

Annex F Instrument Transformers Subcommittee

Chair: Ross McTaggart

F.1 Introductions

The attendees introduced themselves and reported affiliations.

F.2 Quorum

20 of 34 members were present - quorum attained

Also 26 guests attended

F.3 Approval of minutes – Vancouver, BC meeting

Motion by David Wallace & seconded by Vladimir Khalin

F.4 Review of Agenda

F.5 Status of C57.13 Standards

Ross presented the status of the various standards handled by the ITSC

A PAR has been written for the revision of C57.13.2, Thomas Sizemore is to chair this working group.

Ross McTaggart indicated that the work on C57.13.7 covering milli-ampere CTs was in the balloting process and that a ballot resolution group is to be formed.

The SSVT standard C57.13.8 development effort led by David Wallace is continuing.

A working group is being led by Zoltan Roman to revise the PLC Caps and CCVT standard C57.13.9.

F.6 Working Group Reports

F.6.1 Working Group on Current Transformers with mA range (WG C57.13.7) - Chair: Henry Alton, Vice-Chair: Adnan Rashid

This WG did not meet in New Orleans. The Standard is in the balloting process

F.6.2 WG on Station Service Voltage Transformers - D Wallace

The meeting of the C57.13.8 Working Group met at 8:00 AM as convened by Chair David Wallace. Roster sheets were circulated for attendees to sign in.

A total of 46 people were in attendance with 18 members and 28 guests. 18 out of 30 members were present, therefore quorum was met. One guest requested membership.

The agenda was presented and accepted with no discussion.

The Patent Claims Statement was presented to the workgroup with no claims being identified.

The minutes from the Vancouver meeting were presented. Rudy Ogajanov made a motion to accept the minutes with Vladimir Khalin seconding the motion. The motion was approved with no discussion.

In new business, Ross McTaggart gave a short presentation on the proposed incorporation of C57.13.8 into the CSA Standard. According to Ross, the CSA committee will wait until C57.13.8 is approved and then look at incorporating it.

In old business, the remaining comments from the request for comments on C57.13.8 D3 were discussed. This wrapped up the discussion on comments from draft 3 of C57.13.8. The accepted comments will now be inserted into Draft 4 of C57.13.8 for comment and review at the next meeting in Louisville, Ky.

It was also decided to hold a discussion at the beginning of the next meeting on accuracy measurements on metering windings in SSVT's.

A motion to adjourn the meeting was offered by Patrick Rock and seconded by Barrett Wimberly. The motion carried unanimously without discussion.

F.6.3 WG PD in Bushings & PTs/CTs PC57.160 - Thang Hochanh

Attendees: 71

Members attending: 19/42 - Quorum requirements were not met.

Rosters: Circulated for members and guests.

Agenda: An agenda was presented for the meeting.

Essential Patent Claims: Text was displayed and the Chair inquired as to if anyone knew of essential patent claims. None were brought up during the meeting.

Minutes: Minutes could not be approved due to the quorum requirements not being met.

Items discussed based upon comments received:

A total of 23 comments were received for discussion many were editorial or minor in nature. Details of the discussion points are below.

Comments discussed and which will be incorporated into the next draft:

- An abstract was not included in the previous draft. Suggested text was provided.
- Keywords were not included in the previous draft. Suggested text was provided.
- A suggestion was made to change the order of the references.
- Change 'pico-Coulombs' to 'picocoulombs' in several locations.
- Section 3.1 correct referenced clause number.
- Section 4.2.1 make the last indented statement a separate paragraph.
- Section 4.2.2 add the word 'capacitance' for clarity.
- Sections 4.2.2 and 7.1 Discussed wording regarding allowing the measured PD noise to be as high as the limit if no higher values are measured.

- Section 4.2.4.1 Discussed changing to 500 kHz from 1 MHz.
- Sections 4.2.4.2 and Appendix A removed company logo from provided figures.
- Section 4.2.4.3 Added qIEC, Rmax, Rmin and Pulse Train definitions from IEC.
- Section 4.2.4.4 Removed typographical error from the section heading.
- Section 4.2.4.4 Discussed adding stronger language for recommend recording and evaluation of several pieces of data. Chose to leave the current language both because it would be excessively hard to do in higher production environments and also to prevent potentially controversial language from a legal standpoint.
- Section 6.2 Discussed the wording relating to the use of shielding as part of test preparation.
- Annex C updated references which called out 'B' instead of 'C' figures and text.

Motion to submit the document for ballot: At the next meeting, a motion for ballot will be submit to the WG members.

PAR extension: Due to the termination (2017-12-31) of the original PAR, a PAR extension is necessary.

Motion to adjourn: A motion was presented by Bertrand Poulin and was seconded by Vladimir Khalin.

Fall meeting 2017: This WG plans to continue working at the IEEE Fall meeting in Louisville (KY).

Next version of draft: A new and "final" draft is being prepared to incorporate all of the recent comments. This will be sent out between meetings.

F.6.4 Working Group on Revision of C57.13.5 "Standard of Performance and Test Requirements for Instrument Transformers of a Nominal System Voltage of 115 kV and Above.

The WG met on April 4, 2017, from 9:30 am to 10:30 am. Seventeen (17) members and Thirty-five (35) guests attended the meeting. Four (4) guests requested membership. The meeting was chaired by David Wallace, vice-chair of the WG. This was the third WG meeting.

Required quorum was met, presence of at least 12 members was required.

The agenda was reviewed and approved by all members present.

Minutes of Atlanta meeting were approved unanimously. The motion was made by Steven Oakes and seconded by Thomas Sizemore.

Call for patents has been made and no essential patent claims have been reported.

As the first item of business, the results from the survey on a new relaying accuracy designation when an anti-remanence gap is added within magnetic circuits were presented. It was agreed that wording will be proposed by the WG chair in Draft 1.4 of revision C57.13.5 prior to the Louisville meeting.

The results of the survey will also be brought up in the Subcommittee meeting for the clause placement into the latest revision of C57.13

Alternative gases to SF6 during internal arc test were added to clause 12.2.2 3rd paragraph. Now 3 gasses are specified: air, CO2 and N2

Changes proposed in D1.3 have been reviewed one by one up from clauses A.2 through the end of the draft. Several changes were mainly editorial in nature such as reference clause numbers and date of referenced standards.

- Zoltan Roman will make a proposal for the next meeting in Louisville, Ky on the the temperature rise test procedure for CTs having dielectric losses greater than 20% of the RI2 losses

Draft 1.4 of C57.13.5 will be released to the WG before the next meeting in Louisville Ky.

The meeting adjourned at 10:45 am on October 25, 2016. The adjournment motion was made by Mr. T. Sizemore and was seconded by Mr. R. Ogajanov. The motion was approved unanimously.

The next meeting is planned to be held in Louisville, Ky, on October 31, 2017.

F.6.5 C57.13.9 Task Force for PLC Capacitors and CCVT's – Zoltan Roman

Zoltan Roman started the meeting as Chair with Mike Craven as Secretary.

Introductions were made.

This is the first meeting as a new Working Group formed from the Task Force. There were 41 attendees and 17 signed in requesting Membership. All are accepted and we inherently had a quorum. (Motion made by Steve Snyder and seconded by Barrett Wimberly.)

The call for patents was made and there were no patent claims by attendees.

The Agenda was presented and the October 24, 2016 Vancouver meeting minutes was accepted.

As Old Business the PAR approval was announced with very slight changes from the submittal.

As New Business Zoltan Roman reviewed the schedule/timetable he had proposed and started with the review of his first composition of the new standard from ANSI C93.1.

- C57.13 will be a basis for similar content and this standard will attempt to harmonize with CSA and IEC standards.

- -review started with the standard IEEE contents with revisions made to the "Definitions" section by the group

- Service conditions section was also commented on and revised

- Several items will need future verification (PLC frequency range, voltage ratings reference to C84.1 Table 4, ratios in Table 3.

- There was concern that there be a basis for the ratings used and the low voltage terminal BIL was decided to be kept as in C93.1 as 10 kV.

- Section 5.5.2 will need to be rechecked with the source.

Date and place of the next meeting will be the Transformers Committee Meeting in Louisville Ky. Adjournment was at 12:16.

F.6 Special Presentation

Vladimir Khalin gave a presentation to the subcommittee regarding in service recertification of CTs. Both metering and relaying applications were covered. Additionally his presentation covered online testing. Two case study examples were shown indicating the value this type of testing to end users.

F.7 New Business:

Our subcommittee was approached by Dale Finney, Chairman, Working Group J12 of the Rotating Machinery subcommittee of the IEEE PES, Power System Relaying and Control Committee. This WG is writing a report on new developments for stator ground fault protection for high-impedance grounded, synchronous generators. One method uses negative and zero sequence voltages to selectively differentiate between a stator ground fault and other ground faults. This method allows faster tripping by improving the selectivity of the protection. The method requires calculating the negative and zero sequence voltages associated with a ground fault on the secondary wiring of the generator voltage transformer (VT) circuit. Calculation of these values requires the leakage reactance be known. Slides were presented by Thomas Sizemore covering the information they would like to receive. The membership associated with these types of PTs was requested to provide information.

Conversation also took place regarding initiating a Task Force to review accuracy requirements. No Chair for this work was identified. Additionally a discussion took place regarding if a task force should be initiated to create an applications guide for instrument transformers. This topic will likely be discussed further in the future.

F.8 ITSC Adjournment

The meeting concluded by motion to adjourn by David Wallace and seconding of this motion by Arnaud Martig.

The next meeting will be at the Fall 2017 Transformers Committee meeting in Louisville, KY