Report Date: 07 Oct 2013

Summary Report for Individual Task
052-204-1209
String Single Phase and Three Phase Overhead Conductors
Status: Approved

Condition: As a Power Line Distribution Specialist in a tactical or nontactical environment when single phase or three phase overhead conductors need to be strung, you are part of a line crew with applicable climbing and rigging equipment, reels of conductors, a reel trailer or stand, pulling and tensioning equipment, the Lineman's and Cableman's Handbook (LCH), safety standing operating procedures (SOPs), applicable personal protective equipment (PPE), and DA Form 2702 (Bill of Materials). This task should not be trained in MOPP.

Standard: String the single phase or three phase overhead conductors by ensuring that conductors are not damaged while they are reeled out, pulled under tensionandplaced in the correct sequence on support devices.

Special Condition: None

Safety Level: Low

MOPP: Never

Task Statements

Cue: None

DANGER

1. THIS TASK SHOULD ONLY BE PERFORMED BY QUALIFIED PERSONNEL KNOWLEDGEABLE IN THE INSTALLATION, OPERATION, AND MAINTENANCE OF MEDIUM-VOLTAGE ELECTRICAL POWER GENERATION EQUIPMENT AND THE ASSOCIATED HAZARDS. FAILURE TO COMPLY MAY CAUSE PERMANENT INJURY OR DEATH.

2. A VOLTAGE DETECTOR SHOULD BE USED TO ENSURE THAT CABLES ARE NOT ENERGIZED. MATERIAL (SUCH AS A LEAD SHEATH THAT ACTS AS A SHIELD) MUST NOT BE BETWEEN THE VOLTAGE DETECTOR AND THE CONDUCTORS OF THE CIRCUIT BEING TESTED. FAILURE TO TEST CABLES MAY CAUSE PERMANENT INJURY OR DEATH.

3. ALL SYSTEMS ARE CONSIDERED ENERGIZED UNTIL THE ENERGY SOURCE IS REMOVED, LOCKED OUT (WHEN POSSIBLE), TAGGED OUT, AND GROUNDED. WHEN ENERGY-ISOLATING DEVICES CANNOT BE PHYSICALLY LOCKED OUT, USE TAGOUT PROCEDURES. FAILURE TO COMPLY MAY CAUSE PERMANENT INJURY OR DEATH.

4. FAILURE TO FOLLOW PROPER MAINTENANCE PROCEDURES MAY CAUSE PERMANENT INJURY OR DEATH.

5. FOLLOW ELECTRICAL SAFETY PRACTICES AND WEAR APPLICABLE PPE AS REQUIRED. FAILURE TO COMPLY MAY CAUSE PERMANENT INJURY OR DEATH.

6. A VOLTAGE DETECTOR SHOULD BE USED TO ENSURE THAT THE CABLE IS NOT ENERGIZED. MATERIAL (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 TEST CABLES MAY CAUSE PERMANENT INJURY OR DEATH.

7. REMOVE RINGS, NECKLACES, OTHER JEWELRY, AND LOOSE CLOTHING. FAILURE TO COMPLY MAY CAUSE PERSONAL INJURY OR DEATH.

WARNING

l) Prior to stringing operations, a briefing shall be held setting forth the plan of operation and specifying the type of equipment to be used, grounding devices and procedures to follow, crossover methods to be employed, and the clearance authorization required.

2) Where there is a possibility of the conductor accidentally contacting an energized circuit or receiving a dangerous induced voltage buildup, to protect the employee from the hazards of the conductor, the conductor being installed or removed shall be grounded or provisions made to insulate or isolated the employee.

3) If the existing line is deenergized, proper clearance authorization shall be secured and the line grounded on both sides of the crossover or the line being strung or removed shall be considered and worked as energized.

4) When crossing over energized conductors in excess of 600 volts, rope nets or guard structures shall be installed unless provisions are made to isolate or insulate the workers or energized conductor. Where practical the automatic reclosing feature of the circuit-interrupting device shall be made inoperative. In addition, the line being strung shall be grounded on either side of the crossover or considered and worked as energized.

5) Conductors being strung in or removed shall be kept under positive control by the use of adequate tension reels, guard structures, tielines, or other means to prevent accidental contact with energized circuits.

6) Guard structure members shall be sound and of adequate dimension and strength and adequately supported.

7) Catch-off anchors, rigging and hoists shall be of ample capacity to prevent loss of lines.

8) The manufacturers load rating shall not exceeded for stringing lines, pulling lines, sock connections, and all load-bearing hardware and accessories.

9) Pulling lines and accessories shall be inspected regularly and replaced or repaired when damage or when dependability is doubtful. The provisions of 29 CFR 1926.251(c)(4)(ii) concerning splices shall not apply.

10) Conductor grips shall not be used on wire rope unless designed of this application.

11) While the conductor or pulling line is being pulled (in motion), workers shall not be permitted directly under overhead operations nor shall any employee be permitted on the crossarm.

12) A transmission clipping crew shall have a minimum of two structures clipped in between the crew and the conductor being sagged. When working on conductors, clipping crews shall install grounds at work location. The grounds shall remain intact until the conductors are clipped in, excepted on dead end structures.

13) Except during emergency restoration procedures, work from structures shall be discontinued when adverse weather (such as high wind or ice on structures) makes the work hazardous.

14) Stringing and clipping operations shall be discontinued during the progress of an electrical storm in the immediate vicinity.

15) Reel handling equipment, including pulling and braking machines, shall have ample capacity, operate smoothly and be leveled and aligned in accordance with manufacturers operating instructions.

16) Reliable communications between the reel tensioner and pulling rig operator shall be provided.

17) Each pull shall be snubbed or dead-ended at both ends before subsequent pulls.

CAUTION

WHEN POSSIBLE, INDIVIDUALS NOT ASCENDING THE POLE MUST MAINTAIN A 10-FOOT RADIUS FROM THE POLE BASE TO ENSURE THAT THEY ARE NOT STRUCK BY DROPPED OBJECTS. FAILURE TO COMPLY MAY CAUSE IMMEDIATE PERSONAL INJURY.

Remarks: All required Prime Power specific references and technical manuals will be provided by the local Prime Power Command.

Notes: Reel handling equipment, including pulling and tensioning devices, shall be in safe operating condition and shall be leveled and aligned.

Proper alignment of the stringing machines will help prevent failure of the equipment, conductors, and supporting structures, which could result injury to workers.

Load ratings of stringing lines, pulling lines, conductors grips, load-bearing hardware and accessories, rigging, and hoist may not be exceeded.

Performance Steps

1. Review danger, warning, and caution notices before proceeding.

2. Review the manufacturer's literature, electrical construction prints, and wiring diagrams.

3. Ensure that PPE is correctly tested and fully mission-capable.

4. Inspect tools and climbing and rigging equipment for serviceability.

5. Participate in a safety briefing that highlights safety precautions and the concept of the operation.

6. Place tensioner at right location of pull.

Note: Reel handling equipment, including pulling and braking machines, shall have ample capacity, operate smoothly and be leveled and aligned in accordance with manufacturers operating instructions.

7. Anchor trailer where it will not be pulled toward puller.

8. Place rope in dollies.

9. Place puller trailer in line with pull & anchor tensioner trailer.

10. Connect ropes to puller.

11. Install ground rod at tensioner, then connect ground from trailer to ground rod.

12. Communications between the reel tensioner and pulling rig operator will be constant.

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. While the conductor or pulling line is being pulled (in motion), workers shall not be permitted directly under overhead operations nor shall any employee be permitted on the crossarm.

13. Pull rope & wire through dollies at proper tension.

Note: Each pull shall be snubbed or dead-ended at both ends before subsequent pulls.

14. Inspect conductors to ensure that they were not damaged during reeling out.

15. Ensure that conductors are placed on conductor support devices in the proper sequence.

16. Ensure that PPE, climbing and rigging equipment, and tools are correctly cleaned and stored.

(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. Reviewed danger, warning, and caution notices before proceeding.			
2. Reviewed the manufacturer's literature, electrical construction prints, and wiring diagrams.			
3. Ensured that PPE was correctly tested and fully mission-capable.			
4. Inspected tools and climbing and rigging equipment for serviceability.			
5. Participated in a safety briefing that highlighted safety precautions and the concept of the operation.			
6. Placed tensioner at right location of pull.			
7. Anchored trailer where it will not be pulled toward puller.			
8. Placed rope in dollies.			
9. Placed puller trailer in line with pull & anchor tensioner trailer.			
10. Connected ropes to puller.			
11. Installed ground rod at tensioner, then connect ground from trailer to ground rod.			
12. Communications between the reel tensioner and pulling rig operator was constant.			
13. Pulled rope & wire through dollies at proper tension.			
14. Inspected conductors to ensure that they were not damaged during reeling out.			
15. Ensured that conductors were placed on conductor support devices in the proper sequence.			
16. Ensured that PPE, climbing and rigging equipment, and tools were correctly cleaned and stored.			

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
	DA FORM 2702	Bill of Materials	Yes	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	Yes	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 5-811-1	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.

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. All safety considerations are mentioned in the task performance steps and are annotated as DANGERS, CAUTIONS and WARNINGS. A thorough risk assessment must be completed prior to every mission or operation.
• Using the best available ground to minimize the time the lines remain energized.
• Bonding equipment together to minimize potential differences.
• Providing grounding mats to extend areas of equipotential.
• Employing insulating protective equipment or barricades

Prerequisite 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)	Approved
052-204-1125	Operate a Line Truck with Auxiliary Equipment	052 - Engineer (Individual)	Approved
052-204-1128	Interpret an Electrical One-Line Diagram	052 - Engineer (Individual)	Analysis Completed
052-204-1117	Inspect Hot-Line Equipment	052 - Engineer (Individual)	Approved
052-204-1114	Rescue an Injured Victim From a Utility Pole	052 - Engineer (Individual)	Approved
052-204-1124	Climb a Utility Pole	052 - Engineer (Individual)	Approved
052-204-1116	Rescue an Injured Victim From an Aerial-Bucket Truck	052 - Engineer (Individual)	Approved
052-204-1108	Inspect Safety Equipment	052 - Engineer (Individual)	Analysis Completed
052-204-1120	Install a Grounding Set	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
052-204-1212	Operate a Bucket/Material Handler Truck	052 - Engineer (Individual)	Analysis Completed
052-204-1123	Secure Conductor to Insulator (De-energized)	052 - Engineer (Individual)	Approved

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)	Approved
052-204-1125	Operate a Line Truck with Auxiliary Equipment	052 - Engineer (Individual)	Approved
052-204-1117	Inspect Hot-Line Equipment	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

052-204-1119	Perform Operator Preventive-Maintenance Checks and Services (PMCS) on a Line Truck With Auxiliary Equipment	052 - Engineer (Individual)	Approved
052-204-1202	Maintain Rigging/Hoisting Equipment	052 - Engineer (Individual)	Approved
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

Supported Individual Tasks :

Task Number	Title	Proponent	Status
052-204-1121	Install High-Intensity Lights and Ballasts	052 - Engineer (Individual)	Approved
052-204-1211	Install Distribution System Protection and Equipment (De-energized)	052 - Engineer (Individual)	Approved
052-204-1126	Perform Crossarm Change Out (With Conductors)	052 - Engineer (Individual)	Approved
052-204-2307	Supervise the Installation of a Utility Pole Line	052 - Engineer (Individual)	Analysis Completed
052-204-2302	Install Distribution System Protection and Equipment (Energized)	052 - Engineer (Individual)	Approved
052-204-2210	Secure Conductor to Insulator (Energized)	052 - Engineer (Individual)	Approved
052-204-2217	Manage a Power Line Crew	052 - Engineer (Individual)	Approved
052-204-2216	Perform Maintenance on Electrical Distribution Equipment	052 - Engineer (Individual)	Approved

Supported Collective Tasks :

Task Number	Title	Proponent	Status
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
05-3-5704	Created from Template: Perform Nonorganic Equipment Power Distribution Maintenance Operations	05 - Engineers (Collective)	Analysis
05-3-5700	Created from Template: Install Nonstandard Low-Voltage, Electrical-Power Distribution Equipment	05 - Engineers (Collective)	Analysis
05-3-5701	Created from Template: Install Low-Voltage, Electrical-Power Distribution Equipment	05 - Engineers (Collective)	Analysis
05-3-5700	Install Nonstandard Low-Voltage, Electrical-Power Distribution Equipment	05 - Engineers (Collective)	Approved
05-3-5700	Created from Template: Install Nonstandard Low-Voltage, Electrical-Power Distribution Equipment	05 - Engineers (Collective)	Analysis
05-3-5701	Install Low-Voltage, Electrical-Power Distribution Equipment	05 - Engineers (Collective)	Approved
05-3-5725	Install Aerial Electrical Power Distribution Equipment	05 - Engineers (Collective)	Approved

ICTL Data :

ICTL Title	Personnel Type	MOS Data
12P2O ASI U4, Prime Power Production Specialist, skill level 2	Enlisted	MOS: 12P, Skill Level: SL2, ASI: U4

12Q10, Power Line Distribution Specialist, skill level 1	Enlisted	MOS: 12Q, Skill Level: SL1