Stray and Contact Voltage Working Group
Matthew Norwalk, Chair
Chuck DeNardo, Vice Chair
Scott Kruse, Secretary

2020 WebEx Meeting

July 27, 2020
1PM – 2:30PM CDT

Approved Meeting Minutes

Attendees

Gordon Baker – General Cable/Prysmain Group
Bryan Beske – American Transmission Co.
Larry Conrad – Conrad Technical Services
Chuck DeNardo - Consultant
Fred Friend – AEP
Dave Gilmer – Unaffiliated
Tom Giordano – Ronk Electrical Ind.
Kevin Grant – Con Edison
Joe Grappe – Duke Energy
Stuart Hanebuth – Osmose
Terri Hopkins – Duke Energy
David Kalokitis – Osmose
Michael Kipness – IEEE SA
Scott Kruse – Osmose
Sal Martino – Duke Energy
John McDaniel – National Grid
Chris Mullins – Power Monitors, Inc.
Matt Norwalk– SCE
Paul Ortmann – Idaho Power Co
Marty Page – Georgia Power
Karen Pedersen - Consultant
Andre Savoie – Hydro One Networks
Muayad Tarabain – Hydro One

The Stray and Contact Voltage Working Group held a WebEx Meeting in place of a face to face meeting due to the COVID-19 Pandemic. The meeting was held Monday afternoon July 27th. There were 23 people in attendance.

The meeting was recorded for the purpose of generating the meeting minutes and began with the Chair introducing the Officers and requesting that participants use the chat to list their names and affiliations.

The patent slides were posted for review by the group, and no one identified any patent information. Michael Kipness from SA offered additional clarification on the patent slides and an update on the Copyright policy. The new copyright policy requires the working group to obtain permission for the use of all pre published material before including it in the draft of a document. He stated the information was updated in Copyright Slides, which are available. The Chair acknowledged that this was something the editorial subgroup would need to address at the next meeting.

Next the group reviewed the Agenda. The Chair announced plans to schedule a web meeting in November to review the document and get working group approval of the work done by the editing subgroup.

The Jacksonville meeting minutes were approved by the group, John McDaniel motioned to approve and Sal Martino seconded.

The Chair updated the group regarding the formation of the editing subgroup, which was discussed at the January meeting. The subgroup holds meetings every three weeks and was formed to reorganize the content in the document to align with the revised Table of Content. The subgroup has gone through sections 1 -7 and will be reviewing section 8 at the next meeting on August 4. The subsequent meetings will be held to try to lock down the updated content for each section with the intent on presenting an organized document to the larger group at a meeting in November. The current revision 2.2 is separated by sections on iMeet for members to access.

Details of the Editing Subgroup Formation:
At the Jacksonville Joint Technical Committee Meeting the working group discussed setting up web meetings to edit the guide. It was determined that this would be considered an Editing Subgroup and in accordance with the Policies and Procedures of the working group would require an approval vote by the majority of the voting membership. The details of the subgroup are as follows:

Scope: The 1695 Editing Subgroup will perform editing of existing content and creation of new content for the Guide based on the revised table of contents and other revisions identified by the Working Group. These changes may include text, flow charts, diagrams, and figures as necessary.

Duties: The Subgroup shall deliver a revised draft of P1695 to the Stray and Contact Voltage Working Group identifying all changes made to the document. The Working Group will vote to approve or reject any changes made by the Subgroup.

Requirements to Participate in the Subgroup: Must be a member of the Stray and Contact Voltage Working Group.

On February 25, 2020 an online ballot was sent out to the voting membership of the working group, which allowed for 10 days to respond with a vote of approve, disapprove, or abstain. Of the 20 voting members, 13 responded with approve, and 7 did not respond at all. However, since the majority responded the Editorial Subgroup was approved. The group agreed to hold meetings via WebEx every 3 Weeks on Tuesday's at 11am PST. The first meeting was held on March 31, 2020. Chuck DeNardo was appointed to Chair the Subgroup.

The group discussed Case Study submissions and the Chair presented the general instructions for creating a case study. They should be brief, concise and vague when it

comes to events, customers and utilities. The editing subgroup has discussed using creative license with case studies because of the fears utilities have about case study submission. The group feels it is important to have case studies to show how to apply the content in the guide. Case studies should be submitted to the Chair or the officers, anyone with iMeet access can post them to the case study folder.

The Chair reviewed the time line for publication and the plan for moving forward. If the document is ready for review by the group in November and there are no requests for major changes the document might be ready for a small group to clean up by the JTM2021 meeting. No one from the group expressed any concerns regarding the document or timeline.

New Business:
Marty Page wanted to know if the case studies he submitted were in the repository, it was concluded he would check iMeet to see if they are his. Additionally, Marty was interested to know if Doug Dorr had discussed putting any of the new information, which EPRI has posted on their site, regarding existing pools in the current revision of the guide. Presently he has not said anything but the group is working on expanding the sections for pools and marina and boat dock investigations and the content has been moved into the body of the guide under asset specific investigations.

Muayad Tarabain addressed Marty to get an update on how the isolation solution at Marinas and boat docks had turned out. Marty stated that the installation of isolation transformers at boat houses owned by Georgia Power was working and hopes to expand to other locations. The Chair had commented that the NFPA National Electric Code doesn't support Isolation Transformer installs. He also asked if Marty considered putting a proposal before the NEC, but Marty recalled it was attempted by NEETRAC without success. He thinks NEC didn't want to be seen as requiring isolation transformers when there was nothing in the code to limit their use. The Chair expressed that if that is the case the group might be able to put information in the guide to help navigate the code to support this type of installation. Marty agreed to talk to Doug Dorr about putting something together for the guide. Muayad mentioned that the Ontario Electric Code is a little different but his understanding is that an isolation transformer would go against code because it breaks the grounding requirement. Marty's solution used a double insulation isolation transformers which separated the ground at the boat dock from the ground from the Utility service. Joe Grappe mentioned that the grounding issue Muayad mentioned was addressed in the NC code and he would try to find the supporting document.

The Chair asked the group if anyone knew of any new Stray or Contact Voltage legislation in any of the states. The only comments were in regard to the adoption of the NEC code for pool bonding. NC and Massachusetts may be the only adopters of the code without the alternate, although not confirmed. It was mentioned that on EPRI's

site they are recommending isolation between the bonding of the pool area to equipotential grid and electrical system ground. This would require all pool equipment to be double insulated, which might not be possible in some installations. It was suggested that if the guide recommends the use of double insulated equipment, it might be a way to isolate the pool from the electrical ground because the code doesn't require tying the equipotential grid or ground ring back to the electrical system.

There was a discussion on the idea that most contractors do not understand that the neutral and ground are not really at zero potential and they could carry voltage. The point that the neutral to ground connection could introduce voltage on the ground system if there is a ground fault on any neighboring equipment or property should be elaborated in the document. Additionally, readers need to understand code compliant pools may have stray and contact voltage issues, this is currently explained in the Annex but could be emphasized.

The group moved to a discussion of NEV measurements. 5 Volts seemed to be common on the system. However, higher voltages 7V – 9V have been seen in areas without any stray or contact voltage complaints. It was mentioned that the Wisconsin public service commission has kept a database of NEV levels for years. The data should be available on request if it is not on their website. Other utilities record NEV at dairy customer locations in order to know what the trend is and try to identify levels that may be in line with a stray or contact voltage problem. It was suggested that a procedure for recording NEV would be helpful, provided it could be submitted to the group. In Canada they do not consider 5V NEV high so it might not be a norm for all system configurations. 10V NEV near substations is common due to 3rd harmonic current on the neutral. There is difficulty when dealing with 3rd harmonic current and some devices within the electrical system do not identify it. The guide should go into more detail to address these types of issues and the importance of making actual neutral measurements. Additionally, it would be valuable to add a case study that deals with 3rd harmonics.

Round Table:
Joe Grappe poled the group to see if anyone has used the process of injecting a signal onto a pools equipotential ground grid to check for points where it's not bonded. The Chair requested he put together a description of the process for the guide. The Chair commented that utility locating equipment might do something similar. Marty Page mentioned that he takes voltage measurements around the pool in reference to the proper conductor at the pump and significantly elevated voltages are interpreted to indicate bonding issues. Larry Conrad tested the grounding at a substation by injecting a current and making voltage measurements in doing so he was able to identify an isolated section. It was determined that the group should try to put a procedure in the guide to help identify the type of grid and grounding components.

All case studies or test procedures should be sent to the Chair. He will send out notice for a November meeting. The case study template and copy of the presentation will be sent out to the mailing list.

Meeting adjourned at 2:36PM CDT.

The next meeting will be a WebEx in November, Date to be determined.