

**MEETING MINUTES**  
*IEEE / PES Transformers Committee*  
*Performance Characteristics Subcommittee*

**Working Group for the revision of C57.142**

**New Orleans, Louisiana**

**Tuesday, April 4<sup>th</sup>, 2017**

**3:15 PM – 4:30 PM**

**Grand Ballroom C**

**Chairman – Jim McBride**

**Vice Chair – Xose Lopez-Fernandez**

**Secretary – Tom Melle**

- 1) Welcome and Chair's Remarks
- 2) Circulation of Attendance Sheets  
134 Members and Guests Attended  
32 of 41 Members present (quorum achieved)  
Membership of prior TF will extended to new WG  
Membership requested by 27 guests, Current Membership 68 Members
- 3) Approval of Agenda and Minutes from Last TF Meeting  
Agenda Approved - First: Rogerio Verdolin / Second: Phil Hopkinson  
Minutes Approved - First: Bertrand Poulin / Second: Phil Hopkinson
- 4) Status of TF Paper Submission  
IEEE Transactions Paper must be resubmitted to IEEE with additional author information to be added for significant contributors (authors).
- 5) Status of C57.142 PAR Application  
PAR approved. Expires December 31, 2021.  
This work will be jointly sponsored by the Switchgear Committee  
Administrative work and main meetings will take place at Transformers committee meetings, but the Transformers committee WG will receive contributions from Switchgear Committee.
- 6) Presentation was made on the Impact of the Transformer's Neutral Grounding Method on its Transient Performance under Lightning Impulse by Waldemar Ziomek  
Presentation demonstrated significant differences in internal stress between the TV and LV windings based on solid grounded, resistive grounded, and reactively grounded neutral. These interactions were modeled and the models confirmed using a recurrent surge generator (RSG)

Motion was made to include neutral-grounding clauses presented in the revision of C57.142.

Motion by Waldemar Ziomek. Second: Bertrand Poulin

25 voted for motion. 1 vote against. Motion carried.

Jim McBride will request posting of Waldemar's presentation on the WG website.

7) Presentation on Measured 500kV Shunt Reactor Switching Transients – Jim McBride

Transients interactions were presented from energization and de-energization of 500kV reactors using breakers and SF6 interrupters. The de-energization transients with the circuit switcher demonstrated re-ignition transients at the terminals of the reactor.

Phil Hopkinson asked if there were any problems found with transformers or switchgear in study? Answer: No equipment quality problems were detected. However, problems occurred due to the system interactions between the devices.

Phil mentioned that many times involved parties are not willing to share data from failure events. He asked if this data would be available for the guide? Answer: The Chairman hopes that TF members who have already presented in the task force will allow the data/material to be used in the revision of the standard.

Rogério Verdolin commented that the opening transient applied to the reactor at different opening points can create very different results. Answer: It was agreed that the opening point can make significant differences in the transients. This is demonstrated in the waveforms presented. These transients can be 1000 times faster than most instrument transformers are capable of measuring.

8) Discussion on Team for Mitigation Methods, Factory Testing, and Field Service Conditions.

Examples include: use of coupling capacitor in parallel to ground, increase of BIL, or special factory tests. A separate TF is being formed to study options. Current membership of this group is:

Phil Hopkinson

Mike Spurlock

Hamid Sharifnic

Akash Joshi

Shekhar Vora

Jim McBride

Waldemar Ziomek

Pugal Selvaraj

Dave Caverly  
John Hall  
Amitabh Sarkar  
Cihangir Sen

- 9) New Business - Chair suggested having all WG membership associate with writing or reviewing revisions to the guide in one of the following seven areas. The Chair will seek lead persons in the writing of the additions in each of these areas.
  1. System Faults and Cable Switching that produces traveling waves with reflections that excite lightly loaded transformers to resonance
  2. Generator step-up transformers operating in back feed mode are excited to resonance by system transients
  3. High frequency switching operations close to the transformer terminals excite internal resonance due to multiple re-ignitions and restrikes
  4. Incorporate more mitigation techniques into the document
  5. Include information on stress in the transformer due to the method of neutral grounding.
  6. Include information on reactor switching interactions
  7. Include information on upstream and downstream interactions in low power factor and highly inductive circuits. dividing.
- 10) Next Meeting (Louisville, Kentucky)  
Pierre Riffon to give presentation on special termination LI
- 11) Adjournment at 4:30 PM