

Training and Evaluation Outline Report

Status: Approved

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Task Number: 05-PLT-5729

Task Title: Operate Power Generation and Distribution Equipment

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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
	TM 3-34.45	ENGINEER PRIME POWER OPERATIONS	Yes	Yes
	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 5-682	Facilities Engineering: Electrical Facilities Safety.	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 directed to operate an electrical-power generation plant with auxiliary support systems installed. Petroleum, Oils, and Lubricants (POL), materials, and operator personnel are available. 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.

Some iterations of this task should be performed in MOPP 4.

Standards: The element operates the power plant generator set(s) in a safe manner to produce electrical power. Electrical power is produced within the specified voltage and frequency parameters consistent with the power demands of the power grid. The time required to perform this task is increased when conducting it in Mission-Oriented Protective Posture (MOPP) 4.

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

Live Fire Required: No

Objective Task Evaluation Criteria Matrix:

Plan and Prepare		Execute					Assess		
Operational Environment	Squad & PLT	Training Environment (LW/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
Dynamic (Single Threat)	Night	IAW unit CATS statement.	>=85%	>=80%	Yes	>=91%	All	>=90%	T
			75-84%			80-90%		80-89%	T-
Static (Single Threat)	Day		65-74%	75-79%	No	65-79%	<All	<=79%	P
			60-64%	60-74%		51-64%			P-
			<=59%	<=59%		<=50%			U

Remarks: None

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

Safety Risk: Medium

Task Statements

Cue: None

DANGER

1. This task should only be performed by qualified personnel who are knowledgeable in the installation, operation, and maintenance of medium-voltage electrical power generation equipment and its associated hazards. Failure to comply may cause permanent injury or death.
2. Remove rings, necklaces, other jewelry and loose clothing. Failure to comply may cause permanent injury or death.
3. Do not operate the generator set unless it has been properly grounded. 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

Noise levels in excess of 85 decibels exist within a 50-foot radius of operating equipment. Always wear single hearing protection within a 50-foot radius of operating equipment. Failure to comply may cause injury.

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 performs duties in accordance with established industry practices and standards and the unit Standing Operating Procedure (SOP).			
+ a. Defines the duties and responsibilities for the following positions:			
(1) Plant operations supervisor.			
(2) Shift supervisor.			
(3) Control room operator.			
(4) Equipment operator.			
+ b. Defines the procedures for the following duties:			
(1) Maintaining power plant operations log(s) and record(s).			
(2) Putting generator(s) on and off the grid.			
(3) Coordinating the plant operational requirements, with external sources (grid).			
(4) Requesting issue or release of clearances and cautions.			
(5) Handling hazardous material.			
+* 2. The element leader enforces the power plant safety SOPs.			
* 3. The element leader plans for plant operational shifts.			
a. Determines the required number of shifts.			
(1) For normal operation at full strength, a three-shift operation (8 hours per shift) is used per 24 hours.			
(2) For emergency operating conditions, a two-shift operation (12 hours per shift) is used per 24 hours.			
b. Designates the following shift personnel, duties, and responsibilities:			
Note: Safety requirements for the operation of medium-voltage power plants dictate that a minimum of two individuals be assigned to an operating shift.			
(1) Shift leaders.			
(2) Plant control room operators.			
(3) Plant equipment operators.			
(4) Individual with the authority to issue or release safe clearance and caution.			
(5) Individual with the authority to request issue or release of a safe clearance or caution.			
(6) Individual responsible for coordinating the plant operational requirements with external source(s) (grid).			
(7) Plant Fire Marshal.			
(8) Plant safety Non-Commissioned Officer (NCO).			
(9) Hazardous materials NCO.			
+* 4. The element leader reviews the operator qualification records.			
Note: Operators must be qualified for the specific model of the generator set(s) to be operated.			
+ 5. The element leader conducts a plant operations safety briefing.			
+ a. Reviews the requirements for the following:			
(1) Individual safe conduct on the job.			
(2) Situational awareness on the job.			
(3) Wear of protective clothing and equipment.			
(4) Safe clearances and cautions that are in effect.			
b. Instructs individuals of their responsibility to report unsafe acts and working conditions.			
+ c. Relates safety as applicable to visitors.			
+ 6. The element conducts plant operations.			
+ a. Operates the plant in a safe manner and according to procedures prescribed for medium-voltage power plants.			
+ b. Meets changing mission requirements through timely coordination with the consumer.			
+ c. Operates the plant to meet and maintain mission-prescribed power output parameters.			
+ d. Ensures that supplies, materials, tools, and equipment for plant operations are available.			
+ e. Performs operator Preventive Maintenance Checks and Services (PMCS) on generation equipment and auxiliary support systems.			
+ f. Maintains plant operations, safety, and individual equipment, maintenance, and historical records.			
+ 7. The power plant operations crew operates the power plant.			
a. Performs before-operations PMCS.			
b. Sets up generating equipment and auxiliary support systems for plant start-up operations, as necessary.			

Step Number	Task Number	Title	Proponent	Status
	052-204-1108	Inspect Safety Equipment	052 - Engineer (Individual)	Approved
	052-204-1113	Prepare a Manhole for Safe Entry	052 - Engineer (Individual)	Approved
	052-204-1117	Inspect Hot-Line Equipment	052 - Engineer (Individual)	Approved
	052-204-1120	Install a Grounding Set	052 - Engineer (Individual)	Approved
	052-204-1211	Install Distribution System Protection and Equipment (De-energized)	052 - Engineer (Individual)	Approved
	052-204-1214	Terminate a Medium-Voltage URD Power Cable	052 - Engineer (Individual)	Approved
	052-204-1215	Splice a Medium-Voltage Overhead Power Cable	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
	052-204-2212	Energize an Electrical Distribution System	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
	052-204-2303	Perform Primary Voltage Live-Line Testing	052 - Engineer (Individual)	Approved
	052-204-2304	Perform Secondary Voltage Live-Line Testing	052 - Engineer (Individual)	Approved
	052-204-2305	Trouble Shoot Primary/Secondary Voltage Systems	052 - Engineer (Individual)	Approved
	052-205-2125	Service a Governor for Generating Equipment	052 - Engineer (Individual)	Approved
	052-205-2129	Troubleshoot a Diesel Engine Lube Oil System	052 - Engineer (Individual)	Approved
	052-205-2130	Troubleshoot a Diesel Engine Cooling System	052 - Engineer (Individual)	Approved
	052-205-2131	Troubleshoot a Diesel Engine Air Intake and/or Exhaust System	052 - Engineer (Individual)	Approved
	052-205-2132	Repair a Diesel Engine Lube Oil System	052 - Engineer (Individual)	Approved
	052-205-2133	Repair a Diesel Engine Cooling System	052 - Engineer (Individual)	Approved
	052-205-2134	Repair an Engine Air Intake and/or Exhaust System	052 - Engineer (Individual)	Approved
	052-207-2100	Produce an Electronic Circuit	052 - Engineer (Individual)	Approved
	052-210-1102	Develop a Power Plant Safety SOP	052 - Engineer (Individual)	Approved
	052-210-1104	Manage Lock out and Tag out Procedures	052 - Engineer (Individual)	Approved
	052-210-1106	Perform Quality Assurance (QA) Quality Control (QC)	052 - Engineer (Individual)	Approved
	052-210-1107	Manage the Service of a Power Transformer	052 - Engineer (Individual)	Approved
	052-210-1108	Manage the Service of a Distribution Transformer	052 - Engineer (Individual)	Approved
	052-210-1120	Manage the Operation of a Power Plant	052 - Engineer (Individual)	Approved
	052-210-1141	Manage Power Generation and Distribution Equipment Operations	052 - Engineer (Individual)	Approved
	052-210-1142	Manage Electrical-Power Generation Equipment Organizational Maintenance	052 - Engineer (Individual)	Approved
	052-210-1143	Manage Electrical-Power, Distribution Equipment Organizational Maintenance Operations	052 - Engineer (Individual)	Approved
	052-210-1144	Manage Disaster Relief Operations	052 - Engineer (Individual)	Approved
	052-244-2101	Perform Generator Set Hourly Checks	052 - Engineer (Individual)	Approved
	052-244-2114	Operate a Mobile Electric Power (MEP)-810A or B Generator	052 - Engineer (Individual)	Approved
	052-244-2115	Operate a Mobile Electric Power (MEP)-012 or -208 Generator	052 - Engineer (Individual)	Approved
	052-244-2116	Operate a Mobile Electric Power (MEP)-029 Generator	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
	052-244-2123	Operate a Multiunit Power Plant	052 - Engineer (Individual)	Approved
	052-244-2125	Operate a Nonorganic Generator	052 - Engineer (Individual)	Approved
	052-244-2147	Troubleshoot a Nonorganic Prime Mover	052 - Engineer (Individual)	Approved
	052-244-4200	Inspect a Power Plant Shift Operation	052 - Engineer (Individual)	Approved
	052-244-4201	Develop a Power Plant Safety Standing Operating Procedure (SOP)	052 - Engineer (Individual)	Approved
	052-244-4207	Develop a Power Plant Standing Operating Procedure (SOP)	052 - Engineer (Individual)	Approved
	052-264-2115	Troubleshoot the Improper Operation of an Electrical Motor	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		

Materiel 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. .