



Preliminary Ignition Investigation Report

Ignition Database Index:	20240608
Electric Incident Investigation (EII) Number:	N/A
Incident Name:	Madrone
PG&E Facility Ignition?	Yes
CPUC Reportable Ignition?	Yes
Date & Time of Incident:	June 7, 2024 at 1521 hours
Street Address:	[REDACTED], Napa
City:	Napa
County:	Napa
Latitude/Longitude:	[REDACTED]
State Responsibility Area (SRA) / Local Responsibility Area (LRA) / Federal Responsibility Area (FRA)	State Responsibility Area
PG&E Division:	North Bay
High Fire Threat District (HFTD):	Tier 2
High Fire Risk Area (HFRA):	Yes
EPSS Buffer:	No
Fire Index Area (FIA):	180
Fire Potential Index (FPI) Rating: FIA	R1
Fire Potential Index (FPI) Rating: Circuit	R2
Was there a PSPS event at the time of ignition?	No
Suspected Initiating Event:	Vegetation
Failure Driver:	Contact from object
Failure Sub-driver:	Contact - Vegetation
Circuit:	Silverado 2102
Circuit Protection Zone:	Silverado 2102714
Nominal Voltage:	21kV
Pole SAP Equipment ID:	103805719
Subject to PRC 4292 Veg Pole Clearance:	No
PG&E Equipment associated with ignition:	4/0 aluminum conductor, kingpin, insulator
EPSS enabled at time of ignition?	Yes
Fault Type:	Line to Line
Wire Down (Primary)?	Yes
Lead Agency/Agency Having Jurisdiction:	CAL FIRE
Fire Size:	1 meter - <3 meters

FAS Field Remarks:	Tag made for crew to repair one span of wire down 4/0 Al. wire pulled out of deadend shoe at sw 1489 one broken kingpin on loc 2 one broken insulator pin on loc 3
HAWC Summary:	Units responded to an incident at [REDACTED]. Fire is being reported as forward progress stopped with a current size of 0 acre 10 x 10 spot. OMT showing 2 outage (OIS#2479500, 2479498) on the SILVERADO 2102 , 043432102, EPSS enabled. EPSS enabled circuit SILVERADO 2102 , 043432102 within .25 miles of the fire. Small spot. Notifications have been made to: DCC PSS HAWC Ops
Injuries / Fatalities / Property Damage / Media Attention:	No/No/No/No
Weather Conditions:	At 1520 hours nearest the Incident Location: Temperature: 82.0°F Relative Humidity: 45% Wind Speed: 0.7 mph from the east-southeast Wind Gust: 4.2 mph
Red Flag Warning (RFW) / High Wind Warning (HWW):	No/No
911 Standby Relief Time:	N/A
OIS #:	2479498
ILIS #:	24-0074817
FAS #:	T006414297, T006414320
TOTL #:	N/A
Assigned Attorney:	N/A
Ignition Investigator & Phone:	[REDACTED]

Executive Summary

On June 7, 2024, at 1516 hours, a SmartMeter™ on the Silverado 2102 21kV three-phase overhead distribution circuit recorded a First No Light (FNL) event and went offline. At the same time, a line sensor event was detected. At 1520 hours, line recloser (LR) 714 opened automatically. At 1521 hours, a PG&E troubleshooter was dispatched to the Incident Location in response to a customer report of an explosion and wires down. Upon arrival at the Incident Location at 1527 hours, the troubleshooter found a burned area between 1 and 3 meters in size in grass fuel that had been suppressed by CAL FIRE at the base of pole SAP ID 03805719 (Pole #1), and two spans of 4/0 aluminum triplex wire down. Additionally, an insulator and a kingpin were damaged and required repair. The troubleshooter found a fuse on one phase at source side device 9877 open during their patrol. It is suspected to have operated during the ignition event, however the cause of this operation could not be definitively determined. The troubleshooter identified a fallen tree branch as the cause of the ignition and equipment damage. Three EC notifications were submitted for repairs:

- 'A' priority notification 129037666 was submitted for repair of two spans of 4/0 aluminum wire conductor at Pole #1.

- 'A' priority notification 129037667 was submitted for repair of a kingpin and replacement of tie wires at pole SAP ID 102260996 (Pole #2).
- 'A' priority notification 129037795 was submitted for repair of an insulator at pole SAP ID 103598985 (Pole #3).

On June 7 at 1836 hours, a PG&E repair crew was dispatched to the Incident Location to repair damages related to the tree failure and ignition. Repairs were completed and all customers were restored at 0132 hours on June 8, 2024.

On June 12, 2024, a PG&E vegetation management inspector (VMI) performed a Fire Incident Investigation and Extent of Conditions (XoC) patrol at the Incident Location. During the investigation, the VMI identified the Incident Tree as a 43-inch diameter at breast height (DBH), 90-foot tall valley oak (*Quercus lobata*). A large, 13-inch diameter branch from high in the tree's canopy broke and fell onto conductors, causing both line-to-line and line-to-ground faults. While the tree showed evidence of prior utility pruning, no defects or decay to indicate a failure cause were observed at the point of failure. During the XoC patrol, the VMI inspected five spans in every direction but did not identify any trees of similar species or concern that warranted work. The last routine maintenance inspection performed by Vegetation Management (VM) was performed on May 31, 2023, and the last Second Patrol inspection was performed on April 8, 2024. No work was prescribed for the Incident Tree during either inspection. VM records indicate that the Incident Location had not been inspected under the Enhanced Vegetation Management (EVM) program. The last work prescribed for the Incident Tree was for side pruning and it was completed on May 24, 2022.

During the system protection analysis initiated as part of this investigation, the Distribution Planning – Protection team discovered that the EPSS settings for line recloser 714 were removed, resulting in a delayed relay operating time. This change was not documented. CAP# [129083390](#) was submitted on June 17, 2024, to track the investigation into the cause of the improper settings. During the investigation for this CAP, 65 additional EPSS-enabled devices were identified for further review. The CAP was closed on July 15, 2024, with 39 devices awaiting review.

It was a cool dry day on June 7, 2024 near the Incident Location. The high temperature for the day was 85.0°F at 1400 hours and the low temperature was 55.9°F at 0620 hours. The relative humidity was as high as 91% at 0630 hours and was as low as 44% at 1500 hours. The strongest wind gust was 6.1 miles per hour (mph) at 1650 hours from the east.

This information is preliminary and subject to change based on new data.

System Protection Analysis

Upstream LR 714 was EPSS enabled at the time of the ignition by placing in group Alternate 1. The actual Alternate 1 settings in the field did not match the original 2021 EPSS settings that were documented. This resulted in instantaneous trip settings not being enabled. Tree contact resulted in a line-to-line (A-B phase) and a line-to-ground (C phase) fault. LR 714 tripped and cleared the fault. The fault magnitude for A phase was 2755A, phase B was 2931A, and phase C was 2662A. Relay operating time was 578 milliseconds (ms), outside of the expected time of 100ms. Proper Alternate 1 EPSS settings would have resulted in a relay operating time of 73ms. Downstream fuse 9877 appears to have operated at the time of the ignition as well, however the cause of this operation could not be determined. No high impedance faults or partial voltage alarms were detected.

Ignition Impact

The ignition resulted in an approximately 10-foot by 10-foot grass fire. No private property damaged. A riser cover at the base of Pole #1 was slightly damaged by the fire but was not replaced. 1,118 customers lost power in the initial outage at 1521 hours on June 7, 2024. At 1737 hours, LR 714 was closed, restoring nine customers. At 1744 hours, LR 589596 was closed, restoring 728 customers. At 0039 hours on June 8, 2024, LR 714 was opened for repairs, de-energizing nine customers. At 0107 hours, LR 714 was closed, restoring 28 customers. At 0132 hours, switch 914108 was closed, restoring the remaining 362 customers.

Sequence of Events

June 7, 2024

- 1516 hours – First SmartMeter™ went offline. First line sensor event detected.
- 1519 hours – First No Light recorded by ILIS.
- 1520 hours – IRWIN response time. LR 714 opened automatically.
- 1521 hours – LR 714 opened, PG&E troubleshooter dispatched.
- 1614 hours – Troubleshooter reported that a tree limb fell through the conductor. Two spans of one phase of wire were down.
- 1626 hours – Troubleshooter arrived at incident location.
- 1635 hours – Switch 625897 was opened by the troubleshooter.
- 1700 hours – Fuse 783 was opened by a troubleshooter.
- 1716 hours – Switch 509115 was opened by a troubleshooter.
- 1717 hours – Switch 914108 was opened by a troubleshooter.
- 1737 hours – LR 714 was closed remotely.
- 1744 hours – LR 589596 was closed remotely.

June 8, 2024

- 0039 hours – LR 714 was opened remotely.
- 0104 hours – Fuse 783 was closed by a troubleshooter.
- 0107 hours – LR 714 was closed remotely.
- 0132 hours – Switch 914108 was closed, resulting in full restoration.

Corrective Notification Associated with Ignition

EC 'A' priority notification 129037666 was submitted on June 7, 2024 to repair one span (80 feet) of 4/0 AL TPX conductor at Pole #1. A PG&E repair crew completed the notification on June 7, 2024.

EC 'A' priority notification 129037667 was submitted on June 7, 2024 to replace a broken kingpin and tie wires at Pole #2. A PG&E repair crew completed the notification on June 7, 2024.

EC 'A' priority notification 129037795 was submitted on June 7, 2024 to replace a broken crossarm-mounted insulator at pole Pole #3. A PG&E repair crew completed the notification on June 7, 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

Source Side Structure	Pole #1	
Info / Inspection	Most Recent Date	Findings
Install Date:	2016	
Inspection:	June 19, 2022	No abnormal findings
	June 3, 2021	No abnormal findings
Patrol:	N/A	
Corrective History:	N/A	
Aerial Inspection Records:	N/A	
VM Inspection:	April 8, 2024	Tree not prescribed for work
EVM Inspection:	N/A	Not in EVM scope
Equipment Test:	N/A	
Pole Intrusive Test:	N/A	
WSIP Inspection:	May 17, 2019	No abnormal findings

*Incident Location: SAP ID: 103805719

Load Side Structure	Pole #2	
Info / Inspection	Most Recent Date	Findings
Install Date:	2010	
Inspection:	June 19, 2022	No abnormal findings
	June 8, 2021	No abnormal findings
Patrol:	N/A	
Corrective History:	N/A	
Aerial Inspection Records:	August 29, 2019	No abnormal findings
VM Inspection:	April 8, 2024	Tree not prescribed for work
EVM Inspection:	N/A	Not in EVM scope

Equipment Test:	N/A	
Pole Intrusive Test:	October 5, 2012	Pass
WSIP Inspection:	April 15, 2019	No abnormal findings

*Incident Location: SAP ID: 103805719

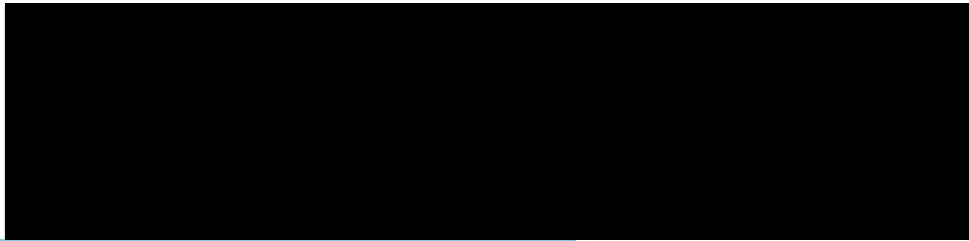
Hazard Barrier Analysis:

Hazard	Vegetation Contact	Sub-Hazard	Fallen branch
Target	Fallen branch into conductors resulting in 100 square-foot fire in Tier 2 HFTD.		
Barrier	Expected vs. Observed Performance	Why did the barrier not prevent the ignition event? (See ICF Codes)	Opportunity
Barriers that Negatively Affected Ignition			
Enhanced Powerline Safety Settings - Instantaneous Trip Settings	Expected Performance: Instantaneous trip settings would de-energize the overhead conductor quickly to prevent an ignition. Observed Performance: Barrier did not perform as expected	A4B1C2D2 – Settings not adequate to prevent ignition event	Barrier was not properly implemented because of a records error.
Barriers that were Assessed as Opportunities			
SEL ARC Sense on 4-Wire and PN Systems	Expected Performance: Quickly de-energize overhead conductors when a line-to-ground fault is detected. Observed Performance: Barrier did not exist.	Barrier was not present.	The presence of this barrier may have de-energized conductors, preventing the ignition.

Potential Next Steps / Associated CAP Items:

CAP# [129083390](#) was submitted on June 17, 2024 to investigate the cause of incorrect EPSS settings for LR 714. The EPSS settings on LR 714 were removed and not documented, which caused it to not operate as quickly as intended for faults during EPSS season. Sixty-five other devices were reviewed for non-conformance. The CAP was completed on July 15, 2024 with plans to submit 39 remaining devices for review by Distribution Line Technicians by August 9, 2024.

Single Line Diagram



LEGEND



Substation



Fuse



Line
Recloser



Area of
Interest

Photos and Diagrams of Events

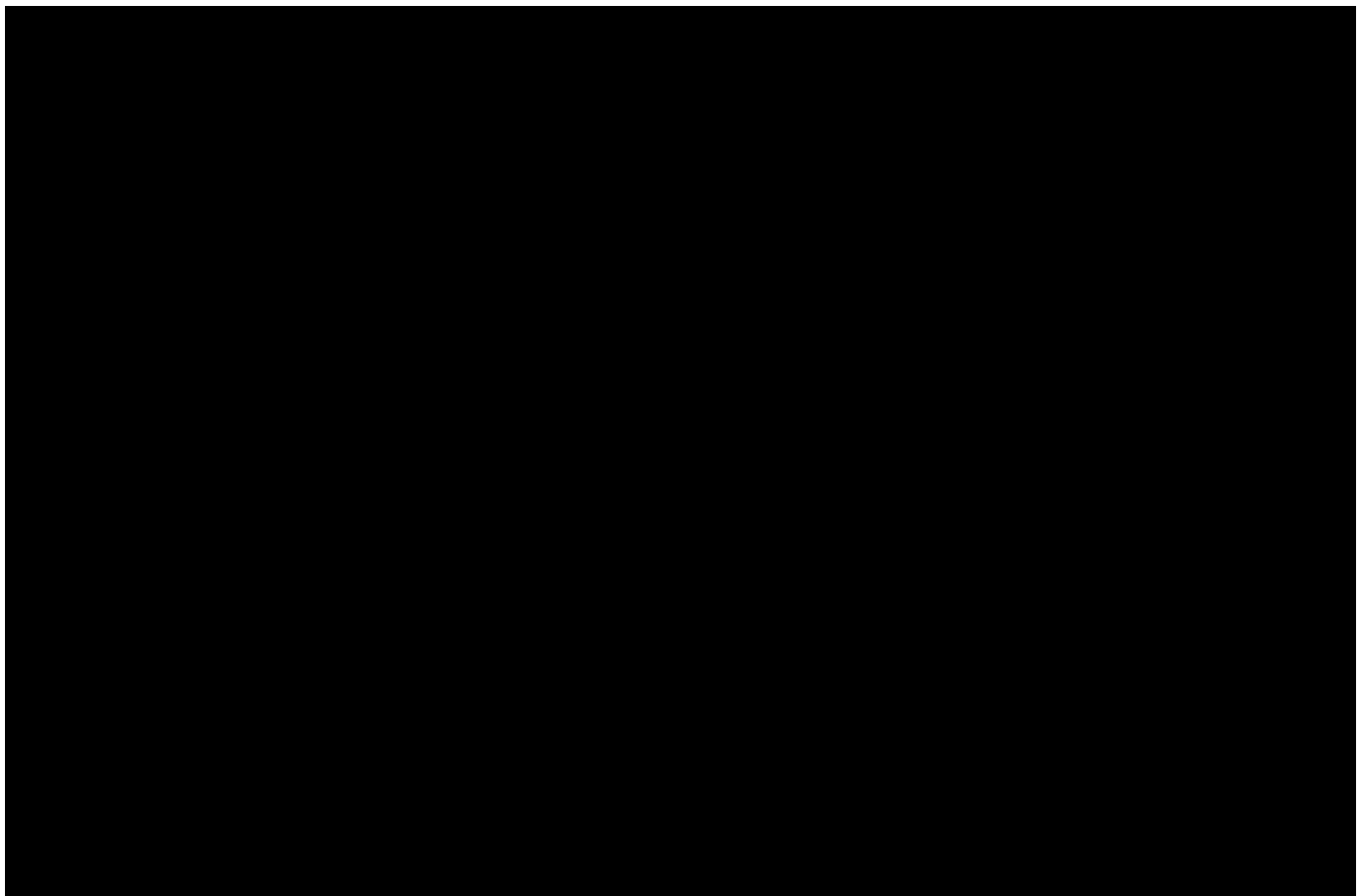


Figure 1: Satellite imagery showing the geographic location of Poles #1, #2, and #3, the approximate Ignition Location, and the Incident Tree location.



Figure 2: Fire footprint around Pole #1. Photo collected by PG&E ignition investigator.



Figure 3: Incident Tree with failed limb at base. Photo collected by PG&E troubleshooter.

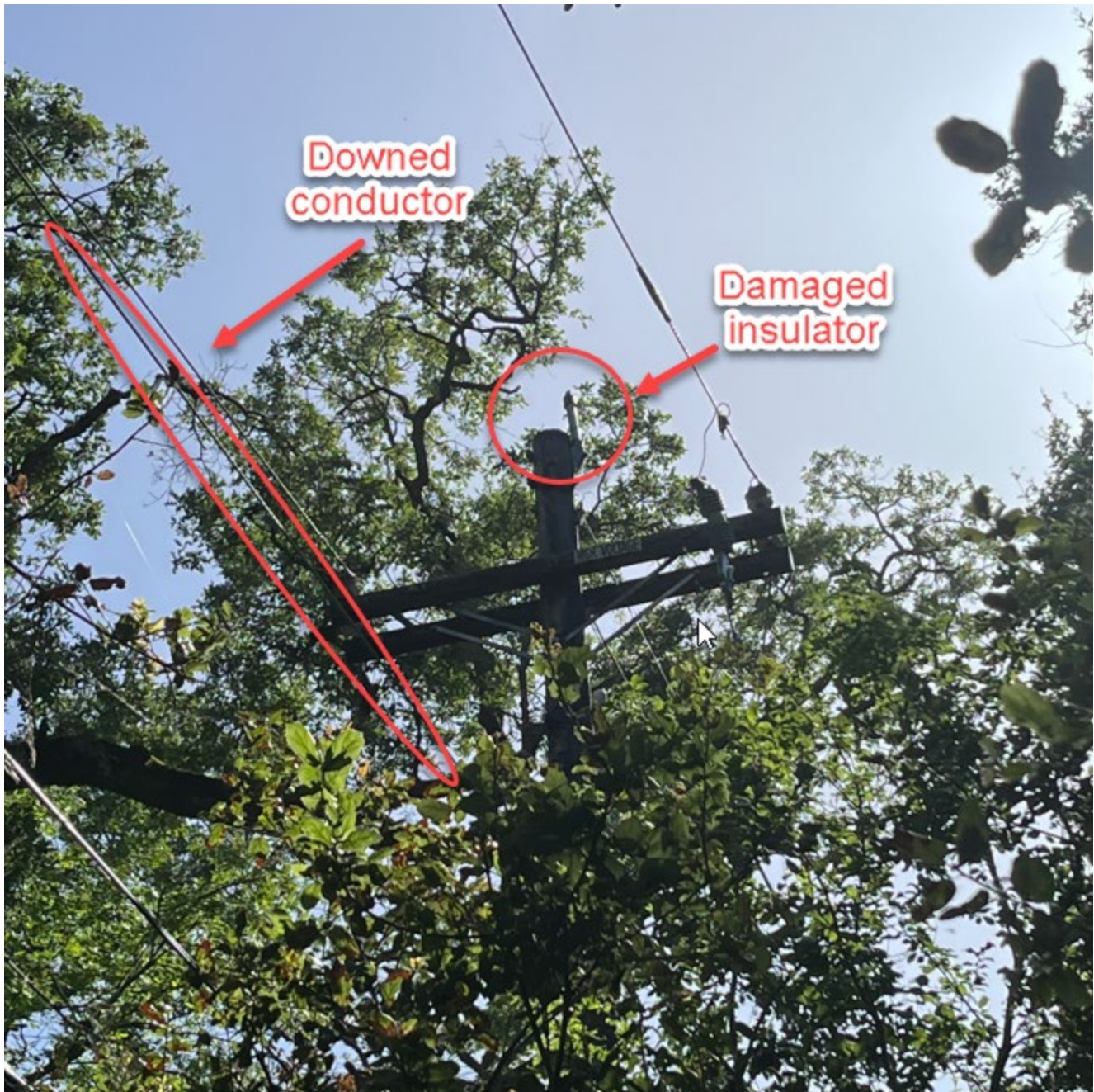


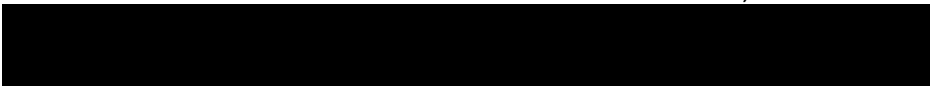
Figure 4: Photo of damaged Pole #2. Photo collected by troubleshooter.



Figure 5: Photo showing the broken end of the branch that caused the ignition. No defect or decay is present in the broken end. Photo collected by VMI.

Attachments

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



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