

**Subsurface Transformers and Network Protectors Subcommittee
Task force / Working Group Report**

Chairman: _____ **George Payerle**

Vice-Chair: _____ **Tony Reiss**

Meeting Date: 3/30/2022 **Location:** Denver, CO **Time:** 11:00 – 12:15 MST

Members Present

David	Blew	Retired (PSE&G)
Thomas	Dauzat	General Electric
Larry	Dix	Quality Switch, Inc.
William	Elliott	Prolec GE
Kenneth	Hampton	Baltimore Gas & Electric
Gary	Hoffman	Advanced Power Technologies
Brian	Klaponski	Carte International Inc.
Daniel	Mulkey	Mulkey Engineering Inc.
George	Payerle	Carte International Inc.
Dan	Schwartz	Quality Switch, Inc.
Jeremy	Sewell	Quality Switch, Inc.
Adam	Sewell	Quality Switch, Inc.
Avijit	Shingari	Pepco Holdings Inc.
Alan	Traut	Howard Industries
John	Vartanian	National Grid
Joshua	Verdell	ERMCO
Michael	Zarnowski	Carte International

Guests Present

* Josh	Adams	Quanta Services
* Nabi	Almeida	Prolec GE
Kevin	Biggie	Weidmann Electrical Tech.
John	Chisholm	IFD Corporation
Herton	de Oliveirafilho	PSE&G
Sanford	Fong	Georgia Power Co.
* Ramadan	Issack	American Electric Power
Andrew	Larison	Hitachi Energy
Angela	Leigl	Eaton
* Vinay	Patel	Consolidated Edison Co. of NY
Daniel	Posada	Prolec
Albert	Sanchez	Knoxville Utilities Board
Stefan	Schindler	Maschinenfabrik Reinhausen

**Subsurface Transformers and Network Protectors Subcommittee
Working Group Report**

Russell	Sewell	Quality Switch, Inc.
Audrey	Siebert-Timmer	IFD Corporation
* James	Spaulding	Fort Collins Utilities
* Liz	Sullivan	Dominion Energy
Timothy	Tillery	Howard Industries
Bruce	Webb	Knoxville Utilities Board
* William	Whitehead	H2scan Corporation

Meeting Administration:

- Call to order at 11:02 MST with 17 members and 20 guests. Seven guests requested membership. As of S22, Mike Zarnowski is now a member.
- Sign In – 2 roster sheets started for circulation
- Chairman’s Comments
 - If you have had a change of affiliation or with your e-mail, please advise Chairman or Vice-Chair
 - Introductions done with return to in person meeting
- Quorum Determination, member list
 - Current members 29, 15 needed for quorum. 16 in attendance - quorum was achieved
- Present agenda and approval
 - Minor editorial change (Spring 2021 minutes should be Fall 2021)
 - No objections from the SC for the change. Unanimous approval.
- Approval of the Fall 2021 minutes
 - Motion to approve – Jeremy Sewell, 2nd Tom Dauzat.
 - Unanimous approval
- Announce new members
 - none announced
- Does anyone request SC membership? Indicate on roster.

Working Groups Report:

- **C57.12.23 Single-Phase Submersible Transformers** working group –
- **NOT MEETING AT THIS TIME**
Alan Traut, Chairman,
 - Revision due date: 12/31/2028
 - PAR Approval Date:
 - PAR Expiration Date:

Stage: On break

**Subsurface Transformers and Network Protectors Subcommittee
Working Group Report**

- **C57.12.24 Three-Phase Submersible Transformers** working group –
Ben Garcia, Chairman; Tom Dautat, Vice Chair; George Payerle, Secretary
 - Approved: **12/7/2016**
 - Revision Due Date: 12/31/2026
 - PAR Approval Date:
 - PAR Expiration Date: **12/31/23**

Stage: Recently Approved

IEEE/PES Transformers Committee Working Group on Requirements
For Three-Phase Submersible Transformers (C57.12.24)
Meeting Minutes
Hyatt Regency, Denver, CO
Monday, March 28, 2022

Members Present

David	Blew	Retired (PSE&G)
Douglas	Craig	Richards Manufacturing Co.
Thomas	Dautat	General Electric
William	Elliott	Prolec GE
Ben	Garcia	SCE (virtual)
Kenneth	Hampton	Baltimore Gas & Electric
John	Harley	FirstPower Group LLC
Ramadan	Issack	American Electric Power
Brad	Kittrell	Consolidated Edison Co. of NY
Brian	Klaponski	Carte International Inc.
Andrew	Larison	Hitachi Energy
Kent	Miller	T&R Electric Supply Co.
Michael	Morgan	Duke Energy
Daniel	Mulkey	Mulkey Engineering Inc.
George	Payerle	Carte International Inc.
James	Ratty	Electronic Technology Inc.
Avijit	Shingari	Pepco Holdings Inc.
Audrey	Siebert-Timmer	IFD Corporation
James	Spaulding	Fort Collins Utilities
Alan	Traut	Howard Industries
Reinaldo	Valentin	Duke Energy
John	Vartanian	National Grid

Guests Present

Alex	Alahmed	Everg Wolf Creek
------	---------	------------------

**Subsurface Transformers and Network Protectors Subcommittee
Working Group Report**

*Nabi	Almeida	Prolec GE
Jeff	Benach	Megger
Kevin	Biggie	Weidmann Electrical Technology
Jaroslaw	Chorzepa	ABB
Rhett	Chrysler	ERMCO
Anthony	Coker	M&I Materials
Michael	Dahlke	Central Moloney, Inc.
Herton	De Oliveira Filho	PSE&G
Cesar	Dias	EATON Corporation
Jeffrey	Door	H-J Family of Companies
Sanford	Fong	Georgia Power Co.
Hector	Garza	Orto de Mexico
Ali	Ghafourian	H-J Enterprises, Inc.
Orlando	Giraldo	HJ Family of Companies
Michael	Hardin	H-J Enterprises, Inc.
John	Herron	Raytech USA
Martin	Munoz Molina	Orto de Mexico
*Vinay	Patel	Consolidated Edison Co. of NY
Daniel	Posadas	Prolec
Clemens	Reiss IV	Custom Materials, Inc.
Stefan	Schindler	Maschinenfabrik Reinhausen
Jeffrey	Schneider	Power Partners/Spire Power Sol.
Dan	Schwartz	Quality Switch, Inc.
Jeremy	Sewell	Quality Switch, Inc.
Russell	Sewell	Quality Switch, Inc.
Jaber	Shalabi	VanTran Industries, Inc.
Liz	Sullivan	Dominion Energy
Eric	Theisen	Metglas, Inc.
Timothy	Tillery	Howard Industries
Robert	Vantol	Commonwealth Assoc
Pragnesh	Vyas	Sunbelt Solomon
Shelby	Walters	Howard Industries
Bruce	Webb	Knoxville Utilities Board
Alan	Wilks	Consultant
Malia	Zaman	IEEE
Michael	Zarnowski	Carte International
Kyle	Zemanovic	EATON Corporation
* = requests member-ship		

Subsurface Transformers and Network Protectors Subcommittee Working Group Report

The S22 meeting of C57.12.24 was called to order at 4:45 PM on Monday, March 28, 2022 in the Centennial F room of the Hyatt Regency in Denver, CO.

Tom Dauzat filled in for Chair Ben Garcia to run the meeting. Ben was present by way of a speaker phone. George Payerle acted as secretary. Introductions were made.

A member list was presented. C57.12.24 has 38 members. There 21 members present so quorum was achieved. There were 43 guests present. Patent and copyright slides were shown. Michael Zarnowski and Nabi Almeida are new member as of this meeting.

The chair presented an agenda. Will Elliott moved to accept the agenda and Dan Mulkey seconded. The motion passed. Will Elliott moved to accept the minutes of the previous (virtual) meeting from the fall of 2021. Dan Mulkey seconded and the motion was passed.

The main work of the meeting was continuing to revise C57.12.24.

There was discussion about removing reference to dates when standards are cited. This will eliminate the need for standards to be frequently updated to keep the references to other standards current. The users of C57.12.24 will be expected to seek out only the latest revision of C57.12.00. Dan Mulkey made a motion to remove all references to dates where standards are cited. Will Elliott seconded and the motion passed

Dan Mulkey moved to approve changes to the layout of the primary switches and fusing in figure 1, Nabi Almeida seconded, no objection, motion passed.

Simplify table 4 by removing the lower of the alternative HV connector ratings for 95 and 125kVBIL winding insulation levels (i.e. removing the 8.3kV option where the table previously stated "8.3kV or 15.2kV"). Motion was made by Nabi Almeida, Avi Shingari seconded. No objection, motion passed.

7.2.2 row 5 was changed to add the wording 'per ANSI/NEMA CC-1' after "...in accordance Figure 4 through Figure 8." This was in response to the question about dimensional and thickness tolerances of the A, B, C callouts in each figure. Dan Mulkey moved to add 'and ANSI/NEMA CC-1' reference. Dan moved; Nabi Almeida seconded. Motion passed.

Table 5, is a new table added to the standard to summarize all of the previously embedded tables in Figures 4 through 8 and place this consolidated information in one place at the end of the section.

A new table was also created and embedded into Figure 8 to include the thread stud secondary terminal dimensional requirements. This was added to figure 8 to replace the tables for fig 4 to 7 with table 5 showing the size of the stud and spade configuration. Nabe Almeida made the motion, John Vartanian seconded. The motion passed.

Table 5, change was made to the 500 kVA, 240V cell. The original callout for a 4 hole spade but it was changed to 6 hole spade to be consistent with the recommendation stated for the 500kVA, 208Y/120V cell (6 hole spade). Dan Mulkey made the motion. Will seconded. The motion passed.

7.2.3 line 13. The spacing requirement for the neutral bushing ground pad was changed from a minimum of 12" to 6" spacing from the bushing center. This change was made to address Ralph

**Subsurface Transformers and Network Protectors Subcommittee
Working Group Report**

Wegner’s comment about there being a lot of components on the cover and how a 12” minimum could be problematic. Mike Zarnowski made the motion to do so, Will Elliott seconded. The motion passed.

7.3.1, line 7, change ‘protective cap’ to ‘protective sealed cap’ Brian Klaponski moved, Brad Kittrell seconded. The motion passed.

Stopped at 7.3.1 row 8 re dual voltage switches.

Per the chair, this will be the last working meeting to review and approve new changes. After this meeting, the chair will work with the STNP subcommittee team to submit a clean version of C57.12.24 to RevComm for formal review.

Next meeting Charlotte NC, Oct 16 to 20, 2022. The meeting was adjourned at 6:00 pm MST

Respectfully submitted...
George Payerle, secretary, C57.12.24
March 30, 2022

- **C57.12.40 Secondary Network Transformer** working Group –
Dave Blew, Chairman, Dan Schwartz, Secretary
 - Published 2017
 - Revision due date: **12/31/2027**
 - PAR Approval Date: 8/31/2012
 - PAR Expiration Date: **12/31/2023**

Stage: Submitted to Revcom on RevCom Agenda 04-May-2017

**IEEE Transformers Committee
C57.12.40
Secondary Network Transformer Working Group**

Spring 2022 Denver Meeting Minutes

Hyatt Regency, Denver, CO

Mineral Hall B-C

11:00 AM MDT March 29, 2022

Members Present

Dave Blew (Chair)
Dan Schwartz (Secretary)
Douglas Craig

Company

Consultant (Retired PSE&G)
Quality Switch
Richards Manufacturing Co.

**Subsurface Transformers and Network Protectors Subcommittee
Working Group Report**

Tom Dauzat	Prolec GE
Larry Dix	Quality Switch
William Elliott	Prolec GE
Brad Kittrell	Consolidated Edison Co. of NY
Brian Klaponski	Carte International Inc
Dan Mulkey	Mulkey Engineering Inc.
George Payerle	Carte International Inc.
James Ratty	Richards Manufacturing Co.
Adam Sewell	Quality Switch
Jeremy Sewell	Quality Switch
Russell Sewell	Quality Switch
Avijit Shingari	Pepco
Liz Sullivan	Dominion Energy
John Vartanian	National Grid

Guests Present

Joshua Adams
Nabi Almeida
Herton De Oliveira Filho
Sanford Fong
Ken Hampton
Jack Harley
*Vinay Patel
Bruce Webb
Bill Whitehead
*Mike Zarnowski
*Requested Membership

Company

Quanta Underground Power Services
Prolec GE USA
PSE&G
Georgia Power Co.
BGE and Exelon Company
First Power Group LLC
Consolidated Edison Co. of NY
Knoxville Utilities Board
H2scan
Carte International Inc.

- 1) The group met on Tuesday, March 29, 2022 at 11:00 AM MDT with 17 members and 10 guests. Two (2) guests requested membership. Quorum was achieved with 17/28 (61%) of members present.
 - 2) A call for patents was made; none were mentioned.
 - 3) Copyright requirements were reviewed by the Chair.
- 4) An agenda was presented for approval. Motion to approve was made by George Payerle and seconded by Will Elliott. The agenda was approved unanimously.
- 5) The minutes of the November 16, 2021, meeting on WebEx were reviewed. A motion to approve was made by Jeremy Sewell and seconded by Adam Sewell. The minutes were approved unanimously.
- 6) The Chair reviewed that the PAR was approved and became active May 21, 2019 and expires December 31, 2023. The Chair will apply for a two-year PAR extension in 2023 prior to expiration of the current PAR.

**Subsurface Transformers and Network Protectors Subcommittee
Working Group Report**

- 7) Old Business - The Chair reviewed the previous meetings list of topics to be addressed in the next revision of C57.12.40 and the following items were discussed:
 - a. **Primary Switch Testing** - Cory Morgan (Eversource) provided wording to update Section 6.2.2.3. Wording of the paragraph was updated by the group; the updated paragraph wording has been documented and will be updated in Rev1 of the new document. A motion was made to approve the changes by Liz Sullivan and seconded by Tom Dauzat. The motion was approved unanimously.
 - b. **Update of Tables 8 & 9** – A modified combination of Tables 8 & 9 (will be the new Table 7) were reviewed. A motion to approve the combined table was made by John Vartanian and seconded by Brian Klaponski. The motion passed unanimously. It was also agreed that these modifications to the document can be reviewed later prior to balloting.
 - c. **Tank and Throat Sizing** – Modified wording and removal of Table 7 was presented. Table 7 was removed, and the paragraph modified to reference Figures 3 and 4. A motion to approve the changes was made by Jeremy Sewell and seconded by Will Elliott. The motion passed unanimously.
 - d. **Bushing Standardization** – A discussion was held about the updated Appendix B. Dave Blew agreed to provide any updates to Appendix B for the next meeting in Charlotte.
 - e. **Cathodic Protection and Corrosion** – The work of the corrosion TF was discussed. The group decided it would be best to reference the in-progress Guide (C57.12.53), but because the new Guide would most likely not be approved before this standard, the group decided to maintain the current references in the standard until the next revision.
- 8) New Business – The Chair opened the discussion on any new items the group felt needed to be addressed in the next revision.
 - a. New wording was discussed to address tank cover design and not allowing debris and fluids to settle on the tank cover. Wording was provided. A motion was made to approve the wording by Larry Dix and seconded by Dan Mulkey. The motion was approved unanimously. Additional wording will be discussed and provided prior to the next meeting by Larry Dix and Dan Schwartz.
- 9) The meeting was adjourned at 12:04 PM MDT with the next meeting set for Charlotte, NC on October 18, 2022.

Respectfully submitted,
D. Schwartz, Secretary

**Document
#:**

PC57.12.53

**Document
Title:**

Guide on Mitigating Corrosion on Subsurface Transformers

**Subsurface Transformers and Network Protectors Subcommittee
Working Group Report**

Chair:	<u>Will Elliott</u>	Vice-Chair	<u>Avijit Shingari</u>
Secretary	<u>Audrey Siebert-Timmer</u>	Per Cent Complete	<u>0</u>

Current Draft Being Worked On: 0 **Dated:** _____

Meeting Date: March 29, 2022 **Time:** 1:45 PM MST

Attendance:	Members	<u>19</u>
	Guests	<u>13</u>
	Total	<u>32</u>

Attending Members:

William Elliott, Prolec GE
Avijit Shingari, Pepco Holdings Inc.
Audrey Siebert-Timmer, IFD Corporation
Nabi Almeida, Prolec GE
Dave Blue, Consultant
Thomas Dauzat, Prolec GE
Herton De Oliveira Filo, PSE&G
John Harley, First Power Group LLC
Brad Kittrell, Consolidated Edison Co. of NY

Brian Klaponski, Carte International Inc.
Tyler Morgan, Duke Energy
Daniel Mulkey, Mulkey Engineering Inc.
Dan Schwartz, Quality Switch, Inc.
Adam Sewell, Quality Switch, Inc.
Jeremy Sewell, Quality Switch, Inc.
James Spaulding, City of Fort Collins
Liz Sullivan, Dominion Energy
John Vartanian, National Grid
Michael Zarnowski, Carte International Inc.

Attending Guests

Paul Chisholm, IFD Corporation
Michael Dahlke, Central Moloney, Inc.
Cesar Diaz, EATON Corporation
Jeffrey Door, The H-J Family of Companies
Douglas Craig, Richards Manufacturing Co.

Sanford Fong, Georgia Power Co.
Joe Nims, Allen & Hoshall, Inc
[George Payerle, Carte International Inc.](#)
[James Ratty, Electronic Technology Inc.](#)
[Clemens Reiss IV, Custom Materials](#)
[Russ Sewell, Quality Switch, Inc.](#)

**Subsurface Transformers and Network Protectors Subcommittee
Working Group Report**

| *Timothy Tillery, Howard Industries*

Shelby Walters, Howard Industries

**Subsurface Transformers and Network Protectors Subcommittee
Task force / Working Group Report**

Subsurface Transformers and Network Protectors Subcommittee Meeting Minutes

Meeting Minutes:

1. Will Elliott called the meeting to order at 1:45 PM MST.
2. Opening remarks and announcements.
 - i. As this is the first meeting, any attendee can request to be a member.
3. Will Elliott reviewed agenda. Hearing no requests for changes, the agenda was approved as written. As this is the first meeting there was no previous meeting minutes to approve.
4. Will Elliott reviewed IEEE Essential Patent Claims and SA Copyright Policy. No issues were raised.
5. New Business:
 - i. Will Elliott reviewed the approved PAR.
 - ii. Will Elliott requested nominations for the working-group officers.
 - a. **Brian Kaplonski made a motion to nominate Will Elliott as the working group Chair. Second by George Payerle. Motion passed unanimously.**
 - b. **Nabi Almeida made a motion to nominate Avijit Shingari as the working group Vice Chair. Second by Michael Zarnowski. Motion passed unanimously.**
 - c. **Tom Dauzat made a motion to nominate Audrey Siebert-Timmer as the working group secretary. Second by Paul Chisholm. Motion passed unanimously.**
 - iii. Will Elliott asked the group how we should proceed with the draft document which was created by the corrosion taskforce.
 - a. **Tom Dauzat made a motion to accept the current draft as the starting point. Document contents can be modified within the constraints of the approved PAR scope. Second by George Payerle. Motion passed unanimously.**
 - b. Group discussed the following:
 1. A question was asked if should limit the number or types of changes to make to the document. Group discussed the draft is a starting point and can be changed as needed if it is within the document scope.
 2. A suggestion was made to discuss what experience we have in the room (i.e. corrosion experts or material scientists).
 1. Jeremy Sewell from Quality Switch mentioned they have a material scientist who could review the draft.

Subsurface Transformers and Network Protectors Subcommittee Meeting Minutes

2. Tom Dausat from Prolec GE mentioned he is a mechanical engineer with a materials background. He performed a number material tests for the taskforce.
 3. Brad Kittrel from ConEd mentioned they have corrosion experts. ConEd also has corrosion data can be shared.
 4. Avijit Shingari mentioned PEPCO have some corrosion experts who could review the draft.
 5. John Harley from First Power Group mentioned they have a corrosion expert who could review the draft and possibly attend the meeting.
3. Group discussed that if we can get the corrosion experts to attend the meeting it would be beneficial. This could include corrosion experts that work on the transmission side or from other industries.
 4. Tom Dausat suggested the scope to be further clarified as the document is a guide. It is designed to help the user to specify their requirements bases on the application.
 5. Brian Kaplonski commented that ideally that some items may be extracted to put into other standards (i.e. the good stuff).
- c. Will Elliott reviewed the taskforce draft document with the group. **Will Elliott requested the group to review the proposed draft and provide feedback to him by July 1, 2022.**
6. Next meeting: is planned for October 18, 2022 in Charlotte, NC USA
 - i. The following attendees requested membership: William Elliott, Avijit Shingari, Audrey Siebert-Timmer, Nabi Almeida, Dave Blue, Thomas Dausat, Herton De Oliveira Filo, John Harley, Brad Kittrell, Brian Klaponski, Tyler Morgan, Daniel Mulkey, Dan Schwartz, Adam Sewell, Jeremy Sewell, James Spaulding, Liz Sullivan, Michael Zarnowski,
7. The meeting was adjourned at 2:38 PM MST.
 8. Subsequent to the meeting John Vartanian indicated that he intended to request membership during the meeting, and was granted membership.

Submitted by: Audrey Siebert-Timmer

Date: 03/29/2022

Subsurface Transformers and Network Protectors Subcommittee Meeting Minutes

Minutes presented by Dave Blew with comment that a PAR extension after the Spring 2023 is anticipated. There were no additional questions.

- **C57.12.44 Secondary Network Protectors** working group – Mark Faulkner, Chairman, Alex Macias, Secretary
 - Revision due date: **12/31/2024**
 - PAR Approval Date: **3/26/2015**
 - PAR Expiration Date: **12/31/22 In Ballot**

Stage: Being revised

No minutes presented. Chairman advised this was currently in ballot

- **C57.167 Guide for Monitoring Distribution Transformers** working group – Gary Hoffman, Chairman, Mike Thibault, Secretary
 - Revision due date: **N/A – new standard**
 - PAR Approval Date: **6/14/2018**
 - PAR Expiration Date: **12/31/2022**

Minutes presented by Gary Hoffman with comment to the group thanking them for their input making for a better document

Motion made by member Gary Hoffman: Based on receiving 2/3rds approval by C57.167 WG, that they request to go to an SA ballot. 2nd Brian Klaponski.

- Discussion: Approved by SC. Gary Hoffmann also noted that a ballot resolution group has already been started in anticipation that there likely would be comments during the balloting process. Brian Klaponski sees this as a proactive approach to get in front of the comments and streamline the process
- No objections from the SC