

PUBLIC UTILITIES COMMISSION

505 VAN NESS AVENUE
SAN FRANCISCO, CA 94102-3298



March 13, 2014

SA2014-002

Robert McCann, Manager of Electrical Substation Maintenance
Los Angeles Department of Water and Power
1212 Palmetto Street
Los Angeles, CA 90013

SUBJECT: Audit of LADWP's Metro Area Substation Facilities

Dear Mr. McCann:


On behalf of the Safety and Enforcement Division (SED) of the California Public Utilities Commission, Ben Brinkman and Richard Kyo conducted an audit of Los Angeles Department of Water and Power's (LADWP's) electric substation facilities in the Los Angeles Metro Area from February 24 to February 28, 2014. The audit included a review of LADWP's maintenance records and inspections of LADWP'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.

Please advise me no later than April 18, 2014, by electronic or hard copy, of all corrective measures taken by LADWP to remedy and prevent such violations.

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,



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 Supervisor, CPUC – LA

Audit Summary

Company: LADWP
Location: Electric Substation System, Los Angeles Metro Area
Audit: Substation
Date: February 24-28, 2014

Field Violations

1.	Structure ID / Location:	Switchyard, Substation DS-2
	Previous LADWP Visit Details:	January 6, 2014
	Date of CPUC Inspection:	February 25, 2014
Explanation of Violation(s):		
<p><u>Missing Fence Ground</u></p> <p>GO 174, Rule 30.1, 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>LADWP's Inspection Program Practice Document, dated February 21, 2014, states in part:</p> <p style="text-align: center;"><i>We document and report any abnormal conditions found in the substations during these inspections.</i></p> <p>The outdoor substation fence is ungrounded. LADWP's inspectors failed to document this abnormal condition in their inspection report.</p>		

2.	Structure ID / Location:	Bank 2, Substation DS-13
	Previous LADWP Visit Details:	January 14, 2014
	Date of CPUC Inspection:	February 25, 2014
Explanation of Violation(s):		
<p><u>Deteriorated Insulation</u></p> <p>GO 174, Rule 30.1, 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>LADWP's Inspection Program Practice Document, dated February 21, 2014, states in part:</p> <p style="text-align: center;"><i>We document and report any abnormal conditions found in the substations during these inspections.</i></p> <p>The oil-impregnated insulation on a cable above a transformer is dripping fluid and is deteriorating. LADWP's inspectors failed to document this abnormal condition in their inspection report.</p>		

3.	Structure ID / Location:	Substation DS-9
	Previous LADWP Visit Details:	January 22, 2014
	Date of CPUC Inspection:	February 26, 2014
	Explanation of Violation(s):	
	<p><u>Burned out Bulbs</u></p> <p>GO 174, Rule 30.1, states in part:</p> <p><i>Each Operator shall establish, update as needed, and follow an Inspection Program.</i></p> <p>LADWP's Inspection Program Practice Document, dated February 21, 2014, states in part:</p> <p><i>We document and report any abnormal conditions found in the substations during these inspections.</i></p> <p>Several light-bulbs are burned out in this substation. LADWP's inspectors failed to document this abnormal condition in their inspection report.</p>	

4.	Structure ID / Location:	Near Air Blast CB 23 and 33, Substation DS-9
	Previous LADWP Visit Details:	January 22, 2014
	Date of CPUC Inspection:	February 26, 2014
Explanation of Violation(s):		
<p><u>Tripping Hazard</u></p> <p>GO 174, Rule 30.1, 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>LADWP's Inspection Program Practice Document, dated February 21, 2014, states in part:</p> <p style="text-align: center;"><i>We document and report any abnormal conditions found in the substations during these inspections.</i></p> <p>Metal plates in the floor are extending upward, creating a potential tripping hazard. LADWP's inspectors failed to document this abnormal condition in their inspection report.</p>		

5.	Structure ID / Location:	Control Room, Substation DS-12
	Previous LADWP Visit Details:	January 22, 2014
	Date of CPUC Inspection:	February 26, 2014
Explanation of Violation(s):		
<p><u>Missing First Aid Supplies</u></p> <p>GO 174, Rule 30.1, states in part:</p> <p><i>Each Operator shall establish, update as needed, and follow an Inspection Program.</i></p> <p>LADWP's Inspection Program Practice Document, dated February 21, 2014, states in part:</p> <p><i>We document and report any abnormal conditions found in the substations during these inspections.</i></p> <p>Supplies are missing from the first aid kit. LADWP's inspectors failed to document this abnormal condition in their inspection report.</p>		

6.	Structure ID / Location:	Substation DS-13
	Previous LADWP Visit Details:	January 14, 2014
	Date of CPUC Inspection:	February 25, 2014
	Explanation of Violation(s):	
	<p><u>Burned out Bulbs</u></p> <p>GO 174, Rule 30.1, 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>LADWP's Inspection Program Practice Document, dated February 21, 2014, states in part:</p> <p style="text-align: center;"><i>We document and report any abnormal conditions found in the substations during these inspections.</i></p> <p>Several light-bulbs are burned out in this substation. LADWP's inspectors failed to document this abnormal condition in their inspection report.</p>	

Observation

During the audit SED inspected twelve jurisdictional substations out of a total twenty in the area audited. Of these, eleven utilized extinguishers, smoke and heat detectors and alarms, and fire department response for fire detection and suppression. SED checked tags on all fire extinguishers, checked for any problems on alarm control panels, and checked that emergency plans and fire system instructions were present in the substation. One substation, in addition to the above measures, utilized a CO2 suppression system. SED checked the most recent inspection and repair records for this system and found that during the week of the audit LADWP was performing preventive maintenance on the system.

Recommendations

Based on other observations during this audit, SED recommends that LADWP:

- Place a written log or record sheet in each substation for inspectors to sign in and out at the time of an inspection,
 - Currently LADWP does not allow anyone but operators to enter anything in the substation log. Therefore, to actually monitor whether inspectors physically enter the substation LADWP must check control center call and alarm records.
- Conduct a lighting study of all indoor substations to ensure lighting is sufficient to ensure safety,
- Modify the entrance to substation DS-114,
 - The substation entrance is poorly designed. The substation entrance to the substation requires descending narrow steps that end below the level of the entrance, presenting a potential tripping hazard. There is also a concern about the quality of construction of the current substation entrance door.
- Investigate water seeping through a wall in DS-42 underground substation causing what appears like corrosion to form near mounting brackets for some grounding cables,
 - At this time, no corrosion appears near the actual ground connections; however SED recommends that LADWP fully evaluate this seepage to determine if it presents any risk to the electrical or structural integrity of the grounding system at this point in the substation.
- Place a high voltage sign on the front door to the control room of station DS-25.
 - The station's perimeter has high voltage signs approximately every 100 feet, and on all vehicle entrances. However the front door to the control room lacks any such signage. This door faces the street, so an additional sign would be a positive safety enhancement.
- Develop a policy for classifying oil leaks and stains on equipment,
 - LADWP washes its substation insulators annually; therefore the insulators found in this audit were very clean. However SED found some evidence of contamination due to weeping oil around transformer welds and at the oil sampling ports. In general, this contamination was minimal and any active leaks were reported on the inspection report. However, in one instance an excessive amount of oil contamination was present on a transformer but no active leak was present. SED recommends that LADWP develop a policy for classifying these leaks and stains, and that LADWP keeps its transformers clean of this contamination in order to make identification of active leaks easier and clearer.