

## **7.1 Underground Transformers and Network Protectors – Carl G. Niemann**

### **Meeting Minutes – October 25, 2006**

#### **7.1.1 Introduction/Attendance**

The Underground Transformers and Network Protectors Subcommittee met on Wednesday, October 24, 2006, in the Auditorium of the Delta Centre-Ville Hotel at 9:30 AM with 9 members and 6 guests present.

#### **7.1.2 Approval of Minutes**

The minutes of the March 22, 2006 meeting in Costa Mesa, CA were approved as submitted.

#### **7.1.3 Membership**

Membership stands at 18 members.

#### **7.1.4 Chairman's Remarks**

**The following Administrative Subcommittee notes were reported to the subcommittee:**

- The attendance statistics and future meeting locations
- IEEE metric policy – for safety **or clarity** then US Customary may also be shown

#### **7.1.5 Working Group Reports**

##### **7.7.5.1 Underground Single Phase Transformers (C57.12.23) – A. Traut, Chairman**

1. The WG for single phase submersible transformers PC57.12.23 did not meet in Montreal. The document is well along its development and is ready for editorial review by IEEE. The WG will meet again in Dallas to review the results of that editorial review.

##### **7.7.5.2 Three-Phase Underground-Type Transformers (C57.12.24) – Giuseppe Termini, Chairman**

1. The meeting was called to order by the Chairman at 8:00AM on Monday, October 23, 2006 in the St. Charles Room of the Delta Centre-Ville Hotel, Montréal, Québec, CANADA
2. Introductions were made. The meeting was attended by 17 members and 5 guests.
3. The Chairman opened the meeting by asking if anyone in the Working Group knew or had knowledge of any existing or pending patents that may affect the work on this standard. All responses were negative.
4. The Meeting Minutes from the previous meeting in Costa Mesa, California, were reviewed and approved.
5. The rest of the meeting consisted of a review of Draft C of the standard.
  - A. Section 1.2. The word “determining” on the Purpose was changed to “establishing”.
  - B. Section 7.2.2. The reference to NOTE 5, on figures 4 (c) and (d) will be deleted since this note was removed (see Item 4).

- C. Section 7.2.2. The number of holes in the notation for figure 4 (d) will be corrected to 12, and the missing kVA range will be filled as: 3000-3750. This omission occurred when the draft document in word format was converted to a pdf format for group distribution.
- D. Section 7.2.2. NOTE 5 for Figure 4 will be deleted. This deletion was approved at the 3/20/06 meeting in Costa Mesa, California.
- E. Section 7.5.1. The word “tank” will be added at the beginning of the sentence right after the word transformer. The dashes between the metric and English units in Table 5 will be removed.
- F. Section 7.5.3. The word “function” was changed to “functional”. This section will read: “All external hardware, nuts, bolts, washers, etc., shall be austenitic stainless steel, silicon bronze, or the functional equivalent.”
- G. Section 7.5.4. This section was revised to read: “All valves, fittings, pipe plugs or caps, and bushing flanges shall have corrosion resistance properties. Any thread sealant used shall be non-conducting.”
- H. Section 7.5.6. The word “located” was removed from the sentence. This section now reads: “If a handhole is required, it shall be welded to the cover, be adequately sized, and be suitably located to permit access to internal components.”
- I. Section 7.8. The table number in the paragraph was changed from “5” to “6”. Also, the reference to “35 kV and below” and the notation “(decibels) were removed from the Average Sound Levels column of Table 6. The decibel symbol “dB(A)” will be added in this column header.

6. The meeting was adjourned at 9:20 a.m.

#### **7.7.5.3 Liquid Filled Secondary Network Transformers (C57.12.40) – B. Klaponski, Chairman**

- 1. The WG met on Monday, October 23, 2006 at 09:30 am with 12 members and 6 guests.
- 2. The chairman reviewed the patent legal issue and asked whether there were any patents or patents pending that would affect the WG or standard. None were identified.
- 3. The minutes of the March 20, 2006 meeting in Costa Mesa, CA were amended to remove the last sentence of item #4d. The minutes were approved as amended.
- 4. B. Klaponski gave a brief status update on the standard and process.
  - A. Standard was published on September 15, 2006.
  - B. The PAR for this last update was to correct errors in the document. Since the standard published was only updated to correct editorial errors, it is not really the standard we need. WG will focus on a complete review of the standard during the next review cycle. The WG will focus on technical issues.
  - C. The chairman reiterated the comments made at the March meeting that the procedures for a Working Group to update a standard are overly complicated and too much administrative work is required from the WG.

This places a huge burden on the WG chairs. There is a lot of opportunity for improvement in the process.

- D. Review of new PAR. WG reviewed the new title, scope, and purpose developed at the March meeting. Intent is for this standard to not cover dry type transformers.
- E. Title: Draft Standard for Network, Three-Phase Transformers, 2500 kVA and Smaller; High Voltage 34 500 GrdY/19 920 and Below; Low Voltage 600 Volts and Below
- F. Scope: This standard covers certain electrical, dimensional, and mechanical characteristics and takes into consideration certain safety features of three-phase, 60-Hz, liquid-immersed, self-cooled, network transformers with a primary grounding switch. These transformers are rated 2500 kVA and smaller with high voltages of 34 500GrdY/19 920 volts and below. These transformers are generally used for step-down purposes from underground primary cables and supply a secondary network system through network protectors. These transformers are typically installed below ground level.
- G. Purpose: This standard is intended for use as a basis for establishing the performance, electrical and mechanical interchangeability, safety of the equipment covered, and to assist in the proper selection of such equipment.
- H. A new PAR submittal will be made prior to next meeting. The title, scope and purpose will be reviewed by chairman prior to submitting a new PAR.
- I. The WG began work on update of standard (Draft A).
  - i. The group kicked off with a discussion of section 5.2.2 regarding the short circuit rating of the three-position high voltage switch, and gaps in the wording of the current standard. The group began a review of a proposal submitted by L. Dix, with the focus of discussion on defining the performance of the switch. Draft wording was developed and will be sent to the WG.
  - ii. There was a suggestion regarding polling the utility network users in North America regarding typical network circuit relay protection settings to assist the WG in establishing the proper short circuit ratings of the high voltage switch. L. Dix volunteered to poll network users in this regard via a user group email system.
  - iii. The WG then began discussion of section 5.2.5 regarding dielectric properties in the open position. J. Rosetti questioned whether an AC test was the same as a DC test. Can the manufacturers use an AC factory hipot to test switch and have the switch withstand the DC hipot voltages used for cable testing? Should the test be done in the actual switch chamber to include actual clearances? What value of AC will represent the DC test voltages? L. Dix offered to provide historical information on this topic. The group will continue discussion at the next meeting.
- J. The meeting was adjourned at 10:45am with the next meeting in Dallas, Texas.

**7.7.5.4 Secondary Network Protectors (C57.12.44) – D.H. Mulkey, Chairman**

1. The WG was not scheduled to meet.
2. The standard was published in 2005
3. Reaffirmation or PAR will be needed in 2010

**7.7.5.5 Ventilated Dry-Type Network Transformers (C57.12.57) – A.L. Robinson, Chairman**

1. The WG was not scheduled to meet.

**7.1.6 Old Business**

1. None

**7.1.7 New Business**

1. Improvements for administrative process
  - A. Session with the WG chairs and Bill Chew and Angela Ortiz to discuss improvements with IEEE editorial representation added
  - B. Sessions where Bill Chew and/or Angela Ortiz are available to help individual chairs through the various steps of the process.
  - C. Bill Chew to keep latest project at each stage as examples
  - D. Editor assigned on front end or at least editor to stay the same from pre-ballot review to publication
  - E. IEEE representation to attend through Thursday meeting

**7.1.8 Future Meetings**

The location and dates for the next meetings are as follows:

- March 11-15, 2007, Dallas, Texas – Hilton Dallas Lincoln Centre, about \$130/night, host is Ken Hanus TXU Electric Delivery
- Oct 14-18, 2007, Minneapolis Minnesota – Hilton downtown (with light rail access), about \$130/night– Excel Energy
- Spring 2008 Charlotte, NC? Phoenix?
- Fall 2008 Oporto Portugal, Sheraton

**7.1.9 The Subcommittee adjourned at 10:27 AM.**

## Roster and Attendance

Role	Last Name	First Name	Company	10/24/2006
Member	Alfonso	Nelson	Siemens S. A.	X
Member	Barrientos-Torres	Israel	Prolec GE	
Member	Blew	Dave	Public Service Electric & Gas	X
Guest	Buchanan	Paul	Moloney Electric	X
Guest	Dunkin	Bob	ABB	X
Guest	Fortin	Marcel	Consultant	X
Guest	Graham	Richard	Delta Star	X
Member	Hussain	Mohammad	ABB	X
Member	Klaponski	Brian	Carte International	X
Member	Lee	Dennis	Seattle City Light	X
Member	Lu	Franklin	Seattle City Light	
Member	Moffat	Jock	Eaton Electrical	
Vice-Chair	Mulkey	Daniel	Pacific Gas & Electric	X
Chair	Niemann	Carl	Niemann Consulting	X
Member	Risse	Peter	Georgia Power	
Member	Robinson	Arlise (Butch)	American Electric Power	
Member	Romano	Ken	Georgia Power	X
Guest	Rossetti	John	Memphis Light, Gas & Water	X
Member	Schroeder	Steven	ABB	
Member	Sullivan	John	Consultant	
Member	Termini	Giuseppe	Exelon – PECO	X
Member	Traut	Alan	Kuhlman	
Guest	Virelli	Greg	Virelli & Associates	X
Member	Wimmer	William	Dominion	