

## PUBLIC UTILITIES COMMISSION

505 VAN NESS AVENUE  
SAN FRANCISCO, CA 94102-3298



October 9, 2009

Carolyn Cowan Barbash  
Regional Operations  
NV Energy  
875 E. Long Street  
Carson City, NV 89706

CPUC File No. E200910

**SUBJECT:** Electric Audit of Sierra Pacific Power Company's (SPPC) South Lake Tahoe Division

On behalf of the Utilities Safety and Reliability Branch (USRB) of the California Public Utilities Commission, Ivan Garcia, Kenneth How and I conducted an Electric Audit of SPPC's South Lake Tahoe Division from August 17-21, 2009. The audit included a review of your records for the period of 2006-2009.

During the inspection, we identified violations of one or more General Orders. A copy of the audit summary itemizing the violations is enclosed. Please advise me by electronic or hard copy of all the corrective measures taken by the Utility regarding the violation(s) and the date on which they were corrected.

If you have any questions, please contact me at (415) 703-2192.

Sincerely,

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Jadwindar Singh, P.E.  
Utilities Safety and Reliability Branch  
Consumer Protection and Safety Division

Enclosure: Audit Summary

CC: Mr. Randy Kelly, SPPC  
Mr. Ivan Garcia, CPUC  
Mr. Kenneth How, CPUC

# Audit Summary

## Violations

### (1) GO 165, Section IV, Standards for Inspection, Record-keeping, and Reporting

Section IV, states in part:

"For all inspections, within a reasonable period, company records shall specify the circuit, area, or equipment inspected, the name of the inspector, the date of the inspection, and any problems identified during each inspection, as well as the scheduled date of corrective action."

The USBR has cited SPPC in the two prior audits for not specifying the "scheduled date of corrective action" for identified maintenance, and instead using "resources permitting." While SPPC has removed the ability to create new maintenance without a specific required end date, a large amount of maintenance items exists in SPPC's database that continues to have a "resources permitting" end date. Not having a specific scheduled date of corrective action is a violation of GO 165.

SPPC staff explained during the audit that all "resources permitting" maintenance for a specific circuit will be repaired after the circuit is inspected. This means that all "resources permitting" work for circuits inspected this year will be completed this year and all other "resources permitting" work for circuits inspected in the future will not be completed until then. The USBR understands that SPPC has a limited work force and can not be expected to address all pending "resources permitting" work immediately. However, we insist that all "resources permitting" work, no matter when SPPC has arranged for the work to be done, must be given a specific scheduled date of correction.

### (2) GO 165, Section IV, Standards for Inspection, Record-keeping, and Reporting

Section IV, states in part:

"For all inspections, within a reasonable period, company records shall specify the circuit, area, or equipment inspected, the name of the inspector, the date of the inspection, and any problems identified during each inspection, as well as the scheduled date of corrective action."

SPPC staff explained that inspectors performing inspections, using a circuit map, start from the substation and progress to the outer reaches of the circuit. Inspectors create an inspection record for each pole, pad mount, or subsurface equipment encountered until all facilities on that circuit have been inspected. While inspectors have been tasked to inspect "all" facilities on the circuit, there is no exact method to determine if in fact "all" facilities have been visited because SPPC does not know how many "inspect-able" units there are on each circuit, nor do inspectors highlight a map (or something similar) to show that all facilities on the circuit have been inspected. Therefore, SPPC's inspection program violates GO 165 because it is inexact, and does not definitively nor unequivocally ensure that "all" facilities have been inspected.

**(3) GO 165, Section IV, Standards for Inspection, Record-keeping, and Reporting**

Section IV, states in part:

“For all inspections, within a reasonable period, company records shall specify the circuit, area, or equipment inspected, the name of the inspector, the date of the inspection, and any problems identified during each inspection, as well as the scheduled date of corrective action.”

SPPC staff explained that inspectors performing patrols may not be following the same procedures as inspectors performing inspections. For instance, after a search of the database, it was not clear if the person performing patrols had written any tags for any of the circuits patrolled in the last few years. It is highly unlikely that the inspector came across no violations during the patrols. Furthermore, SPPC staff presented a summary sheet of the circuits patrolled instead of providing anything actually signed off by the inspector. Patrols performed must be documented by a handwritten signature.

Similar to inspections, patrols conducted do not currently have a method to prove that all facilities have been patrolled, as SPPC does not know how many “patrol-able” units there are on each circuit, nor do inspectors highlight a map (or something similar) to show that all facilities on the circuit have been patrolled. Therefore, SPPC’s patrol program violates GO 165 because it is inexact, and does not definitively or unequivocally ensure that “all” facilities have been patrolled.

**(4) GO 165, Section IV, Standards for Inspection, Record-keeping, and Reporting**

Section IV, states in part:

“Each utility subject to this General Order shall conduct inspections of its distribution facilities, as necessary, to assure reliable, high-quality, and safe operation, but in no case may the period between inspections (measured in years) exceed the time specified in the attached table.”

“Underground transformers shall be detailed inspected once every three years.”

The following submersible transformers were inspected late in 2009:

Transformer #	Installation Date	Inspection Date
13864	1990	unknown
11235	2004	unknown
31815	unknown	2003
3089	unknown	unknown
101331	unknown	unknown
5000	unknown	unknown
107884	1996	unknown
75295	1990	unknown
17463	1990	unknown
17991	unknown	unknown

112158	2005	unknown
30270	1990	unknown
30253	1990	unknown

Furthermore, all 71 submersible transformers on the Meyers 3200 were last inspected in either 2003/2004 and were only subsequently inspected in 2009.

**(5) GO 165, Section IV, Standards for Inspection, Record-keeping, and Reporting**

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“Each utility subject to this General Order shall conduct inspections of its distribution facilities, as necessary, to assure reliable, high-quality, and safe operation, but in no case may the period between inspections (measured in years) exceed the time specified in the attached table.”

“Underground transformers shall be detailed inspected once every three years.”

Submersible Switch 22 does not have a record to show that it was inspected prior to 2009.

**(6) GO 95, Rule 54.6-B Ground Wires**

Rule 54.6-B states in part:

“That portion of the ground wires attached on the face or back of wood crossarms or on the surface of wood poles and structures shall be covered by a suitable protective covering.”

At Location 4 (Pole# 63966) on Wednesday, August 19 we observed a broken ground molding at the base of the pole. The pole had been inspected on 4/16/08. It is likely that the inspector was not able to see the broken ground molding at the base of the pole because of snow buildup. Inspectors must evaluate all portions of the pole during inspection and repairs.

**(7) GO 95, Rule 31.6 Abandoned Lines**

Rule 31.6 states:

“Lines or portions of lines permanently abandoned shall be removed by their owners so that such lines shall not become a public nuisance or a hazard to life or property. For the purposes of this rule, lines that are permanently abandoned shall be defined as those lines that are determined by their owner to have no foreseeable future use.”

At Location 11 (Pole# 77232) on Wednesday, August 19 we observed an idle aerial service bracket on the secondary arm. The service had gone to 2270 Utah. The idle hardware should have been removed during the aerial service removal. However, SPPC’s inspection should have caught the idle bracket also.

**(8) GO 95, Rule 54.6-I Vertical and Lateral Conductors: Attachment of Protective Covering**

Rule 54.6-I states:

“Protective covering shall be attached to poles, structures, crossarms, and other supports by means of corrosion-resistant materials (straps, plumbers tape, lag, nails, staples, screws, bolts, etc.) which are adequate to maintain such covering in a fixed position.”

At Location 20 (Pole# 77130) on Wednesday, August 19 we observed that the under arm bus strap was broken and there is a mapping error on the pole. SPPC’s map indicates that a transformer is set on this pole, while the transformer is actually on the next pole. This pole was inspected on 2/27/08. Both of these violations should have been identified during the inspection.

**(9) GO 95, Rule 54.6-B Ground Wires**

Rule 54.6-B states in part:

“That portion of the ground wires attached on the face or back of wood crossarms or on the surface of wood poles and structures shall be covered by a suitable protective covering.”

At Location 1 (Pole# 168113) on Thursday, August 20 we observed a broken ground molding at the base of the pole. The pole had been inspected in 2006, and all repairs were made on 1/21/09. It is likely that the inspector was not able to see the broken ground molding at the base of the pole because of snow buildup. Inspectors must evaluate all portions of the pole during repairs and inspections.

**(10) GO 95, Rule 56.2 Use**

Rule 56.2 states in part:

“Guys shall be attached to structures, as nearly as practicable, at the center of load. They shall be maintained taut and of such strength as to meet the safety factors of Rule 44.”

**GO 95, Rule 56.6 Guys in Proximity to Supply Conductors of Less than 35,500 Volts**

Rule 56.6 states in part:

“All portions of guys within both a vertical distance of 8 feet from the level of supply conductors of less than 35,500 volts and a radial distance of 6 feet from the surface of wood poles or structures shall not be grounded, through anchors or otherwise. Where necessary to avoid the grounding of such portions, guys

shall be sectionalized by means of insulators installed at locations as specified in Rule 56.7”

At Location 2 (Pole# 256506) on Thursday, August 20 we observed that the secondary down guy was loose. Also, the down guy insulator is located too close to the pole (about 4 feet). The pole was inspected on 4/3/08 and a span guy was repaired the same day. The loose down guy and improperly placed insulator should have been identified during the inspection on 4/3/08.

**(11) GO 95, Rule 54.6-I Vertical and Lateral Conductors: Attachment of Protective Covering**

Rule 54.6-I states:

“Protective covering shall be attached to poles, structures, crossarms, and other supports by means of corrosion-resistant materials (straps, plumbers tape, lag, nails, staples, screws, bolts, etc.) which are adequate to maintain such covering in a fixed position.”

At Location 3 (Pole# 70012) on Thursday, August 20 we observed a broken under arm bus strap. The pole was inspected on 12/31/08 and repairs were made on 5/11/09. The broken under arm bus strap should have been identified during either the inspection or repair.

**(12) GO 95, Rule 51.6, Marking and Guarding**

Rule 51.6 states in part:

“Poles which support line conductors of more than 750 volts shall be marked with high voltage signs. This marking shall consist of a single sign showing the words “HIGH VOLTAGE”, or pair of signs showing the words “HIGH” and “VOLTAGE”, not more than six (6) inches in height with letters not less than 3 inches in height. A pair of signs may be stacked to a height of no more than 12 inches. Such signs shall be of weather and corrosion-resisting material, solid or with letters cut out therefrom and clearly legible.”

At Location 4 (Pole# 83366) on Thursday, August 20 we observed missing High Voltage signs. The pole was inspected on 1/12/09 and repairs were made on 4/20/09. The missing signs should have been identified during either the inspection or repair.

**(13) GO 95, Rule 51.6, Marking and Guarding**

Rule 51.6 states in part:

“Poles which support line conductors of more than 750 volts shall be marked with high voltage signs. This marking shall consist of a single sign showing the words “HIGH VOLTAGE”, or pair of signs showing the words “HIGH” and “VOLTAGE”, not more than six (6) inches in height with letters not less than 3 inches in height.

A pair of signs may be stacked to a height of no more than 12 inches. Such signs shall be of weather and corrosion-resisting material, solid or with letters cut out therefrom and clearly legible."

At Location 5 (Pole# 83365) on Thursday, August 20 we observed missing High Voltage signs. The pole was inspected on 1/12/09 and repairs were made on 4/20/09. The missing signs should have been identified during either the inspection or repair.

**(14) GO 95, Rule 54.6-I Vertical and Lateral Conductors: Attachment of Protective Covering**

Rule 54.6-I states:

"Protective covering shall be attached to poles, structures, crossarms, and other supports by means of corrosion-resistant materials (straps, plumbers tape, lag, nails, staples, screws, bolts, etc.) which are adequate to maintain such covering in a fixed position."

At Location 13 (Pole# 46513) on Thursday, August 20 we observed a missing under arm bus strap. The pole was inspected on 2/10/09 and repairs were made on 4/9/09. The missing under arm bus strap should have been identified during either the inspection or repair.

**(15) GO 128, Rule 35.3 Warning Signs**

Rule 35.3 states in part:

"Warning signs indicating high voltage shall be installed on an interior surface, or barrier if present, inside the entrance of vaults, manholes, handholes, pad mounted transformer compartments, and other above ground enclosures containing exposed live parts above 750 volts. Such warning signs shall also be installed on an exterior surface of all such pad mounted transformer compartments and other above ground enclosures. Such signs shall be clearly visible to a person in position to open any such access door, other opening, or barrier."

At Location 15 (Heavenly submersible Room) on Thursday, August 20 we observed that High Voltage signs were missing on the exterior doors. The submersible transformer was recently inspected and the missing High Voltage signs should have been identified during the inspection.

**(16) GO 128, Rule 34.3-C Locking**

Rule 34.3 states in part:

"Compartments and enclosures shall be made secure against entry by unauthorized persons by means of locks or other suitable means."

**GO 128, Rule 17.8 Identification of Manholes, Handholes, Subsurface and Self-contained Surface-mounted Equipment Enclosures**

Rule 17.8 states in part:

“Manholes, handholes, subsurface and self-contained surface-mounted equipment enclosures shall be marked as to ownership to facilitate identification by persons authorized to work therein and by other persons performing work in their vicinity.”

At Location 16 (Two Heavenly vaults in between submersible room and machine shop) on Thursday, August 20 we observed that one of the vaults is missing all bolts and the other only has one out of four. Furthermore, ownership of the vaults was not indicated on either of the lids. The vaults were recently inspected and the missing bolts and ownership should have been identified during the inspection.

**(17) GO 128, Rule 17.8 Identification of Manholes, Handholes, Subsurface and Self-contained Surface-mounted Equipment Enclosures**

Rule 17.8 states in part:

“Manholes, handholes, subsurface and self-contained surface-mounted equipment enclosures shall be marked as to ownership to facilitate identification by persons authorized to work therein and by other persons performing work in their vicinity.”

At Location 17 (Heavenly vault in the parking lot of the machine shop) on Thursday, August 20 we observed that ownership of the vault was not indicated on the lid. The vault was recently inspected and the missing ownership should have been identified during the inspection.

**(18) GO 95, Rule 31.1 Design, Construction and Maintenance**

Rule 31.1 states in part:

“Electrical supply and communication systems shall be designed, constructed, and maintained for their intended use, regard being given to the conditions under which they are to be operated, to enable the furnishing of safe, proper, and adequate service.”

At Location 29 (Pole# 135485) on Thursday, August 20 we observed that the down guy preform was buried. The pole was inspected on 4/14/08 and the buried preform should have been identified during the inspection.

**(19) GO 95, Rule 31.1 Design, Construction and Maintenance**

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“Electrical supply and communication systems shall be designed, constructed, and maintained for their intended use, regard being given to the conditions under



which they are to be operated, to enable the furnishing of safe, proper, and adequate service.”

**GO 95, Rule 56.6 Guys in Proximity to Supply Conductors of Less than 35,500 Volts**

Rule 56.6 states in part:

“All portions of guys within both a vertical distance of 8 feet from the level of supply conductors of less than 35,500 volts and a radial distance of 6 feet from the surface of wood poles or structures shall not be grounded, through anchors or otherwise. Where necessary to avoid the grounding of such portions, guys shall be sectionalized by means of insulators installed at locations as specified in Rule 56.7”

At Location 30 (Pole# 135486) on Thursday, August 20 we observed that trees are growing around the down guy and shorting it out, the down guy preform is buried, and there is no insulator installed on the down guy. The pole was inspected on 4/9/08 and all violations should have been identified during the inspection.

## Concerns and Recommendations

### (1) GO 165 Inspection Plan

SPPC South Lake Tahoe staff have come up with a General Order 165 inspection plan for the years 2006-2015. However, the plan is lacking in the following areas:

- a) Assumptions have been made as to what facilities have been inspected and when. Our audit found that many of the assumptions are not correct. For example, on the Meyers 3400, the plan assumed that all facilities on the circuit had been inspected in 2007. Our audit found that there were facilities on the circuit that were inspected the year before in 2006. The plan mistakenly schedules the next audit for the Meyers 3400 in 2012. Inspecting the entire circuit in 2012 would violate General Order 165, as the facilities inspected in 2006 would have been inspected after 6 years, instead of 5. In order to create a proper General Order 165 plan, SPPC needs to definitively determine what facilities have been inspected in the past and when.
- b) We suggest adding all circuits in the South Lake Tahoe area to the inspection plan, as the Pinenut 1254 and Topaz 1261 aren't currently included. If possible, it would also be beneficial to have South Lake Tahoe staff perform inspections on the Pinenut and Topaz circuits for consistency's sake. Having one group in charge of South Lake Tahoe's entire GO 165 program will ensure that the inspections and patrols are done per established procedure and on time.

### (2) GO 165 Procedures/Process Flows

SPPC needs to create GO 165 inspection procedures that clearly outline the different steps required to complete the inspection of a circuit and it's repairs. For example, the process/procedures should include:

- How inspectors keep track of what facilities have been inspected on the circuit they are doing.
- Who receives and enters the inspections forms after they come in from the field.
- How work entered into the computer is scheduled for completion.
- Where completed forms go after they come back from the field and who enters them into the computers.

Currently, this is a very loose process, with no actual procedures documented anywhere. There is also no idea what procedures the two other South Lake Tahoe offices are using to complete inspections and maintenance work. This process method must also be shared with North Lake Tahoe staff so that it may be implemented in the same manner.

### (3) Inspection Form Comments

As noted in the prior audits, we still find that inspector comments related to violations found during inspections are vague and incomplete. While verifying completed maintenance in the field, we found it extremely difficult to understand what the original inspector had identified for repair. The vague comments also make it difficult for the person trying to address all the violations found by the inspector.

On the same note, we found it extremely difficult to understand what repairs were made to close out a maintenance form. We suggested to SPPC staff that once inspection

forms comes in (after a circuit has been initially inspected) that the form be entered into the computer and then filed away. When the maintenance is due, a new form could be printed that has the previously identified violations listed at the bottom of the sheet with each having a comments section and date field accompanying it. This way the field person can specifically comment on and date each completed repair. Currently, the person entering the forms is left to decipher the cryptic comments left by field personnel.

- (4) At Location 3 (Pole # 184867) on Wednesday, August 19, we visited a pole that did not have a pole number attached to it. The tag created on 4/16/08 said there was "no problem." This is an issue, because tags labeled as "no problem" will be closed out in the database, and no one will do the research then.
- (5) At Location 9 (Switch# 902-33) on Wednesday, August 19, we observed that the door had only been secured with a lock, and a penta head bolt was not utilized. We suggest that all pad mounted equipment utilize penta head bolts where the nuts have already been installed, as this would require no extra work. The company should also consider installing nuts on equipment that do not already have them.
- (6) At Location 7 (Pole# 109503) on Thursday, August 20 we observed that the pole brand is about seven feet off the ground and we are concerned about the set depth.
- (7) At Location 23 (Pole# 201772, 1034 Turnback) on Thursday, August 20 we observed that a mapping issue was identified during the inspection, however the map we had with us in the field did not show that the mapping issue had been corrected. What is the lead time to correct mapping issues?