



PROTECT – Protection Fundamentals

Length: 4.5 Days

Overview

Energy from electrical power systems or lightning can pose safety hazards to your personnel, cause fires and facility damage and result in service outages. Newer electronic equipment is even more sensitive to electrical surges, presenting a greater likelihood of unsafe equipment degradation.

PROTECT promotes your understanding of electrical energy sources, including lightning, power contacts and induced voltage from ground return power current. The principles and practices surrounding bonding, grounding, protectors and surge arrestors are covered in detail, giving you the information you need to more effectively protect your telecommunications office, outside plant facilities and customer premises equipment.

Upon course completion, you will be tested to reinforce your knowledge and determine areas for further study. Successful completion of this test will earn TPI Trainers Certification.

Customization: PROTECT reflects current industry standards and can be customized and presented at your location to meet the unique needs of specific work groups, such as installation technicians and managers, facility maintenance technicians, network maintenance technicians and technical support engineers. Call 1-630-607-9302 for information on customized versions of this course.

You Will Learn

- Protection equipment specification and installation measures.
- Calculations for induced voltage into a cable from ground return current on a paralleling power line.
- Liability claims investigations with an electrical power origin.
- How to evaluate the effectiveness of protection systems at central offices, outside plants and customer facilities.
- Proper measurement of earth resistivity and ground electrode resistance.

Course Outline

- Principles of Electrical Protection
 - Power System Description
 - Determination of Influence

- Power Systems Overview
 - Operating Characteristics
 - Power Contacts
 - Inductive Coupling
- Ground Potential Rise (GPR) Demonstration
- Joint Use and Power Contact Considerations
- Lightning Fundamentals
- Lightning and Power Contact Demonstration
- Surge Protection and Grounding
- Telecommunications Office Protection and Grounding
- Station Protection, Bonding and Grounding
- Soil Characteristics
 - Earth Conduction
 - Soil Resistivity
- Ground Measurements
 - Test Equipment
 - Electrode Resistance
 - Earth Resistivity (Meter-ohms)
 - Outdoor Laboratory
- Special Protection - General
 - Importance of Special Protection
- Special Protection - Power Substations
 - Importance of Special Protection
 - GPR at Power Stations
 - Overview of Protection Methods
 - Reference Materials
- Liability Investigation Example
- Telecommunications Office Fire Investigation Case
- Protection of Cables
 - Conventional Copper
 - Optical Fiber



Take Home Materials:

You will receive a comprehensive course manual and computer diskette that will be helpful in making mutual impedance and ground electrode calculations when you return to your job.

Who Can Benefit:

Telecommunications personnel and others involved in the electrical protection of telecommunications offices, distribution facilities and customer premises. Also beneficial for technical support personnel and others who investigate electric shock reports, equipment damage and fires of electrical origin involving telephone facilities.

An understanding of basic electrical theory is recommended.

