

Annex K Power Transformers Subcommittee

March 30, 2022

Denver, Colorado USA

Meeting Time: 1:30-2:45 p.m. MT

Chair: Ryan Musgrove

Vice Chair: Alwyn VanderWalt

Secretary: Daniel Blaydon

K.1 Meeting Attendance

The Power Transformers Subcommittee met on Wednesday, March 30 at 1:30 PM MT. The attendance record indicates that 74 out of 136 members of the subcommittee were in attendance; a quorum at the meeting was achieved. A total of 169 individuals attended the meeting; 1 guest requested membership.

The complete attendance record is provided in Attachment K.1.

K.2 Approval of Agenda and Meeting Minutes

The Chair asked the membership for a motion to approve the agenda. Dan Sauer (Eaton) made a motion to approve the agenda which was seconded by Steve Shull (BBC Electrical Services). The agenda was approved without objection. The approved agenda can be found in Attachment K.2.

The Chair asked the membership for a motion to approve the Fall 2021 minutes. Dan Sauer (Eaton) made a motion to approve the minutes which was seconded by Steve Shull (BBC Electrical Services). The minutes were approved without objection.

K.3 Chair's Remarks

Ryan Musgrove (Oklahoma Gas & Electric) introduced himself as the new Chair of the PTSC, as the term of the previous Chair, Bill Griesacker (Duquesne Light Co.), had expired. The Vice-Chair and Secretary were reintroduced, as their positions remain unchanged.

The Chair introduced (5) new members which were added to the PTSC membership list since the Fall 2021 meeting. These members are listed below:

Cihangir John Sen (Duke Energy)

Balakrishnan Mani (Virginia Transformer)

Albert Sanchez (Knoxville Utilities Board)

Sanjay Patel (Royal SMIT)
Waldemar Ziomek (PTI Transformers)

The Chair provided the requirements for establishing and maintaining membership.

The Chair provided an overview the future scheduled meetings and proposed locations.

The Chair provided an overview of the Working Group and Task Force requirements for the scheduling of meetings, submission of minutes, and other administrative tasks.

The Chair provided announced that new Working Group leadership training would be made available through IEEE.

K.4 Working Group and Task Force Reports

K.4.1 Liaison to PC57.93a IEEE Guide for Installation and Maintenance of Liquid-Immersed Power Transformers – S. Reed

This liaison activity is related to the topic of low temperature cold starts for transformers with natural ester fluid. An overview of the testing this group plans to perform was provided which includes inserting fiber optics into the transformer to evaluate temperatures at different loading conditions. Scott Reed noted that we were informed that the testing has occurred, but no data has been shared yet with IEEE. There is a meeting in the near future where the data is expected to be shared.

The complete meeting minutes can be found in Attachment K.4.1.

K.4.2 Revision of C57.125 Guide for Failure Investigation, Documentation, Analysis and Reporting for Power Transformers and Shunt Reactors – H. Sahin

This working group met on Monday and achieved a quorum. They reviewed several clauses within the document that can be revised and agreed to create Task Forces to develop proposed revisions. This guide expires on 12/31/2025. They are expecting to take it to ballot on May 2024.

The complete meeting minutes can be found in Attachment K.4.2.

K.4.3 Revision of C57.131 Tap Changers – C. Colopy

This working group had two meetings this week. They reviewed changes that were made to the draft document. A motion was made to accept this new draft while keeping the following notes

on Section 6.1.15 Protection against access to hazardous parts and Section 7.2.2 Temperature rise for joint revision with IEC 60214-1. This motion was approved. There was also discussion about Table 3 switching impulse test values. Draft 1.1 will be posted on the Power Transformers Subcommittee page for review.

The complete meeting minutes can be found in Attachment K.4.3.

K.4.4 Revision of C57.143 – Guide for Application of Monitoring Equipment to Liquid-Immersed Transformers and Equipment – M. Spurlock

This working group met on Monday and did not achieve a quorum. They currently are conducting a straw ballot of the document which was sent out on March 11th to over 300 recipients. Responses are due back by April 11th. They are expecting to go to ballot in the Fall of 2022. The PAR expires in December 2023.

The complete meeting minutes can be found in Attachment K.4.4.

K.4.5 Revision of C57.150 Guide for the Transportation of Transformers and Reactors Rated 10,000 kVA or Larger – G. Anderson

The PAR expires for this revision expires in December 2023. Draft 2 of the guide has been sent to working group members. They expect to resolve comments by April and obtain approval from the working group over the summer to request Subcommittee approval to go to SA ballot at the Fall 2022 meeting. The revised document is expected to be published next year.

The complete meeting minutes can be found in Attachment K.4.5.

K.4.6 Task Force on V/Hz Curve – J. Watson

This working group met on Tuesday and did not achieve a quorum. They had some additions to Draft Rev. 0 of the document from various task forces and had discussions around additional information that they may want to add to the document, including standardizing V/HZ curves (scaling and conditions). They will be working on document for next month or so. They are still looking for volunteers to join the WG with experience in this area.

The complete update can be found in Attachment K.4.6.

K.4.7 Development of PC57.170 Condition Assessment Guide – K. Mani

This working group met on Tuesday but did not achieve a quorum. Presentations were given by various task forces within the working group. They intend to send sections of the guide out for

straw ballot to the working group later this summer and hope to complete the other draft sections by Fall 2022.

The complete meeting minutes can be found in Attachment K.4.7.

K.4.8 Revision of C57.116 GSU Transformers – W. Li

This working group met on Monday and achieved a quorum. They reviewed the recommended changes made since the last meeting. All changes were accepted. The working group voted to take the document to the PTSC to request approval to move to ballot.

W.Li (Braintree Electric Light Dept) made a motion to submit Draft 3 of PC57.116 dated March 2022 to SA Ballot. Eduardo Garcia (Siemens Energy) seconded the motion.

The complete meeting minutes can be found in Attachment K.4.8.

K.4.9 PAR Study Group for C57.135, Phase Shifting Transformers - E. Schweiger

This PAR study group has been working on the PAR wording, with the last meeting taking place on March 14th. The proposed PAR was presented to the Subcommittee.

Ewald Schweiger requested a motion from the Subcommittee to “Create a PAR to revise C57.135-2011 as presented. With the intent to meet as a Working Group at the next meeting, if the PAR approved.”

Steve Shull (BBC Electrical Services, Inc.) made the motion as presented. Joe Watson (JD Watson and Associates Inc.) seconded the motion.

The motion was approved with unanimous consent.

They plan to hold their first working group meeting at the Fall 2022 committee meeting.

The complete meeting minutes can be found in Attachment K.4.9.

K.4.10 PAR Study Group for C57.93, Installation and Maintenance Guide: S. Reed

This PAR Study Group group met on Tuesday. They continued to review the PAR and table of contents of the existing guide. There was discussion about adding more information about maintenance into the guide specifically for LTCs and Bushings. The next objective is to finalize the title scope and purpose.

The complete meeting minutes can be found in Attachment K.4.10.

K.4.11 PAR Study Group for C57.17, Arc Furnace Transformers: D. Corsi

This document expires on 12/31/22. Dom Corsi (Chair) has requested individuals with experience using the standard or manufacturers of arc furnace transformers to review the standard and volunteer to assist with revising the document.

K.4.12 PAR Study Group for IEEE 638 Class 1E Xfmrs for Nuclear Stations - C. Swinderman

This standard expires on 12/31/2023. Craig Swinderman (Chair) has requested individuals with experience using the standard to volunteer with revising the document.

K.5 Old Business

The chair reviewed the following PAR study groups which were approved by the PTSC via email following the Fall 2022 meeting. Volunteers interested in participating in these groups were requested to contact either the PTSC Chair or PAR Study Group Chair(s). All groups plan to meet as a TF or WG at the Fall 2022 meeting.

C57.153 Paralleling Guide (expires 12/31/2025)

Mark Tostrud (Dynamic Ratings) will be leading this group.

C57.156 Tank Rupture (expires 12/31/2026)

Peter Zhao (Hydro One) will be leading this group.

C57.157 Contact Functional Life (expires 12/31/2025)

Adam Sewell (Quality Switch) will be leading this group.

K.6 New Business

There was no new business.

K.7 Adjournment

The meeting adjourned at 2:22pm MT.

K.8 Attachments

Attachment K.1 – Attendance
Attachment K.2 – S22 PTSC Agenda
Attachment K 4.1 - PC57.93a Minutes
Attachment K 4.2 – C57.125 Minutes
Attachment K 4.3 – C57.131 Minutes
Attachment K 4.4 – C57.143 Minutes
Attachment K 4.5 – C57.150 Minutes
Attachment K 4.6 – V/HZ Minutes
Attachment K 4.7 – C57.170 Minutes
Attachment K 4.8 – C57.116 Minutes
Attachment K 4.10 – C57.93 Minutes

Attachment K.1

Role	First Name	Last Name	Company
Member	Kayland	Adams	SPX Transformer Solutions, Inc.
Guest	Alex	Alahmed	Evergy Wolf Creek
Guest	Jennie	Aldenlid	Hitachi Energy
Member	Gregory	Anderson	GW Anderson & Associates, Inc.
Member	Stephen	Antosz	Stephen Antosz & Associates, Inc
Guest	Elise	Arnold	SGB
Member	Javier	Arteaga	Hitachi Energy
Member	Onome	Avanoma	MJ Consulting
Member	Donald	Ayers	Ayers Transformer Consulting
Member	Gilles	Bargone	FISO Technologies Inc.
Guest	Cheryl	Basel	WEG Transformers USA Inc.
Guest	Barry	Beaster	H-J Family of Companies
Guest	Jason	Beaudoin	Weidmann Electrical Technology
Guest	Olle	Benzler	Megger
Guest	Jean-Noel	Berube	Rugged Monitoring Inc.
Member	Enrique	Betancourt	Prolec GE
Member	Wallace	Binder	WBBinder Consultant
Secretary	Daniel	Blaydon	Baltimore Gas & Electric
Member	William	Boettger	Boettger Transformer Consulting LLC
Member	Paul	Boman	Hartford Steam Boiler
Guest	Michael	Botti	Hyosung HICO
Guest	Jeremiah	Bradshaw	Bureau of Reclamation
Guest	Jeffrey	Britton	Phenix Technologies, Inc.
Member	David	Calitz	Siemens Energy
Guest	Juan Alfredo	Carrizales	Prolec GE
Member	Juan	Castellanos	Prolec GE
Guest	Arup	Chakraborty	Delta Star Inc.
Member	Stuart	Chambers	Powertech Labs Inc.
Guest	Jonathan	Cheatham	General Electric
Guest	Larry	Christodoulou	Electric Power Systems

Guest	Olivia	Cordova	Bureau of Reclamation
Guest	Michael	Craven	Phoenix Engineering Services
Member	Juan Carlos	Cruz Valdes	Prolec GE
Guest	Gurk	David	Xcel Energy
Member	Eric	Davis	Burns & McDonnell
Guest	Herton	De Oliveira Filho	PSEG
Guest	Samson	Debass	EPRI
Guest	Jonathan	Deverick	Dominion Energy
Guest	Cesar	Diaz	EATON Corporation
Member	Scott	Digby	Duke Energy
Guest	Nikolaus	Dillon	Dominion Energy
Guest	Larry	Dix	Quality Switch, Inc.
Guest	Zachary	Draper	Delta-X Research Inc.
Guest	John	Eastman	
Member	Evgenii	Ermakov	Hitachi Energy
Guest	Marco	Espindola	Hitachi Energy
Guest	Florin	Faur	SPX Transformer Solutions, Inc.
Member	Reto	Fausch	RF Solutions
Member	Hugo	Flores	Hitachi Energy
Member	Bruce	Forsyth	Bruce Forsyth and Associates PLLC
Guest	Jean-Philippe	Gagnon	Qualitrol Company LLC
Guest	Jose	Gamboa	H-J Family of Companies
Member	Eduardo	Garcia Wild	Siemens Energy
Guest	Orlando	Giraldo	H-J Family of Companies
Member	Ramsis	Girgis	Hitachi Energy
Chair	Bill	Griesacker	Duquesne Light Co.
Member	Niklas	Gustavsson	Hitachi Energy
Guest	Shamaun	Hakim	WEG Transformers USA Inc.
Guest	Bridget	Havens-Spillers	Ameren
Member	Kyle	Heiden	EATON Corporation
Member	John	Herron	Raytech USA

Member	Saramma	Hoffman	PPL Electric Utilities
Guest	Ryan	Hogg	Bureau of Reclamation
Guest	Derek	Hollrah	Burns & McDonnell
Member	Philip	Hopkinson	HVOLT Inc.
Guest	Nicholas	Jensen	Delta Star Inc.
Member	Akash	Joshi	Black & Veatch
Member	Kurt	Kaineder	Siemens Energy
Guest	Jerzy	Kazmierczak	Hitachi Energy
Member	Zan	Kiparizoski	Howard Industries
Member	Egon	Kirchenmayer	Siemens Energy
Guest	Evan	Knapp	EATON Corporation
Member	Axel	Kraemer	Maschinenfabrik Reinhausen
Guest	Alexander	Kraetge	OMICRON electronics Deutschland GmbH
Guest	Tiffany	Lucas, P.E.	SPX Transformer Solutions, Inc.
Guest	Jinesh	Malde	M&I Materials Inc.
Member	Kumar	Mani	Duke Energy
Guest	Tom	Matson	Xcel Energy
Guest	Mama	MbouoMboud	Hitachi Energy
Guest	James	McBride	JMX Services, Inc.
Guest	Brian	McBride	Cargill, Inc.
Guest	Anthony	McGrail	Doble Engineering Co.
Member	Thomas	Melle	HIGHVOLT
Guest	Kent	Miller	T&R Electric Supply Co.
Guest	Philip	Miller	Memphis Light, Gas & Water
Member	Emilio	Morales-Cruz	Qualitrol Company LLC
Member	David	Murray	Tennessee Valley Authority
Member	Ryan	Musgrove	Oklahoma Gas & Electric
Guest	Brady	Nesvold	Xcel Energy
Guest	Dwight	Parkinson	EATON Corporation
Member	Sanjay	Patel	Smit Transformer
Member	Poorvi	Patel	Electric Power Research Institute (EPRI)

Member	Nitesh	Patel	Hyundai Power Transformers USA
Guest	Harry	Pepe	Phenix Technologies, Inc.
Guest	Matthew	Pinard	Weidmann Electrical Technology
Guest	Homero	Portillo	Advanced Power Technologies
Guest	Daniel	Posadas	Prolec SA DECV
Guest	Adnan	Rashid	Measurement Canada / ISED
Member	Scott	Reed	MVA
Guest	Sebastian	Rehkopf	Maschinenfabrik Reinhausen
Guest	Benjamin	Riggins	Xcel Energy
Guest	Kevin	Riordan	WEG Transformers USA Inc.
Guest	Diego	Robalino	Megger
Guest	Tim	Rocque	SPX Transformer Solutions, Inc.
Member	Marnie	Roussell	Entergy
Member	Mickel	Saad	Hitachi Energy
Member	Hakan	Sahin	Virginia/Georgia Transformer
Guest	William	Salmon	Dominion Energy
Member	Albert	Sanchez	Knoxville Utilities Board
Member	Dinesh	Sankarakurup	Duke Energy
Guest	Erick	Sato	Siemens Energy
Member	Daniel	Sauer	EATON Corporation
Member	Alan	Sbravati	Cargill, Inc.
Member	Steven	Schappell	SPX Transformer Solutions, Inc.
Guest	Stefan	Schindler	Maschinenfabrik Reinhausen
Guest	Eric	Schleismann	Southern Company Services
Guest	Alfons	Schrammel	Siemens Energy
Member	Dan	Schwartz	Quality Switch, Inc.
Member	Ewald	Schweiger	Siemens Energy
Guest	Pugal	Selvaraj	Virginia Transformer Corp.
Member	Cihangir	Sen	Duke Energy
Guest	Jeremy	Sewell	Quality Switch, Inc.
Guest	Russell	Sewell	Quality Switch, Inc.
Member	Adam	Sewell	Quality Switch, Inc.

Guest	Samuel	Sharpless	Rimkus Consulting Group
Guest	Adetokunho	Shosanga	Xcel Energy
Member	Stephen	Shull	BBC Electrical Services, Inc.
Guest	Andre	Simons	Cogent Power Inc.
Guest	Jonathan	Sinclair	PPL Electric Utilities
Guest	Kenneth	Skinger	Scituate Consulting, Inc.
Guest	Markus	Soeller	Power Diagnostix Consult GmbH
Member	Sanjib	Som	Pennsylvania Transformer
Guest	Mauricio	Soto	Hitachi Energy
Guest	Arthur	Speegle	Entergy Services, Inc.
Member	Mike	Spurlock	Spurlock Engineering Services, LLC
Member	Brad	Staley	Salt River Project
Member	Markus	Stank	Maschinenfabrik Reinhausen
Member	Kyle	Stechschulte	American Electric Power
Guest	Hampton	Steele	Tennessee Valley Authority
Guest	Andrew	Steineman	Delta Star Inc.
Guest	Charles	Sweetser	OMICRON electronics Corp USA
Guest	Craig	Swinderman	Mitsubishi Electric Power Products
Member	Janusz	Szczechowski	Maschinenfabrik Reinhausen
Member	Troy	Tanaka	Burns & McDonnell
Guest	Marc	Taylor	JFE Shoji Power Canada Inc.
Guest	Ed	teNyenhuis	Hitachi Energy
Guest	Ryan	Thompson	Burns & McDonnell
Guest	Timothy	Tillery	Howard Industries
Guest	Eduardo	Tolcachir	TTE
Member	Mark	Tostrud	Dynamic Ratings, Inc.
Guest	Daniel	Tournoux	SPX Transformer Solutions, Inc.
Guest	Olivier	Uhlmann	Reinhausen Canada Inc.
Vice-Chair	Alwyn	Van Der Walt	Electrical Consultants, Inc.
Guest	Robert	Vantol	Commonwealth Associates, Inc.
Member	Ajith	Varghese	SPX Transformer Solutions, Inc.
Guest	Richard	vonGemmingen	Dominion Energy

Member	Pragnesh	Vyas	Sunbelt-Solomon Solutions
Member	David	Wallach	Duke Energy
Guest	Evanne	Wang	DuPont
Guest	Alan	Washburn	Burns & McDonnell
Member	Joe	Watson	JD Watson and Associates Inc.
Member	Bruce	Webb	Knoxville Utilities Board
Member	Daniel	Weyer	Nebraska Public Power District
Member	William	Whitehead	H2scan Corporation
Guest	Trenton	Williams	Advanced Power Technologies
Member	Dr. Alexander	Winter	HIGHVOLT Pruftechnik Dresden
Member	Jeffrey	Wright	Duquesne Light Co.
Guest	Malia	Zaman	IEEE
Member	Kris	Zibert	Allgeier, Martin and Associates

AGENDA

Power Transformers Subcommittee

IEEE PES Transformers Committee

Wednesday, March 30, 2022, 1:30-2:40 PM CST, Centennial E (3)

In Person – Welcome All

Ryan Musgrove – Chair, Alwyn VanderWalt – Vice Chair, Dan Blaydon – Secretary

1. Call to order
2. Distribution of Roster
3. Chair remarks
4. New Members
5. Determine quorum
6. Approval of agenda, approval of previous meeting minutes
7. Working Group and Task Force reports
 - a. WG Revision of C57-131, Tap Changers.....Craig Colopy/Axel Kraemer
 - i. Monday March 28, 9:30-10:45 - Centennial F
 - b. WG Revision of C57.116, GSU TransformersWeijun Li
 - i. Monday March 28, 11:00-12:15 – Centennial G
 - c. WG Revision of C57.143, Monitoring GuideMike Spurlock
 - i. Monday March 28, 3:15-4:30 – Centennial G
 - d. WG Revision of C57.125, Failure Investigating and ReportingHakan Sahin
 - i. Monday March 28, 4:45-6:00 – Centennial G
 - e. WG C57.170, Condition Assessment GuideKumar Mani
 - i. Tuesday March 29, 8:00-9:15 – Centennial G
 - f. WG Revision of C57.150, Transportation GuideGreg Anderson
 - i. Tuesday March 29, 9:30-10:45 – Centennial G
 - g. WG for Transformer Volts per Hertz C57.107.....Joe Watson
 - i. Tuesday March 29, 1:45-3:00 – Centennial D-E
 - h. PAR Study Group for C57.93, Installation and Maintenance Guide ...Scott Reed
 - i. Tuesday March 29, 3:15-4:30 – Centennial G

- i. Liaison to PC57.93a – Installation and Maintenance GuideScott Reed
 - j. PAR Study Group for C57.135, Phase Shifting TransformersEwald Schweiger
 - k. PAR Study Group for C57.17, Arc Furnace TransformersDom Corsi
 - l. PAR Study Group for IEEE 638 Class 1E Xfmrs for Nuclear Stations ...Craig Swinderman
- 8. Old business
 - m. Results of PAR Study Group E-mail Poll
 - i. C57.153 Paralleling Guide (expires 12/31/2025)..... Mark Tostrud
 - ii. C57.156 Tank Rupture (expires 12/31/2026)..... Peter Zhao
 - iii. C57.157 Contact Functional Life (expires 12/31/2025)..... Adam Sewell
- 9. New business
- 10. Adjournment

C57.93a Meeting Notes

Spring 2022

Low-temperature cold start test protocol for transformer with natural ester.

The Chinese working group has not met in 9 months. Last summer they developed a procedure to perform a low temperature cold start up on a transformer. The agreed upon procedure consists of the following:

1. Install four fiber optic temperature sensors in the transformer.
2. Gradually cool the transformer down to -40 Celsius.
3. Perform the testing under two scenarios
 - a. Energize with no load, then 25%, 50%, 75% and then 100%.
 - b. Energize the transformer immediately fully loaded.
4. The tests will be completed after the four temperature probes stabilize in temperature.
5. After the load is removed and the test is completed, a DGA will be taken on the fluid after 24 hours to determine if any arcing occurred

We are being told that testing has occurred, but no data has been shared yet. They are expecting to have a meeting this June.

Power Transformer Subcommittee

Working Group Report

Document #: C57.125
Document Title: Guide for Failure Investigation, Documentation, Analysis and Reporting for Power Transformers and Shunt Reactors

Chair: Hakan Sahin **Vice-Chair** Thomas Melle
Secretary Adam Sewell **Percent Complete** 10%

Current Draft Being Worked On: Draft not started **Dated:** n/a

PAR Expiration Date: December 31, 2025

Meeting Date: 28 March 2022 **Time:** 4:45pm MDT

Location: Denver, CO, USA

K.9	Attendance:	K.10	Members	<u>27 of 56</u>
	K.11	K.12	Guests	<u>76</u>
	K.13	K.14	Guests Requesting Membership	<u>To be done with email to chair/secretary</u>
	K.15	K.16	Total*	<u>103</u>

* Attendance list for this meeting is shown at end of meeting minutes

Meeting Minutes / Significant Issues / Comments:

Meeting was called to order at 4:45pm MDT, March 28, 2022.

1. Administrative

- a. IEEE Patent Policy and Call for Patents
 - i. No comments from group
- b. IEEE SA Copyright Policy
 - i. No comments from group
- c. Review of agenda
 - i. No comments from group
- d. Introductions of the attendees
 - i. Attendance sheets were passed out. Guest list had chair/secretary email addresses listed for requesting membership
- e. Updated membership review and count for quorum
 - i. 56 members were listed and 28 were counted as present by hand count
 - ii. Attendance sheets after meeting completed showing 27 members attended which is official count for quorum.
 - iii. Email votes on motions approved in this meeting will be done since QUORUM WAS NOT MET
 - iv. Members are expected to stay in the meeting so business can be conducted.
- f. Approval of Agenda
 - i. MOTION-W.Binder, 2nd-P.Selvaraj. No objection to unanimous approval. Will need email vote follow up since quorum was not met.
- g. Approval of minutes from 2021 Fall WG C57.125 Meeting
 - i. No objection to unanimous approval. Will need email vote follow up since quorum was not met.

2. New Business

- a. Reminder on the purpose and the scope of the working group
 - i. The expectation from this WG is to review and update the document as it expires on 12/31/2025.
 - ii. Expected Date of submission of draft to the IEEE SA for Initial Standards Committee Ballot: May 2024. Projected Completion Date for Submittal to RevCom: Dec 2024
- b. Section 4.2 Investigation flow chart – proposal presented by chair for changing wording of this section by changing “...include insulating liquid sampling for dissolved gas Analysis.” To be: “...include insulating liquid sampling for dissolved gas Analysis, and other oil sampling for other oil quality tests to verify the integrity of the transformer for continuous operation.”
 - i. The group had discussions about this proposal and a motion was made.

- ii. MOTION-T.Ansari, 2nd-W.Binder: Review clause 4.2 and recommend changes/additions.
 - 1. No objection to unanimous approval. Will need email vote follow up since quorum was not met.
- c. Section 5.3.6.3 Testing under vacuum – proposal presented by chair asking if a value should be specified for “sufficiently low voltage.”
 - i. The group had discussions about this section and a motion was made
 - ii. MOTION-E.teNyenhuis, 2nd-W.Boettger: Remove section 5.3.6.3 Testing under vacuum from guide.
 - 1. YES-13, NO-8, ABSTAIN-4
 - a. Vote did not pass without quorum so email vote will not be sent on this motion
 - iii. MOTION-B.Forsyth, 2nd-A.Sarkar: Change wording of section 5.3.6.3 to read “Do not test under vacuum.”
 - 1. Motion was discussed then an amendment was proposed
 - 2. MOTION AMENDMENT-R.vonGemmingen, 2nd-B.Forsyth: postpone motion above indefinitely
 - a. No objection to unanimous approval. Will need email vote follow up since quorum was not met.
 - iv. MOTION- R.vonGemmingen, 2nd-P.Selvaraj: Review and revise section 5.3.6.3 to understand safety and consequences of testing under vacuum.
 - 1. No objection to unanimous approval. Will need email vote follow up since quorum was not met.
- d. Table 2 – proposal presented by chair asking group if “switches, breakers, fuses...” should be added to the general observations in the Table 2.
 - i. Discussions on this proposal included suggestions on how to undertake the review and revision of Table 2 and other portions of PC57.125 document. The consensus seemed to be a “straw ballot” by members after reviewing the existing Guide, therefore a Draft document of C57.125 will be posted on WG page of the Power Transformer Subcommittee website for all members to review.
 - 1. Comment resolution checklist to be used to track comments/changes/suggestions to document.
- e. Task force volunteers to work on section 5.3.6.3
 - i. R.vonGemmingen, A.Sarkar, Pedro?, Mark?
- f. Task force volunteers to work on section 4.2
 - i. T.Ansari, P.Selvaraj, S.Debass

- g. MOTION-B.Forsyth, 2nd-P.Selvaraj: Allow guests requesting membership at today's meeting to receive membership. Note: this is at the Chair's discretion.
 - i. No objection to unanimous approval. Will need email vote follow up since quorum was not met.
 - ii. Chair presented his email at the meeting for guests to send membership requests.
- 3. Next meeting: TBD at Fall 2022 Transformer Committee Meeting scheduled for October 16-20, 2022 in Charlotte, NC, USA.
- 4. Close of meeting
 - a. Meeting adjourned at 6:00pm MDT

Submitted by: Hakan Sahin Date: 4/19/22

3/28/2022 Meeting Attendance:

Last Name	First Name	Company (Affiliation)	Role
Adams	Kayland	Prolec GE Waukesha	Guest
Alahmed	Alex	Energy-Wolfcreek	Guest
Alonso	Mario	Georgia Transformer	Guest
Ansari	Tauhid Haque	Hitachi Energy	Member
Arnold	Elise	SGB	Guest
Bargone	Gilles	FISO Technologies Inc.	Guest
Beaudoin	Jason	Weidmann Electrical Technology	Guest
Betancourt	Enrique	Prolec GE	Member
Binder	Wallace	WBBinder Consultant	Member
Boettger	William	Boettger Transformer Consulting LLC	Member
Bradshaw	Jerimiah	Bureau of Reclamation	Guest
Brannen	Randy	Southern Company	Guest
Carrizales	Juan Alfredo	Prolec GE	Guest
Chambers	Stuart	Powertech Labs	Guest
Cordova	Olivia	Bureau of Reclamation	Guest

Last Name	First Name	Company (Affiliation)	Role
Cruz Valdes	Juan Carlos	Prolec GE	Guest
Debass	Samson	EPRI	Guest
Denzer	Stephanie	Alliant Energy	Guest
Deverick	Jonathan	Dominion Energy	Guest
Dillon	Nikolaus	Dominion Energy	Guest
Dix	Larry	Quality Switch, Inc.	Member
Dolloff	Paul	East Kentucky Power	Guest
Draper	Zachary	Delta-X Research	Guest
Espindola	Marco	Hitachi Energy	Member
Faur	Florin	Prolec GE Waukesha	Guest
Fausch	Reto	RF Solutions	Guest
Flores	Hugo	Hitachi Energy	Guest
Forsyth	Bruce	Bruce Forsyth and Associates PLLC	Member
Gamboa	Jose	The HJ Family of Companies	Guest
Garcia Wild	Eduardo	Siemens Energy	Member
Gazivoda	Dora	Koncar-Instrument Transformers	Guest
Grant	Ben	Delta Star Inc	Guest
Gustavsson	Niklas	Hitachi Energy	Guest
Hoffman	Saramma	PPL	Guest
Hogg	Ryan	Bureau of Reclamation	Guest
Hollrak	Derek	Burns & McDonnell	Guest
Hutchinson	Zachary	East Kentucky Power	Guest
Jensen	Nick	Delta Star Inc	Guest

Last Name	First Name	Company (Affiliation)	Role
Jordan	Steve	TVA	Guest
Joshi	Akash	Black & Vcatch	Guest
Kazmierczak	Jerzy	Hitachi Energy	Guest
Kiparizoski	Zan	Howard Industries	Guest
Knapp	Evan	EATON Corporation	Guest
Konta	Ivan	Koncar-Instrument Transformers	Guest
Kraemer	Axel	Maschinenfabrik Reinhausen	Member
Kraetge	Alexander	OMICRON electronics Deutschland GmbH	Member
Lawless	Andrew	Potencia Partners	Guest
Leigl	Angela	EATON Corporation	Guest
Lewand	Lance	Doble Engineering Co.	Guest
Li	Weijun	Braintree Electric Light Dept.	Member
Mami	Kumer	Duke Energy	Guest
Mani	Balakrishnan	Virginia Transformer Corp.	Guest
Martinez	Rogelio	Georgia Transformer	Guest
Matson	Thomas	Xcel Energy	Guest
McBride	Jim	JMX High Voltage	Guest
Melle	Tom	Highvolt	ViceChair
Murray	David	TVA	Guest
Musgrove	Ryan	Oklahoma Gas & Electric	Member
Nims	Joe	Allen & Hoshall	Guest
Panesar	Parminder	Virginia Transformer Corp.	Member
Parkinson	Dwight	EATON Corporation	Guest

Last Name	First Name	Company (Affiliation)	Role
Patel	Nitesh	Hyundai Power	Guest
Patel	Poorvi	EPRI	Guest
Patel	Sanjay	Smit Transformer	Member
Prevost	Thomas	Weidmann Electrical Technology	Guest
Riggins	Benjamin	Xcel Energy	Guest
Robalino	Diego	Megger	Member
Saad	Mickel	Hitachi Energy	Guest
Sahin	Hakan	Virginia/Georgia Transformer	Chair
Sanchez	Albert	Knoxville Utilities Board	Member
Sarkar	Amitabh	Virginia Transformer Corp.	Member
Schappell	Steven	Prolec GE Waukesha	Guest
Schrammel	Alfons	Siemens Energy	Guest
Selvaraj	Pugal	Virginia Transformer Corp.	Member
Sen	Cihangir	Duke Energy	Guest
Sewell	Adam	Quality Switch, Inc.	Secretary
Shull	Stephen	BBC Electrical Services	Guest
Sinclair	Jonathan	PPL Electric	Guest
Sizemore	Thomas	ABB	Guest
Spurlock	Mike	Spurlock Engineering Svcs	Guest
Staley	Brad	SRP	Guest
Stechschulte	Kyle	AEP	Guest
Steele	Hampton	TVA	Guest
Sumner	Deanna	SD Myers	Guest

Last Name	First Name	Company (Affiliation)	Role
Szczechowski	Janusz	Maschinenfabrik Reinhausen	Member
Tanaka	Troy	Burns & McDonnell	Member
Taylor	Marc	JFE Shoji Power Canada Inc.	Member
teNyenhuis	Ed	Hitachi Energy	Member
Thompson	Ryan	Burns & McDonnell	Guest
Tolcachir	Eduardo	Tobos trans	Guest
Uhlmann	Olivier	Reinhausen Canada	Guest
Vanderwalt	Alwyn	ECI	Guest
Varghese	Ajith	Prolec GE Waukesha	Guest
Varnell	Jason	Doble Engineering Co.	Member
vonGemmingen	Richard	Dominion Energy	Member
Wallace	David	Mississippi State University	Guest
Wallach	David	Duke Energy	Guest
Washburn	Alan	Burns & McDonnell	Member
Weyer	Daniel	NPPD	Guest
Whitten	Christopher	Hitachi Energy	Guest
Winter	Alexander	Highvolt	Guest
Woods	Deanna	Alliant Energy	Guest
Ziger	Igor	Koucar-WJT	Guest

Power Transformer Subcommittee

Working Group Report

Document #: C57.131

Document Title: Standard Performance Requirements and Test Methods for Tap-changers

Chair: Craig A. Colopy Vice-Chair: Axel Kraemer

Secretary: Adam M. Sewell Percent Complete: 90%

Current Draft Being Worked On: 1.1 Dated: March 2022

PAR Expiration Date: December 31, 2024

Meeting Date: 28 March 2022 Time: 9:30am-10:45am MDT

Location: Virtual Online Meeting

K.17	Attendance:	K.18	Members	<u>24 out of 44</u>
K.19	K.20	Guests		<u>23</u>
K.21	K.22	Guests Requesting Membership		<u>Send email to secratary</u>
K.23	K.24	Total*		<u>47</u>

* Attendance list for this meeting is shown at end of meeting minutes

Meeting Minutes / Significant Issues / Comments:

5. Meeting was called to order at 9:45am MDT, March 28, 2022.
6. Call for patent disclosure / review of IEEE Copyright Policy

- a. No comments made from attendees
- 7. Quorum Check / Introductions
 - a. Introductions were made by name and affiliation
 - b. 25 members out of 44 were in attendance – QUORUM MET
 - c. Member requests can be sent to ADAMSEWELL@IEEE.ORG
- 8. Approval of Agenda
 - a. Motion – H.Flores 2nd-J.Sewell. No opposition to unanimous approval. APPROVED
- 9. Approval of minutes from Fall 2021 Virtual Meeting
 - a. Motion – H.Flores 2nd-J.Sewell. No opposition to unanimous approval. APPROVED
- 10. Discussion timeline for this revision
 - a. Current C57.131-2012 expires December 31, 2022
 - b. Par expires December 31, 2024
- 11. Discussion by A. Kraemer from work session held on March 26, 2022
 - a. 14 members attended work session and went through Draft 1.0 to create Draft 1.1
 - b. Changes were shown to working group and MOTION was made
 - c. MOTION-T.Dauzat, 2nd-T.Tillery: Accept Draft 1.1 with changes shown in meeting and keep following notes for joint revision with IEC 60214-1
 - i. Section 6.1.15 Protection against access to hazardous parts - check if there is an equivalent designation in NEMA 250 for IP1X
 - ii. Section 7.2.2 Temperature rise - To be considered in a future joint IEC/IEEE revision. Some discussion is warranted regarding the difference between contact temperatures of OLTC and DETC along with defining contact test temperature methodology to normalize testing. This could include switch orientation, liquid volume and parameters you have to prevent unwarranted advantageous results.
 - iii. There was no objection to unanimous approval of this motion-APPROVED
 - d. Discussion about Table 3 values for switching impulse test values
 - i. Current IEEE and IEC standards do not list switching impulse values less than 100kV and for joint revision, switching impulse values will be looked at for less than 100kV. 69kV was a value brought up in this meeting.

- e. Draft 1.1 will be posted on the Power Transformers Subcommittee page. Chair requested all members to review all appendices for comments.
12. Next meeting: TBD at Fall 2022 Transformer Committee Meeting scheduled for October 16-20, 2022 in Charlotte, NC, USA.
13. Close of meeting
- a. Meeting adjourned at 10:45am MDT. Motion – J.Sewell, 2nd – M.Stank. No opposition to unanimous approval. ADJOURNED.

Submitted by: Craig A. Colopy Date: _____

Meeting Attendance 3/28/202:

Last Name	First Name	Company (Affiliation)	Role
Adams	Kayland	SPX Transformer Solutions, Inc.	Guest
Aldenlid	Jennie	Hitachi Energy	Member
Beaudoin	Jason	Weidmann	Guest
Benzler	Olle	Megger	Guest
Boettger	William	Boettger Transformer Consulting LLC	Guest
Calitz	David	Siemens Energy	Member
Chakraborty	Arup	Delta Star Inc.	Guest
Cruz Valdes	Juan Carlos	Prolec GE	Member
Dauzat	Thomas	General Electric	Member
Dillon	Nikolaus	Dominion Energy	Guest
Dix	Larry	Quality Switch, Inc.	Member
Eiarza	Hector	Orto de Mexico	Guest
Faur	Florin	Prolec GE Waukesha	Member
Flores	Hugo	Hitachi Energy	Member
Griesacker	Bill	Duquesne Light Co.	Member
Gustavsson	Niklas	Hitachi Energy	Member

Last Name	First Name	Company (Affiliation)	Role
Halcim	Samauy	WEG USA	Guest
Havens-Spillers	Bridget	Ameren Mo.	Guest
Hutchinson	Zachary	East Kentucky Power Cooperative	Guest
Kraemer	Axel	Maschinenfabrik Reinhausen	Vice-Chair
Kurth	Bernhard	Maschinenfabrik Reinhausen	Guest
Lejay	Olivier	Huaming USA Corp.	Member
Matzon	Tom	Xcel Energy	Guest
McCullough	Douglas	Maxima-Hyundai	Guest
Miller	Philip	MLGVY	Guest
Munoz Molina	Martin	Orto de Mexico	Member
Pollaro	Dominic	NASS	Guest
Posadas	Daniel	Prolec GE	Guest
Posadas	Daniel	Prolec GE	Guest
Pruente	John	SPX Transformer Solutions, Inc.	Member
Schindler	Stefan	Maschinenfabrik Reinhausen	Member
Schwartz	Dan	Quality Switch, Inc.	Member
Sewell	Adam	Quality Switch, Inc.	Secretary
Sewell	Jeremy	Quality Switch, Inc.	Member
Sewell	Russ	Quality Switch, Inc.	Guest
Som	Sanjib	Pennsylvania Transformer	Member
Stank	Markus	Maschinenfabrik Reinhausen	Member
Steckschulte	Kyle	American Electric Power	Member
Steineman	Andy	Delta Star Inc.	Guest

Last Name	First Name	Company (Affiliation)	Role
Szczechowski	Janusz	Maschinenfabrik Reinhausen	Guest
Tanaka	Troy	Burns & McDonnell	Guest
Tillery	Timothy	Howard Industries	Member
Uhlmann	Olivier	Reinhausen Canada	Guest
Washburn	Alan	Burns & McDonnell	Member
Whitehead	William	H2scan Corporation	Member
Whitten	Christopher	Hitachi Energy	Member
Ynui	Andrea	Siemens Energy	Guest
Meeting attendance 3/26/2022:			
Last Name	First Name	Company (Affiliation)	Role
Aldenlid	Jennie	Hitachi Energy	Member
Dauzat	Thomas	General Electric	Member
Dix	Larry	Quality Switch, Inc.	Member
Faur	Florin	Prolec GE Waukesha	Member
Gustavsson	Niklas	Hitachi Energy	Member
Kraemer	Axel	Maschinenfabrik Reinhausen	Vice-Chair
Lejay	Olivier	Huaming USA Corp.	Member
Rehkopf	Sebastian	Maschinenfabrik Reinhausen	Member
Schwartz	Dan	Quality Switch, Inc.	Member
Sewell	Adam	Quality Switch, Inc.	Secretary
Sewell	Jeremy	Quality Switch, Inc.	Member
Stank	Markus	Maschinenfabrik Reinhausen	Member
Tillery	Timothy	Howard Industries	Member

Last Name	First Name	Company (Affiliation)	Role
Whitten	Christopher	Hitachi Energy	Member

C57.143 – IEEE Guide for Transformer Monitoring**Monday, March 28, 2022****Denver, CO, USA****Minutes of WG Meeting**

The meeting was called to order at 3:15 PM by Chair Mike Spurlock. Secretary Elizabeth Bray was not present. Vice-Chair Poorvi Patel was present and filled the role of Secretary for the meeting.

A quorum was not reached. There were 51 of 117 members present and 37 guests. Two guests requested membership. The attendance for this meeting was as follows:

- Number of Members in Activity = 117
- Number of Members Present = 51
- Percentage of Members Present = 43.6%
- Number of attendees = 88
- Attendees requesting Membership = 2

A List of Meeting Attendees is provided below.

Last Name	First Name	Association	
Aldenlid	Jennie	Hitachi	Guest
Almeida	Nabi	Prolec GE	Member
Alonso	Mario	Georgia Transformer	Guest
Avanoma	Onome	CG Power Systems Canada	Guest
Bargone	Gilles	FISO Technologies Inc.	Member
Benach	Jeff	Megger	Guest
Berube	Jean-Noel	Rugged Monitoring Inc.	Member
Boman	Paul	Hartford Steam Boiler	Member
Bradshaw	Jeremiah	Bureau of Reclamation	Member
Calitz	David	Siemens Energy	Member
Castellanos	Juan	Prolec GE	Guest
Chambers	Stuart	Powertech Labs Inc.	Member
Cheatham	Mark	General Electric	Member
Christodoulou	Larry	Electric Power Systems	Member

Cordova	Olivia	Bureau of Reclamation	Guest
Craven	Michael	Phoenix Engineering Services	Guest
Debass	Sam	EPRI	Guest
Denzer	Stephanie	Alliant Energy	Member
Diaz	Cesar	Easton Corporation	Guest
Dollof	Paul	East Kentucky Power	Guest
Draper	Zachary	Delta-X Research Inc.	Guest
Dulac	Hakim	Qualitrol Company LLC	Member
Eastman	John	ZTZ Service International	Guest
Ermakov	Evgenii	Hitachi Energy	Guest
Espindola	Marco	Hitachi Energy	Member
Faur	Florin	SPX Transformer Solutions Inc.	Member
Fazlic	Zlatan	Camlin Power	Member
Frimpong	George	Hitachi Energy	Member
Gara	Lorne	Shermco	Member
Gustavsson	Niklas	Hitachi Energy	Member
Harley	Jack	FirstPower Group LLC	Member
Havens Spillers	Bridget	Ameren	Guest
Heiden	Kyle	EATON Corporation	Member
Hoffman	Gary	Advanced Power Technologies	Member
Hoffman	Saramma	PPL Electric Utilities	Member
Hollrah	Derek	Burns & McDonnell	Member
Hutchinson	Zachary	East Kentucky Power	Guest
Jacob	Nathan	Camilin Energy	Guest
Kraemer	Axel	Maschinenfabrik Reinhausen	Member
Kulasek	Krzysztof	Hitachi Energy	Member
Kurth	Bernhard	Reinhausen	Guest
Lamontagne	Donald	Arizona Public Service Co.	Member
Lewand	Lance	Doble Engineering Company	Guest
Mani	Balakrishnan	Virginia Transformer Corp.	Member
Mani	Kumar	Duke Energy	Member
Matson	Tom	Xcel Energy	Guest
McGrail	Tony	Doble Energy	Member
Morales-Cruz	Emilio	Qualitrol Company LLC	Member
Munoz Molina	Martin	Orto de Mexico	Member

Nunez	Arturo	Mistras Group, Inc.	Member
Panesar	Parminder	Virginia Transformer Corp.	Guest
Patel	Poorvi	EPRI	ViceChair
Pinard	Matt	Weidmann Electrical Technology	Guest
Prevost	Tom	Weidmann Electrical Technology	Member
Pruente	John	SPX Transformer Solutions, Inc.	Member
Reed	Scott	MVA	Member
Reeder	Perry	Prolec GE	Guest
Robalino	Diego	Megger	Guest
Saad	Mickel	Hitachi Energy	Member
Salmon	William	Dominion	Guest
Schrom	Wes	Carolina Dielectric	Guest
Shosanya	Adetokunbo	Xcel Energy	Guest
Sinclair	John	PPL Electric Utilities	Member
Soeller	Markus	Power Diagnostix	Guest
Sohail	Mohammed	Trench Limited	Guest
Soto	Mauricio	Hitachi Energy	Member
Sparling	Brian	Dynamic Ratings	Member
Spurlock	Mike	Spurlock Engineering Services, LLC	Chair
Staley	Brad	Salt River Project	Member
Stank	Markus	Maschinenfabrik Reinhausen	Member
Stechschulte	Kyle	American Electric Power	Member
Steele	Hampton	TVA	Guest
Sumner	Dean	SD Myers, LLC.	Guest
Swan	Phil	RESA Power	Guest
Sweetser	Charles	OMICRON electronics Corp USA	Member
Szczechowski	Janusz	Maschinenfabrik Reinhausen	Member
Tostrud	Mark	Dynamic Ratings, Inc.	Member
Tournoux	Daniel	Prolec GE	Guest
Uhlmann	Olivier	Reinhausen Canada Inc.	Guest
Van Der Walt	Alwyn	Electrical Consultants, Inc.	Guest
Watson	Joe	JD Watson and Associates Inc.	Member
Webb	Matt	SPX Transformer Solutions, Inc.	Member
White	Leon	H2Scan	Guest
Whitehead	William	H2scan Corporation	Member

Williams	Trent	Advanced Power Technologies	Member
Woods	Deanna	Alliant Energy	Member
Wright	Jeffrey	Duquesne Light Co.	Member
Ziger	Igor	Koncar	Guest

Agenda

1. Welcome & Introduction
2. Call for Patent Disclosure
3. Chair Remarks
4. Quorum Check
5. Approval of Agenda
6. Approval of Fall 2021 Virtual Meeting Minutes
7. Status of Straw Ballot and Next Steps
8. New Business

The patent and copyright policies were shown by Chair Mike Spurlock. No new patents claims were brought forward.

Since quorum was not reached, the Fall 2021 Meeting Minutes will be sent out by email ballot.

The Chair reminded everyone that a Straw Ballot and comment spreadsheet were sent out on March 11, and is due back by April 11, 2022. Comments should be populated into the spreadsheet and returned to the Chair.

The Par expires December 2023.

There was no new business.

Jim McBride presented methodology and waveforms for on-line FRA.

The meeting was adjourned at 3:45 pm.

The WG plans to meet at the Fall 2022 Meeting in Charlotte.

PC57.150 – IEEE Guide for Transportation of Transformers and Reactors

Tuesday, March 29, 2022; 9:30 am- 10:45 am

Hyatt Regency Convention Center, Denver, Colorado; Centennial G Ballroom

Unapproved Minutes of Working Group Meeting

The meeting was called to order at 9:30 am by Chair Greg Anderson. Vice-Chair Ewald Schweiger and Secretary Marnie Roussell (writer of minutes) were also present.

There was a total of 43 people present, 19 members, and 24 guests. Attendance was taken as paper rosters were passed around since no RFID utilized this meeting. Quorum was not reached. A list of meeting attendees is included at the end of these minutes.

C57.150 is in draft status "Rev D2" and is almost complete, so new material and new members were not requested.

Chairs Remarks

The Chair apologized for inactivity over the past 18 months due to the COVID crisis.

A call for essential patent claims was made. No patent claims were identified.

Minutes of the Spring 2019 Meeting will be submitted by email for a vote of approved.

Meeting Agenda

1. Welcome & Call to Order
2. Question, Essential Patent Issues
3. Determination of Quorum (more than 24 of 48 members is necessary to have quorum)
4. Approval of the Minutes
5. Old Business
 - Timeline of Project
6. New Business

Attendees were asked to introduce themselves and indicate their affiliations when making comments or asking questions.

Old Business

Project Progress to Date

The Chair announced an extension of the PAR to December 2023 was granted.

The draft of PC57.150 was sent by email on March 7 to the 48 members of the working group. Only four members responded with comments.

Remaining Project Timeline

The Chair discussed the remaining timeline of the project.

- Request volunteers for the ballot comment resolution team (and contact the officers via email)
- Resolve the 4 current comments by the end of April.
- Resend "almost final" draft to 48 members of the working group for straw ballot approval. This requires 2/3 approval of the votes cast, provided more than 24 of all 48 voting members of the working group respond. Submit the draft to the Power Transformer Subcommittee by the Fall 2022 meeting for ballot approval. Need simple majority vote approval.
- Submit the draft to IEEE-SA for Mandatory Editorial Coordination, MEC review. This process typically takes 4-6 weeks.
- Form Ballot Resolution Group, BRG in myProject.
- By the end of the year, the draft standard prepared by the PC57.150 working ground will be submitted from the working group to IEEE-SA for sponsor ballot.

New Business

The Chair reviewed a few sample comments to the draft, which were submitted as a response of the March 7th email and asked for several people to volunteer to help resolve the comments. Four individuals volunteered for the ballot resolution team.

The meeting was adjourned at 10:22 am. The WG plans to meet at the Fall 2022 Meeting in Charlotte, North Carolina.

Greg Anderson
WG Chair

Ewald Schweiger
WG Vice Chair

Marnie Roussell
WG Secretary

C57.150 WG: List of Meeting Attendees at Spring '22 Meeting, including affiliation and voting member status.

<u>COUNT</u>	<u>LAST NAME</u>	<u>FIRST NAME</u>	<u>AFFILIATION</u>	<u>STATUS</u>
1	Alonso	Mario	Georgia Transformer	Member
2	Anderson	Gregory	GW Anderson & Associates, Inc.	Chair
3	Basel	Cheryl	WEG Transformers USA Inc.	Guest
4	Binder	Wallace	WBBinder Consultant	Member
5	Byrnes	Ryan	HICO America	Guest
6	Cho	Tony	HICO America	Guest
7	Cordova	Olivia	Bureau of Reclamation	Guest
8	Dolloff	Paul	East Kentucky Power	Member
9	Doutrelepont	Alexander	Siemens Energy	Guest
10	Havens	Bridget	Ameren	Guest
11	Hollrah	Derek	Burns & McDonnell	Guest
12	Kapka	Sergiusz	Hitachi Energy	Guest
13	Kazmierczak	Jerzy	Hitachi Energy	Guest
14	Martinez	Rogelio	Georgia Transformer	Guest
15	Matson	Tom	Xcel Energy	Guest
16	McCullough	Douglas	Maxima / Hyundai	Guest
17	Nambi	Shankar	Bechtel	Member
18	Nims	Joe	Allen & Hoshall, Inc.	Guest
19	Pietraszczyk	Marcin	Hitachi Energy	Guest

<u>COUNT</u>	<u>LAST_NAME</u>	<u>FIRST_NAME</u>	<u>AFFILIATION</u>	<u>STATUS</u>
20	Pointner	Klaus	Trench Austria GmbH	Guest
21	Reeder	Perry	GE Grid Solutions	Guest
22	Riggins	Benjamin	Xcel Energy	Guest
23	Riordan	Kevin	WEG Transformers USA Inc.	Guest
24	Roussell	Marnie	Entergy	Secretary
25	Schrammel	Alfons	Siemens Energy	Member
26	Schweiger	Ewald	Siemens Energy	Vice-Chair
27	Sen	Cihangir	Duke Energy	Member
28	Sharp	Michael	Trench Limited	Guest
29	Sharpless	Samuel	Rimkus Consulting Group	Member
30	Shull	Stephen	BBC Electric Services Inc	Guest
31	Simons	Andre	Cogent Power Inc.	Member
32	Skinger	Kenneth	Scituate Consulting, Inc.	Member
33	Tanaka	Troy	Burns & McDonnell	Guest
34	Thompson	Ryan	Burns & McDonnell	Guest
35	Tolcachir	Eduardo	Tubos Trans Electric S.A.	Guest
36	Tournoux	Dan	Prolec-GE Waukesha	Guest
37	Uhlmann	Olivier	Reinhausen Canada Inc.	Member
38	VanderWalt	Alwyn	Electrical Consultants, Inc.	Member
39	Wallach	David	Duke Energy	Member
40	Watson	Joe	JD Watson and Associates Inc.	Member
41	Webb	Bruce	Knoxville Utilities Board	Member
42	Weyer	Daniel	Nebraska Public Power District	Member
43	Zibert	Kris	Allgeier, Martin and Associates	Member

Meeting Minutes

PC57.107 WG

**Recommended Practice for Developing Design Specific Operational Limits for
Transformers Connected to Generators or Power Systems Subject to Significant Short-term
Changes in Voltage and/or Frequency**

Tuesday, March 29, 2022, 1:45-3:00 PM

Joe Watson – Chair, Ramsis Girgis - Vice Chair, Secretary – Drew Welton

The WG met with 37 attendees including 15 members and 22 guests. We were one member short of a quorum so the previous minutes and agenda were not approved and no motions were made or voted on. The minutes will be submitted to the members for approval by email.

No Patent of Copyright issues were raised.

The work of the three Task Forces was presented and discussed.

- Task Force 1: Drew Welton, Kipp Yule, Bruce Webb and Ryan Hogg
- Task Force 2: Ramsis Girgis
- Task Force 3: Joe Watson, Sanjay Patel, Jagdish Burde

Task Force 1 (Drew Welton, Kipp Yule, Bruce Webb and Ryan Hogg) had prepared Section 4.2 covering the causes of short term overexcitation of power transformers and Section 4.3 covering relay practices.

Task Force 2 (Ramsis Girgis) had prepared Section 4.4 and moved material from Section 4 that was more informational to a new Annex A discussing existing short term overexcitation curves, and Annex B with examples of V/Hz curves for various transformer designs.

Task Force 3: (Joe Watson, Sanjay Patel, Jagdish Burde) prepared Section 6 covering temperature limits for metal parts, which was expanded to include different types of insulation materials. The TF's work was revised to a general temperature limit for transformers or reactors with mineral oil or other fluids of 180°C for designs with cellulose type insulation and 200°C for designs with high temperature types of insulation in the areas affected by overexcitation.

Section 5, which provides the recommended procedure for developing Short Term Overexcitation Criteria for Power Transformers and the development of the V/Hz curve was discussed. The general consensus was that the document needs to further define the conditions or assumptions used to calculate the values in the V/Hz curve such as ambient temperature, loading, and other factors but the conditions were only briefly discussed during the meeting and will be developed by the WG in the future.

The WG also discussed the need to establish the standard range of excitation and time for the standard V/Hz curves recommended format and generally agreed that the time was only necessary for a very short time like 2 minutes. We also discussed the need to clarify that the document covers transformers directly connected to generators.

Ed teNyenhuis offered to work with one of the Task Forces and will work with Ramsis Girgis on Task Force 2.

A clean copy of Draft 2 will be emailed to the WG members and guests and posted on the Transformer Team website.

The following officers, members and guests attended the meeting:

Status	Name	Affiliation
Guest	Adetokunbo Shosanya	Xcel Energy
Guest	Alfons Schrammel	Siemens Energy
Member	Amitabh Sarkar	VA Transformer
Guest	Andrea Ynui	Siemens Energy
Guest	Anton Koshel	Delta-Star
Guest	Axel Kraemer	Reinhausen
Member	Balakrishnan Mani	VA Transformer
Guest	Benjamin Riggins	Xcel Energy
Guest	Bridget Havens-Spillers	Ameren
Member	Bruce Webb	Knoxville Utilities Board
Member	Ed teNyenhuis	Hitachi Powergrids
Member	Eduardo Garcia	Siemens Energy
Member	Eduardo Tolcachir	TTE
Member	Emilio Morales-Cruz	Qualitrol
Guest	Enrique Betancourt	Prolec GE
Guest	Eric Davis	Burns and McDonnell
Guest	Evan Knapp	Eaton Corp.
Guest	Giovanni Hernandez	Virginia Transformer Corp.
Member	Huan Dinh	Hitachi Energy
Guest	Jeff Gragert	XCEL Energy
Chair	Joe Watson	JD Watson and Associates
Guest	John Eastman	ZTZ Services
Member	Juan Carlos Cruz Valdes	Prolec/GE
Member	Kayland Adams	SPX
Member	Mats Bernesjo	Hitachi Powergrids
Member	Nicholas Jensen	Delta-Star
Guest	Nitesh Patel	Hyundai
Guest	Onome Avonoma	MJ Consulting

Co-Chair	Ramsis Girgis	Hitachi Energy
Member	Richard von Gemmingen	Dominion Energy
Guest	Robert vanTol	Com Associates
Member	Ryan Hogg	Bureau of Reclamation
Guest	Ryan Musgrove	OG&E
Guest	Ryan Thompson	Burns and McDonnell
Guest	Samson Debass	EPRI
Member	Sanjay Y. Patel	Royal Smit Transformers
Guest	Shankar Nambi	Bechtel
Guest	Tom Matson	Xcel Energy

The meeting adjourned at 2:55PM.
Joe Watson

IEEE PC.57.170 Condition Assessment Guide Working Group Meeting Minutes

Date and Venue: 08:00-9:30 am, March 29th, 2022 @ Denver Colorado

Total Attendees: 100

Members: 44 (out of 140) Guest: 56 Guest Requesting Membership: 15 No answer: 0

Total Members: 100, Members Attended: 44; 31.4% quorum was not achieved.

1. The chair outlined the IEEE Patent disclosure and the IEEE Copyright Policy.
2. A membership quorum was polled, but a quorum was not established.
3. Fall 2021 Meeting Minutes and Spring 2022 Agenda could not be adopted since there was no quorum.
4. Task Force presentations were presented by Emilio for Luiz for TF#1, Saramma Hoffman for TF#2, and Jonathan Sinclair for TF#3. Good progress has been made by these three task forces.
5. Jonathan requested attendees to support the task force by providing any bushing failure mechanism photographs to include in the guide.
6. The Chair opened the floor for comments and questions.
7. Brian Sparling from Dynamic Ratings suggested that CIGRE has a bushing reliability guide that Taskforce 3 could use.
8. The Chair requested help from the attendees on writing the condition monitoring / online monitoring section for TF# 3.
9. Poorvi Patel from TF #3 proposed that they would like to use some sections from the CIGRE guide. Bruce Forsyth suggests getting copyright approval from GIGRE to adapt specific section of their TB-761 guide. Tom Prevost recommended checking with the CIGRE to copy that how much content (in %) we can adapt from their guide.
10. The Chair stated that the plan was to circulate a straw ballot of TF #4 sections within this working group for comments later this summer. We also plan to complete the draft sections for Taskforces 1-2-3 before the Fall 2022 meeting.

List of Attendees:

First Name	Last Name	Company
------------	-----------	---------

Alex	Alahmed	Evergy Wolf creek
Jennie	Aloenlio	Hitachi Energy
Elise	Arnold	SGB
silles	bargove	fiso
Barry	Beaster	H-J Family of Companies
Jeff	Benach	Megger
Jean-Noel	Berube	Rugged Monitoring
Enrique	Betancourt	Prolec GE
William	Boettger	Boettger Transformer Consulting LLC
Paul	Boman	Hartford Steam Boiler
Michael	Botti	Hyosung HICO
Jeremiah	Bradshaw	Bureau of Reclamation
Larry	Christodoulou	Electric Power Systems
Olivia	Cordova	Bureau of Reclamation
Juan		
Carlos	Cruz Valdes	Prolec GE
Dauches	davoulli	Delta Star Inc.
samson	Debass	EPRI
Stephanie	Denzer	Alliant Energy
Zachary	Draper	Delta-X Research Inc.
Hakim	Dulac	Qualitrol Company LLC
John	Eastman	ZTZ Services International
Evgenii	Ermakov	Hitachi Energy
Marco	Espindola	Hitachi Energy
Joe	Faherty	OTC service
Florin	Faur	SPX Transformer Solutions, Inc.
Zlatan	Fazlic	Camlin Power
Bruce	Forsyth	Bruce Forsyth and Associates PLLC
George	Frimpong	Hitachi Energy
Rich	frye	EATON Corporation
Eduardo	Garcia Wild	Siemens Energy
Jeffrey	Gragert	Xcel Energy
Niklas	Gustavsson	Hitachi Energy

shamaun	hakim	weg Transformers USA Inc.
Kyle	Heiden	EATON Corporation
Giovanni	Hernandez	Virginia Transformer Corp.
Gary	Hoffman	Advanced Power Technologies
Saramma	Hoffman	PPL Electric Utilities
Zachary	Hutchinson	East Kentucky Power Cooperative
Natan	Jacob	Camlin Power
Nick	Jensen	Delta Star Inc.
Steve	Jordan	TVA
Akash	Joshi	Black & Veatch
Evan	Knapp	EATON Corporation
Anton	Koshel	Delta Star Inc.
Axel	Kraemer	Maschinenfabrik Reinhausen
Alexander	Kraetge	OMICRON electronics Deutschland GmbH
Donald	Lamontagne	Arizona Public Service Co.
Mark	Laohman	Doble Engineering Co.
Weijun	Li	Braintree Electric Light Dept.
Jinesh	Malde	M&I Materials Inc.
Kumar	Mani	Duke Energy
Tom	Matson	Xcel Energy
Mama	Mbouombouo	Hitachi Energy
Anthony	McGrail	Doble Engineering Co.
Philip	Miller	Memphis Light, Gas & Water
Emilio	Morales-Cruz	Qualitrol Company LLC
David	Murray	Tennessee Valley Authority
Ryan	Musgrove	OG&E Electric Services
Joe	Nims	Allen & Hoshall, Inc.
Arturo	Nunez	Mistras Group, Inc.
Nitesh	Patel	Hyundai Power Transformers USA
Poorvi	Patel	Electric Power Research Institute (EPRI)
Sanjay	Patel	Smit Transformer
Matt	Pinard	Weidmann Electrical Technology
Homero	Portillo	Advanced Power Technologies

Thomas	Prevost	Weidmann Electrical Technology
John	Pruente	SPX Transformer Solutions, Inc.
Scott	Reed	MVA
Perry	Reeder	SPX Transformer Solutions, Inc.
	rehkopl	MR
Kevin	Riordan	WEG Transformers USA Inc.
Tim	Rocque	SPX Transformer Solutions, Inc.
Mickel	Saad	Hitachi Energy
Amitabh	Sarkar	Virginia Transformer Corp.
Alan	Sbravati	Cargill, Inc.
Jonathan	Sinclair	PPL Electric Utilities
Markus	Soller	Power Diagnostix
Mauricio	Soto	Hitachi Energy
Brian	Sparling	Dynamic Ratings, Inc.
Thomas	Spitzer	City Transformer Service Co.
Brad	Staley	Salt River Project
Hampton	Steele	TVA
Dean	Summer	SDMyers, LLC.
Charles	Sweetser	OMICRON electronics Corp USA
Troy	Tanaka	Burns & McDonnell
Ed	teNyenhuis	Hitachi Energy
Mark	Tostarod	Dynamic Ratings, Inc.
Olivier	Uhlmann	Reinhausen Canada Inc.
Alwyn	Van Der Walt	Electrical Consultants, Inc.
Robert	Vantol	Commonwealth Associates, Inc.
Jason	Varnell	Doble Engineering Co.
Pragnesh	Vyas	Sunbelt-Solomon Solutions
Alan	Washburn	Burns & McDonnell
Matthew	Webb	SPX Transformer Solutions, Inc.
Daniel	Weyer	Nebraska Public Power District
William	Whitehead	H2scan Corporation
Chris	Whitten	Hitachi Energy
Trenton	Williams	Advanced Power Technologies

Jeffrey Wright Duquesne Light Co.
Kris Zibert Allgeier, Martin and Associates
The meeting was adjourned at 09:15 am.

Kumar Mani
Chair

James Cross
Vice Chair

Akash Joshi
Secretary

Working Group PC57.116
Guide for Transformers Directly Connected to Generators
Spring 2022 Meeting
Monday, March 28, 2022, 11 a.m. – 12:15 p.m.
Hyatt Regency, Denver, CO
Meeting Room: Centennial G

Chair: Weijun Li, **Vice Chair:** Jason Varnell, **Secretary:** Bill Griesacker

1. Introductions, establishment of quorum:

The chair announced that if you did not get an email notice from the WG, and especially if your email changed please notify the WG chair so your email can be updated. The members of the WG were counted. There are 21 members so quorum is 11, there were 11 members present at the meeting therefore quorum was achieved.

Attendance summary from paper rosters circulated during meeting:

Members	11
Guests	81
Total Attendance	92
Guests Requested Membership	2

The chair asked the attendees to speak with the WG officers in person after the meeting if they would like to become a member. Two guests requested membership. Both guests met the attendance requirements and will be granted membership.

2. Agenda review and approval:

There was no objection to unanimous approval of the agenda.

3. Call for patents:

The IEEE patent slide was presented and there were no responses voiced.

4. IEEE SA copyright policy:

The copyright slide was presented and no responses were voiced.

5. Approval of Fall 2021 meeting minutes (if quorum is obtained)

Shankar Nambi made a motion to approve the Fall 2021 meeting minutes. Joe Watson seconded the motion. No objections voiced to unanimous approval of the Fall 2021 meeting minutes.

6. Review of project timeline:

The chair reviewed the project timeline and said that it would be possible to hold a vote today to send the draft document to the subcommittee for balloting.

7. Review of new recommended changes since the Fall 2021 meeting

a. TF1 – Sections 3, 4, 5, 9, 10 and 11 (Shankar Nambi):

There were no changes since the last meeting.

b. TF2 – Section 6 (Toby Johnson / Ryan Hogg):

Changes in section 6.3.1, requirements for minimum voltage at highest tap; document edits were presented. The changes were made to help clarify the text and an example was added. In section 6.4 changes were made because of the -word “risk”, a sentence was modified and the word “risk” was replaced with an explanation of what the risk is. IEEE does not like the term “risk”.

c. TF3 – Sections 7 and 8 (Kayland Adams):

There were no changes since the last meeting.

d. TF4 – New Annex A – Considerations for specifying GSUs (Joe Watson)

The chair presented the changes made since the last meeting which consisted of editorial changes.

e. TF5 – New Annex B – Volts/Hertz (Kipp Yule / Joe Watson)

The chair presented the changes made since the last meeting which consisted of editorial changes. It was discussed if the typical V/Hz curve should be changed to be some other generic curve. There are concerns that there could be delays to make a new curve and possible copy right conflicts with the existing curve. It was acknowledged that the curve has been used in technical papers, including in an EPRI document. It was discussed that the curve could be redrawn. It was stated that there cannot be one curve that covers all transformer designs. The topic was given back to the V/Hz TF to decide how to address the curve. The curve was presented in a Bill McNutt paper in the 1960s and so the copy right would have expired, it was agreed that the paper could be referenced. It was -proposed to remove the figure and it could be added during the ballot process. Joe Watson made a motion to “strike the V/Hz

curve from the document and replace it with reference to document B2 (the Bill McNutt paper) and add reference B2 in the reference section of the document. It was stated that it might be better to find out if there are any copy right conflicts and hold a vote on the changes once this is figured out. The motion was seconded by Ryan Hogg. 1-in favor, 8 against, 1 abstain. The motion did not pass.

8. Old business: none

9. New business

The following changes were proposed by a reviewer:

Change term auxiliary back to auxiliaries. This was already addressed.

Add MW, MVAR MVA to definitions to document. These are basic abbreviations that do not need to be added to the document.

Proposed to change “correct” selection of UT parameters to “proper” selection of UT parameters. There was no perceived difference in terms or advantage to the change.

Ryan Hogg made a motion to approve all new changes to accept the changes as shown in draft D3. This was seconded by Emilio Morales. 10 approve, no opposed, no abstentions.

Joe Watson made a motion to send draft 3 to ballot. The motion was seconded by Kayland Adams. 8 for, 0 opposed, 0 abstention. The motion carries to move to ballot.

10. Action items / next steps

The V/Hz TF will look into any copy right issues with the V/Hz curve.

11. Next meeting will be held in Charlotte, NC in October 2022.

12. Adjournment

The meeting adjourned at 2:14 p.m.

Attendance:

<u>First Name</u>	<u>Last Name</u>	<u>Company Name</u>	<u>Role</u>
Kayland	Adams	SPX Transformer Solutions, Inc.	Member
Alex	AlAhmed	Evergy - Wolf Creek	Guest
Mario	Alonso	Georgia Transformer	Guest
Stephen	Antosz	Stephen Antosz and Associates	Guest

Javier	Arteaga	Hitachi Energy	Guest
Gilles	Bargone	FISO Technologies Inc.	Guest
Barry	Beaster	The H-J Family of Companies	Guest
Jason	Beaudoin	Weidmann Electrical Technology	Guest
Mats	Bernesjo	Hitachi Energy	Guest
Enrique	Betancourt	Prolec GE	Guest
William	Boettger	Boettger Transformer Consulting LLC	Guest
Josh	Bohrn	Siemens Energy	Guest
Jeremiah	Bradshaw	Bureau of Reclamation	Guest
David	Calitz	Siemens Energy	Guest
Arup	Chakraborty	Delta Star Inc.	Guest
Anthony	Coker	M & I Materials	Guest
Olivia	Cordova	Bureau of Reclamation	Guest
Juan Carlos	Cruz Valdes	Prolec GE	Guest
Juan Alfredo	Carrizales	Prolec GE	Guest
Jonathan	Deverick	Dominion Energy	Guest
Marcin	Dietraszoyk (sp?)	Hitachi Energy	Guest
Scott	Digby	Duke Energy	Guest
Nikolaus	Dillon	Dominion Energy	Guest
Pouneh	Divoudi	Delta Star Inc.	Guest
Paul	Dolloff	East Kentucky Power	Guest
Jeffrey	Door	The H-J Family	Guest
Marco	Espindola	Hitachi Energy	Guest
Reto	Fausch	RT Solutions	Guest
Zlatan	Fazlic	Camlin Energy	Guest
Hugo	Flores	Hitachi Energy	Guest
Bruce	Forsyth	Bruce Forsyth and Associates PLLC	Guest
Rich	Frye	EATON Corporation	Guest
Eduardo	Garcia Wild	Siemens Energy	Guest
Bill	Griesacker	Duquesne Light Co.	Secretary
Shamaun	Hakim	WEG Electric Corp.	Guest
Bridget	Havens	Ameren	Guest
Giovanni	Hernandez	Virginia Transformer Corp.	Guest
Saramma	Hoffman	PPL	Guest

Ryan	Hogg	Bureau of Reclamation	Member
Nathan	Jacob	Camlin Energy	Guest
Nicholas	Jensen	Delta Star Inc.	Guest
Steve	Jordan	TVA	Guest
Akash	Joshi	Black & Veatch	Guest
Serg	Kapka	Hitachi Energy	Guest
Jerzy	Kazmierczak	Hitachi Energy	Guest
Zan	Kiparizoski	Howard Industries	Guest
Anton	Koshel	Delta Star Inc.	Guest
John	Kotula	Dominion Energy	Guest
Krzysztof	Kulasek	Hitachi Energy	Guest
Mark	Lachman	Doble Engineering Co.	Guest
Donald	Lamontagne	Arizona Public Service Co.	Guest
Andrew	Lawless	Potencia Partners	Guest
Weijun	Li	Braintree Electric Light Dept.	Chair
Andrew	Lugge	Hitachi Energy	Guest
Kumar	Mani	Duke Energy	Member
Balakrishnan	Mani	Virginia Transformer Corp.	Guest
Roger	Martinez	Georgia Transformer	Guest
Mama	Mbouombouo	Hitachi Energy	Guest
Emilio	Morales-Cruz	Qualitrol Company LLC	Member
David	Murray	TVA	Guest
Ryan	Musgrove	Oklahoma Gas & Electric	Guest
Shankar	Nambi	Bechtel	Member
Joe	Nims	Allen & Hoshall	Guest
Tihomir	Pandza	Siemens Energy	Guest
Parminder	Panesar	Virginia Transformer Corp.	Guest
Sanjay	Patel	Smit Transformer	Guest
Nitesh	Patel	Hyundai Power Transformers USA	Guest
Harry	Pepe	Phoenix Technologies	Guest
Goran	Plisic	Siemens Energy	Guest
Hakan	Sahin	Virginia Transformer	Guest
Dinesh	Sankarakurup	Duke Energy	Member
Amitabh	Sarkar	Virginia Transformer Corp.	Guest

Steven	Schappell	SPX Transformer Solutions, Inc.	Member
Stefan	Schindler	Maschinenfabrik Reinhausen	Guest
Alfons	Schrammel	Siemens Energy	Guest
Ewald	Schweiger	Siemens Energy	Guest
Cihangir	Sen	Duke Energy	Guest
Erick	Sato	Siemens Energy	Guest
Sanjib	Som	Pennsylvania Transformer Technology	Guest
Brad	Staley	Salt River Project	Guest
Hampton	Steele	TVA	Guest
Andrew	Steineman	Delta Star Inc.	Guest
Ed	teNyenhuis	Hitachi Energy	Guest
Ryan	Thompson	Burns & McDonnell	Guest
Eduardo	Tolcachir	Tubos Trans Electric S.A.	Guest
Reza	Torabi Goodarzi	SMIT Transformatoren B.V.	Guest
Mark	Tostrud	Dynamic Ratings, Inc.	Guest
Ajith	Varghese	Prolec GE - SPX	Guest
Jason	Varnell	Doble Engineering Co.	Vice-Chair
Richard	vonGemmingen	Dominion Energy	Guest
David	Wallach	Duke Energy	Guest
Joe	Watson	JD Watson and Associates Inc.	Member
Jeffery	Wright	Duquesne Light Co.	Guest

Task Force for Installation of Power Transformers C57.93

Monday, March 29, 2022

3:15 – 4:30 PM

Hyatt Regency

Denver, CO

Chairman Scott Reed

Vice Chairman Alwyn VanderWalt

Secretary Kyle Stechschulte

The meeting was called to order at 3:15 pm by Chair Scott Reed.

Scott	Reed	Ryan	Musgrove
Alwyn	VanderWalt	Olle	Benzler
Kyle	Stechschulte	Diego	Robalino
Kent	Miller	Jason	Beaudoin
Bruce	Webb	Eric	Theisen
Hampton	Steele	Zachary	Hutchinson
Stefan	Schindles	Jennie	Aldenlid
Olivier	Uhlmann	Niklas	Gustavsson
Mickel	Saad	Dean	Sumner
Doug	McCullough	Troy	Tanaka
John	Eastman	Ewald	Schweiger
Benjamin	Riggins	Kenneth	Skinger
Ryan	Hogg	Tom	Matson
Phil	Swan	Joe	Nims
Adnan	Rashid	Cihangir	Sen
Perry	Reeder	Dinesh	Sankarakurup
Lorne	Gara	Eduero	Tolcacler
Matthew	Webb	Joe	Faherty
Robert	Vantol	John	Sinclair
Pugal	Selvaraj	Alien	Clarke
Tom	Aikens	Kris	Zibert
			Havens-
Daniel	Weyer	Bridget	Spillers
Ryan	Thompson	Jerzy	Kazmierczak

Greg Anderson

David Murray
Evgenii Ermakov

There were 49 guests in attendance. 24 requested and were granted membership given this was the first meeting of the Task Force. No official agenda was presented or approved.

Unofficial Agenda

1. Introductions
2. Opening Remarks
3. IEEE Copyright Policy
4. IEEE Patent Policy
5. Review of Current Document
6. New Document
7. Title
8. Scope
9. Purpose
10. Next Meeting
11. Adjournment

Chairman posted the Patent Claim and Copyright slides. No notifications or comments were received.

The chair reviewed the following areas:

- Presented current document title and scope and went through the table of content clauses.

- The title references maintenance but there is very little discussion of maintenance in the guide.

Question was raised whether to separate maintenance into a new section.

- Under Installation, we reviewed the duplication of clauses 4 and 5 because of how the scope is currently written. It separates transformers into categories as either less than 10 MVA and 69 kV or greater than 10 MVA and greater than 69 kV. The question was raised as to considering redefining these sections into “units delivered oil filled” and “units delivered dry.”

- Is the Task Force interested in adding LTC installation practices and maintenance.

- Is the Task Force interested in recommending a partial fill and circulation under vacuum to heat up the core and coil to remove moisture for new installations?

Comments from the Task Force attendees also suggested investigating:

- Diego Robalino suggested researching developing a Maintenance Strategy.

- Greg Anderson mentioned he would like to see the Transformer Storage section reviewed and improved.

- Comments included adding bushing installation and handling.
- Other comments included adding an on line monitoring section.

It was suggested to focus on title and scope in the next meeting to be able to pursue a PAR.

The meeting was adjourned at 4:24 pm.