

Summary Report for Individual Task  
091-MCST-1000  
Emplace Mobile Electric Power According to Local Tactical Power Grid Design  
Status: Approved

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**Distribution Restriction:** Approved for public release; distribution is unlimited.

**Destruction Notice:** None

**Foreign Disclosure: FD5** - This product/publication has been reviewed by the product developers in coordination with the USAOS, Fort Lee, VA foreign disclosure authority. This product is releasable to students from all requesting foreign countries without restrictions.

**Condition:** In an operational environment, as a tactical power generator operator/repairer, assigned or in support of a tactical power operations, given AUTODISE network management plan/Grid Layout or power grid plan, hearing protection, tactical mobile electric power with references, power distribution and illumination equipment (PDISE) or equivalent. As part of preparation for deployment or during deployment, your staff personnel requires you to install or modify current power grid for assigned element. Standard MOPP 4 conditions do not exist for this task. See the MOPP 4 statement for specific conditions.

**Standard:** Install equipment as laid out in power grid plan. When installation is complete, all systems are operable to include a safe efficient balanced load without negative impact to mission. Grid operates within optimal power distribution (and power generation) parameters.

**Special Condition:** None

**Safety Risk:** Low

**MOPP 4:** N/A

|                        |
|------------------------|
| <b>Task Statements</b> |
|------------------------|

**Cue:** A field unit's power distribution system requires design and set up.

## DANGER

- DO NOT OPERATE GENERATOR OR EQUIPMENT UNLESS PROPERLY GROUNDED FIRST!
- HIGH VOLTAGES ARE PRESENT WHEN GENERATOR IS RUNNING!
- NEVER ATTEMPT TO CONNECT/DISCONNECT GENERATOR CABLES WHILE GENERATOR IS RUNNING!
- DO NOT ATTEMPT REPAIR OF THE GENERATOR WHILE IT IS RUNNING.

## WARNING

- USE EYE PROTECTION AND GLOVES!
- BE CAUTIOUS OF LOOSE CLOTHING OR LANYARDS!
- REMOVE IDENTIFICATION TAGS (DOG TAGS)!

## CAUTION

- Remove all rings, watches, and jewelry.
- Do not operate generator equipment in an enclosed area unless the area is adequately ventilated.
- Smoking, sparks, or open flames are not allowed within 50 feet of a generator set that is undergoing fuel system maintenance.
- Use care when handling fan and radiator. Sharp edges can cause injury.
- Dry-cleaning solvent is flammable and should not be used in the vicinity of sparks or open flame.
- When using compressed air, wear eye shields.
- Do not remove a radiator cap or surge tank cap unless the engine is cool.
- While working on battery systems, wear rubber gloves and goggles.
- Before working on the exhaust system, make sure it is cool.
- Disconnect the negative battery cable prior to performing any electrical system maintenance or when performing repairs in the locality of electrical components.
- While cutting metal with an oxyacetylene torch, wear leather gloves, leather apron, and welding goggles.
- When working around engines that are operating, wear hearing protection.
- When removing components over 75 pounds, two personnel are required.
- Do not smoke or use an open flame in the vicinity when filling a fuel tank.
- Do not operate generator set unless ground terminal stud has been connected to a suitable ground.
- Do not attempt to alter the position of the voltage reconnection board while the generator set is operating.
- Do not attempt to connect or disconnect load leads while the generator set is operating.
- Be careful not to inhale ether gas.
- Do not allow a crated generator set to swing while it is suspended.

**Remarks:** The following Skills and knowledges are required in order to perform this task:

-Basic electricity (Ohms Law) and electrical safety

-Grounding and bonding theory/application

- Ground faults and short circuits
- Single-phase and Three-phase power
- Computing neutral current and voltage drop  
PDISE
- Paralleling and synchronization
- Load distribution and balancing

**Notes:** -Task may be taught, supported and evaluated in multiple lessons.

-Equipment identified at the task may not reflect what is required in the formal training environment.

-Trained at the institution for 91D.

-Trained at the unit for operators.

## Performance Steps

### 1. Perform before operations PMCS

## CAUTION

1. Always keep fire extinguishers readily available to the generators.
2. Always place drip pans underneath generators
3. Keep fuel cans and other flammable items clear of the power plant area (at least 15 feet away).
4. Ensure landing legs, outriggers, chock blocks, and hand brakes are extended, engaged, and applied.
5. Always keep generator access doors closed during operation.
6. Keep power plant area clear at all times.

### 2. Emplace power plants

Note: 1. Position generators side by side and in an area where all cables can reach their designated PDISE connections without restrictions.

### 2. Keep generators as level as possible and at no more than a 15 degree angle (slope).

a. Generator set "A"

b. Generator set "B"

### 3. Ground power plants.

a. Dig a hole in the area where you intend to place the ground rod, one foot in diameter and one foot deep to provide a place to put salt and drive your ground rod deeper to lower resistance.

b. Ensure that the three-segmented ground rods are at least eight feet in the ground and no more than 1 foot exposed.

c. Ensure ground cable (#6AWG) is connected to the GND of the TB1 (load output terminals), to the chassis of the trailer (bonded) and then to the ground rod.

d. Ensure ALL connections are securely fastened. IE: ground rod clamps, chassis ground stud, and ground terminal (TB1).

e. Place ground rod as close to the generator as possible.

f. Ensure all connections are connected to bare metal.

g. Trench around ground rod so that rainwater or condensate drain will flow into the hole when possible.

### 4. Install all interconnecting cables.

a. Connect Inter-connecting cable from generator set "B" to transfer/switch box on generator set "A"

- b. Inter-connecting cable from generator set "B" to transfer/switch box (load contactor control).
- c. Connect paralleling cable between each generator set.
- d. Ensure Transfer/Switch box load contactor switch is open.
- e. Install 100amp pigtailed to the transfer/switch box
- f. Install 50ft feeder cables to the 100amp pigtail

5. Emplace PDISE components

- a. Emplace the M100 PDISE feeder boxes
- b. Install 50ft feeder cables from the M100 PDISE box to the M40 PDISE and from the M100 to the tactical shelters
- c. Install all extension cables, outlet boxes and light sets from the M46 kit

6. Perform during operations PMCS

Cue: On initial start-up of the power plant, Unit A will run first. Once the generator is running, the main generator is provides power to the main AC load contactor only. No power can go beyond this point until you close the main AC load contactor.

- 7. Perform paralleling procedures
- 8. Balance the load
- 9. Perform after operations PMCS

(Asterisks indicates a leader performance step.)

**Evaluation Guidance:** The Soldier scores a GO if all performance measures were passed. The Soldier scores a NO-GO if any performance measure was failed. If any performance measure was failed show the Soldier what was done wrong and how it should have been done to score a GO.

**Evaluation Preparation:** TBD

| PERFORMANCE MEASURES   | GO | NO-GO | N/A |
|--|----|-------|-----|
| 1. Performed operator's before operations check PMCS   |    |       |     |
| a. Corrected any operators faults noted  |    |       |     |
| b. Annotated correction on DA Form 5988E   |    |       |     |
| 2. Emplaced power plants.  |    |       |     |
| a. Positioned generators side by side and in an area where all cables can reach their designated PDISE connections without restrictions.   |    |       |     |
| b. Kept generators as level as possible and at no more than a 15 degree angle (slope).   |    |       |     |
| (1) Generator set "A"  |    |       |     |
| (2) Generator set "B"  |    |       |     |
| 3. Grounded power plants.  |    |       |     |
| a. Dug a hole in the area where the ground rod was is intended to be placed. (Hole was one foot in diameter and one foot deep to provide a place to put salt and drive ground rod deeper to lower resistance). |    |       |     |
| b. Ensured that the three-segmented ground rods are at least eight feet in the ground and no more than 1 foot exposed.   |    |       |     |
| c. Ensured ground cable (#6 AWG) is connected to the GND of the TB1 (load output terminals), to the chassis of the trailer (bonded) and then to the ground rod.  |    |       |     |
| d. Ensured ALL connections are securely fastened. IE: ground rod clamps, chassis ground stud, and ground terminal (TB1).   |    |       |     |
| 4. Installed all interconnecting cables.   |    |       |     |
| a. Connected Inter-connecting cable from generator set "B" to transfer/switch box on generator set "A".  |    |       |     |
| b. Connected Inter-connecting cable from generator set "B" to transfer/switch box (load contactor control).  |    |       |     |
| c. Connected paralleling cable between each generator set.   |    |       |     |
| 5. Emplaced PDISE components.  |    |       |     |
| a. Emplaced the M100 PDISE feeder boxes.   |    |       |     |
| b. Installed 50ft feeder cables from the M100 PDISE box to the M40 PDISE and from the M100 to the tactical shelters.   |    |       |     |
| c. Installed all extension cables, outlet boxes and light sets from the M46 kit.   |    |       |     |
| 6. Performed operational test.   |    |       |     |
| a. Started generator "A"   |    |       |     |
| b. Applied the load  |    |       |     |
| c. Ensured load was balanced   |    |       |     |
| d. Corrected any load imbalanced issues  |    |       |     |
| e. Started generator "B"   |    |       |     |
| f. Paralleled both generators  |    |       |     |
| g. Dropped generator "A" from the load   |    |       |     |
| h. Shut-down generator "A"   |    |       |     |
| 7. Performed PMCS.   |    |       |     |
| a. Corrected any operator faults noted   |    |       |     |
| b. Annotated correction on DA Form 5988E/2404.   |    |       |     |

**Supporting Reference(s):**

| Step Number | Reference ID  | Reference Name   | Required | Primary |
|-------------|---------------|--|----------|---------|
|             | AR 600-55     | THE ARMY DRIVER AND OPERATOR STANDARDIZATION PROGRAM (SELECTION, TRAINING, TESTING, AND LICENSING) | Yes      | No      |
|             | CECOM TR 98-6 | Earth Grounding and Bonding Pamphlet   | No       | No      |
|             | TM 3-34.45    | ENGINEER PRIME POWER OPERATIONS  | Yes      | No      |
|             | TM 3-34.46    | Theater of Operations Electrical Systems   | No       | No      |

**Environment:** Environmental protection is not just the law but the right thing to do. It is a continual process and starts with deliberate planning. Always be alert to ways to protect our environment during training and missions. In doing so, you will contribute to the sustainment of our training resources while protecting people and the environment from harmful effects. Refer to FM 3-34.5 Environmental Considerations and GTA 05-08-002 ENVIRONMENTAL-RELATED RISK ASSESSMENT. All operations must conform to the Army Environmental Program, TC 5-400 (Unit Leader's Handbook for Environmental Stewardship), local, state, and federal environmental policies, the Clean Air Act (CAA), CAA amendments, National Ambient Air Quality Standards (NAAQS), as well as OSHA Hazard Communications Standard for Industry, 29 CFR, part 1910.

**Safety:** In a training environment, leaders must perform a risk assessment in accordance with ATP 5-19, Risk Management. Leaders will complete the current Deliberate Risk Assessment Worksheet in accordance with the TRADOC Safety Officer during the planning and completion of each task and sub-task by assessing mission, enemy, terrain and weather, troops and support available-time available and civil considerations, (METT-TC). Note: During MOPP training, leaders must ensure personnel are monitored for potential heat injury. Local policies and procedures must be followed during times of increased heat category in order to avoid heat related injury. Consider the MOPP work/rest cycles and water replacement guidelines IAW FM 3-11.4, Multiservice Tactics, Techniques, and Procedures for Nuclear, Biological, and Chemical (NBC) Protection, FM 3-11.5, Multiservice Tactics, Techniques, and Procedures for Chemical, Biological, Radiological, and Nuclear Decontamination. -All operations will be performed to protect and preserve Army personnel and property against accidental loss.  
--Procedures will provide for public safety incidental to Army operations and activities and safe and healthful work places, procedures, and equipment.

-Observe all safety and/or environmental precautions regarding electricity, fuel, lubricants and high pressures.

-Provide ventilation for exhaust fumes during equipment operation and use hearing protection when required in accordance with AR 385-10, the Clean air Act (CAA), the CAA amendments, and the OSHA Hazard Communication standard.

-Observe all safety precautions when using lifting devices and handling heavy parts.

#### Prerequisite Individual Tasks :

| Task Number  | Title   | Proponent                   | Status   |
|--------------|---|-----------------------------|----------|
| 091-91D-1111 | Perform Preventive Maintenance Checks and Services on a Generator Set | 091 - Ordnance (Individual) | Approved |

#### Supporting Individual Tasks :

| Task Number  | Title   | Proponent                   | Status   |
|--------------|---|-----------------------------|----------|
| 091-91D-1189 | Perform Paralleling Procedures on Generator Sets                                      | 091 - Ordnance (Individual) | Obsolete |
| 091-91D-1188 | Perform Procedures to Determine Generator Selection to Meet a Particular Power Demand | 091 - Ordnance (Individual) | Obsolete |

#### Supported Individual Tasks :

| Task Number  | Title  | Proponent                   | Status   |
|--------------|--|-----------------------------|----------|
| 091-91D-1189 | Perform Paralleling Procedures on Tactical Power Systems | 091 - Ordnance (Individual) | Approved |
| 091-91D-1189 | Perform Paralleling Procedures on Generator Sets         | 091 - Ordnance (Individual) | Obsolete |

|              |   |                             |          |
|--------------|---|-----------------------------|----------|
| 091-91D-1188 | Perform Procedures to Determine Generator Selection to Meet a Particular Power Demand             | 091 - Ordnance (Individual) | Obsolete |
| 091-91D-1188 | Perform Procedures to Determine Tactical Power System Selection to Meet a Particular Power Demand | 091 - Ordnance (Individual) | Approved |

**Supported Collective Tasks :**

| <b>Task Number</b> | <b>Title</b>                                     | <b>Proponent</b>                               | <b>Status</b> |
|--------------------|--|--|---------------|
| 01-6-0433          | Supervise Support of Brigade Command Posts (CPs) | 01 - Aviation/Aviation Logistics (Collective)  | Approved      |
| 43-2-7035          | Provide Tactical Electric Power                  | 43 - Maintenance (except missile) (Collective) | Approved      |

**ICTL Data :**

| <b>ICTL Title</b>                                 | <b>Personnel Type</b> | <b>MOS Data</b>            |
|---|-----------------------|----------------------------|
| MOS 91D - Power Generation Equipment Repairer SL1 | Enlisted              | MOS: 91D, Skill Level: SL1 |