Insulating Fluids Subcommittee

October 22, 2014

Washington DC Metro Area

Chair David Wallach
Vice-Chair Jerry Murphy
Secretary C. Patrick McShane

# Introductions, Roll Call of Members for Quorum, Meeting Agenda Appoval, F13 Minutes Approval, and Chair’s Comments

## Chair’s comments: David Wallach advised that the data base confidentiality and access means policy is coming soon. He reminded the attendees that the standards work must not stifle competition.

## Roll Call of SC members. >23 Quorum was achieved.

There were 31 SC members and 58 guests in attendance at the meeting. A quorum was achieved. Three new SCIF members were welcomed:

 John John, Zan Kiparizoski, Shawn Galbraith

 The following guests requested membership in the IFSC:

Julio Caldeira, Josh Herz, Scott Reed

## Agenda Approval

SC Vote Outcome: Passed unanimously

## Corrections and Approval of minutes from Fall 2013, St. Louis, MO

Outcome: Passed unanimously

## WG & TF Reports Presented at the SC Meeting

### C57.104 – IEEE Guide for the Interpretation of Gases Generated in Oil – Immersed Transformer

### WG Chair - Rick Ladroga, Vice-Chair - Claude Beauchemin

The report of the WG was presented at the SCIF meeting by Susan McNelly.

 The PAR for the WG was extended for 2 more years.

The Minutes (unapproved) of C57.104 WG Meeting as Submitted:

 Tuesday, March 25, 2014

The meeting was called to order at 4:52pm by Vice Chair Claude Beauchemin. Secretary Susan McNelly (writer of Minutes) was also present.

There were 52 of 87 members present. There were 48 guests, and 7 guests requesting membership. A membership quorum was achieved. Guests attending the WG meeting for the first time who request membership or who have not attended 2 meetings in a row (including the present meeting, will be deferred until the next meeting attended.

The following guests requesting membership were (those identified with an asterisk (4 of the 7) will be added as WG members):

Hugo Flores Garcia\*

Roger Hayes\*

Scott Reed\*

Rogerio Herdolin\*

Kevin Sullivan

Kumar Mani

Javier Arteaga

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**Agenda**

1. Welcome & Introductions
2. Quorum Check
3. Approval of Minutes from Spring 2014 Meeting
4. Vice Chair’s Remarks
5. Task Force Chair Reports
	1. Framework – Claud Beauchemin
	2. IEEE Data Protocol – Tom Prevost/Sue McNelly
	3. On-line Monitoring Trends – Jesse Inkpen
6. Adjourn

Introductions of the Vice Chair and Secretary were made. Attendees were not asked to introduce themselves but instructed that when speaking during the meeting to at that point introduce themselves and their affiliations.

Motion to approve the Spring 2014 Savannah, Georgia meeting minutes was made by Tom Prevost and seconded by Don Cherry. The motion was unanimously approved.

There was an addition to the agenda for a presentation by Jesse Inkpen. Don Cherry made motion to approve the Agenda as written and was seconded by Bob Thompson. The motion was unanimously approved.

The Data Protocol is still being worked on and there are no new items to report.

**Vice Chair’s Remarks:**

* + - **Framework**

The Guide will be revised to have only 3 conditions rather than the present 4 conditions. The two main types of transformers that will be identified, oil preservation system (sealed or breather) and the second will be the age of the transformer. These showed the largest variation in the population studied.

The change between two samples over various timeframes was found to be more telling than the rate of change previously used.

It will be necessary to have multiple samples to diagnose actions that should be taken.



**IEC 60599**



**Proposed for C57.104 Guide:**



Claude explained that the reason for recommending on-line monitoring since a unit that is gassing and increasing in gassing, could be considered dangerous.

**Preliminary Table 1a and 1b (90%)**



The percentage of O2 will give an easy and quick way to determine which category a transformer falls within. The numbers were rounded off for simplicity and to provide some margin.

**Preliminary Table 3 (%95 Delta)**



1. Fredi Jacob indicated that he liked Table 1 because it urges you to take additional samples. He indicated he would like to see a maximum time interval be indicated when you progress beyond Condition 1.
2. Fredi indicated that he and Jim Dukarm have written a paper on Normal Energy Index. The intent is to get rid of the TDCG.
3. James Garner raised a question regarding does the age of the oil get taken into account or only the age of the TR. Claude indicated that it is only the nameplate age of the TR.
4. On-line DGA Data Presentation – Jesse Inkpen
5. Presently only off line DGA information has been used by C57.104. This presentation shows the gassing characteristics of TR faults with online DGA.
6. Off line data has useful information about a large number of transformers.
7. Determination of
8. Step changes
9. Impending failures
10. Change of state
11. Time of state Change – Cause of change
12. Fault type
13. Correlation of gassing rate to:
14. Load
15. Temperature
16. Start-up conditions
17. Jesse presented a simple online case study with a 10ppm change in Ethylene within a 2 day period. Rate of change is a function of data sampling.
18. The TDCG rate of change was very flat leading up to the failure. The transformer was repaired and put back in service. Initially the gases stabilized and then progressed through condition 2, 3, and 4 within only a few months. An analysis of the data from this unit will be done using the new proposed Tables to see how this particular example would have fared.
19. Jesse indicated that the rate of change can identify the approximate date of a state change (no fault to active fault state).
20. The transformer was again repaired and degassed and put back online. Over a 4 month period, there was again a steady ramp up of TDCG.
21. A second case study was presented with a transformer showing acetylene. Methane and ethane were also increasing. Looking at ethylene, they changed loading and looked at temperature trying to determine if the fault was at the top or the bottom of the transformer.
22. Fredi Jacob asked if Jesse knew how long on average it took for the residual gas to come out of the paper insulation. Jesse indicated a month or two, but that for CO and CO2 it is usually longer. Claude indicated that he has seen cases that take 3 months to level off and stabilize after degassing. It will be dependent on the type of transformer, amount of paper, and circulation of the oil.
23. The meeting was adjourned at 6:00 pm. Don Cherry made a motion for adjournment and Rainer Frotscher seconded. The motion was unanimously approved.

Claude Beauchemin

WG Vice-Chair

Susan McNelly

WG Secretary

### C57.106 – IEEE Guide for Acceptance and Maintenance of Insulating Oil in Equipment

WG Chair: Bob Rasor, Vice-Chair: Jim Thompson, Secretary: Claude Beauchemin

**The WG Report at the Sub-Committee Meeting: Presented by Bob Rasor:**

Quorum was achieved. Discussion at the WG meeting included ASTM D877 Dielectric Strength issue, a motion was made and passed for the WG to look at the overall structure of the Guide, and taking out the current wording regarding spills and complying with US regulations. Instead, a more global statement wording was agreed upon to be sure to have compliance of applicable requirements and regulations.

**The Minutes (unapproved) of C57.106 WG Meeting as Submitted:**

Monday, October 20th, 2014 4:45 PM

The meeting was called to order by Chair Bob Rasor at 4:50PM. To save time, introductions were skipped. There were 58 attendees. Four of the eight individuals that requested membership in Savannah (Spring 2014) did not attend therefore will not become members until they attend two consecutive meetings. The four new members are Oleg Roizman, Paul Boman, Don Dorris, and Arturo Nunez. Quorum was reached as 22 of the 41 members were present.

Attendees requesting membership were:

1. Scott Reed
2. Dinesh Chhajer
3. Leon White
4. Kumar Mani
5. Rainer Frotscher
6. Kevin Sullivan
7. Jose Lzquierdo
8. Pat Rock

Those above will become members when they attend the next conference meeting or participate on the teleconferences.

Agenda for the meeting was reviewed. The WG looked at the document structure based on good comments. It has been restructured and revised and sent with a straw ballot to the working group members two weeks prior to the conference.

The draft is revision 2 and section 4 has been restructured the most. Additionally, the circuit breaker section was removed and handed over to the Breaker Committee.

Discussion following regarding the document:

* Table 1 is new oil as delivered, so it has ASTM values for new oil.
* Dielectric D877 was removed from Table 1 because ASTM has removed that test method for new oil specification.
* ASTM revised the corrosive sulfur test method ASTM 1275 A & B. It is now just ASTM 1275B. It was recommended to put a footnote in Table 1 saying ASTM 1275 has formally replaced A.
* Don Cherry asked if we should combine Tables 2 and 3 since they are both for new oil before energization, but just different voltage classes. Don Platts asked if the titles are different. Table 2 is for new oil received in new equipment, whereas Table 3 is new oil processed in new equipment. Possible reasoning – smaller transformers may be shipped with oil and larger ones will be filled onsite during installation. Both tables are prior to energization.
* It was noted that the values for the 230 kV and 345 kV were not much different. Mostly the dielectric D1816 and the color. Also, oxidation inhibitor is not in Table 3 (>230 kV).
* Comment followed asking if the colored corrosive sulfur chart should be added to the document to help further explain. Claude B. said that the method is covered in ASTM and if it was elaborated, then we may also need to elaborate all the other test methods in C57.106.
* Rainer F. commented that the ASTM (copper strip) method is not sufficient for certain types of tap changers. Specifically DIN 51353 (1985) (silver strip method). It was asked if ASTM has a silver strip method. Don and Claude agreed that ASTM has not adopted a silver strip method, so it may be difficult to add to Table 1. Maybe a note could be added saying other tests exist and also elaborate more on the other methods in Table 6 and in Section 5.3.3. Jim Thompson asked that the comment be submitted with the straw ballot.
* Bob R. asked if the draft needs more elaboration on what to do if corrosive sulfur is found. Clair said Table 1 rejects it, so no elaboration needed there. However, the comment was made that this document addresses in-service oil (Table 4) as well. Table 4 does not list CS – should it be included? Jim T. said the structure of the guide may need to be changed to add CS. It was also stated that new oil can come with CS, so an explanation is valid. Don C. questioned if we should address how it is dealt with. Claude B. said we would need to do that for all tests. He elaborated that it applies to in-service oil because testing has changed much since oil may have been installed. Another comment followed that the guide is called Acceptance and Maintenance of Mineral Oil, so it is valid should we decide to elaborate. Bob R. read the scope - includes in-service oil. Jim T. asked that the comments be put in the straw ballot.
* If in-service oil is positive for CS, there is no guidance for help in C57.106. Should we add it? If additives are available, it that a marketing issue? Not if it is kept general. Oxidation inhibitor is discussed. If CS passivator is added to document, leave it general – no brand names.
* Why would C57.106 mention remedy for CS and not mention solutions for other oil qualities?
* New paragraph was added to document regarding oxidation inhibitor. Then document goes into the three classes of oil. Bob R. stated that C57.637 (Reclamation Guide) then takes over. Discussion followed on term consistency (i.e. Class, Group, and Condition). 106 uses Class. 637 uses Group. Maybe the term Condition 1, 2, 3 should replace Class 1, 2, 3. A comment was made suggesting Classes be pulled from 106 and refer to 637. Bob R. asks if we should refer to C57.637 Table 2 footnote? There are a couple options and it is easier to change 106 because 637 is in ballot. Consistency will help with clarity for those that use the guide.
* Table 5 (after reclaiming, prior to energization) is new. It picks up where 637 finishes.
* Discussion followed on how we know if a transformer was reclaimed in past. It will not matter as long as it passes the in-service table. After transformer is energized, it becomes in-service oil.
* Annex B on moisture was shown. This was previously section 4.5.

Again - Straw ballot was sent out. Comments due by the end of November. By San Antonio (Spring 2014), plan is to vote to go to ballot. If we don’t think we will make it prior to PAR expiring, we can file for extension in October 2015.

Motion was made to adjourn by Don Cherry; seconded by Don Platts. Meeting was adjourned.

### WG C57.121 – IEEE Guide for Acceptance and Maintenance of Less-Flammable Hydrocarbon Fluid in Transformers

#### Chair: David Sundin

**The WG Report at the Sub-Committee Meeting: Presented by Patrick McShane**

Patrick stated that no meeting was held, and that at the Spring 14 WG meeting it was decided that the WG will be disbanded.

### WG C57.130 – IEEE Guide for Dissolved Gas Analysis During Factory Temperature Rise

Jim Thompson: Chair, Tom Prevost: Vice-Chair

The WG Report at the Sub-Committee Meeting: Presented by Jim Thompson

Quorum achieved. A ballot resolution TF has been formed. Two negative votes were discussed. The first regarded resolving a conflict due to a difference in detection limits between IEC and ASTM DGA methods. The second involved recommendation to narrow the scope of the Guide to ≥10 MVA and ≥69kV.

The Minutes (unapproved) of C57.130 WG Meeting as Submitted:

October 21, 2014

Unapproved Minutes Working Group Meeting for IEEE PC57.130

IEEE “Guide for the Use of Dissolved Gas Analysis Applied to Factory Temperature Rise Tests for the Evaluation of Mineral Oil-Immersed Transformers and Reactors”

The working group meeting was conducted on October 21, 2014 at Tysons Corner, Virginia with 70 people in attendance, including 7 of the 12 current working group members. There was a quorum.

The previous minutes from S14 (Spring 2014) were presented for approval. The F12 minutes approval motion was done by Ms. Sue McNelly and seconded by Mr. Scott Digby, was followed by unanimous approval.

It was informed by the Chair that the balloting process was concluded with more than 90% of approval rate, and 100 comments most of them editorial. The officers of this working group: Mr. Jim Thompson, Mr. Tom Prevost, and Mr. Juan Castellanos will form the ballot resolution group.

Two of the negatives were discussed. Mr. Don Cherry stated that the use of gas detection limits from IEC standard 61181 is not appropriate, since the standard makes reference to the DGA method per ASTM D3612, and this ASTM standard has its own detection limits. It was agreed that a sentence is to be included making an exception to the detection limits of ASTM D3612 and referring to table 1.

The second negative discussed was related to a change to the scope including the higher than 10 MVA and higher than 69 kV limited application. It was suggested that the PAR should be changed since the scope was to be modified. Ms. Erin Spiewak from IEEE mentioned such a change to the PAR is not necessary since the revised scope would be for a narrowing application. It was agreed to modify the scope, and continue with the ballot resolution, but without modifying the PAR.

There was a motion to adjourn the meeting by Mr. Don Cherry, seconded by Mr. Krishnamurjthy Vijayan. All were in favor and the meeting was adjourned at 2:30 PM

Respectfully submitted,

Chair Jim Thompson

Vice-chair Tom Prevost

Secretary Juan Castellanos

### IEEE C57.139 IEEE Dissolved Gas Analysis in Load Tap Changers

Chair: David Wallach, Vice-Chair: Mark Cheatham, Secretary: Susan McNelly

The WG Report at the Sub-Committee Meeting: Presented by David Wallach

Most of the WG meeting was discussing the results of the straw ballot. The ballot produced 104 comments, and the key ones were reviewed. The Chair expressed hope that the SC will approve the go to ballot.

The Minutes (unapproved) of C57.139 WG Meeting as Submitted:

Tuesday, Chair Dave Wallach called the WG meeting to order at 11:04 am. Vice-Chair Mark Cheatham and Secretary Susan McNelly (minutes written by) were also present. There were 39 of 68 members present (Quorum requirement was met). There were 68 guests present with 9 guests requesting membership. At this point, new members will not be considered unless they substantially contribute such as participating on the ballot resolution group. The membership roster and attendance will be recorded in the Committee AM System.

The following guests requested membership in the WG but as mentioned above only those that substantially contribute at this late point in the document will be considered (\*).

Almkvist, Marten

Ansari, Tauhid Haque

Arteaga, Javier

Caldeira, Julio

Dorris, Don

Joshi, Arvin

Luo, Shawn

Pruente, John \*

Sullivan, Kevin

Agenda:

Introductory Remarks

Rosters

Introductions/Member Roll Call

Approval of Minutes from Spring 2014 Meeting

PAR and Schedule Review

Milestones

Draft Document Status/Discussion

Old Business

New Business

Adjourn

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

Attendees were not asked to introduce themselves but instructed that when speaking during the meeting to introduce themselves and their affiliations at that point.

No changes or additions were made to the existing minutes. Motion to approve the Spring 2014 Savannah Georgia, Missouri meeting minutes was made by George Forrest and seconded by Rainer Frotscher. The motion was unanimously approved.

Milestones

Straw Ballot between meetings – Completed and comments received

Begin Ballot process – Request approval to go to ballot by Spring 2015 meeting

PAR Expiration December 31, 2015

Submit Balloted document to REVCOM by October 2015

Document Status/Discussion

Draft 4 Circulated for Straw Ballot, Draft 5 sent for review

A total of 104 comments were received. The remaining open comments from Straw Ballot were reviewed at the meeting. Detail and discussion is provided below.

Discussion about N2/O2 ratio. Comment was received that the minimum possible value in air-saturated mineral oil should be changed to >1.8, rather than >1.9. Claude Beauchemin commented that it should not matter whether this is 1.8 or 1.9. Dave will verify what the original wording was and make a decision on which will be used.

Section 4.1: Comment was that acetylene is always present in the oil of operating non –vacuum LTC. Guide presently indicates “usually” present. The word “operating” was added before “vacuum interrupting type” portion of this sentence. Don Dorris indicated that they have a lot of vacuum interrupting type LTCs with acetylene. Some have no acetylene and some have more. He indicated you may put something about small quantities of acetylene. Dave Wallach indicated that the user develops its own guidelines based on the LTC type. Rainer Frotscher indicated it is population and application specific, so there is no specific guideline as to what is an acceptable limit and that for this reason it needs to be kept as general as possible and that it cannot be quantified. He also recommended removing the word “interrupting” and just indicate “vacuum type” LTC. Fredi Jacob indicated we should indicate that users are advised to establish their own limits in the way the guide recommends. Paul Boman indicated that this is very model specific. Dave indicated that this is the premise of the whole document, that users need to develop their own type specific limits.

Section 4.2.3: Comment to add ethylene/ethane and remove ethane to ethylene ratio to the second paragraph. This would mean that if an increasing ratio is seen it will indicate an issue, rather than having mixed increasing and decreasing ratios.

Section 5.3.3: Suggested change to text to include a reference to the temperature rise requirements of C57.131. Rainer indicated it should be referred to reactive and resistor type rather than using transition resistor terminology in this section. He indicated the title of the section should be resistive type tap changers and to change transition resistors to resistance type. Some other minor rewording for grammar was also suggested and made. Dave will incorporate Rainer’s comments into the final draft before sending out.

Section 1.3: Meaning of sentence is unclear: “The nature of the interpretation also depends upon the context or application of the DGA.” This sentence will be removed as the intent is covered by the information above it in the paragraph.

Annex C, Section C.2: Possible improvement suggested. The section is a case history. The user was asking if a type designation could be included in the document. Rainer indicated that there can be more than one type associated if the exact type of LTC in the examples are not known. If it is known, this can be done.

Annex D, D.4: Exceptional LTC Types: The N-zones are model specific according to Jim Dukarm. Rainer will work with Michel Duval to determine types that can be referenced.

Section 3.3, Heating Gases: Were defined as methane, ethane and ethylene for the first time in this section but is also mentioned in a later section. Does this need to be identified each time the term “heating gases” is brought up. It will be defined at the first use and a search of the document will be done to remove additional points where this is again defined. Similar with arcing gases. A suggestion was made that these should be defined in the definition section rather than hidden in a section at the first point of use. There was general agreement that this made sense.

Annex D – Triangles: Question was asked if subscripts could be used. This can’t be done with program generating the graphics. Michel Duval, Dave Wallach and Sue McNelly will work to improve the graphics.

Suggestion that the ratio of CO/CO2 should also be considered for LTC Diagnostic Gas Analysis. Dave Wallach indicated his personal opinion was that it doesn’t belong in the guide. The question was asked if it is rare enough to not be added for consideration? Rainer indicated that there are references that could be mentioned to this issue. Language to the main body of text could be added including a reference

Old Business

No old business was discussed.

New Business

No new business was raised for discussion.

The meeting was adjourned at 12:15 pm.

Dave Wallach

Chair

Mark Cheatham

Vice-Chair

Susan McNelly

Secretary

### IEEE C57.147 Guide for Acceptance and Maintenance of Natural Ester Fluids in Transformers

WG Chair: Patrick McShane, Vice-Chair: Clair Claiborne, Secretary: Jim Graham

The WG Report at the Sub-Committee Meeting: Presented by Patrick McShane:

There is significant interest in this WG. The meeting had 74 attendees, including 80% of the WG members. The WG has 3 corresponding members, and they will be contacted regarding the new policy.

Key discussion included: 1. Eliminate the current special dielectric strength and maximum moisture limits for drummed natural ester. 2. Combing two tables into one for continuous use limits. 3. Continue the minimum 300 C fire point for continuous service with a note for possible exceptions for mineral oil filled units retrofill with natural ester.

Two new task forces were formed for the review of the results of the upcoming straw vote on the modified draft. Their reports will be reviewed at the S15 meeting.

### The Minutes (unapproved) of C57.147 WG Meeting as Submitted:

### Call to Order was made at 3:15 PM.

### Introductions/Membership Attendance/Quorum Check

Attendance

24 of 31 members present, quorum was achieved

3 corresponding members

47 guests

Total attendance = 74

2 guests requested membership

A motion to approve the agenda was made by Don Cherry, seconded by Deanna Woods. There were no changes or objections to the proposed agenda, and the motion passed.

A motion to approve the Spring 2014 meeting minutes was made by Don Cherry, seconded by Deanna Woods. There were no changes or objections to the minutes, and the motion passed.

Chair's Remarks, Patrick McShane:

Discussion of C57.147 Draft 1.01. Issues which need to be addressed included

Dielectric strength of natural ester insulating liquids stored in drums/totes vs. bulk storage

Extreme non-uniform fields (may pertain to LTC applications)

Fire point requirements of retrofilled transformers vs. new transformers

Old Business

John Luksich proposed the water content for NE insulating liquids stored in drums/totes be the same as NE insulating liquids in bulk storage, and use ASTM values. Several attendees supported the change as it is normal procedure to process all insulating liquids received in drums and totes.

John Luksich proposed the dielectric for NE insulating liquids stored in drums/totes be the same as for NE insulating liquids in bulk storage – 20kV for a 1 mm gap, and 35kV for a 2 mm gap. Several attendees supported the change as it is normal procedure to process all insulating liquids received in drums and totes.

It was proposed that Table 3 (test limits for new NE liquids received with new equipment < 230 kV) be combined with Table 4 (new NE liquids received with new equipment > 230 kV); provisional designation for Table 4 should be removed. There were no objections.

Rainer Frotscher briefly discussed his draft for a proposed informative annex on load tap changer applications and esters.

Discussion was held on a TF recommendation to drop fire point lower limit (300ºC) for continuous service as not all installations require less-flammable classification.

New Business

Draft 1.02 will incorporate changes agreed to at the meeting and be sent out to the post F14 revised roster members and interested parties for a straw vote before end of this year.

An editorial and technical task forces were established to review and resolve any straw vote Draft 1.02 of the guide.

Editorial Task Force: Sue McNelly, Patrick McShane, Clair Claiborne, Jim Graham

Technical Task force: Don Cherry, John Luksich, Larry Christodoulou, Nick Perjanik, Scott Reed, Paul Boman, Dave Hanson

### The meeting was adjourned by acclamation at 4:30 pm.

Respectively submitted,

Jim Graham, Secretary

IEEE C57.155 Guide for Interpretation of Gases Generated in Natural and Synthetic Ester-Immersed Transformers.

WG Chair: Paul Boman, Secretary: John Luksich

**The WG Report at the Sub-Committee Meeting: Presented by Paul Boman:**

There was no WG meeting at F14. The draft was approved by REVCOM, but then a patent issue developed. The issue was resolved and it is expected that the new Guide is expected to be sent to publication very soon.

### WG PC57.637 Guide for the Reclamation of Insulating Oil and Criteria for Its Use

WG Chair: Jim Thompson

The WG Report at the Sub-Committee Meeting: Presented by Jim Thompson

The PAR was issued an extension, valid through the end of 2015. The meeting discussion focus on negatives received. A test for sulfur was added.

The Minutes (unapproved) of Revision C57.637 WG Meeting as Submitted:

October 21, 2014

Washington DC Metro Area October 21, 2014

The working group meeting was conducted at 8 am on October 21, 2014 at Tysons, Virginia with 24 people in attendance and with 9 of the 15 current working group members present. There was a request for membership by Scott Reed. A PAR extension request was approved this summer until December of 2015. Working Group member Jim Thompson (chair) conducted the meeting.

The minutes for the S14 (spring 2014) meeting were reviewed. With quorum present, a motion was entertained by the Chair for approval of the PC57.637 working group S14 minutes. A motion was made by Don Cherry and a second by Claude Beauchemin and this was then followed by unanimous approval.

The Chair said the first balloting process was concluded with an 84 % of approval rate, and over 200 comments, and with most of them editorial comments. The officers of this working group are the current ballot resolution group.

There was discussion of negatives of the ballot. Rainer Frotscher, a working group guest speaking regarding Dieter Dohnel’s negatives, talked about concerns of used LTC oil not being fit for use in reclaimed oil. There was discussion about adding ASTM D4059 (PCBs in Mineral Oil Test) to table 2 “Suggested Property Limits For Reclaimed Oil” and also adding ASTM D 1275 (Corrosive Sulfur Test). There was also discussion on removing the asterisks below Table 2 and as a substitute using a “Note” text format.

Don Cherry and Claude Beauchemin talked about placing a notation that the method ASTM D 1275 was formerly ASTM D 1275 method B. And lastly Ed TeNyenhuis asked about the timing of the ballot resolution prior to the next meeting. The goal is to conclude the ballot resolution prior to the next Transformer Committee S15 meeting.

The meeting adjourned at 9:10 am.

Respectfully submitted,

Chair Jim Thompson

### TF on Consolidation of Insulating Liquid (Fluid) Guides

#### Chair: Tom Prevost

#### The TF Report given at the Sub-Committee Meeting by Tom Prevost:

Meeting time: Monday October 20th, 2015 @ 0930

The purpose of the TF was reviewed, which is the desire to combine all the insulating liquids guides into one master guide. Except for silicones, the other types were represented.

John Luksich did a lot of work on creating a table with all the current property limits for acceptance of new insulating liquids using existing insulating liquid guides. John also took a stab at suggesting what key properties should be considered for the additional limits for insulating liquids from new equipment and limits for continued service.

Discussion was held on whether or not synthetic ester be included in the proposed consolidation guide. Don Cherry reminded the attendees that ASTM is planning to develop a standard specification for synthetic esters used in Electrical Apparatus.

#### The Minutes (unapproved) of TF Meeting as Submitted:

*(No minutes have been submitted as of 2/12/2015)*

### TF on Particle Count Limits in Mineral Oil

Chair: Mark Scarborough, Secretary: Paul Boman

A meeting of this TF was not held. David Wallach stated that Paul has agreed to provide a report of the activities and discussion of the TF past meetings.

# Old Business

The status of the TF of the Standards Sub-Committee assigned to issue a white paper one Insulating Liquids Terms Normalization was reported by the TF Chair, Patrick McShane. He advised that the TF completed their work, and the white paper has been forwarded to the StdsSC for their consideration. It is most probable that the final draft will be posted soon on the IEEE TC web site section on Standards. He encourage those involved with developing or revising existing standards to review the white paper to determine the proper use of terms and inclusions regarding insulating liquids.

# New Business

Discussion was initiated regarding C57.637, Oil Reclamation Guide.

Jimmy Rasco with Ergon, and member of ASTM and Chairman of ASTM WG D27.01, stated that ASTM is looking to set acceptable criteria for reused insulating mineral oil and sees this impacting C57.637. The AST activity is focused on mineral oil in storage, not for guidance of the mineral oil in situ in equipment.

Jos Veens with Smit Transformers, on behalf of Sanjay Patel, suggested the need to address DGA levels for overload heat run tests as this is becoming a common request form the user community. Tom Prevost and Jim Thompson both commented that C57.130 is ready to go to ballot. Tom made a motion to form a task force for a recommendation on appropriate action to the subcommittee for DGA testing for overload heat runs. The motion carried unanimously.

# Adjournment

Don Cherry made the motion to adjourn, seconded by Claude Beauchemin, and unanimously approved.

Respectively Submitted, Patrick McShane, Secretary SCIF