



Preliminary Ignition Investigation Report

Ignition Database Index:	20240583
Electric Incident Investigation (EII) Number:	N/A
Incident Name:	Warren
PG&E Facility Ignition?	Yes
CPUC Reportable Ignition?	Yes
Date & Time of Incident:	June 5, 2024, at approximately 2023 hours
Street Address:	Near 8186 Warren Road
City:	Valley Springs
County:	Calaveras
Latitude/Longitude:	38.1317372527, -120.9265683852
State Responsibility Area (SRA) / Local Responsibility Area (LRA) / Federal Responsibility Area (FRA)	SRA
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	R2
Fire Potential Index (FPI) Rating: Circuit	R2
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:	Cutout failure
Circuit:	Corral 1101
Circuit Protection Zone:	Corral 1101 LR220994
Nominal Voltage:	12kV
Pole SAP Equipment ID:	102040219
Subject to PRC 4292 Veg Pole Clearance:	No
PG&E Equipment associated with ignition:	Cutout
EPSS enabled at time of ignition?	Yes
Fault Type:	Line to Ground
Wire Down (Primary)?	No
Lead Agency/Agency Having Jurisdiction:	CAL FIRE
Fire Size:	Under 0.25 acres

FAS Field Remarks:	Bottom of PT-44 melted off and wire hit reg case causing an outage and small grass fire, bypassed all 3 regs cut jumpers in the clear on NG cutout, worked with DO to energize, voltage is somewhat low, DLT will come out after repairs are made to put regs back to normal.
HAWC Summary:	Resources responded to a report of a vegetation in the area of Hwy 26 & Shelton Rd in Valley Springs in Calaveras County. Irwin notification came in at 2026 hours. The HAWC analyst notified on call PSS and had them call Tman on scene for information. Tman reported there was a 50x20 spot fire and that the fire was out. There were two separate outages reported at the time of the fire; OIS # 2477009 with 1650 customers affected on the EPSS enabled CORRAL 1101 and OIS # 2477026 with 1222 customers affected on the EPSS enabled CORRAL 1103. The fire was in a Tier 2 area. No notifications were made due to quick mitigation of the hazard and limited intel on the fire. Waiting for Tman to show up on scene for intel. No additional outages or impact to assets reported at the time of incident closure. Closing barring any significant changes.
Injuries / Fatalities / Property Damage / Media Attention:	No injuries, fatalities property damage or media attention
Weather Conditions:	At 2020 nearest the incident location: Temperature: 94.9° Relative Humidity: 32% Wind Speed: 2.7 mph from the northwest Wind Gust: 4.8 mph
Red Flag Warning (RFW) / High Wind Warning (HWW):	No Red Flag Warning or High Wind Warning issued
911 Standby Relief Time:	33 minutes
OIS #:	2477009
ILIS #:	24-0073843
FAS #:	T006412013
TOTL #:	N/A
Assigned Attorney:	N/A
Ignition Investigator & Phone:	<div></div>

Executive Summary

On June 5, 2024, at approximately 2029 hours, PG&E sent a troubleshooter to the area of Warren Road south of Adams Road in Valley Springs in response to a heat related power outage. The primary three-phase overhead, 12kV distribution segment on the Corral 1101 experienced a power loss affecting 1,650 customers. This incident occurred within a Tier 2 High Fire Threat District (HFTD) and a High Fire Risk Area (HFRA). PG&E's Enhanced Powerline Safety Settings (EPSS) were enabled starting in May 2024 due to the increased fire danger in the area.

PG&E Meteorology data pulled from the MesoWest observation site indicated that it was a hot and dry day on June 5, 2024. The high temperatures for the day were 99.8°F at 1730 hours and the low temperature was 70.9°F at 0530 hours. The relative humidity was as high as 73% at 0510 hours and was as low as 27% at 1710 hours. The strongest wind gust was 14.2 miles per hour (mph) at 1530 hours from the northwest. The weather data was taken 2.6 miles east-northeast of the Incident Location with an elevation of 530 feet.

After dispatching three troubleshooters to the EPSS outage, two of the three troubleshooters arrived onsite at 2125 hours and 2129 hours. Both troubleshooters worked the tag and assessed the Incident Location on Warren Road in Valley Springs. When the troubleshooters arrived at the Incident Location, they observed a fire that burned an area approximately 30 feet in diameter around the subject pole. The fire had been extinguished by the Valley Springs Fire Department.

Upon identifying the subject pole, SAP ID 102040219, the troubleshooter called into the Distribution Operator (DO) stating cutout the bottom of a PT-44 melted, disconnecting from the cutout and creating the outage. The failed piece of the Solid Blade hit the regulator (R-166) below which created a spark. The regulator had signs of a flash mark but was not an immediate risk. The troubleshooter and DO agreed to bypass the regulators so the troubleshooter could cut the jumpers to prepare for repairs to the cutout. Shortly after, LR 220994 was closed, restoring service to 1,650 customers at 2251 hours on June 5, 2024.

A corrective notification (EC # 129027107) was created to make repairs at the Incident Location. A PG&E crew was dispatched to the Incident Location on June 5, 2024, to replace the damaged Part 44 cutout with a Part 57 Solid Blade cutout and repair damaged wire conductor. The repair work was completed at 2251 hours on June 5, 2024. Once the Part 44 cutout was replaced, the troubleshooter worked with the DO to bring all three regulators back online by plugging them into AC power to bring the regulators back to a neutral position.

The subject pole has been flagged since 2019 through inspections indicating signs of decay along with a visible deep lateral crack throughout a majority of the pole. The inspection also indicated the cutout was not good and needed replacement. A corrective "E" tag was created on March 16, 2019, stemming from this inspection with a year due date. This tag is still pending and has not been addressed as of date. The next calendar year of 2020, the cutout was identified as damaged and a corrective "E" tag was created to repair the cutout, which was later cancelled noting this was a duplicate tag from the 2019 tag. In 2023, the subject pole was reviewed again as potentially being overloaded due to the large cracks running vertically along the pole. A corrective "E" tag created to test the pole; however, this tag was also cancelled one month after creation citing the original tag created in 2019.

ATS received the failed PT-44 cutout (SAP Equipment: 102040219 attached to Regulator R-166 ID: 220994) on June 12, 2024. ATS engineering confirmed the ignition was caused by the dripping of hot material due to the energized jumper contacting the grounded structure. Visual inspection of the material showed detachment of

the bottom side jumper from the solid-disconnect porcelain cutout likely due to overheating and melting of the potting resin. Historical loading on the subject phase indicated a noticeable rise that likely exceeded the rated capacity of the regulator and cutout. This most likely caused elevated temperatures on the solid disconnect resulting in glass transition of the potting resin and detachment of the contact pin (*see photo 7*).

The Asset Failure Analysis team investigated the events of June 5, 2024, as part of their Extent of Condition (XoC). Per AFA engineering, on one phase of regulator R-166, the porcelain cutout bottom jumper connector failed and came out of the bottom of the cutout. The jumper and bottom connector touched the casing of the regulator, causing sparks. AFA advised an infrared (IR) inspection (IR 119946724) was conducted in 2020 as part of a GO165 inspection and identified the excessive heat buildup on the Part 44 cutout.

As a result of this, an Extent of Conditions (XoC) was conducted and determined the corrective action of suggesting IR tags be standalone tags and not bundled with other tags. This would prevent the cancellation and transfer errors that lead to failures and ignitions. This would ensure the stand-alone tags would be added to the workplan in a timely manner that matches the tag priority and not have it pushed out, re-assessed or extended.

The history of this location indicates this pole poses an immediate risk of a complete failure and will need to be replaced to prevent further incident.

System Protection Analysis

Enhanced Powerline Safety Settings (EPSS) were enabled on the Corral 1101 as of May 26, 2024. The first protective device to respond to the incident on June 5, 2024, was LR 220994. This LR is a Beckwith, revision 8.1 which was placed on Mode 3 during the time of incident. The LR operated as programmed, tripping at 2023 hours on a line to ground fault, clearing the fault in 98 milliseconds.

Ignition Impact

The ignition event on June 6, 2024, was caused by equipment failure. The incident pole has prior tags dating back to 2019 indicating the pole has signs of decay and will need a full replacement along with a cutout replacement. The pole underwent further inspections noting that it showed signs of being overloaded, in 2023, with no action taken to correct the load. As time progressed without any action taken to remediate the prior year's discovery about a compromised pole stability, the cutout gave away in June 2024. The responding troubleshooter noted all cutouts were showing signs of heavy load, which lead the cutout to fail. The Part 44 cutout bottom burned off at the bottom causing sparks to ignite the vegetation underneath the pole, starting a grass fire that was less than 0.25 acres in size.

Sequence of Events

June 5, 2024

- 2023 hours – First No Light reported, 1,650 customers without power
- 2025 hours – LR 220994 opened
- 2029 hours – Troubleshooter #1 dispatched, unavailable to take call
- 2037 hours – Troubleshooter #2 dispatched
- 2038 hours – Troubleshooter #3 dispatched
- 2125 hours – Troubleshooter #3 onsite
- 2129 hours – Troubleshooter #2 onsite

- 2251 hours – LR 220994 closed, 1,650 customers restored

Corrective Notification Associated with Ignition

A corrective tag, EC Notification 129027107 was created on June 5, 2024, by the responding troubleshooter to replace the Part 44 cutout with a Part 57 Solid Blade cutout. This work was completed by a PG&E repair crew on June 6, 2024, where the cutout was replaced with a Part 57 Solid Blade cutout.

Pending Work

Type	Number	Description	Priority	Date Identified	Due Date
EC Notification	116749659	Replace pole, decay/rotten, cutout bad	E	03/16/2019	03/16/2020
	129376507	Replace crossarm, pole, operating number	E	08/10/2024	08/10/2025
COE Notification	126683748	Overloaded pole – Test	E	07/27/2023	08/03/2023
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

Source Side Structure		
Info / Inspection	Most Recent Date	Findings
Install Date:	1997	Class 4, 45', Douglas Fir wood pole
Inspection:	07/27/2023	GO 165 Inspection identified rotten/decayed pole will need a load test performed
	05/19/2020	GO 165 Inspection did not identify any corrective action warranted
Patrol:	N/A	
Corrective History:	10/13/2020	Repair cutout (tag cancelled, EC # 119946724)
	07/27/2023	Pole overloaded (tag cancelled, EC # 126683748)
	08/12/2024	Crossarm decay, woodpecker damaged (Priority E tag, EC# 129376507)
Aerial Inspection Records:	N/A	
VM Inspection:	N/A	
EVM Inspection:	N/A	
Equipment Test:	N/A	
Pole Intrusive Test:	08/22/2019	Test and treat – passed

WSIP Inspection:	03/16/2019	Tree/Vine removal
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*Incident Location: Pole SAP ID: 102040219

Hazard Barrier Analysis:

Hazard	Equipment Failure	Sub-Hazard	Cutout Failure
Target	Cutout failed, causing bottom to fall off hitting the regulator and spreading sparks		
Barrier	Expected vs. Observed Performance	Why did the barrier not prevent the ignition event? (See ICF Codes)	Opportunity
Barriers that Negatively Affected Ignition			
Field Safety Reassessment	Expected Performance: Perform annual safety re-assessments of tags to document if there has been a change to field condition of non-conformance that poses increased risk to safety and repair prior to failure/ignition Observed Performance: Barrier did not perform as expected	A1C1C2D6 – Limitation: Visibility Limitation; Equipment Condition Visibility; Other condition not visibly apparent	Damages to pole and cutout were not addressed by end date in tag created
Equipment Work Management	Expected Performance: Complete maintenance identified through patrols and inspections in timely and correct manner. (Assess this barrier if there was any overdue or pending work; Observed Performance: Barrier did not perform as expected	A1B4C1D1 – Limitation: Operational Limitation; Work Delay or Cancellation; Identified work cancellation	Pole identified as needing testing for decayed pole/damage, tag was not worked
Barriers that Positively Affected Ignition			
Enhanced Powerline Safety Settings - Instantaneous Trip Settings	Expected Performance: Automatically turn off power when a hazard is detected to reduce the risk of ignition in High Fire Risk Areas. Set protective devices to operate quickly when a fault occurs but not under typical operating conditions for the line. Observed Performance: Barrier performed as expected	A4B1C3D1 – Strategy: EPSS Strategies: EPSS Operations; Conditions; Coordination – nearest protective device operated first	LR 220994 enabled and operated as designed

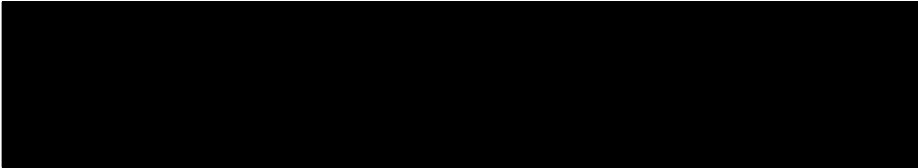
This report is preliminary and based on available information as of **September 4, 2024**; event data is subject to change based upon subsequently discovered information.

Barriers that were Assessed as Opportunities			
Pole Clearing Program	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.	N/A	Opportunity to extend pole clearing into Tier 2/Tier 3 areas to prevent ignitions. This pole was not cleared at base.





Potential Next Steps / Associated CAP Items:

- Submitted CAP #129675478 to suggest IR tags be standalone tags and not to be bundled with other tags, preventing cancellation and transfer errors that lead to failures and ignitions.

Single Line Diagram



LEGEND

 Substation
 Fuse
 Line Recloser
 Area of Interest

Photos and Diagrams of Events



Photo 1: EDGIS overview of location of where the fire occurred.

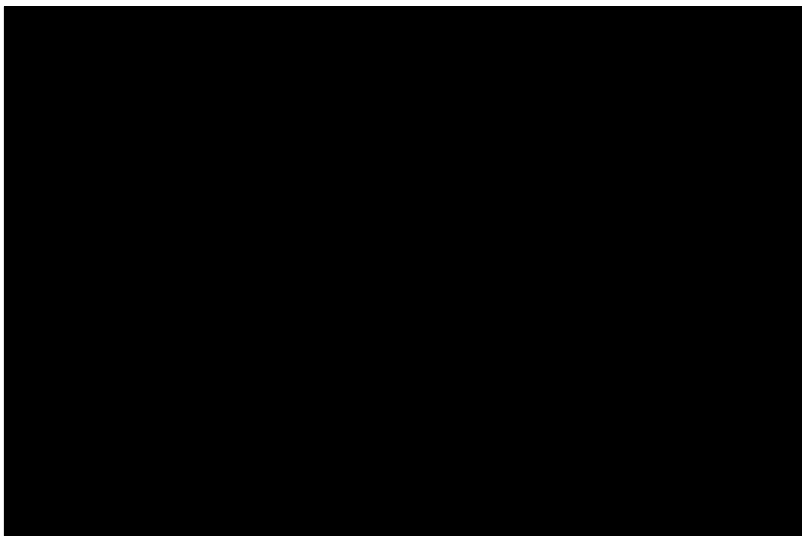


Photo 2: Google Earth overview of location of where the fire occurred.



Photo 3: 2019 inspector photo showing large crack in pole.



Photo 4: 2022 inspector photo showing large crack in pole and cutout.

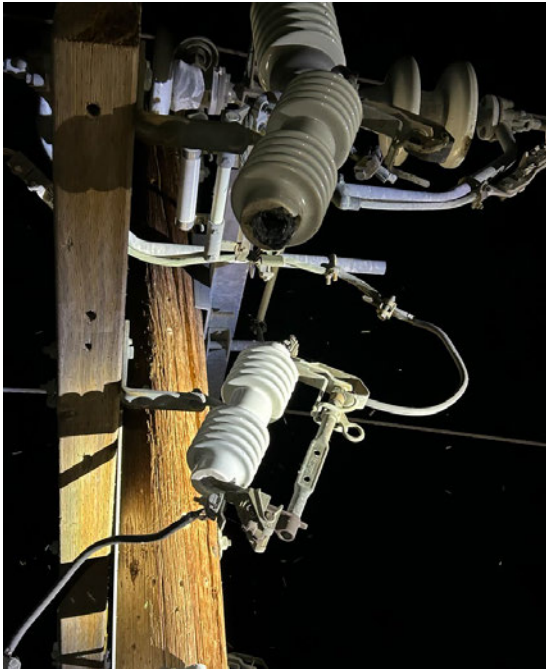


Photo 5: June 5, 2024, troubleshooter photo of failed cutout.



Photo 6: June 5, 2024, troubleshooter photo of fire footprint

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Doc. R18 – Mar 2024

Internal

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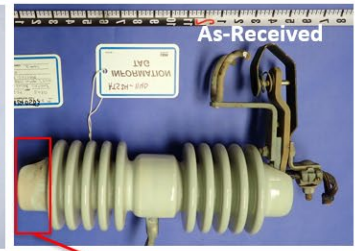
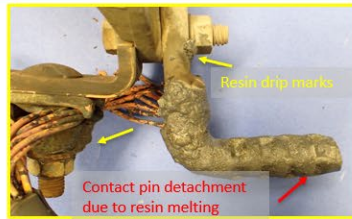


Index 583 Corral 1101 Reg R-166 Cutout

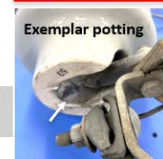
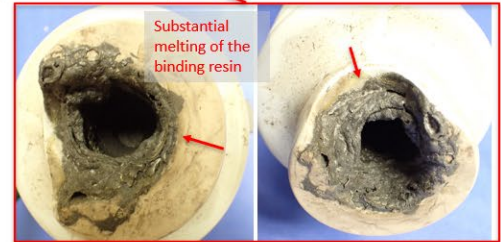
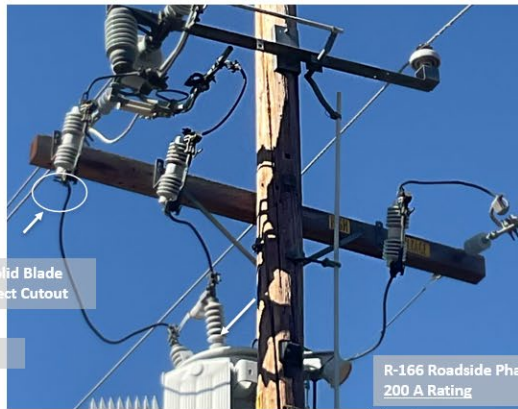
EQUIPMENT INFO

SAP Equipment: 102040219
R-166 Device ID: 220994
Year Pole Installed: 1997 (EDGIS)

Lat: 38.131738
Long: -120.926578



Incident Photo



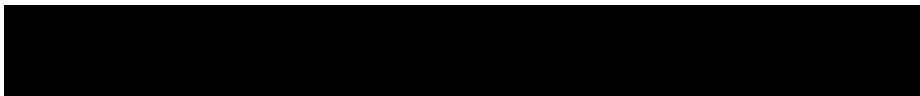
Epoxy resins commonly used as cutout potting material	Bisphenol-A (BPA) Melting point: 157 °C +	Cycloaliphatic Epoxy Melting point: 85 °C ++
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* <https://doi.org/10.1016/j.jlp.2016.08.024>

** <https://thegundcompany.com/wp-content/uploads/2023/02/Cycloaliphatic-Epoxy-Materials-Datasheet.pdf>

Photo 7: Findings of testing conducted by ATS.

Attachment



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