

**Summary Report for Individual Task
052-204-1213
Splice a Medium-Voltage URD Power Cable
Status: Approved**

DISTRIBUTION RESTRICTION: Approved for public release; distribution is unlimited.

DESTRUCTION NOTICE: None

Condition: As a Power Line Distribution Specialist in a tactical or nontactical environment during an initial installation of cables where power cables must be joined or a power cable is damaged beyond repair, you are given an applicable splice kit with instructions, applicable tools specified in the splice kit instructions, an electrician's tool kit, a lockout and tagout kit, grounding equipment, a megohmmeter test set, a voltage detector, applicable manufacturer's literature, applicable personal protective equipment. This task should not be trained in MOPP.

Standard: Splice a medium-voltage power cable so that the splice meets the rating of the original cable and does not create an electrical hazard to personnel or equipment. Ensure that the cable is capable of transmitting the maximum electrical load without excessive heating and is at the full mechanical strength of the conductors.

Special Condition: None

Safety Level: Low

MOPP: Never

Task Statements

Cue: None

<p>DANGER</p> <p>VOLTAGE DETECTOR SHOULD BE USED TO ENSURE THAT CABLES ARE NOT ENERGIZED. MATERIALS (SUCH AS A LEAD SHEATH THAT ACTS AS A SHIELD) MUST NOT BE BETWEEN THE TESTER AND THE CONDUCTORS OF THE CIRCUIT BEING TESTED. FAILURE TO COMPLY MAY CAUSE PERMANENT INJURY OR DEATH. WARNING: 1. THE SPLICER'S TOOLS, HANDS, AND SPLICING MATERIALS MUST BE KEPT CLEAN DURING CONSTRUCTION. FAILURE TO COMPLY MAY CAUSE IMMEDIATE PERSONAL INJURY OR EQUIPMENT DAMAGE. 2. EMPLOY EVERY RESOURCE TO PREVENT MOISTURE (DRIPPINGS, CONDENSATION, and PERSPIRATION) FROM ENTERING THE JOINT INSULATION. FAILURE TO COMPLY MAY CAUSE IMMEDIATE PERSONAL INJURY OR EQUIPMENT DAMAGE.</p>
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<p>WARNING</p> <p>None</p>

<p>CAUTION</p> <p>None</p>

Remarks: None

Notes: There are several types of splicing kits available for use with medium-voltage power cables. Each kit contains specific instructions on how to make the splice. Always follow the manufacturer's guidelines for the particular kit used.

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. FAILURE TO 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.

1. Perform switching, blocking and tagging procedures.

Note: 1. Authorized personnel applying lockout and tagout devices are also responsible for ensuring the control of residual energy and for placing, tagging, and removing protective grounds.

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

2. Inspect the splice kit.

a. Use the correct splice kit for the cable.

b. Inventory the kit to ensure that all components/parts are present.

3. Prepare the cable, and splice it according to the manufacturer's literature.

a. Measure and mark the cable.

b. Inspect the cable for carbon particles, and remove those that are found.

c. Inspect the cable jacket for nicks, and remove those that are found.

4. Align cables so that the ends of the conductors conjoin squarely.

a. Ensure that cuts are squarely made and leave a smooth edge.

b. Perform ring cuts as needed without causing damage to other cable parts.

5. Remove the jacket using the distance indicated by the splice kit instructions.

6. Remove the cable metallic shield using the distance indicated in the splice kit instructions.

Note: Do not ring-cut into the metallic shielding or insulation when removing the jacket.

7. Remove the high-voltage insulation layer using the distance indicated in the splice kit instructions.

8. Remove the semiconductor from the metallic-shield edge using the distance indicated in the splice kit instructions.
9. Apply the connector using the correct compression tool.
 - a. Measure back the depth needed for the conductor to penetrate the connector plus the distance indicated by the splice kit.
 - b. Clean the entire area of the splice with cable-cleaning solvent.
 - c. Remove sharp edges.
 - d. Place two crimps on the connector, and ensure an offset between each crimp that is approximately 90°.
10. Replace the high-voltage insulation layer according to the manufacturer's literature.
11. Apply a semiconductive layer from the edge of the shielding tape to the edge of the opposing shield according to the manufacturer's literature.
12. Recreate a shield layer across the splice connector according to the manufacturer's literature.
13. Attach a ground to the shield according to the manufacturer's literature, and leave the ground long enough to reach the grounding point.

Note:
14. Apply an outer jacket to the power cable according to the manufacturer's literature to prevent moisture from entering.
15. Test the splice to ensure that it meets the cable rating.

WARNING

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

16. Close out switching, blocking and tagging procedures by performing switching operations and removing locking and tagging devices.

(Asterisks indicates a leader performance step.)

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

PERFORMANCE MEASURES	GO	NO-GO	N/A
1. Performed switching, blocking and tagging procedures.			
2. Inspected the splice kit.			
3. Prepared the cable and spliced it according to the manufacturer's literature.			
4. Aligned cables so that the ends of the conductors conjoined squarely.			
5. Removed the jacket using the distance indicated by the splice kit instructions.			
6. Removed the cable metallic shield using the distance indicated in the splice kit instructions.			
7. Removed the high-voltage insulation layer using the distance indicated in the splice kit instructions.			
8. Removed the semiconductor from the metallic-shield edge using the distance indicated in the splice kit instructions.			
9. Applied the connector using the correct compression tool.			
10. Replaced the high-voltage insulation layer according to the manufacturer's literature.			
11. Applied a semiconductive layer from the edge of the shielding tape to the edge of the opposing shield according to the manufacturer's literature.			
12. Recreated a shield layer across the splice connector according to the manufacturer's literature.			
13. Attached a ground to the shield according to the manufacturer's literature and left the ground long enough to reach the grounding point.			
14. Applied an outer jacket to the power cable according to the manufacturer's literature to prevent moisture from entering.			
15. Tested the splice to ensure that it met the cable rating.			
16. Closed out switching, blocking and tagging procedures by performing switching operations and removing locking and tagging devices.			

Supporting Reference(s):

Step Number	Reference ID	Reference Name	Required	Primary
	EM 385-1-1	Safety and Health Requirements.	No	No
	FM 5-412	PROJECT MANAGEMENT	No	No
	LCH	The Lineman's and Cableman's Handbook, 11th Edition, McGraw-Hill. 2007	No	No
	TM 3-34.45	ENGINEER PRIME POWER OPERATIONS	No	No
	TM 5-682	Facilities Engineering: Electrical Facilities Safety.	No	No
	TM 5-684	Facilities Engineering - Electrical Exterior Facilities. NAVFAC MO-200/AFJMAN 32-1082.	No	No
	TM 5-686	Power Transformer Maintenance and Acceptance Testing.	No	No
	TM 5-811-1	Electric Power Supply and Distribution {AFJMAN 32-1080}	No	No
	TM 5-811-3	Electrical Design: Lightning and Static Electricity Protection. AFM 88-9, Chap 3.	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.

For classroom instruction:

No major environmental impact, training entirely of an administrative or classroom nature, with little or no environmental impact on the environment, equipment or personnel. [32 CFR Part 651, Appendix B, Section II, (i)(2)]

For practical exercises and demonstrations:

Instructors should complete a risk assessment before conducting training, operations, or logistical activities. Risk assessments assist instructors in identifying potential environmental hazards, develops controls, make risk decisions, implement controls, and ensure proper supervision and evaluation. FM 3-100.4, Environmental Considerations in Military Operations.

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. In a training environment, leaders must perform a riskassessment 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 :

Task Number	Title	Proponent	Status
052-204-1115	Rescue an Injured Victim From a Manhole	052 - Engineer (Individual)	Approved
052-204-1117	Inspect Hot-Line Equipment	052 - Engineer (Individual)	Reviewed
052-204-1108	Inspect Safety Equipment	052 - Engineer (Individual)	Reviewed
052-204-1120	Install a Grounding Set	052 - Engineer (Individual)	Approved
052-204-1113	Prepare a Manhole for Safe Entry	052 - Engineer (Individual)	Reviewed
052-204-1204	Tie Rope Knots and Splices	052 - Engineer (Individual)	Analysis Completed

Supporting Individual Tasks :

Task Number	Title	Proponent	Status
052-204-1117	Inspect Hot-Line Equipment	052 - Engineer (Individual)	Reviewed
052-204-1120	Install a Grounding Set	052 - Engineer (Individual)	Approved
052-204-1113	Prepare a Manhole for Safe Entry	052 - Engineer (Individual)	Reviewed
052-204-2301	Perform Switching, Blocking and Tagging Procedures	052 - Engineer (Individual)	Approved

Supported Individual Tasks :

Task Number	Title	Proponent	Status
052-204-2217	Manage a Power Line Crew	052 - Engineer (Individual)	Analysis Completed
052-204-1211	Install Distribution System Protection and Equipment (De-energized)	052 - Engineer (Individual)	Approved
052-204-1121	Install High-Intensity Lights and Ballasts	052 - Engineer (Individual)	Analysis Completed
052-204-2212	Energize an Electrical Distribution System	052 - Engineer (Individual)	Approved
052-204-1205	Install Underground Cable	052 - Engineer (Individual)	Analysis Completed

052-204-2216	Perform Maintenance on Electrical Distribution Equipment	052 - Engineer (Individual)	Approved
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Supported Collective Tasks :

Task Number	Title	Proponent	Status
05-3-5702	Created from Template: Install Underground Electrical-Power Distribution Equipment	05 - Engineers (Collective)	Analysis
05-3-5702	Install Underground Electrical-Power Distribution Equipment	05 - Engineers (Collective)	Approved
05-3-5724	Install Expedient, Surface-Laid, Electrical-Power Distribution Equipment	05 - Engineers (Collective)	Approved
05-3-5731	Perform Electrical-Power, Distribution Equipment Organizational Maintenance Operations	05 - Engineers (Collective)	Approved
05-3-5701	Install Low-Voltage, Electrical-Power Distribution Equipment	05 - Engineers (Collective)	Approved
05-3-5723	Install Prime Power Generation Equipment	05 - Engineers (Collective)	Approved
05-3-5704	Perform Nonorganic Equipment Power Distribution Maintenance Operations	05 - Engineers (Collective)	Approved
05-3-5727	Install Underground Distribution Equipment	05 - Engineers (Collective)	Approved
05-3-5701	Created from Template: Install Low-Voltage, Electrical-Power Distribution Equipment	05 - Engineers (Collective)	Analysis
05-3-5707	Perform Nonorganic Power Generation System Maintenance Operations	05 - Engineers (Collective)	Approved
05-3-5730	Perform Electrical-Power Generation Equipment Organizational Maintenance Operations	05 - Engineers (Collective)	Approved
05-3-5732	Conduct Electrical-Power Generation Equipment Intermediate Maintenance Operations	05 - Engineers (Collective)	Approved
05-3-5725	Install Aerial Electrical Power Distribution Equipment	05 - Engineers (Collective)	Approved
05-3-5704	Created from Template: Perform Nonorganic Equipment Power Distribution Maintenance Operations	05 - Engineers (Collective)	Analysis

ICTL Data :

ICTL Title	Personnel Type	MOS Data
12Q10, Power Line Distribution Specialist, skill level 1	Enlisted	MOS: 12Q, Skill Level: SL1