



Preliminary Ignition Investigation Report

Ignition Database Index:	20241296
Electric Incident Investigation (EII) Number:	N/A
Incident Name:	Pearl
PG&E Facility Ignition?	Yes
CPUC Reportable Ignition?	Yes
Date & Time of Incident:	September 6, 2024 @approximately 0648 hours
Street Address:	(rural) 0.12 miles east of Camp 9 Road
City:	Angels Camp
County:	Calaveras
Latitude/Longitude:	38.11233, -120.41017
State Responsibility Area (SRA) / Local Responsibility Area (LRA) / Federal Responsibility Area (FRA)	State Responsibility Area
PG&E Division:	Stockton
High Fire Threat District (HFTD):	Tier 2
High Fire Risk Area (HFRA):	Yes
EPSS Buffer:	No
Fire Index Area (FIA):	320
Fire Potential Index (FPI) Rating: FIA	R5
Fire Potential Index (FPI) Rating: Circuit	R5
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:	Splice/Clamp/Connector
Circuit:	Stanislaus 1701
Circuit Protection Zone:	LR 862450
Nominal Voltage:	17kV
Pole SAP Equipment ID:	101285874
Subject to PRC 4292 Veg Pole Clearance:	No
PG&E Equipment associated with ignition:	Bolted parallel groove connector
EPSS enabled at time of ignition?	Yes
Fault Type:	Line-to-Line
Wire Down (Primary)?	No
Lead Agency/Agency Having Jurisdiction:	CAL FIRE
Fire Size:	2.5 acres

FAS Field Remarks¹:	Fls tripped at 2301 and L1147. Fire started 12 spans source side of L2595. found loose connection at pole where cdf determined fire started
HAWC Summary²:	Per PSS no damage to assets. Resources responded to a vegetation fire, the Pearl Incident. It was located at Camp 9 Road & Parrotts Ferry Road in Calaveras County. This is a Tier 2 area. The fire was listed as forward progress stopped. The fire size was last listed as 2.6 acres. There was an outage associated with this incident. The outage was on the Stanislaus 1701 circuit with 332 customers impacted. The OIS number was- 2560754. The closest circuit was the Stanislaus 1701, it was an EPSS circuit. There was no damage to assets. An Everbridge message was sent. A SIPT Engine responded to this incident and performed the following activities: unknown. An Incident Report was not sent. A Preliminary Fire Report was not sent. Notifications were made to: HAWC Sup, PSS Will , DCC <input checked="" type="checkbox"/> , GCC <input checked="" type="checkbox"/>
Injuries / Fatalities / Property Damage / Media Attention:	No/No/No/No
Weather Conditions³:	At 0650 hours near the Incident Location: Temperature: 79.5°F Relative Humidity: 25% Wind Speed: 11.1 mph Wind Gust: 17.4 mph out of the east-northeast
Red Flag Warning (RFW) / High Wind Warning (HWW):	No/No
911 Standby Relief Time:	N/A
OIS #:	2560754
ILIS #:	24-0107655
FAS #:	T006493266
TOTL #:	N/A
Assigned Attorney:	N/A
Ignition Investigator & Phone:	

¹ FAS Field Remarks entered verbatim.

² HAWC summary entered verbatim (*employee names removed*)

³ Weather Observation Site: PG156 (Elevation 2750 feet approximately 0.8 miles northwest of the Incident Location): Mesowest

Executive Summary

On September 6, 2024, at 0641 hours, dynamic protective device line recloser (LR) 862450 detected a line-to-line fault and operated, de-energizing 332 customers. At 0648 hours, two troubleshooters were dispatched to the Stanislaus 1701 17kV distribution circuit to patrol for the cause. While patrolling, Troubleshooter #1 was contacted by PG&E's Public Safety Specialist (PSS) and informed there was an ignition reported in the fault target area. Troubleshooter #1 initially arrived at Switch 2301 and Fuse L1147 (load side of the Incident Location), where the fault indicators had tripped. The distribution operator informed the troubleshooter of a wire down approximately three miles away. The troubleshooter continued his patrol to SAP Pole ID 101285874 ('Incident Location' – 'Pole #1'), SAP Pole ID 104206160 ('Pole #2'), and SAP Pole ID 104179457 ('Pole #3'). He arrived at an active ignition near Poles #2 and #3, just as CAL FIRE units were arriving. The troubleshooter checked for wires down (there were no wires down) and ensured the scene was safe for suppression activities. CAL FIRE was able to suppress the ignition with ground and aerial attack methods, leaving a burn scar approximately 2.5 acres in size. The troubleshooters continued patrolling and switching activities to sectionalize the area and restore all impacted customers.

Troubleshooter #1 inspected the Incident Location with a CAL FIRE investigator. The CAL FIRE investigator suspected the ignition originated at the base of Pole #1. While inspecting Pole #1, Troubleshooter #1 saw no obvious signs of failure. The troubleshooter created EC Priority 'A' Tag (#129483126) to replace three jumpers on Pole #1 as well as to clean the insulators. While Troubleshooter #1 and the PG&E crew were replacing the jumpers, they found a loose connector on the 'A' phase, running from cutout to cutout. The loose connector (bolted connector) was retained for further analysis. Troubleshooter #1 created two more priority 'A' tags (#129485390) for Pole #2 and (#129485308) for Pole #3, to clean/wash the fire retardant from the assets.

The failed bolted connector was collected and sent to Applied Technology Services (ATS) to be further analyzed by an engineer. Visual inspection of the bolted connector indicates minor arcing damage on the copper side of the parallel groove (PG) connector that attaches to the main line to the jumper (See Figure 5). There was a line-to-line fault a few minutes prior to the incident in the circuit protection zone of the ignition location. The engineer hypothesized that a surge caused arcing across a likely imperfection within the PG connector. The hot arcing products from the PG connector fell into the light, one-hour fuels on the ground, combusting.

The incident was reviewed by an Asset Failure Analysis (AFA) engineer, who concluded that the direct cause is still unknown. A loose connection can cause high resistance and voltage drops, which can heat up the joints on the connector. During a high magnitude fault, energy was dissipated at the loose connection rather than the other two phases.

It was a hot and dry day on September 6, 2024 near the Incident Location. The high temperature for the day was 95.5°F at 1400 hours and the low temperature was 78.8°F at 0540 hours. The relative humidity was as high as 29% at 0030 hours and as low as 17% at 1340 hours. The strongest wind speed was 17.5 miles per hour (mph) out of the east-northeast at 0700 hours.

System Protection Analysis

The Stanislaus 1701 17kV distribution circuit was enabled with Enhanced Powerline Safety Settings (EPSS) at the time of the ignition. The Incident Location was protected by circuit breaker (CB) 1701/2 (Stanislaus Substation) and LR 862450, which was in Mode 3 with sensitive ground fault (SGF) and downed conductor detection (DCD) settings enabled at the time of the incident. At approximately 0641 hours, LR 862450 detected a line-to-line

fault (A – C) with a 331A RMS (AMPS - roots mean square) fault magnitude, triggering LR 862450 to operate within 11.72 milliseconds, clearing the fault. SGF and DCD did not operate (as expected). The protective device operated as intended.

Ignition Impact

The ignition was isolated to vegetation, resulting in a burn scar approximately 2.5 acres in size. There were no reports of injuries, fatalities, or property damage. There were 332 customers impacted for a total of 80,500 customer minutes.

Sequence of Events

September 6, 2024

- 0641 hours – First No Light - LR 862450 opens/Smart Meter goes offline
- 0648 hours – Two troubleshooters dispatched for patrol (Troubleshooter #1 and #2)
- 0840 hours – Switch L1147 open (for sectionalizing/Incident Location isolation)
- 1013 hours – Fuse 45857 open (for sectionalizing/Incident Location isolation)
- 1043 hours – Switch 91511 close (326 customer re-energized)
- 1109 hours – Switch L1147 close (6 customers re-energized) - **All Impacted Customers Restored via Sectionalizing**
- 1932 hours – Overhead disconnect L2595 close
- 1947 hours – Overhead disconnect 625273 close
- 2000 hours – Line Recloser 862450 close

Corrective Notification Associated with Ignition

As a result of this incident, there were three priority 'A' EC Tags created:

- EC Priority 'A' Tag (#129483126) was created to clean the insulators and replace three jumpers on Pole #1 (SAP Pole ID 101285874). This tag was completed on September 6, 2024, by a PG&E crew.
- EC Priority 'A' Tags (#129485390 and #129485308) were created to wash/clean fire retardant from the insulators.
 - EC 'A' Tag (#129485390) → SAP Pole ID 104206160 – Pole #2
 - EC 'A' Tag (#129485308) → SAP Pole ID 104179457 – Pole #3

Pending Work

Type	Number	Description	Priority	Date Identified	Due Date
EC Notification	126453567 (PM#35468449)	Pole is rotten at the top around the eyebolt. Replace 1980 cellon pole that has major splits and rot in Tier 2. System Hardening Work.	E	June 26, 2023	June 26, 2024

This report is preliminary and based on available information as of **October 8, 2024**; event data is subject to change based upon subsequently discovered information.

EC Notification	127729437 (PM#35468449)	Replace pole as per TNT. Valid duplicate tag (see above).	E	December 21, 2023	December 21, 2024
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

Incident Location Structure		
Info / Inspection	Most Recent Date	Findings
Install Date:	1980	Douglas Fir, Wood, 40' tall, Cellon gas treated, MKB manufacturer.
Inspection ⁴ :	June 26, 2023	Structure (Distribution Pole) – Pole broken, damaged, burnt, deformed, corroded, gunshot, or showing signs of cracking, rotten, or decay.
Patrol:	N/A	
Corrective History:	July 22, 2021	EC Priority 'E' Tag (#117174304) – Pole has brush and overgrowth that needs to be removed before next inspection. Found May 7, 2019. Completed and closed on July 22, 2021, as 'completed on arrival'.
Aerial Inspection Records:	April 9, 2024	Structure: Replace pole, rotten with HW movement and sinking into pole. Other compelling conditions: Old pole butt.
VM Inspection:	N/A	
EVM Inspection:	N/A	
Equipment Test:	N/A	
Pole Intrusive Test:	December 21, 2023	Shell rot/decay. Damage Type – Heart Shell Thickness – 3.5 Calculated Strength – 99.49% Inspection Result – Fail/Replace
WSIP Inspection:	May 4, 2019	There were no compelling abnormal conditions for the Pole, equipment, and its associated spans.

*Incident Location: SAP Pole ID 101285874

⁴ General Order 165 – The CPUC establishes requirements for electric distribution and transmission facilities (excluding those facilities contained in a substation) regarding inspections in order to ensure safe and high-quality electrical service.

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Hazard Barrier Analysis:

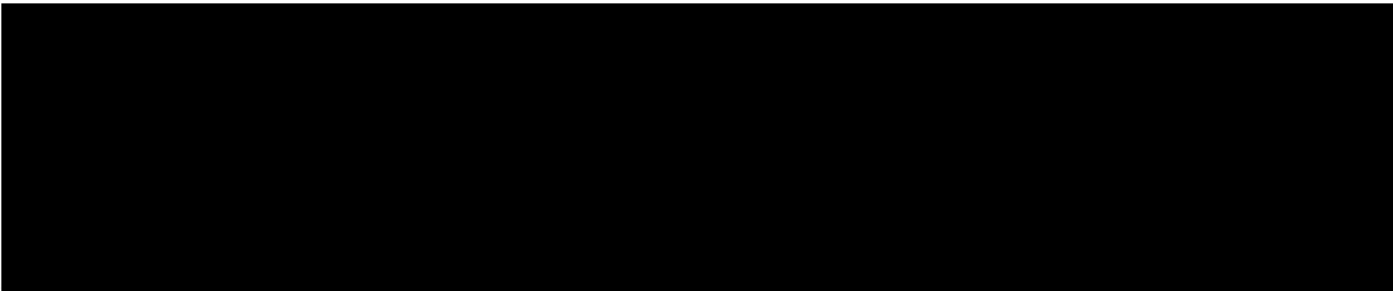
Hazard	Equipment – PG&E	Sub-Hazard	Splice/Clamp/Connector
Target	To reduce equipment failure caused ignitions.		
Barrier	Expected vs. Observed Performance	Why did the barrier not prevent the ignition event? (See ICF Codes)	Opportunity
Barriers with Unknown Impact on Ignition			
Equipment Work Management	<p>Expected Performance: Complete pole replacement.</p> <p>Observed Performance: Barrier did not perform as expected</p>	A3B1C2D2 – Work not complete, past due	There is a pending tag (#126453567) to replace the pole (rotten around the eyebolt). PM#35468449 pending for system hardening in 2025.
Field Safety Reassessment	<p>Expected Performance: Perform annual safety re-assessments of tags to document if there has been a change to field condition.</p> <p>Observed Performance: Barrier performed as expected</p>	A1B1C2D6 – Other condition not visually apparent	The location is slated for system hardening and has been packaged under PM#35468449 for a 2025 work plan. A reinspection would not have identified the loose connection as the condition is not a visible one.
Barriers that Positively Affected Ignition			
Enhanced Powerline Safety Settings - Instantaneous Trip Settings	<p>Expected Performance: Automatically turn off power when a hazard is detected.</p> <p>Observed Performance: Barrier performed as expected</p>	A1B2C2D3 – Device tripping time is limited	The protective device operated as designed.
Barriers that were Assessed as Opportunities			
Distribution System Hardening Program	<p>Expected Performance: Targets conductor replacement in high wildfire risk areas.</p> <p>Observed Performance: Barrier did not exist</p>	A1B1C2D6 – Other condition not visually apparent	This location is slated for system hardening (PM#35468449).

Pole Clearing Program	Expected Performance: Limit fire spread potential near poles. Observed Performance: Barrier did not exist		This location does not have non-exempt equipment.
Voluntary Risk Reduction	Expected Performance: Reduce the likelihood of rapid-fire development or impact in proximity to PG&E assets. Extends pole clearing program for selected poles to reduce risk.; Observed Performance: Barrier did not exist	[A4B2C2D1 - Strategy: Program Strategies; Vegetation-Related; Location not prioritized for program]	The location is slated for system hardening. PM#35468449.

Potential Next Steps / Associated CAP Items:

- Location is slated for system hardening, projected to commence in 2025. Per PM #35468449.

Single Line Diagram



Photos and Diagrams of Events

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Internal

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Figure 1 Google Earth Pro map of Incident Location.



Figure 2 Active ignition at the Incident Location. Photo taken by responding troubleshooter on September 6, 2024.

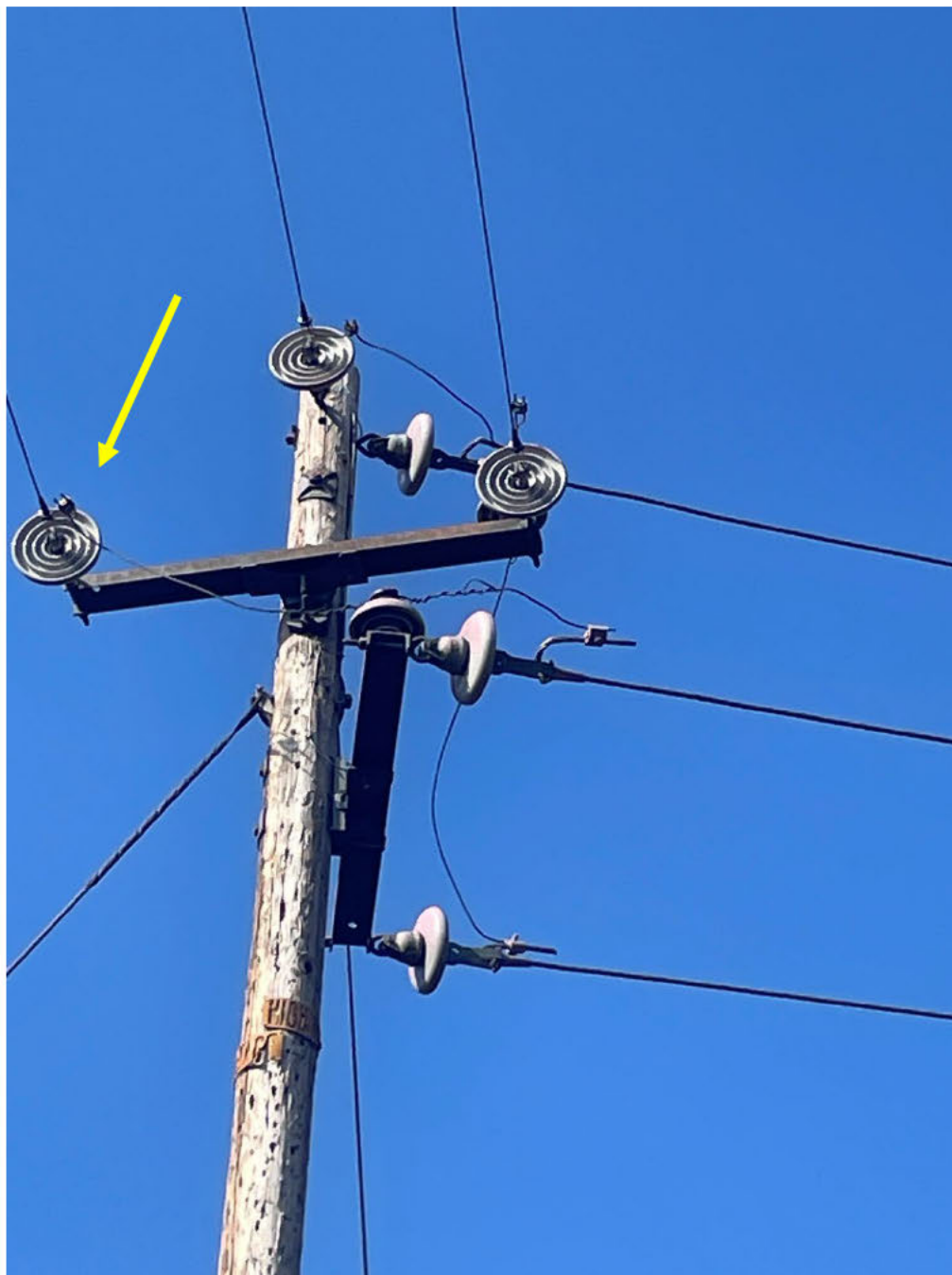


Figure 3 SAP Pole ID 101285874 (Pole #1). Photo taken by troubleshooter on September 6, 2024. The bolted connector that was collected for analysis is identified in the photo.



Figure 4 Poles that were treated with aerial fire retardant by CAL FIRE. Photo taken by troubleshooter on September 6, 2024.

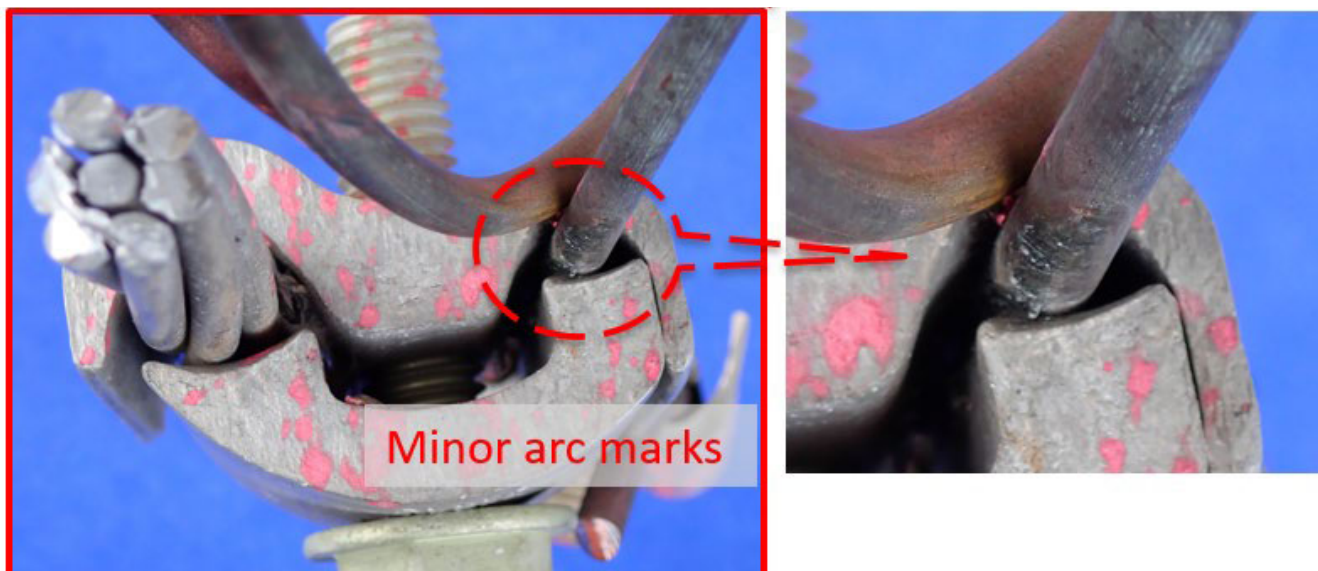
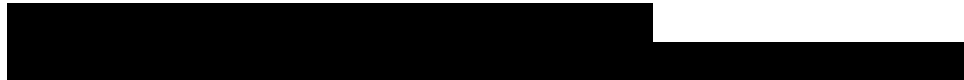


Figure 5 ATS photo of bolted connector with the arc marks identified in the photo. Photo taken by ATS engineer.

Attachments

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



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