Annex F Instrument Transformers Subcommittee

Chair: Thomas Sizemore
Vice Chair: David Wallace
Secretary: Nigel MacDonald

F.1 Introductions

The table below shows all recorded attendees, affiliations at the time of the meeting and roles in the ITSC.

First Name	Last Name	Company/Affiliation	Role
Dinu	Amarasinghe	Bruce Power	Guest
Gregory	Ante	Southern California Edison	Guest
Edmundo	Arevalo	Bonneville Power Administration	Guest
Allan	Bartek	Spruce Run Engineering LLC	Guest
Mats	Bernesjo	Hitachi ABB Power Grids	Guest
Jean-Noel	Berube	Rugged Monitoring Inc.	Guest
Lee	Bigham	Instrument Transformer Equip Corp	Member
Sanket	Bolar	Megger	Guest
Jeffrey	Britton	Phenix Technologies, Inc.	Guest
Steven	Brzoznowski	Bonneville Power Administration	Guest
Jaroslaw	Chorzepa	ABB Inc.	Guest
Michael	Craven	Phoenix Engineering Services	Guest
Juan Carlos	Cruz Valdes	Prolec GE	Guest
Rolando	Demes	Arteche	Member
Brandon	Dent	Memphis Light, Gas & Water	Guest
Huan	Dinh	Hitachi ABB Power Grids	Member
David	Ellis	PSEG	Guest
Eric	Euvrard	RHM International	Member
Feras	Fattal	Manitoba Hydro	Guest

Reto	Fausch	RF Solutions	Guest
Lorne	Gara	Shermco	Guest
Ali	Ghafourian	H-J Enterprises, Inc.	Guest
Rob	Ghosh	General Electric	Guest
Michael	Haas	Instrument Transformers, LLC	Guest
Michael	Hardin	H-J Enterprises, Inc.	Guest
Ryan	Hogg	Bureau of Reclamation	Guest
Ramadan	Issack	American Electric Power	Guest
William	Knapek	OMICRON electronics Corp USA	Guest
Ivan	Konta	KONCAR - Instrument Transformers	Member
Marek	Kornowski	Polycast International	Member
John	Kotula	Dominion Energy	Guest
Christopher	Lianides	Southern California Edison	Guest
Colby	Lovins	Federal Pacific Transformer	Guest
Nigel	Macdonald	Trench Limited	Secretary
Rebecca	Manderfield	Xcel Energy	Guest
Lee	Matthews	Howard Industries	Guest
James	McBride	JMX Services, Inc.	Guest
Scott	McCloskey	Amran Inc.	Member
Matthew	McFadden	Oncor Electric Delivery	Guest
Ross	McTaggart	Trench Limited	Member
Robert	Middleton	RHM International	Member
Slobodan	Misur	Trench Limited	Guest
Paul	Morakinyo	PSEG	Guest
Randolph	Mullikin	ABB Inc.	Guest

Hossein	Nabi-Bidhendi	ABB Inc.	Guest
Frank	Neder	Trench Germany GmbH	Guest
Rudolf	Ogajanov	ABB Inc.	Member
Ron	Pate	ABB Inc.	Guest
Dipakkumar	Patel	Instrument Transformer Equip Corp	Guest
Caroline	Peterson	Xcel Energy	Guest
Sylvain	Plante	Hydro-Quebec	Guest
Adnan	Rashid	Measurement Canada / ISED	Member
Pierre	Riffon	Pierre Riffon Consultant Inc.	Member
Diego	Robalino	Megger	Member
Patrick	Rock	American Transmission Co.	Member
Zoltan	Roman	GE Grid Solutions	Member
Andre	Rottenbacher	Ritz Instrument Transformers	Member
Daniel	Sauer	EATON Corporation	Guest
Devki	Sharma	Entergy	Guest
Kunal	Shukla	PECO Energy Company	Guest
Stephen	Shull	BBC Electrical Services, Inc.	Guest
Thomas	Sizemore	ABB Inc.	Chair
Adam	Smith	Commonwealth Associates, Inc.	Guest
Steven	Snyder	Hitachi ABB Power Grids	Member
Muhammad	Sohail	Trench Limited	Guest
William	Solano	Instrument Transformer Equip Corp	Guest
Brian	Sonnenberg	Instrument Transformers, LLC	Guest
Mauricio	Soto	Hitachi ABB Power Grids	Guest

Dervis	Tekin	Meramec Instrument Transformer Co.	Member
Risto	Trifunoski	Trench Limited	Guest
Kiran	Vedante	Ritz Instrument Transformers	Guest
Deniss	Villagran	GE Grid Solutions	Member
Dieter	Wagner	Hydro One	Guest
David	Wallace	Mississippi State University	Vice-Chair
Leon	White	H2scan	Guest
Barrett	Wimberly	GE Grid Solutions	Member
Mana	Yazdani	Trench Limited	Member
Joshua	Yun	Virginia Transformer Corporation	Guest
Malia	Zaman	IEEE	Guest
Igor	Ziger	KONCAR - Instrument Transformers	Member

F.2 Quorum

25 of 35 members were present quorum was attained. 45 guests were also in attendance. The total number of attendees was 80 and 14 requested membership. These requests for membership will be reviewed.

F.3 Agenda

An agenda was displayed by the chair. It was approved unanimously.

F.4 Approval of minutes – Fall 2020 meeting

Minutes were approved unanimously.

F.5 Essential Patent Claims & IEEE Copyright Policy

A slide was displayed as a reminder to all WG/TF leaders that it is necessary to display the essential patent claim and IEEE copyright policy slides.

F.6 Status of C57.13 Standards

The chair briefly presented the status of the various standards handled by the ITSC including both those being actively worked on at this time as well as those not yet due for revision.

F.7 Working Group Reports

F.7.1 JWG on Station Service Voltage Transformers, IEC-IEEE 63253-5713-8 – David Wallace & Ross McTaggart

Attendees: 56 people attended the meeting with 23 members present. Quorum was met. 13 people requested membership to the working group.

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. Thomas Sizemore made a motion to approve the minuets and Igor Ziger seconded the motion. The agenda was approved with no objections made.

Summary: Minutes of the Fall 2020 Virtual meeting were presented. Pierre Riffon made a motion to accept the minuets and Rudolf Ogajanov seconded the motion. The minuets were approved by the members of the working group with no objections.

Ross McTaggart provided a status update on the current revision of the draft. The group decided to send the draft to CDV.
Ross McTaggart led a discussion concerning the use of materials from other standards in the draft.

David Wallace pointed out that the PAR for the workgroup was set to expire in December. He proposed asking for an extension. The WG agreed. David will submit the request.

Discussion was held on the 60% requirement for the internal arc test. Pierre Riffon agreed to send out a CIGRE paper with relevant information on the topic for the group to review.
The comment resolution performed by the JWC will be presented to the TC38 WG on May 12 for review.

It was brought to attention that Table 8 in the draft needed to be corrected. David Wallace will make the requested corrections.

Kenneth Skinger made a motion to adjourn the meeting, Rudolf Ogajanov seconded the motion. No objections were made.

Next Meeting: The WG will meet to continue work at the Fall 2021 meeting in Milwaukee, Wi.

F.7.2.3 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. The Agenda was displayed, and introductions were made.

Attendees: A poll showed that 19 members were present and that was a quorum of greater than 13 of the 24 members. There were 37 total attendees.

Essential Patent Claims: The patent notice was made and there were no patent claims. Attendees were notified of copyright rules.

IEEE Copyright Policy: Attendees were notified of copyright rules.

Agenda: A motion was made by Tom Sizemore to accept the agenda and it was seconded by Barrett Wimberly. No one opposed; it was accepted.

Minutes: A motion was made by Barrett Wimberly and was seconded by Tom Sizemore to approve the minutes for the Fall meeting of 20 October 2020. No one opposed; it was accepted.

A motion was made by Barrett Wimberly and was seconded by Tom Sizemore to approve the minutes for the electronic meeting of 30 November 2020. No one opposed; it was accepted.

Summary: Zoltan began by reviewing the almost complete status of the standard, but not everything has been added to Draft 9. Draft 10 should then be the version for balloting. A discussion of the need for a PAR extension followed and Tom said it would need to be done by about the summer. He made a motion to approve requesting an extension, the motion was seconded by Steve Snyder and Zoltan displayed the membership list. No one opposed so the application for an extension is approved.

Zoltan continued with consideration of two surveys that may need to be sent out. Capacitance ranges Table for Annex B and dielectric tests by users. The Table led to discussion about line tuner specification ranges and the names of the columns conflicting with the names of manufacturer ranges. Finally, a motion was made to "Include the capacitance range table in Annex B with the headings changed to Range 1 and Range 2 and Range 3." Andre Rottenbacher formally made the motion and Steve Snyder seconded it. A poll of the members was taken. 16 of 19 members present accepted it and it will be included in Annex B.

There was a request to consider guidance on capacitance for PLC applications. Annex A about drain coils is now from C93.1. There was also a request for TRV capacitance guidance, but after discussion there will be no addition.

Back to "New survey questions" and the "dielectric tests by user" led to much more discussion. Barrett recalled that it involved the variance between field measurements versus nameplates. He also pointed out the users do not do full voltage tests, but typically do 10 kV power factor tests, for example. No one opposed adding this guidance and volunteers were asked to write the text. Diego Robalino and Patrick Rock volunteered.

As at other meetings there was discussion of PD levels at different capacitances and the difficulties of achieving Table 8 limits. Zoltan had a slide showing the actual PD data measuring 10 and 25 nF.

The meeting presentation and Draft 9 will be distributed.

Zoltan expects the next meeting to be the end of May to the beginning of June timeframe and after input by the 'test by user' group.

With a motion by Steve Snyder and a second by Patrick Rock the meeting was adjourned.

F.7.5 TF for Instrument Transformers Accuracy – Igor Ziger

Attendees: A total of 56 people attended. 23 members were present, and quorum was attained. 9 people requested membership.

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 pervious meeting: Unanimously approved

Agenda: was displayed without any objections

Summary:

This was the fourth meeting of TF Instrument Transformer Accuracy and it was was held virtually at 9:25 am Central Time as convened by chair Igor Ziger and Thomas Sizemore, serving in place of Deepak Kumaria who was unable to attend.

A presentation was given by Hossein Nabi-Bidhendi entitled "Voltage transformer errors at different burdens and power factors", which took up most of the time. There were

discussion points throughout the presentation. The main comments will be present in the TF minutes.

I. Ziger presented and led a brief discussion about the formation of sub-task force group to investigate the effect on burdens at amperage other than 5 amps. A meeting will be planned between this meeting and the fall meeting. So far 8 people expressed interest through the chat.
The main action items are:

- I. Ziger and D. Kumaria will reach out and search for volunteers to work on a new informative annexure
- Web meetings to be scheduled to specifically cover the work done so far
- A subgroup to resolve the effect on burdens at amperage other than 5 amps will be assembled and meet in between meetings. I. Ziger and D. Kumaria will reach out to the TF body to collect other interested individuals aside from those that applied through the chat.
- I. Ziger to upload all previous materials to the IEEE server

Motion to adjourn: The meeting adjourned at 10:40 AM with no objections.

Next Meeting: The next meeting is Milwaukee, USA Fall 2021 meeting.

F.8 Old Business

No old business was displayed or discussed.

F.9 New Business

Zoltan Roman presented 3 new topics; polarity and terminal markings when multiple primary windings are provided, requirement for an autopsy after the endurance test in C57.13.5 and consideration of implementing C57.13 under a continuous revision PAR.

In C57.13 4.9.1 the text indicates that when multiple primary windings are provided that the leads or terminals shall be designated with the letter H along with pairs of associated numbers. It is not clear if connections that are not customer accessible are required to be marked in this manner or not. Considerable conversation took place, but consensus was not reached in the meeting as to the next step.

Discussion took place concerning the endurance chopped wave test as specified in C57.13.5 12.1 item C. This section indicates that “The inspection and autopsy of the complete internal insulation structure for the dismantled transformer reveal no trace of tracking or burnt mark”. It was questioned if it is necessary to perform an autopsy if DGA results are satisfactory. A discussion took place primarily between Zoltan Roman, Pierre Riffon, Igor Ziger and Huan Dinh. Pierre provided an example in which an autopsy was able to find an issue in an oil filled CT which was damaged at a

capacitance tap. A majority of people speaking on this topic were in favor of not making a change at this time.

Two issues (CTs with the same dielectric requirements as circuit breakers and burden for non 5 A secondary CTs) observed in the C57.13 standard that have not yet been acted on were discussed as background information for a discussion of starting a revision to the standard using a continuous revision PAR. It was also discussed if a normal PAR should be used but then when work concludes on the next version immediately initiate another PAR which in many ways has a similar effect to a continuous revision PAR. The chair is to discuss each approach with Malia Zamen and Steve Shull. When relative merits of each approach are determined further discussion will take place with the ITSC before initiating a PAR for a new WG to be formed to revise the C57.13 standard. An online meeting or survey is likely to take place on this topic prior to the Fall meeting.

Thomas Sizemore presented a slide concerning if a Task Force should be created to start work on some of the issues that have been brought up in the C57.13 standard. No vote was taken on this topic as a WG may be formed in the coming months for revising this standard. Creation of one or more task force groups may be taken up later in support the C57.13 revision. Additionally, it will be investigated how revisions can be made by corrigendum or other means.

Adnan Rashid presented work on a DC transducer standard. The ANSI C12 committee has created a subgroup to develop a DC transducer standard which is now in the planning phase and is looking for experts to participate.

F.10 ITSC Adjournment

The meeting concluded after a motion to adjourn which was approved unanimously.

The next meeting is to be held in Milwaukee, Wi, USA, Canada, in the Fall of 2021.