

Annex K Power Transformers Subcommittee

October 30, 2019

Columbus, OH

Meeting Time: 1:30 p.m.

Chair: Bill Griesacker

Vice Chair: Alwyn VanderWalt

Secretary: Daniel Blaydon

K.1 Meeting Attendance

The Power Transformers Subcommittee met on Wednesday, October 30, 2019 at 1:30 PM. The RFID attendance record indicated that 87 out of 118 members of the subcommittee were in attendance; a quorum at the meeting was achieved. A total of 220 individuals attended the meeting; 6 guests requested membership.

K.2 Approval of Agenda and Meeting Minutes

The Chair requested a motion for approval of the proposed meeting agenda. A motion to approve was made by Phil Hopkinson and seconded by Wally Binder. Gary Hoffman made a motion to revise the agenda to include an item under new business about the wound core gassing issue that Phil Hopkinson has brought before the committee. Dan Sauer seconded the motion. The motion passed. The motion to approve the revised agenda was approved by unanimous consent. The approved agenda can be found in Attachment K.2.

The request for approval of the Spring 2019 meeting minutes was inadvertently omitted. Approval of these minutes will be requested at the Spring 2020 meeting.

K.3 Chair's Remarks

The chair provided an overview of the present subcommittee membership statistics, including new members and those members which had been moved to guest status.

An announcement was made that attendance would be tracked by the RFID system. Paper rosters were not used at this meeting; however, a signup sheet was provided to guests who wanted to requested membership.

The chair provided an overview of the Working Group and Task Force requirements for the scheduling of meetings, submission of minutes, and other administrative tasks.

K.4 Working Group and Task Force Reports

K.4.1 Revision of C57.12.10 IEEE Standard Requirements for Liquid-Immersed Power Transformers

This group did not meet.

K.4.2 Revision of C57.93 IEEE Guide for Installation and Maintenance of Liquid-Immersed Power Transformers

This group did not meet.

K.4.3 Revision of C57.125 Guide for Failure Investigation, Documentation, Analysis and Reporting for Power Transformers and Shunt Reactors

This group did not meet.

K.4.4 WG IEC 60214-2 - Tap Changer Application Guide - Craig Colopy

A dual logo (IEC/IEEE) document was published in June 2019.

The complete update can be found in Attachment K.4.5.

K.4.5 WG 60214-1-C57-131 - Tap Changers - Craig Colopy

A joint review creating a revision of 60214-1 (2014) by IEC and IEEE is currently under consideration. A review report will be issued by the IEC TC14 Secretary at the end of the maintenance review and will be circulated to the member countries before the TC 14 plenary meeting in September 2020. It is anticipated that a joint review for revising 60214-1 (2014) will be initiated after this meeting.

The complete update can be found in Attachment K.4.5.

K.4.6 C57.140 Guide for the Evaluation and Reconditioning of Liquid-Immersed Power Transformers

This group did not meet.

K.4.7 C57.143 – Guide for Application of Monitoring Equipment to Liquid-Immersed Transformers and Equipment – Mike Spurlock

Work is in progress including extensive revisions to some sections of the guide. The latest revisions have been posted to the Power Transformers Subcommittee page. EPRI research on transformer monitoring was presented. The Chair is currently evaluating options to help improve volunteer participation, including the possibility of establishing a task force to organize the volunteers into a more formal structure and will inform the working group via email in the next 2-3 weeks. The Working Group is looking for call for additional volunteers and members were again requested to review the current document currently posted on the Subcommittee webpage.

The complete meeting minutes can be found in Attachment K.4.7.

K.4.8 Revision of C57.148 Guide for Control Cabinets for Power Transformers - Joe Watson

This group did not meet. The guide is currently out for ballot. The ballot pool has closed and voting will close on November 23rd.

K.4.9 Revision of C57.150 Guide for the Transportation of Transformers and Reactors Rated 10,000 kVA or Larger – Greg Anderson

The last version of this guide was published in 2015. The PAR for the current revision expires in December 2022. Current topics under consideration for the new version include transportation topics that should be brought up during a design review, impact recorder applications and specifications, internal and external bracing, mobile substations, and alternative insulating fluids. The working group is seeking experts on these topics.

The complete meeting minutes can be found in Attachment K.4.9.

K.4.10 Development of PC 57.153 Guide for Paralleling Transformers

This group did not meet.

K.4.11 Development of PC57.156 Guide for Transformer Tank Rupture Mitigation of Liquid-Immersed Power Transformers and Reactors

This group did not meet.

K.4.12 Development of PC57.157 Guide for Conducting Functional Life Tests for De-Energized Tap Changer Contacts

This group did not meet.

K.4.13 Task Force on V/Hz Curve – Joe Watson

The task force discussed the background on the original General Electric V/HZ curves and their current applicability. They have developed a proposed outline/table of contents for a paper which will discuss effects and performance implications of these curves. They will be holding a meeting prior to the Spring 2019 which will be announced.

The complete meeting minutes can be found in Attachment K.4.13.

K.4.14 Development of PC57.170 Condition Assessment Guide – Kumar Mani

A task force has been setup to review a CIGRE condition assessment guide and make recommendations.

The complete meeting minutes can be found in Attachment K.4.14.

K.4.15 PAR Study Group for C57.116 GSU Transformers – Weijun Li

PAR has been submitted. Waiting for IEEE approval. A working group will meet at the Spring 2020 meeting to start reviewing the document.

K.5 Old Business

No old business.

K.6 New Business

1. The standard C57.17 Requirements for Arc Furnace Transformers expires in 2022. Peter Balma has volunteered to submit a PAR for re-approval of the standard.
2. The history of the PD test for wound cores for distribution class transformers was provided, including current status of approvals. Phil Hopkinson made a motion that the Power Transformers Subcommittee approve the recommendations of the task force (relating to the wound core proposal) to go into C57.12.00 and C57.12.90. Gary Hoffman seconded the motion. There was no discussion. The motion was approved unanimously with 3 abstentions.
3. The State Grid of China requested that we amend C57.93 IEEE Guide for Installation and Maintenance of Liquid-Immersed Power Transformers to include cold start (low temperature) procedures. They have requested that this be Entity Based work. There was much discussion about the implications of Entity Based work. Gary Hoffman made a motion to motion “Accept their proposal for an amendment to C57.93 and they would have to work with us for scope, title

purpose”. This was seconded by Dan Sauer. Sanjib Som made an amendment to change “us” to “PTSC” in the motion. Gary Hoffman and Dan Sauer agreed to amendment. The motion passed with 57 voting to approve, 4 voting negative, and 5 abstentions. There was no further new business.

K.7 Adjournment

The meeting was adjourned at 2:23 pm

K.8 Attachments

Attachment K.2 – F19 PTSC Agenda

Attachment L.4.5 - WG IEC 60214-2 and WG 60214-1-C57-131 Update

Attachment K.4.7 – C57.143 Monitoring Guide

Attachment K.4.9 – C57.150 Transportation Guide

Attachment K.4.13 – TF V/HZ

Attachment K 4.14 – PC57.170 Condition Assessment Guide

AGENDA

Power Transformers Subcommittee
IEEE PES Transformers Committee

Wednesday, October 30, 2019, 1:30-2:45 PM

Hyatt Regency Columbus Hotel, Columbus, Ohio USA

Bill Griesacker – Chair, Alwyn VanderWalt – Vice Chair, Dan Blaydon – Secretary

1. Call to order
2. Determine quorum
3. Approval of previous meeting minutes
4. Chair remarks
5. Working Group and Task Force reports
 - a. PAR Study Group for C57.116 GSU Transformers W. Li
 - b. WG 60214-1-57-131, Tap Changers (on hold) C. Colopy
 - c. WG Tap Changer Application Guide IEC 60214-2 C. Colopy
 - d. WG Revision of C57.143, Monitoring Guide M. Spurlock
 - e. WG Revision of C57.148, Control Cabinet Standard J. Watson
 - f. WG Revision of PC57.150, Transportation Guide G. Anderson
 - g. WG C57.170 Condition Assessment Guide K. Mani
 - h. TF Transformer V/Hz Curves J. Watson
6. Old business
7. New business
 - a. Wound Core Gassing Issue – Phil Hopkinson
8. Adjournment

Attachment K.4.560214-1 (C57.131) Tap-changers

Some discussion took place September 2019, at the IEC TC14 plenary meeting in Fontainebleau, France, whether or not to start a revision of IEC 60214-1. The development of a common IEC/IEEE Dual Logo document is in the interest of the industry. It was agreed that revision of the document for technical reasons is not required. This direction was confirmed earlier, over a year ago by the IEEE Power SC with it agreeing to adopt IEC 60214-1 (2014) as is for creation of a dual logo document, replacing C57.131-2012. Due to IEC procedures it was decided that copying an IEC standard by another Global standard body was not possible. A joint review creating a revision of 60214-1 (2014) by IEC and IEEE was decided as being the best avenue going forward. As a conclusion of the discussion in France, the IEC convener, Axel Kramer, was asked to prepare a maintenance review in cooperation with the IEEE chairman, Mr. Craig Colopy. A review report (RR) will be issued by the IEC TC14 Secretary at the end of the maintenance review to formally record the result. The RR will be circulated to the member countries of IEC before TC 14 plenary meeting in New Delhi, India, September 2020. It is anticipated that a joint review for revising 60214-1 (2014) will be initiated after this IEC TC14 meeting in India.

60214-2 Tap-changer Guidelines

Dual logo (IEC/IEEE) was published June 2019

Regards
Craig Ambrose Colopy
IEEE C57.131 /IEC 60214-1 Chairman

Attachment K.4.7

**Revision to C57.143 – “Guide for Application of Monitoring Equipment to
Liquid-Immersed Transformers and Components”
Transformer Monitoring Working Group**

Monday, October 28, 2019

Columbus, OH, USA

Minutes of WG Meeting

The meeting was called to order at 3:15 pm by Chair Mike Spurlock. Vice Chair Poorvi Patel and Secretary Elizabeth Bray was also present.

This was the sixth meeting of the working group, rosters were circulated and members asked to stand to determine quorum, quorum was reached with 45 of 80 members present. The attendance for the meeting was as follows:

Number of Members in Activity = 102

Number of Members Present = 45

Quorum Present = 56.25%

Number of attendees = 125

Attendees requesting Membership = 17 (To be reviewed based on Participation to date)

The WG does plan to meet at the Spring 2019 Transformers Committee Meeting in Charlotte, NC.

PAR Status: PAR for a Revision to an existing IEEE Standard

Type of Project: Revision to IEEE Standard C57.143-2012

PAR Request Date: 19-Nov-2016

PAR Approval Date: 17-Feb-2017

PAR Expiration Date: 31-Dec-2021

The Agenda for the meeting was reviewed as seen below.

MEETING AGENDA

1. Welcome & Introduction
2. Call for Patent Disclosure
3. Roster Circulation
4. *Quorum Roll Call*
5. Chair Remarks
6. Recognition and thanks to volunteers.
7. New Members – Indicate on Roster

8. Call for approval of Spring 2019 Meeting Minutes (Anaheim, CA)
9. Working Group Activities
 - a. Progress to date and latest revision posted for review.
 - b. Sections still needing revisions.
10. EPRI COLM Presentation (Poorvi Patel and Prayag Parikh)

11. New Business

Mike Spurlock reviewed the Par Status and Scope and Purpose for the PAR with the working group. The goal is to have the document ready for ballot in early 2021.

The volunteers who have contributed to this point were recognized. In addition, the call for additional volunteers was made several times during the meeting

Mike Spurlock went over the current progress for the working group. Revisions have been made to Chapter 4, the Introduction, and extensive work and reorganization of Chapter 5. There is more work needed in Chapter 5. Chapter 6 also needs revision.

Prayag Parikh presented work from EPRI on the COLM guide for a quick monitoring guide for monitoring transformers. Feedback was requested from Prayag & Poorvi around what is missing in the guide.

Mike Spurlock brought up a question on whether a task force should be created to oversee the ongoing work on the C57.143 monitoring guide revision. During subsequent discussion on this topic, some WG members indicated they had felt excluded from the revision process and expressed a need for better communications as well as a more open revision process. A main motion to create a task force was proposed by Roger Felton but after much discussion, the motion seemed to lose momentum. Gary Hoffman then made a motion to table (postpone indefinitely) the main motion and this was seconded by Roger Felton. The motion to table was passed by majority vote. The WG Chair will evaluate options to help improve the monitoring guide revision process, including the possibility of establishing a task force to organize the volunteers into a more formal structure and will inform the WG via email within 2-3 weeks after the fall meeting. Gary Hoffman suggested that if the chair decided to proceed with setting up a task force, a letter ballot defining the structure and scope of the task force could be prepared and circulated to the WG via email.

A motion to Adjourn was given by Trent Williams and seconded by Claude Beauchemin. Meeting adjourned at 4:22pm.

C57.150 – IEEE Guide for Transportation of Transformers & Reactors Rated 10 000 kVA or Higher

**Tuesday, October 28, 2019; 11:00 am – 12:15 pm
Hyatt Regency Columbus Hotel, Union AB Room
Columbus, Ohio USA
Minutes of WG Meeting**

The meeting was called to order at 11:01 am by Chair Greg Anderson. Also present were Vice Chair Ewald Schweiger, and Secretary Marnie Roussell (writer of these Minutes).

A total of 105 people was present. This included 27 of the 45 current members in the working group, resulting in a 60% quorum. Attendance was taken utilizing RFID tabulation. Paper rosters were not passed around, so any guests desiring membership were asked to contact one of the WG leaders.

Greg stated that he moved seven (7) individuals from WG Member status to WG Guest status. The following individuals have not attended the past four meetings, nor otherwise contributed: P. McShane, A. Mukerji, K. Kampshoff, A. Burns, A. Gyore, Y. Weldetnsae, A. Sbravati.

Agenda

1. Welcome and Call to Order
2. Questions, address the Patent Issue & Copyright Issue
3. Determination of Quorum (determined by RFID system)
4. Approval of the Minutes
5. Old Business
 - a. Timeline of Project (PAR expires 12/31/2022)
 - b. Review a sample of a couple of revised sections of the guide
 - c. Review work-in-progress
6. New Business
7. Additional discussion, ideas
8. Adjourn

Introductions of the Chair, Vice Chair, and Secretary were made.

A call for essential patent claims was made. A call for essential copyright issues were made. No patent claims or copyright issues were identified.

Minutes of the Spring 2019 Meeting were approved with a motion by Eduardo Garcia, and seconded by Susan McNelly. The Agenda of this Fall 2019 Meeting were approved with a motion by Wallace Binder, and seconded by Ken Skinger.

Timeline

Greg provided a brief history of the document and the timeline for the revision. He indicated we need to essentially have a complete draft done at least a year prior to the 12/31/2022 expiration of the PAR.

Revision Topics/Assignments

Tasks Assignments were reviewed and status provided.

WORK ASSIGNED AT PREVIOUS MEETINGS				-
	Task	Brief Scope (see meeting minutes)	Assigned To	Status Columbus Meeting
1	CIGRE Guide	Compare CIGRE document 673 - WG A2.42-2016 to our Guide. Identify topics to be included.	H. Abdelkamel, M. Locarno, K. Vijayan, S. Nambi, E. Schweiger, B. Webb	Done
1.3		#3 Definitions	P. Dolloff, M. Alonso	WIP
1.4		#4 Transport Incidents - case studies	P. Dolloff, M. Alonso Need more volunteers	WIP
1.5		#5 Design Considerations for Transportation	Need more volunteers	Need more volunteers
1.7		#7 Design review	See Item 13 below	
1.8		#8, 12, 13 Transport (process, planning, instructions)	Need more volunteers S. Nambi	WIP Help offered by T. MacArthur
1.9		#9 10 Impact recorder application and data interpretation	See item 4 below	WIP Help offered by T. MacArthur
1			Annex Flowchart for test/conditions after transport	Need more volunteers
2	Swimlanes	Helpful "matrix/table" to Guide	D. Wallach	Done
3	Impact Recorders	Enhance section on impact recorders	S. Nambi, R. Rathi, J. Watson, P. Dolloff, B. Webb	WIP Input received from J. Watson, W. Binder, B. Webb
4	Internal Bracing	Add guidance (careful, a design issue!)	R. Verdolin, J. Watson, M. Alonso, M. Hrkac	WIP Input received from R. Verdolin
5	External Bracing, Lashing, etc.	Provide some guidance	K. Zibert, P. Selvaraj	WIP Ideas about how to handle requirements in different states requested
6	Exceeding Impact Limits	Add: What to do if specified impact limits are exceeded.	R. Verdolin, J. Watson, S. Sharpless	WIP
7	Tests	Compare Tests, C57.150 vs. C57.152	W. Binder, J. Watson, M. Ferreira	WIP Input received from J. Watson, W. Binder, M. Ferreira
8	Air Pressure	Add: How internal air pressure changes w/ambient temperature.	J. Arteaga, P. Kleine	Done
9	SFRA	Enhance section on SFRA	G. Anderson, R. Su, K. Sullivan	WIP
10	C57.93, Installation Guide	Review C57.93 for overlap and conflicts (Doc published in 2019)	Lead: J. Sen; M. Lau	Done
11	Shipping with fluids / Natural Ester Fluids	Add section of unique issues	R. Simonelli, A. Jhala	WIP
12	Mobile Subs	Add section of unique issues	K. Vijayan Need more volunteers	WIP
13	Design Review Checklist	Checklist of discussion topics during a design review	K. Vijayan, M. Alonso, A. Jhala, A. Sarkav	WIP

WIP = Work in Progress

CIGRE Guide

Mario Alonso made a motion to take some case studies and photos from CIGRE Guide and add to the Annex of C7.150. Sue McNelly seconded the motion, and the motion was amended to add some of our own case studies. Peter Kleine volunteered to add case studies.

Swim Lanes

Dave Wallach completed the Swim Lanes Concept matrix. It is posted to the website.

Impact Recorders

Tara Lee MacArthur, Daniel Weyer, K. Vijayan, Mario Alonso, Bruce Webb, and Eric Doak volunteered to work together.

Internal Bracing

Sue McNelly suggested that internal bracing be located under the design section. Help was requested from manufacturers.

Exceeding Impact Limits

Samuel Sharpless and Roger Verdolin have approached this as “what to do if”, and will join the force with the group on impact recorders.

Compare Tests, C57.150 vs. C57.152

Marcos Ferreira, the Chair of C57.152, volunteered to assist with this section.

Shipping w/Natural Ester Fluids

The suggestion was to include all liquid fluids as a general section. Jeremiah Bradshaw and Paul Dolloff volunteered to develop this section,

Mobile Sub

Krishnamurthy Vijayan earlier submitted a section to Greg.

Design Review Checklist

Dave Wallach will resend a Design Review Transportation Checklist created by Mario Alonso.

New Business – There was no new business

The meeting was adjourned at 12:10 pm, with a motion by Wallace Binder which was seconded by Samuel Sharpless.

The Working Group plans to meet at the Spring 2020 Meeting in Charlotte.

Greg Anderson
WG Chair

Ewald Schweiger
WG Vice Chair

Marnie Roussell
WG Secretary & Technical Editor

TF on Volts/Hz Requirements
Kipp Yule – Chair, Ramsis Girgis, – Vice Chair, Joe Watson - Secretary

The TF met on Tuesday, October 29, 2019, from 3:15 – 4:30 PM with around 40 members and guests in attendance. The Chair was not able to attend and listened in by phone.

Ramsis Girgis discussed the background and purpose of the Task Force, to prepare guidance on a standardized process to determine V/Hz curves for various type of transformers with various designs and insulation materials, and to present this to the WG that will cover the revision of C57.116, the Guide for Transformers Directly Connected to Generators.

The basic contents of the document will be as follows:

- 1) Phenomenon of short term overexcitation (covered by Drew Welton)
 - a. Overvoltage or under-frequency generator operation
 - b. Generator load rejection
- 2) Relay Practices (covered by Drew Welton)
 - a. Generator curves
 - b. Typical V/Hz protection
- 3) Effect of short term overexcitation in power transformers
 - a. Structural parts overheating in core form transformers (covered by Ramsis Girgis)
 - b. Structural parts overheating in shell form transformers (covered by Ramsis Girgis)
 - c. Oil bubbling or gassing (Need authors)
 - d. Insulation deterioration (Need authors)
- 4) V/Hz curves presently used by the industry (covered by Ramsis Girgis)
 - a. Original GE curve
 - b. Issues with the GE curve and presently used curves
- 5) Updated V/Hz curves
 - a. Process for estimating thermal impact of short-term overexcitation (covered by Ramsis Girgis)
 - b. Development of Thermal criteria for Gas generation and insulation deterioration (need authors)
 - c. Process for developing V/Hz curves (covered by Ramsis Girgis)
- 6) References (need authors)

We discussed the need to recruit insulation and insulating fluids experts to cover some of the content in Sections 3 and 5 and we will reach out to others in the Committee.

We also plan to have a conference call or Skype meeting in December or January.

Working Group “Condition Appraisal for Liquid-Filled Transformers” PC57.170

(Power Transformer Sub-Committee)

Meeting Date/Time: October 29, 2019 0930-10:45 Hrs.

Meeting Location: “Union A/B” – Hyatt Regency

Chairman: Kumar Mani (KM) – (Duke Energy)

Vice-Chair: James Cross (JC) - (Kinectrics)

Secretary: TBA. Acting Secretary – James Cross

This was the formative meeting of this working group.

Meeting was convened at 0935 Hrs. by Chairman Kumar Mani with 121 total attendees. 33 attendees requested membership on the WG on the paper attendance list that was circulated.

Akash Joshi (Black and Veatch) has volunteered to be Secretary for this WG. He will take over Secretary duties at the next meeting. AGENDA

- A. Welcome & Introduction
- B. Call for Patent Disclosure
- C. IEEE Copyright Policy
- D. Roster Circulation- If you have interest in becoming a member, please indicate on the Roster.
- E. Chair Remarks
- F. Working Group Activities
 1. Approved PAR Title: A Guide for the Condition Assessment of Liquid Immersed Transformers, Reactors and their components.
 2. Approved PAR Scope: To present existing condition assessment methodologies that quantify the current condition of liquid immersed transformers, reactors and their components.
 3. Discussion on proposed sections in new guide.
 4. Volunteers to write the sections in the new guide.

Meeting Minutes:

KM reviewed the standard patent disclosure info. (No response from attendees to request for patent info.)

KM reviewed the copyright policy with the group.

KM presented a slide comparing the TB 761 document with IEEE C57.152, C57.140, and C57.143 contents.

Discussion: Gary H. asked if we had permission from CIGRE to use information from the TB 761 document. He noted that there is an MOU between IEEE and CIGRE to allow sharing of published information.

Bruce Forsyth asked if the MOU meant that we already had de facto permission to use CIGRE information. Gary suggested that we still needed formal copyright approval.

Action Item: Kumar to approach CIGRE and IEEE through IEEE-SA for copyright approval of the above reference documents.

Diego R. noted that the CIGRE document is available to all on the CIGRE website whether one is a CIGRE member or not.

Allan (Cargill) commented on the development of the CIGRE document. Luiz Cheim (ABB) participated in the CIGRE WG as well... he noted concerns about "Health Index" and that this needs to be discussed thoroughly. Joe Watson (Weidmann) also worked on the CIGRE TB 761 WG and he noted that the approach needs to be flexible and that a goal should be a consistent approach (as might be required by an insurance auditor). The current tools do not support this approach. He believes that we should develop something like CIGRE TB 761.

Luiz Cheim observed that we should use the CIGRE document as a starting point for our WG as many of the CIGRE participants and company are present.

Motion: Gary Hoffman moved that the officers of C57.170 WG obtain formal copyright permission from CIGRE. Seconded by Bruce Forsyth. Carried unanimously.

A discussion ensued about whether the permission would carry across various IEEE WG.

Joe Watson asked about whether a "co-logo'd" document with CIGRE might be possible. Gary noted that CIGRE would expect recognition as the information source.

Motion: Luiz made a motion that once we get approval from CIGRE to use their copyrighted material that a task force (or forces) produce a summary of the document be presented to this group. Seconded by Emilio Morales.

Discussion of motion: Mario Lacourno noted that a presentation on this topic was made at the Thursday tutorial session at a previous meeting.

Gary H. commented that he was not in favour of this approach...but rather than WG members make individual comments to the WG chairman. Poorvi Patel feels that results would be better if someone took leadership of this work as part of a TF.

Bruce F. noted that other WG's have created individual task forces to look at sections of a document. He recommends this approach. He said that the CIGRE document is available to all for use, so we need to look at changes/additions that we might make to the CIGRE document to justify our effort in this WG.

Gary H. offered a trailing amendment to Luis' motion: have a discussion of the CIGRE document that is open to all members not just TF. He made a trailing amendment that we break the CIGRE document into 12 sections and 12 task forces. There was no seconder.

Joe W. – we don't necessarily need all the same chapters as the CIGRE document.

Tim Raymond (EPRI) he noted that following the CIGRE document is not necessarily a good approach.

JW – he noted that one or two individuals should lead the summary of the CIGRE document (via task forces).

Tim suggests that one task force is adequate for the review/presentation task. Jim Gardner (SPX) – calls the question. Opposed by Gary H.

Vote: Four persons opposed the motion. Luis' motion is carried by majority vote.

Motion to reconsider: Gary made a motion to reconsider and develop/define a specific scope for the task force. Seconded by Bruce F. Bruce noted that this discussion has been going on for several meetings and so we need to move forward with a defined work scope. We need clarity in the scope and concrete direction/actions.

Discussion: Joe W. – we need a blank table of contents to use as a “template.”

Allan (Cargill) – noted that there were four or five TF's that worked on the CIGRE working group.

Carried unanimously.

Scott Reed (MVA Power) – Suggested we set up a Taskforce to look in to different chapters. Poorvi suggested that we needed concrete proposals for wording rather than just a simple review.

Motion: Bruce F made a motion that we form a TF that reviews the document and proposes a Table of Contents by way of defining the scope. Seconded by Diego R.

Discussion: Joe W – the task force should develop a TOC that correlates to the CIGRE document identifying gaps and overlap areas.

Scope of TF: To review the CIGRE TB 761 document and to develop and recommend a table of contents for the C57.170 guide and to make a presentation at the next WG meeting in Charlotte. Also, to review and recommend if any of A2.49 document sections should be incorporated into our guide.

Peter W. (Megger) noted CIGRE Technical Brochure 761 covers this subject. Bruce's motion carried unanimously. Joe W. asked about the PAR timeframe and the schedule moving forward. There are four years remaining in the PAR.

Action Item: Luiz Cheim will lead the TF effort. Volunteers should come forward after the meeting if they want to participate in the TF.

Alan Sbravati, Tim Raymond, Joe W, Jim Graham, Gary H, Mike Said all volunteered before the close of the meeting. Jeff Benach, Stephanie Denzer, Pragnesh Vyas, Ed teNyenhuis, Emilio Morales-Cruz, Bill Whitehead, Tara-Lee MacArthur, Peter Kleine and Elizabeth Bray volunteered after the meeting.

Action By JC: Volunteer name list to be provided to Luiz for the TF.

New Business- There was none.

Next Spring, 2020 meeting will be held at Charlotte, NC Meeting adjourned at 1035 hrs.

Respectfully submitted,

Kumar Mani
Chair

James Cross
Vice-Chair (Acting Secretary)