

DISCLAIMER: These Standard Operating Procedures (SOP's) are for the exclusive use of Navy Public Works Center (PWC) Norfolk. They are promulgated as guidance for their NAVFAC Commands. If intended to be used by other activities, they must be tailored to each activity's particular requirements and must be reviewed/approved by the activity's safety professionals prior to use.

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

STANDARD OPERATING PROCEDURE / JOB HAZARD ANALYSIS

TITLE
TERMINATE HIGH VOLTAGE CABLES
PRIMARY AIR SWITCH

PROCEDURE NUMBER
WC 624 HVE 046

SIGNED: _____
(DATE)

APPROVED: _____
(DATE)

SAFETY PROFESSIONAL: _____
(DATE)

MANAGEMENT OFFICIAL: _____
(DATE)

REVISION

A

TERMINATE HIGH VOLTAGE CABLES PRIMARY AIR SWITCH

Purpose:

Procedure to terminate high voltage cables onto a transformer primary air switch.

Potential Energy Sources:

1. The cables being terminated can be a potential energy source if they have already been spliced into the underground circuit.
2. Switch's line side cables if Generators have been placed to supply temporary power to facilities which have had their normal power switched off due to this work.

Tools and PPE:

Tools: Shotgun stick, cable cutters, hydraulic press, and assorted hand tools. 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. ANSI C2-1987 National Electrical Safety Code
5. Electrical Transmission and Distribution Safety Manual, P-1060
6. SOP WC 622 HVE 013, Deenergization, Lockout, Tagout
7. SOP WC 622 HVE 007, Switchout and Switchback Energized Circuit

Procedures:

1. WC 622 will perform deenergization switching if
 - a) the high voltage cables to be terminated are connected to an energized circuit
 - b) a generator has been placed at the facility to supply temporary power during the work period, and there is a possibility the generator can back feed the transformer.

WC 622 will follow the following SOPs

WC 622 HVE 007, Switchout and Switchback Energized Circuit
WC 622 HVE 013, Deenergization, Lockout, Tagout

2. Using a high voltage tester test the high voltage cables to be terminated and/or the switch's line side 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

TERMINATE HIGH VOLTAGE CABLES
PRIMARY AIR SWITCH

conductor 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 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.

3. Cut the cables to proper length and prepare the cable ends per the specific terminating kit's manufacture's instructions.
4. Install the terminators per the specific terminating kit's manufacture's instructions.
5. Mount and connect the terminated cables to the line side of the air switch.
6. WC 622 personnel close the switch and 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

END