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

2017 IEEE PES General Meeting
Sheraton Grand Chicago Hotel
Chicago, IL

July 17, 2017
1PM – 4PM

Approved Meeting Minutes

Attendees

Bryan Beske - American Transmission Co.
Jim Bouford – Quanta-Technology
Anthony Cedrone - Con Edison of NY
Daniel Chen - Con Edison
Brian Cramer – ComED
Chuck DeNardo – Consultant
Alexander Dornhelm – Con Edison
Doug Dorr - EPRI
Andra Flaherty - Snohomish County PUD
Kevin Grant – Con Edison
Stuart Hanebuth - Power Survey Co
Alex Hofman - APPA
David Kalokitis – Power Survey Co
Scott Kruse - Power Survey Co
Theo Laughner – TVA
Sal Martino - EPRI
Carl Miller - EPRI
Robert Naphen - National Grid
Matt Norwalk - SCE
Adrianne Ortizo – Con Edison
Marc Patterson – Idaho Power Co.
Scott Peele – Duke Energy
Jens Schoene - EnerNex
Rusty Soderberg - Consumers Energy
Muayad Tarabain – Hydro One Inc.
Pablo Torres – PG&E
Val Werner - We Energies

The Stray and Contact Voltage Working Group met at the 2017 IEEE PES General Meeting on Monday afternoon July 17th at the Sheraton Grand Chicago Hotel in Chicago, IL. There were approximately 27 people in attendance.

The meeting began with an introduction of the officers, review of the obligatory slides, and then moved on to a review of the minutes from New Orleans. There was a request to add to the minutes, that Anthony Cedrone was going to put together a case study template. It was determined that this information would be added to the paragraph in the minutes discussing Anthony's case study presentation. Afterwards they were approved with a motion by Anthony Cedrone and second by Dave Kalokitis.

The meeting continued with attendee introductions. The Chair announced that Daniel Chen has resigned as Vice Chair, and Chuck DeNardo has been appointed Vice Chair until the winter meeting where a formal election can be setup.

There was discussion about the iMeet Central website which we are now using for open collaboration. The Chair opened the site for the group to see. Documents from the website have been moved into iMeet. Scott Kruse was asked to put a link to the iMeet site on the working group website. Since members need to be invited to join the site anyone who wants to gain access should send an e-mail request to the working group officers.

The meeting continued with a review of the draft table of contents. A discussion ensued around the Energy Loss subsection and concern it will be hard to capture due to the number of variables involved. Additionally, it would be hard to quantify how long a fault, that you didn't know existed until you found it, has existed. However, there are Utilities that are concerned with energy loss and UK Power Networks is working on a study and hopefully we will be able to incorporate that information. It was also suggested that Smart Meters might be able to detect if there are high impedance faults on the line, and this might be a form of detection as well as a means of quantifying energy loss. Although it will still require an investigation to find out the cause (actual fault not NEV) and mitigate. Two recommendations were presented. One was that energy loss might be listed as an additional benefit to fixing the faults instead of being a subsection. The other was that the section could say that through future use of smart meter technology it might be possible to quantify energy losses.

Rob Naphen brought up a concern with the asset management programs section and his opinion that the document shouldn't have clerical documents that tell utilities what data to collect. Instead he felt the guide should focus on detection and mitigation. He doesn't want to see utilities be forced to collect specific data if the guide became a standard. However, the programs and forms are all examples of what has worked for others in the industry and they are presented that way. He agreed that if they state they are examples he would be ok leaving them.

The Chair addressed the direction the revision of the guide is headed. From previous group discussion, a new version of the guide should be published and then elevated to recommended practice. The group agreed.

Continuing with the discussion on the outline, Rob Naphen had a hard time finding information on horses for the electrical sensitivity section. Jim Bouford offered to send him some information. It was also determined that Rob should look for information on dogs and cats. Canines was added to the Table of Contents.

Brian Cramer volunteered to write something for the section on electromagnetically coupled currents and voltages.

Someone brought up the right of way limits for electromagnetic fields and wondered if anyone knew where they came from and if they compare across the industry. The question of whether the limits would be of value to the guide was posed. A response was that the limits are more for health effects rather than exposure.

After a short break, Pablo Tores presented: Stray/Contact Voltage Incident Tracking. He discussed the task he was given to determine the level of risk to his utility of a contact voltage event. He put together a risk analysis and determined that the risk fell in the middle of the risk

chart. However, in gathering information for the analysis they determined that there was no system for tracking incidents. The company decided to move forward with developing a tracking process. He polled the group to see what other utilities have done to track incidents. It was suggested that a call center might be useful where a specific set of information can get collected. Also, a team needs to be able to investigate the reports to determine if they are contact voltage, and not man made issues. It may also be useful to make the public aware of the issue and how to report it.

Breaking from the presentations the Chair asked the section leads for updates.

Section leads:
Clause 3 – General discussion - Matt Norwalk – Didn't get much done, but will by the next meeting.
Clause 4 – Human and animal electrical sensitivity - Rob Naphen – Minor additions to the general statement paragraph and added some categories. Presented a chart, that he got from EPRI, with the perception levels that are presently in table form. They could be added or used as replacements depending on what the group decides. Sal Matino is going to reverse the order of the perception levels for group review at the next meeting. Jim Bouford will provide information regarding horse sensitivity.
Clause 5 – Voltage Sources - Doug Dorr – Didn't get much done. Jim Cramer should be added to the list of members for iMeet since he volunteered to help with the coupled currents and voltages section. He will try to get case studies which he will present for the groups review. During the breakout session at the last meeting the idea of, what constitutes a voltage and how long does it have to last, was discussed. 1 min seemed to be a reasonable amount of time.
Clause 6 – Detection and Measurement Equipment - Dave Kalokitis - The same equipment is used differently for different investigation scenarios. Once it is determined how the equipment is used the section will come together.
Clause 7 – Investigation – Stu Hanebuth – Will address in his presentation.
Clause 8 – Mitigation – Alex Dornhelm – Did some editing; current clamping, load testing to determine between customer and utility, and addressed traffic and street lighting.
Clause 9 – Daniel Chen and Rhys dela Cruz – Didn't get much done. Adrianne Ortizo and Rhys will work on the section.
Annexes/Case Studies - Anthony Cedrone – Will have three templates to present so others can send examples. Information to include is facility, load and weather.

Stu Hanebuth and Dave Kalokitis present: IEEE 1695 Investigation Process Proposal. While there are similarities between Stray and Contact investigations, they have different objectives and therefore different measurement processes and interpretation. They presented a master flow chart for a reported voltage (i.e. farm complaint, pool shock, survey result, etc.), which showed how the investigation process could be combined. Their proposal was to turn the flow charts from the guide into asset diagnostic tables much like they have in automotive repair manuals. They would include Symptom, Cause and Action and incorporate references to the clauses.

Doug Dorr's presentation got pushed off due to lack of time.

There was no new business to discuss.

There was no round table discussion.

Sal Martino motioned to adjourn, Rob Naphen seconded. The meeting adjourned at 4:04PM.

The next meeting will be at the 2018 IEEE PES Joint Technical Meeting, January 7-11, 2018, in Jacksonville, FL.