Unapproved Minutes

IEEE/PES Transformers Committee
Standards Subcommittee Meeting
October 8, 2008 Porto Palacio Hotel, Porto, Portugal

1. Opening Remarks

a. Chair, William Bartley, advised the operating procedure manual is due to be updated to incorporate the name change of the PES (IEEE POWER ENGINEERING SOCIETY officially changed name to IEEE POWER & ENERGY SOCIETY).

b. For 2009 the meetings locations are planned for Miami, Florida and Lombard (near Chicago), Illinois fro spring and fall respectively.

2. Meeting Attendance

The Standards Subcommittee met on Wednesday, October 8, 2008, at 4:30 PM. The meeting roster was circulated. There were 32 members and 32 guests present. Six guests requested membership.

3. Approval of previous meeting minutes

Joe Kelly motioned for approval of the previous meeting minutes. Bill Chiu seconded the motion. The meeting minutes from the Spring 2008 meeting in Charlotte, North Carolina were approved as written.

4. Working group reports.

a. **Cont. Revision of C57.12.00 – D. Kim, -** The status is open for ballet

b. **Cont. Revision of C57.12.90-2006 – S. Antosz-** The status is open for ballet.

c. **PC57.12.70 Terminal Markings Revision – S. Shull -** No report, no meeting held.

d. **WG on Revision of IEEE C57.152 (old 62) – L Wagenaar (for J. Verner)** – The fourth Working Group on the Guide for Diagnostic Field Testing of Fluid Filled Power Transformers, Regulators and Reactors had 66 in attendance and no patents related to the work of the group; there were stated.

The Spring 08 meeting minutes were approved.

Two web meetings here held, May 14 and August 28, since the last formal meeting achieving progress in several key areas towards a revised standard.

The May 08 web meeting covered:

- References - ASTM Standards
- Annex A, Power Factor Measurement
- Purpose of Testing

The August 08 web meeting covered:

- Single Phase Excitation
- Core Demagnetization
- Future task assignments
    - Section 6.1.4 Short Circuit Impedance
    - Section 6.1.5 Resistance
    - Section 6.1.6 Capacitance & Power Factor
    - Section 6.3 Insulating Fluids Tables

A second draft was issued to WG will posted on the web. The draft includes the sections previously submitted and reviewed to date.

The review of scope was commented regarding if “acceptance criteria” is really appropriate. It was noted that Scope must match PAR and to change must really be necessary. It was suggested that an Order of

Precedence (or hierarchy) be added in to show Manufacturer, IEEE Standards, would take precedence over the PC57.152 Field Test Guide parameters and values.

Section 6.3, Insulating Fluids. Jerry Corkran went through the changes submitted by John Luksich to include additional fluid types in the following tables:

- Table 3 – Acceptable neutralization number values for new and in-service fluids
- Table 5 – Acceptable dielectric strength values for new and in-service fluids
- Table 6 – Acceptable interfacial tension values for new and in-service (serviced aged) fluids
- Table 8 – Acceptable dissipation factor values for new and in-service fluids
- Table 10 – Acceptable water content values for new and in-service fluids.

These tables were updated by referencing the latest revision of following guides:

- C57.106-2006, Guide for Acceptance and Maintenance of Insulating Oil in Equipment
- C57.121-1998, Guide for Acceptance and Maintenance of Less Flammable Hydrocarbon Fluid in Transformers
- C57.111-1989 (Reaffirmed 1995, 2003), Guide for Acceptance of Silicone Insulating Fluid and its Maintenance in Transformers
- C57.147-2008, Guide for Acceptance and Maintenance of Natural Ester Fluids in Transformers

It was pointed out that temperature of the oil being sampled should be recorded. This is particularly important for samples being tested for water content.

It was also noted that some values inserted into the tables did not exist in the reference guide. Jerry Corkran will check the reference guides and make certain that values not noted in the reference guides do not appear in the tables.

It was noted that Table 10 should have a reference temperature added.

Section 6.3.12, - Water Content. The Insulation Life and Insulating Fluids SCs are both reviewing the latest developments in the topic of water in the paper and oil at different temperatures. Water migrates from the paper to the oil at higher temperatures and vice versa at lower temperatures. For this reason, the TF on Moisture Estimation in Transformers has been set up within the Insulation Life SC. Tom Prevost emphasized the importance of following the policy of having the "parent" committees establish the guidelines before the WG includes them in the field guide. Hence, the WG will not include the any information about these developments until the parent SCs establish some guidelines. However, the old IEEE 62 guide does contain some information about water content so this information will be updated in accordance with the updated reference guides.

New section, FRA Testing - Matt Kennedy explained the summary submitted by himself and Charles Sweetser. The source is C57.149, Guide for Application and Interpretation of Frequency Response Analysis for Oil Immersed Transformers. Since C57.149 is still being developed, changes that will be required as they are made in the reference guide. The only comment (S. McNelly) was that the Transportation Guide PC57.150 also has FRA recommendations and there will be necessary to the various guides synchronized. The FRA is intended to be issued as an Annex in the Field Test Guide.

The section on Safety Measures to be undertaken prior to field testing of Large Power Transformers contributed by P. Ghosh was overviewed. Two comments arose; first (L. Wagenaar) the word "safety" did not seem necessary or relevant, and the attendees agreed it could be removed without effecting intent; and second (J. Corkran, M. Perkins) a cautionary statement shall be added to warn that oil sampling should be performed be when units have negative pressure relative to atmospheric pressure, as air may be pulled into insulating fluid possibly leading to failure.

P. Ghosh and L. Weathington volunteered to contribute additional input to resolve comments observed by the initial TF on IEEE 62 regarding where cautionary and potential safety warnings may be appropriate.

The next web meeting will be scheduled for: Thursday, 15 January 2009, 11:00 AM Eastern Standard Time.

5. PC57.12.80 – Terminology for P & D Transformers – B. Chiu

a. The definition for thermally upgraded paper has been proposed for cellulose based paper which has been chemically modified to reduce the rate at which the paper decomposes. Ageing effects are reduced either by partial elimination of water forming agents or by inhibiting the formation of water through the use of stabilizing agents. A paper is considered as thermally upgraded if it meets the life criteria as defined in ANSI/IEEE C57.100. Because the thermal upgrading chemicals used today contain nitrogen, which is not present in Kraft pulp, the degree of chemical modification is determined by testing for the amount of nitrogen present in the treated paper. Typical values for nitrogen content of thermally upgraded papers are between 1 and 4 percent when measured in accordance with ASTM D-982. (See Draft 2 for the full definition being added.)

b. A note is being added for inhibited oil to reference that Type II Oil as described in ASTM D3487 has a suitable oxidation inhibitor added to achieve greater than 0.08%, but no greater than 0.30%, by mass of the oxidation inhibitor content.

6. TASK FORCE on IEEE-IEC CROSS REFERENCE – J. Sim

1. Discussion of standards comparison

- It was noted that this task force is continuous due to the IEC and IEEE documents continuously being under revision.
- The table showing the IEEE and corresponding IEC documents was displayed. The list noted who is responsible for which set of documents. Several have been completed by members of the task force.
- A template for the comparison was shown to allow all in attendance to see the format.
- It was suggested that a possible cross reference could be done on rectifier transformers C57.18.10.
- Technical committees in IEC that are included as part of this cross reference are TC10, TC14, TC36, and TC112. It was asked if any other technical IEC committees exist that should be included. There were none mentioned.
- It was suggested that two additional comparisons be made. These include the following.
    i. Comparison of IEC vs. IEEE procedural process.
    ii. Comparison of terms relating to IEEE, IEC and CIGRE – such as the definitions of guide, standard, etc.

7. Old Business

a. IEC Dual Logo status – see the Standards Luncheon Presentation of Monday, October 6, 2008 -- *Dual Logo Update:* presented by: William Bartley

http://grouper.ieee.org/groups/transformers/info/F08/F08-DualLogoUpdate.pdf

8. New Business

a. Also, as discussed in the WG 57.152 meeting; the subject of water content with respect to the Insulation Life and Insulating Fluids SCs are both reviewing the latest developments in the topic of water in the paper and oil at different temperatures. Water migrates from the paper to the oil at higher temperatures and vice versa at lower temperatures. For this reason, the TF on Moisture Estimation in Transformers has been set up within the Insulation Life SC. The Chair reemphasized the importance of following the policy of having the "parent" committees establish the guidelines before the WG includes them in the field guide. This matter was also discussed in a paper presented by Jin Sim in a TF under the Insulation Life SC at this Fall

2008 Transformer Committee Meeting. This task force recommended that the issue belonged with the Insulating Fluids SC not the Insulation Life SC.

9. Adjournment

a. The motion to adjourn by J. Kelly was seconded by R. Thompson, and meeting adjourned around 5:30PM.

Respectfully Submitted

Kipp J. Yule

Standards SC