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Northeast Wisconsin Technical College

31-413-337 053762 Line Electrician Field Training. 2-B

Course Outcome Summary

Course Information

Description	31-413-337 LINE ELECTRICIAN FIELD TRAINING 2-B ...This course provides an introduction to overhead three phase construction, electrical power line equipment; capacitors, regulators and OCR's, three phase transformer design and construction, protective grounds and pole top and buck truck rescue techniques. (Corequisite: 31-413-336, Line Electrician Field Training 2-A)
Total Credits	5
Total Hours	180

Course History

Last Revision Date	3/16/2017
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Employability Skills

- Communicate Effectively
- Demonstrate Community and Global Accountability
- Demonstrate Personal Accountability
- Solve Problems Effectively
- Think Critically and Creatively
- Value Individual Differences and Abilities
- Work Cooperatively and Professionally

Program Outcomes

- TSA1 - Apply electrical theory
- TSA2 - Construct overhead electrical distribution systems
- TSA3 - Disassemble overhead electrical distribution systems
- TSA6 - Construct overhead electrical transmission system
- TSA7 - Disassemble overhead electrical transmission system
- TSA8 - Maintain electrical systems

Course Competencies

1. Install poles in single/three-phase system

Assessment Strategies

by installing poles in single/three-phase system

Learning Objectives

- 1.a. Differentiate between single and three-phase systems
- 1.b. Set the pole
- 1.c. Interpret work order, plat map, staking sheets
- 1.d. Terminate wires to the overhead system
- 1.e. Utilize Personal Protective Equipment (PPE)

Criteria

Your performance will be successful when:

you verify that all existing UD facilities have been located
you interpret work orders, plat maps, staking sheets
you assist in staking out a pole line
you follow specified construction standards
you load & unload poles on a pole trailer
you set pole to proper depth
you plumb the pole
you face the pole
you backfill & tamp newly set pole

2. Demonstrate proper Pole Top Rescue Techniques

Assessment Strategies

by demonstrating proper Pole Top Rescue Techniques

Learning Objectives

- 2.a. Perform Pole Top Rescue safely
- 2.b. Determine when Pole Top Rescue needs to be performed
- 2.c. Utilize Personal Protective Equipment (PPE)

Criteria

Your performance will be successful when:

you identify the proper steps for Pole Top Rescue
you perform a proper Pole Top Rescue safely
you identify all hazards involved with Pole Top Rescue

3. Demonstrate proper Bucket Truck Rescue Techniques

Assessment Strategies

by demonstrating proper Pole Top Rescue Techniques

Learning Objectives

- 3.a. Perform Bucket Truck Rescue safely
- 3.b. Determine when Bucket Truck Rescue needs to be performed
- 3.c. Utilize Personal Protective Equipment (PPE)

Criteria

Your performance will be successful when:

you identify the proper steps for Bucket Truck Rescue
you perform a proper Bucket Truck Rescue safely
you identify all hazards involved with Bucket Truck Rescue

4. Frame poles for single/three-phase

Assessment Strategies

by framing poles for single/three-phase

Learning Objectives

- 4.a. Utilize Personal Protective Equipment (PPE)
- 4.b. Review proper hardware installation according to construction standards

Criteria

Your performance will be successful when:

- you drill bolt holes for installation
- you follow specified construction standards
- you install hardware and equipment
- you install cross arms
- you install ground rods and connect ground wires
- you install fuse cut-out and lighting arrester

5. Perform proper pole climbing

Assessment Strategies

by properly climbing poles

Learning Objectives

- 5.a. Utilize Personal Protective Equipment (PPE)
- 5.b. Climb wood poles

Criteria

Your performance will be successful when:

- you use a safety strap
- you belt in and belt off of wood poles
- you double belt wood poles
- you ascend and descend free hand
- you ascend and descend belted in
- you coordinate hand and foot movement
- you lengthen and shorten safety strap properly to perform work
- you move around the pole free hand
- you move around the pole belted in
- you climb over cross arms and obstruction
- you hang a handline while on the pole
- you perform work with two hands

6. Perform proper truck operation

Assessment Strategies

by performing proper truck operation

Learning Objectives

- 6.a. Utilize Personal Protective Equipment (PPE)
- 6.b. Guard work site
- 6.c. Operate digger derrick truck
- 6.d. Operate bucket truck

Criteria

Your performance will be successful when:

- you perform DOT inspection of vehicle
- you start engine
- you position truck for work, check soil, road, and shoulder
- you recognize worksite hazards
- you set up cones & signs to avoid worksite hazards
- you properly guard the work site
- you engage PTO
- you operate lower controls
- you perform inspection of digger derrick/bucket truck prior to use
- you raise and cradle the boom
- you raise outriggers

you disengage PTO
you attach trailer, detach trailer and park trailer
you back vehicle and trailer
you use hand signals
you locate and operate pedestal override controls

7. Use hand and power tools

Assessment Strategies

by using hand and power tools

Learning Objectives

- 7.a. Utilize Personal Protective Equipment (PPE)
- 7.b. Display proper use of hand tools
- 7.c. Display proper use of power tools

Criteria

Your performance will be successful when:

you select correct tools.
you inspect tools.
you adjust tools before and during each use.
you clean and inspect tools.
you store tools in correct location.

8. Tie knots and splice ropes

Assessment Strategies

by tying knots and splicing rope

Learning Objectives

- 8.a. Utilize Personal Protective Equipment (PPE)
- 8.b. Demonstrate how to tie knots

Criteria

Your performance will be successful when:

you tie a bowline
you tie a double bowline
you tie a bowline on a bight
you tie a running bowline
you tie a triple (rescue) bowline
you tie a square knot
you tie a figure eight knot
you tie a sheepshank
you tie a overhand knot
you tie two half-hitches
you tie a round turn and two half-hitches
you tie a snubber
you tie a catspaw
you tie a timber hitch

9. Demonstrate rigging techniques

Assessment Strategies

by demonstrating proper rigging techniques

Learning Objectives

- 9.a. Utilize Personal Protective Equipment (PPE)
- 9.b. Demonstrate proper installation and removal of pole gins
- 9.c. Demonstrate proper installation and removal of baker boards
- 9.d. Demonstrate proper rigging techniques

Criteria

Your performance will be successful when:

you demonstrate proper use of slings
you make-up blocks
you inspect blocks
you properly handle blocks and rigging equipment
you install pole gin in desired location per specific pole gin
you remove pole gin with proper technique per specific pole gin
you install baker boards in desired location per specific baker board
you remove baker boards with proper technique per specific baker boards

10. Install hot line cover up gear

Assessment Strategies

by installing hot line cover up gear

Learning Objectives

- 10.a. Identify different cover up gear
- 10.b. Select proper cover up gear
- 10.c. Identify order to assemble/remove cover up gear
- 10.d. Demonstrate proper care of hot line cover up gear
- 10.e. Identify system voltage to be worked on
- 10.f. Utilize Personal Protective Equipment (PPE)

Criteria

Your performance will be successful when:

you identify different cover up gear
you select proper cover up gear
you identify order to assemble/remove cover up gear
you demonstrate proper care of hot line cover up gear
you identify system voltage to be worked on
you utilize Personal Protective Equipment (PPE)

11. Identify circuits and equipment in the field

Assessment Strategies

by identifying circuits and equipment in the field

Learning Objectives

- 11.a. Identify system voltage
- 11.b. Identify Phases
- 11.c. Install and reinstall jumpers
- 11.d. Utilize Personal Protective Equipment (PPE)

Criteria

Your performance will be successful when:

you read the operating diagram to identify the system voltage
you use a volt meter to identify the system voltage
you read the name plate on the transformer to identify system voltage
you use a volt meter/phasing stick to identify that phases match
you install by pass jumpers prior to installing new jumpers
you remove the by pass jumpers after installing new jumpers.

12. Install transformer hook-ups

Assessment Strategies

by installing transformer hook-ups

Learning Objectives

- 12.a. Draw transformer hookups
- 12.b. Identify Wye/Delta transformer hookups
- 12.c. Identify Wye/Wye transformer hookups
- 12.d. Open Wye/Open Delta transformer hookups
- 12.e. Install Wye/Delta transformer hookups
- 12.f. Install Wye/Wye transformer hookups

- 12.g. Install Open Wye/Open Delta hookups
- 12.h. Utilize Personal Protective Equipment (PPE)

Criteria

Your performance will be successful when:

- you draw proper hookups on transformer drawings
- you install wire in proper hook ups to make proper connections
- you shape and form wires per hookup specifications
- you hook up service line to transformer setting
- you verify tap setting for correct voltage
- you verify name plate when identifying transformer

13. Install & remove Oil Circuit Reclosures (OCRs)

Assessment Strategies

by installing and removing Oil Circuit Reclosures (OCRs)

Learning Objectives

- 13.a. Bypass OCRs
- 13.b. Cover lines up before removal
- 13.c. Explain how an OCR operates
- 13.d. Identity other types of reclosures
- 13.e. Describe construction standards for OCR measures
- 13.f. Utilize Personal Protective Equipment (PPE)

Criteria

Your performance will be successful when:

- you use construction standards to bypass OCR.
- you demonstrate line cover up prior to install or removal of OCRs to prevent accidental contact
- you differentiate between the different types of OCRs
- you identify different types of reclosures
- you follow standard guidelines to install and remove OCRs

14. Install & remove Voltage Regulators

Assessment Strategies

by installing and removing Voltage Regulators

Learning Objectives

- 14.a. Bypass Voltage Regulators
- 14.b. Cover lines up before install and removal
- 14.c. Explain how an Voltage Regulators operates
- 14.d. Identity other types of Voltage Regulators
- 14.e. Describe construction standards for Voltage Regulators measurements
- 14.f. Utilize Personal Protective Equipment (PPE)

Criteria

Your performance will be successful when:

- you use construction standards to bypass Voltage Regulators.
- you you follow standard guidelines to install and remove Voltage Regulators
- you demonstrate line cover up prior to install or removal of Voltage Regulators to prevent accidental contact
- you differentiate between the different types of Voltage Regulators.
- you identify different types of Voltage Regulators
- you identify different parts of a Voltage Regulator

15. Install & remove capacitor bank

Assessment Strategies

by installing and removing capacitor bank

Learning Objectives

- 15.a. Define procedures for deenergizing and energizing
- 15.b. Deenergize capacitor

15.c. Utilize Personal Protective Equipment (PPE)

Criteria

Your performance will be successful when:

- you identify any problems with capacitor
- you protect lightening arrestors
- you maintain proper distance from capacitor when deenergizing
- you follow steps to bleed off capacitor
- you short off the capacitor between two terminals

16. Install and removal of protective grounds

Assessment Strategies

by installing and removing protective grounds

Learning Objectives

- 16.a. Explain protective grounding
- 16.b. Determine the proper sequence of installing & removing the protective grounds
- 16.c. Utilize Personal Protective Equipment (PPE)

Criteria

Your performance will be successful when:

- you verify buzzing tool is working properly
- you verify line is deenergized using buzzing tool
- you identify proper length of grounds
- you secure leads with improper lengths
- you identify proper placement of ground leads