

## **Annex F Instrument Transformers Subcommittee**

**Chair:** Ross McTaggart

**Vice Chair:** Thomas Sizemore

### **F.1 Introductions**

The attendees introduced themselves and reported affiliations.

### **F.2 Quorum**

28 of 42 members were present - quorum attained.

31 guests were also in attendance and 5 individuals expressed an interest in joining the ITSC.

### **F.3 Agenda**

An agenda was displayed for this meeting. A motion to approve the agenda was made by Vladimir Khalin and this was seconded by Pierre Riffon. No objections to the agenda were raised by the floor.

### **F.4 Approval of minutes – Jacksonville FL meeting**

The motion to approve by Pierre Riffon was seconded by David Wallace with no objections from the floor.

### **F.5 Status of C57.13 Standards**

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

- A PAR for a Corrigendum has recently been approved.
- Thomas Sizemore is the chair of the working group revising C57.13.2.
- Pierre Riffon is the chair of the working group revising C57.13.5 currently.
- C57.13.7 covering milli-ampere CTs has been recently published.
- The SSVT standard C57.13.8 development effort led by David Wallace is continuing.
- A working group led by Zoltan Roman to is working to revise the PLC Caps and CCVT standard C57.139. While this effort is making progress an extension may be required.

### **F.6 Working Group Reports**

#### **F.6.1 WG on Station Service Voltage Transformers - D Wallace**

**Attendees:** 43 people attended, 22 members were present in person.

**Rosters:** A roster was circulated for members and guests.

**Essential Patent Claims:** Was discussed by the Chair inquired as to if anyone knew of essential patent claims. None were brought up.

**IEEE Privacy Policy:** Was discussed by the Chair.

**Agenda:** The agenda was displayed by the Chair and approved with no objections were made.

Chair: David Wallace

Secretary (acting): Thomas Sizemore (the actual Secretary was unable to attend).

Minutes of the Charlotte meeting were approved by the members of the working group. Motion was given by Steven Oakes and it was seconded by Vladimir Khalin.

Minutes of the Jacksonville meeting were approved by the members of the working group. A motion to approve was given by Pierre Riffon and it was seconded by Deepak.

**IEEE/IEC Dual Logo:** Ross McTaggart presented a roadmap of how the effort is to proceed. Ross and David are the conveners of this effort. A two part PAR update is being pursued. First the PAR will be modified for future work to be done as a joint effort with IEC. Second an extension will be requested soon to allow time for the work to proceed. Some conversation took place concerning the likely timeline of the project.

**Review of comments from the most recent draft of the standard:**

General comment – Reviewed the use of Rated Voltage. NSV is suggested. The Chair is to review text from the Standards Dictionary. It was noted that this is a potential issue with respect to the IEC joint standard work.

Clause 1.4 – It was suggested to add a sentence indicating that the metering winding is optional. Initial conversation was to add this sentence to this section. Afterwards it was determined that the sentence would be added to section 5.8.

Clause 3 – It was agreed to remove the numbering associated with definitions per the IEEE style guide.

Clause 3 – Discussed adding a rated arc proof current definition as per the C57.13.5 draft. A survey is to come regarding the C57.13.5 change on this issue. Will reference C57.13.5 in this document.

Clause 3.1 – This clause is shown twice. Agreed to delete the duplication.

Clause 4.1.7 – A reference is missing. Agreed to add the missing reference.

Clause 4.1.7.2 – The acronym MCOV has a different meaning in regards to surge arresters. It was agreed to go back to the document and spell out the intended text each time.

Clause 4.1.7.3 -See text provided by Zoltan. His table is to be updated.

Clause 4.4.1.2 – Reference the latest draft of C57.13.5 as it has been updated recently on the same topic.

**Motion to adjourn:** A motion was put forth by Pat Rock and seconded by Pierre Riffon.

**Next Meeting:** This WG will meet to continue work at the fall 2019 meeting in Columbus, Ohio.

**Next version of draft:** A new draft is being prepared to update based on comments. Some editorial updates will also be included in addition to items noted above.

### **F.6.2 WG PD in Bushings & PTs/CTs PC57.160 - Thang Hochanh**

This working group did not meet as the Guide is now out for balloting

### **F.6.3 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 March 26 , 2018, from 9:30 am to 10:45 am. The meeting continues also during the last part of the Instrument Transformers SC meeting on March 27 from - 8:00 am to 09:15 am. On March 26, twenty-six (26) members and seventeen (17) guests attended the meeting. Six (4) guests requested membership. On March 27, twenty-three (23) members and eighteen (18) guests attended the meeting. Meetings were chaired by Mr. Pierre Riffon, WG chair. Mr. David Wallace was the vice-chair.

This was the seventh WG meeting.

Attendance has been recorded in the AM system.

Required quorum was met in both meetings, presence of at least 18 members was required.

The agenda has been reviewed and was approved unanimously. The motion of approving the agenda was made by Steve Snyder and was seconded by Deepak Kumaria.

Minutes of the Jacksonville meeting minutes have been approved by all members present. The motion of approving the Jacksonville meeting minutes has been made by Vladimir Khalin and was seconded by Deepak Kumaria.

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

The item of business was related to the review and discussion on the comments received on D1.7 issued end of December 2018. Thirty-three (33) comments have been received. Apart from some several editorial corrections, the main decisions made on the comments received were:

- The standard title needs to be corrected. A PAR revision will be required. The Chair will request a PAR revision before the next meeting;
- Referenced standards will be undated when they are no specific clause references in the main text;

- Table regarding creepage distances needs to be numbered, all other Table numbers need to be corrected accordingly;
- The wind load calculation reference will be changed to ASCE 7;
- For the seismic condition, a simple reference to IEEE Std. 693 will be made, the reference to 0,1g will be deleted;
- The sentence related to the means of refiling a gas-filled unit during service will be deleted
- The new text related to gas leakages has been reviewed and accepted;
- A CO<sub>2</sub> limit of 200 p.p.m. has been accepted in Table 8;
- The R10 series exponent "n" has been clarified, exponent "n" will range from 3 to 5;

The March 26 meeting ran out of time and it has been agreed upon with the Instrument Transformers SC Chair, to use the remaining time of the SC meeting on March 27, 2019.

The main decisions made on March 27, 2019 on the comments received were:

- The duration of the mechanical cantilever test has been changed to 1.0 minute;
- A sentence will be added giving a reference to C57.13 concerning continuous current capability for operation above 1000 m;

The Chair will issue a D1.9 based on the decisions taken during the both meetings. A motion has been made by Mr. Lee Bigham to move for a Sponsor Ballot with Draft 1.9 taken into account the decisions made during the meetings. This motion was seconded by Mr. Vladimir Khalin. This motion has been approved unanimously.

A PAR extension will be required because it does not seem to have enough time to complete the document and the balloting process before the end of the PAR which is December 31, 2020.

The first meeting adjourned at 10:45 am on March 26, 2019. The adjournment motion was made by Igor Ziger and was seconded by Deepak Kumaria.

The second meeting adjourned at 08:45 on March 27, 2019. The adjournment motion was made by Deepak Kumaria and was seconded by Vladimir Khalin.

#### F.6.4 Working Group for PLC Capacitors and CCVT's C57.13.9– Zoltan Roman

Deniss Villagran substituted for the Working Group Chair, Zoltan Roman, and started the meeting with Mike Craven as Secretary. Introductions were made.

This is the fifth meeting as a Working Group. The "Attendee session report" was received by email: There were 37 attendees including 16 of 26 members present. We had a quorum of 61.5%. Several attendees requested membership and a review will be made again after the meeting. The Minutes from the Fall 2018 meeting in Jacksonville and the new Agenda were approved by unanimous consent with no corrections.

The patent notice was made and there were no patent claims by attendees.

Old business began with review using version Draft 5 marked up by Zoltan for this meeting. There were very little or no comments up through sections 6.7.2 Power frequency withstand voltage from Draft 2 and 7.1.3 Thermal burden ratings of Draft 4 though there are still outstanding final edits to be done.

New business began with section 7.2.1.1 Allowable variation in ratio correction factor... and Table 11. A concurrent Task Force is studying burden recommendations and will include CCVTs in their recommendations. The review continued steadily but with some noted items:

- Table 12 Accuracy limit for frequency variation phase angle deviation is considered too large and suggested values and reasoning is needed
- section 7 definitions do not match Section 3 definitions and will need to be aligned
- usage of IEC will need IEC permissions

The Draft 5 review was completed. Zoltan has considered proposing interim meetings. Otherwise the next meeting will be at the Transformers Committee Meeting in Columbus, Fall 2019. The meeting was adjourned at 11:59.

#### F.6.5 Working Group for Conformance Test Procedures C57.13.2 – Thomas Sizemore

**Attendees:** 40 people attended. 19 members were present out of 29 and 2 requested membership.

**Rosters:** A roster was circulated for members and guests.

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

**Minutes:** minutes were approved unanimously

**PAR Approval:** The PAR was approved in December 2017.

**Review of the current version of the standard:**

Based on the meeting that took place in Jacksonville the comments were reviewed.

- In section 2 decided to use dated or rev references for all the places where C57.13 references are used.

- In table 1, editorial removed the dot from the C.57.13-2016
- In table 1, editorial use the document number under the reference subclause. Consult IEEE style guide for correct usage before next draft.
- Gia and Igor commented to add few sentences for the case where gap cores will be used for relaying and metering both.
- Deepak commented to move 7.3.3.2 out of this sub section (relaying accuracy 7.3.2 ) but it put under 7.3 as a separate sub section.
- No objection to the state wording in the Section 9, motion 1<sup>st</sup> by David Wallace and second by Nigel.
- Nigel also added comment to crosscheck how to use the trademark/copyright symbols for IEEE reference standards

**Motion to adjourn:** A motion was put forth by Vladimir Khalin and second by Igor Ziger.

**Next version of draft:** A new draft is being prepared to update based on comments. It will be issue between meetings with a request for comments.

## F.6.6 TF for Instrument Transformers Accuracy

**Attendees:** 25 people attended. 19 members present requested membership.

**Rosters:** since this is First meeting so for all participants requesting membership will be granted

**Essential Patent Claims:** Text was displayed and none were brought up.

**Minutes:** This is first meeting conducted so agenda was presented

**PAR Approval:** NA

### **Review of the current version of the standard:**

Based on the meeting that took place in Jacksonville the comments were reviewed.

- CCVT to be added to the scope
- Extended range CT also added to the scope
- Remove PSRC standard reference
- Remove relaying accuracy, as this is not part of the scope.
- No change to the PF and burden for now for CT and VTs
- Confirm with Eddy So/Zoltan if we could use their data and publish at IEEE portal ?
- Suggestion was made to make some white paper/study based on OEM/Test equipment manufactures/testers could be published which we could send to client showing what are benefits of this approach
- Igor Ziger and Deepak Kumaria will send out a survey within the working group to look for volunteers to present experimental data and how the accuracy change influences it
- Igor Ziger and Deepak Kumaria will compile a survey intended for Users/Test equipment manufacturers and send it out to the group for comments
- Ross McTaggart to confirm the TF group if all the data that is presented in WG, the ownership does lie with IEEE
- Ross McTaggart to check availability for different time slot so that potentially more users could participate

**Motion to adjourn:** A motion was put forth by Vladimir Khalin and second by David Wallace.

## **F.7 Old Business**

Ross McTaggart indicated that a PAR was approved for a corrigendum needed for C57.13. Three areas are known to need correction. First in section 11.3.1.7 the text calls for comparison of the first full wave and the last full wave. Other standards reference comparison of the first reduced full wave to the final full wave. Second a typographical error is present in section 4.1.1 with the use of the words usual and unusual. Finally it was indicated that the definition of RCF has a discrepancy versus text provided in the metering handbook. Ross McTaggart also indicated that the PAR was approved for further development of the SSVT standard as a dual logo document with IEC.

## **F.8 New Business**

Ross McTaggart presented information from a laboratory in Paraguay concerning the performance of current transformers under varying ambient temperatures. Vladimir Khalin indicated that he had seen similar changes in current transformers over his career. It was Vladimir's experience that most of the difference observed was due to core padding used placing stress upon the core at extremely cold temperatures not changes due to the resistance, etc. A leadership change was announced. Ross McTaggart will be stepping down from the Chair position effective October 1<sup>st</sup>. Thomas Sizemore will assume the Chair position at that time. Nigel McDonald will take over the Secretary role. At this time the Vice-Chair position is vacant but may be filled in the future.

## **F.9 ITSC Adjournment**

The meeting concluded after a motion to adjourn by Vladimir Khalin and seconding of this motion by David Wallace.

The next meeting is to be held in Columbus, OH, on Oct 30, 2019.