

Unapproved Minutes
IEEE/PES Transformers Committee
Standards Subcommittee Meeting
October 17, 2007 Minneapolis Hilton, Minneapolis, MN

1. Meeting Attendance

- a. The Standards Subcommittee met on Wednesday, October 17, 2007, at 4:30 PM. The meeting roster was circulated. There were 29 members and 13 guests present. No guests requested membership.

2. Approval of previous meeting minutes

Bertrand Poulin motioned for approval of the minutes. Loren Wagenaar seconded the motion. The meeting minutes from the spring 2007 meeting in Dallas, TX were approved as written.

3. WORKING GROUP REPORTS.

- a. **C57.144** - Guide for Metric Conversion of Transformer Standards

No report

- b. **C57.12.80** – IEEE Standard Terminology for Power and Distribution Transformers

Tim Raymond, WG Chair was not present, and there was no WG report

Bill Chiu reported that an amendment to add the definition of thermal upgraded paper was submitted to MEC, but have not heard back from them. When this process is completed, the amended document will be balloted. Bill also requested to the working groups of all subcommittees to send him new definitions identified during the development of their work.

- c. **C57.12.70** – IEEE Standard Terminal Markings and Connections for Distribution and Power Transformers (by Steve Shull, WG Chair)

The WG had their second meeting. There were 5 member and 5 guests; no new membership requested. The document was circulated for review. The purpose of the revision is to fix the problems found during the reaffirmation process.

Steve Shull called the meeting to order, introductions were made, and an attendance roster was circulated. Steve reviewed the IEEE Patent Policy and asked the group if there were any patents that needed to be disclosed. None were announced to the group. Copies of the minutes were circulated and reviewed. A motion was made by Gael Kennedy to approve and seconded by Alan Traut. It was approved by acclamation.

Steve commented that Section 3 as it currently exists in the standard was correct. No comments were offered from the attendees.

Charlie Drexler gave comments on his review of Sections 4.3-4.6. A duplication in the title of Figure 13 was eliminated. He also provided edits to the document text which were noted by Steve Shull.

Alan Traut presented his review of Sections 6.5-6.7. Alan combined the paragraphs concerning station class transformers and unit substations. Alan will provide this section and drawings for the figures to Steve Shull so that he could incorporate it in the next draft.

Jerry Murphy reviewed Section 7. Jerry commented he didn't find any problems in the text but he did realign and re-label some of the items in Figure 20. This drawing for the figure was provided to Steve Shull.

A brief introduction to "clock" notation to which Section 8 refers was made with Jerry Murphy discussing the differences between the IEC and IEEE electrical notations. Steve Shull showed a proposal for a new Section 8 that would provide a clear reference for users of the standard. The members were in agreement with this approach. Ali Ghafourian commented that he had seen an old document that gives the winding relationships. He stated he would look for this item and provide it to Steve Shull if he found it. Steve Shull indicated that he would finish this section for the next meeting. He also stated that by the next meeting, he would incorporate all of the corrections that were provided.

Unapproved Minutes
IEEE/PES Transformers Committee
Standards Subcommittee Meeting
October 17, 2007 Minneapolis Hilton, Minneapolis, MN

A motion was made to adjourn by Gale Kennedy and seconded by Ali Ghafourian and approved by acclamation.

d. **TF on IEC/IEEE Cross Reference** (by Jim Sim , TF Chair)

- The TF had its second meeting. A review took place on all the published comparisons of the two standards. There were good interest & participation.
- Phil Hopkinson has the assignment to review IEC 76-1 versus our 12.000 and 12.90. IEC 76-1 is going through major changes. Additional considerations will be given to other areas, as changes are made.

e. **PC57.1252** (formerly IEEE 62) – IEEE Guide for Diagnostic Field Testing of Power Apparatus – Part 1: Oil Filled Power Transformers, Regulators and Reactors (by Jane Verner, WG Chair)

This was the second meeting for this Working Group. We began with introductions of all in attendance. There were 41 members and 16 guests present. It was asked if any patents were related to the work of the group; there were none.

The previous meeting minutes from Dallas were read and approved. A draft of the proposed guide has been posted to the Transformer Committee website. Notes from the previous task force meetings and input from various team members are also posted for reference.

Our approach to the document is to start with portions of IEEE 62 that are thought to still be accurate and not in conflict with other IEEE standards. From here additional sections or clauses can be added and updated. Comments from the Task Force that reviewed the need to make this a document of the Transformer Committee are included in the draft with track changes in each section.

- Clause 6.1.2 Ratio/polarity/phase should be reviewed with respect to C57.12.90.
- Clause 6.1.2.3 Turns Ratio - Details concerning when there is DETC and/or LTC should be included.
- Clause 6.1.2.4 - Explanation of turns ratio test purpose should be added. The purpose of the factory testing is to check for turns match to design. Field testing is geared toward picking up shortened turns or misconnection of leads.
- Clause 6.1.3.1 Excitation testing does not give an indication that winding has shifted and this phase should be removed.
- Clause 6.1.3.2 – Test methods – IEEE 62 presently states that “excitation testing to be performed at the highest possible test voltage without exceeding the voltage rating of the excited winding.” The proposed text is, “the test is usually performed at rated voltage or a maximum of 10 kV without exceeding the voltage rating of the exciting winding.” After much discussion the proposed text was agreed to by a vote of 36 to 3. [Post meeting note - clause 6.1.6.5 Test voltage addresses this topic and could be enhanced referenced excitation section]

A general warning of test voltage levels for liquid filled units being tested without the insulating fluid should be added. Types of liquids also need to be addressed. Dry types and distribution transformers are subject to a future working group.

Insulated power factor clause should include temperature correction factors for ambient temp, as well as winding, top oil and bottom oil.

Table 1- Recommended diagnostic characteristics was discussed. The power factor row for new transformers should be removed. The Moisture row should align with C57.106 – Jim Thompson to provide a recommendation.

Dissolved Gas data should align with C57.104 – Jerry Corkran to provide a recommendation.

Unapproved Minutes
IEEE/PES Transformers Committee
Standards Subcommittee Meeting
October 17, 2007 Minneapolis Hilton, Minneapolis, MN

It was suggested that a summary chart of recommended commissioning, routine and diagnostic tests after a fault be added. (After the meeting Prodipto Ghosh agreed to submit strawman proposal.)

A web meeting was scheduled for the second Thursday in December or Dec 13th. (2:00 PM) Eastern Standard Time (minus 5:00 GMT) Details will be sent out prior to then.

When asking for volunteers to work on the various sections, a very positive response was received from these attending the meeting. A summary follows:

Clause	Responsible Person(s)
2 References ASTM	Kipp Yule
3 Definitions	Andre Lux
4 Diagnostic Chart	John Matthews
FRA Testing	Chuck Sweetser
Furan Testing	Prodipto Ghosh
Tank Vacuum Testing -See clause 4.8.1 of C57.93	Javier Arteaga
Paper Insulation DP Test 4.13.1.5 of C57.93	Dr. Lemke & Alexander Kraetge
5 Safety additions	Kip Yule & Prodipto Ghosh
6.1.6.6 Environmental Factors	Hakan Sahin
6.1.7.1 Induced Voltage Test	Christoph Ploetner
6.1.8. PD Detection	Eberhard Lemke
6.3.12 Water Content	Jim Thompson
6.4 LTCs	Paulette Powell & Lewis Powell
6.4.5 Voltage Regulators	Jin Sim
6.5 Core	Jin Sim
6.6 Tanks and assoc. Devices	Javier Arteaga
Purpose of Tests	Kent Brown
DGA	Jim Thompson & Jerry Corkran
Dielectric Spectroscopy DFR & FDS	Peter Werelius & Mark Perkins
Chart of commission, routine & after fault testing	Prodipto Ghosh
Visual Inspection (post meeting)	Andre Lux
Factory Testing vs. Field Testing	Mark Perkins
Annex A PF Measurements	G. Matthew Kennedy
Annex B Bushings	Mike Lau & Peter Zhao
Annex C Infrared Temp Measurements	Kipp Yule
Dew Point Test	Jin Sim to find a volunteer

Submitted by Jane Ann Verner P.E.

10/17/07

f. Continuous Revision of C57.12.00, (Dong Kim WG Chair) and C57.12.90 Stephen Antosz WG Chair.

Both of these standards were approved by RevCom in September 2006, and were officially published in February of 2007. Both documents are now available and ready for use by the different working groups for the development of their work. New PARs for both documents will be requested so that the next revision process could start.

C57.12.90 (by StephenAntonsz): The WG goal is to take this version to Ballot in early 2008, so that the ballot is completed by our March '08 meeting. Following are the changes already surveyed and ready for inclusion in the next official ballot of C57.12.90

- Mark Perkins' changes to Clause 5 Resistance Measurements
- Pierre Riffon's changes to Clause 10.3.1.1 Full Wave test
- Bertrand Poulin's changes to Clauses 10.5 to 10.11 Low Frequency tests

Unapproved Minutes
IEEE/PES Transformers Committee
Standards Subcommittee Meeting
October 17, 2007 Minneapolis Hilton, Minneapolis, MN

- Pierre Riffon's changes to Clause 10.3.2.5 Non-linear devices during test
- Pierre Riffon's changes to Clause 10.3.1.3 Chopped Wave test.
- Pierre Riffon's changes to Clause 10.2.2.1 Switching Surge test.
- Gerry Rosselli's changes to Clause 9.5 Zero Sequence testing.
- Ed teNyenhuus' new material for Annex B on Frequency Conversion Factors.
- Bruce Forsythe's new clause on Single-Phase Excitation Test (from 2004).

Following are changes that are still in progress.

Jeewan Puri's changes to Clause 13 Sound test.

Marcel Fortin's work on Clause 12 Short-Circuit test.

Paulette Payne's work on Clause 11 Temperature test.

"Retained Comments" from the previous negative ballot of C57.12.90

C57.12.00 (by Dom Kim)

Our WG goal is to complete a ballot in 2008. In order to do that we will have to close off any proposed changes at the end of 2007. Some of the comments from the 2006 ballot were not resolved and will be considered in the latest revision.

One of the major interests is Table 21, Routine Tests, which Steve Snyder has been working on. It is now divided by Class 1 and Class 2 transformers. Phil Hopkinson has been working on the Dielectric Test Table, and another table is being developed for front wave test. If these tables are completed by the end of the year, they may be included in the next ballot.

4. Old Business

a. IEEE/IEC Dual Logo

This issue has been on the Standards SC agenda for quite some time because it was originally our objective to start a cue of documents that could have a "dual logo". But, thus far, IEEE C57.135 Guide for the Application, Specification, and Testing of Phase-Shifting transformers is our only dual logo standard that has been approved.

IEEE C57.123 – IEEE Guide for Transformer Loss Measurement was also a candidate for dual logo consideration. But this standard has received a number of negative ballots. The concerns are primarily in the area of the references (normative vs. bibliography). IEC is concerned in that an approval of the C57.123 would imply an acceptance/approval of all the normative references in the C57.123.

There are many other IEEE documents in the same situation and will also encounter the same resistance by IEC if there is desire for dual logo status. After some discussion, it was agreed that the Dual Logo issue will be referred to the Transformer Administrative Subcommittee for future resolution, and it will be removed from Old Business in Standards Subcommittee.

b. C57 Collection of Standards on CD

Bill Chiu has been working with IEEE-SA to publish a new C57 Collection of Standards in CD version. Unfortunately it takes a long time to publish the CD. Bill waited until after the June 2007 Standards meeting for a cut-off date to produce the CD; and at that point it was too late to make it available at this October meeting in Minneapolis. Our new goal is to have this CD collection available for our membership, by the Spring of 2008. Unfortunately it may not be available the week of our meeting in Charlotte. The collection will include the latest revisions and new standards such as C57.12.00 and C57.12.90, C57.127, C57.140 etc.

Unapproved Minutes
IEEE/PES Transformers Committee
Standards Subcommittee Meeting
October 17, 2007 Minneapolis Hilton, Minneapolis, MN

5. New Business

Bill Chiu announced that this was his last meeting as Chair of Standards Subcommittee. (Bill will be assuming other duties in the Transformer Committee.) Don Fallon made a motion that the Subcommittee express their thanks and appreciation to Bill Chiu for his years of service as Standards Coordinator. The motion was seconded, followed by a round of applause.

William H. Bartley, SC secretary has accepted the assignment as Chair and will be seeking a new SC secretary.

6. Adjournment

- a. The meeting adjourned around 5:30PM.

Respectfully Submitted

William H. Bartley P.E.

Standards SC Secretary