

Docket:	:	<u>A.22-04-001</u>
Exhibit Number	:	<u>CalAdv02</u>
Commissioner	:	<u>John Reynolds</u>
Admin. Law Judge	:	<u>Susan Lee</u>
Witness	:	_____



PUBLIC ADVOCATES OFFICE
California Public Utilities Commission

**SCE RESPONSES TO CAL ADVOCATES
DATA REQUESTS 16, 17**

(PUBLIC VERSION)

San Francisco, California
March 30, 2023

INDEX LIST

Attachment #	Document Description
1.	PubAdv-SCE-DR-016 Q.01 to Q.02 Responses + Confidentiality Declaration
2.	PubAdv-SCE-DR-017 Q.01 to Q.43 Responses

ATTACHMENT 1

PubAdv-SCE-DR-016 Q.01 to Q.02 Responses + Confidentiality Declaration

CONFIDENTIAL

Southern California Edison
A.22-04-001 2021 ERRA Review – 2021 ERRA Review

DATA REQUEST SET P u b A d v - S C E - D R - 0 1 6

To: Public Advocates Office
Prepared by: Eduyng Castano
Job Title: Senior Manager
Received Date: 2/17/2023

Response Date: 3/1/2023

[REDACTED]

Response to Question 01:

CONFIDENTIAL

This Response Is Marked Confidential In Accordance With D. 16-08-024 and D.17-09-023.
Basis for Confidentiality In Accompanying Confidentiality Declaration.

Public Disclosure Restricted.

SCE objects to this data request on the grounds that it seeks information that is outside the scope of this proceeding, that it is not relevant to the subject matter of this proceeding nor reasonably calculated to lead to the discovery of admissible evidence. Without waiving its objection, SCE responds as follows:

SCE would have paid [REDACTED]

Southern California Edison
A.22-04-001 2021 ERRA Review – 2021 ERRA Review

DATA REQUEST SET P u b A d v - S C E - D R - 0 1 6

To: Public Advocates Office
Prepared by: Eduyng Castano
Job Title: Senior Manager
Received Date: 2/17/2023

Response Date: 3/1/2023

Question 02:

SCE's 2021 ERRA Compliance Testimony states that the Metrus Energy Hercules 1 contracts 408001-408017 were executed in November 2014 (pp. 39-44).

- 2.1. For each contract, please provide:
 - 2.1.1. The total amounts paid out to the counterparty each year since the contract's execution;
 - 2.1.2. The total amounts that would have been paid out since the contract's execution had the "average kWh per day" calculation and clarified definitions of Energy Savings Percentages been applied.

Response to Question 02:

CONFIDENTIAL

**This Response Is Marked Confidential In Accordance With D. 16-08-024 and D.17-09-023.
Basis for Confidentiality In Accompanying Confidentiality Declaration.**

Public Disclosure Restricted.

SCE objects to this data request on the grounds that it seeks information that is outside the scope of this proceeding, that it is not relevant to the subject matter of this proceeding nor reasonably calculated to lead to the discovery of admissible evidence. Without waiving its objection, SCE responds as follows:

For each payment period and for each offer (408001-408017), the following table shows the amount originally invoiced by the counterpart, the amount calculated by SCE using the definition of "Energy Savings Percentages" (as updated in the Settlement Agreement), and the amount paid by SCE.

Offer Name	Invoiced	SCE Calculated based on clarified definitions	Payment	Posting Date
LCR Power Supply Offer ID 408001				
LCR Power Supply Offer ID 408001				
LCR Power Supply Offer ID 408001				
LCR Power Supply Offer ID 408001				
LCR Power Supply Offer ID 408001				
LCR Power Supply Offer ID 408002				
LCR Power Supply Offer ID 408002				
LCR Power Supply Offer ID 408002				
LCR Power Supply Offer ID 408003				

Offer Name	Invoiced	SCE Calculated based on clarified definitions	Payment	Posting Date
LCR Power Supply Offer ID 408003				
LCR Power Supply Offer ID 408003				
LCR Power Supply Offer ID 408003				
LCR Power Supply Offer ID 408004				
LCR Power Supply Offer ID 408004				
LCR Power Supply Offer ID 408005				
LCR Power Supply Offer ID 408005				
LCR Power Supply Offer ID 408005				
LCR Power Supply Offer ID 408006				
LCR Power Supply Offer ID 408006				
LCR Power Supply Offer ID 408006				
LCR Power Supply Offer ID 408007				
LCR Power Supply Offer ID 408007				
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LCR Power Supply Offer ID 408015				
LCR Power Supply Offer ID 408016				
LCR Power Supply Offer ID 408016				
LCR Power Supply Offer ID 408016				
LCR Power Supply Offer ID 408016				
LCR Power Supply Offer ID 408017				

Offer Name	Invoiced	SCE Calculated based on clarified	Payment	Posting Date
LCR Power Supply Offer ID 408017				
Total				

Notes:

- The amounts in red show when the invoice and the SCE calculated amounts differ.
- Note that since the settlement, the counterparty has invoiced SCE using the agreed upon calculation.
- As stated by SCE in its testimony, absent the Settlement Agreement, SCE estimated that the total discrepancy between the vendor original methodology and the agreed upon methodology would have been approx. [REDACTED] throughout the contract term.

**DECLARATION OF EDUYNG CASTANO REGARDING THE
CONFIDENTIALITY OF CERTAIN DATA**

I, Eduyng Castano, declare and state:

1. I am a Senior Manager at Southern California Edison Company (SCE). As such, I had responsibility for preparing SCE's response to the data request set titled PubAdv-SCE-DR-016, Questions 1-3. I make this declaration in accordance with Decisions ("D") 06-06-066 and D.08-04-023, issued in Rulemaking 05-06-040. I have personal knowledge of the facts and representations herein and, if called upon to testify, could and would do so, except for those facts expressly stated to be based upon information and belief, and as to those matters, I believe them to be true.

2. I have reviewed SCE's response to the data request set titled PubAdv-SCE-DR-016, Question 1-3. Listed below are the data in the response for which SCE is seeking confidential protection and the categories of the Matrix of Allowed Confidential Treatment Investor Owned Utility (IOU) Data ("Matrix") appended to D.06-06-066 to which these data correspond.

Data	Location	Matrix Category	Limitations on Confidentiality Specified in Matrix
Contract Amendment terms and valuation	PubAdv-SCE-DR-016 Question 2	VII (B) Contracts and power purchase agreements between utilities and non-affiliated third parties (except RPS)	Contract summaries public, including counterparty, resource type, location, capacity, expected deliveries, delivery point, length of contract and online date. Other terms confidential for three years from date contract states deliveries to begin; or until one year following expiration, whichever comes first.
Identification of Confidential contract terms	PubAdv-SCE-DR-016 Q1, Q2 & Q3	VII (B) Contracts and power purchase agreements between utilities and non-affiliated third parties (except RPS)	Contract summaries public, including counterparty, resource type, location, capacity, expected deliveries, delivery point, length of contract and online date. Other terms confidential for three years from date contract states deliveries to begin; or until one year following expiration, whichever comes first.

3. SCE also seeks confidential treatment of its testimony, plans and appendices under GO-66C and Public Utilities Code section 454.5(g), because the information contains data that is market-sensitive, but does not clearly fall into a category in the Matrix. That confidential data and the asserted justification for confidential treatment of that data is listed below:

Data	Justification for Confidential Protection
PubAdv-SCE-DR-016 Q1, Q2 & Q3	SCE proprietary and trade secret information, intellectual property or competitive data (e.g., org structure/work charts, noncore competitive growth opportunities, pricing forecast, supply and demand forecast,) and other commercial records including project specific calculations, project costs, equipment cost; market-sensitive data; nonpublic business plans and strategies; long-term fuel buying and hedging plans; price, load, or demand forecasts; power purchase agreements within three years of execution, etc. Protected under Govt. Code §§6254(e) (i), (k), 6254.7 (d), 6254.15, 6255(a), 6276.44, Civ. Code §3426 et seq.; Evidence Code § 1060.
PubAdv-SCE-DR-016 Q1, Q2 & Q3	Privileged Attorney-Client Communications, Attorney-Work Product, and Pending Litigation Information (e.g., claims and investigation reports associated with Utility Incidents, Claims Reserve Information, Information related to potential and pending litigation of investigations) Gov't Code §6254(k), Gov't Code §6276.04, Civil Code §954, Evidence Code § 950 et seq.

4. I am informed and believe that SCE is complying with the limitations on confidentiality in the table in paragraph 2 specified in the Matrix that pertain to the data listed in the table above.

5. I am informed and believe that SCE is complying with the limitations on confidentiality in Public Utilities Code section 454.5(g) in the table in paragraph 3 above.

6. I am informed and believe and thereon allege that the data in the table in paragraphs 2 and 3 above cannot be aggregated, redacted, summarized, masked or otherwise protected in a manner that would allow partial disclosure of the data while still protecting confidential information.

7. I am informed and believe and thereon allege that the data in the tables in paragraphs 2 and 3 above has never been made publicly available.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

Executed on 2/26/2022 at Rosemead, California.

/s/ Eduyng Castano
Eduyng Castano

ATTACHMENT 2

PubAdv-SCE-DR-017 Q.01 to Q.43 Responses

CONFIDENTIAL

Southern California Edison
A.22-04-001 2021 ERRA Review – 2021 ERRA Review

DATA REQUEST SET P u b A d v - S C E - D R - 0 1 7

To: Public Advocates Office
Prepared by: Timothy Condit
Job Title: Sr. Advisor
Received Date: 2/27/2023

Response Date: 3/10/2023

Question 01:

I. Root Cause Evaluation

Root Cause Evaluation – Infant Mortality

SCE cites infant mortality described in “The Bathtub Curve, Infant Mortality and Burn-in” article (Infant Mortality Article) by Dennis J. Wilkins (Appendix A of Exhibit SCE-08), to provide an explanation for how Infant Mortality was the likely contributor to the premature failure of the Linear Variable Differential Transformer (LVDT) within 8 days in service.

1. Why did SCE choose Dennis J. Wilkins’s Article to support its explanation on infant mortality?

Response to Question 01:

SCE chose to cite portions of “The Bathtub Curve and Product Failure Behavior” paper written by Dennis Wilkins due to its relevant explanation of Infant Mortality (aka early product failure) relating to electrical equipment. SCEs cite of the Wilkins article is relevant because, while Linear Variable Differential Transformers (LVDTs) are used in a power plant environment, an LVDT is comprised of components that experienced a failure mode similar to that discussed in the Wilkins article. SCE did not choose the article based on Wilkins’ specific experience or education, but rather the subject matter itself. SCE could have cited other articles, *e.g.*, “Reliability of Manufactured Products” written by the U.S. Food and Drug Administration, which also explains the “bath-tub” curve and “infant mortality” – both common terms used in various industries when describing failures modes of manufactured products. SCE is not aware of any organizations or institutions who disagree, or any articles to the contrary. Further, SCE is not aware of previously citing the Wilkins article in a CPUC proceeding, nor is it aware of the articles’ use in other proceedings.

Infant mortality includes many reasons for premature failures. As explained in the Wilkins article, “failures during infant mortality are highly undesirable and are always caused by defects and blunders: material defects, design blunders, errors in assembly, etc.” SCE’s testimony did not imply otherwise. Rather the intention of SCE’s testimony is to convey that Infant Mortality failures are

inherent to the product manufacturing process, which is out of SCE's control. Technical, quality and quality assurance requirements related to the manufacturing of LVDTs, and/or similar electrical components, are the responsibility of the product manufacturer – not SCE.

As explained in SCE's response to previous Cal Advocate data requests, SCE's experience with LVDTs has been relatively trouble free throughout the history of the Mountainview Generation Station and LVDTs are typically very reliable, and failures are rare. Because of this, individual incidents caused by LVDT failures are not tracked by SCE, and SCE has no reason to be concerned about Rexroth's work and product. GE is the supplier of the LVDT, and Rexroth is the manufacturer of the LVDT. SCE reasonably considers LVDTs to be a run-to-failure part and prudently maintains a sufficient onsite supply of spares for timely replacement in the event of an unexpected failure. SCE's warehouse utilizes a max/min inventory system wherein SCE keeps a maximum of six LVDTs in inventory and restocks to that amount when inventory levels reach a minimum amount of four. SCE purchases Rexroth-manufactured LVDTs from GE, and because of the relatively trouble-free history of the LVDTs being used, SCE has neither sought nor researched alternative supply options.

The Commissions direction is that SCE's UOG outages presented in the ERRA applications are reviewed under a reasonable manager standard, whereby SCE's actions are evaluated based on whether they "comport with what a reasonable manager of sufficient education, training, experience, and skills using the tools and knowledge at his or her disposal would do when faced with a need to make a decision and act." (D.11-10-002 at 11).

The goal of SCE's UOG fleet is to maintain safe, reliable, and efficient plant operations while generating electricity in a cost-effective manner. SCE does not have the manpower nor the resources necessary to send personnel to external manufacturing facilities to perform quality assurance / quality control on every one of the thousands of pieces of UOG equipment whose failure might lead to an unplanned outage. Assuming otherwise would be unreasonable because it would ignore the economics of performing such an undertaking.

SCE strives to maintain a high level of plant availability consistent with industry wide averages, while maximizing value to customers. As SCE discusses in testimony, power plant reliability is tracked by utilizing the Equivalent Availability Factor (EAF). EAF is the percentage of time that a generating asset is available for operation. A 100 percent EAF is not practical because (1) generating assets must be periodically removed from service to conduct routine maintenance; and (2) there are diminishing returns on the cost to design and maintain a power plant to the level required to fully mitigate all the possible problems that can cause forced outages.

Where appropriate, SCE operations and maintenance practices follow OEM recommendations. LVDTs associated with the Intercept Control Valves are routinely maintained during Intercept Control Valve Actuator overhauls. The OEM General Electric (GE) recommends this inspection be completed every 24,000 to 32,000 operating hours. At Mountainview, SCE expects to reach this milestone every 6-8 years and determined that no changes to the maintenance strategy were needed

as a result of this forced outage. SCE's actions prior to, during and following this outage were consistent with Commission directives.

Southern California Edison
A.22-04-001 2021 ERRA Review – 2021 ERRA Review

DATA REQUEST SET P u b A d v - S C E - D R - 0 1 7

To: Public Advocates Office
Prepared by: Timothy Condit
Job Title: Sr. Advisor
Received Date: 2/27/2023

Response Date: 3/10/2023

Question 02:

I. Root Cause Evaluation

Root Cause Evaluation – Infant Mortality

SCE cites infant mortality described in “The Bathtub Curve, Infant Mortality and Burn-in” article (Infant Mortality Article) by Dennis J. Wilkins (Appendix A of Exhibit SCE-08), as a likely explanation for the premature failure of the Linear Variable Differential Transformer (LVDT) within 8 days in service.

2. In which CPUC proceeding(s), if any, has SCE used the Infant Mortality Article to plead its case? Please cite those proceedings.

Response to Question 02:

See response to Question 1.

Southern California Edison
A.22-04-001 2021 ERRA Review – 2021 ERRA Review

DATA REQUEST SET P u b A d v - S C E - D R - 0 1 7

To: Public Advocates Office
Prepared by: Timothy Condit
Job Title: Sr. Advisor
Received Date: 2/27/2023

Response Date: 3/10/2023

Question 03:

I. Root Cause Evaluation

Root Cause Evaluation – Infant Mortality

SCE cites infant mortality described in “The Bathtub Curve, Infant Mortality and Burn-in” article (Infant Mortality Article) by Dennis J. Wilkins (Appendix A of Exhibit SCE-08), as a likely explanation for the premature failure of the Linear Variable Differential Transformer (LVDT) within 8 days in service.

3. Has the Infant Mortality Article been litigated before the CPUC? Please cite those cases and explain the outcome of those cases.

Response to Question 03:

See response to Question 1.

Southern California Edison
A.22-04-001 2021 ERRA Review – 2021 ERRA Review

DATA REQUEST SET P u b A d v - S C E - D R - 0 1 7

To: Public Advocates Office
Prepared by: Timothy Condit
Job Title: Sr. Advisor
Received Date: 2/27/2023

Response Date: 3/10/2023

Question 04:

I. Root Cause Evaluation

Root Cause Evaluation – Infant Mortality

SCE cites infant mortality described in “The Bathtub Curve, Infant Mortality and Burn-in” article (Infant Mortality Article) by Dennis J. Wilkins (Appendix A of Exhibit SCE-08), as a likely explanation for the premature failure of the Linear Variable Differential Transformer (LVDT) within 8 days in service.

4. Has the CPUC adopted and/or accepted the Infant Mortality Article argument in certain situations only. If so, please explain what those circumstances are.

Response to Question 04:

See response to Question 1.

Southern California Edison
A.22-04-001 2021 ERRA Review – 2021 ERRA Review

DATA REQUEST SET P u b A d v - S C E - D R - 0 1 7

To: Public Advocates Office
Prepared by: Timothy Condit
Job Title: Sr. Advisor
Received Date: 2/27/2023

Response Date: 3/10/2023

Question 05:

I. Root Cause Evaluation

Root Cause Evaluation – Infant Mortality

SCE cites infant mortality described in “The Bathtub Curve, Infant Mortality and Burn-in” article (Infant Mortality Article) by Dennis J. Wilkins (Appendix A of Exhibit SCE-08), as a likely explanation for the premature failure of the Linear Variable Differential Transformer (LVDT) within 8 days in service.

5. The article was written by an employee of Hewlett Packard with regard to computer equipment. Is the Infant Mortality Article applicable on power plant equipment because of the physical size and industry usage? Please explain.

Response to Question 05:

See response to Question 1.

Southern California Edison
A.22-04-001 2021 ERRA Review – 2021 ERRA Review

DATA REQUEST SET P u b A d v - S C E - D R - 0 1 7

To: Public Advocates Office
Prepared by: Timothy Condit
Job Title: Sr. Advisor
Received Date: 2/27/2023

Response Date: 3/10/2023

Question 06.a:

I. Root Cause Evaluation

Root Cause Evaluation – Infant Mortality

SCE cites infant mortality described in “The Bathtub Curve, Infant Mortality and Burn-in” article (Infant Mortality Article) by Dennis J. Wilkins (Appendix A of Exhibit SCE-08), as a likely explanation for the premature failure of the Linear Variable Differential Transformer (LVDT) within 8 days in service.

6. What are the qualifications of Dennis J. Wilkins, the author of Infant Mortality Article?
 - a. Please provide his specific experiences and education.

Response to Question 06.a:

See response to Question 1.

Southern California Edison
A.22-04-001 2021 ERRA Review – 2021 ERRA Review

DATA REQUEST SET P u b A d v - S C E - D R - 0 1 7

To: Public Advocates Office
Prepared by: Timothy Condit
Job Title: Sr. Advisor
Received Date: 2/27/2023

Response Date: 3/10/2023

Question 07.a:

I. Root Cause Evaluation

Root Cause Evaluation – Infant Mortality

SCE cites infant mortality described in “The Bathtub Curve, Infant Mortality and Burn-in” article (Infant Mortality Article) by Dennis J. Wilkins (Appendix A of Exhibit SCE-08), as a likely explanation for the premature failure of the Linear Variable Differential Transformer (LVDT) within 8 days in service.

7. Is the Infant Mortality Article accepted in the industry as standard practice?
 - a. Are there organizations, institutions and/or individuals who refute or disagree with Dennis J. Wilkins’ Article? If so, please enumerate them and give their reasons for their disagreements.

Response to Question 07.a:

See response to Question 1.

Southern California Edison
A.22-04-001 2021 ERRA Review – 2021 ERRA Review

DATA REQUEST SET P u b A d v - S C E - D R - 0 1 7

To: Public Advocates Office
Prepared by: Timothy Condit
Job Title: Sr. Advisor
Received Date: 2/27/2023

Response Date: 3/10/2023

Question 08:

I. Root Cause Evaluation

Root Cause Evaluation – Infant Mortality

SCE cites infant mortality described in “The Bathtub Curve, Infant Mortality and Burn-in” article (Infant Mortality Article) by Dennis J. Wilkins (Appendix A of Exhibit SCE-08), as a likely explanation for the premature failure of the Linear Variable Differential Transformer (LVDT) within 8 days in service.

8. Why did SCE not choose other publications to support its explanation on infant mortality?

Response to Question 08:

See response to Question 1.

Southern California Edison
A.22-04-001 2021 ERRA Review – 2021 ERRA Review

DATA REQUEST SET P u b A d v - S C E - D R - 0 1 7

To: Public Advocates Office
Prepared by: Timothy Condit
Job Title: Sr. Advisor
Received Date: 2/27/2023

Response Date: 3/10/2023

Question 09:

I. Root Cause Evaluation

Root Cause Evaluation – Infant Mortality

SCE cites infant mortality described in “The Bathtub Curve, Infant Mortality and Burn-in” article (Infant Mortality Article) by Dennis J. Wilkins (Appendix A of Exhibit SCE-08), as a likely explanation for the premature failure of the Linear Variable Differential Transformer (LVDT) within 8 days in service.

9. Besides infant mortality, what other likely explanations could account for the premature failure of the LVDT? Please explain.

Response to Question 09:

See response to Question 1.

Southern California Edison
A.22-04-001 2021 ERRA Review – 2021 ERRA Review

DATA REQUEST SET P u b A d v - S C E - D R - 0 1 7

To: Public Advocates Office
Prepared by: Timothy Condit
Job Title: Sr. Advisor
Received Date: 2/27/2023

Response Date: 3/10/2023

Question 10:

I. Root Cause Evaluation

Root Cause Evaluation – Infant Mortality

SCE cites infant mortality described in “The Bathtub Curve, Infant Mortality and Burn-in” article (Infant Mortality Article) by Dennis J. Wilkins (Appendix A of Exhibit SCE-08), as a likely explanation for the premature failure of the Linear Variable Differential Transformer (LVDT) within 8 days in service.

10. Has SCE considered product defect due to lapses in the manufacturing process?

Response to Question 10:

See response to Question 1.

Southern California Edison
A.22-04-001 2021 ERRA Review – 2021 ERRA Review

DATA REQUEST SET P u b A d v - S C E - D R - 0 1 7

To: Public Advocates Office
Prepared by: Timothy Condit
Job Title: Sr. Advisor
Received Date: 2/27/2023

Response Date: 3/10/2023

Question 11:

I. Root Cause Evaluation

Root Cause Evaluation – Linear Variable Differential Transformer (LVDT)

11. How many manufacturers of LVDT has SCE used? Please list the names of the companies and their addresses. Please list the LVDT companies used by Mountainview Unit by year and explain the reasons for the choices.

Response to Question 11:

See response to Question 1.

Southern California Edison
A.22-04-001 2021 ERRA Review – 2021 ERRA Review

DATA REQUEST SET P u b A d v - S C E - D R - 0 1 7

To: Public Advocates Office
Prepared by: Timothy Condit
Job Title: Sr. Advisor
Received Date: 2/27/2023

Response Date: 3/10/2023

Question 12:

I. Root Cause Evaluation

Root Cause Evaluation – Linear Variable Differential Transformer (LVDT)

12. How many companies make LVDT? List them and explain why SCE has used or has not used some of the companies in the list.

Response to Question 12:

See response to Question 1.

Southern California Edison
A.22-04-001 2021 ERRA Review – 2021 ERRA Review

DATA REQUEST SET P u b A d v - S C E - D R - 0 1 7

To: Public Advocates Office
Prepared by: Timothy Condit
Job Title: Sr. Advisor
Received Date: 2/27/2023

Response Date: 3/10/2023

Question 13:

I. Root Cause Evaluation

Root Cause Evaluation – Linear Variable Differential Transformer (LVDT)

13. On May 31, 2022, the day before the outage, please identify the number of LVDTs SCE had in stock in the warehouse. Please break down the number by year purchased and by manufacturers, viz a viz (viz), General Electric (GE), Rexroth, and/or others.

Response to Question 13:

See response to Question 1.

Southern California Edison
A.22-04-001 2021 ERRA Review – 2021 ERRA Review

DATA REQUEST SET P u b A d v - S C E - D R - 0 1 7

To: Public Advocates Office
Prepared by: Timothy Condit
Job Title: Sr. Advisor
Received Date: 2/27/2023

Response Date: 3/10/2023

Question 14:

I. Root Cause Evaluation

Root Cause Evaluation – Linear Variable Differential Transformer (LVDT)

14. Please break down and explain the numerical composition of the LVDT warehouse stock by manufacturers. For example, did SCE purchase more Rexroth over GE because of certain issues? If so, please provide the explanations.

Response to Question 14:

See response to Question 1.

Southern California Edison
A.22-04-001 2021 ERRA Review – 2021 ERRA Review

DATA REQUEST SET P u b A d v - S C E - D R - 0 1 7

To: Public Advocates Office
Prepared by: Timothy Condit
Job Title: Sr. Advisor
Received Date: 2/27/2023

Response Date: 3/10/2023

Question 15:

I. Root Cause Evaluation

Root Cause Evaluation – Linear Variable Differential Transformer (LVDT)

15. Are there differences in price among the LVDTs made by various manufacturers? If so, please indicate what those differences are and why.

Response to Question 15:

See response to Question 1.

Southern California Edison
A.22-04-001 2021 ERRA Review – 2021 ERRA Review

DATA REQUEST SET P u b A d v - S C E - D R - 0 1 7

To: Public Advocates Office
Prepared by: Timothy Condit
Job Title: Sr. Advisor
Received Date: 2/27/2023

Response Date: 3/10/2023

Question 16:

I. Root Cause Evaluation

Root Cause Evaluation – Linear Variable Differential Transformer (LVDT)

16. Are there differences in the technical (i.e., specifications), quality (i.e., inspections and testing) and quality assurance (i.e., documentations, such as, Certified Mill Test Reports, inspection and test reports) requirements among the LVDTs made by various manufacturers? If so, please enumerate those differences.

Response to Question 16:

See response to Question 1.

Southern California Edison
A.22-04-001 2021 ERRA Review – 2021 ERRA Review

DATA REQUEST SET P u b A d v - S C E - D R - 0 1 7

To: Public Advocates Office
Prepared by: Timothy Condit
Job Title: Sr. Advisor
Received Date: 2/27/2023

Response Date: 3/10/2023

Question 17:

I. Root Cause Evaluation

Root Cause Evaluation – Linear Variable Differential Transformer (LVDT)

17. Who specifies the technical, quality and quality assurance requirements of the LVDTs?

Response to Question 17:

See response to Question 1.

Southern California Edison
A.22-04-001 2021 ERRA Review – 2021 ERRA Review

DATA REQUEST SET P u b A d v - S C E - D R - 0 1 7

To: Public Advocates Office
Prepared by: Timothy Condit
Job Title: Sr. Advisor
Received Date: 2/27/2023

Response Date: 3/10/2023

Question 18:

I. Root Cause Evaluation

Root Cause Evaluation – Linear Variable Differential Transformer (LVDT)

18. How has SCE enforced the technical, quality and quality assurance requirements of the LVDTs.

Response to Question 18:

See response to Question 1.

Southern California Edison
A.22-04-001 2021 ERRA Review – 2021 ERRA Review

DATA REQUEST SET P u b A d v - S C E - D R - 0 1 7

To: Public Advocates Office
Prepared by: Timothy Condit
Job Title: Sr. Advisor
Received Date: 2/27/2023

Response Date: 3/10/2023

Question 19:

I. Root Cause Evaluation

Root Cause Evaluation – Linear Variable Differential Transformer (LVDT)

19. SCE contacted GE to troubleshoot the outage problem (SCE response to Cal Advocates Data Request 10, Question 051). Why did SCE contact GE to troubleshoot when the failed LVDT was made by Rexroth (SCE response to Cal Advocates Data Request 10, Question 055)?

Response to Question 19:

As explained in the response to DR10 Q51, SCE contacted General Electric (GE) and requested its support in troubleshooting the incident (*i.e.*, outage) from its remote monitoring center. GE provides support to SCE via continuous monitoring of the Mountainview control system, which is used to manage the operational performance of the GE turbines and auxiliary equipment. Following review, GE notified SCE that the Unit trip was the result of one of the three LVDTs on the right intercept valve reading >10% different than the other two. At the time of the outage, SCE was not aware that the LVDT was the cause of the outage. As such, SCE had no reason to contact Rexroth.

Southern California Edison
A.22-04-001 2021 ERRA Review – 2021 ERRA Review

DATA REQUEST SET P u b A d v - S C E - D R - 0 1 7

To: Public Advocates Office
Prepared by: Timothy Condit
Job Title: Sr. Advisor
Received Date: 2/27/2023

Response Date: 3/10/2023

Question 20:

I. Root Cause Evaluation

Root Cause Evaluation – Linear Variable Differential Transformer (LVDT)

20. Has Rexroth, in the past, caused SCE to be concerned about Rexroth's work and product, and has this led to SCE consulting with GE instead? Please explain.

Response to Question 20:

See response to Question 1.

Southern California Edison
A.22-04-001 2021 ERRA Review – 2021 ERRA Review

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To: Public Advocates Office
Prepared by: Timothy Condit
Job Title: Sr. Advisor
Received Date: 2/27/2023

Response Date: 3/10/2023

Question 21:

I. Root Cause Evaluation

Root Cause Evaluation – Linear Variable Differential Transformer (LVDT)

21. Did SCE relay the failure to Rexroth? If so, what was Rexroth's response?

Response to Question 21:

No.

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A.22-04-001 2021 ERRA Review – 2021 ERRA Review

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To: Public Advocates Office
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Question 22:

I. Root Cause Evaluation

Root Cause Evaluation – Linear Variable Differential Transformer (LVDT)

22. SCE replaced the failed Rexroth LDVT with one made by GE. It was purchased from GE with a warranty period from June 2, 2021 to June 2, 2022. June 2, 2021 was the day the outage ended. Why did SCE buy the LVDT from GE on June 2, 2021 when there are spare LVDTs in the warehouse (SCE response to Cal Advocates Data Request 10, Question 065)?

Response to Question 22:

This question incorrectly assumes that because SCE purchased the replacement Linear Variable Differential Transformer (LDVT) from General Electric (GE) that GE manufactured the LVDT.

As stated in response to DR10-Q55, Rexroth is the manufacturer of the LVDT used by SCE. GE is the supplier.

As stated in response to DR-10-Q64, SCE obtained the replacement Linear Variable Differential Transformer (LDVT) from its own on-site warehouse.

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A.22-04-001 2021 ERRA Review – 2021 ERRA Review

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Question 23.a:

I. Root Cause Evaluation

Root Cause Evaluation – Linear Variable Differential Transformer (LVDT)

23. Since SCE bought a new LVDT from GE on June 2 ,2021, what is the disposition of all the spare LVDTs in the warehouse after May 31, 2021? Please explain.

a. Were certain LVDTs disposed or mothballed, while others were kept in inventory? If so, please explain.

Response to Question 23.a:

The premise of Cal Advocate's question is incorrect. SCE did not purchase a new LVDT from GE on June 2, 2021. As stated in response to DR-10-Q64, SCE obtained the replacement Linear Variable Differential Transformer (LDVT) from its own on-site warehouse.

Given that LVDTs are typically very reliable, and failures are rare, SCE kept all spare LVDTs in its inventory.

Southern California Edison
A.22-04-001 2021 ERRA Review – 2021 ERRA Review

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Job Title: Sr. Advisor
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Question 24:

I. Root Cause Evaluation

Root Cause Evaluation – Linear Variable Differential Transformer (LVDT)

24. What is the current inventory of LVDTs in the warehouse as compared to that on May 31, 2021? Please break down the number by year purchased and by manufacturers, viz., General Electric (GE), Rexroth, or others. Please tabulate the information on the current inventory side by side with the May 31, 2021 inventory. Please explain the differences.

Response to Question 24:

See response to Question 1.

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A.22-04-001 2021 ERRA Review – 2021 ERRA Review

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Prepared by: Timothy Condit
Job Title: Sr. Advisor
Received Date: 2/27/2023

Response Date: 3/10/2023

Question 25:

II. Steam Turbine Generator Hydraulic System Fluid (STG Hydraulic Fluid)

STG Hydraulic Fluid – Use of Synthetic Oil

25. Please cite the source of SCE's claim that synthetic oil used for automobiles can be replaced every 10,000 miles or longer instead of every 3,000 miles.

Response to Question 25:

Synthetic oil usage in automobiles is general common knowledge readily available via a Google search on the subject. SCE's rebuttal testimony did not state that it was using synthetic oil at Mountainview. It was simply used as an example to demonstrate that new products may change operating parameters. Since the plant's inception, SCE has used, and continues to use, the Original Equipment Manufacturer (OEM) recommended hydraulic fluid called Fryquel, which is a standard industry-used product manufactured by ICL Industrial Products.

SCE is not aware of a hydraulic fluid OEM warranty agreement per se, rather the ICL Industrial Products – Fryquel Operating Fluid Maintenance Guidelines provided to Cal Advocates in rebuttal testimony Appendix D would constitute the OEM guidelines SCE would need to follow in order to use the product as intended by the OEM. SCE uses the Fryquel Operating Fluid Maintenance Guidelines which specify the operating parameters, condition monitoring, sampling/testing frequency, and several other operation and maintenance guidelines.

While SCE oftentimes consults the plant OEM when making decisions, SCE is not aware of a requirement to notify the plant OEM when deviating from a plant OEM recommendation, nor does it track such occurrences. Such deviations from plant OEM recommendations can occur, as was the case with the sampling frequency of hydraulic fluid, after a more specific recommendation was identified (i.e., the product OEM recommendation superseded the plant OEM recommendation). This review process ensures that SCE continues to use industry best practices for plant maintenance that are based on actual operating experience. As such, SCE monitors hydraulic fluid quarterly in accordance with item #4 of the Fryquel Operating Fluid Maintenance Guidelines and prudently adjusts the sampling cadence based on observed fluid condition and subject matter expert (SME)

assessments/recommendations - which includes plant operators, maintenance personnel and engineers, as well the product OEM and the ISO/IEC accredited test laboratory issued by the ANSI-ANAB National Accreditation Board.

Southern California Edison
A.22-04-001 2021 ERRA Review – 2021 ERRA Review

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Response Date: 3/10/2023

Question 26:

II. Steam Turbine Generator Hydraulic System Fluid (STG Hydraulic Fluid)

STG Hydraulic Fluid – Use of Synthetic Oil

26. Is this source regarding automobile synthetic fluid the only basis that SCE used to make the switch to synthetic oil for plant equipment? If not, cite and provide the other sources that SCE used to make the decision to switch to synthetic oil.

Response to Question 26:

See response to Question 25.

Southern California Edison
A.22-04-001 2021 ERRA Review – 2021 ERRA Review

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Job Title: Sr. Advisor
Received Date: 2/27/2023

Response Date: 3/10/2023

Question 27:

II. Steam Turbine Generator Hydraulic System Fluid (STG Hydraulic Fluid)

STG Hydraulic Fluid – Use of Synthetic Oil

27. What is the current STG Hydraulic Fluid used? Provide brand name and specifications.

Response to Question 27:

See response to Question 25.

Southern California Edison
A.22-04-001 2021 ERRA Review – 2021 ERRA Review

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Question 28:

II. Steam Turbine Generator Hydraulic System Fluid (STG Hydraulic Fluid)

STG Hydraulic Fluid – Use of Synthetic Oil

28. What was the previous STG Hydraulic Fluid used before the switch to synthetic oil? Provide brand name and specifications.

Response to Question 28:

See response to Question 25.

Southern California Edison
A.22-04-001 2021 ERRA Review – 2021 ERRA Review

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Question 29:

II. Steam Turbine Generator Hydraulic System Fluid (STG Hydraulic Fluid)

STG Hydraulic Fluid – Use of Synthetic Oil

29. When and why did SCE switch the STG Hydraulic Fluid to synthetic oil?

Response to Question 29:

See response to Question 25.

Southern California Edison
A.22-04-001 2021 ERRA Review – 2021 ERRA Review

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Response Date: 3/10/2023

Question 30:

II. Steam Turbine Generator Hydraulic System Fluid (STG Hydraulic Fluid)

STG Hydraulic Fluid – Use of Synthetic Oil

30. When was the OEM notified of the switch? Was the OEM in agreement with the change? Please provide all copies of documentations between the OEM and SCE on the fluid change.

Response to Question 30:

See response to Question 25.

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A.22-04-001 2021 ERRA Review – 2021 ERRA Review

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Question 31:

II. Steam Turbine Generator Hydraulic System Fluid (STG Hydraulic Fluid)

STG Hydraulic Fluid – Use of Synthetic Oil

31. If the OEM was not notified of the switch to synthetic oil, please explain why not.

Response to Question 31:

See response to Question 25.

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A.22-04-001 2021 ERRA Review – 2021 ERRA Review

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Response Date: 3/10/2023

Question 32:

II. Steam Turbine Generator Hydraulic System Fluid (STG Hydraulic Fluid)

STG Hydraulic Fluid – Use of Synthetic Oil

32. Is the synthetic oil used by SCE the same as that used for automobiles? If not, please explain the differences between automobile oil and that used for the STG Hydraulic Fluid. Explain the effect the differences between the two fluids have on usage and longevity.

Response to Question 32:

See response to Question 25.

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A.22-04-001 2021 ERRA Review – 2021 ERRA Review

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Response Date: 3/10/2023

Question 33:

II. Steam Turbine Generator Hydraulic System Fluid (STG Hydraulic Fluid)

STG Hydraulic Fluid – Testing Frequency

SCE Rebuttal (Exhibit SCE-08, page 9, line 10 to 14) states, “OEM specifications/standards by nature are created to account for a broad array of available products in the marketplace that can be used. Products evolve and continually improve, and manufacturer standards such as the recommended monitoring and testing frequency of hydraulic oil can and oftentimes will override OEM [Original Equipment Manufacturer] recommended standards for good operational reasons.”

33. Has the OEM approved SCE’s decision to deviate from the OEM’s testing frequency. If so, please provide the documentations to show the OEM’s approval on the deviation.

Response to Question 33:

See response to Question 25.

Southern California Edison
A.22-04-001 2021 ERRA Review – 2021 ERRA Review

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Received Date: 2/27/2023

Response Date: 3/10/2023

Question 34:

II. Steam Turbine Generator Hydraulic System Fluid (STG Hydraulic Fluid)

STG Hydraulic Fluid – Testing Frequency

SCE Rebuttal (Exhibit SCE-08, page 9, line 10 to 14) states, “OEM specifications/standards by nature are created to account for a broad array of available products in the marketplace that can be used. Products evolve and continually improve, and manufacturer standards such as the recommended monitoring and testing frequency of hydraulic oil can and oftentimes will override OEM [Original Equipment Manufacturer] recommended standards for good operational reasons.”

34. Please provide the OEM warranty agreement.

Response to Question 34:

See response to Question 25.

Southern California Edison
A.22-04-001 2021 ERRA Review – 2021 ERRA Review

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Question 35:

II. Steam Turbine Generator Hydraulic System Fluid (STG Hydraulic Fluid)

STG Hydraulic Fluid – Testing Frequency

SCE Rebuttal (Exhibit SCE-08, page 9, line 10 to 14) states, “OEM specifications/standards by nature are created to account for a broad array of available products in the marketplace that can be used. Products evolve and continually improve, and manufacturer standards such as the recommended monitoring and testing frequency of hydraulic oil can and oftentimes will override OEM [Original Equipment Manufacturer] recommended standards for good operational reasons.”

35. Have other industry experts and/or utilities accepted and adopted increased oil testing intervals for plant equipment? If so, please cite and provide the relevant documentations, showing their testing frequencies.

Response to Question 35:

See response to Question 25.

Southern California Edison
A.22-04-001 2021 ERRA Review – 2021 ERRA Review

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Question 36:

II. Steam Turbine Generator Hydraulic System Fluid (STG Hydraulic Fluid)

STG Hydraulic Fluid – Test Reports

36. Please provide the Oil Reports (Test Reports) on the hydraulic fluid samples taken on 2/6/2022, 7/6/2021, 4/6/2021, 12/31/2020, and 11/10/2020.

Response to Question 36:

SCE has already provided the information related to the 11/10/2020, 12/31/2020, 7/6/2021, 4/6/2021, and 2/6/2022 samples in both the response to Cal Advocates' Data Request 10, question 43, and in rebuttal testimony as Appendix E. While the report states that SCE's sample exceeded particulate ingressions thresholds (Pore Block Count 17/15/12) and all five samples resulted in the same comment/corrective action noted on the report, which states, "Check for sources of particulate ingressions first before changing filters." SCE's samples were still within acceptable operating limits and no further action was required.

Southern California Edison
A.22-04-001 2021 ERRA Review – 2021 ERRA Review

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Response Date: 3/10/2023

Question 37.a-f:

II. Steam Turbine Generator Hydraulic System Fluid (STG Hydraulic Fluid)

STG Hydraulic Fluid – Test Reports

37. For each of those Test Reports, please state the findings, the impact of those findings on the operation and maintenance of the equipment, the actions taken by SCE to correct the findings, and the actions taken to preclude its recurrence. For example, if deleterious materials were found in the oil sample, please respond to the Test Report findings, using the below enumerated items as sample issues and actions:

- a. Findings: excessive particle count and/or other items as stated in the Test Reports.
- b. Identification: chemical analyses reveal that the particles were XXXX, YYYY, etc.
- c. Source of particles: from where did XXXX, YYYY, etc. originate, and why?
- d. Impact on Findings: the harmful effects of the particles on equipment, operation, and premature failure, such as on steam generator, and other equipment, e.g., xxxx.
- e. Actions to Correct Findings: remove particulates in the fluid by changing fluid, adding filters, etc.
- f. Actions to Preclude Recurrence: identify sources of particulate ingestions, and correct those sources which cause the incursion of particulates.

Response to Question 37.a-f:

See response to Question 36.

Southern California Edison
A.22-04-001 2021 ERRA Review – 2021 ERRA Review

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Response Date: 3/10/2023

Question 38:

II. Steam Turbine Generator Hydraulic System Fluid (STG Hydraulic Fluid)

STG Hydraulic Fluid – Test Reports

38. If the same findings were identified in each of those reports, please explain why SCE did not take earlier actions to correct the problems and prevent its recurrences.

Response to Question 38:

See response to Question 36.

Southern California Edison
A.22-04-001 2021 ERRA Review – 2021 ERRA Review

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Question 39:

II. Steam Turbine Generator Hydraulic System Fluid (STG Hydraulic Fluid)

STG Hydraulic Fluid – Test Reports

39. Are there acceptable ingestion limits on particles and/or other deleterious materials? If so, list them and cite source.

Response to Question 39:

See response to Question 36.

Southern California Edison
A.22-04-001 2021 ERRA Review – 2021 ERRA Review

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Question 40:

II. Steam Turbine Generator Hydraulic System Fluid (STG Hydraulic Fluid)

STG Hydraulic Fluid – Test Reports

40. Is the number of particles and/or other deleterious materials found in each of the above five reports within the acceptance limits? If not, what were SCE's immediate and long-term preventive corrective actions on those specific items.

Response to Question 40:

See response to Question 36.

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A.22-04-001 2021 ERRA Review – 2021 ERRA Review

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Response Date: 3/10/2023

Question 41:

III. Compliance to OEM Standards

41. Has SCE deviated from any OEM recommendations and standards with regards to STG Hydraulic Fluid?

Response to Question 41:

See response to Question 25.

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Question 42:

III. Compliance to OEM Standards

42. Have any deviations been approved and accepted by the OEMs? Please provide correspondences and documentations of such approvals or denials.

Response to Question 42:

See response to Question 25.

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A.22-04-001 2021 ERRA Review – 2021 ERRA Review

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Response Date: 3/10/2023

Question 43:

III. Compliance to OEM Standards

43. Cite examples when such deviations led to equipment failures/malfunctions. Provide documentations of those incidents and follow-up actions.

Response to Question 43:

See response to Question 25.