Report Date: 02 Oct 2013

Summary Report for Individual Task
052-204-2301
Perform Switching, Blocking and Tagging Procedures
Status: Approved

Condition: As a Power Line Distribution Specialist in a tactical or nontactical environment (with a system that must be de-energized for troubleshooting or maintenance), you are given Occupational Safety and Health Administration (OSHA) Regulation 1910.147, Technical Manual (TM) 5-682, Engineer Regulation (ER) 385-1-31, Engineer (ENG) Form 1925 (Danger-Main Hold Card), ENG Form 1927-R (Safe Clearance Request), ENG Form 2198 (Operation Log), a lockout and tagout kit, a voltage detector, a two-way radio or telephone communication equipment, other appropriate TMs, and electrical schematics and/or prints (depending on the situation) for the equipment to be switched, blocked and tagged out. This task should not be trained in MOPP.

Standard: Perform switching, blocking and tagging procedures as specified in OSHA regulations to ensure the safe isolation of energized circuits or mechanical hazards.

Special Condition: None

Safety Level: Low

MOPP: Never

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. A VOLTAGE DETECTOR SHOULD BE USED TO ENSURE THAT THE CABLES ARE NOT ENERGIZED. MATERIAL (SUCH AS A LEAD SHEATH THAT ACTS AS A SHIELD) MUST NOT BE BETWEEN THE DETECTOR AND THE CONDUCTORS OF THE CIRCUIT BEING TESTED. FAILURETO COMPLY MAY CAUSE PERMANENT INJURY OR DEATH. 3. ALL SYSTEMS ARE CONSIDERED ENERGIZED UNTIL THE ENERGY SOURCE IS REMOVED, LOCKED OUT (WHEN POSSIBLE), AND TAGGED OUT. WHEN ENERGY-ISOLATING DEVICES CANNOT BE PHYSICALLY LOCKED OUT, USE TAGOUT PROCEDURES. FAILURE TO COMPLY MAY CAUSE PERMANENT INJURY OR DEATH.

WARNING

None

CAUTION

None

Remarks: None

Notes: 1.Authorized personnel applying the lockout and tagout devices are also responsible for ensuring the control of

residual energy and for the placing, tagging, and removing of protective grounds.

2.Safe clearances must be used for all electrical work performed on de-energized lines and equipment operating over 600 volts.

Performance Steps

1. Notify the project supervisor of the work areas requiring switching, blocking and tagging procedures.

2. Initiate a safe clearance request.

    a. Fill out ENG Form 1927-R.

    b. Annotate the safe clearance in the power station operation log (ENG Form 2198).

3. Review the schematics and/or prints of the system.

    a. Identify all energy-isolating devices and disconnecting means.

    b. Identify where the system can be isolated by—

        (1) Shutting down the system.

        (2) Isolating the system.

        (3) Blocking the system.

        (4) Securing the system.

4. Isolate all the systems operated by remote controlled power sources.

5. Create a list of all the energy-isolating devices and disconnecting equipment to be switched, blocked and tagged.

    a. Identify the primary means of isolation.

    b. Identify the secondary means of isolation.

6. Review the other work areas to identify possible exposure to other sources of electrical and/or mechanical energy hazards.

7. Identify other energy sources in the immediate area to determine possible exposure to stored or residual energy.

8. Ensure that all potentially hazardous stored or residual energy is relieved, discharged, or otherwise rendered safe.

9. Establish energy control methods to control other hazardous energy sources in the area.

10. Test each phase conductor or circuit part using a voltage detector to verify that it is de-energized.

    a. Check an energized circuit to ensure that the voltage detector is working.

    b. Check for the presence of voltage on the de-energized circuit.

    c. Check the energized circuit again to verify that the voltage detector is working properly.

11. Install lockout devices on each energy-isolating device and disconnecting equipment so they are maintained in the open or de-energized position.

    Note: The person who performs the work maintains the keys to the lockout devices while the work is being completed.

12. Attach ENG Form 1925 as a main hold card for the primary means of energy isolation.

a. Ensure that the person installing the lockout device signs the lockout tag with the—

(1) Printed name of the installer.

(2) Date.

(3) Time.

(4) Clearance number.

b. Ensure that the main hold card lists all the locations of the auxiliary hold cards.

13. Attach ENG Form 1925 as an auxiliary hold card for the secondary means of energy isolation.

Note:

a. Ensure that the person installing the lockout device signs the lockout tag with the—

(1) Printed name of the installer.

(2) Date.

(3) Time.

(4) Clearance number.

b. Ensure that the auxiliary hold card number matches the numbered location of the main hold cards.

14. Attach ENG Form 1925 as a tagout device for the energy-isolating device or disconnecting means that cannot be physically locked.

Note: The lockout tag should contain a brief statement prohibiting the unauthorized operation of the energy-isolating device or disconnecting means or the removal of the tag. It should warn against the hazardous condition resulting from the system being energized and include a legend that contains wording (such as do not start, do not energize, do not open, do not close, and/or do not operate).

a. Ensure that the person installing the lockout device signs the lockout tag with the—

(1) Printed name of the installer.

(2) Date.

(3) Time.

(4) Clearance number.

b. Ensure that the lockout tag is placed directly over the operating controls of the energy-isolating devices or disconnecting means.

DANGER

VERIFICATION OF ISOLATION AND DE-ENERGIZING OF SYSTEMS MUST BE ACCOMPLISHED BY ATTEMPTING TO OPERATE THE ENERGY-ISOLATING DEVICES AND DISCONNECTING MEANS. FAILURE TO COMPLY MAY CAUSE IMMEDIATE DEATH OR PERMANENT INJURY.

15. Perform an inspection with the personnel in the work area and the project supervisor.

a. Verify that the system has been isolated and de-energized successfully.

b. Accomplish the inspection before starting to work on the systems that have been switched, blocked and/or tagged out.

16. Test each phase conductor or circuit part with an adequately rated voltage detector to verify that they are de-energized.

a. Check an energized circuit to ensure that the voltage detector is working properly.

b. Check for the presence of voltage on the de-energized circuit.

c. Check the energized circuit again to verify that the voltage detector is working properly.

17. Perform any required maintenance or service to the phase conductor or circuit part.

18. Request permission from the project supervisor to close out the lockout and tagout procedures.

19. Perform an inspection with the personnel performing the work and the project supervisor to ensure that all affected personnel are notified that the lockout and tagout devices are ready for removal.

WARNING

BEFORE THE LOCKOUT OR TAGOUT DEVICES ARE REMOVED AND ELECTRIC CIRCUITS OR EQUIPMENT ARE REENERGIZED, APPROPRIATE TESTS AND VISUAL INSPECTIONS WILL BE CONDUCTED BY AUTHORIZED PERSONNEL (THE INSTALLER). THE INSTALLER WILL VERIFY THAT ALL TOOLS; MECHANICAL RESTRAINTS; AND ELECTRICAL JUMPERS, SHORTS, AND GROUNDS HAVE BEEN REMOVED. THE ENTIRE WORK AREA WILL BE INSPECTED AND ALL NONESSENTIAL ITEMS WILL BE REMOVED FROM THE SYSTEM. FAILURE TO COMPLY MAY CAUSE SEVERE DAMAGE TO THE EQUIPMENT AND/OR IMMEDIATE PERSONAL INJURY.

20. Close out the switching,blocking and tagging procedures by removing all locking and/or tagging devices.

Note: Ensure that each lockout and tagout device is removed by the installer or a designated representative if the installer is not available.

21. Ensure that all personnel are safely positioned or removed from the area needing to be reenergized.

22. Complete and file all necessary forms.

a. Complete ENG Form 1927-R.

b. Annotate the completed work on ENG Form 2198.

c. File the completed ENG Form 1927-R.

(Asterisks indicates a leader performance step.)

Evaluation Preparation: Provide the Soldier with the items in the conditions. Give the Soldier a safety briefing before starting the test, and ensure that all safety precautions are followed. Prepare testing area and equipment in advance to ensure that the task standards can be met.

PERFORMANCE MEASURES	GO	NO-GO	N/A
1. Notified the project supervisor of the work areas requiring switching, blocking and tagging procedures.			
2. Initiated a safe clearance request.			
3. Reviewed the schematics and/or prints of the system.			
4. Isolated all the systems operated by remote controlled power sources.			
5. Created a list of all the energy-isolating devices and disconnecting equipment to be switched, blocked and tagged.			
6. Reviewed the other work areas to identify possible exposure to other sources of electrical and/or mechanical energy hazards.			
7. Identified other energy sources in the immediate area to determine possible exposure to stored or residual energy.			
8. Ensured that all potentially hazardous stored or residual energy was relieved, discharged, or otherwise rendered safe.			
9. Established energy control methods to control other hazardous energy sources in the area.			
10. Tested each phase conductor or circuit part using a voltage detector to verify that it was de-energized.			
11. Installed lockout devices on each energy-isolating device and disconnecting equipment so they were maintained in the open or de-energized position.			
12. Attached ENG Form 1925 as a main hold card for the primary means of energy isolation.			
13. Attached ENG Form 1925 as an auxiliary hold card for the secondary means of energy isolation.			
14. Attached ENG Form 1925 as a tagout device for the energy-isolating device or disconnecting means that could not be physically locked.			
15. Performed an inspection with the personnel in the work area and the project supervisor.			
16. Tested each phase conductor or circuit part with an adequately rated voltage detector to verify that they were de-energized.			
17. Performed any required maintenance or service to the phase conductor or circuit part.			
18. Requested permission from the project supervisor to close out the lockout and tagout procedures.			
19. Performed an inspection with the personnel performing the work and the project supervisor to ensure that all affected personnel were notified that the switching, blocking and tagging devices were ready for removal.			
20. Closed out the lockout and tagout procedures by removing all swtiching, blocking and/or tagging devices.			
21. Ensured that all personnel were safely positioned or removed from the area needing to be reenergized.			
22. Completed and filed all necessary forms.			

Supporting Reference(s):

Step Number	Reference ID	Reference Name	Required	Primary
	AR 385-10	The Army Safety Program (*RAR 004, 10/04/2011)	No	No
	EM 385-1-1	Safety and Health Requirements.	No	No
	ER 385-1-31	Safety & Occupational Health. The Control of Hazardous Energy (Safe Clearance).	No	No
	LCH	The Lineman's and Cableman's Handbook, 11th Edition, McGraw-Hill. 2007	No	No
	NFPA 70	National Electrical Code, National Fire Protection Association, 2002.	No	No
	NFPA 70B	Recommended Practice for Electrical Equipment Maintenance	No	No
	NFPA 70®	National Electrical Code® (NEC®) Handbook. 2011 edition	No	No

Environment: Environmental protection is not just the law but the right thing to do. It is a continual process and starts with deliberate planning. Always be alert to ways to protect our environment during training and missions. In doing so, you will contribute to the sustainment of our training resources while protecting people and the environment from harmful effects. Refer to FM 3-34.5 Environmental Considerations and GTA 05-08-002 ENVIRONMENTAL-RELATED RISK ASSESSMENT. Environmental protection is not just the law but the right thing to do. It is a continual process and starts with deliberate planning. Always be alert to ways to protect our environment during training and missions. In doing so, you will contribute to the sustainment of our training resources while protecting people and the environment from harmful effects. Refer to FM 3-34.5 Environmental Considerations and GTA 05-08-002 ENVIRONMENTAL-RELATED RISK ASSESSMENT.

Safety: In a training environment, leaders must perform a risk assessment in accordance with FM 5-19, Composite Risk Management. Leaders will complete a DA Form 7566 COMPOSITE RISK MANAGEMENT WORKSHEET 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. a training environment, leaders must perform a risk assessment in accordance with FM 5-19, Composite Risk Management. Leaders will complete a DA Form 7566 COMPOSITE RISK MANAGEMENT WORKSHEET 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, NBC Protection, FM 3-11.5, CBRN Decontamination.

Prerequisite Individual Tasks : None

Supporting Individual Tasks :

Task Number	Title	Proponent	Status
052-204-1203	Perform Operator Preventive-Maintenance Checks and Services (PMCS) on a Bucket/Material Handler Truck	052 - Engineer (Individual)	Reviewed
052-204-2303	Perform Primary Voltage Live-Line Testing	052 - Engineer (Individual)	Analysis Completed
052-204-2207	Conduct a Safety Briefing	052 - Engineer (Individual)	Reviewed
052-204-2208	Conduct a Safety Inspection	052 - Engineer (Individual)	Approved
052-204-1116	Rescue an Injured Victim From an Aerial-Bucket Truck	052 - Engineer (Individual)	Approved
052-204-1120	Install a Grounding Set	052 - Engineer (Individual)	Approved
052-204-1113	Prepare a Manhole for Safe Entry	052 - Engineer (Individual)	Reviewed
052-204-2217	Manage a Power Line Crew	052 - Engineer (Individual)	Analysis Completed

052-204-1202	Maintain Rigging/Hoisting Equipment	052 - Engineer (Individual)	Reviewed
052-204-1212	Operate a Bucket/Material Handler Truck	052 - Engineer (Individual)	Analysis Completed
052-204-1204	Tie Rope Knots and Splices	052 - Engineer (Individual)	Analysis Completed
052-204-1123	Secure Conductor to Insulator (De-energized)	052 - Engineer (Individual)	Reviewed

Supported Individual Tasks :

Task Number	Title	Proponent	Status
052-204-1129	Splice a Medium-Voltage Power Cable	052 - Engineer (Individual)	Approved
052-204-1126	Perform a Crossarm Change Out	052 - Engineer (Individual)	Approved
052-204-2216	Perform Maintenance on Electrical Distribution Equipment	052 - Engineer (Individual)	Superseded
052-204-1121	Install High-Intensity Lights and Ballasts	052 - Engineer (Individual)	Analysis
052-204-1130	Terminate a Medium-Voltage Power Cable	052 - Engineer (Individual)	Approved
052-204-1121	Install High-Intensity Lights and Ballasts	052 - Engineer (Individual)	Superseded
052-204-1120	Install a Grounding Set	052 - Engineer (Individual)	Superseded
052-204-1123	Secure Conductor to Insulator (De-energized)	052 - Engineer (Individual)	Approved
052-204-1122	Install Distribution Equipment (De-energized)	052 - Engineer (Individual)	Approved
052-204-1120	Install a Grounding Set	052 - Engineer (Individual)	Approved
052-204-2304	Perform Secondary Voltage Live-Line Testing	052 - Engineer (Individual)	Analysis Completed
052-204-1213	Splice a Medium-Voltage URD Power Cable	052 - Engineer (Individual)	Reviewed
052-204-2305	Trouble Shoot Primary/Secondary Voltage Systems	052 - Engineer (Individual)	Analysis Completed
052-204-2107	Connect an Overhead Sectionalizer, Recloser, or Circuit Breaker	052 - Engineer (Individual)	Approved
052-204-2109	Connect an Overhead Transformer Bank	052 - Engineer (Individual)	Approved
052-204-2114	Install an Overhead Air Switch	052 - Engineer (Individual)	Approved
052-204-2116	Prepare an Underground, Electrical-System Manhole for Work	052 - Engineer (Individual)	Approved
052-204-1214	Terminate a Medium-Voltage URD Power Cable	052 - Engineer (Individual)	Approved
052-204-2108	Connect an Overhead Voltage Regulator	052 - Engineer (Individual)	Approved
052-204-1211	Install Distribution System Protection and Equipment (De-energized)	052 - Engineer (Individual)	Approved
052-204-2215	Perform an Insulation-Resistance Test	052 - Engineer (Individual)	Approved
052-204-2213	Locate an Underground Cable and/or a Fault	052 - Engineer (Individual)	Superseded
052-204-2126	Perform a Crossarm Changeout	052 - Engineer (Individual)	Approved
052-204-2216	Perform Maintenance on Electrical Distribution Equipment	052 - Engineer (Individual)	Approved
052-204-2125	Climb a Utility Pole for Electrical Purposes	052 - Engineer (Individual)	Approved
052-204-1123	Secure Conductor to Insulator (De-energized)	052 - Engineer (Individual)	Reviewed
052-204-2213	Locate an Underground Cable and/or Fault	052 - Engineer (Individual)	Approved
052-204-1126	Perform Crossarm Change Out (With Conductors)	052 - Engineer (Individual)	Reviewed

Supported Collective Tasks :

Task Number	Title	Proponent	Status

05-3-5717	Created from Template: Perform Power Plant Distribution System Design Technical Assistance	05 - Engineers (Collective)	Analysis
05-3-5700	Created from Template: Install Nonstandard Low-Voltage, Electrical-Power Distribution Equipment	05 - Engineers (Collective)	Analysis
05-3-5702	Created from Template: Install Underground Electrical-Power Distribution Equipment	05 - Engineers (Collective)	Analysis
05-3-5716	Created from Template: Perform Power Plant Installation Technical Assistance	05 - Engineers (Collective)	Analysis
05-3-5704	Created from Template: Perform Nonorganic Equipment Power Distribution Maintenance Operations	05 - Engineers (Collective)	Analysis
05-3-5715	Perform Power Plant Design Technical Assistance	05 - Engineers (Collective)	Approved
05-3-5715	Created from Template: Perform Power Plant Design Technical Assistance	05 - Engineers (Collective)	Analysis
05-3-5730	Perform Electrical-Power Generation Equipment Organizational Maintenance Operations	05 - Engineers (Collective)	Approved
05-3-5705	Retrieve Electrical-Power Generation and Distribution Equipment	05 - Engineers (Collective)	Approved
05-3-5712	Perform a Power Plant Maintenance Survey	05 - Engineers (Collective)	Approved
05-3-5701	Install Low-Voltage, Electrical-Power Distribution Equipment	05 - Engineers (Collective)	Approved
05-3-5703	Perform Electrical Safety Systems Testing and Maintenance	05 - Engineers (Collective)	Approved
05-3-5722	Prepare Power Systems Construction Estimates	05 - Engineers (Collective)	Approved
05-3-5733	Perform Power Plant and Distribution Equipment Shipment	05 - Engineers (Collective)	Approved
05-3-5728	Assess Power Generation Systems for Damage	05 - Engineers (Collective)	Approved
05-3-5717	Perform Power Plant Distribution System Design Technical Assistance	05 - Engineers (Collective)	Approved
05-3-5732	Conduct Electrical-Power Generation Equipment Intermediate Maintenance Operations	05 - Engineers (Collective)	Approved
05-3-5720	Select a Temporary Power Plant Site	05 - Engineers (Collective)	Approved
05-3-5725	Install Aerial Electrical Power Distribution Equipment	05 - Engineers (Collective)	Approved
05-3-5720	Created from Template: Select a Temporary Power Plant Site	05 - Engineers (Collective)	Analysis
05-3-5709	Perform a Power Plant Installation Survey	05 - Engineers (Collective)	Approved
05-3-5707	Perform Nonorganic Power Generation System Maintenance Operations	05 - Engineers (Collective)	Approved
05-3-5716	Perform Power Plant Installation Technical Assistance	05 - Engineers (Collective)	Approved
05-3-5701	Created from Template: Install Low-Voltage, Electrical-Power Distribution Equipment	05 - Engineers (Collective)	Analysis
05-3-5727	Install Underground Distribution Equipment	05 - Engineers (Collective)	Approved
05-3-5713	Perform a Power Distribution System Maintenance Survey	05 - Engineers (Collective)	Approved
05-3-5704	Perform Nonorganic Equipment Power Distribution Maintenance Operations	05 - Engineers (Collective)	Approved

05-3-5719	Perform Power Plant Generation System Maintenance Technical Assistance	05 - Engineers (Collective)	Approved
05-3-5723	Install Prime Power Generation Equipment	05 - Engineers (Collective)	Approved
05-3-5706	Perform Project Management	05 - Engineers (Collective)	Approved
05-3-5715	Created from Template: Perform Power Plant Design Technical Assistance	05 - Engineers (Collective)	Delete
05-3-5731	Perform Electrical-Power, Distribution Equipment Organizational Maintenance Operations	05 - Engineers (Collective)	Approved
05-3-5711	Perform a Power Plant Operations Survey	05 - Engineers (Collective)	Approved
05-3-5724	Install Expedient, Surface-Laid, Electrical-Power Distribution Equipment	05 - Engineers (Collective)	Approved
05-3-5729	Operate Power Generation and Distribution Equipment	05 - Engineers (Collective)	Approved
05-3-5700	Created from Template: Install Nonstandard Low-Voltage, Electrical-Power Distribution Equipment	05 - Engineers (Collective)	Analysis
05-3-5708	Perform a Mission Survey	05 - Engineers (Collective)	Approved
05-3-5700	Install Nonstandard Low-Voltage, Electrical-Power Distribution Equipment	05 - Engineers (Collective)	Approved
05-3-5702	Install Underground Electrical-Power Distribution Equipment	05 - Engineers (Collective)	Approved

ICTL Data :

ICTL Title	Personnel Type	MOS Data
12Q20, Power Line Distribution Specialist, skill level 2	Enlisted	MOS: 12Q, Skill Level: SL2