a) recommended leaving impacted soil in place until the building is removed (with focus on the upper 10 feet of soil, because deeper TPH detections were attributed to the Stoddard solvent releases).	Ursic (1999a)	J&G			
	Oily cuttings and chips outside Building 112A	Oily cuttings and chips were not well contained and had contacted concrete, pavement, and soil surfaces at the site. Phase II assessment was recommended outside in chip storage areas (between Building 112A and the railroad spur). The area out side Building 112A and adjacent to the rail line was sampled by MFG and discussed above in relationship to the Scalper and Planer.	Enviro-Wise (1998)	J&G	REC	TPH, PCBs, VOCs, and Metals	Assessment of the underlying soil was conducted by MFG(1998) in the area of the rail road line and off the southwest corner of Building 112A. Additional testing for As in soil is recommended.
	Etching station	A nitric acid and caustic etching station located at building column G-20 was noted to have chemical residue on and beneath it (along east wall of building).	Enviro-Wise (1998)	J&G	REC	pH and Metals	Soil testing below concrete was not conducted, nor was the condition of the concrete slab reported.
	Paint shop	The area located at grid F-45 was used as a paint shop for small items. A hazardous waste satellite accumulation area also was noted here. Housekeeping in this area was noted as inadequate in 1998.	Enviro-Wise (1998)	J&G	REC	VOCs, TPH, and Metals	Soil testing below concrete was not conducted, nor was the condition of the concrete slab reported.
	Former degreasing sumps (north part of building), and trenches	Assessment of subsurface soils beneath Building 112A was conducted under oversight of the City of Vernon in 1996. Three soil borings to depths of 20 feet bgs were completed within Building 112A. PCBs were not detected in four soil samples collected between 8 and 15 feet bgs. Three samples collected between depths of 8 and 9.5 feet bgs were analyzed for petroleum hydrocarbons: TEPH was detected at concentrations of 1100 mg/kg at 8 feet bgs near a former degreasing sump in the northern part of the building; TEPH was reported at 29 mg/kg at a depth of 20 feet in the same boring. No further action for soil was required by the City of Vernon.	Enviro-Wise (1998)	J&G	HREC	TPH, and Aromatic VOCs	No further action was granted by the City of Vernon. TPH-impacted soil remains in the vicinity of the former degreasing sump at a concentration above the RWQCB screening criteria of 1000 mg/kg, but vertical attenuation of TEPH concentrations with depth was observed.
	No. 11 stretcher	No. 11 stretcher was identified as impacted with PCBs and reportedly was removed along with associated pits, trenches, sumps, and foundations between 1990 and 1994. This facility was closed by the City of Vernon. During removal, petroleum products were observed in the base of the associated trench (Ursic, 1999a). PCBs, BTEX compounds, TEPH, TVPH were not detected in soil at the east and west ends of the trenches. No soil testing along north and south sides of trench (MKC, 1996).	Enviro-Wise (1998)	J&G	REC	THP and PCBs	No further action was granted by the City of Vernon after the removal of equipment, trenches, and sump. Soil testing along north and south sides not conducted.
	Former various pits and sumps	Seventeen pits and sumps located in Building 112A were cleaned and chipped to expose clean concrete. Following this, the pits were visually inspected by the City of Vernon, backfilled with pea gravel, and capped with concrete. The size of these features ranged between approximately 2 to 3 cubic feet. Reportedly these pits and sumps were free of liquids but did not show watermarks or rust stains. No further environmental action was recommended by Ursic (1999a).	Ursic (1999a)	J&G	REC	TPH and PCBs	Soil testing below these features does not appear to have been conducted.
	Waste asbestos and refractory pit	During construction of a sanitary sewer line, a small area formerly used to dispose of refractory brick and furnace insulation was uncovered in the southeast corner of the parking lot east of Building 112A. Analysis of the insulation indicated it contained asbestos. The area was excavated and backfilled with clean fill. The referenced report does not state the size of the excavation or the volume of material removed, but photographs suggest the excavation was at least 6 to 8 feet deep and approximately 50 feet in one lateral dimension. Closure was requested from the City of Vernon.	Ursic (1999a)	J&G	OEC	ACM	Closure was requested by Alcoa.
	Tube mill solvent wash tank	A fire incident report dated July 23, 1982 reported a flash fire had occurred in the tube mill solvent wash tank. Location of the tank was not specified.	City of Vernon (1982)	Fire Dept.	HREC	Stoddard solvent and VOCs	The type of solvent in tank was not identified the in the incident report.

TABLE 3
SUMMARY OF POTENTIAL ENVIRONMENTAL ISSUES

Area/ Building	Potential Environmental Issue	Summary	Reference	Source	REC Assessment	Potential COCs	Comments
Building 112A	PCBs in fluid systems	The potential for PCBs to leach from equipment cleaned of PCB-containing oil in 1989 and 1990 was noted in the referenced report. Testing of oil from selected equipment was recommended.	Enviro-Wise (1998)	J&G	OEC	PCBs and Oils	Other hydraulic lifts remain at the subject property, including the hydraulic lifts associated with the vertical pits (hydraulic rams left in place between 30 and 70 feet bgs) and the hydraulic lift in Building 104.
		Two hydraulic fluid samples collected from a crane and a scalper located in Building 112A and analyzed for PCBs did not contain analytes above laboratory reporting limits.	MFG (1998)	J&G			
	Site reconnaissance observation - Hazardous materials storage area	Radial and circular cracks consistent with subsidence features were observed in the concrete slab around the blind sump in the hazardous materials storage area. With the exception of these cracks, the concrete in the storage area was in good condition with no significant staining.	--	Site Visit	REC	TPH and PCBs	Spills in the storage area could impact the underlying soil.
	Site reconnaissance observation - Satellite hazardous waste accumulation area	Oil was observed within the plastic secondary containment units at the satellite hazardous waste storage area. The concrete slab in this area was oil stained and in poor condition, and oily chip were present. The satellite accumulation area is located in the southern portion of the Building 112A in the vicinity of the Stoddard solvent plumes.	--	Site Visit	REC	TPH and PCBs	Concrete around this area was stained and in poor condition.
	Site reconnaissance observation - Stained concrete floor	Black stained concrete flooring was observed west of the hazardous material storage area approximately 50 by 30 feet. Concrete in this area was in fair condition.	--	Site Visit	REC	TPH and PCBs	PCB-impacted wood block flooring was previously removed from this area and PCBs may be present. Concrete in this area was in fair condition.
	Site reconnaissance observation - Pits and trenches for existing machines	Trenches and pits covered with steel plates were observed around most of the cutting machines, including the scalper, saws, and mills. Visual observation of the interior of the trenches was not conducted. Lubricating oils are used in these processes.	--	Site Visit	REC	TPH	Concrete trenches containing hydraulic oil piping may be a source of TPH to soil underlying the concrete trenches and pits.
	Site reconnaissance observation - Plate rotator and Hyde-Mechanical saw	Oily chips, oil and oil staining was observed around the base of the plate rotator and water/oil collection sump at the Hyde-Mechanical saw. Concrete slab near the plate rotator was in fair condition and the concrete slab near the Hyde-Mechanical saw was in poor condition. Waste oil drums were stored in this area.	--	Site Visit	REC	TPH and PCBs	Oil spills around the machines may be a potential source of TPH to the underlying soil.
	Site reconnaissance observation - Tool and saw cage	A square sump covered with a steel plate was observed inside a tool and small saw cage. The concrete slab in this area was in fair to good condition with no major staining observed.	--	Site Visit	REC	TPH and VOCs	Spills in the storage area could impact the underlying soil.
	Site reconnaissance observation - Excess storage area	A number of unlabeled containers (plastic drums) with fluids were observed in the excess equipment storage area, along with the storage of hazardous materials (see Tables 10 and 11). One drum was turned upside down on top of a plastic secondary containment unit to drain. The secondary containment unit was filled with oily liquids.	--	Site Visit	OEC	TPH and others	Spills in this area could impact the underlying soil.
Building 106	Former pits, sumps, and trenches and former truck shop	Assessment of subsurface soils beneath Building 106 was conducted under oversight of the City of Vernon in 1996. Eleven soil borings to depths between 6 and 151 feet bgs were completed within Building 106. PCBs were not detected in 14 soil samples collected between 5 and 65 feet bgs. Thirty samples collected between depths of 5 and 145 feet bgs were analyzed for petroleum hydrocarbons: TVPH was detected at 400 mg/kg at a depth of 80 feet bgs in the southeast corner of the building; associated BTEX concentrations in this sample were 0.77, 4.6, 7.4, and 26 mg/kg, respectively. TCE was reported at a concentration of 140 ug/kg in two soil samples collected from depths of 55 feet bgs at locations in the northern and western portions of the building (MKC 1996). Reportedly, a former truck shop was located in this area and gasoline was stored in drums on bare ground during the 1950s. According to the referenced report, no further action for soil was required by the City of Vernon.	Enviro-Wise (1998)	J&G	REC	TPH and VOCs (aromatic and TCE)	No further action was granted by City of Vernon. No additional evaluation of TCE at 55 feet or TPH at 80 feet appears to have been conducted. Anecdotal information suggested that the TCE was due to perched groundwater from an off-site source; however, Building 106 is located in the northwest corner of the subject property relatively far from potential off-site, upgradient sources. No evaluation of potential impacts to groundwater conducted in this area.
	Common press trench, press pits, north and south bottle bays, concrete vaults 10, 11 and 12	These features were closed according to procedures approved by the City of Vernon that included removal of debris and liquid, steam cleaning the surfaces, chip dark stained surfaces with an air hammer, backfill, and cap with 6 to 8 inches of concrete. Prior to backfilling, the trench, pits, bays, and vaults were inspected by the City of Vernon. Piping associated with these features was sealed with concrete or expanding foam. No further action was requested from the City of Vernon.	Ursic (1999b)	J&G	REC	TPH and PCBs	No further action was requested by Alcoa for these features. Soil testing does not appear to have been conducted in the area of these features.
	Former press 2 French drain	According to the referenced document, a French drain was discovered in the floor of the Press 2 pit during its inspection in June 1999. The surface of the drain reportedly contained 19,000 mg/kg TRPH and 150 mg/kg PCBs. SVOCs were not detected. Soil was removed beneath the drain to a depth of approximately 7 feet below the base of the pit. PCBs were detected at a concentration of 0.14 mg/kg in the confirmation sample collected from the base of the excavation. The excavation was backfilled with concrete. No further action was requested from the City of Vernon.	Ursic (1999b)	J&G	HREC	TPH and PCBs	A request for no further action was made by Alcoa for these features. Soil impacted with low concentrations of PCBs remain in place.

TABLE 3
SUMMARY OF POTENTIAL ENVIRONMENTAL ISSUES

Area/ Building	Potential Environmental Issue	Summary	Reference	Source	REC Assessment	Potential COCs	Comments
	Site reconnaissance observations - stained flooring	The floor in this area was a combination of concrete and asphalt. The floor covering was in fair to poor condition, and appeared to be stained and dusty throughout.	--	Site Visit	REC	PCBs	PCB-containing wood block flooring was removed from this area previously. Based on the condition of the concrete the underlying soil may contain PCBs.
Building 108	Extrusion press 4	A single extrusion press was located in Building 108. This press was cleaned, backfilled with pea gravel, and capped with concrete. Conduits to the press sealed with foam prior to backfilling. No further action for Building 108 facilities was requested in the referenced document. Drawing suggests that there were three elongated press pits (Enviro-Wise, 1998). Press 4 was used for about one year.	Ursic (1999b)	J&G	REC	TPH and PCBs	Soil testing does not appear to have been conducted. A no further action request for Building 108 was requested by Alcoa.
	Site reconnaissance observations - stained flooring	The floor in this area was a combination of concrete and asphalt. The floor covering was in fair to poor condition, and appeared to be stained and dusty throughout. Reported PCB concentrations in concrete core samples ranged from 73 to 71,000 ug/kg (MFG, 1998).	--	Site Visit	REC	PCBs	PCB-containing wood block flooring was removed from this area previously. Based on the condition of the concrete the underlying soil may contain PCBs.
Building 110	Deep swindell quench pits	Deep swindell heat treat quench pits were noted at this location of the site and recommended for assessment in 1990.	Enviro-Wise (1998)	J&G	HREC	PCBs, TPH, and Metals	No further action was granted by City of Vernon.
		In 1998, the swindell furnaces and associated structures were removed. Following removal, two soil samples were collected from depths of approximately 65 and 70 feet bgs, or about 5 and 10 feet below the base of the pit, and analyzed for TRPH, PCBs, phenols, and metals. TRPH, PCBs, SVOCs, and phenols were not detected in samples analyzed; metals concentrations were interpreted to be "not significant." Each pit was backfilled with approximately 500 tons of pea gravel and capped with concrete. Conduits into the pits were sealed with foam. No further action at this location was recommended in the referenced document. Pit is approximately 55 to 60 feet deep.	Ursic (1999b)	J&G			
	Site reconnaissance observations - fuel leak and sump/drain	A front end loader was observed to be leaking oil or fuel onto the concrete slab, which appeared to be in poor to fair condition.	--	Site Visit	OEC	TPH	Oil should be cleaned up and leaking equipment fixed to terminate the leak.
		A square sump/drain was observed along the southern wall in the area of Building 110 near two above ground concrete pads. The surrounding area is used for paint and flammable materials storage.	--	Site Visit	REC	TPH, VOC and PCBs	The floor drain may be a potential release point for chemicals to the underlying soil (historical and current).
Building 114 (former)	Trenches, pits, and tunnels	Assessment and remediation of PCBs in trenches, pits, tunnels, and the foundation at Building 114 was conducted under a US EPA consent agreement. According to Ursic (1999b), EPA approved subsequent PCB remediation in December 1991 and required no further action.	Enviro-Wise (1998)	J&G	HREC	PCBs	No further action was granted by EPA following remediation.
	Press 9 pit, extractor car pit, and impacted fill material	Building 114 is no longer present at the site and its former location currently is a parking lot. During demolition, the lowermost floors of two press pits and a high pressure bottle bay were left in place at a depth of approximately 8 feet bgs. Several areas of soil beneath Building 114 were assessed and remediated during decommissioning of the building in 1998: the extractor car pit, fill material below the upper floor, fill used to close the Press 9 pit in the 1970s, and two small areas of discolored soil along the north wall of the building. Excavated materials contained PCBs at concentrations up to 46 mg/kg. Four belowgrade concrete structures remain (about 7 feet bgs).	Ursic (1999b)	J&G	REC	PCBs	PCB-impacted soil remains in place above industrial PRGs. The area is an asphalt paved parking lot today.
	Historical "well"	During demolition of Building 114, a 10-inch diameter vertical casing was discovered near the northwest corner of the building. The casing was measured to be approximately 64 feet and was dry at the time. The casing was destroyed according to City of Vernon well destruction guidelines by backfilling with concrete and cutting it off approximately 10 feet bgs.	Ursic (1999b)	J&G	HREC	Unknown	Soil testing was not conducted, but the casing was destroyed according to City of Vernon guidelines. Locating this feature may not be feasible and it is unlikely that this "well" acts as a preferential downward flow pathway.
Building 12 (former)	Foundry	The northern end of Building 12, a foundry formerly was located on the subject property. Building 12 was demolished in 1997 and its former location currently is a parking lot. During foundation removal, materials other than soil were observed: blue-white granules, dark brown sand, and gray powder deposited over each other in layers. Analysis of these layers indicated elevated concentrations of copper (up to 21,000 mg/kg) and aluminum (up to 320,000 mg/kg aluminum). Eventually, the whole foundation area of Building 12 was removed to a depth of 4 feet bgs to remove this material. The referenced report states "large subsurface structures (i.e. pits, sumps) were not associated with Building 12;" however, a map included in this document shows two sump locations within the northern part of Building 12 on the subject property. A letter from the City of Vernon dated March 16, 1998 states that this part of the site has met closure requirements. Building was demolished and area was converted to a parking lot.	Ursic (1998b)	J&G	HREC	Metals	City of Vernon provided closure for this building. Soil removal was conducted for elevated levels of metals (copper and zinc). Residual concentrations of metals are likely to present in soil.

TABLE 3
SUMMARY OF POTENTIAL ENVIRONMENTAL ISSUES

Area/ Building	Potential Environmental Issue	Summary	Reference	Source	REC Assessment	Potential COCs	Comments
Building 104	Degassing precipitate	Degassing precipitate was noted as accumulating along the ground surface outside western wall of Building 104. This material may contain hazardous substances found in aluminum dross. Phase II assessment was recommended.	Enviro-Wise (1998)	J&G	HREC	Metals	Concentrations of metals detected in soil beneath the particulate were less than industrial PRGs.
		Two samples of soil collected beneath this precipitate were analyzed for metals and reportedly contained up to 193 mg/kg copper and 607 mg/kg zinc.	MFG (1998)	J&G			
	Storm water Outfall No. 7	Storm water Outfall No. 7 is located outside the northwest corner of Building 104. During January 1999, soil samples were collected within the outfall area and analyzed for PCBs, TEPH, TPH C21-C28), SVOCs, phenols, and metals. PCBs were detected at concentrations up to 66 mg/kg at 1 foot bgs, but not detected in samples collected at depths of 7 and 10 feet bgs. 50 mg/kg arsenic was reported in one soil sample collected at 5 feet bgs. Based on these data, the outfall area was excavated to a depth of 6 feet bgs, but lateral extent of the excavation was limited by railroad tracks, a wall, and a sidewalk. The maximum concentration of PCBs in confirmation samples collected from the base of the excavation was 4.5 mg/kg. Ursic (1999b) recommended no further action at this location.	Ursic (1999b)	J&G	REC	PCBs, TPH and Metals	Soil impacted with PCBs and metals remain in place because the excavation limits were reached at 6 feet. PCB concentrations in soil left in place are above industrial PRGs. No further action was requested by Alcoa.
	Lubricating oil ASTs	During a site reconnaissance conducted in 1998 by LFR, three ASTs for lubricating oils were observed in the truck repair shop area of the building. Pink staining and black grime were noted on floors.	LFR (1998)	J&G	HREC	TPH	Soil testing below the concrete floor was not conducted.
	Stoddard solvent spill	A hazardous materials incident report indicates 300 gallons of Stoddard solvent were spilled on the driveway in the "ingot area" near the "spur track" on June 3, 1983. The report indicates the spill was covered with "company sand."	City of Vernon (1983)	Fire Dept.	REC	Stoddard solvent (TPH)	Soil testing below the release was not conducted, but may have occurred within the area currently being addressed for Stoddard solvent.
	Concrete Flooring - HMC saw	PCBs detected in concrete flooring at concentrations between 0.044 to 30 mg/kg (in the vicinity of HMC saw).	MFG (1998)	J&G	REC	PCBs	Soil testing below concrete has not been conducted.
	Site reconnaissance observation - Pits and trenches	Trenches and pits covered with steel plates were observed around the furnaces and saw. Hydraulic oils are used in this building and oily water is generated during the molding process. Process water is transported by piping within the trenches to the cooling tower.	--	Site Visit	REC	TPH	Concrete trenches containing hydraulic oil piping may be a potential source of TPH to soil underlying the concrete pits and trenches.
	Site reconnaissance observation - Deep vertical pits and hydraulic system	Three deep vertical pits used for molding long aluminum sheets formerly were located in this building. One of the vertical pits currently is present in front of the Remelt Furnace #3. According to Mr. Clinkenbeard, the other two pits, including the associated hydraulic cylinders, which are located between 30 and 70 feet bgs and used PCB-containing oil, were backfilled in place.	--	Site Visit	REC	PCBs and TPH	Soil testing adjacent to the pits has not been conducted; however, oil rams typically are sealed and are considered to have a low to medium probability of impacting soil. Verify historical pit locations.
	Site reconnaissance observation - unknown circular feature	An unknown circular features (possible floor drain) was noted in the far western portion of the machine shop. The concrete slab in this area was in poor condition. Lubricating oil and cleaners are used in the machine shop.	--	Site Visit	REC	TPH and VOCs	The unknown feature may be a potential release point for the discharge of chemicals to the underlying soil.
Building 64	Site reconnaissance observation - Dross storage	This building is used for dross storage and cooling. The concrete flooring appeared to be in poor condition and in some areas appeared earthen or powdery (grayish white).	--	Site Visit	REC	Metals	Metal-laden dust and debris are likely present on surfaces in this building. Due to the poor condition of the floor, metals may be present in shallow soil at this location.
Courtyard Area	Fuel USTs	Three fuel USTs formerly were located in the courtyard east of Building 104. Soil sampling conducted in 1990 reported diesel fuel in soil at concentrations up to 19,000 mg/kg. UST removal and over excavation of impacted soil was conducted under the oversight of the City of Vernon in 1992. Impacted soils were stockpiled on site for bioremediation. Tanks were used to fuel the furnaces (OHM 1992).	Enviro-Wise (1998)	J&G	HREC	TPH and Aromatic VOCs	Bioremediation of excavated soil was conducted on Parcel 6 (pers. comm. with Mr. Ursic on June 6, 2005). Residual levels of TPH may remain in soil after bioremediation.
		A letter from the City of Vernon dated February 24, 1994 acknowledges that treatment of TPH-impacted soil is adequate and allows for placement of all 800 cubic yards of soil on site as backfill.	City of Vernon (1994)	H&EC			
		The City of Vernon acknowledged completion of the UST removals in a letter dated October 10, 1995, but because contamination was found at several areas of the site, the City requested a remedial action plan.	City of Vernon (1995)	RWQCB UST			
		Three fuel UST were noted in the court yard between Buildings 64, 104 and 112 on a 1949 Sanborn map.	EDR (2005d)	EDR			

TABLE 3
SUMMARY OF POTENTIAL ENVIRONMENTAL ISSUES

Area/ Building	Potential Environmental Issue	Summary	Reference	Source	REC Assessment	Potential COCs	Comments
Cooling Tower Area	Cooling Tower	Historical water treatment chemicals may have included hexavalent chromium. Hot and cold wells for the cooling system are constructed below grade (approximately 12 feet). Phase II assessment was recommended.	Enviro-Wise (1998)	J&G	REC	metals (Cr 6+)	Soil testing for Cr6+ does not appear to have been conducted in this area.
		60,000 ug/kg PCBs were reported in a soil sample collected from a depth of 1 foot bgs near the hot well of the cooling tower. Lower PCB concentrations were observed in soil near the cold well (100 ug/kg), TEPH was detected at 56 mg/kg and As at 33.8 mg/kg.	MFG (1998)	J&G	REC	PCBs and Metals	Closure was requested by Alcoa. PCB-impacted soil remains in place above PRGs. As at 60 mg/kg is also present in soil.
		Five soil borings were completed to a depth of 10 feet bgs in an area north of the hot well. Soil samples from these borings were analyzed for TEPH, TPH (C21-C28), PCBs, and metals. The referenced report contains original laboratory reports, but only the TEPH and PCB data are tabulated and discussed; metals data were not addressed. TEPH was not detected in soil samples analyzed. PCB concentrations ranged from 0.16 to 21 mg/kg in samples collected at 1 foot bgs; 0.23 and 0.31 mg/kg PCBs were reported in samples collected from 5 and 7 feet bgs, respectively, in one boring. The area was excavated in two stages to a depth of 3 feet bgs; two confirmation samples collected at a depth of 3 feet bgs contained 0.6 and 6.9 mg/kg PCBs. The excavation was backfilled with clean road base and closure was requested from the City of Vernon. Below the area excavated, As was detected at 5, 7 and 11 feet bgs at concentrations of 60, 34, and 57 mg/kg, resepctively.	Ursic (1999a)	J&G			
	Site reconnaissance observation - Oil skimmer	Oil is skimmed from the water in the hot well of the cooling tower. Skimmed oil is transferred to a 55-gallon steel drum located adjacent to the hot well. Spills observed by EPA during RCRA compliance inspection of the facility.	--	Site Visit	REC	TPH and Metals	Spill previous reported by EPA in 2003.
	Storm water Outfall No. 6	Discolored soil on the ground surface was noted from the fence line onto the adjacent rail spur. Phase II assessment was recommended.	Enviro-Wise (1998)	J&G	REC	TPH, PCBs, and Metals	Closure was requested by Alcoa. PCB-impacted soil remains in place above PRGs. Phenols were not detected in soil. Elevated metals detected in one boring at 1-foot in the area excavated to 2-feet (assumed).
		A soil sample collected from a depth of 1 foot bgs contained 70,000 ug/kg PCBs, 1400 mg/kg TEPH, 55 mg/kg TRPH, 47.9 mg/kg total chromium, 539 mg/kg copper, 448 mg/kg lead, and 2370 mg/kg zinc. Soluble copper and lead in this sample were 56.5 and 17.7 mg/l, respectively.	MFG (1998)	J&G			
		Five soil borings were completed to a depth of 10 feet bgs within the outfall area. Soil samples from these borings were analyzed for TEPH, TPH (C21-C28), PCBs, metals, and phenols. The referenced report contains original laboratory reports, but only the TEPH and PCB data are tabulated and discussed. 540 mg/kg TEPH was detected at a depth of 1 foot bgs in one boring, but was not detected in other samples. PCBs ranged from 0.10 to 39 mg/kg at 1 foot bgs, from 0.06 to 0.15 between 5 and 7 feet bgs, and were not detected in samples collected at 10 feet bgs. Subsequently, the storm water outfall area was excavated to a depth of 2 feet. Confirmation samples collected at the base of the excavation contained 1.1 to 7.1 mg/kg PCBs. Based on these data, Ursic (1999a) recommended regulatory closure of this area. The excavation was backfilled with clean road base.	Ursic (1999a)	J&G			
	Waste disposal pit	An open topped, dirt based waste pit was noted south of the cooling tower on historical drawings. Phase II assessment was recommended.	Enviro-Wise (1998)	J&G	REC/HREC	TPH and PCBs	Closure was requested by Alcoa, need to confirm. PCB-impacted soil remains in place above PRGs and TPH-impacted soil remains in place at concentrations above RWQCB screening levels. Additional excavation of impacted soil was limited by stability of excavation and the location of the rail spur. Aerial photographs reviewed from EDR (2005c) suggests this area of the subject property was unpaved in 1947 and 1956. Elevated metals concentrations were detected before excavation activities (less than PRGs after excavation). Phenol was reported as not detected.
		Soil samples collected between depths of 15 and 30 feet bgs from a soil boring completed within the former pit contained 16,000 to 85,000 mg/kg TEPH, 12,000 to 100,000 mg/kg TRPH, and 1400 to 11,000 mg/kg PCBs. VOC related hydrocarbons n-butylbenzene (nBB), sec-butylbenzene (sBB), ethylebenzene (EB), isopropylbenzene, (IPB), isopropyltoluene (IPT), n-butylbenzene (nBB), n-proprylbenzene (nPB), toluene (T), trimethylbenzene (TMB), xylenes (X), and naphthalene were detected in soil at a concentration up to 1900 ug/kg. Metals Ba, Cr, Cu, Ni, Vn, and Zn at concentrations below the PRGs.	MFG (1998)	J&G			
		Thirteen additional soil borings were completed within the pit to depths of 45 to 50 feet bgs. The pit was estimated to be approximately 30 feet deep with lateral dimensions of approximately 50 feet by 80 feet. Soil samples from these borings were analyzed for TPH (C21-C28), TEPH, PCBs, metals, and phenols. The referenced report contains original laboratory reports, but only the TEPH and PCB data are tabulated and discussed. 94,000 mg/kg TEPH was reported at a depth of 35 feet bgs; samples collected between 40 and 50 feet bgs did not contain TEPH above laboratory reporting limits. Maximum reported PCB concentration was 52 mg/kg at a depth of 10 feet bgs, but PCBs were reported to a depth of 40 feet bgs at 0.08 mg/kg. Almost 3,000 tons of soil were excavated from the pit. Confirmation samples that contained up to 42,000 mg/kg TPH (C21-C28) and 5.2 mg/kg PCBs and discolored soil indicated impacted soil was still in place (north and west walls and southwest bottom of excavtion), but unstable soil and adjacent structures prohibited further excavation. In addition, VOC related hydrocarbons T, X, IPT, nPB, naphthalene, IPB, IPT, and TMBs were detected in soil at concentrations between 4.4 and 75 ug/kg. Metals As, Cr, Cu, Pb, Mo, Ni were also detected. Well AOW-7 was destroyed during the excavation activities. The excavation was backfilled with clean soil and road base and regulatory closure was requested from the City of Vernon.	Ursic (1999a)	J&G			

TABLE 3
SUMMARY OF POTENTIAL ENVIRONMENTAL ISSUES

Area/ Building	Potential Environmental Issue	Summary	Reference	Source	REC Assessment	Potential COCs	Comments
Parcel 6	Standpipe	A 4-inch within a 6-inch annular standpipe cut off near ground surface was noted west of the rail spur and near a former gate location. Former use of the standpipe was not noted.	Enviro-Wise (1998)	J&G	HREC	Unknown	Soil testing was not conducted around the stand pipe, but locating this feature may not be feasible.
		No odors or staining were noted, and FID readings at the pipe did not indicate the presence of flammable gas; therefore, the standpipe was cut off below ground surface and sealed with mortar.	MFG (1998)	J&G			
	Waste ceramic dump (former area of Building 135)	Building 135 was demolished in 1996 and the foundation removed in 1998 (Ursic, 1998a). According to Ursic (1999c), sampling of stockpiled soil removed from the former foundation area of Building 135 indicated elevated concentrations of lead (3400 mg/kg) and other metals (160 mg/kg total chromium, 650 mg/kg copper, and 1400 mg/kg zinc). Excavation of this area in May and June 1999 uncovered a shallow dump site used to dispose of waste ceramics, primarily dinnerware. Dimensions of the area excavated was not provided in the referenced document, but photographs indicate the excavation was approximately 30 to 40 feet on each side and about 3 feet deep. Two soil samples collected from the base of the excavation contained 34 and 6.3 mg/kg lead. The excavation was backfilled with clean fill and covered with asphalt.	Ursic (1999c)	J&G	HREC	Metals	Residual levels of lead remain in soil, but are below the California PRG of 150 mg/kg.
	Historical use of Parcel 6 (Lots 10 and 11)	Limited historical documentation exists for this portion of the site. Aluminum dross formerly was stored on the east end of Building 135. A rail spur and associated loading dock is indicated on historical site drawings. Phase II assessment was recommended.	Enviro-Wise (1998)	J&G	REC	TPH	Records reviewed do not indicate that additional testing was conducted to assess the potential source or extent of the TPH-impacted soil.
		Fourteen soil samples were collected from seven soil borings completed to a depth of 10 feet bgs at Parcel 6. One soil sample collected at a depth of 10 feet bgs in the south-central part of Parcel 6 reportedly contained 540 mg/kg TEPH near the load dock. Metals detected in soil below PRGs.	MFG (1998)	J&G	HREC		
		Parcel 6 Lot 11 was historically part of Brass-Ross Tool Co. (RBT) located at 5306 Boyle Avenue. Features and buildings noted from 1929 and 1949 Sanborn maps included: a pipe cutting building, a paint storage building, lumber storage, a power saw building, a testing building, storage sheds, carpentry and pattern shop, and a paint spray booth.	EDR (2005d)	EDR	REC	TPH , VOCs, Metals and SVOCs	Limited information is available for these historical operations.
		Parcel 6 lot 10 was historically part of Ready Cut Homes Inc. Construction Supply. Features and buildings noted from the 1929 Sanborn map included: an unidentified small building and lumber storage.	EDR (2005d)	EDR	REC	SVOCs, Metals and VOCs	If wood treatment was conducted on site, creosote, metals (arsenic), and VOCs may be present in the subsurface.
	Site reconnaissance observations - Parcel 6 Lot 11	A number of concrete building slabs were observed in this area of Parcel 6. Two large areas of oil staining were observed on the asphalt and concrete in the southern portion of the lot. The concrete and asphalt in the area was in poor condition.	--	Site Visit	REC/OEC	Unknown and TPH	Shallow soil impacts may be associated with the oil stained areas. The potential source of the staining was not identified during our assessment. Limited information is available for the historical operations conducted in buildings formerly located in this area. Oil stained areas should be profiled and disposed.
	Site reconnaissance observations - Parcel 6 Lot 10	An unknown gray-white powdery material was observed on the asphalt between two empty chip hoppers on Lot 10.	--	Site Visit	OEC	Metals	
		A small burned area was observed on the asphalt and palm tree adjacent to the western fence line on Lot 10 (Photograph 233). According to Mr. Clinkenbeard, the fire resulted from a third party cutting pieces of metal equipment.	--	Site Visit	OEC	Metals	
Adjacent and Upgradient Properties	Impacted soil and/or groundwater	3027 Fruitland Ave (Detrex Corp), 5375 S Boyle Ave (U.S. Filter), 3300 Slauson Ave (Bethlehem Steel), 3300 Slauson Ave, Vernon Industrial Plaza (Lots 1-6), 3040 E Slauson Ave (Trico Industries, Inc.), 2911 Slauson Ave (Henry Company), 3165 E. Slauson (Chemclear of Los Angeles Inc.), and 4900 S. Boyle (NI Industries)	EDR (2005a)	EDR	REC	VOCs	Listed facilities are potential off-site sources of chlorinated VOCs in groundwater. Existing on-site groundwater data indicate VOCs are present in groundwater at concentrations greater than MCLs.
	Other Features	An inactive BP Pipeline is located along the east side of Boyle Avenue adjacent to the subject property.	Fire Marshal		REC	TPH and VOCs	

Abbreviations:
BTEX = benzene, toluene, ethylbenzene, and xylenes.
TEPH = total extractable petroleum hydrocarbons.
TVPH = total volatile petroleum hydrocarbons.
TPH (C21-C28) = total petroleum hydrocarbons with carbon chain distribution C21 to C28.
TRPH = total recoverable petroleum hydrocarbons.
VOCs = volatile organic compounds.
ACM = asbestos containing material.
FID = flame ionization detector.
PCBs = polychlorinated biphenyls.
AST = aboveground storage tank.
UST = underground storage tank.
TCE = trichloroethene.
PCE = tetrachloroethene.
MC = methylene chloride.
DCA = dichloroethane.
DCE = dichloroethene.
TCA = trichloroethane.
CCL4 = carbon tetrachloride.
CF = chloroform.
Cr 6+ = hexavalent chromium.

RWQCB = California Regional Water Quality Control Board -- Los Angeles Region.
US EPA = United States Environmental Protection Agency.
J&G = Jenkens & Gitchrist, LLP.
H&EC = City of Vernon Health & Environmental Controls.
Building Dept. = City of Vernon Building Department.
Fire Dept. = City of Vernon Fire Department.
G&M = Geraghty & Miller Environmental Services.
LFR = Levine Fricke & Associates.
EDR = Environmental Data Resources, Inc.
PRGs = US EPA Preliminary Remediation Goals.

bgs = below ground surface.
mg/kg = milligrams per kilogram.
ug/kg = micrograms per kilogram.
ug/l = micrograms per liter.
ppmv = parts per million per volume.

TABLE 4
SUMMARY OF STORED HAZARDOUS MATERIALS
PHASE I Environmental Site Assessment
Pechiney Cast Plate Facility
Vernon, California

Location	Material	Number of Containers	Capacity (Volume)	Container Type	Secondary Containment	Ground Cover
Building 112A						
Hazardous Materials Storage Area (Building 112A)	Diesel fuel	4	55-gallon	Steel drums	Pallet within berm	Concrete
	Uni-Lube 68, 32 and 100	5	55-gallon	Steel drums	Pallet within berm	Concrete
	Mobile Lube	1	55-gallon	Steel drums	Pallet within berm	Concrete
	Premium Way Lube 220	4	55-gallon	Steel drums	Pallet within berm	Concrete
	HASO Alaska	2	55-gallon	Steel drums	Pallet within berm	Concrete
	AW Hydraulic Oil	2	55-gallon	Steel drums	Pallet within berm	Concrete
	Synthetic Lube Oil		55-gallon	Steel drums	Pallet within berm	Concrete
	Amerilube 1003		55-gallon	Steel drums	Pallet within berm	Concrete
	Castrol Oil DB	12	55-gallon	Steel drums	Pallet within berm	Concrete
	Magnesium chloride	7 x 4	55-gallon	Cardboard	Pallet within berm	Concrete
	Empty Drums	27	55-gallon	Steel drums	Pallet within berm	Concrete
	Diatomite	1	Pallet	Bags	Pallet within berm	Concrete
	absorbent materials	1	Pallet	Bags	Pallet within berm	Concrete
	absorbent pigs				Pallet within berm	Concrete
	Paint	7	1-gallon	cans	Flammable cabinet within berm	Concrete
	Paint thinner	3	1-gallon	cans	Flammable cabinet within berm	Concrete
	Ammonium hydroxide	3	1-liter	Plastic	Flammable cabinet within berm	Concrete
	Dry Film Graphite lub	3	1-gallon	Plastic	Flammable cabinet within berm	Concrete
	Wise-Chem E-115A	5	5-gallon	Metal	Flammable cabinet within berm	Concrete
	Wise-Chem E-115B	5	1-quart	Metal	Flammable cabinet within berm	Concrete
	Glycol Ether	1	1-quart	Plastic	Flammable cabinet within berm	Concrete
	Isopropyl Alcohol (IPA)	2	1-gallon	Plastic	Flammable cabinet within berm	Concrete
	Kerosene	1	1-gallon		Flammable cabinet within berm	Concrete

TABLE 4
SUMMARY OF STORED HAZARDOUS MATERIALS

PHASE I Environmental Site Assessment
Pechiney Cast Plate Facility
Vernon, California

Location	Material	Number of Containers	Capacity (Volume)	Container Type	Secondary Containment	Ground Cover
Outside the Hazardous Materials Storage Area (Building 112A)	Ammonium hydroxide	4	1-gallon	Plastic	Pallet	Concrete
	MiraChem 500	5 x 4	1-gallon		Pallet	Concrete
	Magnesium chloride	4	55-gallon	Cardboard	Pallet	Concrete
Inside Building 112A (tool cage)	Compressed gas cylinders					Concrete
						Concrete
						Concrete
Overflow storage and Miscellaneous Storage Area	Paint	8	1-gallon	Cans	Pallet	Concrete
	Aerosol spray cans	3		Cans	Pallet	Concrete
	Liquid binder (HPO4)	5 x 4	1-gallon	Plastic	Box on Pallet	Concrete
	Reftech	22	5-gallon	Plastic	Pallet	Concrete
	Activator	15	1-gallon	Plastic	Pallet	Concrete
	All-purpose Cleaner					
	Refractory bricks, mastic, plastic mortar, bentonite pellets	3	Pallet		Pallet	Concrete
	Unknown (fluids in the bottom)	1	55-gallon	Plastic	Pallet	Concrete
	Lubricating oils	1	unknown		Drum draining into a secondary plastic drum container	Concrete
	Sweeping compound		40-gallon	Cardboard	Pallet	Concrete
	Unknown (Corrosive)	1	55-gallon (1/3 full)	Plastic	Pallet	Concrete
	Nalco - 1140 (antiskid agent) 1	2	Carboy	Plastic	Pallet	Concrete
	Colloidal Silica	5	1-gallon	Plastic	Pallet	Concrete
	Empty drums	39	55-gallon	Steel	Pallet	Concrete
	Mastic	5	1-gallon	Plastic	Pallet	Concrete
	Super Mortar	1	Pallet	Bags	Pallet	Concrete
	Thermbond (Refractory)	1	Pallet	Bags	Pallet	Concrete
	Plicast	4	Pallets		Pallet	Concrete
	Refractory and Mortar	3	Pallets		Pallet	Concrete
	Thermatibe	1	Pallet		Pallet	Concrete
	Battery	1			Pallet	Concrete
	Liquid A Cleaning Compound	1	55-gallon (1/2 Full)	Plastic	Pallet	Concrete

TABLE 4
SUMMARY OF STORED HAZARDOUS MATERIALS
PHASE I Environmental Site Assessment
Pechiney Cast Plate Facility
Vernon, California

Location	Material	Number of Containers	Capacity (Volume)	Container Type	Secondary Containment	Ground Cover
West of Spool Storage	Paint	40	1-gallon	Cans	Pallet	Concrete
	Paint Thinner	2	1-gallon	Cans	Pallet	Concrete
	Cement (dried)	1	55-gallon (3/4 full)	Steel		Concrete
	Various Oils		1-quart	Cans	Flammable Cabinet	Concrete
	Paint		1-gallon	Cans	Flammable Cabinet	Concrete
	Alcohol		1-gallon	Cans	Flammable Cabinet	Concrete
	Naphtha		1-gallon	Cans	Flammable Cabinet	Concrete
	IPA		5-gallon	Plastic	Flammable Cabinet	Concrete
	Weed Killer					
	Tar seal	3	5-gallon	Cans	Flammable Cabinet	Concrete
	Unknown	1	Carboy	Plastic	Plastic	Concrete
	Batteries	5				Concrete
Adjacent to Transformer	Nitrogen	3	Cylinders	Metal	Fenced storage	Concrete
	Chlorine	4	Cylinders	Metal	Fenced storage	Concrete
Cooling Tower Area						
Cooling Tower Area	Oil (skimmed oil)	1	55-gallon	Steel		Concrete
	Argon (liquid)	1	AST	Steel		Asphalt
	CWT-S1-008	1		Plastic		Asphalt
	Agarite 500	1		Plastic		Asphalt
	Nalsperse 7308	1		Plastic		Asphalt
	Empty gas cylinders					Asphalt
	Hydrogen Peroxide 35X	4	55-gallon	Plastic		Asphalt
	Sodium Hydroxide	1	30-gallon	Plastic		Asphalt
Building 104						
North end of Furnace Building 104	Gear Oil	1	55-gallon	Steel	Plastic	Concrete
	Hasco Alaska	1	55-gallon	Steel	Plastic	Concrete
	Lubricating Oil	1	55-gallon	Steel	Plastic	Concrete
	High Temperature Grease	1	35-gallon	Steel		Concrete
Furnace Area	Boron Nitride	1	55-gallon	Steel	Plastic	Concrete
	AEP-38	2	40-gallon	Cardboard	Pallet	Concrete

TABLE 5
SUMMARY OF STORED HAZARDOUS WASTE
PHASE I Environmental Site Assessment
Pechiney Cast Plate Facility
Vernon, California

Location	Material	Number of Containers	Capacity (Volume)	Container Type	Secondary Containment	Ground Cover
Building 112A						
Main Satellite Accumulation Area Adjacent to Hazardous Materials Storage Area	Oil rags			Cardboard	Plastic	Concrete
	Waste oil		55-gallon	Steel drums	Plastic	Concrete
	Amerilube Oil		55-gallon	Steel drums	Plastic	Concrete
	Hydraulic Oil		55-gallon	Steel drums	Plastic	Concrete
	Oily chips	5	5-gallon	Plastic	Plastic	Concrete
	Oil Filters	1	55-gallon	Steel drums	Plastic	Concrete
	Waste Lubricating Oils	6	55-gallon	Steel drums	Plastic	Concrete
	Lubricants	4	5-gallon	Plastic	Flammable cabinet	Concrete
Building 124						
Hazardous Waste Storage Building	WD-40	1	5-gallon	Steel	Pallet	Concrete
	Empty drums	20	55-gallon	Steel	Pallet	Concrete
	HASCO Alaska	empty	55-gallon	Steel	Pallet	Concrete
	Oil mixed with Water	1	55-gallon	Steel	Pallet	Concrete
	Oily pigs	1	55-gallon	Steel	Pallet	Concrete
	Oily rags	1		Cardboard	Pallet	Concrete
	Bag House Dust	7		Cardboard	Pallet	Concrete
	Cleaning supplies					
Building 104 and 64						
North end of Furnace Building 104	Used oil	1	55-gallon	Steel	Plastic	Concrete
Furnace Area	Dross	4	Bin	Steel		Concrete