

PUBLIC UTILITIES COMMISSION

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July 14, 2026

SA2026-1431

Jonathan Moulton
Director of Asset Management
PacifiCorp
825 NE Multnomah St. Suite 1700
Portland, OR 97232

SUBJECT: Electric Substation Audit of PacifiCorp Yreka Headquarters

Mr. Moulton:

On behalf of the Electric Safety and Reliability Branch (ESRB) of the California Public Utilities Commission (CPUC), Monica Hoskins and Joe Murphy of ESRB staff conducted an electric substation audit of PacifiCorp Yreka Headquarters from May 4 through May 8, 2026. During the audit, ESRB staff conducted field inspections of PacifiCorp's substation facilities and equipment and reviewed pertinent documents and records.

As a result of the audit, ESRB 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 August 11, 2026, by electronic copy of all corrective actions and preventive measures taken by PacifiCorp to correct the identified violations and prevent the recurrence of such violations.

Please note that ESRB will be posting the audit report and your response to our audit on the CPUC website. If there is any information in your response that you would like us to consider as confidential, we request that in addition to your confidential response, you provide us with a public version (a redacted version of your confidential response) to be posted on our website.

If you have any questions concerning this audit, please contact Monica Hoskins at monica.hoskins@cpuc.ca.gov or (415) 652-1847.

Sincerely,

A handwritten signature in blue ink, appearing to read "Rickey Tse".

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

Enclosure: CPUC Electric Substation Audit Report for PacifiCorp Yreka Headquarters

Cc: Lee Palmer, Deputy Executive Director, Safety Policy Division, Water Division, CPUC
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Bruce Dao, PacifiCorp

CPUC SUBSTATION AUDIT FINDINGS

PacifiCorp Yreka Headquarters

May 4 – 8, 2026

I. Records Review

During the substation audit, Electric Safety and Reliability Branch (ESRB) reviewed the following standards, procedures, and records for PacifiCorp's Yreka Headquarters (HQ):

- List of all PacifiCorp substations/switching stations in the Yreka HQ.
- Map showing all substations/switching stations in the Yreka HQ
- PacifiCorp Substation and High-Voltage Equipment Procedures
- PacifiCorp Substation Inspection and Preventative Maintenance Guidelines
- PacifiCorp Substation Infrared Inspection Guidelines
- PacifiCorp Diagnostic Guidelines for Dissolved Gas-in-oil Concentration Limits (Oil Guidelines)
- PacifiCorp Substation Preventative Maintenance Guidelines
- PacifiCorp Battery System Operation and Maintenance Checks
- PacifiCorp Substation Inspection Expectations & Guidelines
- List of all PacifiCorp substation inspections conducted from January 2020 to December 2025 and the resulting work orders
- Last two visual inspection checklists for ESRB selected substations
- Equipment lists for ESRB selected substations
- List of transformer banks that operated beyond nameplate capacity from January 2020 to December 2025
- Infrared Testing records from January 2024 to December 2025
- Most recent oil sample test results for ESRB selected substations
- Most recent electric test results for ESRB selected substations

II. Records Violations

ESRB observed the following violations during the records review portion of the audit:

General Order (GO) 174, Rule 12, General states in part:

“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.”

GO 174, Rule 33, Records states:

“33.1 Electronic or hard copy records of completed inspections shall include, at a minimum:

- *Inspector name or identification*
- *Inspection date*
- *Brief description of identified discrepancies*
- *Condition rating (where applicable)*
- *Scheduled date of corrective action (where applicable)*

33.2 Electronic or hard copy records of completed Inspections shall be retained for not less than five (5) years.”

1. PacifiCorp’s **Maintenance Intervals, Policy 001: Revision 44, December 11, 2025** establishes the interval for Infrared (IR) Testing as follows:

Table 1: IR Testing Maintenance Intervals

Equipment Type	Equipment Description	Maintenance Task	Interval Years	Notes
Substation	Distribution Facility, FII, Pole Mount	Infrared Testing	2	Infrared testing of substation bus, switches & major equipment.
Substation	Transmission Facility	Infrared Testing	1	Infrared testing of substation bus, switches & major equipment.

- a. PacifiCorp’s Policy 001 requires IR inspections for transmission substations every year. However, PacifiCorp did not conduct an IR inspection for the Steelhead Switching Station in 2024. PacifiCorp stated the Steelhead Switching Station was on a 24-month inspection cycle, but PacifiCorp has now updated the Steelhead Switching Station to a 12-month inspection cycle.¹
- b. PacifiCorp currently uses Version 6 of the Infrared Inspection Report to record IR Inspections. However, PacifiCorp used Version 3 for the December 10, 2025 Dog

¹ Post-Audit DR Response, Pre-Audit Question 4b.

Creek Substation IR Inspection and the December 10, 2025 Shotgun Creek Substation IR Inspection, which was an outdated version of the Infrared Inspection Report at the time of inspection.

- c. PacifiCorp's Infrared Scanning of In-Service Equipment, Policy 346: Revision 1, May 25, 2023 includes tables detailing how to interpret IR Inspection results and the necessary follow-up actions. PacifiCorp's Policy 346 has tables for Overhead Distribution Systems, Underground Distribution Systems, and Distribution Transformers. An example of these instructions is shown in Table 2 below:

Table 2: Overhead Distribution Systems IR Inspection Results

MEASUREMENT (choose worst case)			INTERPRETATION	
Recorded Temperature (deg. C)	Rise over Ambient (deg. C)	Delta-T (deg. C)	Priority	Recommended Action ¹
≤ 85	0 – 45	1 ~ 10	4	Acceptable
86 – 95	46 – 55	>10 ~ 20	3	Monitor
96 – 105	56 – 65	>20 ~ 40	2	Corrective action required as soon as practical [1–3 months]
>105	>65	>40	1	Corrective action required immediately [1–7 days]

¹ Timeframe for recommended action is meant to be a guideline. Strict adherence is not required.

PacifiCorp does not define the recommended action of “Monitor” anywhere in their procedures or detail what follow-up actions must be taken to monitor the equipment with the temperature delta identified during an IR Inspection. PacifiCorp must update their procedures to specify what actions are required to monitor the equipment assigned Priority 3 following an IR Inspection.

2. PacifiCorp's **Substation Conditions and Correction Timeframes, Policy 370: Revision 0, September 9, 2025²** establishes the priority codes and associated timelines as follows:

Condition	Suggested Correction Period
S-I (Imminent)	Immediately. Site cannot be left unattended until corrected or mitigated to an acceptable risk.
S-H (High)	30 Days
S-M (Medium)	2 Years
S-L (Low)	N/A
S-G (Grandfathered)	N/A

² Conditions found prior to January 1, 2026 may not have a Suggested Correction Date.

- a. PacifiCorp's Policy 370 outlines the priority codes, however the provided work order records do not include the Condition Rating (Priority) or a scheduled date of corrective action from work orders initiated from inspections. GO 174, Rule 33.1 specifically requires condition ratings and scheduled dates of corrective action to be recorded for non-conformances generated from inspections, but PacifiCorp's list of Preventative Maintenance, Corrective Maintenance, and Capital Work Orders do not identify the source of the work order. PacifiCorp must make entries for all required records in accordance with GO 174, Rule 33.1.
- b. Open and Completed Work Order records do not include the inspector who completed the inspection or the inspector who identified the non-conformances. GO 174, Rule 33.1 specifically requires the inspector to be recorded for non-conformances generated from inspections, but PacifiCorp's list of Preventative Maintenance, Corrective Maintenance, and Capital Work Orders do not identify the source of the work order. PacifiCorp must make entries for all required records in accordance with GO 174, Rule 33.1.
- c. Due to the lack of priority codes and due dates for corrective action, ESRB is unable to assess the timeliness of PacifiCorp's response to non-conformances. ESRB reviewed PacifiCorp's 3,404 Preventative Maintenance (PM), Corrective Maintenance (CM), and Inspection (INSP) Work Orders. ESRB identified 490 (14.4%) work orders either closed after one year or pending/still open for more than one year. Table 3 breaks down these late work orders by category.

Table 3: Work Orders Closed or Open after One Year

Category	Closed After More than One Year	Pending, Open for More than One Year*	Total
PM	209	74	283
CM	57	19	76
INSP	130	1	131
Total	396	94	490

* As of March 9, 2026, the end of the audit data collection period.

ESRB identified 215 (6.3%) work orders either closed after two years or pending/still open for more than two years. PacifiCorp's Policy 370 states two years is the maximum allowable correction period for non-conformances. Table 4 below break down these late work orders by category.

Table 4: Work Orders Closed or Open after Two Years

Category	Closed After More than Two Year	Pending, Open for More than Two Year*	Total
PM	14	21	35
CM	49	15	64
INSP	116	—	116
Total	179	36	215

* As of March 9, 2026, the end of the audit data collection period.

3. PacifiCorp's **Maintenance Intervals, Policy 001: Revision 44, December 11, 2025** establishes the intervals for substation inspections as follows:

Table 5: Substation Inspection Maintenance Intervals

Equipment Type	Equipment Description	Maintenance Task	Interval Years (Months)	Notes
Substation	NERC TMIP Facility Pertaining to FAC-501 Critical Path Standard	Facility Safety/Operational Inspection	Monthly	Periodic substation security and operational inspection, load and counter reads/minor/major scope performed periodically. NOTE: Substations associated with NERC critical paths (FAC-501), a minimum of 10 monthly inspections shall be performed annually, with 3 of these monthly inspections being the more detailed "major".
Substation	Non-NERC All Facilities - California & Washington Including Mobiles	Facility Safety/Operational Inspection	Monthly (8 times per year)	Periodic substation security and operational inspection, load and counter reads/minor/major scope performed periodically.

- a. PacifiCorp's Policy 001 requires a minimum of 10 monthly inspections for NERC Facilities must be completed annually and a minimum of 8 monthly inspections for Non-NERC Facilities must be completed annually, as shown in Table 5. However, PacifiCorp does not specify a maximum allowable time between substation physical inspections/operational testing inspections³, which allows a 2- or 4-month break

³ Substation security inspections are not to be longer than six months apart according to Substation Inspection, Policy 034: Revision 6, June 26, 2025.

between inspections, respectively. Additionally, PacifiCorp does not specify the number of “major” inspections required for Non-NERC substations annually or the maximum allowable time between “major” substation inspections for NERC and Non-NERC substations. PacifiCorp must clearly define the substation inspections requirements and include the maximum allowable time between inspections annually in their procedures to ensure consistent and thorough inspections.

- b. The Dog Creek Substation visual inspection on November 10, 2025 identified a deficiency on the steel structures in the yard and commented “need tested”. PacifiCorp incorrectly assigned this issue to the steel poles in the yard, instead of the wood poles.⁴
- c. Based on Table 5 above, ESRB noted that PacifiCorp missed a total of 22 inspections from January 2020 to December 2025. This includes 5 inspections missed in 2020, 11 inspections missed in 2021, 2 inspections missed in 2023, and 4 inspections missed in 2024. Table 6 below breaks down the missing inspections by substation and year:

Table 6: Missing Inspections in Yreka HQ

Year	Substation	Required Monthly Inspections Annually	Completed Monthly Inspections Annually	Total Inspections Missed
2020	Crag View Substation	10	8	5
	Montague Substation	8	7	
	Weed Junction Substation	10	8	
2021	Castella Substation	8	7	11
	Copco #2 230kV Substation	8	7	
	Crag View Substation	10	8	
	Fort Jones Substation	8	7	
	Greenhorn Substation	8	6	
	Hamburg Substation	8	7	
	Lucerne Substation	8	7	
	Weed Junction Substation	10	8	
2023	Crag View Substation	10	8	2
2024	Crag View Substation	10	9	4
	Fort Jones Substation	8	7	
	Weed Junction Substation	10	8	
Total				22

⁴ PacifiCorp does not have a steel structure testing program, and the test was intended to be on the wood pole. Post-Audit DR Response, Pre-Audit Question 3 stated “needs testing” was intended to convey that the inspector did not have the equipment or a scheduled outage to test the wood poles at that time. The comment should have been on the wood poles and not the steel poles at the substation.

4. For all oil testing that results in any condition code besides Condition 1 (no issues), PacifiCorp's technical services team will manually review the results and make a recommendation to monitor, resample, internally inspect, remove and replace, etc. the tested equipment.⁵ However, nowhere in their procedures does PacifiCorp outline these actions for the oil sampling results and there is no description of actions taken for the different condition codes or test types. PacifiCorp also does not resample the equipment for oil testing at consistent intervals and does not have procedures outlining required intervals for retesting. Additionally, many oil test results require the equipment to be monitored, but no procedures detail what monitoring entails or requires. This causes inconsistencies in the follow-up actions and failure to adhere to the recommendations for oil testing. The following issues were noted with the oil sample testing results and demonstrate the inconsistencies in PacifiCorp's practices:

- Crag View Substation Transformer 2856 oil sample testing called for "retest 3-6 months to monitor" 2023 to 2026 but PacifiCorp did not perform any retesting⁶. The oil sample testing resulted in Fluid Quality Code 2 since February 3, 2022. PacifiCorp performed oil testing on the following dates since February 3, 2022:
 - 2023-05-01 with 15-month interval
 - 2024-02-23 with 9-month interval
 - 2025-10-24 with 20-month interval
 - 2026-02-25 with 4-month interval
- Hornbrook Substation Transformer 2947 oil sample testing noted poor oil condition and a recommendation for oil disposal and refill 2023 to 2026⁷. PacifiCorp performed oil testing on the following dates since March 11, 2022:
 - 2023-08-16 with 17-month interval
 - 2024-03-11 with 7-month interval
 - 2025-03-11 with 12-month interval
 - 2026-02-03 with 11-month interval
- Little Shasta Substation Transformer 2839 oil sample testing called for "retest in 3-6 months to monitor" 2021 to 2024 and noted an excessive rate of decomposition in 2025⁸. The oil sample testing resulted in DGA Code 4 since March 31, 2021. PacifiCorp has existing Maximo⁹ WO #139195 open since June 17, 2022 for this transformer. PacifiCorp performed oil testing on the following dates since March 31, 2021:
 - 2022-09-29 with 18-month interval
 - 2023-08-11 with 11-month interval
 - 2024-04-22 with 8-month interval
 - 2025-03-12 with 11-month interval

⁵ Intro Meeting DR Response, Question 7.

⁶ Post-Audit DR Response, Pre-Audit Question 5c stated PacifiCorp technical services reviewed the recommendation and determined retesting was not necessary.

⁷ Post-Audit DR Response, Pre-Audit Question 5d stated PacifiCorp technical services reviewed the recommendation and determined that because of the age of the transformer oil replacement is not recommended and could accelerate paper deterioration.

⁸ Post-Audit DR Response, Pre-Audit Question 5e stated PacifiCorp technical services reviewed the recommendation and determined the increases were not significant enough to warrant additional action.

⁹ Maximo is PacifiCorp's asset management software.

PacifiCorp must outline the appropriate follow-up actions for oil sample testing results based on the test results and condition codes to provide consistency and accuracy, and to ensure that all the necessary follow-up actions are taken to maintain safe operation of the equipment.

5. PacifiCorp states that it is the responsibility of the Substation Operation' Meter/Relay group to initiate a single-line diagram (SLD) change and then the Substation Engineering group would make the necessary updates and finalize the SLD for operations personnel to place in each substation¹⁰. However, PacifiCorp has no policies or procedures detailing this process or providing required timelines for updating SLD.

During the field audit, ESRB visited 19 substations and identified 14 SLDs that were out of date (specified in Section IV – Field Inspection – Violations List of this report). PacifiCorp must maintain procedures for updating SLD and ensure that the SLD is updated to reflect the conditions in the field, including aligning the nameplates, for all substations.

¹⁰ Post-Audit DR Response, Field Question 7

III. Field Inspection

During the field inspection, ESRB inspected the following 19 substations:

Substation	City
Dog Creek Substation	Lakehead
Shotgun Substation	Castella
Crag View Substation	Dunsmuir
Mott Switching Station	Mt. Shasta
Lassen Substation	Mt. Shasta
International Paper Substation	Weed
Weed Substation	Weed
Hornbrook Substation	Hornbrook
Copco #2 230 kV Substation	Hornbrook
Copco #2 115 kV Substation	Hornbrook
Yreka Substation	Yreka
Ager Substation	Montague
Greenhorn Substation	Yreka
Steelhead Switching Station	Klamath River
Seiad Substation	Seiad Valley
Happy Camp Substation	Happy Camp
Fort Jones Substation	Fort Jones
Lucerne Substation	Grenada
Montague Substation	Montague

IV. Field Inspection – Violations List

ESRB noted the following violations of GO 174, Rule 12 during the field inspection:

GO 174, Rule 12, General states in part:

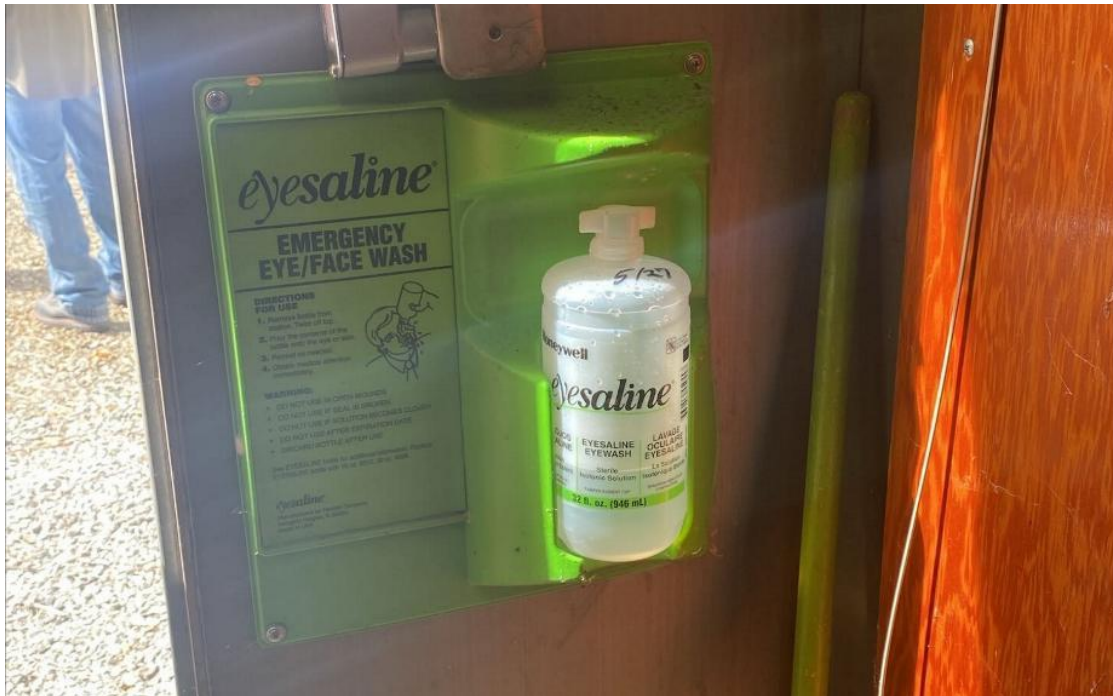
“...Substations shall be designed, constructed and maintained for their intended use, regard being given to the conditions under which they are to be operated, to promote the safety of workers and the public and enable adequacy of service.

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.”

1. Dog Creek Substation

1.1. The station single line diagram (SLD) needs to be updated. The SLD shows Circuit Breaker 8G103 has future build, but the equipment is installed at the substation.

1.2. The station control room has a low eye wash.



1.3. The station batteries have low water levels.¹¹



1.4. The station perimeter fence has soil erosion and accessibility issues.



¹¹ Post-Audit DR Response, Field Question 2 requested battery manufacturing documentation detailing requirements for water levels and refills. *Energys PowerSafe Type CC Performance Specs US-CC-PS-001 Apr06* provided by PacifiCorp did not provide information on water level requirements or detail that the water level only needs to cover the plates regardless of the minimum and maximum lines, as was discussed in the field.

- 1.5. The station perimeter fence and a down guy wire approximately 4 feet from the outside of the fence have touch potential.



2. Shotgun Substation

- 2.1. The station single line diagram (SLD) needs to be updated. The SLD shows Circuit Breaker 5G97 and Circuit Breaker 5G99 as future build, but the equipment is installed at the substation.

2.2. The station perimeter fence has soil erosion and accessibility issues.



2.3. The station perimeter fence and a down guy wire approximately 4 feet from the outside of the fence have touch potential.



3. Crag View Substation

- 3.1. The station single line diagram (SLD) needs to be updated. The SLD shows the control room equipment as future build, but the equipment is installed at the substation.
- 3.2. The station batteries have no provision for containing spilled electrolytes.¹² Containing electrolytes can be accomplished by secondary containment, dams, absorbent materials, or spill pillows.



¹² National Electric Safety Code (NESC 2017), Part 1 Section 14, Item 144 states “Floors of battery areas should be of an acid-resistive material, painted with acid-resistive paint, or otherwise protected. Provision should be made to contain spilled electrolyte.”

3.3. The station perimeter fence has damage and accessibility issues from a pile of scrap metal/equipment.



3.4. Switch 2G525 has a faded label.



3.5. Circuit Breaker 3G280 has a faded counter.



4. Lassen Substation

4.1. The station gate is missing an NFPA symbol.



5. International Paper Substation

5.1. Switch 8G40 Bypass is missing a label.



5.2. Regulator 284 shows signs of an oil weep at the maximum temperature gauge.



5.3. Transformer 2901 has a missing fan and a broken fan.



6. Weed Substation

6.1. The station single line diagram (SLD) needs to be updated. The SLD shows Transformer Bank 2 as future build and does not show the potential transformers, but the equipment is installed at the substation. The SLD also shows Switch 3G2 and Switch 3G566 as in-service, but the equipment is not at the substation.

6.2. The station batteries have low water levels.¹³



¹³ Post-Audit DR Response, Field Question 2 requested battery manufacturing documentation detailing requirements for water levels and refills. *Energys PowerSafe Type CC Performance Specs US-CC-PS-001 Apr06* provided by PacifiCorp did not provide information on water level requirements or detail that the water level only needs to cover the plates regardless of the minimum and maximum lines, as was discussed in the field.

6.3. The station batteries have no provision for containing spilled electrolytes.¹⁴ Containing electrolytes can be accomplished by secondary containment, dams, absorbent materials, or spill pillows.



6.4. The station annunciator panel has two lights that are faded and/or inoperable.



¹⁴ National Electric Safety Code (NESC 2017), Part 1 Section 14, Item 144 states “Floors of battery areas should be of an acid-resistive material, painted with acid-resistive paint, or otherwise protected. Provision should be made to contain spilled electrolyte.”

6.5. Transformer 2 compartment access does not have Confined Space signage and is only marked “Danger”.



6.6. Switch 2G171 has a faded label.



6.7. MOAS 3G344 has a faded label.



7. Hornbrook Substation

7.1. The station perimeter fence and a down guy wire outside of the fence have touch potential.



7.2. Transformer 2947 radiator has a bird's nest.



7.3. Transformer 2946 radiator has a bird's nest.



7.4. Transformer 2948 radiator has a bird's nest.



7.5. Transformer 2948 has an oil weep on the conservator tank oil release valve.



7.6. Circuit Breaker 5G19 has a faded counter.



7.7. Circuit Breaker 5G19 has an incorrect entry on the relay operations card. The counter increased but the corresponding fault operations did not increase on November 27, 2024.

FORM 3211 12/14

PACIFIC POWER

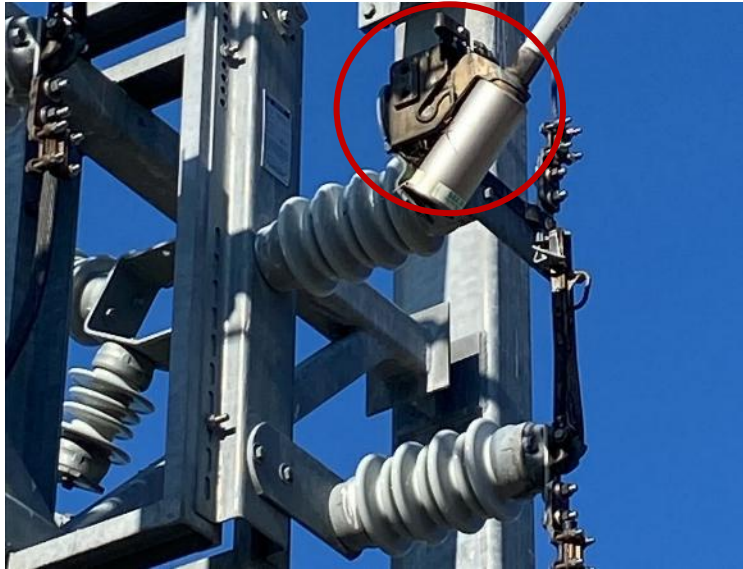
RECORD OF RELAY OPERATIONS

STATION: Hornbrook FEEDER: 5G19

DATE	A PHASE-LEFT		B PHASE-MID.		C PHASE-BOTTOM		GROUND RELAY		O.C.B. COUNTER	Fault Operations Since Overhaul	REMARKS
	TIME	INST.	TIME	INST.	TIME	INST.	TIME	INST.			
5-6-24									316	10	SDIN
7-12-24	7/25	✓		✓	8/9				317	11	TCL
11-27-24									318	11	TCL
1-6-25	4/11	3/5	5/15	7/16	8/5				318	11	SBIN
9/11/25	✓		11/13						319	12	Trip
1-8-26	3/2								319	12	SBIN

69KV-1250A

7.8. Low side Bypass Fuses have a bird's nest.



8. Copco #2 230kV Substation

- 8.1. The station single line diagram (SLD) needs to be updated. The SLD shows Transformer Bank 1 as future build and does not show the capacitor banks and Circuit Breaker 1G20, but the equipment is installed at the substation.
- 8.2. The station batteries have no provision for containing spilled electrolytes.¹⁵ Containing electrolytes can be accomplished by secondary containment, dams, absorbent materials, or spill pillows.



¹⁵ National Electric Safety Code (NESC 2017), Part 1 Section 14, Item 144 states “Floors of battery areas should be of an acid-resistive material, painted with acid-resistive paint, or otherwise protected. Provision should be made to contain spilled electrolyte.”

8.3. Switch 1G5 has a damaged and splitting ground wire.



8.4. The station ground grid is exposed near Switch 2G111 and Switch 2G117.



8.5. Switch 2G140 has a faded label.



8.6. Switch 2G120 has a faded counter.



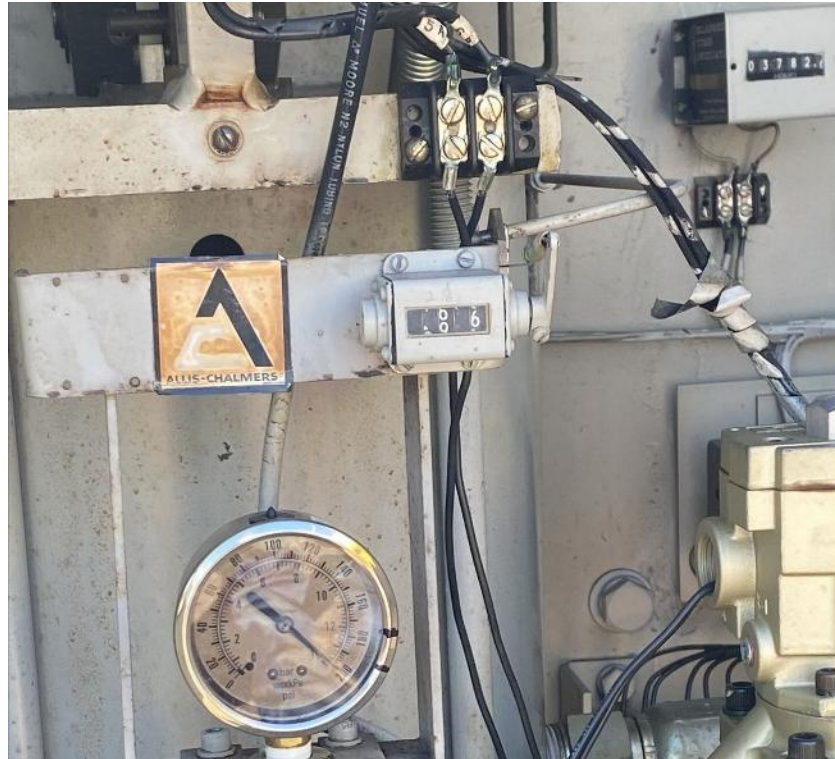
8.7. Transformer Bank 1 (SAP 373187) has a broken fan.



8.8. Circuit Breaker 2G110 has a faded counter.



8.9. Circuit Breaker 2G114 has a faded counter.



8.10. Circuit Breaker 2G106 has a faded counter.



9. Copco #2 115kV Substation

- 9.1. The station single line diagram (SLD) needs to be updated. The SLD shows Circuit Breaker 5G6 as future build, but the equipment is installed at the substation. The SLD also shows Switch 3G44 as in-service, but the equipment is non-operational and not labeled at the substation.
- 9.2. Switch 3G501 is mislabeled. The switch is labeled as Switch 3G507 on the Single Line Diagram and Switch 3G501 at the substation.
- 9.3. The station batteries have no provision for containing spilled electrolytes.¹⁶ Containing electrolytes can be accomplished by secondary containment, dams, absorbent materials, or spill pillows.



¹⁶ National Electric Safety Code (NESC 2017), Part 1 Section 14, Item 144 states “Floors of battery areas should be of an acid-resistive material, painted with acid-resistive paint, or otherwise protected. Provision should be made to contain spilled electrolyte.”

- 9.4. Pole 1/1 inside the station has a slack down guy wire. PacifiCorp will remove this pole when the equipment is moved to Copco #2 230kV Substation.



- 9.5. The substation has multiple faded switch labels, including Switch 3G401, Switch 3G 402, Switch 3G403, Switch 201, Switch 3G204, Switch 3G502, Switch 3G518.





9.6. Transformer 2936 has an illegible and damaged bushing oil gauge.



9.7. Circuit Breaker 3G180 has a faded label.



9.8. Circuit Breaker 3G400 has a faded label.



10. Yreka Substation

- 10.1. The station single line diagram (SLD) needs to be updated. The SLD shows Switch 2G101, but the equipment is motor operated by Circuit Switcher 2G49 at the substation and should be removed from the SLD.
- 10.2. The station batteries have no provision for containing spilled electrolytes.¹⁷ Containing electrolytes can be accomplished by secondary containment, dams, absorbent materials, or spill pillows.



¹⁷ National Electric Safety Code (NESC 2017), Part 1 Section 14, Item 144 states “Floors of battery areas should be of an acid-resistive material, painted with acid-resistive paint, or otherwise protected. Provision should be made to contain spilled electrolyte.”

10.3. The station batteries have low water levels.¹⁸



10.4. Switch 2G39 A Phase, B Phase, and C Phase have faded labels.



¹⁸ Post-Audit DR Response, Field Question 2 requested battery manufacturing documentation detailing requirements for water levels and refills. *Energys PowerSafe Type CC Performance Specs US-CC-PS-001 Apr06* provided by PacifiCorp did not provide information on water level requirements or detail that the water level only needs to cover the plates regardless of the minimum and maximum lines, as was discussed in the field.

10.5. Switch 3G602 has a faded label.



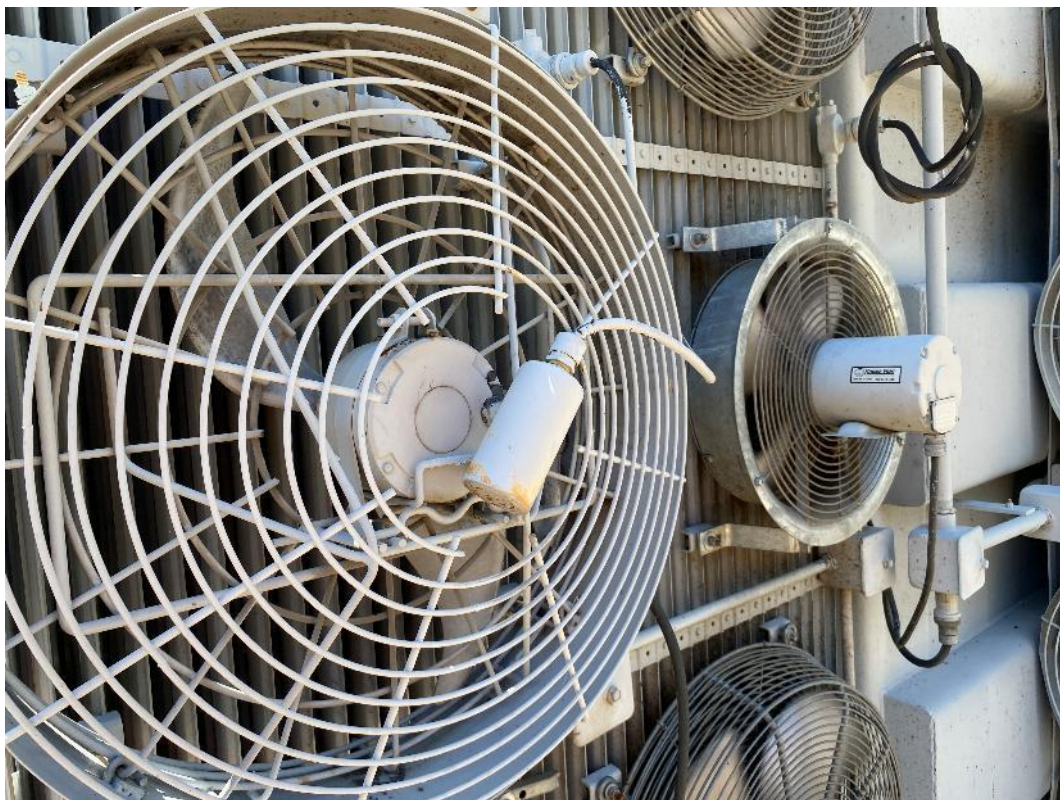
10.6. Switch 3G102 has a faded label.



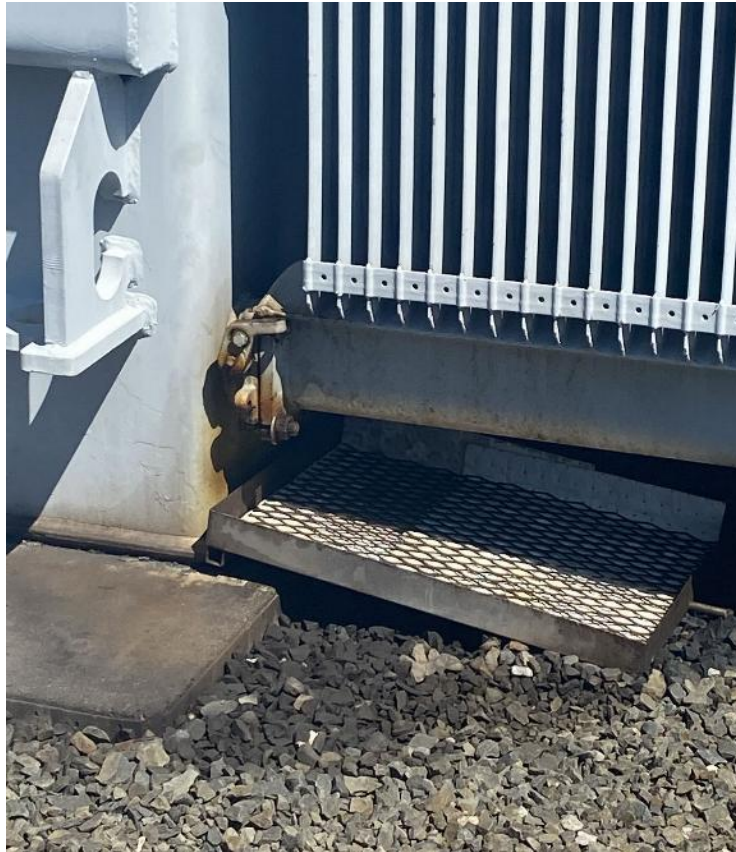
10.7. Transformer 2255 has two broken fans.



10.8. Transformer Bank 2 has a broken fan.



10.9. Transformer Bank 2 radiator has an oil weep.



10.10. Transformer Bank 2 LTC has a low liquid level gauge.



10.11. Circuit Breaker 3G100 bushing gauge is showing high oil level.



10.12. Circuit Breaker 3G100 has the wound semaphore past the viewing window (over wound).



10.13. Circuit Breaker 3G85 has a broken status indicator light.



10.14. Circuit Breaker 3G100 has an incorrect entry on the relay operations card. The counter increased by two, but the corresponding fault operations only increased by one on April 27, 2026.

FORM 3211 12/14
PACIFIC POWER
RECORD OF RELAY OPERATIONS

STATION: Yreka FEEDER: 3G100 Line 1

DATE	A PHASE-LEFT		B PHASE-MID		C PHASE-BOTTOM		GROUND RELAY		O.C.B. COUNTER	Fault Operations Since Overhaul	REMARKS
	TIME	INST.	TIME	INST.	TIME	INST.	TIME	INST.			
5-3-21									2417	20	Switching Robinson
7-1-21	8/9								2420	20	Switching Robinson
9-12-21	1/64								2422	20	Switching Robinson
1-12-22									2422	20	New Year Robinson
2-1-22									2423	20	Switching Robinson
2-7-22	3/8	5/8	3/5	3/22	3/4				2434	20	Relay Testing DB
10-27-22	1/4								2435	20	Switching Robinson
13-8-22					EMALD				2467	20	Switching Robinson
1-5-23	3/4								2467	20	New Year Robinson
2-15-23	3/2	5/26							2491	21	Down line test DB
8-15-23	3/5	11/29							2492	21	SBIN DB
1-4-24	8/7	3/6	5/2						2492	21	NY DB
6-21-2024									2493	23	Down line DB
6-21-2024									2493	23	Testing DB
8-1-24									2493	23	Testing DB
10-15-24	11/8								2497	27	Outage 30100 Campbell
1-10-25	3/25	3/15							2497	27	SBIN Campbell
5/6/25	3/8	4/3	11/20	1/2	3/4				2509	27	SBIN Campbell

12. Greenhorn Substation

- 12.1. The station single line diagram (SLD) needs to be updated. The SLD does not show Circuit Breaker 3G4, Switch 3G605, and Switch 3G606, but the equipment is installed at the substation. The SLD also incorrectly shows Switch 15-1200 as gang operated.
- 12.2. The station batteries have no provision for containing spilled electrolytes.¹⁹ Containing electrolytes can be accomplished by secondary containment, dams, absorbent materials, or spill pillows.



¹⁹ National Electric Safety Code (NESC 2017), Part 1 Section 14, Item 144 states “Floors of battery areas should be of an acid-resistive material, painted with acid-resistive paint, or otherwise protected. Provision should be made to contain spilled electrolyte.”

- 12.3. The station perimeter fence and a down guy wire outside of the fence have touch potential.



- 12.4. Switch 3G91 has a faded label.



12.5. Switch 5G54 Bypass and Switch 5G57 Bypass have missing and faded labels. PacifiCorp replaced the faded labels following the field audit.²⁰



²⁰ Post-Audit DR Response, Field Question 4

- 12.6. Transformer T2437 is not bolted to the pad (transformer installed after May 2025).



13. Steelhead Switching Station

- 13.1. The station single line diagram (SLD) needs to be updated. The SLD shows the potential transformer as future build, but the equipment is installed at the substation.

14. Seiad Substation

- 14.1. The station single line diagram (SLD) needs to be updated. The SLD shows Circuit Breaker 5G39 and Regulator 1186 as future build, but the equipment is installed at the substation. The SLD also incorrectly shows Switch 15-400 as gang operated.

15. Happy Camp Substation

- 15.1. The station single line diagram (SLD) needs to be updated. The SLD incorrectly labels the regulator as R2275, but the equipment is labeled as R1276 at the substation. The SLD also incorrectly shows Switch 15-600 as gang operated.

15.2. The station has vegetation encroaching on the perimeter fence.



15.3. Regulator 1276 motor gear box has an oil leak.



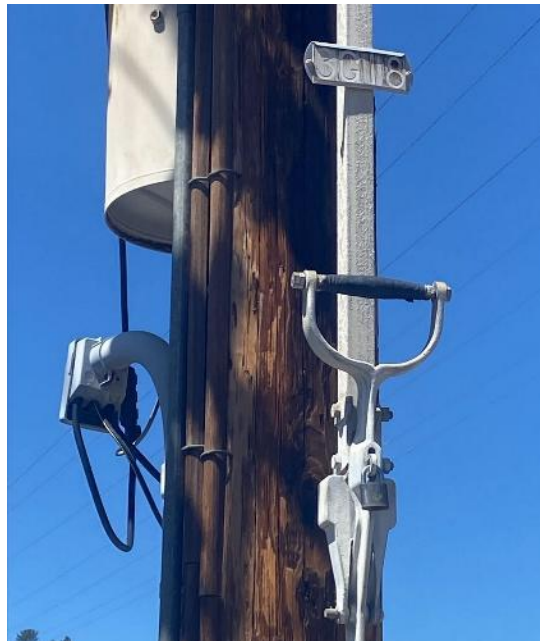
16. Fort Jones Substation

16.1. The station single line diagram (SLD) needs to be updated. The SLD incorrectly labels the regulator as R1142, but the equipment is labeled as R1500 at the substation. The SLD also incorrectly shows Switch 15-600 as gang operated.

16.2. Switch 3G23 has a faded label.



16.3. Switch 3G18 has a faded label.



16.4. Circuit Breaker 5G2 has a faded counter.



17. Lucerne Substation

17.1. Transformer 373245 radiator has a bird's nest.



18. Montague Substation

- 18.1. The station single line diagram (SLD) needs to be updated. The capacitor bank is labeled as 5G304 in the substation, but the equipment is not labeled on the SLD.
- 18.2. Circuit Breaker 5G35 has an incorrect entry on the relay operations card. The counter increased by three, but the corresponding fault operations only increased by one on July 24, 2024, and the counter increased by three, but the corresponding fault operations only increased by two on February 7, 2025.

FORM 3211 12/14

PACIFIC POWER

RECORD OF RELAY OPERATIONS

STATION: Montague FEEDER: 5G-35

DATE	A PHASE-LEFT		B PHASE-MID.		C PHASE-BOTTOM		GROUND RELAY		O.C.B. COUNTER	Fault Operations Since Overhaul	REMARKS
	TIME	INST.	TIME	INST.	TIME	INST.	TIME	INST.			
8-24-23		✓		✓		✓		✓	82	21	SBIN TCU
9-11-23	11/20								82	21	SRBW
1-5-23	3/21	3/5	5/7				✓	✓	83	22	N.P.
6/8/23	✓								83	22	Bad UG YORK RD in fireman's
7-10-24				✓				✓	86	23	SBIN
9/24/24									86	23	SBIN Trip
8/2/24									87	23	SBIN
9/6/24									93	23	SBIN
11-14-24									94	23	Testing
11-22-24									94	23	SBIN
1-6-25				✓		✓			97	25	Tip
2-7-25	3/4/25	5/8	9/17				✓	✓	98	26	SBIN
2-17-25							✓	✓	99	27	SBIN
8/5/25	11/5								99	27	SBIN
9/5/25											
1-5-26	3/11										SBIN

SCADA v. QAP

2026

SQUARE D COMPANY

V. Observations

During the records review, ESRB observed the following developing safety concerns:

PacifiCorp maintains Records of Relay Operations cards at each individual substation detailing the Fault Operations and O.C.B. Counter. The remarks on the cards detail who added the entry and the type of entry, but no additional information. Card entries must be clear to all personnel, and common descriptions or standard abbreviations must be used. Adopting good practice such as correcting erroneous entries with a single line through the error and initials would also provide clarity.

For various substations visited in the field, the Relay Operations Cards had non-standard occurrences that resulted in what appeared to be counter and fault discrepancies. However, PacifiCorp staff with local knowledge were able to clarify the differences. Additional remarks detailing each non-standard occurrence, operation, or event on the relay operations cards at the substations would prevent confusion and reliance on individual knowledge.

During the field inspection, ESRB observed the following developing safety concerns:

1. Shotgun Creek Substation

1.1. Transformer 2790 has a wasp's nest.

2. Crag View Substation

2.1. Grounding Switch 2G526 does not have the handle painted red.

3. Internation Paper Substation

3.1. Transformer 2900 has evidence of a minor oil weep at the oil sample valve.

4. Copco #2 230 kV Substation

4.1. Transformer Bank 1 (SAP 373187) has a wasp's nest.

5. Copco #2 115 kV Substation

5.1. Circuit Breaker 3G141 has a bird's nest

6. Yreka Substation

6.1. Circuit Breaker 5G151 has a fading semaphore.

6.2. Circuit Breaker 5G163 has a fading semaphore.

7. Ager Substation

7.1. Transformer 2736 has a bird's nest.

7.2. Transformer 2736 has evidence of a minor oil weep at the oil sample valve.

8. Fort Jones Substation

8.1. Transformer 3139 has a bird's nest.