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

STANDARD OPERATING PROCEDURE / JOB HAZARD ANALYSIS

TITLE

**HANG CROSSARM ON NEW POLE
STRAIGHT LINE WITH ENERGIZED CIRCUITS**

PROCEDURE NUMBER

WC 624 HVE 003

DISTR:

601A

610

620

WC 624

SIGNED: _____
(DATE)

APPROVED: _____
(DATE)

SAFETY PROFESSIONAL: _____
(DATE)

MANAGEMENT OFFICIAL: _____
(DATE)

DATE: _____

REVISION DATE: _____

HANG CROSS ARM ON NEW POLE
STRAIGHT LINE WITH ENERGIZED CIRCUITS

Purpose:

Hang a cross arm on a new straight line pole with energized circuits on it.

Potential Energy Sources:

1. Energized conductors within close proximity.
2. Deenergized conductors which have not been properly grounded.

Tools and PPE:

Tools: Bucket truck, rubber line hoses, insulating blankets, insulator hoods, hydraulic drill, pneumatic drill, brace and bit, hand line. PPE: Insulating rubber gloves, insulating rubber sleeves, Nomex coveralls, Nomex hood, hard hat, safety glasses, safety shoes, safety harness, orange vest, 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.E
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

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, unless an emergency.

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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. Insulate all energized overhead circuits which are within 3 feet of work area. Insulate any deenergized overhead circuits that have not been properly grounded 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.

4. In order to mount the new cross arm personnel in the bucket will wear Nomex coveralls, safety glasses, safety shoes, insulating rubber gloves and sleeves, hard hat, and ear protection. Ground personnel will wear hard hats, safety shoes, gloves, and orange vests if work is adjacent to a road or in a parking lot. Personnel in the bucket will carry a hand line aloft with them.

5. Drill hole(s) in pole if necessary. Use hydraulic, pneumatic, or brace and bit to drill hole(s). Avoid using an extension cord when working near energized conductors over 600 volts.

6. Hang new cross arm and insulators. Attach arm to pole and have ground personnel level the arm. After the arm is leveled secure the arm in position with hard head or bolt. Attach insulators and arm pins to the arm. Secure bolt on arm pin with the insulator in the proper position. The insulators have to be properly rated based on conductor voltage. Top grooved or saddleback insulators should be used. Use angle insulators if the line is turning at pole work is occurring at. Refer to attached LANTDIVENGCOP Pole Line Plates for further information.

7. Place the conductors on the new insulators and secure them. The exact method will depend on work conditions and mechanic's judgement. A conductor should be placed so the securing tie wire will have minimum strain on it. An insulator and pin is to take the strain

of a conductor. The tie wire just holds the conductor in place. Some general rule for tie wires are as follows:

- a) the tie wire will be the same kind of wire as the conductor, copper tie for copper wire, aluminum tie for aluminum wire, covered tie for covered conductor
- b) use soft annealed wire

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- c) use solid wire
- d) never reuse a tie wire
- e) in general use #6 tie wire for conductors #4 and smaller, and use #4 tie wire for conductors greater than #4

Secure the conductor tightly via standard tying methods as any looseness between the tie wire, conductor, and insulator will lead to chafing and injury to the conductor.

8. Remove insulating material from overhead conductors wearing PPE as per Step 3. Remove material in reverse order of placement.

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