

Insulation Life Subcommittee - Unapproved Meeting Minutes
October 23, 2013 – St. Louis, MO

5.8 Insulation Life Subcommittee – Bruce Forsyth, Chairman

The Insulation Life Subcommittee met in St. Louis, MO on October 23, 2013 at 8:00 AM.

A hand count of the members at the beginning of the meeting revealed that 53 of 92 members were present. A quorum was present.

H. Shertukde made a motion to approve the Milwaukee Meeting minutes as written. D. Wallach seconded the motion. There was no discussion on the minutes. It was unanimously approved.

The Chair pointed out a correction to the Munich Meeting minutes. The expiration of C57.91 was incorrectly listed as 2012. It should be 2021. D. Duckett made a motion to approve the minutes as noted. T. Tanaka seconded the motion. There was no discussion on the minutes. It was unanimously approved as noted.

The agenda was reviewed. R. Merek made a motion to approve the agenda. M. Shannon seconded the motion. There was no discussion on the agenda. It was unanimously approved.

The attendance rosters show that the meeting was attended by 182 people, 60 of 92 members and 122 guests. 15 guests requested membership.

5.8.1 Chair's Report

The Spring 2014 IEEE Transformers Committee Meeting will be held March 23, 2014 through March 27, 2014 in Savannah, Georgia. The Fall 2014 meeting will be held October 19, 2014 through October 23, 2014. Greg Anderson will announce the location during the Thursday General Meeting.

Subcommittee Members were reminded of the need to avoid overt commercialization during the meetings. Company names should not appear in the meeting minutes.

The Chair reviewed the purpose and scope of the Subcommittee and encouraged the Task Forces and Working Groups to review their purpose and scope at the beginning of every meeting.

The minutes for Activity Groups should record:

- The attendance including the number of members, the number of guests, and if a quorum was present
- The Chair or Acting Chair
- The Secretary or Acting Secretary

- The name of the member who makes a motion, the name of the Member who seconds the motion, a restatement of the motion and if the motion carried or was defeated.
- A summary of the discussion and comments.

The Chair reviewed the process to submit documents for Sponsor ballot. Working Groups must have a 2/3 majority to submit the document for Sponsor ballot. The Subcommittee must achieve a simple majority to submit a document for Sponsor ballot.

5.8.2 Project Status Reports

5.8.2.1 C57.91 IEEE Guide for Loading Mineral-Oil-Immersed Transformers

C57.91 is valid until 2021.

5.8.2.2 C57.100 IEEE Standard Test Procedure for Thermal Evaluation of Liquid-Immersed Distribution Transformers

This standard is valid until 2021.

5.8.2.3 C57.119 IEEE Recommended Practice for Performing Temperature Rise Tests on Oil-Immersed Power Transformers at Loads Beyond Nameplate Ratings

C57.119 is valid until 2018.

5.8.2.4 C57.154 Design, Testing and Application of Liquid-Immersed Transformers with High-Temperature Insulation

C57.154 is valid until 2022.

5.8.2.5 1276 Guide for the Application of High Temperature Insulation Materials in Liquid-Immersed Power Transformers

The 1276 PAR expires December 31, 2016. The standard is valid until 2018.

5.8.2.6 1538 IEEE Guide for Determination of Maximum Winding Temperature Rise in Liquid-Filled Transformers

1538 is valid until 2021.

5.8.3 Working Group and Task Force Reports

5.8.3.1 Task Force on Winding Temperature Indicators - Phil McClure

Monday, 10/21/13 St Louis, MO

The meeting was called to order at 9:30am. There were 7 members and 15 guests in attendance. There are 10 members in the Task Force, including two new members since last meeting. A quorum was achieved. Five guests requested membership.

Minutes of the Spring 2013 meeting in Germany were discussed. After discussion, the minutes were unanimously approved.

Old Business: No old business

New business:

Chairman McClure briefly reviewed progress and the current state of our efforts toward completion of the paper. He circulated proposed draft 11 of the paper to members prior to the meeting as a possible avenue forward. Basically, draft 11 is a trimmed-down version of draft 9, with extraneous materials removed.

Discussion began with the experiment. Gary Hoffman expressed a concern that the experiment did not explicitly declare that IS WTI's may not provide an accurate indication of winding temperature at all times, particularly in large power transformers. Several guests addressed the subject and there was general agreement that this is true. Chairman McClure pointed out that the experiment's scope is limited by the objectives, but it might be a good idea to remove the potential for misinterpretation. Gary Hoffman made a motion to include a statement that the thermowells tested in this experiment may not indicate winding temperature accurately in all transformers at all times. Dave Wallach seconded the motion. During discussion V Sankar said that while it may be true that IS WTI's may not indicate accurately in all transformers, in all loading conditions, IS WTI's do indicate accurately in many, if not most situations and that the use of the information in the experiment should be left to the discretion of transformer designers. Gary agreed and made a motion to amend the previous motion and make the advice statement that the use of the information in the experiment should be left to the discretion of transformer designers for application to specific designs. Dave Wallach seconded the amended motion and the motion was carried by unanimous vote of the members. Chairman McClure said that the revised experiment would be circulated within a week.

Bruce Forsyth indicated that this task force began in 1997 and advised that the final document is to be officially presented to the Insulation Life subcommittee as expeditiously as possible. V Sankar requested to proceed with finalization of the paper in its draft 9 form and present this as the final document to the subcommittee, but no members motioned for approval of that request.

Gary Hoffman picked up the issue and made a motion to approve moving forward to incorporate selected information from some sections of Draft 9 into the proposed Draft 11, and submit to the Insulation Life subcommittee. The motion was seconded by Josh Herz. During the ensuing discussion, Bruce Forsyth indicated that the title should include "Task

Force Report on Winding Temperature Indicators”. Chairman McClure requested a motion to modify the previous motion to add the suggested wording to the title of the document. Gary Hoffman made the motion and Tim Rinks seconded it. The modified motion passed by unanimous member affirmatives.

Discussion then progressed to the sequence for completion of the paper. Chairman McClure suggested that assignments be given to willing members and/or guests for updating of the draft 9 information for inclusion in draft 11; followed by circulation of the compiled document to the group; followed by comment resolution; followed by a vote by members and finally submission to the Insulation Life Subcommittee. Gary Hoffman made a motion to accept that suggestion and the motion was seconded by Josh Herz. The motion carried unanimously.

During a related discussion, V Sankar asked if we would like to collaborate with IEC on a WTI standard. It was agreed that we will make contact to IEC via Phil Hopkinson or Jodi Haus to discuss, after we complete work on the technical paper. Gary Hoffman submitted a motion that we will contact Phil or Jodi for sharing with IEC when the paper is completed. Dave Wallach seconded. Motion passed by unanimous affirmation.

Chairman McClure solicited members and guests for specific tasks relating to the completing of the draft:

- Section 5.1 Hybrid IS WTI – Josh Herz volunteered to submit a draft
- Section 5.2 Direct Measurement WTI – Jean-Noel Berube volunteered to submit a draft
- Section 5.3 Calculating WTI – Gary Hoffman volunteered to submit a draft
- Section 5.4 Virtual WTI – Phil McClure Volunteered to submit a draft
- Sections 4.0 and Conclusions – Phil McClure will provide a draft.

At 10:32am, having no more business to cover, Josh Herz moved to adjourn and D Wallach seconded. Motion carried.

Respectfully,
Bob Thompson, Vice Chair

5.8.3.2 Working Group on PC57.162 - Guide for the Interpretation of Moisture Related Parameters in Dry, Gas Insulated and Liquid Immersed Transformers and Reactors – Tom Prevost

Chair: Tom Prevost
Vice Chair: Dr. Valery Davydov
Secretary: Deanna Woods

- Introduction of attendees
- Review of PAR

- Project Scope
- Project Purpose
- Project Timeline
- Call for membership
 - We had a total attendance of 118 people
 - 64 Requested membership
 - Because this was the first meeting of the WG all 64 have been granted membership.
 - New members will need to attend at least two meetings consecutively to maintain membership
 - Active participation in TF will be taken into account
 - Members cannot miss more than two meeting consecutively to retain membership AND they must participate in survey ballots
- Document Structure
 - Terminology and definitions
 - Measurement and evaluation of moisture-in-gas insulation parameters
 - Measurement and evaluation of moisture-in-liquid insulation parameters
 - Measurement and evaluation of moisture-in-solid insulation parameters
 - Evaluation of aging and end of life of solid insulation parameters
 - Factory/workshop application of knowledge on moisture; benchmarking
 - Field application of knowledge on moisture*
 - * *Note: This section lists the risks associated with moisture*
- Establishment of Task Forces
 - TF1: Terminology and definitions
 - TF2: Measurement and evaluation of moisture-in-gas insulation parameters
 - TF3: Measurement and evaluation of moisture-in-liquid insulation parameters
 - TF4: Measurement of moisture in solid insulation using balance
 - TF5: Evaluation of moisture in solid insulation using dielectric response methods
 - TF6: Inferring of moisture in solid insulation from measurements conducted in liquid or gaseous medium
 - TF7: Evaluation of aging and end of life of solid insulation parameters

- TF8: Factory/workshop application of knowledge on moisture; establishing baselines
- TF9: Field application of knowledge on moisture
 - * Note: *This section lists the risks associated with moisture*

- Next meeting
- Adjourn at 12:15 PM

5.8.3.3 Working Group for Application of High-Temperature Materials IEEE P-1276 – Mike Franchek

Tuesday, October 22, 2013

Landmark 5-6, 3:15 pm – 4:30 pm

Renaissance Grand Hotel: St. Louis, MO, USA

1. Welcome and Chair Remarks

Meeting was called to order at 3:15pm.

2. Meeting Quorum – WG Member Count

12 Members so we have a quorum (vs. 23 members), 48 guests and 3 guests requesting membership to bring the total of 26 members.

3. Approval of the meeting agenda

The meeting agenda was approved.

4. Approval of Munich, Germany Spring - 2013 Meeting

Minutes of Munich Germany Spring 2013 meeting were approved.

5. Review and Discussion on the Survey on Scope / Purpose of the Guide

The chair reviewed the scope of the document of the original P1276-1997 Application guide, which was very narrow in scope (power only/mineral oil, hybrid insulation system with aramid and mineral oil).

The chair reviewed topics of past two meetings about the need to maintain this document while we have C57.154. It was noted that much of the tutorial information in 1276 is not in this document (since it is a standard) and their needs to be a place for this type of guide-like information.

Subhas Sarkar asked a question about whether or not mobile substations are covered – they are excluded from C.57.12.00. This led to a healthy discussion, including comments from Craig Stiegemeier, Dave Sundin, Radek Szewczyk, Rick Marek, etc.

C57.154 does discuss technology used in mobile substations. Mobiles negotiated between buyer and seller. BILs, voltage limits, etc. Mobile users are willing to take more risks. The chair noted that this information would be useful to these applications, but there might not be a need to specifically include reference to mobiles. We likely will want to put a note in the document providing information to the applicability to mobiles. The WG will not put this in the document scope, since this is not in the scope of C57.154.

Radek then remarked that most of the applications which use high temperature materials are outside of the scope of C57.12.00. Neil Kranich noted that most of the customers start with C57.12.00 and then negotiations happen which aspects of C57.12.00 are included and which are not. Winds, Traction, Arc Furnace, Mobile, and Specialty transformer all are specifically excluded and yet all are users of high temperature materials.

We then discussed the wording of the scope – should the year be listed or not. Should we include this reference to C57.154 or should we reference C57.12.00 directly.

Scope of Document:

“This guide applies to liquid-immersed distribution, power and regulating transformers that are designed to operate at temperatures that exceed the normal thermal limits of IEEE Std C57.12.00 under continuous load, in the designed average ambient, and at rated conditions.”

Don Chu asked question regarding the last part of the sentence (why not just end the sentence at C57.12.00).

A motion to approve the scope as shown above was proposed and seconded. The motion was made by Craig Stiegemeier and seconded by Neil Kranich. The motion passed with only affirmative votes.

The chair then discussed a proposed purpose for this document.

Purpose of Document:

“The purpose of this guide is to provide an informative technical background for the design, testing, and application of high-temperature transformers covered within the scope of IEEE Std C57.154-2012”

There was no discussion. Motion was made to approve the new Purpose by David Sandin and seconded by Craig Stiegemeier – the motion passed unanimously.

6. Revision of the WG Par

The chair will update the PAR and supply it to Bill Bartley for the next Revcom submittal for the revision.

7. Old Business

No Old Business

8. New Business

The chair discussed the potential for new content for the revised document. He will reach out to members to provide content for the new document. New solids, new fluids, may need to add/subtract clauses from the prior document. The chair reviewed the current table of contents of the existing IEEE 1276-1997 document.

Clause 5 will require a very detailed revision due to the new materials, liquids, test procedures, insulation systems. Likely it will provide recommendations to loading but not a loading guide. Will send the active members the existing document so they can revise the document (post it with password access).

9. Chair's Closing Remarks

Will make sure we do the introductions in the future.

10. Adjournment

Motion made for adjournment and the meeting was adjourned at 4:07pm.

5.8.4 Old Business:

No old business.

5.8.5 New Business:

IEEE 1538-2000 (Reaffirmed 2011) –R. Marek stated that H. Nordman presented a tutorial on Thermal Measurement at the last meeting and that this should be added to the standard. In addition, R. Marek stated that during the reaffirmation ballot a negative ballot was received stating that the standard needed to be updated.

D. Platts made the following motion:

Form a Task Force to evaluate the merits of opening IEEE 1538 for revision and to develop a scope and purpose of a PAR if necessary.

T. Prevost seconded this motion. During discussion, G. Hoffman proposed amending the motion to decide if an amendment or a revision is necessary. D. Platts and T. Prevost both accepted this amendment. The Subcommittee voted on the following amended motion:

Form a Task Force to evaluate the merits of opening IEEE 1538 for amendment or revision and to develop a scope and purpose of a PAR if necessary. The term of the Task Force shall be 6-months.

This motion was unanimously approved.

The Chair appointed R. Marek to Chair this Task Force.

5.8.6 Adjournment

B. Beaster made a motion to adjourn. E. Davis seconded this motion. The meeting adjourned at 8:45 AM.

Respectfully submitted,

Eric Davis
Secretary, Insulation Life Subcommittee