

Insulated Conductor Committee News



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During May 17-20, 2009, approximately 350 engineers and scientists met in Orlando, Florida, for the Spring IEEE/ICC meeting

This is an ongoing opportunity for the InterNational Electrical Testing Association to be recognized and to offer a field testing perspective in the working groups as documents are reviewed. The working groups consist of representatives from cable manufacturers, utilities, test equipment manufacturers, and end users.

Subcommittee F on Field Testing and Diagnostics

One of the major changes was the creation of a new subcommittee F on Field Testing and Diagnostics. Several existing working and discussion groups have been moved to this new subcommittee to provide more focus on one of the most exciting areas in ICC. John Densley and Nigel Hampton are the chair and vice chair respectively. We look forward to their leadership in creating this new committee.

Spring 2009

Breakout Working Groups /Discussion Groups Meetings

B01W	IEEE 48 CABLE TERMINATION STANDARDS
B19D	CABLE PREP TECHNIQUES FOR INSTALLING ACCESSORIES
C26D	MEDIUM VOLTAGE UNDERGROUND CABLE RELIABILITY
C30D	EXTENDING THE LIFE OF POWER CABLES IN THE FIELD
F03D	VERY LOW FREQUENCY TESTING IN THE FIELD – IEEE 400.2
F01W	GUIDE FOR FIELD TESTING AND EVALUATION OF SHIELDED CABLES – IEEE 400 (OMNIBUS)
F04D	PARTIAL DISCHARGE TESTING IN THE FIELD – IEEE 400.3
F05D	DAMPED AC VOLTAGE TESTING
F06D	DC FIELD TESTING OF EXTRUDED CABLE SYSTEMS
F10D	DIAGNOSTIC TESTING FOR CABLE JOINTS & TERMINATIONS

NETA is actively participating in the following:

WG F01W - IEEE 400, IEEE Guide for Field Testing and Evaluation of the Insulation of Shielded Power Cable Systems Rated 5 kV and above

The working group reviewed the proposed revisions by the writing group that includes a new section, "Evaluation of Results." This new section is intended to offer guidelines on the interpretation of results. The final draft is expected to be issued at the spring 2010 meeting and submitted for ballot by September 2010.

WG F03D IEEE 400.2, IEEE Guide for Field Testing of Shielded Power Cable Systems Using Very Low Frequency (VLF).

The discussion group reviewed the potential that include new data and a 30-minute test. A significant number of installation problems can be identified with the longer duration. The discussion group will continue to review new data as it becomes available.

WG F04D IEEE 400.3, IEEE Guide for Partial Discharge Testing of Shielded Power Cable Systems in a Field Environment.

Partial discharge testing has gained acceptance as a valid diagnostic tool for condition assessment of cable insulation. PD testing is a valuable tool in most cable asset management programs. The results obtained from a partial discharge test depend not only on the conditions under which the test was performed but also on the test equipment itself including the type of sensor used and its location. These issues are

being addressed in the review process by the discussion group including methods for a calibration procedure for field installed cable joints. Additional data will be presented for review at the next meeting.

WG F05D, *Damped AC Voltage Testing*

Damped ac voltage testing has gained some acceptance. This subject was presented to the discussion group for review. At this time there is limited activity in the USA utilizing this methodology. It was determined that additional data will be presented at the fall meeting.

WG F06D, *DC Field Testing of Extruded Cable Systems*

The industry is slow to change and a number of specifying engineers still call for dc withstand tests. The concern is that the members of the InterNational Electrical Testing Association (NETA) is called upon to perform dc testing and needs a resource for test values and or test parameters. There was general discussion regarding whether dc testing of extruded dielectric cable should be an IEEE Guide or if a paper should be prepared and circulated. It was determined to continue as a discussion group for low-voltage dc testing only and not overpotential. There was limited discussion on this methodology and additional data for low-voltage dc testing will be presented for discussion at the next meeting.

WG F10 D, *Diagnostic Testing for Cable Joints and Terminations*

Data from EPRI-sponsored research was presented for review including correlation for the degradation rankings of six diagnostic techniques as a function of carefully controlled laboratory ACLT aging conditions on service-aged XLPE-insulated cables. Most outages of power cable systems are caused by PD defects in the accessories, such as joints and terminations, due to improper assembling work. Consequently, the detection of partial discharges after installation is considered a valuable diagnostic tool to ensure the integrity of power cable networks. For the recognition of harmful PD defects in the extruded insulation of cable accessories, however, detection sensitivity as low as a few pC is required. This cannot be achieved in the noisy environment under on-site conditions. Case studies were presented which demonstrate the capability of early recognition of harmful PD defects. There was general discussion, and some volunteered to provide additional data for review.

Ralph Patterson is President of Power Products & Solutions located in Charlotte, North Carolina. His professional background includes working as a design engineer of transformers and as a specifying engineer of insulated conductors. He has more than 25 years in power engineering particularly in insulation diagnosis and evaluation of electrical distribution equipment. He serves on the NETA Standards Review Council and Board of Directors, is the NETA liaison for the IEEE Insulated Conductor Committees working groups and received NETA's 2001 Outstanding Achievement Award.