

PUBLIC UTILITIES COMMISSION

505 VAN NESS AVENUE
SAN FRANCISCO, CA 94102-3298



September 8, 2013

SA2013-003

Michael Palusso
Manager, T&S ISO/FERC Compliance RPPM/TDBU
Southern California Edison
3 Innovation Way, PIV 3, 3rd Floor
Pomona, California 91768

SUBJECT: Audit of SCE's Mira Loma and Mesa Sector Substation Facilities

Dear Mr. Palusso:

On behalf of the Safety and Enforcement Division (SED) of the California Public Utilities Commission, Ben Brinkman, Derek Fong, Richard Kyo, and Zelalem Ewnetu conducted an audit of Southern California Edison's (SCE's) electric substation facilities in the Mira Loma and Mesa Sectors from July 29, 2013 to July 31, 2013. The audit included a review of SCE's maintenance records and inspections of SCE's facilities.

During the audit, we identified violations of General Order 174. A copy of the audit summary itemizing the violations is enclosed. As part of a new risk-based audit protocol for substations, the summary also includes recommendations and areas of concern.

Please advise me no later than October 18, 2013, by electronic or hard copy, of all corrective measures taken by SCE to remedy and prevent such violations. You may respond to the recommendations and areas of concern at your own discretion.

If you have any questions concerning this audit you can contact Ben Brinkman of my staff at (213) 576-7093 or Benjamin.Brinkman@cpuc.ca.gov.

Sincerely,

A handwritten signature in blue ink, appearing to read "Raymond G. Fugere".

Raymond G. Fugere, P.E.
Program and Project Supervisor
Electric Safety and Reliability Branch
Safety and Enforcement Division

Enclosure: Audit Summary

CC: Elizaveta Malashenko, Deputy Director, Safety and Enforcement Division
Ben Brinkman, Senior Utilities Engineer, CPUC

Audit Summary

Company: SCE
Location: Electric Substation System, Mira Loma and Mesa Sectors
Audit: Substation
Date: July 29 to July 31, 2013

Violations

Record Portion

General Order 174, Rule 30.2 states:

Inspections shall be performed by persons who, by reason of training, experience and instruction, are qualified to perform the task.

On the notification list for Layfair substation (notification #404998304), an inspector entered the following the following report during a January 10, 2013 inspection:

I need help with finding the quaker 4KV regulator counter. The hmi counters seems incorrect.

SCE should ensure that all inspectors are trained on all equipment in the substations they inspect, and can locate all counters and meters.

Field Portion

1.	Structure ID / Location:	South 12KV potheads, Bassett Substation
	Previous SCE Visit Details:	June 2, 2013
	Date of CPUC Inspection:	July 29, 2013
Explanation of Violation(s):		
<p><u>Bushing Contamination</u> GO 174, Rule 31, states in part:</p> <p style="text-align: center;"><i>Each Operator shall establish, update as needed, and follow an Inspection Program.</i></p> <p>SCE's Inspection Program Practice, Document 510.012, Section 4.2.1, states in part:</p> <p style="text-align: center;"><i>Corrective action, which requires attention, is turned in by the inspector as a result of an item identified in one of the above inspections.</i></p> <p>Bushing contamination not noted on notification list.</p>		

2.	Structure ID / Location:	Tangerine Circuit Breaker, Citrus Substation
	Previous SCE Visit Details:	June 12, 2013
	Date of CPUC Inspection:	January 30, 2013
Explanation of Violation(s):		
<p><u>Oil Leak</u></p> <p>GO 174, Rule 31, states in part:</p> <p><i>Each Operator shall establish, update as needed, and follow an Inspection Program.</i></p> <p>SCE's Inspection Program Practice, Document 510.012, Section 4.2.1, states in part:</p> <p><i>Corrective action, which requires attention, is turned in by the inspector as a result of an item identified in one of the above inspections.</i></p> <p>Oil leak not listed in notifications.</p>		

3.	Structure ID / Location:	Front gate, Citrus Substation
	Previous SCE Visit Details:	June 12, 2013
	Date of CPUC Inspection:	July 30, 2013
Explanation of Violation(s):		
<p><u>Broken Barbed wire</u></p> <p>GO 174, Rule 31, states in part:</p> <p><i>Each Operator shall establish, update as needed, and follow an Inspection Program.</i></p> <p>SCE's Inspection Program Practice, Document 510.012, Section 4.2.1, states in part:</p> <p><i>Corrective action, which requires attention, is turned in by the inspector as a result of an item identified in one of the above inspections.</i></p> <p>Broken barbed wire support found on front gate.</p>		

4.	Structure ID / Location:	#1 E Bank, Citrus Substation
	Previous SCE Visit Details:	June 12, 2013
	Date of CPUC Inspection:	July 30, 2013
Explanation of Violation(s):		
<p><u>Deteriorated signage</u> GO 174, Rule 31, states in part:</p> <p style="text-align: center;"><i>Each Operator shall establish, update as needed, and follow an Inspection Program.</i></p> <p>SCE's Inspection Program Practice, Document 510.012, Section 4.2.1, states in part:</p> <p style="text-align: center;"><i>Corrective action, which requires attention, is turned in by the inspector as a result of an item identified in one of the above inspections.</i></p> <p>Signs on #1 E Bank falling apart. No notification listed.</p>		

5.	Structure ID / Location:	#1 Cap 4 KV Circuit Breaker, Duarte Substation
	Previous SCE Visit Details:	June 17, 2013
	Date of CPUC Inspection:	July 30, 2013
Explanation of Violation(s):		
<p><u>Oil Leak</u> GO 174, Rule 31, states in part:</p> <p style="text-align: center;"><i>Each Operator shall establish, update as needed, and follow an Inspection Program.</i></p> <p>SCE's Inspection Program Practice, Document 510.012, Section 4.2.1, states in part:</p> <p style="text-align: center;"><i>Corrective action, which requires attention, is turned in by the inspector as a result of an item identified in one of the above inspections.</i></p> <p>Circuit breaker leaking oil not noted on notification list.</p>		

6.	Structure ID / Location:	Back corner near metering box, Duarte Substation
	Previous SCE Visit Details:	June 17, 2013
	Date of CPUC Inspection:	July 30, 2013
Explanation of Violation(s):		
<p><u>Unused wire hanging in substation</u> GO 174, Rule 31, states in part:</p> <p style="text-align: center;"><i>Each Operator shall establish, update as needed, and follow an Inspection Program.</i></p> <p>SCE's Inspection Program Practice, Document 510.012, Section 4.2.1, states in part:</p> <p style="text-align: center;"><i>Corrective action, which requires attention, is turned in by the inspector as a result of an item identified in one of the above inspections.</i></p> <p>Unused ground near metering box should be cut.</p>		

7.	Structure ID / Location:	Diamond Bar Substation
	Previous SCE Visit Details:	June 11, 2013
	Date of CPUC Inspection:	July 29, 2013
Explanation of Violation(s):		
<p><u>Debris in Facility</u> GO 174, Rule 31, states in part:</p> <p style="text-align: center;"><i>Each Operator shall establish, update as needed, and follow an Inspection Program.</i></p> <p>SCE's Inspection Program Practice, Document 510.012, Section 4.2.1, states in part:</p> <p style="text-align: center;"><i>Corrective action, which requires attention, is turned in by the inspector as a result of an item identified in one of the above inspections.</i></p> <p>Excessive debris found in facility.</p>		

8.	Structure ID / Location:	#1 E Transformer bank, Cortez Substation
	Previous SCE Visit Details:	June 8, 2013
	Date of CPUC Inspection:	July 31, 2013
Explanation of Violation(s):		
<p><u>Oil Leak</u></p> <p>GO 174, Rule 31, states in part:</p> <p><i>Each Operator shall establish, update as needed, and follow an Inspection Program.</i></p> <p>SCE's Inspection Program Practice, Document 510.012, Section 4.2.1, states in part:</p> <p><i>Corrective action, which requires attention, is turned in by the inspector as a result of an item identified in one of the above inspections.</i></p> <p>Oil leak not noted on notification list.</p>		

9.	Structure ID / Location:	#3 E Transformer bank, Layfair Substation
	Previous SCE Visit Details:	June 17, 2013
	Date of CPUC Inspection:	July 31, 2013
Explanation of Violation(s):		
<p><u>Oil Leak</u> GO 174, Rule 31, states in part:</p> <p style="text-align: center;"><i>Each Operator shall establish, update as needed, and follow an Inspection Program.</i></p> <p>SCE's Inspection Program Practice, Document 510.012, Section 4.2.1, states in part:</p> <p style="text-align: center;"><i>Corrective action, which requires attention, is turned in by the inspector as a result of an item identified in one of the above inspections.</i></p> <p>Oil seep near sampling port not noted on notification list.</p>		

10.	Structure ID / Location:	12 KV Circuit Oil Breakers, Layfair Substation
	Previous SCE Visit Details:	June 12, 2013
	Date of CPUC Inspection:	July 30, 2013
Explanation of Violation(s):		
<p><u>Oil Leak</u> GO 174, Rule 31, states in part:</p> <p style="text-align: center;"><i>Each Operator shall establish, update as needed, and follow an Inspection Program.</i></p> <p>SCE's Inspection Program Practice, Document 510.012, Section 4.2.1, states in part:</p> <p style="text-align: center;"><i>Corrective action, which requires attention, is turned in by the inspector as a result of an item identified in one of the above inspections.</i></p> <p>Oil leak on all oil breakers not listed in notifications.</p>		

11.	Structure ID / Location:	Live Oak Substation
	Previous SCE Visit Details:	July 14, 2013
	Date of CPUC Inspection:	July 31, 2013
Explanation of Violation(s):		
<p><u>Excess vegetation</u> GO 174, Rule 31, states in part:</p> <p style="text-align: center;"><i>Each Operator shall establish, update as needed, and follow an Inspection Program.</i></p> <p>SCE's Inspection Program Practice, Document 510.012, Section 4.2.1, states in part:</p> <p style="text-align: center;"><i>Corrective action, which requires attention, is turned in by the inspector as a result of an item identified in one of the above inspections.</i></p> <p>Excess vegetation in northeast corner of substation not noted on notification list.</p>		

12.	Structure ID / Location:	Live Oak Substation
	Previous SCE Visit Details:	July 14, 2013
	Date of CPUC Inspection:	July 31, 2013
Explanation of Violation(s):		
<p><u>Construction debris in station</u> GO 174, Rule 31, states in part:</p> <p style="text-align: center;"><i>Each Operator shall establish, update as needed, and follow an Inspection Program.</i></p> <p>SCE's Inspection Program Practice, Document 510.012, Section 4.2.1, states in part:</p> <p style="text-align: center;"><i>Corrective action, which requires attention, is turned in by the inspector as a result of an item identified in one of the above inspections.</i></p> <p>SCE should remove an old water pipe next to the battery room.</p>		

13.	Structure ID / Location:	Live Oak Substation
	Previous SCE Visit Details:	July 14, 2013
	Date of CPUC Inspection:	July 31, 2013
Explanation of Violation(s):		
<p><u>Broken Barbed Wire</u> GO 174, Rule 31, states in part:</p> <p style="text-align: center;"><i>Each Operator shall establish, update as needed, and follow an Inspection Program.</i></p> <p>SCE's Inspection Program Practice, Document 510.012, Section 4.2.1, states in part:</p> <p style="text-align: center;"><i>Corrective action, which requires attention, is turned in by the inspector as a result of an item identified in one of the above inspections.</i></p> <p>Broken barbed wire various places on substation fence.</p>		

14.	Structure ID / Location:	Live Oak Substation
	Previous SCE Visit Details:	July 14, 2013
	Date of CPUC Inspection:	July 31, 2013
Explanation of Violation(s):		
<p><u>Exposed anchor guy</u> GO 174, Rule 31, states in part:</p> <p style="text-align: center;"><i>Each Operator shall establish, update as needed, and follow an Inspection Program.</i></p> <p>SCE's Inspection Program Practice, Document 510.012, Section 4.2.1, states in part:</p> <p style="text-align: center;"><i>Corrective action, which requires attention, is turned in by the inspector as a result of an item identified in one of the above inspections.</i></p> <p>Exposed anchor in southeast corner of substation is a potential tripping hazard.</p>		

Recommendations / Areas of Concern

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- SCE records show several closed notifications still listed as pending, SCE should attempt to close all notification promptly.
- SCE should consider developing and documenting standard minimum guidelines for identification, classification, monitoring and repair of inspection items such as insulation or bushing contamination and equipment oil leaks.
- SCE should consider performing random or selected ground potential rise, soil resistivity and/or fall of potential testing of substations in order to mitigate potential step and touch potential issues.
- During this audit, SED concentrated primarily on external visual and auditory inspections of substation equipment, and meter and counter readings. SED examined some records and procedures for other types of inspections, which SCE states are not performed by the inspection “group”, but rather by various other business units, including maintenance and battery units.

To clarify SED’s understanding of “inspection”, General Order 174 defines an inspection as “a basic evaluation, generally performed using visual and auditory senses, but which could be conducted by other means.” In common understanding, “inspection” refers to evaluative processes, and “maintenance” refers to preventive or corrective activities performed on equipment as a result of an evaluation.

Whether performed by an “inspection” group, or a “maintenance” group, SED considers infrared inspections, dissolved gas analysis, electrical testing, and internal device inspection to be valid areas of inquiry under General Order 174. SED also maintains broad information request authority under the Public Utility Code. In future audits SED will request this additional inspection information and expects full cooperation.