

COURSE ABSTRACT & OUTLINE - TUTORIAL E6 – IEEE STD 81

GUIDE FOR MEASURING EARTH RESISTIVITY, GROUND IMPEDANCE, AND EARTH SURFACE POTENTIALS OF GROUND SYSTEM

IEEE SUBSTATION COMMITTEE MEETING

PORTLAND, OREGON

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Abstract

The tutorial will present practical test methods and techniques for measuring the electrical characteristics of grounding systems as outlined in the latest revision of IEEE Standard 81. Topics addressed will include:

- Safety considerations
- Measuring earth resistivity
- Measuring the resistance or impedance of the ground system to remote earth
- Measuring step and touch voltages
- Verifying the integrity of the grounding system
- Reviewing instrumentation characteristics and limitations
- Reviewing various factors that can distort test measurements
- Interpreting test results

A presentation will also be made on measuring the resistivity of crushed rock surfacing typically used in substations and the test results as compiled by one utility. The afternoon session will feature live demonstration of various testing procedures supplemented with videos demonstrating actual field tests being performed.

TUTORIAL OUTLINE

1. Introduction
 - a. Test objective and key definitions
 - b. Safety considerations
 - c. Understanding the circuit being tested
 - d. Typical problems encountered during testing
2. Test methods
 - a. Earth resistivity
 - b. Ground impedance
 - c. Earth potentials and step and touch voltages
 - d. Ground integrity tests
 - e. Testing surface aggregate
3. Live demonstration and video of field tests being performed with commentary
4. Questions and answers