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

REPLACE 34.5 KV FUSE CUT OUTS INSTALLED ON OUTDOOR BUS

PROCEDURE NUMBER

WC 624 HVE 076

SIGNED:_____

(DATE)

APPROVED:_____

(DATE)

SAFETY PROFESSIONAL:_____

(DATE)

MANAGEMENT OFFICIAL:_____

(DATE)

REVISION A

REPLACE 34.5 KV FUSE CUT OUTS
INSTALLED ON OUTDOOR BUS

DISTRIBUTION

CODE	REV/DATE	REV/DATE	REV/DATE	REV/DATE	REV/DATE	REV/DATE	REV/DATE
601.C3							
620							
622							
610.E1							
622.3							

REPLACE 34.5 KV FUSE CUT OUTS
INSTALLED ON OUTDOOR BUS

REVISIONS

REV	DESCRIPTION	SIGNATURE	DATE
A	Initial Issue.		

REPLACE 34.5 KV FUSE CUT OUTS INSTALLED ON OUTDOOR BUS

Purpose:

Procedure to replace 34,5 kv fuse cut outs installed on an outdoor, 34.5 kv, switchyard bus. The cut out feeds either a potential transformer or an operating transformer.

Potential Energy Sources:

1. All 34.5 kv circuits feeding into or off the outdoor bus.
2. Generator, if placed to provide temporary power to the operating transformer loads.

Tools and PPE:

Tools: Bucket truck, Auger truck, ladders, hand line, collar rope, certified slings, high voltage tester, hand tools. PPE: Nomex coveralls, Nomex hood, insulating rubber gloves, insulating rubber sleeves, hard hat, safety shoes, work gloves, safety glasses, 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. 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 624 HVE 001, Set Up and Secure Bucket/Auger Truck
5. SOP WC 622 HVE 013, Hazardous Energy Control(Lockout, Tagout)
6. SOP WC 622 HVE 007, Switchout And Switchback Energized Circuit

Procedures:

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

2. Using a high voltage tester test the bus to verify it is deenergized. Before the bus is checked, test the high voltage tester on a known energized circuit to verify the tester is working. Test each bus phase 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 bus 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.

REPLACE 34.5 KV FUSE CUT OUTS
INSTALLED ON OUTDOOR BUS

3. Set up bucket and/or Auger trucks. Refer to SOP WC 624 HVE 001, Set Up and Secure Bucket/Auger truck for details.

Ladders may be used in place of a bucket truck. When ladders are used, they will be secured at the top with a collar rope. Ground personnel will secure the ladder at the bottom till the top has been secured.

4. 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.
   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.

5. The following rules will apply to job.
   a) Personnel in the bucket will carry a hand line aloft with them.
   b) All personnel will wear hard hats, safety shoes, work gloves, and safety glasses.
   c) Ground personnel will stay clear of area underneath the bucket and ladders unless the work dictates.
   d) 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.
   e) Personnel working on ladders will wear a safety harness connected to the secured ladder. Refer to attached ladder safety rules for futher information.
   f) If there are exposed, energized components within 15 feet of the work site, then all personnel will wear Nomex coveralls.

6. Using a hot stick, open the fuse cut outs and remove the fuses. Take care to not break the fuses while removing them. Store the fuses in a safe place.

7. Disconnect the switches line and load side connections.

8. Secure the boom winch to a switch with a certified nylon sling or collar rope. Remove the mounting bolts and lower the switch to the ground. Repeat this step till all switches to be removed are on the ground.

9. The ground personnel will secure a new switch to the boom winch using a certified nylon sling or collar rope. The Auger truck operator will raise the switch to the mounting position. The personnel working aloft will seat the switch and secure it with the mounting bolts, removed per

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Step 6. Once the switch has been secured the boom winch line can be removed from the switch. Repeat this step till all switches are installed.

10. Connect line and load side conductors to the switch.

11. Put the fuses removed per Step 6 in the cut outs. Leave the cut outs open.

12. Secure bucket and Auger trucks. Refer to SOP WC 624 HVE 001, Set Up and Secure Bucket/Auger Truck, for details.

If ladders were used, secure them. Ground personnel will hold the ladder while the personnel on the ladder remove the collar ropes, which secured the ladder top, and then climb down off the ladder.

13. WC 622 personnel will close the fuse cut outs and energize all equipment as per the following SOPs:

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

END