

Training and Evaluation Outline Report

Status: Approved

07 Oct 2014

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Task Number: 05-PLT-5701

Task Title: Install Low-Voltage, Electrical-Power Distribution Equipment

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

Destruction Notice: None

Foreign Disclosure: FD1 - This training product has been reviewed by the training developers in coordination with the Fort Leonard Wood, MSCoE foreign disclosure officer. This training product can be used to instruct international military students from all approved countries without restrictions.

Supporting Reference(s):

Step Number	Reference ID	Reference Name	Required	Primary
	ATP 5-19 (Change 001 09/08/2014 78 Pages)	RISK MANAGEMENT http://armypubs.army.mil/doctrine/DR_pubs/dr_a/pdf/atp5_19.pdf	Yes	No
	EM 385-1-1	Safety and Health Requirements.	Yes	No
	NESC®	National Electrical Safety Code. 2012 Edition	Yes	No
	NETA™	Maintenance Testing Specifications for Electrical Power Distribution Equipment & Systems. 2007	Yes	No
	NFPA 70	National Electrical Code	Yes	No
	NFPA 70E	Standard for Electrical Safety Requirements for Employee Workplaces. 2004	Yes	No
	NTRP 4-04.2.5/TM 3-34.42/AFPAM 32-1020/MCRP 3-17.7F	Construction Project Management (HTTPS://NDLS.NWDC.NAVY.MIL) (https://armypubs.us.army.mil/doctrine/DR_pubs/dr_aa/pdf/tm3_34x42_PH_Navy.pdf)	Yes	No
	TB 43-0142	SAFETY INSPECTION AND TESTING OF LIFTING DEVICES	Yes	No
	TM 3-34.45	ENGINEER PRIME POWER OPERATIONS	Yes	Yes
	TM 3-34.86	Rigging Techniques, Procedures, and Applications (MCRP 3-17.7)	Yes	No
	TM 43-0156	DEPOT PACKAGING, DEPRESERVATION AND FIELD PACKAGING INSTRUCTIONS FOR NONTACTICAL GENERATOR SETS AND POWER PLANTS; GENERATOR SET, 700 KW, ELECTRIC (NSN 6115-00-596-3405); GENERATOR SET, 750 KW, ELECTRIC (6	Yes	No
	TM 5-6120-250-12	OPERATORS AND ORGANIZATIONAL MAINTENANCE MANUAL FOR SUBSTATIONS, TRAILER MTD, 500 KVA, AC, 4160-416Y/240 V;208Y/120 V, 3 PHASE, 50/60 HZ (AVIONICS MODEL 950-2200A) (FSN 6120-422-1047)	Yes	No
	TM 9-6115-604-12	Operator and Unit Maintenance Manual for Generator Set, Diesel Engine Driven, Air Transportable Skid Mounted, 750 kW, 3 Phase, 4 Wire, 2400/4160 and 2200/3800 Volts (DOD Model MEP-208A) Class Prime Utility . . . NAVFAC P-8-6-33-12.	Yes	No

Conditions: The element is in a contemporary operating environment and is directed to install a low-voltage electrical power distribution system in support of either military or civilian operations. The element has all personnel, tools and equipment assigned by Table of Organization and Equipment (TOE). The Bill of Materials (BOM), wiring diagrams and construction plans and specifications are provided. Work site security is provided by the supported unit.

Note: The Commander must still determine at what level of training they would want the element to perform. Crawl, walk or run. This can only be determined after consideration as to the units training level.

The Commander prior to evaluating an element in the conduct of the task must determine if it will be conducted in a Live, Virtual, or Constructive environment, additionally it must also be determined which condition as described below that the element will conduct the task. The selection made for

this task is at a trained level of proficiency. The commander must determine which of the environments below will best suit the unit and the proficiency level at which the unit is. When conducting crawl or walk level training units should not increase the intensity until the unit has achieved the standards and then unit trainers should include variables that increase proficiency in all conditions.

Note: The condition statement for this task is written assuming the highest training conditions reflected on the Task Proficiency matrix required for the evaluated unit to receive a "fully trained" (T) rating.

Note: Condition terms definitions:

Dynamic Operational Environment: Three or more operational and two or more mission variables change during the execution of the assessed task. Operational variables and threat Tactics, Techniques, and Procedures (TTPs) for assigned counter-tasks change in response to the execution of Blue Forces (BLUFOR) tasks.

Complex Operational Environment: Changes to four or more operational variables impact the chosen friendly COA/mission. Brigade and higher units require all eight operational variables of Political, Military, Economic, Social, Infrastructure, Information, Physical environment, and Time (PMESII-PT) to be replicated in varying degrees based on the task being trained.

Single threat: Regular, irregular, criminal or terrorist forces are present.

Hybrid threat: Diverse and dynamic combination of regular forces, irregular forces, and/or criminal elements all unified to achieve mutually benefiting effects.

This task should not be trained in MOPP 4.

Standards: The element installs the distribution system in a manner consistent with the mission requirements, the system design criteria, and approved procedures for installing low-voltage distribution systems and equipment.

Note: Leaders are defined as the Commander, Executive Officer, First Sergeant, Operations Sergeant, Platoon Leaders, Platoon Sergeants, Squad Leaders, and Team Leaders.

Live Fire Required: No

Objective Task Evaluation Criteria Matrix:

Plan and Prepare		Execute						Assess		
Operational Environment	Training Environment (L/V/C)	Training/Authorized	% of Leaders Present at	% of Soldiers Present at	External Eval	% Performance Measures 'GO'	% Critical Performance Measures 'GO'	% Leader Performance Measures 'GO'	Task Assessment	
SQD & PLT										
Dynamic (Single Threat)	IAW unit CATS statement.		>=85%	>=80%	Yes	>=91%	All	>=90%	T	
			75-84%			80-90%		80-89%	T-	
Static (Single Threat)			65-74%	75-79%	65-79%	No	51-64%	<All	<=79%	P
			60-64%	60-74%	<=50%					P-
			<=59%	<=59%	<=50%		U			
Day										

Remarks: None

Notes: All required references and technical manuals will be provided by the local command.

Safety Risk: Medium

Task Statements

Cue: None

DANGER

THIS TASK SHOULD ONLY BE PERFORMED BY QUALIFIED PERSONNEL WHO ARE KNOWLEDGEABLE IN THE INSTALLATION, OPERATION, AND MAINTENANCE OF ELECTRICAL POWER DISTRIBUTION EQUIPMENT AND ITS ASSOCIATED HAZARDS. FAILURE TO COMPLY MAY CAUSE PERMANENT INJURY OR DEATH.

Leaders have an inherent responsibility to conduct Risk Management to ensure the safety of all Soldiers and promote mission accomplishment.

WARNING

Risk management is the Army's primary decision-making process to identify hazards, reduce risk, and prevent both accidental and tactical loss. All Soldiers have the responsibility to learn and understand the risks associated with this task.

CAUTION

Identifying hazards and controlling risks across the full spectrum of Army functions, operations and activities is the responsibility of all Soldiers.

Performance Steps and Measures

NOTE: Assess task proficiency using the task evaluation criteria matrix.

NOTE: Asterisks (*) indicate leader steps; plus signs (+) indicate critical steps.

STEP/MEASURE	GO	NO-GO	N/A
+* 1. The element leader performs construction management functions.			
+ a. Coordinates with the interior electricians to determine proper service panel sizes.			
+ b. Verifies the BOM for the project, and submits changes necessary.			
+ c. Prepares the Critical Path Method (CPM) diagram for the project.			
+ d. Identifies and inventories available construction materials.			
+ e. Assembles work crews and assigns their responsibilities.			
+ f. Coordinates nonorganic construction support requirements.			
+* 2. The element leader develops a work site safety plan.			
+ a. Prepares a risk assessment matrix.			
+ b. Appoints work site safety Non-commissioned Officer (NCO) and ensures they receive requisite training.			
+ c. Identifies safe clearance requirements.			
+ 3. The element performs an equipment safety inspection.			
+ a. Inspects individual safety and protective equipment for serviceability.			
+ b. Inspects cable handling and laying equipment for serviceability.			
+ c. Inspects rigging equipment for serviceability.			
+ 4. The element reviews the cable routing plan, ensuring it avoids high traffic areas.			
+ 5. The element installs low-voltage power distribution equipment.			
+ a. Inventories the low-voltage, electrical power distribution equipment.			
+ b. Reviews the equipment manufacturer's literature, electrical construction prints, and wiring diagrams.			
+ c. Positions the equipment.			
(1) Locates a level surface capable of bearing the weight of the equipment.			
(2) Clears work site of brush, large rocks, and other items that might interfere with the operation, maintenance, or stability of the unit.			
(3) Ensures that the area is free from potential floods or washout from rains.			
(4) Places equipment with proper spacing and orientation according to the application specifications.			
(5) Performs Preventive Maintenance Checks and Services (PMCS) on equipment.			
(6) Grounds components that require grounding.			
+ 6. The element installs surface-laid low-voltage distribution system cables.			
+ a. Ensures circuit is deenergized and performs lockout and tagout procedures.			
+ b. Lays out the power cables.			
+ c. Installs low-voltage wiring In Accordance With (IAW) manufacturers' specifications, National Electrical Code (NEC) handbook, and wiring diagram or schematic.			
+ 7. The element installs protective barriers prior to energizing the grid.			
+ 8. The element performs an after installation inspection of the distribution system.			
+ 9. The element closes out lockout and tagout procedures by removing all locking and tagging devices.			
+ 10. The element performs starting operations checks on the Power Distribution Panels (PDPs).			
+ a. Ensures that all cables are connected and that all Circuit Breakers (CB) in the PDP are set to OFF.			
+ b. Sets the appropriate feeder CB connected to the System Distribution Cable (SDC) to ON.			
+ c. Sets the Main Circuit Breaker (CB1) to ON.			
+ d. Applies power to a load.			
(1) Monitors equipment to ensure proper operation.			
(2) Ensures that the load is balanced.			
+* 11. The element leader provides Quality Assurance (QA) and Quality Control (QC).			
+ a. Inspects the completed distribution system.			
+ b. Prepares or updates the low-voltage distribution system as built diagram.			
+* 12. The element leader prepares an After Action Report (AAR) and conducts a briefing IAW the unit Standing Operating Procedure (SOP).			

TASK PERFORMANCE / EVALUATION SUMMARY BLOCK							
ITERATION	1	2	3	4	5	M	TOTAL
TOTAL PERFORMANCE MEASURES EVALUATED							
TOTAL PERFORMANCE MEASURES GO							
TRAINING STATUS GO/NO-GO							

ITERATION: 1 2 3 4 5 M

COMMANDER/LEADER ASSESSMENT: T P U

Mission(s) supported: None

MOPP 4: Never

MOPP 4 Statement: None

NVG: Never

NVG Statement: None

Prerequisite Collective Task(s):

Step Number	Task Number	Title	Proponent	Status
	05-CO-5750	Provide Prime Power Support	05 - Engineers (Collective)	Approved

Supporting Collective Task(s):

Step Number	Task Number	Title	Proponent	Status
	05-PLT-5700	Install Nonstandard Low-Voltage, Electrical-Power Distribution Equipment	05 - Engineers (Collective)	Approved
	05-PLT-5725	Install Aerial Electrical Power Distribution Equipment	05 - Engineers (Collective)	Approved
	71-CO-5100	Conduct Troop Leading Procedures for Companies	71 - Combined Arms (Collective)	Approved
1.	05-CO-5001	Perform Project Management	05 - Engineers (Collective)	Approved
12.	05-CO-0018	Conduct Report Procedures	05 - Engineers (Collective)	Approved

OPFOR Task(s):

Task Number	Title	Status
71-CO-8502	OPFOR Execute an Ambush	Approved
71-CO-8504	OPFOR Execute a Reconnaissance Attack	Approved

Supporting Individual Task(s):

Step Number	Task Number	Title	Proponent	Status
	052-204-1113	Prepare a Manhole for Safe Entry	052 - Engineer (Individual)	Approved
	052-204-1114	Rescue an Injured Victim From a Utility Pole	052 - Engineer (Individual)	Approved
	052-204-1116	Rescue an Injured Victim From an Aerial-Bucket Truck	052 - Engineer (Individual)	Approved
	052-204-1117	Inspect Hot-Line Equipment	052 - Engineer (Individual)	Approved
	052-204-1119	Perform Operator Preventive-Maintenance Checks and Services (PMCS) on a Line Truck With Auxiliary Equipment	052 - Engineer (Individual)	Approved
	052-204-1120	Install a Grounding Set	052 - Engineer (Individual)	Approved
	052-204-1121	Install High-Intensity Lights and Ballasts	052 - Engineer (Individual)	Approved
	052-204-1124	Climb a Utility Pole	052 - Engineer (Individual)	Approved
	052-204-1125	Operate a Line Truck with Auxiliary Equipment	052 - Engineer (Individual)	Approved
	052-204-1127	Perform Groundman Duties	052 - Engineer (Individual)	Approved
	052-204-1201	Maintain Climbing Equipment	052 - Engineer (Individual)	Approved
	052-204-1202	Maintain Rigging/Hoisting Equipment	052 - Engineer (Individual)	Approved
	052-204-1203	Perform Operator Preventive-Maintenance Checks and Services (PMCS) on a Bucket/Material Handler Truck	052 - Engineer (Individual)	Approved
	052-204-1204	Tie Rope Knots and Splices	052 - Engineer (Individual)	Approved
	052-204-1206	Use a Line Truck with Trailer to Load and Unload Poles	052 - Engineer (Individual)	Approved
	052-204-1209	String Single Phase and Three Phase Overhead Conductors	052 - Engineer (Individual)	Approved
	052-204-1211	Install Distribution System Protection and Equipment (De-energized)	052 - Engineer (Individual)	Approved
	052-204-1213	Splice a Medium-Voltage URD Power Cable	052 - Engineer (Individual)	Approved
	052-204-1214	Terminate a Medium-Voltage URD Power Cable	052 - Engineer (Individual)	Approved
	052-204-2105	Perform a Power Pole Serviceability Inspection	052 - Engineer (Individual)	Approved
	052-204-2207	Conduct a Safety Briefing	052 - Engineer (Individual)	Approved
	052-204-2208	Conduct a Safety Inspection	052 - Engineer (Individual)	Approved
	052-204-2211	Develop a Bill of Materials (BOM) List	052 - Engineer (Individual)	Approved
	052-204-2212	Energize an Electrical Distribution System	052 - Engineer (Individual)	Approved
	052-204-2216	Perform Maintenance on Electrical Distribution Equipment	052 - Engineer (Individual)	Approved
	052-204-2217	Manage a Power Line Crew	052 - Engineer (Individual)	Approved
	052-204-2219	Supervise the Use of a Line Truck With Trailer to Load and Unload Utility Poles	052 - Engineer (Individual)	Approved
	052-204-2301	Perform Switching, Blocking and Tagging Procedures	052 - Engineer (Individual)	Approved
	052-204-2302	Install Distribution System Protection and Equipment (Energized)	052 - Engineer (Individual)	Approved
	052-205-2105	Perform Oxyfuel Cutting	052 - Engineer (Individual)	Approved
	052-206-2119	Perform an Insulation Resistance Test to Determine the Condition of the Insulation	052 - Engineer (Individual)	Approved
	052-210-1012	Manage the Construction/Repair of Electrical Utilities	052 - Engineer (Individual)	Approved
	052-210-1101	Manage Risk Management of Power Generation Systems	052 - Engineer (Individual)	Approved
	052-210-1102	Develop a Power Plant Safety SOP	052 - Engineer (Individual)	Approved
	052-210-1103	Manage Installation of a Medium Voltage Non-Aerial Air Switch	052 - Engineer (Individual)	Approved
	052-210-1104	Manage Lock out and Tag out Procedures	052 - Engineer (Individual)	Approved
	052-210-1110	Manage Load Assessment	052 - Engineer (Individual)	Approved
	052-210-1119	Manage the Installation of Low-Voltage Electrical-Power Distribution Equipment	052 - Engineer (Individual)	Approved
	052-210-1124	Manage Risk Mgmt Proc. for Power Systems	052 - Engineer (Individual)	Approved
	052-210-1134	Manage Construction Survey Operations	052 - Engineer (Individual)	Approved
	052-210-1136	Select a Temporary Power Plant Site	052 - Engineer (Individual)	Approved
	052-210-1137	Manage the Installation of Prime Power Generation Equipment	052 - Engineer (Individual)	Approved
	052-210-1138	Manage the Installation of Expedient, Surface-Laid, Electrical-Power Distribution Equipment	052 - Engineer (Individual)	Approved
	052-210-7103	Direct the Installation of Electrical-Power Distribution Equipment	052 - Engineer (Individual)	Approved
	052-239-3001	Prepare a Bill of Materials	052 - Engineer (Individual)	Approved
	052-239-3029	Schedule Work	052 - Engineer (Individual)	Approved
	052-239-3030	Read Construction Prints	052 - Engineer (Individual)	Approved

	052-244-2118	Perform Preventive-Maintenance Checks and Services (PMCS) on a Mobile Electric Power (MEP)-012 or -208 Generator	052 - Engineer (Individual)	Approved
	052-244-2136	Install Low-Voltage Organic Equipment	052 - Engineer (Individual)	Approved
	052-244-2138	Install Low-Voltage Wiring	052 - Engineer (Individual)	Approved
	052-244-3101	Check Power Plant to Load Compatibility	052 - Engineer (Individual)	Approved
	052-244-4202	Perform a Power Plant After-Installation Inspection	052 - Engineer (Individual)	Approved
	052-256-3052	Interpret a Critical Path Method (CPM)	052 - Engineer (Individual)	Approved

Supporting Drill(s): None

Supported AUTL/UJTL Task(s):

Task ID	Title
ART 4.1.7.4	Supply Mobile Electric Power

TADSS

TADSS ID	Title	Product Type	Quantity
No TADSS specified			

Equipment (LIN)

LIN	Nomenclature	Qty
No equipment specified		

Material Items (NSN)

NSN	LIN	Title	Qty
No materiel items specified			

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 the current Environmental Considerations manual and the current GTA Environmental-related Risk Assessment card. .

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. .