



## Preliminary Ignition Investigation Report

<b>Ignition Database Index:</b>	20230862
<b>Electric Incident Investigation (EII) Number:</b>	N/A
<b>Incident Name:</b>	N/A
<b>PG&amp;E Facility Ignition?</b>	Yes
<b>CPUC Reportable Ignition?</b>	Yes
<b>Date &amp; Time of Incident:</b>	August 8, 2023 at 1412 hours
<b>Street Address:</b>	8714 Terrace Drive
<b>City:</b>	El Cerrito
<b>County:</b>	Contra Costa
<b>Latitude/Longitude:</b>	37.919709, -122.285107
<b>State Responsibility Area (SRA) / Local Responsibility Area (LRA) / Federal Responsibility Area (FRA)</b>	Local Responsibility Area (LRA)
<b>PG&amp;E Division:</b>	Diablo
<b>High Fire Threat District (HFTD):</b>	Tier 2
<b>High Fire Risk Area (HFRA):</b>	No
<b>EPSS Buffer:</b>	Yes
<b>Fire Index Area (FIA):</b>	530
<b>Fire Potential Index (FPI) Rating: FIA</b>	R3
<b>Fire Potential Index (FPI) Rating: Circuit</b>	R1
<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>	Splice/Clamp/Connector
<b>Circuit:</b>	EL CERRITO G 1105
<b>Circuit Protection Zone:</b>	EL CERRITO G 1105CB
<b>Nominal Voltage:</b>	12kV
<b>Pole SAP Equipment ID</b>	N/A
<b>Subject to PRC 4292 Veg Pole Clearance</b>	No
<b>PG&amp;E Equipment associated with ignition:</b>	Splice Box
<b>EPSS enabled at time of ignition?</b>	No
<b>Fault Type:</b>	Line to Ground
<b>Wire Down (Primary)?</b>	No
<b>Lead Agency/Agency Having Jurisdiction:</b>	El Cerrito Fire Department
<b>Fire Size:</b>	0.26-9.99 acres
<b>FAS Field Remarks:</b>	Fire started after UG splice failed causing large fire and outage
<b>HAWC Summary:</b>	N/A

<b>Injuries / Fatalities / Property Damage / Media Attention:</b>	None	
<b>Weather Conditions:</b>	<ul style="list-style-type: none"> <li>• Temperature: 58.9° F</li> <li>• Winds of 6.1 mph with gusts up to 14.8 mph</li> </ul>	
<b>Red Flag Warning (RFW) / High Wind Warning (HWW):</b>	None	
<b>911 Standby Relief Time:</b>	36 minutes	
<b>OIS #:</b>	2185886	
<b>ILIS #:</b>	23-0101827	
<b>FAS #:</b>	T006132067, T006132068, T006132069	
<b>TOTL #:</b>	N/A	
<b>Assigned Attorney:</b>	N/A	
<b>Ignition Investigator &amp; Phone:</b>	██████████ (PG&E)	██████████
	██████████ (Exponent)	██████████

## Executive Summary

On August 8, 2023, at approximately 1412 hours, Circuit Breaker (CB) 1105/12 at El Cerrito G substation opened in response to a phase-to-ground fault, causing an outage to 6,162 customers (see Figure 1). At 1419 hours, a customer reported a fire in the field near 8714 Terrace Drive in El Cerrito, California (“Incident Location”) on the Tier 2 HFTD El Cerrito G 1105 12kV Distribution Circuit. At 1423 and 1424 hours respectively, PG&E dispatched two troubleshooters (“Troubleshooter 1” and “Troubleshooter 2”) to the Incident Location.

Upon arrival at the Incident Location at approximately 1455 hours, Troubleshooter 1 observed firefighters on scene who had extinguished the fire around an unmapped underground splice box. Troubleshooter 2 arrived on scene at approximately 1511 hours and the troubleshooters opened the splice box and observed a blown tape splice and a broken distribution pothead riser on pole SAP ID 103050215 on the source side of the splice (see Figure 2). The troubleshooters observed that the other two splices in the splice box are of newer vintage than the failed splice which they suspected were replaced at some point. The protective device that tripped (CB 1105/12) did not show abnormally high loading within a week before the incident. Based on the device history, CB 1105/12 had two vegetation-related outages in 2023 (ILIS #23-0006485 on January 4, 2023 and ILIS #23-0045685 on March 14, 2023).

Around 1530 hours<sup>1</sup>, PG&E dispatched Troubleshooters 1 and 2 to support restoration efforts along with an additional troubleshooter (“Troubleshooter 3”), who was dispatched around 1800 hours. The three troubleshooters performed switching operations on the El Cerrito G 1105 circuit from 1537 hours to 1940 hours when all but three of the 6,162 customers were restored. On August 9 at 2258 hours, troubleshooters restored power to the remaining three customers.

At the time of the incident, PG&E meteorology data from the closest weather station located approximately 396 feet west-southwest of the Incident Location recorded a cool day with a temperature of 58.9 degrees Fahrenheit, 84% relative humidity, and wind speeds 6.1 of miles per hour with gusts up to 14.8 miles per hour.

The splice box at the Incident Location was not mapped in EDGIS at the time of the incident (see Figure 3) and PG&E System Inspection identified no records for the underground enclosure. The splice box can be seen in satellite imagery from a 2019 Sharper Shape Aerial Inspection (see Figure 4) and as far back as 2003 in Google Maps satellite imagery (see Figure 5). Electric Mapping completed RW notification 126830799 on August 15, 2023 to capture the discrepancy and the enclosure is now mapped in EDGIS (see Figure 6). After the incident, only the failed splice and not the other two units were replaced.

Advanced Technology Services (ATS) conducted an initial visual examination to document the failed component. ATS noted that the ignition appeared to be the result of an underground splice failure and observed melted copper at the splice failure location as well as discoloration of copper strands. This dissimilar metal splice is the junction of copper/aluminum conductors (see Figure 7). Additionally, ATS performed radiography imaging and dissected the splice to evaluate the internal condition. The failed splice appeared to be attributed to moisture ingress through the tape, causing corrosion within the splice. There were corrosion products observed on the splice and copper end of the connector. The increased resistance from the corrosion products led to localized arcing near the copper end, as confirmed by x-ray (see FiguresFigure 8 andFigure 9).

## System Protection Analysis

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<sup>1</sup> Based on NICE Compass Call Logs.

The El Cerrito G 1105 circuit was not equipped with EPSS-enabled devices at the time of the incident. CB 1105/12 at the El Cerrito G Substation tripped in response to the phase-to-ground fault.

### Ignition Impact

The incident ignited a fire of approximately ¼ acre in size and was extinguished by the El Cerrito Fire Department. The incident resulted in a sustained outage to 6,162 customers. There were no injuries or fatalities associated with the incident and no media reports were identified.

### Sequence of Events

August 8, 2023

- 1412 hours – CB 1105/12 opened due to phase-to-ground fault
- 1415 hours – SmartMeter auto-generated alarms
- 1419 hours – Customer reported fire in field near 8714 Terrace Drive in El Cerrito
- 1423 hours – Troubleshooter 1 dispatched
- 1424 hours – Troubleshooter 2 dispatched
- 1439 hours – Switch BR165 closed, restoring power to 2,150 customers
- 1455 hours – Troubleshooter 1 arrived at Incident Location
- 1511 hours – Troubleshooter 2 arrived at Incident Location
- 1530 hours – Approximate time Troubleshooter 3 was dispatched to support switching operations<sup>2</sup>
- 1548 hours – Switch R7043 closed, restoring power to 717 customers
- 1827 hours – LR BR316 closed, restoring power to 820 customers
- 1832 hours – LR BR304 closed, restoring power to 1,076 customers
- 1940 hours – Switch R8471 closed, restoring power to 75 customers

August 9, 2023

- 2258 hours – CB1105/12 closed, restoring power to three customers

### Corrective Notification Associated with Ignition

Troubleshooter 2 created EC Notification Tag #126777072 on August 8, 2023 to replace the broken riser at pole SAP ID 103050215 and replace the damaged splice in the splice box. This repair was completed on August 10, 2023.

### Pending Work

Type	Number	Description	Priority	Date Identified	Due Date
EC Notification	121580039 <sup>3</sup>	Guy Loose – Adjust	F	6/22/2021	6/22/2026
COE Notification	N/A	N/A	N/A	N/A	N/A
LC Notification	N/A	N/A	N/A	N/A	N/A
Veg Work Order	N/A	N/A	N/A	N/A	N/A

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

<sup>2</sup> Based on NICE Compass Call Logs.

<sup>3</sup> Pole SAP ID 101439810 on load side of underground splice box

Asset Info & Most Recent Inspections and Tests<sup>4</sup>

Info / Inspection	Most Recent Date	Findings
Install Date:	101439810: 1968	
	103050215: Unknown	
Inspection:	101439810: July 10, 2022	Necessary guys missing or loose, crossarm integrity compromised, molding missing/broken/damaged/loose, grounds exposed/broken/damaged/unsecured/missing, pole wrapped at ground-line
	103050215: July 10, 2022	Dead end with underground primary, no findings
Patrol:	-	-
Corrective History:	101439810: None	-
	103050215: EC Tag #117519767, June 30, 2019	Remove vegetation for non-exempt items. Tag cancelled October 19, 2021 because exempt equipment was identified on the pole
Aerial Inspection Records:	-	-
VM Inspection:	-	-
EVM Inspection:	-	-
Equipment Test:	-	-
Pole Intrusive Test:	101439810: October 19, 2015	Pass
	103050215: N/A <sup>5</sup>	-
WSIP Inspection:	101439810: March 16, 2019	Added visibility strips
	103050215: May 17, 2019	Identified split bolt connector, vegetation around base of pole

<sup>4</sup> Inspection records included for poles on either side of splice box. System Inspections did not identify records for splice box.

<sup>5</sup> Metallic pole

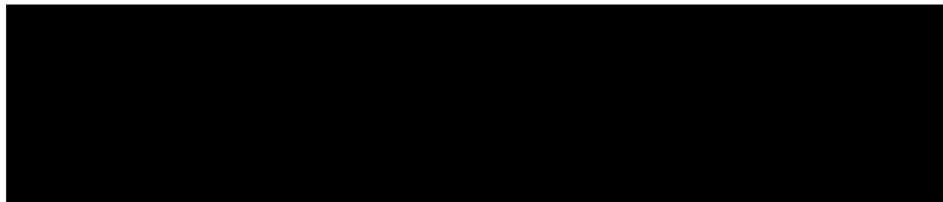
## Hazard Barrier Analysis:

Hazard	Equipment Failure	Sub-Hazard	Connector Failure
Target	Arcing, failed splice in underground enclosure in Tier 2 HFTD leading to 0.26-0.99 acre ignition.		
Barrier	Expected vs. Observed Performance	Why did the barrier not prevent the ignition event?	Comments
<i>Barriers that Negatively Affected Ignition</i>			
Distribution Detailed Inspection TD-2301S Rev. 1 <sup>6</sup>	Inspect splices within primary enclosures every 3 years, Barrier did not perform as expected	Required inspection not completed	Enclosure was not mapped and had no inspection records identified
Distribution Facility Patrol TD-2301S Rev. 1	Patrol underground facilities every 1-2 years to identify any issues with Splices, Barrier did not perform as expected	Required patrol not completed	Enclosure was not mapped and had no patrol records identified
<i>Barriers that were Assessed as Opportunities</i>			
EPSS – Instantaneous Trip Settings TD-2700P-26 Rev. 1, TD-1470S Rev. 0	Trip in response to fault on circuit, Barrier did not exist	N/A	EPSS may have enabled faster tripping after fault in splice box
Patrol & Inspection Minimum Work Completion for Inspections TD-2301S Rev. 1	Identify safety conditions during patrols, inspections, and corrective work, Barrier was not utilized	N/A	Opportunity to include identification of unmapped equipment in TD-2301S under Procedures for Minimum Work Completion

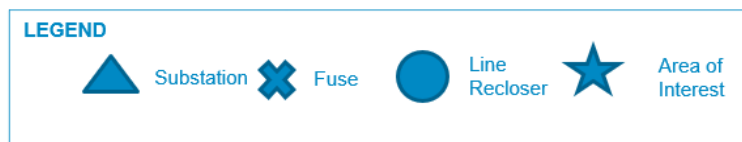
## Potential Next Steps / Associated CAP Items:

CAP 127287090 was created to inspect the splice box and assess if the remaining splices should be replaced because they had no records of inspection history and to assess the grounding configuration on the steel pole to ensure safety.

## Single Line Diagram



<sup>6</sup> Also see TD-8124S Rev. 0, TD-2305M, TD-2305M-JA02 Rev. 11



## Photos and Diagrams of Events

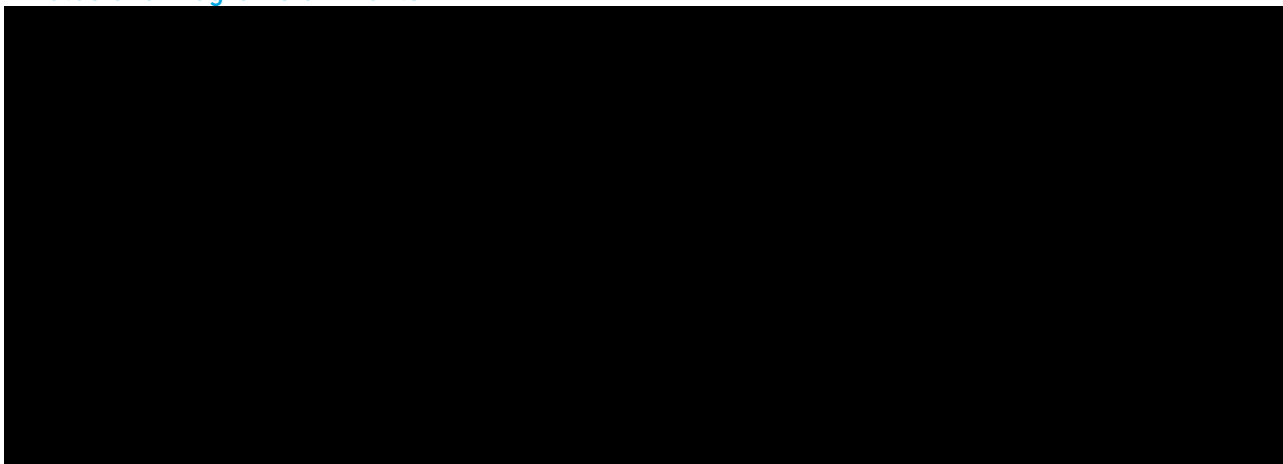


Figure 1. EDGIS map of incident circuit with protective devices.

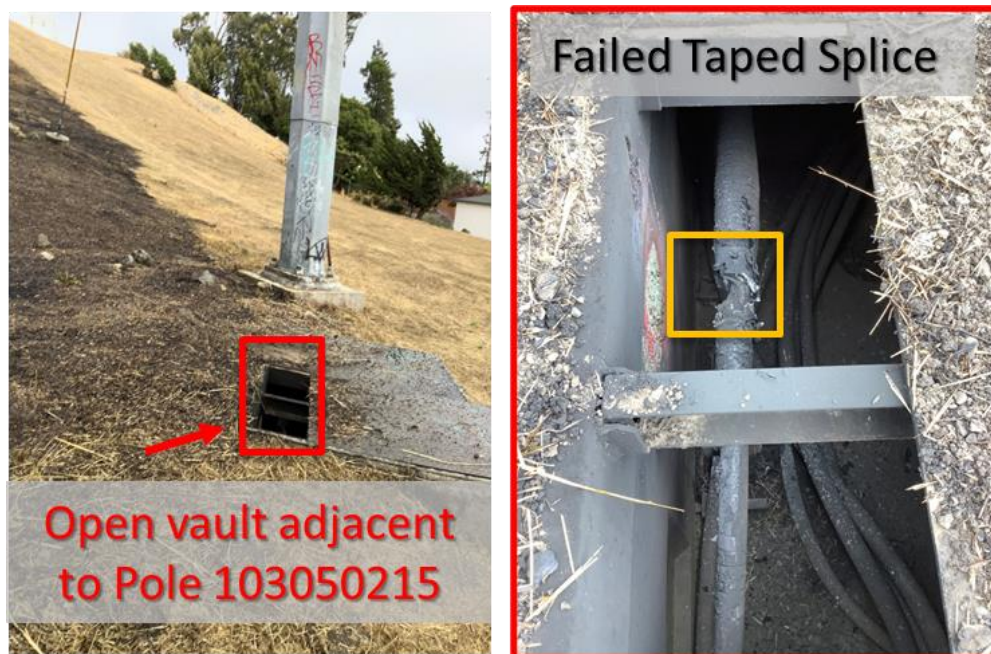


Figure 2. Incident splice box and splice (taken 8/8/2023).

This report is preliminary and based on available information as of August 14, 2023; event data is subject to change based upon subsequently discovered information.

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Pole 101439810

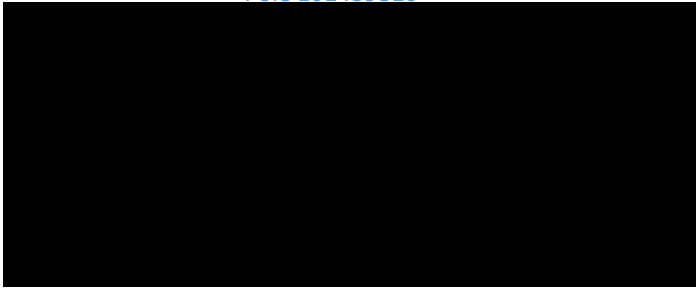


Figure 3. EDGIS map around incident location prior to incident showing approximate location of splice box that was unmapped.

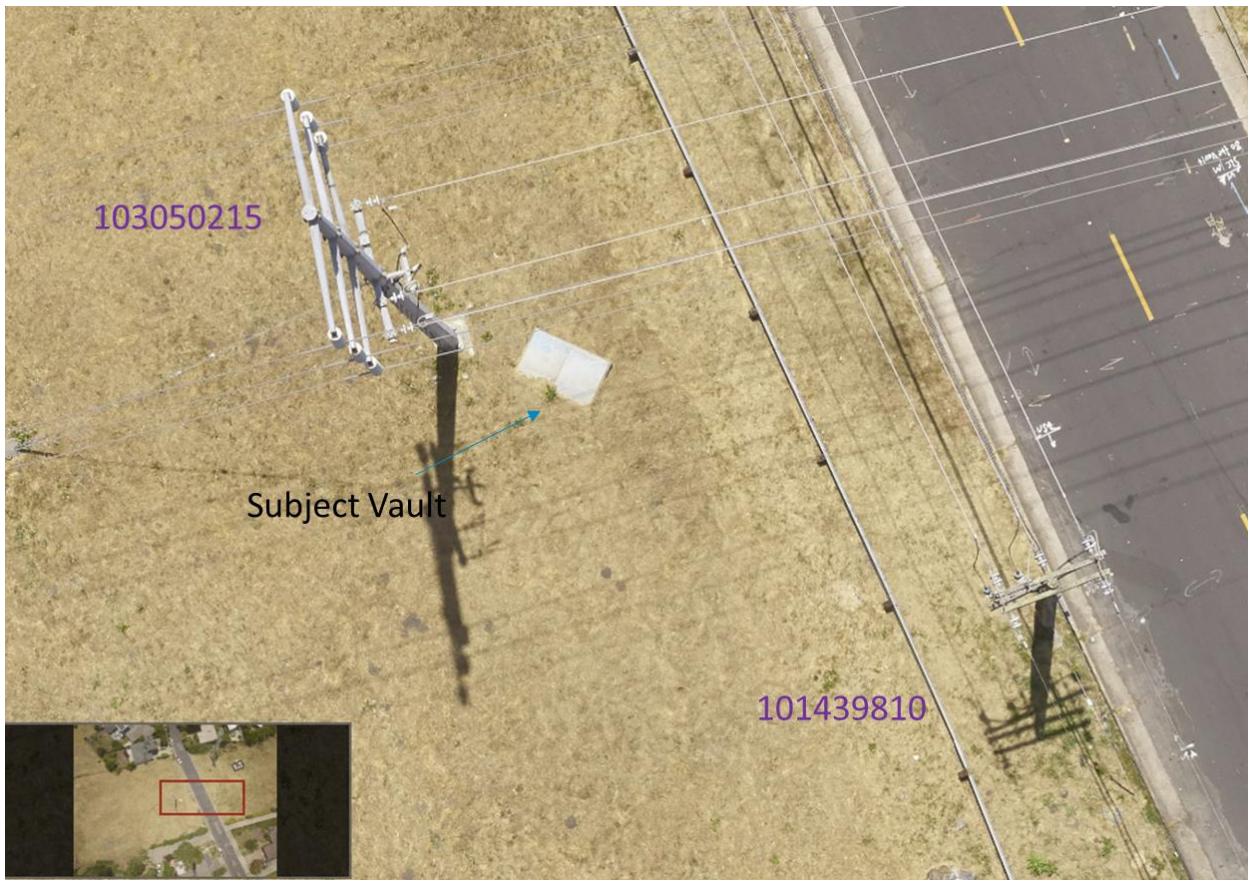


Figure 4. SharperShape Aerial Inspection imagery from 2018 showing splice box.





Figure 5. Google Maps satellite imagery dated December 2003 showing splice box.

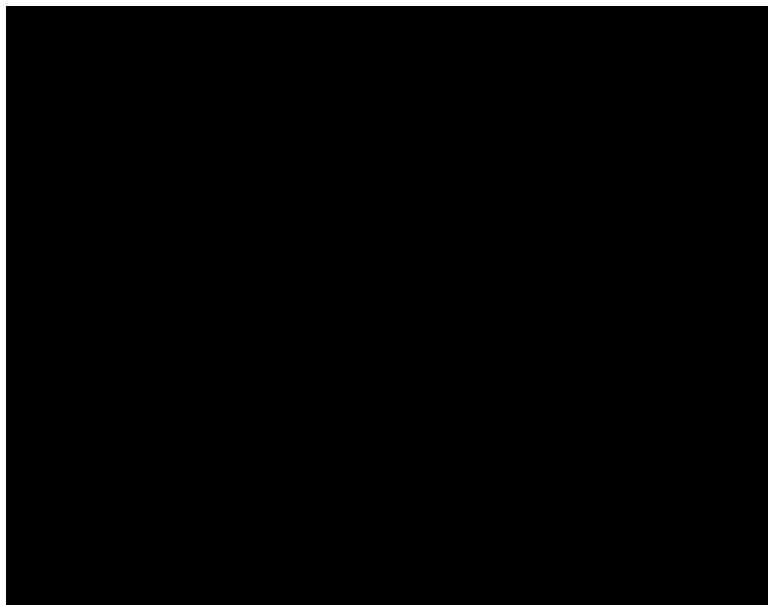


Figure 6. EDGIS map of incident splice box after mapping correction (RW #126830799).

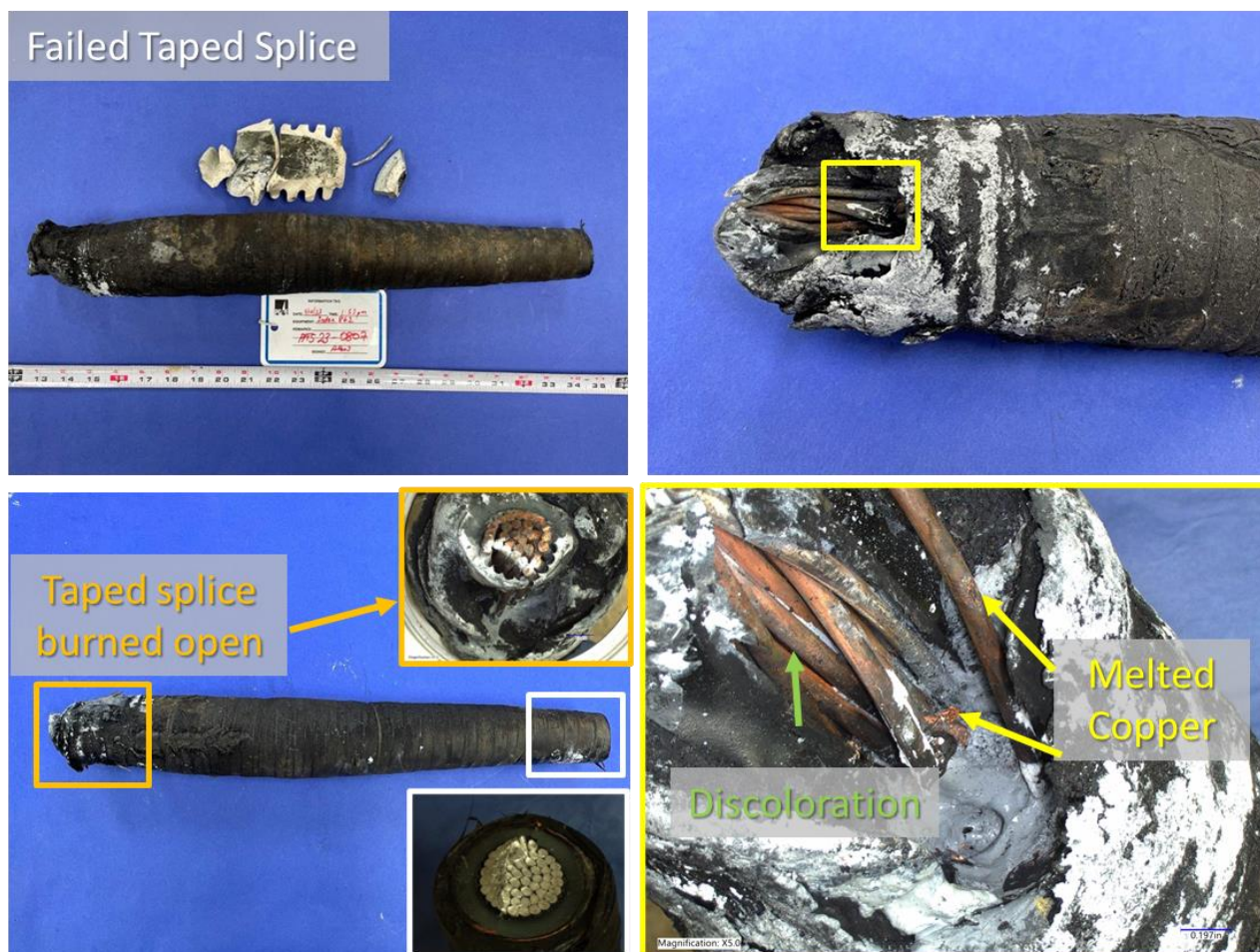


Figure 7. ATS as-received photos of incident splice.



**Non-Intrusive Radiography:** 2D X-Ray was performed on the subject splice

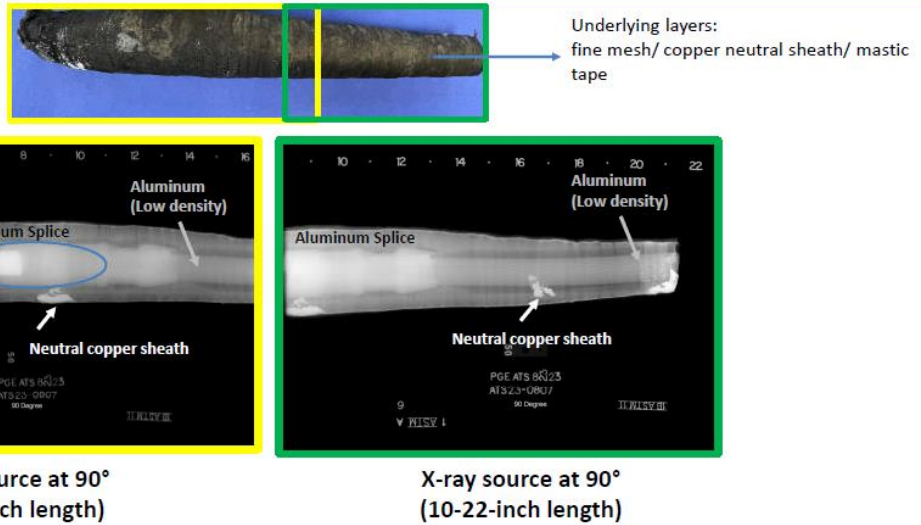
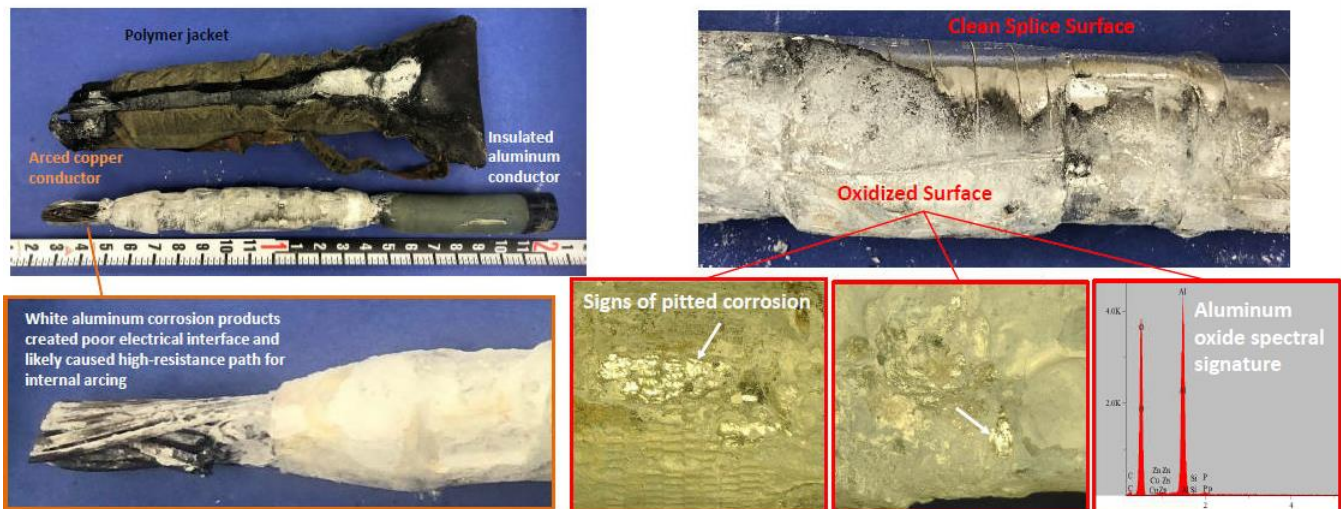


Figure 8. ATS non-intrusive radiography of splice.

**Destructive Inspection:** The polymer jacket around the splice was sectioned longitudinally to get visual access to the splice.



The surface of the splice after sectioning revealed a thick layer of white corrosion biproduct that was covering the aluminum splice and copper conductor.

Figure 9. ATS destructive inspection of failed splice.

## Attachments

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

[Redacted]

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