

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  
OPERATING PORTABLE GENERATORS**

**PROCEDURE NUMBER  
WC 627 HVE 022**

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

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

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

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

**REVISION**

**A**





## OPERATING PORTABLE GENERATORS

**Purpose:**

Procedure to connect, run, and disconnect a portable generator.

**Potential Energy Sources:**

1. 34.5/11.5/4.16 kv facility equipment and cables.
2. 208Y120, 480Y277, 120/240 facility equipment and cables.
3. 208Y120, 480Y277 generator output.
4. Generator engine.

**Tools and PPE:**

Tools: portable generator, electrical power conductors, voltmeter, and phase rotation meter.

PPE: Hard hat, safety shoes, safety glasses, work gloves, Nomex coveralls, Nomex hood, insulating rubber gloves and sleeves, ear protection, 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 622 013, Hazardous Energy Control(Lockout/Tagout)
5. SOP# 600 HVE 6, PWC Switching or Breaker Operation
6. SOP WC 622 007, Switchout And Switchback Energized Circuit

**Procedures:****Before Starting the Engine**

1. Ensure the generator is set up for the correct voltage, 208Y120 or 480Y277. Ensure the generator is set up for the correct voltage, 208/120 or 480/277. Check owners operation manuals and wiring diagrams for the correct hook ups prior to starting the generators.

**FOR NORFOLK SITE ONLY:**

- a) 200 KW Generators - Move the voltage board till indicating arrows point to correct voltage.
- b) 60 KW Generators - Move links T-4, T-5, T-6, and move jumpers on board TB-3 to position as indicated on the generator connection board.
- c) 1000 KW Generators - Move links to correct position as indicated on the generator cabinet.
- d) Blue Generators(2), 150 KW(1), and 50 KW Generators at NH-94 -Only NH-94 personnel will set the voltage.

## OPERATING PORTABLE GENERATORS

2. Ensure the generator output breaker is in the OPEN position. Never start or stop a generator with the output breaker in the CLOSED position. This includes all light plants.
3. Check all liquid levels of the diesel engine: water, oil, fuel. Add any fluid if required.
4. Ensure the generator, radiator, and control cabinet louvers are open for proper air flow across the engine and generator.

While performing the generator checks, wear work gloves and safety shoes. When checking the battery, or adding water to it wear acid resistant gloves and safety goggles.

Check Generator Voltage and Phase Rotation

5. Start the generator and check the generator voltage(all phases), cycles, and phase rotation.  
FOR NORFOLK SITE ONLY:

a) 200 KW and 60 KW Generators - Hold the toggle switch in the start position until the unit is running and up to operating speed.

. On 60 KW units, the REMOTE/LOCAL switch must be in the LOCAL position.

. On 200 KW and 60 KW units, the toggle switch may have to be held in the START position for a long time for the unit to start.

b) All Generators - adjust the frequency to 60 cycles.

. On #1 and #2 200 KW generators, adjust frequency with throttle control located under the control cabinet's lower right hand corner.

. On #3 and #4 200 KW, 60 KW, and 1000 KW generators, adjust frequency with knob marked "Frequency Adjust". The knob is located on the control cabinet.

c) Adjust voltage with "Voltage Adjustment Knob", located on the control cabinet.

d) If required, check phase rotation of generator and load.

6. Secure the generator.

7. Secure power to load.

a) If securing load involves primary switching then operations personnel will perform the task per the following SOPs

WC 622 HVE 007, Switchout and Switchback Energized Circuit

WC 622 HVE 013, Hazardous Energy Control(Lockout/Tagout)

600 HVE #6, PWC Switching or Breaker Operation

8. Connect the generator to the load. Observe the phase rotation. Use proper bending and lifting techniques when handling cables.

Wear safety shoes and work gloves. Put on hearing protection when generator is running.

When checking phase rotations if the voltage is greater than 300 volts, then personnel doing the checks will wear Nomex coveralls, Nomex hood, insulating rubber gloves and sleeves, safety glasses, safety shoes, and hard hat.

## OPERATING PORTABLE GENERATORS

Wear Nomex coveralls, Nomex hood, insulating rubber gloves and sleeves, safety glasses, safety shoes, and hard hat when operating high voltage devices, or devices whose voltage is greater than 300 volts.

Operate Generator

9. Put generator on line and operate.
  - a) Start generator and allow engine to warm up for 5 minutes.
  - b) Make any necessary adjustment to voltage and frequency.
  
10. Close the generator output breaker in accordance with generator operation manuals.  
FOR NORFOLK SITE ONLY:
  - a) On 60 KW and 200 KW generators, use the breaker CLOSE toggle switch located on the control cabinet.
  - b) On 1000 KW generator, put the AUTO/MANUAL selector switch in the MANUAL position and close the breaker with the pistol grip handle on the control cabinet.
  - c) On NH-94 Blue generators, close the output breaker manually.

Wear Nomex coveralls, Nomex hood, insulating rubber gloves and sleeves, safety glasses, safety shoes, and hard hat when operating devices whose voltage is greater than 300 volts.

Secure the Generator

11. Open the generator output breaker.
12. Allow generator to run for 5 minutes to cool down.
13. Shut down the generator. Switch in the remote position.
14. Remove the generator cables from the load.
15. Restore normal power to the load.

Refer to safety notes of Check Generator Voltage and Phase Rotation.

END