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**NAVY PUBLIC WORKS CENTER  
NORFOLK, VIRGINIA  
UTILITIES DEPARTMENT**

**STANDARD OPERATING PROCEDURE / JOB HAZARD ANALYSIS**

**TITLE**

**REPLACE POLE MOUNTED, HIGH VOLTAGE,  
CURRENT TRANSFORMER**

**PROCEDURE NUMBER**

**WC 624 HVE 044**

**SIGNED:** \_\_\_\_\_  
(DATE)

**APPROVED:** \_\_\_\_\_  
(DATE)

**SAFETY PROFESSIONAL:** \_\_\_\_\_  
(DATE)

**MANAGEMENT OFFICIAL:** \_\_\_\_\_  
(DATE)

REVISION

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## REPLACE POLE MOUNTED, HIGH VOLTAGE, CURRENT TRANSFORMER

### **Purpose:**

Procedure to replace a high voltage(4.16/11.5/13.2 kv) current transformer mounted on a pole.

### **Potential Energy Sources:**

1. Energized circuits in close proximity of work.
2. Deenergized circuits which are not included in the work and have not been grounded.
3. Generators supplying temporary power to facilities which have had their normal power switched off due to this work.

### **Tools and PPE:**

Tools: Bucket truck, rubber hoses, rubber blankets, rubber insulator hoods, hand tools, high voltage tester. PPE: Nomex coveralls, Nomex hood, insulating rubber gloves, insulating rubber sleeves, hard hat, safety shoes, work gloves, safety glasses, orange vest, safety harness, and back brace if required by back injury prevention and control program. The class of rubber gloves and sleeves will depend on the exposure voltage as per the following: Class 0 - up to 1,000 volts, Class 1 - up to 7,500 volts, Class 2 - up to 17,000 volts, Class 3 - up to 26,500 volts, Class 4 - up to 36,000 volts.

### **References:**

1. PWC Occupational Safety and Health Program Manual, PWCNORVAINST 5100.33E
2. SOP WC 624 HVE 001, Set Up and Secure Bucket/Auger Truck
3. Occupational Safety and Health Standards for General Industry (29 CFR PART 1910): Subpart I, Personnel Protective Equipment; Subpart R, Electrical Power Generation / Transmission / Distribution; Subpart S, Electrical
4. NFPA 70 E approach distances to exposed, energized, electrical conductors and circuit parts.
5. ANSI C2-1987 National Electrical Safety Code
6. Electrical Transmission and Distribution Safety Manual, P-1060
7. The Lineman's and Cableman's Handbook, 5th ED
8. SOP WC 622 HVE 013, Deenergization, Lockout, Tagout
9. SOP WC 622 HVE 007, Switchout and Switchback Energized Circuit

### **Procedures:**

1. Set up bucket truck. Refer to SOP WC 624 HVE 001, Set Up and Secure Bucket/Auger truck for details.
2. When operating a bucket truck the following safety rules will be followed.
  - a) Only an authorized person, one with a current government license to operate an aerial lift, will operate the bucket.
  - b) Do not use the bucket truck if winds exceed the truck manufacture's specified limit.
  - c) Do not perform energized work in wet weather.

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- d) Personnel in bucket will wear a safety harness with a lanyard attached to the boom or bucket.
  - e) Do not exceed the bucket's weight limitations.
  - f) Stand firmly on the floor of the bucket with both feet. Do not sit on the bucket's edge or use planks, ladders, or other such devices.
3. WC 622 personnel will deenergize the circuit and as per the following SOPs:  
WC 622 HVE 007, Switchout and Switchback Energized Circuit  
WC 622 HVE 013, Deenergization, Lockout, Tagout
4. Insulate energized conductors within 3 feet of the work area. Insulate deenergized overhead circuits within 3 feet of the work area which are not included in the work and have not been grounded as per Lockout and Tagout procedures. Personnel in the bucket shall wear Nomex coveralls, Nomex hood, safety glasses, safety shoes, insulating rubber gloves and sleeves, and hard hat.
5. Using a high voltage tester test the circuit to be worked on to verify it is deenergized. Before the circuit conductors are checked, test the high voltage tester on a known energized circuit to verify the tester is working. Test each deenergized circuit conductors separately, taking care not to cross phase during test. If voltage is detected, stop the test and (a) notify WC 622 personnel that the circuit is still energized, (b) wait for WC 622 personnel to correct the problem, (c) perform the deenergization verification test once again after WC 622 personnel finish switching operations and declare the circuit deenergized. If no voltage is indicated, retest the high voltage tester to re-verify it is working properly. Wear listed Nomex coveralls, Nomex hood, safety glasses, safety shoes, insulating rubber gloves and sleeves, and hard hat.
6. The following rules will apply to job.
- a) Bucket personnel working poles which have energized circuits or circuits which have not been properly grounded will wear Nomex coveralls, safety glasses, safety shoes, hard hat, safety harness, insulating rubber gloves insulating rubber sleeves, and a back brace if required to wear. The circuits in question have been insulated per Step 4.
  - b) Bucket personnel working on poles which have all other high voltage circuits deenergized and properly grounded, or which have no other circuits on the poles, will wear hard hats, work gloves, safety shoes, safety harness, safety glasses when required, and a back brace if required to wear
  - c) Personnel in the bucket will carry a hand line aloft with them.
  - d) Ground personnel will wear hard hats, safety shoes, work gloves, and safety glasses.
  - e) Ground personnel will wear orange vests if working adjacent to a road or in a parking lot.
  - f) Ground personnel not involved with the work will watch the personnel working aloft.
  - g) Ground personnel will stay clear of area underneath the bucket unless

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- the work dictates.
- h) If ground personnel are present, then at least one of them will have been trained to operate the bucket in an emergency situation where the bucket personnel are no longer able to operate the bucket controls.
7. Inspect the current transformers for damage to determine which one(s) are damaged.
8. When a defective current transformer is identified
- Write down the nameplate data.
  - Disconnect the high voltage leads.
  - First mark, and then disconnect the secondary leads to the meter.
  - Remove conduit and connectors from the current transformer.
  - Remove bolts from current transformer brackets and ground lugs.
9. Lower current transformer to ground using a hand line.
10. Using the nameplate data previously recorded, obtain an exact replacement current transformer.
11. Raise new transformer to pole top using a hand line.
12. Install the new current transformer .
- Place on mounting bracket and secure with the mounting bolts.
  - Attach the ground lug.
  - Reinstall the conduit and fittings.
  - Reconnect the secondary wiring paying attention to the wire marking placed during the removal phase.
  - Reconnect the primary wiring.
13. Remove insulation placed on energized conductors. Remove insulation placed on conductors which are not included in the work and have not been grounded as per Lockout and Tagout procedures. Personnel in the bucket shall wear Nomex coveralls, Nomex hood, safety glasses, safety shoes, insulating rubber gloves and sleeves, and hard hat. Remove insulation in reverse order that it was placed.
14. Secure bucket truck. Refer to SOP WC 624 HVE 001, Set Up and Secure Bucket/Auger Truck, for details.
15. WC 622 personnel will energize the circuit as per the following SOPs:  
WC 622 HVE 007, Switchout and Switchback Energized Circuit  
WC 622 HVE 013, Deenergization, Lockout, Tagout
16. Observe the meter for proper direction and speed of the disk as well as for proper voltage light indication.

END

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