Underground Transformers & Network Protectors SC – Chair: Carl Niemann

**March 26, 2014**

**Savannah, Georgia**

**Chair: Carl Niemann
Vice-Chair: Dan Mulkey**

# Meeting Administration

Dan Mulkey chaired as Carl Niemann did not attend this meeting due to personal issues, and with George Payerle acting as secretary.

**Introductions** – The meeting was called to order. In the interest of time, introductions were not made.

**Quorum** – The members were listed on the screen and by a show of hands, it was determined that there was a quorum with 10 of the 13 members in attendance.

**Approval of Minutes** – The Fall 2013 minutes were amended to correct various spelling errors. They were motioned for approval by Alan Traut and seconded by Said Hachichi. The subcommittee approved these without opposition.

**Members in Attendance:**

Adam Bromley - Fort Collins Utilities

Said Hachichi - Hydro-Quebec

Brian Klaponski - Carte International Inc.

Daniel Mulkey - Pacific Gas & Electric

George Payerle - Carte International Inc.

Jeremy Sewell - Quality Switch, Inc.

Adam Sewell - Quality Switch, Inc.

Giuseppe Termini - PECO Energy

Alan Traut - Power Partners

William Wimmer - Dominion

**Guests in Attendance:**

Kevin Biggie - Weidmann Electrical Technology

Richard Cantrell - Doble Engineering Co.

Jermaine Clonts - Power Partners

Valery Davydov - Mr. Valery Davydov

Anil Dhawan – ComEd

\* Larry Dix - Quality Switch, Inc.

Fredric Friend - American Electric Power

\* Carlos Gaytan - Prolec GE

\* Michael Hardin - H-J Enterprises, Inc.

Robert Kinner - FirstPower Group LLC

Lalin Kothalawala - Manitoba Hydro

\* Alejandro Macias - CenterPoint Energy

\* Charles Morgan - Northeast Utilities

Martin Navarro - Siemens Ltda

Robert Olen - Cooper Power Systems by Eaton

Barbara Patoine - Weidmann Electrical Technology

\* Justin Pezzin - IFD Corporation

Russell Sewell - Quality Switch, Inc.

Stefan Siebert - BROCKHAUS MESSTECHNIK

Edward Smith - H-J Enterprises, Inc.

Richard Smith – Eaton

\* Anastasios Taousakis - Pepco Holdings Inc.

\* Requested and was granted membership in the Subcommittee

# Each of the working groups that met reported as follows:

## C57.12.23 Single-Phase Submersible Transformers – Alan Trout, Chairman, Adam Bromley, vice-chair. Revision due date: 3/19/2019 PAR Expiration Date: NA

The meeting was called to order and everyone was asked to introduce themselves. Blank rosters were sent around as this is a new WG.

We did not need to establish a quorum as this is the first meeting and we will be establishing the group of members after this meeting. We had 40 attendees with 29 requesting membership.

Approval of minutes – There are no previous minutes as this is a newly formed working group.

Old business – none as this is a new WG

New Business - Title was modified to include 34500GrdY/19920 V instead of 25000 V. The low voltage rating did not change and was kept at 600 V. Ron Stahara asked if the 35 kV level was feasible and the consensus was that it is.

There was some discussion about changing the largest kVA size. Some customers’ largest size is 250 or 500 kVA. There was a comment about the biggest unit used in a manhole might be 250 kVA. Giuseppe Termini and Dan Mulkey recommend that we go to 250 kVA; Said Hachichi wanted to know why we wouldn’t go bigger (he buys 333 kVA and a few 500 kVA). There was another comment that a 333 kVA would be limit of the current standard stud size. Brian Klaponski recommended that we keep the maximum size at 250 kVA; there seemed to be consensus surrounding that suggestion.

Al Traut and Adam Bromley will ensure that the entire document is updated with new kVA, voltage ratings, etc.

Title and Scope - While reviewing the three phase submersible standard it was noted that the scopes are very similar except that 12.23 has the following paragraph: “This standard does not cover the electrical and mechanical requirements of any accessory devices that may be supplied with the transformer.” It was decided to delete the sentence because we don’t want to state what the scope isn’t.

Ron Stahara made a motion to accept the changes to the Title and Scope; Rich Smith seconded that motion. The motion was unanimously approved and will be used for our PAR application.

Dates - Al asked if we wanted to keep dated references to other IEEE standards in this standard. Ron Stahara mentioned that we want to keep them generic. Brian Klaponski mentioned a concern that when something changes we might easily have an outdated reference. If we are referencing a specific section, it might make sense to use the date. It was decided that we want to use generic references as much as we can, and only use specific references when we have to. Al Traut and Adam Bromley will check all references and update references that need to be changed.

Consistency - There was a comment made regarding the need to keep consistent with submersible enclosure integrity and three phase submersible standards on definitions of submersible, submerged operation, etc.

Brian Klaponski asked if we wanted to keep the 55°C winding rise as a standard. Dan Mulkey stated that the insulation system is based on 65°C, but when we put in a submerged environment, the expectation is to have the 10°C cushion for when air circulation is non-existent.

Al Traut and Adam Bromley will update the document with the proposed changes. We will also submit a PAR application for this standard for approval at NESCOM prior to the October 2014 meeting.

Adjournment – The meeting was adjourned at 10:25 am. The next meeting will be in the Washington D.C. area in October 2014.

## C57.12.24 Three-Phase Submersible Transformers working group – Giuseppe Termini, Chairman Revision due date: 6/17/2019 PAR Expiration Date: 12/31/2015

**Introductions** – the meeting was called to order at 9:45 and introductions were made. George Payerle acted as recording secretary.

**Quorum** - The meeting was attended by 14 members and 33 guests. A quorum was achieved with 14 out of 17 members present. Six (6) guests requested membership. Under the new guidelines, guests must attend two (2) consecutive meetings before they can qualify for membership.

**Approval of Minutes** - The minutes from the St. Louis meeting were reviewed. Dan Mulkey made a motion to accept the minutes as submitted, Adam Bromley seconded the motion. The motion was approved unanimously.

**Discussion** - The chairman then moved to discuss the most recent draft revision of the standard which is D1. Sections 7.3.2 (Pressure Relief) and 7.3.3 (Loadbreak Switch) were reviewed.

After some discussion, the following sub-sections under pressure relief were changed:

1. A minimum ½ inch NPT or UNC fitting shall be located on the transformer cover and used for mounting a manual pressure relief plug or an automatic pressure relief valve.
2. The manual pressure relief plug shall allow slow release of pressure without completely removing the plug.
3. If an automatic pressure relief valve is specified, the fitting shall be sized for the flow rate of the valve and it shall be operable by using a standard hot-line tool.

Brian Klaponski moved to approve the new wording and Dan Mulkey seconded the motion. The motion was approved unanimously. There was additional discussion about adding information, perhaps in the appendix that would explain to the user the need for pressure relief. It was agreed to hold that discussion until after the next meeting. Carlos Gaytan volunteered to provide wording, based on his work in C57.12.39, to use in an appendix and report back at the next meeting.

Load break - The following sub-sections under load break switch were also discussed and revised:

1. A two-position loadbreak switch shall be provided to energize and de-energize the transformer’s high voltage windings.
2. The switch shall be labeled as “OPEN” and “CLOSED” and shall be distinctly observable at a distance of 2.44 m (8 ft) from the transformer by the position of the handle.
3. The switch operating handle shall be located on the transformer cover and shall be operable by using a standard hot-line tool.
4. The switch rotation shall be clockwise to close, to energize the high-voltage windings, and counterclockwise to open, to de-energize the high voltage windings.
5. The minimum current-carrying capabilities of the switch shall be 200 A (continuous current rating) and 10 kA rms symmetrical for 0.17 s (short-time current rating).
6. All parts of the loadbreak switch external to the tank shall be of corrosion resistant material other than aluminum and plastic.

Dan Mulkey moved to approve the aforementioned changes and Adam Bromley seconded the motion. The motion was approved unanimously.

Discussion – Giuseppe Termini noted that progress needs to be made on 12.24 so that it can go to ballot at the next meeting. Dan Mulkey moved to approve the aforementioned changes and Adam Bromley seconded the motion. The motion was approved unanimously. Bill Wimmer and Dan Mulkey volunteered to work with the chairman to review Section 7.3.4 Overcurrent Protection and make any necessary changes prior to the next meeting.

The chairman stated that the remaining changes in the draft will be reviewed at the next WG meeting and encouraged the WG to provide additional input prior to the meeting so that the changes can be included in the next draft revision. The meeting was adjourned at 10:45 with the next meeting scheduled for October 20, 2014 in Washington D.C.

## 57.12.40 Secondary Network Transformer working Group – Brian Klaponski, Chairman Revision due date: 12/31/2021 PAR Expiration Date: 12/31/2016

**Introductions** – The WG met on Tuesday March 25, 2014 at 11:00 a.m. with 10 members and 15 guests. An agenda was presented and introductions were made.

**Minutes** - The minutes of the October 22, 2013 meeting were reviewed and modified as follows: Added Bill Wimmer and Mark Faulkner to the attendance list. Corrected the meeting location to Renaissance Grand hotel in St. Louis MO. Corrected the name of a company from Center Point Energy to CenterPoint Energy. Corrected the name of one attendee from Marcias to Macias. George Payerle made a motion to approve the minutes as amended above. Jeremy Sewell seconded and the minutes were approved unanimously.

**Document review** - The meeting consisted of the review of the proposed changes made at the previous meeting. Additional changes to the following table and figures were suggested:

a) Table 9 – Change the dropout voltage values to the following:

|  |
| --- |
| Dropout voltage |
| 15 to 75 |
| 33 to 166 |

The chairman will forward the changes to the table to Dan Mulkey and Mark Faulkner for review. Dan Mulkey will also solicit input from other end-users. .

c) Correction to title for figure 1(b) to add: “Configuration without switch and terminal chamber”

b) Change title to figure 1(c) as follows: “Configuration with or without internal switch”

Discussion - Jeremy Sewell and Tas Taousakis volunteered to work with the chairman to rewrite the clauses in the body of the standard to allow for the introduction of the new figures: 1 (b) and (c).

It was suggested that additional grounding (this is safety grounding that is normally provided through the primary network switch so it becomes an issue if there is not a primary network switch) would be required if suggested changes discussed in our meeting in regards to Figures 1(b) and (c) were adopted.

Tas Taousakis stated that 90% of network transformer failures occur in the termination chamber.

**Adjournment** - The meeting was adjourned at 12:15 pm with the next meeting set for Washington D.C. in October 2014

## C57.12.44 Secondary Network Protectors working group – Bill Wimmer, Chairman, Mark Faulkner, Secretary Revision due date: 12/31/2018 PAR Expiration Date: 12/31/2014

No meeting – Bill Wimmer reported that the document has been balloted and is probably before RevCom today so C57.12.44 did not meet.

# Chairman’s Comments: Based on the new Practices and Procedures, Membership in a WG is granted if you are either at the first meeting or you can request membership after you have attended 2 consecutive meetings. Membership retention is in jeopardy if you miss 2 consecutive meetings without a good reason.

We are supposed to vote on the agenda and vote on the minutes. There needs to be a 2/3 majority to go to ballot followed by a simple majority vote at the subcommittee level. WG chairs need to keep track of attendance in the AM system.

PARs have a life of 4 years and expire on December 31. Standards are good for 10 years from the date they are approved by RevCom.

# Old Business: None

# New Business -

## AM System discussion - Brian Klaponski noted that the AM system software is not at all intuitive or user friendly, especially for those who only need to use it every 6 months. Brian moved to ask the committee to request modification of the AM system to make it easier to make changes. Alan Traut mentioned that if someone requests membership, we have to keep track of it ourselves. Our purpose is to discuss the technical aspects of transformers and it is not a good use of our time to be dealing with difficult software. Adam Sewell seconded. The motion was approved unanimously.

## Membership - Brian Klaponski noted that membership in the committee is small (13) compared to the number of the people who attend (32 at this meeting) and he encouraged more people to request membership. A number of people did.

# The meeting was adjourned at 11:25. The next meeting will be in the Washington D.C. area in October 2014.