



Preliminary Ignition Investigation Report

| | |
|---|---|
| Ignition Database Index: | 20241240 |
| Electric Incident Investigation (EII) Number: | N/A |
| Incident Name: | Bain |
| PG&E Facility Ignition? | Yes |
| CPUC Reportable Ignition? | Yes |
| Date & Time of Incident: | August 28, 2024 @ 1442 hours |
| Street Address: | [REDACTED] |
| City: | Schellville |
| County: | Somona |
| Latitude/Longitude: | [REDACTED] |
| State Responsibility Area (SRA) / Local Responsibility Area (LRA) / Federal Responsibility Area (FRA) | State Responsibility Area (SRA) |
| PG&E Division: | North Coast |
| High Fire Threat District (HFTD): | Tier 3 |
| High Fire Risk Area (HFRA): | Yes |
| EPSS Buffer: | No |
| Fire Index Area (FIA): | 180 |
| Fire Potential Index (FPI) Rating: FIA | R3 |
| Fire Potential Index (FPI) Rating: Circuit | R5 |
| Was there a PSPS event at the time of ignition? | No |
| Suspected Initiating Event: | Equipment |
| Failure Driver: | All types of equipment/facility failure |
| Failure Sub-driver: | Splice/Clamp/Connector |
| Circuit: | Somona 1103 |
| Circuit Protection Zone: | Somona1103 LR880540 |
| Nominal Voltage: | 12kV |
| Pole SAP Equipment ID: | 102032629 |
| Subject to PRC 4292 Veg Pole Clearance: | No |
| PG&E Equipment associated with ignition: | Tap clamp |
| EPSS enabled at time of ignition? | Yes |
| Fault Type: | Series fault |
| Wire Down (Primary)? | No |
| Lead Agency/Agency Having Jurisdiction: | CAL FIRE |
| Fire Size: | 0.26-9.99 |

| | |
|---|--|
| FAS Field Remarks: | Tap clamp melted insulation on tree wire which made the tap clamp loose. Tap clamp was arching and either dropped alum slag or melted insulation. |
| HAWC Summary: | Resources responded to [REDACTED] in a Tier 3 area. Forward progress of the fire was stopped at approximately 1 acre. The EPSS enabled Sonoma 1103 was in the immediate area. The IC reported lines down and requested PG&E to the scene. A single customer outage populated in OMT, OIS # 2553739. Per the FAS notes, the wire down was not a PG&E wire. It appeared to be a discarded piece of cable about 20' in length. All PG&E facilities ok at this location. HAWC Ops and the PSS were engaged. The single customer outage was not caused by the fire, therefore there were no related outages in the area and no expressed threat to assets. This fire did not meet notification guidelines. Final update unless conditions change. |
| Injuries / Fatalities / Property Damage / Media Attention: | No injuries, fatalities, property damage or media attention |
| Weather Conditions: | At 1440 hours near the incident location: Temperature: 87.1°F Relative Humidity: 29% Wind Speed: 5.0 mph Wind Gust: 8.5 mph out of the south-southwest |
| Red Flag Warning (RFW) / High Wind Warning (HWW): | No Red Flag Warning or High Wind Warning Issued |
| 911 Standby Relief Time: | N/A |
| OIS #: | 2553986 |
| ILIS #: | 24-0104303 |
| FAS #: | T006486663, T006486538 |
| TOTL #: | N/A |
| Assigned Attorney: | N/A |
| Ignition Investigator & Phone: | [REDACTED] [REDACTED] |

Executive Summary

CAL FIRE received a first alarm of a grass and brush fire with a slow rate of speed at 0957 hours. CAL FIRE engines arrived onsite on Norrbom Road at 1017 hours. The fire was contained at 1051 hours, and while CAL FIRE began their investigation for cause and origin, they contacted PG&E to assist since the fire was near a distribution power pole.

On August 28, 2024 at approximately 1047 hours, PG&E was notified of a vegetation fire along with a possible downed power line. This incident occurred on a two-phase overhead segment of the Sonoma 1103, 12kV distribution circuit in Schellville, Sonoma County. PG&E dispatched a troubleshooter to investigate further.

The Sonoma 1103 circuit is a two-phase overhead, 4 Aluminum conductor steel-reinforced cable (ACSR), 12kV conductor. This incident occurred in a Tier 3 High Fire Threat District (HFTD) and a High Fire Risk Area (HFRA). PG&E's Enhanced Powerline Safety Setting (EPSS) were enabled on the Sonoma 1103 circuit in May 2024 due to increased fire potential in the area. The responding troubleshooter was onsite on Norrbom Road in Schellville at 1145 hours. As he attempted to reenergize a panel, he identified an issue that required his attention. He then called into Distribution Operations (DO) at 1400 hours and requested a new tag created for a wire down.

At 1525 hours the troubleshooter called the DO and requested to open fuse 99309. This force out affected 24 customers with a power outage. At 1536 hours, the troubleshooter reported his findings of a failed conductor due to a bad connection at the transformer at Pole SAP ID 102032629, CGC 218731223988 which was identified as the Incident Location.

The troubleshooter located a no-good tree wire type conductor, with a plastic coating that had melted due to a bad connection at the tap clamp. A tap clamp is also referred to as a piercing clamp as it has teeth like features which are meant to pierce through the conductor to make a secure connection. The unsecure connection caused arcing to occur at the Incident Location. As the plastic coating on the conductor melted, the burning slag fell to the ground igniting a vegetation fire.

A corrective notification was created as a priority "A" tag (EC Notification #129450401). The work order requested repairs to the conductor and replaced the tap clamps on the tree wire. A repair crew was onsite on August 28, 2024 and replaced the cut-out connections, the fuses to 6 amp ELF's (Eaton Cooper Power Series, Current-Limiting Drop out Fuse) and replaced bolt covers. Their final step was to close fuse 99309 which occurred at 2237 hours restoring service to the 24 affected customers.

The failed tap clamp was collected by PG&E and sent to Applied Technology Services (ATS) for further analysis. ATS findings conclude a bad high-density polyethylene (HDPE) conductor melted due to a failed tap clamp. The tap clamp was installed on a HDPE conductor. The HDPE conductor has a thick black coating which was designed to use in areas that are vegetated and required a tree wire. Due to the thick plastic-like coating on the conductor, the tap clamp "jaws" could not properly pierce through the conductor, allowing current to flow through the clamp and conductor. The piercing teeth on the clamp either bent or became worn down likely due to the hardness of the HDPE cover and wore down during the failure. Once the clamp reached the end of its lifecycle, arcs occurred through the clamp and conductor, causing the plastic coating on the HDPE wire to drop to the ground, creating a heat source for ignition.

The Asset Failure Analysis (AFA) team also investigated this incident, confirming that the piercing of the insulation may have not been adequate, which resulted in resistance contact. The series fault or high resistance connection created a thermal rise at the location that may have led to series arcing and/or covered conductor insulation ignition. AFA also identified the transformer as showing continual summer overload with a max in July 2024 of 170% overload, which may have also contributed to the failure.

HDPE wire is no longer allowed for new installations as of 2018 per PG&E standards. The current method of connector installation for approved connectors states that the plastic coating must be stripped at the connection point, so any connections have a secure connection that will not be compromised.

The incident location tap clamp connector was installed prior to 2018, therefore the clamp was approved for the installation method utilized at the time.

PG&E Meteorology data pulled post incident confirmed it was a fair and dry day on August 28, 2024 near the Incident Location. The high temperature for the day was 87.4°F at 1520 hours and the low temperature was 60.4°F at 0000 hours. The relative humidity was as high as 57% at 0000 hours and as low as 28% at 1510 hours. The strongest wind speed was 12.2 miles per hour (mph) out of the south-southeast at 1540 hours.

System Protection Analysis

The Sonoma 1103 circuit was placed in EPSS mode as of May 29, 2024. Both LR 880540 and LR 3052 were placed in alternate mode three, with sensitive ground fault (SGF)/downed conductor detection (DCD) enablement. On August 28, 2024 at 1525 hours, a force out occurred on fuse 99309 due to an equipment issue at the transformer. This incident occurred as a series fault, due to thermal rise, therefore EPSS was not able to detect this abnormality in the line. EPSS enablement could have not detected and reacted to this type of fault.

Ignition Impact

The incident burned dry grasses along with brush at the incident pole. The fire footprint was under one acre in size, totaling 0.63 acres. CAL FIRE responded and provided suppression efforts. The fire was fully extinguished at 1051 hours on August 28, 2024. An area outage related to this ignition affected 24 customers for 537 minutes.

Sequence of Events

August 28, 2024

- 0959 hours – First IRWIN time
- 1442 hours – Troubleshooter dispatched to Sonoma 1103
- 1458 hours – Troubleshooter arrived onsite
- 1525 hours – First no light recorded, fuse 99309 opened by troubleshooter, affecting 24 customers
- 1536 hours – Troubleshooter identifies a bad connection on conductor
- 1817 hours – Repair crew dispatched to site
- 2005 hours – Troubleshooter leaves site, site ready for repair crew
- 2139 hours – Repair crew onsite
- 2231 hours – EPSS disabled, permission to close fuse 99309
- 2237 hours – Fuse 99309 closed, power restored to 24 customers
- 2249 hours – Repair crew vacates site, work completed

Corrective Notification Associated with Ignition

A priority “A” tag, EC Notification 129450401 was created to replace a failed connector at SAP ID 102032629. A PG&E repair crew responded to the corrective tag on August 28, 2024 where the cut out connections were replaced, along with bolt covers. The fuses were updated to 6 Amp ELF fuses.

Pending Work

| Type | Number | Description | Priority | Date Identified | Due Date |
|------------------|--------|-------------|----------|-----------------|----------|
| EC Notification | N/A | | | | |
| COE Notification | N/A | | | | |
| LC Notification | N/A | | | | |
| Veg Work Order | N/A | | | | |

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

Asset Info & Most Recent Inspections and Tests

| Source Side Structure | | |
|----------------------------|------------------|---|
| Info / Inspection | Most Recent Date | Findings |
| Install Date: | 1981 | 45', Class 5, Douglas fir |
| Inspection: | 05/19/2022 | GO165 Inspection – No issues identified during inspection |
| | 04/30/2021 | GO165 Inspection – No issues identified during inspection |
| Patrol: | 07/25/2003 | No items identified during patrol |
| | 06/06/2019 | No items identified during patrol |
| Corrective History: | N/A | |
| Aerial Inspection Records: | N/A | |
| VM Inspection: | 06/06/2024 | CEMA Inspection, no issues identified |
| EVM Inspection: | N/A | (Note: document if “not previously in EVM Scope”) |
| Equipment Test: | N/A | |
| Pole Intrusive Test: | 05/18/2019 | No issues identified during inspection |
| WSIP Inspection: | N/A | |

*Adjacent Location: SAP ID: 10203628

| Load Side Structure | | |
|---------------------|------------------|---|
| Info / Inspection | Most Recent Date | Findings |
| Install Date: | 1987 | 50', Class 4, Western pine |
| Inspection: | 05/23/2022 | GO165 Inspection - No issues identified during inspection |
| | 05/04/2021 | GO165 Inspection – No issues identified during inspection |
| Patrol: | 07/25/2003 | No items identified during patrol |
| | 06/06/2019 | No items identified during patrol |
| Corrective History: | 10/21/2015 | Extend buried anchor |

| | | |
|----------------------------|------------|---|
| Aerial Inspection Records: | N/A | |
| VM Inspection: | 06/06/2024 | CEMA Inspection, no issues identified |
| EVM Inspection: | N/A | (Note: document if “not previously in EVM Scope”) |
| Equipment Test: | N/A | |
| Pole Intrusive Test: | 05/20/2019 | No issues identified during inspection |
| WSIP Inspection: | N/A | |

*Incident Location: SAP ID: 102032629

Hazard Barrier Analysis:

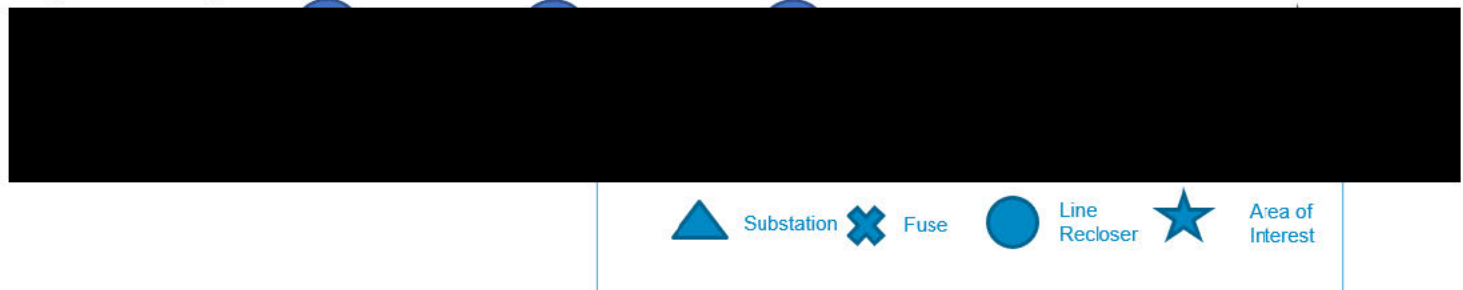
| Hazard | Equipment Failure | Sub-Hazard | Connector Failure (Primary Distribution) |
|--|---|--|---|
| Target | Failed connector on older tree wire | | |
| Barrier | Expected vs. Observed Performance | Why did the barrier not prevent the ignition event? (See ICF Codes) | Opportunity |
| Barriers that were Assessed as Opportunities | | | |
| Aerial Inspections Program | Expected Performance: Eliminate ignition risk from PG&E structures through pole top drone inspections. For connectors, identify burnt, broken, damaged, corroded, or improperly installed equipment Observed Performance: Barrier did not exist | A1B1C2D3 – Fatigue damage not visually apparent | Ground inspection did not identify any defects. Aerial inspections can obtain closer images of connections on pole top. |
| Infrared Inspections | Expected Performance: Inspections to reduce potential for component failures and facility damage. Identify abnormal conditions such as connector temperatures greater than conductor temperatures and count number of splices. Observed Performance: Barrier did not exist | N/A | IR inspections can identify weakened areas in the system to reduce ignitions |

| | | | |
|--------------------------------------|--|-----|---|
| Early Fault Detection (EFD) | <p>Expected Performance: Detect and locate equipment problems, such as loose or fault connections.</p> <p>Observed Performance: Barrier Did Not Exist</p> | N/A | EFD is a detection mitigation that could help to locate series arcing before failure of a connector. |
| Distribution Fault Anticipator (DFA) | <p>Expected Performance: Detect equipment problems, such as loose or fault connections, and locate using SmartMeter or line sensor data.</p> <p>Observed Performance: Barrier Did Not Exist</p> | N/A | DFA is a detection mitigation that could help to identify series arcing before failure of a connector. DFA can be used in combination with SmartMeter data or line sensors to locate and respond to equipment issues. |
| Pole Clearing Program | <p>Expected Performance: Limit fire spread potential near poles for a PG&E equipment involved ignition event within State Responsibility Areas, poles with non-exempt equipment, and selected poles outside of the regulations of PRC 4292.</p> <p>Observed Performance: Barrier did not perform as expected</p> | N/A | Subject pole was identified for clearing as part of the R3+ Ignitions Task Force, but was not cleared before the ignition occurred |

Potential Next Steps / Associated CAP Items:

- There are no action items or CAP items associated with this incident.

Single Line Diagram



Photos and Diagrams of Events

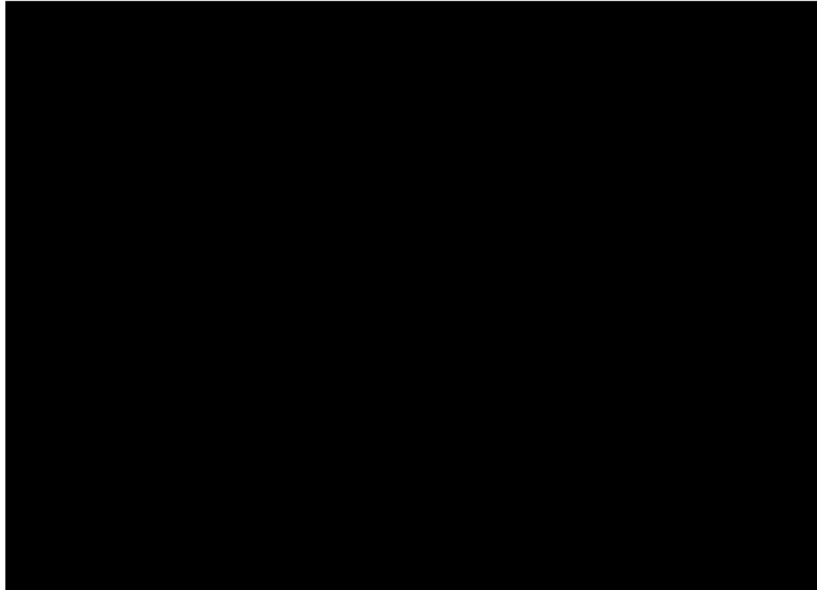


Figure 1 – EDGIS overview of Incident Location.

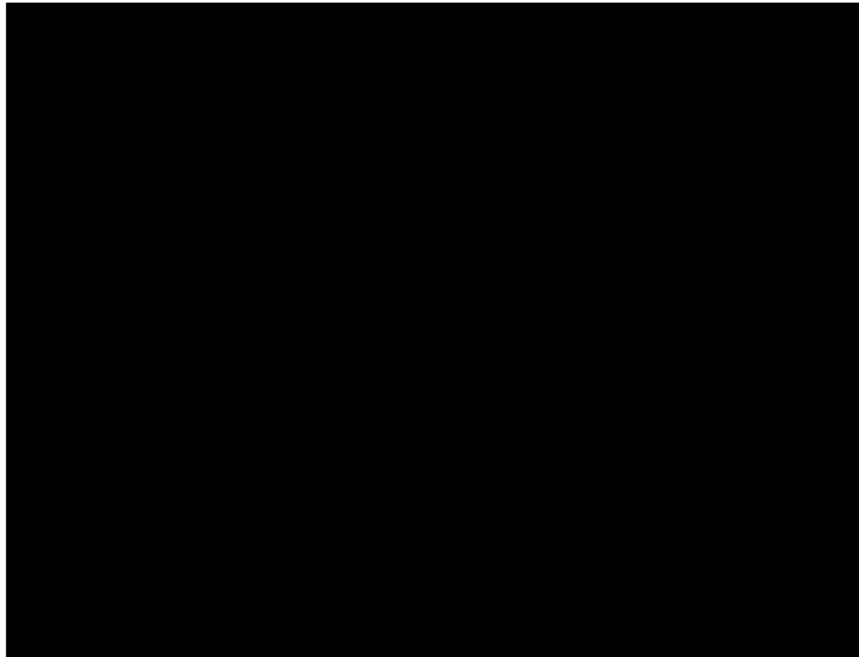


Figure 2 – Google Earth overview of Incident Location.



Figure 3 – Inspector photo taken May 23, 2022 of pole top.

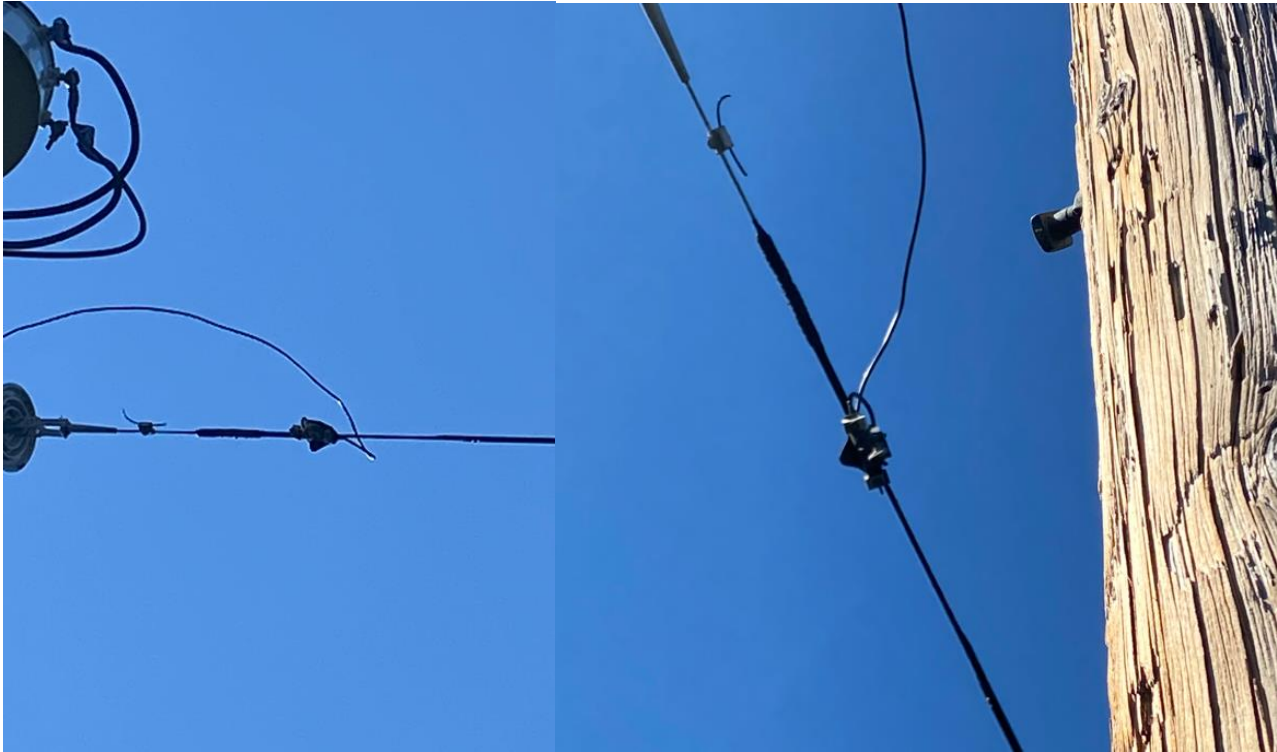


Figure 4 – Troubleshooter photo of failed connection on August 28, 2024.



Figure 5 – Fire footprint near pole, photo provided by CAL FIRE.



Figure 6 – Overview of fire footprint, photo provided by CAL FIRE.

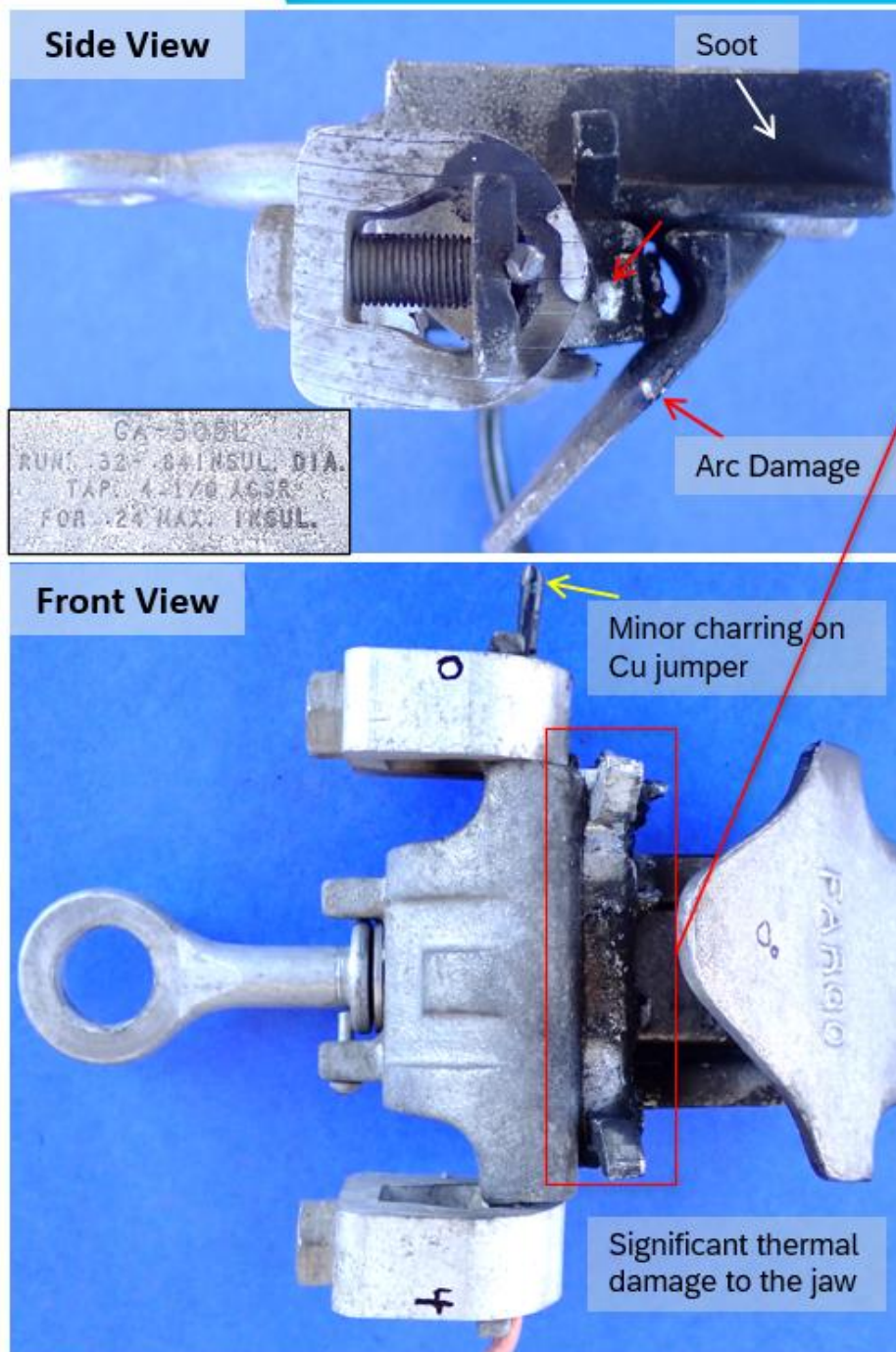


Figure 7 – Tap clamp photo provided by ATS, showing damage.

Several teeth are bent at various levels

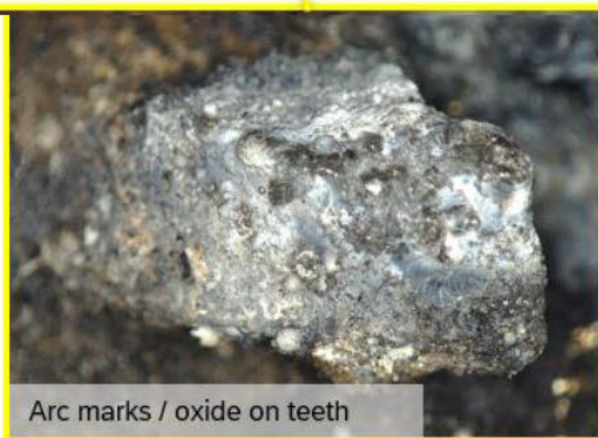
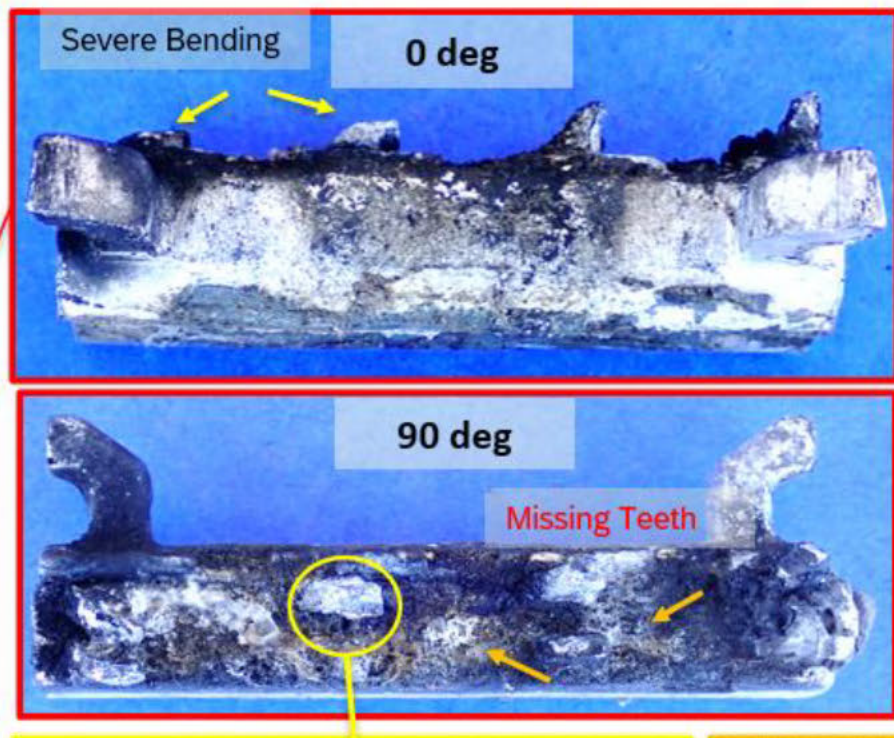


Figure 8 – Tap clamp photo showing defects, photo provided by ATS.

Attachments

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



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