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# **OPERATOR COURSE**

FOR

3KW TACTICAL QUIET GENERATOR SET  
MEP 831A (60 HZ) AND MEP 832A (400 HZ)

## **TRAINEE GUIDE**

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# OPERATOR COURSE TRAINEE GUIDE-PM-MEP-3KW OCTG

## TRAINEE NAME PAGE

Trainee Guide

Name \_\_\_\_\_

Class No. \_\_\_\_\_

### HAZARD AWARENESS NOTICE

All personnel involved with operation of the generator set must be thoroughly familiar with the equipment safety precautions contained in the Operator, Unit, Direct Support, and General Support Maintenance Manual for the Tactical Quiet Generator Set.

Pay extreme close attention to specific cautions and warnings throughout the technical manual during training exercises to prevent injury to personnel and damage to the equipment.

HIGH VOLTAGE is used in the operation of this equipment. DEATH or severe injury may result if personnel fail to observe safety precautions.

The generator set produces high voltages and emits deadly carbon monoxide gases when in operation. Extreme caution must be exercised when working with or near this equipment.

Servicing the generator set should not be accomplished alone. Unless under direct supervision of qualified person, no person shall operate or maintain equipment for which they are not qualified.

Servicing the generator set must be accomplished in well-ventilated spaces only ensuring that equipment is grounded. Under no circumstances will a person operate or service this equipment unless the spaces are ventilated and the equipment suitably grounded. Equipment must be grounded in accordance with procedures in Field Manual 20-31 Failure to adhere to this may cause death, personal injury, and equipment damage.

Report all hazards. if at any time you detect a hazard, it is your responsibility to report the hazard to the next person in your chain of command. This person should ensure that the hazard will be investigated, publicized, or corrected, as required.

# OPERATOR COURSE TRAINEE GUIDE-PM-MEP-3KW OCTG

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# OPERATOR COURSE TRAINEE GUIDE-PM-MEP-3KW OCTG

## OUTLINE SHEET 1-1-1

### COURSE INTRODUCTION

1. Introduction
  - a. This topic provides an introduction to the operator course and describes how the course will be presented. You should take notes as desired. Retain this information for future use.
2. Outline
  - a. Course Title
  - b. Course Content
    - (1) Reference Documentation
    - (2) Trainee Guide
    - (3) Testing
  - c. Class Schedule
  - d. Course Objective

# **OPERATOR COURSE TRAINEE GUIDE-PM-MEP-3KW OCTG**

## **DIAGRAM SHEET 1-1-1**

### **COURSE OBJECTIVE**

UPON SUCCESSFUL COMPLETION OF THIS COURSE, THE TRAINEE WILL HAVE SUFFICIENT KNOWLEDGE TO OPERATE AND PERFORM OPERATOR MAINTENANCE ON THE 3KW TACTICAL QUIET GENERATOR SET.

THE TRAINEE WILL BE ABLE TO:

IDENTIFY AND DESCRIBE GENERATOR SET SYSTEM AND COMPONENTS

DESCRIBE THE FUNCTION AND LOCATION OF CONTROLS AND INDICATORS

PERFORM PMCS PROCEDURES ON THE GENERATOR SET

PERFORM STARTUP AND SHUTDOWN OF THE GENERATOR SET IN USUAL AND UNUSUAL CONDITIONS

PERFORM OPERATOR LEVEL TROUBLESHOOTING OF THE GENERATOR SET

# **OPERATOR COURSE TRAINEE GUIDE-PM-MEP-3KW OCTG**

## **OUTLINE SHEET 1-2-1**

### **DESCRIPTION OF EQUIPMENT AND PRINCIPLES OF OPERATION**

1. Introduction
  - a. This topic provides a description of the generator set and describes the principles of operation for the generator set and its major systems.
  
2. Topic Learning Objectives
  
3. Generator Set Description
  - a. Size
  
  - b. Features
  
  - c. Basic Components
    - (1) Skid Base
  
    - (2) Enclosure
  
    - (3) Engine
  
    - (4) Permanent Magnet Generator
  
    - (5) Control Box Assembly
  
    - (6) Output / Load Connections

# **OPERATOR COURSE TRAINEE GUIDE-PM-MEP-3KW OCTG**

## **OUTLINE SHEET 1-2-1 (continued)**

### **DESCRIPTION OF EQUIPMENT AND PRINCIPLES OF OPERATION**

4. Major Systems and Principles of Operation
  - a. Generator Set Starting System
  - b. Fuel System
  - c. Generator Set / Engine Cooling Systems
  - d. Engine Lubrication System
  - e. Air Intake and Exhaust System
  - f. Governor Control System
  - g. AC Electrical System
  - h. DC Electrical System

# OPERATOR COURSE TRAINEE GUIDE-PM-MEP-3KW OCTG

## DIAGRAM SHEET 1-2-1

### GENERATOR SET DESCRIPTION



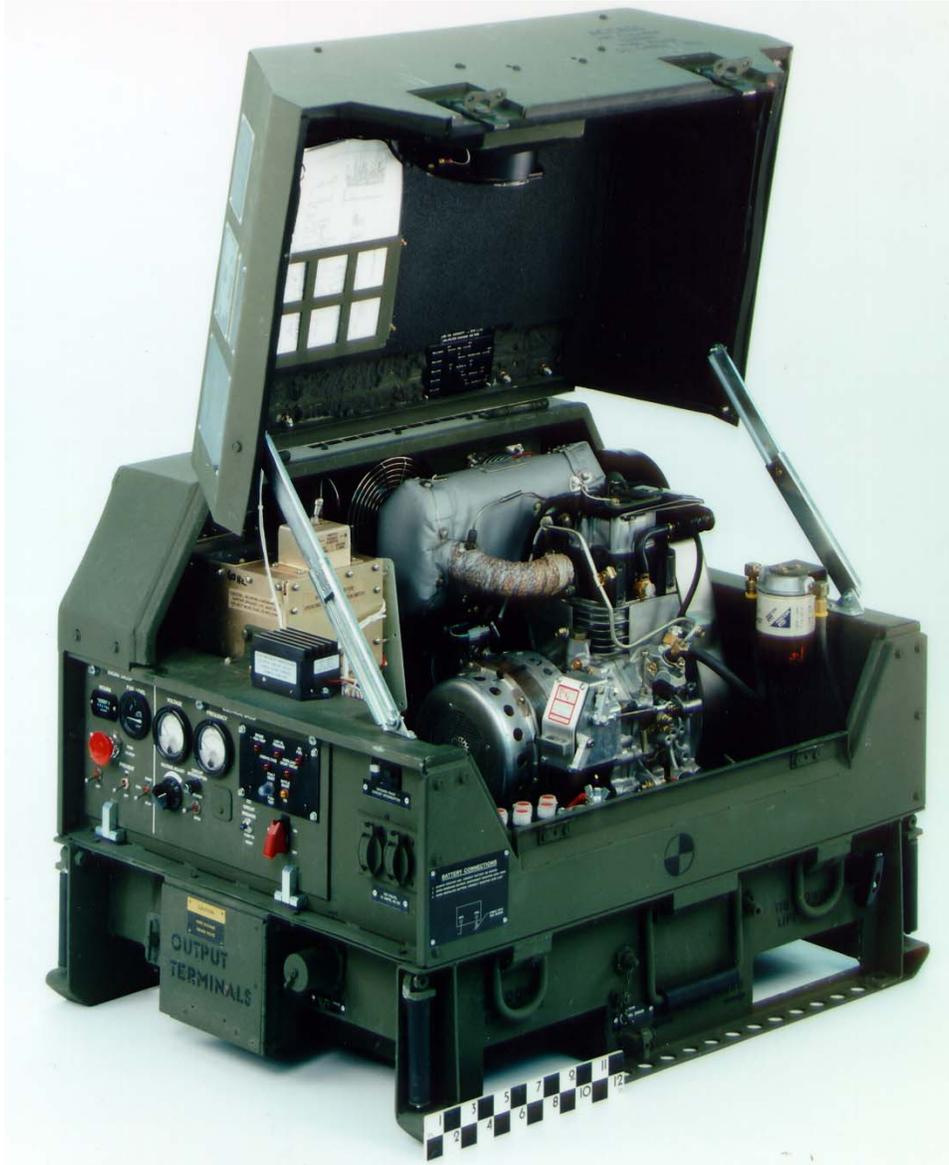
Size

Features

# OPERATOR COURSE TRAINEE GUIDE-PM-MEP-3KW OCTG

## DIAGRAM SHEET 1-2-2

### BASIC COMPONENTS



Skid Base

Enclosure

Engine

Permanent Magnet Generator

Control Box Assembly

Output Terminals

# OPERATOR COURSE TRAINEE GUIDE-PM-MEP-3KW OCTG

## ASSIGNMENT SHEET 1-2-1

### DESCRIPTION OF EQUIPMENT AND PRINCIPLES OF OPERATION

1. Study Assignment

Read and review Technical Manual TM 9-6115-639-13, Paragraphs 1-9 through 1-17. Answer all study questions.

2. Study Questions

a. Briefly describe the characteristics of the diesel engine:

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b. How many lifting handles and tie-down rings are provided on the generator set:

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c. Describe the location and function of the fault indicator module:

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d. Describe the location and function of the auxiliary fuel transfer pump:

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**OPERATOR COURSE TRAINEE GUIDE-PM-MEP-3KW OCTG**

**ASSIGNMENT SHEET 1-2-1 (continued)**

**DESCRIPTION OF EQUIPMENT AND PRINCIPLES OF OPERATION**

e. Describe the location and function of the generator power converter:

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f. What is the oil capacity of generator set system :

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g. The generator set has two electrical systems. Briefly describe the functions of the DC system:

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h. Briefly describe the generator set preheat system:

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i. Briefly describe the function of the CIRCUIT INTERRUPTER switch:

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**OPERATOR COURSE TRAINEE GUIDE-PM-MEP-3KW OCTG**

**ASSIGNMENT SHEET 1-2-1 (continued)**

**DESCRIPTION OF EQUIPMENT AND PRINCIPLES OF OPERATION**

j. Describe the location and function of the fuel filter / water separator:

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k. Briefly describe the operation of the fuel level float switch:

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l. Briefly describe the function of the fault lockout relay:

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# **OPERATOR COURSE TRAINEE GUIDE-PM-MEP-3KW OCTG**

## **OUTLINE SHEET 2-1-1**

### **INTRODUCTION TO THE TECHNICAL DOCUMENTATION**

1. Introduction
  - a. This topic provides an introduction to the generator set's technical manual. It provides information on the format, content, and use of the manual to better enable you to operate and maintain the unit.
  
2. Topic Learning Objectives
  
3. Technical Documentation
  - a. Operator, Unit and Direct Support Maintenance Manual TM 9-6115-639-13
  
  - b. Organization
  
  - c. Content
  
  - d. Use
  
  - e. Safety

# OPERATOR COURSE TRAINEE GUIDE-PM-MEP-3KW OCTG

## OUTLINE SHEET 3-1-1

### GENERATOR SET CONTROLS AND INDICATORS

1. Introduction
  - a. This topic provides information on the controls and indicators required to properly operate the generator set.
  
2. Topic Learning Objectives
  
3. Control Panel Controls and Indicators
  - a. Switches and controls
  
  - b. Normal operating positions
  
  - c. Gauges and meters
  
  - d. Fault and system condition indicators
  
  - e. Controls used for emergency or unusual operation
  
4. Skid Base Mounted Controls
  - a. Output / Load Panel Terminals
  
  - b. NATO Slave Receptacle
  
5. Engine Oil Fill Cap and Gauge
  
6. Generator Set Fuel Tank Fill Port

# **OPERATOR COURSE TRAINEE GUIDE-PM-MEP-3KW OCTG**

## **OUTLINE SHEET 4-1-1**

### **PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)**

1. Introduction
  - a. This topic provides information on the preventive maintenance checks and services required at the operator level to ensure that the generator set remains in proper operating order.
2. Topic Learning Objectives
3. Preventive Maintenance Checks and Services
  - a. Purpose
  - b. Leakage Definitions
  - c. PMCS Table
  - d. PMCS Intervals and Requirements

# **OPERATOR COURSE TRAINEE GUIDE-PM-MEP-3KW OCTG**

## **OUTLINE SHEET 5-1-1**

### **OPERATION UNDER USUAL CONDITIONS**

1. Introduction
  - a. This topic will describe the procedures required to setup and operate the generator set under usual (normal) operating conditions.
2. Topic Learning Objectives
3. Operation Sequence
  - a. Preparation for use
  - b. Initial adjustments and checks
  - c. Startup
  - d. Normal operation
4. Shutdown
5. Physical Operating Procedures

# OPERATOR COURSE TRAINEE GUIDE-PM-MEP-3KW OCTG

## JOB SHEET 5-1-1

### OPERATION UNDER USUAL CONDITIONS

1. Introduction
  - a. This job sheet will help you become proficient in setting up and operating the generator set using the technical manual.
  
2. Equipment
  - a. 3KW Tactical Quiet Generator Set
  
3. Reference Materials
  - a. TM 9-6115-639-13
  
4. Job Steps

#### STEP 1 - ASSEMBLY AND PREPARATION FOR USE

- a. What paragraph in the technical manual address preparation for use:

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- b. A ground cable must be connected to which terminal on the generator set. Where is it located:

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- c. Tell which color battery terminal is connected to the positive battery post:

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# OPERATOR COURSE TRAINEE GUIDE-PM-MEP-3KW OCTG

## JOB SHEET 5-1-1 (continued)

### OPERATION UNDER USUAL CONDITIONS

#### STEP 2 - PREVENTIVE MAINTENANCE CHECKS AND SERVICES

- a. What paragraph in the technical manual addresses operator PMCS procedures:

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- b. Prior to operating the generator set, which PMCS tasks must be performed:

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- c. Perform the PMCS procedures identified above and record the results:

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#### STEP 3 - OPERATION

- a. What paragraph in the technical manual addresses operation under usual conditions:

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- b. At what temperature should the generator set preheat system be activated:

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- c. How long must you wait between attempted starts of the unit to prevent damage to the starter:

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**OPERATOR COURSE TRAINEE GUIDE-PM-MEP-3KW OCTG**

**JOB SHEET 5-1-1 (continued)**

**OPERATION UNDER USUAL CONDITIONS**

- d. When the generator set is operating, which PMCS tasks must be performed:

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- e. Perform operating procedures and record the results:

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- f. Perform PMCS intervals identified in step d and record the results:

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**STEP 4 - SHUTDOWN**

- a. What paragraph in the technical manual addresses normal shutdown procedures:

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**OPERATOR COURSE TRAINEE GUIDE-PM-MEP-3KW OCTG**

**JOB SHEET 5-1-1 (continued)**

**OPERATION UNDER USUAL CONDITIONS**

- b. Perform shutdown procedures and record the results:

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- c. Having shutdown the generator set, which PMCS tasks must be performed:

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STEP 5 - Return any materials used to their proper location and return generator set to normal condition.

# **OPERATOR COURSE TRAINEE GUIDE-PM-MEP-3KW OCTG**

## **OUTLINE SHEET 5-2-1**

### **OPERATION UNDER UNUSUAL CONDITIONS**

1. Introduction
  - a. This topic will describe the procedures required to setup and operate the generator set under unusual operating conditions, including extreme weather and emergency situations.
  
2. Topic Learning Objectives
  
3. Operation Under Unusual Conditions
  - a. Battle short operation
  
  - b. Unusual weather
  
  - c. NBC decontamination
  
  - d. Hand starting
  
4. Emergency shutdown

# OPERATOR COURSE TRAINEE GUIDE-PM-MEP-3KW OCTG

## OUTLINE SHEET 5-3-1

### DECALS AND PLATES

1. Introduction
  - a. This topic will describe the location and content of generator set identification, operation, and warning plates and decals.
2. Topic Learning Objectives
3. Operational Plates
  - a. Fuel capacity plate
  - b. Oil capacity plate
  - c. Battery connection plate
  - d. Load terminal connection plate
  - e. Operating instruction plate
4. Warning and Caution Plates
  - a. Grounding caution plate

# **OPERATOR COURSE TRAINEE GUIDE-PM-MEP-3KW OCTG**

## **OUTLINE SHEET 6-1-1**

### **TROUBLESHOOTING PROCEDURES**

1. Introduction
  - a. This topic will describe the operator level troubleshooting procedures required to fault isolate the generator set and return it to service.
2. Topic Learning Objectives
3. Troubleshooting Procedures
  - a. Engine troubles
  - b. Generator set troubles
4. Troubleshooting the Generator Set

# OPERATOR COURSE TRAINEE GUIDE-PM-MEP-3KW OCTG

## JOB SHEET 6-1-1

### TROUBLESHOOTING PROCEDURES

1. Introduction

- a. This job sheet will aid you in becoming proficient in performing operator level troubleshooting and fault isolation procedures using the technical manual.

2. Equipment

- a. 3KW Tactical Quiet Generator Set

3. Reference Materials

- a. TM 9-6115-639-13

4. Job Steps

When attempting to start the generator set, you discover that the engine will not crank. Perform the following steps to identify and remedy the fault.

#### STEP 1 - LOCATE THE PROPER TROUBLESHOOTING PROCEDURES

- a. What paragraph in the technical manual contains operator level troubleshooting information:

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- b. Which malfunction item number in Table 3-2 covers the noted trouble:

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- c. Conduct the inspections required to fault isolate the trouble and record the results:

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**OPERATOR COURSE TRAINEE GUIDE-PM-MEP-3KW OCTG**

**JOB SHEET 6-1-1 (continued)**

**TROUBLESHOOTING PROCEDURES**

STEP 2 - TROUBLESHOOT THE GENERATOR SET

- a. Based on your analysis, troubleshoot and remedy the fault and record the results:

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STEP 3 - Return the generator set to normal condition.

- d. Perform the PMCS tasks identified in step c and record the results:

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