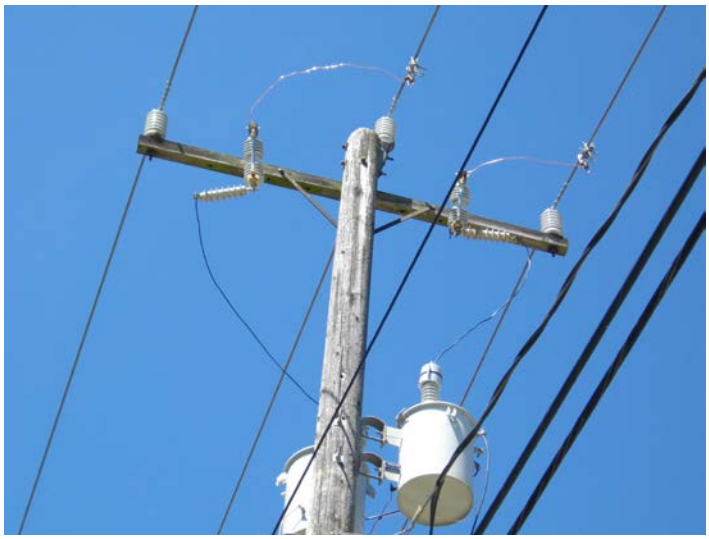
Overhead Transformer Lightning Strike Procedure



1. Scope

This standard covers the decisions operations personnel make when an overhead transformer installed in the field is out of service and a lightning strike is the suspected cause.

2. Application

This standard is directed at crews sent to investigate an out-of-service overhead transformer.

3. Background

Re-energizing a transformer that has been struck by lightning could cause it to fail catastrophically. This failure could lead to serious personal injury of Seattle City Light (SCL) employees or the general public.

Alternately, re-energizing a transformer that has been struck by lightning and sustained some internal damage could cause the unit to fail a short time later, thus creating an additional customer outage and additional crew effort and cost that could have been avoided if the unit had been replaced during the first outage.

4. Procedure

If an out-of-service transformer is suspected of having been struck by lightning, it shall be replaced with a new unit.

Crews sent to the site of an overhead transformer outage shall follow their normal practice of visually inspecting the area around the transformer for wildlife activity or strikes.

Crews shall visually inspect the overhead transformer, confirming:

- Has the pressure relief valve (PRV) activated? See Figure 4.1. An activated PRV (cap hanging, red target exposed) could indicate that an event took place within the transformer and it subsequently ejected gas to the atmosphere in order to prevent a tank explosion.
- Are there signs of lightning activity including black char on the tank or oil leakage?

Figure 4.1. Transformer Pressure Relief Valve, Activated

The suspect transformer shall be taken to the Transformer Repair Shop at the South Service Center for testing. The Crew Chief shall fill out and attach the Transformer Report Tag describing why the unit was removed, the date, and other relevant information. See Figure 4.2.

Testing in the controlled environment of the Transformer Repair Shop will indicate whether the transformer can be reliably returned to service in the future.

Figure 4.2. Transformer Report Tag

5. References

Seattle City Light Distribution Dispatching Memo 3502, Lightning Damaged Transformers, 3rd revision December 20, 2004

Seattle City Light Distribution Dispatching Memo 91-37, Lightning Damaged Transformers, 2nd revision October 30, 1991

Seattle City Light Distribution Dispatching Order 74-11, Lightning Damaged Transformers, 1st revision September 16, 1974

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