



## Preliminary Ignition Investigation Report

<b>Ignition Database Index:</b>	20240905
<b>Electric Incident Investigation (EII) Number:</b>	NR240709A
<b>Incident Name:</b>	Hook – 09 Jul 2024
<b>PG&amp;E Facility Ignition?</b>	Yes
<b>CPUC Reportable Ignition?</b>	Yes
<b>Date &amp; Time of Incident:</b>	July 9, 2024 1846 hours
<b>Street Address:</b>	17985 Hooker Creek Road
<b>City:</b>	Cottonwood
<b>County:</b>	Tehama
<b>Latitude/Longitude:</b>	40.3182, -122.3316
<b>State Responsibility Area (SRA) / Local Responsibility Area (LRA) / Federal Responsibility Area (FRA)</b>	State Responsibility Area (SRA)
<b>PG&amp;E Division:</b>	North Valley
<b>High Fire Threat District (HFTD):</b>	Tier 2
<b>High Fire Risk Area (HFRA):</b>	Yes
<b>EPSS Buffer:</b>	N/A
<b>Fire Index Area (FIA):</b>	246
<b>Fire Potential Index (FPI) Rating: FIA</b>	R3
<b>Fire Potential Index (FPI) Rating: Circuit</b>	R3
<b>Was there a PSPS event at the time of ignition?</b>	No
<b>Suspected Initiating Event:</b>	Equipment – PG&E
<b>Failure Driver:</b>	All types of equipment / facility failure
<b>Failure Sub-driver:</b>	Conductor failure-all
<b>Circuit:</b>	Cottonwood 1103
<b>Circuit Protection Zone:</b>	Cottonwood 11031616
<b>Nominal Voltage:</b>	12kV
<b>Pole SAP Equipment ID:</b>	101510125, 101510120
<b>Subject to PRC 4292 Veg Pole Clearance:</b>	No
<b>PG&amp;E Equipment associated with ignition:</b>	Conductor – Primary
<b>EPSS enabled at time of ignition?</b>	Yes
<b>Fault Type:</b>	Line to Line (A, B)
<b>Wire Down (Primary)?</b>	Yes
<b>Lead Agency/Agency Having Jurisdiction:</b>	CAL FIRE
<b>Fire Size:</b>	0.26-9.99 acres
<b>FAS Field Remarks:</b>	“found east phase down with fire, unknown cause, separated 18” from insulator, cal fire took 4’ of the end that was on the ground.”

<b>HAWC Summary:</b>	<p>“Resources responded to a vegetation fire at Hooker Creek Rd x Saddleback Ridge Rd, Cottonwood in a Tier 2 area. The fire was contained at 3 acres.</p> <p>There was an outage in the immediate area. The outage was on the COTTONWOOD 1103 circuit impacting approximately 558 customers on OIS # 2511846. Per FAS Comments "found east phase down with fire, unknown cause, separated 18" from insulator, cal fire took 4' of the end that was on the ground."</p> <p>This was an EPSS enabled circuit. An Everbridge message was sent. Notifications: HAWC Ops, PSS, ENOC”</p>	
<b>Injuries / Fatalities / Property Damage / Media Attention:</b>	Damage to approximately 150 feet of cattle fencing (not expected to exceed \$50,000).	
<b>Weather Conditions:</b>	<ul style="list-style-type: none"> <li>• Temperature: 99.0°F</li> <li>• Relative Humidity: 27%</li> <li>• Wind Speed: 8.9 mph</li> <li>• Wind Gust: 11.7 mph out of the south-southeast</li> </ul> <p>Weather observation site approximately 2.7 miles east-southeast of the Ignition Location.</p>	
<b>Red Flag Warning (RFW) / High Wind Warning (HWW):</b>	No	
<b>911 Standby Relief Time:</b>	7 minutes	
<b>OIS #:</b>	2511846, 3511979	
<b>ILIS #:</b>	24-0085818	
<b>FAS #:</b>	T006444285, T006444292, T006444293, T006444299, T006444304	
<b>TOTL #:</b>	N/A	
<b>Assigned Attorney:</b>	N/A	
<b>Ignition Investigator &amp; Phone:</b>	██████████ ██████████	██████████ ██████████

## Executive Summary

On July 9, 2024, at 1846 hours, Line Recloser (LR) 1616 opened on a line-to-line fault on the Cottonwood 1103 circuit in a Tier 2 HFTD, causing an outage to 558 customers. Between 1849 hours and 1917 hours, five troubleshooters were dispatched to help patrol the Cottonwood 1103 circuit for trouble. Troubleshooter #1 started to patrol from LR 1616 at 1901 hours. Around 1920 hours, Troubleshooter #2 began to patrol the circuit starting at Fuse Saver 182930 on Hooker Creek Road and Basler Road towards LR 1616.

At 1926 hours, Troubleshooter #1 arrived at 17185 Hooker Creek Road (“Incident Location”) and reported a wire down four spans north of capacitor bank C251 (see Figure 1. EDGIS map of Cottonwood 1103 Circuit up to Fuse Saver 182930., Figure 3). Troubleshooter #1 cut a jumper on pole SAP ID 101510120 to enable the Distribution Control Center (“DCC”) to restore power to 160 customers once a patrol was complete up to that jumper. At 1939 hours, Troubleshooter #3 reported that Troubleshooters #2 and #3 patrolled the line from the Fuse Saver 182930 up to LR 1616 and that no trouble was found between the Incident Location and LR 1616. The troubleshooters did not identify branches on the ground or a bird that might have caused the wire to come down.

From July 6 to July 7, 2024, LR 1616 opened three times likely due to overload based on ILIS records and comments from DCC<sup>1</sup>. In each of these cases, no trouble was found. The controller on LR 1616 was upgraded on July 10, 2024, the day after the incident, which wiped sequence of events data from the device. However, Distribution System Protection reviewed current readings from the SCADA data historian and identified the highest recorded current magnitude on phase A as 171.9 Amps and 172.5 Amps on Phase C, which may have crossed EPSS pickup targets (see Figure 4) on the days prior to the incident. On the day of the incident, the highest recorded current was approximately 150 Amps.

There was an outstanding tag (Priority E EC Notification #126390579) on pole SAP ID 101510120 created during the Distribution Enhanced Inspection on June 16, 2023, for a broken/damaged conductor. Repair was required by June 14, 2024, so was overdue at the time of the incident. The EC notification noted that a conductor on the “field side” had one strand broken (see Figure 5). The inspection and EC notification did not identify where along the span the strand of conductor was broken, however, StreetSmart imagery from July 8, 2022, shows a reflection off of the same conductor that separated during this incident (see Figure 6). This reflection is in the same approximate location that the conductor failed (see Figure 3).

Troubleshooter #3 reported that there may have been a eucalyptus branch north of pole SAP ID 101510125 in contact with a communication line that could have caused “load shock” on the pole (see Figures 2 and 7). An Asset Management Specialist from PG&E Vegetation Asset Strategy and Analytics visited the Incident Location on July 24, 2024 to look for potential for vegetation issues on the communication line. The weather on July 24 was 102°F with sustained wind of 20 mph and gusts up to 30 mph. The Asset Management Specialist observed negligible movement in pole SAP ID 101510125 of the attached conductors given higher winds at the time onsite than on the day of the incident. The Asset Management Specialist assessed that there would be minimal chance for a load shock event to occur in the location that it did.

Applied Technology Services (“ATS”) received 200 feet of conductor collected by the repair crew and conducted an initial visual examination to document the failed component. CAL FIRE retained a section of conductor, which is suspected to have included the failed ends of conductor. The portion of conductor that ATS received showed variable degrees of thermal damage, likely from the failed conductor laying in burning vegetation (see Figure 8).

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<sup>1</sup> ILIS numbers 24-0084677, 24-0084922, 24-0084956

An Asset Failure Analysis Engineer performed an Extent of Conditions analysis and identified one corrective action related to this ignition. A Distribution Engineer performed a CYME simulation where all LR's on the circuit were metered to match what was occurring in the field on the date of the incident. LR 1616 was metered at 3250 kW, about 150 Amps, which is about when the LR tripped due to failure according to the SCADA data historian. The loading levels of the circuit were up to 120% overloaded around the time of the incident. Note that the LR loading does not necessarily apply to the subject span. North Valley Distribution Planning Engineers have a project planned to re-conductor the overloaded section of the Cottonwood 1103 Circuit to be completed before summer 2025. No CAP was created for this as the project has already been approved.

### System Protection Analysis

Multiple devices, including LR 1616, were enabled for the Cottonwood 1103 circuit on the day of the incident. LR 1616 is a Cooper recloser with a Form 6, Revision 28 controller. The controller was upgraded to Revision 30 the day after the incident, which wiped the captured event data and oscillography. Upstream protective devices did not capture the event either. Distribution Protection Engineering analyzed the fault duty for A and B phases as 543 Amps and 607 Amps respectively. LR 1616 operated at 1846 hours, per the settings of the device.

### Ignition Impact

The ignition led to an approximately three-acre fire, which was extinguished by CAL FIRE and damaged approximately 150 feet of cattle fence. The incident resulted in an outage to 160 customers for a total of 94 minutes and 398 customers for a total of 190 minutes.

### Sequence of Events

July 9, 2024

- 1846 hours: LR 1616 opened on line-to-line fault, causing power outage for 558 customers.
- 1849 hours: Troubleshooter #2 dispatched to Incident Location
- 1851 hours: Troubleshooter #3 dispatched the Incident Location.
- 1855 hours: Troubleshooter #1 dispatched to Incident Location.
- 1920 hours: Troubleshooter #3 begins patrolling from Fuse Saver 182930 towards LR 1616.
- 1926 hours: Troubleshooter #1 observes wire down at Incident Location, cut a jumper in the clear to isolate the faulted section, and tagged Man-On-Line.
- 1954 hours: Troubleshooters #2 and #3 completed patrol from Fuse Saver 182930 to LR 1616 and found no other trouble besides Incident Location.
- 2017 hours: DCC closed LR 1616, restoring power to 160 customers.
- 2111 hours: PG&E Crew began repair at Incident location.
- 2153 hours: DCC opened LR 1616, causing power outage for 160 customers.
- 2156 hours: PG&E Crew repaired and closed jumpers on pole SAP ID 101510120.
- 2156 hours: DCC closed LR 1616, restoring power to 558 customers.

### Corrective Notification Associated with Ignition

Priority A EC Notification #129193940 was created on July 9, 2024, to replace one span of #4 ACSR conductor. A PG&E crew replaced 200 feet of all three phases of conductor and reframed the tri-kit structure to a crossarm on the day of the incident.

### Pending Work

Type	Number	Description	Priority	Date Identified	Due Date
EC Notifications	126390574 <sup>2</sup>	Anchor is located in washout area that floods. Needs to be out of ground 2-3 feet. High voltage signs missing/broken.	F	June 16, 2023	June 16, 2024
	126390579 <sup>3</sup>	Conductor has one strand broken. Repair.	E	June 16, 2023	June 16, 2024

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

### Asset Info & Most Recent Inspections and Tests

<b>Source Side Structure</b>	101510125	
<b>Info / Inspection</b>	<b>Most Recent Date</b>	<b>Findings</b>
Install Date:	1953	40-foot Douglas Fir Wood Pole
Inspection:	June 16, 2023	Anchor rod broken, damaged, corroded, covered by vegetation/overgrown, soil-eroded, graded, or buried.
	June 14, 2021	No findings
Corrective History:	None	N/A
Pole Intrusive Test:	Dec 20, 2022	Pass
WSIP Inspection:	Mar 30, 2019	No adverse conditions

<b>Load Side Structure</b>	101510120	
<b>Info / Inspection</b>	<b>Most Recent Date</b>	<b>Findings</b>
Install Date:	1993	45-foot Douglas Fir Through Bore Wood Pole
Inspection:	June 16, 2023	Primary conductor broken, damaged.
	June 14, 2021	No findings
Corrective History:	Feb 18, 2018	EC Notification #116485352 – Removed tree branch from conductor
Pole Intrusive Test:	Dec 20, 2022	Pass
WSIP Inspection:	Mar 30, 2019	No adverse conditions

<sup>2</sup> On Pole SAP ID 101510125

<sup>3</sup> On Pole Sap ID 101510120

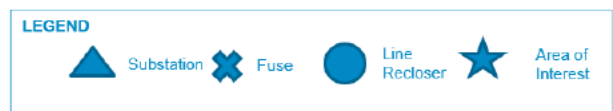
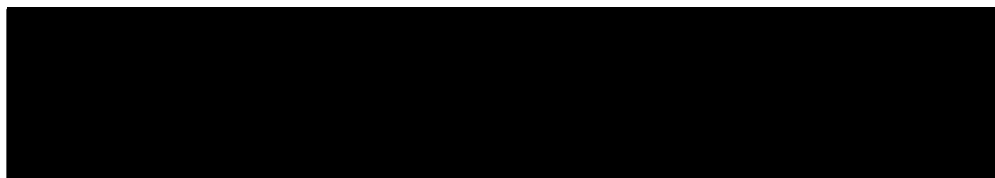
### Hazard Barrier Analysis:

Hazard	Equipment Failure	Sub-Hazard	Primary Conductor Failure
Target	Primary Conductor Failure leading to wire down and roughly three-acre fire in Tier 2 HFTD		
Barrier	Expected vs. Observed Performance	Why did the barrier not prevent the ignition event? (See <a href="#">ICF Codes</a> )	Opportunity
Barriers that Negatively Affected Ignition			
Equipment Work Management	Expected Performance: Complete repair of broken conductor by June 16, 2024.; Observed Performance: Barrier did not perform as expected	A3B1C2D2 - Work not complete, past due	EC notification #126390579 was overdue at the time of the incident. The broken strand identified was likely at the location that the conductor failed in this incident.
Barriers that Positively Affected Ignition			
Distribution Detailed Inspection	Expected Performance: Identify conductor issues on incident span.; Observed Performance: Barrier performed as expected	N/A	Inspection identified broken conductor strand and prescribed work to be complete prior to the incident.
Barriers that were Assessed as Opportunities			
Distribution System Hardening Program	Expected Performance: Proactive conductor replacement; Observed Performance: Barrier did not exist	N/A	Conductor replacement would likely have prevented ignition.

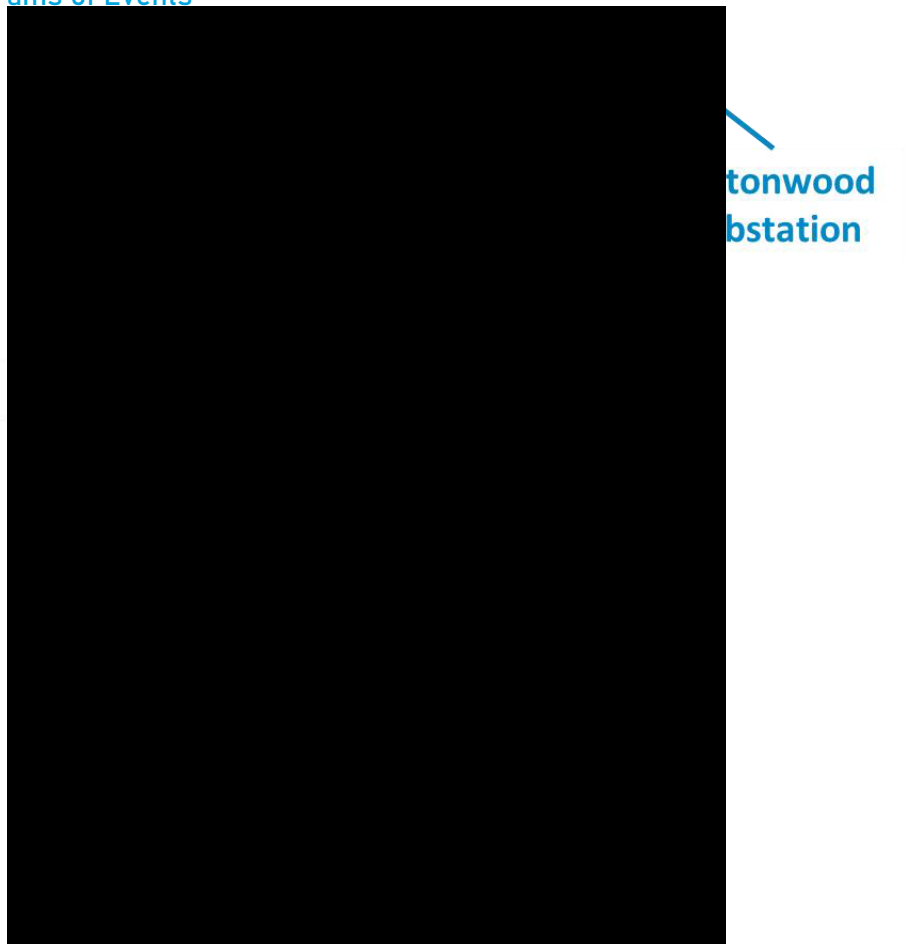
### Potential Next Steps / Associated CAP Items:

- Submitted CAP 129518492 for overdue tag non-conformance identifying the broken conductor at the likely point of failure.
- North Valley Distribution Planning Engineers have a project planned to reconductor the overloaded section of the Cottonwood 1103 Circuit to be completed before summer 2025. No CAP was created for this as the project has already been approved.

### Single Line Diagram

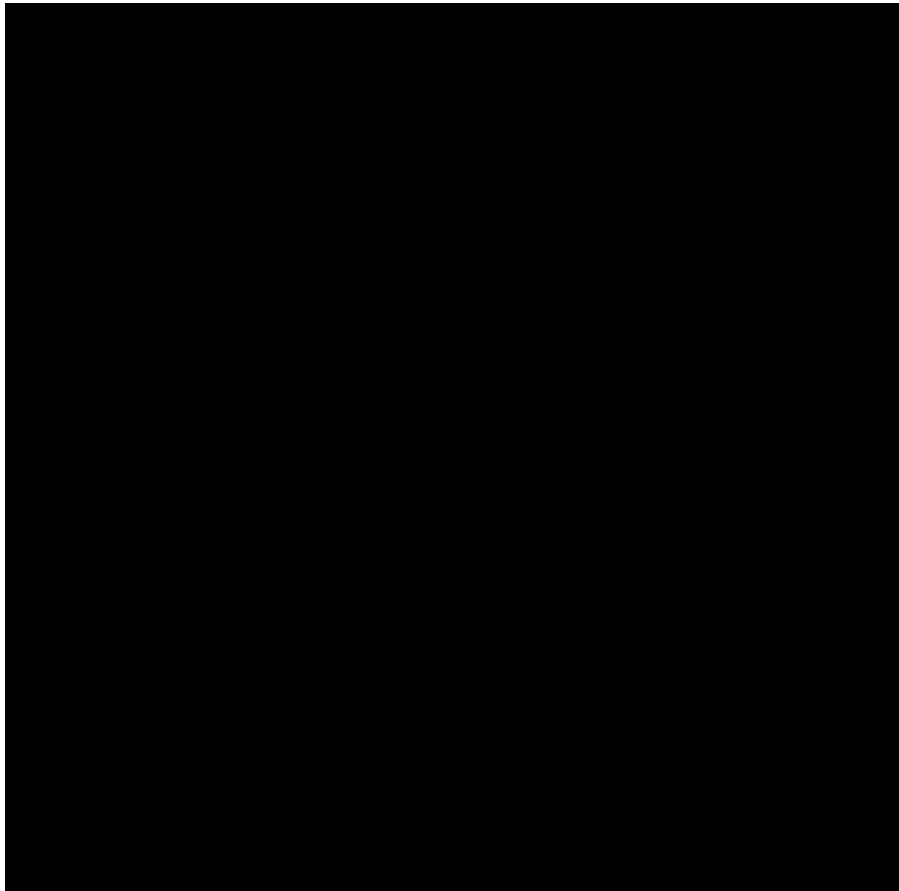


## Photos and Diagrams of Events



*Figure 1. EDGIS map of Cottonwood 1103 Circuit up to Fuse Saver 182930.*





P ID  
125

Figure 2. EDGIS Map of Incident Location and area of branch found near communication line.



Figure 3. Incident photos taken July 9, 2024 showing failed conductor from Pole SAP ID 101510120 (left), failed conductor on ground (center), and burn area around pole (right).



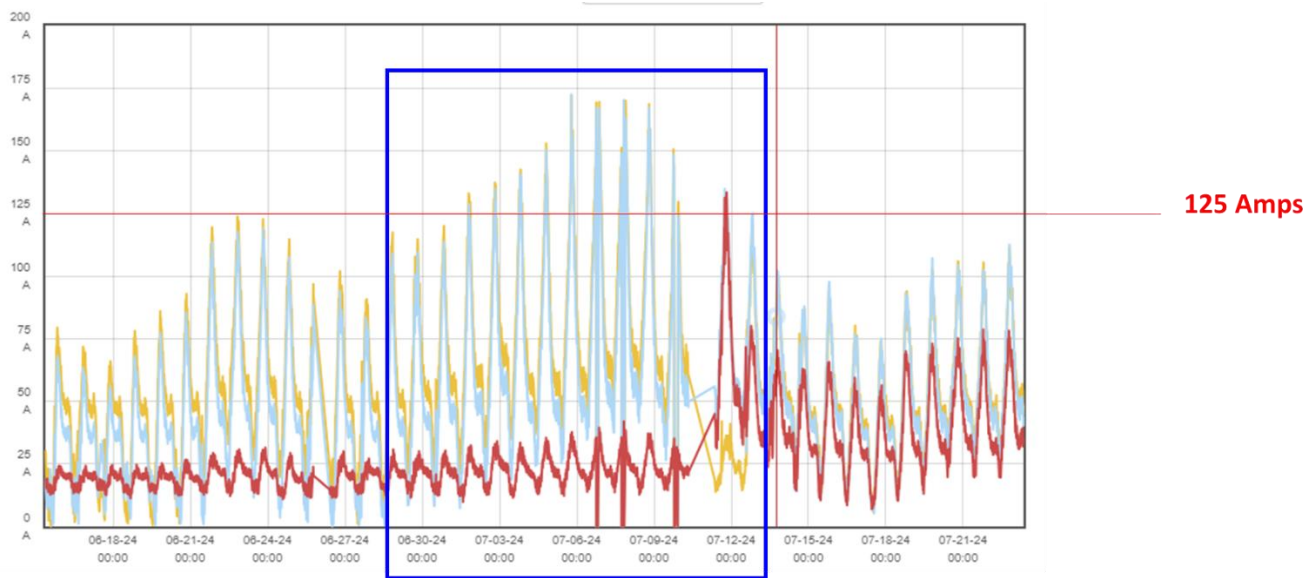


Figure 4. Current at LR 1616 in from July 5 to July 10, 2024. Conductor is designed for maximum of 125 Amps and LR 1616 was set to trip at 180 Amps.

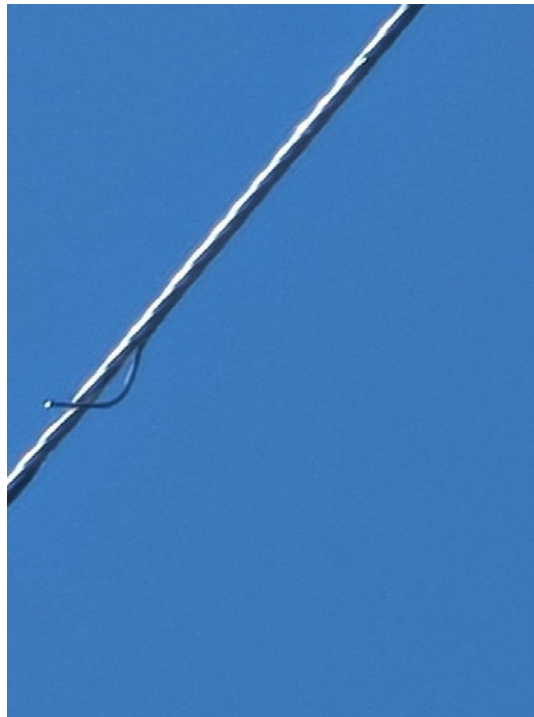


Figure 5. Photo from EC Notification #126390579 created on June 16, 2023, showing broken strand on conductor between subject poles.



Figure 6. StreetViewer image of pole SAP ID 101510210 from July 8, 2022, showing reflection on conductor. This defect is at the same approximate location on the same span where the conductor broke in this incident.



Figure 7. Vegetation near communication line north of pole SAP ID 101310125.



## Index 905 Cottonwood 1103 Conductor

### EQUIPMENT INFO

SAP Equipment: 101510125  
Year Recloser Installed: 1953

Lat: 40.3186468765  
Long: -122.3316144817

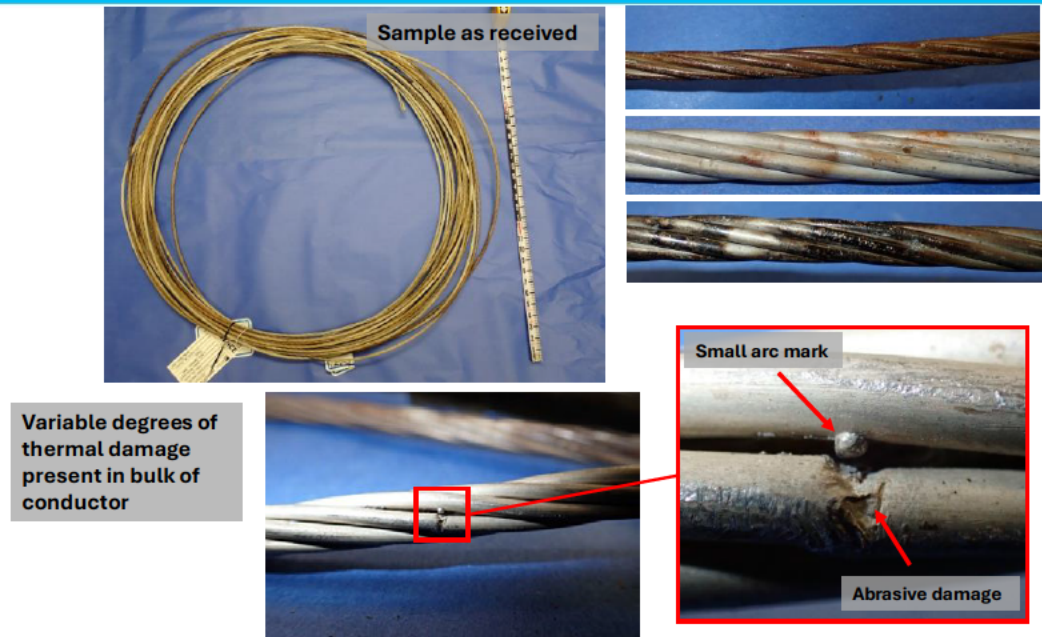


Figure 8. ATS Visual Inspection and Documentation.

### Attachments

The ESA folder, located below, contains attachments and references relevant to this incident:



END OF REPORT