

**Subsurface Transformers and Network Protectors Subcommittee
Task Force Report**

Chairman: _____ **George Payerle**

Vice-Chair: _____ **Tony Reiss**

Meeting Date: 11/17/2021 **Location:** Virtual **Time:** 10:50 AM to 12:05 PM CST

Members present

Thomas	Dauzat	General Electric
Larry	Dix	Quality Switch, Inc.
Mark	Faulkner	EATON Corporation
Benjamin	Garcia	Southern California Edison
Carlos	Gaytan	Prolec GE
Said	Hachichi	Hydro-Quebec
Kenneth	Hampton	Baltimore Gas & Electric
Gary	Hoffman	Advanced Power Technologies
Brian	Klaponski	Carte International Inc.
Alejandro	Macias	CenterPoint Energy
George	Payerle	Carte International Inc.
James	Ratty	Electronic Technology Inc.
Clemens	Reiss IV	Custom Materials, Inc.
Pedro	Salgado	Electronic Technology Inc.
Dan	Schwartz	Quality Switch, Inc.
Jeremy	Sewell	Quality Switch, Inc.
Adam	Sewell	Quality Switch, Inc.
Igor	Simonov	Toronto Hydro
John	Vartanian	National Grid
Joshua	Verdell	Ermco

Guests Present

Nabi	Almeida	Prolec GE
Gregory	Ante	SCE
Gilles	Bargone	FISO
Kevin	Biggie	Weidmann
Jaroslav	Chorzepa	ABB Inc.
William	Elliott	Prolec GE
Rob	Ghosh	General Electric
Kendrick	Hamilton	Power Partners
Matthew	McFadden	Oncor Electric
Robert	Page	EATON Corporation
Albert	Sanchez	Knoxville Utilities Board

**Subsurface Transformers and Network Protectors Subcommittee
Task Force Report**

Avijit	Shingari	Pepco Holdings Inc.
Edward	Smith	H-J Family of Companies
Eric	Theisen	Metglas, Inc.
David	Walker	MGM Transformer
William	Whitehead	H2scan Corporation
Malia	Zaman	IEEE

Meeting Administration: Meeting opened at 10:53 CST

- Sign In
- Chairman’s Comments
We will lose the AM system at the end of 2021. Be sure to back up the attendance data you have there. The Power and Energy Society (PES) is working on a replacement for AMS. We should know more in November.
- Quorum Determination, member list – Quorum met 21 of 36 members with 15 guests
- Present agenda and approval – no opposition to approval
- Approval of the Spring 2021 minutes – no opposition to approval
- Does anyone request SC membership? Send a chat or let Tony or me know. – no membership requests

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

Chairman spoke with Al Traut who couldn’t attend STNP SC meeting. The WG is still inactive but will start meeting again in S23.

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

Members Present

First Name	Last Name	Company
Piotr	Blaszczyk	Specialty Transformer Components

**Subsurface Transformers and Network Protectors Subcommittee
Task Force Report**

David	Blew	Retired (PSE&G)
John	Chisholm	IFD Corporation
Thomas	Dauzat	General Electric
Larry	Dix	Quality Switch, Inc.
William	Elliott	Prolec GE
Benjamin	Garcia	Southern California Edison
Carlos	Gaytan	Prolec GE
Said	Hachichi	Hydro-Quebec
Kenneth	Hampton	Baltimore Gas & Electric
John	Harley	FirstPower Group LLC
Ramadan	Issack	American Electric Power
Brian	Klaponski	Carte International Inc.
Brad	Kittrell	Consolidated Edison Co. of NY
Andrew	Larison	Hitachi Energy
Alejandro	Macias	CenterPoint Energy
Kent	Miller	T&R Electric Supply Co.
Charles	Morgan	Eversource Energy
Daniel	Mulkey	Mulkey Engineering Inc.
George	Payerle	Carte International Inc.
Juan	Ramirez	CELECO
James	Ratty	Electronic Technology Inc.
Pedro	Salgado	Electronic Technology Inc.
Avijit	Shingari	Pepco Holdings Inc.
Audrey	Siebert-Timmer	IFD Corporation
Michael	Thibault	Pacific Gas & Electric
Alan	Traut	Howard Industries
Reinaldo	Valentin	Duke Energy
John	Vartanian	National Grid

Guests Present

First Name	Last Name	Company
Scott	Abbott	PPG
Jerry	Allen	Metglas, Inc.
Nabi	Almeida	Prolec GE
Angela	Amador	EATON Corporation
Gregory	Ante	Southern California Edison
Zoran	Goncin	PTI Transformers
Michael	Gonzales	Southern California Edison
Kendrick	Hamilton	Power Partners, Inc.
Olivier	Lejay	Huaming USA Corp.

**Subsurface Transformers and Network Protectors Subcommittee
Task Force Report**

Xose	Lopz-Fernandez	Consultant
Tiffany	Lucas	SPX
Rosamise	Magee	PSEG
Bob	Page	EATON Corporation
Vinay	Patel	Consolidated Edison Co. of NY
Chris	Pitts	Howard Industries
Clemens	Reiss IV	Custom Materials, Inc.
Dan	Schwartz	Quality Switch, Inc.
Ewald	Schweiger	Siemens Energy
Jeremy	Sewell	Quality Switch, Inc.
Adam	Sewell	Quality Switch, Inc.
Stephen	Shull	BBC Electrical Services, Inc.
Mauricio	Soto	Hitachi Energy
Joseph	Tedesco	Hitachi Energy
Eric	Theisen	Metglas, Inc.
Timothy	Tillery	Howard Industries
Joshua	Verdell	ERMCO
Shelby	Walters	Howard Industries
Bruce	Webb	Knoxville Utilities Board
Bill	Whitehead	H2 Scan
Alan	Wilks	Consultant
Malia	Zaman	IEEE
Michael	Zarnowski	Carte International

The F21 Webex meeting was called to order at 9:25 AM CT with Ben Garcia as chair, Tom Dautat as vice-chair and George Payerle as secretary. There were 29 members and 32 guests in attendance. Total membership is 51 so there was a quorum. 1 guest requested membership. Avijit Shingari and Andrew Larison were recognized as new members since the Spring 2021 meeting. Membership requirement for 12.24 is that you have attended 2 meetings in a row or 3 of the last 5.

George Payerle moved to approve the agenda and Dan Mulkey seconded. The motion passed unanimously. Said Hachichi moved to accept the minutes of the spring 2021 virtual meeting and Ken Hampton seconded. The minutes were approved unanimously.

The chair called for essential patents. There were no disclosures. The chair showed and explained the copyright slides. Work on the PAR was begun at the S19 Anaheim meeting. The PAR will expire December 31, 2023. We have 2 working meetings to finalize the draft and get it to review and resolve comments.

Old Business – there was no old business.

Work continued on revision of the spec.

Subsurface Transformers and Network Protectors Subcommittee Task Force Report

Section 7.1 The chair said that introduction of 5000 kVA into Figure 1 would require that the title and scope of the document change, and for that reason will be dealt with after this revision and addressed during the next PAR. The group did consider the chair's editorial revision of table 1 which was to display the rectangular transformers on the left and round transformers on the right table in order of kV-BIL/kVA from top to bottom. Dan Mulkey moved to accept this change, Will Elliott seconded and the motion passed.

There was discussion about whether to indicate a preferred location for fusing on Fig 2. Based on feedback from the WG, the chair will update the figure by extending the shaded section labeled "preferred area for primary switch handles" to the right and include that fusing is included to the notation. The chair will make this update before the next WG meeting to bring it to a vote.

In Figure 2, Will Elliott made a motion to move the existing Note 2 (dimensions are in mm...) into the table associated with Figure 2 because the note deals with the table and is informative in nature. The existing Note 1 ("H1B, H2B,...") and the new Note 2 ("H0 connection...") was moved from below the table in Figure 2 to below the figure since these notes relate to the figure and not the table. Alex Macias seconded. A poll was taken to make the changes to Figure 2 and approved.

It was further decided to change the wording on the top view of the transformer from X0 H0 to X0 or H0/X0. The chair will make the change and then it will be voted on at the next meeting.

The Figure 2 title was change to "Preferred location and arrangement of transformer cover Wording" and was approved without objection.

Section 7.2: Removed the word 'instruction' before the work "nameplate." Was approved without objection.

Section 7.2.1: Added the words 'by the user' after the words as specified" in the first sentence. Also added 'or integral bushings' after 'The bushing wells' in the second sentence. Dan Mulkey made a motion and George Payerle seconded. The motion passed without objection.

Section 7.2.1: The third sentence shall be changed to "One parking stand shall be provided for each primary bushing." The new wording was approved without objection.

The last 2 sentences of 7.2.1 were suggested to be deleted by the task force as redundant, Mike Thibault made the motion and Dan Mulkey seconded to leave these sentences in as aids to the users, because although it may be redundant, it provides readers the "why" HV connectors are located on the cover (hot-line tool usage) and where to find more information on separable connectors. The motion to leave the proposed deleted passage in the standard was passed without objection.

Discussion at S22 should begin with page 10, table 4.

**Subsurface Transformers and Network Protectors Subcommittee
Task Force Report**

Respectfully Submitted by: Ben Garcia, Chairman C57.12.24 Working Group

- **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**

Members Present

Dave Blew (Chair)

Dan Schwartz (Secretary)

Piotr Blaszczyk

Tom Dauzat

Larry Dix

William Elliott

Mark Faulkner

Brad Kittrell

Brian Klaponski

Alejandro Macias

Dan Mulkey

George Payerle

James Ratty

Pedro Salgado

Avijit Shingari

Igor Simonov

Adam Sewell

Jeremy Sewell

Travis Spooone

John Vartanian

Company

Consultant (Retired PSE&G)

Quality Switch

Specialty Transformer Components

Prolec GE

Quality Switch

Prolec GE

Eaton Corporation

Consolidated Edison Co. of NY

Carte International Inc

CenterPoint Energy

Mulkey Engineering Inc.

Carte International Inc.

Richards Manufacturing Co.

Electronic Technology Inc.

Pepco

Toronto Hydro

Quality Switch

Quality Switch

Eaton Corporation

National Grid

Guests Present

Jerry Allen

Nabi Almeida

John Crouse

Rob Ghosh

Ken Hampton

Jack Harley

Company

Metglas, Inc

Prolec GE USA

Roswell Alliance

General Electric

Baltimore Gas & Electric

First Power Group LLC

Subsurface Transformers and Network Protectors Subcommittee Task Force Report

John Herron	Raytech USA
Tiffany Lucas	Prolec GE - Waukesha
Rosamisa Magee	PSE&G
Aaron Meyers	Eaton Corporation
Vinay Patel	Consolidated Edison Co. of NY
Tony Reiss	Custom Materials, Inc
Jonathan Sinclair	PPL Electric Utilities
Bill Whitehead	H2scan
Mike Zarnowski	Carte International Inc.
*Requested Membership	

- 1) The group met on Tuesday, November 16, 2021 at 10:50 AM CST with 20 members and 15 guests. Zero (0) guests requested membership. Quorum was achieved with 20/29 (69%) 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 Jeremy Sewell and seconded by Brian Klaponski. The agenda was approved unanimously.
- 5) The minutes of the April 27, 2021, meeting on WebEx were reviewed. A motion to approve was made by Adam Sewell and seconded by Mark Faulkner. 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.
- 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) previously expressed interest in reviewing and updating wording in the primary switch testing section (Section 6.2) of the standard to provide clarity to the test requirements. Cory will most likely no longer be attending transformer committee meetings. Larry Dix (Quality Switch) agreed to discuss proposed changes with Cory and provide input prior to the next meeting.
 - b. **Update of Tables 8 & 9** – Tables 8 & 9 were reviewed. The group approved a proposal to remove the other liquids section of both tables and combine into a single table with both millimeter and inch dimensions. Dan Schwartz (Quality Switch) and Dave Blew (Consultant) have agreed to develop the new table and present at the next meeting for approval.
 - c. Dave Blew is waiting for feedback from PSE&G about the current usage of fluids in transformers to determine if utilities are still using fluids other than mineral oil and ester fluids.
 - d. **Tank and Throat Sizing** – The removal of Table 7 and updating of wording in Section 5.6 were discussed. Dan Schwartz (QS) Dave Blew (Consultant), Mike Zarnowski (Carte International) and Igor Siminov (Toronto Hydro) have agreed to develop and update Section 5.6, Table 7, and potentially Figures 3 & 4 for discussion and approval at the next meeting.

**Subsurface Transformers and Network Protectors Subcommittee
Task Force Report**

- e. **Bushing Standardization** – Mike Zarnowski (Carte) provided some discussion on his review of potentially providing standardization of bushings in the standard. Will Elliott (Prolec GE), Mike Zarnowski (Carte), John Vartanian (National Grid), Alex Macias (CenterPoint Energy), Dave Blew (Consultant), and Dan Schwartz (QS) agreed to review the standard and provide proposed updates on bushing standardization for review and approval in the Spring 2022 meeting.
 - f. **Cathodic Protection and Corrosion** – The work of the corrosion TF was discussed. The group decided to wait for the corrosion task force’s future direction to be determined. The working group’s path forward will be determined by that outcome.
 - g. **C57.12.24 vs C57.12.40** – Mike Zarnowski (Carte), Brad Kittrell (Consolidated Edison), Dave Blew (Consultant) and Dan Schwartz (QS) agreed to develop updates based on previous comparisons and present at future meetings for discussion and approval.
- 8) New Business – The Chair opened the discussion on any new items the group felt needed to be addressed in the next revision. No new items were brought forward.
 - 9) The group discussed the spring meeting and what the current view of various groups (utilities, manufacturers, etc.) regarding attendance at the spring meetings based on the current and projected pandemic climate. Many utilities expressed doubt that they will be able to attend in the spring and interest in a potential hybrid meeting setup.
 - 10) Motion to adjourn the meeting was made by George Payerle and seconded by Alejandro Macias. The meeting was adjourned at 11:48 PM CST with the next meeting set for Denver, CO on March 29, 2022.

Respectfully submitted,
D. Schwartz, Secretary

- **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: **12/31/21**

Document #: C57.12.44

Document Title: **STANDARD REQUIREMENTS FOR SECONDARY NETWORK PROTECTORS**

Chair: Mark Faulkner **Vice-Chair** Alex Macias

Secretary n/a

Current Draft Being Worked On: DRAFT 11 **Dated:** November 15, 2021

Meeting Date: November 15, 2021 **Time:** 3:45PM – 5PM CT

**Subsurface Transformers and Network Protectors Subcommittee
Task Force Report**

Meeting Attendance

Activity Name: C57.12.44 WG Secondary Network Protectors
Activity ID:
Number of Members in Activity = 21
Number of Members Present = 17
Quorum Present = 81%
Number of attendees = 27

Dan Schwartz	Quality Switch	member
Dan Mulkey	Dan Mulkey Consultant	member
Brian Klaponski	Carte	member
Thomas (Tom) Dauzat	Prolec/GE	member
Pedro Salgado	ETI-NJ	member
George Payerle	Carte	member
James Ratty	ETI-NJ	member
Jeremy Sewell	Quality Switch	member
Travis Spoone	Eaton	member
Alex Macias	CenterPoint Energy	member
Doug Craig	Richard Mfg.	member
John Vartanian	National Grid	member
Mark Faulkner	Eaton	member
Igor Simonov	Tornoto Hydro	member
Brad Kittrell	ConEd	member
Will Elliott	Prolec/GE	member
Avijit Shingari	Pepco Holding Inc.	member
Malia Zaman	IEEE	guest
Kevin Biggie	Weidmann	guest
David Blew	Consultant	guest
Vinay Patel	ConEd	guest
Tony Reiss	Custom Materials	guest
Bill Whitehead	H2scan	guest
Reinaldo Valentin	Duke	guest
Ramadan Issack	AEP	guest
Hachichi Said	Hydro	guest
Michael Zarnowski	Carte	guest

Meeting Minutes:

The minutes shall record the essential business of the Working Group, including the following items at a minimum:

1. Meeting called to order

Subsurface Transformers and Network Protectors Subcommittee Task Force Report

- a. 3:48 PM
2. Quorum Verification
 - a. Quorum was confirmed via Encore polling process
3. Membership
 - a. Avijit Shingari – Added
 - b. David Blew – Requested to be added
4. Confirmation of the essential patent statement and responses
 - a. No conflicts; presented to group
5. Copyright requirements were reviewed by the Chair
 - a. No conflicts; presented to group
6. Approval of minutes of the previous meeting
 - a. Minutes presented to group
 - b. Motion to approve Alex Macias, 2nd Doug Craig
 - c. Minutes approved unanimously
7. Approval of agenda for this meeting.
 - a. Agenda presented to group
 - b. Agenda approved unanimously
8. Meeting Discussion
 - a. Attendees Informed
 - i. Ballot has been passed
 - ii. PAR to expire 12/31/2021. Par extension was approved and now expires 12/31/2022.
 - b. MEC received along with Comments from the Ballot
 - i. Task Group (TG) continuing with addressing changes recommended by MEC
 - ii. TG: Mark Faulkner, Doug Craig, Dan Mulkey and Cory Morgan
 - iii. TG to presented comments received and a discussion with the attendees.
 1. 69 comments received and sorted into 7 sections.
 2. Section 1, 22 comments were discussed
 - a. WG agreed with recommendations noted by the TG for 17 line items
 - b. Section 10.5.17 Contact position indicator
 - i. WG agree to not to add an additional paragraph and change “shall” to “should”.
 - c. Section 5.2.1 Interrupting rating test
 - i. WG agree to “no change”
 - ii. WG agreed to take up Generation on the next revision
 - d. Section 5.2.2.2 Performance
 - i. WG agree to “no change”
 - ii. WG agreed to take up comment for clarification on the next revision
 - e. Section 5.2.5.1 Test conditions
 - i. WG agree to “no change”
 - f. Section 5.2.6.2 Operating duty
 - i. WG agree to “no change”
 - ii. WG agreed to take up comment for clarification on the next revision
 3. Section 2, 5 of 15 comments were discussed
 - a. WG agreed with recommendations noted by the TG for initial 4 line items

**Subsurface Transformers and Network Protectors Subcommittee
Task Force Report**

- b. Section 6.5.2 Submersible seal integrity test conditions and performance
 - i. WG agreed to change “lbf/in2” to “psig”
 - ii. TG will also make the change in other sections (section 11.1)
 - 4. Time expired
 - a. WG approved (poll taken) to TG to continue with review and addressing comments; Technical issues may be addressed with WG when necessary.
- 9. Meeting adjourned at 5:00 pm
- 10. Spring meeting--date and location
 - a. Denver, Colorado, USA
 - b. Date: March 27-31, 2022

Submitted by: Mark Faulkner

Date: 11/16/2021

- **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**

Chair Gary Hoffman summarized the activity of his working group meeting for the SC. Full details can be found on the transformers committee web page under the Distribution Subcommittee section.

Task force: Corrosion Effects on Subsurface Transformers; Chair, Will Elliott; Vice-chair, Justin Minikel; Secretary, Audrey Siebert-Timmer.

Document #:	<u>n/a</u>
Document Title:	<u>Corrosion Effects on Subsurface Transformers</u>
Chair:	<u>Will Elliott</u> Vice-Chair <u>Justin Minikel</u>
Secretary	<u>Audrey Siebert-Timmer</u> Per Cent Complete <u>0</u>
Current Draft Being Worked On:	<u>Draft 5</u> Dated: <u>Nov 2021</u>
Meeting Date:	<u>Nov 16, 2021</u> Time: <u>2:20 PM CST</u>
Attendance:	<u>Members</u> <u>33</u>

Subsurface Transformers and Network Protectors Subcommittee Task Force Report

Guests	34
Total*	67

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

Attending Members:

Nabi Almeida, Prolec GE	Tyler Morgan, Duke Energy
Martin Bachand, Cloverdale Paint Inc.	Daniel Mulkey, Mulkey Engineering Inc.
Paul Chisholm, IFD Corporation	George Payerle, Carte International Inc.
Juan Carlos Cruz Valdez, Prolec GE	James Ratty, Electronic Technology Inc.
Thomas Dautat, Prolec GE	Pedro Salgado, Electronic Technology Inc.
William Elliott, Prolec GE	Dan Schwartz, Quality Switch, Inc.
Benjamin Garcia, Southern California Edison	Adam Sewell, Quality Switch, Inc.
Zoran Goncin, Partner Technologies Inc.	Avijit Shingari, Pepco Holdings Inc.
Chris Guertin, Cloverdale Paint Inc.	Audrey Siebert-Timmer, IFD Corporation
Said Hachichi, Hydro-Quebec	Igor Simonov, Toronto Hydro
Jane Hall, Cloverdale Paint Inc.	Paul Su, FM Global
Ramadan Issack, American Electric Power	Alan Traut, Howard Industries
Brad Kittrell, Consolidated Edison Co. of NY	John Vartanian, National Grid
Brian Klaponski, Carte International Inc.	Mike Waldrop, Memphis Light, Gas & Water
Tiffany Lucas, SPX Transformer Solutions, Inc.	Shelby Walters, Howard Industries
Alejandro Macias, Centerpoint Energy	Michael Zarnowski, Carte International Inc.
Justin Minikel, EATON Corporation	

Subsurface Transformers and Network Protectors Subcommittee Task Force Report

Attending Guests:

Greg Ante, Southern California Edison
Thomas Callsen, Weldy-Lamont Associates
Antonio Ceballos, Georgia Transformer
Solomon Chiang, The Gund Company
Rhett Chrysler, ERMCO
Michael Dahlke, Central Moloney, Inc.
Eric Davis, Burns & McDonnell
Jose Gamboa, H-J Family of Companies
Carlos Gaytan, Prolec GE
Michael Gonzales, Southern California Edison
Ken Hampton, Baltimore Gas & Electric
Andrew Larison, Hitachi ABB Power Grids
Olivier Lejay, Huaming USA Corp.
Ryan Musgrove, Oklahoma Gas & Electric
Livia Neeson, Entergy
Joe Nims, Allen & Hoshall, Inc.
Vinay Patel, Consolidated Edison Co. of NY
Tim Peterson, N. American Substation Services
Chris Pitts, Howard Industries
Adam Polson, Arizona Public Service Co.
Jarrod Prince, ERMCO
Tony Reiss, Custom Materials, Inc.
Leopoldo Rodriguez, Transformer Testing Services LLC
Samraghi Dutta Roy, Siemens Energy
Mahesh Sampat, EMS Consulting Inc.
Anil Sawant, Virginia Transformer
Jeff Schneider, Spire Power Solutions
Jeremy Sewell, Quality Switch, Inc.
Stephen Shull, BBC Electrical Services, Inc.
Adrian Silgado, IFD Corporation
Neil Strongosky, Memphis Light, Gas & Water
Reinaldo Valentin, Duke Energy
Jeremy Van Horn, IFD Corporation
Drew Welton, Intellirent

Subsurface Transformers and Network Protectors Subcommittee Agenda

Meeting Minutes:

1. Will Elliott called the meeting to order at 2:24 PM CST.
2. Opening remarks and announcements.
 - i. None made.
3. Will Elliott reviewed IEEE Essential Patent Claims and SA Copyright Policy. No issues were raised.
4. Membership changes were noted (since 3rd summer meeting on September 9th 2021):
 - i. Added: Tiffany Lucas, Shelby Walters, Michael Zarnowski
 - ii. Removed: none
5. Quorum was verified. The working group consisted of **40** members, requiring **21** for quorum. **25** members were confirmed through the WebEx poll. **33** members were confirmed afterwards through the roster.
6. Will Elliott requested approval of the agenda. Hearing no requests for changes, the agenda was approved as written.
7. Will Elliot requested approval of the previous minutes for the S21 and the three interim meetings. Tom Dauszat made a motion, second by George Payerle for approval of the minutes. All meeting minutes were unanimously approved.
 - i. Interim meetings were held on June 8th, August 11th, and September 9th 2021
8. Old Business:
 - i. Review of Electronic Ballot Results
 - a. Will Elliot reviewed results of electronic ballot that we performed. Only 16 members provided feedback. The majority wanted the taskforce to pursue a PAR.
 - ii. Review of 1991 GE / Con Ed Corrosion Resistant Submersible Network Transformer Study
 - a. The report was released by GE and is available on Collabratec TF file repository.
 - b. Will Elliot reviewed high level findings
 1. Copper-bearing steel and 409 failed all tests
 2. 302 and 304L passed 4/7 tests and 316L passed 6/7 tests
 3. 255 (duplex) and AL-6XN (duplex) were the only materials that passed all 7 tests
 - c. A question was asked if salts were from road salts or sea water in the New York City field study. Group discussed that it is likely a combination of both.
 - iii. Will Elliot reviewed of comments and changes to draft 5
 - a. Correction in Section 5.1.2 passivate (good) vs sensitize (bad).
 - b. Received suggestion that recommendations should be performance-based rather than recommendations on specific alloys.
 1. C57.12.00 references transformer life to be a minimum of 20.5 years.
 2. Dan Mulkey made the comment that asset life is assumed to be 30 years (from the accounting side) though in reality transformers live anywhere from 1 to 80 years.

Subsurface Transformers and Network Protectors Subcommittee Agenda

3. Brad Kittrell commented that their expected age due to heavy corrosion in 33.72 years.
 - c. Bob Kinner provided a draft procedure for determining chloride concentration in a water sample which was added to the Collabratec TF file repository.
 - d. Dan Mulkey commented that there are two enclosures: the metal tank enclosure and the concrete box enclosure that the transformer is set in.
 1. Group discussed terminology for the concrete box enclosure could be vault or structure.
 2. A comment was made that structure is not used in 12.80 however it is used in over-head standards.
9. New Business:
- i. Discussion for PAR Submission
 - a. Group drafted a title and scope for PAR submittal as follows:
 1. Title: Guide for Mitigating Corrosion on Subsurface Transformers and Network Protectors
 2. Scope: Provide guidance and technical references for users of transformers and network protectors in subsurface structures. This includes testing, measurements, and classifications to define corrosive environments, as well as strategies to mitigate corrosion in subsurface environments, guidance on equipment enclosure specifications, and cathodic protection.
 - b. Tom Dautat made a motion to request PAR using the drafted title and scope. Second by Ben Garcia. A poll was taken, and 25 members approved. Motion passed.**
10. The meeting was adjourned at 3:34 PM CST.
11. After the task-force meeting, in the STNP subcommittee meeting the PAR was reviewed. After some discussion it was decided to ask the members to grant conditional approval for the proposed scope to give the task-force leadership additional time to consider the wording. A poll was taken, and the motion was passed. The PAR request will be submitted to PES so it can be reviewed by NesCom at the Dec 16, 2021 meeting.
- i. Subsequent to the subcommittee meeting, it was decided that no changes would be made to the wording of the PAR request.

Submitted by: Audrey Siebert-Timmer

Date: 11/16/2021

Old Business:

•
none

New Business:

Subsurface Transformers and Network Protectors Subcommittee Agenda

none

Next meeting:

- March 30, 2022 in Denver, CO (Hopefully)

Adjourned at 11:43 CST

Respectfully submitted,

George Payerle, Chair, Submersible Transformers and Network Protectors Subcommittee.