

MAINTENANCE COURSE

FOR

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

INSTRUCTOR GUIDE

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MAINTENANCE COURSE INSTRUCTOR GUIDE - PM-MEP 3KW MCIG

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 contained 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.

MAINTENANCE COURSE INSTRUCTOR GUIDE - PM-MEP 3KW MCIG

TABLE OF CONTENTS

<u>Section</u>	<u>Page</u>	<u>Section</u>	<u>Page</u>
FRONT MATTER		3. TROUBLESHOOTING	3-1
Cover	i	3-1 Generator Set Troubleshooting Procedures	3-1-1
Hazard Awareness Notice	ii	3-2 Engine Troubleshooting Procedures	3-2-1
Table of Contents	iii	4. DIESEL ENGINE MAINTENANCE, UNIT MAINTENANCE LEVEL	4-1
How to Use the Instructor Guide	iv	4-1 Fuel System	4-1-1
Allocation of Instructions Time	vii	4-2 Lubrication System	4-2-1
Course Learning Objectives	ix	4-3 Air Intake and Exhaust System	4-3-1
1. INTRODUCTION, GENERATOR SET DESCRIPTION AND PRINCIPLES OF OPERATION	1-1	5. GENERATOR SET MAINTENANCE, UNIT MAINTENANCE LEVEL	
1-1 Course Introduction	1-1-1	5-1 Fuel System	5-1-1
1-1A Technical Documentation	1-1-4	5-2 Controls and Indicators	5-2-1
1-2 Generator Set Description and Principles of Operation	1-2-1	5-3 Enclosure Assembly	5-3-1
2. PMCS AND OPERATION	2-1	REFERENCE MATERIAL	
2-1 PMCS	2-1-1	Master Materials List	(1)
2-2 Operation	2-2-1	Profile Item-to Topic Objective Assignment Chart (OAC)	(x)
		Fault Applicability List	(x)
		Answer Sheet	(x)

HOW TO USE THE INSTRUCTOR GUIDE

COMPOSITION OF THE INSTRUCTOR GUIDE

This Instructor guide provides an instructor with the information required to prepare for, and instruct in, the topics assigned. As an introduction to each topic, the instructor shall display his/her NAME and TOPIC TITLE on the chalkboard. The instructor will also inform the trainees of the topic learning objectives, establish classroom procedures (questioning, note taking, breaks, etc.), and motivate the trainees by emphasizing the importance of the topic. Each topic within the Instructor Guide contains the following:

1. Topic Learning Objectives. This objectives are written to reflect the training that the topic supports. The objectives are derived from the Training Analysis Summary.
2. Trainee Preparation. If applicable, this portion assigns the study and review material that the trainee must complete to prepare for the topic. It contains detailed assignments in reference publications and diagrams, including support materials, and is assigned at the end of each day of instruction. The instructor must review the Trainee Preparation portion of topics planned for the following day and make study assignments accordingly.
3. Instructor Preparation. This part of the topic page contains:
 - a. A reminder to review assigned trainee materials.
 - b. A list of all reference materials required by the instructor to prepare to instruct the topic.
 - c. A list of all training materials required for the topic, including references, equipment, support materials, and test equipment.
4. Discussion-Demonstration-Activities. This page is divided into two columns, as follows:
 - a. Discussion Point. This column outlines subject matter to the depth necessary to support the corresponding topic learning objective. Also, sufficient space is provided for instructor personalization.
 - b. Related Instructor Activity. In this column are listed specific instructor activities, excluding oral discussion, which will aid in trainee learning. The Related Instructor Activity column provides the instructor specific instructions relative to reference documents and guidance to trainee behavior during presentation of instruction. These activities carry the same number as the discussion point to which they are related. As with the discussion points, space is left for the instructor to ad personalizing notes. The "Reference..." is used to help the instructor locate information applicable to a particular discussion point and to be used to prepare for the material to be covered. It is not intended to direct the instructor to use that reference material in the classroom. The term "Refer to ..." provides direction for the instructor when the reference material is actually intended for use in the classroom. If there is no related instructor activity for a discussion point, the space is left blank and the number omitted.

HOW TO USE THE INSTRUCTOR GUIDE (continued)

FUNCTION OF THE INSTRUCTOR GUIDE

The Instructor Guide expands the approved topic outline into a content format that will serve as an effective plan for instruction. It provides room for instructors to add individual notes. The form of the instructor guide facilitates preparation, minimizes deviation from the approved plan for the topic, and lessens the need for rewriting material already contained in the outline. As the instructors prepare to teach the topic for the first time, they may write in the technical data, information, or notes to be used to do a professional job of instruction. As instructors gain experience teaching a topic, they may modify and improve the data written in. Any activity that does not contribute directly to training in the operation and maintenance of the generator set assembly is wasted effort. A thorough understanding of the equipment theory is necessary in order that the practical work on the equipment may be accomplished. The reason for the theory is to assist the trainee in doing practical work.

USE OF THE INSTRUCTOR GUIDE

When issued to an instructor, this guide becomes his personal property subject only to the regulations that govern classified matter.

Each instructor will make handwritten entries in the spaces provided. Personalized topics may be passed on to a relieving instructor; however, they are to be used only for reference purposes in developing a personalized Instructor Guide.

STUDY ASSIGNMENTS

If applicable, study assignments are provided in the Instructor Guide and all completed assignments should be reviewed with the trainees at the first opportunity.

EQUIPMENT FAULTS

The Fault Applicability List in the Instructor Guide lists the faults/fault insertion devices, if required, in this course. When desirable, additional faults may be selected from the Fault Applicability List in the Guide.

INSTRUCTION SHEETS, EXAMINATIONS, QUIZZES

If applicable, Instruction Sheets, consisting of Information Sheets, Job Sheets, Assignment Sheets, Problem Sheets, and Diagram Sheets are an integral part of the course and help new trainees achieve the topic learning objectives. Quizzes and Examinations are administered to monitor trainee comprehension at the completion of significant areas of instruction.

DIVISION OF COURSE MATERIALS INTO FUNCTIONAL PARTS

The course material in this Instructor Guide has been divided into parts to support the Training Analysis Summary. It has been divided into sections to support instruction on theory, operation, preventive maintenance, and corrective maintenance. The sequence of instruction is based on an analysis of the tasks for the trainee performance.

TRAINING MATERIAL SUPPORT PROGRAM

The Training Material Support Program has been established for the purpose of improving the curriculum and other training material. It is each instructor's responsibility to become familiar with this program. You are to submit all of your suggestions for improvement. These suggestions should include discrepancies found or any comments that you feel will improve training. There will be no changes in this curriculum until authorized by the U.S. Army Troop Support Command.

HOW TO USE THE INSTRUCTOR GUIDE (continued)

SECURITY

In the event that classified information is added to this Instructor Guide as a result of instructor personalization, the Instructor Guide shall be marked and handled in accordance with the regulations of the latest edition of the Department of the Army Supplement to the DoD Information Security Program Regulation.

SAFETY PRECAUTIONS

High voltage present, and the emission of deadly carbon monoxide gases by the generator set assembly are extremely dangerous. The importance of stringent ventilation requirements in the proper preparation and installation of the generator set assembly must be continuously stressed. Safety must be a part of each day of training so that the trainee will develop safe working habits.

MAINTENANCE COURSE INSTRUCTOR GUIDE - PM-MEP 3KW MCIG

ALLOCATION OF INSTRUCTIONAL TIME

<u>Volume No.</u>	<u>Part No.</u>	<u>Section No.</u>	<u>Topic No.</u>	<u>Classroom Hours</u>	<u>Laboratory Hours</u>	<u>Part Totals</u>
		1	1-1	0.25	0	0.25
			1-1A	0.25	0	0.25
			1-2	0.50	0	0.50
			Section Total	1.00	0	1.00
		2	2-1	0.25	0.25	0.50
			2-2	0	0.50	0.50
			Section Total	0.25	0.75	1.00
		3	3-1	0	2.00	2.00
			3-2	0	2.00	2.00
			Section Total	0	4.00	4.00
		4	4-1	0	2.00	2.00
			4-2	0	1.50	1.50
			4-3	0	1.50	1.50
			Section Total	0	5.00	5.00

MAINTENANCE COURSE INSTRUCTOR GUIDE - PM-MEP 3KW MCIG

ALLOCATION OF INSTRUCTIONAL TIME (continued)

<u>Volume No.</u>	<u>Part No.</u>	<u>Section No.</u>	<u>Topic No.</u>	<u>Classroom Hours</u>	<u>Laboratory Hours</u>	<u>Part Totals</u>
		5	5-1	0	1.50	1.50
			5-2	0	2.00	2.00
			5-3	0	1.50	1.50
			Section Total	0	5.00	5.00
			COURSE TOTAL	1.25	14.75	16.00

INSTRUCTIONAL TIME TOTAL 15.00 Hours
TESTING /ADMIN/REVIEW 1.00 Hours
COURSE TOTAL 16.00 Hours

NOTE

Classroom and laboratory (hands-on) hours shown reflect the time used with an actual class size of 8 and a trainee / instructor ratio for laboratory / hands-on periods of 8 / 2. This time may vary slightly at different activities due to different class loading of available resources. Actual times should be reflected on each activities master course schedule.

MAINTENANCE COURSE INSTRUCTOR GUIDE - PM-MEP 3KW MCIG

COURSE LEARNING OBJECTIVES

INTRODUCTION STATEMENT

Upon successful completion of this course, the trainee will have acquired the following Knowledge and Skills and be able to:

Knowledge

1. Describe the generator set course content, schedule, and objective.
2. Describe the generator set, identify the major systems and basic components, and describe the function of each.
3. Describe the organization, content, use and safety precautions in the generator set documentation.
4. Describe the theory necessary to support and understand the operation of the generator set's major systems.
5. Describe the format of PMCS table and tell how it is used.
6. Describe the preventive maintenance procedures for the generator set as they pertain to maintenance intervals.
7. Describe personnel and equipment safety precautions that must be observed when operating or maintaining the generator set.
8. Describe generator set troubleshooting and fault isolation procedures.
9. Describe unit and direct support level removal and installation procedures for the generator set's major systems and components.
10. Describe unit and direct support level removal and installation

procedures for the diesel engine's major systems and components.

Skills

1. Perform PMCS procedures on the generator set.
2. Perform startup and shutdown procedures on the generator set.
3. Perform troubleshooting on the generator set.
4. Perform unit and direct support level maintenance procedures on the generator set's major systems and components.
5. Perform unit and direct support level maintenance procedures on the generator set's diesel engine assembly.

SECTION 1. INTRODUCTION, GENERATOR SET DESCRIPTION, AND PRINCIPLES OF OPERATION

<u>Topic No.</u>	<u>Topic Title</u>	<u>Page</u>
1-1	Course Introduction	1-1-1
1-1A	Technical Documentation	1-1-4
1-2	Description of Equipment and Principles of Operation	1-2-1

SECTION 1. INTRODUCTION, GENERATOR SET DESCRIPTION, AND PRINCIPLES OF OPERATION

Time: 0.25 HRS.

1-1. COURSE INTRODUCTION

TOPIC LEARNING OBJECTIVE

Upon successful completion of this topic, the trainee will be able to:

1. Describe the generator set course content, schedule, and objective.

TRAINEE PREPARATION

A. Trainee Support Material

1. None

B. Reference Publications

1. None

C. Reference Drawings

1. None

INSTRUCTOR PREPARATION

A. Review Assigned Trainee Material

B. Reference Publications

1. None

C. Training Materials Required

1. Overhead Projector
2. Transparencies 1-1-1 and 1-1-2
3. Trainee Guide

SECTION 1. INTRODUCTION, GENERATOR SET DESCRIPTION, AND PRINCIPLES OF OPERATION

1-1 COURSE INTRODUCTION

Discussion Point

Related Instructor Activity

1. Introduction

1. Introduce self and background.

- a. Course Conduct (Raise hands, ask questions)
- b. Regulations (Food, drink, smoking)
- c. Breaks (10 minutes per hour of training)
- d. Safety - in and out of classroom

a. Course Title

a. Show Transparency 1-1-1.

b. Course Content

(1) Reference Documentation

(1) Inventory reference documentation

(2) Trainee Guide

(2) Explain the use of Trainee Guide.

- Outline Sheets
- Diagram Sheets
- Assignment Sheets
- Job Sheets

SECTION 1. INTRODUCTION, GENERATOR SET DESCRIPTION, AND PRINCIPLES OF OPERATION

Discussion Point

Related Instructor Activity

(3) Testing	(3) Explain final testing.
c. Class Schedule	c. Distribute class schedule. Explain allotted time for each topic.
d. Course Objective	d. Show Transparency 1-1-2. Read course objective to trainees.
2. Review and Summary	
3. Assignments	3. None

SECTION 1. INTRODUCTION, GENERATOR SET DESCRIPTION, AND PRINCIPLES OF OPERATION

Time: 0.25 HRS.

1-1A. INTRODUCTION TO THE TECHNICAL DOCUMENTATION

TOPIC LEARNING OBJECTIVE

Upon successful completion of this topic the trainee will be able to:

1. Describe the organization, content, use, and safety precautions in the generator set documentation.

TRAINEE PREPARATION

- A. Trainee Support Material
 1. Trainee Guide
- B. Reference Publications
 1. Operator, Unit and Direct Support Maintenance Manual for the Generator Set, TM 9-6115-639-13
 2. Unit, Direct Support, and General Support Maintenance Manual for the Diesel Engine, TM 9-2815-257-24
 3. Repair Parts and Special Tools List (RPSTL) for the Generator Set, TM 9-6115-639-24P

4. Repair Parts and Special Tools List (RPSTL) for the Diesel Engine, TM 9-2815-257-24P

C. Reference Drawings

1. None

INSTRUCTOR PREPARATION

- A. Review Assigned Trainee Material
- B. Reference Publications
 1. TM 9-6115-639-13
 2. TM 9-2815-257-24
 3. TM 9-6115-639-24P
 4. TM 9-2815-257-24P
- C. Training Materials Required
 1. Trainee Guide

SECTION 1. INTRODUCTION, GENERATOR SET DESCRIPTION, AND PRINCIPLES OF OPERATION

1-1A. INTRODUCTION TO THE TECHNICAL DOCUMENTATION

Discussion Point

Related Instructor Activity

1. Topic Learning Objectives

2. Technical Documentation

- a. Operator, Unit and Direct Support Maintenance Manual for the Generator Set, TM 9-6115-639-13
- b. Unit, Direct Support, and General Support Maintenance Manual for the Diesel Engine, TM 9-2815-257-24
- c. Repair Parts and Special Tools List (RPSTL) for the Generator Set, TM 9-6115-639-24P
- d. Repair Parts and Special Tools List (RPSTL) for the Diesel Engine, TM 9-2815-257-24P

- a. Identify Technical Manuals.

Describe the differences between each manual. Tell what information and procedures are covered in each manual.

SECTION 1. INTRODUCTION, GENERATOR SET DESCRIPTION, AND PRINCIPLES OF OPERATION

Discussion Point

Related Instructor Activity

b. Organization

- (1) Chapters, sections, tables, and appendix format
- (2) Division of text / text between maintenance levels
- (3) Tasks and procedures authorized for the operator

- b. Refer students to the Generator Set Operation and Maintenance Manual TM 9-6115-639-13. Discuss each section listed in the Table of Contents. Explain the division of tasks among maintenance levels.

Refer students to the Generator Set RPSTL TM 9-6115-639-24P. Discuss each section listed in the Table of Contents. Tell how to use the RPSTL to identify a spare part or tool.

c. Content

d. Use

- (1) A guide for generator set operation and maintenance

SECTION 1. INTRODUCTION, GENERATOR SET DESCRIPTION, AND PRINCIPLES OF OPERATION

Discussion Point

Related Instructor Activity

- | | |
|---|---|
| e. Safety | e. Refer Trainees to Warning Summary in Generator Set Operation and Maintenance Manual, pages a, b, c, d. |
| (1) Notes - Denote essential information of special importance or interest to aid in job performance | |
| (2) Cautions - Denote conditions, practices or procedures that must be observed to avoid damage to, or destruction of, equipment. | |
| (3) Warnings - Denote conditions, practices or procedures that must be observed to avoid personal injury or loss of life. | |
| 3. Review and summary | |
| 4. Assignment | 4. None |

SECTION 1. INTRODUCTION, GENERATOR SET DESCRIPTION, AND PRINCIPLES OF OPERATION

Time: 0.50 HRS.

1-2. GENERATOR SET DESCRIPTION AND PRINCIPLES OF OPERATION

TOPIC LEARNING OBJECTIVE

Upon successful completion of this topic, the trainee will be able to:

1. Describe the generator set and identify the major systems and the principles operation for each.

TRAINEE PREPARATION

A. Trainee Support Material

1. Trainee Guide

B. Reference Publications

1. Operator, Unit and Direct Support Maintenance Manual for the Generator Set, TM 9-6115-639-13

C. Reference Drawings

1. None

INSTRUCTOR PREPARATION

A. Review Assigned Trainee Material

B. Reference Publications

1. TM 9-6115-639-13

C. Training Materials Required

1. Overhead Projector
2. Transparencies 1-2-1 through 1-2-10
3. Trainee Guide

SECTION 1. INTRODUCTION, GENERATOR SET DESCRIPTION, AND PRINCIPLES OF OPERATION

1-2. GENERATOR SET DESCRIPTION AND PRINCIPLES OF OPERATION

Discussion Point

Related Instructor Activity

1. Topic Learning Objectives

c. Show Transparencies 1-2-1

2. Generator Set Description

d.
(1) Review topic learning objectives

a. Size

(1) 3KW

(2) 60 Hz (MEP 831A) or 400 Hz (MEP 832A)

b. Features

(2) Describe differences between models

(1) The generator set is a fully enclosed, self contained, skid mounted, portable tactical quiet unit.

(2) Equipped with all control, instruments, and indicators required to operate the generator set in all conditions.

SECTION 1. INTRODUCTION, GENERATOR SET DESCRIPTION, AND PRINCIPLES OF OPERATION

Discussion Point

Related Instructor Activity

c. Basic Components

c. Show Transparency 1-2-2.

(1) Skid Base

Tell trainees all location references are given facing the control panel (front of generator set).

- (a) Supports generator set components
- (b) Slots for forklift
- (c) Lifting handles for movement by personnel
- (d) Tie down rings for security during transportation

d. Provide detailed information on each generator set assembly and major component. Ensure trainees know the location and use of each component.

(2) Enclosure

- (a) Encloses and protects unit from elements
- (b) Hinged cover for easy PMCS access
- (c) Insulated to reduce sound

SECTION 1. INTRODUCTION, GENERATOR SET DESCRIPTION, AND PRINCIPLES OF OPERATION

Discussion Point

Related Instructor Activity

(3) Engine

- (a) Single cylinder, air cooled, direct injection, four stroke, diesel engine
- (b) 6.7 horsepower output at 3600 RPM
- (c) Mounted to skid base with vibration isolators
- (d) Produces mechanical drive to permanent magnet generator to produce electricity

Identify and point out engine components. Ensure trainees know the location and use of each diesel engine component.

(4) Permanent Magnet Generator

- (a) Four three-phase isolated AC output windings
- (b) Voltage output proportional to engine speed
- (c) Mounted directly to engine crankshaft extension

(4)

Identify and point out permanent magnet generator. Describe the differences in current ratings for the MEP 831A (60 Hz) and MEP 832A (400 Hz) models of generator sets.

SECTION 1. INTRODUCTION, GENERATOR SET DESCRIPTION, AND PRINCIPLES OF OPERATION

Discussion Point

Related Instructor Activity

(5) Control Box Assembly

(5)

Identify and point out control box assembly.

- (a) Contains switches, indicators, and circuitry to control and monitor generator set operation
- (b) Hinged control panel allows access for maintenance
- (c) Fault indicator module alerts operator to generator set failure
- (d) Duplex convenience receptacle and ground fault circuit interrupter (GFCI) provided on 60 Hz model (MEP 831A)

(6) Output / Load Connections

(6)

Identify and point out output panel and NATO slave receptacle.

- (a) Load and ground connection terminals mounted on skid base, behind hinged panel
- (b) 24VDC NATO output slave receptacle

SECTION 1. INTRODUCTION, GENERATOR SET DESCRIPTION, AND PRINCIPLES OF OPERATION

Discussion Point

Related Instructor Activity

3. Major Systems and Principles of Operation

3. Show transparency 1-2-3.

a. Generator Set Starting System

Identify and point out starting system components. Describe, in detail, the function and operation of each component. Refer to the electrical schematics (FO-1) at the rear of the technical manual (TM 9-6115-639-13) for detailed information.

(1) START / RUN / STOP switch

(2) 24VDC battery

(3) Battery charging regulator

(4) Engine starter motor

(5) BATTLE SHORT switch (fault bypass operation)

(6) EMERGENCY STOP switch

(7) PREHEAT switch (cold weather operation)

(8) Engine recoil starter system (for manual start)

SECTION 1. INTRODUCTION, GENERATOR SET DESCRIPTION, AND PRINCIPLES OF OPERATION

Discussion Point

Related Instructor Activity

b. Fuel System

b. Show transparency 1-2-4.

(1) Generator set fuel tank

Identify and point out fuel system components on fuel system schematic (Figure 1-6, TM 9-6115-639-13). Describe, in detail, the function and operation of each component.

(2) Fuel level float switch (3 position)

Describe the types of fuel used in operation of the generator set. Tell where to locate the fuel capacity identification plate.

(3) No fuel shutdown mechanism

Describe the differences between operation using the generator set fuel tank and an auxiliary fuel source.

(4) Fuel transfer pumps (primary and auxiliary)

(5) Fuel filter / water separator

(6) Engine fuel injection pump

(7) Engine fuel injector

(8) Fuel return process

SECTION 1. INTRODUCTION, GENERATOR SET DESCRIPTION, AND PRINCIPLES OF OPERATION

Discussion Point

Related Instructor Activity

c. Generator Set / Engine Cooling Systems

(1) Generator set cooling system

- (a) AC cooling fans (60 Hz, MEP 831A)
- (b) DC cooling fans (400 Hz, MEP 832A)
- (c) Two cooling fans mounted in generator set enclosure activate at different temperatures
- (d) Two separate fan activation (temperature) switches

(2) Engine cooling system

- (a) Flywheel fan forces air over cylinder fins
- (b) Fan encased to prevent accidental contact

- c. Show transparency 1-2-5
- c. Identify cooling system components. Describe, in detail, the function and operation of each component.

Describe the operation of the two temperature switches and two enclosure cooling fans.

SECTION 1. INTRODUCTION, GENERATOR SET DESCRIPTION, AND PRINCIPLES OF OPERATION

Discussion Point

Related Instructor Activity

d. Engine Lubrication System

d. Show transparency 1-2-6.

(1) Crankshaft driven oil pump

Identify and point out engine lubrication system components. Describe, in detail, the function and operation of each component.

(2) Crankcase oil sump (no pan on engine)

(3) Oil filter system

(4) Low oil pressure switch

(5) High temperature switch

e. Air Intake and Exhaust System

e. Show transparency 1-2-7.

(1) Air cleaner assembly

Identify and point out air cleaner and exhaust tube. Describe, in detail, the function and operation of each component.

(2) Exhaust tube

SECTION 1. INTRODUCTION, GENERATOR SET DESCRIPTION, AND PRINCIPLES OF OPERATION

Discussion Point

Related Instructor Activity

f. Governor Control System

- (1) Electric governor varies engine speed in proportion to kilowatt load
- (2) Power converter converts generator output
- (3) VOLTAGE ADJUST rheostat all voltage adjustment

f. Show transparency 1-2-8

f. Identify governor control system components. Describe, in detail, the function and operation of each component.

g. AC Electrical System

- (1) Permanent magnet generator
- (2) Power converter
- (3) CIRCUIT INTERRUPTER switch
- (4) AC circuit interrupter
- (5) Output / load terminal board

g. Show transparency 1-2-9

g. Direct students to the AC electrical schematic (FO-1), located in the back of TM 9-6115-639-13.

Identify and point out AC electrical system components on the schematic. Describe, in detail, the function and operation of each component.

Using the technical manual and schematic, describe AC electrical system operation during normal generator set startup, run, and shutdown sequences.

SECTION 1. INTRODUCTION, GENERATOR SET DESCRIPTION, AND PRINCIPLES OF OPERATION

Discussion Point

Related Instructor Activity

h. DC Electrical System

(1) 24VDC battery

(2) Battery charging regulator

(3) START / RUN / STOP switch

(4) Protective devices:

(a) Engine high temperature switch

(b) Engine low oil pressure switch

(c) Fault lockout relay

h. Show transparency

h. Direct students to the DC electrical schematic (FO-1), located in the back of TM 9-6115-639-13.

Identify and point out DC electrical system components on the schematic. Describe, in detail, the function and operation of each component.

Using the technical manual and schematic, describe DC electrical system operation during normal generator set startup, run, and shutdown sequences.

SECTION 1. INTRODUCTION, GENERATOR SET DESCRIPTION, AND PRINCIPLES OF OPERATION

Discussion Point

Related Instructor Activity

(d) Two short circuit relays

(e) AC circuit interrupter

(f) Fault indicator module

4. Review Summary

5. Assignment

5. None

MAINTENANCE COURSE INSTRUCTOR GUIDE - PM-MEP 3KW MCIG

SECTION 2. PMCS AND OPERATION

<u>Topic No.</u>	<u>Topic Title</u>	<u>Page</u>
2-1	Preventive Maintenance Checks and Services (PMCS)	2-1-1
2-2	Operation	2-2-1

SECTION 2. PMCS AND OPERATION

Time: 0.50 HRS.

2-1 PMCS

TOPIC LEARNING OBJECTIVE

Upon successful completion of this topic, the trainee will be able to:

1. Describe PMCS procedures on the generator set.

TRAINEE PREPARATION

A. Trainee Support Material

1. Trainee Guide

B. Reference Publications

1. Operator, Unit and Direct Support Maintenance Manual for the Generator Set, TM 9-6115-639-13
2. Unit, Direct Support, and General Support Maintenance Manual for the Diesel Engine, TM 9-2815-257-24

C. Reference Drawings

1. None

INSTRUCTOR PREPARATION

A. Review Assigned Trainee Material

B. Reference Publications

1. TM 9-6115-639-13
2. TM 9-2815-257-24

C. Training Materials Required

1. Generator Set
2. Trainee Guide

SECTION 2. PMCS AND OPERATION

2-1. PMCS

Discussion Point

Related Instructor Activity

1. Topic Learning Objectives

2. Preventive Maintenance Checks & Services for the Generator Set

a. Purpose

b. PMCS table

(1) Content

(2) Columns

(3) Use

2. Refer Trainees to Generator Set Operation and Maintenance Manual, Paragraph 4-6.

a. Discuss content and format of unit level PMCS. Describe the PMCS Table (each column). Emphasize Notes, Cautions, and Warnings.

SECTION 2. PMCS AND OPERATION

Discussion Point

Related Instructor Activity

- | | |
|---|--|
| c. Unit Level PMCS Intervals and Requirements | |
| (1) Operating Hour Intervals | (1) Discuss hours interval PMCS at the unit level. |
| 3. Preventive Maintenance Checks & Services for the Diesel Engine | 3. Refer Trainees to Diesel Engine Maintenance Manual, Paragraph 3-6.
a. Discuss content and format of unit level PMCS. Describe the PMCS Table (each column). Emphasize Notes, Cautions, and Warnings. |
| 4. Review and Summary | 4. None |
| 5. Assignment | |

SECTION 2. PMCS AND OPERATION

Time: 0.50 HRS.

2-2. OPERATION

TOPIC LEARNING OBJECTIVE

Upon successful completion of this topic, the trainee will be able to:

1. Perform startup, shutdown and PMCS procedures on the generator set.
2. Describe personnel and equipment safety precautions that must be observed when operating the generator set.

TRAINEE PREPARATION

- A. Trainee Support Material
 1. Trainee Guide
- B. Reference Publications
 1. Operator, Unit and Direct Support Maintenance Manual for the Generator Set, TM 9-6115-639-13
- C. Reference Drawings
 1. None

INSTRUCTOR PREPARATION

- A. Review Assigned Trainee Material
- B. Reference Publications
 1. TM 9-6115-639-13, Chapter 2
- C. Trainee Materials Required
 1. Trainee Guide
 2. Generator Set

SECTION 2. PMCS AND OPERATION

2-2. OPERATION

Discussion Point

Related Instructor Activity

- | | |
|-----------------------------------|--|
| 1. Topic Learning Objectives | |
| 2. Operation Sequence | 2. Reference Generator Set Operation and Maintenance Manual, Paragraphs 2-6 through 2-9. |
| a. Preparation for use | a. Demonstrate preparation for use. Emphasize proper procedures and safety precautions. |
| b. Initial adjustments and checks | b. Demonstrate initial adjustments and checks. Emphasize before operation (B) PMCS procedures. |
| c. Startup | c. Demonstrate startup procedure. Emphasize safety precautions. |
| d. Normal operation | d. Demonstrate normal operation procedure. Emphasize during operation (D) PMCS procedures. |
| 3. Shutdown | 3. Demonstrate normal shutdown procedure. Emphasize after operation (A) PMCS procedures. |

SECTION 2. PMCS AND OPERATION

Discussion Point

Related Instructor Activity

4. Operating Procedures.

4. Prepare generator set for operation by trainees.

- a. Direct trainees to operate the generator set as outlined in Job Sheet 2-2-1.
- b. Verify that the trainees observe safety precautions and answer all questions correctly.
- c. Supervise operation to ensure trainees perform in accordance with Job Sheet.
- d. Critique operation to check for trainees understanding.

5. Review Summary

6. Assignment

6. None

SECTION 3. TROUBLESHOOTING

<u>Topic No.</u>	<u>Topic Title</u>	<u>Page</u>
3-1	Generator Set Troubleshooting Procedures	3-1-1
3-2	Engine Troubleshooting Procedures	3-2-1

SECTION 3. TROUBLESHOOTING

Time: 2.00 HRS.

3-1. GENERATOR SET TROUBLESHOOTING PROCEDURES

TOPIC LEARNING OBJECTIVE

Upon successful completion of this topic, the trainee will be able to:

1. Locate and describe both unit and direct support level troubleshooting procedures for the generator set.
2. Perform unit level troubleshooting and fault isolation on the generator set.

TRAINEE PREPARATION

- A. Trainee Support Materials
 1. Trainee Guide
- B. Reference Publications
 1. Operator, Unit and Direct Support Maintenance Manual for the Generator Set, TM 9-6115-639-13
- C. Reference Drawings
 1. None

INSTRUCTOR PREPARATION

- A. Review Assigned Trainee Material
- B. Reference Publications
 1. Manual TM 9-6115-639-13
- C. Training Materials Required
 1. Trainee Guide
 2. Generator Set

SECTION 3. TROUBLESHOOTING

3-1. GENERATOR SET TROUBLESHOOTING PROCEDURES

Discussion Point

Related Instructor Activity

1. Topic Learning Objectives
 2. Troubleshooting Tables
 - a. Unit maintenance level
 - b. Direct support maintenance level
 3. Troubleshooting the Generator Set:
 - Engine Faults
 - Fuel System Faults
 - Generator Set Faults
 - Malfunction Faults
- a. Refer to the Generator Set Operation and Maintenance Manual, Paragraph 4-9. Discuss use of the Malfunction Index (Table 4-3) and Troubleshooting Table (Table 4-4).
 - b. Refer to the Generator Set Operation and Maintenance Manual, Paragraph 5-5. Discuss use of the Malfunction Index (Table 5-1) and Troubleshooting Table (Table 5-2).
3. Prepare the generator set for troubleshooting by the trainees. Select and insert faults from the Fault Applicability List.
 - a. Direct trainees to perform troubleshooting as outlined in Job Sheet 3-1-1.

SECTION 3. TROUBLESHOOTING

Discussion Point

Related Instructor Activity

- | | |
|-------------------|---|
| | <ul style="list-style-type: none">b. Supervise troubleshooting procedure to ensure trainees perform in accordance with Job Sheet 3-1-1.c. Verify that trainee observes safety precautions.d. Critique troubleshooting to check trainee understanding. |
| 4. Review Summary | |
| 5. Assignment | 5. None |

SECTION 3. TROUBLESHOOTING

Time: 2.00 HRS.

3-2. ENGINE TROUBLESHOOTING PROCEDURES

TOPIC LEARNING OBJECTIVE

Upon successful completion of this topic, the trainee will be able to:

1. Locate and describe both unit and direct support level troubleshooting procedures for the diesel engine.
2. Perform unit level troubleshooting and fault isolation on the diesel engine.

TRAINEE PREPARATION

- A. Trainee Support Materials
 1. Trainee Guide
- B. Reference Publications
 1. Unit, Direct Support, and General Support Maintenance Manual for the Diesel Engine, TM 9-2815-257-24
- C. Reference Drawings
 1. None

INSTRUCTOR PREPARATION

- A. Review Assigned Trainee Material
- B. Reference Publications
 1. Manual TM 9-2815-257-24
- C. Training Materials Required
 1. Trainee Guide
 2. Generator Set

SECTION 3. TROUBLESHOOTING

3-2. ENGINE TROUBLESHOOTING PROCEDURES

Discussion Point

Related Instructor Activity

1. Topic Learning Objectives
 2. Troubleshooting Tables
 - a. Unit maintenance level
 - b. Direct support maintenance level
 3. Troubleshooting the Engine
 - a. Refer to the Diesel Engine Assembly Maintenance Manual, Paragraph 3-9. Discuss use of the Malfunction Index (Table 3-2) and Troubleshooting Table (Table 3-3).
 - b. Refer to the Diesel Engine Assembly Maintenance Manual, Paragraph 4-5. Discuss use of the Malfunction Index (Table 4-1) and Troubleshooting Table (Table 4-2).
3. Prepare the engine for troubleshooting by the trainees. Select fault from the Fault Applicability List.
 - a. Direct trainees to perform troubleshooting as outlined in Job Sheet 3-2-1.

SECTION 3. TROUBLESHOOTING

Discussion Point

Related Instructor Activity

- | | |
|-------------------|---|
| | <ul style="list-style-type: none">b. Supervise troubleshooting procedure to ensure trainees perform in accordance with Job Sheet 3-2-1.c. Verify that trainee observes safety precautions.d. Critique troubleshooting to check trainee understanding. |
| 4. Review Summary | |
| 5. Assignment | 5. None |

SECTION 4. DIESEL ENGINE MAINTENANCE, UNIT MAINTENANCE LEVEL

<u>Topic No.</u>	<u>Topic Title</u>	<u>Page</u>
4-1	Fuel System	4-1-1
4-2	Lubrication System	4-2-1
4-3	Air Intake and Exhaust System	4-3-1

SECTION 4. DIESEL ENGINE MAINTENANCE, UNIT MAINTENANCE LEVEL

Time: 2.00 HRS.

4-1. FUEL SYSTEM

TOPIC LEARNING OBJECTIVE

Upon successful completion of this topic, the trainee will be able to:

1. Describe the procedures required to maintain the diesel engine fuel system at the unit and direct support maintenance levels.
2. Perform unit level maintenance on the fuel system.

TRAINEE PREPARATION

- A. Trainee Support Materials
 1. Trainee Guide
- B. Reference Publications
 1. Unit, Direct Support, and General Support Maintenance Manual for the Diesel Engine, TM 9-2815-257-24
- C. Reference Drawings
 1. None

INSTRUCTOR PREPARATION

- A. Review Assigned Trainee Material
- B. Reference Publications
 1. Manual TM 9-2815-257-24
- C. Training Materials Required
 1. Trainee Guide
 2. Generator Set

SECTION 4. DIESEL ENGINE MAINTENANCE, UNIT MAINTENANCE LEVEL

4-1. FUEL SYSTEM

Discussion Point

Related Instructor Activity

1. Topic Learning Objectives

2. Safety Precautions

3. Maintenance Task Description

a. Fuel injector nozzle (unit level)

b. Fuel injector nozzle (direct support level)

c. Fuel injection pump (unit level)

d. Fuel pipes and lines (unit level)

2. Reference technical manual warning statements for fuel system components. Refer trainees to the Warning Summary at the front of the manual for general Warnings regarding the handling of fuel.

3. Describe the engine fuel system components and discuss the authorized level or maintenance for each component.

Use the alphabetical index (located at the back of the manual) or the chapter index (located at the front of each chapter) to locate the maintenance task for each component at each maintenance level.

Discuss each maintenance procedure, including the removal, cleaning, inspection, repair, and reinstallation of the component.

Emphasize proper procedures and observe all Warning and Caution statements.

SECTION 4. DIESEL ENGINE MAINTENANCE, UNIT MAINTENANCE LEVEL

Discussion Point

Related Instructor Activity

4. Maintenance Procedures

4. Prepare the engine for unit level maintenance procedure performance by the trainees.
 - a. Direct trainees to perform unit level maintenance on the following items as described in the technical manual.
 - (1) Fuel injector
 - (2) Fuel lines and fittings associated with the fuel injector
 - b. Verify that the trainees observe all safety precautions.
 - c. Supervise task performance to ensure that all procedures are accomplished in accordance with the technical manual.
 - d. Critique performance to check for trainee understanding.

5. Review and Summary

6. Assignment

6. None

SECTION 4. DIESEL ENGINE MAINTENANCE, UNIT MAINTENANCE LEVEL

Time: 1.50 HRS.

4-2. LUBRICATION SYSTEM

TOPIC LEARNING OBJECTIVE

Upon successful completion of this topic, the trainee will be able to:

1. Describe the procedures required to maintain the diesel engine lubrication system at the unit and direct support maintenance levels.
2. Perform unit level maintenance on the lubrication system.

TRAINEE PREPARATION

- A. Trainee Support Materials
 1. Trainee Guide
- B. Reference Publications
 1. Unit, Direct Support, and General Support Maintenance Manual for the Diesel Engine, TM 9-2815-257-24
- C. Reference Drawings
 1. None

INSTRUCTOR PREPARATION

- A. Review Assigned Trainee Material
- B. Reference Publications
 1. Manual TM 9-2815-257-24
- C. Training Materials Required
 1. Trainee Guide
 2. Generator Set

SECTION 4. DIESEL ENGINE MAINTENANCE, UNIT MAINTENANCE LEVEL

4-2. LUBRICATION SYSTEM

Discussion Point

Related Instructor Activity

1. Topic Learning Objectives

2. Safety Precautions

3. Maintenance Task Description

a. Oil fill cap (unit level)

b. Oil filter (unit level)

c. Oil pump (direct support level)

d. Oil drain hose and valve (unit level)

2. Reference technical manual warning statements for oil system components. Refer trainees to the Warning Summary at the front of the manual for general Warnings regarding the handling of oil.

3. Describe the engine lube system components and discuss the authorized level or maintenance for each component.

Use the alphabetical index (located at the back of the manual) or the chapter index (located at the front of each chapter) to locate the maintenance task for each component at each maintenance level.

Discuss each maintenance procedure, including the removal, cleaning, inspection, repair, and reinstallation of the component.

Emphasize proper procedures and observe all Warning and Caution statements.

SECTION 4. DIESEL ENGINE MAINTENANCE, UNIT MAINTENANCE LEVEL

Discussion Point

Related Instructor Activity

4. Maintenance Procedures

4. Prepare the engine for unit level maintenance procedure performance by the trainees.
 - a. Direct trainees to perform unit level maintenance on the following items as described in the technical manual.
 - (1) Oil fill cap
 - (2) Oil strainer
 - b. Verify that the trainees observe all safety precautions.
 - c. Supervise task performance to ensure that all procedures are accomplished in accordance with the technical manual.
 - d. Critique performance to check for trainee understanding.

5. Review and Summary

6. Assignment

6. None

SECTION 4. DIESEL ENGINE MAINTENANCE, UNIT MAINTENANCE LEVEL

Time: 1.50 HRS.

4-3. AIR INTAKE AND EXHAUST SYSTEM

TOPIC LEARNING OBJECTIVE

Upon successful completion of this topic, the trainee will be able to:

1. Describe the procedures required to maintain the diesel engine air intake and exhaust system at the unit and direct support maintenance levels.
2. Perform unit level maintenance on the air intake and exhaust system.

TRAINEE PREPARATION

- A. Trainee Support Materials
 1. Trainee Guide
- B. Reference Publications
 1. Unit, Direct Support, and General Support Maintenance Manual for the Diesel Engine, TM 9-2815-257-24
- C. Reference Drawings
 1. None

INSTRUCTOR PREPARATION

- A. Review Assigned Trainee Material
- B. Reference Publications
 1. Manual TM 9-2815-257-24
- C. Training Materials Required
 1. Trainee Guide
 2. Generator Set

SECTION 4. DIESEL ENGINE MAINTENANCE, UNIT MAINTENANCE LEVEL

4-2. AIR INTAKE AND EXHAUST SYSTEM

Discussion Point

Related Instructor Activity

- | | |
|---|--|
| <p>1. Topic Learning Objectives</p> | |
| <p>2. Safety Precautions</p> | <p>2. Reference technical manual warning statements for engine maintenance. Refer trainees to the Warning Summary at the front of the manual for general Warnings.</p> |
| <p>3. Maintenance Task Description</p> <p>a. Air cleaner element (unit level)</p> <p>b. Air cleaner assembly (unit level)</p> <p>c. Exhaust pipe (direct support level)</p> | <p>3. Describe the engine air intake and exhaust system and discuss the authorized level or maintenance for each component.</p> <p>Use the alphabetical index (located at the back of the manual) or the chapter index (located at the front of each chapter) to locate the maintenance task for each component at each maintenance level.</p> <p>Discuss each maintenance procedure, including the removal, cleaning, inspection, repair, and reinstallation of the component.</p> <p>Emphasize proper procedures and observe all Warning and Caution statements.</p> |

SECTION 4. DIESEL ENGINE MAINTENANCE, UNIT MAINTENANCE LEVEL

Discussion Point

Related Instructor Activity

4. Maintenance Procedures

4. Prepare the engine for unit level maintenance procedure performance by the trainees.
 - a. Direct trainees to perform unit level maintenance on the following items as described in the technical manual.
 - (1) Air filter element
 - (2) Air filter assembly
 - b. Verify that the trainees observe all safety precautions.
 - c. Supervise task performance to ensure that all procedures are accomplished in accordance with the technical manual.
 - d. Critique performance to check for trainee understanding.

5. Review and Summary

6. Assignment

6. None

SECTION 5. GENERATOR SET MAINTENANCE, UNIT MAINTENANCE LEVEL

<u>Topic No.</u>	<u>Topic Title</u>	<u>Page</u>
5-1	Fuel System	5-1-1
5-2	Controls and Indicators	5-2-1
5-3	Enclosure Assembly	5-3-1

SECTION 5. GENERATOR SET MAINTENANCE, UNIT MAINTENANCE LEVEL

Time: 1.50 HRS.

5-1. FUEL SYSTEM

TOPIC LEARNING OBJECTIVE

Upon successful completion of this topic, the trainee will be able to:

1. Describe the procedures required to maintain the generator set fuel system at the unit and direct support maintenance levels.
2. Perform unit level maintenance on the fuel system.

TRAINEE PREPARATION

- A. Trainee Support Materials
 1. Trainee Guide
- B. Reference Publications
 1. Operator, Unit and Direct Support Maintenance Manual for the Generator Set, TM 9-6115-639-13
- C. Reference Drawings
 1. None

INSTRUCTOR PREPARATION

- A. Review Assigned Trainee Material
- B. Reference Publications
 1. Manual TM 9-6115-639-13
- C. Training Materials Required
 1. Trainee Guide
 2. Generator Set

SECTION 5. GENERATOR SET MAINTENANCE, UNIT MAINTENANCE LEVEL

5-1. FUEL SYSTEM

Discussion Point

Related Instructor Activity

- | | |
|--|---|
| 1. Topic Learning Objectives | |
| 2. Safety Precautions | 2. Reference technical manual warning statements for fuel system components. Refer trainees to the Warning Summary at the front of the manual for general Warnings regarding the handling of fuel. |
| 3. Maintenance Task Description | 3. Describe the generator set fuel system components and discuss the authorized level or maintenance for each component. |
| a. Fuel tank (unit level) | Use the alphabetical index (located at the back of the manual) or the chapter index (located at the front of each chapter) to locate the maintenance task for each component at each maintenance level. |
| b. Fuel level float switch (unit level) | Discuss each maintenance procedure, including the removal, cleaning, inspection, repair, and reinstallation of the component. |
| c. Fuel gauge sender (unit level) | Emphasize proper procedures and observe all Warning and Caution statements. |
| d. Fuel level gauge (unit level) | |
| e. Fuel filter / water separator (unit level) | |
| f. Fuel pump assemblies (primary and auxiliary) (unit level) | |

SECTION 5. GENERATOR SET MAINTENANCE, UNIT MAINTENANCE LEVEL

Discussion Point

Related Instructor Activity

4. Maintenance Procedures

4. Prepare the generator set for unit level maintenance procedure performance by the trainees.
 - a. Direct trainees to perform unit level maintenance on the following items as described in the technical manual.
 - (1) Fuel filter/water separator
 - (2) Auxiliary fuel pump
 - (3) Fuel injection pump
 - b. Verify that the trainees observe all safety precautions.
 - c. Supervise task performance to ensure that all procedures are accomplished in accordance with the technical manual.
 - d. Critique performance to check for trainee understanding.

5. Review and Summary

6. Assignment

6. None

SECTION 5. GENERATOR SET MAINTENANCE, UNIT MAINTENANCE LEVEL

Time: 2.00 HRS.

5-2. CONTROLS AND INDICATORS

TOPIC LEARNING OBJECTIVE

Upon successful completion of this topic, the trainee will be able to:

1. Describe the procedures required to maintain the generator set controls and indicators at the unit and direct support maintenance levels.
2. Perform unit level maintenance on the controls and indicators.

TRAINEE PREPARATION

- A. Trainee Support Materials
 1. Trainee Guide
- B. Reference Publications
 1. Operator, Unit and Direct Support Maintenance Manual for the Generator Set, TM 9-6115-639-13
- C. Reference Drawings
 1. None

INSTRUCTOR PREPARATION

- A. Review Assigned Trainee Material
- B. Reference Publications
 1. Manual TM 9-6115-639-13
- C. Training Materials Required
 1. Trainee Guide
 2. Generator Set

SECTION 5. GENERATOR SET MAINTENANCE, UNIT MAINTENANCE LEVEL

5-2. CONTROLS AND INDICATORS

Discussion Point

Related Instructor Activity

- | | |
|---|---|
| 1. Topic Learning Objectives | |
| 2. Safety Precautions | 2. Reference technical manual warning statements for electrical system components. Refer trainees to the Warning Summary at the front of the manual for general Warnings regarding the handling of electrical components. |
| 3. Maintenance Task Description | 3. Describe the generator set controls and indicators and discuss the authorized level or maintenance for each component. |
| a. Control box assembly (unit level) | Use the alphabetical index (located at the back of the manual) or the chapter index (located at the front of each chapter) to locate the maintenance task for each component at each maintenance level. |
| b. Control panel assembly (unit level) | Discuss each maintenance procedure, including the removal, cleaning, inspection, repair, and reinstallation of the component. |
| c. Volt and frequency meters (unit level) | Emphasize proper procedures and observe all Warning and Caution statements. |
| d. Operator switches (unit level) | |
| e. Emergency stop switch (unit level) | |
| f. DC circuit breaker (unit level) | |

SECTION 5. GENERATOR SET MAINTENANCE, UNIT MAINTENANCE LEVEL

Discussion Point

Related Instructor Activity

- g. Voltage adjust rheostat (unit level)
- h. Battery charging regulator (unit level)
- i. GFCI (unit level)
- j. NATO slave receptacle (unit level)
- k. Fault indicator module (unit level)
- l. Engine temperature switch (unit level)
- m. Engine oil pressure switch (unit level)

SECTION 5. GENERATOR SET MAINTENANCE, UNIT MAINTENANCE LEVEL

Discussion Point

Related Instructor Activity

4. Maintenance Procedures

4. Prepare the generator set for unit level maintenance procedure performance by the trainees.
 - a. Direct trainees to perform unit level maintenance on the following items as described in the technical manual.
 - (1) Emergency stop switch
 - (2) Battery charging regulator
 - (3) NATO slave receptacle
 - (4) Engine temperature switch
 - b. Verify that the trainees observe all safety precautions.
 - c. Supervise task performance to ensure that all procedures are accomplished in accordance with the technical manual.
 - d. Critique performance to check for trainee understanding.

5. Review and Summary

6. Assignment

6. None

SECTION 5. GENERATOR SET MAINTENANCE, UNIT MAINTENANCE LEVEL

Time: 1.50 HRS.

5-3. ENCLOSURE ASSEMBLY

TOPIC LEARNING OBJECTIVE

Upon successful completion of this topic, the trainee will be able to:

1. Describe the procedures required to maintain generator set enclosure assembly components at the unit and direct support maintenance levels.
2. Perform unit level maintenance on the enclosure assembly.

TRAINEE PREPARATION

- A. Trainee Support Materials
 1. Trainee Guide
- B. Reference Publications
 1. Operator, Unit and Direct Support Maintenance Manual for the Generator Set, TM 9-6115-639-13
- C. Reference Drawings
 1. None

INSTRUCTOR PREPARATION

- A. Review Assigned Trainee Material
- B. Reference Publications
 1. Manual TM 9-6115-639-13
- C. Training Materials Required
 1. Trainee Guide
 2. Generator Set

SECTION 5. GENERATOR SET MAINTENANCE, UNIT MAINTENANCE LEVEL

5-3. ENCLOSURE ASSEMBLY

Discussion Point

Related Instructor Activity

- | | |
|---|---|
| <p>1. Topic Learning Objectives</p> | |
| <p>2. Safety Precautions</p> | <p>2. Reference technical manual warning statements for electrical system components. Refer trainees to the Warning Summary at the front of the manual for general Warnings regarding maintenance of the generator set.</p> |
| <p>3. Maintenance Task Description</p> | <p>3. Describe the generator set enclosure assembly components and discuss the authorized level or maintenance for each component.</p> |
| <p>a. Main access cover (unit level)</p> | <p>Use the alphabetical index (located at the back of the manual) or the chapter index (located at the front of each chapter) to locate the maintenance task for each component at each maintenance level.</p> |
| <p>b. Cover latches, hinge, and insulation (unit level)</p> | <p>Discuss each maintenance procedure, including the removal, cleaning, inspection, repair, and reinstallation of the component.</p> |
| <p>c. Enclosure cooling fans (unit level)</p> | <p>Emphasize proper procedures and observe all Warning and Caution statements.</p> |
| <p>d. Cooling fan temperature switches (unit level)</p> | |

SECTION 5. GENERATOR SET MAINTENANCE, UNIT MAINTENANCE LEVEL

Discussion Point

Related Instructor Activity

4. Maintenance Procedures

4. Prepare the generator set for unit level maintenance procedure performance by the trainees.
 - a. Direct trainees to perform unit level maintenance on the following items as described in the technical manual.
 - (1) Main access cover
 - (2) Enclosure cooling fan (one)
 - (3) Cooling fan temperature switch (one)
 - b. Verify that the trainees observe all safety precautions.
 - c. Supervise task performance to ensure that all procedures are accomplished in accordance with the technical manual.
 - d. Critique performance to check for trainee understanding.

5. Review and Summary

6. Assignment

6. None

MAINTENANCE COURSE INSTRUCTOR GUIDE - PM-MEP 3KW MCIG

MASTER MATERIALS LIST

COURSE: Maintenance Course, 3KW Tactical Quiet Generator Set

CLASS SIZE: As per the formal schools catalog

A. TEXTS

<u>Doc No.</u>	<u>Title</u>	<u>Per Tr.</u>	<u>Per Inst.</u>	<u>Per Cl.</u>
PM-MEP 3KW	Maintenance Course Instructor Guide	0	1	2
PM-MEP 3KW	Maintenance Course Trainee Guide	1	1	10

B. REFERENCES

<u>Doc No.</u>	<u>Title</u>	<u>Per Tr.</u>	<u>Per Inst.</u>	<u>Per Cl.</u>
TM 9-6115-639-13	Operator, Unit and Direct Support Maintenance Manual, 3KW Tactical Quiet Generator Set	1	1	10
TM 9-2815-257-24	Unit, Direct Support, and General Support Maintenance Manual, Diesel Engine	1	1	10
TM 9-6115-639-24P	Repair Parts and Special Tools List (RPSTL), Generator Set	1	1	10
TM 9-2815-257-24P	Repair Parts and Special Tools List (RPSTL), Diesel Engine	1	1	10

MAINTENANCE COURSE INSTRUCTOR GUIDE - PM-MEP 3KW MCIG

C. EQUIPMENT

<u>Item No.</u>	<u>Nomenclature</u>	<u>Part No.</u>	<u>CAGE</u>	<u>Per Tr.</u>	<u>Per Inst.</u>	<u>Per Cl.</u>
1	3KW Generator Set	MEP 831 / 832	30554	0	---	1
2	Overhead Projector	---	---	0	---	1
3	Cleaning Cloth	---	---	0	1	2
4	Engine Oil	Note 1		0	1	1
5	Diesel Fuel	Note 1		0	1	1
6	Projector Screen	---	---	0	---	1
7	Podium / Lecture Stand	---	---	0	---	1
8	Table, 3' x 6'	---	---	0	---	1
9	Tool Kit, General Mechanics Automotive	5180-00-177-7033	---	0	1	2
10	Shop Equipment, Automotive Maintenance and Repair, Org Level Common No. 1	4910-00-754-0654	---	0	---	1
11	Gloves, Rubber	8415-00-266-8677	---	0	1	2
12	Goggles, Industrial	4240-00-266-8676	---	0	1	2
13	Grounding Source	---	---	0	1	2

Note 1: Oil and fuel requirements will vary depending upon climactic conditions. Consult fuel capacity and oil capacity plates for exact requirements and specifications.

MAINTENANCE COURSE INSTRUCTOR GUIDE - PM-MEP 3KW MCIG

D. TRANSPARENCIES

<u>Trans No.</u>	<u>Title</u>	<u>Per Class</u>	<u>Source</u>	<u>Fig No.</u>
1-1-1	Course Title	1	---	---
1-1-2	Course Objective	1	---	---
1-2-1	Generator Set Systems and Components	1	TM 9-6115-639-13	1-2
1-2-2	Engine / Generator / Skid Base Assembly	1	TM 9-6115-639-13	1-3
1-2-3	Generator Set Starting System	1	TM 9-6115-639-13	1-5
1-2-4	Fuel System	1	TM 9-2815-257-24	2-2
1-2-5	Generator Set Cooling System	1	TM 9-6115-639-13	
1-2-6	Engine Lubrication System	1	TM 9-2815-257-24	
1-2-7	Air Intake and Exhaust System	1	TM 9-2815-527-24	
1-2-8	Governor Control System	1	TM 9-2815-527-24	
1-2-9	AC Electrical System	1	TM 9-6115-639-13	
1-2-10	DC Electrical System	1	TM 9-6115-639-13	

MAINTENANCE COURSE INSTRUCTOR GUIDE - PM-MEP 3KW MCIG

FAULT APPLICABILITY LIST

<u>Part</u>	<u>Sect.</u>	<u>TOS</u>	<u>Equipment</u>	<u>Function Faulted</u>	<u>Fault No.</u>	<u>Document</u>
			Generator Set	Loose battery cable	1	TM 9-6115-639-13
			Generator Set	Fault lockout relay K12	2	TM 9-6115-639-13
			Generator Set	Power converter connection	3	TM 9-6115-639-13
			Generator Set	Relay K8	4	TM 9-6115-639-13
			Generator Set	Emergency stop switch	5	TM 9-6115-639-13
			Generator Set	Fault module connection	6	TM 9-6115-639-13
			Generator Set	Diode CR3	7	TM 9-6115-639-13
			Generator Set	Preheat switch	8	TM 9-6115-639-13
			Generator Set	Emergency stop switch	9	TM 9-6115-639-13
			Generator Set	Frequency meter connection	10	TM 9-6115-639-13
			Generator Set	Battle short switch	11	TM 9-6115-639-13
			Generator Set	GFCI connection	12	TM 9-6115-639-13
			Generator Set	Regulator fuse FU1	13	TM 9-6115-639-13
			Generator Set	Temp switch S20	14	TM 9-6115-639-13
			Generator Set	Fan B3 connection	15	TM 9-6115-639-13

MAINTENANCE COURSE INSTRUCTOR GUIDE - PM-MEP 3KW MCIG

FAULT APPLICABILITY LIST (continued)

<u>Part</u>	<u>Sect.</u>	<u>TOS</u>	<u>Equipment</u>	<u>Function Faulted</u>	<u>Fault No.</u>	<u>Document</u>
			Generator Set	Filter / water separator	16	TM 9-6115-639-13
			Generator Set	N/A - do not simulate	17	TM 9-6115-639-13
			Generator Set	Clogged cylinder fins	18	TM 9-6115-639-13
			Generator Set	Engine oil filter	19	TM 9-6115-639-13
			Generator Set	Fuel float switch connection	20	TM 9-6115-639-13
			Engine	Injection pump fuel hose	1	TM 9-2815-257-24
			Engine	Injector nozzle	2	TM 9-2815-257-24
			Engine	Governor spring	3	TM 9-2815-257-24
			Engine	Clogged cooling air inlet	4	TM 9-2815-257-24
			Engine	Governor spring	5	TM 9-2815-257-24
			Engine	N/A - do not simulate	6	TM 9-2815-257-24
			Engine	Injection timing	7	TM 9-2815-257-24
			Engine	Injector nozzle	8	TM 9-2815-257-24

**MAINTENANCE COURSE INSTRUCTOR GUIDE - PM-MEP 3KW MCIG
ANSWER SHEET**

Instruction Sheet Type and Number

Question Number and Answer