

## **Annex F Instrument Transformers Subcommittee**

**Chair:** Thomas Sizemore

### **F.1 Introductions**

The attendees introduced themselves and reported affiliations.

### **F.2 Quorum**

28 of 37 members were present - quorum attained.

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

### **F.3 Agenda**

An agenda was displayed by the chair. A motion to approve the agenda was made by Vladimir Khalin and this was seconded by Rudolf Ogajanov. No objections to the agenda were raised by the floor.

### **F.4 Approval of minutes – Anaheim CA meeting**

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

### **F.5 Essential Patent Claims & IEEE Copyright Policy**

The essential patent claims slides were shown and no one brought any up. In addition, the copyright policy was discussed by the chair. It was mentioned that copyright permission is required to borrow material between IEEE standards.

### **F.6 Status of C57.13 Standards**

The chair briefly presented the status of the various standards handled by the ITSC:

- A PAR for a Corrigendum has recently been approved. A document will be prepared after this meeting and submitted.
- Thomas Sizemore is the chair of the working group revising C57.13.2; the PAR expires Dec. 31, 2021 but will be going to ballot soon.
- Pierre Riffon is the chair of the working group revising C57.13.5 currently and the revision of this standard was submitted to RevCom Nov. 6, 2019 and he agreed to send a status update; the PAR expires Dec. 31, 2020.
- The SSVT draft standard IEC-IEEE 63245-5713-8 development effort led by David Wallace and Ross McTaggart continues as conveners in the joint working group. The PAR has been extended to Dec. 31, 2019.
- A working group led by Zoltan Roman to revise the PLC Caps and CCVT standard C93.1 continues. The PAR expires Dec. 31, 2021 and while this effort is making progress an extension may be required.

## F.7 Working Group Reports

### F.7.1 JWG on Station Service Voltage Transformers – David Wallace & Ross McTaggart

October 27 (Sunday meeting)

Attendees: 22 people attended the meeting.

The meeting started at 8:00 am. The comments from the draft 1 review of IEC/IEEE 63253-5713-8. Nine pages of the 22 pages of comments were reviewed. The meeting ended at 5:00pm. At the end of the meeting, homework assignments were assigned to Huan Dinh, Igor Ziger and David Wallace. These assignments are to be reviewed on the meeting Tuesday morning.

October 29 (Tuesday meeting)

**Attendees:** 53 people attended, 25 members were present in person. Quorum was met

**Rosters:** A roster was circulated for members and guests. 7 new people attended and 3 members requested membership

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

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

**Agenda:** The agenda was displayed by the Chair. Kenneth Skinger made a motion to accept the agenda and Pierre Riffon seconded. The agenda was approved with no objections made.

Minutes of the Anaheim and Milan meeting were approved by the members of the working group. Motion was given by Vladmir Khalin and it was seconded by Deepak Kumaria.

Ross McTaggart presented a timeline for working on the standard. Future web conferences have been scheduled for 11/13, 11/20, 12/4, 12/11. Upon completion of the reviews, a revision of the standard will be circulated to the workgroup for review. This will allow for comment review at the next IEEE Transformer Committee meeting in Charlotte. The next TC38 meeting is scheduled for September 2020 in Romania.

David Wallace presented a merged version of Table 3 which included the values from both the IEEE and IEC tables. A discussion was held on keeping the NSV column of the table or remove it. It was decided to modify the table to include the NSV values from the IEEE table and the IEC values as well. This table will be sent out in a survey along with the option to make two tables, one IEEE and one IEC.

A modified version of Clause 4.1.6.3 Rated Voltage Factor ( $F_v$ ) was presented by Igor Ziger. The table combined the values from IEEE and IEC. It was decided to remove the 1.7 and 1.9 values since these values are not possible with the neutral grounded SSVT.

Huan Dinh presented a discussion on voltage regulation based on ANSI C84.1. Igor agreed to add some wording to address comments that arose concerning the limits of the regulation.

Time ran out for any further discussion. Pat Rock motioned for adjournment and Deepak Kumaria seconded the motion. The meeting was adjourned with no objection.

Next Meeting: This WG will meet to continue work at the Spring 2020 meeting in Charlotte, NC.

### **F.7.2 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 – Pierre Riffon**

This working group did not meet as the revision of the standard is currently with RevCom.

### **F.7.3 Working Group for PLC Capacitors and CCVT's C57.13.9 – Zoltan Roman**

The Working Group Chair, Zoltan Roman, started the meeting with Mike Craven as Secretary. Introductions were made. This is the sixth meeting as a Working Group. The "Attendee session report" was received by email. There were 34 attendees including 17 of 19 members present. We had a quorum of 89%. Membership had been revised.

Attendees were notified of new copyright rules. The patent notice was made and there were no patent claims. The Minutes from the Spring 2019 meeting in Anaheim and the new Agenda were approved by unanimous consent with no corrections.

There was no specific old business. Zoltan began with revising the new Draft 6 at Section 8.0. The main points of discussion were:

- Table 18 has added tests. Lightning impulse was added in an effort to harmonize with IEC. Most added tests were acknowledged as routine with manufacturers.
- Backtracking to Table 13 Transient Response the discussion was whether time needed to be in cycles or in an additional column. This question will be surveyed.
- Table 14 Ferro-resonance requirements discussion resulted in another survey question of whether and why a primary voltage factor of 1.4 needs to be added. Also, the time in milliseconds versus cycles was argued.
- Section 8.2.7 capacitance measurements will be revised to not differ by more than +/- 10% or 10 kV with notes to measure at 10 kV first and then at 100%. Further noting that reducing to a lower voltage will produce a different value.

Various minor corrections and clarifications were identified throughout sections, but the Draft 6 revisions ended at Section 8.2.9.

Survey questions will be sent and Zoltan has considered proposing interim internet-based meetings. Otherwise the next meeting will be at the Transformers Committee Meeting in Charlotte, Spring 2020. The meeting was adjourned at 12:15.

#### **F.7.4 Working Group for Conformance Test Procedures C57.13.2 – Thomas Sizemore**

**Attendees:** 38 people attended and 23 members. 8 people requested membership. 3 requests for membership were granted and the remaining 5 requests can be reviewed again after then meeting as they did not meet attendance requirements.

**Rosters:** An initial 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.

**IEEE copyright slides:** Text was displayed, and the Chair inquired as to if had any specific questions or materials that would be an issue. None were brought up.

**Minutes of previous meeting:** approved by David Wallace and Vladimir Khalin

**Agenda:** approved by Scott McCloskey and Rudolf Ogajanov.

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

Vladimir pointed out that the Section 7.3.2.3 is out of scope of this conformance standard and this section should not be part of main body of this standard.

Deepak made a comment to move this section and put in informative annex and later should be addressed in next revision of main standard and once it is being discussed approved and put in c57.13 standard then we could move this section to the main body of 13.2 .David made a motion to move it into informative annex, Vladimir 2nd it .This section needs to be modified to for informative section.

Subclause 2 comments were approved and will be added to the standard. (Scott and David)

Subclause 7.3.2.3 comments need to be moved to informative annex.

Annex A comments were approved and will be added to the standard.

Section 7.3.3 Accuracy of voltage transformers need to be in-line with 7.10 of c57.13. Text will be review and modified as needed for the next draft.

**Action:** An updated draft will be produced and circulated for comment between meetings.

**Motion to adjourn:** David and Vladimir

**Next Meeting:** This WG will meet to continue work at the Charlotte, NC Spring 2020 meeting.

### **F.7.5 TF for Instrument Transformers Accuracy – Igor Ziger**

**Attendees:** 48 people attended, 18 members present and 8 people requested membership.

**Rosters:** no paper copy was used.

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

**Copyright:** Text was displayed at the meeting

**Minutes of previous meeting:** approved by David Wallace and Vladimir Khalin

**Agenda:** approved Vladimir Khalin and Thomas Sizemore

#### **Review of the action items for this task force:**

Presentation was done by Benoît Garceau on “Standard Burdens vs Modern Electronic Meter Burdens for Metering Instrument Transformers” and floor was open for discussion. Discussion tackled many issues, including the impact of high burdens on accuracy, addition of electronic burdens, comparison to IEC requirements, and other remarks.

Deepak Kumaria proposed to have an informative section which educated end customer on standard burden vs modern burden; parameters which influence the accuracy; other concepts like simultaneous loading and Electronics burden and its influence and reason to suggested the need for new square instead of parallelogram. Other people agreed to help (T. Sizemore, R. Trifunovski..).

Zoltan request to put forward a request to sub-committee for end user/ test equipment manufactures to participate in survey to share the data esp. In regard to use and application of electronics burden. This should be mentioned to the entire transformer committee body. A option to do a Thursday morning tutorial was also discussed.

Results of Survey 1 were discussed. The group was encouraged to respond in higher numbers since only 5 responses were received. A reminder email will be sent to the working group body.

The people who positively responded will be contacted to provide data by the spring meeting.

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

**Next Meeting:** This WG will meet to continue work at the Charlotte, NC Spring 2019 meeting.

## **F.8 Presentation by Zoltan Roman on CTs in Outdoor Power Circuit Breaker Applications**

Zoltan Roman presented the differences between Table 2 and Table 3 in C57.13-2008 and Table 2 in C57.13-2016 pointing out that the basic impulse insulation levels and dielectric tests for current transformers with the same dielectric test requirements as outdoor power circuit breakers has been completely removed from the latest revision of the main standard. In Table 2 in C57.13-2016, the PFWV has been changed from 800/860kV previously to 830kV for 1800kV BIL level. In addition, the BIL has been lowered from 1675kV to 1550kV with the PFWV changing from 750kV to 680kV. Lastly, Zoltan Roman mentioned that 1550kV BIL has less safety margin and he presented a table demonstrating this. Zoltan Roman said in general he wants people to be careful with the 1550kV BIL level and be aware. Deepak Kumaria made the comment that all US units are 1800kV BIL and that yes, sometimes 1550kV BIL units have problems in the field. Peter Zhao posed the question about whether Zoltan Roman had considered this from a switching perspective and he replied the problem is the insulation thickness and the transients magnitude and speed. Peter Zhao made the comment that it is up to the utility to pick the correct unit. Pierre Riffon asked if a 600 Chopped Wave test was performed on the problem units then which Zoltan Roman replied yes, they passed, but 600 chops is not enough and that Cigre is looking into this.

## **F.9 Old Business**

The chair reminded the subcommittee 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.

## **F.10 New Business**

There was no new business.

## **F.11 ITSC Adjournment**

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

The next meeting is to be held in Charlotte, NC, in Spring 2020.