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

STANDARD OPERATING PROCEDURE / JOB HAZARD ANALYSIS

TITLE
PM OIL FUSED CUT OUT SWITCH
GE OR G&W TYPE

PROCEDURE NUMBER
WC 624 HVE 086

SIGNED: _____ **(DATE)**

APPROVED: _____ **(DATE)**

SAFETY PROFESSIONAL: _____ **(DATE)**

MANAGEMENT OFFICIAL: _____ **(DATE)**

REVISION

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PM OIL FUSED CUT OUT SWITCH - GE OR G&W TYPE

Purpose:

Procedure to perform preventative maintenance on a 11.5/4.16 KV oil fused cut out switch.

Potential Energy Sources:

1. 11.5/4.16 kv cables connected to switch.
2. Generators if installed at facilities to provide temporary power during the PM.

Tools and PPE:

Tools: Hand tools, high voltage tester, oil dielectric test set, rags, solvent. PPE: Nomex coveralls, Nomex hood, insulating rubber gloves, insulating rubber sleeves, hard hat, safety shoes, work gloves, safety glasses, 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. 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
3. NFPA 70 E approach distances to exposed, energized, electrical conductors and circuit parts.
4. SOP WC 622 HVE 013, Hazardous Energy Control(Lockout, Tagout)
5. SOP WC 622 HVE 007, Switchout And Switchback Energized Circuit

Procedures:

1. Operations personnel will deenergize the primary circuit per SOPs
 - a) WC 622 HVE 007, Switchout and Switchback Energized Circuit
 - b) WC 622 HVE 013, Hazardous Energy Control(Lockout, Tagout)

Operations personnel will ensure that the facility's emergency generator or temporary power generator, if present, is isolated and will not back feed to the transformer.

2. Using a high voltage tester test the primary circuit's cables to verify they are deenergized. Before the conductors are checked, test the high voltage tester on a known energized circuit to verify the tester is working. Test each deenergized conductor separately, taking care not to cross phase during test. If voltage is detected, stop the test and (a) notify operations personnel that the circuit is still energized, (b) wait for operations personnel to correct the problem, (c) perform the deenergization verification test once again after operations personnel finish switching operations and declare the cables deenergized. If no voltage is indicated, retest the high voltage tester to re-verify it is working properly. Wear Nomex coveralls, Nomex hood, safety glasses, safety shoes, insulating rubber gloves and sleeves, and hard hat while testing.

If the primary circuit's cables can not be accessed, then go to another transformer site on the same circuit, which has accessible conductors, and perform the deenergization verification test there.

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The PPE for the PM work will include work gloves, safety shoes(oil resistant), safety glasses, safety goggles, and hard hats. Refer to the JHA for further information

3. Remove the switch cabinet's access cover.
4. Check the switch for oils leaks. Clean the switch cabinet's interior as required.
5. Drain the oil from the switch tanks. Flush the oil tanks with solvent to clean the tanks. Dispose of the drained oil per the proper oil disposal methods.
6. Inspect the moveable parts of the switch operating mechanism. Check for proper alignment and operation. Repair and/or replace broken parts. Lubricate where required.
7. Inspect the contacts, fuses, and fuse holders. Clean and dress as required. Repair and/or replace broken parts. Ensure all fuses are the same rating and are properly sized for the switch's load.
8. Inspect the splices in the switch cabinet and the connections to the switch. Repair all problems detected.
9. Repair or replace all gaskets and seals which were leaking during the oil leak inspection of Step 4.
10. Reassemble the switch's hardware and put the access cover back on.
11. Add new oil to each of the switch's tanks. Test the oil prior to adding. The new oil should have a dielectric strength of 30 kv. If the oil does not test at 30 kv or above then obtain a new batch of oil and test it, or filter the batch on site till a dielectric strength of at least 30 kv is obtained.
12. Operations personnel will energize the primary circuit per SOPs
 - a) WC 622 HVE 007, Switchout and Switchback Energized Circuit
 - b) WC 622 HVE 013, Hazardous Energy Control(Lockout, Tagout)

END