10.2 Distribution Transformer Subcommittee Report

J. Edward Smith - Chairman
(edsmith@h-jenterprises.com)
Meeting Time: Wednesday October 27, 2004 at 3:00pm
Attendance: 49 Total
32 Members
12 Guests
5 Guest Requesting Memberships

10.2.1 Chair's Remarks & Announcements:

Review of Administrative Committee meeting highlights

- Future Meetings
- New Members
- Transformer Standards Activity
- C57.12.33, Loss Evaluation Guide has been dissolved at the recommendation of the Working Group Chairs, Don Duckett and Tom Pakarek. No further actions will taken on this proposed Standard.

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: 10c
Meeting Time: 09:30am, Monday, October 25, 2004
Attendance: 37 Total
19 Members
18 Guests
0 Request for membership

Issues, Remarks & Announcements:

Alan informed the working group of the new IEEE rules governing patents and asked if anyone had any patents to declare, no one did and this information was duly recorded. Alan then announced that John Crotty was replacing Ron Kirker representing San Diego Gas and Electric. Alan also reminded everyone that they had to register on the new AM System.

Minutes – The minutes of the previous meeting in San Diego were reviewed and approved.

Old Business – Alan covered comments from the most recent ballot. He divided them into four categories; those to be considered in the future, those that he had already made the corrections, those that were not to be considered, and those that he was undecided about. Alan will make the following changes to draft 10c: 1. Page 13, paragraph 9.3 – add “T” to “wo”, 2. Page 14, paragraph 9.5.2 – add “T” to “he”, 3. Page 28, Figure 3 – change the parenthesis on “6.4)0.25)” to “6.4 (0.25)”. At this time the meeting was adjourned until Tuesday at 1:45 pm.

Alan called the meeting to order on Tuesday, at 1:50, there were no introductions and Alan continued with the Old Business. Another change that should be made to draft 10c was: Item 4. - Page A-1, Auxiliary Mounting Devices, first line – Change " covered by IEEE C57.12.20-2004 are not …" to " …covered by this standard are not …". After these changes, the draft will be sent for a re-circulation ballot. For this revision, the ballooning issue in the Figures has been taken care of with notes.

New Business – Alan's survey of PRD manufacturers produced only one that could meet the +140C to –40C. He proposed to send the same survey to one other manufacturer, IFD, to see if they could meet that requirement. Ignacio Ares volunteered to come up with wording on PRDs that would meet C57.12.91. Alan then informed the WG about one request to expand C57.12.20 to cover up to 69KV high voltage. There was no motion to support the proposal. The meeting was then adjourned.

10.2.2.3 C57.12.XX Single-Phase Padmounted Distribution Transformers
Combined C57.12.25 & C57.12.21
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: #05, Dated: 10/2004
Meeting Time: 11:00am, Monday, October 25, 2004
Attendance: 37 Total
14 Members
23 Guests
0 Request for membership
Issues, Remarks & Announcements:
The WG met and discuss and approved the minutes of the San Diego meeting with three Corrections:

1) C57 was misspelled as C75.
2) C57.12.25 was misspelled as C57.1.25
3) The meeting adjourned at 12:15 P.M. not A.M.

Four Handouts were given:

1) Meeting Agenda
2) Minutes of San Diego meeting
3) Drafts dated October, 2004 to be renamed 05.1
4) Two proposals from Tommy Holifield for table 1

The WG then discussed various proposals for D5.1
These will be incorporated into the next draft including changes to figures 2.3 and 5.

The WG chains also discussed the recent request by IEEE for identification of any patents related to WG work.
None were identified by the group.
The meeting adjourned at 12:15 P.M.

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 1.9 Dated: April 17, 2004
Meeting Time: October 26, 2004 Time: 8:00 AM
Attendance: 47 Total
24 Members
18 Guests
5 Guest Requesting Memberships

Issues, Remarks & Announcements:

1) Initial Balloting of the standard was completed on Aug. 14, 2004. 70 people in ballot group, 62 affirmative, 1 negative with comments, 1 abstention for 81 % returns.

2) Discussed all comments from affirmative and negative ballots.

3) The negative is being withdrawn if comments are addressed during next Revision of standard.

4) Section 4.1.1 based on affirmative and negative ballots , the last sentence is Being deleted.

5) Figure # 3 the diameter of the pull hook is being corrected from 31.5" – 32" to 1.02" to 1.48".

6) Based on the changes which are being made – A recirculation balloting of the Standard will be conducted.

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: 1.4 Dated: April 17, 2004
Meeting Time: October 26, 2004 Time: 8:00 AM
Attendance: 47 Total
24 Members

18 Guests
5 Guest Requesting Memberships
Issues, Remarks & Announcements:

1) Initial balloting of the standard was completed on Aug. 14, 2004.
70 people in ballot group, 55 affirmative, 1 abstention and 80 % returned.

2) Discussed all affirmative comments.

3) Section 4.1.1 based on comments made and a vote by the working group
The last sentence will be deleted.

5) Figure # 3 the diameter of the pull hook is being corrected from 31.5" – 32.0"
To 1.02" to 1.48".

6) Based on the changes which are being made. A recirculation balloting of the
Standard will be conducted.

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: ***THIS STANDARD HAS BEEN DISOLVED***

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: September 24, 2004
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: 1N/A See Below
Meeting Time: October 24, 2004 Time: 1:45 PM
Attendance: 46 Total
29 Members
15 Guests
2 Guest Requesting Memberships
Issues, Remarks & Announcements

This standard has been approved by REVCOM as of September 24, 2004 and should be published in the next 6 to 9 months. The WG will formulate a new expanded PAR by the next meeting and submit it for approval.

Ron Stahara called the meeting to order, introductions were made, and an attendance roster was circulated. Ron announced that Don Duckett had been released from Progress Energy due to downsizing. He then showed his new contact information. Ron reviewed the IEEE Patent Policy and asked the group if there were any patents that needed to be disclosed. None were announced to the group. The minutes have been published and Ron requested the group to review these online. If there were no comments received within the next three weeks, they will stand approved as published. The group was asked to send these comments to Steve Shull or himself. Ron asked for any other old business. Gerri Piava said that he had received a call from a user asking why C57.12.26 had been withdrawn. Gerri explained the switch to this standard which seemed to be acceptable to the caller.

Ron then asked the working group to look to the next revision of C57.12.34 and thus a new PAR. He said that during the last meeting we had discussed various size limits and a consensus at that time was that 5 MVA would be the new limit. There was some discussion to move the limit to 10 MVA but the group felt that unit sizes above 5 MVA although built were at the present time the exception rather than the rule. Therefore a motion was made by Gerri Paiva and seconded by Gael Kennedy to set the top limit at 5 MVA. A vote was taken and this passed with only 2 members opposed. The high voltage level of 34.5 kV (200 kV BIL level) was suggested. After some discussion on the merits of moving to 200 BIL levels as opposed to 150 kV BIL levels, a motion was made by Gerri Paiva and seconded by Tom Callsen to establish a high voltage level of 34.5 kV (200 kV BIL). A vote was taken and this passed with only 2 members opposed. The low voltage level was suggested as 13.8 kV. After some discussion which included a suggestion that we go to 25 kV, a motion was made by Bob Grunert and seconded by Gerri Paiva to make the low voltage upper limit at 15 kV (95 kV BIL). A vote was taken and this passed with none opposed. The currently approved purpose was reviewed by the group. A motion was made by

Gael Kennedy and seconded by Bob Grunert to accept this as it is currently written because it would not be affected by our limits changes. A vote was taken and this passed with none opposed. The current scope was reviewed and was changed to reflect the changes in the size, high and low voltage limits. A motion was made by Don Trivitt and seconded by Bob Grunert to accept this as it is was corrected. A vote was taken and this passed with none opposed. Ron made a comment that we would formulate this PAR and resubmit it to the working group for approval before it would be submit to IEEE.

Steve Shull passed out a packet that discussed the following items.

- **A)** Change the minimum impedance on 300 & 500 kVA 208/120 ratings to limit fault current – Requested by Gerald Paiva
- **B)** Change the Table 2 values
  - (1) Based on new calculation philosophy – Requested by David Gilmer
  - (2) It isn't clear why the 13800 and 16340 are not 2 ½ above and below. Are these specific values required and does a user requiring 2 - 2 ½ taps above and below need to specify an exception to the standard? – Requested by Tom Lundquist
- **C)** Add a new pad-mount front plate for a three, phase miniature design – Requested by Steve Shull
- **D)** Removal of Barriers
  I do not believe a barrier is "required" between the HV and LV Compartments on a "deadfront" design below 600V... Having this as a requirement in the ANSI standard should be addressed in future revisions to allow some degree of flexibility... I agree this should be "provided" unless a utility has reviewed their operating practices and have specifically addressed this issue in their operating rules before taking exception to this feature. – Requested by Don Duckett
- **E)** The voltage levels used in the standard need to be adjusted to relate to the new proposed secondary voltage ranges. This might include 600 V or 347/600 V systems which are used in some places in the USA.

After the group discussed this sheet, it was decided that Jerry Murphy would create a questionnaire for Items A and D to be distributed among the users. This information would be shared at the next meeting. Items B, C, and D would be reviewed by each member. All of these items would be discussed at the next meeting as it would pertain to the next version of this standard.

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 (R2004)
Current Draft Being Worked On: NEW
Meeting Time: October 25, 2004 Time: 3:15 PM
Attendance: 18 Total
11 Members
5 Guests

2 Guest Requesting Memberships

Issues, Remarks & Announcements:

The meeting was called to order on October 25, 2004 at 3:15 p.m. in the Estancia B room of the Green Valley Ranch Hotel in Las Vegas, Nevada.

The meeting began with introductions of those in attendance.

The chairman announced the IEEE patent requirements and asked if anyone was aware of any patents that might affect the development of this standard. No patent claims were made.

The minutes to the previous meeting were approved.

The chairman announced that the reaffirmation of current standard had been approved by the IEEE on June 24, 2004.

At the previous meeting, it was proposed to bring step-voltage regulators into the standard. Per discussions during the PAR submittal process it was determined that the Title and Scope of the document will need to be revised for the PAR submittal. A revised Title and Scope were proposed and approved. The PAR request will now submitted.

Negative comments from the re-affirmation ballot were reviewed and discussed. Items from the ballots were:

a. Usage of the word shall (Annex A).
b. Metric conversion.
c. Update to latest standards in references.
d. Differing print quality retention requirements in 4.1.6.3 and 4.2.5.1.
e. Include fluid type on barcode label.

The results of the working group review on each item was as follows:

a. The consensus was that the word "shall" should not be used in the informative appendix.
b. The standard should be revised to the current IEEE Transformers committee metrification policy.
c. The standard should be update to most recent standards for references.
d. Bob Olen volunteered to look into clarifying the requirements of section 4.2.5.1.
e. The consensus was not to include the fluid type in the standard barcode label.

The chairman showed a slide that contained a summary of special customer bar code requirements, which was suggested for review in the previous meeting. The consensus was that the standard label should continue to require basic information and that unique requirements should remain in customer specifications.

The chairman asked if anyone had any expertise in the revisions of the referenced bar code standards. Ed Smith suggested contacting one of the previous WG chairman for references used in the development standards. Ed will provide contact information from the original WG.

The meeting was adjourned at 4:15 P.M.

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: #7 Dated October 21, 2004
Meeting Date: October 26, 2004 Time: 11:00AM
Attendance: 41 Total
22 Members
16 Guests
3 Guest Requesting Membership
Issues, Remarks & Announcements:
Main Meeting Summary:
All comments and suggestions from the past meeting have been incorporated into the draft document. Specific areas that were cleaned up included the rating tables, BIL levels, and a variety of items in the construction section. A few sections were identified as good candidates for future enhancements based on the expected feedback once this standard is published. Some of the sections included pressure relief requirements, arrester mounting inside of cabinets, and equipment coordination. At the moment there doesn't appear to be any outstanding issues that need to be resolved prior to taking this draft to ballot.
Distribution SC Summary:
Patent disclosures issues were discussed at the beginning of the meeting and everyone was notified of additional information in their registration packets. No patent issues were noted.

The WG meeting minutes from San Diego were reviewed and approved as submitted.

A copy of the draft 07 will be posted on the transformer committee website immediately following these meetings. All WG members and guests were asked to review the draft carefully as it was a bit difficult to address all issues during the meeting due to technical difficulties with the projector.
Some of the specifics covered during the meeting were as follows:
Due to concerns over the various rating tables from prior meetings, it was decided to remove those tables causing the most heartache and clarify the remaining ones for the voltage applications.

The height of the gauges in the past meeting was an issue, which also was addressed in the last WG meeting for revision to C57.12.10. The maximum allowable gauge height, when there are operating controls, was increased from 1600mm to 2000mm.

Section 5.1.7, Pressure Relief, was reviewed to determine how much detail is necessary for this product standard. The amount of detail currently in this draft, which coincides with C57.12.34, appears to be excessive. It was agreed that this detail should likely reside elsewhere such that other product standards may also reference it without having to repeat this same information. For now it was agreed to keep the performance requirement detail in this document.

Section 5.2, Bushings, was tweaked in order to cover both HV and LV neutral bushing requirements for three-phase grounded wye applications. A decision was made not to address single-phase bushing issues with respect to allowing a derated neutral bushing when using single-phase design in a grounded wye connection.

Another area of clean up was to remove figure 5.5 for angular displacement. Based on a suggestion made at a prior meeting, the document will reference C57.105, Connections In Three-Phase Distribution Systems.
One specific area everyone was asked to review is section 5.13, Bushing-Type Current Transformers, as the changes to this section were not reviewed in this meeting.

During the meeting it was noted that surge arrester mounting, inside of cabinets, has created a variety of field connection problems. A general statement already covers this issue and the WG felt it was best to hold off on any more changes at this point in time.

The last item of discussion was in regards to annex A, Substation Equipment Coordination for Secondary Unit Substations. A suggestion was made to try and establish some transition section standards in an attempt get the switchgear manufactures to adopt. Due to the variety of embedded switchgear transition and connection requirements, which vary significantly by manufacturer, it's believed that trying to force a standard will be a lost cause. At this point some recommendations are identified in the annex and this will be an area to try and improve upon in the future.

After staring at a blue screen and listening to me read sections of the draft for approximately an hour, unanimously the WG agreed to adjourn the meeting at 12:00pm.

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 4 Dated: September 2004
Meeting Date: October 26, 2004 Time: 15:15
Attendance: 25 Total
19 Members
6 Guests
1 Guest Requesting Membership
Issues, Remarks & Announcements:
Introductions and opening remarks –

Approval of the Minutes of the Last meeting -
Notation of IEEE Patent Policy and request for responses, No disclosures of any conflicts at this time

PAR Extension requested and acknowledgement received from IEEE headquarters, action to be taken Dec 8th 2004

Comments on revisions to Draft 4.0
Requesting comments by the end of November 2004.
Draft sent to editors with a long response – abstract and key words, wording must be the same on scope, etc., these comments are to be included in review along with the committee comments.
Five editorial comments from Martin Navarro were reviewed and entered as corrections. Use Mass instead of weight in equation 29. Table 19 has dual 'V' labels need to correct.

New Business:
Craig was at the C57.91 meeting the loading guide and the request was for volunteers to comment on LTC(overload), regulator loading, 55/65 degree rise considerations, etc.
C57.95 was withdrawn; this was the old regulator loading guide.

Questions/Clarifications: Paragraph 7.2 should there be a current limitation as well as a kVA? Craig gave the background for the limitations in this section. Limitations for single phase distribution type regulators of 288 kVA or 328 Amps? Craig will review.

Martin Navarro with reference to Table 2 ,Temperature rise is dependent upon on the insulation – suggest deletion of the words in the parenthesis under item 1 on table. Agreed upon by the entire group.

RON Stahara moved for adjournment – seconded 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: Time:
Meeting Times: ***DID NOT MEET***

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: Time:

Meeting Times: ***DID NOT MEET***

10.2.3 Subcommittee Old Business:
None reported

10.2.4 Subcommittee New Business:
None reported