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INVESTIGATION REPORT OF THE SEPTEMBER 30, 2013 SUBCONTRACTOR FATALITY AT A SOUTHERN CALIFORNIA EDISON COMPANY UNDERGROUND VAULT IN HUNTINGTON BEACH

PUBLIC REPORT

SAFETY AND ENFORCEMENT DIVISION

ELECTRIC SAFETY AND RELIABILITY BRANCH

LOS ANGELES
OCTOBER 2015

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1. Summary

On September 30, 2013, [redacted], an apprentice lineman employed by CAM Contractors (CAM), a subcontractor to Southern California Edison Company (SCE), was fatally injured when he inadvertently removed an energized dead-break elbow while working in an SCE underground vault located in Huntington Beach, California.

The Electric Safety and Reliability Branch (ESRB) of the Safety and Enforcement Division (SED) of the California Public Utilities Commission (CPUC) investigated this incident and found that SCE:

- Delegated its safety responsibilities to a contractor in violation of Commission decisions and California law. SCE must not delegate its safety responsibilities to its contractors.
- Failed to ensure that the contractor and subcontractor performed their work safely, in violation of Public Utilities Code section 451 and General Order 128, Rule 17.1.
- Refused to provide ESRB its Investigation Report and a list of all documents SCE reviewed in its own investigation of the incident, under a claim of attorney-client privilege. This refusal hampered ESRB's investigation and is counter to the requirements of Public Utilities Code sections 314 and 582.

SCE's deficiencies contributed to the creation of an unsafe work environment and allowed the subcontractor's employee to work in an unsafe manner, resulting in his fatal injury.

More generally, ESRB's investigation revealed that SCE's current safety program does not ensure that its contractors and subcontractors are performing work in a safe manner. This disturbing shortcoming warrants a broader investigation than the one undertaken by ESRB regarding this specific incident.

SCE should immediately provide ESRB with its Investigation Report and all other information for which it has claimed the attorney-client privilege, subject to appropriate protection for any confidential information. ESRB's review of these documents might lead to further avenues of inquiry, and ESRB might wish to prepare a supplement to this investigation report at an appropriate time.

ESRB also recommends that SCE submit a proposed Corrective Action Plan. The proposed Corrective Action Plan would adopt and implement measures to address the deficiencies identified below in Section 5 of this report, and would ensure that any work on its facilities, regardless of who does the work, is performed in accordance with acceptable safety practices. The proposed Corrective Action Plan also should include modifications to SCE's procedures to ensure that SCE performs appropriate cause analyses of electric incidents, implements effective corrective actions, and shares electric incident information and lessons learned throughout SCE's operations and with ESRB.

Finally, ESRB recommends that SCE address and identify how its proposed plan would improve SCE's operations to meet or exceed the provisions approved in Decision 15-07-014.

2. Background and Timeline of ESRB Investigation

[redacted], the worker who sustained fatal injuries, was an employee of CAM Contractors (CAM), which was a subcontractor to PAR Electrical Contractors (PAR). PAR is a contractor to SCE, and has performed many different types of underground and overhead electrical work for SCE over a number of

years. At the time of the incident, CAM had been working as a subcontractor preparing cables for lifespan testing for about nine months.

CPUC Resolution E-4184, which modified CPUC Decision 06-04-055, requires investor owned electric utilities to report incidents within two hours of occurrence during normal business hours. On September 30, 2013, at 1359 hours, SCE reported the following to the CPUC: "SCE submits this notification as it reportedly involves a fatality of an employee of a contractor. Initial details reflect a contract crew was working in a subsurface structure (vault) when an incident reported as a fire occurred resulting in serious injuries to at least one member of the crew. The investigation is in its preliminary stages and ongoing."

Immediately after receiving SCE's incident report, ESRB assigned an engineer to conduct a thorough investigation of the incident. The following is a timeline that summarizes important events during the course of ESRB's investigation:

- September 30, 2013 – SCE reported the incident to ESRB at 1359 hours via the CPUC's online incident reporting system. An ESRB engineer arrived at the incident site at approximately 1500 hours and conducted a field investigation.
- October 11, 2013 – ESRB received a supplemental report of the incident from SCE (as required by Appendix B of CPUC Decision 06-04-055).
- November 11, 2013 – ESRB received the first data request response from SCE.
- Mid-January 2014 – ESRB received a copy of the Coroner's report from the Orange County coroner.
- Early February 2015 – ESRB received an incident report and case files from the California Division of Occupational Safety and Health (Cal/OSHA).
- February 6, 2015 – ESRB received a second data request response from SCE.
- February 12, 2015 – [redacted], an attorney for PAR, indicated that PAR would not respond to an ESRB email request for information, because pending litigation on the incident made it not in PAR's best interest to provide information on the incident.
- March 4, 2015 – ESRB received correspondence from [redacted] of SCE.
- March 24, 2015 – ESRB held a teleconference meeting with [redacted] and [redacted] of SCE.
- April 7, 2015 – ESRB met with SCE.
- April 16, 2015 – ESRB met with SCE and received a third data request response from SCE. At this meeting, SCE verbally refused to provide a copy of its investigation report of the incident.
- June 18, 2015 – ESRB received a fourth data request response from SCE.
- July 20, 2015 – ESRB received a fifth data request response from SCE. In this data request response, SCE refused in writing to provide a copy of its investigation report of the incident. Additionally, SCE refused to provide a list of all documents it reviewed in its investigation of this incident.

3. Description of Facilities

The incident occurred in an underground vault located at 16282 Tisbury Circle, Huntington Beach, California. Tisbury Circle is part of a residential neighborhood approximately one mile inland from

the Pacific coast (Figure 1). The vault entrance is located in the street, approximately three feet from the curb in front of 16282 Tisbury Circle (Figure 2). It was installed on December 12, 1968 and has been in operation since.

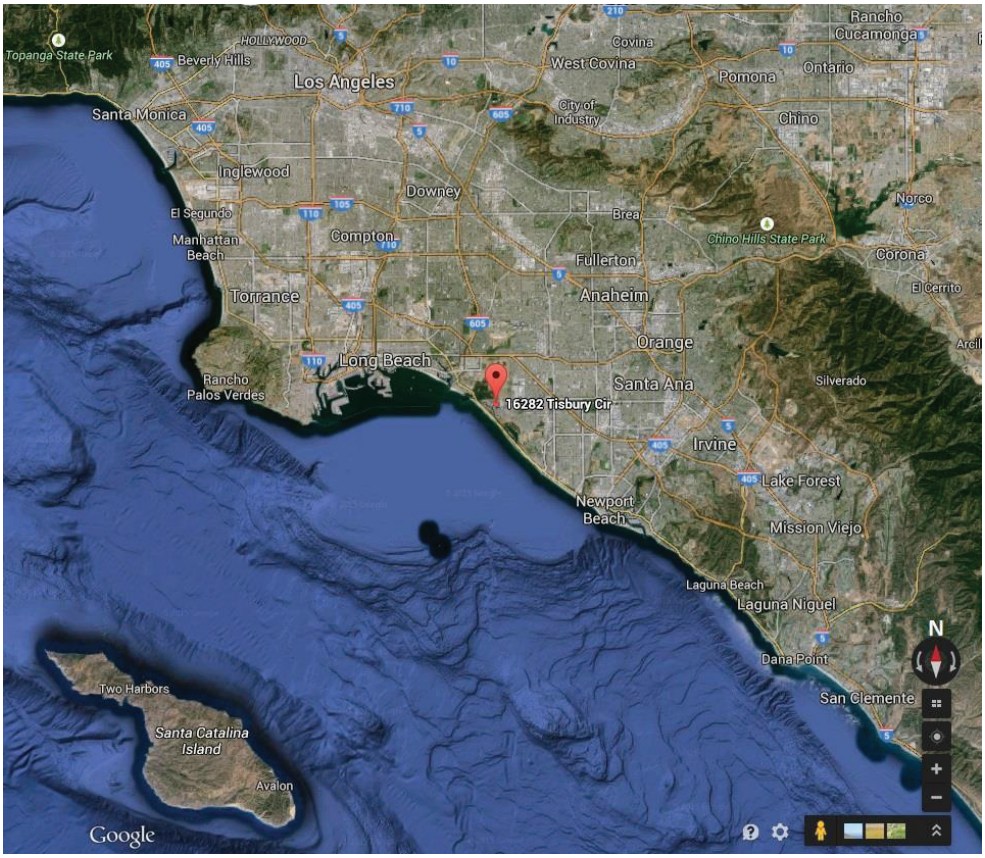

Figure 1: SCE's vault number V5103829 is located in the street at 16282 Tisbury Circle, Huntington Beach, California. *Source: Google Maps.*

Figure 2: View of the vault as seen from Tisbury Circle. *Source: Google Maps.*

The vault, identified as vault number V5103829, contained the following equipment: one three-way switch identified as switch number BS 0885; [redacted]

A switch is a device that controls an electrical load. When a switch is "on", the conductors[2] on the two sides of the switch are electrically connected to each other. Conversely, when a switch is "off", the conductors on the two sides are not electrically connected to each other. The term "three-way" indicates that the device can interconnect conductors using three switches, meaning that any switch can energize or de-energize one or both of the other two switches. Multiple switches are often utilized on a single circuit, to give the utility greater control over which sections of the circuit are energized and de-energized.

Switch number BS 0885 was manufactured by Kuhlman Electric Company, and is rated at an operating voltage of 15 kV. There are three positions on the switch: L, R, and T. Each position is comprised of two connection points (e.g., position L is comprised of L1 and L2) for a total of six connection points (see Figures 3 and 4). Each connection point is attached to a cable through a 200 amp dead-break elbow.[3]

[1] Only primary cables are connected to switch number BS 0885. [redacted]

[2] In this report, the terms "cable" and "conductor" are used interchangeably.

[3] An elbow is an insulated 90-degree electrical appurtenance that enables a cable to be attached to electrical equipment (see Figure 5). One side of the elbow is connected to the cable while the other side is connected to a plug on the piece of electrical equipment. An elbow that is designed to be detached only when it is de-energized is called a "dead-break" elbow.

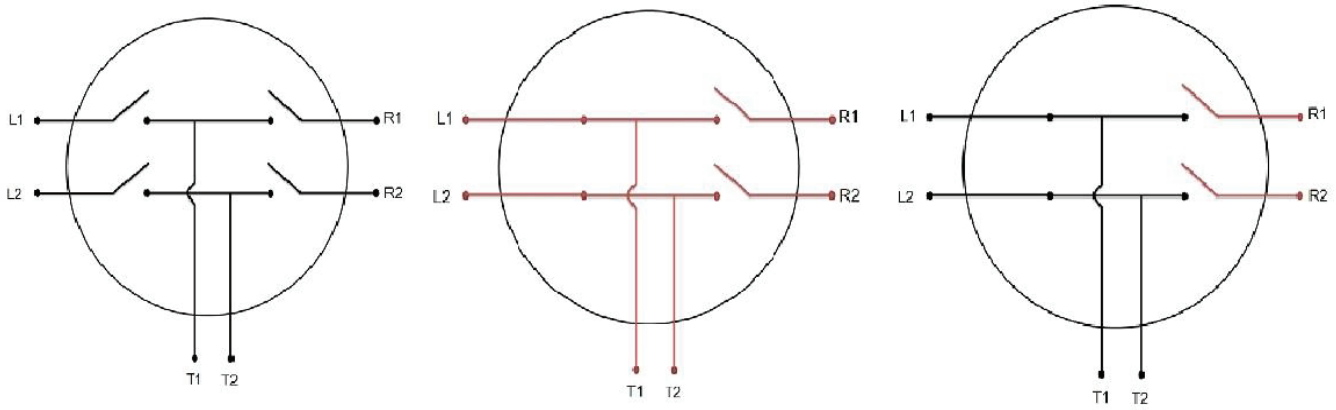

Figure 3: Schematics of switch number BS 0885. Red lines in the center and right schematics indicate an energized component. The schematic on the left is a general schematic of BS 0885. L1, L2, R1, and R2 are switchable, whereas T1 and T2 are permanently closed and, thus, are non-switchable and cannot be opened. L1 and L2 open and close in conjunction; similarly, R1 and R2 also open and close in conjunction. Conductors from switch number GS 0643 located in vault number V5103812 are connected to L1 and L2 (see Appendix A). Conductors from switch number OS 0646 located in vault number V5103759 are connected to R1 and R2 (see Appendix A).

The schematic in the center shows the switching configuration of switch number BS 0885 on the day of the incident prior to field switching. L1 and L2 are energized by the conductors connected to them and are the "source" that feeds (i.e., energizes) T1 and T2. R1 and R2 are not connected to T1 or T2, but are energized by the conductors connected to them. The schematic on the right shows the switching configuration of switch number BS 0885 after SCE performed field switching at switch number GS 0643 to de-energize L1 and L2. T1 and T2 were also de-energized since they were connected to L1 and L2 and had no other energized source. However, R1 and R2 remained energized since they continued to be connected to energized conductors.

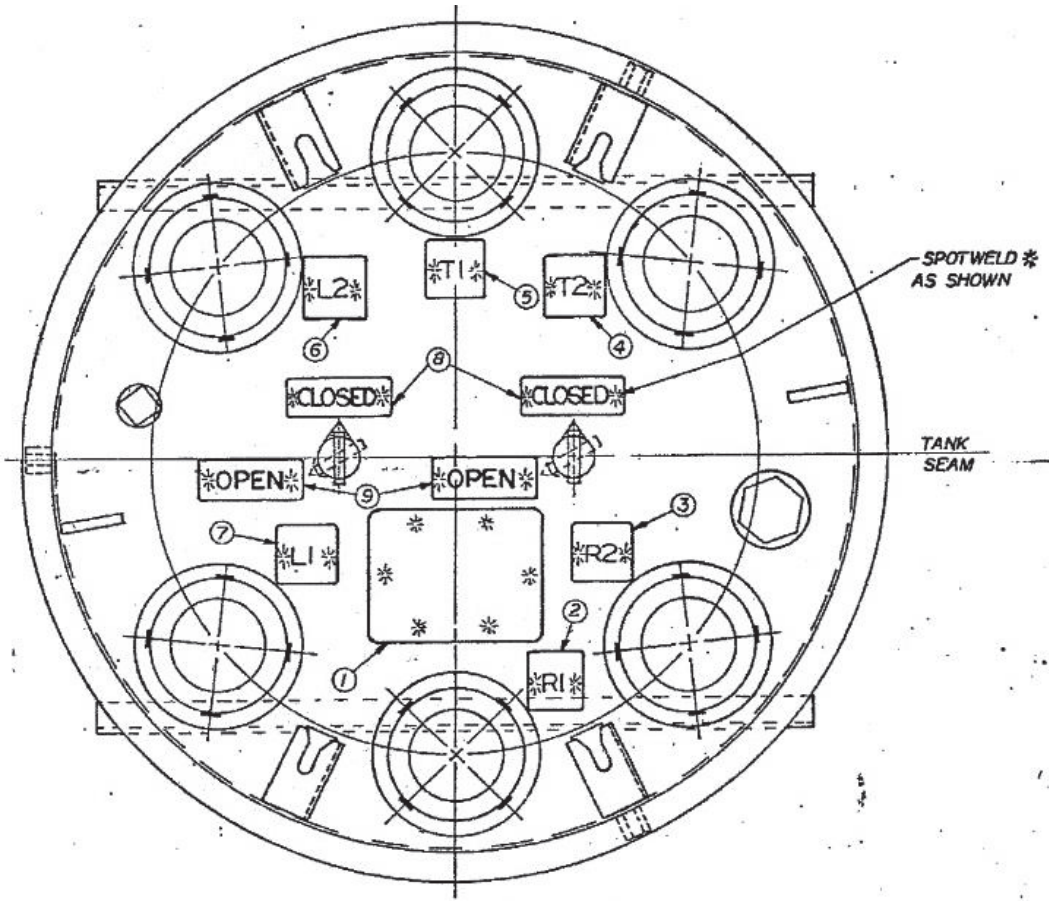

Figure 4: Drawing of the top face of switch number BS 0885 as presented in Kuhlman Electric Company schematics.

Figure 5: Dead-break elbow.

SCE last performed a detailed inspection[4] of vault number V5103829 on October 4, 2011 with seven inspection findings of problems to be corrected. The inspector repaired six of the problems[5] at the time of inspection and the remaining inspection finding for removing a broken subsurface sump pump was pending at the time of the incident. SCE classified that finding as a Priority 3 opportunity maintenance work order[6] with no assigned due date. SCE did a patrol inspection of vault number V5103829 on August 12, 2013 and did not note any obvious safety hazards.[7]

4. Incident and Investigation Description

On September 30, 2013, [redacted], a fifth step apprentice lineman[8] and an employee of CAM, was with one other CAM employee at the incident location to prepare underground primary cables for lifespan

[4] Rule III-A4 of General Order 165 defines a detailed inspection as an inspection "where individual pieces of equipment and structures are carefully examined, visually and through use of routine diagnostic test, as appropriate, and (if practical and if useful information can be so gathered) opened, and the condition of each rated and recorded."

[5] "REPAIR DRT/H2O SUBSRF VAULT", "INSTALL MISSING PUBLIC ID MRKING ID VAULT", "INSTALL MISSING HWARE/FR VAULT", "INSTALL MISSING PUBLIC PICKPLG VAULT", "REMV DRT/H2O SUBSRF VAULT", and "REPLC LOW/DRY SUBSRF GAS SWTICH".

[6] Opportunity maintenance work orders are completed during the earliest unplanned opportunity during the course of other work.

[7] Section III-A3 of General Order 165 defines a patrol inspection as "a simple visual inspection, of applicable utility equipment and structures that is designed to identify obvious structural problems and hazards. Patrol inspections may be carried out in the course of other company business."

[8] There are generally six steps to becoming a journeyman lineman, with the sixth step being the most experienced step. A fifth step apprentice lineman is able to work on equipment that is energized at 600 V and below, but only under the supervision of a qualified electrical worker (QEW). A QEW is generally accepted to be a lineman at the journeyman lineman level or above.

testing. As part of preparing the cables for lifespan testing, the cables must be removed from any electrical equipment to which they are attached. Recall that cables are attached to electrical equipment by a component called an elbow. Therefore, in order to test a cable, the cable must first be detached from the switch by removing its elbow from the switch. At the time of the incident, [redacted] was alone inside SCE vault number V5103829, tasked with removing the de-energized dead-break elbows at L1, L2, T1, and T2 on switch number BS 0885. Switch number BS 0885 also contained dead-break elbows at R1 and R2, which were energized. [redacted] task did not involve removing the dead-break elbows at R1 and R2. At approximately 1215 hours, [redacted] inadvertently removed the energized dead-break elbow at R1 and was fatally injured.[9]

On September 30, 2013, at approximately 1500 hours, the assigned ESRB engineer arrived at the incident location to conduct a field investigation. While on site, the engineer met with [redacted] and [redacted] of SCE who advised that the members of the CAM crew left the site after the incident. The engineer observed a team removing [redacted] body; however, the engineer was not able to enter the vault and conduct a visual inspection until around midnight, when SCE determined that it was safe to enter the vault.

Upon entering the vault, the engineer noted the following equipment: a transformer, conductors, and a switch with connection points for six dead-break elbows. The engineer also made the following observations regarding the switch: 1) only four of the six dead-break elbows were attached to the switch; 2) there were two plugs where a dead-break elbow had been removed: one of the plugs had a black charred substance emanating from it that indicated that an arc flash had occurred at the plug (such a substance is usually the result of an electric arc), while the other plug did not show any evidence of an arc flash; 3) the surface of the switch was covered with a crusty, hard buildup, making it unreadable; and 4) each point where the elbow connected to the switch had a small square outline in front of it (see Figure 6).

At some time after the incident, SCE personnel scrubbed the outlines next to the elbows with a stiff bristle wire brush (see Figure 6). This revealed that the identification of the elbow was embossed within the outline in front of each elbow. It also revealed that the plug with the black substance was located at R1. The other exposed plug was revealed to be located at L1. Removal of the dead-break elbow at L1 would not have caused a flash because it was de-energized (see explanation in Figure 3 above); however, removal of the dead-break elbow at R1 would have caused a flash because R1 was energized.

According to SCE's November 13, 2014, data request response, in the days following the incident, CAM released the remaining crew members from employment. In early February 2015, [redacted] of PAR indicated to ESRB that CAM was dissolved sometime after the incident. ESRB e-mailed PAR in an attempt to contact the remaining CAM crew members and obtain additional information regarding the incident, such as a copy of the signed tailboard, the reason the crew members were terminated, and what safety devices the crew used, but PAR's attorney denied the request, indicating it would not be in PAR's best interest to answer ESRB's questions, due to pending litigation. ESRB contacted SCE to request an interview with the remaining CAM crew members, but SCE stated that it has also been unable to contact them.

[9] The Orange County Sheriff-Coroner's report indicates the cause of death as "electrocution". There are varying definitions for "electrocution"; however a common element in each definition is that electrocution is death caused by electricity. There are two common ways that electricity can cause death: 1) current may pass through the heart and cause cardiac arrest or 2) if an arc flash is present, the heat generated may cause severe burns. The Sheriff-Coroner's report was not specific in the exact mode of electrocution; however both modes of death are plausible. An arc at 12 kilovolts of voltage is sufficient to cause fatal injuries.

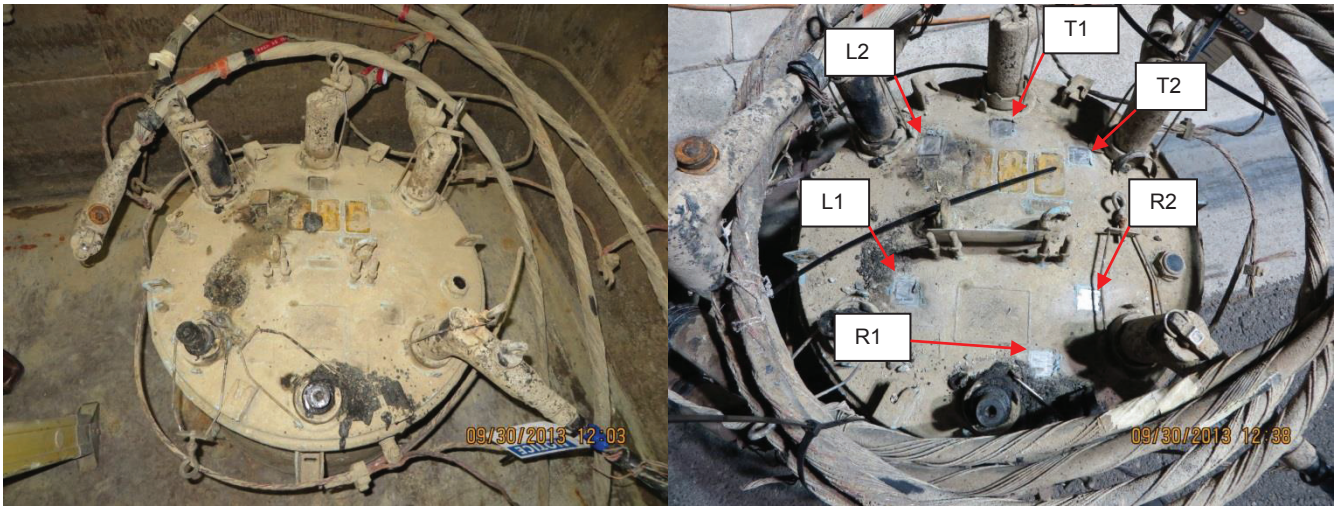

Figure 6: Top face of BS 0885, before and after scrubbing the labels for R1, R2, L1, L2, T1, and T2. *Source: CPUC*

In its February 6, 2015, data request response, SCE described the work that PAR and CAM were to perform for SCE: "SCE has a contract with Par Electrical Contractors, Inc. (PAR) to test underground cables in accordance with SCE's Circuit Reliability Project. PAR then engaged a subcontractor, CAM Contractors, Inc. (CAM) which employed [redacted], to complete the scheduled work." During an interview with SCE on April 7, 2015, SCE reiterated its statement from the data request response, and further indicated that PAR's role was to prepare the cables for lifespan testing.

On April 7, 2015, ESRB met with representatives of SCE to obtain more information about the incident. [redacted], an SCE troubleman (i.e., a lineman who typically is dispatched to identify problems during outages) told ESRB that CAM and the SCE personnel had a set of switching procedures, called a switching program, which lists the steps the SCE personnel would take to de-energize or energize particular sections of the circuit. On the day of the incident, SCE personnel at vault number V5103812 de-energized the conductors leading to L1 and L2; this action also de-energized T1 and T2 and cut electrical service to customers fed off T1 and T2. R1 and R2 remained energized; therefore, customers fed off R1 and R2 continued to receive electrical service. The SCE personnel performed the field switching, verified and confirmed with CAM that each step had been performed, and then left the site. [redacted] job was then to remove the four de-energized dead-break elbows at L1, L2, T1, and T2.

On April 16, 2015, ESRB met again with SCE representatives. At this meeting, ESRB verbally requested a copy of SCE's investigation report; however, SCE verbally denied this request, citing the attorney client privilege. On July 8, 2015, ESRB made a written request to SCE for its investigation report and a list of all documents SCE reviewed in its investigation of the incident; however in its data request response dated July 20, 2015, SCE declined to fulfill either data request and again cited the attorney client privilege.

In early February 2015, ESRB received Cal/OSHA's incident report and case files. According to Cal/OSHA's case files, [redacted] was alone inside the vault at the time of the incident. The Cal/OSHA case files also indicated that a Qualified Electrical Worker (QEW) was outside the vault; however, he did not directly supervise or observe the work that [redacted] performed.

5. Investigation Findings

ESRB reviewed and examined SCE documents and data request responses, examined physical evidence (the switch, dead-break elbows, conductors, and associated hardware), interviewed SCE's representatives,

reviewed the Coroner's report, and reviewed Cal/OSHA's case file and investigation reports. ESRB's investigation revealed that SCE delegated safety responsibilities to its contractor and did not ensure that its contractor or subcontractor followed acceptable safety procedures. SCE's deficiencies contributed to the creation of an unsafe work environment in which the subcontractor's employee was allowed to work in an unsafe manner resulting in his fatal injury.

In its February 6, 2015, data request response, SCE stated that [redacted] was following CAM safety procedures at the time of the incident. In the same data request response, SCE indicated that PAR requires its contractors' safety manuals to meet or exceed the safety protocols outlined in the International Brotherhood of Electrical Workers (IBEW) California Safety Manual Accident Prevention Rules (commonly known as the "Red Book"). However, the evidence demonstrates that the CAM crew violated several Red Book Rules, as explained below in findings 3 and 6.

Specific ESRB findings:

1. SCE delegated its responsibility for safety to the contractor. SCE has a "Master Service Agreement" (MSA) with PAR, which specifies that "Contractor shall be solely responsible for the safety and health of personnel and the prevention of industrial accidents and illness arising out of the performance of the Services" (MSA page 23, section 12.6, *Environmental, Health, and Safety Requirements*).

2. SCE failed to actively manage and oversee the work performed by the CAM crew, as detailed in findings 3 through 6 below.

3. SCE failed to ensure that people working on its facilities were qualified to perform the work in accordance with accepted, safe practices. SCE was not involved in hiring CAM, and did not make any attempt to ensure that CAM and its employees were qualified to work on SCE's facilities.

   Red Book Rule 7.01, "Qualified Persons," states the following: "Only qualified persons shall be assigned to work on energized underground conductors or equipment. Persons in training who are qualified by experience and training shall be permitted to work on energized underground conductors or equipment while under the continuous supervision or instruction of a qualified electrical worker." According to SCE's February 6, 2015 data request response, an electrical worker at the journeyman lineman level is considered a Qualified Electrical Worker. The CAM crew violated Red Book Rule 7.01, as [redacted], who was below the journeyman lineman level, was not under the continuous supervision of a Qualified Electrical Worker.

4. SCE failed to ensure that the CAM crew was familiar with SCE's electric facilities, schematics, and plans, including switch number BS 0885, its configuration, and the circuit diagram of the Outrigger 12 kV circuit that contained switch number BS 0885. SCE personnel were only present at the work site to conduct field switching at switches in various vaults – including switch number OS 0587 at vault number V5102740, switch number OS 0646 in vault number V5103759, and switch number OS 0643 in vault number V5103812 – to de-energize the conductors that connect to L1, L2, T1, and T2 in switch BS 0885. Once their work was finished, the SCE personnel left the work site. SCE personnel did not consult with the CAM crew to ensure that the CAM crew was familiar with the circuit maps and switching procedure provided to them.

5. SCE failed to ensure that the CAM crew was aware of and familiar with the work to be conducted. During a meeting on April 16, 2015, SCE's personnel stated that SCE's general contract with PAR provides a broad scope of work that SCE wants PAR to perform, and that SCE relies on its contractors to provide work instructions to all subcontractors. SCE failed to provide clear and specific instructions to either PAR or CAM on what tasks CAM was to perform, or how to perform the work in a safe manner. SCE failed to furnish any documents indicating which dead-break elbows on switch BS 0885 the CAM crew was required to remove. A set of specific work instructions would have better enabled the crew to perform the work safely.

6. SCE did not ensure that people working on its facilities were properly trained and working in a safe manner. SCE failed to ensure that the CAM crew adhered to the following safety standards:

   - SCE failed to ensure that the CAM crew took reasonable steps to verify the identity of the dead-break elbows. Red Book Rule 7.05(a) states the following: "Every possible precaution shall be exercised to make sure of the correct identity (voltage, circuit, phase, etc.) of the cable or apparatus to be worked upon." The CAM crew violated this rule, as cleaning the labels for L1, L2, R1, R2, T1, and T2, a precautionary measure, would have assisted in verifying the identity of the energized elbow that [redacted] accidentally removed, but that was not done.

   - SCE failed to ensure that the CAM crew tested the dead-break elbow to verify if it was de-energized. Red Book Rule 7.05(f)-1, states the following: "The cable or apparatus shall be considered energized and worked with adequate protective devices (rubber gloves shall not be considered to be suitable devices on voltages in excess of 7,500 volts) until it has been...Tested with an approved device and proven to be de-energized." According to the Cal/OSHA case files, [redacted] did not use a testing device to verify if the dead-break elbow at R1 was de-energized.

   - SCE failed to ensure that the CAM crew was wearing proper personal protective equipment. SCE's Accident Prevention Manual under Section 109, *Clothing/PPE*, states the following: "Employees who enter underground vaults, manholes, power cable trenches, CST/SOE or BURD enclosures containing cable or equipment energized above 300 volts (a. c. / nominal) shall wear approved flame retardant/flame resistant coveralls or rainwear with full length sleeves rolled down."[10] However, in SCE's data request response dated November 13, 2013, a set of six (6) digital photographs appear to show that [redacted] was not wearing coveralls at the time of the incident as required by SCE's Accident Prevention Manual.

7. SCE's failure to ensure that CAM operated in a safe manner is further indicated by Cal/OSHA's investigation of this incident, which led Cal/OSHA to cite CAM for nine (9) violations, several of which are for failures that do not appear to be directly related to the fatal incident. Cal/OSHA's Proposed Penalty Worksheet (see Appendix B) describes the cited violations as follows:

   - Failure to ensure that Confined Space Entry Procedures were followed.

[10] As defined in SCE documentation, CST is defined as "completely submersible transformer", SOE is defined as "surface operable equipment", and BURD is defined as "buried underground residential distribution".

- Failure to extend ladder 36 inches above landing exiting the vault.
- Failure to examine and test each safety device as required.
- Failure to ensure that only Qualified Electrical Workers were working on energized equipment.
- Failure to ensure that an observer was in close proximity to the work being done.
- Failure to ensure that the operating voltage was determined before work began.
- Having an employee working on de-energized equipment next to energized equipment.
- Failure to install visual guards/barriers around the vault.
- Failure to implement and maintain all elements of their Illness and Injury Prevention Program.

8. SCE failed to provide ESRB with its Investigation Report and a list of all documents SCE reviewed in its investigation of the incident, citing attorney-client privileges. This withholding of information hampered ESRB's investigation of the incident and ability to determine whether SCE has identified root causes of the incident and appropriate corrective actions, and whether SCE has incorporated "lessons learned" in other aspects of its operations.

6. Conclusions and Recommendations

As established above, SCE failed to provide safety oversight of PAR's decision to hire CAM and also failed to provide safety oversight of CAM's performance. The absence of any SCE oversight contributed to the creation of an unsafe work environment, and allowed the CAM crew to work in an unsafe manner, resulting in the fatal injury to [redacted].

Therefore, SCE is in violation of Public Utilities Code (PUC) section 451 and General Order (GO) 128, Rule 17.1. The Public Utilities Code and Commission regulations and decisions clearly establish SCE's obligations in this regard.

PUC section 451 requires that each utility must furnish and maintain its equipment and facilities in a manner to promote safety:

> *Every public utility shall furnish and maintain such adequate, efficient, just, and reasonable service, instrumentalities, equipment, and facilities, including telephone facilities, as defined in Section 54.1 of the Civil Code, as are necessary to promote the safety, health, comfort, and convenience of its patrons, employees, and the public.*

GO 128, Rule 17.1, requires that all work performed on public streets be done in a manner that is not dangerous to workers:

> *All work performed on public streets and highways shall be done in such a manner that the operations of other utilities and the convenience of the public will be interfered with as little as possible and no conditions unusually dangerous to workmen, pedestrians or others shall be established at any time.*

CPUC decisions have also made clear that SCE is liable for safety violations by its contractors. Southern

California Edison Co. Decision (D.) 04-04-065; Southern California Edison Co. D.00-06-038; and Pacific Gas and Electric Company D.15-07-014. D.04-04-065, page 64, states the following:

> *As a general matter, to the extent that Edison is liable for the violation of the GOs by its own employees, it is also liable for violations by the employees of Edison's independent contractors.*

SCE's refusals to provide ESRB its Investigation Report and a list of documents SCE reviewed in its investigation of the incident, under a claim of attorney-client privilege, hampered ESRB's investigation of the incident and ability to determine whether SCE has identified root causes of the incident and appropriate corrective actions, and whether SCE has incorporated "lessons learned" in other aspects of its operations. SCE's decision to withhold this information is counter to the requirements of PUC sections 314 and 582. PUC section 314 states, in relevant part, the following:

> *(a) The commission, each commissioner, and each officer and person employed by the commission may, at any time, inspect the accounts, books, papers, and documents of any public utility. ...*

PUC section 582 provides that:

> *Whenever required by the commission, every public utility shall deliver to the commission copies of any or all maps, profiles, contracts, agreements, franchises, reports, books, accounts, papers, and records in its possession or in any way relating to its property or affecting its business, and also a complete inventory of all its property in such form as the commission may direct.*

More generally, ESRB's investigation revealed that SCE's current safety program does not properly ensure the safety of its contractors' and subcontractors' work on SCE's facilities, and does not fulfill its responsibility in this regard. This shortcoming warrants a broader investigation, looking beyond just this specific incident.

Recommendations:

1. SCE should accept and acknowledge responsibility for all work activities performed on SCE-owned and/or operated facilities, whether SCE employees or contractors perform the work.

2. SCE should submit a proposed Corrective Action Plan that would adopt and implement measures to address the deficiencies identified in Section 5 of this report, and would ensure that any work on its facilities, regardless of who does the work, is performed in accordance with acceptable safety practices.

3. SCE's proposed Corrective Action Plan should include modifications to its procedures to ensure that SCE performs appropriate cause analyses of electric incidents, implements effective corrective actions, and shares electric incident information and lessons learned throughout SCE's operations and with ESRB.

4. SCE's proposed Corrective Action Plan should explicitly address each aspect of the all-party settlement approved in Decision 15-07-014 arising from investigation of an electric incident at the Kern Power Plant owned by Pacific Gas and Electric Company (PG&E), and identify how SCE's proposed plan would improve SCE's operations to meet or exceed the requirements in that PG&E settlement.

5. SCE should provide the CPUC its Investigation Report and all other information for which it has claimed attorney-client privileges, subject to appropriate protection for any confidential information.

Appendix A:
Circuit Map of the Outrigger 12 kV Circuit

[CIRCUIT MAP OF THE OUTRIGGER 12 KV CIRCUIT IS REDACTED.]

Appendix B:
Cal/OSHA Proposed Penalty Sheet

Site Address: 18282 Tisbury Cir. Huntington Beach CA 92649

Department of Industrial Relations
DIVISION OF OCCUPATIONAL SAFETY AND HEALTH

PROPOSED PENALTY WORKSHEET

1 EMPLOYER: CAM Contractors, Inc.
ADDRESS: 936 S. Andreasen Dr. Ste. H Escondido, CA 92029

2A INITIAL INSPECTION IDENT.NO. A9562 — 317143824
CAL/OSHA 1 REP.NO. 016 FY 14
REGION 3 DISTRICT 1

2B FOLLOW-UP INSPECTION IDENT.NO.
CAL/OSHA 1 REP.NO. FY
REGION DISTRICT

3	4	5	6	7	8	GRAVITY 9		10		11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
CITATION NUMBER	ITEM NUMBER	STANDARD ORDER, REGULATION OR CODE ALLEGEDLY VIOLATED	NUMBER EXPOSED	NUMBER OF INSTANCES	CLASSIFICATION OF VIOLATION (RS, RG, S, G)	CARCINOGEN	SEVERITY		EXTENT		LIKELIHOOD	GRAVITY BASED PENALTY	REPEATED	WILLFUL	LESS 10 % ADJUSTMENT FACTOR (10, 5, 2)	ADJUSTED PENALTY	LESS 50% ABATEMENT CREDIT	PROPOSED PENALTY FOR EACH VIOLATION	ABATEMENT DATE	DATE OF FOLLOW-UP INSPECTION	NO. OF CAL. DAYS OVER ABATE. DATE	LESS % ADJUSTMENT FACTOR (FIG. 3)	ADJUSTED PENALTY	RESULTING PENALTY, INSTANCES UNABATED	RECISION OF ABATEMENT CREDIT	PROPOSED ADD. PENALTY FOR FAILURE TO ABATE
1	1	2943(b)1)	1	1	G		H	2000	M	0	M	0	2000			200	1800	**900**	**900**	Employer failed to ensure Confined Space Entry Procedures were followed.							
	2	3276(e)(11)	1	1	G		L	1000	M	0	L	-250	750			75	675	**338**	**335**	Extension ladder did not extend 36 inches above landing exiting the vault.							
2	1	2940(b)	1	2	S			18000	L	-4,500	H	4,500	18000			1800	16200	**8100**	**8100**	Employer failed to examine and test the each safety device as required.							
3	1	2940(c)	2	2	S			18000	M	0	H	4,500	22500			2250	20250	**10125**	**10125**	Employer failed to ensure only QEW were performing work on energized equip.							
4	1	2940(d)	1	1	S			18000	M	0	M	0	18000			1800	16200	**8100**	**8100**	Employer failed to ensure an observer was in close proximity to work being done.							
5	1	2940.1(a)	2	1	S			18000	M	0	H	4,500	22500			2250	20250	**10125**	**10125**	Employer failed to ensure operating voltage was determined before work.							
6	1	2943(f)(1)	1	1	SA		H	18000	H	4,500	H	4,500	27000				27000		**25000**	Employee was working on de-energized equipment next to energized equip.							
7	1	2943(g)(1)	1	6	SA		H	18000	H	4,500	H	4,500	27000				27000		**25000**	Visual inspection was not conducted / guards and barriers were not installed.							
8	1	3203(a)(4)	5	2	S			18000	M	0	H	4,500	22500			2250	20250	**10125**	**10125**	Employer failed to implement and maintain their IIIPP.							
																				***Serious Accident-Related only receives adjustment for size and no abatement.**							

FIG.1

W = WILLFUL
S = SERIOUS
G = GENERAL
RS = REPEAT, SERIOUS
RG = REGULATORY
GR= REPEAT, GENERAL

ACC.RELATED/IIP PROGRAM

FIG. 2

PENALTY ADJUSTMENT FACTORS (IN PERCENT)

GOOD FAITH			SIZE				HISTORY			TOTAL
30	15	0	40	30	20	10	0	10	5	0	10
		X						X	X		

											0
							X				

TOTAL PROPOSED PENALTY $ **97810**

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ORIGINAL PREPARED BY — DATE 3/28/14

ORIGINAL APPROVED BY — DATE

FIG. 3

PENALTY ADJUSTMENT FACTORS (IN PERCENT)

GOOD FAITH			SIZE				HISTORY			TOTAL
30	15	0	40	30	20	10	0	10	5	0	

28A TOTAL $

28 0

FAIL-TO-ABATE PREPARED BY — DATE

FAIL-TO-ABATE APPROVED BY — DATE