Incident Investigation Report
Reference Documents
SED Incident E20211223-01
(Brewer Fire)

PACIFIC GAS AND ELECTRIC COMPANY

ELECTRIC INCIDENT REPORT FORM

TO: CALIFORNIA PUBLIC UTILITIES COMMISSION

PG&E Reference Number: EI210707A

CPUC Website	December 23, 2021 at 0950 hours
CPUC Recipient	**Date & Time CPUC Notified**
1-800-235-1076	PG&E
Telephone Number	**Reported by**
	415-973-2782
	Telephone Number

Report Type: 20-Day Report

☐ ***INJURY/FATALITY:*** An incident which results in a fatality or personal injury to an employee or 3rd party rising to the level of in-patient hospitalization and is attributable or allegedly attributable to utility owned electric facilities. Incidents involving motor vehicles are not reportable unless they result in death or injury attributable or allegedly attributable to electrical contact with the utility owned electric facilities.

☐ ***MEDIA:*** An incident that is attributable or allegedly attributable to Pacific Gas and Electric owned electric facilities and is subject to significant public attention and/or media coverage.

☒ ***PROPERTY DAMAGE:*** A single electric incident where property damage of the utility or a single 3rd party is estimated to exceed $50,000 and is attributable or allegedly attributable to utility owned electric facilities.

☐ ***OPERATOR JUDGEMENT:*** Any incident that is significant in the judgement of the operator, even though it may not meet the incident reporting criteria.

20-Day Report Sent to CPUC – Date: January 21, 2021

Initial Report Sent to CPUC – Date: December 23, 2021

PACIFIC GAS AND ELECTRIC COMPANY

ELECTRIC INCIDENT REPORT FORM

TO: CALIFORNIA PUBLIC UTILITIES COMMISSION

PG&E Reference Number: EI210707A

20-Day Report

Date and Time of Incident:	July 7, 2021 at 1800 hours				
Date and Time Incident Determined Reportable:	December 23, 2021 at 0855 hours				
Location of Incident:	[redacted]				
City: Grass Valley		**Division:** Sierra		**County:** Nevada	
Circuit/Facility: Higgins 1103		**Voltage:** 12kV			
Service Interrupted (Date and Time):	July 8, 2021 at 0135 hours		**Total Customers Affected:**	100	
Service Restored (Date and Time):	July 8, 2021 at 0335 hours				

Description of Incident:

On July 7, 2021, at 1900 hours, a PG&E field supervisor listening to a scanner became aware of a fire near a PG&E pole ("Incident Pole") at the intersection of Brewer Road and Iron Horse Drive in Grass Valley ("Incident Location"). The supervisor arrived at the Incident Location and observed that CAL FIRE was working to contain the fire and requested that a troubleman come to inspect and photograph the Incident Pole.

The responding troubleman arrived onsite at 1930 hours to investigate the event but was unable to access the Incident Pole until 2030 hours due to ongoing firefighting efforts. At that time, the CAL FIRE investigator reported the fire was contained and asked that the troubleman investigate a "bright red spot" on jumper supported by the Incident Pole nearest the fire which is served by Higgins 1103 12kV Overhead Distribution Circuit. The troubleman observed a paddle jumper on a switch visibly "burning out" (glowing red) on the Incident Pole and determined that the line was still energized.

The PG&E supervisor called in a repair crew and stayed at the scene. The troubleman left the scene at 2100 hours and returned at 2300 hours when the repair crew arrived to de-energize the line to allow for safe repairs. The crew installed a jumper to bypass the Pole and then initiated an Electric Corrective ("EC") notification to replace the Incident Pole and switch that was damaged as a result of the incident. 100 customers sustained a 120-minute outage during the repair activities. The troubleman stayed at the scene while temporary repairs were completed, then energized the line and left the Incident Location on July 8, 2021 at 0340 hours. The repair crew replaced the Incident Pole and switch on July 13, 2021.

PG&E obtained an Investigation Report from CAL FIRE, which notes "unable to determine cause" though it does indicate that the fire's, "probable cause was the failure of the power pole hardware possibly arcing or melting and falling on to dried vegetation." The incident type listed on the report is brush or brush-and-grass mixture and estimated no property or content loss, as well as zero structures damaged or destroyed.

PG&E is not aware of any injuries or fatalities that resulted from this incident. The repair crew initially retained the incident paddle jumper as evidence however, it was later discarded as it was not believed that any further investigation or reporting was required at the time of the incident.

The most recent General Order ("GO") 165 patrol was completed on January 4, 2021 and the last inspection was completed on June 5, 2018. In reviewing the last two Patrol and Inspection documents PG&E found that there were several EC notifications created prescribing assessment and work to the Incident Pole.

- May 5, 2013: Inspection prescribed work on the Incident Pole hardware. EC notification #106962580 created concerning Switch 2295 missing an arcing suppressor on pin 269.
- October 15, 2013: EC Notification #106962580 canceled, noting that the work belonged to another program, however, the notes also confirm the switch was repaired on pin 247 (pin 269 was incorrect).

- June 6, 2018: Inspection requested Incident Pole be assessed for woodpecker damage via EC notification #114668140. No work was prescribed for Switch 2295.
- January 31, 2019: EC #114668140 was completed and closed with notes stating woodpecker holes ("WPH") were fixed.
- March 27, 2019: The Wildfire Safety Inspection Program ("WSIP") noted excessive woodpecker and insect damage on the Incident Pole. EC notification #116854528 was created.
- May 9, 2020: A safety reassessment was completed noting significant bird damage and shell rot and a need to replace the pole and switch and expedite work before the 2021 fire season.
- November 9, 2020: EC Notification #119998009 created for Switch 2295 was identified as having an elevated temperature during an infrared ('IR") inspection.
- November 9, 2020: PG&E field personnel reviewed the Forward Look Infrared ("FLIR") image and concluded that the elevated temperature was not valid.
- March 12, 2021: A safety reassessment occurred for EC Notification #116854528. PG&E personnel indicated that the tag should be canceled as the Incident Pole was in good condition and did not need to be replaced. Final comments from this notification on March 30, 2021 indicate that the replacement was due to pole test data, and called for expedited replacement of the incident pole by May 31, 2022 (before the following fire season).
- March 31, 2021: A visual safety reassessment via EC Notification #119998009 found Switch 2295 to be in good condition (i.e., without IR or thermal measurements). PG&E personnel responding to the EC notification would not normally attempt to take thermal measurements. EC Notification #119998009 was cancelled.

PG&E was actively managing this pole replacement, however the incident occurred on July 7, 2021 before replacement could be implemented. The Incident Pole was replaced via EC notification #121681165 which represent the repairs from this event.

On December 22, 2021, PG&E Law-Claims received a claim from the property owner near the Incident Location alleging that PG&E equipment caused property damages resulting from the fire exceeding $50,000. PG&E Law-Claims reviewed the claim and PG&E subsequently reported this incident to the CPUC under the Property Damage criterion on December 23, 2021.

PG&E is continuing its investigation into this incident. This information is preliminary, and all the times, customer numbers and measurements mentioned in this report are approximate. PG&E is fully cooperating and communicating with external agencies as required.

Attachments:

- Attachment 01_2020 GO165 patrol records_CONF.pdf
- Attachment 02_2021 GO165 patrol records_CONF.pdf
- Attachment 03_2013 GO165 inspection records_CONF.pdf
- Attachment 04_2018 GO165 inspection records_CONF.pdf
- Attachment 05_2019 WSIP inspection records_CONF.pdf
- Attachment 06_EC tag_114668140_CONF.pdf
- Attachment 07_EC tag_119998009_CONF.pdf
- Attachment 08_EC tag_116854528_CONF.pdf [1]
- Attachment 09_EC tag_106962580_CONF.pdf
- Attachment 10_EC tag_121681165_CONF.pdf [2]
- Attachment 11_FAS tag_0004125021_CONF.pdf

[1] notes Iron Horse Rd, it is for Iron Horse Drive

[2] notes Iron Horse Rd, it is for Iron Horse Drive

PACIFIC GAS AND ELECTRIC COMPANY

ELECTRIC INCIDENT REPORT FORM

- Attachment 12_ILIS_21-0086235_CONF.pdf
- Attachment 13_ Fire Report_CONF.pdf
- Attachment 14_ Photos.pdf
- Attachment 15_Incident Map/Diagram_CONF.pdf

PACIFIC GAS AND ELECTRIC COMPANY
CPUC – SED Data Request
Brewer Fire – SED-001

Requesters: Hassan Jahami, Emily Fisher, Will Dundon
Request Date: March 29, 2022
Response Date: May 2, 2022

Question 48:
Describe the ambient conditions (e.g., wind speed, dry-bulb temperature, relative humidity, etc.) as recorded by PG&E's nearest weather station at the time of the incident.

Response to Question 48:
At the nearest weather station at the time of the incident, the temperature was 91.9F and the relative humidity was 23%. The winds were sustained at 3.7 mph out of the south with a gust up to 7.0 mph.

PACIFIC GAS AND ELECTRIC COMPANY
CPUC – SED Data Request
Brewer Fire – SED-001

Requesters: Hassan Jahami, Emily Fisher, Will Dundon
Request Date: March 29, 2022
Response Date: My 18, 2022

Question 4:
The 20-Day Report (PG&E Reference Number EI210707A, sent to CPUC January 21, 2022) indicates that the incident paddle jumper was discarded.

a. Provide PG&E procedures regarding preservation of evidence related to wildfire incidents.
b. Explain why the paddle jumper was discarded and the reasoning for that decision.

Response to Question 4:
The paddle jumper, initially collected by the repair crew, was discarded because it was not believed that any further investigation or reporting was required at the time of the incident. CAL FIRE's Investigative Report estimated no property or content loss, as well as zero structures damaged or destroyed.

Our procedures regarding preservation of evidence are privileged but were followed in response to this incident.

PG&E's 2019 Corrective Tag Execution Approach

SUMMARY

This bulletin summarizes PG&E's modification in execution approach for Electric Corrective (EC) / Line Corrective (LC) tags in the field as communicated to the California Public Utilities Commission (CPUC) on August 20, 2019, via Wildfire Safety Inspection Program (WSIP) Compliance Plan and Interim Controls.

Based on a significant increase in volume of the tags from the 2019 Wildfire Safety Inspection Program (WSIP), it is anticipated that some number of open notifications will not be resolved prior to the assigned SAP due date. The modified execution approach will follow a risk-informed, circuit-based (Transmission and Distribution only) approach for all open Priority E and F tags, to which Work and Resource Management group will specify the execution prioritization independent of the associated compliance date.

PG&E will monitor and perform a safety re-assessment on an annual basis before the initiation of Fire Season (as determined by the California Department of Forestry and Fire Protection (CALFIRE)) each year for the tags meeting the following conditions:

- Exceed their compliance date
- Remain open
- Contain time-dependent asset deterioration based on "Facility, Damage, Action" (FDA) SAP work management code of the corrective tag
- On line temporarily de-energized (Transmission Line only)

Level of Use: Informational Use

AFFECTED DOCUMENT

Wildfire Safety Inspection Program (WSIP) Compliance Plan and Interim Controls, August 20, 2019

TARGET AUDIENCE

Utility employees, electric inspection, maintenance, and construction employees, electric estimators

WHAT YOU NEED TO KNOW

1 PG&E's 2019 WSIP Scope and Resulting Tags

1.1 PG&E's 2019 WSIP involved inspecting approximately 695,000 distribution structures, 50,000 transmission structures and 200 substations that are in high fire risk areas.

1.2 As a result of the inspections, PG&E identified approximately 277,000 corrective actions, which have resulted in the creation of EC or LC tags (see Table 1 on Page 2).

PG&E's 2019 Corrective Tag Execution Approach

1.2 (continued)

> **NOTE**
>
> EC is a nomenclature used for distribution, while LC is used for Transmission and Substation.

Table 1. EC and LC Tags

Asset Type	Tag Type	Approximate Tag Numbers
Electric Distribution	EC	177,000
Electric Transmission	LC	97,000
Electric Substation	LC	3,000

2 Specific Priority Tags (Priority H)

2.1 PG&E is forecasting that a significant number of moderate and low priority tags (Priority E and F tags, respectively) will not be completed in accordance with the timelines established in PG&E's programs to meet General Order requirements.

2.2 To address identified Priority E tags efficiently, while also mitigating the most risk system-wide, PG&E conducted a holistic desktop review of these identified tags for Distribution and Transmission systems. The review identified the tags that can be most efficiently and safely executed through the following project types:

1. Inclusion into existing capital projects
2. Cluster of tags into new system hardening projects
3. Proactive removal of idle or unnecessary electric facilities

2.3 Together, these identified tags are designated as specific priority (Priority H) – to distinguish from tags requiring individual execution.

3 Issue Prioritization Approach

3.1 PG&E utilized the following risk-informed prioritization approach to address the highest risk issues on PG&E's facilities (see Table 2 below).

Table 2. Tag Prioritization

Tag's Priority	Tag Type	Response/Timeframe
A	Emergency	Requires immediate response or stand-by
B	Urgent	Address within 3 months of the identification date
E & F	Risk-based	Prioritize based on wildfire risk circuit prioritization
H	Distribution only	Execute as a part of system hardening / proactive removal projects

3.2 Aligned with a risk-informed, circuit-based (Transmission and Distribution only) approach for Priority E and F tags, Work and Resource Management group follows the tag execution prioritization independent of compliance date for individual tags. In some cases, execution timing may shift based on unforeseen events such as inclement weather and accessibility or based on resource efficiency.

4 Tags Subject to Safety Re-Assessment

4.1 PG&E will monitor field conditions and perform safety re-assessments on an annual basis before the initiation of Fire Season (as determined by CAL FIRE) for the tags meeting the following conditions ("tags subject to safety re-assessment"):

- Exceed their compliance date
- Remain open
- Contain time-dependent asset deterioration based on "Facility, Damage, Action" (FDA) SAP work management code of the corrective tag
- On line temporarily de-energized (for Transmission only)

4.2 For the tags subject to safety re-assessment, a trained and qualified inspector will re-assess the field condition of the identified open corrective action (including Priority H tags) and create a written record in SAP.

1. The written record will document if there is an urgency in the field condition that would require escalation of the tag to Priority A or B.

4.3 For further information, see *VI. Safety Reassessment Process and Interim Controls*, of the Wildfire Safety Inspection Program (WSIP) Compliance Plan and Interim Controls.

DOCUMENT APPROVER

[redacted], Senior Director, Asset Strategy, Electric Operations

DOCUMENT CONTACT

[redacted] Senior Manager, Distribution Asset Strategy; Electric Operations

[redacted] Manager, Transmission Asset Strategy, Electric Operations

[redacted] Manager, Substation Asset Strategy, Electric Operations

INCLUSION PLAN

This bulletin will be incorporated into Electric Inspection and Maintenance guidance documents in the future.

Electric Overhead Tag

Notification #: 119998009

PM Order #:

Priority: E **Sub Priority:**

Date Identified: 10/29/2020 **Date Required:** 04/28/2021

Identified in Field By:	[redacted]	Plat:	Q0819
Street Address:	ACROSS STREET FROM [redacted]	Circuit:	15269-1103, HIGGINS
		SSD:	2295
City:	GRASS VALLEY	Equipment #:	100018477
Cross Street:	BREWER RD & IRON HORSE DR	Pin #:	
Division:	Sierra	Pole #:	
Latitude:	[redacted]	OIS #:	
Longitude:	[redacted]	SAP Func. Location:	ED.22-Q081900000.STRU.POLE
Description:	SWIT_BROK_REPL - ACROSS STREET FROM [redacted]	SAP Equipment:	100018477
		Accessibility Tier:	

Item Details

	Facility Type	Damage	Cause	Action
Item 1	SWIT Switch	BROK Broken/Damaged		REPL Replace

☐ Completed ☒ Canceled

☐ Pole Test Sheet

User Status

Conductor/Operating Information		Field Identification		Field Condition (Exposure)		Field Condition (Accessibility)		Other	
Status	Description	Status	Description	Status	Description	Status	Description	Status	Description
OH	Overhead			TER2	Tier2 Wildfire	IR	Infrared	PROG	Internal Program Requiremen
								ESTR	Estimate Required
								CNCL	Canceled
								SR21	Field Safety Reassessment-202
								CPGI	Completed by PG&E - PS&R In

Job Estimates

Est. Total Hrs. to Complete: 15

Est. Electric Crew Size: 03

WTC: 511, 2AA_Genl Repl_Est_Req_OH

Main Work Center: GRSSVLLY, Grass Valley

Gas Crew Size: 00

MAT:

Funded Repair Date:

Issued To

Reviewed By: _____ Date of Field Review: _____

Completed or Canceled in Field By (LAN ID): [redacted] If No LAN ID Last Name, First Name: _____

Complete or Cancel Date: 03/31/2021 Actual Hours: _____ *Check One: PG&E Crew ☐ T-Man ☐ Contractor ☐

*Check One: Completed ☐ Canceled ☒ Found Completed Upon Arrival ☐

Signature: _____

I verify that all maintenance on this notification is addressed (completed, canceled, or found completed upon arrival)

***Public Safety & Regulatory Reviewer: If notification was canceled, check one (required):**

☐ **CONV:** Converted to another Notif-Type

☐ **EROR:** Created in Error (Desk Cancelation)

☐ **PROG:** Completed under another Program

☐ **DUMM:** "Dummy" for order only

☐ **NCOA:** All Found Completed/Resolved on Arrival

☐ **DUPL:** Duplicate EC for Same Location

☒ **NOCR:** No Compelling/Regulator Condition Exist

Electric Overhead Tag

Notification #: 119998009

PM Order #:

Priority: E **Sub Priority:**

Date Identified: 10/29/2020

Date Required: 04/28/2021

List of Tasks on Notification

Reassess the condition	Completed By: [redacted]	Completion Date: 03/31/2021
Cancelled	Completed By: [redacted]	Completion Date: 03/31/2021

Field Comments:

Comments

11/09/2020 08:38:43 PST [redacted]

- Identified By Contractor : [redacted]

- Location : 1079

IR FINDING OSMOSE Switch Road Side, High Temp 103, Ref Temp 66.6,

Delta 36.4

11/09/2020 10:22:13 PST [redacted]

* 11/09/2020 10:22:13 PST [redacted]

Reason: Loading (Summer / IR)

FLIR IMAGE SHOW HIGH TEM 128.3, NOT 320.4 AS WRITTEN ON TAG. TEMP RISE

57 DEGREES

02/26/2021 04:24:27 PST [redacted]

02/26/2021-Submitted by [redacted]Mass Update the list of

notifications with new user status = SR21_WO0000000837942.

03/12/2021 16:20:23 PST INSPECTCPIC (INSPECTCPIC)

Safety Reassessment

Inspected by: [redacted]

Field Submission Date/Time: Mar 12, 2021 at 04:20 PM

005. Cancel - Not Valid

Comments: Ok to cancel tag. Switch is in good condition.

Additional Comments: Field Safety Assessment completed for Tier 2/3 EC

notifications that are not in 2021 work execution plan or scheduled

for detailed inspection

03/31/2021 08:09:04 PST [redacted]

Scenario 005 – Cancel Not Valid - NCOA

FDA		New	Priority	Comp
Anchor				
Broken/Damaged	Repair		E	
	Replace		E	
Corroded	Repair		E	
	Replace		E	
Missing	Install		F	
Soil/Eroded/Graded	Adjust		F	
	Replace		F	
Animal Mitigation				
Broken/Damaged	Replace		E	
Mitigation Missing	Install		E	
Bird Protection				
Bird Protection	Replace		E	
CB Pole				
Broken/Damaged	Replace		F	
Burnt	Replace		E	
Decayed/Rotten	Replace		F	
Booster/Regulator				
Broken/Damaged	Repair		E	
	Replace		E	
Burnt	Repair		E	
Excessive Operation	Overhaul		E	
Leaks/Seeps/Weeps	Clean		E	
	Repair		E	
	Replace		E	
Capacitor				
Broken/Damaged	Repair		E	
	Replace		E	
Burnt	Repair		E	
	Replace		E	
Leaks/Seeps/Weeps	Clean		B	
	Repair		E	
	Replace		E	
Climbing Space				
Obstructed	Adjust		F	

FDA		New	Priority	Comp
Conductor				
Broken/Damaged	Repair		E	
	Replace		E	
Burnt	Repair		E	
	Replace		E	
Clearance Impaired	Adjust		E	
	Install CL Pole		E	
	RayChem		E	
Floater	Repair		E	
Idle Facilities	Remove		E	
Improper Connection	Adjust		E	
Overloaded	Test		E	
Sag/Clearance	Adjust		E	
	Replace		E	
	Install Spreader Bracket		E	
Connector				
Burnt	Replace		E	
Corroded	Repair		E	
	Replace		E	
Incorrectly Installed	Replace		E	
Temp Differential	Replace		E	
Crossarm				
Broken/Damaged	Repair		E	
	Replace		E	
Burnt	Repair		E	
	Replace		E	
Decayed/Rotten	Repair		E	
	Replace		E	
Cutout				
Broken/Damaged	Repair		E	
	Replace		E	
Clearance Impaired	Adjust		E	
Flashed	Repair		E	
	Replace		E	
Decorative Streetlight				
Broken/Damaged	Replace		E	
Missing	Install		E	
Fault Indicators				
Broken/Damaged	Replace		E	
Ground				
Broken/Damaged	Repair		B	
	Replace		B	
Exposed	Repair		F	
Missing	Install		E	
Guy				
Broken/Damaged	Repair		E	
	Replace		E	
Clearance Impaired	Adjust		F	
Corroded	Repair		E	
	Replace		E	
Loose	Adjust		F	
Missing	Install		F	
Overgrown	Trim		E	
Strain/Abrasion	Adjust		F	
	Remove		F	
Guy Marker				
Missing	Install		F	
	Replace		F	

FDA		New	Priority	Comp
Hardware/Framing				
Bird Prot Required	Install		E	
Birdcage	Install		E	
Broken/Damaged	Repair		E	
	Replace		E	
Loose	Adjust		E	
Missing	Install		E	
High Sign				
Missing	Install		F	
Insulator				
Broken/Damaged	Replace		E	
Flashed	Replace		E	
Primary Squatter	Repair		E	
	Replace		E	
Secondary Squatter	Repair		E	
	Replace		E	
Jumper				
Burnt	Replace		E	
Clearance Impaired	Adjust		E	
	Replace		E	
LAPP Insulator				
Broken/Damaged	Replace		E	
Lightning Arrester				
Broken/Damaged	Repair		E	
	Replace		E	
Flashed	Repair		E	
	Replace		E	
Marking				
Broken/Damaged	Replace		F	
Missing	Install		F	
Molding				
Broken/Damaged	Repair		F	
	Replace		F	
Loose	Adjust		F	
Missing	Install		F	
OH Facility				
Bird Prot Required	Install		E	
Customer Related	Access		B	
	Appointment		B	
	Refusal		B	
Graffiti	Paint		E	
Idle Facilities	De-Energ		B	
	Remove		F	
	Transfer		F	
Limited Access	Inspect		B	
	Patrol		E	
	Remove		E	
Obstructed	Inspect		B	
	Remove		E	
	Replace		B	
Transmission Issue	Create LC		B	

FDA		New	Priority	Comp
Pole				
Broken/Damaged	Re-Frame		E	
	Repair		E	
	Replace		E	
	Pole Stub		E	
Burnt	Repair		E	
	Replace		E	
	Pole Stub		E	
Clearance Impaired	Repair		E	
	Replace		E	
Decayed/Rotten	Pole Top Repair		E	
	Repair		E	
	Replace		E	
	Pole Stub		E	
Idle Facilities	Remove		F	
Leaning	Adjust		E	
	Replace		E	
Overloaded	Replace		E	
	Test		E	
No Safe Access to Pole	Inspect		B	
Woodpecker Damage	Assessment		E	
Recloser/Sectionalizer				
Broken/Damaged	Repair		E	
	Replace		E	
Excessive Operation	Overhaul		E	
Flashed	Repair		E	
	Replace		E	
Leaks/Seeps/Weeps	Clean		E	
	Repair		E	
	Replace		E	
Riser/Pothead				
Broken/Damaged	Repair		E	
	Replace		F	
Installed in Error	Relocate		E	
Flashed	Repair		E	
	Replace		F	
ROAD				
No Safe Access to Pole	Repair		B	
RTVI				
Interference	Repair		E	
	Replace		E	
SCADA/PDAC				
Broken/Damaged	Repair		F	
	Replace		F	
Leaks/Seeps/Weeps	Repair		F	
	Replace		F	
	Test		B	
Steel Lattice Pole				
Guarding Missing	Install		E	
Pole Step				
Clearance Impaired	Remove		F	
Streetlight				
Broken/Damaged	Repair		E	
	Replace		E	
Missing	Install		E	
Steel Lattice Tower				
Broken/Damaged	Replace		E	
Switch				
Broken/Damaged	Repair		E	
	Replace	X	E	

EMERGENCY ONLY Check Cause (Required)			
☐	Animal	☐	Bird
☐	Equip Failed	☐	Fire
☐	Lightning	☐	Pole Rotten
☐	Third Party	☐	Tree Branch
☐	Tree Contact	☐	Tree Fell
☐	Unknown	☐	

All FDA's identified in field
Priority = Default Priority for B, E, G, & F-Regulatory FDA's
Comp = Check if completing FDA in Field

Electric Overhead Tag

Notification #: 119998009

PM Order #:

Priority: E **Sub Priority:**

Date Identified: 10/29/2020 **Date Required:** 04/28/2021

FDA		New	Priority	Comp
Trans_Dist Pole				
Bonding Broken	Repair		E	
Tie Wire				
Broken/Damaged	Replace		E	
Loose	Replace		E	
Transformer				
Broken/Damaged	Repair		E	
	Replace		F	
Corroded	Replace		E	
Flashed	Repair		E	
	Replace		E	
Idle Facilities	Remove		F	
No Common Neutral	Relocate		E	
Overloaded	Test		E	
Parallel	Replace		E	
Leaks/Seeps/Weeps	Clean		B	
	Repair		F	
	Replace		E	
Tree/Vine				
Clearance Impaired	Remove		E	
	Trim		E	
Decayed/Rotten	Install CL Pole		E	
Overgrown	Remove		E	
	Trim		E	
Tree Connect	Assessment		B	
	Install CL Pole		E	
Trip Saver				
Broken/Damaged	Repair		E	
	Replace		E	
Under-Arm Bus				
Broken/Damaged	Repair		F	

Event Analysis Report

Grass Valley – Property Damage

EIR No.: EI210707A

Date of Event: July 7, 2021

Date Reported to the CPUC: December 23, 2021

CAP Issue No(s).: 122514669, 121864233, 123380445

Report Rev: 01

[redacted] [redacted] 05/05/2022

Leadership Approver | Signature | Date

[redacted] [redacted] 05/05/2022

Incident Investigator | Signature | Date

TABLE OF CONTENTS

1. EXECUTIVE SUMMARY

On July 7, 2021 at 1915 hours, a PG&E field supervisor responded to a fire near a PG&E pole near Brewer Road and Iron Horse Drive in Grass Valley, CA ("Incident Location"). The fire was being put out by CAL FIRE when he arrived at the Incident Location.

The fire associated with this event burnt an area covering 5.5 acres but the fire department did not report any property damage, injuries or fatalities. On December 22, 2021, PG&E Law-Claims received a claim from the property owner near the Incident Location alleging that PG&E equipment caused property damages resulting from the fire exceeding $50,000.

This incident was reported in a timely manner to the CPUC on December 23, 2021 at 0950 hours under the property damage criterion, initiating an investigation by the Electric Incident Investigations ("EII") team. This report reviews the findings of that investigation. PG&E performed an event analysis which included an interview with the responding troubleman, review of the patrol and inspection history, outage history, maintenance and repair history of the Incident Location. Based on all information available, EII concluded that this incident was most likely attributable to PG&E's facilities because the incident connector overheated and dropped hot particles, starting the ignition at the base of the pole. The hot jumper had been identified during an IR inspection performed in 2020, and an Electric Corrective ("EC") tag was created for replacement. Subsequently however this EC tag was downgraded and finally canceled before the jumper was replaced.

Several corrective actions were identified:

- PG&E to stop conducting visual only Field Safety Reinspection on Infrared notification.
- PG&E to provide additional training to the gatekeepers who review the notification cancelation request to prevent future cancelations of IR notifications.
- PG&E to reopen previously canceled IR notifications if the cancelation was initiated after a visual inspection or if the maintenance history suggests the incident equipment identified by IR has not been replaced.

The cancelation of EC tag 119998009 has been identified as a violation of General Order 95 Rule 18. This information was referenced in the amended 20-day report and will also be

submitted to the CPUC in the CPUC 2022 Q1 Self-Identified Potential Non-Compliance Quarterly Report (#2022-Q1).

This report concludes PG&E's investigation into this incident. Unless otherwise noted herein, where there are conflicts between this report and previous PG&E reports related to this incident, this report shall take precedence. If additional information becomes available with the potential to affect the conclusions of this investigation, PG&E reserves the right to re-open this investigation. All times, customer counts, and measurements in this report are approximate.

2. PROBLEM STATEMENT

On the evening of July 7, 2021, at 1915 hours, a 5.5 acre fire occurred near a PG&E pole near Brewer Road and Iron Horse Drive in Grass Valley, CA. A preliminary investigation performed by PG&E determined that a hot (glowing red) paddle jumper had dropped hot particles to the ground and ignited the fire. The hot jumper had been identified during an IR inspection performed in 2020, and an EC tag was created for replacement. Subsequently however this EC tag was downgraded and finally canceled before the jumper was replaced.

This event was reported to the CPUC under the property damage criterion following a claim from the property owner, triggering the investigation by the EII group. This report summarizes the findings of the investigation.

3. EXTENT OF CONDITION

To identify the extent of condition of this failure, PG&E conducted a search for notifications canceled in circumstances that were similar to that of the present incident. This search was conducted on the database of electric distribution notification.

The search criteria were:

- EC Notification
- Notification created following an infrared inspection (identified by the comment "IR OSMOSE" in the comment section)
- Mention of cancelation in the long-text comment field (keyword "cancel")

A total of fifty-two notifications created between 2018 and 2021 met those criteria. The investigation established several pathways through which IR notifications are being canceled. Some of the reasons are legitimate; for instance, six EC notifications related to switches were canceled and transferred into the appropriate notification type (COE) to complete the repair. Several others were correctly canceled due to being duplicates or not being related to PG&E equipment.

However, two decision processes can lead to notification cancelation that are inappropriate:

- FSR inspection: the inspector conducts a visual inspection and concludes that the overheating equipment is no longer damaged or assumes it was already replaced.
- Repair Crew: the repair crew dispatched on the field is not equipped with IR cameras and may assume that the equipment replacement is no longer needed or was already replaced.

In both cases a suggestion to cancel the notification is added to the long text comment of the notification. A gatekeeper reviewing these comments may or may not accept the suggestion.

In total, sixteen notifications, ten from FSR suggestion and six from repair crews, were canceled without any evidence of work being completed at any point after the IR inspection identified an overheating equipment.

The investigation also found that in seventeen instances, including this incident, the infrared notification was canceled because the underlying equipment failed in the field before being addressed and was repaired under an emergency notification.

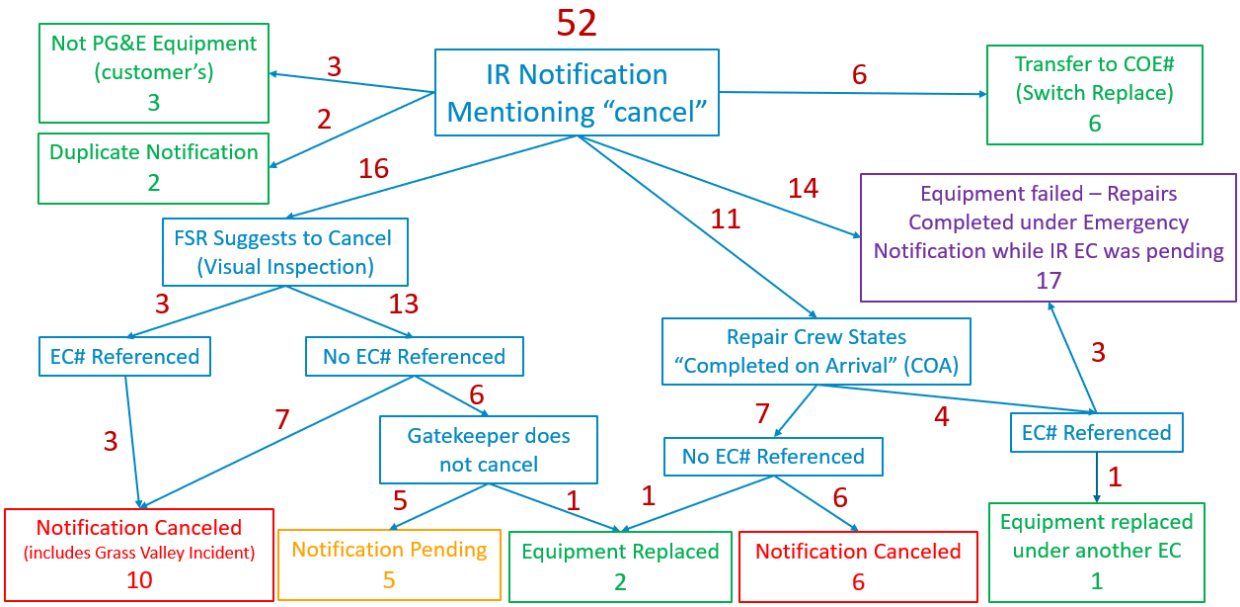


Figure 1: Flow chart of canceled IR notifications. Red boxes are incorrectly canceled, Green boxes were correctly canceled or fixed, Orange box is currently pending, Purple box was canceled due to the equipment failing before being addressed.

4. EVENT SUMMARY

On July 7, 2021, a fire ignited below a PG&E pole near Brewer Road and Iron Horse Drive in Grass Valley, CA. CAL FIRE was notified of the fire at 1800 hours and arrived on site at 1810 hours. A PG&E field supervisor responded to the report of a fire near a pole and arrived on site at 1915 hours. He then requested that a troubleman come to inspect and take pictures of the pole. The responding troubleman was 11 miles away and arrived on scene at 2005 hours. At that time, CAL FIRE had nearly extinguished the 5.5 acre fire but prevented PG&E personnel from accessing the pole until the CAL FIRE investigator arrived at around 2030 hours.

When inspecting the scene, the CAL FIRE investigator asked the PG&E troubleman to come look at a "bright red spot". They observed a paddle jumper glowing red on the pole as the line was still energized. The PG&E supervisor called in a repair crew and stayed on scene while the troubleman left to attend other calls. The troubleman was called back in at 2300 hours when the repair crew arrived, in order to deenergize the line for the repair. He stayed on scene for approximatively two hours until the repair was complete. He then energized the line and left.

The repair crew retained the incident paddle jumper and initiated a request to replace the incident pole and switch which were eventually replaced on July 13, 2021. The paddle jumper was discarded at a later date as it was not believed that any further investigation or reporting was required at the time of the incident.

The investigation revealed that the incident connector had been identified as overheating by an infrared inspection conducted several months prior to the ignition. The investigation also found multiple missed opportunities that could have prevented the ignition, among which the misread of the IR image of the conductor leading to the notification being wrongly downgraded. The infrared notification was canceled on March 31, 2021, following a Field Safety Reinspection (FSR) that was visual in nature.

5. OBSERVATIONS AND EVENT ANALYSIS

PG&E performed an event analysis which included an interview with the responding troubleman, review of the Incident Location inspection history, the incident response timeline, and maintenance and repair history.

5.1. **Inspection history**

The incident occurred on a pole (SAP #100018477) located south of the city of Grass Valley in the Nevada County. The most recent General Order ("GO") 165 patrol was completed on January 4, 2021 and the last inspection was completed on June 5, 2018. In reviewing the last two Patrol and Inspection documents PG&E found that there were several EC notifications created prescribing assessment and work to the Incident Pole.

The incident pole timeline before the incident is detailed below:

- **May 5, 2013**: Inspection prescribed work on the Incident Pole hardware. EC notification #106962580 created concerning Switch 2295 missing an arcing suppressor on pin 269.
- **October 15, 2013**: EC Notification #106962580 canceled, noting that the work belonged to another program, however, the notes also confirm the switch was repaired on pin 247 (pin 269 was incorrect).

- **June 6, 2018**: Inspection requested Incident Pole be assessed for woodpecker damage via EC notification #114668140. No work was prescribed for Switch 2295.
- **January 31, 2019**: EC #114668140 was completed and closed with notes stating woodpecker holes ("WPH") were fixed.
- **March 27, 2019**: The Wildfire Safety Inspection Program ("WSIP") noted excessive woodpecker and insect damage on the Incident Pole. EC notification #116854528 was created.
- **May 9, 2020**: A safety reassessment was completed noting significant bird damage and shell rot and a need to replace the pole and switch and expedite work before the 2021 fire season.
- **November 9, 2020**: EC Notification #119998009 created with B priority (90 Day) for a paddle jumper linked to Switch 2295 which was identified as having an elevated temperature during an infrared ('IR") inspection.
- **November 9, 2020**: PG&E Centralized Inspection Review Team "CIRT" reviewed the Forward Look Infrared ("FLIR") image and misread the provided IR image, incorrectly concluding that the elevated temperature was not valid and downgraded the tag to an E priority (6 month) tag.
- **March 12, 2021**: A safety reassessment occurred for EC Notification #116854528. PG&E personnel indicated that the tag should be canceled as the Incident Pole was in good condition and did not need to be replaced. Final comments from this notification on March 30, 2021, indicate that the replacement was due to pole test data, and called for expedited replacement of the incident pole by May 31, 2022 (before the following fire season).
- **March 31, 2021**: A field safety reassessment was performed on EC Notification #119998009 and visually concluded that Switch 2295 to be in good condition. PG&E personnel responding to the EC notification would not normally attempt to take thermal measurements. Based on the visual inspection EC Notification #119998009 was canceled.
- **July 7, 2021**: A fire occurred at the base of in incident pole due to hot particles falling from Switch 2295.

5.2. **Incident Timeline**

The detailed incident timeline and emergency response begins on July 1, 2021:

July 7, 2021:

- **Prior to 1915 hours**: a fire starts near the incident pole at Brewer Road and Iron Horse Drive in Grass Valley. CAL FIRE responds to the fire.
- **1915 hours**: a PG&E field supervisor arrives on scene and calls for a troubleman to come help inspect and photograph the pole.
- **1930 to 1945 hours**: The troubleman arrives on scene but CAL FIRE denies access to the pole until the fire is completely out and the CAL FIRE investigator has arrived.
- **2030 hours**: CAL FIRE investigator arrives and asks that the PG&E troubleman come to observe the glowing red paddle jumper.
- **2030 to 2045 hours**: the PG&E supervisor calls in a repair crew to fix the jumper.
- **2300 hours**: repair crew arrives on site. Troubleman deenergizes the line and the repair crew begins working.

July 8, 2021:

- **0100 hours**: Emergency repair work is complete. Troubleman reenergizes the line.
- **0400 hours**: COE notification (#121679946) is created to request the replacement of the switch. Notification comments read “inoperable switch has been jumpered out at this time until it can be replaced on a later date”.
- **0920 hours**: EC notification (#121681165) is created calling for the replacement of the hot connector, paddle, and replace the wood pole by a fiberglass one.

5.3. **Maintenance and Repair History**

The timeline analysis of the incident pole shows that it had been subject to two recent EC notifications in connection to the incidents. Two other older EC notifications were also noted in the 20-day report but are not detailed here as they were not directly connected to the incident.

- **EC Notification #116854528**: Created on March 27, 2019, during the WSIP because of excessive woodpecker and insect damages. This notification was updated on March 12, 2021, during an FSR which suggested the pole condition was good. The suggestion to cancel was not approved by the gatekeeper who noted the original notification was based on pole test data (intrusive) which cannot be dismissed by a visual inspection. This notification was still pending and actively managed by PG&E at the time of the incident.
- **EC Notification #119998009**: Created on November 9, 2020. The incident pole was inspected with infrared ("IR") technology by OSMOSE on behalf of PG&E on October 29, 2020 and submitted an EC work form that included the Temperature reading as well as a copy of the IR image taken by the FLIR camera.

The fault temperature reading and the temperature rise (fault temperature – reference temperature) were consistent with the FLIR image that was attached to the form. It read a maximum temperature of 320.4°F on one of the paddle jumpers and a temperature rise of 245.2°F when compared to a non-overheating paddle jumper.

This form was then reviewed by a PG&E clerk on November 9, 2020, who created EC notification #119998009. They initially annotated the notification with incorrect temperature measurements (High Temperature: 128.3°F, Temperature Rise: 57°F), assigned a B priority and 90-day due date (instead of 30 days as prescribed by the Utility Guideline TD-2022B-001) to the notification. Later that same day, a gatekeeper reviewed the notification and further annotated the comments by claiming that the "FLIR IMAGE SHOW HIGH TEM 128.3, NOT 320.4 AS WRITTEN ON TAG. TEMP RISE 57 DEGREES" and downgraded the notification to E priority – 180 days due date. This erroneous reading was based on the upper range of the color scale on the FLIR image rather than the maximum temperature reading in the box framing the paddle jumper.

Once downgraded, the notification remained opened until it was reviewed under the Field Safety Reassessment ("FSR") program on March 12, 2021. The FSR inspector only conducts a visual inspection and does not see any sign of the paddle jumper or the switch needing repairs. They then suggested to cancel the notification (Comment "Ok to cancel tag. Switch is in good condition").

The request to cancel the notification was reviewed and approved by a gatekeeper on March 31, 2021. The final comment on the notification reads “Scenario 005 – Cancel Not Valid - NCOA”.

6. CAUSE & CONTRIBUTING CAUSES

This investigation determined that the direct cause of the fire was:

DC-1: An overheated paddle jumper installed on switch 2295 that dropped hot particles to the ground igniting a fire.

A hazard barrier analysis was performed as part of this investigation to identify any contributing causes to the fire.

Hazard	Overheating equipment can generate hot particles and cause fire				
Target	Overhead equipment which may experience overheating (switch, transformer, connectors…)				
Barrier	**Objective**	**Expected Performance**	**Did Barrier Perform as Expected**	**Did Barrier Contribute to Incident**	**Defect**
Infrared Inspection Program	Identify overheating equipment on the field before they fail and cause ignitions	Infrared camera can capture elevated temperatures before the equipment failure	Yes. inspection on 10/29/2020 detected the hot paddle jumper and correctly reported the elevated temperature that was observed.	No	None
IR notification intake	Open EC notifications from the IR form submitted by contractor	Open EC notification when required, disregard when IR image relates to non-PG&E equipment. Translate the temperature reading into the appropriate priority and due date.	No. Initial clerk misread the temperatures and assigned the wrong priority (B – 90 days instead of B – 30 days)	Yes	Human error when reading the FLIR image and/or the IR form
Notification Review by gatekeeper	Review notifications for QA purpose	Catch and correct clerical errors introduced in notifications	No. Gatekeeper read the FLIR image wrong and downgraded the notification to E priority – 180 days	Yes	Human error when reading the FLIR image
Field Safety Reassessment (FSR) program	Inspect equipment attached to notifications opened in the past and re-assess the equipment status.	Open notification gets updated based on the field observation. Comments should confirm whether the issue initially identified is still ongoing or not.	No. Inspection was visual only and could not assess the original issue that was identified with IR cameras.	Yes	FSR inspection is not appropriate to assess high temperature equipment

FSR review by gatekeeper	Review comments made by FSR inspector and take corresponding actions to modify the notification	Identify mistakes, discrepancies, lack of documentation from the FSR. Request additional information when needed.	No. Gatekeeper should have noticed the FSR was conducting a visual inspection on an overheating equipment identified with IR. They should have refused to cancel.	Yes	Gatekeeper training

The investigation including the hazard barrier analysis identified that the field equipment was initially correctly identified during an infrared inspection but multiple subsequent barriers that were supposed to catch errors and ensure the integrity of the information within the notification introduced errors. These errors eventually lead to the cancelation of the notification that was supposed to address the failing component and prevent an ignition.

Once the notification was canceled, the incident equipment remained active on the field for several months until it triggered the ignition on July 7, 2021.

The investigation identified the following apparent causes:

AC-1: Visual field safety reassessments of the IR tag was unable to observe the malfunctioning paddle jumper resulting in an incorrect cancelation of the EC tag.

AC-2: The CIRT team incorrect reading of the initial IR notification provided by Osmose downgraded a B priority tag to an E tag resulting in a delay and subsequent cancelation of the tag.

7. CORRECTIVE/GENERAL ACTIONS (CA/GA) SUMMARY

The following table summarizes the corrective or general actions identified as a result of this investigation.

NERC Code	Cause(s)	CA/GA #	CA Description	Action Owner	Due Date
A2B6C01 – Damaged, Defective or failed part	DC-1	CA-1	Reopen 12 incorrectly canceled IR notifications and replace the equipment that was initially identified as overheating. CAP#: 121864233	[redacted] CIRT Manager [redacted] Electric Operations Director	5 notifications reopened by CIRT on March 9, 2022 7 notifications reopened by Electric Operations on April 22, 2022
A2B3C02– Inspection/testing LTA	AC-1	CA-2	Remove notifications identified via IR program from the FSR process CAP#: 121864233	[redacted] System Inspection Director	Completed, August 2021
A3B1C04 – Infrequently performed steps were performed incorrectly	AC-2	CA-3	Train Gatekeeper to not cancel or downgrade IR notifications generated by Osmose based on a visual inspection Deliverable: Gatekeeper training CAP#: 121864233	[redacted] CIRT Manager	Completed, August 2021
A2B6C01 – Damaged, Defective or failed part	DC-1	CA-4	Reopen 3 incorrectly canceled IR notifications and replace the equipment that was initially identified as overheating. CAP#: 121864233	[redacted] CIRT Manager	3 Notifications reopened by CIRT on April 25, 2022

Table 1: Corrective Actions

Two additional findings also came out of the investigation:

- **AF-1**: The OSMOSE FLIR images include a temperature scale which may not represent the complete temperature range (minimum and maximum temperatures of the image) which may lead to confusion when reading the temperature on the image but leads to a better contrast.
- **AF-2**: The current Utility Guideline governing the EC notification priority for overheating equipment identified with IR inspection (TD-2022B-001) does not provide an explicit decision matrix when it comes to transformers. Instead, it refers to another document (Document 068178) and does not include a clear equivalence between observed temperature and EC notification priority. Additionally, several instances of overheating transformers were identified by infrared inspection but failed within a few weeks, well before the assigned due date of their EC notification. CAP #123380445 was created to track and document updates made to the relevant utility guidelines.

8. POTENTIAL NON-CONFORMANCES AND NON-COMPLIANCES

The cancelation of EC tag 119998009 has been identified as a violation of General Order 95 Rule 18. This information was referenced in the amended 20-day report and will also be submitted to the CPUC in the CPUC 2022 Q1 Self-Identified Potential Non-Compliance Quarterly Report (#2022-Q1). EC tag 116854528 has been identified as a violation of General Order 95 Rule 18. This information will be submitted to the CPUC in the CPUC 2022 Q1 Self-Identified Potential Non-Compliance Quarterly Report (#2022-Q1).

9. ATTACHMENTS

Attachment 01_CAP_121864233_CONF.pdf

Attachment 02_IR_OSMOSE_FORM_GRASS_VALLEY.pdf

10. REFERENCES

Internal Documents

- Email thread to discuss “Discuss CAP Issue Number: 000121864233”
- CAP 121864233
- Utility Guideline TD-2022B-001 “Revised Corrective Maintenance Priorities Tables when Performing Infrared Inspections”
- Document 068178 “Distribution Transformer Temperature”

External Documents

- CAL FIRE Investigation Report

11. PREVIOUSLY COMPLETED REPORTS AND DATA REQUESTS

20-Day Report

Amended 20-Day Report_EI210707A_Grass Valley_Property Damage_CONF.pdf, submitted to the CPUC February 28, 2022

Attachment 01_2020 GO165 patrol records_CONF.pdf

Attachment 02_2021 GO165 patrol records_CONF.pdf

Attachment 03_2013 GO165 inspection records_CONF.pdf

Attachment 04_2018 GO165 inspection records_CONF.pdf

Attachment 05_2019 WSIP inspection records_CONF.pdf

Attachment 06_EC tag_114668140_CONF.pdf

Attachment 07_EC tag_119998009_CONF.pdf

Attachment 08_EC tag_116854528_CONF.pdf

Attachment 09_EC tag_106962580_CONF.pdf

Attachment 10_EC tag_121681165_CONF.pdf

Attachment 11_FAS tag_0004125021_CONF.pdf

Attachment 12_ILIS_21-0086235_CONF.pdf

Attachment 13_ Fire Report_CONF.pdf

Attachment 14_ Photos.pdf

Attachment 15_Incident Map/Diagram_CONF.pdf

Data Request

SED-01-Brewer Fire.pdf, Data Request received from the CPUC on March 29, 2022[1]

[1] As of the publication date of this report, data request responses have not been delivered yet

CAP Issue#:	121864233	**Risk:**	Medium
Near Hit:	No	**SIF:**	
Issue Title:	Review Tags - Brunswick 1102 (#1013)		
Issue Initiator:	[redacted]	**Issue Owner:**	[redacted]
Initiating Org:	Engineering, Planning & Strategy	**Responsible Org:**	PG&E Utility Operations
Issue Status:	Accepted	**Department Code:**	UNVBSC
Priority:		**Department Name:**	CIRT Manager
Initiation Date:	08/09/2021	**Department Owner:**	[redacted]
Due Date:	06/30/2022	**Evaluation Type:**	WGE - Work Group Eval
Event Time:	00:00:03	**Event Date:**	07/07/2021
Issue Type:	Compliance	**Issue Subtype:**	Regulatory Compliance
Process:		**Asset Family:**	NA - Not Asset Related
Division/District:	SI - Sierra Division	**Reference Issue:**	
Address:		**City:**	

Description

08/09/2021 11:34:04 PST [redacted]
<* What and Where is the Issue ? *>
Index # 1013 - Brunswick 1102 - Equipment Failure
From the reporting:
The ignition may have been caused by an overheated switch paddle. The switch was visibly red hot and previously identified as having elevated temperatures during an infrared (IR) inspection on November 9, 2020 (EC Notification #119998009). That tag was subsequently canceled on March 12, 2021, after a visual safety reassessment found the switch to be in good condition (i.e., without IR or thermal measurements). PG&E field personnel reported that the IR inspection should have resulted in a Critical Operating Equipment (COE) Notification rather than an EC notification, and that personnel responding to the EC notification would not normally attempt to take thermal measurements.

<* Who should be assigned to address this issue ? *>
[redacted]

<* How Might this Issue be Avoided or Solved ? *>
Corrective Actions
1. Review the IR tags generated since 2019 to ensure none were cancelled in Field Safety Reassessment or without a proper reason to do so. Re-open/recreate tags as need be.
2. Change procedure to remove IR tags from FSR process.
3. Prevent Cert team from cancelling tags generated in IR inspection.

08/09/2021 13:02:29 PST [redacted]
Reason for LOB change:
Transfer to Wildfire Risk for URIS
08/11/2021 11:49:15 PST [redacted]
M.3.8.C WGE TO URIS

08/13/2021 08:29:00 PST [redacted]
[redacted]? 08/13/2021 - EO Compliance CRT member has reviewed this CAP (either with or without Initiator consultation) and has determined it should have the PGNC Compliance Attribute code added.

09/08/2021 13:15:32 PST [redacted]
A discussion is needed before SI agrees to the actions on this CAP submission. We also need assumptions validated and greater team alignment, until them this is not supported. [redacted]o set up the discussion, due date being extended until we can build agreement between teams.
02/22/2022 08:59:46 PST [redacted]
Adjusting dept owner per attached email.
03/01/2022 08:12:47 PST [redacted]

Description

Email has been sent [redacted] asking for AS to take this CAP as SI doesn't own the FSR process. Waiting on response.
03/22/2022 09:18:12 PST [redacted]
CAP being reassigned to [redacted] This note is to document actions taken on the CAP to date. In August of 2021, [redacted] provided guidance to the CIRT Gatekeepers instructing them that tags generated from IR should not be cancelled without a new IR reading. This was the only action taken as this is the from SI as this is only corrective action that can be taken from the System Inspections Org.
03/22/2022 10:51:15 PST [redacted]
Attached email from [redacted] stating guidance was given via DOR.

Legend Key for Grids (below)
Column A: Reference number for Category
Column B: Reference number and link of Cause to associated Category
Column C: Reference number and link of CE Action to associated Cause and Category

Category: None

Cause: None

Actions:

A	B	C	Title	Status	Plan Start	Plan End	Comp Date
1		3	GENA / Gatekeeper guidance on IR process	Completed	03/22/2022	03/23/2022	03/22/2022
			Owner: [redacted]	Department: UNVBSC - CIRT Manager			
03/22/2022 09:04:24 PST [redacted] CIRT needs to provide guidance/training to Gatekeepers to NOT cancel tags that are generated from IR without a new IR reading. This task was completed in August of 2021. This action is being created to document that guidance was provided to gatekeepers.							
		2	DDE1 / Due Date Extension Request	Released	03/01/2022	03/08/2022	
			Owner: [redacted]	Department: UNV - Vegetation Management & System Insp			
03/01/2022 08:16:48 PST [redacted] Current Issue Due Date : 01/28/2022 Requesting to extend Due Date to : 06/30/2022 Extension Reason : EC13 - Waiting on Others. Extension Number : 00. Extension Author : [redacted] Extension Approver : [redacted] Extension Justification : This CAP has been identified as one that needs to go to AS. It was noted on Sept 2021 that this was not a SI CAP. Requesting due date change so that the correct issue/department owner does not inherit a past due CAP and has time to bring corrective action.							
		1	0022 / Change Org to 22	Completed	08/09/2021	08/16/2021	08/09/2021
			Owner: [redacted]	Department: UKEWCP - Electric Corrective Action Program			
08/09/2021 13:02:29 PST [redacted] Transfer to Wildfire Risk for URIS							

Attributes:

Type	Type Description	Subtype	Subtype Description
ECAP-SM	Submission Method	MWEB	Web Submission
ECAP-NCI	Non-Compliance/Self-Report Issues	PGNC	PG&E Indentified Non-Conformance -No NOV
ECAP-ECP	Regulatory Agency	0004	CPUC
ECAP-PA	CAP Process Automation	ORG1	Organization Change

Title:

Mass Change Org

01/29/2022 17:08:51 PST [redacted]
Actions for Rule : ORG_CHANGE_O - Org Change
VALID_OFF : - - - - -
SET_STAT : NOEM - - - - -
CHG_FIELD : ZZCREWCLASS_2 - 92 - - - -
ADD_ATTRIB : ECAP-PA - ORG1 - Mass Change Org - - -
UNSET_STAT : NOEM - - - - -

Partners:

Profile Type	LAN ID	Name
Author	[redacted]	[redacted]

Characteristics: None

Attachments:

File type	File Name	Created By	Created Date
msg	CAP 121864233_Concurrence_Asset Strategy	[redacted]	02/22/2022

INFRARED DATA SHEET

(attach to EC-OH or EC-UG)

Inspector LAN ID:	Map #:	Location #:
[redacted] - Osmose	Q0819	1079 - (Across Street from [redacted])

Date:	Circuit:
10/29/2020	HIGGINS 1103

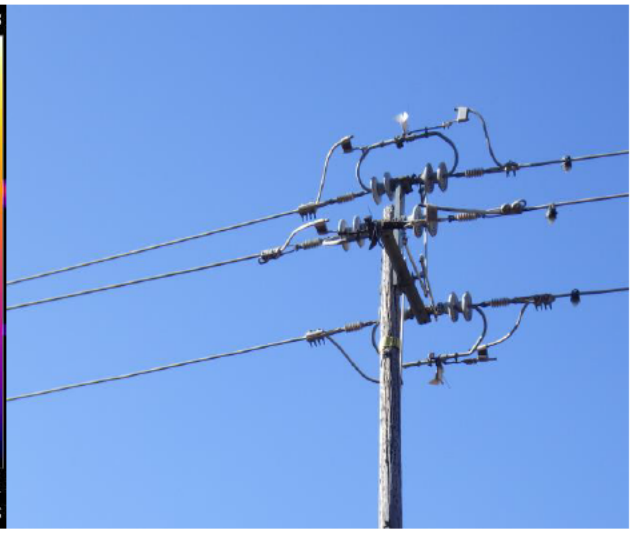
Catalog Codes

Object Part (Facility Type)				Action Required	
X	Overhead		Underground		Adjust
	Connector/Splice-General		Pothead		
	Connector-PG		Stresscone		Install (INST)
	Connector-Kierney		Elbow		
	Connector-Wedge Fired		Cable		Repair (REPA)
	Connector-AB Chance Clamp		Splice-Bump Sleeve		
	Splice-Insulink	X	Switch	X	Replace (REPL)
	Splice-Press Sleeve		Transformer		
	Splice-Armor Rod		Deadend		Monitor (MNTR)

Characteristics

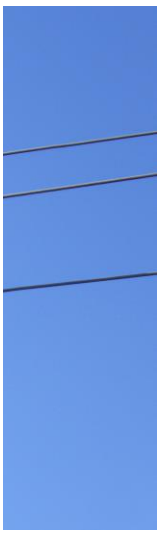
IR Readings (Farenheit)		Phase		Weather	
Emit:	0.95		1/A/North/East/Top		Cloudy
Amb. Temp:	58				
Fault Temp:	320.4		2/B/Middle	X	Clear
Ref Temp:	75.2				
Temp Rise:	245.2	X	3/C/South/West/Bottom		Foggy
Load Amps:					

Image Information			
Digital #:	DC-590881.JPG		Hazy
IR Image #:	IR-590880.jpg		Windy



NOTE: Use ECI Notification to Document IR Conditions

Ver: 01/20/2010



Infrared (IR) Inspections of Electric Distribution Facilities

SUMMARY

This utility procedure establishes requirements for performing infrared (IR) inspections (i.e., thermography) on overhead (OH) and underground (UG) electric distribution facilities, excluding substations. This procedure also explains the permitted use of non-utility-graded IR cameras by restoration employees and other employees who are infrequent users. Finally, this procedure defines roles and responsibilities for employees who perform IR inspections, as well as the roles and responsibilities for implementing this procedure.

Level of Use: Informational Use

TARGET AUDIENCE

The target audience includes the following PG&E employees:

- Electric distribution planning and operations
- Compliance
- Asset strategy reliability
- Electric distribution asset strategy and development
- Electric maintenance and construction (M&C)
- Power quality
- Restoration and control
- Service planning and design
- Project delivery

SAFETY

Wear personal protective equipment (PPE) at all times when performing IR inspections. This includes, but is not limited to, flame-resistant (FR) clothing, hard hats, safety glasses, and suitable footwear.

BEFORE YOU START

WEAR appropriate PPE.

USE the appropriate IR camera.

Infrared (IR) Inspections of Electric Distribution Facilities

TABLE OF CONTENTS

PROCEDURE STEPS

1 General Information

1.1 Compliance inspectors and outside contractors perform IR inspections on electric distribution facilities; however, restoration employees, contractors, and other infrequent users can be responsible for performing some of the actions described in this procedure, depending on the job.

1.2 Background

1. USE IR imaging and temperature-measuring systems as diagnostic tools in both electric transmission and distribution (T&D) system inspections and in preventive maintenance programs. IR imaging can accurately identify and initiate the repair or replacement of faulty devices, equipment, and components.

2. Based on industry specifications, connectors require lower operating temperatures than their respective conductors. When the connector's temperature is greater than the temperature of its respective conductor, a higher-resistance connection exists and a failure is likely, but not precisely predicted. Connector degradation occurs faster with an increase in load or temperature.

3. Conductor manufacturers recommend that the usual maximum operating temperature for tensioned, bare conductor be limited to 75° Centigrade (C) (i.e., 167° Fahrenheit [F]).

4. Conductor manufacturers recommend that the usual maximum operating temperature for insulated conductor be limited to the following temperatures:

   - 75°C (167°F) for high molecular weight polyethylene (HMWPE) material
   - 90°C (194°F) for cross-linked polyethylene (XLPE) material
   - 105°C (221°F) for ethylene propylene rubber (EPR) material

1.3 Equipment

1. USE IR imaging systems to detect and record all heat radiating in an imaging system's field of view.

   a. The IR camera uses an image-scanning technique to specifically identify heat radiating from a target and the target's background. These units capture and store heat images pictorially for immediate or future evaluation.

   b. Using these units, the operator can PINPOINT the hottest spot on the observed target.

2. USE only a utility-grade IR camera when performing IR inspections.

3. USE either utility-grade or non-utility-grade IR cameras as an aid for troubleshooting facilities or equipment known to have power-quality issues.

4. USE non-utility-grade IR cameras to identify hot spot connections or equipment when troubleshooting or performing work verification.

NOTE

DO NOT USE non-utility-grade IR cameras to perform regulatory-mandated IR inspections (managed by the compliance department) or IR inspections performed under the PG&E IR program (managed by the asset strategy department).

2 Requirements and Recommendations

2.1 Implementation

1. This IR procedure was developed as a key element of a preventive maintenance program. The recommended maintenance priorities provided in Table 1, "Corrective Maintenance Priorities for Overhead Distribution Facilities," on Page 6, and Table 2, "Corrective Maintenance Priorities for Underground Distribution Facilities," on Page 8, reduce the risk of component failures, prevent further facility damage, and facilitate a proactive approach to repairing or replacing components identified as abnormal.

2. When performing IR inspections, ENSURE that line equipment (e.g., capacitor banks, line regulators, line reclosers) are in service and are carrying load.

NOTE

BE AWARE that thermography scanning requires the conductor to be energized and carrying load current.

2.2 Scheduling Recommendations

When operational needs allow, COMPLETE the following tasks:

1. SCHEDULE IR inspections starting in July and finishing no later than October.

2. If IR inspections are scheduled during circuit off-peak hours, PERFORM load transfers to increase the circuit's normal loading to approximately 40% rated load of the electrical equipment being inspected.

2.3 Equipment Specifications

PERFORM the following actions:

1. ENSURE that video-imaging equipment using IR technology to inspect UG electric distribution facilities meets the following specifications:

   a. The system must be sealed.

   b. The equipment must be portable.

2. ENSURE that video-imaging equipment used for OH IR inspections includes the following features:

   a. Ability to store images for future analysis.

   b. Adjustable, ambient temperature and emittance settings.

   c. Ability to interchange lenses.

3. ENSURE that approved, utility-grade and non-utility-grade IR cameras meet all specifications listed in Attachment 4, "Minimum Specifications for Approved Infrared Cameras."

2.4 Records and Documentation

1. When conducting IR inspections under a specific maintenance activity type, PERFORM the following actions:

   a. USE Form TD-2022P-01-F01, "Infrared Inspection Log" (SEE Attachment 1), to record required information. The "Infrared Inspection Log" is available either in hard copy or electronically on PG&E mobile devices.

      (1) DETERMINE the appropriate maintenance priority based on the temperature values found in Table 1 on Page 6 and Table 2 on Page 8.

      (2) IF there is obvious physical damage,

      THEN TAKE corrective action immediately.

2.4 (continued)

b. USE Form TD-2022P-01-F02, "Infrared Data Sheet" (SEE Attachment 2), to report identified, abnormal, compelling conditions. The "Infrared Data Sheet" is available either in hard copy or electronically on PG&E mobile devices.

(1) DETERMINE the appropriate maintenance priority based on the temperature values found in Table 1 on Page 6 and Table 2 on Page 8.

(2) IF there is obvious physical damage,

THEN TAKE corrective action immediately.

c. REPORT defective/damaged components on Form 62-0113, "Material Problem Report" (SEE Attachment 3), AND RETAIN the report for additional analysis as described in Utility Standard SCM-2106S, "Material Problem Report Standard."

d. UPLOAD the completed Form TD-2022P-01-F02 to SAP's Electric Compliance (EC) Notification.

2.5 Determining Corrective Maintenance Priorities

When determining corrective maintenance priorities, READ the "Notes in reference to Table 1," under Table 1 on Page 7, and under "Notes in reference to Table 2," on Page 9, AND PERFORM the following actions:

1. REFER to Table 1 on Page 6 and Table 2 on Page 8 to assess and prioritize the relative severity of the conditions found during an inspection.

2. USE the measured temperatures and temperature differentials provided in the tables to make these determinations described in Step 2.5.1 above.

a. Table 1 on Page 6 and Table 2 on Page 8 describe the methods used when performing IR Inspections. Those methods are:

(1) **Differential Temperature analysis** – Refers to relative temperature values of a hotspot with respect to other parts of the equipment with similar conditions.

(2) **Absolute Temperature analysis** – Refers to actual temperature values measured from the hotspot.

3. Between methods (1) and (2) above, the most reliable is the differential temperature analysis because, unlike the absolute temperature analysis, it is minimally affected by environmental factors such as ambient temperature, humidity, and emissivity.

Infrared (IR) Inspections of Electric Distribution Facilities

2.5 (continued)

Table 1. Corrective Maintenance Priorities for Overhead Distribution Facilities

Differential Temperature (ΔT) Analysis			
Distribution Facilities	**Condition**	**Temperature Differential (ΔT)**	**Priority/Due Date**
Arrester cutouts and pot-head termination	Normal	ΔT ≤ 10°C ΔT ≤ 18°F	No maintenance required.
	Minor	10°C < ΔT ≤ 25°C 18°F < ΔT ≤ 45°F	Write EC tag with Priority E. Complete within **180** days.
	Medium	25°C < ΔT ≤ 45°C 45°F < ΔT ≤ 81°F	Write EC tag with Priority B. Complete within **90** days.
	Severe	ΔT > 45°C ΔT > 81°F	Write EC tag with Priority B. Complete within **30** days.
Connector and switch	Normal	ΔT ≤ 25°C ΔT ≤ 45°F	No maintenance required.
	Minor	25°C < ΔT ≤ 45°C 45°F < ΔT ≤ 81°F	Write EC tag with Priority E. Complete within **180** days.
	Medium	45°C < ΔT ≤ 60°C 81°F < ΔT ≤ 108°F	Write EC tag with Priority B. Complete within **90** days.
	Severe	ΔT > 60°C ΔT > 108°F	Write EC tag with Priority B. Complete within **30** days.

2.5 (continued)

Table 1. Corrective Maintenance Priorities for Overhead Distribution Facilities (continued)

Absolute Temperature (T) Analysis			
Distribution Facilities	**Condition**	**Temperature Limits**	**Priority/Due Date**
Arrester cut-outs and pot-head termination	Normal	$T_{hot\ spot} \leq 70°C$ $T_{hot\ spot} \leq 158°F$	No maintenance required.
	Minor	$71°C < T_{hot\ spot} \leq 80°C$ $160°F < T_{hot\ spot} \leq 176°F$	Write EC tag with Priority E. Complete within **180** days.
	Medium	$80°C < T_{hot\ spot} \leq 85°C$ $176°F < T_{hot\ spot} \leq 185°F$	Write EC tag with Priority B. Complete within **90** days.
	Severe	$T_{hot\ spot} \geq 85°C$ $T_{hot\ spot} \geq 185°F$	Write EC tag with Priority B. Complete within **30** days.
Connector and switch	Normal	$T_{hot\ spot} \leq 85°C$ $T_{hot\ spot} \leq 185°F$	No maintenance required.
	Minor	$85°C < T_{hot\ spot} \leq 105°C$ $185°F < T_{hot\ spot} \leq 221°F$	Write EC tag with Priority E. Complete within **180** days.
	Medium	$105°C < T_{hot\ spot} \leq 120°C$ $221°F < T_{hot\ spot} \leq 248°F$	Write EC tag with Priority B. Complete within **90** days.
	Severe	$T_{hot\ spot} > 120°C$ $T_{hot\ spot} > 248°F$	Write EC tag with Priority B. Complete within **30** days.

Notes in Reference to Table 1 (Page 6 and Page 7):

1. If the IR component has already failed, significant damage, or its condition results in significant exposure to the general public, write an EC tag with Priority A, and take corrective action immediately. Refer to the *Electric Distribution Preventive Maintenance Manual* (*EDPM Manual*) for more information.
2. Create the EC tag, and complete the required action(s) within the due date as shown in the Table 1 "Priority/Due Date" column.
3. For live-front terminations on pad-mounted transformers or equipment, use the OH temperature-differential values to determine priorities as shown in Table 1 in the "Temperature Limits" column.
4. Table 1 **does not apply** to transformer tanks. When working with transformer tanks, refer to Numbered Document 068178, "Distribution Transformer Temperature," Table 1, "Transformer Temperatures−Mineral Oil Filled," on Page 2, and Table 2, "Transformer Temperatures−Natural Ester Filled," on Page 3.
5. Temperature conversion factor: °C = (°F – 32) X (5/9)
6. Temperature differential: $°C_{diff} = (°F_{diff}) / 1.8$

2.5 (continued)

Table 2. Corrective Maintenance Priorities for Underground Distribution Facilities

Differential Temperature Rise Analysis			
Distribution Facilities	**Condition**	**Temperature Differential (ΔT)**	**Priority/Due Date**
Elbow and termination	Normal	ΔT ≤ 6°C ΔT ≤ 11°F	No maintenance required.
	Medium	6°C < ΔT ≤ 20°C 11°F < ΔT ≤ 36°F	Write EC tag with Priority B. Complete within **60** days.
	Severe	ΔT > 20°C ΔT > 36°F	Write EC tag with Priority B. Complete within **30** days.
Joint/splice and switch	Normal	ΔT ≤ 6°C ΔT ≤ 11°F	No maintenance required.
	Medium	6°C < ΔT ≤ 12°C 11°F < ΔT ≤ 22°F	Write EC tag with Priority B. Complete within **60** days.
	Severe	ΔT > 12°C ΔT > 22°F	Write EC tag with Priority B. Complete within **30** days.
Absolute Temperature (T) Analysis			
Distribution Facilities	**Condition**	**Temperature Limits**	**Priority/Due Date**
Elbow and termination	Normal	$T_{hot\ spot} \leq 80°C$ $T_{hot\ spot}t \leq 176°F$	No maintenance required.
	Medium	$80°C < T_{hot\ spot} \leq 88°C$ $176°F < T_{hot\ spot} \leq 190°F$	Write EC tag with Priority B. Complete within **60** days.
	Severe	$T_{hot\ spot} > 88°C$ $T_{hot\ spot} > 190°F$	Write EC tag with Priority B. Complete within **30** days.
Joint/splice and switch	Normal	$T_{hot\ spot} \leq 85°C$ $T_{hot\ spot} \leq 185°F$	No maintenance required.
	Medium	$85°C < T_{hot\ spot} \leq 120°C$ $185°F < T_{hot\ spot} \leq 248°F$	Write EC tag with Priority B. Complete within **60** days.
	Severe	$T_{hot\ spot} \geq 120°C$ $T_{hot\ spot} \geq 248°F$	Write EC tag with Priority B. Complete within **30** days.

2.5 (continued)

Notes in Reference to Table 2 (Page 8):

1. If the IR component has already failed, has significant damage, or its condition results in significant exposure to the general public, write an EC tag with Priority A, and take corrective action immediately. Refer to the *EDPM Manual* for more information.
2. Create the electric corrective (EC) tag, and complete the required action(s) within the due date as shown in the Table 2 "Priority/Due Date" column.
3. For live-front terminations on pad-mounted transformers or equipment, use the OH temperature-differential values to determine priorities as shown in Table 2 on Page 8.
4. Table 1 **does not apply** to transformer tanks. When working with transformer tanks, refer to Numbered Document 068178, Table 1 on Page 2, and Table 2 on Page 3.
5. For underground switches, the delta temperature values shown in Table 2 are between **switch components and the bushing-elbow interface.**
6. Temperature conversion factor: °C = (°F – 32) X (5/9)
7. Temperature differential: $°C_{diff} = (°F_{diff}) / 1.8$

3 Procedures

3.1 Setting Up the IR Camera

1. To obtain accurate measurements, it is critical to ESTABLISH the IR imaging-system setup parameters for **emissivity and background temperature**.

   a. USE other imaging-system setup parameters primarily to record initial or future evaluations of heat radiating from a target and its background.

2. SET the emissivity value at 0.95. This eliminates the need to set the background temperature. In this case, the target is considered a black body, totally reflective, and nontransmissive.

   a. With highly emissive targets, the actual reflected energy is so small with respect to the emitted energy that the temperature measurement is well within reason for predictive maintenance applications.

   b. As the emissivity value of the target decreases, the influence of background radiation increases and, consequently, so does the potential for errors based on background temperature settings.

   c. If the emissivity value is set at less than 0.95 and the background temperature setting is adjusted inaccurately, the chances are greater that the target's resulting temperature measurement will contain errors than if the emissivity value were set at 0.95.

3.1 (continued)

EXAMPLE

When the emissivity setting is less than 0.95 and the background temperature setting is **higher** than the actual background temperature, the target temperature measurement is lower than it should be. However, if the background temperature setting is **lower** than the actual background temperature, then the target temperature measurement is higher than it should be. The measurement deviation is compounded as the emissivity setting decreases from 0.95.

d. Setting the emissivity value at 0.95:

(1) Eliminates the need to determine exact emissivity and background temperature values.

(2) Simplifies the system operation.

(3) Results in reasonably accurate measurements.

EXAMPLE

When taking IR measurements on OH systems where the ceiling (sky) is unlimited, determining an accurate background temperature is nearly impossible. Most targets have dark surfaces with emittance values very close to 0.95.

3.2 IR Inspection Measurement Points

Figures 1 through Figure 8, "Infrared Inspection Measurement Points," on Page 12, display the temperature measurement points on various conductor assemblies.

3.3 IR Scanning Techniques

1. If the thermal image's color pallet shows an elevated differential temperature between the targeted component and conductor/cable, FOLLOW the steps below:

a. CENTER the targeted component in the viewer or sight of the IR scanning device, AND OBSERVE the measured temperatures. SEE the measurement points in Figure 1 through Figure 8 on Page 12.

b. SCAN approximately 1 to 2 feet of the conductor/cable entering and/or leaving the targeted image, AND OBSERVE the measured temperatures. SEE the measurement points in Figure 1 through Figure 8 on Page 12.

c. TAKE load readings **if a compelling abnormal condition is identified**.

3.3 (continued)

d. For radial, live-front terminations without adjacent component(s) on the same phase, COMPARE the phase connector to other phase connectors, AND TAKE load readings **if a compelling abnormal condition is identified**.

e. For looped, live-front terminations, COMPARE the connector temperatures on the same phase to each other, AND TAKE a load reading on each cable **if an abnormal condition is found**. This helps to ensure the temperature differential is not load related.

NOTE

Due to load imbalances, a temperature difference between different phases of cables on the same circuit is an expected condition and does not, in itself, indicate any anomalies.

2. If the temperature differential is within the normal value shown in Table 1 on Page 6 and Table 2 on Page 8, but the temperature-absolute value exceeds the normal value shown in Table 1 and Table 2, PERFORM the following actions:

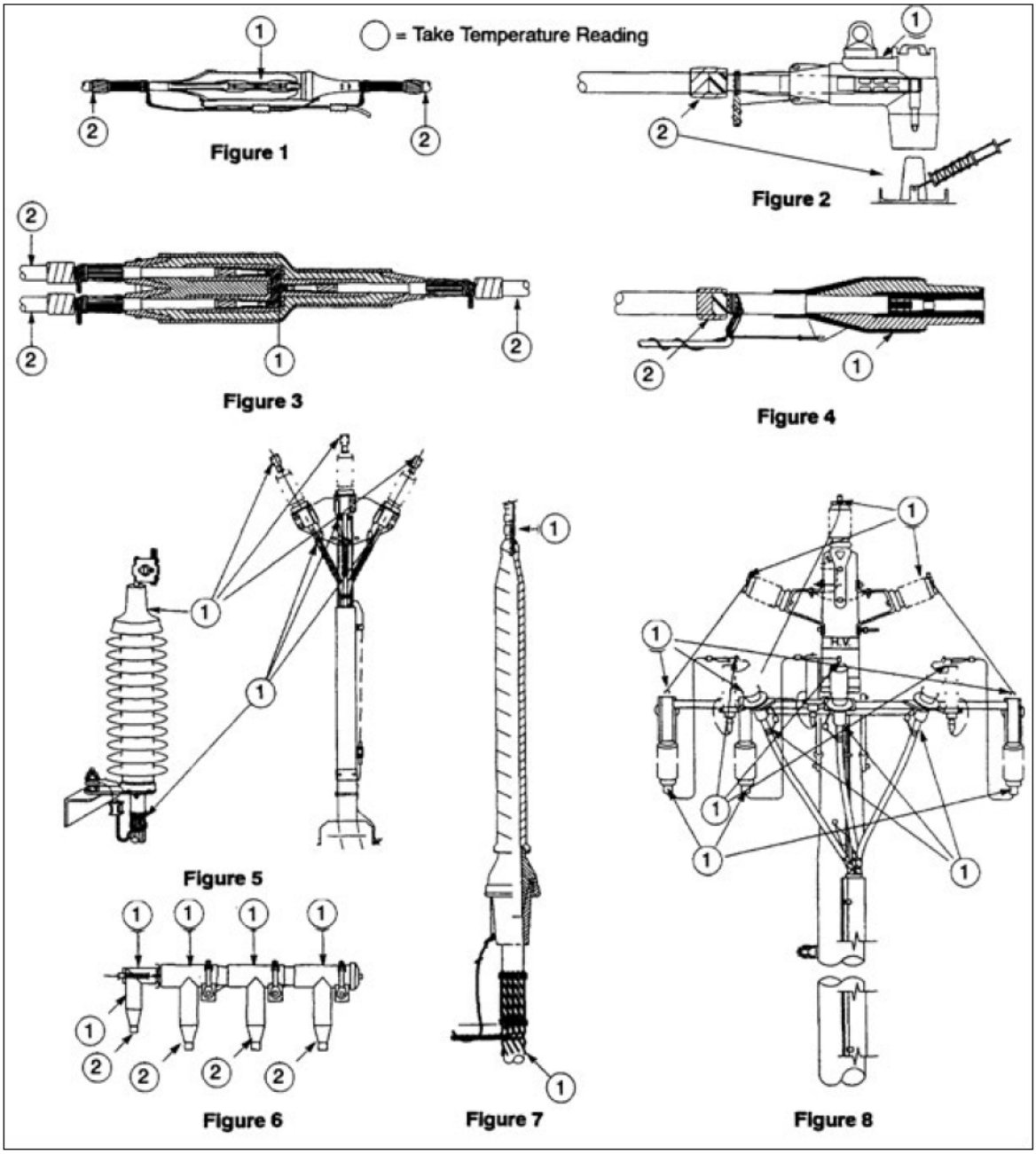
a. CREATE a temporary load transfer (recommended) to increase the load viewed by the targeted component.

b. REPEAT the IR inspection on the same component.

c. RECORD the findings.

Infrared (IR) Inspections of Electric Distribution Facilities

3.3 (continued)



Figures 1–Figure 8
Infrared Inspection Measurement Points

Notes:

1. Numbers ① and ② are the measurement points referred to in Subsection 3.3, "IR Scanning Technique," Step 1 through Step 2, starting on Page 10.
2. Observe excessive temperature readings for figures that only designate measurement points. ①

3.4 Using an IR Camera to Identify Hot Transformers and UG Switches

The IR camera provides thermal images that can identify transformer tanks with high temperatures caused by high loading. Thermal images also identify switch tanks with high temperatures caused by internal switch problems. When imaging transformer and switch tanks, PERFORM the following actions:

1. When identifying a transformer tank with a high temperature, TAKE the actions described in Numbered Document 068178, Table 1 on Page 2, and Table 2 on Page 3.

2. When identifying an oil switch tank with a temperature higher than its cable terminations, CREATE an EC tag with Priority A to replace the switch immediately.

4 Implementation Roles

4.1 The senior director in charge of electric asset strategy has the following responsibilities:

1. DEVELOP AND OVERSEE a prioritized plan that meets the requirements of this procedure. The plan must include performance measures and schedules for reporting progress on the systemwide annual plan.

2. COMPILE a systemwide annual plan based on area-specific submittals. ENSURE that the plan and periodic status reports are available on a schedule determined by the distribution asset management electric operation engineering senior director.

3. IMPLEMENT a quality assurance program to assess compliance with this procedure and to support continuous improvement.

4. DEVELOP AND OVERSEE the funding and forecasting necessary to comply with this procedure.

5. MONITOR progress, AND VERIFY compliance with this procedure.

4.2 The director in charge of restoration compliance operations has the following responsibilities:

1. DEVELOP annual plans to identify and request the resources necessary to achieve all of the area-specific requirements described in this procedure. These annual plans identify area-specific objectives for inspecting and maintaining electric distribution equipment. In addition, the plans provide for the training needed to achieve the area-specific requirements described in this procedure.

2. SUBMIT annual plans AND periodic status reports on a schedule determined by the electric distribution maintenance manager.

4.3 Compliance managers ENSURE that area employees are aware of and comply with the area-specific requirements described in this procedure.

4.4 Directors, managers, and supervisors who direct the inspection and maintenance of electric distribution facilities have the following responsibilities:

1. ENSURE the work necessary to comply with this procedure is performed safely, efficiently, and in a timely manner.

2. Accurately TRACK AND REPORT work progress.

4.5 Supervisors have the following responsibilities:

1. ENSURE that employees who perform facility assessments and subsequent maintenance are qualified to perform their assigned tasks.

2. Periodically CHECK employees' work to verify its accuracy and completeness, as well as the timely and succinct recordkeeping of the work.

4.6 Employees assigned facility inspection and maintenance tasks have the following responsibilities:

1. PERFORM assignments efficiently and safely. ENSURE not only personal safety, but also public safety. Employees must only perform work for which they are qualified.

2. When necessary, NOTIFY supervisors of any additional training, equipment, or resources required to efficiently and safely perform work.

4.7 IF IR inspections are performed by outside contractors,

THEN SEE Attachment 5, "Guideline for Validating Overhead (OH) Infrared (IR) Inspection Contract Work," for additional instructions.

END of Instructions

DEFINITIONS

Abnormal conditions: A condition that impacts or has the potential to adversely impact safety, service reliability, or asset life. Typically, these are conditions where the facility may fail to perform the function for which it was installed.

Ambient temperature: The prevailing temperature in the immediate vicinity of an object or target; the temperature of the target's environment.

Background temperature: The temperature(s) of the surrounding scene reflected off the target.

Component temperature: The temperature of the targeted surface being evaluated.

Distribution facilities: Any conductors or associated equipment operating at voltages up to 50,000 volts (V), namely 50 kilovolts (kV).

Infrared (IR) Inspections of Electric Distribution Facilities

DEFINITIONS (continued)

Emissivity: The relative ability of a surface to emit heat by radiation. Emissivity is the ratio of the heat emitted by a surface compared to that emitted by a black body.

Emittance value: The ratio of the intensity of thermal radiation at a given wavelength or spectral waveband from a target to the thermal radiation emitted by a black body with the same temperature as the target.

Field of view: The size of the scene surrounding the target, as observed by the infrared (IR) scanner and expressed as the ratio between the size of the scene surrounding the target and the distance between the target and the scanner.

Infrared notification: A form or electronic record used as a checklist to identify and record a specific, abnormal maintenance condition(s) that impacts safety, service reliability, or asset life.

Infrequent users: Employees including troublemen, crew foremen, and supervisors who use IR cameras to perform qualitative analysis to help assess the condition of energized electric distribution facilities. Infrequent users are not engaged in everyday IR inspections.

Input form: A form or electronic record used in the field as a checklist to record a specific, abnormal maintenance condition(s) that impacts safety, service reliability, or asset life. The recorded information is used to create an Electric Preventive Corrective Maintenance (EPCM) Notification.

Inspection: In this procedure, “inspection” refers to IR inspections using thermal imaging equipment to observe differential patterns of IR radiation. These patterns provide specific information about a structure system, object, or target. An inspection can also refer to a special type of diagnostic test using IR thermography.

Inspection cycle: Established schedules ensuring that facilities are inspected at durations based on calendar years. Inspections must be performed and completed within the calendar year for which they are scheduled.

Inspection log: A form or electronic record used to document inspections and identify abnormalities that require correction or a follow-up inspection.

Priority: The urgency to perform repairs identified in a notification.

Reference temperature: The temperature of a like piece of equipment at the same location as that registering the component (“fault”) temperature.

Reflective: The ability of a target to reflect or send back rays. A mirror has a reflective surface with respect to visible light.

Infrared (IR) Inspections of Electric Distribution Facilities

DEFINITIONS (continued)

Temperature differential (also known as "temperature rise"): The difference in temperature between the component (fault) temperature and the reference temperature.

Thermography: Any photographic, videotape, computer-generated, or graphic record of information derived from an IR inspection.

Transmissive: The ability of a medium to allow electromagnetic radiation to pass through it without being reflected or absorbed (i.e., sending or transmitting rays from one point to another). Glass is highly transmissive to visible light.

Utility-grade IR cameras: IR cameras that meet the minimum specification listed in Attachment 4, "Minimum Specifications for Approved Infrared Cameras."

Non-utility-grade IR cameras: IR cameras available to infrequent users who are not performing overhead or underground inspections. See Attachment 4 for more details.

IMPLEMENTATION RESPONSIBILITIES

The senior director in charge of asset management is responsible for approving, revising, and distributing this procedure.

Supervisors must ensure that the tailboard for this procedure is delivered by 07/15/2018 (procedure's effective date).

GOVERNING DOCUMENT

NA

COMPLIANCE REQUIREMENT / REGULATORY COMMITMENT

NA

REFERENCE DOCUMENTS

Developmental References:

- *Aluminum Electrical Conductor Handbook*
- Infraspection Institute Manuals:
  - *Infrared Inspection Manual*
  - *Infrared Methodology and Technology Manual*
  - *Infraspection Instruction Manual, Level II*

Infrared (IR) Inspections of Electric Distribution Facilities

REFERENCE DOCUMENTS (continued)

Developmental References (continued):

- Institute of Electrical and Electronic Engineers (IEEE) documents:
  - *Automatic Diagnosis System of Electrical Equipment Using Infrared Thermography*
  - *Robotized inspection of power lines with infrared vision*
- Utility Standard TD-2301S, "Patrols and Detailed/Intrusive Inspections of Electric Overhead and Underground Distribution Facilities"

Supplemental References:

- *Electric Distribution Preventive Maintenance (EDPM) Manual*
- Numbered Document 068178, "Distribution Transformer Temperature"
- Utility Standard SCM-2106S, "Material Problem Report Standard"

APPENDICES

NA

ATTACHMENTS

Attachment 1, Form TD-2022P-01-F01, "Infrared Inspection Log"

Attachment 2, Form TD-2022P-01-F02, "Infrared Data Sheet"

Attachment 3, Form 62-0113, "Material Problem Report"

Attachment 4, Minimum Specifications for Approved Infrared Cameras

Attachment 5, Guideline for Validating Overhead (OH) Infrared (IR) Inspection Contract Work

DOCUMENT RECISION

This utility procedure cancels and supersedes Utility Procedure TD-2022P-01, "Infrared Inspection of Electric Distribution Facilities," Rev. 0, dated 12/20/2013.

This utility procedure also moves the following two bulletins to **For Reference Only (FRO)**:

- Utility Bulletin TD-2022B-001, "Revised Corrective Maintenance Priorities Tables when Performing Infrared Inspections," Rev. 0, dated 04/17/2015.
- Utility Bulletin TD-2022B-002, "Infrared Cameral Approved for Restoration and Infrequent Users," Rev. 0, dated 02/15/2017.

Infrared (IR) Inspections of Electric Distribution Facilities

DOCUMENT APPROVER

[redacted] Senior Manager
Distribution Standards Engineering

DOCUMENT OWNER

[redacted] Senior Manager
Distribution Standards Engineering

DOCUMENT CONTACTS

[redacted] Senior Electric Standards Engineer

REVISION NOTES

Where?	What Changed?
Summary	• Added a sentence to explain the permitted use of non-utility graded IR cameras by restoration and infrequent uses.
Section 2.5, "Determining Corrective Maintenance Priorities"	• Incorporated the information communicated in Utility Bulletin TD-2022B-001: o Split former Table 1 into Table 1 and Table 2. o Revised temperature values and required time to complete the corrective action.
Attachment 4 and Attachment 5	• Added these two new attachments.

PACIFIC GAS AND ELECTRIC COMPANY
CPUC – SED Data Request
SED-003 – Brewer Fire

Requesters: Will Dundon, Emily Fisher
Request Date: August 2, 2022
Response Date: August 10, 2022

Question 1:
In the Event Analysis Report (EAR) PG&E shared for the Brewer Fire (filename "Attchmt 02_EI210707A_Grass Valley_Prpty Dmg_CONF"), PG&E described a search performed for EC Tags created between 2018 and 2021 that were created from an infrared (IR) inspection and mentioned cancelation in the long-text comment field of the EC Tag.

a. Has PG&E performed a similar search for EC Tags that were created from IR inspections and assigned Priority E or F, when the EC tags should have been assigned Priority A or B?

b. The search PG&E performed for EC Tags created from IR inspections and later cancelled returned 16 results between 2018 and 2021 that were improperly cancelled. Please indicate whether any of the locations of the 16 improperly cancelled EC Tags has experienced a fire that could have been caused by overheating electrical facilities since 2018.

Response to Question 1:
Please see our responses, below:

a. PG&E has not performed an additional review of every priority E and F tag created by IR inspections to determine if they have been assigned an incorrect priority.

b. None of the equipment associated with the identified 16 EC tags that were improperly canceled have experienced a failure that resulted in a fire captured in the PG&E ignition tracker after the tag was issued.

Electric Overhead Tag

Notification #: 114668140
PM Order #: 43471677
Priority: E **Sub Priority:** FS
Date Identified: 06/06/2018
Date Required: 06/06/2019

Identified in Field By: [redacted]
Street Address: [redacted]
City: GRASS VALLEY
Cross Street:
Division: Sierra
Latitude: [redacted]
Longitude:
Description: POLE_WOOD_ASES - [redacted] Grass Va

Plat: Q0819
Circuit: 15269-1103, HIGGINS
SSD: 2295
Equipment #: 2299
Pin #: _____
Pole #: _____
OIS #: _____
SAP Func. Location: ED.22-Q081900000.STRU.POLE
SAP Equipment: 100018477
Accessibility Tier:

Item Details

	Facility Type	Damage	Cause	Action
Item 1	POLE Pole	WOOD Woodpecker Damage		ASES Assessment
	☒ Completed ☐ Canceled			
Item 2	MARK Marking	MISS Missing		INST Install
	☒ Completed ☐ Canceled			

☐ Pole Test Sheet

User Status

Conductor/Operating Information		Field Identification		Field Condition (Exposure)		Field Condition (Accessibility)		Other	
Status	**Description**	**Status**	**Description**	**Status**	**Description**	**Status**	**Description**	**Status**	**Description**
PRI	Primary	INSP	Inspection	TER2	Tier2 Wildfire	BTKA	Bucket/Lift Truck Accessible	JAR	Job JAR
JPOL	Joint Pole	CUST	Customer / 3rd party call-in	FIRE	Extreme Fire Risk Area			OTRG	Other Regulator
OH	Overhead			RESD	Residential Area			COMP	Completed
				FMOB	Submitted from Mobile			CCNT	Completed by Contractor

Job Estimates

Est. Total Hrs. to Complete: 7
Main Work Center: GRSSVLLY, Grass Valley
Funded Repair Date:

Issued To

Est. Electric Crew Size: 01
Gas Crew Size: 00
WTC: 540, KAA_OH Genl CorrectMaint Tag
MAT: KAA, OH Genl CM Tag

Reviewed By: _____ Date of Field Review: _____

Completed or Canceled in Field By (LAN ID): [redacted] If No LAN ID Last Name, First Name: _____

Complete or Cancel Date: 01/31/2019 Actual Hours: 2.00 *Check One: PG&E Crew ☐ T-Man ☐ Contractor ☒

*Check One: Completed ☒ Canceled ☐ Found Completed Upon Arrival ☐

Signature: _____

I verify that all maintenance on this notification is addressed (completed, canceled, or found completed upon arrival)

***Public Safety & Regulatory Reviewer: If notification was canceled, check one (required):**

- ☐ **CONV:** Converted to another Notif-Type
- ☐ **EROR:** Created in Error (Desk Cancelation)
- ☐ **PROG:** Completed under another Program
- ☐ **DUMM:** "Dummy" for order only
- ☐ **NCOA:** All Found Completed/Resolved on Arrival
- ☐ **DUPL:** Duplicate EC for Same Location
- ☐ **NOCR:** No Compelling/Regulator Condition Exist

Electric Overhead Tag

Notification #: 114668140
PM Order #: 43471677
Priority: E **Sub Priority:** FS
Date Identified: 06/06/2018
Date Required: 06/06/2019

List of Tasks on Notification

Completed	Completed By: HULD	Completion Date: 01/31/2019

Field Comments:

Comments

06/06/2018 08:36:01 PST AIMOBILECPIC (AIMOBILECPIC)
- Location : 3
Along street. Light traffic.
Assess woodpecker damage.
Install switch numbers at high side.
01/24/2019 07:51:09 PST [redacted] CCM
PRINTED AND DELIVERED TO [redacted] TO DELIVER TO SUMMIT
02/14/2019 18:30:11 PST [redacted]
RECD COMPL EC TAG SCANNED AND TO PSR.
02/16/2019 09:42:05 PST [redacted]
COMPL BY CONTRACTOR [redacted] 1/31/19 HRS= 2
FIXED WPH, INSTALLED NEW MARKINGS.
08/25/2019 16:53:18 PST [redacted]
08252019: Requested by [redacted] WO0000000131957. Please batch the attached list of orders to PREC user status as they meet one of the following criteria:

1) User status is in DOCC, FICL, DCMN, CMPL, MAPP
2) CN24 or Construction confirmation (not within 90 days), no annual orders, no damage claims
3) DC33 (not within 90 days) for MWC KA, KB and KC
4) Damage claims MWC BHD or notification is CD with secondary user status "Bill"

FDA		New	Priority	Comp
Anchor				
Broken/Damaged	Repair		E	
	Replace		E	
Corroded	Repair		E	
	Replace		E	
Missing	Install		F	
Soil/Eroded/Graded	Adjust		F	
	Replace		F	
Animal Mitigation				
Broken/Damaged	Replace		E	
Mitigation Missing	Install		E	
Bird Protection				
Bird Protection	Replace		E	
CB Pole				
Broken/Damaged	Replace		F	
Burnt	Replace		E	
Decayed/Rotten	Replace		F	
Booster/Regulator				
Broken/Damaged	Repair		E	
	Replace		E	
Burnt	Repair		E	
Excessive Operation	Overhaul		E	
Leaks/Seeps/Weeps	Clean		E	
	Repair		E	
	Replace		E	
Capacitor				
Broken/Damaged	Repair		E	
	Replace		E	
Burnt	Repair		E	
	Replace		E	
Leaks/Seeps/Weeps	Clean		B	
	Repair		E	
	Replace		E	
Climbing Space				
Obstructed	Adjust		F	

FDA		New	Priority	Comp
Conductor				
Broken/Damaged	Repair		E	
	Replace		E	
Burnt	Repair		E	
	Replace		E	
Clearance Impaired	Adjust		E	
	Install CL Pole		E	
	RayChem		E	
Floater	Repair		E	
Idle Facilities	Remove		E	
Improper Connection	Adjust		E	
Overloaded	Test		E	
Sag/Clearance	Adjust		E	
	Replace		E	
	Install Spreader Bracket		E	
Connector				
Burnt	Replace		E	
Corroded	Repair		E	
	Replace		E	
Incorrectly Installed	Replace		E	
Temp Differential	Replace		E	
Crossarm				
Broken/Damaged	Repair		E	
	Replace		E	
Burnt	Repair		E	
	Replace		E	
Decayed/Rotten	Repair		E	
	Replace		E	
Cutout				
Broken/Damaged	Repair		E	
	Replace		E	
Clearance Impaired	Adjust		E	
Flashed	Repair		E	
	Replace		E	
Decorative Streetlight				
Broken/Damaged	Replace		E	
Missing	Install		E	
Fault Indicators				
Broken/Damaged	Replace		E	
Ground				
Broken/Damaged	Repair		B	
	Replace		B	
Exposed	Repair		F	
Missing	Install		E	
Guy				
Broken/Damaged	Repair		E	
	Replace		E	
Clearance Impaired	Adjust		F	
Corroded	Repair		E	
	Replace		E	
Loose	Adjust		F	
Missing	Install		F	
Overgrown	Trim		E	
Strain/Abrasion	Adjust		F	
	Remove		F	
Guy Marker				
Missing	Install		F	
	Replace		F	

FDA		New	Priority	Comp
Hardware/Framing				
Bird Prot Required	Install		E	
Birdcage	Install		E	
Broken/Damaged	Repair		E	
	Replace		E	
Loose	Adjust		E	
Missing	Install		E	
High Sign				
Missing	Install		F	
Insulator				
Broken/Damaged	Replace		E	
Flashed	Replace		E	
Primary Squatter	Repair		E	
	Replace		E	
Secondary Squatter	Repair		E	
	Replace		E	
Jumper				
Burnt	Replace		E	
Clearance Impaired	Adjust		E	
	Replace		E	
LAPP Insulator				
Broken/Damaged	Replace		E	
Lightning Arrester				
Broken/Damaged	Repair		E	
	Replace		E	
Flashed	Repair		E	
	Replace		E	
Marking				
Broken/Damaged	Replace		F	
Missing	Install		F	X
Molding				
Broken/Damaged	Repair		F	
	Replace		F	
Loose	Adjust		F	
Missing	Install		F	
OH Facility				
Bird Prot Required	Install		E	
Customer Related	Access		B	
	Appointment		B	
	Refusal		B	
Graffiti	Paint		E	
Idle Facilities	De-Energ		B	
	Remove		F	
	Transfer		F	
Limited Access	Inspect		B	
	Patrol		E	
	Remove		E	
Obstructed	Inspect		B	
	Remove		E	
	Replace		B	
Transmission Issue	Create LC		B	

FDA		New	Priority	Comp
Pole				
Broken/Damaged	Re-Frame		E	
	Repair		E	
	Replace		E	
	Pole Stub		E	
Burnt	Repair		E	
	Replace		E	
	Pole Stub		E	
Clearance Impaired	Repair		E	
	Replace		E	
Decayed/Rotten	Pole Top Repair		E	
	Repair		E	
	Replace		E	
	Pole Stub		E	
Idle Facilities	Remove		F	
Leaning	Adjust		E	
	Replace		E	
Overloaded	Replace		E	
	Test		E	
No Safe Access to Pole	Inspect		B	
Woodpecker Damage	Assessment		E	X
Recloser/Sectionalizer				
Broken/Damaged	Repair		E	
	Replace		E	
Excessive Operation	Overhaul		E	
Flashed	Repair		E	
	Replace		E	
Leaks/Seeps/Weeps	Clean		E	
	Repair		E	
	Replace		E	
Riser/Pothead				
Broken/Damaged	Repair		E	
	Replace		F	
Installed in Error	Relocate		E	
Flashed	Repair		E	
	Replace		F	
ROAD				
No Safe Access to Pole	Repair		B	
RTVI				
Interference	Repair		E	
	Replace		E	
SCADA/PDAC				
Broken/Damaged	Repair		F	
	Replace		F	
Leaks/Seeps/Weeps	Repair		F	
	Replace		F	
	Test		B	
Steel Lattice Pole				
Guarding Missing	Install		E	
Pole Step				
Clearance Impaired	Remove		F	
Streetlight				
Broken/Damaged	Repair		E	
	Replace		E	
Missing	Install		E	
Steel Lattice Tower				
Broken/Damaged	Replace		E	
Switch				
Broken/Damaged	Repair		E	
	Replace		E	

EMERGENCY ONLY Check Cause (Required)			
☐	Animal	☐	Bird
☐	Equip Failed	☐	Fire
☐	Lightning	☐	Pole Rotten
☐	Third Party	☐	Tree Branch
☐	Tree Contact	☐	Tree Fell
☐	Unknown	☐	

All FDA's identified in field
Priority = Default Priority for B, E, G, & F-Regulatory FDA's
Comp = Check if c[redacted]A in Field

Electric Overhead Tag

Notification #: 114668140

Priority: E **Sub Priority:** FS

PM Order #: 43471677

Date Identified: 06/06/2018

Date Required: 06/06/2019

FDA		New	Priority	Comp
Trans_Dist Pole				
Bonding Broken	Repair		E	
Tie Wire				
Broken/Damaged	Replace		E	
Loose	Replace		E	
Transformer				
Broken/Damaged	Repair		E	
	Replace		F	
Corroded	Replace		E	
Flashed	Repair		E	
	Replace		E	
Idle Facilities	Remove		F	
No Common Neutral	Relocate		E	
Overloaded	Test		E	
Parallel	Replace		E	
Leaks/Seeps/Weeps	Clean		B	
	Repair		F	
	Replace		E	
Tree/Vine				
Clearance Impaired	Remove		E	
	Trim		E	
Decayed/Rotten	Install CL Pole		E	
Overgrown	Remove		E	
	Trim		E	
Tree Connect	Assessment		B	
	Install CL Pole		E	
Trip Saver				
Broken/Damaged	Repair		E	
	Replace		E	
Under-Arm Bus				
Broken/Damaged	Repair		F	

Electric Overhead Tag

Notification #: 116854528

PM Order #:

Priority: E **Sub Priority:** FS

Date Identified: 03/27/2019

Date Required: 03/27/2020

Identified in Field By:	[redacted]	Plat:	Q0819
Street Address:	AF [redacted]	Circuit:	15269-1103, HIGGINS
		SSD:	99325
City:	GRASS VALLEY	Equipment #:	
Cross Street:		Pin #:	
Division:	Sierra	Pole #:	
Latitude:	[redacted]	OIS #:	
Longitude:	[redacted]	SAP Func. Location:	ED.22-Q081900000.STRU.POLE
Description:	POLE_BROK_REPL - AF [redacted]	SAP Equipment:	100018477
		Accessibility Tier:	

Item Details

	Facility Type	Damage	Cause	Action
Item 1	POLE Pole	BROK Broken/Damaged		REPL Replace

☐ Completed ☒ Canceled

☒ Pole Test Sheet

User Status

Conductor/Operating Information		Field Identification		Field Condition (Exposure)		Field Condition (Accessibility)		Other	
Status	**Description**	**Status**	**Description**	**Status**	**Description**	**Status**	**Description**	**Status**	**Description**
PRI	Primary			TER2	Tier2 Wildfire	BTKA	Bucket/Lift Truck Accessible	PRTO	WSIP Pronto
CLR	Clearance Required			FSRP	Field Safety Reassessmt			ESTR	Estimate Required
JPOL	Joint Pole			FMOB	Submitted from Mobile			CNCL	Canceled
OH	Overhead							SR21	Field Safety Reassessment-202
								CPGD	Completed by PG&E - Division

Job Estimates

Est. Total Hrs. to Complete: 15

Est. Electric Crew Size: 03

WTC: 311, 07D_Pole Replacement

Main Work Center: GRSSVLLY, Grass Valley

Gas Crew Size: 00

MAT:

Funded Repair Date: 05/31/2022

Issued To

Reviewed By: _____ Date of Field Review: _____

Completed or Canceled in Field By (LAN ID): [redacted] If No LAN ID Last Name, First Name: _____

Complete or Cancel Date: 07/19/2021 Actual Hours: _____ *Check One: PG&E Crew ☐ T-Man ☐ Contractor ☐

*Check One: Completed ☐ Canceled ☒ Found Completed Upon Arrival ☐

Signature: _____

I verify that all maintenance on this notification is addressed (completed, canceled, or found completed upon arrival)

***Public Safety & Regulatory Reviewer: If notification was canceled, check one (required):**

☐ **CONV:** Converted to another Notif-Type

☐ **EROR:** Created in Error (Desk Cancelation)

☐ **PROG:** Completed under another Program

☐ **DUMM:** "Dummy" for order only

☐ **NCOA:** All Found Completed/Resolved on Arrival

☒ **DUPL:** Duplicate EC for Same Location

☐ **NOCR:** No Compelling/Regulator Condition Exist

Electric Overhead Tag

Notification #: 116854528

PM Order #:

Priority: E **Sub Priority:** FS

Date Identified: 03/27/2019

Date Required: 03/27/2020

List of Tasks on Notification

Reviewed	Completed By: [redacted]	Completion Date: 08/14/2019
Reassess the condition	Completed By: [redacted]	Completion Date: 11/01/2020
Reassess the condition	Completed By: [redacted]	Completion Date: 03/30/2021
Cancelled	Completed By: [redacted]	Completion Date: 07/19/2021

Field Comments:

Comments

03/28/2019 09:22:14 PST INSPECTCPIC (INSPECTCPIC)
- Location : WSIP
Excessive amount of woodpecker and insect damage
04/11/2019 08:22:45 PST [redacted]
DOUGLAS FIR
06/21/2019 13:19:14 PST [redacted]
REVW task added to notif to track EC hardening project team review of Tier 2/3 notifs; REVW task will be completed upon completion of review for potential hardening project. Contact [redacted] for questions about this review process and hardening projects.. [redacted] 061319
WO0000004333794
08/17/2019 11:41:49 PST [redacted]
08142019: Requested by [redacted]: Notif released by EC Optimization Review Team on 8/14/2019, confirming that this work can be executed on an individual tag basis and released to normal work flow.
WO0000004361584
01/22/2020 11:07:31 PST [redacted]
1/22/2020 [redacted] Update Orders and Notifications on pending ECs to [redacted]
WO0000000325476.
04/02/2020 16:20:41 PST [redacted]
04022020: Submitted by [redacted]. Add FSRP User Status.
WO0000000424393
04/24/2020 18:01:06 PST [redacted]
04232020: Submitted by [redacted] Remove SR20 user status and add FSRP user status. WO0000000451820
05/05/2020 11:12:24 PST [redacted]
re-apply FSRP user status
05/09/2020 12:55:05 PST CONSTRCTCPIC (CONSTRCTCPIC)

Safety Reassessment
Inspected By: [redacted]
003. Expedite to complete before 2021 fire season
Comments: Significant bird damage and shell rot. Pole and switch needs
to be changed out.
Additional Comments: Field Safety Assessment completed for Tier 2/3 EC
notifications that are not in 2020 work execution plan or sch
11/21/2020 00:57:19 PST [redacted]
11/21/2020 [redacted] CIRT review not required for completed FSR; added REAS
task and funded repair date (FRD) based on FSR field results for
recommended Priority E and F ECs. Field employees should follow
documented scope change process as needed_WO0000000706352
02/26/2021 03:39:23 PST [redacted]
02/26/2021-Submitted by [redacted] ass Update the list of
notifications with new user status = SR21_WO0000000837942.
03/12/2021 16:14:55 PST INSPECTCPIC (INSPECTCPIC)
Safety Reassessment
Inspected by: [redacted]
Field Submission Date/Time: Mar 12, 2021 at 04:14 PM
005. Cancel - Not Valid
Comments: Ok to cancel tag. Pole does not need to be replaced. This is a
Cedar pole. This pole is in good condition.
Additional Comments: Field Safety Assessment completed for Tier 2/3 EC
notifications that are not in 2021 work execution plan or scheduled
for detailed inspection
03/30/2021 06:41:43 PST [redacted]
pole test data is call for replacement.
Scenario 003 – Expedite to complete before next fire season, 5/31/2022
07/19/2021 14:06:16 PST [redacted]
CANCELED DUPLCIATE EC 116854528. WORK COMPLETED ON A TAG 121681165 /
35270414 - 07/13/2021.

FDA		New	Priority	Comp
Anchor				
Broken/Damaged	Repair		E	
	Replace		E	
Corroded	Repair		E	
	Replace		E	
Missing	Install		F	
Soil/Eroded/Graded	Adjust		F	
	Replace		F	
Animal Mitigation				
Broken/Damaged	Replace		E	
Mitigation Missing	Install		E	
Bird Protection				
Bird Protection	Replace		E	
CB Pole				
Broken/Damaged	Replace		F	
Burnt	Replace		E	
Decayed/Rotten	Replace		F	
Booster/Regulator				
Broken/Damaged	Repair		E	
	Replace		E	
Burnt	Repair		E	
Excessive Operation	Overhaul		E	
Leaks/Seeps/Weeps	Clean		E	
	Repair		E	
	Replace		E	
Capacitor				
Broken/Damaged	Repair		E	
	Replace		E	
Burnt	Repair		E	
	Replace		E	
Leaks/Seeps/Weeps	Clean		B	
	Repair		E	
	Replace		E	
Climbing Space				
Obstructed	Adjust		F	

FDA		New	Priority	Comp
Conductor				
Broken/Damaged	Repair		E	
	Replace		E	
Burnt	Repair		E	
	Replace		E	
Clearance Impaired	Adjust		E	
	Install CL Pole		E	
	RayChem		E	
Floater	Repair		E	
Idle Facilities	Remove		E	
Improper Connection	Adjust		E	
Overloaded	Test		E	
Sag/Clearance	Adjust		E	
	Replace		E	
	Install Spreader Bracket		E	
Connector				
Burnt	Replace		E	
Corroded	Repair		E	
	Replace		E	
Incorrectly Installed	Replace		E	
Temp Differential	Replace		E	
Crossarm				
Broken/Damaged	Repair		E	
	Replace		E	
Burnt	Repair		E	
	Replace		E	
Decayed/Rotten	Repair		E	
	Replace		E	
Cutout				
Broken/Damaged	Repair		E	
	Replace		E	
Clearance Impaired	Adjust		E	
Flashed	Repair		E	
	Replace		E	
Decorative Streetlight				
Broken/Damaged	Replace		E	
Missing	Install		E	
Fault Indicators				
Broken/Damaged	Replace		E	
Ground				
Broken/Damaged	Repair		B	
	Replace		B	
Exposed	Repair		F	
Missing	Install		E	
Guy				
Broken/Damaged	Repair		E	
	Replace		E	
Clearance Impaired	Adjust		F	
Corroded	Repair		E	
	Replace		E	
Loose	Adjust		F	
Missing	Install		F	
Overgrown	Trim		E	
Strain/Abrasion	Adjust		F	
	Remove		F	
Guy Marker				
Missing	Install		F	
	Replace		F	

FDA		New	Priority	Comp
Hardware/Framing				
Bird Prot Required	Install		E	
Birdcage	Install		E	
Broken/Damaged	Repair		E	
	Replace		E	
Loose	Adjust		E	
Missing	Install		E	
High Sign				
Missing	Install		F	
Insulator				
Broken/Damaged	Replace		E	
Flashed	Replace		E	
Primary Squatter	Repair		E	
	Replace		E	
Secondary Squatter	Repair		E	
	Replace		E	
Jumper				
Burnt	Replace		E	
Clearance Impaired	Adjust		E	
	Replace		E	
LAPP Insulator				
Broken/Damaged	Replace		E	
Lightning Arrester				
Broken/Damaged	Repair		E	
	Replace		E	
Flashed	Repair		E	
	Replace		E	
Marking				
Broken/Damaged	Replace		F	
Missing	Install		F	
Molding				
Broken/Damaged	Repair		F	
	Replace		F	
Loose	Adjust		F	
Missing	Install		F	
OH Facility				
Bird Prot Required	Install		E	
Customer Related	Access		B	
	Appointment		B	
	Refusal		B	
Graffiti	Paint		E	
Idle Facilities	De-Energ		B	
	Remove		F	
	Transfer		F	
Limited Access	Inspect		B	
	Patrol		E	
	Remove		E	
Obstructed	Inspect		B	
	Remove		E	
	Replace		B	
Transmission Issue	Create LC		B	

FDA		New	Priority	Comp
Pole				
Broken/Damaged	Re-Frame		E	
	Repair		E	
	Replace	X	E	
	Pole Stub		E	
Burnt	Repair		E	
	Replace		E	
	Pole Stub		E	
Clearance Impaired	Repair		E	
	Replace		E	
Decayed/Rotten	Pole Top Repair		E	
	Repair		E	
	Replace		E	
	Pole Stub		E	
Idle Facilities	Remove		F	
Leaning	Adjust		E	
	Replace		E	
Overloaded	Replace		E	
	Test		E	
No Safe Access to Pole	Inspect		B	
Woodpecker Damage	Assessment		E	
Recloser/Sectionalizer				
Broken/Damaged	Repair		E	
	Replace		E	
Excessive Operation	Overhaul		E	
Flashed	Repair		E	
	Replace		E	
Leaks/Seeps/Weeps	Clean		E	
	Repair		E	
	Replace		E	
Riser/Pothead				
Broken/Damaged	Repair		E	
	Replace		F	
Installed in Error	Relocate		E	
Flashed	Repair		E	
	Replace		F	
ROAD				
No Safe Access to Pole	Repair		B	
RTVI				
Interference	Repair		E	
	Replace		E	
SCADA/PDAC				
Broken/Damaged	Repair		F	
	Replace		F	
Leaks/Seeps/Weeps	Repair		F	
	Replace		F	
	Test		B	
Steel Lattice Pole				
Guarding Missing	Install		E	
Pole Step				
Clearance Impaired	Remove		F	
Streetlight				
Broken/Damaged	Repair		E	
	Replace		E	
Missing	Install		E	
Steel Lattice Tower				
Broken/Damaged	Replace		E	
Switch				
Broken/Damaged	Repair		E	
	Replace		E	

EMERGENCY ONLY Check Cause (Required)			
☐	Animal	☐	Bird
☐	Equip Failed	☐	Fire
☐	Lightning	☐	Pole Rotten
☐	Third Party	☐	Tree Branch
☐	Tree Contact	☐	Tree Fell
☐	Unknown	☐	

All FDA's identified in field
Priority = Default Priority for B, E, G, & F-Regulatory FDA's
Comp = Check if completing FDA in Field

Printed By: [redacted] 12/24/2021

Notification #: 116854528

Electric Overhead Tag

Notification #: 116854528

PM Order #:

Priority: E **Sub Priority:** FS

Date Identified: 03/27/2019 **Date Required:** 03/27/2020

FDA		New	Priority	Comp
Trans_Dist Pole				
Bonding Broken	Repair		E	
Tie Wire				
Broken/Damaged	Replace		E	
Loose	Replace		E	
Transformer				
Broken/Damaged	Repair		E	
	Replace		F	
Corroded	Replace		E	
Flashed	Repair		E	
	Replace		E	
Idle Facilities	Remove		F	
No Common Neutral	Relocate		E	
Overloaded	Test		E	
Parallel	Replace		E	
Leaks/Seeps/Weeps	Clean		B	
	Repair		F	
	Replace		E	
Tree/Vine				
Clearance Impaired	Remove		E	
	Trim		E	
Decayed/Rotten	Install CL Pole		E	
Overgrown	Remove		E	
	Trim		E	
Tree Connect	Assessment		B	
	Install CL Pole		E	
Trip Saver				
Broken/Damaged	Repair		E	
	Replace		E	
Under-Arm Bus				
Broken/Damaged	Repair		F	

Job Aid: Overhead Inspection

Summary

This job aid is designed to assist Electric Distribution Compliance Inspectors in assessing and prioritizing **compelling abnormal conditions** on overhead facilities during scheduled GO 165 Inspections.

It is meant to provide guidance on issues that Inspectors may encounter most frequently during an inspection and is not intended to be an all-inclusive listing of all abnormal conditions or corrective actions.

Field assessments are activities performed by Inspectors to identify Compelling Abnormal Conditions.

Compelling Abnormal Condition is defined as being any electric distribution pole, equipment, component, conductors, vegetation, or third-party condition that cause a safety or fire ignition risk that may adversely impact public safety and/or service reliability in the next five (5) years.

Overhead Job Aid Training

- Refresher Training — The Annual Refresher Training program is designed for PG&E's Compliance Inspectors who conducted detailed inspections in the previous year. Content includes explanations of changes to the annual inspection program, mobile applications, and the checklist. A review of this Job Aid is included in this course.
- New Inspector Training — The New Inspector Training program is a 3-day training program designed for new Compliance Inspectors and Canus contractors who may be assigned Electric Distribution GO165 Overhead/Underground inspection and patrol work. A review of this Job Aid is included in this course.
- New Contractor Training — The New Contractor Training program is a 3-day training program, followed by an assessment day plus a 2 day in-the-field-training. It is designed for new contractors who will be assigned Electric Distribution GO165 Overhead inspection work. A review of this Job Aid is included in this course.

Target Audience

- Qualified Electrical Workers (QEW)

Before You Start

- Follow all applicable safety rules, procedures, and protocols.
- Wear appropriate personal protective equipment (PPE) for specific tasks and work area.

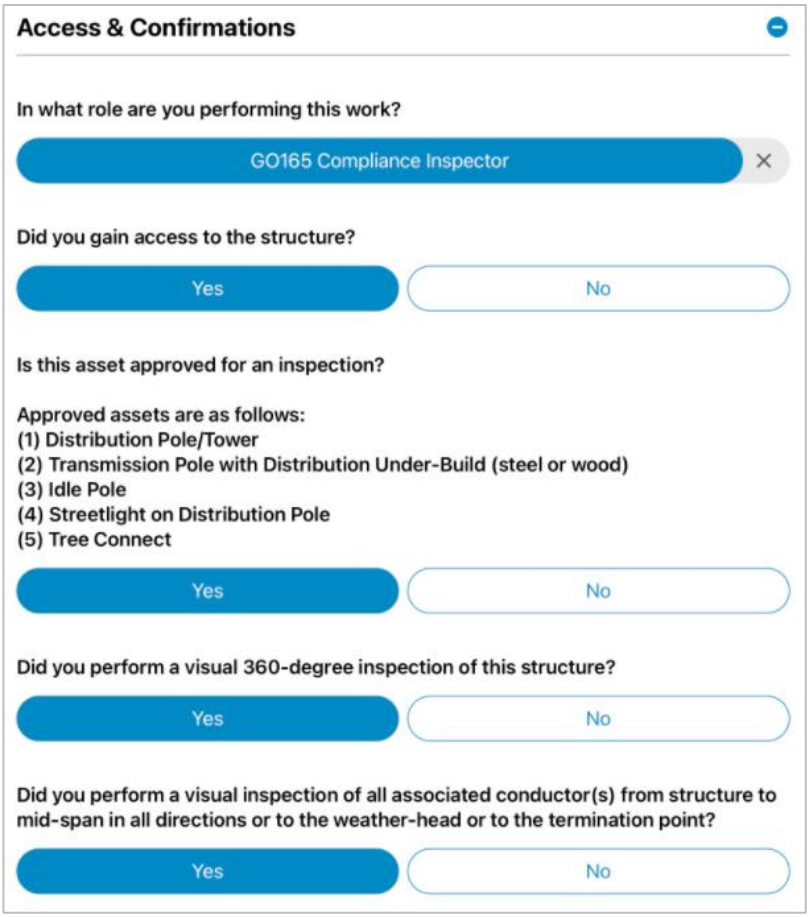
Table of Contents

2022 Detailed Overhead Inspection Checklist

1. Asset Details – Displays asset data

2. Access & Confirmations

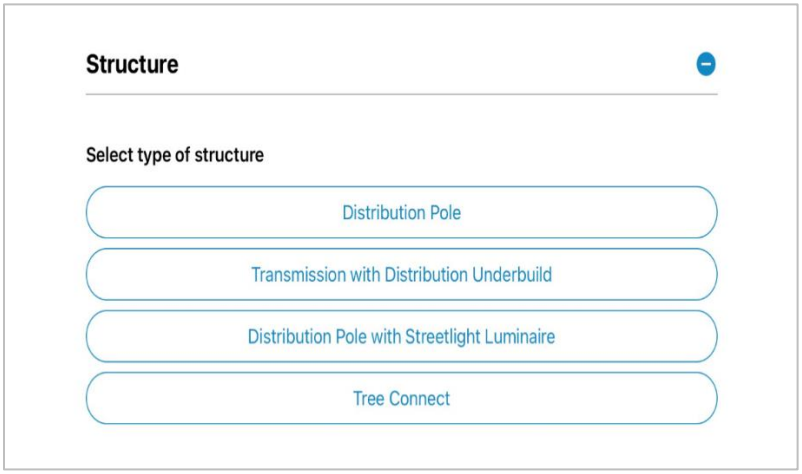
Use this section to (a) select the role for which you are performing the inspection work, (b) indicate if gained access to the inspection location, (c) confirm you achived a visual 360-degree inspection of the structure, and (d) confirm you achived a visual 360-degree inspection of this structure's conductors.



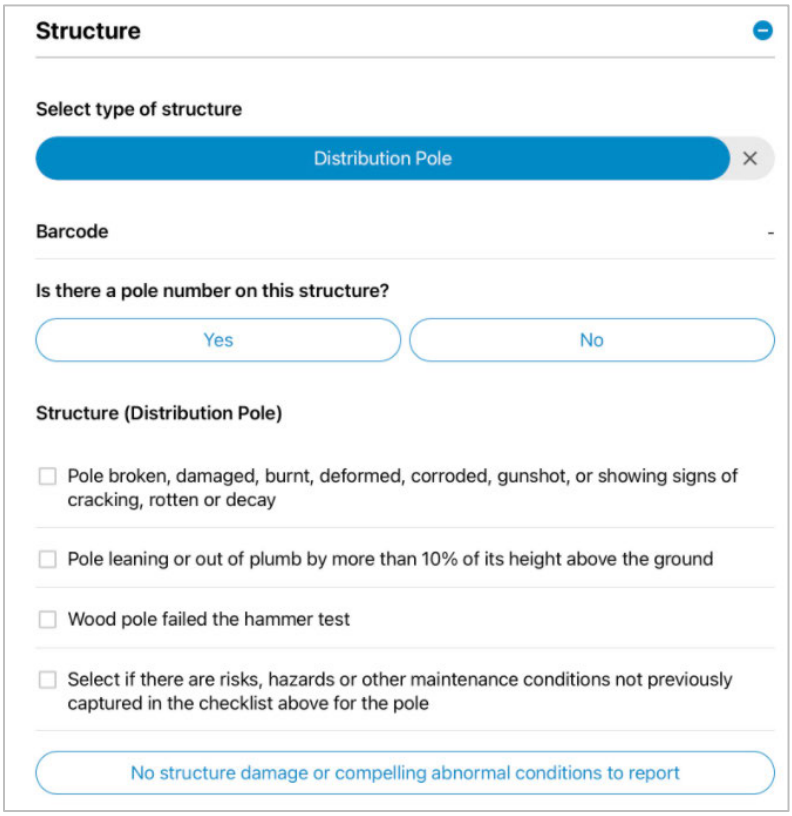
3. Structure

All Compliance Inspectors are required to apply pole number tags (barcodes) to distribution structures with missing or damaged pole number tags and to document that activity using the checklist. The checklist provides a safety reason when this requirement cannot be performed during a detailed inspection.

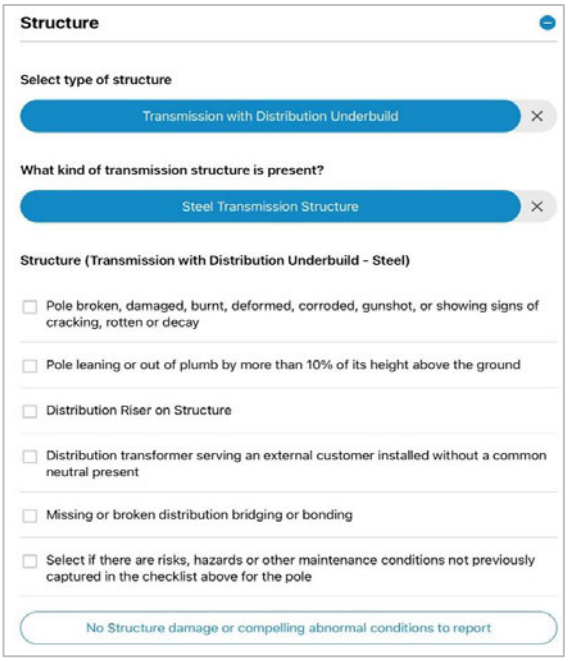
Use this section to identify compelling abnormal conditions related to the structure.

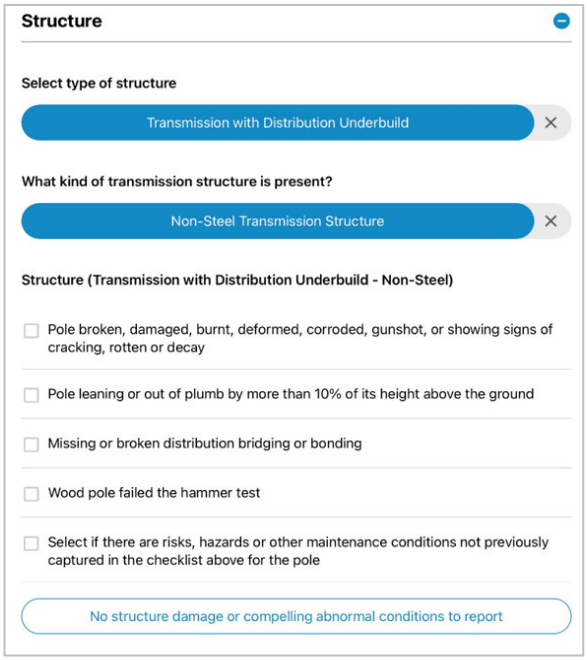


3.1 Distribution Pole

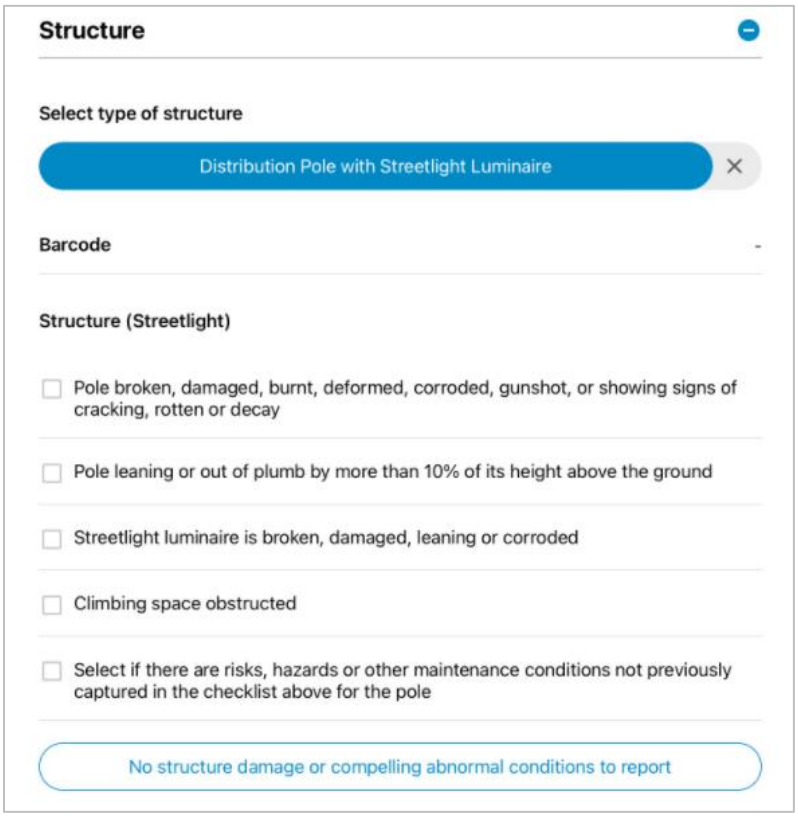


3.2 Transmission with Distribution Underbuild

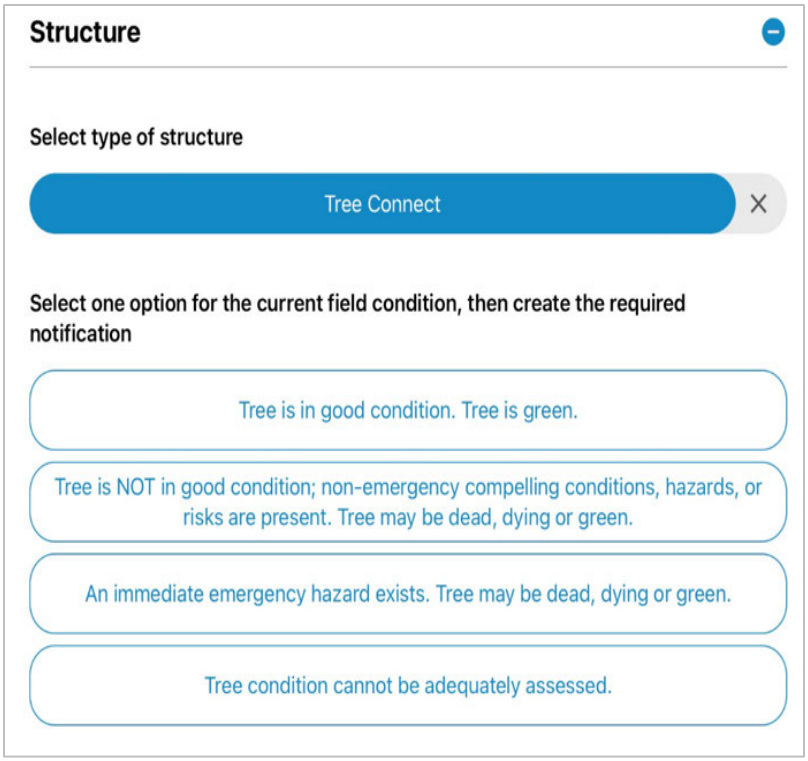




3.3 Distribution Pole with Streetlight Luminaire

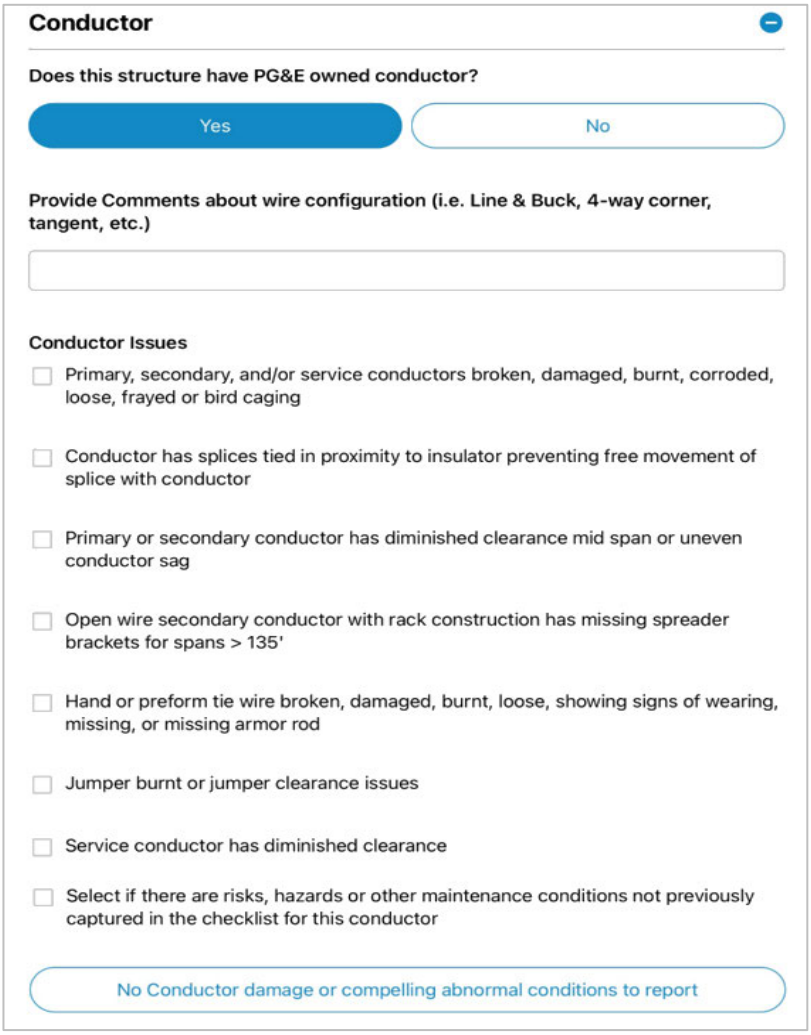


3.4 Tree Connect



4. Conductor

Use this section to identify compelling abnormal conditions related to conductors.



5. Equipment

Use this section to identify compelling abnormal conditions related to transformers, other equipment and Critical Operating Equipment (COE) field conditions.

Equipment

Does this structure have PG&E equipment?

Yes | No

Transformers

- ☐ Transformer/line protection cutouts broken, damaged, cracked, loose, or flashed
- ☐ Transformer flashed or corroded, e.g. integrity of the metal is breached – holes in metal, cover not securable, metal is damaged, separation, layering, or bubbling
- ☐ Transformer shows signs of leaking, seeping, or weeping oil
- ☐ Transformer has cracked or broken bushings
- ☐ Internal Fault Device has activated (overheated) on the transformer (orange band is visible)
- ☐ Obvious paralleled transformer condition at this location
- ☐ Select if there are risks, hazards or other maintenance conditions not previously captured in the checklist above for the equipment

No equipment damage or compelling abnormal conditions to report (Transformers)

Other Equipment

- ☐ Lightning arresters broken, damaged, flashed, or the ground lead disconnect activated
- ☐ Other equipment leaking/seeping/weeping oil or corroded
- ☐ Radial/EOL (End-Of-Line) configuration riser/pothead broken, damaged, loose, or flashed
- ☐ Select if there are risks, hazards or other maintenance conditions not previously captured in the checklist above for the equipment

No equipment damage or compelling abnormal conditions to report (Other Equipment Issues)

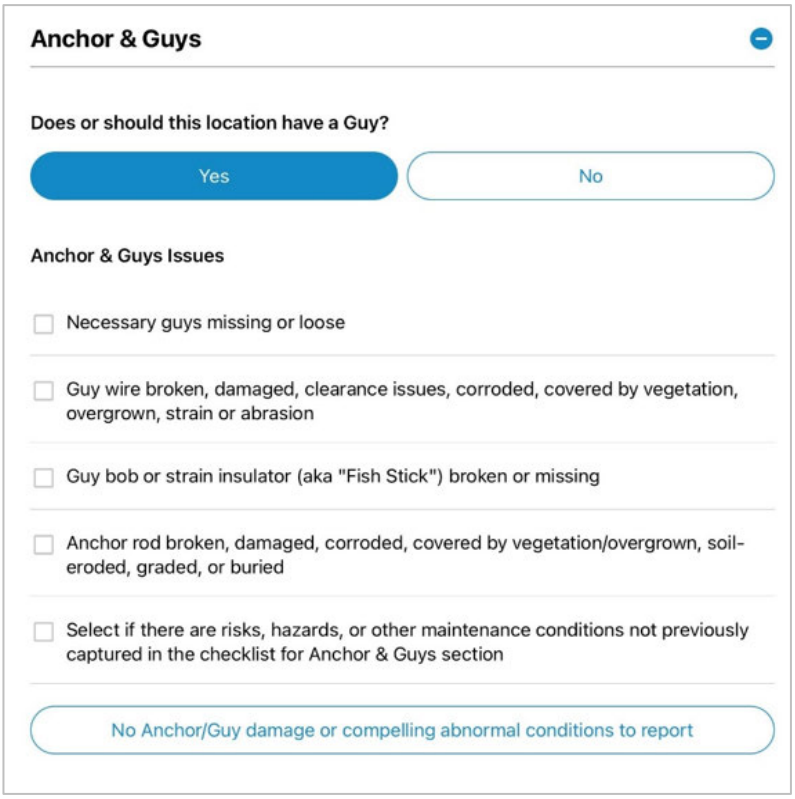
Follow the Critical Equipment (COE) Process

- ☐ Line protection cutouts for loop configurations broken, damaged, cracked, loose, or flashed
- ☐ The critical operating equipment has visible signs of rust, corrosion, cracking, arcing, tracking, contamination, or damaged components
- ☐ Loop configuration riser/pothead broken, damaged, loose, or flashed

No equipment damage or compelling abnormal conditions to report (Critical Equipment)

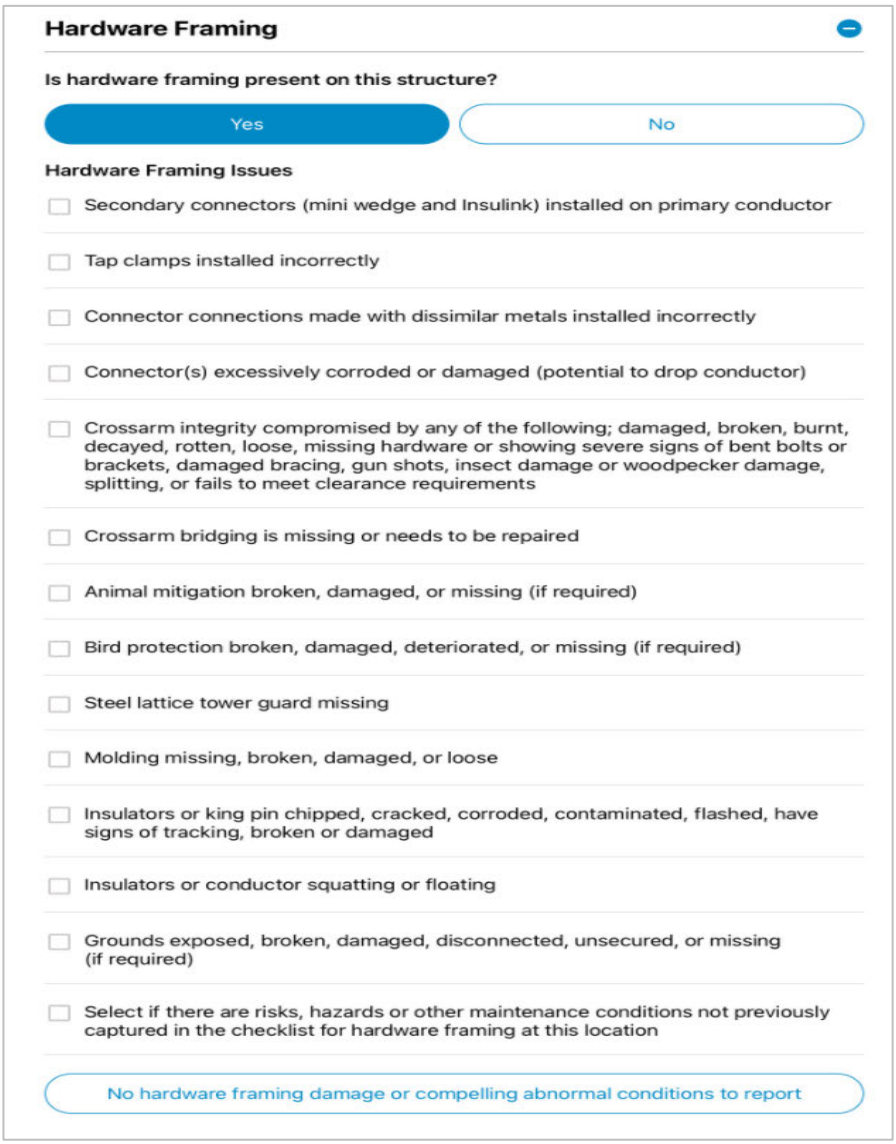
6. Anchor & Guys

Use this section to identify compelling abnormal conditions related to anchor and guys.



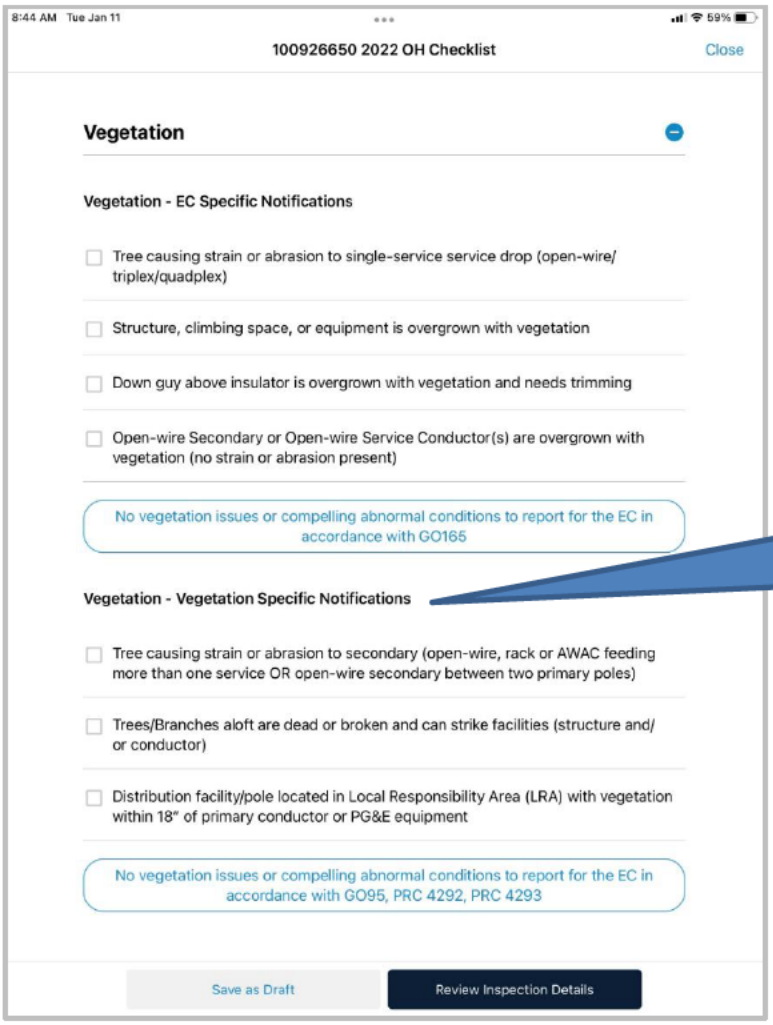
7. Hardware Framing

Use this section to identify compelling abnormal conditions related to hardware and framing issues.



8. Vegetation

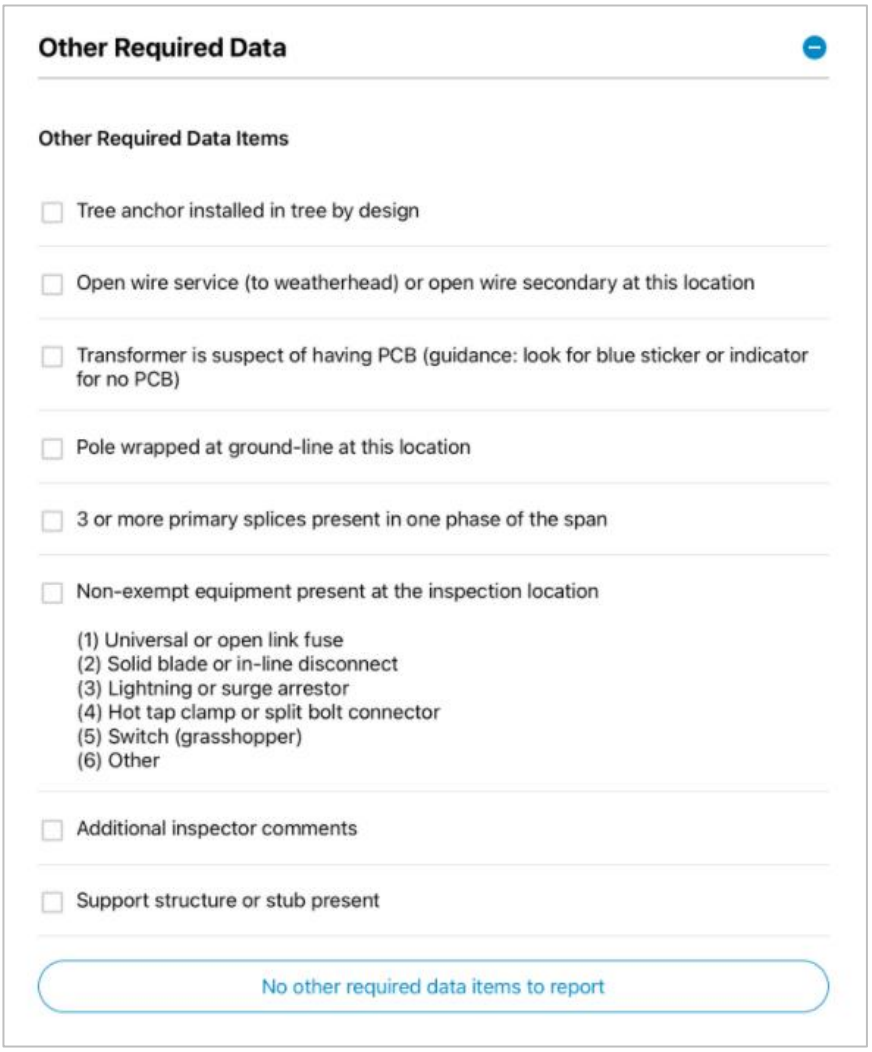
Use this section to identify compelling abnormal conditions related to vegetation issues.



9. Other Required Data

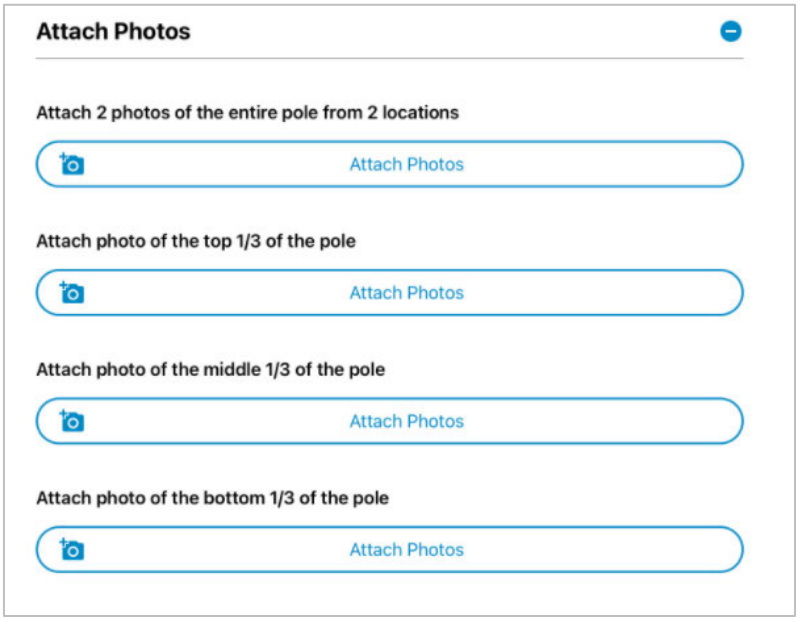
Use this section to provide specific field information which will be used by PG&E's Asset Strategy team to build improvements in PG&E's asset management program. Below are the 2022 topics that require field information from every compliance inspector while performing a Detailed Overhead Inspection.

This section, like all other sections, is required when the checklist item is observed in the field.



10. Attach Photos

Use this section to attach all mandatory inspection photos.



Mandatory Photo Requirements: Reference material shown below originates from GOV-1038S and has been adjusted in ELEC-1000-B and ELEC-0314 Process Training. It is enforced within the iOS Inspect Application, Detailed Inspection Overhead Checklist.

Mandatory Requirements / Photo requirements

(1) Attach 2 Photos of the entire pole from 2 locations
- Take the first photo showing the entire pole (top to bottom) and the structure's surrounding environment.
- Take the second photo while standing at the different location. This location should be approximately 90° or more from the 1st photo's location. The second photo must show the entire pole (top to bottom) and the structure's surrounding environment.
- The photos must show equipment, third-party attachments, ground molding, guys and anchors, if any.

(2) Attach Photo of the top 1/3 of the pole
- Take one photo showing the top 1/3 of the pole including equipment, if any.

(3) Attach Photo of the middle 1/3 of the pole
- Take one photo showing the middle 1/3 of the pole including third-party attachments, if any.

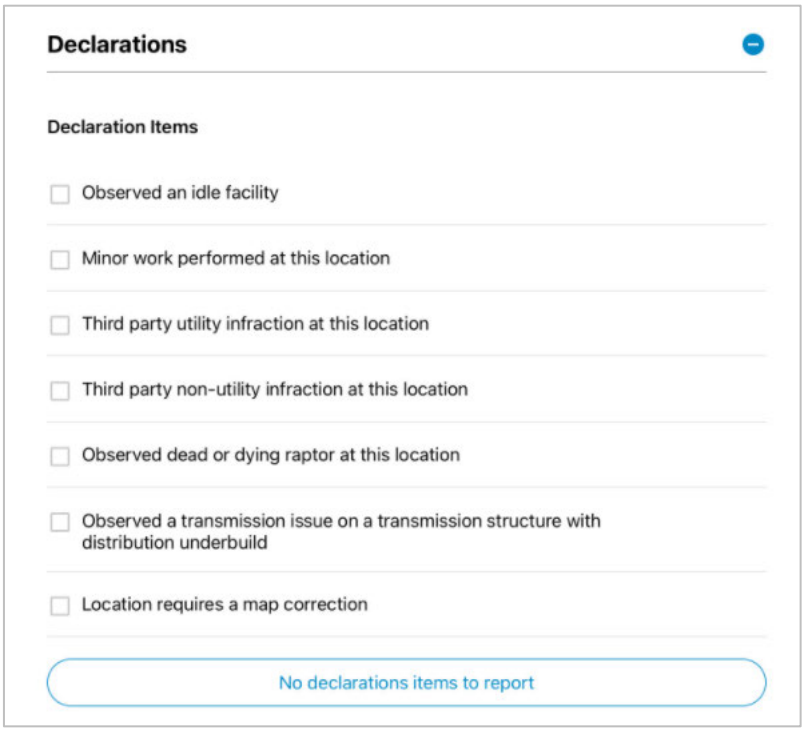
(4) Attach Photo of the bottom 1/3 of the pole
- Take one photo showing the base of the pole meeting the soil, cement, etc.
- The photo should include guys and anchors, if any.

Failure to comply with these requirements mean that the inspection is invalid and would have to be reinspected.

11. Declarations

Use this section to identify field conditions that are reported on the following forms:

- Idle Facility
- Minor Work
- Third-Party Utility
- Third-Party Non-Utility
- Raptor Program
- PG&E Transmission Line
- Map Corrections



Antennas - Third Party Communication

1. Broken/Damaged Cellular Antenna

General Guidance: If the broken antenna is creating a non-emergency safety or reliability issue, create a third-party notification.

If the antenna is causing an emergency safety or reliability issue, contact your supervisor for instructions. Do not leave the location until it is made safe.

Minor Work: No

Related Documents: 027911

2. Third Party Communication Antenna - Inadequate Clearance

General Guidance: Create a third-party notification if a cellular antenna does not have adequate clearance from supply lines or equipment.

If the antenna is causing an emergency safety or reliability issue, contact your supervisor for instructions. Do not leave the location until it is made safe.

Minor Work: No

Related Documents: 027911, T&D Bulletin 2009-20

Climbing Space

1. Climbing Space - Obstructed

General Guidance: Evaluate pole to determine whether there is an obstruction caused by PG&E facilities or by third party facilities that is causing a compelling safety issue – based on the location of the pole and exposure to the worker - that needs to be addressed in 5 years.

Example: Equipment pole that cannot be accessed in a bucket truck.

Example: Pole in rear easement with secondary or service connection failures.

Example where the climbing space **is not** a compelling condition: Equipment pole that is accessible 100% of the time in a bucket.

For PG&E obstructions: Create an EC notification.

For third party obstructions: Create a third-party notification if they pose a significant safety hazard.

If a third-party obstruction is causing an emergency safety or reliability issue, contact your supervisor for instructions.

Minor Work: No

EC Form: Yes, if not able to perform minor work

- Select the Priority and Due Date based upon compelling abnormal condition that may adversely impact public safety and/or service reliability in the next five (5) years.

Related Documents: 066210

COMMUNICATION IN CLIMBING SPACE	CLIMBING SPACE OBSTRUCTED
	
At this Location: Obstructed climbing space, access via bucket truck from street below. Also, look for clearance issues between communications facilities and the PG&E down guys.	**At this Location:** Climbing space obstruction by communication facilities on pole with equipment. Communication messengers are too close. No bucket truck access.
Perform Minor Work: No	**Perform Minor Work:** No
Write Third Party Notification: No	**Write Third Party Notification:** Yes
Write EC Form: No	**Write EC Form:** No

2. Climbing Space – Obstructed by Vegetation

General Guidance: For incidental vegetation in climbing space that can be moved when climbing, or quickly cleared prior to climbing, no action is required.

For major vegetation that cannot be quickly cleared or moved prior to climbing, evaluate the pole:

- Is there supply equipment on the pole that may need to be operated during emergency conditions?
- Should the obstruction be cleared for any other safety or reliability reason in the veg

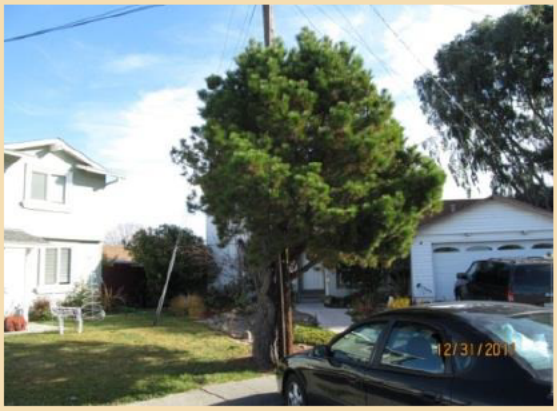
If the answer is yes to any of these questions, the inspector will need to create an EC Notification to clear vegetation unless it can be addressed as minor work.

Minor Work: Yes

EC Form: Yes, if not able to perform minor work

- Select the Priority and Due Date based upon compelling abnormal condition that may adversely impact public safety and/or service reliability in the next five (5) years.

Related Documents: 066210

OBSTRUCTED CLIMBING SPACE	CLIMBING SPACE OBSTRUCTED
	
At this Location: Obstructed climbing space. Inspector cannot see enough of the pole to complete Inspection (heavy vegetation, cannot see through) No equipment on pole. The only reason to address is to complete the inspection.	**At this Location:** Climbing space obstruction, able to perform inspection, no equipment on pole (able to see guys, able to see up the pole under tree)
Perform Minor Work: No	**Perform Minor Work:** No
Write Third-Party Notification: No, only need clearing to perform inspection	**Write Third Party:** No
Write EC Form: Yes • FDA=OH Facility / Limited Access/Obstruct / Inspect (Primary) • FDA=OH Facility / Limited Access/Obstruct / Remove • Priority "B", 0-3 months depending upon exposure; must complete before CPUC due date for map	**Write EC:** No, not compelling

POLE WITH VEGETATION	IVY COVERED POLE
	
At this Location: 360° pole inspection not possible	**At this Location:** 360° pole inspection not possible
Perform Minor Work: No	**Perform Minor Work:** No
Write Third-Party Notification: No	**Write Third-Party Notification:** No
Write EC Form: Yes • FDA= OH Facility / Limited Access/Obstruct / Inspect (Primary) • FDA=OH Facility / Limited Access/Obstruct / Remove • Priority "B", 0-3 months depending upon exposure; must complete before CPUC due date for map	**Write EC Form:** Yes • FDA= OH Facility / Limited Access/Obstruct / Inspect (Primary) • FDA=OH Facility / Limited Access/Obstruct / Remove • Priority "B", 0-3 months depending upon exposure; must complete before CPUC due date for map

Conductor

1. Conductor Broken/Damaged

General Guidance:

2022 Detailed Inspection Checklist Content

Visually check all conductors (primary/secondary/service), associated attachments and dead-ends for damage from the structure being inspected to mid-span in all directions or the weather-head or to the conductor's termination point. [Refer to GOV-1038S]

1 of 8: Primary, secondary, and/or service conductors that are broken, damaged, burnt, corroded, loose, frayed or bird caging. Guidance: If observed, create EC Notification to replace the conductor.

2 of 8: Conductor has splices tied in proximity to insulator preventing free movement of splice with conductor.

Guidance: Create EC to replace conductor whenever when (A) the conductor has splices tied in proximity to insulator (less than 2 ft. from insulator, armor rod or dead end) preventing free movement of splice with conductor; and (B) you observe older grey AWAC service drops and service drops where new service drop cable has been spliced with older, grey AWAC.

3 of 8: Primary or secondary conductor has diminished clearance mid-span or uneven conductor sag. Guidance: Refer to Clearance Job Aid in this document. If observed, create EC Notification to adjust clearance or to recommend a clearance pole.

4 of 8: Open wire secondary conductor with rack construction has missing spreader brackets for spans > 135'. Guidance: If observed, create EC Notification to have spreader brackets installed where bucket truck accessible; use line of sight and if available, foreman-cane or range-finder. If no access due to excessive vegetation, create EC Notification to remove vegetation and install spreaders.

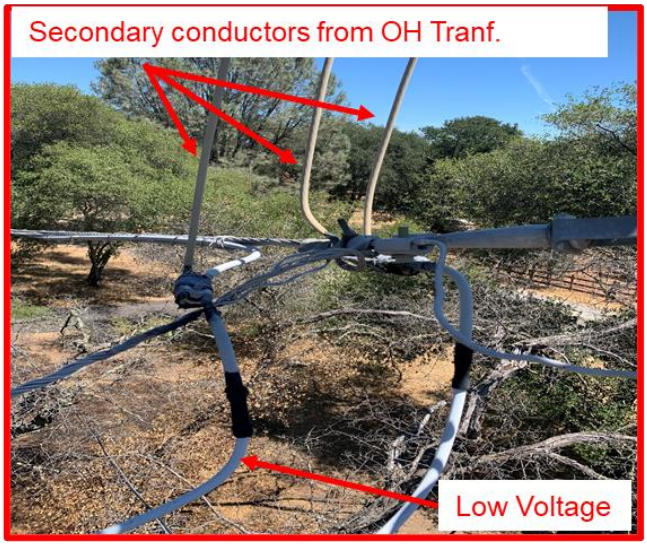
5 of 8: Hand or preform tie wire broken, damaged, burnt, loose, showing signs of wearing, missing, or missing armor rod. Guidance: Create EC Notification to replace tie wire and/or armor rod.

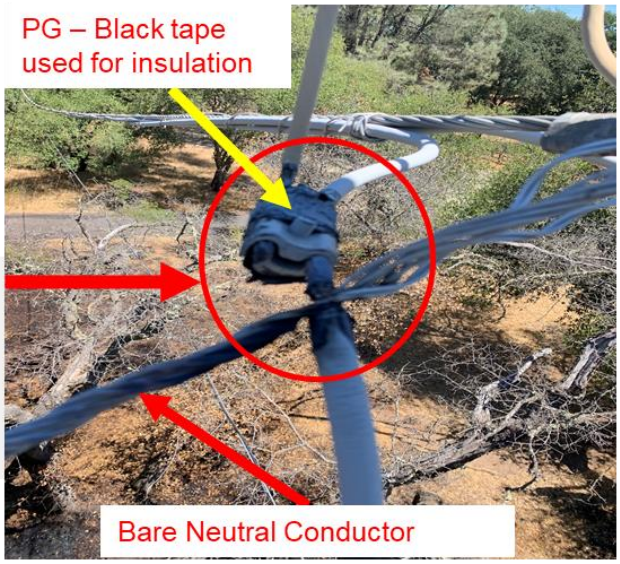
6 of 8: Jumper burnt or jumper clearance issues. Guidance: If observed, create EC Notification to replace burnt jumper or to adjust clearance issues.

7 of 8: Service conductor has diminished clearance. Guidance: Refer to Clearance Job Aid in this document. If observed, create EC Notification to adjust clearance or to recommend a clearance pole.

8 of 8: Select if there are risks, hazards, or other maintenance conditions not previously captured in the checklist for this conductor.

Note 1: Look for vegetation in the open-wire secondary conductor. Look for grey wire AWAC service drops issues like deteriorated insulation and outdated connections. Guidance: If observed, create EC Notification to replace conductor with covered conductor and include vegetation trimming.





Neutral conductor overlay on the service drop caused direct short. Low voltage insulation failed and caused arcing.

Note 2: Visually check for excessively corroded or damaged connectors and dead-end hardware which has a potential to drop conductor. Guidance: If observed, create EC Notification to replace connectors or dead-end hardware.

Note 3: Visually check all conductors, connectors, and splices under existing bird protection. Guidance: Use binoculars. If observed, create EC Notification to replace conductors and/or connectors.

Note 4: Visually check all splices in a span. Guidance: Follow the detailed splice training guidance. Use binoculars. If observed, create EC Notification to replace conductors with damaged, corroded, tie in too close to the insulator, preventing free movement of the splice with the conductor.

Note 5: Is the service conductor cracked, exposing the hotleg. Guidance: Use binoculars. Evaluate service drops looking for cracked or damaged insulation exposing hotlegs. If insulation is cracked or damaged to the point where hotleg is exposed, this is an Emergency/Standby condition. When service conductors go into riser, especially at the the bend radius and cable grip, obverse potential fraying of the conductor insulation. Look for failures at the entry point to the molding or conduit.

Minor Work: Yes

- Repair damaged conductor as minor work if possible and if safe to do so.

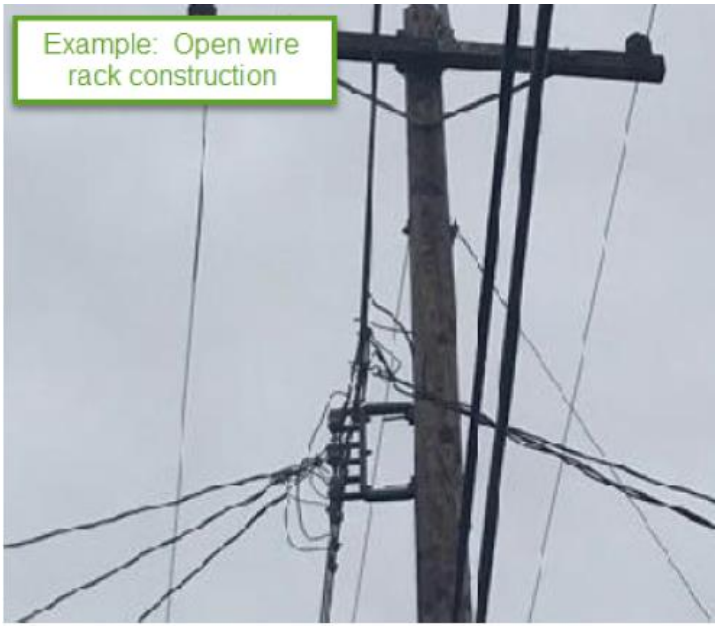
EC Form: Yes, if not able to perform minor work

- Select the Priority and Due Date based upon compelling abnormal condition that may adversely impact public safety and/or service reliability in the next five (5) years.

Visual examples of types of conductor damage referenced under conductor general guidance

Example: Bird-caged conductor

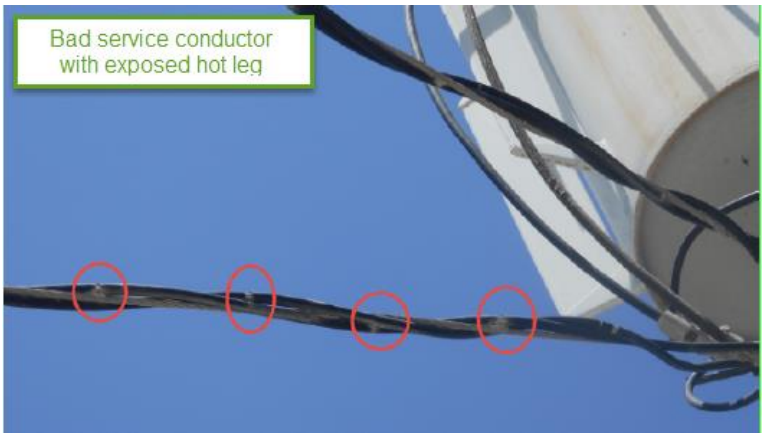
Example: **Open wire rack construction**



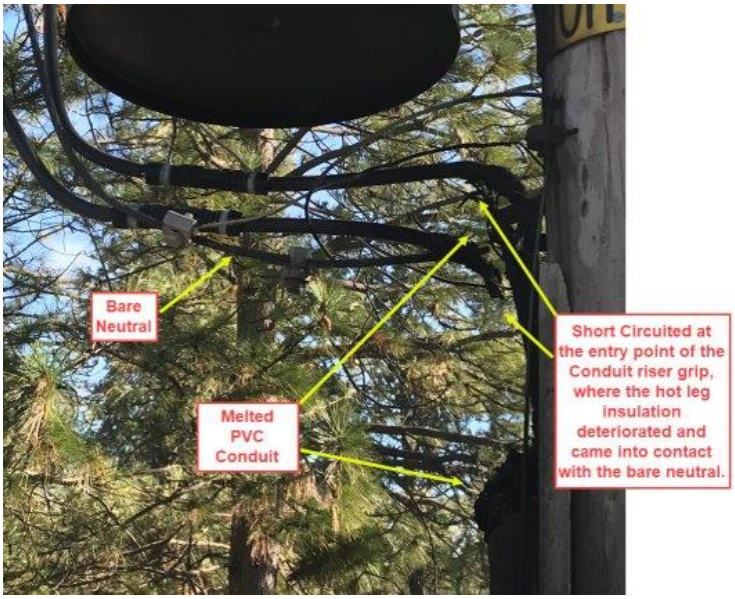
Example: **Open wire on crossarm**

Example: **Gun-shot conductor**

Example: **Bad service conductor with exposed hotleg**



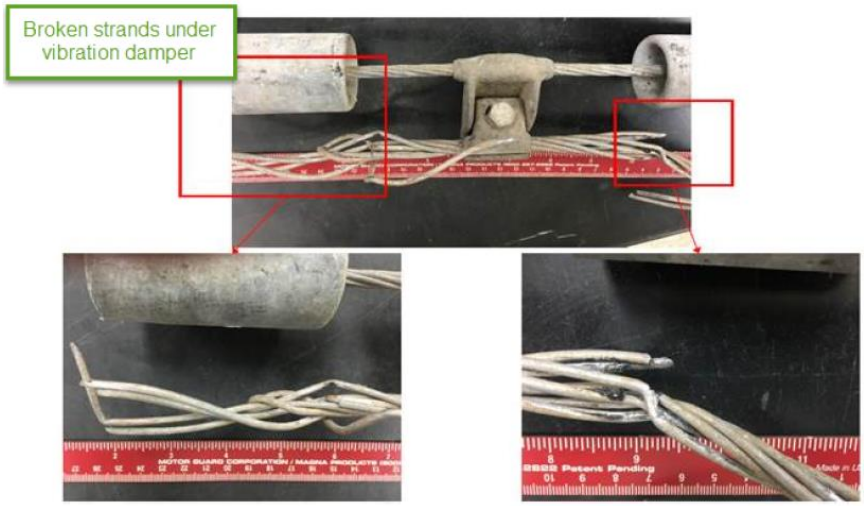
Example: **Bare neutral coming into contact with hotleg**



Example: **Secondary Service Riser Drops**

Example: **Vibration Damper**

Example: **Broken strands under vibration damper**



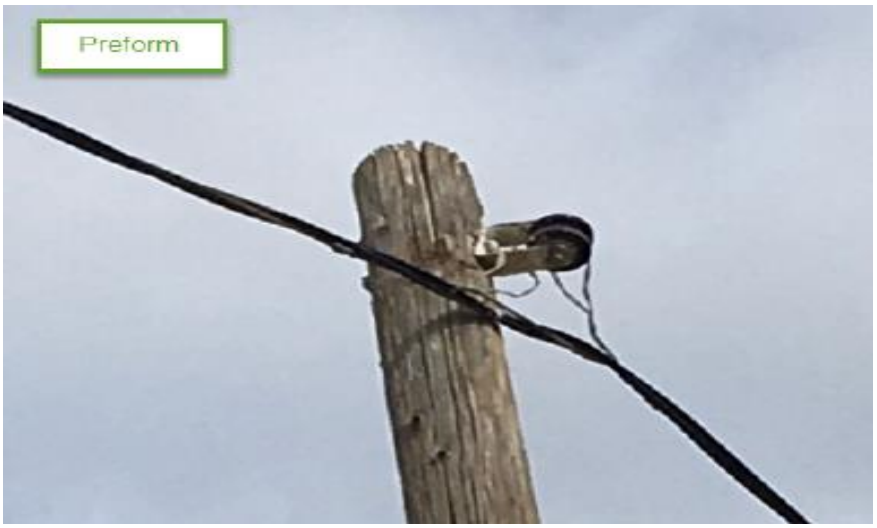
Example: **Splice tied into insulator**

Example: **Less than 2’ from point of support**

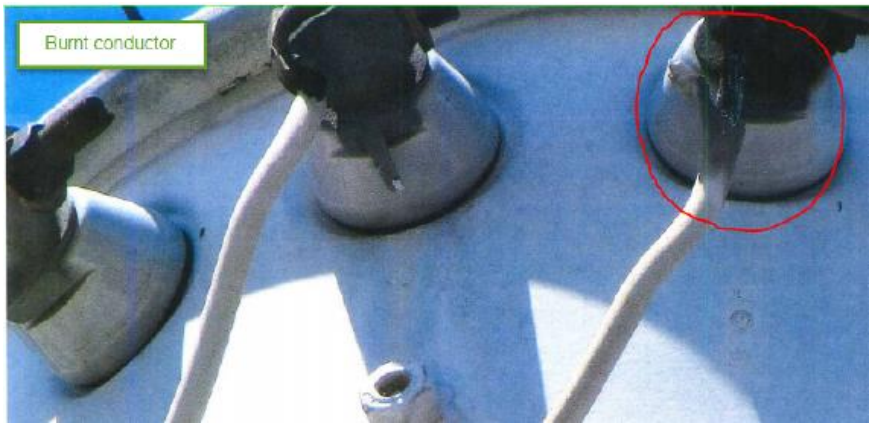
Example: **Splice tied into insulator**

Example: **Loose primary neutral ground:**

Example: **Preform:**

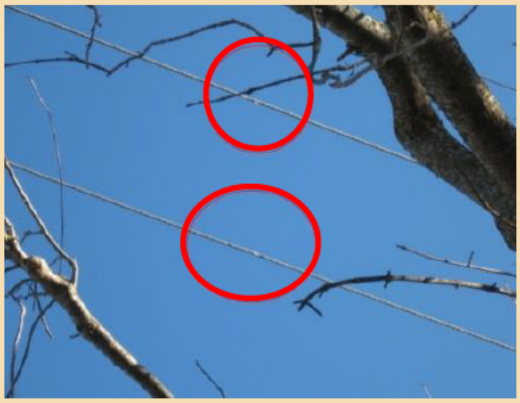


Example: **Burnt conductor**

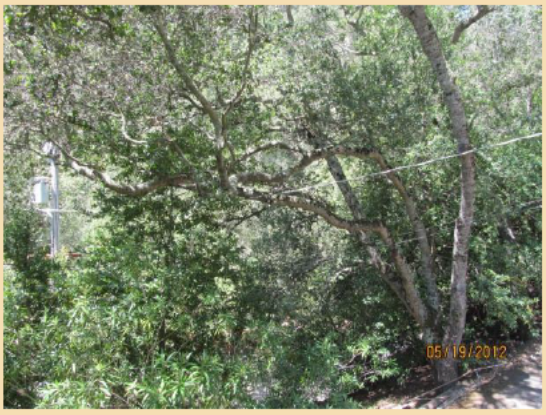


Example: **Bird protection installed on conductor**

BROKEN SERVICE NEUTRAL	DAMAGED/CRACKED GREY SERVICE
	
At this Location: Broken service neutral	**At this Location:** Cracked grey service. Older grey services tend to crack and will appear to have rings around the insulation.
Perform Minor Work: Yes, if safe to do so. If you replace the service conductor, this is capital Minor Work. Fill out EC Form to account for this minor work; charge time to your Division standing order	**Perform Minor Work:** Yes, if safe to do so. If you replace the service conductor, this is capital Minor Work. Fill out EC Form to account for this minor work; charge time to your Division standing order
Write Third Party Notification: No	**Write Third Party Notification:** No
Write EC Form: Yes, if minor work is not possible, or to document completed capital minor work • FDA=Conductor / Broken/Damage / Repair or Replace • Priority “A”, follow Emergency Process	**Write EC Form:** Yes, if minor work is not possible, or to document completed capital minor work • FDA=Conductor / Broken / Replace - *OR* • FDA=Conductor / Damaged / Replace - *OR* • FDA=Conductor / Burnt / Replace • Priority ”A”, emergency, due to exposed hotleg.

DAMAGED SECONDARY	EXPOSED SERVICE CONNECTOR
	
At this Location: Damaged strands	**At this Location:** Exposed conductors
Perform Minor Work: No	**Perform Minor Work:** Yes, if safe to do so.
Write Third Party Notification: No	**Third-Party Notification:** No
Write EC Form: Yes • FDA= Conductor / Damage / Repair • Priority "E", 3-12 months depending upon exposure	**Write EC Form**: Yes, if minor work is not possible • FDA= Conductor / Broken/Damage / Repair • Priority "E", 3-12 months depending upon exposure

CONDUCTOR TEARING APART	HARDWARE BROKEN
	
At this Location: Primary conductor damage (possibly shotgun)	**At this Location:** The #6 solid copper is broken causing strain on the conductor. Unsecured service.
Perform Minor Work: No	**Perform Minor Work:** Yes, if safe to do so
Third-Party Notification: No	**Write Third-Party Notification:** No
Write EC Form: Yes • FDA= Conductor / Broken/Damage / Repair • Priority "B", 0-3 months depending upon exposure	**Write EC Form:** Yes, if minor work is not possible • FDA= Hardware/Framing / Broken/Damaged / Repair • Priority "E", 3-12 months depending upon exposure

OVERHEAD SERVICE STRAIN ABRASION	OVERHEAD SERVICE STRAIN ABRASION
	
At this Location: Service strain abrasion, with possible burning at some sections. Damaged insulation.	**At this Location:** Service strain abrasion, no slack remaining
Perform Minor Work: Yes, if safe to do so. If you replace the service conductor, this is capital Minor Work. Fill out EC Form to account for this minor work; charge time to your Division standing order.	**Perform Minor Work:** Yes, if safe to do so. If you replace the service conductor this is capital Minor Work. Fill out EC Form to account for this minor work; charge time to your Division standing order.
Write Third Party Notification: No	**Write Third Party Notification:** No
Write EC Form: Yes, if minor work is not possible, or to document completed capital minor work • FDA=Conductor / Broken/Damaged/ Repair or Replace • Priority "E", 3-12 months depending upon exposure, in comments add note about strain abrasion burnt conductor • If abrasion has caused an exposed hotleg, assign Priority A, emergency, and stand-by.	**Write EC Form:** Yes, if minor work is not possible, or to document completed capital minor work • FDA=Conductor / Broken/Damaged/ Repair or Replace • Priority "E", 3-12 months depending upon exposure, in comments add note about strain abrasion burnt conductor If abrasion has caused an exposed hotleg, assign Priority A, emergency, and stand-by.

2. Connector Broken/Damaged

General Guidance:

Visually check all connectors for signs of damage, corrosion, or incorrect installation.

Are secondary connectors (mini wedge and Insulink) installed on primary conductor? Guidance: If yes, write EC notification to replace connector.

Are connections made with dissimilar metals installed incorrectly? Guidance: Proper installation is Aluminum over Copper. Guidance: If yes, write EC notification to replace connector.

Are tap clamps installed incorrectly? Guidance: If yes, write EC notification to replace connector. Guidance: Identify improperly installed tap clamps (aka chance clamps); e.g.

- No tap guards installed on conductor smaller than 1/0 Al and/or smaller than #2 Cu
- Installed on tap lines (jumpers) feeding more than 2 transformer banks.
- Installed on armor rod (used for tying in conductor with hand ties; not an appropriate method of attaching tap clamps)
- Used on any other type of equipment (recloser, capacitor, regulator, risers, etc.) other than a transformer.

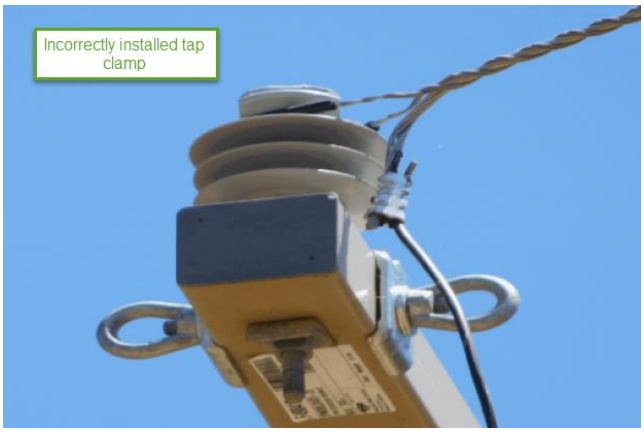
Is the connector excessively corroded or damaged (potential to drop conductor)? If yes, write EC notification to replace connector.

Reference: Chance Clamp is a brand name; this is also known as a hot-line clamp.

Example: Incorrectly installed chance clamp

Example: **Secondary connector installed in primary**

Example: **Insufficient clearance**



3. Tie Wire Damaged

General Guidance:

Ensure splices are not located under tie wires. Repair damaged secondary tie wire as minor work if possible.

Visually inspect hand ties to identify wear prior to failure; utilize bucket truck, binoculars, or camera to get a closer look - especially on older installations.

If damage to primary, create EC notification.

Minor Work: Yes, on secondary only

- Repair damage to secondary as minor work if possible and if safe to do so.
- IF not able to perform minor work, THEN create EC notification.

EC Form: Yes, only if not able to perform minor work on secondary or primary damaged/broken.

- FDA: Tie Wire/ Broken/Damaged / Repair or Replace
- Select the Priority and Due Date based upon compelling abnormal condition that may adversely impact public safety and/or service reliability in the next five (5) years.

Related Documents: 021439, 057855

4. Floaters

General Guidance: Does primary or secondary conductor(s) float? A floater is when the conductor is not attached to the crossarm/pole. Floaters are **always** an Emergency/Standby condition. Create EC Notification using FDA Conductor / Floater / Repair.

Minor Work: No

Related Documents: 022088

FLOATER

At this Location: Floater, conductor is not contacting the arm. Rotten crossarm.

Perform Minor Work: No

Write Third Party Notification: No

Write EC Form: Yes

- FDA=Crossarm / Decayed/Rotten/ Replace
- Priority "A", follow Emergency Process

5. Broken or Unsecured Service Bob

General Guidance: Repair or Replace broken insulator, wires, pins, etc.

Minor Work: Yes

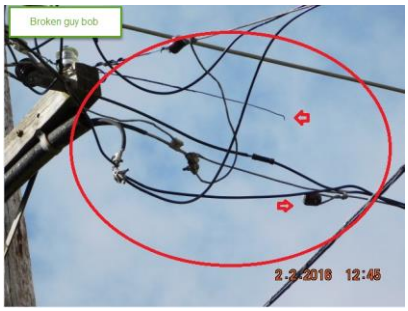
- Make repairs as minor work if possible and if safe to do so.
- IF not able to perform minor work, THEN create EC notification.

EC Form: Yes

- FDA: Hardware / Broken/Damaged / Repair or Replace
- Select the Priority and Due Date based upon compelling abnormal condition that may adversely impact public safety and/or service reliability in the next five (5) years.

Related Documents: None

Example: **Broken service bob**



6. Conductor Clearances (Refer to Clearance Job Aid)

7. Conductor: Uneven, Improper Sag or Diminished Clearance

General Guidance: Check for primary or secondary conductor with improper sag or diminished clearance midspan or uneven conductors, phases touching, or broken at dead end supported by jumper. Guidance: Any spans with uneven conductor - different tension, "bellies" (one is lower than the conductor next to it - when wind blows it may sway at different rates, etc.), then re-sag or install spreader brackets.

Look for damaged dead-end hardware that may cause uneven sag. Look for signs of annealing, excessive sag, splices, or discoloration that can result in failed conductor.

Identify clearance requirements utilizing the Clearance Evaluation Job Aid.

Minor Work: Yes.

- Make repairs as minor work if possible and if safe to do so. Re-sag or install spreader brackets.
- IF not able to perform minor work, THEN create EC notification.

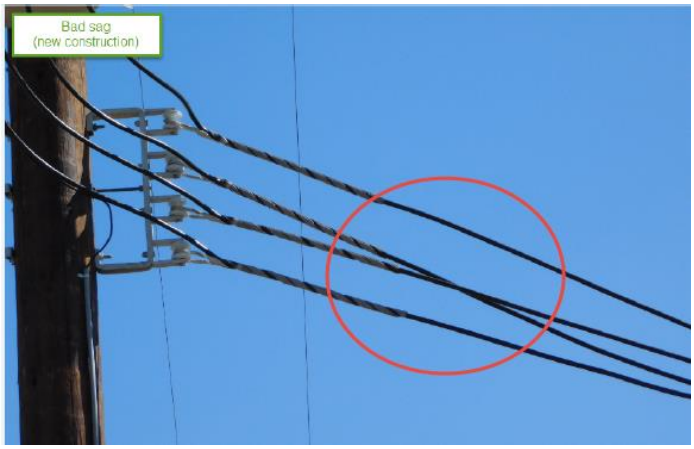
EC Form: Yes

- FDA: Conductor / Sag / Adjust
- Select the Priority and Due Date based upon compelling abnormal condition that may adversely impact public safety and/or service reliability in the next five (5) years.

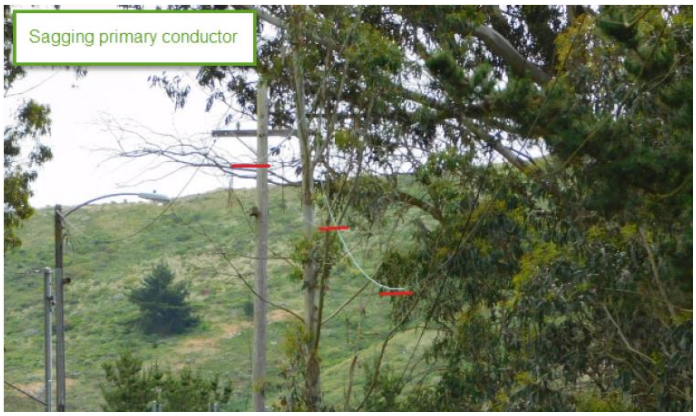
Related Documents: TD-7103P-09 pg16, appendix B, table 1

Example: **Secondary sagging conductor**

Example: **Sagging conductor**



Example: **Sagging conductor**



Cutouts / Fuses / Switches

1. Damaged Arcing Horns

General Guidance: Call Restoration Dispatch to get a T-Man dispatched to the location to create a COE (CE) notification. Consider installing a warning tag on the pole.

Example: **Arcing horn with burnt tip**

Minor Work: No

EC Form: Yes

- Select the Priority and Due Date based upon compelling abnormal condition that may adversely impact public safety and/or service reliability in the next five (5) years.

Related Documents: 015225

2. Cutouts

General Guidance: Are cutouts broken, damaged, cracked, loose, or flashed? Yes/No, if yes, THEN create an EC Notification.

Minor Work: No

EC Form: Yes

- Select the Priority and Due Date based upon compelling abnormal condition that may adversely impact public safety and/or service reliability in the next five (5) years.

Related Documents: 056425

BROKEN DAMAGED CROSSARM MOUNTED CUTOUT	BROKEN INSULATOR ON AIR SWITCH
	
At this Location: Broken/Flashed cutout	**At this Location:** Broken insulator on air switch
Perform Minor Work: No	**Perform Minor Work:** No
Write Third-Party Notification: No	**Write Third-Party Notification:** No
Write EC Form: Yes • FDA=Cutout / Broken/Damaged / Replace • Priority "E", 3-12 months depending upon exposure • COE = No	**Write EC Form:** Yes • FDA=Cutout / Broken/Damaged / Replace • FDA Switch / Broken/Damaged / Replace • Priority "E", 3-12 months depending upon exposure • COE = Depending on voltage & Insulation value remaining if not operable

3. Jumpers

General Guidance: Are jumpers burnt or are there clearance issues? If yes, create EC notification.

Minor Work: No

EC Form: Yes

- Select the Priority and Due Date based upon compelling abnormal condition that may adversely impact public safety and/or service reliability in the next five (5) years.

Example: **Jumper**

4. Switch Handle/Control Box is not Locked

General Guidance: Ensure that boxes or enclosures located 8 feet or less above the ground are locked.

Minor Work: Yes

- Perform minor work if possible and if safe to do so.
- IF not able to perform minor work, THEN create EC notification.

EC Form: Yes, only if not able to perform minor work

- FDA: Switch / Broken / Repair or Hardware / Missing / Install
- Select the Priority and Due Date based upon compelling abnormal condition that may adversely impact public safety and/or service reliability in the next five (5) years.

Related Documents: 066195

Distribution Towers / Steel Lattice

General Guidance: Inspectors are required to inspect distribution towers / lattices for the following:

- Steel Covered by Earth
- Rust or Corrosion at Tower Footings
- Tower Footing Damaged
- Tower Member Loose
- Marking Hi-Sign Missing/Not Legible
- Guarding - Tower Not Guarded (Where Applicable)
- Guy Attachment, Turn Buckles, or Preformed Guys Loose
- Tower Rusty – Needs Paint

Minor Work: No

Related Documents: 022168, Utility Standard

Framing

1. Crossarm Broken/Deteriorated

General Guidance: Refer to TD-2305M-JA_07 “Crossarm Evaluation” Job Aid in this job aid.

2. Bridging Exists and Needs to be Repaired

General Guidance: Visual observation of broken / unattached bridge wire on a Distribution-only wood pole. Create EC notification.

Minor Work: No

Related Documents: 056845

BRIDGING

At this Location: Pole, burnt, pole failed

Perform Minor Work: No

Write Third-Party Notification: No

Write EC Form:
- FDA = Hardware/Framing / Broken/Damaged / Replace
- Priority ”E”, 3-12 months depending upon exposure

3. Underarm Bus Not Securely Attached

General Guidance:

It is a requirement to have at least two attachment points, secured to an underarm bus, one on each side.

It is a requirement to use the following corrosion resistant materials for attaching the underarm bus to the crossarm: straps, plumber's tape, lags, galvanized nails, staples, screws, bolts, zip ties, etc.

If an inspector finds an underarm bus secured with non-authorized material, such as duct tape, electrical tape, or rope, it must be secured by at least two additional approved attachment points.

When an inspector re-secures a bus, it must be brought up to construction standards; four attachment points using corrosion resistant materials.

Complete as minor work/re-secure the bus. IF it cannot be completed as minor work, then create EC notification if compelling and needs to be addressed within 5 years.

Minor Work: Yes

EC Form: Yes, only if not able to perform minor work

- Select the Priority and Due Date based upon compelling abnormal condition that may adversely impact public safety and/or service reliability in the next five (5) years.

Related Documents: 021924, Crossarm Evaluation TD-2305M-JA_07

UNDER-ARM BUS LOOSE AND DETERIORATED

Side View

Front View

At this Location: UAB deteriorated, partial repair with rope, secured with one strap.

Perform Minor Work: No

Write Third-Party Notification: No

Write EC Form: Yes

- FDA=Under-Arm Bus / Broken/Damaged / Repair
- At minimum – must write up as Priority "F-R", next inspection cycle; based on field condition and exposure, corrosion, etc.; prioritize as needed (A, B, E, or F)

UNDER-ARM BUS LOOSE

At this Location: UAB Loose

Perform Minor Work: Yes

Write Third-Party Notification: No

Write EC Form:

- FDA=Under-Arm Bus / Broken/Damaged / Repair
  Priority "E", 3-12 months depending upon exposure

4. Wood Pin Burnt/Tracking or Broken

General Guidance:

Primary wood pins: If the primary wood pin is leaning or broken, or if there are signs of burning or tracking, create a 0-3 month Priority "B" EC Form.

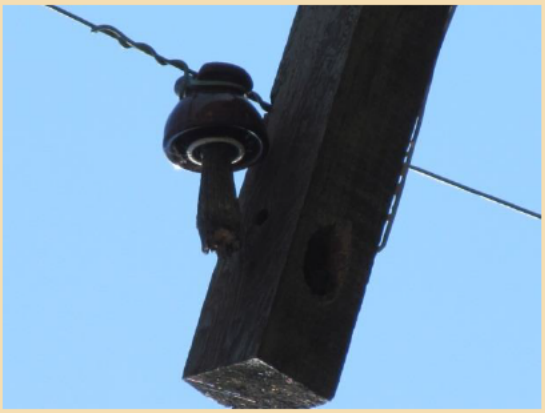
Primary or Secondary wood pins: If wood pin is broken or "floating", create emergency EC to address immediately.

Minor Work: No

EC Form: Yes

- Select the Priority and Due Date based upon compelling abnormal condition that may adversely impact public safety and/or service reliability in the next five (5) years

Related Documents: 015202, G12021, TD-2305M-JA_07 Crossarm Evaluation

PIN BROKEN	PIN BROKEN (FLOATER)
	
At this Location: Primary wood pin is broken, and the conductor is laying on the crossarm. Wood pin arm replace with Composite arm	**At this Location:** Secondary wood pin is broken, and the conductor is laying on the crossarm. Woodpin arm. Replace arm.
Perform Minor Work: No	**Perform Minor Work:** Yes, replace wooden pin with steel pin.
Write Third-Party Notification: No	**Write Third-Party Notification:** No
Write EC Form: Yes • FDA=Hardware/Framing / Broken/Damage / Replace • FDA= Crossarm/Broken Damaged/Replace • Priority "A", follow Emergency Process	**Write EC Form:** Yes • FDA= Conductor / Floating / Repair • FDA= Crossarm/Broken Damaged/Replace • Priority "A", follow Emergency Process

PRIMARY WOOD PIN AT ANGLE	PRIMARY WOOD PIN SQUATTER
	
At this Location: Deteriorated primary wood pin at angle. All insulators need to be replaced. Replace the crossarm with a composite arm.	**At this Location:** Primary wood pin squatter. Replace Crossarm. No armor rod with hand-tie.
Perform Minor Work: No	**Perform Minor Work:** No
Write Third-Party Notification: No	**Write Third-Party Notification:** No
Write EC Form: Yes • FDA= Crossarm/Broken Damaged/Replace • FDA=Hardware/Framing / /Broken/Damaged / Replace • Priority "B", 0-3 Months depending on exposure.	**Write EC Form:** Yes • FDA= Crossarm/Broken Damaged/Replace • FDA=Insulator / Primary Squatter/ Replace • Priority "E", 3-12 months depending upon exposure

Grounds / Ground Molding

1. Exposed Ground below 8'

General Guidance: Exposed grounds 8 feet or less from the ground must be covered. Inspectors must make every effort to cover the ground as minor work. If the exposed ground can be completed as minor work - preferred repair method is to use 1-1/2 inch plastic molding and not wood molding; if wood molding is used to make repair, use straps and not staples.

Consider a higher priority based on how much of the ground is exposed, and on the amount of public exposure. Inspector should "make safe" if cannot be addressed as minor work, based on location and exposure to the public.

The correct FDA is Ground/Exposed/Repair and not Molding Broken/damaged/ repair or replace.

Gaps in between molding segments should be covered if, in the inspector's judgment, they are large enough to allow human contact.

Minor Work: Yes

EC Form: Yes

- Select the Priority and Due Date based upon compelling abnormal condition that may adversely impact public safety and/or service reliability in the next five (5) years

Related Documents: Utility Bulletin TD-2990P-01

EXPOSED GROUND	
	**At this Location:** Exposed grounds near sidewalk **Perform Minor Work:** Yes, at a minimum make safe **Write Third-Party Notification:** No **Write EC Form:** Only if not able to perform minor work • FDA=Ground / Exposed / Repair • Priority "A", emergency – due to public exposure at ground level.

REPAIR WITH 1.5" MOLDING

Before: Copper Wire sticking out from under the wood molding

After: 1.5 inch u-shaped molding installed over existing wood molding

At this Location: Wood molding with ground exposed

Perform Minor Work: Yes

Write Third-Party Notification: No

Write EC Form: Only if not able to perform minor work

REPAIR WITH 2" PLASTIC

At this Location: Condition acceptable after repair of exposed ground

REPAIR WITH WOOD MOLDING

At this Location: Condition acceptable after repair with wood molding

2. Exposed Ground above 8' to the Communication Level

General Guidance: If there are communication facilities on the pole, exposed grounds above 8 feet to the communication level must be covered. Cover the ground as minor work if possible. If not, create an EC Notification.

Gaps in between molding segments should be covered if, in the inspector's judgment, they are large enough to allow human contact.

If the pole is not a joint pole, no action required, because there is no exposure to the communication worker.

Minor Work: Yes

EC Form: Yes

- Select the Priority and Due Date based upon compelling abnormal condition that may adversely impact public safety and/or service reliability in the next five (5) years

Related Documents: 021904, 036229

EXPOSED GROUND AT COMMUNICATION LEVEL	EXPOSED GROUND DUE TO TWISTED MOLDING
	
At this Location: Exposed ground at communications level. Wood molding broken in climbing space.	**At this Location:** Exposed ground in wood molding.
Perform Minor Work: Yes, if safe to do so.	**Perform Minor Work:** Yes, when safe to do so.
Write Third-Party Notification: No	**Write Third-Party Notification:** No
Write EC Form: Only if unable to perform minor work. • FDA=Ground / Exposed / Repair • At minimum – must write up as Priority "F-R", next inspection cycle; based on field condition and exposure, corrosion, etc.; prioritize as needed (A, B, E, or F)	**Write EC Form:** Only if unable to perform minor work. • FDA=Ground / Exposed / Repair • FDA=Molding / Broken/Damaged / Repair • At minimum – must write up as Priority "F-R", next inspection cycle; based on field condition and exposure, corrosion, etc.; prioritize as needed (A, B, E, or F)

3. Ground Molding Unsecured/Loose

General Guidance: Ensure that the molding is in good condition and secured to the pole.

Look for unsecured and loose wood ground molding, unglued PVC ground molding joints, molding joints that have come apart exposing the ground wire, etc.

Gaps in between molding segments should be covered if, in the inspector's judgment, they are large enough to allow human contact.

When making repairs - must meet construction standards.

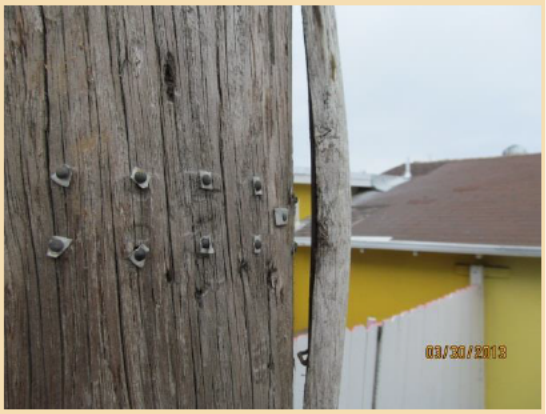
Minor Work: Yes

EC Form: Yes

- Select the Priority and Due Date based upon compelling abnormal condition that may adversely impact public safety and/or service reliability in the next five (5) years

Related Documents: 02904

WOOD MOLDING NOT SECURE EXPOSING GROUND



At this Location: Wood molding not secure, allowing human contact.

Perform Minor Work: Yes

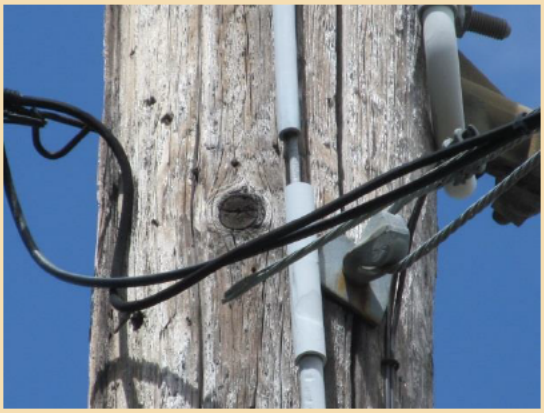
Write Third-Party Notification: No

Write EC Form: Only if unable to perform minor work.

- FDA=Ground / Exposed / Repair

At minimum – must write up as Priority "F-R", next inspection cycle; based on field condition and exposure, corrosion, etc.; prioritize as needed (A, B, E, or F)

PVC MOLDING NOT SECURE EXPOSING GROUND



At this Location: PVC molding not secure, due to failure of previous repairs, allowing human contact.

Perform Minor Work: Yes

Write Third-Party Notification: No

Write EC Form: Only if unable to perform minor work.

- FDA=Ground / Exposed / Repair

At minimum – must write up as Priority "F-R", next inspection cycle; based on field condition and exposure, corrosion, etc.; prioritize as needed (A, B, E, or F)

PVC MOLDING SECURED

At this Location: PVC molding adequately secured with staples upon arrival. No action is required.

WOOD MOLDING SECURED

At this Location: Wood molding adequately secured with straps spacing 36 inches or less upon arrival. No action required.

4. Exposed Ground Rod

General Guidance: If the ground rod can be permanently covered as minor work, do so. If not, create EC notification.

Minor Work: Yes

EC Form: Yes

- Select the Priority and Due Date based upon compelling abnormal condition that may adversely impact public safety and/or service reliability in the next five (5) years

Related Documents: None

EXPOSED GROUND ROD	
	**At this Location:** Exposed ground rod **Perform Minor Work:** Yes **Write Third-Party Notification:** No **Write EC Form:** • FDA=Ground / Exposed / Repair At minimum – must write up as Priority "F-R", next inspection cycle; based on field condition and exposure, corrosion, etc.; prioritize as needed (A, B, E, or F)

5. Broken Ground

General Guidance: Inspector identifies a broken ground; refer to bulletin **TD-2999B-024** for specific guidance about testing/replacing grounds

Minor Work: Yes

- Perform minor work if possible and if safe to do so.
- IF not able to perform minor work, THEN create EC notification.

EC Form: Yes

- Select the Priority and Due Date based upon compelling abnormal condition that may adversely impact public safety and/or service reliability in the next five (5) years

Related Documents: Utility Bulletin TD-2990P-01; TD-2999B-024

Guys / Anchors

1. Down Guy Preform Buried

General Guidance:

Top of anchor head must be above grade. Expose anchor as minor work. Evaluate the unburied anchor guy pre-forms and visually inspect them.

Perform minor work to add extension or grade around anchor so the anchor head becomes visible.

If the pre-form cannot be unburied as minor work, create an EC notification.

Notes:

- If you cannot dig up the anchor and create an EC with a photo of a buried anchor **only** - the Gatekeeper will **not know** if the anchor can be replaced or if an extension can be installed; you should make every effort to dig up the anchor to perform a complete assessment. If your photo is of a buried anchor only, the general rule of thumb is that the EC will be created to **replace** the anchor.
- If you **cannot** dig up the anchor, but you can see most of the pre-form - an extension can *usually* be added (only one extension can be installed)

Minor Work: Yes

- Perform minor work if possible and if safe to do so.
- IF not able to perform minor work, THEN create EC notification.

EC Form: Yes

- Select the Priority and Due Date based upon compelling abnormal condition that may adversely impact public safety and/or service reliability in the next five (5) years

Related Documents: 022221

BURIED ANCHOR

Before: Vegetation covers anchor

After: Vegetation cleared from anchor

At this Location: Anchor below grade overgrown with vegetation. After minor work inspector decides if the anchor can be adjusted or needs replaced.

Perform Minor Work: Yes, remove the vegetation
Yes, expose anchor and evaluate condition/corrosion
Yes, preferred method is to adjust anchor by adding extension

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Write Third-Party Notification: No

Write EC Form: If cannot be addressed as minor work

- FDA=Anchor / Soil/Eroded/Graded / Replace (if the anchor cannot be adjusted)
- At minimum – must write up as Priority "F-R", next inspection cycle; based on field condition and exposure, corrosion, etc.; prioritize as needed (A, B, E, or F)

ANCHOR EXTENSION

Anchor extension

Close-up

At this Location: Inspector performed minor work, exposed anchor, evaluated anchor to be in good condition so that extension could be installed, then installed extension. (Back fill not shown)

Perform Minor Work: Yes

Write Third-Party Notification: No

Write EC Form: No

ANCHOR COVERED BY CONCRETE

At this Location: Anchor covered by concrete

Perform Minor Work: **No**

Write Third-Party Notification: No

Write EC Form: Yes
FDA=Anchor /Soil/Eroded/Graded / Replace
At minimum – must write up as Priority "F-R", next inspection cycle; based on field condition and exposure, corrosion, etc.; prioritize as needed (A, B, E, or F)

ANCHOR BURIED BY VEGETATION

Anchor buried by roots

Anchor buried by tree

At this Location: Anchor buried by ivy roots / tree

Perform Minor Work: No

Write Third-Party Notification: No

Write EC Form: Yes

- FDA=Anchor / Soil/Eroded/Graded / Replace
- At minimum – must write up as Priority "F-R", next inspection cycle; based on field condition and exposure, corrosion, etc.; prioritize as needed (A, B, E, or F)

2. Visible Portion of Anchor Rod has Significant Corrosion

General Guidance: IF the anchor rod is significantly corroded, THEN create EC notification.

Minor Work: No

EC Form: Yes, only if not able to perform minor work

- FDA: Anchor Corroded Replace
- Select the Priority and Due Date based upon compelling abnormal condition that may adversely impact public safety and/or service reliability in the next five (5) years

Related Documents: 025998

ANCHOR ROD WITH SIGNIFICANT CORROSION	
	
Anchor above ground	**Below**

At this Location: Corroded Anchor

Perform Minor Work: No

Write Third-Party Notification: No

Write EC Form: Yes
- FDA=Anchor / Corroded / Replace
- Priority "E", 3-12 months depending upon exposure

3. Guy Broken/Slack

General Guidance: Important: Before any work is performed on a down guy, inspect the guy insulator; if broken, check for presence of voltage. Guys must be taut (straight, no belly). Tighten the guy as minor work if possible. If not possible, create an EC Notification.

If tightening the guy would exacerbate any pre-existing conditions on a facility (e.g. increase the lean of an already leaning pole, deform an already deforming pole), create an EC Notification with comments describing the situation.

Minor Work: Yes

EC Form: Yes

- Select the Priority and Due Date based upon compelling abnormal condition that may adversely impact public safety and/or service reliability in the next five (5) years

Related Documents: 022178

GUY CLEARANCE	GUY DAMAGED REPAIR
	
At this Location: Acceptable solution through plastic barrier. GO 95 requires 3" of radial clearance. Plastic barriers can be installed if less than 3" of clearance.	**At this Location:** Guy tail extends beyond the preform **near sidewalk**, safety hazard. **Perform Minor Work:** Yes **Write Third-Party Notification:** No **Write EC Form:** Only if minor work cannot be performed. • FDA Guy / Broken/Damaged/ Repair • Priority "E", 3-12 months depending upon exposure

OVERGROWN GUY

At this Location: Extensive dead ivy covering half of length of guy.

Perform Minor Work: No

Write Third-Party Notification: No

Write EC Form: Yes

- FDA=Guy / Broken/Damaged / Replace
- Priority "E", 3-12 months depending upon exposure

TREE GROWING AROUND GUY

At this Location: Tree growing around guy

Perform Minor Work: No

Write Third-Party Notification: No

Write EC Form: Yes

- FDA=Guy / Broken/Damaged / Replace
- Priority "E", 3-12 months depending upon exposure

SLACK GUY

At this Location: Loose guy on left side

Perform Minor Work: Yes

Write Third-Party Notification: No

Write EC Form: Yes, only if minor work is not possible

- FDA=Guy / Loose / Adjust
- At minimum – must write up as Priority "F-R", next inspection cycle; based on field condition and exposure, corrosion, etc.; prioritize as needed (A, B, E, or F)

GUY GROUNDED BY VEGETATION

Guy grounded by vegetation

Guy grounded by vegetation

Guy overgrown by vegetation

At this Location: Guy grounded by vegetation, above the bob.

Perform Minor Work: Yes

Write Third-Party Notification: No

Write EC Form: Yes, only if minor work cannot be performed

- FDA=Guy / Overgrown / Trim
- Priority "E", 3-12 months depending upon exposure

IVY ON GUY AND PRIMARY

At this Location: Ivy on guy and on primary. Safety issues, possible energized guy and pole, transformer weeping – no oil on ground, evaluate per oil spill matrix.

Perform Minor Work: No

Write Third-Party Notification: No

Write EC Form: Yes

- FDA=Transformer / Leaks/Seeps/Weeps / Replace (primary)
- FDA=Guy / Overgrown / Trim
- Priority "B", 3 months or less depending upon exposure

TREE LIMB GROWING AROUND GUY

Guy through tree

Close-up

At this Location: Tree limb growing around guy, below the bob.

Perform Minor Work: No

Write Third-Party Notification: No

Write EC Form: Yes

- FDA=Guy / Strain/Abrasion / Remove
- Priority "E", 3-12 months depending upon exposure

4. Guy Insulator Broken/Missing

General Guidance: Guys in the cylinder of “proximity” to conductors less than 35kV:

- 8 ft. or less above or below the conductor level
- 6 ft. or less horizontally from the surface of the pole

Example: **Broken guy insulator**

Must be sectionalized and ungrounded. Ensure there is an intact guy insulator.

Minor Work: No

EC Form: Yes

- FDA: Guy / Broken/Damaged / Replace or Guy / Missing / Install
- Select the Priority and Due Date based upon compelling abnormal condition that may adversely impact public safety and/or service reliability in the next five (5) years

Related Documents: 022178

5. Down Guy Grounded above Guy Insulator (vegetation or other)

General Guidance: Ensure that all guys are not grounded above the guy insulator. Remove any foreign objects (e.g. vegetation) contacting and grounding the guy above the insulator as minor work. Clear so that new growth will not contact or ground the guy. (Rule of thumb is that growth per year is 1 foot, so trim back 5 feet.)

Minor Work: Yes

EC Form: Yes

- Select the Priority and Due Date based upon compelling abnormal condition that may adversely impact public safety and/or service reliability in the next five (5) years

Related Documents: 022178

DOWN GUY GROUNDED ABOVE GUY INSULATOR	DOWN GUY GROUNDED ABOVE GUY INSULATOR CAUSING STRAIN AND ABRASION
	
At this Location: Vine growing up and across the guy insulator grounding the guy.	**At this Location:** Tree grounding the guy above the guy insulator causing strain and abrasion.
Perform Minor Work: Yes	**Perform Minor Work:** Yes, if minor work not possible
Write Third-Party Notification: No	**Write Third-Party Notification:** No
Write EC Form: Yes, only if minor work cannot be performed • FDA=Guy / Overgrown / Trim • Priority "E", 3-12 months depending upon exposure	**Write EC Form:** Yes, only if minor work cannot be performed • FDA=Guy / Strain/Abrasion / Remove • FDA=Guy / Overgrown / Trim • Priority "E", 3-12 months depending upon exposure

6. Down Guy Marker Missing/Damaged

General Guidance: For poles installed **after 1996,** Guy Markers are required on **all** down guys. The markers must be a minimum 8 ft. in length. For poles installed ***prior to 1996,*** guy markers are **only required** on poles which are exposed to traffic. **Inspector should confirm the age of the pole via the date nail to verify the requirement.**

Install a single guy marker on multiple guys which are clamped together. For guys that are not clamped together, but on the same anchor, consider separate guy markers on each guy if the separation is large.

Note: Installing yellow colored guy marker does not negate the need to install visibility strips on the markers. Install visibility strips around traffic areas, on state highways, near curbs, driveways, etc. See visibility strip entry for more details.

Note: Install a segment of guy marker above cattle guards to ensure a minimum 8 ft. of guarding.

Minor Work: Yes

EC Form: Yes

- Select the Priority and Due Date based upon compelling abnormal condition that may adversely impact public safety and/or service reliability in the next five (5) years

Related Documents: 06542, 022178, 99-34

GUY MARKER MISSING	CATTLE GUARD LESS THAN 8 FT
	
At this Location: Guy marker missing	**At this Location:** Cattle guard is less than 8 feet in length
Perform Minor Work: Yes, install new guy marker	**Perform Minor Work:** Yes, lower cattle guard and add guy marker to meet 8 feet requirement.
Write Third-Party Notification: No	**Write Third-Party Notification:** No
Write EC Form: No, perform minor work	**Write EC Form:** No, perform minor work

DOWN GUY: MARKER NOT REQUIRED

At this Location: Acceptable down guy attached to building, no marker required.

At this Location: Acceptable down guy in marsh, no marker required.

Idle Facilities

1. Identifying and Documenting Idle Facilities

Inspectors identify and document idle lines as they would for any other field condition found, per the requirements and procedures in the Electric Distribution Preventative Maintenance (EDPM) Manual.

Compliance Inspections follow the Idle Facility Program as documented in TD-2459P-01 and use the annual Detailed Overhead Inspection Checklist to indicate when an Idle condition is present for the inspection location by checking the observed an Idle Facility box.

When an idle condition is selected, the inspector shall select from 4 reasons:

1. Pole is not mapped idle. It is de-energized.
   - Create IF Notification (using the Inspect App)

2. Pole is not mapped idle. It is energized.
   - Create IF Notification (using the Inspect App)
   - Create EC Notification (to de-energize)

3. Pole is mapped idle. It is de-energized.
   - No further action required

4. Pole is mapped idle. It is energized.
   - Create EC Notification (to de-energize)

Inspect App: Use the IF Notification in the Inspect App to document an observed Idle Facility field conditions. These include asset information, location information, facility type, field conditions, and comments and photos. Compliance Inspectors will select the appropriate Priority as follows:

1. High Priority
   - Pending EC Notification B Priority (not de-energize FDA) at this location

2. Medium Priority
   - Transformer Present
   - HFTD T3/T2
   - Oil Filled Equipment
   - Modesto Irrigation District (60 days)

3. Low Priority
   - All other conditions

At a **minimum**, attach the following three images to each IF Notification:
- Two field photos of the field condition
- Screenshot of Map with the idle area clearly identified

Example: If there is an idle line with five poles, only one IF Notification is required for the entire section of line. ***Do not create an IF Notification for each pole.***

Note 1: Continue to document safety, reliability, and/or regulatory issues for EC and Vegetation Notifications. Vegetation management personnel **do not** patrol or maintain vegetation on de-energized tap lines.

Note 2: Use Table 1 to help in understanding the various priorities.

Pacific Gas and Electric Company®

Utility Procedure: TD-2459P-01
Publication Date: 03/03/2022, Effective Date: 03/03/2022, Rev: 4

Idle Facility Program

Table 1. Idle Facility Field Conditions and Investigation Priorities

Condition	Action	Investigation Priority
Safety situation/risk.	• Mitigate hazard and make safe, which may include de-energizing. • Initiate an IF notification for investigation. • Initiate an electric corrective (EC) notification to document any other abnormal conditions to resolve. • Initiate a Priority B, 3-month EC notification to de-energize the facility.	• High • Submit to supervisor by end of day. • Enter in SAP and communicate to idle facility investigation personnel within two business days.
Idle transformers that do not have a blue sticker indicating a polychlorinated biphenyl (PCB) content of less than 5 parts per million (ppm) may be classified as high, medium, or low priority. Consider current field conditions[1], the transformer condition, and if the following sensitive locations are nearby: • Surface or ground waters • Sewers or sewage treatment systems • Private or public drinking water sources or distribution systems • Grazing lands • Vegetable gardens or agricultural areas • Daycare centers and schools	If high priority, then mitigate hazard and make safe, which may include de-energizing. • Initiate an IF notification for investigation; priority is dependent on field and equipment conditions. • Note the specific field conditions, transformer condition, and transform locations (see "Condition" column notes) in the Comments section • Initiate a Priority B, 3-month EC notification to de-energize the facility	• High – Medium – Low • To designate as high priority, consider the identified idle transformer locations, current condition of the transformer (see "Condition" column notes), and current condition of associated facilities (pole, crossarm, etc.)
Future work required to maintain existing idle facility (EC notifications to repair/replace/relocate facilities).	• Initiate an IF notification for investigation and ensure the Future Work Requested field is checked • Initiate a Priority B, 3-month EC notification to de-energize the facility	High – Medium – Low
PG&E and Modesto Irrigation District (MID) service areas.	• Initiate an IF notification for investigation • Initiate a Priority B, 3-month EC notification to de-energize the facility	Medium
Idle facilities in raptor concentration zones (RCZs) with suitable habitat to support threatened or endangered raptors. Oil-filled equipment considerations: • Surface or ground waters • Sewers or sewage treatment systems • Private or public drinking water sources or distribution systems • Grazing lands • Vegetable gardens or agricultural areas • Daycare centers and schools	• Initiate an IF notification for investigation. • Initiate a Priority B, 3-month EC notification to de-energize the facility. • Initiate an IF notification for investigation. • For idle transformers, note the absence or presence of a blue sticker on the IF notification; a blue sticker indicates a PCB content of less than 5 ppm • Initiate a Priority B, 3-month EC notification to de-energize the facility.	Medium – Low Medium
Idle facility in Tier 2 & 3 fire zone.	• Initiate an IF notification for investigation. • Initiate a Priority B, 3-month EC notification to de-energize the facility.	Medium
Potential use for agricultural pumps or vacant buildings.	• Initiate an IF notification for investigation. • Initiate a Priority B, 3-month EC notification to de-energize the facility	Low
Entire primary tap is identified as idle and is unfused. No future work is required to maintain the existing idle facility.	• Initiate an IF notification for investigation. • Initiate a Priority B, 3-month EC notification to de-energize the line.	Low

Note 3: Use Table 2 to help in understand the mapping annotations.

Table 2. TOS/TIF Classifications

Temporary Out of Service (TOS) De-Energized Temporary Idle Facility (TIF) Energized		
Facilities with a future use are grouped into one of the following classifications:		
TOS-AG	Potential agricultural use	De-energized
TIF-AG	Potential agricultural use	Energized
TOS-V	Potential service to an existing vacant building	De-energized
TIF-V	Potential service to an existing vacant building	Energized
TOS-CAP	Potential PG&E use for capacity or reliability	De-energized
TIF-CAP	Potential PG&E use for capacity or reliability	Energized
TOS-F	Future customer use identified by service planning	De-energized
TIF-F	Future customer use identified by service planning	Energized
TOS-MLX	Current Main Line Extension Agreement	De-energized
TIF-MLX	Current Main Line Extension Agreement	Energized
TOS-SFA	Current Special Facilities Agreement	De-energized
TIF-SFA	Current Special Facilities Agreement	Energized

Note 4: When new maintenance is identified on energized idle facilities, write **THREE** notifications:

- One IF Notification (TD-2459S-F01) for the entire idle line
- One EC Notification to de-energize the entire idle line
- One EC Notification per location requiring maintenance

Note 5: After identifying pending maintenance on idle facilities, ensure that the IF Notification has the Field Condition box “Future work required to maintain existing idle facility” checked.

- Enter the following note in the EC Notification comments section: “IDLE notification created.”
- Enter a note in both IF Notification and EC Notification comments with corresponding notification numbers, when available.

Note 6: Always ask your PG&E Lead, IRS, or Supervisor for help in determining priority, creating the IF Notification, and creating an EC Notication to de-energize the idle line.

Raptor Concentration Zone (RCZ) Guidance: In the Inspect App, do the following:

1. Go to Map Preferences
2. Set the Raptor Concentration Zone “ON”
3. View the map with purple RCZ layer displayed
4. The IF Program administrators use all the information you provide on the IF Notification in conjunction with RCZ flag indicating if this location is or is not in an RCZ area to further assess risk.

Related Documents: TD-2459P-01

2. Energized Electric Line Facility No Longer Used to Serve Customer Load

General Guidance: It may be necessary to de-energize the idle facility:

If primary lines are energized, de-energize line sections by opening cut-outs. In raptor concentration zones (RCZs) or if the primary tap line is unfused, create a Priority E, 3-month Electric Corrective (EC) Notification to de-energize the jumpers.

NOTE

When idle transformers or sections of line de-energized by cut-outs are located in non-raptor areas, an EC Notification is **not** required to de-energize the jumpers.

Do not initiate an IF Notification or an EC Notification when attachments to poles (cross-arms, miscellaneous hardware, brackets, insulators, etc.) do not pose a safety or reliability risk to an idle facility. If it is not necessary to de-energize the idle facility, create a Priority “F” EC Notification.

Continue to document safety or reliability issues that meet criteria for vegetation notifications.

Minor Work: No

EC Form: Yes, to de-energize

- FDA: OH Facility Idle De-Energize
- Select the Priority “E”
- Select the 0-3 month Due Date

Idle Facility Form: Yes

Related Documents: TD-2459P-01

3. De-Energized Electric Line Facility Already Identified on a Pending EC Notification but Not Mapped

General Guidance: Create a map change request if the facility is not mapped as idle.

Minor Work: No

Map Correction: Yes

Related Documents: TD-2459P-01

Insulators

1. Arcing or Tracking on Insulators

General Guidance: If there is evidence of arcing or tracking on a primary insulator, call the construction supervisor, create Emergency EC notification, and follow emergency EC processes.

Note: Inspector should always consider replacing wood crossarm with composite crossarm.

Construction Note: Cannot mix insulator types, always replace full set of insulators.

Minor Work: No

EC Form: Yes, create an Emergency EC Notification

Related Documents: Utility S2405

2. Damaged Insulators

General Guidance Are Insulators chipped, cracked, corroded, contaminated, flashed, have signs of tracking, broken, or damaged? If yes, create EC notification.

Replace ALL insulators if one is chipped, cracked, contaminated, broken, or damaged.

Note for construction: If an insulator is damaged due to gunshot, replace with epoxy or polymer insulators.

Note for construction: Cannot mix insulator types, always replace full set of insulators.

Note: Inspector should always consider replacing wood crossarm with composite crossarm, based on condition of crossarm.

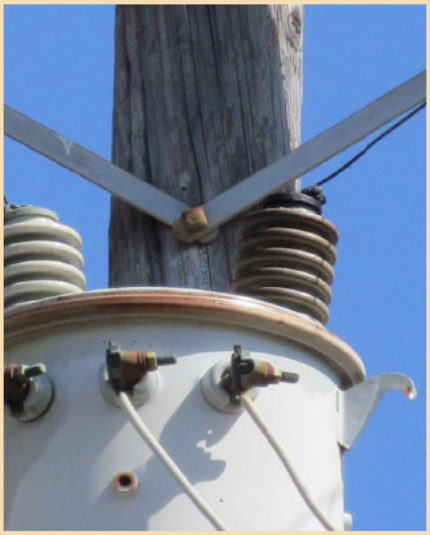
Minor Work: No

EC Form: Yes

- FDA: Insulator Broken Replace
- Select the Priority and Due Date based upon compelling abnormal condition that may adversely impact public safety and/or service reliability in the next five (5) years

Related Documents: 022088, 068180 (composite crossarm), TD-2305M-JA_07 Crossarm Evaluation job aid

DAMAGED INSULATOR	INSULATOR LAYING ON ITS SIDE / PRIMARY ON THE ARM
	
At this Location: Damaged insulator with an insulator that I no longer approved. Replace all insulators and the arm	**At this Location:** Insulator lying on its side. Primary on the arm.
Perform Minor Work: No	**Perform Minor Work:** No
Write Third-Party Notification: No	**Write Third-Party Notification:** No
Write EC Form: Yes • FDA= Crossarm / Decayed/Rotten / Replace • FDA=Insulator / Broken/ Damage / Replace • Priority "E", 3-12 months depending upon exposure	**Write EC Form:** Yes • FDA= Crossarm / Decayed/Rotten / Replace • Priority "A", follow Emergency Process

FLASHED INSULATOR ON TRANSFORMER	BROKEN WOOD PIN ON PRIMARY
	
At this Location: Flashed insulator on transformer **Perform Minor Work:** No **Write Third-Party Notification:** No **Write EC Form:** Yes • FDA= Transformer / Flashed / Replace • Priority "E", 3-12 months depending upon exposure	**At this Location:** Broken wood pin. Primary (High Voltage Sign). Conductor on arm. Replace all insulators and the crossarm with a composite arm. **Perform Minor Work:** No **Write Third-Party Notification:** No **Write EC Form:** Yes • FDA= Crossarm / Decayed/Rotten / Replace FDA=Insulator / Squatter-(Primary) / Replace • Priority "A", follow Emergency Process, (Conductor contacting crossarm)

FLASHED INSULATOR POTHEAD

At this Location: Flashed pothead

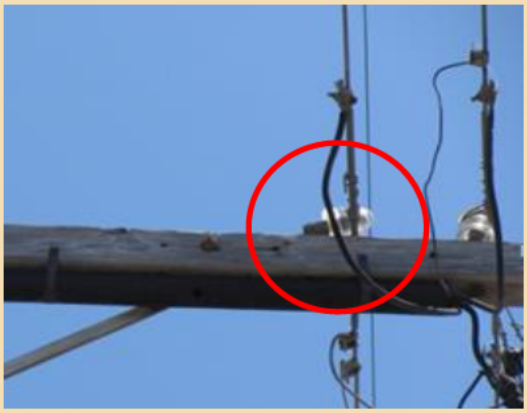
Perform Minor Work: No

Write Third-Party Notification: No

Write EC Form: Yes or COE (pin or energized)

- FDA=Riser/Pothead / Flashed / Replace
- At minimum – must write up as Priority "F-R", next inspection cycle; based on field condition and exposure, corrosion, etc.; prioritize as needed (A, B, E, or F)

BROKEN WOOD PIN ON SECONDARY



At this Location: Broken secondary wood pin. Conductor lying on the arm, tangent pole. (excluding urban wildfire areas, use risk priority matrix). Wood pin arm at end of life replace arm with composite arm

Perform Minor Work: Yes

Write Third-Party Notification: No

Write EC Form: Yes, if minor work not possible

- FDA= Crossarm / Decayed/Rotten / Replace
- FDA= Insulator / Squatter (Secondary) / Replace
- Priority "B", 0-3 months depending upon exposure

BROKEN SECONDARY INSULATOR

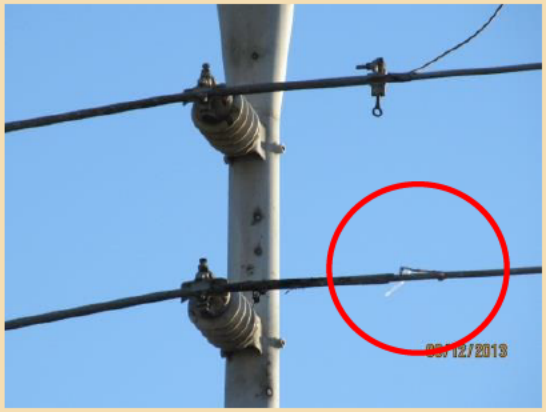
At this Location: Broken secondary insulator

Perform Minor Work: No

Write Third-Party Notification: No

Write EC Form: Yes

- FDA= Crossarm / Decayed/Rotten / Replace
- FDA=Insulator / Broken/ Damage / Replace

FLASHED INSULATOR MYLAR BALLOON	
	**At this Location:** Flashed insulator by Mylar balloon **Perform Minor Work:** No **Write Third-Party Notification:** No **Write EC Form:** Yes • FDA=Insulator / Flashed / Replace • Priority "E", 3-12 months depending upon exposure

3. Squatters – Primary or Secondary

General Guidance: Are primary or secondary insulators squatting? If yes, create EC Notification.

Minor Work: No

EC Form: Yes

- FDA = Insulator / Primary Squatter / Replace - OR
- FDA = Insulator /Secondary Squatter / Replace
- Select the Priority and Due Date based upon compelling abnormal condition that may adversely impact public safety and/or service reliability in the next five (5) years

Note: Inspector should always consider replacing wood crossarm with composite crossarm.

Construction Note: If an insulator is damaged due to gunshot, replace with epoxy of polymer insulators.

Construction Note: Cannot mix insulator types, always replace full set of insulators.

Related Documents: 022088, Crossarm Evaluation TD-2305M-JA_07

PRIMARY SQUATTER

At this Location: 2 Primary Wood Pin Squatters; replace wood crossarm with composite crossarm.

Perform Minor Work: No

Write Third-Party Notification: No

Write EC Form: Yes

- FDA = Crossarm Decayed/Rotten / Replace
  FDA = Insulator / Primary Squatter / Replace
- At minimum – must write up as Priority "E", based on field condition and exposure, corrosion, etc.; prioritize as needed (A, B, or E)

SECONDARY SQUATTER AND DECAYED CROSSARM

At this Location: Secondary Squatter and decayed crossarm.

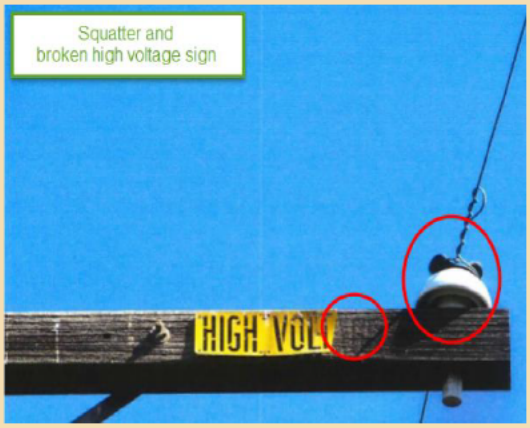
Perform Minor Work: No

Write Third-Party Notification: No

Write EC Form: Yes

- FDA= Crossarm / Decayed/Rotten / Replace
- Priority "E", 3-12 months depending upon exposure
- Note: When replacing insulators, do NOT mismatch insulators.

PRIMARY SQUATTER AND BROKEN HIGH VOLTAGE SIGN



At this Location: Primary squatter and broken high voltage sign

Perform Minor Work: No

Write Third-Party Notification: No

Write EC Form: Yes

FDA = Insulator / Primary Squatter / Replace
FDA = High Sign / Broken / Replace

- Assign priority depending upon condition of asset/component, location, and public safety & exposure
- Note: Consider replacing wood crossarm with composite.

4. Flying Bells

General Guidance: Are flying bells broken or damage? If yes, create EC notification.

Note: If flying bells were installed to de-energize idle facilities, assess vegetation around idle conductor; create EC notification to trim, as vegetation management does not perform trimming on idle facilities.

Example: **Flying bells installed**

Minor Work: No

EC Form: Yes

- Select the Priority and Due Date based upon compelling abnormal condition that may adversely impact public safety and/or service reliability in the next five (5) years

Lightning / Surge Arrestors

1. Broken or Flashed

General Guidance: Are arrestors broken, damaged, flashed, or is the ground lead disconnect activated? If yes, Create EC notification to replace lightning arrestor.

Example: Blown lightning arrestor

Example: Approved ABB-type surge arrestor

Minor Work: No

EC Form: Yes

- Select the Priority and Due Date based upon compelling abnormal condition that may adversely impact public safety and/or service reliability in the next five (5) years

Related Documents: 031822

Markings

1. High Voltage Sign Not Installed as Required

General Guidance: Inspectors are required to look for missing or broken high voltage signs during inspections. If inspectors find missing or broken signs, they should install new signs as minor work if they have the appropriate materials and equipment and can perform the work safely. If the inspector cannot install a sign as minor work, the inspector must create a Priority 'F' EC notification. Below is guidance on how to evaluate high voltage signage.

High Voltage Sign Requirements:

Poles that support line conductors or risers energized at **more than 750 volts** must be marked with high voltage signs. .

IMPORTANT: If a pole is marked under **any of the options below**, it satisfies the high voltage marking requirement.

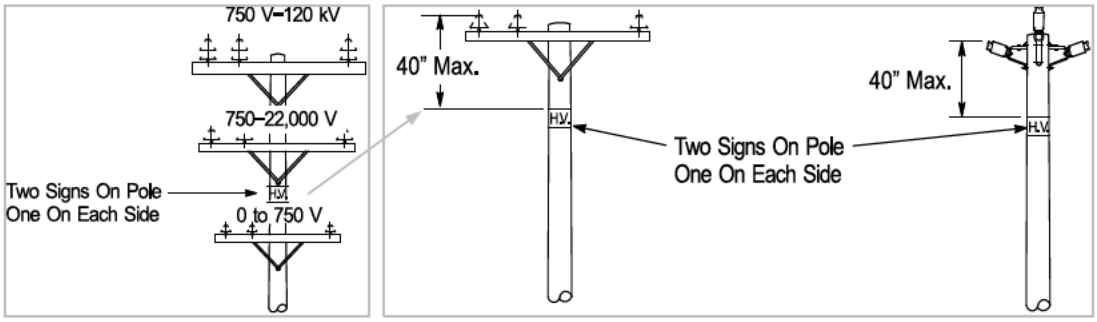
When installing *new* high voltage signs using one option, inspectors are not required to remove signs previously installed under different options.

Marking Options A B and C:

A. Sign the Pole Below the Lowest 750V+ Line Conductor **(Preferred Method)**

Marking requirements are satisfied under this option if:

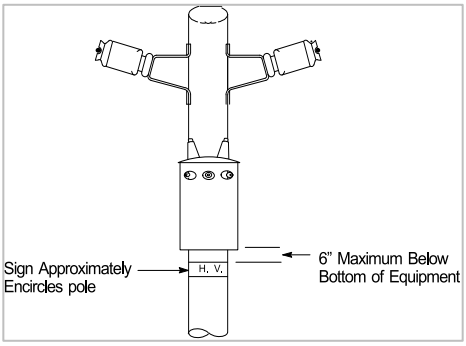
1. There are two signs, attached to the surface of each side of the pole[1].
2. The top of each sign is no more than 40" below the lowest level line conductor that exceeds 750V.



[1]**Exception:** If an inspector finds only one high-voltage sign within 40" below the lowest 750V or greater conductor, the inspector **is not required to install a second sign**. However, when performing work at the lowest crossarm level, a second sign must be installed.

B. Sign the Pole Below Equipment

Marking requirements are satisfied under this option **if:**

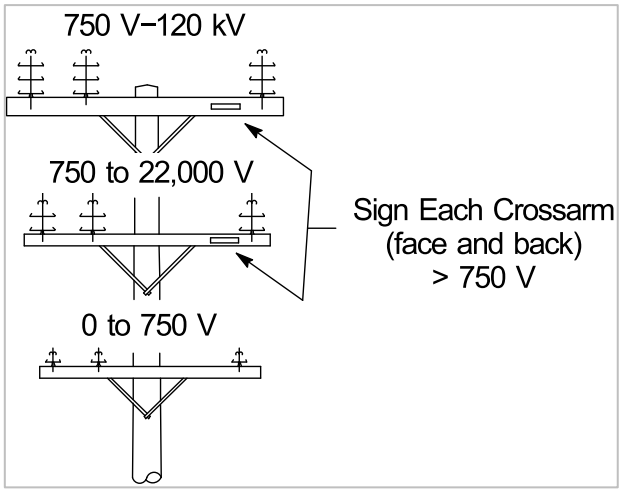


1. There are two signs attached to the surface of each side of the pole[2].
2. The top of each sign is no more than 6'' below the equipment.
3. The signs are above all 0-750V supply and communication line conductors.

[2] **Exception:** If an inspector finds only one high-voltage sign installed within 6'' below the equipment, the inspector **is not required to install a second sign**. However, when performing work at the equipment level, a second sign must be installed.

C. Sign Each Crossarm

Marking requirements are satisfied under this option **if** each crossarm (line arm) supporting line conductors in excess of 750V are signed both front and back. Signs are not required on the inside faces of double arms.



The exceptions in Sections A and B do not apply when, in the judgment of the inspector, the two high voltage signs should be installed so that they may be visible from all sides of the pole.

Typical examples are poles near water areas suitable for sailboats, near established boat ramps and associated rigging areas, adjacent to swimming pools, and in agricultural areas with moveable irrigation piping.

Examples: **High Voltage Sign**

Minor Work: Yes

EC Form: Yes, if cannot be completed as minor work.

- Select the Priority and Due Date based upon compelling abnormal condition that may adversely impact public safety and/or service reliability in the next five (5) years

Related Documents: 022168

2. Operating Number Incorrect / Illegible/ Missing

General Guidance:

IF the operating number on the field equipment does **not** match the operating number printed on inspection map;

THEN (1) **contact the local Distribution Operation (DO)** to confirm the discrepancy and to get further instructions

(2) DO confirms the field equipment number is **correct;** then complete a **map correction**

(3) DO confirms the field equipment number is **not correct**; then **perform minor work to correct the operating numbers** on the field equipment

(4) DO **cannot confirm the operating number**; then get a PIN from DO and complete a **map correction** to get an operating number assigned

(5) DO confirms the field equipment number for equipment in the field that **does NOT** have a field equipment number installed; then **complete minor work to install the equipment number OR create an EC** to have M&C install the field equipment number

Note: Alpha characters may differ between divisions. Be sure to confirm the "number" with the local DO and PS&R Supervisor.

Operating number should be installed in the operating position; if missing, they should be installed on the operating position, not at the 6' level. Consider also adding the # at the 6' level for ease of identification for field EE's.

If operating number exists, is it legible (faded, etc.); if not legible replace them as minor work or create an EC notification.

If operating number is not installed in the field, but on the inspection map - call the DO to confirm the correct number before installing.

If confirmed that the field is wrong, correct as minor work or create an EC to have corrected.

If confirmed that the operating number is mapped but not installed in the field, install the operating number as minor work.

If operating number is not installed in the field, but on the inspection map and/or in GIS - call the team lead who will contact the DO to confirm the correct number before installing.

If confirmed that the number is mapped but not installed in the field, or the field is incorrect, correct as minor work if possible, or write EC notification.

Minor Work: Yes

Map Correction: Yes, if operating number needs to be corrected

EC Form: Yes, if you cannot perform minor work

- FDA: Marking / Broken/Damaged / Replace or Marking / Missing / Install
- Select the Priority and Due Date based upon compelling abnormal condition that may adversely impact public safety and/or service reliability in the next five (5) years

Related Documents: 057352

FADED OPERATING NUMBER

Before: Faded operating number

Close-up

After: Minor work completed, operating number applied below operating position.

At this Location: Operating number is faded

Perform Minor Work: Yes

Write Third-Party Notification: No

Write EC Form: Yes

- FDA=Marking / Broken/Damaged / Replace
- At minimum – must write up as Priority "F-R", next inspection cycle; based on field condition and exposure, corrosion, etc.; prioritize as needed (A, B, E, or F)

3. Damaged or Missing Visibility Strips on Poles/Guy Markers

General Guidance: Reflective visibility strips shall be installed on wood, fiberglass, or steel poles, streetlight poles, and guy markers as follows:

A. On poles and guy markers installed on state highways.

B. On poles and guy markers located within 15 feet from the paved surface or 15 feet from the edge of the traveled, unpaved portion of city or county roads (streets) where not protected by curbs.

C. On poles and guy markers within 6 feet of an adjacent driveway, private roadway (street), turnaround, parking lot, or thoroughfare in rural district, capable of being traversed by vehicles, where these are not protected by curbs.

Notes:

Visibility strips are not required on poles or guy markers behind a curb, approximately 5-1/2” x 5-1/2” and 90 degrees to the surface.

Visibility strips should not be installed if there is no reasonable expectation of traffic. For example: Cross country poles, poles through waterways or wetlands, rear easements poles, poles behind guardrails, or poles on embankments that are well above or below the road.

Reminders:

- Do not install visibility strips on top of the old one. Inspectors must remove the old strip first.
- If the old strip is in good condition, but became loose, re-secure the strip to the structure.
- Do not install metal visibility strips over any vertical molding/riser.
- If any visibility strip work is required, bring the location up to the current visibility strip standard (all must be the same color – yellow)
- Install visibility strips on the side facing oncoming traffic when known.
- Do not install visibility strips within 1-1/2” of U-shaped molding
- If unable to install at time of inspection due to lack of material return and complete minor work if still in the area and can do so and document minor work or write up EC notification to correct.

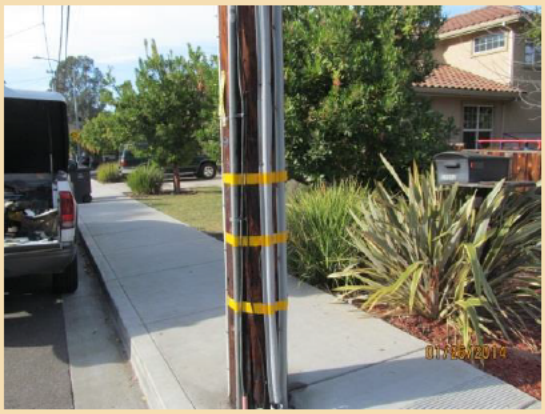
Minor Work: Yes

EC Form: Yes, if cannot be completed as minor work.

- Select the Priority and Due Date based upon compelling abnormal condition that may adversely impact public safety and/or service reliability in the next five (5) years

Related Documents: 022168, GO 95 Rule 56.9 (1964, 1990, 1996 Change to Guy Marker)

ADHESIVE VISIBILITY STRIPS

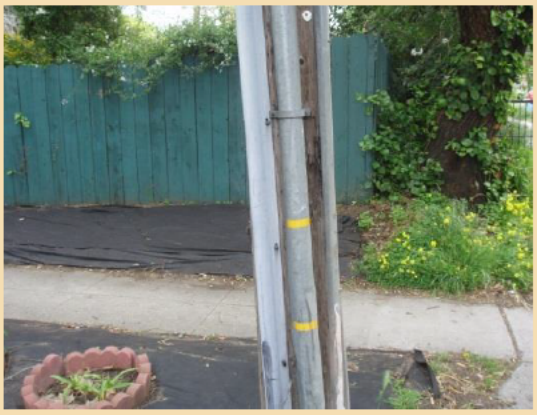


At this Location: Acceptable application of plastic and adhesive visibility strips

CLEARANCE FROM GROUND

At this Location: Acceptable metal visibility strips attached 1 ½"from ground.

INADEQUATE VISIBILITY STRIPS



At this Location: Pole with vehicular exposure. Two small sections of yellow adhesive visibility strips.

Perform Minor Work:

Yes, apply 3 adhesive visibility strips on the pipe.

Yes, apply 3 adhesive visibility strips to the plastic molding.

Write Third-Party Notification: No

Write EC Form: No, perform minor work

VISIBILITY STRIPS PAINTED OVER NO LONGER REFLECTIVE

At this Location: Visibility strips painted brown (3rd visibility strip located above not shown in picture)

Perform Minor Work: Yes, remove old visibility strips and install new.

Write Third-Party Notification: No

Write EC Form: No, perform minor work

METAL OVER MOLDING

Before

After

At this Location: Metal visibility strips under wood molding and over wood molding with protruding edge.

Perform Minor Work: Yes, remove old metal visibility strips and apply new visibility strips; **visibility strips on after photo are fiber, not metal** (coded item)

Write Third-Party Notification: No

Write EC Form: No, perform minor work

OLD METHOD VISIBILITY STRIPS

At this Location: Aged visibility strips have lost reflectivity.

Perform Minor Work: Yes, replace with 3 yellow visibility strips

Write Third-Party Notification: No

Write EC Form: No, perform minor work

OLD AND NEW VISIBILITY STRIPS

At this Location: Yellow visibility strips mounted over old white visibility strips.

Perform Minor Work: Yes, remove old visibility strips

Write Third-Party Notification: No

Write EC Form: No, perform minor work

Oil-filled Equipment

1. Equipment Oil: Leaking/Weeping Stain

General Guidance: Refer to the EDPM Manual - Assessments and Notifications Section for additional information about addressing oil in the field.

IF you observe a **stain or leak**

THEN (1) Look for **exposure or contamination**

Refer to the PCB Spill/Leak Category Response Matrix to determine the appropriate action and priority.

PCB Spill/Leak Category Response Matrix
Overhead & Sub-surface Equipment

Indicator	PCB Equipment Manufactured Before July 1979		Non-PCB Equipment Manufactured July 1979 or later	
	EC Notification Priority	Standby at Site	EC Notification Priority	Standby at Site
Equipment has failed and insulating fluid has run off the surface of the equipment and is in contact with the soil, vegetation, or water.	A Replace	Yes	A Replace	Yes
Insulating fluid has run off the surface of the equipment and is in contact with the soil, vegetation, or water OR Insulating fluid is actively dripping.	A Replace	Yes	A Replace	Supervisor discusses with EFS to determine need to standby based on location and size of spill.
Insulating fluid is about to run off the surface of the equipment but has not made contact with the soil, vegetation, water, or structure.	A Replace	Yes	A Replace	Supervisor discusses with EFS to determine need to standby based on location and size of spill.

PCB Spill/Leak Category Response Matrix
Overhead & Sub-surface Equipment
(Continued)

Indicator	PCB Equipment Manufactured Before July 1979		Non-PCB Equipment Manufactured July 1979 or later	
	EC Notification Priority	Standby at Site	EC Notification Priority	Standby at Site
Insulating fluid is on the surface of the equipment and is **not** about to run off the surface and has **sheen** (Weeps or Seeps).	Supervisor discusses with EFS to determine EC notification category based on sensitivity of location and upcoming weather. IF no timely response from EFS within ½ hour, THEN assumed to be sensitive area.			
Sensitive Areas	A Replace	Not needed	B 3 month Recheck • Describe sheen in notification • Re-check in 3 months.	Not needed
Non-sensitive Areas	B 30 day Replace IF estimating cannot be completed in time to meet 30 day deadline, THEN replace with like.			
Residual stain is a mark on the equipment that appears dried. Examples: • Stain on side of overhead transformer • Stain on concrete	No further action needed	Not needed	No further action needed	Not needed

PCB Spill/Leak Category Response Matrix, continued

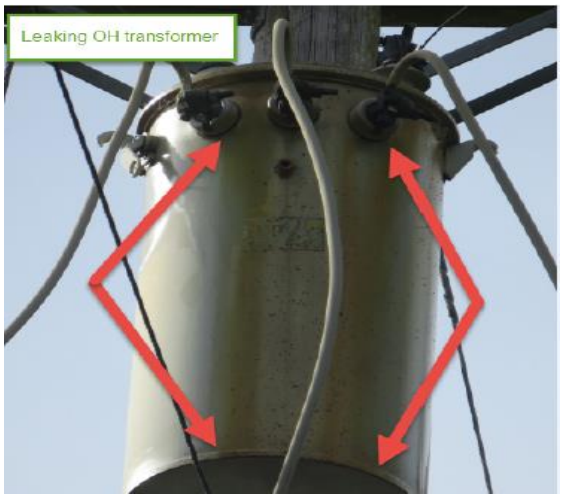
PCB Spill/Leak Category Response Matrix
Padmount Equipment

Indicator	PCB Equipment Manufactured Before July 1979 2		Non-PCB Equipment Manufactured July 1979 or later	
	EC Notification Priority	Standby at Site	EC Notification Priority	Standby at Site
Equipment has failed and insulating fluid has run off the surface of the equipment and is in contact with the soil, vegetation, or water.	A Replace	Yes	A Replace	Supervisor discusses with EFS to determine need to standby based on location and size of spill.
Insulating fluid Is actively dripping either outside or inside the cabinet doors.	A Replace	Yes	A Contain & Clean Complete cleaning A, B, or E Replace	Supervisor discusses with EFS to determine need to standby based on location and size of spill.

Minor Work: No

Related Documents: TD-2320P-01 Attachment 4

Examples: **Leaking OH Transformer**



2. Corrosion

General Guidance: In many parts of PGE's service territory, facilities are exposed to conditions that both cause and accelerate corrosion of metal components.

During detailed inspections, examine facilities and assess their condition for corrosion. If corrosion is minor, repairs to the protective coatings that cover the metal surfaces on the equipment should be made. In addition, during the diagnostic testing for specific types of distribution line equipment, perform an examination for corrosion.

Minor Work: Yes

EC Form: Yes, if compelling

- Select the appropriate FDA
- Select the Priority and Due Date based upon compelling abnormal condition that may adversely impact public safety and/or service reliability in the next five (5) years

Related Documents: TD-2305M-JA_05 "Corrosion Evaluation Job Aid", G12020, TD-3322B-066-JA08

IF you observe corrosion:

THEN (1) Look for exposure

(2) Refer to the below table for to determine the corrosion rating and the required actions to perform. Visual examples follow:

Description	Symptoms	Required Actions
Integrity is breached	Hole(s) in metal (public exposure to high voltage, cover not securable, significant oil leak or spill, etc.)	EC notification Priority A – replace immediately or make safe and issue Priority B – replace/repair
Metal is damaged	Separation, layering, bubbling	EC notification Priority E – replace/repair Not to exceed 12 months
Moderate to heavy corrosion	No sign of metal degradation	Inspect at next interval Pad-mounted equipment – clean and paint
Little or no corrosion	Discolored paint, staining	No action required

OH CORROSION EXAMPLES

At this Location: Corrosion Weakening Integrity of Tank

Metal is separating into layers

Corrosion will breach tank

Perform Minor Work: No

Write Third-Party Notification: No

Write EC Form:

- FDA=Transformer Leaks/Seeps/Weeps Replace
- Priority "E", 3-12 months depending upon exposure

At this Location: Transformer with moderate/heavy corrosion

Metal structure still sound (rust staining from attachments)

Perform Minor Work: No

Write Third-Party Notification: No

Write EC Form: No

At this Location: Bonding hardware corroded

Perform Minor Work: No

Write Third-Party Notification: No

Write EC Form: Yes

- FDA=Transformer Leaks/Seeps/Weeps Replace

Priority "E", 3-12 months depending upon exposure

TRANSFORMER WITH STAINING, NO CORROSION	TRANSFORMER CASE WITH LITTLE OR NO CORROSION
	
At this Location: Transformer with dirt and salt spray staining, no metal damage	**At this Location:** Transformer with little to no corrosion, no metal damage
Perform Minor Work: No	**Perform Minor Work:** No
Write Third-Party Notification: No	**Write Third-Party Notification:** No
Write EC Form: No	**Write EC Form:** No

3. Transformer – Blue Sticker

Guidance: Use binoculars to confirm the presence or absence of a blue sticker.

Always determine if the transformer has a blue sticker or not.

Always determine if the transformer is a SP (self-protecting) transformer or not

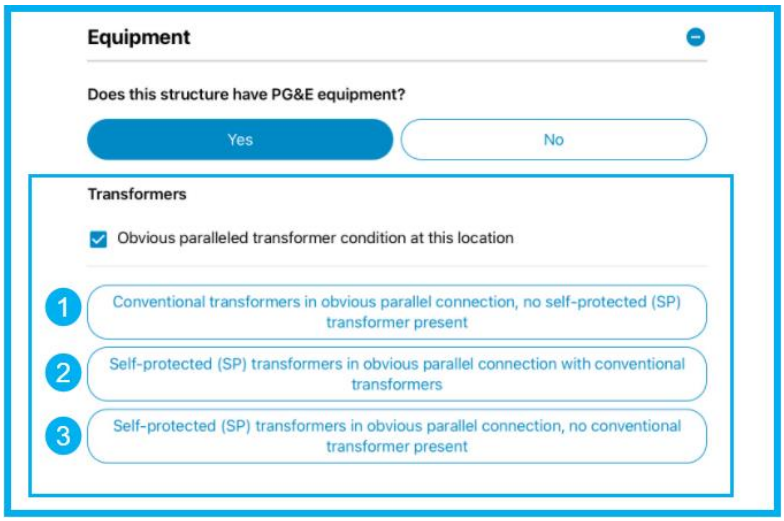
Example: **SP transformer**

4. Transformer – Parallel

Is there an obvious paralleled transformer condition at this location? If yes, create EC notification to address parallel condition in the field.

Minor Work: No

2022 Checklist Equipment Section: Guidance: Use a combination of the mapping symbols shown on your Inspect App map, the actual field observations, the checklist options (shown below) to guide your checklist selection and the notification priority (B or E) when creating an EC Notification.



4.1 Select this checklist option when you observed the following conditions:

In the field: You observed Conventional transformers in obvious parallel connection, with no self-protected (SP) transformer present.

Checklist: Select this checklist item

Create EC: FDA = Transformer / Parallel / Replace with Priority E

4.2 Select this checklist option when you observed the following conditions:

In the field: You observed Self-Protected (SP) transformers in obvious parallel connection, with conventional transformers present.

Checklist: Select this checklist item

Create EC: FDA = Transformer / Parallel / Replace with Priority B

4.3 Select this checklist option when you observed the following conditions:

In the field: You observed Self-Protected (SP) transformers in obvious parallel connection, with no conventional transformer present.

Checklist: Select this checklist item

Create EC: FDA = Transformer / Parallel / Replace with Priority B

Example: Banked transformers on separate poles should be identified as banked.

Example: OH Paralleled Transformers **OH Transformers separated by bobs are ok**

Related Documents: TD-2424B-001

Poles

1. Solely-Owned Poles with Third-Party Attachments

General Guidance: Identify all solely owned pole with third-party attachments (based on how it is mapped). Write EC Notification for Pole / Overloaded / Test, for Estimating to confirm pole loading.

Determine if additional clearing is needed for access to pole; if so - create EC Notification.

Minor Work: Yes, create an EC Notification to clear vegetation unless it can be addressed as minor work

Related Documents: EDPM Pole Inspection, Utility S2325

2. Broken, Deteriorated, Deformed Poles

General Guidance: Observations in the field may include the following types of pole damage:

1. Broken
2. Split
3. Decayed / Rotten
4. Woodpecker / Animal / Vehicle damage
5. Vandalized
6. Any pole deformity
7. Any condition that may impair conductor clearance
8. Cracked poles: assess for potential failure
9. Significant reduced circumference

Is pole damaged, broken, burnt, deformed, corroded, gunshot, or showing signs of cracking, or decay that needs to be addressed in the next 5 years? If yes, create EC notification.

Does the pole have woodpecker damage that needs to address in the next 5 years? Refer to EDPM Manual for how to assess woodpecker damage. If yes – create EC notification to repair, assess, or replace pole.

Does pole have significant reduced circumference? Guidance: For example, animal, vehicle, vandalism, burnt, shell rot, that has caused a pole circumference reduction that could cause the pole to be overloaded or deformed needs to be written up on an EC Notification, FDA = Pole Overloaded Test. If circumference is significant and needs to be addressed in the next 5 years, create EC notification to replace pole.

An ‘N’ tag indicates previously identified damaged pole.

Minor Work: No

Related Documents: EDPM Pole Inspection, TD-2325S, 066209

Related Document: TD-2325P-06

Composite Pole

Composite Pole

Pole with steel stub

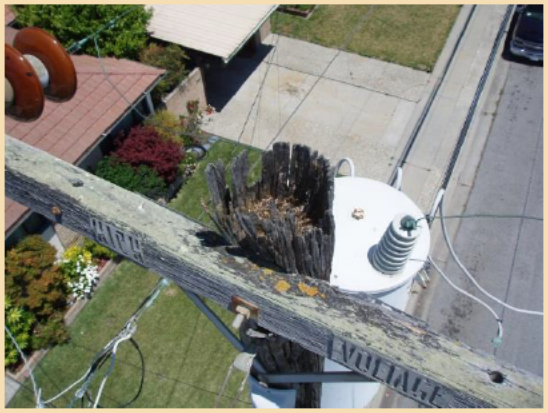
Pole with wood stub

Example: Pole top extension

Example: "California" pole top extension

POLE BROKEN AT THE COMMUNICATION LEVEL	POLE BROKEN AT MIDDLE SECTION
	
At this Location: Pole broken at the communication level in HFTD area. Complete Pole Inspection Test Report	**At this Location:** Broken pole. Complete Pole Inspection Test Report
Perform Minor Work: No	**Perform Minor Work:** No
Write Third-Party Notification: No	**Write Third-Party Notification:** No
Write EC Form: Yes • FDA=Pole / Broken/Damaged / Replace • Priority “A” address immediately	**Write EC Form:** Yes • FDA=Pole / Broken/Damaged / Replace • Priority ”B”, 0-3 months depending upon exposure

BROKEN POLE	POLE SPLIT AT COMMUNICATION LEVEL
	
At this Location: Broken pole. Complete the Pole Inspection Test Report. Pole supported in four directions.	**At this Location:** Pole split at communication level. Complete the Pole Inspection Test Report.
Perform Minor Work: No	**Perform Minor Work:** No
Write Third-Party Notification: No	**Write Third-Party Notification:** No
Write EC Form: Yes • FDA=Pole / Broken/Damaged / Replace • Priority "B", 0-3 months depending upon exposure	**Write EC Form:** Yes • FDA=Pole / Broken/Damaged/ Replace • Priority "B", 0-3 months depending upon exposure

DAMAGE TO POLE FROM SPECIFIC EVENT	DECAY OF POLE OVER TIME
	
At this Location: Pole burnt If pole has reduced circumference. Write EC notification for estimating to confirm pole loading.	**At this Location:** Pole top decayed. Entire pole failed pole test. Complete the Pole Inspection Test Report.
Perform Minor Work: No	**Perform Minor Work:** No
Write Third-Party Notification: No	**Write Third-Party Notification:** No
Write EC Form: Yes, Write EC notification for estimating to confirm pole loading. • FDA=Pole/Overloaded/Test • Priority "E", 3-12 months depending on exposure.	**Write EC Form:** Yes • FDA=Pole Decayed/Rotten/Replace • Priority "E", 3-12 months depending upon exposure

SAW CUT INTO POLE

At this Location: Vandalized pole. Chain saw cut into lower portion of pole. Half of pole circumference cut into.

Notify supervisor of possible vandalism. Supervisor will have to communicate to damage claims. Complete Poles Inspection Test Report.

Perform Minor Work: No

Write Third-Party Notification: No

Write EC Form: Yes

- FDA=Pole / Broken/Damaged/ Replace
- Priority “A” or ”B”, 0-3 months depending upon exposure

At this Location: Vandalized pole. Chain saw cut into lower portion of pole. More than half of pole circumference cut into.

Notify supervisor of possible vandalism. Supervisor will have to communicate to damage claims. Complete Poles Inspection Test Report.

Perform Minor Work: No

Write Third-Party Notification: No

Write EC Form: Yes

- FDA=Pole / Broken/Damaged / Replace
- Priority “A” or ”B”, 0-3 months depending upon exposure

POLE DAMAGED ON THE BOTTOM BUT OK

At this Location: Pole damaged by vehicle. Splint installed as temporary repair. Inspection shows adequate circumference/strength. Sharp ragged splinters. Curb is adequate protection – visibility strips not required.

If pole has reduced circumference write EC notification for estimating to confirm pole loading. If damage requires replacement, create an EC notification to replace the pole.

Perform Minor Work: Yes, Remove sharp edges, remove splint.

Write Third-Party Notification: No

Write EC Form: Yes.

- FDA= Pole / Overloaded / Test

If needs replaced:

- FDA=Pole / Broken/Damaged / Replace

DETERIORATION AROUND GROUND LINE

Before extraction

After extraction showing below ground deterioration

At this Location: Deteriorated condition found during normal inspection. Complete Pole Inspection Test Report. If pole has reduced circumference. Write EC notification for estimating to confirm pole loading.

Perform Minor Work: No

Write Third-Party Notification: No

Write EC Form: Yes

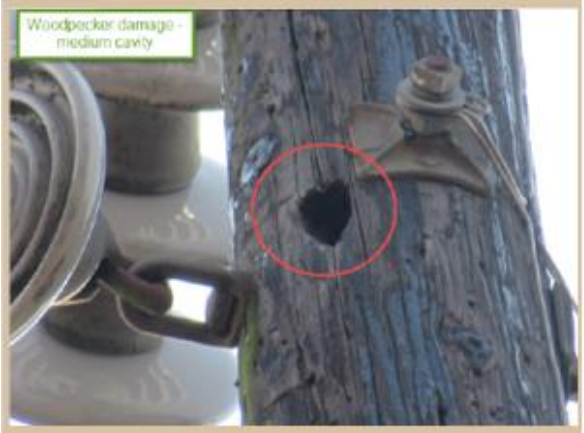
- FDA=Pole / Decayed/Rotten / Replace
- Priority "A", follow Emergency Process

Examples: Poles with woodpecker damage – assess using woodpecker assessment guidelines.

Woodpecker damage at top of pole

Woodpecker damage - multiple holes within ~2'

Woodpecker damage - medium cavity



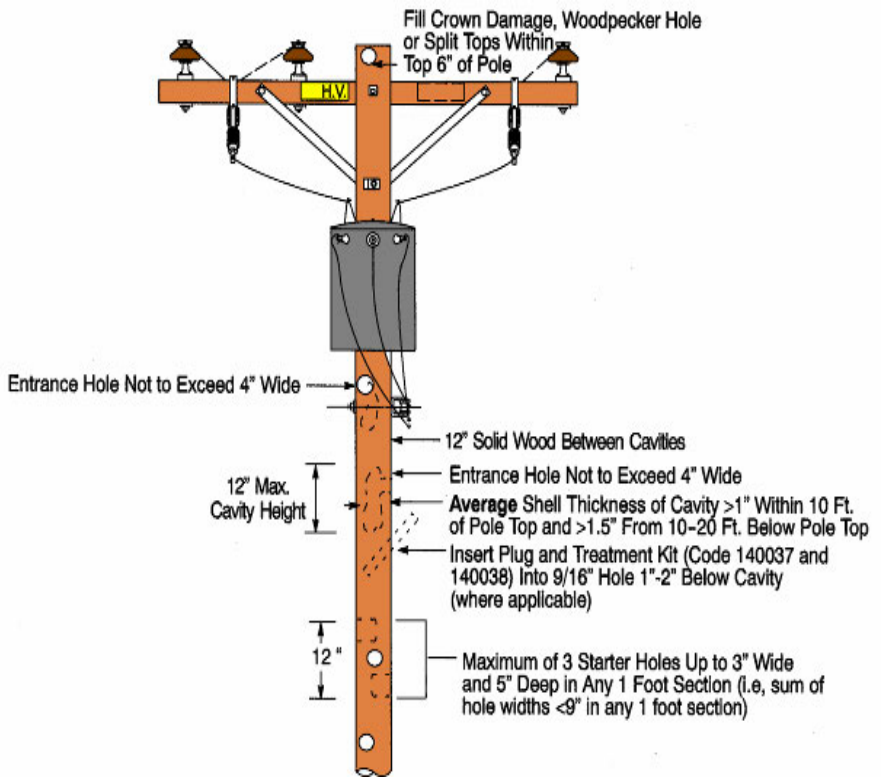
Woodpecker damage - large cavity

Examples: Significant reduced circumference

Signifcant reduced circumference (bear damage)

Signifcant reduced circumference (tractor damage)

Repair of Woodpecker-Damaged Pole Tops



Assessing woodpecker damage

- The QCR should note the approximate location, number, and size of woodpecker holes on the “Pole Inspection/Test Report” (Exhibit A, Part 3).
- Determine whether identified above-ground or pole-top damage is suitable for restoration. Poles are suitable for restoration and can remain in service if they meet the criteria listed below:
  - There is 1 vertical inch of solid wood directly below any throughbolt to support existing or proposed attachments.
  - Nesting cavities or other open pockets have an outside hole diameter that is less than 4 inches wide.
  - Internal cavities are estimated to be less than 12 inches high and 7 inches in diameter.
  - The average shell thickness of the cavity is greater than 1 inch within the top 10 feet of the pole, and greater than 1½ inches between 10 feet and 20 feet from the top. See Exhibit B, Part 1, for shell thickness between 20 feet of the pole top and the groundline.
  - There is more than 12 inches of sound wood vertically between nesting cavities.
  - There are three or fewer starter holes less than 3 inches wide, 3 inches high, and 5 inches deep within any 1-foot vertical section of the pole. The maximum sum of the diameters of the holes must be less than 9 inches wide in a 1-foot vertical section.
  - The pole-top crown damage or split tops extend downward less than 6 inches from the pole top.

3. Leaning Pole

General Guidance: Consider the following when evaluating a leaning pole:

- Is the pole leaning/out of plumb by more than 10% of its height above the ground?
- Is the leaning pole causing excessive conductor sag or reduced clearance issues that could result in contact, fire risk, or public safety?
- Does the lean appear as if it will become worse or affect safety or reliability in the next 5 years (considering environmental and configuration factors -soil, wind, pole attachments, equipment, guying)?

If the answer is **yes** to any of these questions, at minimum **create an EC Notification (Pole /Overloaded /Test) and fill out Pole Test Data Sheet**. All poles need to be load calculated prior to straightening. Estimating will create an EC to straighten (Pole/Lean/Adjust) or replace (Pole/Lean/Replace). If Inspector determines that pole needs to be replaced, create EC notification to replace pole.

Note: If the Inspector suspects that a third-party attachment is causing the pole to lean, consider writing a Third-Party Utility notification in addition to an EC Notification.

Minor Work: No

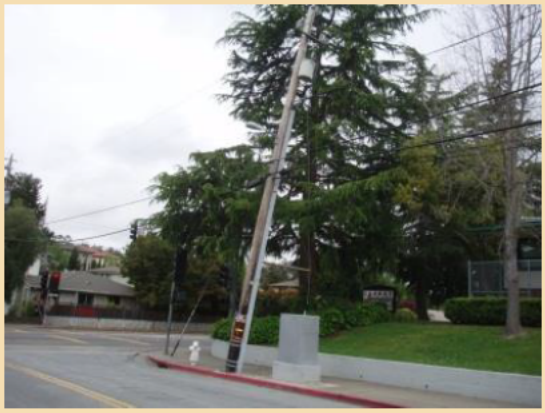
EC Form: Yes

- Select the Priority and Due Date based upon compelling abnormal condition that may adversely impact public safety and/or service reliability in the next five (5) years

Related Documents: 023058, TD-2014S – Third Party Damage

LEANING POLE	LEANING SLACK SPAN
	
At this Location: Leaning pole greater than 10% out of plumb. Pole is stable. No equipment in rural area. Causing reduced clearance.	**At this Location:** Leaning pole more than 10% out of plumb. Pole test indicates that pole is solid below ground and can be straightened. Probability of equipment failure is moderate.
Perform Minor Work: No	**Perform Minor Work:** No
Write Third-Party Notification: No	**Write Third-Party Notification:** No
Write EC Form: Yes • FDA=Pole / Leaning / Replace • Priority "E", 3-12 months depending upon exposure	**Write EC Form:** Yes • FDA=Pole / Leaning / Adjust • Priority "E", 3-12 months depending upon exposure

STUBBED POLE LEANING TOWARDS SCHOOL



At this Location: Stubbed pole leaning towards school, supported by down guy. Pole Bands are loose due to additional deterioration of the pole. Pole test data sheet indicates that pole no longer meets stubbing criteria causing reduced clearance issues

Perform Minor Work: No

Write Third-Party Notification: No

Write EC Form: Yes

- FDA=Pole / Decay/Rotten / Replace
- Priority "E", 3-12 months depending upon exposure

POLE LEANING 3 POT TRANSFORMER IN BUCK POSITION

At this Location: Pole is leaning less than 10% out of plumb, leaning in direction of offset equipment. Pole inspection found pole stable.

Perform Minor Work: No

Write Third-Party Notification: No

Write EC Form: No

POLE LEANING NEAR RAILROAD TRACKS

At this Location: Severe lean being held up by the primary conductors. Low clearance over active railroad tracks. Pole located in a swamp area with standing water.

Perform Minor Work: No

Write Third-Party Notification: No

Write EC Form: Yes

- FDA=Pole / Decayed/Rotten/ Replace
- Priority "A", follow Emergency Process

4. Deformed Pole

General Guidance:

For deformed poles, write EC Notification for Pole / Overloaded / Test, for estimating to confirm pole loading.

If the deformity appears as if it will become worse or affect safety or reliability in the next 5 years (considering environmental and configuration factors - soil, wind, pole attachments, equipment, guying) - write EC notification to replace pole.

Common drivers for deformed poles: Improper/lack of guying, third party attachment.

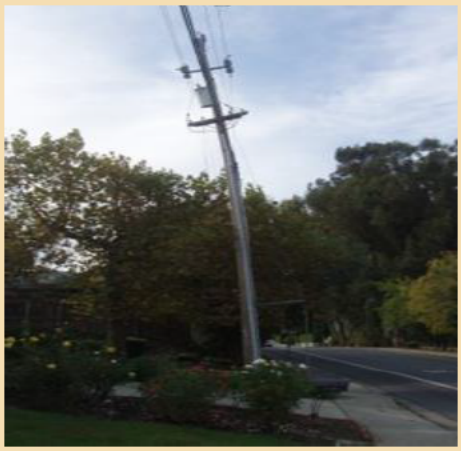
Review clearances to verify no reduced clearance issues, all levels of clearance requirements that could result in contact, fire risk, or public safety.

Minor Work: No

EC Form: Yes

- Select the Priority and Due Date based upon compelling abnormal condition that may adversely impact public safety and/or service reliability in the next five (5) years

Related Documents: EDPM Pole Inspection

POLE BENT 4 FEET OUT OF LINE	
	**At this Location:** Pole bent 4 feet out of line, less than 10% lean **Perform Minor Work:** No **Write Third-Party Notification:** No **Write EC Form:** Yes, only when the inspector decides that further assessment is required. • FDA=Pole / Overloaded / Test • Priority "E", 3-12 months depending upon exposure

INADEQUATE SUPPORT AT COMMUNICATIONS LEVEL

At this Location: Two guys stabilizing communication level.

Perform Minor Work: No

Write Third-Party Notification: No

Write EC Form: Yes, only when the inspector decides that further assessment is required.

- FDA=Pole / Overloaded / Test
- Priority "E", 3-12 months depending upon exposure

OVER STRESSED POLE

At this Location: Pole is twisted, cracked, due to communication.

Perform Minor Work: No

Write Third-Party Notification: No

Write EC Form: Yes

- FDA=Pole / Overloaded / Replace Pole Test Data Sheet is Required
- Priority "E", 3-12 months depending upon exposure; add in field comments "overloaded by communications."

UNBALANCED LOAD AT TOP

At this Location: Deformed pole with bowed top in line with conductor.

Perform Minor Work: No

Write Third-Party Notification: No

Write EC Form: Yes

- FDA=Pole / Overloaded / Test Pole Test Data Sheet is Required

Priority "E", 3-12 months depending upon exposure.

5. Soil Excessively Eroded or Washed Away at Base of Pole

General Guidance: If the inspector notices that a large amount of soil was washed or eroded away at the base of a pole, consider writing an EC notification to investigate whether the pole still meets its designed set depth.

Minor Work: No

EC Form: Yes

- FDA = Pole / Overloaded / Test
- Select the Priority and Due Date based upon compelling abnormal condition that may adversely impact public safety and/or service reliability in the next five (5) years

Related Documents: 015203, page 2, table 1

Example: **Soil eroded at base of pole**

6. Pole Steps

General Guidance: Remove any pole steps less than 8 feet 6 inches above the ground or any other accessible surface; this allows for grading, landscaping, etc.

Minor Work: Yes

EC Form: Yes, if cannot be completed as minor work.

- Select the Priority and Due Date based upon compelling abnormal condition that may adversely impact public safety and/or service reliability in the next five (5) years

Related Documents: 022616 page 2, section 5

7. Mud sill

General Guidance: Repair/replace deteriorated mud sill.

Minor Work: No

Related Documents: 030109

8. Transmission Poles

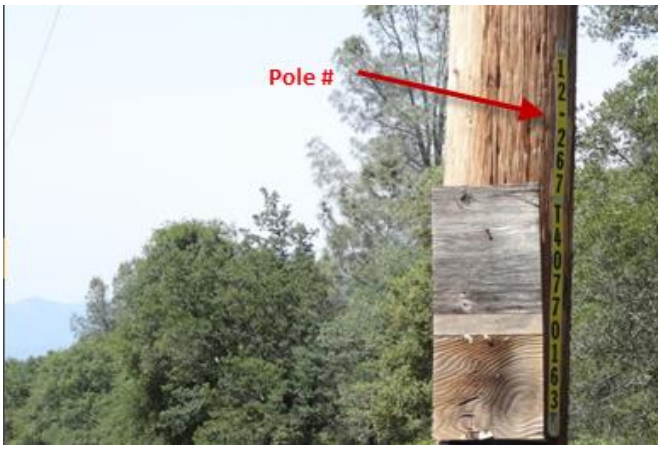
General Guidance: At minimum, when performing GO 165 patrols or inspections, Inspectors should perform a "patrol" of the transmission assets in the area being patrolled or inspected in order to identify any **obvious structural problems or hazards** that need to be addressed by the Transmission Organization. Review clearances to verify no reduced clearance issues, all levels of clearance requirements that could result in contact, fire risk, or public safety.

Examples of the types of issues that could be identified:

- Damaged or broken poles
- Broken or decayed crossarms
- Broken insulators
- Damaged tie wire
- Vegetation issues

If you identify an obvious structural problem or hazard in the field that is NOT an emergency:

- Assign a location # of your map
- Take a photo of the pole # on the pole; example:



- Take a **minimum** of one photo to document the issue at the location
- Refer to the Transmission key contact map to identify the **T-Line contact** for that area
- Contact the appropriate **Transmission Supervisor** (leave a VM if not available)
- In the comments section of your log entry, note the following:
  - The issue identified (i.e., bad pole, broken crossarm, etc.)
  - The transmission pole #
  - The date, name and phone number of the T-Line employee that you contacted
  - The digital photo number(s) associated with the location

When in doubt call your Supervisor or PG&E Lead

Minor Work: No

9. Transmission Pole with Distribution Underbuild

Inspect App: Use the Inspect App to document adverse field conditions as follows:

Structure Section: Select Transmission with Distribution Underbuild

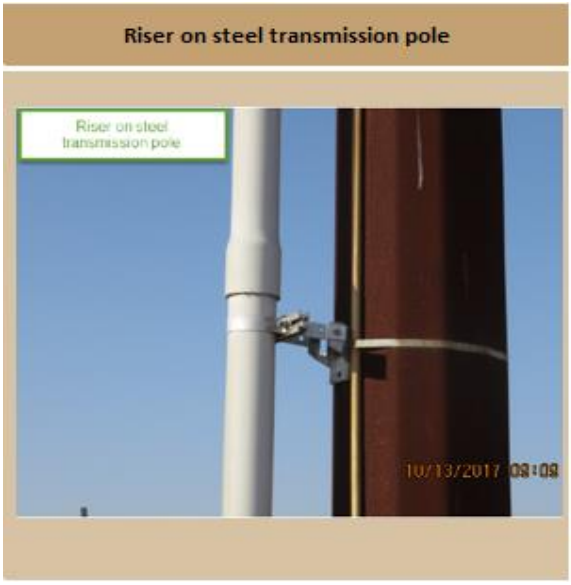
Example 1:

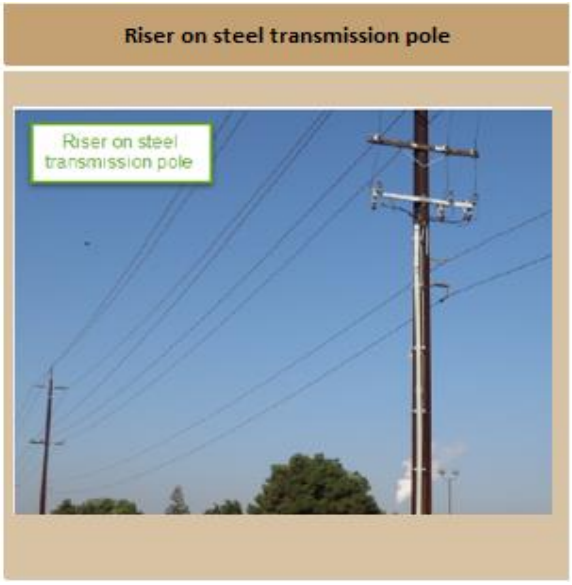
Checklist item: Distribution riser on structure

Guidance: Structure must be steel Transmission Structure with Distribution Underbuild. If observed, yes, create EC notification to relocate riser.

EC Form: Yes

- FDA = Riser/Pothead / Installed in Error / Relocate
- Priority "E", 3-12 months depending upon exposure





Example 2:

Checklist item: Distribution transformer serving an external customer installed without a common neutral present

Guidance: If observed, yes, create EC notification to relocate the transformer.

EC Form: Yes

- Select the Priority and Due Date based upon compelling abnormal condition. Defaults to E Priority.
- Use FDA Transformer / No Common Neutral / Relocate

Related Documents: 068177

Example: Distribution transformer on steel transmission pole without common neutral.

Example 3:

Checklist item: Missing or broken distribution bridging or bonding

Guidance: If observed, yes, create EC notification to repair or install missing bridging.

EC Form: Yes

- Select the Priority and Due Date based upon compelling abnormal condition. Defaults to E Priority.
- Use FDA Trasn_Dist Pole / Bonding Broken / Repair
- Use FDA Trasn_Dist Pole / Bonding Missing / Install

Related Documents: TD-2305M-B009

Example: Wood Crossarm on Transmission with Distribution Underbuild that requires bridging

Riser Molding

1. Broken/Missing Riser Ground

General Guidance:

See ‘Ground / Ground Molding’ in this job Aid

Minor Work: None

Related Documents: 027742

2. U-Shape Riser Molding Broken/Damaged or Unsecured

General Guidance – Existing Molding:

Ensure bottom section of ground molding is flush against the pole

IF molding is NOT firmly attached to pole

THEN Perform Minor Work to secure molding to pole by attaching all lags ***OR*** Create EC Notification

Address any gaps identified via minor work or create an EC notification

General Guidance if Installing New Molding or Repairing Existing Molding:

Below 8 feet: Both sides of the molding must be secured to the pole at least every 18 inches

Above 8 feet: Both sides of the molding must be secured to the pole at least every 36 inches

Examples

Cracked riser boot	Broken riser
	

Minor Work: Yes

Related Documents: 021924

SmartMeter/SCADA Equipment/Other Equipment on Poles

1. Broken/Damaged SmartMeter Relay/Access Point/Data Collector Unit or SCADA Equipment

General Guidance: If, through visual inspection, an inspector sees broken or damaged SmartMeter antenna, DCU, or SCADA equipment, create EC notification. Be sure to check the SmartMeter box on the EC Form. If visible, note the operating number and/or serial number of the equipment.

Supervisors will contact SmartMeter Operations to notify them of the issue.

Minor Work: No

Related Documents: 072145, 072150, 068190, SMRT-9000WBT, 054421

EXAMPLES OF SMARTMETER ON POLE

Streetlights

1. Broken or Damaged Streetlight Pole

General Guidance: Test for out of plumb, then create EC notification.

Minor Work: No

Related Documents: TD-2309S, TD-2307M

MISSING STREET LIGHT	LEANING AGGREGATE POLE
	
At this Location: Cone indicates location of missing decorative street light and pole. Exposed wire is de-energized. Include picture of similar street light for replacement.	**At this Location:** Leaning aggregate pole more than 10% out of plumb. Pole is broken at base and not stable. Light still working.
Perform Minor Work: Yes, make safe.	**Perform Minor Work:** No
Write Third-Party Notification: No	**Write Third-Party Notification:** No
Write EC Form: Yes • FDA=Streetlight / Missing / Install • Priority "B", 30 days for regular streetlights, add in field comment section if pole is missing. • Priority "E", 6 months for decorative streetlights, add in field comment section – describe if pole is missing.	**Write EC Form:** Yes • FDA=Pole / Broken/Damaged / Replace • Priority "B", 0-3 months depending upon exposure

2. Day Burner

General Guidance: Do not create an EC Notification for a day burner. Call a clerk to contact Restoration Dispatch to get a T-Man to respond. This is to ensure correct accounting for streetlight work (depending on the rate that the customer is one, etc.).

Minor Work: Yes; if you have the materials on your truck

Related Documents: Utility S2309

3. Missing Streetlight

General Guidance: If the inspector notices that a missing streetlight, first, make safe then create EC notification to install a missing streetlight.

Minor Work: No

Related Documents: Utility S2309

Trees

1. Trees within 4 Feet of a Primary Line

General Guidance: If you have any questions about the integrity of tree that could impact electric facilities, (causing damage to our facilities, dead or dying, causing conductor height issue, could fall into line etc.), write a Vegetation Notification to remove dead/dying tree.

Broken Limb on Conductor: Remove the limb as minor work with a hot stick if it is safe to do so.

Vegetation Touching Bare Conductor or Signs of Burning or Arcing: Create an emergency Priority “A” Vegetation Management Tag and call vegetation management for assistance. Wait at the location until relieved by Vegetation Management personnel.

Vegetation Not Touching Bare Conductor and No Signs of Burning or Arcing: Create a Vegetation Management notification.

Minor Work: Yes

Related Documents: None

2. Tree Attachments

General Guidance: If you have any questions about the integrity of the tree, (causing damage to our facilities, dead or dying, causing conductor height issue, etc.), create an EC Notification to install a clearance pole.

Minor Work: No

Related Documents: TD-2999B-044

3. Trees Causing Strain or Abrasion to a Secondary Conductor or Service

General Guidance:

If vegetation is:

A. Causing damage to the conductor insulation due to friction (Note: scuffing and polishing is NOT damaged) or

B. Causing strain on the conductor that is adversely affecting other supply facilities.

Note: The inspector should clear the vegetation or move the conductor as minor work if possible. Inspectors should leave the trimmings at the location; use door hanger to notify customer.

If the inspector cannot clear the vegetation or move the conductor:

- For service drops: Create an EC notification
- For secondary conductor spans serving 2 or more customers: Write a Vegetation Management notification with priority based on severity.

Note: Vegetation Management considers secondary as conductor that feeds more than one physical address (per Rule 16); i.e., multiple “service” conductors feeding the **same customer/property are considered service**, not secondary; Inspector will need to **create an EC** in this scenario.

If the inspector sees a hazardous vegetation issue on communication facilities, create a third- party notification.

Minor Work: Yes

Related Documents: None

PHONE TREE CONDITION

At this Location: Tree putting strain on the pole, due to communication line

Perform Minor Work: No

Write Third-Party Notification: Yes

Write EC Form: No

SECONDARY HARD AGAINST TREE

SECONDARY OVERGROWN REDUCING CONDUCTOR CLEARANCES

At this Location: Secondary conductor resting on tree/vegetation

Perform Minor Work: No

Write Third-Party Notification: No

Write EC Form: Yes

- FDA=Tree / Overgrown / Trim
- FDA= Conductor / Clearance / Adjust
- Priority "E", 3-12 months depending upon exposure

Wildlife Protection

1. Existing Migratory Bird Protection Damaged

General Guidance: Evaluate locations where animal mitigation has previously been installed to assess if it is sufficient or is missing or broken. If not sufficient or needs repair, create EC notification to replace.

Note: If there is a nest at the location, write EC Notification to install animal mitigation if nest is already abandoned.

Example: **Bird nest on transformer**

Minor Work: No

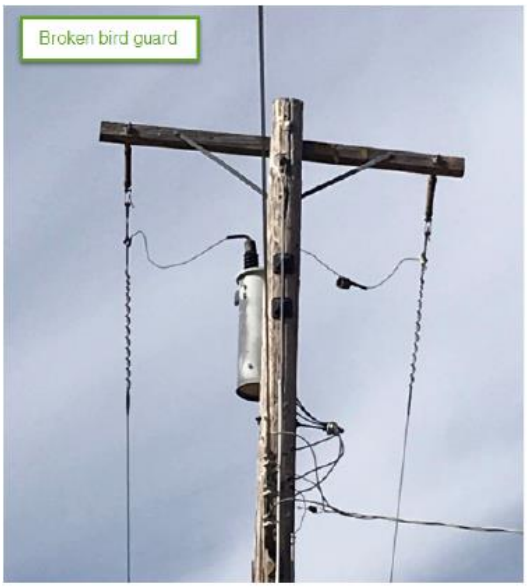
Related Documents: Utility S2321, 061149

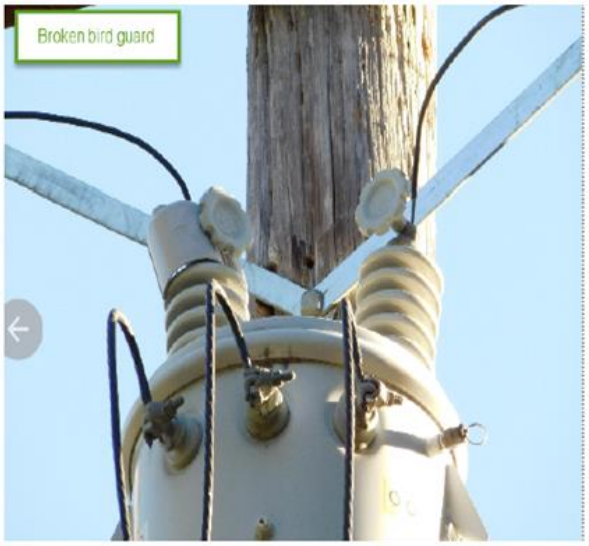
2. Existing Wildlife Protection Damaged

General Guidance: Inspector should create EC notification to repair/replace existing wildlife protection installed in the field (cow guards, etc.)

Note where there are signs of animal activity/nesting/debris. Write EC Notification to install animal mitigation if nest is already abandoned.

Examples: **Broken bird guard**





Minor Work: No

Related Documents: 061149

Clearance Evaluation Job Aid

TD-2305M-JA12
Publication Date: 3/2013 Rev: 1

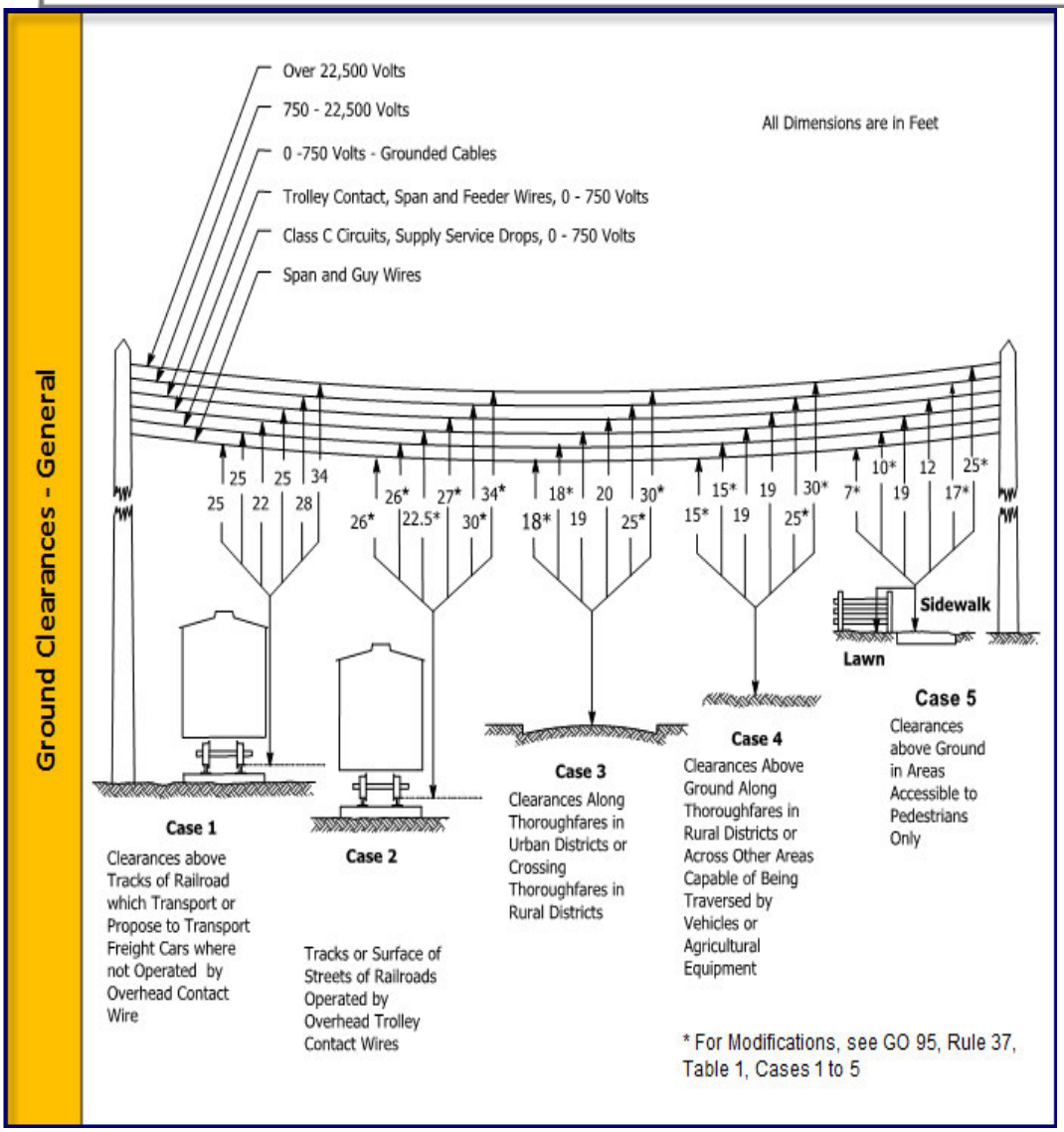
Overhead Clearance Evaluation

Guidance Document References:
TD-2305M – EDPM 2011 Manual
Engineering Document 022158 – Clearance Tables CPUC General Order 95

Level of Use:
- ❑ Information
- ✓ Reference
- ❑ Continuous

General Information

This job aid contains reference material to help compliance inspectors evaluate conductor clearance issues they visually identify in the field.



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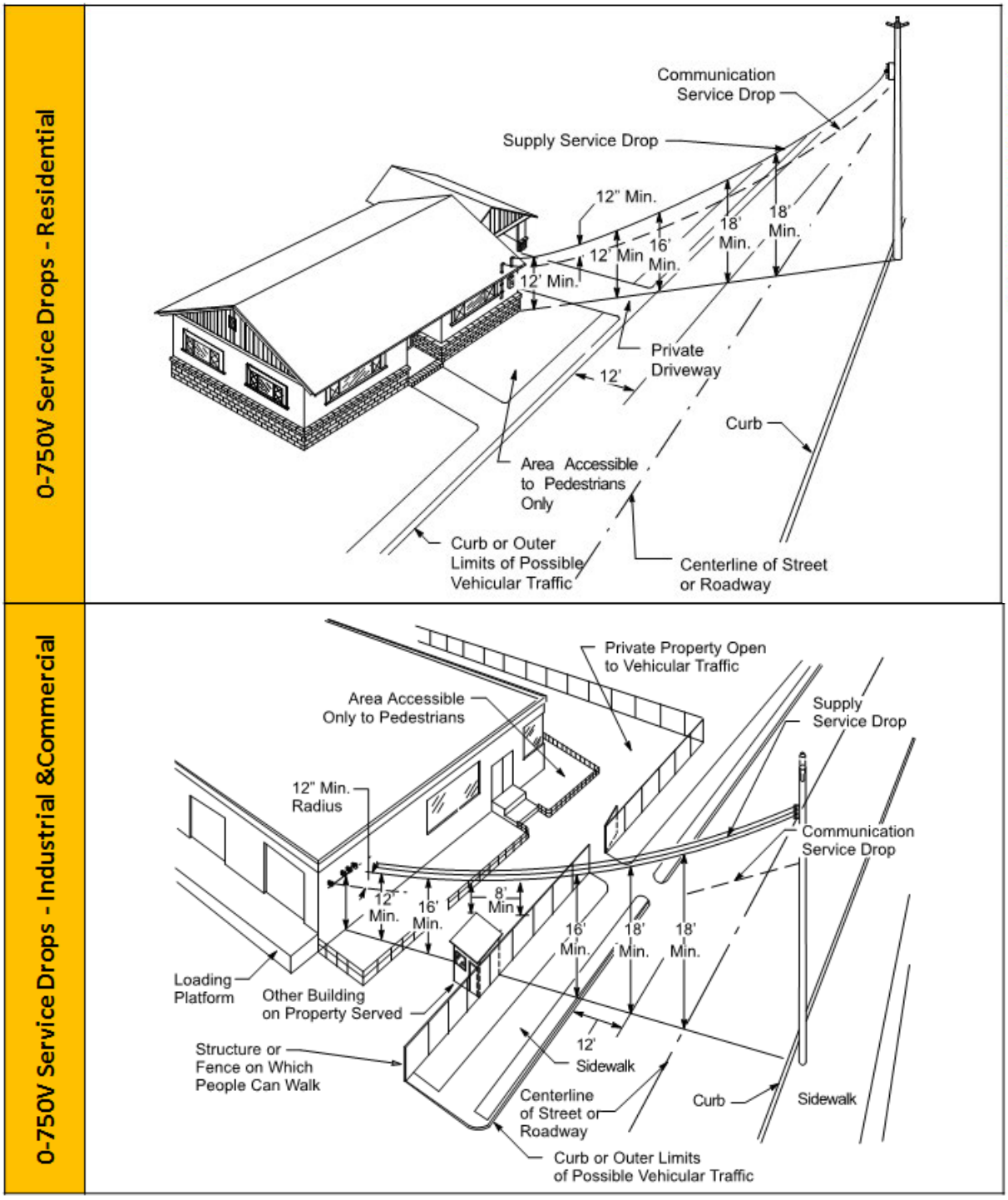
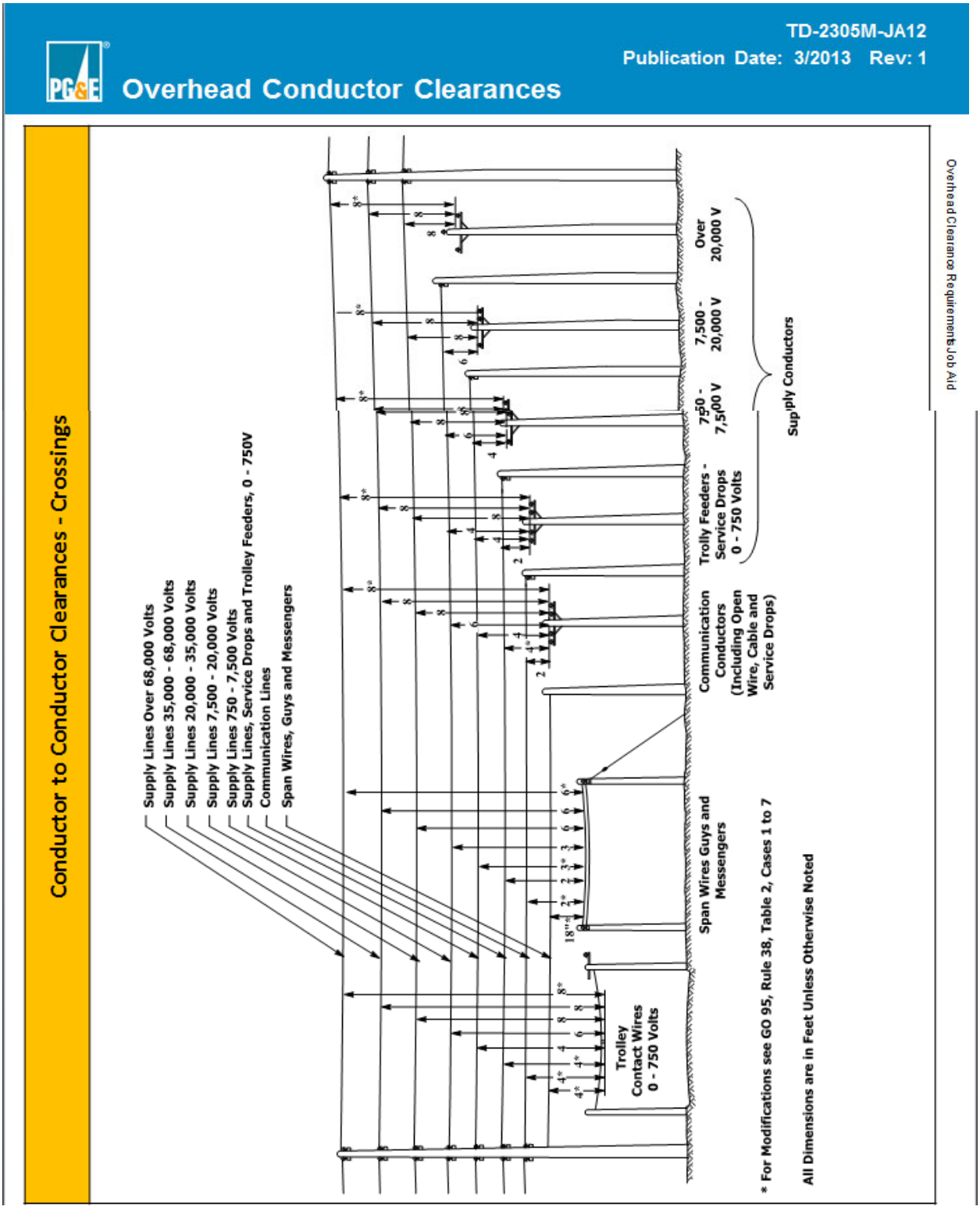
Overhead Conductor Clearances



Overhead Clearance Requirements Job Aid

Page 2, Clearance Job Aid



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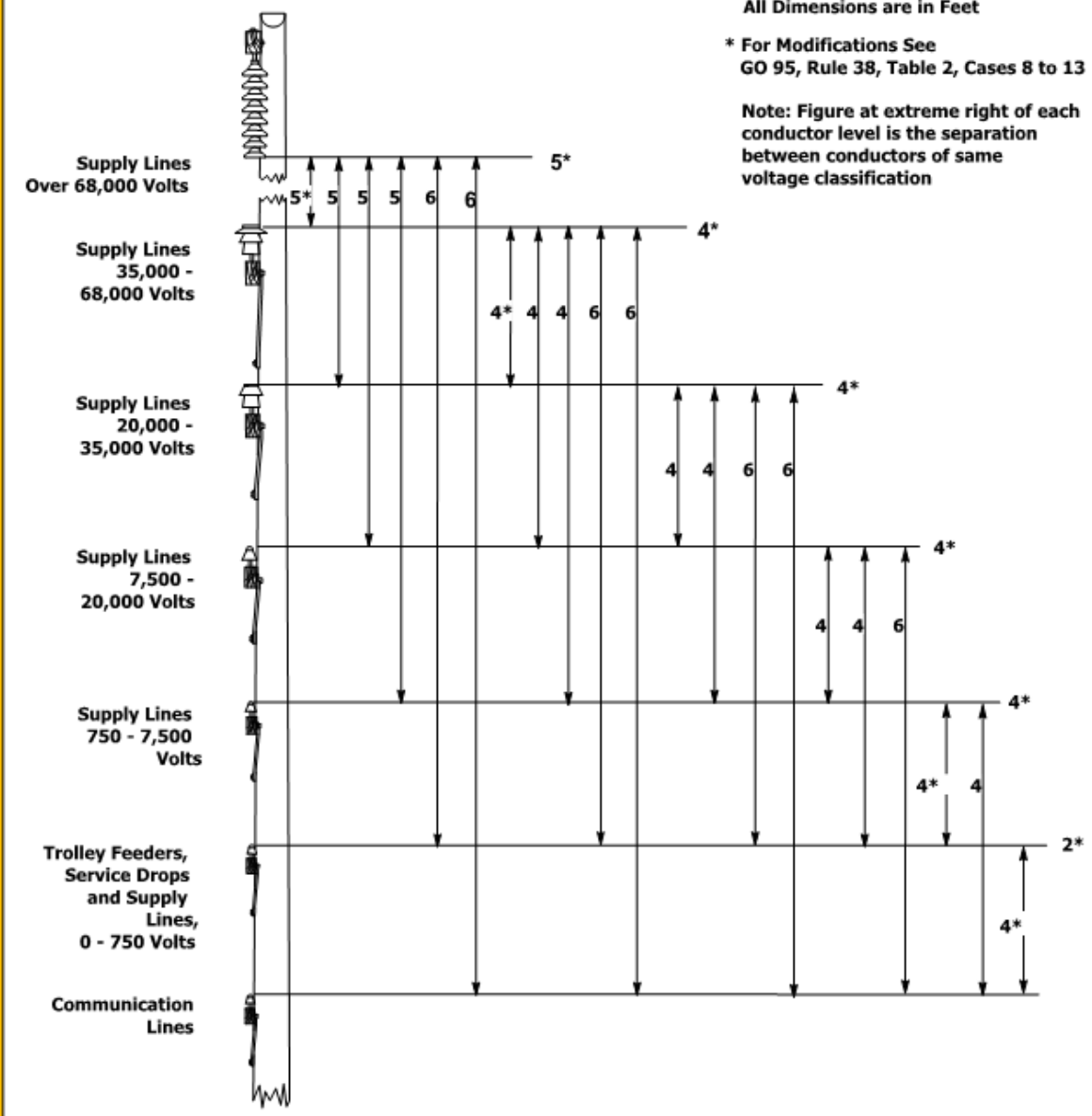
Overhead Conductor Clearances

Conductor to Conductor Clearances – On Same Pole



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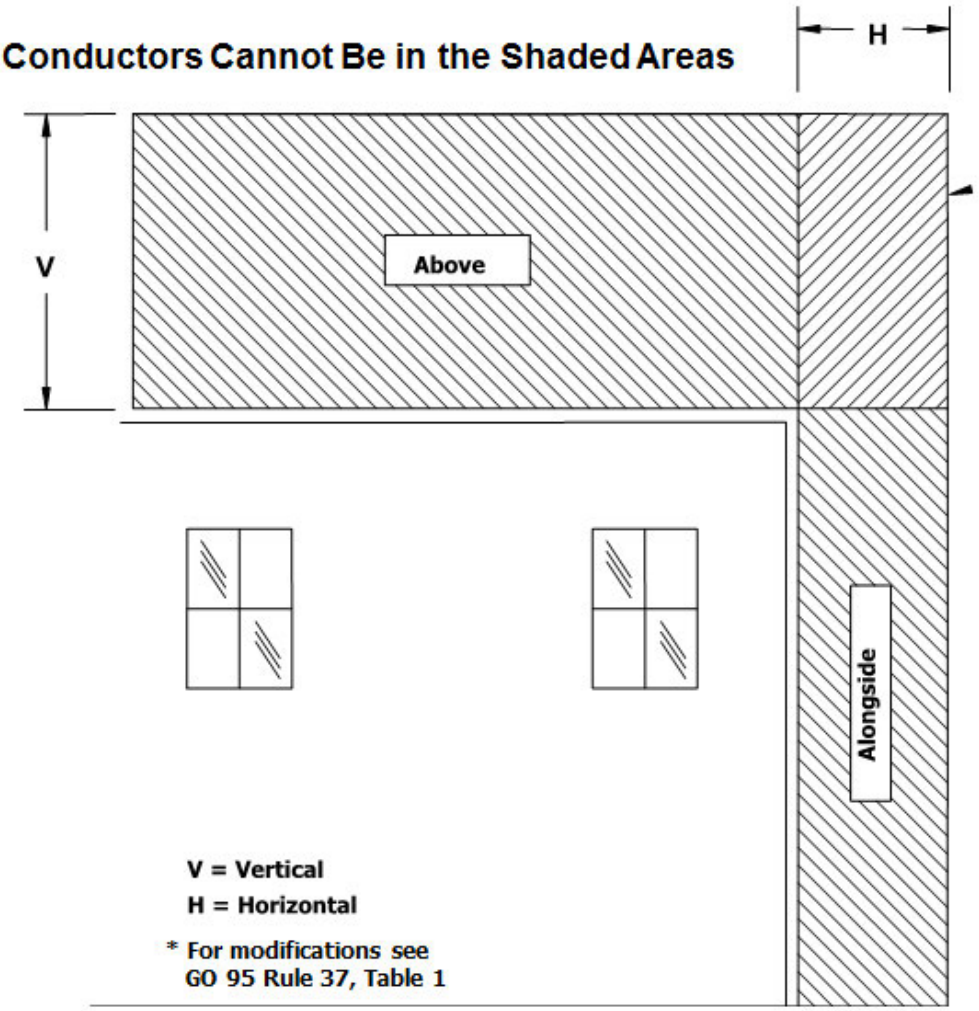
Overhead Conductor Clearances

Conductor to Building Clearances

Conductors Cannot Be in the Shaded Areas



V = Vertical
H = Horizontal

* For modifications see GO 95 Rule 37, Table 1

	Conductor Type					
	Guys	Service Drops (not Attached)	0-750 V Spans	750V-22.5kV	22.5 – 300kV	300-550kV
V (Walkable Surface)	8 ft. *	8 ft. *	8 ft.	12 ft.	12 ft.	20 ft. *
V (Non-Walkable Surfaces: Handrails, Chimneys, Patio Covers, etc.)	2 ft.	8 ft. *	8 ft. *	8 ft.	8 ft.	20 ft.
H		3 ft. *	3 ft. *	6 ft.	6 ft. *	15 ft. *

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Publication Date: 3/2013 Rev: 1

Overhead Conductor Clearances

G.O. 95 Table 1 – Vertical Clearances

Case	Nature of Clearance	Wire or Conductor Concerned						
		A Span Wires (Other than Trolley Span Wires) Overhead Guys and Messengers	B Communication Conductors (Including Open Wire, Cables and Service Drops), Supply Service Drops of 0 - 750 Volts	C Trolley Contact, Feeder and Span Wires, 0 - 5,000 Volts	D Supply Conductors of 0 - 750 Volts and Supply Cables Treated as in Rule 57.8	E Supply Conductors and Supply Cables, 750 - 22,500 Volts	F Supply Conductors and Supply Cables, 22.5 - 300 kV	G Supply Conductors and Supply Cables, 300 - 550 kV
1	Crossing above tracks of railroads which transport or propose to transport freight cars (maximum height 15 feet, 6 inches) where not operated by overhead contact wires. (a) (b) (c) (d)	25 Feet	25 Feet	22.5 Feet	25 Feet	28 Feet	34 Feet	34 Feet (kk)
2	Crossing or paralleling above tracks of railroads operated by overhead trolleys. (b) (c) (d)	26 Feet (e)	26 Feet (e) (f) (g)	22.5 Feet (h) (i) (eee)	20 Feet (i)	25 Feet (o) (ii)	30 Feet (o) (ii)	30 Feet (o) (ii) (kk)
3	Crossing or along thoroughfares in urban districts or crossing thoroughfares in rural districts. (c) (d)	18 Feet (j) (k) (ii)	18 Feet (j) (l) (m) (ii) (aa)	19 Feet (hh) (eee)	20 Feet (i)	25 Feet (o) (ii)	30 Feet (o) (ii)	30 Feet (o) (ii) (kk)
4	Above ground along thoroughfares in rural districts or across other areas capable of being traversed by vehicles or agricultural equipment.	15 Feet (k)	15 Feet (m) (n) (p)	19 Feet (eee)	19 Feet	25 Feet (o)	30 Feet (o) (p)	30 Feet (o) (kk)
5	Above ground in areas accessible to pedestrians only	8 Feet	10 Feet (m) (q)	19 Feet (eee)	12 Feet	17 Feet	25 Feet (o)	25 Feet (o) (kk)
6	Vertical clearance above walkable surfaces on buildings, (except generating plants or substations) bridges or other structures which do not ordinarily support conductors, whether attached or unattached.	8 Feet (r)	8 Feet (r)	8 Feet	8 Feet	12 Feet	12 Feet	20 Feet (ll)
6a	Vertical clearance above non-walkable surfaces on buildings, (except generating plants or substations) bridges or other structures, which do not ordinarily support conductors, whether attached or unattached	2 Feet	8 Feet (yy)	8 Feet	8 Feet (zz)	8 Feet	8 Feet	20 Feet
7	Horizontal clearance of conductor at rest from buildings (except generating plants and substations), bridges or other structures (upon which men may work) where such conductor is not attached thereto(s) (t)	-	3 Feet (u)	3 Feet	3 Feet (u) (v)	6 Feet (v)	6 Feet (v)	15 Feet (v)

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Overhead Conductor Clearances

G.O. 95 Table 1 – Vertical Clearances (cont'd)

Case	Nature of Clearance	Wire or Conductor Concerned						
		A	B	C	D	E	F	G
		Span Wires (Other than Trolley Span Wires) Overhead Guys and Messengers	Communication Conductors (Including Open Wire, Cables and Service Drops), Supply Service Drops of 0 - 750 Volts	Trolley Contact, Feeder and Span Wires, 0 - 5,000 Volts	Supply Conductors of 0 - 750 Volts and Supply Cables Treated as in Rule 57.8	Supply Conductors and Supply Cables, 750 - 22,500 Volts	Supply Conductors and Supply Cables, 22.5 - 300 kV	Supply Conductors and Supply Cables, 300 - 550 kV
8	Distance of conductor from center line of pole, whether attached or unattached (w)(x)(y)	-	15 inches (s)(aa)	15 inches (aa)(bb)(cc)	15 inches (o)(aa)(dd)	15 or 18 inches(o)(dd)(ee)(ii)	18 inches (dd)(ee)	Not Applicable
9	Distance of conductor from center line of pole, whether attached or unattached (w)(x)(y)	-	3 inches (aa)(ff)	3 inches (aa)(cc)(gg)	3 inches (aa)(dd)(gg)	3 inches (dd)(gg)(ii)	1/4 Pin Spacing Shown in Table 2 Case 15 (dd)	1/2 Pin Spacing Shown in Table 2 Case 15 (dd)
10	Radial centerline clearance of conductor or cable (unattached) from non-climbable street lighting or traffic signal poles or standards, including mastarms, brackets and lighting fixtures, and from antennas that are not part of the overhead line system.	-	1 Foot (u)(rr)(ss)	15 inches (bb)(cc)	3 Feet (oo)	6 Feet (pp)	10 Feet (qq)	10 Feet (ll)
11	Water areas not suitable for sailboating (tt) (uu) (ww) (xx)	15 Feet	15 Feet	-	15 Feet	17 Feet	25 Feet	25 Feet (kk)
12	Water areas suitable for sailboating, surface area of:(tt)(vv)(ww)(xx)			-				
	(A) Less than 20 acres	18 Feet	18 Feet	-	18 Feet	20 Feet	27 Feet	27 Feet (kk)
	(B) 20 to 200 acres	26 Feet	26 Feet	-	26 Feet	28 Feet	35 Feet	35 Feet (kk)
	(C) Over 200 to 2,000 acres	32 Feet	32 Feet	-	32 Feet	34 Feet	41 Feet	41 Feet (kk)
	(D) Over 2,000 acres	38 Feet	38 Feet	-	38 Feet	40 Feet	47 Feet	47 Feet (kk)
13	Radial clearance of bare line conductors from tree branches or foliage (aaa)(ddd)	-	-	18 inches (bbb)	-	18 inches (bbb)	1/4 pin spacing shown in table 2, Case 15(bbb) (ccc)	1/2 pin spacing shown in table 2, Case 15

Note: A letter next to a measurement indicates there may be an exception. Refer to G.O. 95 to research.

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Overhead Conductor Clearances

G.O. 95 Table 2 – Conductor to Conductor Clearances

Case No.	Nature of Clearance and Class and Volt age of Wire, Cable or Conductor Concerned	Other Wire, Cable or Conductor Concerned										
		Supply Conductors (Including Supply Cables)										
		A Span Wires, Guys and Messengers	B Trolley Contact Conductors 0 – 750 Volts	C Comm. Conductors (Including Open Wire, Cables and Service Drops)	D 0 – 750 Volts (Including Service Drops) and Trolley Feeders (a)	E 750 - 7,500 Volts	F 7,500 - 20,000 Volts	G 20,000 - 35,000 Volts	H 35,000 - 75,000 Volts	I 75,000 - 150,000 Volts	J 150,000 - 300,000 Volts	K (kk) 300,000 - 550,000 Volts
	Clearance between wires, cables and conductors not supported on the same poles, vertically at crossings in spans and radially where colinear or approaching crossings											
1	Span wires, guys and messengers (b)	18 (c)	48 (d, e)	24 (e)	24 (e)	36(f)	36	72	72	78	78 (gg)	138(hh)
2	Trolley contact conductors, 0 - 750 volts	48 (d, e)	-	48 (d)	48 (d, h)	48	72	96	96	96	96 (gg)	156(hh)
3	Communication conductors	24 (e)	48 (d)	24	48 (i)	48(dd)	72	96	96	96	96 (gg)	156 (hh)
4	Supply conductors, service drops and trolley feeders, 0 - 750 volts (qq)	24 (e)	48 (d, h)	48 (i)	24	48	48	96(oo)	96	96	96 (gg)	156 (hh)
5	Supply conductors, 750 - 7,500 volts (qq)	36 (f)	48	48 (dd)	48	48(h)	72	96(oo)	96	96	96 (gg)	156(hh)
6	Supply conductors, 7,500 - 20,000 volts (qq)	36	72	72	48	72	72	96(oo)	96	96	96 (gg)	156 (hh)
7	Supply conductors, more than 20,000 volts (qq)	72 (g)	96 (g)	96 (g)	96 (g, oo)	96 (g,oo)	96 (g, oo)	96 (g, oo)	96 (g)	96	96 (gg)	156 (hh)
	Vertical separation between conductors and/or cables, on separate crossarms or other supports at different levels (excepting on related line and buck arms) on the same pole and in adjoining midspans											
8	Communication Conductors and Service Drops	-	-	12 (j, rr)	48 (k, l, m, n, pp)	48(k)	72 (m, n)	72(m)	72	78	87 (gg)	147 (hh)
9	Supply Conductors Service Drops and Trolley Feeders, 0 - 750 Volts	-	-	48 (k, l, m, n, pp)	24 (h, k, m, o)	48(k, m, p)	48 (k, m, p)	72 (m, nn)	72	78	87 (gg)	147 (hh)
10	Supply conductors, 750 – 7,500 volts	-	-	48 (k)	48 (k, m, p)	48 (m, o, r, ee)	48 (m, q)	48 (m, q)	48 (q)	60 (ff)	90 (gg)	150 (hh)

Note: A letter next to a measurement indicates there may be an exception. Refer to G.O. 95 to research.

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Publication Date: 3/2013 Rev: 1

Overhead Conductor Clearances

G.O. 95 Table 2 – Conductor to Conductor Clearances (Cont'd)

Case No.	Nature of Clearance and Class and Voltage of Wire, Cable or Conductor Concerned	Other Wire, Cable or Conductor Concerned										
		Supply Conductors (Including Supply Cables)										
		A	B	C	D	E	F	G	H	I	J	K (kk)
		Span Wires, Guys and Messengers	Trolley Contact Conductors 0 – 750 Volts	Comm. Conductors (Including Open Wire, Cables and Service Drops)	0 – 750 Volts (Including Service Drops) and Trolley Feeders (a)	750 - 7,500 Volts	7,500 - 20,000 Volts	20,000 - 35,000 Volts	35,000 - 75,000 Volts	75,000 - 150,000 Volts	150,000 - 300,000 Volts	300,000 - 550,000 Volts
	Vertical clearance between conductors on related line arms and buck arms											
14	Line arms above or below related buck arms (s , t)	-	-	6	12 (u)	18 (u)	18 (u)	24	48	60 (ff)	90 (gg)	150 (hh)
	Horizontal separation of conductors on same crossarm											
15	Pin spacing of longitudinal conductors vertical conductors and service drops (v , w)	-	-	3 (x)	11½ (h , x)	11½(x)	17½(x)	24 (x)	48	60 (ff)	90 (gg)	150 (hh)
	Radial separation of conductors on same crossarm, pole or structure—incidental pole wiring											
16	Conductors, taps or lead wires of different circuits (v , y , s)	-	-	3 (x)	11½ (h , x)	11½(x)	17½(x)	24 (x)	48	60 (ff)	90 (gg)	150(hh)
16a	Uncovered, grounded, non-dielectric fiber optic cables on metallic structures, in transition (ss)	-	15	15	15	18	18	18	18	24	36	120
17	Conductors, taps or lead wires of the same circuit (v , s , aa)	-	-	3	3	6	6	12	24	60 (ff)	90 (gg)	150 (hh)
	Radial separation between guys and conductors											
18	Guys passing conductors supported on other poles, or guys approximately parallel to conductors supported on the same poles	-	-	3	11½	11½	17½	24	36	36 (ff)	78 (gg)	138(hh)

Note: A letter next to a measurement indicates there may be an exception. Refer to G.O. 95 to research.

Page 9, Clearance Job Aid

Crossarm Evaluation Job Aid

General Information:

Environmental conditions throughout the service territory expose support structures to a variety of conditions that can cause or accelerate deterioration of wood components. This section provides guidelines for assessing wood crossarms. Engineering requirements are identified in the Electric Wood Crossarm Assessment Utility guideline TD-2301P-01-JA01.

Guidance: During detailed inspections, examine wood crossarms and assess their condition: Is primary or secondary crossarm damaged, broken, burnt, decayed, rotten, loose, missing hardware or showing signs of bent bolts or brackets, gun shots, insect damage or woodpecker damage, or splitting that compromises the integrity of the crossarm? If yes, create EC notification to replace crossarm; always consider replacing wood crossarms with composite.

Additional Guidance:

Identify conditions such as crossarm configuration, number of phases, location (e.g., urban, rural, forest, inaccessible, traffic, etc.), loading (e.g., double/triple arms, dead ends, alley arms, proximity to trees, angles/conductor size, heavy loading, damaged wood pins, etc.) and the likelihood of these conditions contributing to further deterioration or failure of the crossarm or attached components.

Often cross arms experience significant decay on the top of the arm without exhibiting clues that are visible from the ground[1]. For this reason, arms that exhibit two or more of the following characteristics are more likely to decay on the top and should be considered for a more detailed aerial/climbing inspection:

- Arms that appear to be greater than 50 years old[2](based on age of pole, presence of wood pins, brown/glass insulators, or other indicators).
- Arms mounted on poles where the pole top is showing signs of decay or crowning.
- Severely weathered arms or arms rounded or apparently decayed ends.
- Damaged wood pins or elongated pinholes.
- Active moss/vegetation growth.
- Presence of woodpecker holes (greater than one inch diameter) on the arm
- Arms in areas of higher rainfall/moisture and reduced sunlight such as those in many coast and mountain areas.
- Wood pins on arms located in agricultural areas or orchards contaminated by aerial spraying and dirt, which contributes to tracking and arm or pin deterioration.

[1] Examples of top and bottom views of crossarm conditions are shown in table 2

[2] Many, but not all, arms prior to 1955 were untreated.

Crossarm Evaluation Job aid – photo examples

Table 2 – Crossarm Grading Aid

BOTTOM VIEW	TOP VIEW
Evidence of decay near hole 	Evidence of Significant Decay 
Enlarged hole, minor moss/discoloration/splits near pin hole 	Enlarged hole, minor moss/discoloration/splits near pin hole 
Evidence of tracking/burning near brace and pin holes 	Evidence of burning near brace and pin holes 

BROKEN CROSSARM

Crossarm is completely broken/fractured

Emergency - make safe immediately

SPLIT CROSSARM

Primary Squatter (wood pin). Crossarm split within 2" of pinhole.

Replace in the next 3 months.

TOP OF CROSSARM DECAYED

Evidence of pole top decay and face of crossarm decay; may need additional assessment of crossarm.

Replace 3-12 months

DETERIORATED CROSSARM

Significant deterioration, both arms are broken/split. Evidence of previous temporary repair.

Replace 3-12 months

BROKEN SECONDARY CROSSARM

Secondary arm broken; split/fractured within 2" of bolt holes in heavy tree area.

Replace 3-12 months

PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE
SAN FRANCISCO, CA 94102-3298

February 1, 2023 CPUC-ID: E20211223-01

Vincent Tanguay, Senior Director
Electric Compliance, Electric Engineering
Pacific Gas and Electric Company (PG&E)
3000 Lakeside Drive
Oakland, CA 94612

SUBJECT: Notice of Violation (NOV)

Dear Mr. Tanguay:

On behalf of the Wildfire Safety and Enforcement Branch (WSEB) of the California Public Utilities Commission (CPUC), Will Dundon of my staff investigated an incident that occurred on July 7, 2021, involving PG&E's facilities at the intersection of Brewer Road and Iron Horse Drive in Grass Valley, Nevada County, California. This letter serves as notification to you that our investigation identified the following violations:

General Order 95, Rule 18 – Maintenance Programs and Resolution of Potential Violations of General Order 95 and Safety Hazards states in part:

> *Each company (including electric utilities and communications companies) shall establish and implement an auditable maintenance program for its facilities and lines for the purpose of ensuring that they are in good condition so as to conform to these rules. Each company must describe in its auditable maintenance program the required qualifications for the company representatives who perform inspections and/or who schedule corrective actions. Companies that are subject to GO 165 may maintain procedures for conducting inspections and maintenance activities in compliance with this rule and with GO 165.*

General Order 95 Rule 31.1 – Design, Construction and Maintenance states in part:

> *For all particulars not specified in these rules, design, construction, and maintenance should be done in accordance with accepted good practice for the given local conditions known at the time by those responsible for the design, construction, or maintenance of communication or supply lines and equipment.*

WSEB's investigation determined that PG&E failed to complete a work order which identified a safety hazard within the timeline prescribed by General Order (GO) 95 Rule 18.

WSEB's investigation also determined PG&E was in violation of GO 95 Rule 31.1, failure to use accepted good practices in the maintenance of its electrical facilities by performing the following: (1) PG&E failed to use Infrared cameras to reassess facilities with an elevated temperature, (2) PG&E failed to comply with its internal procedures for repairing electrical facilities with elevated temperatures within the utility's prescribed timeline, (3) PG&E failed to comply with its internal procedures for replacing

poles with excessive woodpecker damage, (4) PG&E failed to comply with its internal procedures for addressing work orders within an internally prescribed timeline, and (5) PG&E failed to perform required maintenance on overheated equipment and significantly delayed maintenance work to repair woodpecker damage due to its Field Safety Reassessment program.

Please provide a response no later than March 3, 2023 with records of all corrective actions and preventive measures taken by PG&E to remedy and prevent the recurrence of such violation. If you have any questions concerning this NOV, please contact Will Dundon at (415) 660-8163 or will.dundon@cpuc.ca.gov.

Sincerely,

Devla Singh
Program and Project Supervisor
Wildfire Safety and Enforcement Branch
Safety and Enforcement Division
California Public Utilities Commission

Cc: Lee Palmer, Director, Safety and Enforcement Division, CPUC
Anthony Noll, Program Manager, Wildfire Safety and Enforcement Branch (WSEB), SED, CPUC
Devla Singh, Program and Project Supervisor, WSEB, SED, CPUC
Will Dundon, Senior Utilities Engineer, WSEB, SED, CPUC

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March 3, 2023

Ms. Devla Singh
Program & Project Supervisor, WESB
Safety and Enforcement Division
California Public Utilities Commission

Reference: CPUC-ID: E20211223-01
Notice of Violation: General Order (GO) 95, Rules 18 and 31.1

Ms. Singh

This letter is in response to the above referenced Notice of Violation (NOV) dated February 1, 2023, regarding Wildfire Safety and Enforcement Branch's (WSEB's) investigation of a July 7, 2021, fire in Grass Valley, California and a subsequent property damage claim exceeding $50,000.

The WSEB's investigation identified the following violations:

GO 95, Rule 18, Maintenance Programs and Resolution of Potential Violations of General Order 95 and Safety, which states in part:

> *"Each company (including electric utilities and communications companies) shall establish and implement an auditable maintenance program for its facilities and lines for the purpose of ensuring that they are in good condition so as to conform to these rules."*

GO 95, Rule 31.1, Design, Construction and Maintenance, which states in part:

> *"For all particulars not specified in these rules, design, construction, and maintenance should be done in accordance with accepted good practice for the given local conditions known at the time by those responsible for the design, construction, or maintenance of communication or supply lines and equipment."*

The NOV alleges the following:

1. PG&E is in violation of GO 95, Rule 18, because it failed to complete a work order which identified a safety hazard within the timeline prescribed by GO 95 Rule 18.
2. PG&E is in violation of GO 95, Rule 31.1, because it failed to use accepted good practices in the maintenance of its electrical facilities by failing to: (1) use infrared cameras to reassess facilities with an elevated temperature, (2) comply with its internal procedures for repairing

electrical facilities with elevated temperatures within the utility's prescribed timeline, (3) comply with its internal procedures for replacing poles with excessive woodpecker damage, (4) comply with its internal procedures for addressing work orders within an internally prescribed timeline, and (5) perform required maintenance on overheated equipment and significantly delayed maintenance work to repair woodpecker damage due to its Field Safety Reassessment program.

WSEB requested that we identify all corrective actions and preventive measures taken to remedy and prevent the recurrence of such violations by March 3, 2023.

Background

On July 7, 2021, one of our field supervisors became aware of a fire near our pole (Incident Pole) while listening to a police scanner. At 1930 hours our responding troubleshooter arrived onsite but was unable to access the Incident Pole due to the ongoing firefighting efforts. At 2030 hours CAL FIRE reported the fire was contained and asked the troubleshooter to investigate a "bright red spot" on a jumper supported by the Incident Pole. The troubleshooter noticed a paddle jumper on a switch failing and visibly glowing red.

We dispatched a repair crew and they arrived at 2300 hours. We made temporary repairs at the time which resulted in 100 customers experiencing a sustained 120-minute outage during these activities. We created an Electric Corrective (EC) notification to replace the Incident Pole and switch at the same time the temporary repairs were being made. On July 13, 2021, we closed this EC notification after the Incident Pole and switch were replaced.

We performed an investigation of the incident and identified two prior EC notifications associated with the Incident Pole which may have contributed to the July 7, 2021, fire. The two prior EC notifications were #116854528 and #119998009 which identified excessive, woodpecker and insect damage to the pole, and Infrared (IR) temperature readings, respectively.

The first of these EC notifications was #116854528 which was created on March 27, 2019, during the Wildfire Safety Inspection Program (WSIP) to replace the Incident Pole for excessive woodpecker and insect damage. The Incident Pole was located in a Tier 2 High Fire-Threat District (HFTD) and, therefore, this EC tag was required to be completed within 12 months under the time periods established in GO 95 Rule 18.a.ii. However, the EC tag to replace the Incident Pole was originally scheduled for completion by March 27, 2020, which was beyond the 12-months allowed for Tier 2 HFTD, and this EC notification would be further extended beyond the March 27, 2020, due date.

The second EC notification was tag #119998009 which was initiated on October 29, 2020, during an Infrared (IR) inspection of the Incident Pole. This IR inspection identified one of the paddle jumpers to be at an excessive temperature of 320.4°F. Based on the results of the IR inspection, we created EC notification, #119998009, on November 9, 2020, as a Priority B notification and assigned a 90-day due date (instead of the 30-day completion date prescribed in Utility Guideline TD-2022B-001).

Subsequently, a Central Inspection Review Team (CIRT) gatekeeper misread the IR data and downgraded the EC notification to a Priority E notification, which has a 180-day due date.

On March 12, 2020, a Field Safety Reassessment (FSR) recommended that both tags should be canceled as the Incident Pole and the switch were in good condition and did not need to be replaced.[1] The FSR inspection was a visual inspection only; however, EC tags created by intrusive pole test data, or IR testing, cannot be dismissed by a visual inspection. The recommendation to cancel the first EC tag was appropriately rejected by our CIRT on March 30, 2021, because the gatekeeper noted the original notification was based on intrusive pole test data and the FSR inspection was a visual inspection only. EC tags created by intrusive pole test data cannot be dismissed by a visual inspection. Unlike the pole replacement EC notification, the gatekeeper did not reject the recommendation to cancel the EC notification based on IR data and it was approved on March 31, 2021. As a result of this EC notification being canceled, no corrective action was taken to resolve the unsafe condition of the high temperature on the paddle jumper.

We reported this incident to the CPUC on December 23, 2021, under the property damage criteria after our Law-Claims department received a claim of property damages exceeding $50,000 dollars on December 22, 2021.

As part of our investigation of this incident, we recognized that EC tag #119998009 should not have been cancelled and this finding was self-reported to the CPUC on April 29, 2022, under General Order 95 Rule 18.[2]

Our Response

We agree with WSEB's determination that we violated GO 95, Rules 18 and 31.1. While we believe that the first attempted cancellation of the pole replacement was appropriately rejected under the CIRT review, we did not correctly reject the FSR's recommended cancellation of replacing the paddle jumper. While the replacement of the Incident Pole was late, we do not believe that it caused, or contributed to, the incident and we were actively managing its replacement per our process at the time of the incident. However, the failure to address the overheating paddle jumper within the time frame associated with initial prioritization may have contributed to the incident.

We identified the following corrective actions to prevent a similar situation from taking place:

1. EC tags that originated from either Pole Test & Treat (PT&T) or IR inspections are no longer eligible for the FSR process.
2. We held tailboards with the relevant personnel directing them to reject FSR cancellation requests related to IR or PT&T conditions.

[1] The FSR process is a risk-based method of dealing with our EC notification backlog. Open EC tags are inspected to determine which ones can receive due date extension while scheduling the highest risk tags for immediate action.
[2] *See,* our CPUC 2022 Q1 Self-Identified Potential Non-Compliance Quarterly Report (#2022-Q1); this information was also referenced in the 20-Day Report Supplemental Response submitted on March 11, 2022.

3. We developed a procedure for FSRs, creating a process that clearly establishes a built-in Quality Control (QC) check as an extra layer of QC review, as well as applicable SAP enhancements.
4. We also added updates to the Electric Distribution Preventative Maintenance Manual.

We are following up internally to determine if these corrective actions have been completed.

Please contact me at 925-786-7144 if you have any questions regarding this response.

Sincerely,

Vincent Tanguay
Senior Director – Electric Compliance, Electric Engineering

cc: Lee Palmer, Director, Safety and Enforcement Division (SED), CPUC
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