



## Preliminary Ignition Investigation Report

Ignition Database Index:	20241460
Electric Incident Investigation (EII) Number:	NR241008B
Incident Name:	Lake
PG&E Facility Ignition?	Yes
CPUC Reportable Ignition?	Yes
Date & Time of Incident:	October 8, 2024 @approximately 1841 hours
Street Address:	Behind 104 Lake Drive
City:	San Bruno
County:	San Mateo
Latitude/Longitude:	37.6183, -122.4499
State Responsibility Area (SRA) / Local Responsibility Area (LRA) / Federal Responsibility Area (FRA)	Local Responsibility Area
PG&E Division:	Peninsula
High Fire Threat District (HFTD):	Tier 2
High Fire Risk Area (HFRA):	Yes
EPSS Buffer:	No
Fire Index Area (FIA):	518
Fire Potential Index (FPI) Rating: FIA	R3
Fire Potential Index (FPI) Rating: Circuit	R1
Was there a PSPS event at the time of ignition?	No
Suspected Initiating Event:	Equipment – PG&E
Failure Driver:	All types of equipment/facility failure
Failure Sub-driver:	Other
Circuit:	Sneath Lane – Pacifica 60kV transmission
Circuit Protection Zone:	Circuit Breakers (CB) 6042 and 6052
Nominal Voltage:	60kV
Pole SAP Equipment ID:	44384742 (Left Single Wood Pole)
Subject to PRC 4292 Veg Pole Clearance:	No
PG&E Equipment associated with ignition:	Jumper/Shoe
EPSS enabled at time of ignition?	Yes
Fault Type:	Line to Line
Wire Down (Primary)?	No
Lead Agency/Agency Having Jurisdiction:	San Bruno Fire Department
Fire Size:	100 feet in diameter

<b>FAS Field Remarks<sup>1</sup>:</b>	Open jumper in rear of 100 lake dr transmission notified
<b>HAWC Summary<sup>2</sup>:</b>	Resources responded to a vegetation fire with report of wires down near 100 Lake Drive in Tier 2. Fire contained at 0.8 acres per PSS. There were two unplanned outages associated with this incident: distribution-level outage affecting 9 customers on SNEATH LANE 1107 and transmission-level outage affecting 10,058 customers on Pacific Substation. Initial/Final Everbridge alert sent. Notifications made to HAWC Ops, PSS, and marked for EII. Final update unless conditions change.
<b>Non-Reportable Summary<sup>3</sup>:</b>	<p>On October 8, 2024, at 1841 hours, PG&amp;E received notification of a sustained outage to Pacifica Substation, affecting 10,058 customers in the vicinity of Valencia Way and Granada Drive in Pacifica, of San Mateo County, a non-HFTD. PG&amp;E troubleshooters responded to the outage and found a burnt open jumper on the Sneath Lane – Pacifica 60kV overhead transmission line at structure 004/049. The burnt open jumper caused a vegetation fire near the pole, which was extinguished by the fire department. The Grid Control Center was able to reenergize Pacifica Substation by utilizing the Sneath Lane – Half Moon Bay 60kV line. Substation personnel later reported Pacifica Substation circuit switcher 25 had a bad “C” phase interrupter. Additional switching occurred and all customers were restored by October 9, 2024, at 0319 hours. As of October 9, 2024, at 0940 hours, the Grid Control Center is reporting the Sneath Lane – Half Moon Bay 60kV line forced out for substation to make repairs to Pacifica Substation circuit switcher 25 “C” phase interrupter with no customer interruption. Substation maintenance have been able to operate the switch and interrupter, while on-going testing is being performed to prove the interrupter is not at end of life.</p> <p>This incident is being documented as non-reportable due to no known injuries, media</p>

<sup>1</sup> FAS Field Remarks entered verbatim – T006521484.

<sup>2</sup> HAWC Summary entered verbatim – Lake.

<sup>3</sup> Electric Incident Investigation Index (EII) Number: NR241008B – Summary entered verbatim.

	threshold not being met and property damage not likely to exceed \$50,000.
<b>Injuries / Fatalities / Property Damage / Media Attention:</b>	No/No/No/No
<b>Weather Conditions<sup>45</sup>:</b>	At 1840 hours near the Incident Location: Temperature: 57.2°F Relative Humidity: 89% Wind Speed: 12.0 mph Wind Gust: 14.0 mph out of the west-southwest
<b>Red Flag Warning (RFW) / High Wind Warning (HWW):</b>	No/No
<b>911 Standby Relief Time:</b>	N/A
<b>OIS #:</b>	2589889
<b>ILIS #:</b>	24-012920
<b>FAS #:</b>	T006521484
<b>TOTL/INT #:</b>	INT-18685
<b>Assigned Attorney:</b>	N/A
<b>Ignition Investigator &amp; Phone:</b>	

<sup>4</sup> Weather Observation Site: (Wind Untrusted) PG784 (Elevation 798 feet approximately 54 feet east of the Incident Location): Mesowest

<sup>5</sup> Wind Observation Site: AV684 (Elevation: unknown approximately 2.5 miles northwest of the Incident Location): Mesowest

## Executive Summary

On October 8, 2024, at 1841 hours, PG&E became aware that the Sneath Lane – Pacifica 60kV transmission circuit relayed and did not test. A PG&E distribution troubleshooter (Troubleshooter #1) was dispatched to SAP Pole ID 44384742/Structure 004/049 ('Incident Location' – 'Pole #1') located approximately 0.3 miles southwest of the Sneath Lane Substation. The troubleshooter reported to grid control operations that a jumper on Pole #1 (center pole of tri-post configuration) running from pole top to the south side shoe had failed and was burning (See Figure 2). Local agency personnel were on scene conducting suppression and mop up activities (See Figure 3) around a burn scar approximately 100 feet in diameter. A transmission troubleshooter also responded to the Incident Location and confirmed all reports by Troubleshooter #1. This incident occurred within a Tier 2 HFTD zone during R1 (circuit) conditions. There was a Corrective Action Program (CAP<sup>6</sup>) report created to document the incident, noting the possible cause of the broken jumper was due to heavy wind (approximately 20 miles per hour (MPH) with an approximate wind gust of 30-40 MPH). An LC Priority 'A' Tag (#129657510) was created to replace the burnt open jumper and was completed by a PG&E crew the following morning, October 9, 2024. The jumper was collected to be shipped to Applied Technology Services (ATS) for further analysis. The shoe did not show any signs of damage and was left on the conductor and returned to service.

The failed jumper was sent to Applied Technology Services (ATS) to be further analyzed by an engineer. A visual inspection was conducted of the jumper, with a focus on the failed ends. Point #1 is where it was cut in the clear from the north shoe and Point #2 (source side of fracture) is where the jumper failed approximately ½ inch above the south shoe (See Figure 8). Point #2 has signs of arc flash damage (See Figure 9), that likely took place after the fracture. Point #3 is the section of jumper that was still inside the dead-end clamp/shoe and has signs of low cycle fatigue (See Figure 10). The jumper appears to have failed from low cycle fatigue (LCF<sup>7</sup>) at the dead-end clamp attributed to cumulative wind gusts.

The incident was analyzed by an Asset Failure Analysis (AFA) engineer. AFA agrees with the ATS results that conclude that the jumper ultimately failed from a low cycle fatigue (LCF) at the dead-end clamp attributed to cumulative wind gusts. Age is also a major contribution as the jumper conductor may be well over its end of life potentially over 100 years old (possibly 126). There have been two outages on this line, March 13, 2018, and October 24, 2021, with similar jumper failures (See Figure 11). The Sneath Lane jumper and the Pacifica circuit switcher (CSW) interrupter are related only in that when attempting to switch to alternate sources AFTER the jumper failure the CSW failed to operate. The jumper failure did NOT impact the CSW at the time of the relay. *"After an outage on the Sneath Lane-Pacifica line due to a burnt/open jumper. Operations tried to use Pacifica's alternate source from Half Moon Bay. Pacifica switch (SW) 25 C phase would not latch and stay closed. We forced SW 25 out of service."*<sup>8</sup>

It was a fair, warm, and dry day on October 8, 2024 near the Incident Location. The high temperature for the day was 81.3°F at 0100 hours and the low temperature was 54.4°F at 0000 hours. The relative humidity was as high as 100% at 1920 hours and as low as 21% at 0100 hours. The strongest wind speed was 18.0 MPH out of the west-southwest at 2303 hours. Per the ATS analysis, the failed jumper appears to have failed from LCF at the dead-end clamp, attributed to cumulative wind gusts.

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<sup>6</sup> CAP (#129657468) – Full CAP may be found in the shared folder at the end of the document.

<sup>7</sup> Low cycle fatigue (LCF) – has two fundamental characteristics: plastic deformation in each cycle; and low cycle phenomenon, in which the materials have finite endurance for this type of load. The term cycle refers to repeated applications of stress that lead to eventual fatigue and failure; low cycle pertains to a long period between applications.

<sup>8</sup> Transmission Operations Support Engineer (pulled from 'Daily Reliability Scorecard' email)

## System Protection Analysis

The Incident Location on the Sneath Lane – Pacifica 60kV transmission line was enabled with Enhanced Powerline Safety Settings (EPSS)(Group #3) on a seasonal (high fire risk season – final dates determined by leadership) schedule and protected by the circuit breakers (CB) 6042 and 6052 (Set A and Set B line relays 611LA-4 and 611LB-4) at the Sneath Lane Substation. The incident caused a line-to-line (A-B) fault. The relay-initiated trip within ½ cycle with CB 6042 and 6052 opening to isolate the fault in 4-cycles. The relays performed as intended.

## Ignition Impact

The ignition was isolated to vegetation, resulting in a circular shaped burn scar approximately 100 feet in diameter. There were no reports of injuries, fatalities, property damage or media attention. The incident happened on a 60kV transmission line impacting 10,058 customers for a total of 4,753,378 customer minutes.

## Sequence of Events

October 8, 2024

- 1841 hours – Substation Pacifica source opens (10,058 customers de-energized)
- 1853 hours – T-line supervisor reports a troubleshooter will be dispatched
- 1908 hours – Distribution troubleshooter reports open jumper on structure 004/049 & that the grass fire has been extinguished
- 1900 hours to 2152 hours – Switching activities<sup>9</sup>
- 2153 hours – LR 3907 closed (111 customers re-energized)
- 2154 hours – LR 230272 closed (309 customers re-energized)
- 2315 hours – LR 52715 opens
- 2326 hours – Switch 42352 opens
- 2340 hours – Switch 79887 closed (414 customers re-energized)
- 2345 hours – Switch 42352 closed (874 customers re-energized)

October 9, 2024

- 0241 hours – Substation Pacifica source closed
- 0311 hours – Circuit Breaker (CB) 1103/2 closed (2828 customers re-energized)
- 0312 hours – CB 1104/2 closed (882 customers re-energized)
- 0314 hours – CB 1102/2 closed (2711 customers re-energized)
- 0319 hours – CB 1101/2 closed (1929 customers re-energized)

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<sup>9</sup> See ILIS 24-0120920 for details.

### Corrective Notification Associated with Ignition

The troubleshooter wrote an LC Priority 'A' Tag (#129657510) to replace the burnt, open jumper. The repair was completed by a PG&E crew the following morning, October 9, 2024.

### Pending Work

Type	Number	Description	Priority	Date Identified	Due Date
EC Notification	N/A				
COE Notification	N/A				
LC Notification	N/A				
Veg Work Order	N/A				

Please note this may not include pending major program or project work at the incident location.

### Asset Info & Most Recent Inspections and Tests

<b>Incident Location Structure</b>	<b>SAP Pole ID: 44384742/Structure 004/049 (Left Single Wood Pole)</b>	
<b>Info / Inspection</b>	<b>Most Recent Date</b>	<b>Findings</b>
Install Date:	Manufactured Date - 1988	3-Pole, Wood, Double Dead End, 52.5' tall, Class 2
Inspection <sup>10</sup> :	March 4, 2024	Condition of Guy System – 2 (light damage) Anchor rod issues – Anchor(s) pulling out or in poor condition Condition of Anchor – 3 (moderate damage) Condition of Non-Steel Structure (distribution under build present) – 2 (light damage) Condition of Non-Steel Framing – 2 (light damage) Condition of Conductor – 2 (light damage) Insulator Issues – Insulators are damaged, contaminated, arcing/tracking, or in poor condition – 3 (moderate damage)
Patrol:	N/A	
Corrective History:	April 19, 2023	Dirty and need washing. Tag cancelled on February 23, 2024 with comments: Hot wash not needed – heavy rain events cleaned insulators.
Aerial Inspection Records:	N/A	
VM Inspection:	N/A	
EVM Inspection:	N/A	
Equipment Test:	N/A	

<sup>10</sup> Non-Steel Inspection Form

Pole Intrusive Test:	July 31, 2025	Pass
WSIP Inspection:	N/A	

\*Incident Location: SAP ID: 44384742/Structure 004/049 (Left Single Wood Pole)

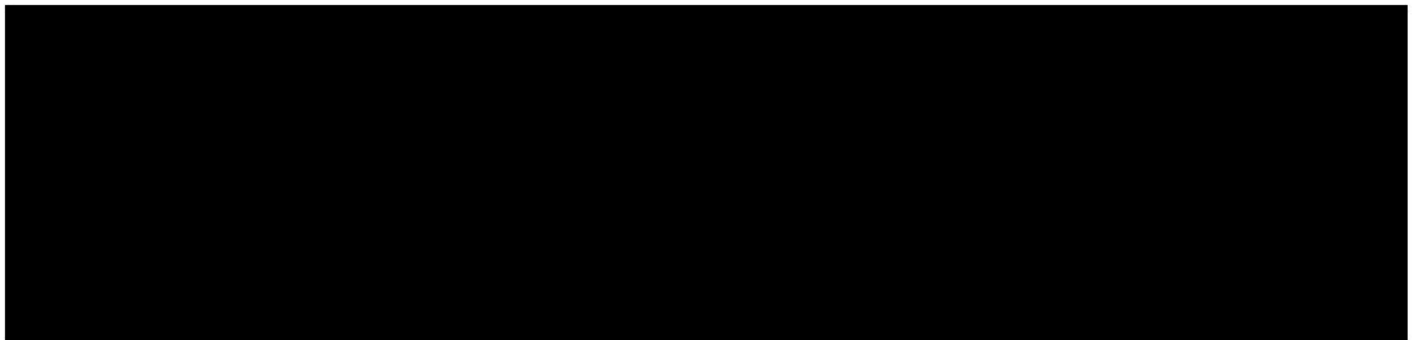
#### Hazard Barrier Analysis:

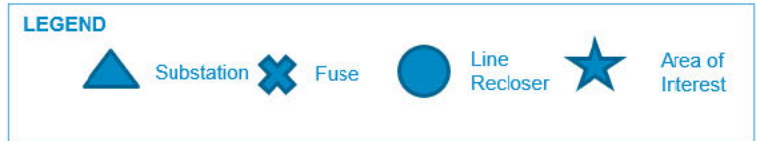
Hazard	All types of equipment/facility failure	Sub-Hazard	Jumper/Shoe Failure
Target	To reduce equipment failure		
Barrier	Expected vs. Observed Performance	Why did the barrier not prevent the ignition event? (See <a href="#">ICF Codes</a> )	Opportunity
Barriers that were Assessed as Opportunities			
Pole Clearing Program	Expected Performance: Limit fire spread potential near poles for a PG&E equipment involved ignition event within State Responsibility Areas, poles with non-exempt equipment, and selected poles outside of the regulations of PRC 4292. Clear 10-ft radius around subject poles from 0-8 feet above ground level.; Observed Performance: Barrier did not exist	[ A4B2C3D1 - Strategy: Program Strategies; Pole-Clearing-Related ; Only applies to poles with non-exempt equipment ]	This location is not currently part of any pole clearing program. However, there is a possibility the ignition would not have started if the pole had been cleared.

#### Potential Next Steps / Associated CAP Items:

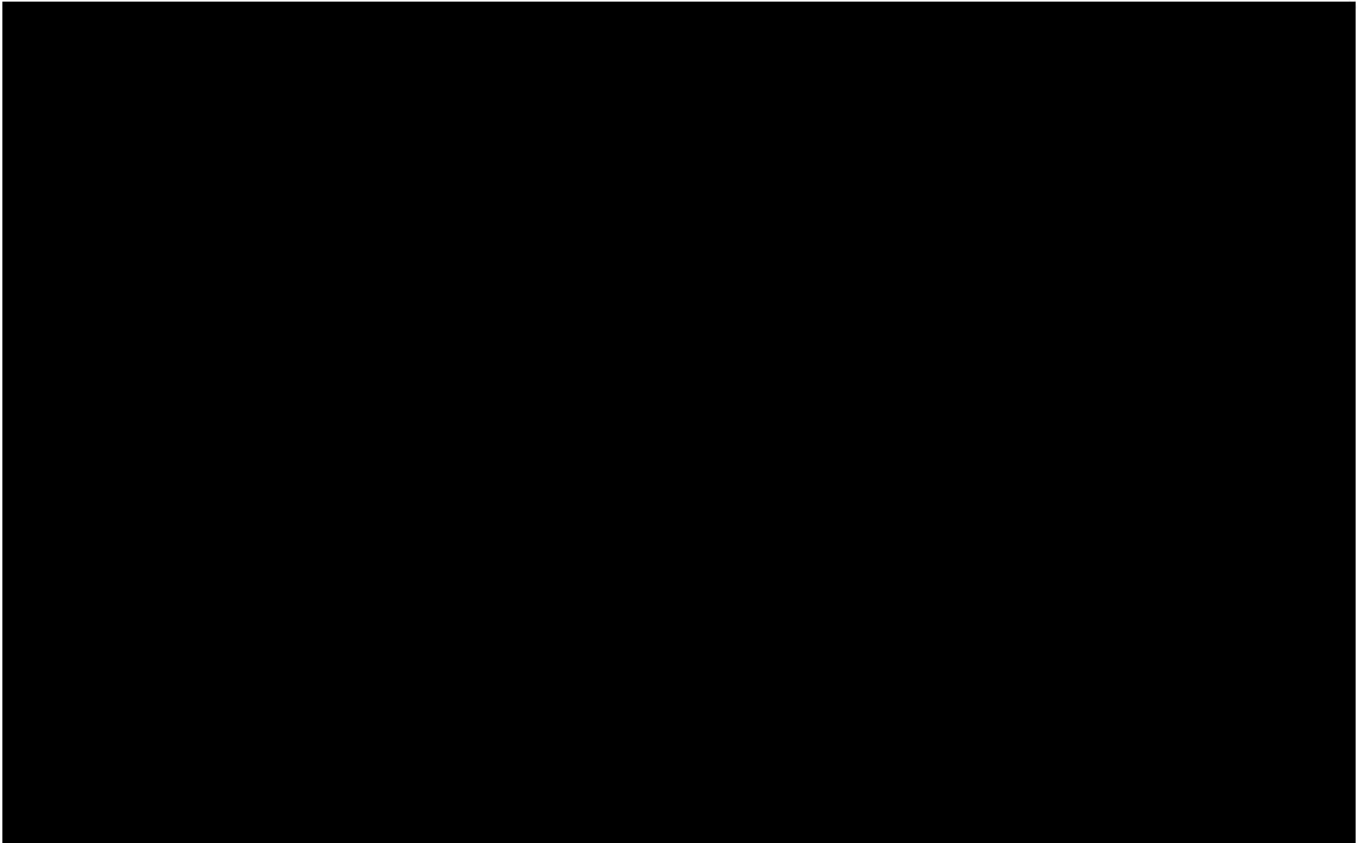
- None at this time.

#### Single Line Diagram





## Photos and Diagrams of Events



*Figure 1 Google Earth Pro map of Incident Location.*





*Figure 2 SAP Pole ID 42560786/Structure 004/049 on the Sneath Lane – Pacifica 60kV transmission line. Jumper failure from pole top to south shoe (farthest west phase). Photo taken by troubleshooter on October 8, 2024.*

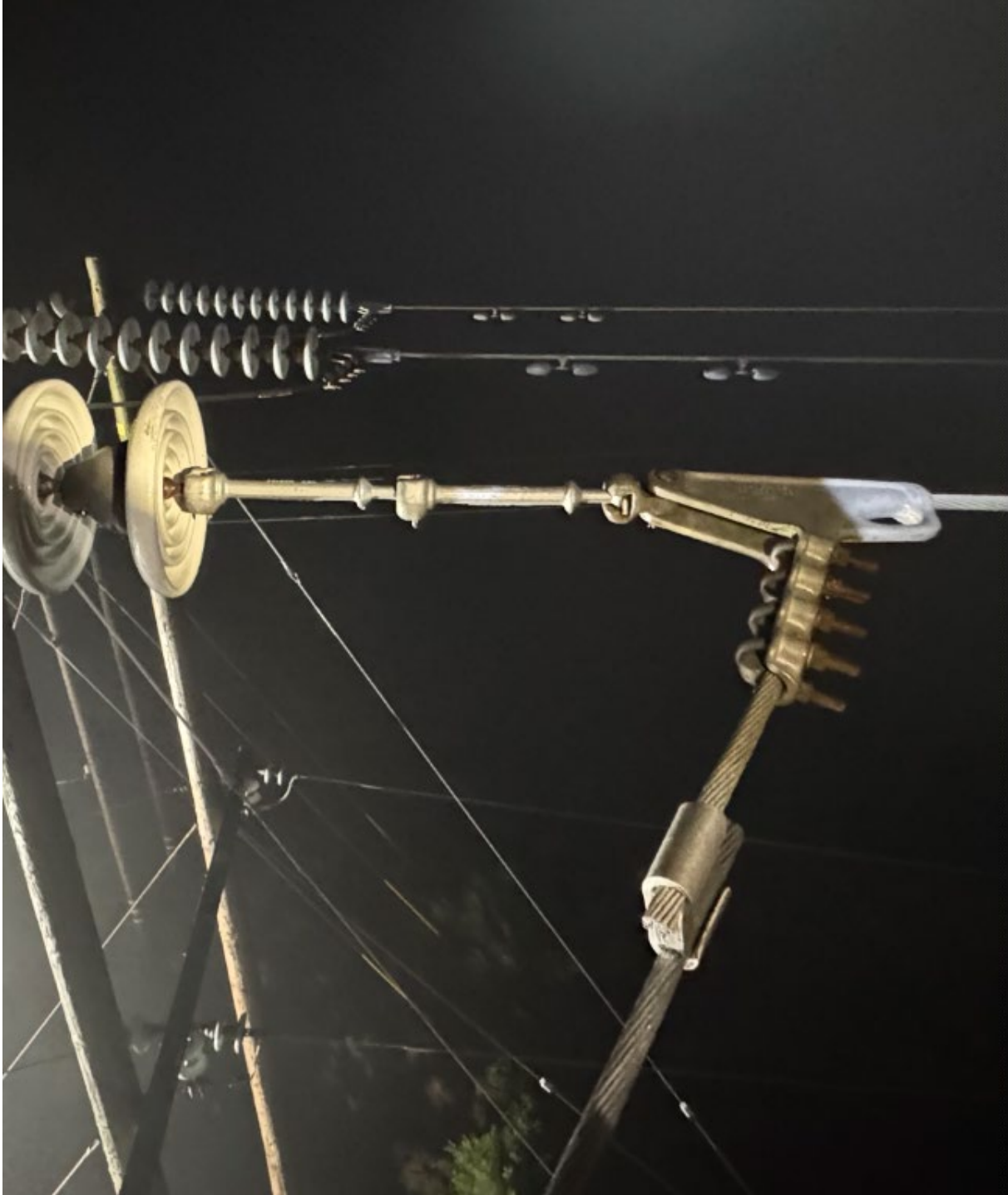


*Figure 3 Suppression/mop up activities by local fire agency personnel. Photo taken by troubleshooter on October 8, 2024.*



*Figure 4 SAP Pole ID 42560786/Structure 004/049 on the Sneath Lane – Pacifica 60kV transmission line, post-ignition. Failed jumper on the southside of pole top. Photo taken by troubleshooter on October 8, 2024.*





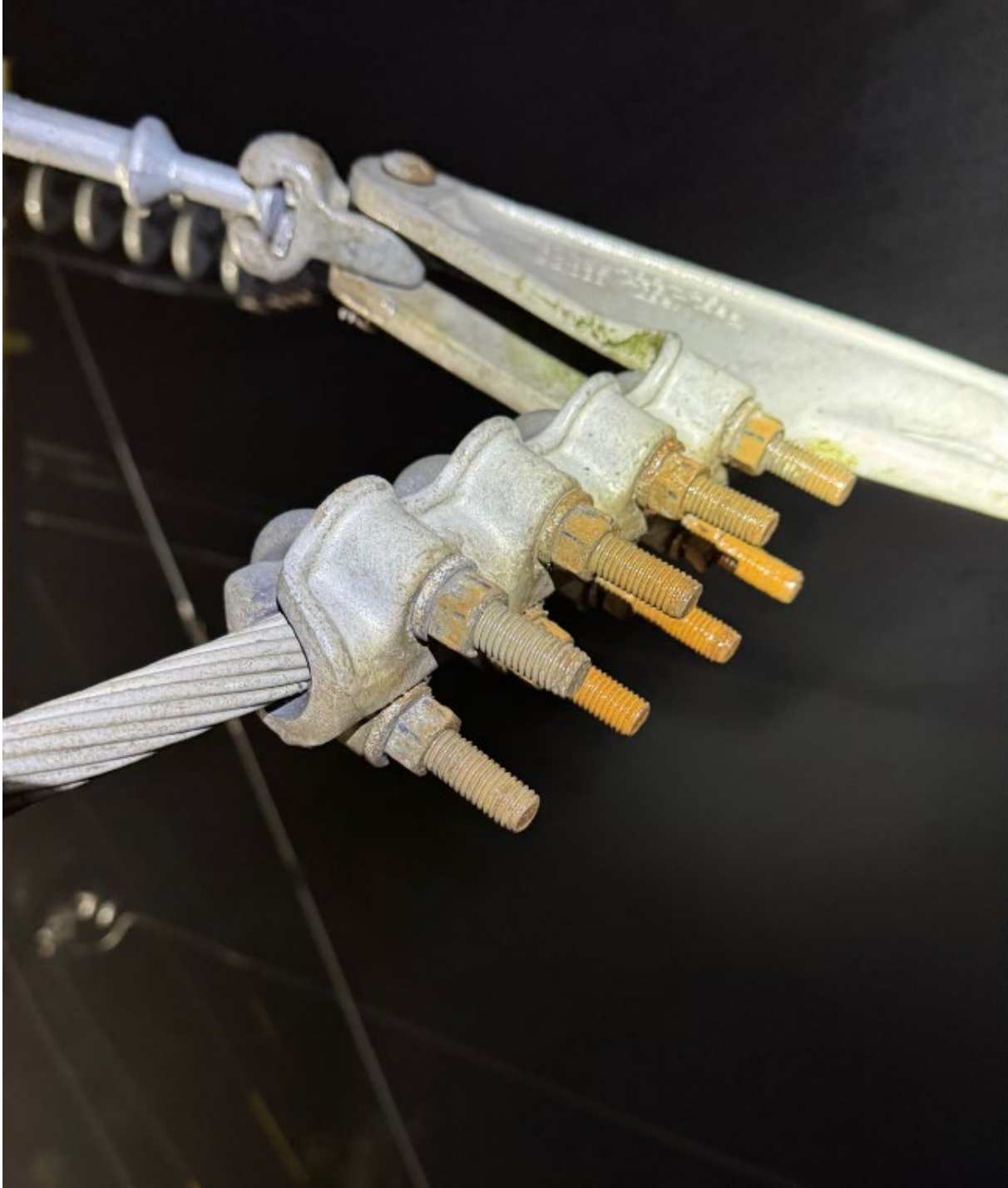
*Figure 5 Post-construction photos of shoe repairs. Photo taken by PG&E crew on October 9, 2024.*

This report is preliminary and based on available information as of **October 10, 2024**; event data is subject to change based upon subsequently discovered information.

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*Figure 6 Re-used shoe, post-construction photos taken on October 9, 2024.*



*Figure 7 Post-construction photo of asset. The impacted shoe/jumper is identified in the photo. Photo taken by Ignitions Investigator during site visit on October 23, 2024.*

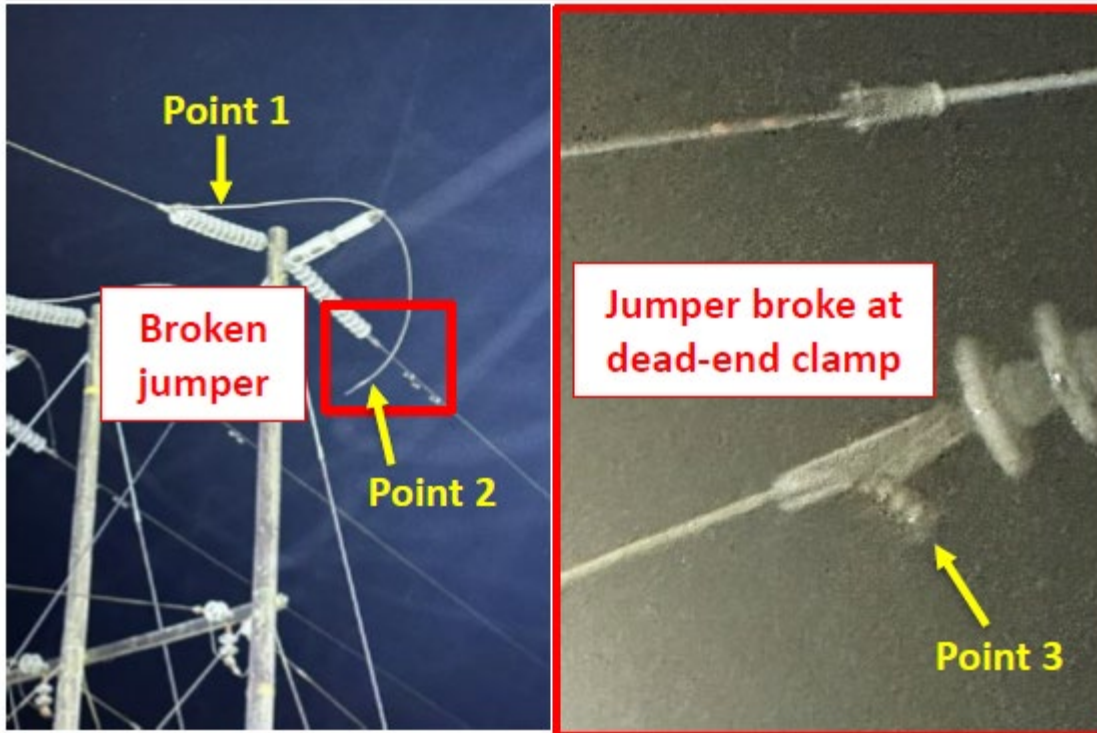


Figure 8 The failed jumper, as photographed by troubleshooter prior to removal, October 8, 2024.





**Point 2**

Source side of fracture, arc damage likely after the fracture

*Figure 9 ATS photos of the source side of the failed jumper.*

Dark color in vicinity of fracture surfaces suspected to be fretting wear debris



**Fractography indicative of low cycle fatigue**

**Point 3**

*Figure 10 ATS photo of the section of jumper that remained in the dead-end clamp/shoe.*



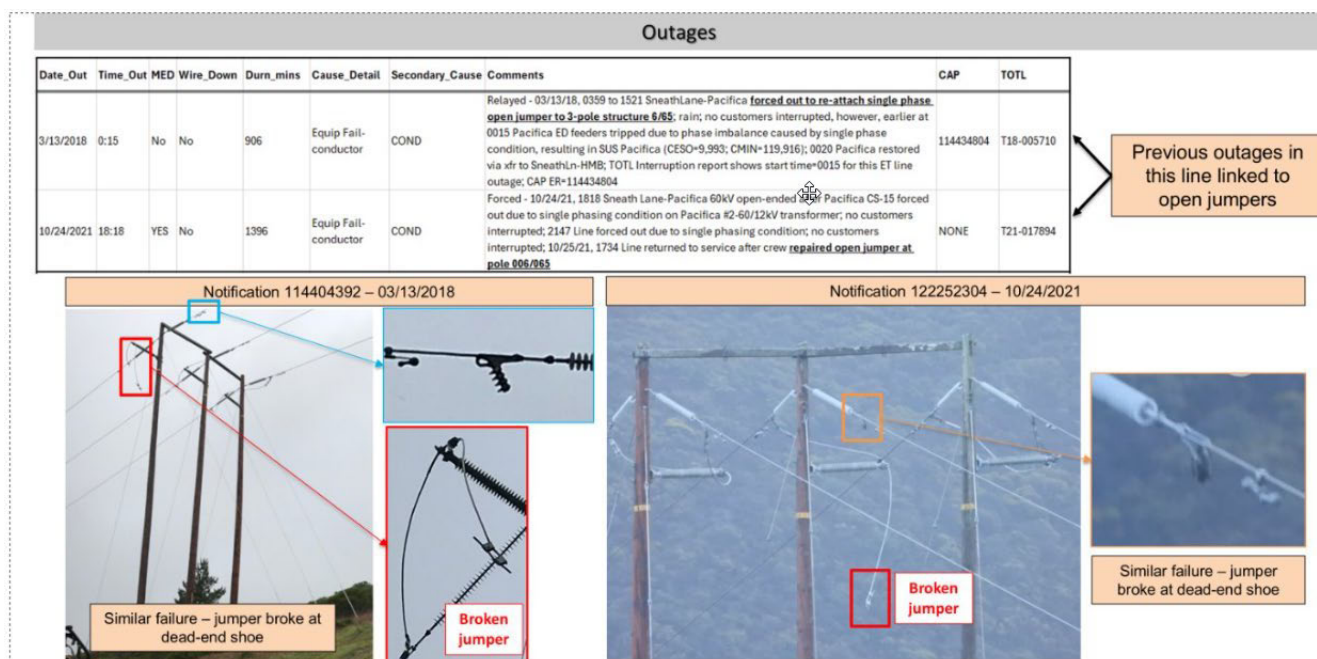


Figure 11 Historical outage data (compiled for reference) due to open jumpers on the Sneath Lane – Pacifica 60kV by AFA.

## Attachments

Attachments and references can be located in the ESA folder, located below:



-----END of REPORT-----