Insulation Life Subcommittee - Unapproved Meeting Minutes

March 21, 2013 – Munich, Germany

**5.8** I**nsulation Life Subcommittee – Bruce Forsyth, Chairman**

The Insulation Life Subcommittee met in Munich, Germany on March 21, 2013 at 8:00 AM.

A hand count of the members at the beginning of the meeting revealed that 43 of 88 members were present. Since a quorum was not present the meeting minutes from Milwaukee could not be approved.

The attendance rosters show that the meeting was attended by 115 people, 47 of 88 members and 68 guests. 14 guests requested membership.

**5.8.1 Chair’s Report**

The Fall 2013 IEEE Transformers Committee Meeting will be held October 20, 2013 through October 24, 2013 in St. Louis, Missouri. The Spring 2014 meeting will be held March 23, 2014 through March 27, 2014 in Savannah, Georgia.

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

The Subcommittee membership requirements were reviewed.

* You must have attended 2 consecutive meetings and actively participate in order to be considered for membership.
* Existing members will be moved to guest status if they miss three meetings in a row. Once moved to guest status, former members will need to meet the requirements for new members.
* Guests will be removed from the roster if they miss 3 meetings in a row.

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 Transformers Committee is looking for tutorial topics. Please talk to your subcommittee Chair if you have any suggestions for technical presentations.

**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 2012.

**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 2023.

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

The 1276 PAR expires in 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**

The meeting was called to order at 8:00 am. There were 6 members and 22 guests in attendance. There are 8 members in the Task Force, so a quorum was achieved. Three guests requested membership and Bruce Forsyth and Emilio Morales, who attended the Fall 2012 meeting, will be welcomed to the group. Curiously, three guests who attended the Fall 2012 meeting and requested membership at that time, and also attended this meeting, did not request membership at this meeting. Those persons shall be contacted in case they forgot to put a check in the “request membership” box.

The minutes of the Fall 2012 meeting in Milwaukee were emailed to the members before this meeting. The chair requested a motion for approval of the minutes and Dave Wallach made the motion. Gary Hoffman seconded the motion. The members voted approval and there were no abstaining or dissenting votes.

# Old Business

There was no old business.

# New Business

The experiment was modified since the last revision release. The final modern WTI was tested and added to the data pool. Some paragraphs were also added to the observations and conclusions section.

A discussion was had on how to introduce the results of the experiment, in order that they can be used as a reference for future documents and existing documents in the future. The key concept is peer review. In the past, specific content, formatting and size were required and publishing was subject to scheduling and space restrictions. This hurdle has in large part been removed by virtue of a new avenue for publishing papers and reports that has been adopted by the Transformers Committee. In essence, if a paper has been written by a chartered group within the Committee and has been approved by vote, the paper can be considered to be peer reviewed. Once the paper has been approved by the authoring activity and Insulation Life Subcommittee, it can be posted on the ILSC webpage. There are requirements that the paper adhere to the Committee’s O&P manual but these requirements should be easy to meet.

The next discussion dealt with what to do with the existing paper, which has been written over a period of many years, while we attempted through several avenues to get data to answer the charter question. The group voiced reaffirmed support for publishing the experiment first, then concern ourselves with follow-on actions.

It was proposed to circulate the experiment to the group members and solicit comments and suggestions for changes. The Chair will append to those tasks.

As a result of this discussion, the Chair requested a motion to bring the recommendations of the Task Force to a vote. Dave Wallach made the motion to complete and publish the experiment, then decide how to proceed. The motion was seconded by Josh Herz and all members present voted in favor of the motion.

A motion to adjourn was made by Dave Wallach and was seconded by Tim Rinks and the meeting was adjourned at 8:42 am.

Phil McClure

Chair

Task Force on Winding Temperature Indicators

**5.8.3.2 Task Force on Moisture In Insulation Systems – Tom Prevost**

Chair: Tom Prevost

Vice-Chair: Valery Davydov

The TF on Moisture in Insulating Systems met on Monday, March 18, 2013 at 11:00 AM with 107 people attending.

Introductions and statement of affiliation.

Introduction of goals of the task force- Tom Prevost

* Develop Title, Scope ad Purpose of document
* Create PAR for potential WG to be presented to Insulation Life Subcommittee Chair

Introduction of need for document- Valery Davydov

* Valery Davydov gave a brief history of the task force and the need for a reference document for moisture in insulation systems

Development of Title, Scope and Purpose Statements for PAR

* Purpose of task force is to develop a title, scope and purpose statement for a Project Authorization Request (PAR) which will be introduced as a motion at the Insulation Life Subcommittee meeting.
* Concept is to request a PAR to be sponsored by Insulation life Subcommittee and submit to IEEE SA NESCOM so that PAR can be approved before next Transformers Committee meeting in St. Louis in October 2013.

**Title:** “Guide for the Interpretation of Moisture Related Parameters in Dry, Gas Insulated and Liquid Immersed Transformers and Reactors”

**Scope:** This reference document applies to dry, gas insulated and liquid immersed transformers and reactors and addresses:

* + Moisture related phenomena and parameters in transformers and reactors
  + The theory of moisture dynamics in solid-gas, solid-liquid and solid-liquid-gas insulating physical complexes
  + Methods of assessment of moisture related parameters in solid-gas, solid-liquid and solid-liquid-gas insulating physical complexes
  + The effects of moisture on operating transformers and reactors, and the risks associated with these effects
  + The establishment of a baseline for each moisture related parameter
  + The tracking and interpreting of changes against the baselines throughout the life of the transformer or reactor

**Purpose:** This document recommends methods for:

* the assessment of moisture and moisture related phenomena in dry, gas insulated and liquid immersed transformers and reactors
* the establishment of a baseline for each moisture related parameter
* the tracking and interpreting of the changes against the baselines throughout the life of the unit

The revised Title, Scope and Purpose were approved by the participants of the task force meeting. Following this vote the meeting was adjourned at 12:15 PM

**5.8.3.4 Working Group for Temperature Rise Test Procedures Section 11 of C57.12.90 - Paulette Powell**

The Working Group met in the Alpsee room of the Dolce Hotel in Munich, Germany on Tuesday March 19, 2013 at 11am. Present were five (5) members and thirty-six (36) guests. We did not have a quorum. Four guests requested membership: Vir, Dharam of SPX Transformer Solutions; Jacobsen, Dallas of Schweitzer Engineering Labs; John, John of Virginia Transformer Corp; and Shannon, Michael of Rea Magnet Wire.

The minutes from the previous meeting in Milwaukee could not be approved due to the lack of quorum.

The group was informed that clause 11.1.2.2, regarding the loading-back method, is currently in straw-ballot due to March 22. So far 15 votes (of 23 members) were received, all of them approved with just one minor editorial comment.

There were no new business presented at the meeting. The chairman of the Insulation Life Subcommittee, Mr. Bruce Forsyth, asked the audience for new issues to be addressed by this group. He requested ideas to be reported to the WG chair. Mr Sanjib Som proposed to announce the search for new business at the Subcommittee level, and also by email to the larger group.

The meeting adjourned at 11:15am.

After the meeting, two individuals ( Jennifer Yu of PG&E Co.; and Dharam Vir of SPX Transformer Solutions) approached the vice-chairman, and stated they will send proposals to be considered as new business.

Respectfully submitted,

Juan Castellanos, Vice-Chair

Marnie Roussell, Secretary

**5.8.3.5 Working Group for Application of High-Temperature Materials IEEE P-1276**

March 19, 2013

Ammersee I, Dolce Munich-Unterschleissheim Hotel

Munich, Germany

Mike Franchek, Chairman

Roger Wicks, Secretary

5.8.3.5.1 Introduction and Rosters

The working group met on Tuesday, March 19, 2013 at 3:15 PM with 9 members and 23 guests with 3 guests requesting membership. As our membership totaled 19 members prior to this meeting, a quorum did not exist during the meeting.

* + - * 1. Chairman’s Remarks on WG Task

The chair reviewed the topics of discussions held in Milwaukee during the last meeting of this working group, including a background on the original IEEE 1276 document and background paper as well as the development of the recently published IEEE C57.154. The minutes from that meeting provides the detail of this discussion and isn’t needed here.

* + - * 1. Discussion related to the scope of the document.

The chair reviewed the scope from the original document, including the comments from Revcom related to revisions (inclusion of temperature rises). This lead to good discussions related to the types of transformers (general consensus that it needs to be broader than just power transformers) and types of insulating fluid (general consensus that it needs to be broader than just mineral oil). Prior discussions and discussions during this meeting noted that loading should not be part of this document.

The chair then proposed his draft of a revised scope for the document:

Proposed Scope – This guide applies to liquid-immersed distribution, power and regulating transformers that are designed to operate at high-temperatures according to IEEE Std C57.154-2012.

This scope seems to address much of the comments listed during the prior two meetings. However this modification led to a discussion about whether traction transformers or reactors should be included in the scope of this document. Additional topics which should be included in the document (not necessarily in the scope) included bubble emission, use of high temperature materials where the transformers are not operated at high temperatures (we will see with examples during the work of the revision on how to address this. Other comments involved discussion of oil temperature rise vs. average winding rise and it was noted that these would be discussed in the guide.

The chair will try and determine how to address the units (like traction) which seem to be outside the scope of our IEEE document series.

* + - * 1. Discussion related to the purpose of the document.

The chair provided information related to the proposed purpose of the document, as follows:

Proposed Purpose – The purpose of this guide is to provide an informative technical background for the design, testing, and application of high-temperature transformers covered within its scope.

This led to a discussion related the need for this document with the completion of IEEE C57.154, which was previously discussed in Milwaukee. It was again noted that during the development of this document as well as the similar IEC 60076-14, there was quite a bit of “tutorial” type information which was removed since it wasn’t deemed appropriate for the standard. It was discussed that there was a lot of good information in 1276 that needs to be maintained and upgraded so that a revision is appropriate.

* + - * 1. Revision of the Purpose and Scope

Since a quorum of members was not present (at the end of the meeting a quorum call was held and only 8 members were present), the chair will circulate the draft scope and purpose to the working group members and guests within the next week, and would request the members to vote on these revisions within two weeks of when the note comes out.

Our PAR expires in 2016, so we have time, but we need to work fairly quickly.

* + - * 1. Old business

There was no old business

* + - * 1. New business

There was a short discussion related to soliciting input (presentations) related to this guide that could provide input that could be used to update this guide. The chair will send out a separate note from the ballot soliciting input for our upcoming meeting in St. Louis.

* + - * 1. Chair’s closing remarks

The chair then closed the meeting at 4:05pm (in absence of a quorum a motion could not be made).

* + - * 1. The meeting adjourned at 4:15 PM.

Proposed Scope – This guide applies to liquid-immersed distribution, power and regulating transformers that are designed to operate at high-temperatures according to IEEE Std C57.154-2012.

Proposed Purpose – The purpose of this guide is to provide an informative technical background for the design, testing, and application of high-temperature transformers covered within its scope.

**5.8.4 Old Business:**

No old business.

**5.8.5 New Business:**

**5.8.5.1** Tom Prevost made a motion to approve the Scope and Purpose to form a new Working Group. Since the motion came from a standing committee, a second was not required.

**Title:** “Guide for the Interpretation of Moisture Related Parameters in Dry, Gas Insulated and Liquid Immersed Transformers and Reactors”

**Scope:** This reference document applies to dry, gas insulated and liquid immersed transformers and reactors and addresses:

* + Moisture related phenomena and parameters in transformers and reactors
  + The theory of moisture dynamics in solid-gas, solid-liquid and solid-liquid-gas insulating physical complexes
  + Methods of assessment of moisture related parameters in solid-gas, solid-liquid and solid-liquid-gas insulating physical complexes
  + The effects of moisture on operating transformers and reactors, and the risks associated with these effects
  + The establishment of a baseline for each moisture related parameter
  + The tracking and interpreting of changes against the baselines throughout the life of the transformer or reactor

A hand count of the members at this point in the meeting revealed that 45 of 88 members were present. Since a quorum was present, discussion on the motion was conducted.

The discussion of the motion included the following points:

* Patrick McShane questioned the use of “Liquid Immersed” in the title. Don Platts responded that the use was appropriate based on the definition of “Liquid Immersed” in C57.12.80.
* Scott Digby asked if the title would include regulators. Tom Prevost responded that regulators are a subset of transformers.
* Don Lucil suggested the inclusion of “Power, Distribution, and Regulation” to the title. After some discussion, it was decided not to add these words to the title.
* Bill Chu was concerned the 4th bullet in the scope was an overlap/duplication of coverage.
* James Garner asked if this would take the place of C57.106, IEEE Guide for the Acceptance and Maintenance of Insulating Oil in Equipment. The response was that this will not take the place of C57.106.
* Raj Ahuja discussed the 3rd bullet in the scope, “moisture related parameters.”

The final version of the title and scope are:

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* + Moisture related phenomena and parameters in transformers and reactors
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  + The establishment of a baseline for each moisture related parameter
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**Purpose:** This document recommends methods for:

* the assessment of moisture and moisture related phenomena in dry, gas insulated and liquid immersed transformers and reactors
* the establishment of a baseline for each moisture related parameter
* the tracking and interpreting of the changes against the baselines throughout the life of the unit

The final version of the title and scope were approved unanimously. The work of the Task Force is complete. The work will be continued as a Working Group at the next meeting.

**5.8.5.2** Raj Ahuja suggested that the temperature rise test procedure be revised to deal with symmetrical or double stack windings. The temperature calculations for the top and bottom windings should be governed by the hot spot temperature and the average rise of both windings. Dennis Marlow pointed out that this issue was addressed in C57.12.10 Clause 4.2.2.

**5.8.6 The meeting adjourned at 9:15 AM.**

Bruce Forsyth

Chair, Insulation Life Subcommittee