10.2 Distribution Transformer Subcommittee Report

J. Edward Smith - Chairman
(edsmith@h-jenterprises.com)

The Distribution Transformer Subcommittee has a total of 14 Active Working Groups, 9 of those working Groups meet in Memphis.

Subcommittee Meeting Wednesday October 26, 2005 at 3:00pm
39 Members
11 Guests
50 TOTAL

10.2.1 Chair's Remarks & Announcements:

Review of Administrative Committee meeting highlights

- Future Meetings
- New Members
- Transformer Standards Activity
- A request for patent disclosure concerns was made with none being indicated.
- The Unapproved Jackson minutes were approved with no corrections.

Special Working Group Activity

Those Working Groups that met in Memphis along with the minutes of each are as follows. . .

Six of these standards are currently in the balloting process or just completed the balloting process with two others to be balloted in the near future

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: 1999
Current Draft Being Worked On: 10d Dated 03/05
Meeting Time: 09:30am, Monday, October 24, 2005
Attendance: 39 Total
20 Members
19 Guests
1 Request for membership

Issues, Remarks & Announcements:

Alan Wilks called the WG C57.12.20 meeting to order at 9:30 , introductions were made and rosters were circulated. The minutes of the spring 05 meeting in Jackson were reviewed and approved with one correction. Alan then reminded everyone of the IEEE policy on patents and none were declared.

Old Business: Alan then recommended that 4 members that had not signed up for the AM system and his recommendation passed. The update on the Dielectric Test paragraph for single

bushing transformers with the high voltage terminal permanently grounded has been permanently moved to the Sub Committee for Dielectric Tests. The re-circulation ballot status was discussed Alan then reviewed the proof copy of the C57.12.20. First going over the recommendations from the editor, most of these were agreed to but Alan was to check with the editor on some of her proposed changes. Alan then went over some problems he had found page numbers and Figure number. Alan then went over problems printing 2 of the drawings and Stephen Shull informed us of the need to have special software to be able to print the drawings. Tommy then informed the group of our survey of PRD manufacturers that 4 of the 5 could support our proposed change to
-40° to +120°C and 1 could support the 120° proposal. The WG decided that we first needed to find out the range of all of the gaskets used in the transformer.

New Business: The proposal to look at the special materials called for in the Standard was dropped. Alan then informed us about the need to go for a new Par, this will be done during our spring 06 meeting. The meeting was adjourned at 10:40 am.

10.2.2.3 C57.12.38 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: TBD
Current Standard Date: 1995
Current Draft Being Worked on: #05-2, Dated: March 2005
Meeting Time: 11:00am, Monday, October 24, 2005
Attendance: 41 Total
37 Members
 4 Guests
0 Request for membership
Issues, Remarks & Announcements:
Introductions were made and roster was circulated.

The IEEE Patent disclosure information was discussed and there were no patent noted that pertain to these standards.

The unofficial minutes of the last meeting held in April, 2005 in Jackson, MS were approved with no corrections.

- A change was made to Figure 1a, changing the free clearance area above the parking stand from a solid to dotted line. In addition, a 1.25” dimension was added between the centerline of the parking stand slot to the bottom of clearance area or top of the parking stand.
- Ali noted that he checked to see if the 5.75” dimension from the parking stand to the top of the transformer could be reduced to4.5”. It cannot be reduced to 4.5” as the feed thru device will not fit in a 4.5” space. 5.5” is an absolute minimum for

clearance. The dimension of 5.75” was confirmed to be correct and is the sum of 4.5” space plus the 1.25” of the parking stand dimension.

- Figure 1b was changed similarly, but the clearance required is 5” plus 1.25” of the parking stand, which equals 6.25”. This does not agree with the 5.75” shown on the front plate. Ali will check this out.
- Figure 2a and 2b were changed similar to Figure 1a.
- The par for C57.12.38 was discussed and it will expire at the end of 2009.
  Table 1 and 2 was changed to show “System Voltage” as required in the Jackson, MS meeting.
  It was recommended that delta loop feed transformers be dropped from the first issue of 12.38 and that delta loop be added in the next revision. After considerable discussion, it was agreed to exclude delta loop from the initial document. A revision to the PAR will be necessary, since delta loop is included in the current PAR
- .
- It was noted that Table 2 was incorrect as the phase to ground voltage is wrong for the last two rows. The 8.3 KV’s should both be changed to 15.2 and 21.1 KV, respectively.
- It was decided to make these corrections and go out for ballot as soon as possible.
- There was discussion about the LV in the scope being 480 volts and below. It was decided to limit the scope to 240/120 as in the previous documents. This change will be included in the request for PAR revision.

The meeting adjourned at 12:00 noon.
Respectively submitted,
Alan Wilks

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

General:

The minutes from the March 15, 2005 meeting in Jackson, Mississippi were approved as submitted.

A request was made for disclosure of any patents that may be related to the work of the WG, and there were no responses to the request for disclosure.

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: IEEE 2005
Current Draft Being Worked on:
Meeting Time: October 25, 2005 Time: 8:00 AM
Attendance: 45 Total
27 Members

18 Guests
2 Guest Requesting Memberships
Issues, Remarks & Announcements:
C57.12.28 Standard for Pad-Mounted Equipment – Enclosure Integrity
Status: Just published
Publication has been completed and the document was issued on September 30, 2005

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: 1.5 Dated: December 2004
Meeting Time: October 25, 2005 Time: 8:00 AM
Attendance: 45 Total
27 Members
18 Guests
2 Guest Requesting Memberships
Issues, Remarks & Announcements:
C57.12.29 Standard for Pad-Mounted Equipment – Enclosure Integrity for Coastal Environments
Status: Being published
The initial proof copy has been returned to the IEEE Publication Group with comments.
Publication is currently scheduled by IEEE for November 10, 2005

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 Time: October 25, 2005 Time: 8:00 AM
Attendance: 45 Total
27 Members
18 Guests
2 Guest Requesting Memberships
Issues, Remarks & Announcements:
C57.12.31 Standard for Pole-Mounted Equipment – Enclosure Integrity
Status: 2002 Standard
Old Business:
Needs English units moved back into text – Chairs will do first run
Remove salt spray test
Need to check order of Scope & Purpose
New Business:

PAR – will be submitted by February 17, 2006 to initiate working group activity
Scope and purpose were revised to be as shown in the attachment
The Salt Spray Test is to be removed following the .28 standard

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 Time: October 25, 2005 Time: 8:00 AM
Attendance: 45 Total
27 Members
18 Guests
2 Guest Requesting Memberships
Issues, Remarks & Announcements:
C57.12.32 Standard for Submersible Equipment – Enclosure Integrity
Status: 2002 Standard
Old Business:
English units moved back into text
Scope – change "(with exception of network protectors)" to "and network protectors"
Need to check order of Scope & Purpose
Will leave as is for now. It can either be reaffirmed or a PAR taken out by 2007

10.2.2.8 C57.12.XX Standard for Pole-Mounted Equipment – Enclosure Integrity for Coastal Environments
Bob Olen & Dan Mulkey Co Chairs
(bolen@cooperpower.com & dhm3@pge.com)
PAR Status: NONE
PAR expiration Date: N/A
Current Standard Date: NONE
Current Draft Being Worked on: NONE Dated : NONE
Meeting Time: October 25, 2005 Time: 8:00 AM
Attendance: 45 Total
27 Members
18 Guests
2 Guest Requesting Memberships
Issues, Remarks & Announcements:
C57.12.xx Standard for Pole-Mounted Equipment – Enclosure Integrity for Coastal Environments
Status: Proposed Standard
It has been recommended by the working group that a new standard be created to cover pole-mounted equipment installed in coastal environments:

PAR – will be submitted by February 17, 2006 to initiate working group activity

Scope and purpose are to be as shown in the attachment (Selected the second of the two in the agenda.)

The plan is to :

- Utilize C57.12.29 substrate requirements
- Work on stainless steel galling considerations
- Work on coating and color requirements
- Use corrosion test referenced in C57.12.31
- Remainder of coating tests blended between C57.12.29 and C57.12.31

10.2.2.9C57.12.33 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***

WORK ON THIS STANDARD HAS NOW BEEN REACTIVATED

10.2.2.10 C57.12.34 Three-Phase Padmounted Distribution Transformers

Ron Stahara & Steve Shull Co Chairs
(rjstahara@msn.com & sshull@empiredistrict.com)
PAR Status: APPROVED
PAR expiration Date: 03/20/2005
Current Standard Date: March 8, 2005
Current Draft Being Worked On: N/A See Below
Meeting Time: October 24, 2005 Time: 1:45 PM
Attendance: 44 Total
22 Members
11 Guests
11 Guest Requesting Memberships
Issues, Remarks & Announcements

Ron Stahara called the meeting to order, introductions were made, and an attendance roster was circulated. 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 were reviewed and approved as written. Ron reviewed the status of the PAR.

The high/low voltage compartment barrier removal in dead front untis was again discussed. Gerry Paiva stated that he felt that there were two major issues. The first was the potential safety problem for operating personnel. This is due to worker qualifications and training of those being allowed into the high voltage section of the transformer. The other item was cabinet security due to the loss of this central support. Gerry posed this question to the group. What is to be gained by removing the barrier? Cabinet security issues were rebutted by the Canadian users and producers who currently do not use barriers in deadfront units. After some discussion, cabinet

security was dismissed because it was not a problem. The safety issue was debated by a number of US users pointing to work practices, noting that non-utility electricians were being allowed into this compartment. A motion was made by Gerry Paiva to leave the barriers as they are currently shown in the standard. It was seconded by Ken Hanus. There were 17 "for" and 5 "again", thus the motion carried. Therefore the barriers will be left as they are now shown in the current standard.

As a side note, Ron pointed out that the current standards document had an error on last line of the table in Figure 13b where 1 ¼ was delivered but during conversion it was changed to 1….. . He said that IEEE had corrected this problem and errata had been sent to the working group. All future documents would have the correction in place. He stated that IEEE had indicated that those who had purchased the document would also receive the errata sheet.
Ron indicated that at the request of Ali Ghafourian, the IEEE C57.80 document had been acquired and our document terminology will meet this standard.

Ron asked if there was any further consideration of the impedance range change that had been proposed. Gerry Paiva said that limiting the fault current to 65kA was only part of the issue. Although this does help on an initial installation, it doesn't resolve the main breaker AIC rating problem when a transformer is replaced with a lower impedance transformer due to the original's failure. With this replacement, he explained the fault current will be higher and many times beyond the original main breaker AIC rating. Marcel Fortin commented the methods and reasoning behind these values should be put forth in an informative annex. He also commented that the 65 kA value is good for low voltage distribution but at the new 15 kV rating the maximum value is really 16 kA. Gerry also commented that he would prefer one value as the current standard specifies for transformers 750kVA and greater. Dave Wiegand commented that by fixing this impedance in combination with the forthcoming efficiency standards, it will become difficult to accomplish a transformer design. He said this is due to the geometry and standard conductor sizes that are available. Brian Klaponski also pointed out that the transformer is limited to a 25 times through fault which would affect the lower limit. After some discussion, it was decided that the 300 and 500 kVA units seemed to be where the impedance problems could exist. It was suggested by Steve Shull that a Task Force of Brian Klaponski, Dave Wiegand, and Israel Barrientos investigate what a recommended impendence range or lower limit might be based on other IEEE standards, industry practices, and requirements. These accepted the assignment with Brian coordinating the efforts of the group.

Under new business, Ali Ghafourian stated that while he was developing the IEEE C57.12.38, he discovered that the "P" dimension would not work as shown in Figure1 of this standard. He said that our dimension is currently shown as 4.5" and in reality it should be at least 5.5". This dimension is referenced throughout the C57.12.34 document. He requested that we review this dimension for this standard. He also pointed out that as we move to the higher kVA ratings and different voltage levels, section 9.12 will not be correct. He requested that we review this as we revise the standard. He also request that the last sentence in section 9.11.3 be clarified.

10.2.2.11 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: APPROVED Dated: March 4, 2005
PAR expiration Date: December 31, 2009

Current Standard Date: 1996 (R2004)
Current Draft Being Worked On: Draft #2 Dated: October 6, 2005
Meeting Time: October 25, 2005 Time: 3:15 PM
Attendance: 22 Total
14 Members
8 Guests
0 Guest Requesting Memberships
Issues, Remarks & Announcements:
The meeting was called to order on October 25, 2005 at 3:15 p.m. in the Hernando Desoto Room of the Peabody Hotel in Memphis, TN.

The meeting began with introductions of those in attendance.

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

The minutes of the previous meeting were approved.

A review of the changes incorporated in Draft 2 from comments received on Draft 1 was conducted. Three manufacturers had also requested addition to the code listing in Annex A.

The remainder of the meeting consisted of a review and commentary on Draft 2 of the document.

It was recommended that the temperatures for the UV accelerated weathering test, referenced in Paragraph 4.1.6.2, be revised to agree with those in the Enclosure Integrity Standards.

The chairman asked that any additional comments, for consideration in Draft 3, be provided by January 31, 2006.

The meeting was adjourned at 3:45 P.M.

10.2.2.12 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: December 2006
Current Standard Date: NEW Standard Under Development
Current Draft Being Worked On: #09
Meeting Date: October 25, 2005 Time: 11:00AM
Attendance: 39 Total
17 Members
16 Guests
6 Guest Requesting Membership
Issues, Remarks & Announcements:
The unapproved minutes from the S05 Jackson, MS meeting were approved. The patent policy

was reviewed. No issues were identified.

Mandatory Editorial Coordination
David revised draft 8 to comply with the editorial recommendations as received from Michelle Turner. The meeting focused on reviewing the figures in draft nine. The figures reviewed have been copied as separate files and converted to gif format to satisfy the editorial coordination.

David Aho had requested that the W.G. provide wording for the abstract and key words for the proposed standard.

Jerry Murphy wrote and submitted an abstract for the draft. The abstract states as follows:
Abstract C57.12.26
Small power transformers have become a significant element in distribution systems supplying large commercial customers like major resort hotels and site specific industrial customers that desire the local utility to own, operate and maintain the serving transformer. These transformers can range in sizes from 112.5 kVA to 10,000 kVA with primary voltages at 69,000 volts and below and secondary voltages from 34,500 to 120 volts. Transformers in this standard are generally for larger distribution customers often with special voltages or installation requirements like convention centers with large chiller plants and extensive exhibit space. There is often a desire to serve these transformers from underground systems utilizing side-mounted bushings on the primary. This standard seeks to define the small power transformer that is applied as more than just a small version of the power transformers covered by C57.12.10 and as more than a large distribution class transformer covered by C57.12.21.

Key Words
The following key words were selected by members and guests in the meeting:
distribution substation transformer
class I
liquid immersed
station type
unit substation

The final draft will be submitted for ballot after inclusion of the above items.

There being no further business a motion was made to adjourn at 11:44a.m.

Submitted by: John Rossetti

10.2.2.13 C57.15-200XStep-Voltage Regulators
(Craig Colopy & Gael Kennedy Co Chairs
(ccolopy@cooperpower.com & grkennedy@nppd.com)
PAR Status: APPROVED Date: June 9, 2005
PAR Expiration Date: December 31, 2009
Current Standard Date: C57.15 – 1999 – Published April 2000
Current Draft Being Worked On: Draft 5.1 Dated: October 2005
Meeting Date: October 25, 2005 Time: 13:45

Attendance: 25 Total
16 Members
7 Guests
2 Guest Requesting Membership

Issues, Remarks & Announcements:

- Introduction of all Present
- Routing of Attendance Sheets
- Minutes of the Last Meeting Un-approved to Approved (moved Lee Matthews, 2nd by Steve Shull, Passed with no objections)
- IEEE Patent Policy conflict or infringements given to group – No responses
- New PAR created to cover the differences in Scope and Purpose between PAR and Document. Extension to 31 December 2009. Comment on Dual Logo Standard.
- Comments were basis on the C57.15 being designed to stand by itself.

Additional comments on Draft 5.1 received and reviewed. Copy is on the Web site. Use the comment template and send back to Craig. (Craig will look at the IEEE TR-Committee comment template as an option)
Previous draft was sent to editorial staff and some comments have been received. Asked members to look first at the Abstract and keywords to make sure that they are complete. Comments should be back to Craig within 4-6 weeks. Would like to complete and forward on for whole Committee for a vote.

Recommendation to list middle initials to names of committee members for consistency, you don't provide it then it won't be there.

Add Ken Kanus to the member list.

References used in the Section 2 should be used in the document itself, those which were not have been moved to the back.

In an e-mail: Wally Bender noted he was still troubled by the short circuit rated, using the 40 times as an option. It was noted that 25 times is the standards for all regulators. User input into this noted that it was not problem for the line regulators (167 kVA, 288 amp and smaller), but that with application as the substation regulator is where there may be a problem.

The corrected Draft, which will now be 5.2, will be passed out to the Web site for the committee to due a 30-45 day comment period. Please return all comments to Craig as soon as possible.

Motion from _____ to adjourn, 2nd, Ken Kanus and passed with no objection.

10.2.2.14 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: 11d Dated: October 2005
Meeting Date: October 24, 2005 Time: 8:00am
Attendance: 24 Total
18 Members
6 Guests
2 Guest Requesting Membership

Issues, Remarks & Announcements:

The meeting was opened with introductions and handing out the roster for attendance records.
The patent disclosure statements were reviewed and no one responded.
The results of the preliminary response of REVCOM were reviewed. Several REVCOM members felt that technical data was part of the negative votes on the initial ballot and a recirculation ballot was needed.
The recirculation ballot received one negative vote. The Main Transformer Committee asked that we address that negative and Document #: C57.12.37_ Draft Revision: 11d Date: _Oct. 2005 Page #: 1, request another recirculation ballot.

A draft layout of the step-regulator test information reporting data was given out for comments. The layout was based on C57.15, paragraph 8.9.5 (Certified Test Report) required data. Craig Colopy reported that users require more than that specified in C57.15. Craig is to get me a more comprehensive list of data items.

The meeting was adjourned.
1 meeting slot is requested for the March 2006 meeting.
Rich Hollingsworth
Co-chair, C57.12.37

10.2.2.15 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