

Annex D Dry Type Transformers Subcommittee

April 5, 2017

New Orleans, LA USA

Chair: Charles Johnson

Vice-Chair: Casey Ballard

Secretary: David Stankes (absent)

D.1 Introductions and Approval of Agenda and Minutes

The Subcommittee met on April 5, 2017 at 1:30 PM in the Toulouse AB Room of the New Orleans Astor Crowne Plaza Hotel.

There were 17 of 26 members present (therefore we had a quorum of 50+%), and 16 guests present, 2 guests requested membership. The attendance roster will be kept in the AMS.

The agenda was approved unanimously.

The minutes of the Vancouver, BC Canada meeting were approved unanimously.

D.2 Chairs Remarks

None.

D.3 Working Group/Task Force Reports

The next order of business was the presentation of the reports of the various working groups and task forces. See the following sections for the individual reports:

D.3.1 IEEE PC57.12.01 - Dry Type General Requirements Chair Casey Ballard

The working group met in the Iberville Room of the Astor Crown Plaza Hotel.

The meeting was called to order at 1:45 PM by Chairman Casey Ballard.

Chairman made opening comments.

Introductions were made by all participants. WG Roster has been distributed and signed.

The meeting was convened with 35 participants, 15 of them are members, 3 participants requested membership. Quorum was reached (22 current members). The attendance was reported in the AMS.

The Agenda was approved unanimously being no negative votes.

The Minutes of Fall 2016 Vancouver meeting was approved unanimously.

The chair made a call for known patent issues. No patent related issues were claimed.

Old business

- Chair informed on the revisions that have been incorporate into Draft 2 and circulated to the membership.

- Term “power” has been changed to the term “kilovoltamperes” in the text of the standard.
- Fuzzy Figures 3-4 – new higher resolution pictures inserted.

- Other topics that had proposals created were (volunteers reports):

- Cooling ratings by C57.12.00, IEC nomenclature, CSA – current C57.12.01 nomenclature doesn't fit any other systems anymore. Dhiru Patel provided proposal on 3 letter system for the cooling classes. Discussion:
 - C. Ballard mentioned the need to cover dry-type transformers with water cooled heat exchangers using forced air and forced water – AFWF in IEC.
 - V. Tendulcar was satisfied with the current 4 letter designation system used by IEC.
 - C. Johnson commented that “G” represents contained air enclosures and “A” is all other air type cooling systems (C57.52). He also noted that the difference between dry-type and liquid-immersed transformers may warrant different cooling designation conventions.

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- R. Marek reminded that C57.12.80 (terminology) has been opened for a revision and he recommended taking part in the work of this WG – this is in a conflicting slot to C57.12.91.
- T-F. Mai volunteered to review IEC standards and make a proposal prior to the F17 meeting.
- WG felt that the proposed 3 letter designation system doesn't cover the variety of the cases and doesn't bring a harmonization with other standards. It was also proposed to keep reference to IEC (if different) in Table 2 of the standard. The Chair thanked D. Patel for his proposal.
- Maximum system voltage in Table 5.
 - V. Tendulkar proposed to use C57.12.00 maximum system voltages.
 - P. Hopkinson agreed and added that we need to add nominal and maximum voltages to the level between 600 V and 1200 V. It was a comment that C57.13 defines 660 V as a maximum system voltage for 600 V system.
 - C. Johnson commented that the specified voltages at regulating taps may go beyond a maximum system voltage.
 - Chairman conducted Straw Poll, which confirmed that the WG supports harmonization with C57.12.00; tap voltages shall be a separate issue – perhaps addressed by text in the main document or a note.
 - The table will be updated and circulated for formal approval and will have further discussion planned for the Fall 17 meeting.
- Short Circuit thermal limits.
 - R. Marek and D. Patel informed on the results of their research related to the topic: mechanical strength of the conductor is not a limiting factor in the determination of the winding sc thermal limits (Cu conductor remains 50% of its mechanical strength after exposure to 450 deg. C even for 30 min; similar result is for Al conductor at 350 deg. C for 30 min). Thermal endurance of the insulation shall define these limits. Also cracking of the cast resin insulation might be a limitation.
 - R. Marek presented the tests of different materials at 450 deg. C for 5 sec and 15 seconds, that demonstrated the different degree of the deterioration of the materials. Rick wanted to repeat test for shorter times (2 sec) and to look at development of the insulation system short term thermal endurance acceptance test.
 - The request to harmonize with IEC maximum allowed temperatures has been dropped as the conducted study showed that IEC limits might be wrongly defined.
 - Discussion on the proposed revision of Table 15 – C. Johnson proposed to remove column 2 for winding initial average temperature as it isn't used in the determination of the limits anymore. V. Tendulkar commented that IEC uses average winding rise temperatures and IEEE uses hot spot temperature limits. S. Chiang noted that UL 845 has sc requirements for insulation (instant test), he will share the appropriate excerpt with the WG.
- Short Circuit thermal calculation.
 - D. Walker has shown the comparison of the IEEE and IEC thermal calculation methods for 6 transformers and demonstrated that the results are quite close (max 3.4% difference).
 - After discussion, WG feels that both methods shall be included in the body of the standard as it's unknown what method is more accurate and also for the historical continuity.
- Higher standard BIL ratings in Table 5.
 - Results of the previous WG surveys were split 50/50.
 - Discussion revolved around 15 kV voltage class with 60, 75 or 95 kV BIL test level.
 - C. Johnson thought that 60 kV level is not relevant anymore for this voltage class and shall be increased. This will make a transformer more robust.
 - C. Ballard argued that 60 kV works fine in many cases and there is no evidence that increasing BIL level will solve problems with switching transients.

- P. Hopkinson informed on the Schneider Electric database for 15 kV units (open ventilated design): 75 % of transformers are specified for 95 kV BIL testing (based on the logic that those units are connected to the switchgears that is tested to 95 kV BIL). The proposal was to make 95 kV BIL a standard test level for 15 kV BIL voltage class, but keep 60 kV BIL as an optional lower level.
- V. Tendulkar commented that, normally, protective devices have a higher test level and this shall not be a reason for increasing transformer test levels, which results in more expensive units. We shall not close the option for the customers to receive 60 kV BIL transformers, if they consider this level acceptable.
- P. Hopkinson – the switchgear test levels have been changed for a reason (even though, it's still an indoor equipment and nothing has changed as for the lightning withstand requirements for this equipment), so we need to think about transformers as well.
- C. Ballard – even now standard allows for the optional higher voltage test levels. We also need to think about other voltage classes.
- D. Patel thinks that 60 kV BIL is outlier and provides the reduced test levels compared to Hi-Pot test levels for other voltage classes. He would agree making 75 kV BIL as a standard level.
- It was also a comment that, contrary to liquid-immersed transformers, in dry-type there is no differentiation between power and distribution classes and this might be something to look at going forward.
- P. Hopkinson – in the future, the specifics of power electronic expansion shall be addressed.
- The Chair will circulate a ballot to the WG members on this topic and make a response mandatory. The three questions polled will be related to:
 - Should both 60 and 95kV BIL be marked with an 'S' to dictate a standard BIL level for 15kV class equipment? This would allow both to be used as standard instead of 60 being standard and 95 being optional.
 - Should a 75kV BIL level be created and added to table 5 and marked as the only standard for 15kV? This would remove 60kV BIL as standard and leave 95 as optional.
 - Should 95 be marked as the standard, removing 60 and adding 110kV BIL as an optional level?
- Other BIL/system voltage levels will be addressed on or before the Fall 17 meeting

New Business

- Environmental testing requirements such as per IEC-60076-11 – has not been discussed due to time constrain, Chairman will send some proposal to the membership.
- On Load Tap Changers (OLTC) are not currently covered by 12.01 and T.F. Mai has proposed that it be considered. This will also be submitted to the membership.

Next meeting: Fall 2017, Louisville, Kentucky, October 29 – November 2, 2017

With no further business, the meeting was adjourned at 3 PM.

Chairman: Casey Ballard

Secretary: Sasha Levin

D.3.2 IEEE PC57.12.60 - Dry Type Thermal Aging Chair Roger Wicks

The meeting was called to order at 1:45 PM by Chairman Roger Wicks. Introductions were made and attendance sheet was circulated.

The meeting was convened with 38 people in attendance / 11 members present (22 members so Quorum was reached.). One of the guests present requested membership and Chair will review to see if person met eligibility requirements. (11 members on paper roster did not reflect electronic badge sign in which said 10.)

The Chairman reviewed the proposed Agenda. He apologized for the delay in getting the agenda out to the WG. The delay was due to waiting for outcome of IEC TC 112 WG 6 special meeting for IEC 61857 Part 41 in Krefeld Germany, a document dealing with similar/same topic as C57.12.60.

The agenda was reviewed and approved unanimously.

The minutes from fall 2016 WG meeting were approved unanimously

The chairman asked if there were any essential patent issues relevant to this standard. None were noted.

Discussion of IEC 61857-41 Meeting March 28 & 29 in Krefeld, Germany

Chairman provided some background surrounding the IEC 61857 Part 41 and taskforce (with experts from both TC 112 and 14) that was formed to review comments received from Committee Draft. The meeting in Krefeld was a special meeting of TC 112 WG 6.

Chairman noted area where work in IEC 61857-41 (which is still a work in progress) could impact C57.12.60 including:

1. Improved aging table
2. Concept of screening test
3. Simplified model test to possibly replace current Method B and/or to be used for material substitution.

Chairman described that a screening test (electrical and thermal) may be useful to potentially reduce test times due to testing closer to the failure point of unaged system. A rough draft of the proposed screening process available and will be circulated to the WG per request from Dhuru Patel.

Chairman described that current Transformer Test in C57.12.60 is for the most part OK, but that model test is in need of improvement. The models that will be listed in Part 41 may be useful in C57.12.60.

The Chairman described that Part 41 may be used as a replacement for current Sealed Tube test that is used to approve new materials.

Areas of work to be completed include:

- Additional models to be added to represent various winding configurations
- Apply transient voltage analysis / impulse test as option to induced voltage test.

Chairman also suggested that PD inception level may also be used as part of the screening process. Chairman noted that we must decide what are the correct tests that should be included.

Chairman presented winding setup from Part 41 and described how the model used voltage stress levels (VSL's) for testing. A potential problem with testing insulation thinner than what would be used in an actual transformer was noted by the Chairman. An example was given of film, and how dielectric strength changes with thickness. It was noted by Chairman that it was recommended in Krefeld that actual thickness of insulation designed to be used in finished transformer (+/- some tolerance) be used in model test.

Reviewed data presented by Eltek at Krefeld meeting showing test results of coils tested per 12.60 and Part 41 (impulse vs. induced voltage). The data showed that test results from induced voltage test were more conservative compared to impulse, although there was no details regarding voltage tested at, etc. A question was raised by Casey Ballard regarding what version of C57.12.60 was used (simulated impulse or true impulse).

Chairman reviewed a VSL example, which recommended using maximum stress level identified in finished transformer + 0.5 additional stress. Chairman noted that this stress level may be less than air, and recommended considering use of higher stress levels.

The need to determine how to perform screening test under impulse was identified. Chair requested a volunteer to help write this procedure. Ken McKinney volunteered.

A discussion on whether or not part 41 would be used as a material test as opposed to having to conduct a design test. Casey Ballard suggested that it be determined what materials would be eligible to be

modified in this method. (Would not be used to replace on material with another material with totally different chemistry. Tim Mai volunteered to submit various model constructions. Solomon Chaing thought that UL accepts material tests for substitutions of Busbar insulations with good results.

Follow-up Items from our meeting in Vancouver

- **PD test proposal**

Chairman showed proposal regarding PD test proposal. (Initial Test, Trending test, and use of collected data to be used to help predict failure.) It was agreed that this was a starting point, but we may have to modify/detail the use of PD testing as a trending test.

- **How to change Voltage (down) from a previously tested design**

Casey described proposal including which would give UL a logical path (rules) that could be used to reduce voltage

- OK to scale down, but not OK to scale up
- Volts/mil cannot be increased
- Voltage stress (impulse)
- Air shall be considered in the design
- Full scale transformer must be built and tested
- Major insulation cannot be changed
- Examples will be added

Review of action items:

Chairman to circulate:

- Presentation
- Screening proposal
- Current draft of 12.60
- Data from Eltek presenting 12.60 vs. IEC 61857-41 test data

With no further items to discuss, Chair asked for motion to adjourn.

Tim Mai motioned to adjourn and Vijay Tendulkar seconded.

Meeting was concluded at 3:00PM.

It was confirmed that the WG would meet again at the Fall 2017 Transformer Committee Meeting in Louisville.

Chair: Roger Wicks

Co-Chair: Dave Stankes

D.3.3 IEEE PC57.12.58 - Dry Type Transient Analysis

Chair Roger Wicks

This WG did not meet in person in Vancouver. However, IEEE C57.12.58 has successfully been balloted within the IEEE-SA balloting process after completing a recirculation. At this point the working group chair will work with IEEE Staff to submit this document for IEEE approval and publication.

D.3.4 IEEE PC57.12.91 - Standard Test Code

Chair Derek Foster (absent)

Vice Chair David Walker presented minutes from meeting

The Working Group met in the Saint Charles AB meeting room. The meeting was called to order at 4:45 PM.

There were 28 people present. 10 members and 18 guests were present. A quorum was present.

The patent call was given. No one replied with any patent issues.

The agenda was approved unanimously.

The minutes of the April 2016 meeting in Atlanta were unanimously approved as written in this meeting because there was not a quorum present at the October 2016 Vancouver meeting. The minutes of the October, 2016 meeting in Vancouver were unanimously approved as written.

Old Business

- Old business from Vancouver meeting was carried over because it could not be voted on due to the lack of a quorum.
- Tim Felix-Mai had proposed to adopt the language from C57.96 for altitude corrections to the temperature from a temperature test. No need for further considerations was identified by those in attendance. Tim Felix-Mai proposed to move to a vote on the proposal. Chuck Johnson seconded the motion. The motion passed.
- A proposal had been made to include temperature tests with harmonic load in Section 11. This is not currently included. The discussion during the Vancouver meeting was that the test does not belong in C57.12.91. Casey Ballard moved to take a vote to quash the proposal. Vijay Tendulkar seconded the motion. The motion passed with 7 votes for and 0 votes opposed.

New Business:

- Jagdish Burde proposed that the Equation 23 in Section 11.7.1 for correction of temperature rise measurements for variations in ambient temperature should be removed because an analogous equation does not exist in either C57.12.90 or IEC 60076-3. This is the equation for correcting the winding temperature rise when the ambient air temperature is anything other than the air temperature at rated kVA (usually 30°C). Chuck Johnson objected, explaining that according to the “old school” engineers that he had consulted with, this correction was designed to give all transformers a “level playing field” when considered winding rise, regardless of what the temperature was when the test was conducted. Dave Walker added that to remove this equation would create a discontinuity in customers’ data. Joe Tedesco countered that such an argument could be made any time a change was made to the test in the standard, therefore, such a discontinuity, by itself, is not a valid argument. Casey Ballard asked if the problem was that Equation 23 was technically wrong in some way or was it just different than other standards. Chuck Johnson added that there are plenty of times that something is in one of our standards and not in another standard and that does not make our standard wrong. Dhiru Patel stated that if there was potentially something wrong with the equation, it was worth considering removing it. Vijay Tendulkar pointed out that the 30°C in the standard refers to the ambient air, which is the cooling medium; in liquid-filled units, the cooling fluid is oil, which does not experience much temperature change during operation. That is likely the reason why this equation is not present in C57.12.90. He also agreed with Chuck Johnson’s comment. Jagdish Burde stated that the problem is that if either cold air or hot air affects the temperature rise, then there are thermodynamic concerns that come into effect, so correcting the temperature using a coefficient related to the wire is wrong. Ultimately, Dave Walker asked if there would be a motion to study if the equation needed to be changed. Jagdish Burde motioned for this study. Dhiru Patel seconded the motion. The motion passed with 6 votes for and 0 votes opposed. Jagdish Burde agreed to study whether the equation is correct and appropriate and report at the next meeting.
- Casey Ballard asked if the Old Business section of the Vancouver minutes was the right place to list future business. Dave Walker responded that those were tasks for future consideration for which no one had volunteered. Volunteers were solicited to review Sections 11, 12, and 13 and compare them to other applicable standards. Jagdish Burde accepted the responsibility of reviewing the rest of Section 11, since he was already reviewing Equation 23. Dave Walker stated that he would e-mail two other individuals about Sections 12 and 13 since no one volunteered.

- The business from Tim Felix-Mai was raised again regarding adding language regarding LTC's, and climactic and environmental ratings from IEC, to C57.12.01. Casey Ballard stated that this had not been done in C57.12.01 because that Working Group did not make it far enough in their motions to discuss adding them, so no movement could be made on adding them to C57.12.91.
- Dave Walker reminded everyone to review all of C57.12.91 and look for sections, sub-sections, sentences, equations, etc. that are obsolete, missing, confusing, out-of-place, in disagreement with other standards, etc. If any such items are found, e-mail a description of them to Dave Walker and he will compile a list of the items that need to be reviewed and will distribute that list to the Working Group.

Tim-Felix Mai agreed to act as Secretary for this Working Group. Thanks to Tim-Felix. This is much appreciated.

With no further business, the meeting was adjourned, without objection, at 5:13 PM.

The Working Group will meet again at the Fall 2017 meeting in Louisville, KY.

Chairman: Derek Foster (absent)

Vice Chairman: David Walker (acting as Chairman)

Secretary: Joseph Tedesco (acting as note-taker)

D.3.5 IEEE PC57.16 – Dry Type Reactors

Chair Art Del Rio

The working group for the revision of C57.16 met in the Iberville room of the Astor Crowne Plaza Hotel on Monday April 03, 2017, at 4:45 PM.

1. Introductions and Call for Patents

- The meeting was called to order at 4:45 PM by the WG Chair Art Del Rio.
- The meeting was opened with the introduction of participants.
- The WG Chair Art Del Rio did a call for potentially essential patents. None was reported.

2. Circulation of Rosters

- The attendance rosters were circulated.

3. Verification of Quorum

- There were a total of 23 participants: 9 Members and 14 Guests out of which 2 Guest requested membership. One was granted.
- 9 of the current 10 WG Members were present and quorum to carry out business was met.
- The meeting agenda, which was circulated by email among members and guests on March 27, 2017, was presented to the participants.
- There were no objections or comments and the agenda was approved unanimously.

4. Approval of the minutes of the October 25, 2016, meeting in Vancouver, Canada.

- The minutes from the F16 meeting in Vancouver, which were circulated on March 27, 2017 by email, were presented to the participants.
- There was one comment. In Old Business i.e, the text “AC side of multilevel converters” should be changed to “AC side of 2, 3 or multilevel converters”.

- The WG Chair Art Del Rio will do that change and circulate the updated minutes within the WG again.

5. Continue to discuss and review of the scope, purpose.

- One comment on the scope. What is the meaning with “With some restrictions, this standard is applicable to ... ” in the Scope?
 - Mike Sharp checked with Richard Dudley (the former chair of C57.16) and it may be related to a legal issue, with no other details available at this time.
 - If we will keep that wording then the restrictions should be listed.
- IEC 60076-6 covers most types of reactors.
- In the present standard there are both Normative (A, B, C and D) and Informative (E, F and G) Annexes. Annex A, B and C are referred in the Scope. This must be investigated so that it will be correct.
 - It can make sense to put text that is only related to requirements on special types of reactors in separate normative Annexes. The main text can then be general and refer to the different annexes.
 - The normative Annexes could be incorporated in the main text but then it could be more difficult to read the standard.
 - Is it ok to have a general main text and the normative Annexes with precedence over the main text?
 - Art Del Rio will check this with IEEE-SA editorial staff.
- Art Del Rio will distribute the word document.

6. New Business

- Art Del Rio asked for volunteers to review different parts of the document.
 - David Caverly volunteered to review the annex on dry-type air-core shunt capacitor reactors.
 - Klaus Pointner volunteered to review the annex on filter reactors.
 - Mike Sharp volunteered to review the annex on discharge current limiting reactors for series capacitor banks applications.
 - The three reviews above should be finished before May 15. Answers to be sent to Art Del Rio.
 - There is also a need to review the Scope and the sections on TRV issues.
- This standard does not need to cover arc suppression coils, which are covered by IEEE C57.32, Neutral Grounding Devices.
- All WG members are encouraged to look through the whole document and give comments.
- We should explain 2, 3 and multi-level converters in the definitions.
- Klaus Pointner made a motion that we should include AC side converter reactors, for Voltage Source Converters, in an additional Annex. Mike Sharp seconded the motion. A voting took place with the result 7 positive, 1 negative and 1 abstain.

- Should we include iron core reactors? IEC does not exclude this kind of reactor but says that filter reactors mostly are of air-core type. The conclusion was that we should not include it because the market is very small and we are lacking expertise. This question should be raised at the SC meeting.

7. Adjournment

- Motion to adjourn the meeting by Robert Ballard, seconded by Vijay Tendulkar, the meeting was adjourned at 5:45 PM.

Next meeting: Fall 2017, Louisville, Kentucky, October 29 - November 2, 2017.

Respectfully submitted,

Chairman: Art Del Rio (a.delrio@ieee.org)

Secretary: Ulf Radbrandt (ulf.radbrandt@ieee.org)

D.3.6 IEEE PC57.124 – Dry Type Partial Discharge Guide Chair

Tom Prevost (absent)

Rick Marek presented minutes from meeting

Chair welcomed the attendees. There were in total 48 members and guests in attendance. 10 of 13 members were in attendance so we had a quorum. PAR for the WG has been submitted and expected to be obtained in June of 2017. Since this was the last meeting of the TF before the PAR for the TF work becoming official all members attending and wishing to be members of the WG will become members.

Agenda circulated by the Chair was accepted unanimously. Patent statement was posted. There was no individual with any knowledge of such an association that affected the working of the WG and its implications to the work.

The minutes of the previous meeting were unanimously approved with no comments.

The Scope, which was approved at the Vancouver meeting, was presented by the chair to remind the group of our working boundaries.

C.57.113 was proposed by the Chair to be used as a guideline for our work. In addition other documents like C.57.12.01, C.57.113, C.57.124 will be circulated by the Chair to all participants for review and guidance to all members in preparation for the next meeting in Louisville, KY in Fall.

In addition, IEC 60270 will be also used as guidance and will be added to the list of documents above for circulation by the Chair in the near future. Chair will request copy of IEC 60270 from SA for use in this group.

It was pointed out that C.57.12.01- 2015 has the PD limits for Dry Type Transformers while our focus in C. 57.124 will be for the test methodology.

The chair mentioned that Detvev Gross will give a presentation on PD pattern recognition at the next WG meeting. PD pattern recognition is included as an annex in both C57.124, current version and C57.113.

Finally, Alex Kraetge will check for considerations related to 600076-03 and its implications to our work and report at the next meeting.

Barring no New Business the meeting was adjourned at 9:15 am.

Respectfully Submitted,

Hemchandra Shertukde

Secretary

C.57.124

D.3.7 IEEE PC57.12.51 - Dry Type Product Standard “> 500kVA Ventilated” Chair Sanjib Som

Document #: PC57.12.51

Document Title: IEEE Standard for Ventilated Dry-Type Power Transformers

Chair:	<u>Sanjib Som</u>	Vice-Chair	<u>vacant</u>
Secretary	<u>Mark Gromlovits</u>		

Current Draft Being Worked On: to be started May 2017 **Dated:** _____

Meeting Date: 3 April 2017 **Time:** 11:00am – 12:15pm

Attendance:	Members	<u>9 out of 13</u>
	Guests	<u>16</u>
	Total*	<u>25</u>

*** For details of attendance, please refer to AMS system of the Transformers Committee**

Meeting Minutes / Significant Issues / Comments:

1. Call to order and any Chair's remarks
2. Quorum was achieved with 8 of 13 members being present.
3. Call for essential patents was made and none were brought forward.
4. Minutes of the previous meeting were approved unanimously.
5. Agenda for this meeting was approved unanimously.
6. The PAR revision was submitted and is on the 4 May 2017 RevCom.
7. The chair presented the draft standard.
 - The chair indicated there were no technical issues to address.
8. Next meeting—Louisville, KY on 30 October 2017.

Submitted by: Sanjib Som

Date: 04/03/2017

D.4 Old Business

D.4.1 Status of Dry Type Transformers Standards

Chair reviewed status of standards activity including:

- IEEE PC57.12.51 - The Chair expressed concern regarding timing for the completion of PC57.12.51, as PAR expires in 2018. This document is in need of a PAR revision and ballot be sent out for comments prior to Fall 2017 meeting in order to meet the 2018 deadline.

D.5 New Business

D.5.1 Dry-Type Iron Core Reactors

A question arose during the WG meeting for C57.16 as to whether or not the document should cover iron core reactors as well. The SC was polled informally and (2) members would be interested in contributing. The SC chair will take this under advisement and determine if a formal vote will be requested to start a new TF.

D.5.2 IEEE C57.12.80 Terminology

Rick Marek noted that 12.80 was opened for revision. It was then commented that the 12.80 and C57.12.91 timeslot were in conflict. Rick then agreed he would combine the dry-type subcommittee's member's comments and raise them at the 12.80 meeting. The Chair thanked Rick for taking on this task and encouraged the members and guests to read over 12.80 and submit their comments as quickly as possible.

D.6 Adjournment

With no further business, the meeting was adjourned at 2:43 PM.

Chairman: Charles Johnson

Vice Chairman: Casey Ballard