

IEEE PES TRANSFORMERS COMMITTEE

DIELECTRIC TEST SUBCOMMITTEE

The meeting was held at the Hyatt Regency, Denver, Colorado, USA

Dielectric Tests Subcommittee		
Chair: Poorvi Patel	Vice-Chair: Thang Hochanh	Secretary: Diego Robalino
Room: Centennial DE	Date: Wednesday, March 26, 2025	Time: 11:00 am to 12:15 pm
Total DTSC Members: 157	Members present at the meeting: 109	Attendance recorded (QR+roaster): 247
Guests present: 138	Membership requested: 37	Membership accepted: 25
Members moved to Guest Status: 17		

Chair's Remarks

The SC Chair welcomed members and guests to the fall 2024 meeting in St. Louis, Missouri.

Five sets of the SC roster were distributed for attendance record. SC Secretary requested unanimous approval to record the meeting for the sole purpose of minutes reporting. None are against it, and the meeting is recorded (only voice no video).

The use of QR code has been implemented for easier management of attendees list.



Before presenting the agenda, the list of DTSC members was displayed.

First, SC Chair reviewed policies and procedures according to IEEE SA. It was stated the need to identify potential essential patent claims. DTSC members and guests are reminded to inform SC Chair, SC Secretary or IEEE SA representative for

our SC (Patrycja Jarosz, +19087268288, p.jarosz@ieee.org) of potential patent claims. Copyright policies, participation behavior, compliance with all applicable laws, including antitrust and competition laws.

It was requested to all attendees approach the microphone for questions and comments during the meeting stating name and affiliation.

Future events:

IEEE DEIS Electrical Insulation Conference 2025	June 8 – 12, South Padre Island, TX
IEEE PES General Meeting	July 27 – 31, Austin, TX
IEEE PES Transformer Committee Meeting Fall 2025	Oct. 19 - 23, Bonita Springs, FL
IEEE PES Transformer Committee Meeting Spring 2026	March 22-26, Fort Worth, TX
IEEE T&D	May 4 – 7, Chicago, IL

Next, SC Chair requested all TF and WG leaders to submit minutes on or before April 09, 2025 including revised and updated attendance list. The information to be sent to SC Secretary via e-mail (diego_robolino@ieee.org). The information must be consolidated and submitted to the Main Committee by May 08, 2025. Also, a reminder was made for any online meeting happening in-between the in-person meetings also should keep a recorded attendance and minutes.

- **ADCOM highlights**

Patrycja Jarosz's contact information was provided for guests and members if questions arise.



Patrycja Jarosz



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Regarding WG and SC officer Training, it has become optional but highly recommended. IEEE SA's Antitrust, Competition, and Commercial Terms Policies remain mandatory for Standards Committee / Working Group Officers to complete within 90 days of appointment.

Training link: <https://iln.ieee.org/Public/ContentDetails.aspx?id=AE404C2328DA4A39AAD7AB5117681F05>

- **Optional** training that all current and future officers need to complete
- **Mandatory**- IEEE SA's Antitrust, Competition, and Commercial Terms Policies training shall be performed after appointment
 - Standards Committee/Working Group Officers within 90 days of appointment
 - Training is on demand
- **Recommend everyone to go through the training**

Memberplanet

- Testing is ongoing with no target date when it will be released.

List Serv-email address

- The SC Chair indicated that all WG and TF leaders are requested to send the list of members or non-members to Patrycja to be updated in **MyProject**., she will generate the email address and set you up as admin to be able to change the list as well. Let her know if you want one email address for Members and Guests
- **PAR Changes, Modification and Extension**

- Must have WG Approval
- Must have SC Approval

• **Status of Active Standards**

Project	Title	Valid until	PAR Status
C57.127	Guide for the Detection of Acoustic Emissions from Partial Discharges	2028	PAR 2028
C57.160	Guide for the Elec. Measurement of PD in HV bushings and Instrument Transformers	2033	WG inactive
C57.113	Recommended practice for PD Measurement Power	2034	WG Inactive
C57.98	Guide for Transformer Impulse Tests	2021	PAR 2026 Ballot Process
C57.138	Recommended Practice for Routine Impulse Tests for Distribution Transformers	2026	PAR 2028
C57.161	Guide for DFR Measurements	2028	PAR 2028
C57.168	Low-Frequency Test Guide	2034	WG inactive
C57.12.200	Bushing Dielectric Frequency Response Guide (ENTITY WG)	2032	WG inactive

Next, NesCom/RevCom meeting dates and deadlines were reviewed.

Standard Board Meeting	Submittal Deadlines
26 th March 2025	
7 th of May 2025	28 th of March 2025
18 th of June 2025	9 th of May 2025

SC Secretary's Report

SC Secretary brought back the attention to the use of the QR code, and some answers were recorded indicating that not all attendees were aware of their status (member or guest).

Agreed to display the members' names before scanning the QR code. Lesson learned. It is part of using an alternative system.

Sign-in sheet explanation. Emphasizing on where to sign attendance and where to request membership.

- Total Attendees to DTSC F24 meeting: **213**
 - o Total Members attended: 104 (out of 155)
- Requested Membership: 34
 - o Rejected Membership: **17**
 - o Approved Membership: **17**

First Name	Last Name	First Name	Last Name
Jason	Beaudoin	Marta	Muñoz
Jeffrey	Door	Rakesh	Patel
Saif	Hossain	Eric	Schleismann
Yeounsoo	Kim	Jonathan	Tan
Zan	Kiparizoski	Scott	Thomas
Fernando	Lagos	Krishnamurthy	Vijayan
Luc	Loiselle	Joe	White
José Luis	Machain	Terry	Wong
		Fei	Yang

- Total Members for Fall 2024 meeting: **156**
- Required for Quorum: **79**
- Requirements to become a DTSC Member:
 - o Attend **3** out of the last **5** DTSC meetings

A list of members was presented to the audience to establish a quorum during this meeting and QR code was displayed. Looking at the list of members, we requested to raise hands for headcount.

The headcount was completed with **over 90** members attending the meeting. **Therefore, the quorum was achieved.** The final review will be carried out against roster signatures and QR code data.

- o **Quorum, Approval of Minutes, and Agenda**

Once quorum was established, SC Chair requested a motion to approve the agenda for today's meeting:

- Motion by Dan Sauer, second Evgenii Ermakov.
- No objection to the unanimous approval of the agenda for Spring 2025 meeting, hence approved.

Chairperson requested a motion to approve the Fall 2024 minutes from Vancouver meeting including revisions made later to its publication:

- Motion by Peter Werelius, second Sami Debass
- No objection to the unanimous approval of the minutes for the Fall 2024 meeting, hence approved.

Attendance Summary

	By QR & R
Total Attendees	247
Total # Of Members	157
Members Present	109
Quorum Present	YES (69.4%)

SC Discussions and Motion passed.

New Business:

1. Entity Par- Guide for testing Partial discharge acoustic image of electric power equipment (Detlev Gross)
 - Already a guide C57.127 - a section on air-borne acoustic signals captured with the dish-type acoustic detectors. In this section we plan also to cover now the so-called acoustic cameras using the MEMS arrays for beam forming. The aim here is to make sure that there is no external source of the PD and in case identify the external source.
 - Encourage the entity PAR to join this WG. The Guide covers the application on transformers as per this proposal, but of course not the application on overhead cables.
 - For the application on overhead cables and other substation equipment shall then be hosted by another PES committee Tauhid Ansari – indicated that to his TF in the continuous revision of C57.12.00 a topic was identified not to belong to this task force and it is brought up to the DTSC.
 - Detlev Gross informs about the scope of the Entity PAR
 - Stephen Shull – Liasion – indicated they are waiting on response regarding scope. Recommends taking ownership of this work and accept this PAR.
 - **Motion to approve this PAR and integrate it into the DTSC**
 - Motion by Dan Sauer, second Sami Debass
 - Jeff Britton calls for clarification. Motion is not to accept the PAR but to oversight the process
 - Chair accepts clarification and request unanimous approval. Hearing no objections **Motion passes.**
 - An error in formula in external clearance section- should be corrected before next revision of C57.12.00.
 - Should be BSL and not BIL

$$\text{BSL} \quad \cancel{\text{BIL}} = \text{CFO} \times \left(1 - 1.28 \times \frac{\sigma_f}{\text{CFO}} \right)$$

-
- Ajith Varghese indicated that this is only a typo and correction is requested.
- **Motion to make necessary corrections in the next version of C57.12.00**
 - Motion by Dan Sauer, second Sanjib Som
 - Hearing no objections **Motion passes.**

Old Business: No old business

Motions during the DTSC meeting:

- **TF Revision to Low Frequency Dielectric Tests**

Motion requested by Ajith Varghese

Request SC approval for following changes to C57.12.90 to be incorporated into next revision of Test code.

- Delete subclause 10.5.1
- Add below shown subclause and text to

10.7 Induced-voltage test for distribution and class I transformer and

10.8 Induced-voltage test for class II transformer

10.7.X Induced-voltage test for transformers with series or multiple connection

Transformers with windings that have multiple connections (series-parallel or delta-wye) and whose connections each have a nominal system voltage of 25 kV or above shall receive two induced tests, one in each connection. If more than one winding has such multiple connections, then the connections in each of the windings shall change between the tests, and the manufacturer shall determine the relative connections for each test. The test voltage and shall be contingent on the system voltage level of the high-voltage winding for the connection being tested. In all cases, the last induced test shall be for the connection with the highest test voltage

10.8.X Induced-voltage test for transformers with series or multiple connection

Transformers with windings that have multiple connections (series-parallel or delta-wye) and whose connections each have a nominal system voltage of 25 kV or above shall receive two induced tests, one in each connection. If more than one winding has such multiple connections, then the connections in each of the windings shall change between the tests, and the manufacturer shall determine the relative connections for each test. The test voltage and shall be contingent on the system voltage level of the high-voltage winding for the connection being tested. In all cases, the last induced test shall be for the connection with the highest test voltage

- The motion was seconded by Dan Sauer.
- No discussion and no additional comments.
- No objection to unanimous approval of the motion, **therefore Motion is approved.**

- **TF Revision to Impulse Tests**

Motion requested by Dan Sauer

Request SC approval to survey the updated wording for voltage waveforms in the TF and the SC

- Motion seconded by Francis Mills.
- No discussion and no additional comments.
- No objection to unanimous approval of the motion, **therefore Motion is approved.**

- **TF Survey to bushing Clearances**

Motion requested by Tauhid Ansari

Setup task force to go through all comments and make necessary changes to currently proposed changes to Sec 6.8 of C57.12.00

- Motion seconded by Sanjib Som.
- Steve Antoz suggests the TF to work virtually. Tauhid indicates that a group of people will be invited.
- Bruce Webb asked who will be in the group of people. Tauhid indicated that those who replied and Poorvi added that anyone willing to participate should be in that TF.
- No additional discussion and no additional comments.
- No objection to unanimous approval of the motion, **therefore Motion is approved.**

Taskforce and Working Group Reports

Reports are in the order presented during the meeting

TF Core Ground and Winding Insulation Resistance

Chair: Diego Robalino

Acting Secretary: Aniruddha Narawane

Monday, March 24, 2025.

Hyatt Regency, Denver, CO – Centennial H (3) 16:45 – 18:00

Minutes prepared by Aniruddha Narawane, Secretary

- The meeting called to order by the WG Chair at 16:45

Total TF Members: 48	Members present at the meeting: 25	Attendance according to sign in sheet: 103
Guests present: 33	Membership requested: 19	Membership accepted: 10
Members moved to Guest Status: 9		

- Attendance Summary**

	By Roster
Total Attendees	103
Total # Of Members	48
Members Present	25
Quorum Present	Yes (52.08%)

- Patent statement from IEEE SA presented to attendees
- IEEE SA Policies presented to attendees
- Welcome new members of this TF:

First Name	Last Name
Edwin	Betancourt
Gabriel	Delgado
Lorne	Gara
Roger	Hayes

Luc	Loiselle
Alberto	Sandoval
Risto	Trifunoski

- Meeting called to order by the chair at 4.45 pm.
- Patent claims and copyright shown – no issues or questions were raised.
- Total 27 out of 53 members were present, so quorum was established.
- Agenda for the meeting, and minutes for Vancouver and St. Louis meetings were approved unanimously.
- Chair presented the data for core to ground and frame to ground insulation tests conducted on various sizes of transformers ranging from 10 to 200 MVA.
- There were questions about the voltage levels used for tests, types of bushings used for ground, if frame was accessible for testing on a finished transformer.
- It was decided to add option of Frame to core test results in data collection template.
- Most commonly used bushings like Porcelain, Epoxy and thermoplastic type were also decided to be specified for ground connection.
- A question about the goal of task force was raised and chair explained that if the exercise results in an acceptable document, then placing it in C57.12.00, C57.12.90 or C57.152 can be recommended.
- After presentation of data and due discussions meeting was adjourned at 5.40 pm.

Attendance Record

First Name	Last Name	Affiliation
Isaac	Abdalla	HICO America
Mostafa	Agharahimi	Georgia Transmission Corp.
Mario	Alonso	Georgia Transformer
Mihir	Amin	Eaton
Tauhid	Ansari	Hitachi Energy
Stephen	Antosz	
Josh	Arias-Garcia	Midwest Electric Transformer Services
Onome	Avanoma	MJ Consulting
Duvier	Bedoya	Hitachi Energy
Josh	Bohrn	PacifiCorp
Garrett	Bradshaw	Howard Industries
Josipa	Brekalo	KONCAR D&ST
Steven	Brzoznowski	BPA
John	Bule	DTE Energy
Jim	Cai	JSHP
David	Calitz	Siemens Energy
Alfredo	Carrizales	Prolec
Adriana	Cisco Sullberg	Salt River Project
Juan Carlos	Cruz Valdes	PROLEC GE
Gabriel	Delgado	Invenergy

Scott	Dennis	Hitachi Energy
Dumitru	Diaconu	Delta Star Inc
Jesse	Duffy	Nashville Electric Service
William	Elliott	AEP SWEPCO
Marco	Espindola	Hitachi Energy
Raymond	Frazier	
Lorne	Gara	Shermco Industries
Shawn	Gossett	Ameren Illinois
Luke	Grandbois	IFD Technologies Inc.
Benjamin	Guinand	Power Magnetics
Ravi	Gupta	Megger
Attila	Gyore	MIDEL and MIVOLT Fluids Ltd
Roger	Hayes	GE Vernova
Jean Carlos	Hernandez	
Benjamin	Hershberger	Midwest Transformer
Saramma	Hoffman	PPL
Thomas	Holifield	Howard Industries
Balaji	Janakiraman	Virginia Transformer corp
Chanmin	Jeong	HD Hyundai
John	John	Virginia Transformer Corp
Gary	King	Consultant
Zan	Kiparizoski	Howard Industries
Egon	Kirchenmaya	Siemens-Energy
Matija	Koprivnjak	Končar D&ST
Anton	Koshel	
Arvind	Kumar	Delta Star Inc
Fernando	Leal	PROLEC GE
Kanglin	Lee	Cheryong Electric
Mario	Locarno	
Geraldo	Magela junior	Siemens-energy
Kushal	Mahajan	Sungrow
Moses	Manzano	Hyosung HICO
Swapnil	Marathe	Megger
Alberto	Martinez	
Nader	Masoud	Central Moloney
Hossein	Nabi-Bidhendi	Itec
Aniruddha	Narawane	
Kris	Neild	Megger
Joe	Nims	Allen & Hoshall
Jonas	Oliveira	Hitachi
Cuauhtemoc	Ortiz	Niagara Power Transformers Corp
Juan	Ortiz	
Ajay	Palhatiya	Virginia Transformers corp
Parminder	Panesar	
Dean	Park	Hyosung Hico
Poorvi	Patel	EPRI

Rakesh	Patel	Hitachi Energy
Dipeshkumar	Patel	Hyper solutions
Monil	Patel	
Nitesh	Patel	Hyundai Power Transformers
Crystal	Qiao	Trench Canada
Laxman	Rapelly	
Jonathan	Reimer	FortisBC
Diego	Robalino	
Dinesh	Sankarakurup	Duke Energy
Armando	Santos	Prolec
Garret	Sarkinen	Xcel Energy
Nithin	Satheesh	Trench Limited
Salahuddin	Shaikh	
Walters	Shelby	Howard Industries
Steven	Snyder	Hitachi Energy
Markus	Soeller	Megger
Kyle	Steckschulte	AEP
Andrew	Steineman	Delta Star, Inc.
Sunny	Swarna	Virginia Transformer Corp
Marc	Taylor	JFE Shoji Canada
Andreas	Thiede	HIGHVOLT Dresden
Scott	Thomas	Hitachi Energy
Eduardo	Tolcachir	Tte Transformers
Risto	Trifunoski	Trench group
Pedro	Trujillo	Hyundai
Orlando	Urbinez	JST Power
Ajith	Varghese	Prolec GE Waukesha
Jason	Varnell	
Kannan	Veeran	
Pragnesh	Vyas	Cleveland Cliffs
David	Wallach	Duke Energy
Matt	Weiseusee	PacifiCorp
Peter	Werelius	Megger
Aparna	Xedantham	
Fei	Yang	Hitachi Energy
Shibao	Zhang	
Anna	Zhou	JST Power

TF Revision to Low Frequency Dielectric Tests

Denver, Colorado, USA Meeting – March 25, 2025 1:45-3:30pm MST

Chair: Ajith Varghese

Vice Chair: Markus Schiessl

Secretary: Jason Varnell

1. The meeting was called to order at 1:45 PM.
2. 103 individuals were in attendance. A quorum was achieved with 43 of 60 total members present. 19 individuals requested membership; however, only 11 were given member status based on attendance and participation and will be added after the S25 meeting. 6 Members that were not present had missed two out of the last three meetings and will be moved to guest after the S25 meeting, which means there will be 65 members.
3. A motion was made by Dan Sauer (Eaton) and seconded by Curtiss Frazier (Ameren) to approve the Spring 2025 meeting agenda. There were no objections to unanimous approval of the agenda. A motion was made by Dan Sauer (Eaton) and seconded by Curtiss Frazier (Ameren) to approve the Fall 2024 task force meeting minutes. There were no objections to unanimous approval of the Fall 2024 task force meeting minutes.
4. Old business
 - a. There was no old business.
5. New business
 - a. Recommendation from Jason Varnell (Doble Engineering) to add partial discharge calibration requirements into the body of IEEE C57.12.90 subclause 10.9.3 instead of simply referring to C57.113.
 - i. Discussions were generally favorable to review the criteria in C57.113 and to decide if any of the criteria should be revised or included explicitly in C57.12.90.
 - ii. Dan Sauer (Eaton) made a motion to form a sub-TF, which was seconded by Sanjib Som (PTTI). The motion passed. TF unanimously agreed to form a sub-TF with the following objective:
 1. Determine if the requirements from C57.113 should be moved directly into C57.12.90 subclause 10.9.3.
 2. Determine if the requirements from C57.113 are applicable and/or need to be changed. The sub-TF should confirm that there are no conflicts between recommendations for C57.12.90 and what is currently in C57.113.
 - b. Request from Ryan Musgrove (OG&E) to move requirements from IEEE C57.12.90 subclause 10.5.1 to subclauses 10.7 for Class I transformers and subclause 10.8 for Class II transformers. The request was made due to observed misinterpretations of its applicability to either class I or class II transformers since the requirements were not in subclauses 10.7 and 10.8, respectively.
 - i. Discussions were generally favorable to clarifying the requirements.
 - ii. A motion was made by Dan Sauer (Eaton) and seconded by Kris Zibert (Allgeier, Martin and Associates) to remove the text from C57.12.90 subclause 10.5.1, then to modify it

(see text below) and move it to subclause 10.7 for Class I Power Transformers and to also move it to subclause 10.8 for Class II Power Transformers. The motion passed unanimously. The TF chair is to present the text to DTSC for a vote for inclusion into the next revision of C57.12.90. The modified text for inclusion to subclause 10.7 and subclause 10.8:

1. Induced-voltage test for transformers with series or multiple connections

Transformers with windings that have multiple connections (series-parallel or delta-wye) and whose connections each have a nominal system voltage of 25 kV or above shall receive two induced tests, one in each connection. If more than one winding has such multiple connections, then the connections in each of the windings shall change between the tests, and the manufacturer shall determine the relative connections for each test. The test voltage and duration ~~(Class I—7200 cycle or Class II—one-hour test)~~ shall be contingent on the system voltage level of the high-voltage winding for the connection being tested. In all cases, the last induced test shall be for the connection with the highest test voltage.

6. A motion to adjourn the meeting was made by Dan Sauer (Eaton) and seconded by Tauhid Ansari (Hitachi Energy). The motioned passed unanimously. The meeting was adjourned at 3:00 p.m. The next meeting will be in Bonita Springs, Florida, USA at the Fall 2025 IEEE Transformers Committee Meeting.

Attendance Record (Membership Status After S25 Meeting)

Guest	Nabi	Almeida	Prolec-GE
Member	Tauhid Haque	Ansari	HITACHI ENERGY
Member	Stephen	Antosz	Stephen Antosz & Associates, Inc
Member	Elise	Arnold	SGB
Member	Onome	Avanoma	MJ Consulting
Guest	Duvier	Bedoya	Hitachi ABB Power Grids
Member	Daniel	Blaydon	Baltimore Gas & Electric
Member	William	Boettger	Boettger Transformer Consulting LLC
Guest	Josh	Bohrn	PacifiCorp
Member	Alain	Bolliger	HV TECHNOLOGIES, Inc.
Member	Dominique	Bolliger	HV TECHNOLOGIES, Inc.
Member	Michael	Botti	Hyosung HICO
Member	Jeffrey	Britton	Phenix Technologies, Inc.
Guest	Steven	Brzoznowski	Bonneville Power Administration
Member	David	Calitz	Siemens Energy
Member	Juan	Carrizales	Prolec GE
Guest	Vivian	Chan	Hitachi Energy
Guest	Eric	Davis	Consultant
Member	Scott	Dennis	Hitachi ABB Power Grids
Guest	Eric	Elson	SDG&E
Member	Reto	Fausch	RF Solutions
Member	Raymond	Frazier	Ameren
Member	Eduardo	Garcia Wild	Siemens Energy
Guest	Shawn	Gossett	Ameren
Member	Bill	Griesacker	Consultant
Member	Detlev	Gross	Power Diagnostix Consult GmbH
Guest	Peter	Heinzig	Weidmann Electrical Technology
Member	Saramma	Hoffman	PPL
Member	Nick	Jensen	Delta Star
Member	Zan	Kiparizoski	Howard Industries
Member	Nihat	Kosedagi	ERMCO
Guest	Alexander	Kraetge	OMICRON electronics Deutschland GmbH
Member	Arvind	Kumar	Delta Star
Guest	Bernard	LaBean Jr.	Consumers Energy
Member	Mathieu	Lachance	Omicron
Member	Mark	Lachman	Doble Engineering Co.
Member	Fernando	Leal	Prolec GE
Member	Moonhee	Lee	Hammond Power Solutions
Member	Gabriel	Mamede	Siemens Energy
Member	Moses	Manzano	Hyosung HICO
Guest	James	McBride	JMX Services, Inc.
Member	Francis	Mills	Power Engineers

Member	Juliano	Montanha	Siemens Ltda
Member	Marta	Munoz	Hitachi Energy
Member	Hugo	Murillo	The H-J Family
Guest	Aniruddha	Narawane	Power Distribution, Inc. (PDI)
Guest	Kristopher	Neild	Megger
Member	Cuauhtemoc	Ortiz	NIAGARA POWER TRANSFORMERS
Guest	Monil	Patel	Pacific Gas & Electric Company
Guest	Nitesh	Patel	Hyundai Power Transformers USA
Member	Harry	Pepe	Phenix Technologies, Inc.
Guest	Bertrand	Poulin	Hitachi ABB Power Grids
Guest	Juan	Reyes Perez	Hitachi Energy
Member	Rodrigo	Ronchi	WEG-Voltran
Member	Hakan	Sahin	Virginia and Georgia Transformers
Member	Amitabh	Sarkar	Virginia Transformer Corp.
Member	Daniel	Sauer	EATON Corporation
Vice-Chair	Markus	Schiessl	SGB
Member	Eric	Schleismann	Southern Company Services
Member	Cihangir	Sen	Duke Energy
Guest	Kabir	Sethi	ABB AG
Guest	Aron	Sexton	Kinectrics
Member	Christopher	Slattery	FirstEnergy Corp.
Member	Sanjib	Som	Pennsylvania Transformer
Member	Kyle	Stechschulte	American Electric Power
Guest	H. Allen	Steele	TVA
Guest	Andrew	Steineman	Delta Star Inc.
Member	Janusz	Szzechowski	Maschinenfabrik Reinhausen
Member	Matthew	Sze	OMICRON electronics Corp USA
Member	Jonathan	Tan	Northern Transformer
Guest	Andreas	Thiede	Highvolt Dresden
Member	Eduardo	Tolcachir	TTE S.A.
Chair	Ajith	Varghese	Prolec-GE Waukesha
Secretary	Jason	Varnell	Doble Engineering Co.
Guest	John	Wagner	AEP
Member	David	Wallach	Duke Energy
Guest	Joshua	Watson	Nebraska Public Power District
Member	Fei	Yang	Hitachi Energy
Member	Kris	Zibert	Allgeier, Martin and Associates
Guest	Armando	Santos	Prolec-GE
Guest	Christian	Diaconu	Delta Star
Guest	James	Norton	Oncor Electric Delivery
Guest	Hector	Villa	Ecuatran SA
Guest	Garrett	Bradshaw	Howard Industries
Guest	Jesus	Sanchez Rodriguez	Vertiv

Guest	Cole	Van Dreel	ATC
Guest	Isaac	Abdalla	HICO America
Guest	Mihir	Amin	Eaton
Guest	Kushal	Mahajan	Sungrow
Guest	Dipeshkumar	Patel	Hyper Solutions
Guest	Gunja	Vijay	Powertech Labs Inc.
Guest	Benjamin	Guinand	Power Magnetronics
Guest	Anna	Zhou	JST Power
Guest	Dong Hyun	Jang	LS Electric
Guest	Jaeyong	Park	LS Electric
Guest	Heonsu	Kim	LS Electric
Guest	Scott	Thomas	Hitachi Energy
Guest	Hyounggon	Ryu	HD Hyundai
Guest	Juan	Ortiz	Reinhausen
Guest	Namtran	Nguyen	TT Electronics
Guest	Josipa	Brekaco	Koncar DST
Guest	Luca	Peuc	Koncar DST
Guest	Matija	Kopriunjak	Koncar DST

Task Force on Revision of Impulse Tests

Spring 2025 Transformers Committee Meeting

Task Force on Revision of Impulse Tests C57.12.00 and C57.12.90 (DiTests)

Hyatt Regency Denver Convention Center, Centennial DE

Tuesday, March 25, 2025, 8:09am

- Dan Sauer, Eaton Corporation, called meeting to order, as the Chair Sylvian Plante was unable to attend.
- Jason Varnell, Doble Engineering, volunteered to help and circulated blank roster sheets.
- Dan Sauer reviewed the patent slide requirements.
- Total members were reported as 52. Sauer noted that 27 members were needed for a quorum
- 30 members were counted and it was determined that a quorum was present.

MOTION - Steve Antoz (seconded by David Wallach) made a motion to approve the agenda. No objection was found to unanimous approval.

MOTION - Steve Antoz (seconded by Onome Avanoma) made a motion to approve the previously circulated minutes from Fall 2024. No objection was found to unanimous approval.

- Discussion was undertaken of survey results related to C57.12.90 sections 10.3.4.1 and 10.4.3.2 (Oscillograms). A total of 47 responses were received from a pool of both members and guests. Results were shared by Sauer in spreadsheet form, via recital of each line of comments. There were two *disapprove* responses, constituting a small fraction of respondents. Comments relating to comparison of waves were made by:
 - Steve Brzoznowski, BPA
 - Dave Wallach, Duke Energy
 - Jim McBride, JMX Services
 - Jason Warnell, Doble
 - John Sam, Duke Energy
 - Onome Avanoma, Independent Consultant

MOTION – Curtis Frazier, Ameren (seconded by Matt Weisensee, PacifiCorp) made a motion to survey the working group and task force for feedback on the latest language.

Old Business - A topic was presented by Sauer and determined to be closed.

- New Business – Jim McBride reported on an instance in which a customer was not seeing sufficient resolution to overlay impulse test currents and diagnose turn-to-turn faults. There is some question about whether the ability to detect turn-to-turn faults exists for all types of impulse testing. Jim suggested that routine impulse testing should not be a higher requirement than normal Lightning impulse testing. Comments provided by:
 - Dan Sauer, Eaton Corporation
 - Jim McBride, JMX Services
 - Bertrand Boulin, Hitachi Energy
- The Three commenters agreed to work together to generate language on this topic that can be surveyed to the task force.
- Al Traut, Howard Industries raised a topic regarding which tests apply to which size/type of transformers. C57.12.36 was noted as being related.

MOTION - Fernando Prolec, (Matt, Weisensee, PacifiCorp) – to adjourn. No objection heard to unanimous approval.

Attendance Record

Isaac	Abdalla	
Diego	Alvez	Hico America
KyungChan	An	Hyosung
Onome	Avanoma	MJ Consulting
Duvier	Bedoya	Hitachi Energy
William	Boettger	Boettger Transformer Consulting LLC
Alain	Bolliger	HV TECHNOLOGIES, Inc.

Dominique	Bolliger, Ph.D.	HV TECHNOLOGIES, Inc.
Garrett	Bradshaw	Howard Industries
Jeffrey	Britton	Phenix Technologies, Inc.
Steven	Brzoznowski	Bonneville Power Administration
David	Calitz	Siemens Energy
camilo	casallas	
Vivian	Chan	Hitachi Energy
Olivia	Cordova	Bureau of Reclamation
Eric	Davis	Consultant
Luiz	de Oliveira	Hitachi Energy
Scott	Dennis	Hitachi Energy
Duamiru	Diaconu	Delta Star
Iuc	Dorpranns	Royal SMIT Transformers
Eric	Elson	
Reto	Fausch	RF Solutions
Marcos	Ferreira	FEMA
Raymond	Frazier	Ameren
Eduardo	Garcia Wild	Siemens Energy
Orlando	Giraldo	THE H-J FAMILY OF COMPANIES
Alireca	Gorzin	
Shawn	Gossett	Ameren
Kevin	Hampton	Siemens Energy
Peter	Heinzig	Weidmann Electrical Technology
Giovanni	Hernandez	
Saramma	Hoffman	PPL
Thomas	Holifield	Howard Industries
Miljenko	Hrkac	Hitachi Energy
Donghyun	Jang	LS Electric
Sukin	Jang	Iljil Electric
John	John	Virginia Transformer Corp.
Verin	Juchen	Hitachi Energy
Heonsu	Kim	LS Electric
Arvind	Kumar	Delta Star Inc
Bernard	LaBean Jr	Consumer Energy
Mark	Lachman	Doble Engineering Co.
Fernando	Leal	Prolec GE
Ricardo	Lopes Mamede	
Gabriel	Mamede	Siemens Energy
Moses	Manzano	Hyosung
Alberto	Martinez	
Nader	Masoud	Central Moloney
James	McBride	JMX Services, Inc.
Pat	McLaughlin	PECO Energy Company
Francis	Mills	Power engineers
Juliano	Montanha	Siemens Energy
Mario	Morioma	Georgia Transformer

Marta	Munoz	Hitachi Energy
Fredy	Murcia	Siemens Energy
Ali	Naderian	Consultant
patel	nitesh	
Daniel	Obregon	Tubos Trans Electric S.A.
Cuauhtemoc	Ortiz	Niagara Transformer Corp
Ajay	Palhuhter	Virginia Transformer Co
Manan	Pandya	Siemens Energy
Dern	Park	Hyosung
Poorvi	Patel	Epri
Harry	Pepe	Phenix Technologies, Inc.
Bertrand	Poulin	Hitachi Energy
Jonathan	Reimer	FortisBC
Juan	Reyes	Hitachi Energy
Rodrigo	Ronchi	WEG Transformers USA Inc.
Hyoumggon	Ryu	HD
Hakan	Sahin	Virginia/Georgia Transformer
Jesos	Sanclez Rodriguez	Vertis
Armando	Santos	Prolec GE
Daniel	Sauer	EATON Corporation
Eric	Schleisman	Southern Company Services
Cody	Schott	The H-J Family of Companies
Alfons	Schrammel	Siemens Energy
Danio	Segonic	Siemens Energy
Aron	Sexton	Kinectrics
Salahuddin	Shaikh	NRG Energy
Mike	Shannon	REA Magnet Wire
Christopher	Slattery	FirstEnergy Corp.
Kyle	Stechschulte	American Electric Power
Hampton	Steele	Tennessee Valley Authority
Andrew	Steineman	Delta Star Inc.
Jonathan	Tan	
Andrewa	Thiede	
Scott	Thomas	Hitachi Energy
Leonard	Torchin	PSE&G
Alan	Traut	Howard Industries
Pedro	Trujillo	Hyundai Electric
Nidzar	Turcinhodzic	Siemens Energy
Jason	Varnell	Doble Engineering Co.
kannan	veeran	
Yues	Vermette	Hubbell
John	Wagner	
David	Wallach	Duke Energy
Eric	Weatherbee	PCORE Electric
Matthew	Weisensee	PacifiCorp

Fei	Yang	Hitachi energy
Hongzhi	Zhang	Hitachi Energy
Waldemar	Ziomek	PTI Transformers

TF Clearance Between Bushings (Virtual)

Tauhid Ansari
Unapproved Meeting Minutes

Survey On Review of Section 6.8 – Dielectric Clearance

Performed two virtual meetings submitting a survey.

Participants	422		
Member	164		
Guest	258		
Result		% of Total Participants	% of total response
Accept with Comment	11	2.6%	9.6%
Accept	81	19.2%	70.4%
Reject with Comment	16	3.8%	13.9%
Reject	0	0.0%	0.0%
Abstain	7	1.7%	6.1%
Total	115	27.3%	

Comments came up in different ways.

A motion will be addressed to the SC for approval of setting up a TF to go through all survey comments.

WG Revision of C57.161 “Guide for Dielectric Frequency Response Measurements”

WG Chair:	Evgenii Ermakov (Hitachi Energy – Sweden)
Vice-Chair:	Ismail Guner (Hydro Quebec – Canada)

Secretary:	Diego Robalino (Megger – USA)		
Meeting Location:	Meeting in room Centennial H at the Hyatt Regency, Denver, Colorado		
Meeting Date:	March 24, 2025	Meeting Time:	13:45 – 15:00

This is the second meeting of this working group. WG Chairman started the session at 13:45 and welcomed all attendees and participants. Those who requested membership during the first meeting were all approved.

Total WG Members: 42	Members present at the meeting (QR code): 23	Members present at the meeting (Roster + QR): 23
Guests present: 39	Attendance M&G (QR code): 54	Attendance M&G (Roster + QR): 62
Members moved to Guest Status: N/A	Membership requested: 8	Membership accepted: 8

- WG Chair indicated that this is the second meeting of this WG and during the previous meeting four task forces were created.
- This meeting focuses on an update from each of the task forces
- The agenda was presented
- Attendance is verified using QR code and rosters. Chair requests attendees to register attendance preferably using the QR code.
- Members are requested to stand up for headcount. Listed 42 members.
- Recording of the meeting is requested to the attendees – hearing none, recording is approved for the sole purpose of writing minutes.
- Unapproved minutes from F24 were presented, not able to approve without quorum.
- Patent statement from IEEE SA presented to attendees
- IEEE SA Policies presented to attendees
- IEEE SA copyright policy is read to attendees
-
- Report from Task Force leaders
 - Task Force 1 – Revision of Chapter 4
 - Ron Hernandez – Overview of the overall test
 - Two meetings held so far (January and February)
 - Revision of the use of DFR to include reactors
 - Theoretical basis – going through editorial work.
 - Edit table 2 – focus on the role of the analysis and the objectives of failure modes.
 - Modify the test of the algorithm – expanding the description of the algorithm.
 - Adding a figure for reactors
 - Task Force 2 – Revision of Chapters 5 & 6
 - Peter Werelius – thorough reading of Ch 5 & 6. Suggestion that chapter 5 and 6 are in good shape.

- Suggestions were sent to other members of the group to make comments.
- Task Force 3 – Revision of Chapter 7
 - Poorvi Patel – Carried out three virtual meetings looking at the analysis part.
 - Working on the use of CH for reactors
 - Looking at the types of fluids to be included inclusive ester fluids.
 - Question from the group to make sure there is no duplication of efforts specially with chapter 1. Open to discuss with other TF leaders.
 - Peter Werelius commented that he and his team have recently worked in the area of ester fluids. He indicated this is not an easy topic and we should be careful about recommendations.
 - Poorvi Patel is looking at some guidelines, maybe not as deep as the recommendations made for mineral oil. Calculate moisture is difficult.
 - Charles Sweetser, he would like to contribute, maybe now too early and in 10 years we may know more.
 - Chair suggests to look at cases from the group. Include state-of-the-art in the guide.
 - Tauhid Ansari asks about dew point correlation. Dew point seems to measure lower moisture than DFR.
 - Poorvi Patel indicates that it is important to know the difference between doing Dew Point vs DFR.
 - Diego Robalino brought to the attention that differences between those methods is already stated in C57.162.
 - Poorvi would like to see limit values and what to do about that.
 - Ron Hernandez mentions about C57.166 to be published this year and has moisture limits stated. Ron is corrected and pointed to C57.162. After clarification, it is mentioned that a table has been added in the document for DFR limits.
 - A statement was made that C57.162 has not yet been published and it is mineral oil only.
 - One last question – if 162 has limits for DFR, how is that separated. Chair responds he has no comments.
- Task Force 4 – Revision of Annexes, Literature and Case Studies
 - Ismail Guner was not able to travel from Canada.
 - Diego Robalino is requested to report in Ismail's absence.
 - The TF is trying to collect case studies. None gathered so far in the last two meetings. Request open to all the attendees to share if there is an interesting case study.
 - We are going through the bibliography
 - Poorvi asking to send a blast e-mail to the group requesting files as well as on reactors.
 - Charles Sweetzer mentions that in his TF there is a need to include issues like core laminations or another failure mode. Also mentions the need to show hook-up diagrams to include CH connections.
- No more questions about the progress of the Task forces
- New business
 - No new business addressed

- Chair looks again for quorum
 - Quorum reached
 - Secretary looks for the Table referred in the discussion from the balloting process of C57.162
 - Motion to approve agenda
 - o Motion by Sami Debass, second P. Papet
 - o Agenda is approved unanimously
 - Motion to approve the minutes from Fall 2024 (st. Louis meeting)
 - o Motion by Peter Werelius, second Sami Debass
 - o No discussion
 - o Minutes approved unanimously
 - Open floor to attendees:
 - o M. Locarno – follows Poorvi’s comment about a DFR guide for Instrument Transformers, he would like to know how much of the work of this WG could be part of the new proposed guide.
 - o Diego Robalino indicates that probably a good 30 to 40 % could be shared from this document. Theoretical probably closer to what the HV bushing DFR guide has but connections and interpretation is quite different.
 - o Ron Hernandez identified Table 12 in section 10.4.4. in the recirculated version of C57.162. The group to verify that and have discussion.
 - o Evgenii Ermakov – Created a workspace to share the information and keep updates of minutes and TF reports.
 - o Mario Locarno asked how to access workplace. Chair to clarify with Patycja.
 - o Bernard Poulin asks for guidance on where to measure and why not. Peter also commented on the challenges.
 - o QR code shows ~ 46 attendees but there is ~ 55 in the room
 - o Peter Werelius – might be new business to mentions conditions where “recommended” connections are not feasible. Also on reactors with access to the core. Peter has lots of measurements to discuss from Middle East.
 - Chair suggest to have cases to illustrate these type of uncommon situations.
- Motion to adjourn the meeting
- Motion by Peter Werelius, second Sami Debass.
- Meeting adjourned.

Attendance List

Role	First Name	Last Name
Guest	Mario	Alonso
Guest requesting membership	Tauhid	Ansari
Member	Onome	Avanoma
Guest requesting membership	Garrett	Bradshaw
Member	Sudip	Chanda

Guest	Murray	David
Member	Sami	Debass
Member	Gabriel	Delgado
Guest	Eric	Elson
Chair	Evgenii	Ermakov
Member	Marco	Espindola
Guest	Kyle	Feaster
Guest	Marc	Foata
Guest	Lorne	Gara
Guest	Rob	Ghosh
Member	Alireza	Gorzin
Guest requesting membership	Matthew	Greenhaw
Guest requesting membership	Roger	Hayes
Member	Ronald	Hernandez
Guest	Jean Carlos	Hernandez-Mejia
Guest	Braxton	Jones
Guest	Laszlo	Kadar
Guest	Sheldon	Kennedy
Guest requesting membership	Arvind	Kumar
Guest	Bernard	LaBean Jr
Guest	Aswini	Labh
Guest	Mathieu	Lachance
Guest	Rapelly	Laxman
Member	Mario	Locarno
Guest	Gabriel	Mamede
Member	Kumar	Mani
Member	Swapnil	Marathe
Guest	Logan	Merrill
Member	David	Murray
Member	Ali	Naderian
Guest	Kris	Neild
Guest	Rudolf	Ogajanov
Guest requesting membership	Juan	Ortiz
Guest	Parminder	Panesar
Guest	Dwight	Parkinson
Member	Poorvi	Patel
Member	Rakesh	Patel
Guest	Bertrand	Poulin
Secretary	Diego	Robalino
Member	Rodrigo	Ronchi
Member	Mickel	Saad
Guest requesting membership	Garret	Sarkinen
Guest	Markus	Soeller
Guest	Jonathon	Stauffer
Member	Charles	Sweetser
Member	Matthew	Sze
Guest	Jonathan	Tan
Guest	Andreas	Thiede

Guest requesting membership	Eduardo	Tolcachir
Guest	Yves	Vermette
Guest	Hector	Villa
Guest	Joshua	Watson
Member	Drew	Welton
Member	Peter	Werelius
Guest	Jiahao	Xie
Guest	Guang	Yuan
Member	Shibao	Zhang

TF C57.127- Revision of IEEE Guide for the Detection, Location and Interpretation of Sources of Acoustic Emissions from Electrical Discharges

Detlev Gross

Unapproved Meeting Minutes

Denver, March 25th, 2025, Room: Mineral Hall (A)

- Meeting Attendance

The working group met at 9:30 AM. 31 participants were in the room including 7 of the 17 members. Quorum was not met at that time but with more members entering the room, we were able to reach quorum at 9h45 with 9 members. Attendance list is shown at the end of the present minutes. Minutes from S24 and F24 were approved.

- Discussions

It was explained to the group that since our last meeting, we received comments and contributions. Some of the contributions are simple corrections that can be added to the document but others, more extensive, will require more efforts to be integrated in the document. Having that in mind, it was suggested that two task forces were created to integrate new contributions and to review the current document for corrections and/or additions. It is assumed that the task forces will meet virtually between our working group meetings to speed up the editing of the document.

Task force #1 :

- Scope: Chapters 1 to 5
- Task force leader : Mathieu Lachance
- Task force members : Matthew Sze, Mark Tostrud, Detlev Gross, David Larochelle

Task force #2 :

- Scope : Chapters 6 to the end
- Task force leader : Janusz Szczechowski
- Task force members : Markus Soeller, Alexander Kraetge, Aaron Sexton, Detlev Gross, David Larochelle

Considering our working group attendance is incomplete, the task forces creation will be announced by email so interested contributors can join and task forces meeting dates can be set.

The difficulty to reach quorum can partly be explained by the scheduling conflicts with two other working groups. Considering that one of these WG will be over soon, a scheduling change for our WG will not be requested.

- **Adjournment**

The meeting was adjourned at 9h55.

David Larochelle

- Attendance List

Complete name	Affiliation	Status
Ronny Doerr	SGB-SMIT Group	G
Eric Elson	San Diego Gas & Electric	G
Marc Foata	Reinhausen	G
Jean-Philippe Gagnon	Qualitrol	G
Luke Grandbois	IFD Technologies	G
Detlev Gross	Independent	C
Didier Hamoir	Transformer Protector Corp	G
Derek Hollrah	Burns McDonnell	G
Allen Hsiao	Shihlin Electric	G
Braxton Jones	SD Myers	G
Franjo Kelemen	Koncar Power Transformers	G
Alexander Kraetge	Omicron	M
Mathieu Lachance	Omicron	M
David Larochelle	NDB Technologies	S
Omar Mendez	Prolec GE	G
Fredy Murcia	Siemens Energy	G
Mark Newbill	Hitachi Energy	G
Ashwin Patmanaban Iyer	Transformer Protector Corp	G
Ion Radu	Hitachi Energy	G
Jonathan Reimer	Fortis BC	G
Yuri Rossini	Siemens Energy	G
Dario Segovic	Koncar Power Transformers	G
Aron Sexton	Kinectrics	M
Markus Soeller	Power diagnostix Systems	M
Janusz Szczechowski	Reinhausen	M
Matthew Sze	Omicron	M
Eduardo Tolcachir	TTE transformers	G
Mark Tostrud	Dynamic Ratings	M
Karsten Viereck	Reinhausen	G
Stanley Yeh	Shihlin Electric	G
AnnaBelinda Zhou	JST Power Equipment	G

WG C57.138 - Recommended Practice for Routine Impulse Tests

Unapproved Meeting Minutes

Chair:	<u>Hakan Sahin</u>	Vice-Chair	<u>Reto Faush</u>
Secretary	<u>David Wallace</u>	Percent Complete	<u>75%</u>
Current Draft Being Worked On:	<u>Draft not started</u>	Dated:	<u>n/a</u>
PAR Expiration Date:	<u>December 31, 2026</u>		
Meeting Date:	<u>25 March 2025</u>	Time:	<u>3:15pm</u>
Location:	<u>Denver, CO, USA</u>		
1) Attendance:	2) Members		<u>9</u>
3)	4) Guests		<u>23</u>
5)	6) Guests Requesting Membership		<u>5</u>
7)	8) Total*		<u>37</u>
* Attendance list for this meeting is shown at end of meeting minutes			

Meeting Minutes / Significant Issues / Comments:

Meeting was called to order at 3:15pm, March 25, 2025.

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.
- e. Updated membership review and count for quorum
 - i. 34 people were in attendance with 8 out of 14 members present. Quorum was **achieved**.
 - ii. Fall_24 unapproved meeting minutes and Spring_24 agenda were approved with no objections from the members.
 - iii. 0 attendees requested membership.
- f. Jim McBride Motioned for approval of agenda, Chris Slattery seconded. No objections noted, motion passed.
- g. Chris Slattery motioned for approval of minutes, Jim McBride seconded. No objections noted, motioned passed.

2. Old Business

WG continued to review the document from clause 8.3.3, where we had stopped at the end of Fall_24 meeting, thru clause 8.3.2, which is where we will continue from during the Spring_25 meeting. Proposed changes approved during the meeting. Below is the summary of the review comments.

8.3.3 – The clause was presented. No comments were recorded on the clause.

8.4 – No comments were recorded on the clause.

8.4.1 – Dan Sauer said he used a winding resistance meter to demag the core before continuing to the next impulse shot. Hakan suggested keeping this as knowledge based.

8.4.2 – No comments were recorded on the clause.

9 – No comments were recorded on the clause.

Annex

A.1 - No comments were recorded on the clause.

A.2 – Note: check with the latest revision of C57.98 to ensure the statement (refer to 3.5 of C57.98) is still relevant.

A.3 – Hakan mentioned that we will have to cross check with 12.90 to make sure that everything still lines up. No other comments were recorded on the clause.

A.4 – No comments were recorded on the clause.

A.4.1 – No comments were recorded on the clause.

A.4.2 - No comments were recorded on the clause.

Figure A.6 should state “two-section layer winding”

Figure A.7 should state “two-section layer winding”

A.5 - No comments were recorded on the clause.

A.6 - No comments were recorded on the clause.

A.7 - No comments were recorded on the clause.

A.8 - No comments were recorded on the clause.

A.9 – Insert new point a. Use of a winding resistance meter to demag a unit is permissible. Dan Sauer made the motion, Reto Faush seconded. No objection. Motion passed

Change the note to state b, c and d.

WG is well on track to complete the review, revise the document per all approved revisions by the par expiration date of 12/31/2026

3. Next meeting: FALL 2025 MEETING BONITA SPRINGS, FLORIDA, USA October 19 - 23, 2025

4. Close of meeting

- a. Dan Sauer Motioned to adjourn, David Wallace seconded. No objections
- b. Meeting adjourned at 4:30 pm.

Submitted by: Hakan Sahin Date:_____

WG C57.138 Members and Guests list

Below membership as of Spring_25 meeting, which will be updated by the Fall-25 meeting

WG C57.138 Members and Guests list

Below membership as of Fall_24 meeting, which will be updated by the Spring-25 meeting

Abdalla	Isaac	Hico America	Guest	Lachman	Mark	Doble	Guest
Alonso	Mario	Georgia Transformers	Guest	Lambert	Jason	JST Power	Guest
Andrew	Larison	Hitachi Energy	Guest	Leal	Fernando	Prolec GE	Guest
Ansari	Tauhid	Hitachi Energy	Guest	Lee	Moonhee	Hammond power solutio	Guest
Avanoma	Onome	MJC	Guest	Lopes	Ricardo	EFACEC	Guest
Beaudoin	Jason	Weidmann	Guest	Mani	Balakrishnan	ITEC	Guest
Betancourt	Edwin	Siemens Energy	Guest	Masoud	Nader	Central Maloney	Guest
Binder	Wallace	Consultant	Guest	McBride	Jim	JMXHV	Member
Bolliger	Alain	HV Technologies	Member	Montanha	Juliano	Siemens Energy	Guest
Bolliger	Dominiques	HV Technologies	Guest	Moreno	Andre	Siemens Energy	Guest
Britton	Jeffery	Phenix Technology	Guest	Morris	Tim	Walton EMC	Guest
Carr	Deniss	GE	Guest	Morrow	Gianetta	Crane Aerospace	Guest
Costa	Florian	Corimpex	Guest	Murray	David	TVA	Guest
CruzValdes	Juan Carlos	Prolec GE	Guest	Nabi-Bidhendi	Hossein	ITEC	
Davis	Eric	Consultant	Guest	Ogajanov	Rudolf	Hitachi Energy	Guest
Derouen	Craig	ERMCO	Guest	Orozco	Polo	GE Grid Solutions	Guest
Diaz	Cesar	Eaton	Guest	Ortiz	Cuauhtemoc	Niagara Transformer Co.	Guest
Dolloff	Paul	EKPC	Guest	Owen	John	PowerTech Labs	Guest
Door	Jeffrey	H-J	Guest	Palhaliju	Ajay	Virginia Transformer	Guest
Elliott	William	Prolec GE	Guest	Parrales	Herman	Prolec GE	Guest
Eshenroder	Jacob	Burns and McDonnell	Guest	Patel	Poorvi	EPRI	Member
Fausch	Reto	RF Solutions	Member	Pepe	Harry	Phenix Technology	Guest
Fayad	Fadi	ASD	Guest	Plante	Sylvain	Hydro-Quebec	Guest
Flores	Hugo	Hitachi	Guest	Plisic	Goran	Siemens Energy	Guest
Frye	Richard	Eaton	Member	Posadas	Daniel	CELECO	Guest
Garcia	Eduardo	Siemens Energy	Guest	Pousset	Baptiste	Transformer Protection C	Guest
Gaytan	Carlos	Prolecge	Guest	Prince	Jarrod	ERMCO	Guest
Ghosh	Rob		Guest	Rhett	Chrysler	ERMCO	Guest
Givaldo	Orlando	HJ Family	Guest	Ronchi	Rodrigo	WEG	Guest
Greenhaw	Matthew	OG&E	Guest	Sahin	Hakan	Virginia and Georgia Transformer	Member
Gumand	Benjamin	Power Magnetis	Guest	Salinas	Fernando	Power Partners	Member
Hernandez	Giovannie	Virginia Transformers	Member	Saraf	Manish	Hammond Power	Guest
Himow	Monkin	Highvolt	Guest	Sarkar	Amitabh	VA Transformer	Guest
Hochanh	Thang	PowerTech	Guest	Sauer	Dan	Eaton	Member
Holifield	Thomas	Howard Inc.	Guest	Schott	Cody	H-J Family	Guest
Hopkinson	Phil	Hvolt	Member	Schrammel	Alfons	Siemens Energy	Guest
Nabi-Bidhendi	Hossein	ITEC	Guest	Scott	Dennis	Hitachi Energy	Guest
Jarosz	Patrycja	IEEE SA	Guest	Segovic	Dario	Siemens Energy	Guest
Jordan	Steve	TVA	Guest	seluargj	Pugual	VA Transformer	Guest
Katz	Nathan	Pacificorp	Guest	Sexton	Aron	Kinectrics	Guest
Kennedy	Gael	GRKennedy&Associates L	Guest	Shalabi	Jaber	Vantran	Guest
King	Gary	Howard Industry	Guest	Sharp	Michael	Trench, LTD	Guest
Knapp	Evan	Eaton	Guest	Slattery	Chris	First Energy	Member

Snyder	Steve	Hitachi Energy	Guest
Som	Sanjib	PTI, LLC	Guest
Steele	Hampton	TVA	Guest
Stretch	Kerwin	Siemens Energy	Guest
Sze	Matthew	Omicron Energy	Guest
Thibolt	Mike	PG&E	Guest
Thomas	Scott	Hitachi Energy	Guest
Tillery	Tim	Howard Industry	Guest
Tirado	Fernando	Prolec GE	Guest
Traut	Alan	Howard	Member
Tsai	Steve	JST Power	Guest
Verdell	Joshua	ERMCO	Guest
Vivian	Chan	Hitachi Energy	Guest
Walker	David	MGM Transformers	Guest
Wallace	David	Mississippi State University	Member
Washburn	Alan	Burns & McDonnell	Guest
Watson	Joshua	NPPD	Guest
Weisensee	Matt	Pacificorp	Guest
Weyandt	Paul	Schneider Electric	Guest
Winter	Alexandar	Highvolt	Guest
Yun	Joshua	Virgina Transformer Corp	Member
Zanwan	Anand	Siemens Energy	Guest
Zhang	Shibao	PCORE	Guest
Zhou	Anna	JST Power	Guest
Ziger	Igor	Kovear	Guest

TF for DFR on Instrument Transformers

Unapproved Minutes

**Meeting in Centennial F (3) at the Hyatt Regency Denver at Colorado Convention Center, Colorado,
11:00 AM – 12:15 PM, mars 25, 2025,**

Chair: Ismail Guner (Hydro Quebec – Canada)

Vice Chair: Ali Naderian

Secretary: Peter Werelius (Megger, Sweden)

This is the very first meeting of this task force (TF). TF chair was not able participate the meeting. Ali Naderian chaired the meeting. The meeting chair started the session at 11:00 and welcomed all attendees and participants.

The attendees were communicated that this is the first meeting of this TF and all are welcome to become members.

Total attendees: XX

Attendees requested membership: XX

The agenda was presented:

1. Welcome
2. Review of IEEE Rules and Procedures
3. Introduction
4. Background on the need for a guide on DFR on Instrument Transformers
5. Discussion on the existing content and presentations of case studies
6. Floor Discussion on possible content for a new guide
7. Survey based on discussions (*Slido*) by 11:55
8. Conclusions of the survey
9. Adjournment

The meeting chair presented two slides regarding IEEE-SA Copyright Policy followed by one slide about IEEE-SA Patent Policy.

Next, the rule of Task Force Membership was presented:

- Participants attending the first meeting may request membership. Requests should be indicated on the paper rosters.
- To become a member after the first meeting:
 - Attendance in 2 consecutive meetings
- To maintain membership:
 - Attendance in 3 out of the last 5 meetings

Introduction followed, that:

1. This task force aims to provide recommendation to the Subcommittee to develop a new “guide” (not a standard) for DFR Testing of Instrument Transformers.
2. Currently it does not fit well with any existing standard or guide
3. Two IEEE guides published on DFR measurements on transformers and bushings
 - C57.161-2018 - IEEE Guide for Dielectric Frequency Response Test
 - C57.12.200-2022 - IEEE Guide for the Dielectric Frequency Response Measurement of Bushings

In the “background” a case study from Australia was presented. Peter Werelius added that he had experience of cases where DFR was applied for similar cases in Sweden, France and The Netherlands.

Peter Werelius then presented the response of a dry oil-impregnated cellulose CT followed by a set of moist oil-impregnated cellulose CTs. The DFR response is very similar to the DFR response of an oil-impregnated bushing. He also presented the verification of the Arrhenius Temperature Correction that is recommended in C57.12.200.

The “floor” was opened for discussion:

Many persons contributed to the discussion: Zoltan Roman, Evgenii Ermakov, Thomas Sizemore, Charles Sweetser, Drew Welton, Poorvi Patel, Diego Robalino and Peter Werelius.

The conclusion from the discussion was that more data and case studies need to be collected before the TF can continue formulate a Title and Scope for a proposal form a WG. The aim is to collect data and case studies to be presented at the fall 2025 meeting in Florida. To be able fulfil that Peter Werelius asked everyone to please submit data/cases and/or be able present in at next meeting in Florida. Diego Robalino volunteered make a literature review to be submitted at next meeting in Florida.

Diego Robalino raised a motion adjourn the meeting. Evgenii Ermakov second it. The meeting adjourned at 12:15.

Liaison Report – HVTT

(J. Britton)

Standards Activity:

- IEEE 1122 – IEEE Standard for Digital Recorders for Measurements in HV Impulse Tests
 - Standard is Published (Jeff Britton)
- IEEE 510 – IEEE Guide for Electrical Safety in High-Voltage Testing
 - *PAR Expired and Resubmitted – Draft Standard is 90% completed(Jeff Hildreth)*
- IEEE P4.1 Implementation Guide for IEEE 4
 - *Draft 8 circulated for WG approval – Uncertainty Estimation and K-Factor(Bill Larzelere)*
- IEEE P454 – Guide for the Detection, Measurement and Interpretation of Partial Discharges
 - *Draft Development last meeting virtual in February (Glenn Behrmann)*
- IEEE P2426 – Guide for Field Measurement of Fast-Front and Very Fast-Front Overvoltages in Electric Power System
 - *Guide is Fully Published (Shijun Xie)*
- IEEE 4 – Standard for High-Voltage Testing Techniques
 - *Draft Development – Target to hold Monthly Virtual Meetings (Jeff Britton)*
- IEEE 316 – IEEE Standard Requirements for Direct Current Instrument Shunts
 - *PAR Approved in December 2024 - Expires Dec 31, 2028 (Switchgear Committee)*

Meeting Activities:

- All PSIM meetings are hybrid or fully virtual
- JTCM – Annually (All PSIM Groups)
- IEEE GM – Annually (Sensors and Electricity Metering)
-

Upcoming Meetings:

- HVTT Groups – GM, Austin TX (hybrid)
 - HVTT All groups – JTMC January 2026
-

WG to Investigate the Interaction between Substation Transients and Transformers in HV and EHV Applications and Revision of C57.142

**Denver, Colorado USA
Tuesday, March 25th, 2025
11:00 AM – 12:15 PM
Hyatt Regency - Centennial DE**

**Chairman – Jim McBride
Vice Chair – Xose Lopez-Fernandez
Secretary – Tom Melle**

- 1) Welcome and Chair's Remarks (it was mentioned the WG paper can be found at <https://ieeexplore.ieee.org/document/9161400>)
- 2) Circulation of Attendance Sheets. Quorum was achieved with 36 of 44 Members present. Guest attendance was 77 for a total of 113 attendees.
- 3) IEEE Patent Policy Slides – no patent claims
- 4) Approval of Agenda and Minutes from Last Meeting: Fall 2024 Minutes (motion by Phil Hopkinson / 2nd by Eduardo Garcia Wild) and Spring 2025 Agenda (motion by Marnie Roussell / 2nd by Phil Hopkinson) unanimously approved.
- 5) Reminder that the WG PAR extension is through December 31, 2025.
- 6) C57.142 Ballot and Comment Resolution for Draft 13 – Jim McBride:

The Chair stated that all comments have been resolved and asked for a motion to recirculate the ballot (motion by Hemchandra Shertukde / 2nd by Amitabh Sarkar). Weijun Li mentioned that a vote was not mandatory; however, the motion was unanimously approved. The Chair showed the slide containing the members of the CRG. During discussion a question from Phil Hopkinson, regarding resolution of the comment from Doug Edwards of the Switchgear Committee was asked: "Should we state the loading levels and chopping currents in the Guide?" The chair responded that this topic will be considered in future business.

Update from IEEE Switchgear Liaison Task Force to WG for Revision of C57.142 by David Caverly. The Switchgear Meeting will be held at the Wyndham Grand Orlando

Resort Bonnet Creek (Orlando, Florida) from April 6 – 11, 2025. No Task Force work is planned for the meeting, as all comments are complete. Mr. Caverly mentioned the creation of CIGRE A3.42 (new brochure for transformer failures) that may be of interest to the WG for liaison opportunities.

7) Mitigation Methods Task Force Update – Jim McBride / Phil Hopkinson

The Chair presented the Mitigation Methods summary and a list of TF Members. A tutorial is scheduled for Fall 2025 TC Meetings.

The WG plans to have ongoing discussions regarding the challenges of high-magnitude, high-frequency transients. It should be noted there are few (if any) factory tests to simulate these occurrences.

8) New Business – the Chair mentioned many recent occurrences of failures of transformers connected to solar farms as a possible future topic for the guide.

9) Next Meeting (Bonita Springs, FL October 19-23, 2025)

10) Adjournment at 11:33 AM

Meeting Attendance:

Role	Last Name	First Name	Company
Chair	McBride	James	JMX High Voltage
Vice-Chair	Lopez-Fernandez	Xose	Universidade de Vigo
Secretary	Melle	Thomas	HIGHVOLT
Member	Betancourt	Enrique	Prolec GE
Member	Boettger	William	Boettger Transformer Consulting LLC
Member	Britton	Jeffrey	Phenix Technologies, Inc.
Member	Caverly	David	Trench Limited
Member	Espindola	Marco	Hitachi Energy
Member	Frazier	Raymond	Ameren
Member	Garcia Wild	Eduardo	Siemens Energy
Member	Heiden	Kyle	EATON Corporation
Member	Hernandez	Giovanni	Virginia Transfomrer Corp.
Member	Hernandez	JC	Georgia Tech - NEETRAC
Member	Hoffman	Saramma	PPL Electric Utilities
Member	Hopkinson	Philip	HVOLT Inc.
Member	Hossain	Saif	Trench Limited
Member	John	John	Virginia Transformer Corp.
Member	Khan	Qasim	Georgia Tech - NEETRAC
Member	Kirchenmayer	Egon	Siemens Energy
Member	Lee	Moonhee	Hammond Power Solutions
Member	Li	Weijun	Braintree Electric Light Dept.
Member	Mani	Kumar	Duke Energy
Member	Montanha	Juliano	Siemens Energy
Member	Pepe	Harry	Phenix Technologies, Inc.
Member	Pointner	Klaus	Trench Austria GmbH
Member	Poulin	Bertrand	Hitachi Energy
Member	Ronchi	Rodrigo	WEG-Voltran
Member	Roussell	Marnie	Entergy
Member	Sarkar	Amitabh	Virginia Transformer Corp.
Member	Sharp	Michael	Trench Limited
Member	Tolcachir	Eduardo	TTE
Member	Varghese	Ajith	Prolec-GE-Waukesha
Member	Vir	Dharam	Prolec-GE Waukesha
Member	Yun	Joshua	Virginia Transformer Corp.
Member	Zhang	Shibao	PCORE Electric
Member	Ziomek	Waldemar	PTI Transformers
Guest	An	KYUNGCHAN	HYOSUNG
Guest	Arnold	Elise	SGB
Guest	Botti	Michael	Hyosung HICO
Guest	Bradshaw	Garrett	Howard Industries
Guest	Brodeur	Samuel	Hitachi

Guest	Calitz	David	Siemens Energy
Guest	Carrizales	Juan Alfredo	Prolec GE
Guest	Chan	Vivian	Hitachi Energy
Guest	Chorzepa	Jaroslaw	ABB Inc
Guest	Czernorucki	Marcos	Hitachi Energy
Guest	de Oliveira	Luiz	Hitachi Energy
Guest	Duffy	Jesse	Nashville Electric Service
Guest	Feaster	Kyle	Xcel Energy
Guest	Fernandez	Miguel	BELD
Guest	Fujimori	Alan	Romagnole
Guest	Griesacker	Bill	WGA
Guest	Gunja	Vijay	Powertechlabs
Guest	Heinzig	Peter	Weidmann Electrical Technology
Guest	Hollrah	Derek	Burns & McDonnell
Guest	Iman	Mike	MGM Transformer Company
Guest	Janakiraman	Balaji	Virginia Transformer
Guest	Jarosz	Patrycia	IEEE SA
Guest	Juchem	Kevin	ABB AG
Guest	Kim	Yeousoo	MEPPI
Guest	Klempner	Dmitriy	Southern California Edison
Guest	Koshel	Anton	Delta Star Inc
Guest	Kotbagi	Shrinivas	MGM Transformers
Guest	Kumar	Arvind	Delta Star Inc.
Guest	Leal	Fernando	Prolec GE
Guest	Levin	Aleksandr	Weidmann Electrical Technology
Guest	Lopes	Ricardo	Efacec Energia, SA
Guest	Martinez Mares	Alberto	WEG
Guest	Masoud	Nader	Central Moloney
Guest	Mills	Francis	POWER Engineers
Guest	Munoz	Marta	Hitachi Energy
Guest	Nambi	Shankar	Bechtel
Guest	Natale	Anthony	HICO America
Guest	Nims	Joe	Allen & Hoshall, Inc.
Guest	Panetta	Sergio	I-GARD Corp
Guest	<i>Parkinson</i>	<i>Dwight</i>	EATON Corporation
Guest	Patel	Nitesh	Hyundai Power Transformers USA
Guest	Patel	Monil	PG&E
Guest	Perez	Marcelino	PROLEC-GE
Guest	<i>Ploetner</i>	<i>Christoph</i>	Siemens Energy
Guest	Prevost	Tom	Weidmann
Guest	Raymond	Tim	Inductive Reasoning
Guest	Reimer	Jonathan	Fortis BC

Guest	Rossini	Yuri	Siemens Energy
Guest	Rutledge	Gris	GeVernova
Guest	Santos	Armando	Prolec GE
Guest	Saraf	Manish	Hammond Power Solutions
Guest	Sbravati	Alan	Hitachi Energy
Guest	Schiessl	Markus	SGB
Guest	Schleismann	Eric	Southern Company Services
Guest	Segovic	Dario	Koncar Power Transformers
Guest	Sethi	Kabir	Hitachi Energy
Guest	Shaikh	Salahuddin	Hitachi Energy
Guest	Shull	Stephen	BBC Electrical Service, Inc.
Guest	Snyder	Jason	FirstEnergy
Guest	Stechschulte	Kyle	American Electric Power
Guest	<i>Steele</i>	<i>Hampton</i>	Tennessee Valley Authority
Guest	<i>Steineman</i>	<i>Andrew</i>	Delta Star Inc.
Guest	Thiede	Andreas	HIGHVOLT Dresden
Guest	Torchia	Leonard	PSE&G
Guest	Trifunoski	Rusto	Trench
Guest	Trujillo	Pedro	Hyundai Power Transformers USA
Guest	Velasquez	Juan	Magnetron SAS
Guest	Wagner	John	AEP
Guest	Washburn	Alan	Burns & McDonnell
Guest	Watson	Joe	JD Watson & Associates
Guest	Watson	Joshua	Nebraska Public Power District
Guest	Weatherbee	Eric	PCORE Electric
Guest	Wong	Terry	Trench LTD
Guest	Xie	Jiahao	S&C Electric Company
Guest	Yeboah	Kwasi	GE Vernova
Guest	Yuan	Guang	Hitachi Energy
Guest	Zhou	Anna	JST Power

Record of Attendance to the DTSC meeting of March 26, 2025

Role	First Name	Last Name	Company
Guest	Ahmad	Skeik	Crosslink Technology
Member	Ajith	Varghese	Prolec GE Waukesha
Member	Alan	Sbravati	Hitachi Energy
Guest	Alan	Washburn	Burns & McDonnell
Request Membership	Alberto	Martinez	WEG
Member	Aleksandr	Levin	Weidmann Electrical Technology
Guest	Alex	Zeigher	Hitachi Energy
Request Membership	Alexander	Kraetge	OMICRON electronics Deutschland GmbH
Guest	Alfons	Schrammel	Siemens Energy
Member	Ali	Naderian	Potencia Partners
Member	Alireza	Gorzin	Black & Veatch
Member	Amitabh	Sarkar	Virginia Transformer Corp.
Guest	Amitkumar	Singh	Consolidated Edison
Guest	Anastasia	O'Malley	Consolidated Edison Co. of NY
Guest	Andreas	Kurz	
Guest	Andreas	Thiede	HIGHVOLT Dresden
Guest	Andrew	Larison	Hitachi Energy
Member	Andrew	Steineman	Delta Star Inc.
Member	Aniruddha	Narawane	EATON Corporation
Guest	Anna	Zhou	JST Power
Request Membership	Arvind	Kumar	Delta Star Inc
Request Membership	Ashwini	Labh	Hitachi Energy
Guest	Balaji	Janakiraman	Virginia Transformer
Guest	Benjamin	Guinand	Power Magnetics
Guest	Bernard	LaBean Jr	Consumers Energy Company
Member	Bertrand	Poulin	Hitachi Energy
Member	Bill	Griesacker	WGA
Member	Brian	McBride	Cargill, Inc.
Member	Bruce	Webb	Knoxville Utilities Board
Member	Camilo	Casallas	Trench Limited
Guest	Chanmin	Jeong	HD hyundai
Member	Charles	Sweetser	OMICRON electronics Corp USA
Member	Christopher	Slattery	FirstEnergy Corp.
Guest	Christopher	Whitten	Hitachi Energy
Member	Cihangir	Sen	Duke Energy
Request Membership	Cole	Van Dreel	American Transmission Co.
Member	Craig	Colopy	Retired from EATON
Guest	Crystal	Qiao	Trench limited
Guest	Dalho	kim	iljin electric
Member	Daniel	Blaydon	Baltimore Gas and Electric
Member	Daniel	Sauer	EATON Corporation
Guest	Daniel	Obregon	TTEF
Guest	Daniel	Crockett	Ameren

Request Membership	Dappen	Tim	Cargill
Member	David	Calitz	Siemens Energy
Guest	David	Caverly	Trench Limited
Member	David	Larochelle	NDB Technologies
Member	David	Murray	Tennessee Valley Authority
Guest	David	Stankes	3M
Member	David	Wallace	Mississippi State University
Member	David	Wallach	Duke Energy
Guest	Dean	Park	Hyosung Hico
Guest	Derek	Hollrah	Burns & McDonnell
Member	Detlev	Gross	Independent Consultant
Member	Dharam	Vir	Prolec GE Waukesha
Guest	Didier	Hamoir	Transformer Protector Corporation
Secretary	Diego	Robalino	Megger
Member	Dinesh	Sankarakurup	Duke Energy
Request Membership	Dumitru	Diaconu	Delta Star Inc
Member	Dwight	Parkinson	EATON Corporation
Member	Eduardo	Garcia Wild	Siemens Energy
Request Membership	Eduardo	Tolcachir	Tubos Trans Electric S.A.
Member	Egon	Kirchenmayer	Siemens Energy
Guest	Egui	Espitia	Reinhausen Manufacturing Inc
Member	Elise	Arnold	SGB
Member	Enrique	Betancourt	Prolec GE
Member	Eric	Davis	Consultant
Guest	Eric	Elson	San Diego Gas & Electric
Guest	Erik	Tarango	Olsun electric
Member	Evgenii	Ermakov	Hitachi Energy
Member	Ewald	Schweiger	Siemens Energy
Member	Fei	Yang	Hitachi Energy
Request Membership	Fernando	Duarte	Hitachi Energy
Member	Fernando	Leal	Prolec GE
Member	Francis	Mills	POWER Engineers
Request Membership	Gabriel	Mamede	Siemens Energy
Member	Gabriel	Delgado	Invenergy
Guest	Garret	Sarkinen	Xcel Energy
Request Membership	Garrett	Bradshaw	Howard Industries
Guest	Geraldo	Magela Junior	Siemens-Energy
Request Membership	Guang	Yuan	Hitachi Energy
Member	Hakan	Sahin	Virginia Transformer Corp
Request Membership	Hampton	Steele	Tennessee Valley Authority
Member	Harry	Pepe	Phenix Technologies, Inc.
Guest	Hector	Villa	Ecuatran SA
Request Membership	Hongzhi	Zhang	Hitachi Energy
Member	Hugo	Flores	Ermco
Guest	Hyounggon	Ryu	HD Hyundai electric
Member	Ion	Radu	Hitachi Energy
Guest	Isaac	Abdalla	HICO America
Guest	James	Gardner	RESA Power

Member	James	McBride	JMX High Voltage
Member	Janusz	Szczechowski	Maschinenfabrik Reinhausen
Request Membership	Jason	Snyder	FirstEnergy
Member	Jason	Varnell	Doble Engineering Co.
Member	Jason	Beaudoin	Weidmann
Member	Javier	Arteaga	Hitachi Energy
Guest	Jean	Gagnon	
Member	Jean Carlos	Hernandez	NEETRAC Georgia Tech
Guest	Jean-Noel	Berube	Rugged Monitoring Quebec Inc
Member	Jeffrey	Britton	Phenix Technologies, Inc.
Guest	Jeffrey	Wright	Duquesne Light Co.
Guest	Jeremiah	Bradshaw	Bureau of Reclamation
Guest	Jesse	Duffy	Nashville Electric Service
Guest	Jesus	Sanchez Rodriguez	Vertiv
Guest	Jiahao	Xie	S&C electric
Member	Joe	White	POWER Engineers
Guest	John	Bule	DTE Energy
Member	John	John	Virginia Transformer Corp.
Guest	John	Wagner	American electric power
Guest	Jonathan	Reimer	FortisBC
Member	Jonathan	Tan	Northern Transformer
Guest	Jose	Gamboa	H-J Family of Companies
Member	José Luis	Machain	Prolec GE
Request Membership	Joshua	Bohrn	PacifiCorp
Guest	Joshua	Watson	NPPD
Request Membership	Joshua	Yun	Virginia Transformer Corp.
Member	Juan	Castellanos	Prolec GE
Guest	Juan	Ortiz	Reinhausen Manufacturing
Guest	Juan	Rodriguez	Magnetron
Member	Juan Alfredo	Carrizales	Prolec GE
Member	Juliano	Montanha	Siemens Energy
Request Membership	Kabir	Sethi	Hitachi Energy Germany Ag
Guest	Karl	Jakob	Cargill
Member	Kayland	Adams	Prolec-GE Waukesha
Guest	Kevin	Hampton	Siemens Energy
Member	Klaus	Pointner	Trench Austria GmbH
Guest	Komelabbas	Lakhani	Siemens Energy
Member	Kris	Zibert	Allgeier, Martin and Associates
Guest	Kristopher	Neild	Megger
Guest	Kumar	Mani	Duke Energy
Member	Kurt	Kaineder	Trench
Guest	Kyle	Heiden	EATON Corporation
Member	Kyle	Stechschulte	American Electric Power
Guest	KyungChan	An	HYOSUNG
Guest	Landen	Kwan	US NRC
Guest	Laszlo	Kadar	Laszlo & Associates
Guest	Leonard	Torchia	PSE&G
Guest	Logan	Merrill	OMICRON

Guest	Luc	Dorpmanns	Royal SMIT Transformers
Member	Luc	Loiselle	Tetra tech
Guest	Luiz	de Oliveira	Hitachi Energy
Request Membership	Manan	Pandya	Siemens Energy
Guest	Manish	Saraf	Hammond Power Solutions
Request Membership	MARCELINO	PEREZ	PROLEC
Member	Marco	Espindola	Hitachi Energy
Guest	Marcos	Czernoruck	Hitachi Energy
Request Membership	Marcos	Ferreira	FEMA
Member	Markus	Schiessl	SGB
Guest	Mateusz	Kwiatkowski	Hitachi Energy
Member	Matthew	Sze	Omicron Electronics
Member	Matthew	Weisensee	PacifiCorp
Request Membership	Michael	Botti	Hyosung HICO
Guest	Michael	Sharp	Trench Limited
Guest	Michael	Craven	Qualus
Guest	Mick	Kasonga	Oncor
Member	Mickel	Saad	Hitachi Energy
Guest	Miguel	Fernandez	Braintree Electric
Member	Miguel	Garcia	Hitachi Energy
Request Membership	Mihir	Amin	Eaton
Guest	Miljenko	Hrkac	Hitachi Energy
Guest	Monil	Patel	Pacific Gas & Electric
Member	Moonhee	Lee	Hammond Power Solutions
Request Membership	Moses	Manzano	Hyosung HICO
Guest	Mostafa	Agharahimi	Georgia Transmission Corp.
Request Membership	Nader	Masoud	Central Moloney
Guest	Naveen	Bhardwaj	Trench Group
Request Membership	Nicholas	Jensen	Delta Star Inc.
Guest	Nicholas	Post	WEC Energy Group
Request Membership	Nihat	Kosedagi	ERMCO
Guest	Nikolaus	Dillon	Dominion Energy
Guest	Omar	Mendez	Prolec
Member	Onome	Avanoma	MJ Consulting
Request Membership	Orlando	Giraldo	H-J Family of Companies
Member	Parminder	Panesar	Virginia Transformer Corp.
Guest	Patrycja	Jarosz	IEEE SA
Request Membership	Paul	Weyandt	Schneider Electric
Guest	Peter	Heinzig	Weidmann Electrical Technology
Member	Peter	Werelius	Megger
Guest	Peter	Zhao	Hydro One
Member	Philip	Hopkinson	HVOLT Inc.
Chair	Poorvi	Patel	Electric Power Research Institute (EPRI)
Member	Pragnesh	Vyas	Cleveland Cliffs
Guest	Prudhvi Anand	Bhattiprolu	AES
Request Membership	Qasim	Khan	NEETRAC -Georgia Tech
Guest	Rafal	Kowalski	Hitachi Energy

Member	Rakesh	Patel	Hitachi Energy
Member	Ravi	Gupta	Megger
Member	Raymond	Frazier	Ameren
Member	Reto	Fausch	RHF Solutions
Guest	Ricardo	Lopes	Efacec
Guest	Richard	vonGemmingen	Dominion Energy
Member	Rob	Ghosh	GE Vernova
Member	Roberto	Da Silva	Maschinenfabrik Reinhausen
Member	Rodrigo	Ronchi	WEG Transformers México
Member	Roger	Hayes	GE Vernova
Member	Ronald	Hernandez	Doble Engineering Co.
Guest	Rudolf	Ogajanov	Hitachi Energy
Guest	Ryan	Hogg	Bureau of Reclamation
Guest	Ryan	Musgrove	Oklahoma Gas & Electric
Member	Saif	Hossain	Trench Group
Request Membership	Salahuddin	Shaikh	NRG Energy
Guest	Sam	Attaguile	3M Company
Member	Sami	Debass	Electric Power Research Institute (EPRI)
Member	Samragini	Dutta Roy	Siemens Energy
Guest	Sanjay	Patel	Royal Smit Transformers
Member	Sanjib	Som	PTT, LLC
Guest	Saramma	Hoffman	PPL
Member	Scott	Dennis	Hitachi Energy
Member	Scott	Thomas	Hitachi Energy
Guest	Sergiusz	Kapka	Hitachi Energy
Member	Shawn	Gossett	Ameren
Guest	Sheila	Ray	US Nuclear Regulatory Commission
Member	Sheldon	Kennedy	Sheldon P Kennedy Engineering PLLC
Guest	Shibao	Zhang	PCORE
Member	Stephen	Antosz	Stephen Antosz & Associates, Inc
Guest	Stephen	Shull	BBC Electrical Services, Inc.
Member	Steve	Snyder	Hitachi Energy
Guest	Steven	Ashcraft	
Request Membership	Steven	Brzoznowski	Bonneville Power Administration
Guest	Sudip	Chanda	Virginia Transformer Corp.
Guest	Sukin	Jang	ILJIN Electric
Request Membership	Sunny	Swarna	Virginia Transformer Corp
Request Membership	Swapnil	Marathe	Megger
Guest	Sylvain	Lapointe	Rugged Monitoring
Member	Tauhid Haque	Ansari	Hitachi Energy
Member	Terry	Wong	Trench Limited
Request Membership	Thien	Pham	Siemens Energy
Guest	Thomas	Holifield	Howard industries Inc
Member	Thomas	Melle	HIGHVOLT
Guest	Thomas	Propts	Dominion Energy
Member	Tim-Felix	Mai	Siemens Energy
Member	Timothy	Raymond	Inductive Reasoning

Guest	Toni	Mellin	Vaisala
Member	Troy	Tanaka	Burns & McDonnell
Guest	Valentina	Valori	Hitachi Energy
Guest	Vivian	Chan	Hitachi energy
Member	Waldemar	Ziomek	PTI Transformers
Member	Weijun	Li	Braintree Electric Light Dept.
Request Membership	Wilerson	Calil	Hitachi Energy
Member	William	Boettger	Boettger Transformer Consulting LLC
Guest	William	Solano	Voltyx
Member	Xose	Lopez-Fernandez	Universidade de Vigo
Member	Yeounsoo	Kim	JST power equipment
Member	Zan	Kiparizoski	Howard Industries
Request Membership	Zhang	Hongzhi	Hitachi Energy
Member	Zoltan	Roman	GE Vernova

SC Chair requested a motion to adjourn the meeting.

Dan Sauer made a motion, seconded by Evgenii Ermakov.

Meeting Adjourned at 12:15 PM.