10.2 Distribution Transformer Subcommittee Report

J. Edward Smith - Chairman
(edsmith@h-jenterprises.com)
Meeting Time:
Attendance: 46 Total
27 Members
19 Guests
2 Guest Requesting Memberships

10.2.1 Chair's Remarks & Announcements:
Review of Administrative Committee meeting highlights
- Future Meetings
- New Members
- Transformer Standards Activity

10.2.2 Working Group Reports

10.2.2.1 C57.12.20 Overhead Distribution Transformers
(Alan Wilks & Tommy Cooper Co Chairs
(awilks@ermco-eci.com & Tommy.cooper@faypwc.com)
PAR Status: Current
PAR Expiration Date: 12/31/ 2005
Current Standard Date: 1997
Current Draft Being Worked On: 10b Dated: January, 2004
Meeting Time: 09:30am, Monday, March 8, 2004
Attendance: 33 Total
18 Members
15 Guests
1 Request for membership

Issues, Remarks & Announcements:
"Draft 10b will go out for ballot in the near future"

The meeting was called to order by Alan Wilkes at 9:30. Introductions were made and the attendance roster was circulated. There were 18 members and 15 guests present. One guest, Steve Hudson requested membership. The minutes from the meeting in Pittsburg. Pa were reviewed and approved. We went over 9 editorial changes in Draft 10b recommended by a review of IEEE'S pre-ballot Review Editor. A balloting group of 78 has been formed and Draft 10b will be balloted soon. We also went over some future changes to 10b. One of which we decided was an additional editorial change Section 7. from reading a tolerance of "2mm(0.063inch)" to " ±2mm(±0.063inch)". Alan plans to incorporate this editorial into Draft 10b if possible. All of Section 7 and Section 9 will be renumbered. In Sections 7.2.5.1 and 7.4 we decided to remove the reference to C57.91 since it did not apply and to remove it from the Section 2 also. Alan is to check with manufacturers of PRDs to verify that they can meet pressure from –40 to 140° C. Change Section 7.2 to read "may be provided and shall be located as shown in Figures 7 – 14", this is to be researched by Tim Olson to see if we need to add

ballooning to these figures for our next meeting. In Section 8.2 the reference of angle of tilt shall remain an agreement between the user and the manufacturer. In Section 9.3 we need to change reference to "9.6" to "9.5". In 9.4.1 the last sentence should read "shall not" instead of "cannot". In Section 9.5.2 in the next to last 2 sentences should read " This fault shall draw 25 times the rated transformer current up to a 4% transformer impedance. For impedances greater than 4% the current will be limited by the transformer impedance." Alan assigned Tommy to attend SC for Dielectric Tests on Wednesday to see if they cover our Section 6.2 about applied voltage test to a single bushing transformer with H2 permanently grounded. Alan reminded everyone to make sure that they are in the balloting group for C57.12.20 D10b. The meeting was adjourned at 10:45.

10.2.2.2 C57.12.23 Single Phase Submersible Distribution Transformers
Al Traut & Bikash Basu Co Chairs
(alant@kuhlman.com & basub@sce.com)
PAR Status: Approved N/A
PAR Expiration Date: N/A
Current Standard Date: 6/13/2002,
Current Draft Being Worked On: N/A
Meeting Time: N/A
Attendance: 19 Total
6 Members
13 Guests
8 Request for membership

Issues, Remarks & Announcements:
The WG met with 13 members or requesting membership and 5 guests as shown in the attached list.

Minutes of the Fall 2000 meeting in Niagara Falls were approved as submitted.

The chair reported that this WG will be transferred from the Distribution Subcommittee to the Underground Subcommittee effective with the Fall 2004 meeting. This is being done to provide relief to the growing number of WGs in the Distribution Subcommittee and to have all Underground Transformer Standards under the umbrella of the Underground Transformer Subcommittee.

The WG will recommend to the Underground Subcommittee that this WG be placed in the 8am Monday time slot to allow interested Distribution SC members the opportunity to attend this WG without conflicting with other Distribution WG meetings.

In Clause 1.1 the term "suitable for occasional submerged operation" was reviewed in attempt to more clearly define what is meant by occasional. The WG voted 12 to 1 to remove the word occasional from that sentence in 1.1 and add a definition for submerged operation to the definitions of this document. Dan Mulkey, Guiseppe Termini, and Al Traut will work on this definition and provide a recommendation for the next meeting.

In Clause 1.1 the term “mineral-oil-immersed” will be replaced with “liquid immersed”. This will be incorporated throughout the document as needed.

A request to add 50Hz transformers to the scope of this standard failed 13-0.

In Table 2 the recommendation to add 480/240 with 3 terminals passed 11 to 2.

A recommendation was made to swap the location of the parking stands and the nameplate in Fig 1. This failed 13 to 0.

In Fig 2 the 0.56 inch hole dimension will be changed to 9/16 inch. This is consistent with the guide for metrification C57.144.

10.2.2.3 C57.12.25 Single-Phase Padmounted Distribution Transformers
Ali Ghafourian & Ignacio Ares Co Chairs
(aghafourian@ermco-eci.com & Ignacio_ares@fpl.com)
PAR Status: Approved 12/08/1998 (For combining Standards C57.12.25 & C57.12.21)
PAR expiration Date: End of 2004
Current Standard Date: 1990
Current Draft Being Worked on: #5, Dated: March 2004
Meeting Time: 11:00am, Monday, March 8, 2004
Attendance: 54 Total

Issues, Remarks & Announcements:
Minutes of Pittsburgh’s meeting were approved.

Status of draft 8 of C57.12.25 was reviewed. This draft is in process of re-circulation.

Copies of draft 5 of combined C57.12.21 & .25 were distributed to the working group for review.

Changes from D4 to D5 were discussed.
The major change is addition of delta H.V. ratings to standard.
Item 7.2 “ Dielectric Test” will need to be changed to include delta ratings similar to C57.12.20.
Document #: C57.12.21 & C57.12.25 Draft Revision:_D5_ Date: 3/2004
Table 1 – Delete note “b” & change “c” to “b”.
Fig. 3 - Extend the dimension lines to HV bushing.
Change H1A to H1
Remove note 3 & change 4 & 5 to 3 & 4.
Table 2 – Ken Hanus & Mike Culhane agreed to add delta H.V. ratings to table 2.
Fig. 4 – Change note 6 to show ± 2 mm (± .063 inches).
Change 0.625-11 to 5/8-11.
Fig. 5 – Change front panel to include L.V. bushings.
Relocate parking stand to be on the outside of HV bushing. Tom Holyfield agreed to send me drawings.
Change H.V. bushing height to be 23” for the lower bushing per Mike Culhone request.

(Note: After W.G. meeting Mike agreed to leave this dimension as is.)
9.2.5 Change statement to include delta ratings.
11.1 Al Trout & Dan Mulky volunteered to review the top oil temp. range of –5° to 105° for a sealed tank construction.

C57.12.28, C57.12.29, C57.12.31 & C57.12.32 Represent Cabinet integrity Standards and are handled under one basic working group.

10.2.2.4 C57.12.28 Pad-Mounted Equipment Enclosure Integrity
Bob Olen & Dan Mulkey Co Chairs
(bolen@cooperpower.com & dhm3@pge.com)
PAR Status: Approved
PAR expiration Date: May 09, 2007
Current Standard Date: ANSI/NEMA 1999
Current Draft Being Worked on: D 1.7 Dated: 11/14/2003
Meeting Time: March 9, 2004 Time: 8:00 AM
Attendance: 46 Total
20 Members
24 Guests
2 Guest Requesting Memberships

Issues, Remarks & Announcements:
A few very minor corrects were made to numerical values and spelling errors.

C57.12.28 draft 1.7 will be sent to IEEE for balloting during April 2004.

10.2.2.5 C57.12.29 Pad-Mounted Equipment Enclosure Integrity for Coastal Environments
Bob Olen & Dan Mulkey Co Chairs
(bolen@cooperpower.com & dhm3@pge.com)
PAR Status: Approved by NES Com May 23, 2002
PAR expiration Date: May 09, 2007
Current Standard Date: ANSI/NEMA 1999
Current Draft Being Worked on: 1.2 Dated: November 14, 2003
Meeting Time: March 9, 2004 Time: 8:00 AM
Attendance: 46 Total
20 Members
26 Guests
2 Guest Requesting Memberships

Issues, Remarks & Announcements:
A few very minor corrects were made to numerical values and spelling errors.

C57.12.29 draft 1.2 will be sent to IEEE for balloting during April 2004.

10.2.2.6 C57.12.31 Pole Mounted Equipment Enclosure Integrity
Bob Olen & Dan Mulkey Co Chairs
(bolen@cooperpower.com & dhm3@pge.com)
PAR Status: Approved by NESCOM N/A
PAR expiration Date: N/A
Current Standard Date: 2002 Published March 7, 2003
Current Draft Being Worked on: Dated :
Meeting Times: ***DID NOT MEET***

10.2.2.7 C57.12.32 Submersible Equipment Enclosure Integrity
Bob Olen & Dan Mulkey Co Chairs
(bolen@cooperpower.com & dhm3@pge.com)
PAR Status: Approved by NESCOM N/A
PAR expiration Date: N/A
Current Standard Date: 2002 Published March 7, 2003
Current Draft Being Worked on: Dated :
Meeting Times: ***DID NOT MEET***

10.2.2.8 C57.12.33 Guide For Distribution Transformer Loss Evaluation
Don Duckett & Tom Pekarek Co Chairs
(don.duckett@fpc.com & tjpekarek@firstenergycorp.com)
PAR Status: PAR extension renewed for two years
PAR expiration Date: December 2004
Current Standard Date: October 2001
Current Draft Being Worked On: #9 Dated April 2003
Meeting Date: ***DID NOT MEET***

10.2.2.9 C57.12.34 Three-Phase Padmounted Distribution Transformers
Ron Stahara & Steve Shull Co Chairs
(rjstahara@msn.com & sshull@empiredistrict.com)
PAR Status: Approved 9/21/1995 (For Standard Development)
PAR expiration Date: December 2004
Current Standard Date: New Standard
This NEW Standard is a combination of the following two Standards
C57.12.22 1989 (Three-Phase Padmounted Distribution Transformers with H.V. Bushings) (Copyright ANSI)
C57.12.26 1992 (Three-Phase Padmounted Distribution Transformers with Separable Connectors) (Copyright ANSI)
Current Draft Being Worked On: 10 Dated : June 2003
Meeting Time: March 8, 2004 Time: 1:45 PM
Attendance: 30 Total

16 Members
14 Guests
2 Guest Requesting Memberships

Issues, Remarks & Announcements:
The ballot is still out on this proposed standard and will close as soon as a 75% return of the ballot group is received.

Ron Stahara called the meeting to order, introductions were made, and an attendance roster was circulated. Ron stated that the document had been out for ballot and had closed on March 4, 2004. He asked Steve Shull to report on the proposed standard's current status. Steve stated that there were 58 votes. This consisted of 2 disapproved, and a number of affirmative with and without comments. Because we have a total in the ballot group of 90 members, we do not have enough votes to qualify for a valid ballot. Therefore, the ballot was opened for another 15 days to allow Ron and Steve to poll those not responding to hopeful get a qualifying ballot. Steve felt that he might be able to talk the respondents who had a disapproving vote to change their vote so that we could get this standard approved.

Ron then asked the working group to look to the next revision of C57.12.34 and thus a new PAR. He asked the group to consider the following suggestions, which in part came from the comments that were raised during the balloting of PC57.12.34/D9.

1. Expanded the scope to 10 MVA, 69 kV and below high voltage, 34.5 kV and below low voltage.
2. Change the minimum impedance on 300 & 500 kVA, 208/120 ratings to limit faults.
3. Change the maximum Secondary Voltage to include other voltages that are not native to the USA.
4. Change the Table 2 values based on new calculation philosophy.
5. Add a new pad-mount front plate for a three, phase miniature design.

This developed into a lively discussion with no real resolutions. Steve stated that he would provide a packet to the members to act as a medium to help them develop their positions. The consensus of the group was that this product standard would not be recommended for international acceptance. This led to a conclusion that the additional voltage configurations referred to in item 3 listed above might not be necessary.

10.2.2.10 C57.12.35 Bar Coding For Distribution Transformers
Lee Matthews & Giuseppe Termine Co Chairs
(lmatthews@howard-ind.com & Giuesseppe.termine@peco-energy.com)
PAR Status: Active for Reaffirmation
PAR expiration Date: The PAR expires December 2002(*see below)
Current Standard Date: 1996
Current Draft Being Worked On: NEW
Meeting Time: March 8, 2004 Time: 3:15 PM
Attendance: 25 Total
0 Members
25 Guests

14 Guest Requesting Memberships

Issues, Remarks & Announcements:
The meeting began with introductions of those in attendance. Attendance rosters were circulated and attendees were asked to indicate their desire to become working group members on the rosters.

Ed Smith & Lee Matthews gave a report on the re-affirmation ballot that was conducted in 2002. The working group had not met since that ballot due to the death of previous chairman. There were 77 people in the balloting pool. 63 ballots were returned. 60 votes were affirmative. 3 were negative. The negative votes have been resolved.

Ed Smith suggested that the group conduct a survey to determine if the current standard meets the needs of users. Mike Culhane suggested that manufacturers provide sample formats that are currently being provided to their customers. This information, from several manufacturers would cover the majority of user's requirements.

A new PAR will be initiated. The consensus was to change the scope of the document to state " Distribution Transformers ", rather than list specific types of distribution transformers as in the present document. The scope will also be expanded to include step voltage regulations.

The meeting was adjourned at 4:00 PM.

10.2.2.11 C57.12.36 Distribution Substation Transformers
John Rossetti & David Aho - Co Chairs
(jrossetti@mlgw.org & daho@cooperpower.com)
PAR Status: PAR Approved June 2002
PAR expiration Date: October 2005
Current Standard Date: NEW Standard Under Development
Current Draft Being Worked On: #6 Dated February 28, 2004
Meeting Date: March 9, 2004 Time: 11:00AM
Attendance: 38 Total
15 Members
23 Guests
3 Guest Requesting Membership

Issues, Remarks & Announcements:
Good progress was made at this meeting. A few items were uncovered that the WG felt should be addressed prior to balloting. These changes will be made along with a variety of other issues covered. The general consensus was that this document, once revised, could be submitted to IEEE for editorial review. The goal will be to ballot this document prior to the fall meeting.

Due to the aggressive agenda and in the interest of time, introductions were skipped. A quick review of the minutes from the prior meeting was reviewed in an attempt to avoid having to cover the same details. After approving these minutes, the WG jumped into reviewing the changes made to the draft document. All editorial and technical changes were reviewed with

some spirited discussion. Some new suggestions were also made to enhance, clarify, or correct specific sections. A few of these items were either rejected, or tabled for future consideration, as there currently weren't enough strong feelings by the majority of the WG to include them at this time.

After the changes were reviewed, a small amount of time was used to review tables 4.2 – 4.5 for voltage applications. The original intent of this section was simply to provide a user of this standard some guidance as what's considered a typical or readily available voltage transformation ratio. Over the years this section has grown into also trying to define typical ratings for each kVA level. The result has been much confusion and controversy, with questions continuing to arise as to the need for such tables. A number of suggestions were made ranging from: rewrite the section, remove portions, or simply remove everything. Another shot will be taken to clean this area up in order to avoid potential ballot problems.

The last order of business was to assess the possibility of getting this document out for ballot prior to the Fall meeting. There were a few items brought up for discussion that needs to be addressed prior to balloting. A few of these received good suggestions and should easily be resolved (i.e.: 25 & 35kV BIL levels). These changes will be made along with the variety of other issues covered. The general consensus was that this document, once revised, could be submitted to IEEE for editorial review. The goal will be to ballot this document prior to the fall meeting.

As everyone appeared anxious for lunch and two thirds of the group had already left, the meeting adjourned at 12:20 pm.

10.2.2.12 C57.15-200XStep-Voltage Regulators
(Craig Colopy & Gael Kennedy Co Chairs
(ccolopy@cooperpower.com & grkennedy@nppd.com)
PAR Status: Active
PAR Expiration Date: April 2004
Current Standard Date: C57.15 – 1999 – Published April 2000
Current Draft Being Worked On: Draft 3 Dated: March 2004
Meeting Date: March 9, 2004 Time: 15:15
Attendance: 22 Total
11 Members
11 Guests
5 Guest Requesting Membership

Issues, Remarks & Announcements:
Introduction of all Present

Minutes of the Last Meeting Approved (moved by Ron Stahara, 2nd by)

Routing of Attendance Sheets

Comments on Draft 3

Referencing C57.91 instead of C57.95 in Section 2
Added Definition of Platform Mounted
Updated Definition of pole mounted
3.46 sealed tank: definition on seals will be consistent with all standards
Move statement on temp to appropriate location
Added Voltage supply ratio definition
Would like better definition of Type A and Type B
4.3.3 for three phase regulators
5.2 clarify 55/ 65 ratings
5.4 ratings revised to 668 amp maximum
Table 5 revise 7960 to 7970
Table 10 revise max to 668_ _Table 13 can be used as 50 or 60 hz
Table 14 Bushing notation for both conductor connector and threaded stud
6.7.1.2.f clarified current ratings
7.2 clarify comment on
8.1.3.2d comment taken directly from C57.12.90
8.3.2 tolerances for ratio comments clarified
8.5.1 taken directly from C57.12.90_
8.5.4.2.1 note revised
8.6.3.2.3 revise to shall
8.6.6.1 clarified existing comment
8.6.7.2 need to investigate the wording.

Craig will check for the Official IEEE Symbol for the Temperature designations.

Need to reference in 4.1 on enclosure integrity C57.12.28 – Don M's comment Annex C convert numbers from B to C

Specific Note: **THIS IS THE FIRST TIME ALL THE REGULATOR MANUFACTURERS SHOWED UP IN THE SAME ROOM AND SURVIVED**

The corrected Draft which will now be 4 will be sent out for a 45 day comment period.

Motion from Ron Stahara to adjourn, 2nd, and passed.

10.2.2.13 C57.12.37 Electronic Reporting of Test Data (formerly P1388)
Richard Hollingsworth & Thomas Callsen Co Chairs
(rhollin@howard-ind.com & Thomas.Callsen@ExelonCorp.com)
PAR Status: Submitted for editorial review and balloting
PAR Expiration Date: December 2005
Current Standard Date: Published under IEEE Std. 1388-2000
Current Draft Being Worked On: D11 Dated: August 2003
Meeting Date: March 8, 2004 Time: 08:00AM
Attendance: 27 Total
14 Members

13 Guests
0 Guest Requesting Membership

Issues, Remarks & Announcements:
Reviewed the status of the PAR. The "Ballot initiation form" to be submitted.

Reviewed the next step for the working group. The next step is o bring Step Voltage Regulators and Dry type into the document. It appears that the Dry Type may fit into the present standard with the extended data set. He Step Voltage Regulators will probably need a separate extended data set.

One time slot will be required at the next meeting.

10.2.2.13 C57.144 Guide to Metric Conversion of Transformer Standards
Tim Olson Chair
(tolson@hydro.mb.ca)
PAR Status: Active
PAR Expiration Date: April 2006
Current Standard Date: New Document
Current Draft Being Worked On: D5 Dated: March 10, 2004
Meeting Date: March 10, 2004 Time: 11:00AM
Attendance: 15 Total
7 Members
8Guests
1 Guest Requesting Membership

Issues, Remarks & Announcements:
Minutes of March 17, 2003 meeting were approved as submitted.

Review of D4 ballot results; 94 (76%) returns, 14 with comment, one negative. Changes to the IEEE metric policy resulted in D5 with changes to the body and introduction of D4. Consequently, negative was withdrawn. D5 is to be re-circulated for ballot.

Review of D5 with corrections and clarifications some brought forward from comments on D4 follows:
Introduction – include IEEE metric policy revision and background/requirement of guide.

1.2	Correct reference to IEEE/ASTM SI 10-2002
1.3	Removed.
3	Removed ‘General’
3.1	Clarify intent of clause.
3.2	Correct conversion example.
3.7	Use of in for inches (throughout document)
3.8	Proper use of terms eg, value vs dimension (throughout document)

3.12 Replace ‘Standard Hardware Items’ with ‘Trade Items’. Working group preferred to show fractional vs decimal dimensions.
3.13. Proper reference to Bibliography.
3.17 Clarified example explaining mass and force.
3.24 Clarified equipment lifting and carrying capacity vs mass.

Annex A: Removed unnecessary references to documents in order to avoid future requirements for revision.

Working Group moved to approve D5 as corrected for re-circulation.

Revised conversion spreadsheet will soon be available on IEEE trans web site.

No meeting required in fall.

10.2.3 Subcommittee Old Business:
None reported

10.2.4 Subcommittee New Business:
None reported