Application No: A.11-06-003
Exhibit No.:
Witness: Daniel S. Baerman

| | | |
|---|---|---|
| Application of San Diego Gas & Electric Company (U 902-E) for Approval of: (i) Contract Administration, Least Cost Dispatch and Power Procurement Activities in 2010, (ii) Costs Related to those Activities Recorded to the Energy Resource Recovery Account and Transition Cost Balancing Account in 2010 and (iii) Costs Recorded in Related Regulatory Accounts in 2010 | ) | A.11-06-003 (Filed June 1, 2011) |

**SAN DIEGO GAS & ELECTRIC COMPANY**

**PREPARED REBUTTAL TESTIMONY OF**

**DANIEL S. BAERMAN**

# (PUBLIC VERSION)

**BEFORE THE PUBLIC UTILITIES COMMISSION**
**OF THE STATE OF CALIFORNIA**

**FEBRUARY 9, 2012**

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**PREPARED REBUTTAL TESTIMONY OF**
**DANIEL S. BAERMAN**
**ON BEHALF OF SDG&E**

## I. INTRODUCTION

On December 16, 2011, the Division of Ratepayer Advocates ("DRA") submitted its report on San Diego Gas & Electric Company's ("SDG&E's") 2010 Energy Resource Recovery Account ("ERRA") compliance review Application ("A.") 11-06-003. The purpose of my rebuttal testimony is to address the conclusions and recommendations in Chapter 5, Utility Retained Generation ("URG"), of DRA's Report. Specifically, my rebuttal will:

- provide a justification of SDG&E's URG outages and internal controls during 2010; and
- refute DRA's assertion that SDG&E declined to provide full and complete responses to DRA discovery regarding URG outages.

According to its Report, DRA reviewed and verified SDG&E's prudent management of its electric generating assets. Specifically, DRA reviewed various plant outages, both scheduled and forced, "to ensure that ratepayers do not suffer any economic losses due to any unreasonable URG management errors or omissions."[1] "DRA also reviewed SDG&E's internal audit program for its URG facilities."[2] Based on this review, DRA "found no evidence that SDG&E's management of its URG was unreasonable."[3] DRA also reported that it had "no objection at this time to the SDG&E's request for ERRA recovery for its URG fuel expenses."[4]

DRA's conclusions are consistent with how SDG&E's outage record compares to industry averages. In particular, an informative indicator of how competently an electric generation site is being run is to compare its forced outage rate and availability to the industry average. The forced outage rate shows the hours of unit failure as a percentage of the total hours of the availability of that unit. Availability simply expresses, as a percentage, the amount of time a unit is available for any given period of time. A lower forced outage rate is better and a higher

[1] DRA Report at p. 5-1.
[2] DRA Report at p. 5-1.
[3] DRA Report at p. 5-1.
[4] DRA Report at p. 5-1.

availability is better. For example, in 2010, SDG&E's Palomar Energy Center achieved a forced outage rate of 1.5% compared to an industry average of 5.04%.[5] The Palomar Energy Center's 2010 availability was 94.1% compared to an industry average of 89.55%.[6] The Miramar Energy Facility ("MEF") peaker plant achieved an average availability of 94.7% and a combined forced outage factor of 3.1%. The forced outage factor is a ratio of forced outage hours and period hours expressed as a percentage. These performance metrics provide evidence of a well-run operation.

Contrary to this record and its own conclusions, however, DRA goes on to generally claim later in its Report that "SDG&E Did Not Justify Its Outages"[7] and "provided no explanation or justification for their occurrence."[8] These latter statements are inexplicable because in addition to being contrary to DRA's own conclusions, in fact, SDG&E provided substantial information on outages in response to the following DRA data requests[9]:

- DRA's Master Data Request ("MDR") questions 1.1.14.1 through 1.1.14.19, 1.1.15, 1.1.17;
- DR-05 – questions 5.1.1.1 through 5.1.1.9, 5.1.2.4, 5.1.2.5, 5.1.2.6, 5.1.2.7; and
- DR-07 – questions 7.1.1 and 7.1.3.

DRA ignored these data requests and responses when it stated that "(g)iven the paucity of information SDG&E provided for its URG outages, DRA does not make any explicit finding of reasonableness or unreasonableness of SDG&E's URG outages during the Record Period."[10] Moreover, as explained in more detail below, SDG&E's URG management was reasonable and SDG&E maintains reasonable internal controls with respect to such management.

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[5] North American Electric Reliability Corporation (NERC), Generating Availability Report 2006-2010. This report is available on NERC's website: http://www.nerc.com/.
[6] North American Electric Reliability Corporation (NERC), Generating Availability Report 2006-2010. This report is available on NERC's website: http://www.nerc.com/.
[7] DRA Report at p. 5-4.
[8] DRA Report at p. 5-4.
[9] SDG&E's responses to these data requests are included as Attachments A through C. Please note that SDG&E submitted revised responses to DRA's data request questions 5.1.2.4, 5.1.2.7 and MDR 1.1.14, regarding the August 5, 2010 outage at Palomar in order to clarify and provide a more detailed description. The attached responses reflect these revisions. Also, please note that some of the responses are confidential/privileged pursuant to applicable provisions of D.06-06-066, G.O. 66-C and PUC Code Sections 583 and 454.5(g).
[10] DRA Report at p. 5-5.

## II. SDG&E'S URG MANAGEMENT DURING THE RECORD PERIOD WAS REASONABLE

DRA stated that "SDG&E acknowledged its URG outages in its Prepared Testimony, but provided no explanation or justification for their occurrence."[11] This statement is contrary the Direct Testimony of SDG&E witness Andrew Scates. In particular, Mr. Scates provided a complete list of forced outages of 24 hours or longer, that included start dates and times, end dates and times, and the reason for each outage.[12] Moreover, it has been SDG&E's practice in these ERRA compliance proceedings to provide a listing of any significant outages (lasting 24 hours or more) in its prepared direct testimony, knowing that DRA's MDR includes detailed questions asking for specific outage information. Thus, while SDG&E may agree that some outage details were not provided in its prepared direct testimony, substantial detail was provided in responses to the MDR and subsequent data requests, specifically DR-05 and DR-07.

It should also be noted that scheduled outages at SDG&E's URG sites are pre-approved by the California Independent System Operator ("CAISO") and a unique Scheduling and Logging for the ISO of California ("SLIC") number is attached to each outage by the CAISO. SLIC numbers were provided to DRA for each relevant outage. Additionally, DRA received the purpose for each outage, dates, times of outage commencement and termination, as well as dates and times of each generating unit's return to service.[13]

Similar information was provided for unscheduled outages. SDG&E's response to MDR question 1.1.14 included the CAISO SLIC number for each outage, the purpose of the outage and duration, along with dates and times that the generating units were returned to service. Also, DRA was provided with an outage cause evaluation report regarding an end-of-year outage at Palomar. As explained in further detail below, since this outage extended well into the next record period, its evaluation will be completed during the next ERRA compliance proceeding.

DRA went on to request much of the same information in DR-05. Question 5.1 asked for outage dates, times, durations, etc. even though this information had been provided previously in responses to MDR questions 1.1.4, 1.1.12 and 1.1.14. DR-05 question 5.1.2 then requests the same outage information previously provided in MDR question 1.1.4. SDG&E's response to

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[11] DRA Report at p. 5-4.
[12] SDG&E Application 11-06-003, Prepared Direct Testimony of Andrew Scates, Appendix 1, p. AS-1.
[13] DRA MDR, Q1.1.12.

DR-05 question 5.1.2.2 provided the same outage information requested and provided in response to MDR question 1.1.4. SDG&E's response to DR-05 question 5.1.2.3 provided information previously requested and provided in response to MDR question 1.1.5. SDG&E's responses to DR-05 questions 5.1.2.4, 5.1.2.5, 5.1.2.6 and 5.1.2.7 also provided details on outages and output capacity de-rates.

Even though complete outage information was provided in responses to DR-05, DRA requested much of the same outage information in DR-07. SDG&E's response to question 7.1.3 included additional documents regarding the end-of-year Palomar outage, including communications to the California Public Utilities Commission ("CPUC") and California Energy Commission ("CEC") related to that outage.

In light of the information requested and provided, it is difficult to understand how DRA came to the conclusion that the "paucity of information SDG&E provided for its URG outages"[14] has stymied their ability to determine reasonableness in 2010.

## III. SDG&E MAINTAINS REASONABLE AND SUFFICIENT INTERNAL CONTROLS WITH RESPECT TO ITS URG MANAGEMENT

DRA also generally asserts that SDG&E did not present any evidence of internal controls or "prudent management of its URGs and outages."[15] This statement ignores the fact that SDG&E is required to comply with the CPUC's General Order ("GO") 167 - Enforcement of Maintenance and Operation Standards for Electric Generating Facilities. Section 11 of GO 167 specifically outlines each generator owner's obligation to cooperate with the CPUC audits, investigations and inspections. Generally, this process includes the following steps:

- When a forced/unplanned outage occurs, SDG&E sends the CPUC representative assigned to the plant, the Consumer Protection and Safety Division ("CPSD") Utilities Engineer, a courtesy email informing him/her of the outage.
- The courtesy email includes a basic description of the outage, how many people are assigned to fix the outage, and if plant personnel have enough information to anticipate the length of the outage.

[14] DRA Report at p. 5-5.
[15] DRA Report at p. 5-4.

- Once the CPSD Utilities Engineer receives the email, a site visit is scheduled and a data request letter is sent to SDG&E management.
- During the site visit, the CPSD Utilities Engineer makes inquiries as to the cause of the outage, outage duration, details of repairs required and extent of work to be done, equipment affected, evidence of repairs, and other questions pertaining to the recovery.
- The data request letter typically requires SDG&E to provide control room operator logs, generation curve in megawatts ("MW"), a root cause investigation or summary of the corrective actions, and general photographs that illustrate the outage details.
- After reviewing the response to the initial data request, the CPSD Utilities Engineer may issue additional data requests to obtain additional information for review.
- The requests for data continue until the CPSD closes the inquiry.

Additionally, in certain cases (e.g., catastrophic loss of equipment), SDG&E may conduct internal investigations. Such an investigation report was provided to DRA in response to DRA-07 question 7.1.3 and MDR question 1.1.14. The report was produced following the failure of a generator step-up transformer at the Palomar Energy Center. Although the failure of this transformer occurred in the last days of 2010, the ensuing outage extended into the spring of 2011, which is beyond the record period of this proceeding. Accordingly, SDG&E proposed that review of this particular outage be postponed until the next ERRA compliance review for the 2011 record year, after the investigation is complete, including the investigation being conducted by CPSD. DRA agreed and recommends that they "conduct this evaluation when SDG&E makes its 2012 ERRA compliance filing."[16]

In addition to what may be provided to the CPSD Utilities Engineer, each outage may provoke the creation of related documentation including, but not limited to, equipment affected, parts replaced, work required to accomplish outage related tasks, costs of repairs, actions that may be taken to mitigate a repeat of the failure, change to operating procedures required to address component or plant issues, changes to maintenance practices to improve reliability,

[16] DRA Report at p. 5-6.

communications with an original equipment manufacturer and implementation of upgrades to improve reliability. Evidence of the above can be found in parts ordering documents, SAP work orders, vendor invoices, root cause investigation reports, management of change documents, and communications with vendors.

Finally, Sempra Energy's Internal Audit department also conducts audits of SDG&E's generating facilities. Consistent with auditing standards, the frequency and nature of such audits is determined based on an annual risk assessment which determines the areas of the company, including utility operations, to be audited. This risk-based analysis may change from year to year and in some years may include audits of URG operations.

## IV. SDG&E HAS PROVIDED FULL AND COMPLETE RESPONSES TO DRA DISCOVERY

DRA reported that "SDG&E declined to provide full and complete responses to DRA discovery."[17] DRA then goes on to discuss their alleged frustrating efforts to convince SDG&E to provide documentation related to the Palomar transformer fire outage, which, as noted above, began in the last days of 2010 and lasted to the spring of 2011. DRA's argument is misleading because despite the fact that SDG&E believed that review of the Palomar transformer fire should be postponed until the next ERRA compliance review for 2011, SDG&E did provide documents related to this outage, including the internal report it had provided to CPSD and the CEC (refer to SDG&E's responses to MDR question 1.1.14 and DR-07 question 7.1.3 in Attachment A and C, respectively). In any event, DRA's complaints with respect to the Palomar transformer fire outage are moot in light of their agreement to postpone review of this outage.

With respect to discovery pertaining to other outages, SDG&E did object to certain overbroad and burdensome requests that were not likely to lead to the discovery of admissible evidence. Despite SDG&E's objections to these types of defective data requests, it should be noted that SDG&E did in fact provide responses, subject to the objections. Examples of these instances are DR-05 questions 5.1.1, 5.1.2.1, 5.1.2.2, 5.1.2.3, 5.1.2.4, 5.1.2.5, 5.1.2.6, 5.1.2.7 and DR-07 questions 7.1.1, 7.1.2 and 7.1.3.[18] In light of SDG&E's responses, DRA's discovery complaints are without merit.

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[17] DRA Report at p. 5-4.

[18] SDG&E provided no response to DR-05 question 5.1.2.13 because it requested labor costs clearly outside the scope of the ERRA proceeding.

## V. CONCLUSION

Although DRA did not seek any specific disallowance or finding regarding URG and has agreed to postpone its review of the end-of-year outage at Palomar, SDG&E nevertheless believed it needed to rebut DRA's general statements challenging SDG&E's justification of outages, evidence of internal controls and responses to data requests. In light of the foregoing facts, and those contained in the Direct Testimony of Andrew Scates and the attached data request responses, DRA's general statements should be disregarded as inconsistent with the record in this proceeding.

This concludes my prepared rebuttal testimony.

## VI. QUALIFICATIONS

My name is Daniel S. Baerman. My business address is 2300 Harveson Place, Escondido, CA 92029. I am employed by San Diego Gas & Electric Company ("SDG&E") as Director, Electric Generation.

My responsibilities include setting policy and standards for the management of SDG&E's electric generation assets. In this capacity I am responsible for managing, directing, planning and coordinating the site operation and maintenance of the Palomar Energy Center and Miramar Energy Facility.

I hold a Bachelor of Science degree in Marine Engineering from the United States Merchant Marine Academy at Kings Point, New York.

I have been in my current position since 2005 and have worked in the electric generation field for over 25 years.

# Attachment A

SDG&E's Responses to DRA's Master Data Request

**DRA MDR DATA REQUEST**
**SDG&E 2010 ERRA COMPLIANCE**
**A.11-06-003**
**DATE RECEIVED: JUNE 1, 2011**
**DATE RESPONDED: JUNE 30, 2011**

1.1.4. Provide, in a spreadsheet, for each and every plant, and for each and every unit of plants with multiple units, owned (wholly or partially) or operated by the utility at any time during the Record Period:

1.1.4.1. its name, or other unique identifier,
1.1.4.2. basic type and/or configuration
1.1.4.3. fuel,
1.1.4.4. specific physical location,
1.1.4.5. date this plant or unit first put in service by any party,
1.1.4.6. ownership percentage by this utility during the Record Period, if any,
1.1.4.7. first date of ownership by this utility under current utility ownership, if any,
1.1.4.8. identity of operator during the Record Period,
1.1.4.9. first date of operation by this utility under current period of utility operation, if any,
1.1.4.10. manufacturer's nameplate capacity,
1.1.4.11. CAISO-recognized capacity during the Record Period,
1.1.4.12. first day and hour of the Record Period this unit or plant was operated (specify whether hour-beginning or hour ending format) during the current Record Period,
1.1.4.13. last day and hour of the Record Period this unit or plant was operated (specify whether hour-beginning or hour ending format) during the current Record Period,
1.1.4.14. whether or not any scheduled outages of this plant were incurred during the Record Period; Note: include any instances of capacity or generation factor reduction or derating as instances of a (partial) outage.
1.1.4.15. whether or not any unscheduled outages occurred during the Record Period; Note: include any instances of capacity or generation factor reduction or derating as instances of a (partial) outage;
1.1.4.16. The average ramp rate, in hourly-average MW per hour, at which this plant or unit recovers from an outage, from the time it goes back on line until it is capable of operating at full rated power.
1.1.4.17. The time it takes, in hours and minutes, for this plant or unit to achieve its fully rated power output after going back on-line after an outage, and
1.1.4.18. the most-recent forecast, made prior to the current Record Period, of annual and monthly energy output for the current Record Period, made in any regulatory proceeding.

**DRA MDR DATA REQUEST**
**SDG&E 2010 ERRA COMPLIANCE**
**A.11-06-003**
**DATE RECEIVED: JUNE 1, 2011**
**DATE RESPONDED: JUNE 30, 2011**

**SDG&E Response 1.1.4:**
**The attachment ERRA 2010 MDR Q1.xlsx is considered confidential/privileged information pursuant to applicable provisions of D.06-06-066, GO 66-C and PUC Code Sections 583 & 454.5(g).**

Refer to the attached spreadsheet *ERRA 2010 MDR Q1.xlsx* attached to (Question 1.1.1.4).

**The following is confidential/privileged pursuant to applicable provisions of D.06-06-066, G.O. 66-C and PUC Code Sec. 583 and Sec. 454.5 (g).**

| **1.1.4** | **Questions:** | | | | | |
|---|---|---|---|---|---|---|
| 1.1.4.1 | Unit Name | Miramar Unit 1 | Miramar Unit 2 | Palomar Unit 1 | Palomar Unit 2 | Palomar Unit 3 |
| 1.1.4.2 | Basic type | Simple Cycle CT | Simple Cycle CT | Combined Cycle CT | Combined Cycle CT | Combined Cycle Steam Turbine |
| 1.1.4.3 | Fuel | Gas Fuel | Gas Fuel | Gas Fuel | Gas Fuel | |
| 1.1.4.4 | Location | 6897 Consolidated Way, San Diego, CA 92121 | 6897 Consolidated Way, San Diego, CA 92121 | 2300 Harveson Place, Escondido, CA 92029 | 2300 Harveson Place, Escondido, CA 92029 | 2300 Harveson Place, Escondido, CA 92029 |
| 1.1.4.5 | Date 1st put in service | 7/26/2005 | 8/8/2009 | 3/3/2006 | 3/3/2006 | 3/3/2006 |
| 1.1.4.6 | Ownership % | 100% | 100% | 100% | 100% | 100% |
| 1.1.4.7 | First date of ownership by utility | 7/26/2005 | 8/8/2009 | 3/3/2006 | 3/3/2006 | 3/3/2006 |
| 1.1.4.8 | Identity of Operator | SDG&E | SDG&E | SDG&E | SDG&E | SDG&E |
| 1.1.4.9 | First Date of operations by utility | 7/26/2005 | 8/8/2009 | 4/3/2006 | 4/3/2006 | 4/3/2006 |
| 1.1.4.10 | Name plate capacity | Nominal Rating = 49 MW | Nominal Rating = 49 MW | Nominal Rating @ 75 F = 168 MW | Nominal Rating @ 75 F = 168 MW | Nominal Rating is 230 MW |
| 1.1.4.11 | CAISO-recognized capacity | 48 MW | 47.9 MW | Pmax is 565 MW, ISO doesn't divide between units. | | |
| 1.1.4.12 | First day and hour operated | 1/3/2010 17:29 | 1/3/2010 17:30 | 1/1/2010 0:00 | 1/1/2010 0:00 | 1/1/2010 0:00 |
| 1.1.4.13 | Last day and hour operated | 12/31/2010 19:58 | 12/31/2010 19:58 | 12/31/2010 23:59 | 12/31/2010 23:59 | 12/31/2010 23:59 |
| 1.1.4.14 | Scheduled outages? | Yes | Yes | Yes | Yes | Yes |
| 1.1.4.15 | Unscheduled outages? | Yes | Yes | Yes | Yes | Yes |
| 1.1.4.16 | Average Ramp Rate after outage | 12 | 12 | 12 | 12 | 1 |
| 1.1.4.17 | Time to reach Full Capacity after outage | 10 minutes | 10 minutes | 5.5 hours | 5.5 hours | 5.5 hours |
| 1.1.4.18 | Forecast | See below | See below | See below | See below | See below |

| 1.1.4.18 | ERRA Forecast (MWh) | Miramar Unit 1 | Miramar Unit 2 | Palomar (total only) |
|---|---|---|---|---|
| | January | [redacted] | | |
| | February | | | |
| | March | | | |
| | April | | | |
| | May | | | |
| | June | | | |
| | July | | | |
| | August | | | |
| | September | | | |
| | October | | | |
| | November | | | |
| | December | | | |
| | 2010 Total | | | |

**DRA MDR DATA REQUEST**
**SDG&E 2010 ERRA COMPLIANCE**
**A.11-06-003**
**DATE RECEIVED: JUNE 1, 2011**
**DATE RESPONDED: JUNE 30, 2011**

1.1.5. Does SDG&E own or operate any fossil-fuel fired generating plants? If so, then provide, for each and every plant and each unit of a plant with multiple units, owned (wholly or partially) or operated by the utility at any time during the Record Period which burned any fossil fuel, using the same name, or other unique identifier, used in item 1.1.3., above, for each calendar month of the Record Period and, for comparison purposes, for the previous Record Period:

1.1.5.1. the type of fuel consumed,
1.1.5.2. the quality of fuel consumed, if applicable
1.1.5.3. the quantity of fuel consumed,
1.1.5.4. the quantity of thermal energy diverted to any in-plant purpose, other than the generation of electricity, if any,
1.1.5.5. thermal energy (if any) delivered to any other party or customer; and,
1.1.5.6. the electrical energy produced (for any purpose),
1.1.5.7. the electrical energy delivered to the grid or to any other party or customer, and
1.1.5.8. for comparison purposes, the same information for each plant or unit for the previous Record Period, as applicable.

**SDG&E Response 1.1.5:**

**The attachment ERRA 2010 MDR Q1.xlsx is considered confidential/privileged information pursuant to applicable provisions of D.06-06-066, GO 66-C and PUC Code Sections 583 & 454.5(g).**

Refer to the attached spreadsheet *ERRA 2010 MDR Q1.xlsx* attached to (Question 1.1.1.4).

**The following is confidential/privileged pursuant to applicable provisions of D.06-06-066, G.O. 66-C and PUC Code Sec. 583 and Sec. 454.5 (**

**1.1.5**

Palomar 2010

| Month | heat content | ST | ST | CT1 | CT1 | CT1 | CT2 | CT2 | CT2 | Duct Burners | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | (MMBtu/kscf) | gross generation | net generation | gross generation | net generation | fuel use | gross generation | net generation | fuel use | fuel use | fuel use |
| | | MWhr | MWhr | MWhr | MWhr | MMBtu | MWhr | MWhr | MMBtu | MMBtu | MMBtu |
| January | 1.0130 | [redacted] | | | | | | | | | |
| February | 1.0110 | | | | | | | | | | |
| March | 1.0120 | | | | | | | | | | |
| April | 1.0160 | | | | | | | | | | |
| May | 1.0130 | | | | | | | | | | |
| June | 1.0130 | | | | | | | | | | |
| July | 1.0190 | | | | | | | | | | |
| August | 1.0180 | | | | | | | | | | |
| September | 1.0140 | | | | | | | | | | |
| October | 1.0160 | | | | | | | | | | |
| November | 1.0120 | | | | | | | | | | |
| December | 1.0100 | | | | | | | | | | |
| 2010 Total | | | | | | | | | | | |

Miramar 2010

| Month | heat content | MEF 1 | MEF 1 | MEF 1 | MEF 1 | MEF 2 | MEF 2 | MEF 2 | MEF 2 |
|---|---|---|---|---|---|---|---|---|---|
| | (MMBtu/kscf) | gross generation | station service | net generation | fuel use | gross generation | station service | net generation | fuel use |
| | | MWh | MWh | MWh | MMBtu | MWh | MWh | MWh | MMBtu |
| January | 1.0130 | [redacted] | | | | | | | |
| February | 1.0110 | | | | | | | | |
| March | 1.0120 | | | | | | | | |
| April | 1.0160 | | | | | | | | |
| May | 1.0130 | | | | | | | | |
| June | 1.0130 | | | | | | | | |
| July | 1.0190 | | | | | | | | |
| August | 1.0180 | | | | | | | | |
| September | 1.0140 | | | | | | | | |
| October | 1.0160 | | | | | | | | |
| November | 1.0120 | | | | | | | | |
| December | 1.0100 | | | | | | | | |
| 2010 Total | | | | | | | | | |

**DRA MDR DATA REQUEST**
**SDG&E 2010 ERRA COMPLIANCE**
**A.11-06-003**
**DATE RECEIVED: JUNE 1, 2011**
**DATE RESPONDED: JUNE 30, 2011**

1.1.12. For each and every plant and for each unit of plants with multiple units, where such plant or unit was at least 25 MW in rated capacity, which incurred any scheduled outage(s) during the Record Period, of duration of 24 hours or more, please identify each and every such scheduled outage, specifying:

1.1.12.1. the purpose for which it was scheduled,
1.1.12.2. the date on which this outage for this purpose was first placed on any schedule,
1.1.12.3. can the date reported above be substantiated with contemporaneous records?
1.1.12.4. the beginning date and time originally scheduled for this outage, as of the date on which it was first placed on any schedule,
1.1.12.5. can the date and time reported above be substantiated with contemporaneous records?
1.1.12.6. the duration originally scheduled for this outage, as of the date on which it was first placed on any schedule, can the date reported above be substantiated with contemporaneous records?
1.1.12.7. can the duration reported above be substantiated with contemporaneous records?
1.1.12.8. the date and hour it actually began, given as the date and time there was any reduction in capacity associated with this outage,
1.1.12.9. the date and hour when the ultimate reduction in capacity of this unit, due to this outage, was reached;
1.1.12.10. the date and hour the outage ended, given as the date and time the unit was available for start-up after the remediation of the outage cause,
1.1.12.11. the date and hour that the unit was fully back on line as needed, without any reduction in capacity due to this outage,
1.1.12.12. if the actual date and time the outage began was different from the first scheduled beginning date and time by more than 24 hours, provide date and the reason(s) for each and every time the outage was rescheduled by more than 24 hours.
1.1.12.13. if the actual duration exceeded the earliest scheduled duration by more than 24 hours, provide an explanation for each extension of the outage duration.
1.1.12.14. were any outage reports, incident reports, Root Cause Evaluations, or any other summaries, evaluations, or reports produced as a result of this outage and, if so, provide a brief summary of any findings and conclusions drawn. Attach a copy of any documents addressing these evaluations and conclusions.
1.1.12.15. were any modifications to preventive maintenance procedures or schedules made as a result of this outage or similar outages and, if so, provide a summary of all such PM procedures or schedules changed;

**DRA MDR DATA REQUEST**
**SDG&E 2010 ERRA COMPLIANCE**
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**DATE RECEIVED: JUNE 1, 2011**
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**SDG&E Response 1.1.12:**

**The attachment ERRA 2010 MDR Q1.xlsx is considered confidential/privileged information pursuant to applicable provisions of D.06-06-066, GO 66-C and PUC Code Sections 583 & 454.5(g).**

Refer to the attached spreadsheet *ERRA 2010 MDR Q1.xlsx* attached to (Question 1.1.1.4).

**The following is confidential/privileged pursuant to applicable provisions of D.06-06-066, G.O. 66-C and PUC Code Sec. 583 and Sec. 45**

**1.1.12** **Miramar 1 Schedule Outages**

| | | |
|---|---|---|
| 1.1.12.1 | The purpose for which it was scheduled | [redacted] |
| 1.1.12.2, 1.1.12.4,1. 1.12.6 | date first scheduled, time and duration | |
| 1.1.12.3 | Can the date reported above be substantiated with contemporaneous records? | Yes, please see 1.1.12.1 |
| 1.1.12.5 | Can the date and time reported above be substantiated with contemporaneous records? | Yes, please see 1.1.12.1 |
| 1.1.12.7 | Can the duration reported above be substantiated with contemporaneous records? | Yes, please see 1.1.12.1 |
| 1.1.12.8 | Begin Date and time | [redacted] |
| 1.1.12.9 | the date and hour when the ultimate reduction in capacity of this unit, due to this outage, was reached | |
| 1.1.12.10 | Ending Date and Hour | [redacted] |
| 1.1.12.11 | The date and hour that the unit was fully back on line as needed, without any reduction in capacity due to this outage, | |
| 1.1.12.12 | If the actual date and time the outage began was different from the first scheduled beginning date and time by more than 24 hours, provide date and the reason(s) for each and every time the outage was rescheduled by more than 24 hours. | [redacted] |
| 1.1.12.13 | If the actual duration exceeded the earliest scheduled duration by more than 24 hours, provide an explanation for each extension of the outage duration | [redacted] |
| 1.1.12.14 | Were any outage reports, incident reports, Root Cause Evaluations, or any other summaries, evaluations, or reports produced as a result of this outage and, if so, provide a brief summary of any findings and conclusions drawn. Attach a copy of any documents addressing these evaluations and conclusions. | N/A |
| 1.1.12.15 | Were any modifications to preventive maintenance procedures or schedules made as a result of this outage or similar outages and, if so, provide a summary of all such PM procedures or schedules changed | N/A |

**Miramar 2 Schedule Outages**

| | | | |
|---|---|---|---|
| 1.1.12.1 | The purpose for which it was scheduled | [redacted] | [redacted] |
| 1.1.12.2, 1.1.12.4,1. 1.12.6 | date first scheduled, time and duration | | |
| 1.1.12.3 | Can the date reported above be substantiated with contemporaneous records? | Yes, please see 1.1.12.1 | Yes, please see 1.1.12.1 |
| 1.1.12.5 | Can the date and time reported above be substantiated with contemporaneous records? | Yes, please see 1.1.12.1 | Yes, please see 1.1.12.1 |
| 1.1.12.7 | Can the duration reported above be substantiated with contemporaneous records? | Yes, please see 1.1.12.1 | Yes, please see 1.1.12.1 |
| 1.1.12.8 | Begin Date and time | [redacted] | [redacted] |
| 1.1.12.9 | the date and hour when the ultimate reduction in capacity of this unit, due to this outage, was reached | | |
| 1.1.12.10 | Ending Date and Hour | [redacted] | [redacted] |
| 1.1.12.11 | The date and hour that the unit was fully back on line as needed, without any reduction in capacity due to this outage, | | |
| 1.1.12.12 | If the actual date and time the outage began was different from the first scheduled beginning date and time by more than 24 hours, provide date and the reason(s) for each and every time the outage was rescheduled by more than 24 hours. | [redacted] | [redacted] |
| 1.1.12.13 | If the actual duration exceeded the earliest scheduled duration by more than 24 hours, provide an explanation for each extension of the outage duration | [redacted] | [redacted] |

| | | | |
|---|---|---|---|
| 1.1.12.14 | Were any outage reports, incident reports, Root Cause Evaluations, or any other summaries, evaluations, or reports produced as a result of this outage and, if so, provide a brief summary of any findings and conclusions drawn. Attach a copy of any documents addressing these evaluations and conclusions. | [redacted] | [redacted] |
| 1.1.12.15 | Were any modifications to preventive maintenance procedures or schedules made as a result of this outage or similar outages and, if so, provide a summary of all such PM procedures or schedules changed | [redacted] | [redacted] |

**Palomar Scheduled Outages**

| | | |
|---|---|---|
| 1.1.12.1 | The purpose for which it was scheduled | [redacted] |
| 1.1.12.2, 1.1.12.4,1. 1.12.6 | date first scheduled, time and duration | [redacted] |
| 1.1.12.3 | Can the date reported above be substantiated with contemporaneous records? | Yes, please see 1.1.12.1 |
| 1.1.12.5 | Can the date and time reported above be substantiated with contemporaneous records? | Yes, please see 1.1.12.1 |
| 1.1.12.7 | Can the duration reported above be substantiated with contemporaneous records? | Yes, please see 1.1.12.1 |
| 1.1.12.8 | Begin Date and time | [redacted] |
| 1.1.12.9 | the date and hour when the ultimate reduction in capacity of this unit, due to this outage, was reached | [redacted] |
| 1.1.12.10 | Ending Date and Hour | [redacted] |
| 1.1.12.11 | The date and hour that the unit was fully back on line as needed, without any reduction in capacity due to this outage, | [redacted] |
| 1.1.12.12 | If the actual date and time the outage began was different from the first scheduled beginning date and time by more than 24 hours, provide date and the reason(s) for each and every time the outage was rescheduled by more than 24 hours. | [redacted] |
| 1.1.12.13 | If the actual duration exceeded the earliest scheduled duration by more than 24 hours, provide an explanation for each extension of the outage duration | [redacted] |
| 1.1.12.14 | Were any outage reports, incident reports, Root Cause Evaluations, or any other summaries, evaluations, or reports produced as a result of this outage and, if so, provide a brief summary of any findings and conclusions drawn. Attach a copy of any documents addressing these evaluations and conclusions. | [redacted] |
| 1.1.12.15 | Were any modifications to preventive maintenance procedures or schedules made as a result of this outage or similar outages and, if so, provide a summary of all such PM procedures or schedules changed | [redacted] |

**DRA MDR DATA REQUEST**
**SDG&E 2010 ERRA COMPLIANCE**
**A.11-06-003**
**DATE RECEIVED: JUNE 1, 2011**
**DATE RESPONDED: JUNE 30, 2011**

1.1.14. For each and every plant and for each unit of plants with multiple units, where such plant or unit was at least 25 MW in rated capacity, which incurred any unscheduled outage(s) during the Record Period, of duration of 24 hours or more, please identify each and every such scheduled outage, specifying:

| | |
|---|---|
| 1.1.14.1. | The date and hour of the occurrence of the apparent initiating event or proximate cause for this outage; |
| 1.1.14.2. | can the date and time reported above be substantiated with contemporaneous records? |
| 1.1.14.3. | the apparent initiating event or proximate cause of the outage, as first reported to management, |
| 1.1.14.4. | The date the apparent initiating event or proximate cause was first reported to management; |
| 1.1.14.5. | can the date reported above be substantiated with contemporaneous records? |
| 1.1.14.6. | the date and hour this outage began, given as the date and time there was any reduction in capacity associated with this outage, |
| 1.1.14.7. | the date and hour when the ultimate reduction in capacity of this unit, due to this outage, was reached; |
| 1.1.14.8. | the date and hour this outage ended, given as the date and time the unit was available for start-up after the remediation of the outage cause, |
| 1.1.14.9. | the date and hour that the unit was fully back on line as needed, without any reduction in available capacity due to this outage, |
| 1.1.14.10. | the time initially estimated for the duration of this outage, as first reported to management, |
| 1.1.14.11. | can the estimated duration reported above be substantiated with contemporaneous records? |
| 1.1.14.12. | The date the initial estimate of outage duration was first reported to management; |
| 1.1.14.13. | can the date reported above be substantiated with contemporaneous records? |
| 1.1.14.14. | if the actual duration exceeded the earliest estimated duration by more than 24 hours, the date and time the actual duration was first reported to management, |
| 1.1.14.15. | if the actual duration exceeded the earliest scheduled duration by more than 24 hours, provide the reason(s) for each extension of the estimated duration. |
| 1.1.14.16. | if, by the time the plant was returned to service, the cause of the outage was determined to be different from that originally reported to management, the date and time the determined cause of the outage was first reported to management, |
| 1.1.14.17. | can the date and time reported above be substantiated with contemporaneous records? |

1.1.14.18. were any outage reports, incident reports, Root Cause Evaluations or any other summaries, evaluations or reports produced as a result of this outage and, if so, provide a brief summary of any findings and conclusions drawn. Attach a copy of any documents addressing these evaluations and conclusions.

1.1.14.19. were any modifications to preventive maintenance procedures or schedules made as a result of this outage and, if so, provide a summary of all such PM procedures or schedules changed;.

**DRA MDR DATA REQUEST**
**SDG&E 2010 ERRA COMPLIANCE**
**A.11-06-003**
**DATE RECEIVED: JUNE 1, 2011**
**DATE RESPONDED: JUNE 30, 2011**

**SDG&E Response 1.1.14:**

**The attachment ERRA 2010 MDR Q1.xlsx is considered confidential/privileged information pursuant to applicable provisions of D.06-06-066, GO 66-C and PUC Code Sections 583 & 454.5(g).**

Refer to the attached spreadsheet *ERRA 2010 MDR Q1.xlsx* attached to (Question 1.1.1.4).

For question 1.1.14.18, please refer to attachment *RCI-MEF II UAT Failure.pdf.* Also, it should be noted that with respect to the unscheduled Palomar outage beginning on December 22, 2010, the vast majority of its duration took place in 2011 (the outage ended on March 25, 2011). Accordingly, review of this particular outage is out of scope in this ERRA compliance proceeding and should be delayed until the next ERRA compliance proceeding. Subject to and without waiving this objection, SDG&E is producing a report, inserted below and which has already been provided to the CEC and CPSD.


PEN GSU1 Failure
Incident Investigatior


Appendix A -
Protection Summary f

# Incident Investigation Report

## Palomar Energy Center Unit 1 Generator Step-Up Transformer Failure

## December 22, 2010

SDGE

A Sempra Energy utility®

April 1, 2010

# Table of Contents

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# 1. Executive Summary

At 12:08PM on December 22, 2010, the Palomar Energy Center (PEC) Combustion Turbine Generator Unit 1 (CTG1) step-up transformer (GSU1) failed, resulting in the opening of Palomar Energy Center Switchyard (PEN) 230 kV circuit breakers 4E and 4T and the 18 kV generator circuit breaker GCB-CTG1-01 within 3.5 cycles, effectively isolating the faulted GSU1 transformer. The scope of this incident investigation focuses on the source of the GSU1 failure and the precipitating events and conditions leading up to the failure.

The failed GSU1 was manufactured by Hyundai Heavy Industries Co., Ltd. in 2004 in Ulsan, Korea and placed into service in 2006. GSU1 nameplate information is as follows:

132/176/220 MVA
ONAN/ONAF/ONAF
230/18 kV
Grounded Wye/Delta Connected
HV De-energized taps, +/- 5.0%, +/-2.5% steps

CTG1 was operating at full load and carrying 165 MW at the time of the failure. The subsequent fire required removing the remaining combustion and steam generators, CTG2 and STG respectively, from service.

The failure was caused by a breakdown in the internal transformer insulation system that resulted in a single line to ground fault with a magnitude of 25,000 A. Protective relaying systems properly operated and tripped the breakers within 3.5 cycles. No transmission system disturbance is known to have occurred at the time of the fault, and no lightning strikes were recorded or heard by plant personnel at the time of the fault.

A forensic teardown was conducted on the transformer which exposed an internal flashover between the 230 kV C Phase ABB draw-lead bushing grounded lower support, lower corona shield, and the tank east end wall. As a result of the internal flashover within GSU1, the internal insulating oil ignited, fueled a fire, and burned for twenty-seven (27) hours.

Although a majority of the physical evidence was destroyed or severely damaged in the GSU1 fire, the available historical information and debris inspection indicate that the December 22, 2010 event consisted of a C Phase to ground fault of 25,000 A internal to the GSU1 transformer tank lasting 3.5 cycles, resulting in a breakdown of the GSU1 insulation system.

The protective relaying system properly operated and cleared the fault in 3.5 cycles, however, the energy dissipated during the fault was sufficient to ignite the oil and cause a catastrophic explosion internal to the transformer tank rupturing the transformer north side wall and east end wall seams, severely damaging B and C Phase 230 kV bushings.

A determination as to the factors that definitively contributed to the breakdown of the GSU1 insulation system, as well as the sequence of fault events that created the discovered arc marks, remains inconclusive.

The investigation concludes that proper maintenance procedures and techniques were in place and practiced prior to the transformer failure, and that GSU1 maintenance was not a contributing factor to the fire.

An internal inspection of GSU1's sister unit, GSU2, to include a detailed analysis of the pressboard insulating cone surrounding the 230 kV bushings, may provide further insight into the construction and design techniques of GSU1 which may have contributed to the GSU1 failure. If the detailed analysis of GSU2, scheduled for May 2011, indicates that there are construction and design techniques that contributed to the GSU1 failure, corrective remedies will be immediately implemented to avoid a possible failure of GSU2.

## 2. Summary of Sequence of Incident Events

Prior to 12:08PM, PEC generating units CTG1, CTG2, and STG were operating under normal, full load generating conditions with output capacities of 165 MW, 165.8 MW, and 213.3 MW, respectively. Transmission and generation system voltages were operating at normal levels. Prior to the occurrence of the event on December 22, 2010, the SDG&E system experienced no transmission system disturbances.

The following is a detailed sequence of events for the incident on December 22, 2010:

| | |
|---|---|
| 12:08PM | 1) Generator core monitor fault alarms. |
| | 2) 230 kV overcurrent relay SEL-351 instantaneous ground and phase units pick up in PEN 230 kV Switchyard. |
| | 3) GSU1 transformer differential relay T-60 operates tripping 230 kV Circuit Breakers 4E and 4T in PEN 230 kV Switchyard and 18 kV CTG1 Generator Circuit Breaker GCB-CTG1-01. |
| | 4) GSU1 transformer differential relay ST-745 operates. |
| 12:10PM | 1) PEC Operator reports fire in GSU1 to 911. |
| | 2) PEC Operator advises SDG&E Grid Operations of fire in GSU1. |
| | 3) SDG&E Grid Operations advises California Independent System Operator (CAISO) of fire in GSU1. |
| 12:18PM | City of Escondido Fire Department is on-site. |
| 1:35PM | PEN 230 kV Circuit Breaker 4W is opened, de-energizing TL23051 (Palomar Energy – Sycamore Canyon 230 kV transmission line) for safety. |
| 1:37PM | PEN 230 kV Circuit Breakers 3T and 3W are opened, de-energizing TL23011 (Encina - Palomar Energy – San Luis Rey 230 kV transmission line) for safety. |
| 3:12PM | PEN 230 kV Circuit Breakers 1W and 2W are opened, de-energizing PEN 230 kV West Bus. |

| | |
|---|---|
| 3:24PM | Decision is made by Director of Generation to shut down remaining generators CTG2 and STG due to heavy soot accumulation in the PEN 230 kV Switchyard from the GSU1 fire. |
| 3:40PM | PEN 230 kV Circuit Breakers 2E and 2T are opened, isolating TL23015 (Palomar Energy – Escondido 230 kV transmission line) from Grid. |
| 3:41PM | STG taken off-line. |
| 3:42PM | CTG2 taken off-line. |
| 4:40PM | SDG&E Grid Operations advises PEC that PEN 230 kV Circuit Breaker 3T will need to be reclosed when next communication is made. |
| 4:45PM | SDG&E Grid Operations advises PEC Operator to close PEN 230 kV Circuit Breaker 3T. |

At 2:24PM on December 23, the City of Escondido Fire Department extinguishes the fire in GSU1.

# 3. Findings

The following are the findings of the investigation related to the condition of GSU1 prior to and after its catastrophic failure. Among others, these findings include an evaluation of the maintenance practices (including all on-line and off-line proactive diagnostics performed on GSU1), transformer accessory design, and visual inspections of all remaining post-failure debris to ascertain the mode of failure of the GSU1 insulation system.

## 3.1. Transformer Oil Quality and Dissolved Gas Analysis

### 3.1.1. Dissolved Gas Analysis

As stated in *C57.104-2008: IEEE Guide for the Interpretation of Gases Generated in Oil-Immersed Transformers* [1]:

> The detection of certain gases generated in an oil-filled transformer in service is frequently the first available indication of a malfunction that may eventually lead to failure if not corrected. Arcing, partial discharge, low-energy sparking, severe overloading, pump motor failure, and overheating in the insulation system...can result in decomposition of the insulating materials and the formation of various combustible and noncombustible gases. Normal operation [of the transformer] will also result in the formation of some [combustible and noncombustible] gases.

Dissolved Gas Analysis (DGA) of GSU1 was performed by Weidmann Diagnostic Solutions on September 27, 2010 after taking an insulating oil sample while GSU1 was in service. Review of these DGA results indicate that Weidmann designated GSU1 a Condition 3 (Condition 1 being least severe, Condition 4 being most severe) transformer based on elevated levels of carbon monoxide dissolved in the transformer oil. Further review of these DGA results reveal that GSU1 is considered a Condition 2 transformer based on established threshold limits for Total Dissolved Combustible Gases (TDCG).

Table 1 of *C57.104-2008: IEEE Guide for the Interpretation of Gases Generated in Oil-Immersed Transformers* indicates that the elevated gas levels reported by Weidmann in the September 27, 2010 GSU1

DGA results correlate to a Condition 3 transformer based on carbon monoxide. Table 1 is annotated with a Note 1 stating:

> Table 1 assumes that no previous tests on the transformer for dissolved gas analysis have been made or that no recent history exists. If a previous analysis exists, it should be reviewed to determine if the situation is stable or unstable. Refer to 6.5.2 for appropriate action(s) to be taken.

Review of the historical GSU1 DGA results dating back to GSU1 energization indicates that GSU1 DGA levels were stable. The determination was made through the application of engineering judgment in conjunction with a review of *C57.104-2008: IEEE Guide for the Interpretation of Gases Generated in Oil-Immersed Transformers,* Section 6.5.2 to keep GSU1 in-service.

As part of San Diego Gas and Electric's (SDG&E) initiative to install on-line bulk electric system transformer monitoring systems, a Kelman on-line dissolved gas monitor was installed on GSU1 and began logging dissolved gas level values starting on November 23, 2009. Review of the logged dissolved gas levels from November 23, 2009 through December 7, 2010 show stable dissolved gas level values. The Kelman unit experienced an identified anomaly which logged increased dissolved gas level values that peaked on August 25, 2010. This dissolved gas level value peak was immediately followed by a decrease to stable dissolved gas level values on August 26, 2010.

With the application of *C57.104-2008: IEEE Guide for the Interpretation of Gases Generated in Oil-Immersed Transformers,* a review of the logged historical gas level values demonstrates stable transformer dissolved gas level values, both prior to and following the Kelman unit anomaly.

As of the September 27, 2010 Weidmann DGA analysis results, it can be concluded that the GSU1 dissolved gas analysis results did not indicate an imminent failure of the unit.

3.1.2. Oil Quality Analysis

Oil quality analysis is an additional suite of transformer insulating oil diagnostics that can be performed in a laboratory concurrent with DGA. Oil quality analysis of GSU1 was also performed by Weidmann

Diagnostic Solutions on September 27, 2010 on the same oil sample discussed in Section 3.1.1.

Review of the September 27, 2010 oil quality results as reported by Weidmann reveal that the dielectric strength of both GSU1 and GSU2 exceeded the IEEE threshold for continued service, which raised plant personnel awareness.

Plant personnel evaluated the additional oil quality analysis results in conjunction with satisfactory Doble electrical test results for the GSU1 insulating system (further discussed in Sections 3.4.2, 3.5.2, and 3.6.2) and determined that GSU1 was acceptable for continued service.

Results from subsequent GSU2 oil analysis performed by Weidmann on January 4, 2011 (post-GSU1 failure) indicate that the dielectric strength as previously reported in September 2010 had retested to above acceptable limits.

It can be concluded that, as of the September 27, 2010, Weidmann oil quality analysis results, did not indicate an imminent failure of the unit and that PEC personnel proceeded appropriately.

## 3.2. System Protection and Relays

SDG&E System Protection and Controls Engineering (SPACE) reviewed all available relay records as collected from the power plant and PEN 230 kV switchyard, concluding that the transformer failed as a result of a Phase C to ground fault of approximately 25,000 A.

An evaluation of the protective relaying systems concludes that all relays, circuit breakers, and associated equipment properly operated and tripped the PEN 230 kV switchyard Circuit Breakers 4E, 4T, and the 18 kV generator circuit breaker GCB-CTG1-01 within 3.5 cycles, effectively isolating the faulted GSU1.

A summary of SPACE's evaluation of the event can be found in Appendix A.

## 3.3. Maintenance Records

A review of the PEC maintenance records indicate that maintenance practices were in place and executed on a daily operator rounds, monthly visual, and annual visual, mechanical, and electrical basis. Annual

maintenance was performed by Hampton Tedder Technical Services and SDG&E Substation Construction and Maintenance (SCM) crews.

3.4. Transformer

3.4.1. Loading History

GSU1 is a 230/18 kV Grounded Wye/Delta connected 132/176/220 MVA (ONAN/ONAF/ONAF) generator step-up transformer PEC GTG1, which is rated 222 MVA. PEC CTG1, CTG2, and STG are dispatched by the CAISO and are cycled as system demands dictate. A review of CTG1's load cycling profile between December 22, 2009 and December 22, 2010 reveals that GSU1 was not exposed to loading beyond its top rating of 220 MVA.

3.4.2. Doble Electrical Test Results

As stated in *Doble Test Procedures Revision C* [2]:

> By detecting changes in [the measurable electrical parameters of a power transformer such as capacitance, dielectric-loss, and power factor using Doble electrical field-test equipment], failure hazards can be revealed, thereby preventing loss of service by permitting orderly repair or recondition of defective insulation.

After reviewing the Doble electrical test results performed on GSU1 and its insulating fluid by SDG&E SCM crews on March 22, 2010 in conjunction with the September 27, 2010 DGA and oil quality analysis results discussed in Sections 3.1.1 and 3.1.2, it can be concluded that electrical testing of GSU1did not indicate an imminent failure of the unit.

3.4.3. Visual Inspection

A visual inspection was performed on both the external outer areas of the GSU1 tank, as well as a complete internal disassembly and visual inspection of the main tank. The explosion of the transformer tank resulted in bulging of the transformer north side wall and tore the seams of its east end wall around the proximity of the C Phase 230 kV bushing.

After cleaning soot from the tank's east end wall, an arc mark nearest the C Phase 230 kV bushing corona shield was discovered (see

Figures 1 and 2). The diagonal straight line distance between the C Phase 230 kV bushing corona shield arc mark and the east end wall arc mark is approximately 21.6 inches (see Figure 3).

Figure 1. Arc mark on east end tank wall nearest the C Phase 230 kV bushing corona shield

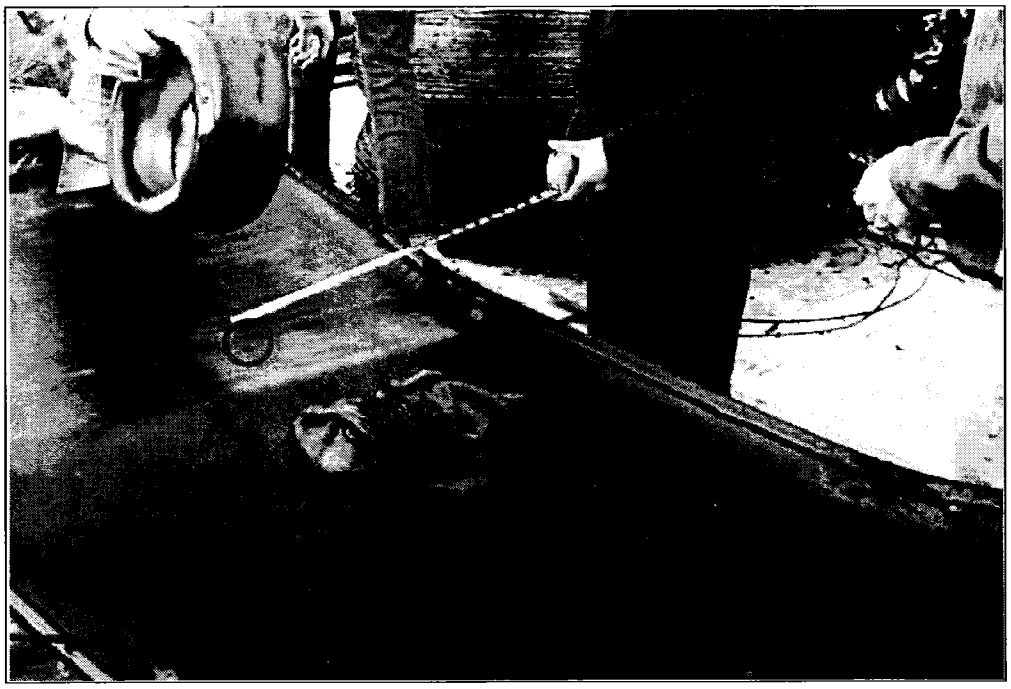


Figure 2. Close-up of arc mark on end tank wall nearest the C Phase 230 kV bushing corona shield

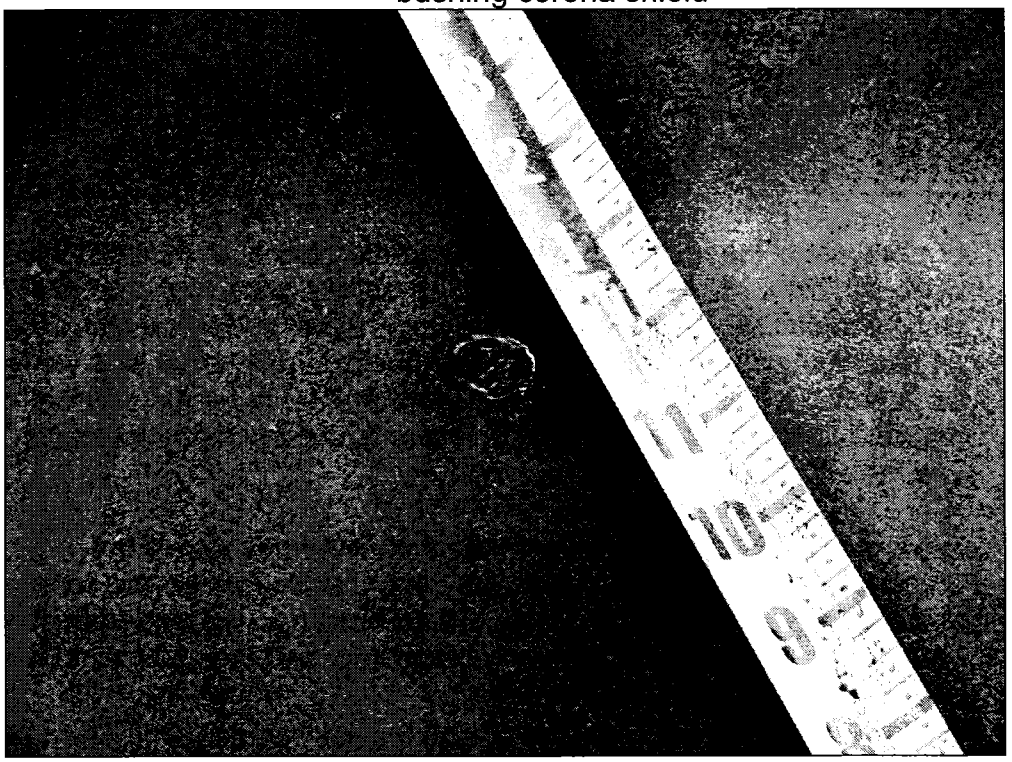
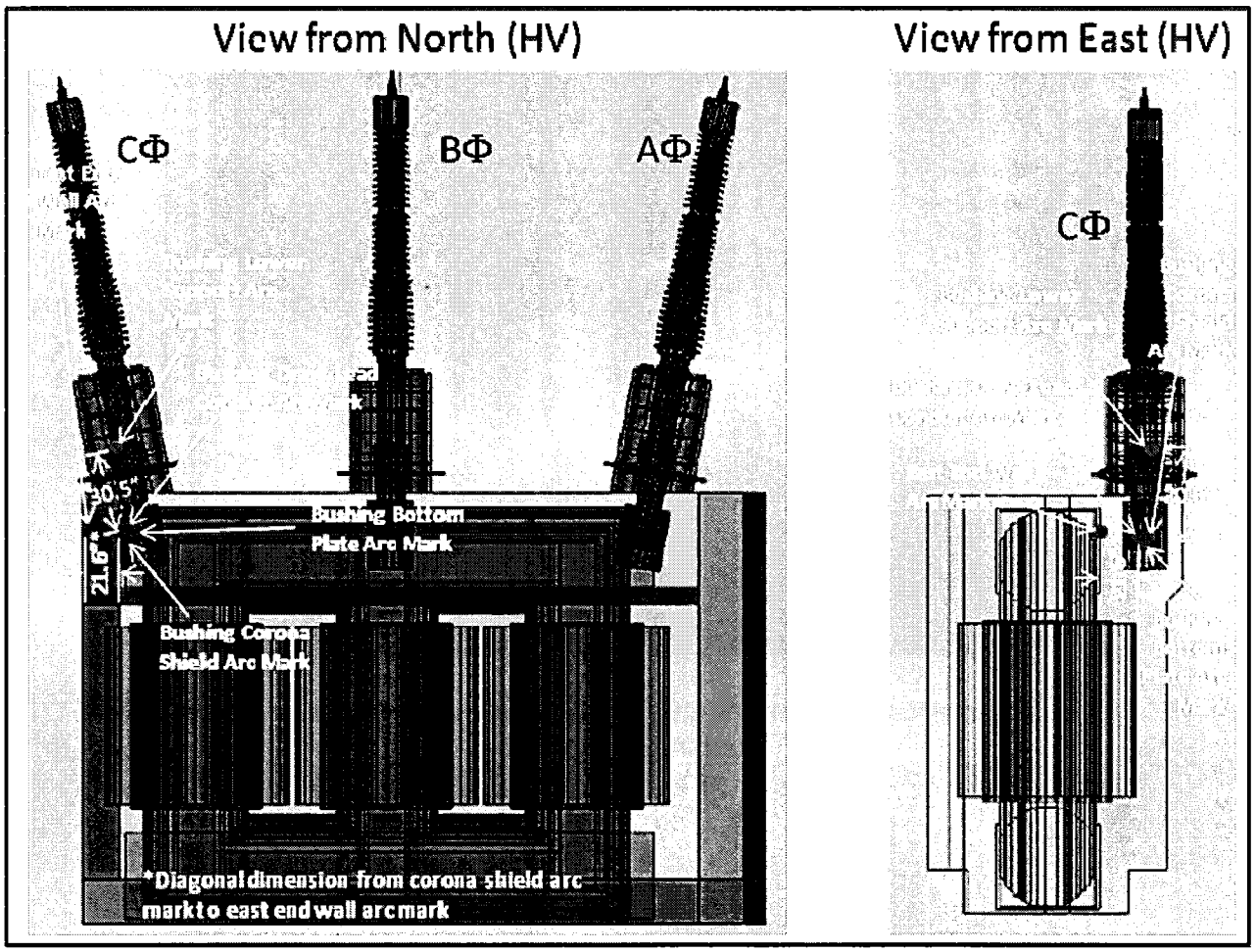


Figure 3. Location of arc marks found inside GSU1 transformer tank




Further visual inspection of the transformer internal and external side walls, lid, high and low voltage bushing turrets, core, high and low voltage windings, and conductors did not reveal additional evidence of an electrical mode of failure. Marks found on the internal side walls, lid, and 230 kV bushing turrets were determined to be mechanical in nature and resultant from the explosion caused by the initial fault's ignition of the insulating oil.

Review of the GSU1 internal construction drawings reveal the presence of a pressboard insulating cone that surrounds the corona shield and lower support of each 230 kV bushing. No evidence of the pressboard insulating cones was discovered, and is assumed to have been burned in the transformer fire.

## 3.5. Bushings

### 3.5.1. Visual Inspections

The A Phase 230 kV bushing and A, B, and C Phase 18 kV bushings remained intact throughout the event. A visual inspection of these bushings did not reveal evidence of their contribution to the fault internal to the transformer tank on the 230 kV C Phase.

B and C Phase 230 kV bushings were severely damaged in the incident, with their lower supports discovered internally in the transformer tank bottom below their normal mounting positions in the 230 kV bushing turrets.

Visual inspection of the B and C Phase 230 kV bushing fragments recovered inside the tank revealed the following:

a. Arc mark on the grounded C Phase 230 kV bushing lower support. This segment of the bushing was found internal to the transformer tank. See Figure 4.

b. Arc mark on the C Phase 230 kV bushing bottom plate which connects the draw lead conduit to the shield assembly (see Figure 5). The straight line distance between the arc mark on the grounded bushing lower support and the bushing bottom plate is approximately 30.5 inches (see Figure 3 in Section 3.4.3). This bushing bottom plate was found internal to the transformer tank.

c. Arc mark on the C Phase 230 kV bushing corona shield. This corona shield was found internal to the transformer tank. See Figures 6 and 7.

d. Arc mark on the C Phase 230 kV bushing draw-lead conduit above the bottom plate threading. See Figure 8.

e. Dark lines on the B Phase 230 kV bushing draw lead conduit. Metallurgical examination found these markings to be superficial in nature and likely caused by overheating or combustion of the bushing condenser paper that originally covered the outer surface of the conduit. See Figure 9.

Figure 4. Arc mark on C Phase 230 kV bushing grounded lower support internal to the transformer tank

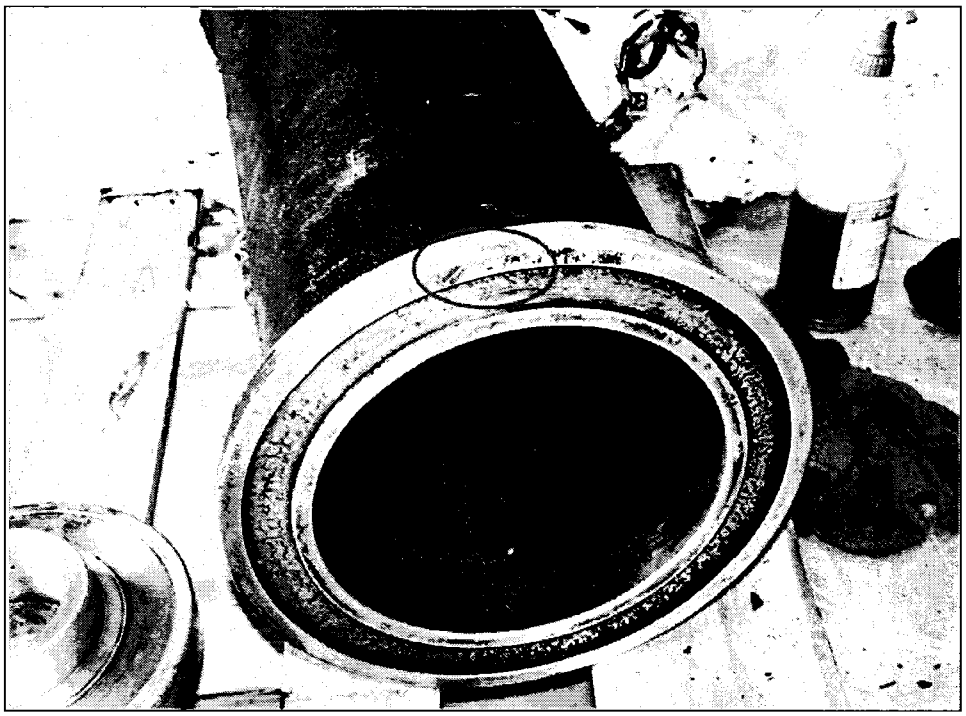


Figure 5. Arc mark on C Phase 230 kV bushing bottom plate which connects the draw lead sleeve to the shield assembly

Figure 6. Arc mark on the C Phase 230 kV bushing corona shield

Figure 7. Close-up of arc mark on the C Phase 230 kV bushing corona shield

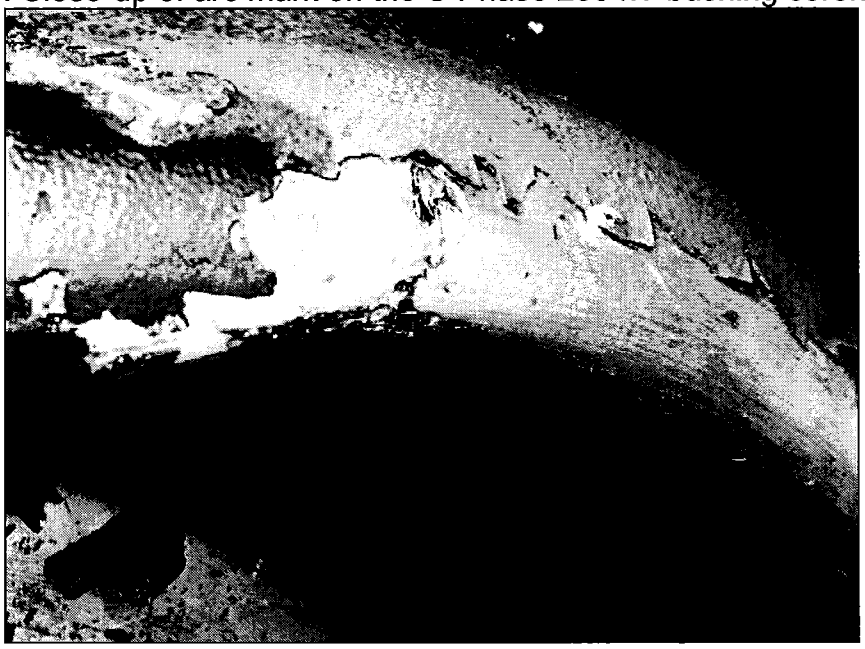
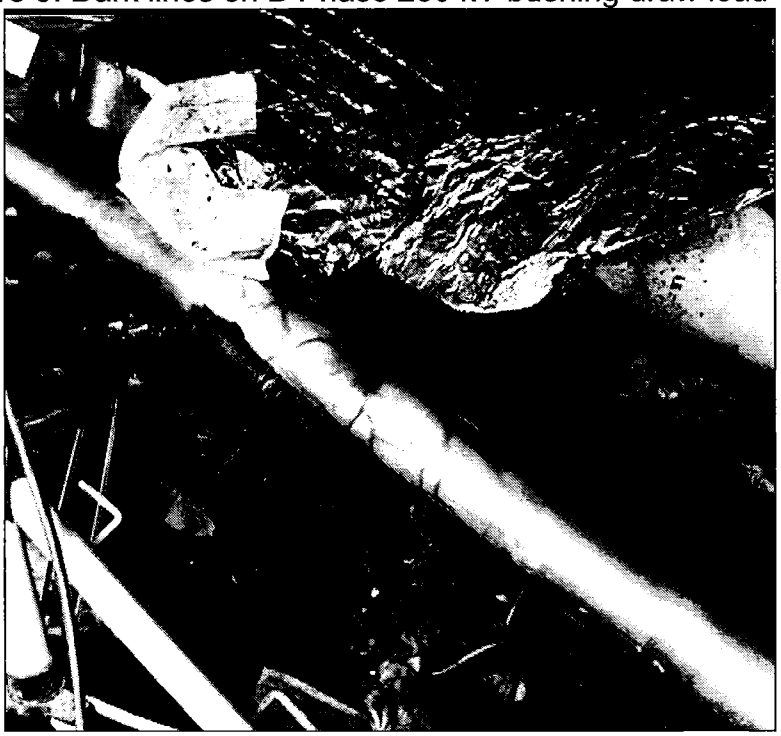


Figure 8. Arc mark on the C Phase 230 kV bushing draw-lead conduit above the bottom plate threading

Figure 9. Dark lines on B Phase 230 kV bushing draw lead conduit



Visual inspection of porcelain bushing fragments and condenser foil from the B and C Phase 230 kV bushings did not reveal any evidence that either bushing contributed to the fault by experiencing internal breakdowns of their lower condenser assemblies contained within the transformer tank.

Visual inspection of B and C Phase 230 kV bushing porcelain fragments found on top of the transformer did not reveal any evidence that either bushing contributed to the fault by experiencing internal breakdowns of their upper condenser assemblies external to the transformer tank.

The 230 kV bushing top cap assembly construction was tested for moisture barrier integrity. The test was performed by observing and noting levels of water flow through the intact A Phase 230 kV bushing draw-lead conduit. Standing the bushing in an upright position with and without the top cap gasket installed, results revealed:

a. With the gasket installed and the top cap assembly properly torqued, water intrusion through the draw-lead conduit did not occur.

b. With the gasket installed and the top cap assembly rotated less than one-half turn, water intrusion through the draw-lead conduit did not occur.

c. With the gasket installed and the top cap assembly rotated a full half turn, water intrusion through the draw-lead conduit occurred.

d. With the gasket not installed and the top cap assembly rotated one-quarter turn, water intrusion through the draw-lead conduit occurred.

Metallurgical testing of the B and C Phase 230 kV bushing draw lead conduit debris found on top of the transformer determined that both conduits were damaged by partial melting due to heat from the transformer fire.

A dissection of the B and C Phase 230 kV bushing draw lead conduit debris found on top of and inside the transformer tank did not reveal any evidence that either bushing contributed to the fault by experiencing a flashover from a compromised draw-lead conductor insulation breakdown in either phase.

Metallurgical testing of the C Phase 230 kV bushing top cap terminal connector concluded that pitting found on the connector was most likely caused by electrical arcing. Because relay records and arc marks discovered on the tank wall and C Phase 230 kV bushing components internal to the transformer tank indicate that the fault occurred within the transformer tank, it was determined that this C Phase top cap arcing did not contribute to the initiating event or the fault itself. Further metallurgical testing will be performed to further refine this conclusion.

3.5.2. Doble Electrical Test Results

After reviewing the Doble electrical test results performed on the GSU1 230 kV and 18 kV bushings by SDG&E SCM crews on March 22, 2010, it can be concluded that electrical testing of the GSU1 230 kV and 18 kV bushings did not indicate an imminent failure of the unit.

3.6. Lightning Arresters

3.6.1. Visual Inspection

A visual inspection of the intact A Phase lightning arrester and B and C Phase lightning arrester debris found on top of and around the transformer tank did not indicate that the lightning arresters contributed to the initiating event or the fault itself.

3.6.2. Doble Electrical Test Results

After reviewing the Doble electrical test results performed on the GSU1 230 kV lightning arresters by SDG&E SCM crews on March 22, 2010, it can be concluded that the lightning arrester electrical test results for GSU1did not indicate an imminent failure of the unit.

3.7. 230 kV Cable and Terminations

A visual inspection of the 230 kV underground cable revealed some melting of the A Phase insulating jacket and was determined to be a result of the transformer fire. It was further determined that the 230 kV underground cable did not contribute to the initiating event or the fault itself.

A visual inspection of the 230 kV cable terminations at the GSU1 transformer pad and the PEN 230 kV switchyard did not indicate that the 230 kV cable terminations contributed to the initiating event or the fault itself.

It was determined that it was not necessary to perform electrical or diagnostic testing on either the 230 kV underground cable or the 230 kV cable terminations.

3.8. Weather and Seismic Impacts

3.8.1. Weather

Review of a five (5) year weather pattern for Escondido, California reveals that the PEC site experienced above average levels of rainfall during the months of October 2010 and December 2010. Specifically, a total of 1.81 inches of rainfall was recorded for Escondido, California on December 22, 2010 with eyewitness accounts reporting that, prior to the event, the PEC site experienced a significantly heavy rate of rainfall.

3.8.2. Seismic Impacts

On April 4, 2010 at 3:40PM, the Sierra-El Mayor Earthquake (or Mexicali Earthquake), occurred in the Baja California, Mexico region along the Laguna Salada Fault in Mexico, which is a segment of the Elsinore Fault System. Measuring 7.2 on the Moment Magnitude scale, the total duration of the earthquake was approximately forty (40) seconds. The epicenter of the earthquake was 90 miles southeast of PEC and subjected the PEC region to a maximum acceleration pulse of 0.028 g.

On July 7, 2010, a subsequent earthquake, referred to as the Collins Valley Earthquake, occurred approximately 43.5 miles from PEC, near Borrego Springs, California. Measuring 5.7 on the Moment Magnitude scale, the Collins Valley Earthquake subjected the PEC region to acceleration levels of 0.022 g.

This information was obtained from the United States Geological Survey (USGS) and a report prepared by SDG&E geotechnical consultant, United Research Services Corporation (URS).

# 4. Analysis of Findings

All DGA, oil quality, and electrical tests performed on GSU1 indicate that GSU1's insulating system and accessories were properly constructed, maintained, and suitable for continued service.

Visual inspection of GSU1 transformer tank and accessory debris revealed the arc marks illustrated in the three-dimensional (3D) recreation illustrated in Figure 3 of Section 3.4.3.

The bulging of the transformer tank and discovered ark marks on and around the C Phase 230 kV bushing are consistent with SDG&E SPACE relay records, which recorded a C Phase to ground fault on the 230 kV side of the transformer below the C Phase 230 kV-side turret-mounted bushing current transformer (BCT).

The following factors are taken into consideration when evaluating the precipitating events resulting in the GSU1 failure:

a. A, B, and C Phase 230 kV draw-lead bushing construction incorporating a pressboard insulating cone surrounding the corona shield and bushing lower support.
b. The location of the 230 kV bushing arc marks.
c. The location of the east end wall arc mark.
d. Internal transformer tank electrical clearances between energized and grounded components.
e. April 4, 2010 earthquake experienced by the San Diego region.
f. Above average rainfall experienced at the PEC site after the occurrence of the April 4, 2010 earthquake and prior to the GSU1 failure.
g. Absence of arc marks on all internal surfaces of the damaged lightning arrester and 230 kV draw-lead bushings.

# 5. Conclusions

Although a majority of the physical evidence was destroyed or severely damaged in the GSU1 fire, the available historical information and debris inspection indicate that the December 22, 2010 event consisted of a C Phase to ground fault of 25,000 A internal to the GSU1 transformer tank lasting 3.5 cycles, resulting in a breakdown of the GSU1 insulation system.

The protective relaying system properly operated and cleared the fault in 3.5 cycles, however, the energy dissipated during the fault was sufficient to ignite the oil and cause a catastrophic explosion internal to the transformer tank rupturing the transformer north side wall and east end wall seams, severely damaging B and C Phase 230 kV bushings.

A determination as to the factors that definitively contributed to the breakdown of the GSU1 insulation system, as well as the sequence of fault events that created the discovered arc marks, remains inconclusive.

The investigation concludes that proper maintenance procedures and techniques were in place and practiced prior to the transformer failure, and that GSU1 maintenance was not a contributing factor to the fire.

An internal inspection of GSU1's sister unit, GSU2, to include a detailed analysis of the pressboard insulating cone surrounding the 230 kV bushings, may provide further insight into the construction and design techniques of GSU1 which may have contributed to the GSU1 failure. If the detailed analysis of GSU2, scheduled for May 2011, indicates that there are construction and design techniques that contributed to the GSU1 failure, corrective remedies will be immediately implemented to avoid a possible failure of GSU2.

# 6. Recommendations

Based on the conclusions in Section 5, the following recommendations are made:

a. During the May 2011 PEC maintenance outage, drain all oil from and internally inspect GSU2 and STG GSU3. Ensure that all bolts on the transformer and transformer accessories are properly torqued to the manufacturers' specifications, all gaskets/seals are in acceptable condition, and all electrically conducting connections are acceptable.

b. Ensure that all bushings on GSU2 and GSU3 are installed according to the manufacturer's installation instructions.

c. Request Hyundai to review the electric field intensity around the GSU2 and GSU3 230 kV bushing corona shields to confirm that sufficient electrical clearances exist, and, if necessary, to add additional dielectric material to increase electrical clearances to acceptable levels.

## References

[1] *IEEE Guide for the Interpretation of Gases Generated in Oil-Immersed Transformers*, IEEE Standard C57.104, 2008.

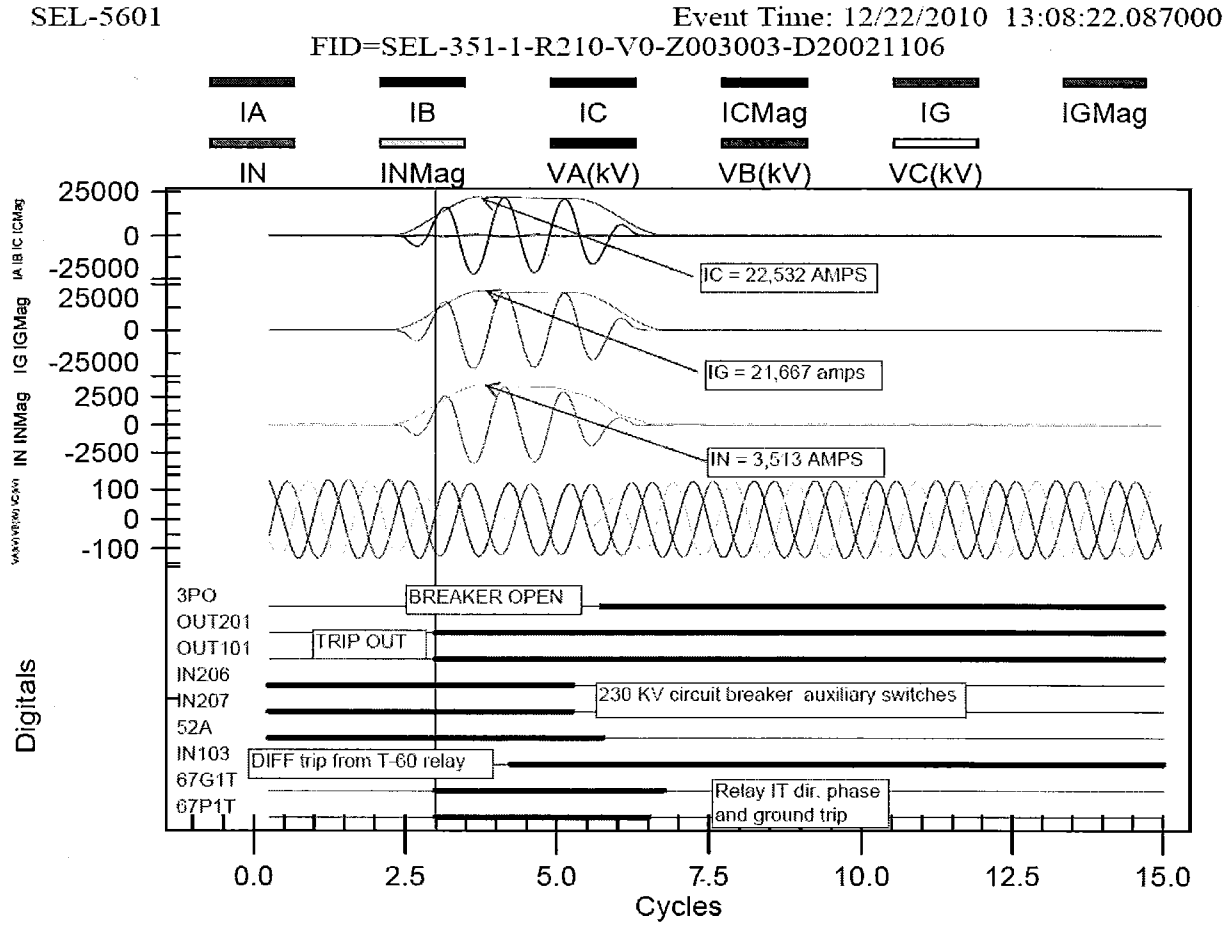
[2] *Doble Test Procedures*, Rev. C, Doble Engineering Co., Watertown, MA, 2009.

# Appendix A –
# Protection Summary for Palomar Energy
# CTG-1 Transformer Fire 12-22-2010

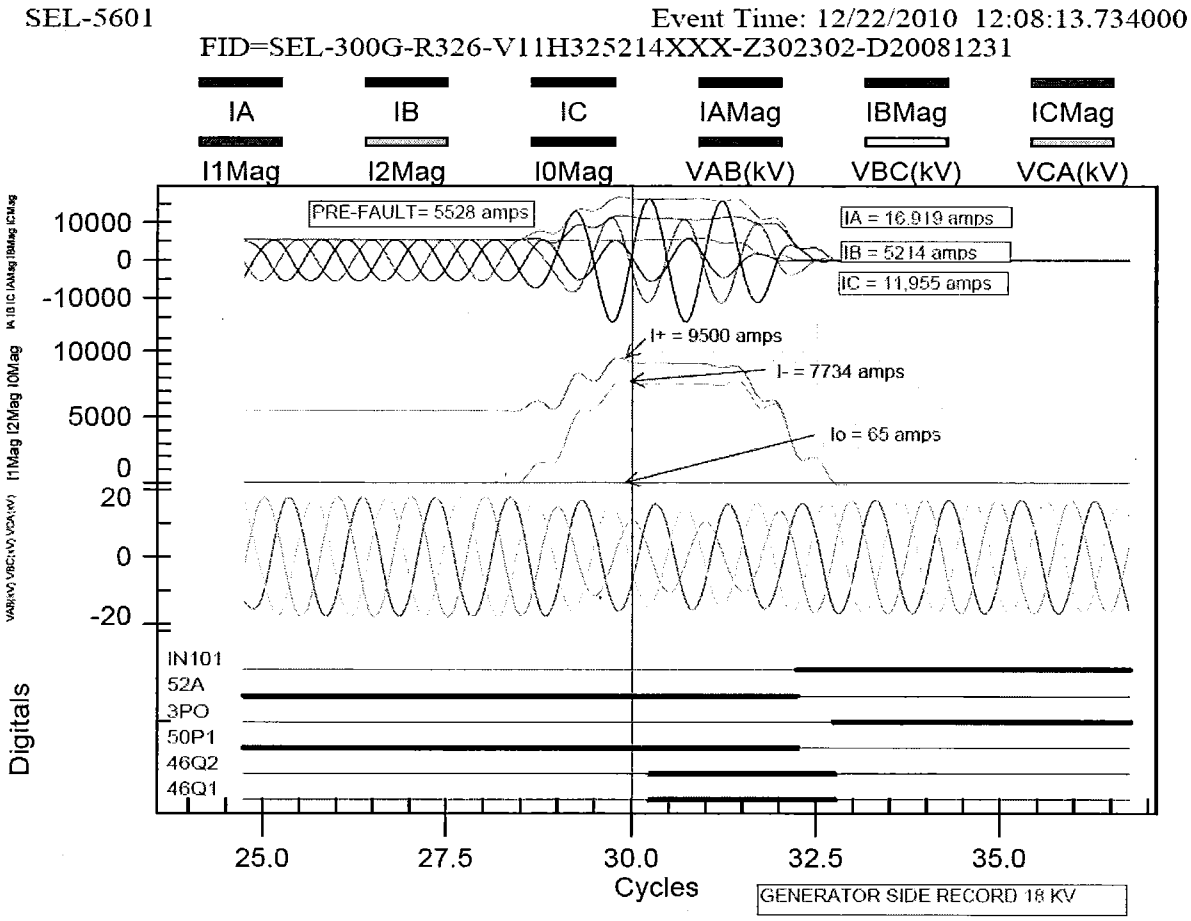
## Protection Summary for Palomar Energy CTG-1 Transformer Fire 12-22-2010

On December 22nd 2010 at 12:08 PM a 230kV C-phase to ground fault developed at the GSU-1 at the Palomar Energy plant with a subsequent fire. The total fault current contribution was approximately 22,532 amps from the SDG&E system and 2,468 amps from the generator contribution providing a 25000,-amp C-phase to ground fault. The event record below was taken from the 230kV SEL-351 overcurrent relay in the Palomar Energy 230kV switchyard. As shown, the fault was fed from the 230kV system for just over three cycles until the 230kV circuit breaker s 4E and 4T opened. The event record shows the fault contribution from the SDG&E system as well as the residual current (IG) and neutral current (IN) from the transformer. Also, the timing of the internal relay elements is shown.

**230kV CTG-1 Overcurrent Relay Event Record**



**CTG-1 Generator Protection Relay Event Record**




The above event shows the contribution to the 230kV fault from the Generator 18kV side. The SEL-300G relay is fed from the generator CTs.

Due to the fact that the transformer is Wye-Delta, a line to ground fault on the 230kV side shows up as a Phase A-and Phase C contribution from the 18kV delta side. The pre-fault current of approx 5528 amps shows the generator load current prior to the occurrence of the fault. As shown, the generator breaker opened to clear the fault in just over three cycles.

## T-60 Transformer Differential Relay Sequence of Events Record

File Name: T:\Misc&Requests\INVESTIGATIONS\PEN Investigation\PEN Downloads\PEN_GE_T60_CTG1_GSU_12-30-10.evt
Date / Time of Last Clear:
Events Since Last Clear:
Shown Number of Events: 19

| Event Number | Date/Time | Cause | Data |
|---|---|---|---|
| 19 | Dec 30 2010 11:09:18.500094 | ALARM On | |
| 18 | Dec 30 2010 11:09:13.044917 | POWER ON | |
| 17 | Dec 28 2010 15:31:03.742272 | POWER OFF | |
| 16 | Dec 28 2010 15:25:46.500793 | ALARM On | |
| 15 | Dec 28 2010 15:25:41.045600 | POWER ON | |
| 14 | Dec 28 2010 11:47:06.302933 | POWER OFF | |
| 13 | Dec 28 2010 10:51:34.500792 | ALARM On | |
| 12 | Dec 28 2010 10:51:29.045612 | POWER ON | |
| 11 | Dec 23 2010 14:02:49.455478 | POWER OFF | |
| 10 | Dec 23 2010 13:43:04.500793 | ALARM On | |
| 9 | Dec 23 2010 13:42:59.045606 | POWER ON | |
| 8 | Dec 22 2010 16:52:40.516818 | POWER OFF | |
| 7 | Dec 22 2010 12:56:08.890773 | ALARM On | |
| 6 | Dec 22 2010 12:56:08.890773 | 87 TRIP Off | |
| 5 | Dec 22 2010 12:56:08.828305 | ALARM Off | |
| 4 | Dec 22 2010 12:56:08.828305 | 87 TRIP On | |
| 3 | Mar 24 2010 11:21:18.185739 | ALARM On | |
| 2 | Mar 24 2010 11:03:25.703639 | RESET OP(COMMS) | |
| 1 | Mar 24 2010 11:03:08.650154 | EVENTS CLEARED | |

DIFF TRIP T-60 GE relay

The above sequence of events shows the T-60 transformer differential operated for the internal fault. This transformer differential zone of protection for the T-60 relay extends from the 230kV circuit breaker 4E and 4T CTs to the CTs on the 18kV generator bus.

## SR-745 Transformer Differential Relay Sequence of Events Record

GE SR 745 #2

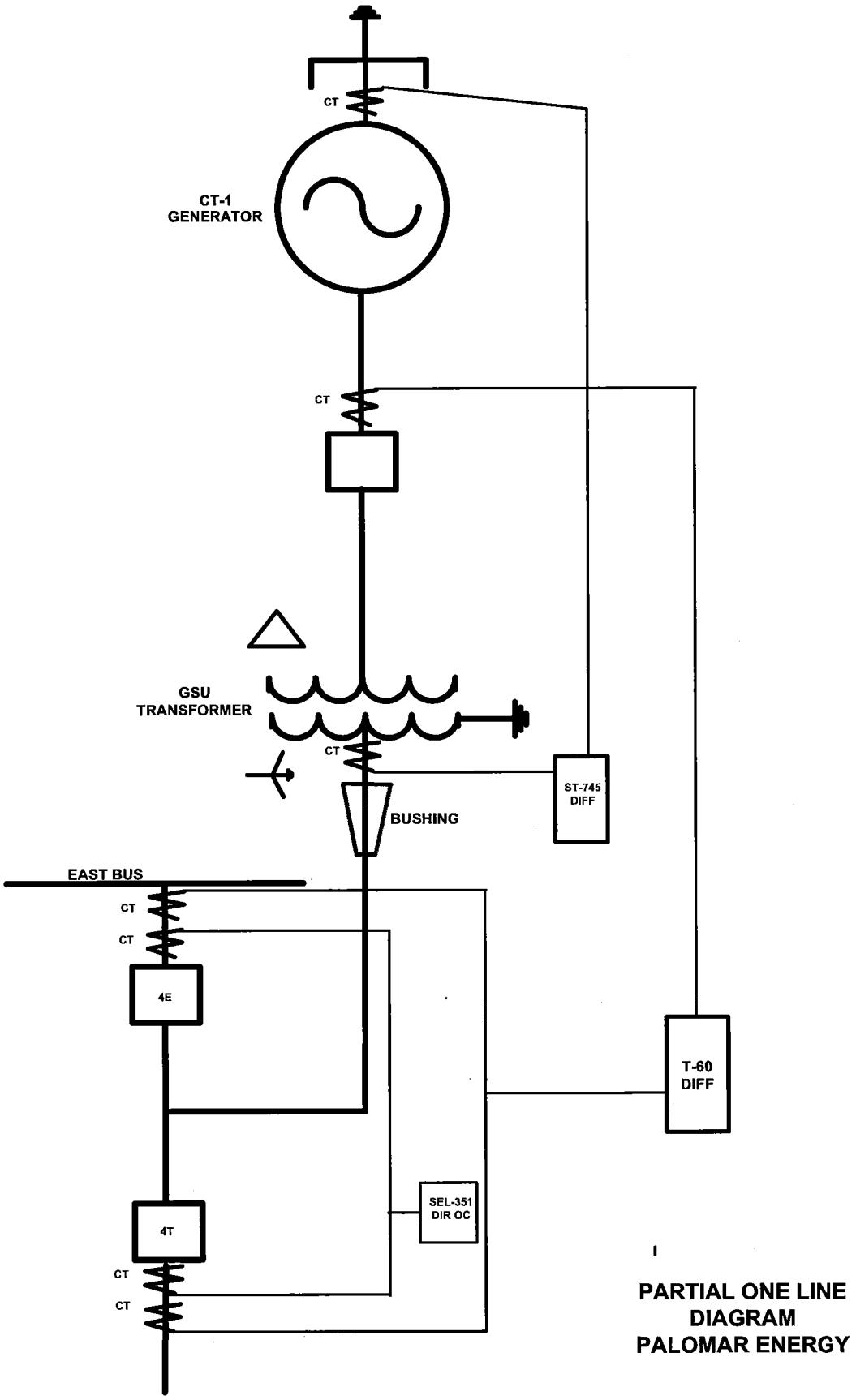
EVENT RECORDER
Last Cleared Date & Time : 03/30/2010 13:52:57.064
Total Number of Events Since Last Clear: 770

| Event Num | Date of Event | Time of Event | Cause of Event | Winding 1 Phase A current Magnitude | Winding 1 Phase A current Angle | Winding 1 Phase B current Magnitude | Winding 1 Phase B current Angle (Lag) | Winding 1 Phase C current Magnitude | Winding 1 Phase C current Angle (Lag) | Winding 1 Ground current Magnitude | Winding 1 Ground current Angle (Lag) | Winding 1 Phase A 2nd Harmonic (%fo) | Winding 1 Phase B 2nd Harmonic (%fo) | Winding 1 Phase C 2nd Harmonic (%fo) | Winding 1 Phase A 5th Harmonic (%fo) | Winding 1 Phase B 5th Harmonic (%fo) | Winding 1 Phase C 5th Harmonic (%fo) | Winding 2 Phase A current Magnitude (A) | Winding 2 Phase A current Angle (Lag) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 770 | 12/23/2010 | 14:5:1.219 | On - Self-Test Relay | 0 Amp | 0 °Lag | 0 Amp | 0 °Lag | 0 Amp | 0 °Lag | 0 Amp | 0 °Lag | 0.0 %fo | 0.0 %fo | 0.0 %fo | 0.0 %fo | 0.0 %fo | 0.0 %fo | 0 Amp | 0 °Lag |
| 769 | 12/23/2010 | 14:5:1.100 | On - Control Power | 0 Amp | 0 °Lag | 0 Amp | 0 °Lag | 0 Amp | 0 °Lag | 0 Amp | 0 °Lag | 0.0 %fo | 0.0 %fo | 0.0 %fo | 0.0 %fo | 0.0 %fo | 0.0 %fo | 0 Amp | 0 °Lag |
| 768 | 12/22/2010 | 21:46:51.886 | Off - Control Power | 0 Amp | 0 °Lag | 0 Amp | 0 °Lag | 0 Amp | 0 °Lag | 0 Amp | 0 °Lag | 0.0 %fo | 0.0 %fo | 0.0 %fo | 0.0 %fo | 0.0 %fo | 0.0 %fo | 0 Amp | 0 °Lag |
| 767 | 12/22/2010 | 21:44:59.218 | On - Self-Test Relay | 0 Amp | 0 °Lag | 0 Amp | 0 °Lag | 0 Amp | 0 °Lag | 0 Amp | 0 °Lag | 0.0 %fo | 0.0 %fo | 0.0 %fo | 0.0 %fo | 0.0 %fo | 0.0 %fo | 0 Amp | 0 °Lag |
| 766 | 12/22/2010 | 21:44:19.090 | On - Control Power | 0 Amp | 0 °Lag | 0 Amp | 0 °Lag | 0 Amp | 0 °Lag | 0 Amp | 0 °Lag | 0.0 %fo | 0.0 %fo | 0.0 %fo | 0.0 %fo | 0.0 %fo | 0.0 %fo | 0 Amp | 0 °Lag |
| 765 | 12/22/2010 | 21:40:49.291 | Off - Control Power | 0 Amp | 0 °Lag | 0 Amp | 0 °Lag | 0 Amp | 0 °Lag | 0 Amp | 0 °Lag | 0.0 %fo | 0.0 %fo | 0.0 %fo | 0.0 %fo | 0.0 %fo | 0.0 %fo | 0 Amp | 0 °Lag |
| 764 | 12/27/2010 | 15:0:47.933 | Dropout - W2 Ground Time OC | 0 Amp | 0 °Lag | 0 Amp | 0 °Lag | 0 Amp | 0 °Lag | 0 Amp | 0 °Lag | 0.0 %fo | 0.0 %fo | 0.0 %fo | 0.0 %fo | 0.0 %fo | 0.0 %fo | 0 Amp | 0 °Lag |
| 763 | 12/27/2010 | 15:0:47.823 | None - Auto Trace Trigger | 0 Amp | 0 °Lag | 0 Amp | 0 °Lag | 0 Amp | 0 °Lag | 0 Amp | 0 °Lag | 0.0 %fo | 0.0 %fo | 0.0 %fo | 0.0 %fo | 0.0 %fo | 0.0 %fo | 0 Amp | 0 °Lag |
| 762 | 12/23/2010 | 15:0:47.501 | Pickup - W2 Ground Time OC | 0 Amp | 0 °Lag | 0 Amp | 0 °Lag | 0 Amp | 0 °Lag | 0 Amp | 0 °Lag | 0.0 %fo | 0.0 %fo | 0.0 %fo | 0.0 %fo | 0.0 %fo | 0.0 %fo | 0 Amp | 0 °Lag |
| 761 | 12/22/2010 | 12:57:6.795 | Off - Output Relay 2 / DIFFERENTIAL TRIP | 44 Amp | 0 °Lag | 0 Amp | 0 °Lag | 44 Amp | 182 °Lag | 0 Amp | 0 °Lag | 1.4 %fo | 4.8 %fo | 1.5 %fo | 1.8 %fo | 4.9 %fo | 0.0 %fo | 1 Amp | 186 °Lag |
| 760 | 12/22/2010 | 12:57:6.732 | Dropout - Percent Differential | 44 Amp | 0 °Lag | 0 Amp | 0 °Lag | 44 Amp | 182 °Lag | 0 Amp | 0 °Lag | 1.4 %fo | 4.8 %fo | 1.5 %fo | 1.8 %fo | 4.9 %fo | 0.0 %fo | 1 Amp | 186 °Lag |
| 759 | 12/22/2010 | 12:57:6.732 | Dropout - Percent Differential | 282 Amp | 0 °Lag | 1 Amp | 332 °Lag | 291 Amp | 180 °Lag | 0 Amp | 0 °Lag | 52.7 %fo | 2.4 %fo | 45.8 %fo | 24.7 %fo | 4.8 %fo | 22.6 %fo | 0 Amp | 0 °Lag |
| 758 | 12/22/2010 | 12:57:6.695 | Dropout - W2 Ground Time OC | 282 Amp | 0 °Lag | 1 Amp | 332 °Lag | 291 Amp | 180 °Lag | 0 Amp | 0 °Lag | 52.7 %fo | 2.4 %fo | 45.8 %fo | 24.7 %fo | 4.8 %fo | 22.6 %fo | 0 Amp | 0 °Lag |
| 757 | 12/22/2010 | 12:57:6.654 | Dropout - Inst Differential | 1093 Amp | 0 °Lag | 508 Amp | 26 °Lag | 1549 Amp | 186 °Lag | 0 Amp | 0 °Lag | 3.8 %fo | 6.9 %fo | 0.0 %fo | 1.8 %fo | 2.4 %fo | 0.0 %fo | 872 Amp | 90 °Lag |
| 756 | 12/22/2010 | 12:57:6.556 | On - Output Relay 2 / DIFFERENTIAL TRIP | 1093 Amp | 0 °Lag | 508 Amp | 26 °Lag | 1549 Amp | 186 °Lag | 0 Amp | 0 °Lag | 3.8 %fo | 6.9 %fo | 0.0 %fo | 1.8 %fo | 2.4 %fo | 0.0 %fo | 879 Amp | 36 °Lag |
| 755 | 12/22/2010 | 12:57:6.553 | Operate - Inst Differential | 1093 Amp | 0 °Lag | 508 Amp | 26 °Lag | 1549 Amp | 186 °Lag | 0 Amp | 0 °Lag | 3.8 %fo | 6.9 %fo | 0.0 %fo | 1.8 %fo | 2.4 %fo | 0.0 %fo | 879 Amp | 36 °Lag |
| 754 | 12/22/2010 | 12:57:6.553 | Operate - Percent Differential | 904 Amp | 0 °Lag | 497 Amp | 54 °Lag | 1312 Amp | 198 °Lag | 0 Amp | 0 °Lag | 47.2 %fo | 3.4 %fo | 31.4 %fo | 7.4 %fo | 1.1 %fo | 6.3 %fo | 885 Amp | 57 °Lag |
| 753 | 12/22/2010 | 12:57:6.547 | None - Auto Trace Trigger | 904 Amp | 0 °Lag | 497 Amp | 54 °Lag | 1312 Amp | 198 °Lag | 0 Amp | 0 °Lag | 47.2 %fo | 3.4 %fo | 31.4 %fo | 7.4 %fo | 1.1 %fo | 6.3 %fo | 885 Amp | 57 °Lag |
| 752 | 12/22/2010 | 12:57:6.465 | Pickup - W2 Ground Time OC | 0 Amp | 0 °Lag | 0 Amp | 0 °Lag | 0 Amp | 0 °Lag | 0 Amp | 0 °Lag | 0.0 %fo | 0.0 %fo | 0.0 %fo | 0.0 %fo | 0.0 %fo | 0.0 %fo | 0 Amp | 0 °Lag |
| 751 | 12/22/2010 | 9:8:28.486 | None - Setpoint Group 1 | 0 Amp | 0 °Lag | 0 Amp | 0 °Lag | 0 Amp | 0 °Lag | 0 Amp | 0 °Lag | 0.0 %fo | 0.0 %fo | 0.0 %fo | 0.0 %fo | 0.0 %fo | 0.0 %fo | 0 Amp | 0 °Lag |
| 750 | 12/22/2010 | 9:8:27.539 | Off - Logic Input 2 / GE MKVI 87TSSX | 0 Amp | 0 °Lag | 0 Amp | 0 °Lag | 0 Amp | 0 °Lag | 0 Amp | 0 °Lag | 0.0 %fo | 0.0 %fo | 0.0 %fo | 0.0 %fo | 0.0 %fo | 0.0 %fo | 0 Amp | 0 °Lag |
| 749 | 12/22/2010 | 9:4:45.667 | None - Setpoint Group 2 | 0 Amp | 0 °Lag | 0 Amp | 0 °Lag | 0 Amp | 0 °Lag | 0 Amp | 0 °Lag | 0.0 %fo | 0.0 %fo | 0.0 %fo | 0.0 %fo | 0.0 %fo | 0.0 %fo | 0 Amp | 0 °Lag |
| 748 | 12/22/2010 | 9:4:45.524 | On - Logic Input 2 / GE MKVI 87TSSX | 0 Amp | 0 °Lag | 0 Amp | 0 °Lag | 0 Amp | 0 °Lag | 0 Amp | 0 °Lag | 0.0 %fo | 0.0 %fo | 0.0 %fo | 0.0 %fo | 0.0 %fo | 0.0 %fo | 0 Amp | 0 °Lag |

DIFF Trip SR 745 GE Relay

The above sequence of event shows that the second transformer differential SR 745 relay operated for the internal fault. This transformer zone of protection extends from the 230kV step-up transformer bushing CTs to the generator neutral CTs. This would indicate that the fault was internal to the CT mounted at the base of the 230kV C-phase bushing. This would be consistent with a 230kV bushing failure or a fault due to an insulation failure on the 230kV lead into the transformer tank, and would remove the possibility of a fault external to the transformer, such as an external flashover or arrester failure. The observed 230kV fault currents would indicate that the fault current was not limited by the impedance of the transformer, i.e. the observed fault current matched the ASPEN shorth circuit program calculated current for a solid 230kV phase-to-ground fault.

SEE Partial One Line Diagram Below




**PARTIAL ONE LINE DIAGRAM**
**PALOMAR ENERGY**

**DRA MDR DATA REQUEST**
**SDG&E 2010 ERRA COMPLIANCE**
**A.11-06-003**
**DATE RECEIVED: JUNE 1, 2011**
**DATE RESPONDED: DECEMBER 6, 2011**

**SDG&E Response 1.1.14:**

ERRA 2010 DRA MDR Q1[1].1.14 R

**The following is confidential/privileged pursuant to applicable provisions of D.06-06-066, G.O. 66-C and PUC Code Sec. 583 and Sec. 454.5 (g) .**

| 1.1.14 | Questions | Miramar 1 Unscheduled Outages | | |
|---|---|---|---|---|
| 1.1.14.1 | date and time reported and est. duration or cause of outage | [redacted] | [redacted] | [redacted] |
| 1.1.14.2 | can the date and time reported above be substantiated with contemporaneous records? | yes | yes | yes |
| 1.1.14.3 | the apparent initiating event or proximate cause of the outage, as first reported to management | [redacted] | [redacted] | [redacted] |
| 1.1.14.4 | The date the apparent initiating event or proximate cause was first reported to management | [redacted] | [redacted] | [redacted] |
| 1.1.14.5 | can the date reported above be substantiated with contemporaneous records? | yes | yes | yes |
| 1.1.14.6 | the date and hour this outage began, given as the date and time there was any reduction in capacity associated with this outage | [redacted] | [redacted] | [redacted] |
| 1.1.14.7 | the date and hour when the ultimate reduction in capacity of this unit, due to this outage, was reached | [redacted] | [redacted] | [redacted] |
| 1.1.14.8 | Date and hour ended(reduction in capacity) | [redacted] | [redacted] | [redacted] |
| 1.1.14.9 | Date and hour of full availability | [redacted] | [redacted] | [redacted] |
| 1.1.14.10 | Initial estimate of duration | [redacted] | [redacted] | [redacted] |
| 1.1.14.11 | can the estimated duration reported above be substantiated with contemporaneous records? | yes | yes | yes |
| 1.1.14.12 | The date the initial estimate of outage duration was first reported to management | [redacted] | [redacted] | [redacted] |
| 1.1.14.13 | can the date reported above be substantiated with contemporaneous records? | yes | yes | yes |
| 1.1.14.14 | if the actual duration exceeded the earliest estimated duration by more than 24 hours, the date and time the actual duration was first reported to management | [redacted] | [redacted] | [redacted] |
| 1.1.14.15 | If the actual duration exceeded the earliest scheduled duration by more than 24 hours, provide the reason(s) for each extension of the estimated duration | [redacted] | [redacted] | [redacted] |
| 1.1.14.16 | If, by the time the plant was returned to service, the cause of the outage was determined to be different from that originally reported to management, the date and time the determined cause of the outage was first reported to management | [redacted] | [redacted] | [redacted] |
| 1.1.14.17 | can the date and time reported above be substantiated with contemporaneous records? | yes | yes | yes |
| 1.1.14.18 | were any outage reports, incident reports, Root Cause Evaluations or any other summaries, evaluations or reports produced as a result of this outage and, if so, provide a brief summary of any findings and conclusions drawn. Attach a copy of any documents addressing these evaluations and conclusions. | [redacted] | [redacted] | [redacted] |
| 1.1.14.19 | were any modifications to preventive maintenance procedures or schedules made as a result of this outage and, if so, provide a summary of all such PM procedures or schedules changed;. | [redacted] | [redacted] | [redacted] |

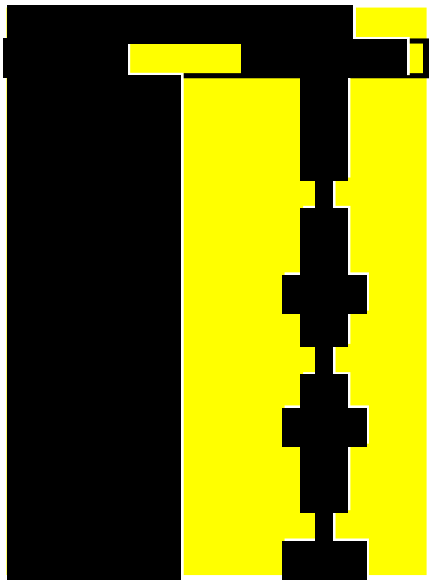
| | | Miramar 2 Unscheduled Outages | | |
|---|---|---|---|---|
| 1.1.14.1 | date and time reported and est. duration or cause of outage | [redacted] | [redacted] | [redacted] |
| 1.1.14.2 | can the date and time reported above be substantiated with contemporaneous records? | yes | yes | yes |
| 1.1.14.3 | the apparent initiating event or proximate cause of the outage, as first reported to management | [redacted] | [redacted] | [redacted] |
| 1.1.14.4 | The date the apparent initiating event or proximate cause was first reported to management | [redacted] | [redacted] | [redacted] |
| 1.1.14.5 | can the date reported above be substantiated with contemporaneous records? | yes | yes | yes |
| 1.1.14.6 | the date and hour this outage began, given as the date and time there was any reduction in capacity associated with this outage | [redacted] | [redacted] | [redacted] |
| 1.1.14.7 | the date and hour when the ultimate reduction in capacity of this unit, due to this outage, was reached | [redacted] | [redacted] | [redacted] |
| 1.1.14.8 | Date and hour ended(reduction in capacity) | [redacted] | [redacted] | [redacted] |
| 1.1.14.9 | Date and hour of full availability | [redacted] | [redacted] | [redacted] |
| 1.1.14.10 | Initial estimate of duration | [redacted] | [redacted] | [redacted] |
| 1.1.14.11 | can the estimated duration reported above be substantiated with contemporaneous records? | yes | yes | yes |
| 1.1.14.12 | The date the initial estimate of outage duration was first reported to management | [redacted] | [redacted] | [redacted] |
| 1.1.14.13 | can the date reported above be substantiated with contemporaneous records? | yes | yes | yes |
| 1.1.14.14 | if the actual duration exceeded the earliest estimated duration by more than 24 hours, the date and time the actual duration was first reported to management | [redacted] | [redacted] | [redacted] |
| 1.1.14.15 | If the actual duration exceeded the earliest scheduled duration by more than 24 hours, provide the reason(s) for each extension of the estimated duration | [redacted] | [redacted] | [redacted] |
| 1.1.14.16 | If, by the time the plant was returned to service, the cause of the outage was determined to be different from that originally reported to management, the date and time the determined cause of the outage was first reported to management | [redacted] | [redacted] | [redacted] |
| 1.1.14.17 | can the date and time reported above be substantiated with contemporaneous records? | yes | yes | yes |

| | | | | |
|---|---|---|---|---|
| 1.1.14.18 | were any outage reports, incident reports, Root Cause Evaluations or any other summaries, evaluations or reports produced as a result of this outage and, if so, provide a brief summary of any findings and conclusions drawn. Attach a copy of any documents addressing these evaluations and conclusions. | [redacted] | [redacted] | [redacted] |
| 1.1.14.19 | were any modifications to preventive maintenance procedures or schedules made as a result of this outage and, if so, provide a summary of all such PM procedures or schedules changed;. | [redacted] | [redacted] | [redacted] |

**Palomar Unscheduled Outages**

| | | | |
|---|---|---|---|
| 1.1.14.1 | date and time reported and est. duration or cause of outage | [redacted] | [redacted] |
| 1.1.14.2 | can the date and time reported above be substantiated with contemporaneous records? | yes | yes |
| 1.1.14.3 | the apparent initiating event or proximate cause of the outage, as first reported to management | [redacted] | [redacted] |
| 1.1.14.4 | The date the apparent initiating event or proximate cause was first reported to management | [redacted] | [redacted] |
| 1.1.14.5 | can the date reported above be substantiated with contemporaneous records? | yes | yes |
| 1.1.14.6 | the date and hour this outage began, given as the date and time there was any reduction in capacity associated with this outage | [redacted] | [redacted] |
| 1.1.14.7 | the date and hour when the ultimate reduction in capacity of this unit, due to this outage, was reached | [redacted] | [redacted] |
| 1.1.14.8 | Date and hour ended(reduction in capacity) | [redacted] | [redacted] |
| 1.1.14.9 | Date and hour of full availability | [redacted] | [redacted] |
| 1.1.14.10 | Initial estimate of duration | [redacted] | [redacted] |
| 1.1.14.11 | can the estimated duration reported above be substantiated with contemporaneous records? | yes | yes |
| 1.1.14.12 | The date the initial estimate of outage duration was first reported to management | [redacted] | [redacted] |
| 1.1.14.13 | can the date reported above be substantiated with contemporaneous records? | yes | yes |
| 1.1.14.14 | if the actual duration exceeded the earliest estimated duration by more than 24 hours, the date and time the actual duration was first reported to management | [redacted] | [redacted] |
| 1.1.14.15 | If the actual duration exceeded the earliest scheduled duration by more than 24 hours, provide the reason(s) for each extension of the estimated duration | [redacted] | [redacted] |
| 1.1.14.16 | If, by the time the plant was returned to service, the cause of the outage was determined to be different from that originally reported to management, the date and time the determined cause of the outage was first reported to management | [redacted] | [redacted] |
| 1.1.14.17 | can the date and time reported above be substantiated with contemporaneous records? | yes | yes |
| 1.1.14.18 | were any outage reports, incident reports, Root Cause Evaluations or any other summaries, evaluations or reports produced as a result of this outage and, if so, provide a brief summary of any findings and conclusions drawn. Attach a copy of any documents addressing these evaluations and conclusions. | [redacted] | [redacted] |
| 1.1.14.19 | were any modifications to preventive maintenance procedures or schedules made as a result of this outage and, if so, provide a summary of all such PM procedures or schedules changed;. | [redacted] | [redacted] |

| Request ID | Request DTS | Request Type | Details | Description |
| --- | --- | --- | --- | --- |
| [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |



**DRA MDR DATA REQUEST**
**SDG&E 2010 ERRA COMPLIANCE**
**A.11-06-003**
**DATE RECEIVED: JUNE 1, 2011**
**DATE RESPONDED: JUNE 30, 2011**

1.1.15. For all outages, regardless of plant size or outage duration, provide the best available estimates of (a) the total number of outages and (b) the total duration of all outages, disaggregated as follows (a total of 18 possible classifications):

1.1.15.1.1. Whether the outage was (a) scheduled or (b) unscheduled,
1.1.15.1.2. Whether the unit size was (a) less than 10 MW, (b) between 10 and 25 MW, and (c) over 25 MW; and
1.1.15.1.3. Whether the outage duration was (a) less than 8 hours, (b) between 8 and 24 hours, and (c) over 24 hours.

**SDG&E Response 1.1.15:**

**The attachment ERRA 2010 MDR Q1.xlsx is considered confidential/privileged information pursuant to applicable provisions of D.06-06-066, GO 66-C and PUC Code Sections 583 & 454.5(g).**

Refer to the attached spreadsheet *ERRA 2010 MDR Q1.xlsx* attached to (Question 1.1.1.4).

**The following is confidential/privileged pursuant to applicable provisions of D.06-06-066, G.O. 66-C and PUC Code Sec. 583 and Sec. 454.5 (g).**

| 1.1.15 | | Miramar 1 | Miramar 2 | Palomar CTG-1 | Palomar CTG-2 | Palomar STG |
|---|---|---|---|---|---|---|
| a | Total number of all outages | [redacted] | | | | |
| b | Total all Scheduled duration all outages | | | | | |
| 1.1.15.2a | less than 10MW | N/App | N/App | N/App | N/App | N/App |
| 1.1.15.2b | between 10MW and 25MW | N/App | N/App | N/App | N/App | N/App |
| 1.1.15.2c | Over than 25MW | N/App | N/App | N/App | N/App | N/App |
| 1.1.15.3a | Less than 8 hours | [redacted] | | | | |
| 1.1.15.3b | between 8 and 24 hours | | | | | |
| 1.1.15.3c | Over 24 hours | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| a | Total number of all outages | [redacted] | | | | |
| b | Total un-scheduled duration all outages | | | | | |
| 1.1.15.2a | less than 10MW | N/App | N/App | N/App | N/App | N/App |
| 1.1.15.2b | between 10MW and 25MW | N/App | N/App | N/App | N/App | N/App |
| 1.1.15.2c | Over than 25MW | N/App | N/App | N/App | N/App | N/App |
| 1.1.15.3a | Less than 8 hours | [redacted] | | | | |
| 1.1.15.3b | between 8 and 24 hours | | | | | |
| 1.1.15.3c | Over 24 hours | | | | | |

**DRA MDR DATA REQUEST**
**SDG&E 2010 ERRA COMPLIANCE**
**A.11-06-003**
**DATE RECEIVED: JUNE 1, 2011**
**DATE RESPONDED: JUNE 30, 2011**

1.1.17. Provide a comparison each and every unit of any fossil-fuel-fired power plant owned (wholly or partially)or operated by the utility at any time during the Record Period, for each month and for the year as a whole, against published industry baselines for appropriate indices of generating plant outages, availability, and productivity. If the utility's units' performance parameters are different from the industry standard, explain why.

**SDG&E Response 1.1.17:**

**The attachment ERRA 2010 MDR Q1.xlsx is considered confidential/privileged information pursuant to applicable provisions of D.06-06-066, GO 66-C and PUC Code Sections 583 & 454.5(g).**

Refer to the attached spreadsheet *ERRA 2010 MDR Q1.xlsx* attached to (Question 1.1.1.4). The relevant industry standard is the North American Electric Reliability Council Generating Availability Data System (NERC-GADS).

**The following is confidential/privileged pursuant to applicable provisions of D.06-06-066, G.O. 66-C and PUC Code Sec. 583 and Sec. 454.5 (g).**

**1.1.17**

Palomar 2010

| Month | CT1 Availability Factor (AF) | CT2 Availability Factor (AF) | ST Availability Factor (AF) | Primary reason AF was lower than industry standard |
|---|---|---|---|---|
| January | | | | |
| February | | | | |
| March | | | | |
| April | | | | |
| May | | | | |
| June | | | | |
| July | | | | |
| August | | | | |
| September | | | | |
| October | | | | |
| November | | | | |
| December | | | | |
| **2010** | | | | |
| **Industry Standard = 89.54** | | | | |

Industry Standard is the North American Electric Reliability Council Generating Availability Data System (NERC-GADS), Generating Availability Report for 2005 -2009, Combined Cycle Plants, Availabiity Factor = 89.54.
AF = (available hours/period hours)*100

Miramar 2010

| Month | CT1 Availability Factor (AF) | CT2 Availability Factor (AF) | Primary reason AF was lower than industry standard |
|---|---|---|---|
| January | | | |
| February | | | |
| March | | | |
| April | | | |
| May | | | |
| June | | | |
| July | | | |
| August | | | |
| September | | | |
| October | | | |
| November | | | |
| December | | | |
| **2010** | | | |
| **Industry Standard = 92.33** | | | |

Industry Standard is the North American Electric Reliability Council Generating Availability Data System (NERC-GADS), Generating Availability Report for 2005 -2009, Gas Turbines 20-49 MW, Availabiity Factor = 92.33.
AF = (available hours/period hours)*100

# Attachment B

SDG&E's Responses to DRA's Data Request Number 5

**DRA DATA REQUEST**
**DRA- SDG&E- DR-05**
**SDG&E 2010 ERRA COMPLIANCE – A.11-06-003**
**SDG&E RESPONSE**
**DATE RECEIVED: NOVEMBER 9, 2011**
**DATE RESPONDED: NOVEMBER 17, 2011**

**5.1 Utility-Retained Generation (Anthony Mazy – 415-703-3036 anthony.mazy@cpuc.ca.gov)**

5.1.1. Provide a single MS Excel, or compatible, worksheet, with no merged cells, containing a row of data, as specified below, for each and every outage affecting 25 MW or more and lasting 24 hours or more, where any portion of the outage occurred during the 2010 Record Period, with a separate column for each of the following data:

5.1.1.1. the text name of the plant experiencing the outage,

5.1.1.2. the text identity of the unit(s), of multi-unit plants, experiencing the outage,

5.1.1.3. text, indicating whether the plant/unit was nuclear-, hydro-, thermal-, or other-powered (and, for "other", include a footnote specifying the type of plant,

5.1.1.4. text, indicating whether the outage was scheduled or unscheduled (forced),

5.1.1.5. the actual date and time, in MS Excel date-time format, or compatible, that the outage began, even if occurring prior to the 2010 Record Period,

5.1.1.6. the actual date and time, in MS Excel date-time format, or compatible, that the outage ended, even if occurring after the 2010 Record Period,

5.1.1.7. the number, in megawatts, of the capacity affected by the outage,

5.1.1.8. if a scheduled outage, the date, in MS Excel date format, or compatible, on which this outage was originally scheduled (put on a schedule), and

5.1.1.9. if a scheduled outage, the date, in MS Excel date format, or compatible, on which this outage was, on originally scheduled to occur (commencement of scheduled outage).

**SDG&E Response:**

SDG&E objects to this request as overbroad, unduly burdensome, and seeking information that is irrelevant and not likely to lead to the discovery of admissible evidence. In addition, for the Record Period, the majority of the requested information was previously provided in the Master Data Request, specifically in questions 1.1.4, 1.1.12, and 1.1.14. These responses remain confidential. Without waiving this objection, SDG&E provides the following response.

**The information below in attachment *DR 5.1.1.xls* is confidential/privileged pursuant to applicable provisions of D.06-06-066, G.O. 66-C and PUC Code Sec. 583 and Sec. 454.5(g).**

DR 5.1.1.xls

**The following is confidential/privileged pursuant to applicable provisions of D.06-06-066, G.O. 66-C and PUC Code Sec. 583 and Sec. 454.5 (g) .**

| **5.1.1** | **Questions:** | | | | | |
|---|---|---|---|---|---|---|
| | **OUTAGE ID** | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |
| 5.1.1.1 | Unit Name | Palomar Unit 1 | Palomar Unit 2 | Palomar Unit 3 | Palomar Unit 3 | Palomar Unit 1 |
| 5.1.1.2 | Basic type | Combined Cycle C | Combined Cycle C | Combined Cycle S | Combined Cycle S | Combined Cycle |
| 5.1.1.3 | Fuel | Gas Fuel | Gas Fuel | | | Gas Fuel |
| 5.1.1.4 | Outage Type | Scheduled | Scheduled | Scheduled | Forced | Forced |
| 5.1.1.5 | Outage Start Time | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |
| 5.1.1.6 | Outage End Time | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |
| 5.1.1.7 | Number of MW affected | [redacted] | | | [redacted] | [redacted] |
| 5.1.1.8 | Date Scheduled | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |
| 5.1.1.9 | Original Start Date | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |

**The following is confidential/privileged pursuant to applicable provisions of D.06-06-066, G.O. 66-C and PUC Code Sec. 583 and Sec. 454.5 (g).**

| **5.1.1** | **Questions:** | | | | |
|---|---|---|---|---|---|
| | **OUTAGE ID** | [redacted] | [redacted] | [redacted] | [redacted] |
| 5.1.1.1 | Unit Name | Miramar Unit 1 | Miramar Unit 1 | Miramar Unit 1 | Miramar Unit 1 |
| 5.1.1.2 | Basic type | Simple Cycle CT | Simple Cycle CT | Simple Cycle CT | Simple Cycle CT |
| 5.1.1.3 | Fuel | Gas Fuel | Gas Fuel | Gas Fuel | Gas Fuel |
| 5.1.1.4 | Outage Type | Scheduled | Forced | Forced | Forced |
| 5.1.1.5 | Outage Start Time | [redacted] | [redacted] | [redacted] | [redacted] |
| 5.1.1.6 | Outage End Time | [redacted] | [redacted] | [redacted] | [redacted] |
| 5.1.1.7 | Number of MW affected | [redacted] | [redacted] | [redacted] | [redacted] |
| 5.1.1.8 | Date Scheduled | [redacted] | [redacted] | [redacted] | [redacted] |
| 5.1.1.9 | Original Start Date | [redacted] | [redacted] | [redacted] | [redacted] |

**The following is confidential/privileged pursuant to applicable provisions of D.06-06-066, G.O. 66-C and PUC Code Sec. 583 and Sec. 454.5 (g).**

| **5.1.1** | **Questions:** | | | | |
|---|---|---|---|---|---|
| | **OUTAGE ID** | [redacted] | [redacted] | [redacted] | [redacted] |
| 5.1.1.1 | Unit Name | Miramar Unit 2 | Miramar Unit 2 | Miramar Unit 2 | Miramar Unit 2 |
| 5.1.1.2 | Basic type | Simple Cycle CT | Simple Cycle CT | Simple Cycle CT | Simple Cycle CT |
| 5.1.1.3 | Fuel | Gas Fuel | Gas Fuel | Gas Fuel | Gas Fuel |
| 5.1.1.4 | Outage Type | Scheduled | Scheduled | Forced | Forced |
| 5.1.1.5 | Outage Start Time | [redacted] | [redacted] | [redacted] | [redacted] |
| 5.1.1.6 | Outage End Time | [redacted] | [redacted] | [redacted] | [redacted] |
| 5.1.1.7 | Number of MW affected | [redacted] | [redacted] | [redacted] | [redacted] |
| 5.1.1.8 | Date Scheduled | [redacted] | [redacted] | [redacted] | [redacted] |
| 5.1.1.9 | Original Start Date | [redacted] | [redacted] | [redacted] | [redacted] |

**DRA DATA REQUEST**
**DRA- SDG&E- DR-05**
**SDG&E 2010 ERRA COMPLIANCE – A.11-06-003**
**SDG&E RESPONSE**
**DATE RECEIVED: NOVEMBER 9, 2011**
**DATE RESPONDED: NOVEMBER 17, 2011**

5.1.2. For each and every generating plant, or unit of a multi-unit plant, owned or operated by SDG&E at any time in the previous three (3) years, provide the following data in separate, machine-readable, MS Excel, or compatible, worksheets, with month-specific data for any one plant in a single row and plant-specific data for any one month in a single column:

5.1.2.1. a worksheet showing the manufacturer's rated nameplate capacity for that plant, for each month of the Record Period and for each month of the preceding two calendar years; DRA expects that most plants will have few, if any, changes in capacity over any three-years period. For any plants with no nameplate capacity changes over the period requested, the utility may substitute a single value in the column representing the most recent month, with a text note in the column immediately to the right indicating "no changes".

**SDG&E Response:**

SDG&E objects to this request as overbroad, unduly burdensome, and seeking information that is irrelevant and not likely to lead to the discovery of admissible evidence. In addition, for the Record Period, this information was previously provided annually in the Master Data Request in question 1.1.4. Subject to and without waiving its objections, SDG&E provides the following response which responds to the question with 2009 and 2010 monthly data.

Please see attachment DR 5.1.2.1-5.1.2.2.xls below.

DR
5.1.2.1-5.1.2.2.xls

**DRA DATA REQUEST**
**DRA- SDG&E- DR-05**
**SDG&E 2010 ERRA COMPLIANCE – A.11-06-003**
**SDG&E RESPONSE**
**DATE RECEIVED: NOVEMBER 9, 2011**
**DATE RESPONDED: NOVEMBER 17, 2011**

5.1.2.2. a worksheet showing the rated capacity for that plant, as registered with or recognized by, the California ISO, for each month of the Record Period and for each month of the preceding two calendar years; DRA expects that most plants will have few, if any, changes in capacity over any three-years period. For any plants with no CAISO-recognized capacity changes over the period requested, the utility may substitute a single value in the column representing the most recent month, with a text note in the column immediately to the right indicating "no changes".

**SDG&E Response:**

SDG&E objects to this request as overbroad, unduly burdensome, and seeking information that is irrelevant and not likely to lead to the discovery of admissible evidence. In addition, for the Record Period, this information was previously provided annually in the Master Data Request in question 1.1.4. Subject to and without waiving its objections, SDG&E provides the following response which responds to the question with 2009 and 2010 monthly data.

Please see attachment DR 5.1.2.1-5.1.2.2.xls below.

DR
5.1.2.1-5.1.2.2.xls

**Nameplate Capacity**

| Month/Year | Miramar 1 | Miramar 2 | Palomar | SONGS 2 | SONGS 3 |
|---|---|---|---|---|---|
| Jan-09 | 49 | 0 | 566 | 1,070 | 1,080 |
| Feb-09 | 49 | 0 | 566 | 1,070 | 1,080 |
| Mar-09 | 49 | 0 | 566 | 1,070 | 1,080 |
| Apr-09 | 49 | 0 | 566 | 1,070 | 1,080 |
| May-09 | 49 | 0 | 566 | 1,070 | 1,080 |
| Jun-09 | 49 | 0 | 566 | 1,070 | 1,080 |
| Jul-09 | 49 | 0 | 566 | 1,070 | 1,080 |
| Aug-09 | 49 | 49 | 566 | 1,070 | 1,080 |
| Sep-09 | 49 | 49 | 566 | 1,070 | 1,080 |
| Oct-09 | 49 | 49 | 566 | 1,070 | 1,080 |
| Nov-09 | 49 | 49 | 566 | 1,070 | 1,080 |
| Dec-09 | 49 | 49 | 566 | 1,070 | 1,080 |
| Jan-10 | 49 | 49 | 566 | 1,070 | 1,080 |
| Feb-10 | 49 | 49 | 566 | 1,070 | 1,080 |
| Mar-10 | 49 | 49 | 566 | 1,070 | 1,080 |
| Apr-10 | 49 | 49 | 566 | 1,070 | 1,080 |
| May-10 | 49 | 49 | 566 | 1,070 | 1,080 |
| Jun-10 | 49 | 49 | 566 | 1,070 | 1,080 |
| Jul-10 | 49 | 49 | 566 | 1,070 | 1,080 |
| Aug-10 | 49 | 49 | 566 | 1,070 | 1,080 |
| Sep-10 | 49 | 49 | 566 | 1,070 | 1,080 |
| Oct-10 | 49 | 49 | 566 | 1,070 | 1,080 |
| Nov-10 | 49 | 49 | 566 | 1,070 | 1,080 |
| Dec-10 | 49 | 49 | 566 | 1,070 | 1,080 |

**Pmax Capacity**

| Month/Year | Miramar 1 | Miramar 2 | Palomar | SONGS 2 | SONGS 3 |
|---|---|---|---|---|---|
| Jan-09 | 48 | 0 | 565 | 1,124 | 1,126 |
| Feb-09 | 48 | 0 | 565 | 1,124 | 1,126 |
| Mar-09 | 48 | 0 | 565 | 1,124 | 1,126 |
| Apr-09 | 48 | 0 | 565 | 1,124 | 1,126 |
| May-09 | 48 | 0 | 565 | 1,124 | 1,126 |
| Jun-09 | 48 | 0 | 565 | 1,124 | 1,126 |
| Jul-09 | 48 | 0 | 565 | 1,124 | 1,126 |
| Aug-09 | 48 | 48 | 565 | 1,124 | 1,126 |
| Sep-09 | 48 | 48 | 565 | 1,124 | 1,126 |
| Oct-09 | 48 | 48 | 565 | 1,124 | 1,126 |
| Nov-09 | 48 | 48 | 565 | 1,124 | 1,126 |
| Dec-09 | 48 | 48 | 565 | 1,124 | 1,126 |
| Jan-10 | 48 | 47.9 | 565 | 1,124 | 1,126 |
| Feb-10 | 48 | 47.9 | 565 | 1,124 | 1,126 |
| Mar-10 | 48 | 47.9 | 565 | 1,124 | 1,126 |
| Apr-10 | 48 | 47.9 | 565 | 1,124 | 1,126 |
| May-10 | 48 | 47.9 | 565 | 1,124 | 1,126 |
| Jun-10 | 48 | 47.9 | 565 | 1,124 | 1,126 |
| Jul-10 | 48 | 47.9 | 565 | 1,124 | 1,126 |
| Aug-10 | 48 | 47.9 | 565 | 1,124 | 1,126 |
| Sep-10 | 48 | 47.9 | 565 | 1,124 | 1,126 |
| Oct-10 | 48 | 47.9 | 565 | 1,124 | 1,126 |
| Nov-10 | 48 | 47.9 | 565 | 1,124 | 1,126 |
| Dec-10 | 48 | 47.9 | 565 | 1,124 | 1,126 |

**DRA DATA REQUEST**
**DRA- SDG&E- DR-05**
**SDG&E 2010 ERRA COMPLIANCE – A.11-06-003**
**SDG&E RESPONSE**
**DATE RECEIVED: NOVEMBER 9, 2011**
**DATE RESPONDED: NOVEMBER 17, 2011**

5.1.2.3. a worksheet showing the monthly energy production for that plant, for each month of the Record Period and for each month of the preceding two calendar years;

**SDG&E Response:**

SDG&E objects to this request as overbroad, unduly burdensome, and seeking information that is irrelevant and not likely to lead to the discovery of admissible evidence. In addition, for the Record Period, this information was previously provided in the Master Data Request in question 1.1.5. Subject to and without waiving its objections, SDG&E provides the following response which responds to the question with 2009 and 2010 data. Please see attachment DR 5.1.2.3.xls below.

**The information below in attachment *DR 5.1.2.3.xls* is confidential/privileged pursuant to applicable provisions of D.06-06-066, G.O. 66-C and PUC Code Sec. 583 and Sec. 454.5(g).**

DR 5.1.2.3.xls

**The information below in attachment is confidential/privileged pursuant to applicable provisions of D.06-06-066, G.O. 66-C and PUC Code Sec. 5**

**Monthly Energy Production(MWHrs)**

| Month/Year | Miramar 1 | Miramar 2 | Palomar | SONGS 2 | SONGS 3 |
|---|---|---|---|---|---|
| Jan-09 | | | | | |
| Feb-09 | | | | | |
| Mar-09 | | | | | |
| Apr-09 | | | | | |
| May-09 | | | | | |
| Jun-09 | | | | | |
| Jul-09 | | | | | |
| Aug-09 | | | | | |
| Sep-09 | | | | | |
| Oct-09 | | | | | |
| Nov-09 | | | | | |
| Dec-09 | | | | | |
| Jan-10 | | | | | |
| Feb-10 | | | | | |
| Mar-10 | | | | | |
| Apr-10 | | | | | |
| May-10 | | | | | |
| Jun-10 | | | | | |
| Jul-10 | | | | | |
| Aug-10 | | | | | |
| Sep-10 | | | | | |
| Oct-10 | | | | | |
| Nov-10 | | | | | |
| Dec-10 | | | | | |

**DRA DATA REQUEST**
**DRA- SDG&E- DR-05**
**SDG&E 2010 ERRA COMPLIANCE – A.11-06-003**
**SDG&E RESPONSE**
**DATE RECEIVED: NOVEMBER 9, 2011**
**DATE RESPONDED: NOVEMBER 17, 2011**

5.1.2.4. a worksheet showing the energy production, in MWHrs, lost to capacity derating, partial outages, or similar issues, during times when the plant was not off-line, during the month, due to the lack of fuel, including water for power, or due to maintenance or repair, for each month of the Record Period and for each month of the preceding two calendar years;

**SDG&E Response:**

SDG&E objects to this request as overbroad, unduly burdensome, and seeking information that is irrelevant and not likely to lead to the discovery of admissible evidence. Subject to and without waiving its objections, SDG&E provides the following response which responds to the question with 2009 and 2010 data.

Note that energy production quantities lost to capacity derates reflects generation shortfall relative to hour-ahead or day-ahead energy that was already scheduled. Also please note that the information provided is for incidents affecting 25 MW or more and lasting 24 hours or more.

Please see attachment 5.1.2.4.xls

**The information below in attachment *DR 5.1.2.4.xls* is confidential/privileged pursuant to applicable provisions of D.06-06-066, G.O. 66-C and PUC Code Sec. 583 and Sec. 454.5(g).**

DR 5.1.2.4.xls

**DRA DATA REQUEST**
**DRA- SDG&E- DR-05**
**SDG&E 2010 ERRA COMPLIANCE – A.11-06-003**
**SDG&E RESPONSE**
**DATE RECEIVED: NOVEMBER 9, 2011**
**DATE RESPONDED: DECEMBER 6, 2011**

5.1.2.4. a worksheet showing the energy production, in MWHrs, lost to capacity derating, partial outages, or similar issues, during times when the plant was not off-line, during the month, due to the lack of fuel, including water for power, or due to maintenance or repair, for each month of the Record Period and for each month of the preceding two calendar years;

**SDG&E Response:**

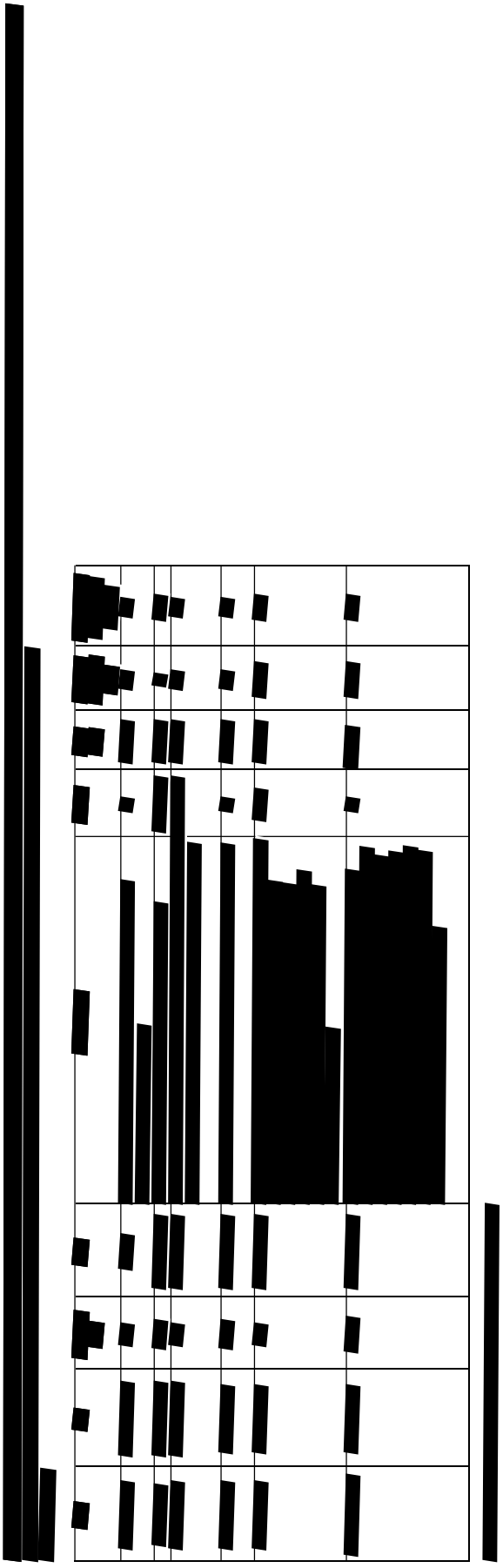
SDG&E objects to this request as overbroad, unduly burdensome, and seeking information that is irrelevant and not likely to lead to the discovery of admissible evidence. Subject to and without waiving its objections, SDG&E provides the following response which responds to the question with 2009 and 2010 data.

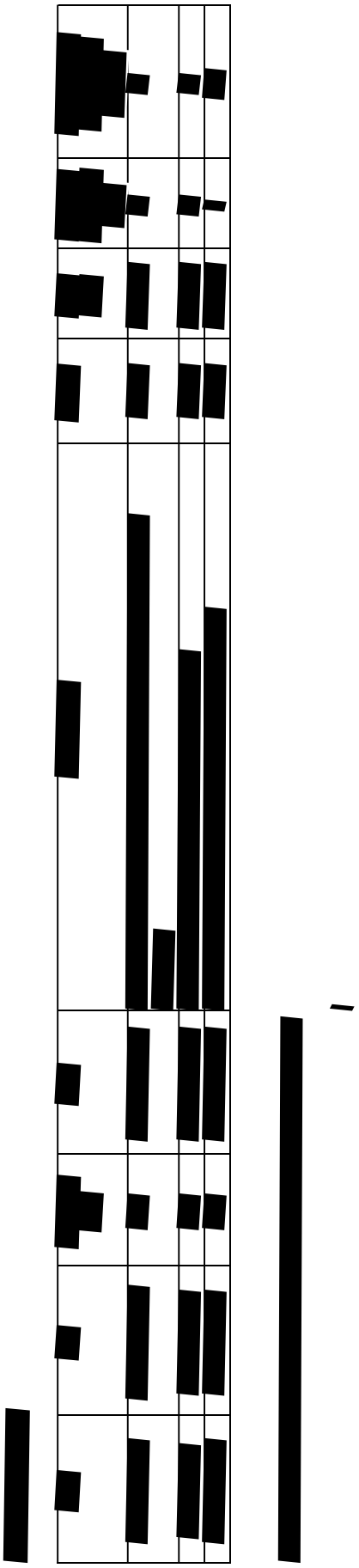
Note that energy production quantities lost to capacity derates reflects generation shortfall relative to hour-ahead or day-ahead energy that was already scheduled. Also please note that the information provided is for incidents affecting 25 MW or more and lasting 24 hours or more.

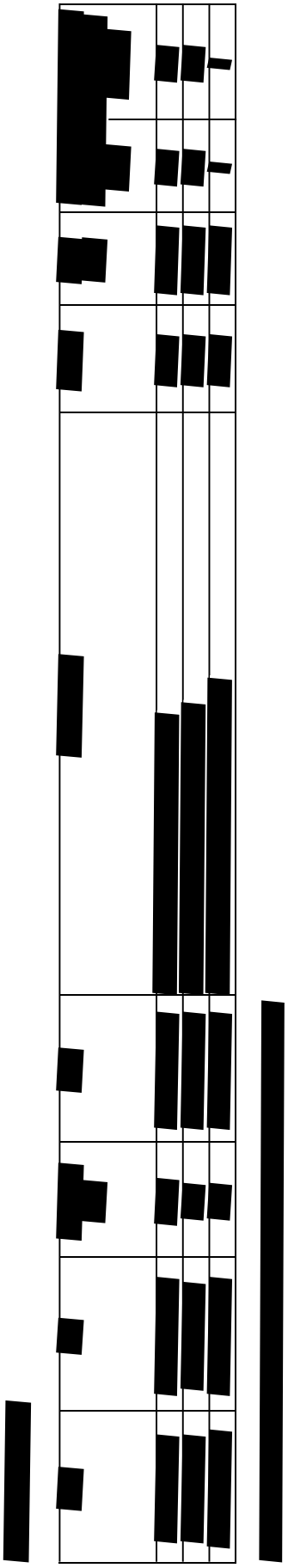
Please see attachment 5.1.2.4.xls

**The information below in attachment *DR 5.1.2.4.xls* is confidential/privileged pursuant to applicable provisions of D.06-06-066, G.O. 66-C and PUC Code Sec. 583 and Sec. 454.5(g).**

DR 5[1].1.2.4 Revised.xls







**DRA DATA REQUEST**
**DRA- SDG&E- DR-05**
**SDG&E 2010 ERRA COMPLIANCE – A.11-06-003**
**SDG&E RESPONSE**
**DATE RECEIVED: NOVEMBER 9, 2011**
**DATE RESPONDED: NOVEMBER 17, 2011**

5.1.2.5. a worksheet showing the number of hours that the plant was off-line during the month, due to the lack of fuel, including water for power, for each month of the Record Period and for each month of the preceding two calendar years;

**SDG&E Response:**

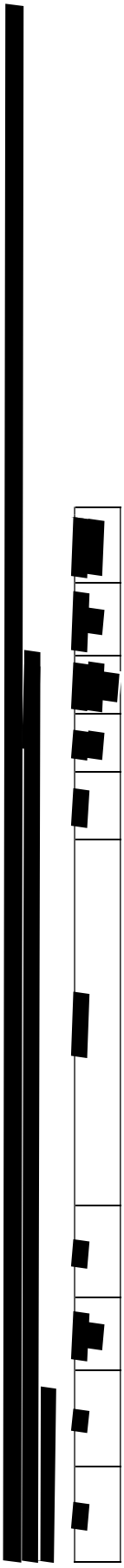
SDG&E objects to this request as overbroad, unduly burdensome, and seeking information that is irrelevant and not likely to lead to the discovery of admissible evidence. Subject to and without waiving its objections, SDG&E provides the following response which responds to the question with 2009 and 2010 data.

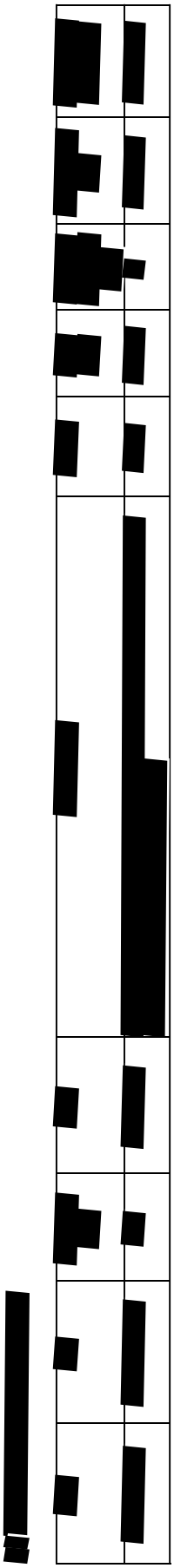
Note that the information provided is for incidents affecting 25 MW or more and lasting 24 hours or more.

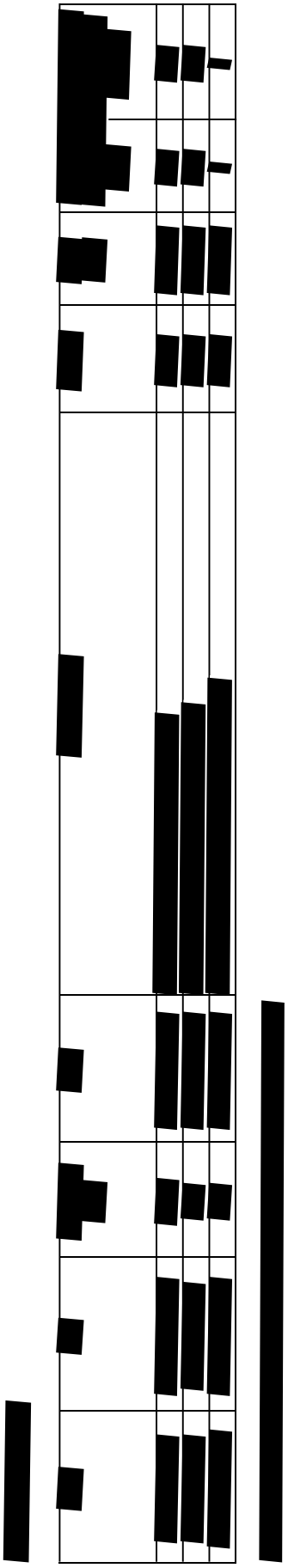
Please see attachment 5.1.2.5.xls

**The information below in attachment *DR 5.1.2.5.xls* is confidential/privileged pursuant to applicable provisions of D.06-06-066, G.O. 66-C and PUC Code Sec. 583 and Sec. 454.5(g).**

DR 5.1.2.5.xls







**DRA DATA REQUEST**
**DRA- SDG&E- DR-05**
**SDG&E 2010 ERRA COMPLIANCE – A.11-06-003**
**SDG&E RESPONSE**
**DATE RECEIVED: NOVEMBER 9, 2011**
**DATE RESPONDED: NOVEMBER 17, 2011**

5.1.2.6. a worksheet showing the number of hours that the plant was off-line during the month, for scheduled maintenance, for each month of the Record Period and for each month of the preceding two calendar years;

**SDG&E Response:**

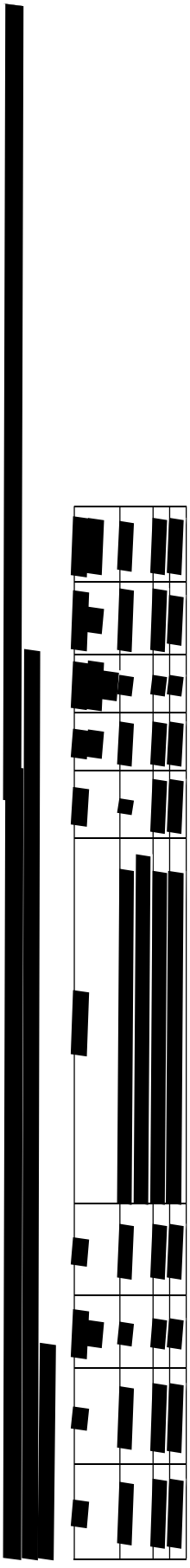
SDG&E objects to this request as overbroad, unduly burdensome, and seeking information that is irrelevant and not likely to lead to the discovery of admissible evidence. Subject to and without waiving its objections, SDG&E provides the following response which responds to the question with 2009 and 2010 data.

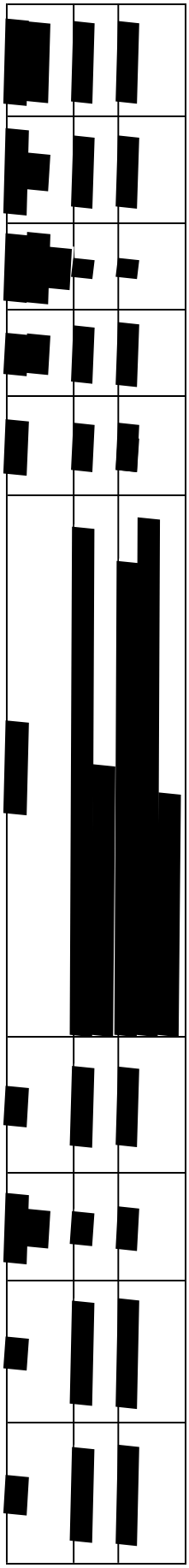
Note that the information provided is for incidents affecting 25 MW or more and lasting 24 hours or more.

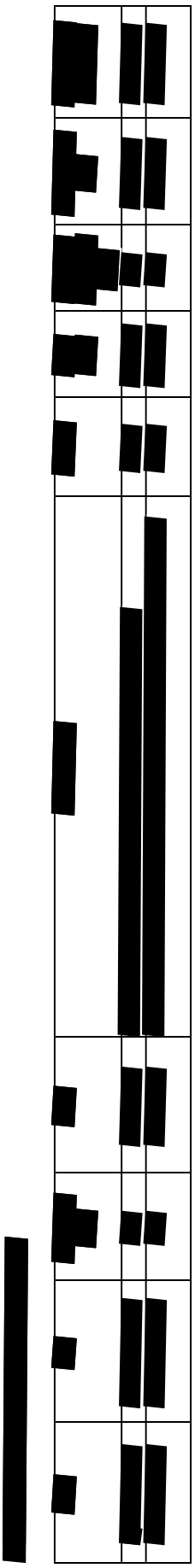
Please see attachment 5.1.2.6.xls.

**The information below in attachment *DR 5.1.2.6.xls* is confidential/privileged pursuant to applicable provisions of D.06-06-066, G.O. 66-C and PUC Code Sec. 583 and Sec. 454.5(g).**

DR 5.1.2.6.xls







**DRA DATA REQUEST**
**DRA- SDG&E- DR-05**
**SDG&E 2010 ERRA COMPLIANCE – A.11-06-003**
**SDG&E RESPONSE**
**DATE RECEIVED: NOVEMBER 9, 2011**
**DATE RESPONDED: NOVEMBER 17, 2011**

5.1.2.7. a worksheet showing the monthly number of hours that the plant was forced off-line during the month, for each month of the Record Period and for each month of the preceding two calendar years;

**SDG&E Response:**

SDG&E objects to this request as overbroad, unduly burdensome, and seeking information that is irrelevant and not likely to lead to the discovery of admissible evidence. Subject to and without waiving its objections, SDG&E provides the following response which responds to the question with 2009 and 2010 data.

Note that the information provided is for incidents affecting 25 MW or more and lasting 24 hours or more.

Please see attachment 5.1.2.7.xls.

**The information below in attachment *DR 5.1.2.7.xls* is confidential/privileged pursuant to applicable provisions of D.06-06-066, G.O. 66-C and PUC Code Sec. 583 and Sec. 454.5(g).**

DR 5.1.2.7.xls

**DRA DATA REQUEST**
**DRA- SDG&E- DR-05**
**SDG&E 2010 ERRA COMPLIANCE – A.11-06-003**
**SDG&E RESPONSE**
**DATE RECEIVED: NOVEMBER 9, 2011**
**DATE RESPONDED: DECEMBER 6, 2011**

5.1.2.7. a worksheet showing the monthly number of hours that the plant was forced off-line during the month, for each month of the Record Period and for each month of the preceding two calendar years;

**SDG&E Response:**

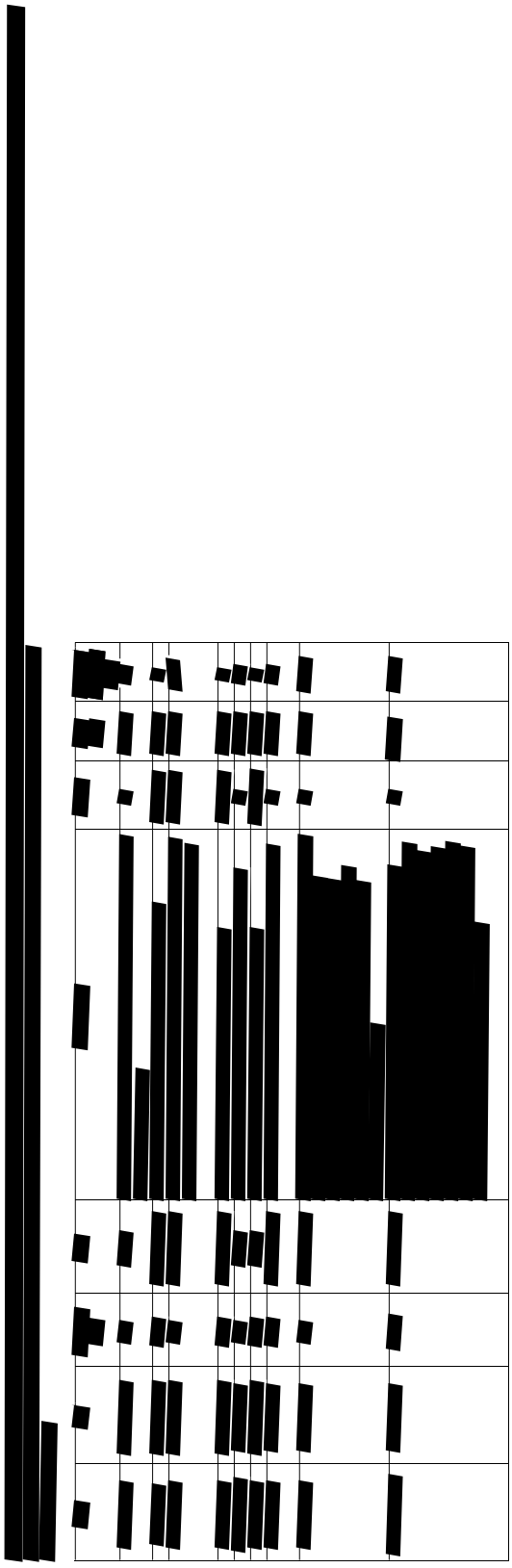
SDG&E objects to this request as overbroad, unduly burdensome, and seeking information that is irrelevant and not likely to lead to the discovery of admissible evidence. Subject to and without waiving its objections, SDG&E provides the following response which responds to the question with 2009 and 2010 data.

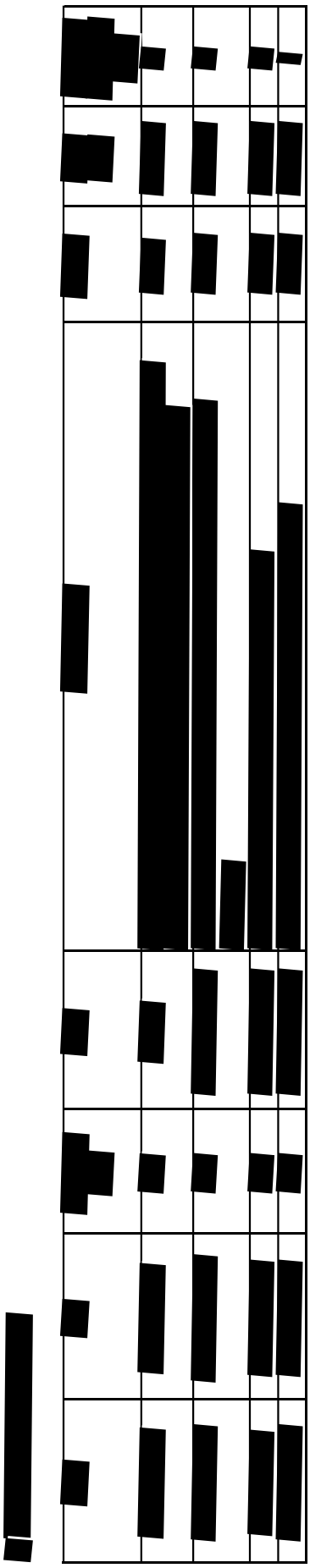
Note that the information provided is for incidents affecting 25 MW or more and lasting 24 hours or more.

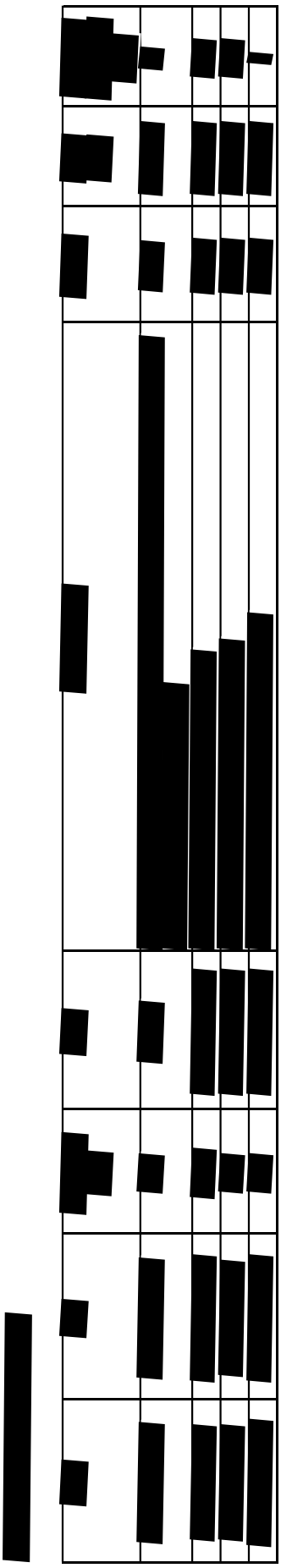
Please see attachment 5.1.2.7.xls.

**The information below in attachment *DR 5.1.2.7.xls* is confidential/privileged pursuant to applicable provisions of D.06-06-066, G.O. 66-C and PUC Code Sec. 583 and Sec. 454.5(g).**

DR 5[1].1.2.7
Revised.xls







# Attachment C

SDG&E's Responses to DRA's Data Request Number 7

**DRA DATA REQUEST**
**DRA- SDG&E DR-07**
**SDG&E 2010 ERRA COMPLIANCE – A.11-06-003**
**SDG&E RESPONSE**
**DATE RECEIVED: NOVEMBER 22, 2011**
**DATE RESPONDED: DECEMBER 6, 2011**

**7.1 Utility-Retained Generation (Anthony Mazy – 415-703-3036 anthony.mazy@cpuc.ca.gov)**

7.1.1. Question 5.1.2.8. requested a worksheet showing the number of hours that the plant was not available for service, regardless of whether it was actually in service during times it was available, during the month, for each month of the Record Period and for each month of the preceding two calendar years; to which SDG&E objected, as overbroad, unduly burdensome, and seeking information that is irrelevant and not likely to lead to the discovery of admissible evidence, and subject to and without waiving its objections, requested clarification of how a plant would not be available for service while it was available.

7.1.1.1. Please note that DRA did not, in fact, make any reference to how a plant "would not be available for service while it was available."

7.1.1.2. DRA requested "**a worksheet showing the number of hours that the plant was not available for service, during the month, for each month of the Record Period and for each month of the preceding two calendar years;**," and still does. The phrase, "regardless of whether it was actually in service during times it was available," was intended to clarify that DRA's interest was in times that the plant was not actually available for service, and not merely "not in service," a status that might well include "available, but not operating," or other possibilities. Please provide the requested data now.

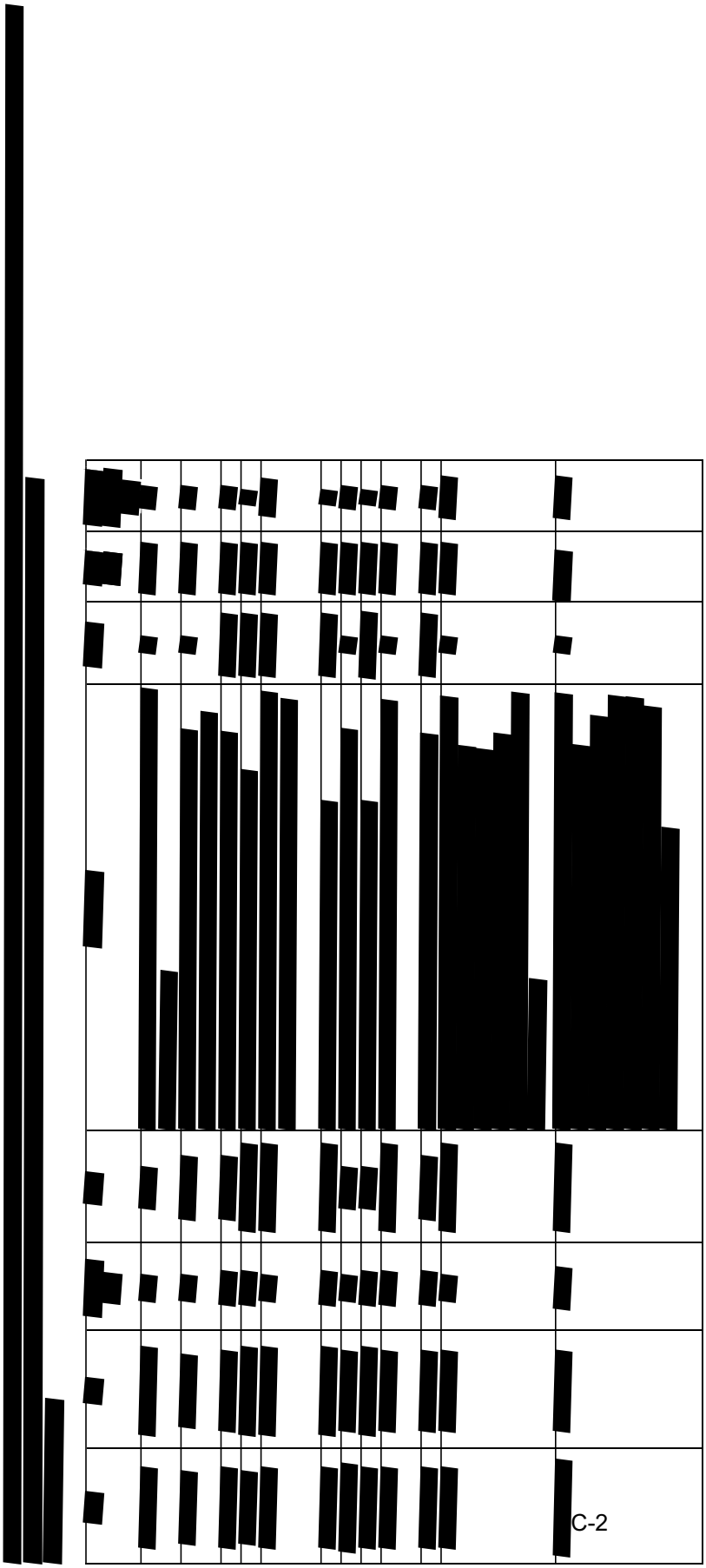
**SDG&E Response 7.1:**

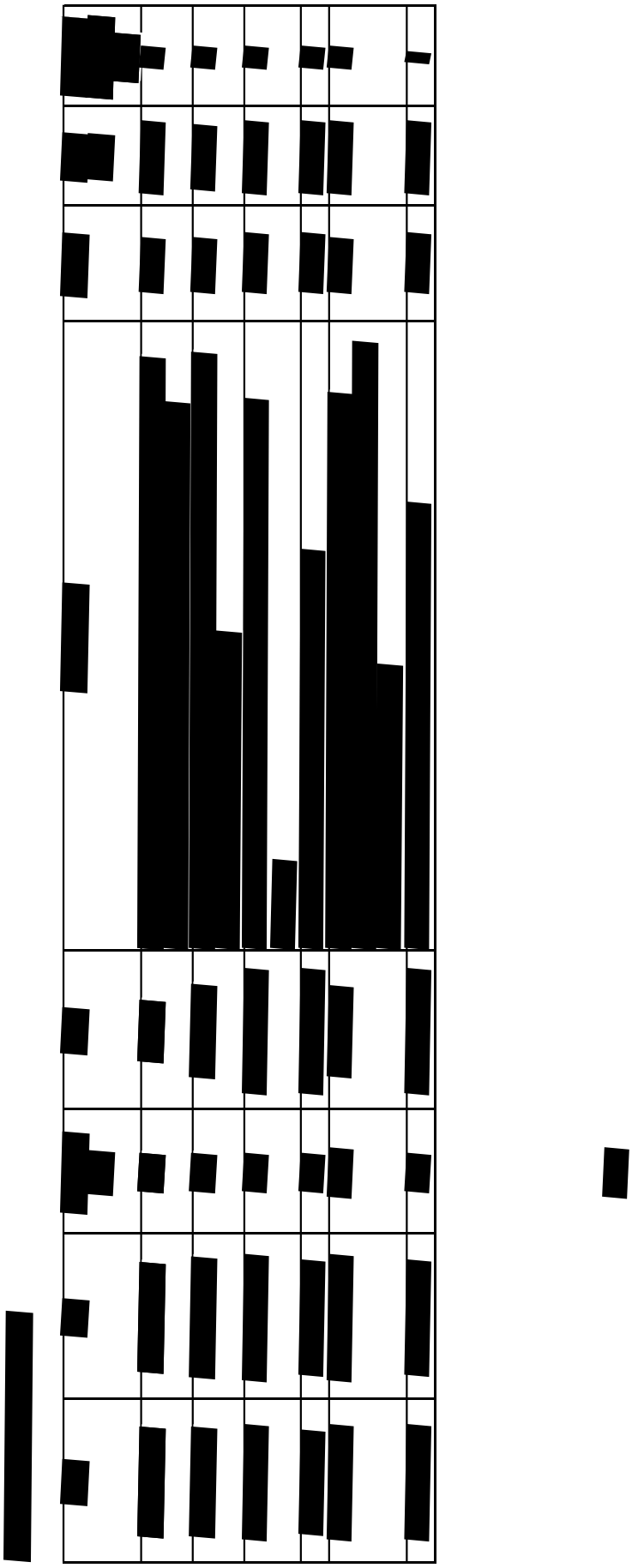
SDG&E objects to this request as overbroad, unduly burdensome, and seeking information that is irrelevant and not likely to lead to the discovery of admissible evidence. Subject to and without waiving its objections, SDG&E provides the following response which responds to the question with 2009 and 2010 data. Please see attachment 7.1.1.xls.

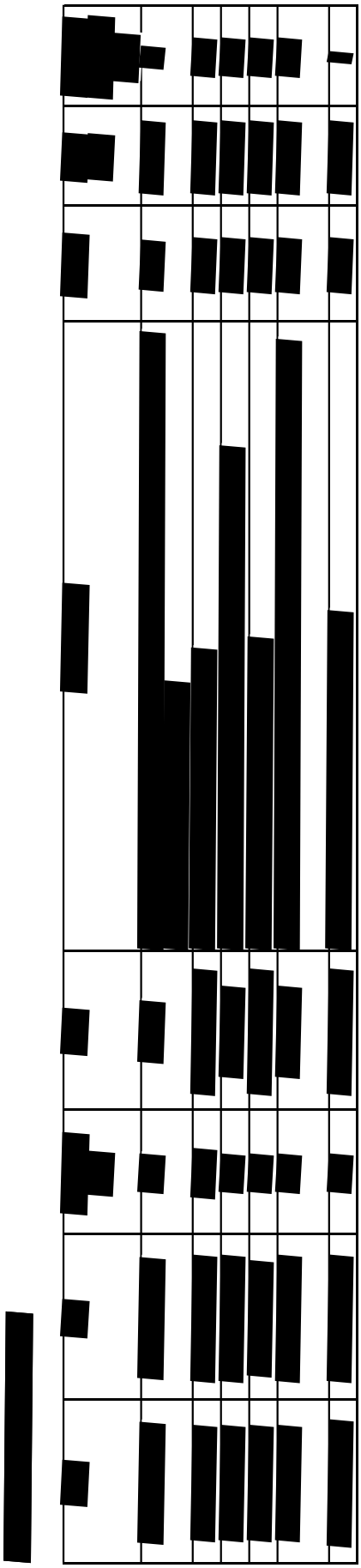
Note that the information provided is for incidents affecting 25 MW or more and lasting 24 hours or more.

**The information below in attachment *DR 7.1.1.xls* remains confidential/privileged pursuant to applicable provisions of D.06-06-066, G.O. 66-C and PUC Code Sec. 583 and Sec. 454.5(g) and the corresponding declaration of Andrew Scates.**


DR 7.1.1.xls







**DRA DATA REQUEST**
**DRA- SDG&E DR-07**
**SDG&E 2010 ERRA COMPLIANCE – A.11-06-003**
**SDG&E RESPONSE**
**DATE RECEIVED: NOVEMBER 22, 2011**
**DATE RESPONDED: DECEMBER 6, 2011**

7.1.2. Question 5.1.2.9. requested, if, for any plant in any month, the number provided in your response to Question 5.1.2.8 does not equal the sum of your responses to Questions 5.1.2.5, 5.1.2.6, and then provide notes explaining each and every difference, to which SDG&E Responded, "Not applicable." Please provide the requested data now.

**SDG&E Response7.1.2:**

SDG&E objects to this request as overbroad, unduly burdensome, and seeking information that is irrelevant and not likely to lead to the discovery of admissible evidence. Subject to and without waiving its objections, SDG&E provides the following response.

Note that the information provided is for incidents affecting 25 MW or more and lasting 24 hours or more.

The total number of hours the plant was not available regardless of whether it was actually in service during 2009 and 2010 as reported by SDG&E in question 7.1.1 will be more than the sum of responses to 5.1.2.5 and 5.1.2.6. The difference is due to forced outages reported by SDG&E in response to question 5.1.2.7.

**DRA DATA REQUEST**
**DRA- SDG&E DR-07**
**SDG&E 2010 ERRA COMPLIANCE – A.11-06-003**
**SDG&E RESPONSE**
**DATE RECEIVED: NOVEMBER 22, 2011**
**DATE RESPONDED: DECEMBER 6, 2011**

7.1.3. Provide a copy of any and all:

(a) internal audit reports,

(b) non-financial external audit reports,

(c) memos, reports or other written communications from any manager or committee at the Palomar energy facility to any manager or committee at SDG&E headquarters or Sempra headquarters,

(d) memos, reports or other written communications from any manager or committee at SDG&E headquarters or Sempra headquarters to any manager or committee at the Palomar energy facility,

(e) memos, reports or other written communications from any public agency, licensing or certification authority, industry association, or employee organization, to SDG&E or Sempra, or

(f) memos, reports or other written communications from SDG&E or Sempra to any public agency, licensing or certification authority, industry association, or employee organization, that addresses, with respect to the physical plant, on-site personnel, site or plant operations, or immediate environmental vicinity of the Palomar Energy Facility, any actual, possible or alleged:

7.1.3.1. outage or unavailability of the facility for service, including any outage extension or delayed return to service,

7.1.3.2. functional or operational failure of the plant or its equipment,

7.1.3.3. safety or security failure,

7.1.3.4. system or equipment malfunction or failure,

7.1.3.5. operational, repair, or maintenance failures or mistakes,

7.1.3.6. harm or injury to public or employees,

7.1.3.7. illegal activities,

7.1.3.8. hazardous situations,

7.1.3.9. civil, criminal, regulatory, or administrative legal proceedings, including any actual, possible, or alleged criminal behavior by any site personnel,

7.1.3.10. vandalism, sabotage, or any unresolved damage to property, or

7.1.3.11. workplace unrest or violence.

**DRA DATA REQUEST**
**DRA- SDG&E DR-07**
**SDG&E 2010 ERRA COMPLIANCE – A.11-06-003**
**SDG&E RESPONSE**
**DATE RECEIVED: NOVEMBER 22, 2011**
**DATE RESPONDED: DECEMBER 6, 2011**

**SDG&E Response 7.1.3:**

SDG&E objects to this request as overbroad, unduly burdensome, and seeking information that is irrelevant and not likely to lead to the discovery of admissible evidence. Subject to and without waiving its objections, SDG&E provides the following response:

The following documents are responsive for the 2010 record period. It should be noted that additional documents generated in 2011 exist, including documents related to the Palomar fire outage that began near the very end of 2010, but continued well into 2011. The 2011 documents generated outside the record period are not being produced.


CPUC Steam Valve.pdf


CPUC Transformer Fire.pdf


CEC Com.pdf

**From:** LaPeter, Carl S.
**To:** "Leung, Brian D."
**Cc:** Smithson, Peter; Martin, Brian; Dobbs, Jason
**Subject:** RE: Forced Outage 8/5/2010
**Date:** Friday, August 06, 2010 6:26:02 PM

---

Brian,

I apologize for my late response; I did not look at my emails until late today due to spending time resolving the subject issue.

Please see my responses below (in blue text). Please let me know if you need additional information, explanation or clarification.

We can discuss how best to communicate information when we meet. I have added your name to my Outlook Contacts so that when you call my cell phone I will see your name and not just a number.

I look forward to meeting you.

Thanks,
Carl

Carl S. La Peter
Maintenance Manager
SDG&E - Electric Generation
Palomar Energy Center
2300 Harveson Place
Escondido, CA 92029

Office: 760-432-2503
Cell: 760-331-7810
Email: clapeter@semprautilities.com

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**From:** Leung, Brian D. [mailto:brian.leung@cpuc.ca.gov]
**Sent:** Friday, August 06, 2010 10:32 AM
**To:** LaPeter, Carl S.
**Subject:** Forced Outage 8/5/2010

Hi Carl,

As mentioned in my voicemail message to you, I have been assigned the Palomar Energy Center. I will be contacting you, instead of Ben Brinkman, regarding any Forced or Scheduled outages at the Palomar Energy Center & Miramar Peakers from now on.

I'm not sure what your preference is in terms of communication exchange (ie. phone/email). So in the interim, I was wondering if you can provide me some information regarding the Forced outage. If possible, could you please respond before the end of today, Friday, August 6, 2010.

I'd like more information on the following:

Concerning PEC (Palomar Energy Center) Steam Turbine Generator Shutdown on August 5,

2010.

1. What exactly is broken or not functioning properly, that is causing the outage?
Main Steam Control Valve 2 hydraulic actuator developed an hydraulic fluid seal leak. The fluid leaked onto the valve body and began to create a large cloud of smoke. (The only way to stop this type of hydraulic fluid leak is to shutdown the steam turbine generator and then isolate the hydraulic fluid leak.) The steam turbine generator was shutdown and the two gas turbine generators were left running in emergency simple cycle mode. See 7 below for timeline.

2. What is the "critical path" for this outage? [What are the major tasks performed during the outage?
With the steam turbine shutdown the hydraulic supply lines to the actuator were removed and plugged. This allowed the steam turbine to be restored to service on Friday morning August 6, 2010. Note: Main steam control valve 1 and 2 are connected in parallel. The steam turbine generator can operate with only one of the two open, though with some plant limitations. See 7 below for timeline.

3. What was the status of the unit in question at the time the outage began?
Palomar Energy Center was in service and operating at approximately 545MW per schedule. The steam turbine generator was operating normally.

4. Approximately how many people are working to resolve this issue and how are they scheduled? Are they working 24 hours per day, seven days per week?
Dayshift: 5 to 10 people
Nightshift: 5 people

5. When was the last time an event of this nature occurred?
This type of leak has not occurred at PEC on this equipment.

6. When was the last time this piece of equipment in question was maintenanced?
Valve was inspected during the March 2010 Planned Outage; no specific actuator work was performed. Valve was calibrated during this outage.
Main steam control valves are stroke tested nightly.

7. Do you anticipate extending the current outage? If so, when wiill the unit be approximately returned to full availability (hours and date)?
Outage (derate) timeline:
Note: PEC normal rating is 565MW
Thursday afternoon: Steam turbine generator shutdown to isolate hydraulic leak: PEC derated to 340MW
Thursday evening: hydraulic lines disconnected and plugged. PEC shutdown overnight per schedule
Friday morning: PEC startup per schedule with steam turbine in service: PEC derated to 545MW (8:36AM)
Friday Afternoon: PEC operating per schedule: PEC derate increased to 555MW (2:30PM)

We expect to receive a replacement actuator during the weekend. While waiting we will remove the failed actuator and have tools and equipment in place to install the new actuator. When the new actuator arrives we will install and perform a calibration. When this is complete we will be able to increase the plant rating from the current 555MW to the normal 565MW. The tentative plan is to have PEC restored to full power sometime on Monday morning August 9, 2010.

Lastly, I may need to schedule a plant visit not only to inspect the plant, but to formally introduce myself to you.
Please visit at any time. I look forward to meeting you.

Thanks,

Brian D. Leung, M.S., P.E.
California Public Utilities Commission
Consumer Protection and Safety Division
320 West 4th Street, Suite 500
Los Angeles, CA 90013
Office: (213) 620-2581
Fax: (213) 620-2543
Cell: (213) 215-3447
bdl@cpuc.ca.gov

| | |
|---|---|
| **From:** | LaPeter, Carl S. |
| **To:** | "Leung, Brian D." |
| **Cc:** | Smithson, Peter; Dobbs, Jason; Martin, Brian; Baerman, Daniel |
| **Subject:** | RE: CPUC Data Request-PM1-20100809 |
| **Date:** | Thursday, August 26, 2010 5:14:27 PM |
| **Attachments:** | CPUC Data Request-PM1-20100809.doc<br>PEC Control Room Operator Log 04Aug2010 through 05Aug2010.pdf<br>PEC Generation Curve 04Aug2010 through 05Aug2010 .pdf<br>PEC Main Steam Control Valve Outage Photographs 05Aug2010.pdf<br>PEC Main Steam Control Valve Outage Summary 05Aug2010.pdf<br>RE Forced Outage 852010.msg |

Brian,

The response to the data request is in the attachments. I also included the initial email correspondence concerning this outage, in the attachments. Please let me know if you require more information.

Thanks,
Carl

Carl S. La Peter
Maintenance Manager
SDG&E - Electric Generation
Palomar Energy Center
2300 Harveson Place
Escondido, CA 92029

Office: 760-432-2503
Cell: 760-331-7810
Email: clapeter@semprautilities.com

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**From:** Leung, Brian D. [mailto:brian.leung@cpuc.ca.gov]
**Sent:** Tuesday, August 10, 2010 7:57 AM
**To:** LaPeter, Carl S.
**Subject:** CPUC Data Request-PM1-20100809

Hi Carl,

As mentioned, this is the CPUC data request for the August 5, 2010 outage.

Thanks,

Brian D. Leung, M.S., P.E.
California Public Utilities Commission
Consumer Protection and Safety Division
320 West 4th Street, Suite 500
Los Angeles, CA 90013
Office: (213) 620-2581
Fax: (213) 620-2543
Cell: (213) 215-3447
bdl@cpuc.ca.gov

**From:** LaPeter, Carl S.
**To:** "Leung, Brian D."
**Cc:** Dobbs, Jason; Martin, Brian; Smithson, Peter; Baerman, Daniel; Kuder, Scott
**Subject:** CTG1 GSU Fire
**Date:** Wednesday, December 22, 2010 1:59:17 PM
**Attachments:** CTG1 GSU Transformer.jpg

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Brian,

This is a short email to notify you that we had a fire at the Palomar Energy Center in CTG1 GSU Transformer (Combustion Turbine 1 Generator Step UP Transformer). CTG1 is currently offline and the plant is running in 1x1 operation (CTG2 and STG). I have attached one photo. We are currently working with SDGE and Escondido emergency services.

Carl

Carl S. La Peter
Maintenance Manager
SDG&E - Electric Generation
Palomar Energy Center
2300 Harveson Place
Escondido, CA 92029
Office: 760-432-2503
Cell: 760-331-7810
Email: clapeter@semprautilities.com

| | |
|---|---|
| **From:** | Leung, Brian D. |
| **To:** | LaPeter, Carl S. |
| **Cc:** | Dobbs, Jason; Martin, Brian; Smithson, Peter; Baerman, Daniel; Kuder, Scott; Ho, Winnie |
| **Subject:** | RE: CTG1 GSU Fire |
| **Date:** | Wednesday, December 22, 2010 2:19:56 PM |

Thanks for immediate notification.

When the situation permits itself, please complete the incident form on the link provided:
https://ia.cpuc.ca.gov/emg/safety/
Also, I'll contact you on Monday, December 27, 2010 for another update.

Thanks,

Brian D. Leung, M.S., P.E.
California Public Utilities Commission
Consumer Protection and Safety Division
320 West 4th Street, Suite 500
Los Angeles, CA 90013
Office: (213) 620-2581
Fax: (213) 620-2543
Cell: (213) 215-3447
bdl@cpuc.ca.gov

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**From:** LaPeter, Carl S. [mailto:CLaPeter@semprautilities.com]
**Sent:** Wednesday, December 22, 2010 1:59 PM
**To:** Leung, Brian D.
**Cc:** Dobbs, Jason; Martin, Brian; Smithson, Peter; Baerman, Daniel; Kuder, Scott
**Subject:** CTG1 GSU Fire

Brian,

This is a short email to notify you that we had a fire at the Palomar Energy Center in CTG1 GSU Transformer (Combustion Turbine 1 Generator Step UP Transformer). CTG1 is currently offline and the plant is running in 1x1 operation (CTG2 and STG). I have attached one photo. We are currently working with SDGE and Escondido emergency services.

Carl

Carl S. La Peter
Maintenance Manager
SDG&E - Electric Generation
Palomar Energy Center
2300 Harveson Place
Escondido, CA 92029
Office: 760-432-2503
Cell: 760-331-7810
Email: clapeter@semprautilities.com


## The report of this Power Plant Incident has been submitted.

Below is the information you entered. You may want to print this page for your records.

**Report Date & Time:** 12/22/2010 5:02:44 PM

**Company Name:** San Diego Gas & Electric

**Reported By:** Bob Watson

**Title:** Safety Manager

**Phone Number:** 619-228-6840

**Address:** 2300 Harveson Place

**City:** Escondido

**County:** San Diego

**Email Address:** bwwatson@semprautilities.com

**Plant Name:** Palomar Energy Center

**Incident Date:** 12/22/2010

**Unit Number:**

**Incident Time:** 12:10 p.m.

**Capacity:**

**Description:** Step up transformer for Unit 1 at Palomar Energy failed and on fire. No injuries or disruption of service to customers. Emergency responders on scene.

| | |
|---|---|
| **From:** | Leung, Brian D. |
| **To:** | LaPeter, Carl S. |
| **Cc:** | Dobbs, Jason; Martin, Brian; Smithson, Peter; Baerman, Daniel; Kuder, Scott |
| **Subject:** | PM1-20101227 |
| **Date:** | Tuesday, December 28, 2010 7:19:29 AM |
| **Attachments:** | CPUC Data Request-PM1-20101227.doc |

Hi Carl,

As discussed during my plant visit yesterday. This is the CPUC data request assocated with the Safety Incident occuring on December 22, 2010. If you or anyone at the plant have any questions, feel free to contact me.

Thanks,

Brian D. Leung, M.S., P.E.
California Public Utilities Commission
Consumer Protection and Safety Division
320 West 4th Street, Suite 500
Los Angeles, CA 90013
Office: (213) 620-2581
Fax: (213) 620-2543
Cell: (213) 215-3447
bdl@cpuc.ca.gov

**From:** Dale Rundquist
**To:** Dobbs, Jason
**Cc:** Miller, Taylor
**Subject:** Fire at Palomar?
**Date:** Thursday, December 23, 2010 9:57:35 AM

---

Hi Jason,
Mark Rodriguez sent an e-mail this morning with a news article about a fire at Palomar.
I understand there are no injuries and that the Fire Department is going to let the fire burn itself out.
Can you update me about this incident?
Thank you,
Dale R.

**Dale Rundquist**
Compliance Project Manager
**CALIFORNIA ENERGY COMMISSION**
Siting, Transmission & Environmental Protection (STEP) Division
1516 9th Street, MS-2000
Sacramento, CA 95814
Office: 916-651-2072
FAX: 916-654-3882
E-mail: drundqui@energy.state.ca.us
URL: http://www.energy.ca.gov

| | |
|---|---|
| **From:** | Dale Rundquist |
| **To:** | Dobbs, Jason |
| **Cc:** | Miller, Taylor |
| **Subject:** | Fwd: Docket No. 01-AFC-24C |
| **Date:** | Thursday, December 23, 2010 11:31:22 AM |
| **Attachments:** | Palomar Energy Center Fire1.jpg<br>Palomar Energy Center Fire2.jpg<br>Palomar Energy Center Fire3.jpg<br>Part.004 |

---

Hi Jason,
This is the e-mail that Mark Rodriguez sent to me this morning.
Please send an incident report of the failure and fire as soon as possible so that I may brief my manager.
Thank you,
Dale R.

**Dale Rundquist**
Compliance Project Manager
**CALIFORNIA ENERGY COMMISSION**
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E-mail: drundqui@energy.state.ca.us
URL: http://www.energy.ca.gov

>>> Mark Rodriguez <marknrodriguez@cox.net> 12/23/2010 8:11 AM >>>

Dale Rundquist
Compliance Project Manager
California Energy Commission
1516 Ninth Street, MS2000
Sacramento, Ca 95814

Docket No. 01-AFC-24C
Palomar Energy Center

On Dec. 23, 2010 approximately around 12:030PM a transformer caught fire resulting in 15,000 gallons of cooling fluid (mineral oil) to burn throughout the night. There is no indication of when this fire will be extinguished or a cause of the problem. I'm not sure of the consequences, but this is a fairly new facility which brings into question the proper compliance, operation and licensing of the facility. I also have attached a few photos taken yesterday which shows a nearby hospital and homes and a link below.

http://www.nctimes.com/news/local/escondido/article_d3c666f1-577e-5d05-8a6f-400bf65f46c2.html?mode=story

**From:** Dobbs, Jason
**To:** "Dale Rundquist"
**Subject:** RE: Docket No. 01-AFC-24C
**Date:** Thursday, December 23, 2010 1:57:00 PM
**Attachments:** msds.msg

---

Dale,

Status of the fire at Palomar.

1) The Generator Step-up transformer for unit one fail and is on fire.
2) Escondido Fire Department, San Diego Fire Department, County Health, and MCAS Camp Pendleton fire are on scene. EFD was on scene around 1pm Dec 22, 2010.
3) Palomar is currently offline.
4) Efforts to use class B foam (Pendleton) were unsuccessful (Dec 22, 2010 around 7pm)
5) IC assessment resulted in the decision to allow the unit to burn itself out.
6) IC will attempt to extinguish the fire again around 2:20pm (Dec 22, 2010)
7) No injuries from this incident.

Detail of the unit (transformer)

1) Generator Step-up transformer (GSU) capacity 11,120 gallons.
2) Containment will hold 100% of oil plus 5 inches.
3) Oil Type (see MSDS)

Reporting and notifications made

1) CPUC – Incident reporting (online)
2) San Diego Air Pollution Control District
3) SD County Department of Env Health (CUPA)(county HazMat on Scene.
4) Cal Emergency Management Agency (Calera)
5) CUP – is planning to visit the site on Dec 27, 2010 – Palomar to draft an incident report.

Feel free to call my cell phone if you have questions. Thank you.

Jason T. Dobbs
Compliance Administrator
San Diego Gas & Electric

2300 Harveson Place
Escondido, CA 92029-1965
(760) 432-2506 Office
(619) 247-2789 Cell

---

**From:** Dale Rundquist [mailto:DRundqui@energy.state.ca.us]
**Sent:** Thursday, December 23, 2010 11:31 AM
**To:** Dobbs, Jason
**Cc:** Miller, Taylor
**Subject:** Fwd: Docket No. 01-AFC-24C

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>>> Mark Rodriguez <marknrodriguez@cox.net> 12/23/2010 8:11 AM >>>

Dale Rundquist
Compliance Project Manager
California Energy Commission
1516 Ninth Street, MS2000
Sacramento, Ca 95814

Docket No. 01-AFC-24C
Palomar Energy Center

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http://www.nctimes.com/news/local/escondido/article_d3c666f1-577e-5d05-8a6f-400bf65f46c2.html?mode=story

**From:** Dobbs, Jason
**To:** "Dale Rundquist"
**Subject:** FW: Docket No. 01-AFC-24C
**Date:** Thursday, December 23, 2010 1:59:00 PM
**Attachments:** msds.msg

---

Sorry Dale – Outlook changed some of the abbreviations – this copy fixes the inadvertent changes. thanks

Jason T. Dobbs
Compliance Administrator
San Diego Gas & Electric
2300 Harveson Place
Escondido, CA 92029-1965
(760) 432-2506 Office
(619) 247-2789 Cell

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**From:** Dobbs, Jason
**Sent:** Thursday, December 23, 2010 1:57 PM
**To:** 'Dale Rundquist'
**Subject:** RE: Docket No. 01-AFC-24C

Dale,

Status of the fire at Palomar.

1) The Generator Step-up transformer for unit one fail and is on fire.
2) Escondido Fire Department, San Diego Fire Department, County Health, and MCAS Camp Pendleton fire are on scene. EFD was on scene around 1pm Dec 22, 2010.
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3) Oil Type (see MSDS)

Reporting and notifications made

1) CPUC – Incident reporting (online)

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3) SD County Department of Env Health (CUPA)(county HazMat on Scene.

4) Cal Emergency Management Agency (CalEMA)

5) CUP***[Dobbs, Jason]*** A – is planning to visit the site on Dec 27, 2010 – Palomar to draft an incident report.

Feel free to call my cell phone if you have questions. Thank you.

Jason T. Dobbs
Compliance Administrator
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(619) 247-2789 Cell

---

**From:** Dale Rundquist [mailto:DRundqui@energy.state.ca.us]
**Sent:** Thursday, December 23, 2010 11:31 AM
**To:** Dobbs, Jason
**Cc:** Miller, Taylor
**Subject:** Fwd: Docket No. 01-AFC-24C

Hi Jason,

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Thank you,

Dale R.

**Dale Rundquist**
Compliance Project Manager

**CALIFORNIA ENERGY COMMISSION**
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E-mail: drundqui@energy.state.ca.us
URL: http://www.energy.ca.gov

>>> Mark Rodriguez <marknrodriguez@cox.net> 12/23/2010 8:11 AM >>>

Dale Rundquist
Compliance Project Manager
California Energy Commission
1516 Ninth Street, MS2000
Sacramento, Ca 95814

Docket No. 01-AFC-24C
Palomar Energy Center

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**From:** Dale Rundquist
**To:** Dobbs, Jason
**Cc:** Chris Marxen
**Subject:** Re: FW: Docket No. 01-AFC-24C
**Date:** Thursday, December 23, 2010 3:19:30 PM

---

Hi Jason,
Thank you for the update.
I just called your cell to request that you send an e-mail to my email address as soon as the attempt to put the fire out is successful or the fire burns out by itself.
You can send an email any time
**I will have my Blackberry on all night.**
Hopefully, the fire is already out and you can send that information quickly.
Thank you,
Dale R.

>>> "Dobbs, Jason" <JDobbs@semprautilities.com> 12/23/2010 1:59 PM >>>

Sorry Dale – Outlook changed some of the abbreviations – this copy fixes the inadvertent changes. thanks

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**From:** Dobbs, Jason
**Sent:** Thursday, December 23, 2010 1:57 PM
**To:** 'Dale Rundquist'
**Subject:** RE: Docket No. 01-AFC-24C

Dale,

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1) The Generator Step-up transformer for unit one fail and is on fire.

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Jason T. Dobbs
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(760) 432-2506 Office
(619) 247-2789 Cell

---

**From:** Dale Rundquist [mailto:DRundqui@energy.state.ca.us]
**Sent:** Thursday, December 23, 2010 11:31 AM
**To:** Dobbs, Jason
**Cc:** Miller, Taylor
**Subject:** Fwd: Docket No. 01-AFC-24C

Hi Jason,

This is the e-mail that Mark Rodriguez sent to me this morning.

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Thank you,

Dale R.

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>>> Mark Rodriguez <marknrodriguez@cox.net> 12/23/2010 8:11 AM >>>

Dale Rundquist
Compliance Project Manager
California Energy Commission
1516 Ninth Street, MS2000
Sacramento, Ca 95814

Docket No. 01-AFC-24C
Palomar Energy Center

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**From:** Dale Rundquist
**To:** Dobbs, Jason
**Cc:** Chris Marxen
**Subject:** Update
**Date:** Friday, December 24, 2010 10:02:17 AM

---

Hi Jason,
I'm glad the fire is out.
Has there been a determination of the cause of the fire yet?
I am planning a trip to the site next Tuesday, 12/28/2010.
I will have technical staff with me.
Send new information as you receive it.
Thank you,
Dale R.

**From:** Dobbs, Jason
**To:** "Dale Rundquist"
**Cc:** Chris Marxen; LaPeter, Carl S.; Martin, Brian; Smithson, Peter; Baerman, Daniel
**Subject:** RE: Update
**Date:** Friday, December 24, 2010 2:44:00 PM

---

Dale,

The fire is out however we're keeping a close eye on a steady flow of white smoke coming from an opening at the top of the unit. The EFD turned the plant over to SDG&E shortly after extinguishing the fire, yet visual monitoring of the unit will be required until the smoke is gone and the temperature has returned to normal.

An incident evaluation is underway with the initial collection of electronic mentoring data for this equipment. The information will help the investigation team assess operating conditions at the time of the incident. As information becomes available, I will pass it on to you.

I look forward to seeing you and other CEC staff on Tuesday.

In my last email I failed to clearly state notification was made to CPUC. Please note notification was made via the online notification process and through other email communications. Also, the plant will be visited by CPUC on Monday the 27th. If you have questions regarding other agency notifications, please feel free to call me.

Thank you

Jason T. Dobbs
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(619) 247-2789 Cell

---

**From:** Dale Rundquist [mailto:DRundqui@energy.state.ca.us]
**Sent:** Friday, December 24, 2010 10:02 AM
**To:** Dobbs, Jason
**Cc:** Chris Marxen
**Subject:** Update

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Thank you,

Dale R.

**From:** Dobbs, Jason
**To:** "Dale Rundquist"
**Subject:** RE: Update
**Date:** Tuesday, December 28, 2010 10:38:00 AM

---

Dale - I've been out in the plant most of the morning so I just got your emails. Everything is going fine but as mentioned before the transformer still has a steady stream of smoke coming from the top. We are looking at a few ways to extinguish the smoldering inside the unit. We can review the details when you get here.

Jason T. Dobbs
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-----Original Message-----
From: Dale Rundquist [mailto:DRundqui@energy.state.ca.us]
Sent: Tuesday, December 28, 2010 10:13 AM
To: Dobbs, Jason
Subject: Re: Update

Hi Jason,
I am with Butch Walls.
We should be at Palomar by 11 or 1130.
How is everything going?
Dale
-----Original Message-----
From: "Dobbs, Jason" <JDobbs@semprautilities.com>
To: Dale Rundquist <DRundqui@energy.state.ca.us>

Sent: 12/27/2010 2:16:19 PM
Subject: RE: Update

Okay Dale – I will plan on seeing you tomorrow. Have a safe trip.

Jason T. Dobbs
Compliance Administrator
San Diego Gas & Electric
2300 Harveson Place
Escondido, CA 92029-1965
(760) 432-2506 Office
(619) 247-2789 Cell

From: Dale Rundquist [mailto:DRundqui@energy.state.ca.us]
Sent: Monday, December 27, 2010 1:40 PM
To: Dobbs, Jason
Subject: RE: Update

Hi Jason,
I will be at Palomar at about 11 AM or so--depending on traffic.
See you then.
Dale R.

>>> "Dobbs, Jason" <JDobbs@semprautilities.com> 12/24/2010 2:44 PM >>>

Dale,
The fire is out however we're keeping a close eye on a steady flow of white smoke coming from an opening at the top of the unit. The EFD turned the plant over to SDG&E shortly after extinguishing the fire, yet visual monitoring of the unit will be required until the smoke is gone and the temperature has returned to normal.
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Cc: Chris Marxen
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