

Insulation Life Subcommittee - Unapproved Meeting Minutes
April 13, 2011 – San Diego, CA

10.6 Insulation Life Subcommittee – Bruce Forsyth, Chairman

The Insulation Life Subcommittee met in San Diego on April 13, 2011 at 8:00 AM.

The minutes of our meeting in Toronto, Canada meeting on October 27, 2010 were approved as written.

A roll call of the members revealed that a quorum was present. The attendance rosters show that the meeting was attended by 190 people, 56 of 75 members and 134 guests. 26 guests requested membership.

10.6.1 Chair's Report

The Fall 2011 IEEE Transformers Committee Meeting will be held in Boston, MA in October. The Spring 2012 meeting location has not been announced.

All of the Working Group and Task Force Chairs are encouraged to clean up their membership rosters. Individuals who have not attended recent meetings should be contacted to see if they are still interested in participating.

The IEEE patent disclosure policy was discussed. It is important that all Working Group and Task Force Chairs review this information every meeting.

10.6.2 Project Status Reports

10.6.2.1 C57.91 Loading Guide

C57.91 is currently in ballot resolution. The PAR was extended to December 31, 2011.

10.6.2.2 C57.100 Thermal Evaluation Guide

C57.100 is currently in ballot resolution. The PAR was extended to December 31, 2011.

10.6.2.3 1538 Guide for the Determination of Maximum Winding Temperature Rise in Liquid Filled Transformer

1538 expires at the end of 2011.

10.6.2.4 1276 Guide for the Application of High Temperature Insulation Materials in Liquid-Immersed Power Transformers

1276 expires at the end of 2011. A reaffirmation ballot will be initiated before the next meeting.

10.6.3 Working Group and Task Force Reports

10.6.3.1 Working Group for the Revision to C57.91 Loading Guide – Don Duckett

The working group was called to order by Chair Don Duckett at 9:30 am. Vice Chair Carlo Arpino and Secretary Susan McNelly were also present.

There were 28 of 55 members present (a quorum was achieved) and 44 guests. New requests for membership will not be entertained due to the Guide having gone to ballot. However, anyone who has volunteered to work on the ballot resolution group will be added to the membership list.

Agenda:

- 1. Roll Call/Introductions**
- 2. Patent disclosure announcement**
- 3. Previous meeting minutes approval**
- 4. Status of the present Guide**
- 5. Adjournment**

Introductions of members and guests were made.

The IEEE Patent disclosure requirements were discussed and a request was made for disclosure of any patents that may be related to the work of the WG. There were no responses to the request for disclosure.

Minutes from the Spring 2010 meeting in Houston, Texas and Fall 2010 meeting in Toronto, Ontario, Canada were approved.

Status of the present Loading Guide:

The Guide was set to expire and be withdrawn at the end of 2010. A PAR extension until the end of 2011 was requested and approved at the December NESCOM meeting.

Draft 9 Ballot summary:

Draft 9 was balloted with 218 comments, 82 as must be satisfied.

The ballot met the 75% return requirement with 97% affirmative rate.

Draft 10 has incorporated many of the comments that were received.

Don indicated that the next step will be to form a ballot resolution group to review the remaining technical comments received during the ballot process. A request for a ballot resolution group (BRG) was made and the following have volunteered: Don Duckett, Carl Arpino, Sue McNelly, Dave Wallach, Juan Castellanos, Don Platts, Craig Colopy, Peter

Balma, and Tom Prevost, and Roger Verdolin and Tim Raymond will be contacted to see if they are willing to help out.

Brett Sargent volunteered after the meeting to review Annex J and propose updates. Depending on the extent of the proposed changes, any revision may need to wait for a future revision.

Since there was time during the meeting, the WG went through most of the remaining technical comments from the ballot and resolved all but about two or three. This will make the work of the BRG much easier and will help push the document forward after a quick review of the changes made since the last ballot by the BRG. Don Duckett will be making arrangements for conference call with the BRG in the near future to go through any remaining comments and the changes made to the document.

The meeting was adjourned at 10:46 AM.

Respectfully Submitted

Don Duckett	Carlo Arpino	Susan McNelly
WG Chair	WG Vice Chair	WG Secretary

10.6.3.2 Working Group On Thermal Evaluation Of Power And Distribution Transformers (C57.100) – Roger Wicks

The Ballot Resolution team has met a number of times since our ballot closed in order to develop a revised document that can be successfully recirculated.

We met Monday during the working group scheduled time to continue this work. We have a plan on the elements to complete this revision, but the “devil is in the details”. These details are still in the process of being worked out.

Specifically, we are addressing standardizing the sealed tube test (adding specificity) as well as documenting a process for assigning new life curves (based on IEEE 1) for new insulation systems. This was outside of the scope of our document in previous versions of this document, and in our balloted document wasn’t as clear as it needed to be. This is of importance today due to the interest in new insulation systems for our power transformers.

The ballot resolution group should be commended for all of the work in this effort – Don Platts, Tom Prevost, John Luksich, Terry Drees and Jin Sim.

10.6.3.3 Task Force on High Temperature Liquid-Immersed Transformers (PC54.154) – Richard Marek

The sixth meeting took place on Monday, April 11, 2011 in the Rousseau Center Meeting Room at 1:45 pm, at the Catamaran Resort Hotel, San Diego, California. Introductions were made and attendance sheets were circulated. The new IEEE patent policy was discussed and there were no concerns regarding patents. At 36 members, a quorum was established with 20

members and 70 guests present. The minutes from the Toronto meeting were approved as submitted.

Waldemar Ziomek presented the results of the Task Force assigned to resolve issues with Fig 3 of Draft 5, which has now become Fig 5 in Draft 6. The recommendation included revisions to the sketch and Waldemar will provide a marked up copy according to the Task Force agreement along with the results of a series of questions.

George Frimpong presented data that showed a temperature advantage of aging of cellulose in the natural ester over mineral oil. He is supporting the Task Force charged with developing an informative annex that presents a convincing argument for this thermal enhancement. The Task Force Chair, Jin Sim then addressed the group noting that the results will be prepared by August. This is important to make sure the content is included in the upcoming survey of the Insulation Life Subcommittee.

The Chairman then reviewed the changes to Draft 6:

- The number of insulation systems was reduced to three
- The use of windings was introduced as a means of explaining these systems
A comment was made by Hasse Nordman questioning the need for high-temperature stress rings. The Chair agreed that this was a mistake and it would be corrected.
A discussion followed on the tables with allowable temperature rises, methodology, temperature classes of individual components and rules for combining materials
- Notes concerning shell type were added
- The revised temperature limits tables were reviewed

The question was again raised whether the document is a standard or a guide. Gary Hoffman asked if he could make a motion to vote on the question. The Chair declined his offer for a vote but agreed to add this question to the upcoming survey of the Insulation Life Subcommittee which is scheduled to be completed before the fall meeting. His reason for declining was that an earlier show of hands indicated that very few of those present had read the latest draft and so it made no sense to ballot the working group on this topic.

Two guests asked why they were not granted membership. The Chair noted that since the work is well over half complete no new member were being accepted. He also noted that all documents go to all guests as well as members, so membership is not necessary. However, several guests said that they did not receive the last mailing. The Chair said that he uses the List Server and agreed to check the cause.

The meeting adjourned at 3:05 pm.

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

The Working Group met at 11:00am April 12, 2011 in Kon Tiki room of the Catamaran Resort Hotel in San Diego, California USA. Introductions of members and guests were made. The chair reviewed requirement for quorum and took count of the membership. The group has

thirty-one members; a quorum was established. In attendance there were twenty members and sixty-one guests.

There were no patent disclosures.

The minutes of the March 9, 2010 meeting in Houston were approved as written. The minutes of the October 26, 2010 meeting in Toronto were approved with correction that a quorum was not present so no action pending from the meeting could be addressed.

Projects:

TF – Sub-clause 11.2.2e - Addressing scenarios wherein hot-resistant time data unsuitable for fitting to an exponential decay curve: (There was no discussion on this topic.)

Unfinished Business

1. Proposal Circulated from the Fall Meeting modifying sub-clauses 11.2.2 c, d and f for distribution transformers: The results of the previous survey was shown on the screen, opening the floor to comments. Mr. Marcel Fortin commented that the time constant of a winding varies a lot, and is in function of design and construction. The Chair remarked that the intent of the proposed sub-clause 11.2.2d was to have only one method. The group was polled with a majority preferring alternate 2 (11 vs. 1). The Chair will re-circulate the survey to the WG for approval.

- *Add to 11.2.2.c - At least one resistance measurement shall be taken on all terminal pairs within a time less than half the coils shortest time constant after shutdown.*
- *Add to 11.2.2d:*
 - Alternate 1 - A series of at least 10 resistance measurements shall be made on one terminal pair corresponding to a phase of a winding in less than 10% of the bulk oil time constant.*
 - Alternate 2 - At least 10 resistance measurements shall be made on one terminal pair corresponding to a phase of a winding. All resistance data points shall be recorded at no longer than 30 second intervals and no less than 10 second intervals.*
- *11.2.2f: Modify to agree with timeframe specified in 11.2.2c.*

2. Average oil rise in distribution transformers – The group revisited a presentation previously made by Mr. Hasse Nordman for determination whether to form a TF for determination of average liquid temperature in distribution transformers without external oil circulation. Mr. Marcel Fortin made a comment explaining that the higher than expected gradients were related to the height difference between the core & coils, and the top of tank/radiators, anticipating a lot of different design configurations. As there were only two persons present having performed the measurements in order to possibly derive a correlation between internal oil temperature and external temperature, the task could not be pursued. The Chair stated that she will poll the attendees in the future to see if the proposal merits re-visiting.

3. Comments made by Marcel Fortin in a previous C57.12.90 ballot: Marcel Fortin has proposed a rewrite of 11.1 and 11.1.2.2 with reference to the back to back method. The Chair will send a survey to the group comparing the existing text to the proposed for consideration.

New Business

There was no new business.

The meeting adjourned at 11:45am.

Respectfully submitted,

Paulette Payne Powell, Chair
Juan Castellanos, Co-Chair

10.6.3.5 Task Force on Furan Testing – Shuzhen Xu

This Task Force did not meet at this meeting. They will meet during the Fall 2011 Session.

10.6.3.6 Task Force on Moisture Estimation in Transformer Insulation – Jin Sim

The Task Force on Moisture Estimation in Transformer Insulation did not meet during the Spring 2011 Transformer's Committee meeting.

The TF anticipates having a draft of the paper by the end of the year. Once complete, the draft will be circulated in the TF for comment.

10.6.3.7 Task Force on Winding Temperature Indicators - Phil McClure

This Task Force had an off schedule meeting. The focus of the discussion was how to get the paper into the public domain.

10.6.4 Old Business:

10.6.4.1 High Temperature Limits of Non-Current Carrying Metallic Parts

A survey on the high temperature limits of non-current carrying metallic parts will be coming out soon.

10.6.5 New Business:

A member indicated that he had comments on altitude correction but did not think that they would be substantial. The Chair will follow up with the Member to discuss the comments and determine the appropriate course of action.

10.6.6 The meeting adjourned at 9:05 AM.

Bruce Forsyth
Chair, Insulation Life Subcommittee