

Electrical Safety for Utilities

4 Days, 3.2 CEUs

Linemen, substation technicians, and other utility maintenance and construction personnel are exposed to some of the highest voltages and electrical hazard levels in the United States. Lean operations and informal on-the-job training can lead to gaps in a technician's electrical safety knowledge. To ensure adequate safe work practices are followed, personnel must understand electrical hazards, safety regulations, and the use of safe work procedures and protective equipment. Because of updates, utilities may have difficulty keeping up with revisions in OSHA, the National Electrical Safety Code (NESC), ASTM and other applicable electrical safety regulations and standards. This course improves the ability to interpret these requirements because applying them is essential to preventing electrical accidents, outages, and equipment damage.

This course provides training for new, multi-craft or experienced electricians, linemen, technicians, engineers, supervisors and safety managers that install, maintain, repair, troubleshoot or work around power generation, transmission and distribution equipment. It meets mandated training requirements of OSHA 1910.332 and .269. The participant should have basic knowledge of AC and DC electrical systems.

Classroom Attire:

AVO is committed to the personal safety of each participant. Lecture courses may involve a tour of a work or shop area and for this reason open toe shoes and shorts are not considered appropriate attire for the classroom.

Learning Objectives:

Upon completion of this course the participant will demonstrate, by attaining a minimum grade of 80% on the final exam, that he/she is able to:

- Explain the hazards of electricity and their effects.
- Interpret and apply hazardous energy control regulations for utilities as required by OSHA.
- Outline installation of temporary grounding for personal protection.
- Utilize safe work practices for work on or around substation equipment, transmission equipment, and overhead lines.
- Recognize appropriate personal protective equipment for a variety of applications.
- Describe the functions of a substation grounding system.

SCOPE

Day 1*

I. Introduction

- A. Schedule
- B. Course Outline

II. Hazards of Electricity

- A. Electrical Shock
- B. Electrical Arc Flash
- C. Electrical Arc Blast

III. Electrical Safety Regulations and Standards

- A. Who is OSHA?
- B. Overview of the Regulations and Standards

Day 2

IV. Deenergized Work for Utilities

- A. Regulatory Requirements
- B. One-Line Diagrams
- C. Locking and Tagging
- D. Clearance Procedures
- E. Verification of Deenergization

V. Personal Protective Grounding

- A. Regulatory Requirements for Grounding
- B. Purpose of Protective Grounds
- C. Sizing of Protective Grounds
- D. Effects of Current and PPE Grounding
- E. Grounding Equipment
- F. Personal Protective Ground Jumper Testing
- G. Grounding Equipment Manufacturers/Suppliers
- H. Application of Protective Grounds
- I. Induced Voltages and Currents on Deenergized Circuits & Equipment

Day 3

VI. Working on Utility and Industrial Power Systems

- A. Overview of Electrical Power Systems

- B. Training Requirements for Qualified Workers
- C. Safe Work Requirements
- D. Energized Electrical Power Work

Day 4

VII. Personal Protective Equipment

- A. Protective Techniques
- B. Electrical Protective Equipment
- C. Arc Flash Protective Equipment
- D. Arc Blast Protective Equipment
- E. Other Protective Equipment
- F. Energy Detection Equipment

VIII. Substation Grounding

- A. Functions of Substation Grounding Systems
- B. Grounding Methods for Electric Supply
- C. Ground Testing

IX. Conclusion

- A. Review
- B. Final Exam

*Class scheduling times may vary based on discussions and size of class.