

**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 |

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|---------|-----------|-------------------------|
| 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 |

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| 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. |

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|----------|-----------------|-------------------------------|
| Xose | Lopez-Fernandez | Consultant |
| Tiffany | Lucas | SPX |
| Rosamire | 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.

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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.

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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 Spoone
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

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|-----------------------|-------------------------------|
| John Herron | Raytech USA |
| Tiffany Lucas | Prolec GE - Waukesha |
| Rosamie 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.

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- 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**

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|---------------------------------------|---|-------------------|--------------------------|
| Document #: | <u>C57.12.44</u> | | |
| Document Title: | STANDARD REQUIREMENTS FOR SECONDARY NETWORK PROTECTORS | | |
| Chair: | <u>Mark Faulkner</u> | Vice-Chair | <u>Alex Macias</u> |
| Secretary | <u>n/a</u> | | |
| <small>M</small> | | | |
| Current Draft Being Worked On: | <u>DRAFT 11</u> | Dated: | <u>November 15, 2021</u> |
| Meeting Date: | <u>November 15, 2021</u> | Time: | <u>3:45PM – 5PM CT</u> |

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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

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- 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

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- 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: | <div style="border: 1px solid black; padding: 5px; text-align: center;">Corrosion Effects on Subsurface Transformers</div> | | |
| 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: | Members | | 33 |

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| | |
|---------------|-----------|
| 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 Dauzat, 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 | |

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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 Dautzat 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.

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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 overhead 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 Dauzat 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:

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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.