Southwire®

Services & Solutions

Rejuvenation Instructions

#700 – Failure Sample Handling

This document covers the following:

- How to obtain a failure sample for an injected power cable.

Patents: http://www.southwire.com/patents/

WARNING: It is dangerous working around energized high-voltage systems, pressurized systems, and chemicals. Always work in accordance to the Field Operations Safety Handbook (FOSH) or other local governing safety standards.

cablerejuvenationengineering@southwire.com
22820 Russell Rd Kent, WA 98032
(253) 395-0200
Revised: June 11, 2025

Table of Contents

Failure Sample Handling

Cable rejuvenation, through injection and component replacement, has been shown to significantly improve the reliability of circuits. Occasionally, even these treated cables or their attached components fail. Southwire Services learns from each failure and adjusts procedures, improves the equipment design, or reformulates the chemistry to provide a continuously improving post-injection reliability experience. These instructions help the circuit owner to provide the failure evidence so that the most complete analysis can be performed. The principles of failure sample handling can be summarized into a handful of actions that you should do and not do.

DO	DON'T
• Take 3 photos of **a)** the failure site in its "as found" condition, **b)** the affected sample and components removed, and **c)** the package prepared for shipment. • Remove all damaged cable and/or components, preferably as a single assembled unit. • Secure bare neutrals with electrical tape. • Seal all ends and fault hole to minimize fluid loss or contamination from outside sources. • Collect a warranty tag. • Send the sample to Southwire Services Engineering • Complete the Failure Claim Form on Knomentous.	• Do not throw anything away. • Do not cut at the failure location. • Do not clean anything. • Do not bend or cut the sample to fit it in a package. • Do not straighten a bent sample.

1. Take photos of the failure site.

a. Take photos of the fault location in its "as-discovered" condition to document the cable environment and cable lay.
   - It is helpful to also take photos after cutting the cable.

b. If the cable or component is bent significantly, take a photograph at a right angle to the bend to document the bending radius.
   - The bend radius on the cable can be documented using **NRI 210 Bend Radius Template**

Figure 1: Fault "as-discovered".

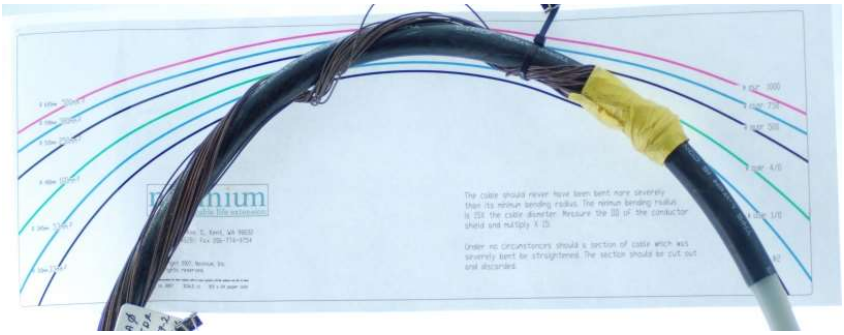

Figure 2: The 1/0 cable is bent more severely than its minimum bending radius.

2. What to remove for a failure sample

Whenever possible, all parts of the cable system should be provided as a failure sample. Cutting the sample so that the provided sample extends some distance away from the fault site (at least 6 inches is preferred), will help investigating the failure.

Figure 3: Failure sample of a midspan fault including additional length of unfaulted cable.

For accessory failures (splice, elbow, termination, etc) include the cable entering the accessory, in addition to neutrals and neutrals attachment.

Keep the sample whole and complete unless absolutely necessary to disassemble. If disassembly of the sample is required, take photos and mark locations of the installed accessory so alignment can be determined.

Figure 4: Failure sample of a faulted splice including additional lengths of cable and rejacket kit.

3. Cut the treated cable.

a. Follow the instructions in **NRI 710 Cutting a Treated Cable** before proceeding to the next step.

4. Preserve recovered fluids.

a. Place any fluid-stained paper towels or rags in ziploc bags.

b. Pour any fluid into clean bottles that can be tightly sealed.

c. Wrap vinyl electrical tape around the bottle-cap joints to help keep the cap in place.

Figure 5: Apply vinyl tape to prevent the cap from unscrewing.

5. Apply vinyl tape to the bare neutrals.

a. Apply vinyl tape to the bare neutrals to keep them in place.

Figure 6: Bare neutrals secured with vinyl tape.

6. Collect relevant data surrounding the failure

a. Record all known information about the failure conditions such as cable loading, mechanical disturbances, and large amounts of ground water, etc.

7. Seal all cable ends and the fault hole.

a. Seal all cable ends and the fault hole to minimize any fluid loss.
   - Cold-shrink end caps are ideal for cable ends, but a tight fitting plastic bag secured with vinyl tape is okay.
   - Plastic sheeting over the fault hole cinched at either end with vinyl tape is the best way to seal the fault hole.

b. Avoid allowing fluid to pool in the package if possible.

c. Take a photo of the sealed cable sample at this stage.

Figure 7: Sealed cable ends.

Figure 8: Sealed fault hole.

8. Submit Failure Claim Form in Knomentous

Use the warranty tag or other information to locate the segment record in Knomentous. Use the Failure Claim Form to document basic information about the failure and submit a claim.

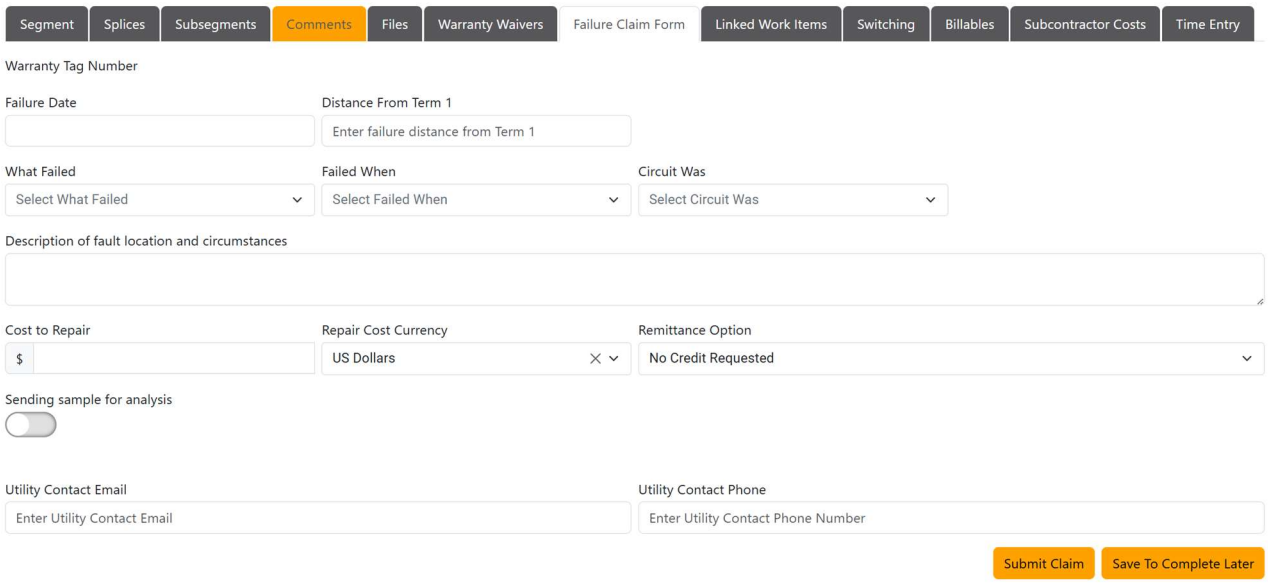

Figure 9: Failure Claim Form tab in Knomentous

9. Package the failure sample for shipment.

a. Without bending the sample, package it for shipment.

b. Place all fluids in sealed bottles.

c. Secure the bottle lids with vinyl tape.

d. Place the bottles into ziploc bags.

e. Use packaging filler to prevent damage during shipment.

f. Include a warranty tag and a copy of the completed Failure Claim Form (available on Knomentous).

g. Share any photos or additional data with your Southwire Services contact or cablerejuvenationengineering@southwire.com.