

PUBLIC UTILITIES COMMISSION

505 VAN NESS AVENUE
SAN FRANCISCO, CA 94102-3298



January 29, 2019

SA2018-807

Adeel Babar
Supervisor – Regulatory Compliance
Pacific Gas and Electric Company (PG&E)
3401 Crow Canyon Road, #221E
San Ramon, CA 94583

SUBJECT: Substation Audit of PG&E Vaca-Dixon

Mr. Babar:

On behalf of the Electric Safety and Reliability Branch (ESRB) of the California Public Utilities Commission (CPUC), Ivan Garcia, Stephen Lee, Anwar Safvi, Rickey Tse, and Brandon Vazquez of my staff conducted a substation audit of PG&E Vaca-Dixon Division from November 5, 2018 through November 9, 2018. The audit included a review of PG&E's procedures, records, and field inspections of its substation facilities.

During the audit, my staff identified violations of General Order 174. A copy of the audit findings itemizing the violations is enclosed. Please provide a response no later than March 8, 2019, by electronic or hard copy of all corrective actions and preventive measures taken by PG&E to correct the identified violations and prevent the recurrence of such violations.

If you have any questions concerning this audit, please contact Ivan Garcia at (916) 928-5875 or ivan.garcia@cpuc.ca.gov.

Sincerely,

A handwritten signature in blue ink, appearing to read "Banu Acimis".

Banu Acimis, P.E.
Program and Project Supervisor
Electric Safety and Reliability Branch
Safety and Enforcement Division
California Public Utilities Commission

Enclosures: CPUC Audit Findings

Cc: Elizaveta Malashenko, Director, Safety and Enforcement Division, CPUC
Lee Palmer, Deputy Director, Office of Utility Safety, SED, CPUC
Charlotte TerKeurst, Program Manager, ESRB, SED, CPUC
Rickey Tse, Senior Utilities Engineer – Supervisor, ESRB, SED, CPUC
Ivan Garcia, Utilities Engineer, ESRB, SED, CPUC
Stephen Lee, Utilities Engineer, ESRB, SED, CPUC
Anwar Safvi, Utilities Engineer, ESRB, SED, CPUC
Brandon Vazquez, Utilities Engineer, ESRB, SED, CPUC

AUDIT FINDINGS

I. Records Review

During the audit, ESRB staff reviewed the following standards, procedures, and records:

- PG&E Substation Equipment Maintenance Requirements, Utility Standard: TD-3322S with Attachments 1 through 13
- PG&E Condition Based Management (Circuit Breaker) Transition Process, TD-3322B-012
- PG&E Substation Inspections, TD-3322B-024
- PG&E Substation Inspection Implementation Plan, TD-3322B-026
- PG&E Substation Maintenance and Construction Manual (SM&CM), Substation Inspections Booklet
- Lists of equipment at each substation
- Monthly and bi-monthly substation inspection records from September 2017 to September 2018
- Maintenance records for the substations; Line Corrective (LC) Notifications from September 2017 to September 2018
- Infrared Testing records for the substations in the last 12 months
- PG&E Insulating Oil Testing Manual
- PG&E Oil Test Samples for transformers substations in the last 12 months
- Substation electrical equipment testing results
- PG&E Substation Fire Protection Systems and Equipment –Inspection, Test and Maintenance of Fire Protection Systems and Equipment at Substations: TD-3320P-07
- PG&E Minimum Working Distance Awareness: TD-3325B-002
- All open work orders for all 39 substations in the Vaca Dixon division
- PG&E Identifying Levels of Corrosion and LC Notifications Job Aid: TD-3320P-12-JA02
- PG&E job aid for identifying and recording oil leaks in Condition-Based Maintenance
- PG&E Identifying Levels of Foundation Deterioration and Creating LC Notifications for Further Civil Engineering Assessment: TD-3320P-12-JA03
- Peer to Peer Inspections performed at the Arbuckle, Wilkins Slough, Cordelia, and Zamora substations

II. Records Violations

ESRB staff observed the following violations during the record review portion of the audit:

GO 174, Rule 12, General states in part:

“...Substations shall be designed, constructed and maintained for their intended use, regard being given to the conditions under which they are to be operated, to promote the safety of workers and the public and enable adequacy of service.

Design, construction and maintenance should be performed in accordance with accepted good practices for the given local conditions known at the time by those responsible.”

PG&E Substation Equipment Maintenance Requirements, Utility Standard: TD-3322S states that corrective work Priority Codes B and E are to be completed within 90 and 365 days, respectively. PG&E did not complete the following notifications by their assigned due dates:

Order	Notification	Substation	Priority	Date Created	Expected Due Date	Date Completed
43384854	114736601	Birds Landing	B	6/28/2018	9/26/2018	Open
43389168	114752819	Davis	B	7/5/2018	10/3/2018	Open
74015487	113260423	Dixon	E	9/19/2017	9/19/2018	Open
74015517	113663423	Wilkins Slough	E	10/4/2017	10/4/2018	Open

III. Field Inspection

ESRB conducted field inspections of the following substations:

Name of Substation	Highest Operating Voltage	Approximate Address	City
Deepwater	115 kV	3000 Thorpe Road	West Sacramento
West Sacramento	115 kV	900 Oak Street	West Sacramento
Davis	115 kV	236 K Street	Davis
Winters	60 kV	9131 Gaddini Road	Winters
Putah Creek	115 kV	28651 County Road 87D	Winters
Plainfield	60 kV	38461 County Road 27	Woodland
Dixon	60 kV	369 West A Street	Dixon
Zamora	115 kV	11320 County Road 99 West	Zamora
Williams	60 kV	421 5 th Street	Williams
Arbuckle	60 kV	808 Lucas Street	Arbuckle
Wilkins Slough	60 kV	929 State HW 45	Arbuckle
Cordelia	115 kV	2408 Cordelia Road	Cordelia
Vaca Dixon	115 kV	5221 Quinn Road	Vacaville

IV. Field Inspection – Undocumented Violations List

ESRB staff observed the following violations during the field inspection. PG&E did not identify and/or document these violations that ESRB discovered during the field inspection.

GO 174, Rule 12, General states in part:

“...Substations shall be designed, constructed and maintained for their intended use, regard being given to the conditions under which they are to be operated, to promote the safety of workers and the public and enable adequacy of service.

Design, construction and maintenance should be performed in accordance with accepted good practices for the given local conditions known at the time by those responsible.”

Deepwater Substation

- Oil was leaking around the Transformer Bank #2 Load Tap Changer.
- The counter on Circuit Breaker 315 was worn out and not legible.

West Sacramento

- There was an abandoned wooden pole located in the substation.

Winters Substation

- Warning labels on Circuit Breaker 1101 were damaged.
- The counter on Circuit Breaker 1101 was worn out and not legible.
- The counter on Circuit Breaker 1102 was worn out and not legible.
- The Solano County Department of Resource Management Environmental Health Division Fee Receipt located in the substation control room expired on December 31, 2017.

Putah Creek Substation

- Warning labels on the front panel of Circuit Breaker 1102 were damaged.

Plainfield Substation

- The nitrogen tank reading for Transformer Bank #1 was at 0 psig.
- Oil was leaking underneath the Transformer Bank #1 radiator fins.
- PG&E SM&CM Circuit Breakers Section 1.II.C.1-4 requires signage to warn against the manual operation of energized breakers. Circuit Breaker 1200 was missing this signage.
- PG&E SM&CM Circuit Breakers Section 1.II.C.1-4 requires signage to warn against the manual operation of energized breakers. Circuit Breaker 1106 was missing this signage.
- PG&E SM&CM Circuit Breakers Section 1.II.C.1-4 requires signage to warn against the manual operation of energized breakers. Circuit Breaker 1105 was missing this signage.

Dixon Substation

- A light bulb was missing in the control cabinet of Transformer Bank #1.
- The gray-colored animal abatement tape on Transformer Bank #2 covered up the oil level sight glasses for all the low-side bushings.

- The gray-colored animal abatement tape on Transformer Bank #2 on the distribution phase closest to the blast wall was beginning to unravel.

Zamora Substation

- The red-colored animal abatement jacket on one of the bushings on Circuit Breaker 1107 was coming off.

Williams Substation

- The ventilation fan in the battery compartment was not plugged into the wall socket.
- There was a burned-out light bulb in the control cabinet for Transformer Bank #2.

Arbuckle Substation

- The middle insulator on the substation perimeter fence to the left of the control building entrance was cracked.

Wilkins Slough Substation

- The counter on Circuit Breaker 1103 was worn out and not legible.

Cordelia Substation

- Battery Cell #49 has corrosion on the positive terminal.
- An insulator on the C-phase regulator was cracked.

Vaca Dixon Substation

- Battery Cell #52 has corrosion on the positive terminal.
- The standoff insulator for Switch 375, C-phase on Transformer Bank #7 is rusted.
- The counter on Circuit Breaker 1700 was worn out and not legible.
- The counter on Circuit Breaker 1106 was worn out and not legible.
- The counter on Circuit Breaker 1800 was worn out and not legible.

V. Field Inspection – Documented Violations List

ESRB staff observed the following violations during the field inspection. PG&E identified and/or documented, but have not corrected, these violations that ESRB discovered during the field inspection.

GO 174, Rule 12, General states in part:

“...Substations shall be designed, constructed and maintained for their intended use, regard being given to the conditions under which they are to be operated, to promote the safety of workers and the public and enable adequacy of service.

Design, construction and maintenance should be performed in accordance with accepted good practices for the given local conditions known at the time by those responsible.”

Deepwater Substation

- The counter on Circuit Breaker 1105 was worn out and not legible. LC Notification #115007547
- The ceiling fan in the Circuit Breaker 1200 control cabinet was broken. A physical LC notification tag is placed on the equipment.
- The oil filtration motor on Transformer Bank #2 is broken. LC Notification #115104925

West Sacramento Substation

- The counter on Circuit Breaker 1100 was worn out and not legible. LC Notification #115088481

Davis Substation

- The oil filtration gauge on Transformer Bank #2 was broken. LC Notification #115277546

Putah Creek Substation

- Oil was leaking behind the Transformer Bank #1 radiator fins. LC Notification #115001280

Plainfield Substation

- There was an abandoned wooden pole located in the substation. LC Notification #115132690

Williams Substation

- The oil filter for Transformer Bank #1 was out of service. LC Notification #114748414

Arbuckle Substation

- The counter on Circuit Breaker 1101 was worn out and not legible. LC Notification #115070262
- The insulator on Switch 1104/3C was chipped. LC Notification #115070265

Cordelia Substation

- The counter on Circuit Breaker 1101 was worn out and not legible. LC Notification #115208810