IEEE/PES TRANSFORMERS COMMITTEE MEETING

NOVEMBER 8, 1995

BOSTON, MASSACHUSETTS

IEEE/PES TRANSFORMERS COMMITTEE MEETING
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ATTENDANCE SUMMARY

MEMBERS PRESENT

D. J. Allan
J. Arteaga
J. H. Bishop
J. L. Corkran
L. E. Dix
M. A. Franchek
R. D. Graham
E. Hanique
W. R. Henning
J. Hunt
E. Kallaur
J. G. Lackey
T. D. Lewis
J. W. McGill
S. P. Mehta
D. H. Mulkey
B. K. Patel
T. J. Pekarek
R. L. Plaster
C. T. Raymond
G. W. Rowe
K. R. Skinger
R.W. Stoner
T. P. Traub
L. B. Wagenaar
W. G. Wimmer

R. Allustiarti
R. L. Barker
J. D. Borst
D. W. Crofts
R. F. Dudley
D. L. Galloway
R. L. Grubb
N. W. Hansen
K. R. Highton
C. W. Johnson, Jr.
J. J. Kelly
M. Y. Lau
S. R. Lindgren
N. P. McQuin
M. C. Mingoia
C. R. Murray
W. F. Patterson, Jr.
M. D. Perkins
D. W. Platts
P. G. Risse
V.S.N. Sankar
J. E. Smith
J. C. Sullivan
E. R. Trummer
B. H. Ward

G. Andersen
E. A. Bertolini
D. J. Cash
J. C. Crouse
F. E. Elliott
A. A. Ghafourian
F. J. Gryszkiewicz
K. S. Hanus
P. J. Hopkinson
A. J. Jonnatti
S. P. Kennedy
J. P. Lazar
R. P. Marek
C. P. McShane
H. R. Moore
C. G. Niemann
P. A. Payne
V. Q. Pham
B. Poulin
C. A. Robbins
D. N. Sharma
S. D. Smith
J. A. Thompson
G. H. Vaillancourt
R. J. Whearty

J. C. Arnold, Jr.
W. B. Binder, Jr.
D. Chu
T. Diamantis
P. T. Feghali
R. S. Girgis
M. E. Haas
J. H. Harlow
E. Howells
R. D. Jordan
A. D. Kline
F. A. Lewis
J. W. Matthews
R. McTaggart
W. E. Morehart
G. A. Paiva
L. C. Pearson
L. W. Pierce
J. Puri
J. R. Rossetti
H. J. Sim
R. J. Stahara
R. W. Thompson
R. A. Veitch
A. L. Wilks

MEMBERS ABSENT

E. J. Adolphson
D. A. Barnard
C. V. Brown
O. R. Compton
J. K. Easley
J. A. Fleeman
R. L. Grunert
C. C. Honey
D. C. Johnson
E. Koenig
L. A. Lowdermilk
J. Ma
C. J. McMillen
M. I. Mitelman
P. E. Orehek
D. Perco
S.M.A. Rizvi
L. J. Savio
J. E. Smith
L. R. Stensland
V. Thenappan
W. E. Wrenn
M. S. Altman
S. Bennon
D. S. Brucker
V. Dahinden
J. A. Ebert
S. L. Foster
G. H. Hall
J. W. Howard
C. P. Kappeler
P. E. Krause
D. L. Lowe
W. A. Maguire
W. J. McNutt
R. J. Musil
K. Papp
V. Raff
R. B. Robertson
W. E. Saxon
J. W. Smith
D. W. Sundin
R. C. Thomas
J. Aubin
W. E. Boettger
M. Cambre, Jr.
J. N. Davis
K. D. Edwards
J. M. Frank
F. W. Heinrichs
P. Iijima
W. N. Kennedy
H. F. Light
R. I. Lowe
K.T. Massouda
C. K. Miller
W. H. Mutschler, Jr.
J. M. Patton
J. D. Ramboz
A. L. Robinson
R. W. Scheu
L. R. Smith
L. A. Tauber
D. W. Whitley
R. A. Bancroft
J. V. Bonucchi
T. F. Clark
R. C. Degeneff
D. J. Fallon
D. A. Gillies
P. J. Hoefler
G. W. Iliff
J. P. Kinney, Jr.
L. W. Long
D. S. Lyon
A. D. McCain
R. E. Minkwitz, Sr.
E. T. Norton
H. A. Pearce
P. Riffon
M. P. Sampat
V. Shenoy
W. W. Stein
J. B. Templeton
C. W. Williams, Jr.

GUESTS PRESENT

T. M. Adams
J. Antweiler
E. BETANCOURT
O. M. Bello
A. Cancino
K. P. Ellis
J. Foldi
J. S. Garza
D. Helriegel
V. C. Jhonsa
V. M. Khalin
R. MULLIKIN
N. Mohesky
R. I. Psyck
W. W. Schwartz
R. TURLOTTE
C. WILSON
D. J. Woodcock
D. C. Anderegg
P. BALMA
D. E. Ballard
A. Bolliger
A. C. Chan
J. FINN
B. I. Forsyth
D. F. Goodwin
G. E. Henry III
L. E. Juhlin
B. Kumar
W. E. McCain
A. F. O'Neill
G. J. Reitter
T. Siebert
A. Traut
R. D. Wakeam
F. N. Young
G. W. Anderson
P. BARRY
M. F. Barnes
J. Bosiger
D. Dohnal
J.A.C. FORREST
M. L. Frazier
T. HUFF
T. L. Holdway
S. KOSTYAL
B. LLOYD
J. P. Melanson
D. E. Orten
J. C. Riboud
T. H. Stewart
S. C. Tuli
E. W. Werner
P. ZHAO
S. Antosz
R. BEGIN
W. H. Bartley
J. L. Brown
J. C. Duart
R. H. Fausch
G. GAGNE
J. W. Harley
A. F. Hueston
C. E. Kelly
M. C. Loveless
J. R. Moffat
R. L. Provost
C. SIMMONS
M. TEETSEL
J. Vaschak
R. C. Wicks
D. de la Cruz

Contents

IEEE PES TRANSFORMERS COMMITTEE MEETING
WEDNESDAY, NOVEMBER 8, 1995

Chair: J. H. Harlow Vice Chair: W. B. Binder, Jr.

Secretary: J. W. Matthews

1.0 Chair's Remarks and Announcements - J. H. Harlow

J. H. Harlow called the meeting to order at 8:00 am. Mr. Harlow opened the meeting by complimenting Ken Skinger for the excellent meeting arrangements. The Committee thanked Ken and the Host Committee with a round of applause.

Ken Skinger, Meeting Host, reported on the attendance (see Attachment 4).

Dan de la Cruz extended an invitation to the next meeting to be held in San Francisco during April 14-17, 1996. Arrangements have been made at the Ana Hotel and room rates will be $140 single and double, plus tax. Dan said they were planning numerous activities for the members and their traveling companions and urged everyone to attend.

Mr. Harlow then asked Edgar Trummer to address the Committee with some preliminary information on the meeting to be held in Graz, Austria in July 1997. Edgar indicated that the meeting in Austria was planned for the week prior to the PES Summer Power Meeting, which is to be held in Berlin, Germany, so that people may save on travel costs if they are planning to attend both meetings. He has arranged for two adjacent Hotels to hold the meeting in order to accommodate the usual arrangements. He then presented some information on the city of Graz and on the travel costs. The hotel rates are approximately $130, total. Several flight arrangements have been investigated, and it appears that air fares can be arranged for as low as $700. Edgar also indicated that plenty of activities will be planned to keep the traveling companions occupied and away from the shopping centers, which should help to greatly reduce the expenses. He also noted that rental cars are rather expensive in Austria, but he has special arrangements with Avis for approximately $40 per day.

Mr. Harlow presented information on the health of two of our members who could not attend this meeting. Bill Kennedy, who suffered a stroke after the last meeting, is recuperating and plans to return to work in January. He hopes to be with us in San Francisco. Larry Lowdermilk, who was the victim of a mugging, has recovered and returned to work but could not attend this meeting due to other conflicts. Greg Anderson then added that the mugger is still in jail in Kansas City.

Mr. Harlow requested all of the previous day's Panel Session participants to assemble during the break for a photograph.

Mr. Harlow proceeded with the reports on the Technical Council and Administrative Subcommittee meetings.

1.1 Report of the Technical Council Meeting, July 25, 1995

The PES Technical Council met at the 1995 Summer Power Meeting July 25, 1995 in Portland, Oregon. Following are points of note.

1.1.1 PES Administration

Mr. Mel Olken was introduced as the Executive Director of PES. He will be an ex-officio, non-voting member of the Governing Board of Executive Committee.

1.1.2 Poster Session

The Power System Engineering Committee sponsored the first poster session run by PES at the Summer Power Meeting. The session was well attended. Authors and attendees indicated satisfaction with the format. The poster session format will be expanded at future General Meetings.

Still under consideration for future meetings is the elimination of the requirement for presentation before publication.

1.1.3 1997 Summer Power Meeting

All technical committees are charged with taking specific action to support the 1997 Summer Power Meeting in Berlin (July 20, 1997 week). The Transformers Committee has scheduled a meeting in Graz, Austria for the week just prior to the Summer Power Meeting with the anticipation that many members will attend both forums.

1.1.4 Anti-trust Concerns

An incident in the T & D Committee has prompted a request that "...the IEEE Technical Council take a specific action to insure that information that would normally be protected as being of a competitive nature (such as pricing) is not discussed at or distributed in conjunction with IEEE PES sponsored activities".

There will be more on this later. Mel Olken will provide guidance regarding existing IEEE or PES rules.

1.1.5 Technical Committee Ballots

There are major changes being proposed regarding PES Technical Committee ballots. Basically, the objective is to open the balloting process to facilitate balloting by outside PES interested parties.

Of four options considered, the one selected for implementation in 1996 is the "One Ballot" concept which will combine Working Group, Subcommittee and Sponsor ballots into one ballot, plus include respondents received in response to a general "Invitation to Ballot".

It is recognized that it is likely to be more difficult to obtain consensus and incorporate comments.

1.1.6 IEEE Metric Policy

A three stage progression to the use of metric units in IEEE Publications has been announced. The first stage, effective January 1, 1996 dictates that proposed new standards and revised standards submitted for approval shall include metric units, such as in the form 1 inch (25.4mm). Effective January 1, 1998 the metric unit is the preferred, such as 51mm (2 in). Finally, effective January 1, 2000 the metric unit is to be used exclusively.

There are exceptions allowed. The complete policy was attached to the Kansas City meeting minutes.

Respectfully submitted,

J. H. Harlow, Chair

2.0 Approval of Minutes of April 26, 1995 - J. H. Harlow

The minutes of the Kansas City meeting were approved as written.

3.0 Vice Chair's Report - W. B. Binder, Jr.

3.1 The following are reports on activities of PES Committees on which the Vice Chair serves as Committee representative.

The following are reports on activities of PES Committees on which the Vice Chair serves as Committee representative. All of the meetings reported were held at the 1995 Summer Power Meeting in Portland, OR on July 24-27, 1995.

3.1.1 Publications Committee (Meeting held Monday, July 24, 1995, 3:00 PM)

3.1.1.1 1995/1996 Paper Budget

A six page limit per paper is currently in effect and the 1996 Budget is 5,000 pages. With discussions and closure, the average paper size is 6.7 pages. About 400 papers per meeting can be published. The problem at the moment is available meeting room space to present the papers that are accepted.

3.1.1.2 Presentation Practice

The Power System Engineering and the Energy Development and Power Generation Committees each attempted one "poster" session at the Summer Power Meeting. This is an attempt to "present" papers in a manner which inspires some discussion and one-on-on question and answer while allowing up to 19 papers to be presented at the same session. The number of papers received by Transformers, Switchgear, Surge Protective Devices Committees and others does not warrant such practice; however, PSEC and T&D Committee receive as many as 300 papers each meeting to be reviewed and presented. The Committees receiving smaller numbers of papers could put a paper in some other Committee's poster session if a need arose to exceed the quota. A motion before the Technical Council and another letter from T&D Committee proposing the return of Conference grade papers produced a lengthy debate on the pros and cons of such papers, the presentation process in general and the concerns about excessive reviewer load. The result was that Chair Lambert will appoint a Task Force to study the subjects discussed including the number and subject of General Meetings for presenting at the Winter Meeting in Baltimore. The outcome may be a restructuring of the way meetings are conducted in PES.

3.1.1.3 Guidelines for New People

Concern was expressed on how members of the Committee "train" their successors. Some felt a written guide would be appropriate. My successor made the mistake of attending the meeting to gain some insight on what is going on at these Committee meetings.

3.1.1.4 Other New Business: Papers Per Author

A single concern was expressed about limiting the number of papers which a single author or co-author can submit. No action was taken on this issue and the subject was dropped.

3.1.1.5 Resubmittals

Rejection is appropriate action to take if the paper is resubmitted without the required changes being made. This can even be done without full review if anywhere in the process anyone determines the required changes have not been made as described by an original reviewer. This makes it imperative that reviewers provide as much detail as possible to assist authors in determining what is the reason for rejection of a paper.

3.1.1.6 Publication of Standards Interpretations

It was asked if the Publications Committee should address this. It was suggested that it was a Standards Board matter.

3.1.1.7 Power Meeting Panel Sessions

Future deadlines are 3/1 and 9/1 for name of Panel Chair, Panelists and Title. Transformer Committee had no panels since the last T&D Conference. The due date for 1996 Summer Power Meeting panels is March 1, 1996. The date for the 1996 T&D Conference was extended to October 13, 1995 from July 15, 1995.

3.1.2 Organization and Procedures Committee (Meeting held Tuesday, July 25, 1995, 8:00 am)

3.1.2.1 The Standards Balloting Process

A directed action by PES from the Standards Board requires changes to the balloting process. A "blended" solution was outlined here and introduced at Technical Council later that evening. An invitation to ballot process will be coupled with a streamlined balloting process wherein the Working Group, Subcommittee and Sponsor Ballot are all conducted simultaneously. A detailed procedure will be written by the PES SCC by December 1, 1995 and ballot at the TCOP Committee at or prior to the 1996 Winter Power Meeting. After successful ballot at TCOP, it will be adopted by Technical Council at the Winter Power Meeting for immediate implementation as a change to the PES Technical Council O&P Manual. Because of the hierarchic nature of the manuals, a reference in our own manual will be sufficient to establish this new balloting process. The SCC will also present recommendations on interpretations, appeals and reaffirmation's. All Technical Committee O&P Manuals will have to refer to the TCOP Manual to avoid a lag in procedure implementation.

3.1.2.2 Technical Committee Reports

To handle the burden of paper reviews, the PSEC has split into three sub-groups, each having three subcommittees. I reported on our progress on revision to our own O&P Manual with some

scope changes but withdrew my intent of providing advance copies to the TCOP Committee Chair as a result of the discussion earlier in the meeting. I requested that IEEE 62 be transferred to the Transformers Committee and that decision was referred to PES SCC. I was successful in obtaining a verbal commitment from Staff Director Judy Gorman that Transformer standards interpretations would be published in the C57 Collection.

3.1.2.3 Standards Interpretations

At the Winter Power Meeting, the O&P Committee adopted a minimum practice which adheres to the IEEE Standards Board requirements. A need exists to establish a consensus practice to limit risk. No single response is allowed by Standards Board. Each Technical Committee should incorporate a detailed interpretation procedure after the Standards Board provides some guidance as to how uniform and how rigorous such procedures must be.

3.1.2.4 Formation of a New Technical Committee

A Task Force was formed to address the issue of forming a new Committee on Energy Storage. Following the Committee meeting, the Task Force met to discuss the Scopes of each proposed subcommittee.

3.1.3 Technical Sessions Improvement Committee (Meeting held Thursday, July 27, 1995, 2:00 PM) - Jim Harlow, Chair

3.1.3.1 Sessions Evaluation

A list of comments was discussed relative to improvement of meeting rooms and improvement of presentations. Lee Willis was not available to report on an assignment to generate a checklist for meeting rooms for the organizing committee. Problems with presentations need to be addressed in the Guide for Session Chairmen. A draft of the proposed changes to this guide was issued for comment. Paper Coordinators ought to send Session Chairmen a package including a letter of greeting to be sent to authors, a copy of each of the papers and some suggestions on how to run the session (including the "Guide for Session Chairs").

We discussed the proposed new forms of presentation in the poster session.

3.1.3.2 Improving Foreign Papers

This subject has expanded to include all papers needing grammatical help. A solicitation for assistance will be advertised and a list of support people will be compiled. Authors will then be encouraged to avail themselves of this type of service either within their own firms or from the compiled list.

3.1.3.3 Guidelines for Slides and Overheads Presentation at Author's Breakfast

The live presentation now used has been validated and additional presenters for the Author's Breakfast have been recruited. Consideration is being give to mailing a videotape of the presentation with the author's kit.

3.1.4 IEEE/PES Summer Power Meeting Technical Paper Sessions

The Transformers Committee sponsored two paper sessions at the Summer Power Meeting which
were well attended. Seven papers were accepted and presented out of thirteen that were reviewed.

3.2 1996 IEEE/PES Winter Power Meeting Technical Paper Review

We have received 19 papers for review which were sent out the second week in September for return by the end of September and the beginning of October. There is a 47% quota limit and a 2 session presentation limit for the 1996 Winter Power Meeting; therefore, 8 papers have been accepted.

We have also reviewed for two papers from the 1995 Stockholm PowerTech Conference. These papers were presented at the Conference and are being reviewed for publication only.

3.3 Future Meeting Schedule:

Spring, 1996	San Francisco, CA	Dan de la Cruz
Fall, 1996	Vermont	Chris Robbins
Spring/Summer, 1997	Graz, Austria	Herbert Schemmer
Fall, 1997	St. Louis, MO	Jerry Bishop
Spring, 1998	Little Rock, AR	Ed Smith

This schedule extends for two more years. Commitments from hosts are needed for meetings Fall, 1998 and beyond. The planning should be starting very soon. Should we consider holding joint meetings with other committees? Should we consider holding some or all future meetings in conjunction with the Summer or Winter Power Meetings?

Respectfully submitted,

W. B. Binder, Vice Chair

4.0 Administrative Subcommittee - J. H. Harlow

ADMINISTRATIVE SUBCOMMITTEE MEETING MINUTES
NOVEMBER 6, 1995
BOSTON, MASSACHUSETTS

4.1 Introduction of Members and Guests

Chair Harlow called the meeting to order at 7:10 p.m. in the Constitution Room of the Marriott Long Wharf Hotel.

The following members of the Subcommittee were present:

W. B. Binder, Jr.
J. D. Borst
D. de la Cruz (rep. G. A. McCulla)
F. E. Elliott
F. J. Gryszkiewicz
K. S. Hanus
J. H. Harlow)
J. W. Matthews
C. G. Niemann (rep. P. E. Orehek)
B. K. Patel
W. F. Patterson
W. Pierce
J. Puri
J. E. Smith
G. H. Vaillancourt
L. B. Wagenaar

The following guests were present:

Ken Skinger - Boston Meeting Host
Dan de la Cruz - San Francisco Meeting Host
Anne O'Neill - PES International Program Engineer, IEEE Standards Office
H. Jin Sim

During introductions, Chair Harlow announced that effective January 1, 1996 Wally Binder will be the Committee Chair, John Matthews will be the Vice Chair, and Bipin Patel will be the new Secretary. Jin Sim will become the new Chair of the Performance Characteristics Subcommittee.

4.2 Approval of the Kansas City Meeting Minutes

The minutes of the previous Administrative Subcommittee meeting in Kansas City were approved as published.

4.3 Additions to and/or Approval of the Agenda

There were no changes to the published agenda.

4.4 Committee Finances and Meeting Arrangements

4.4.1 Finances

Approximately $8000 was carried over from the meeting in Kansas City.

4.4.2 Meeting Arrangements

The Boston meeting host, Mr. Ken Skinger, reported the following registration:

Members and guests	265
Companions	51
Companions Tours - Monday	49
Tuesday	34
Tuesday Luncheon	161
Tuesday Outing	147

It was noted that spaces were still available for both the Tuesday Luncheon and the Tuesday Outing.

Mr. Skinger made the suggestion that it would be helpful for future meeting hosts to receive the registration program earlier to become familiar with the operation to avoid delays during registration. Ken complimented Greg Anderson for his help in the meeting arrangements.

Mr. Dan de la Cruz, host for the next Committee meeting in San Francisco, announced that the meetings will be held at the Ana Hotel on April 14 - 17, 1996. Rooms have been blocked 100-230-230-230-50 for Saturday through Wednesday nights. The room rates will be $140 single or double plus tax.

The Fall 1996 meeting will be hosted by Mr. Chris Robbins in Burlington, Vermont during October 27-30, 1996.

The Summer 1997 meeting will be held during July 15-18 in Graz, Austria. Mr. Harlow indicated that now is the time to begin promotion for this meeting. Edgar Trummer, host for the meeting in Graz, has set up a display which includes a video presentation in the registration area at this meeting. He will also make a short presentation at the main Committee meeting on Wednesday.

The Fall 1997 meeting will be held in St. Louis during November 16-19, 1997. Jerry Bishop will host the St. Louis meeting at the Adams Mark hotel.

We have just made arrangements for the Spring 1998 meeting to be held in Little Rock, AR. Ed Smith, Central Moloney, will be the host.

Mr. Borst suggested, and it was adopted, that a historical listing of the Transformer Committee meeting locations be maintained as part of the Administrative Subcommittee meeting minutes. He provided a listing dating back to 1974 which is attached to these minutes.

4.5 Chair's Report - J. H. Harlow

Mr. Harlow presented his report which will be included in the Committee meeting minutes.

4.5.1 Review of Technical Council Activities

The following notes are from the PES Technical Council meeting held in Portland during the 1995 Summer Power Meeting.

4.5.1.1 PES Administration

Mr. Mel Olken was introduced as the Executive Director of PES.

4.5.1.2 Poster Session Presentation

The first poster session was held at this meeting. It was well attended and appeared to be successful. This format will be expanded at future meetings for presentation of a large number of papers.

4.5.1.3 1997 Summer Power Meeting

All technical committees were asked to take action offering support for this meeting to be held in Berlin. Mr. Harlow suggested that our Committee could help support this meeting by sponsoring a panel session. Suggestions were made to repeat/update the panel sessions sponsored by the Underground Transformers and Network Protectors Subcommittee at the T&D Conference or the panel session to be held tomorrow on the Transnationalization of Standards. Subcommittee chairs were requested to submit suggestions for a panel session by the next Administrative Subcommittee meeting in San Francisco.

4.5.1.4 Anti-Trust Concerns

Due to an incident in the T&D Committee, Technical Council has reminded all that "...information that would normally be protected as being of a competitive nature (such as pricing) is not discussed at or distributed in conjunction with IEEE PES sponsored activities."

4.5.1.5 IEEE Metric Policy

The Technical Council repeated the three-stage implementation plan which was previously established. All work being done at this time should include metric units. There are some identified exceptions such as specific hardware sizes.

4.5.2 Topics From Executive Committee Meeting on Sunday, November 5, 1995

4.5.2.1 Revision of Transformers Committee Organization and Procedures Manual

The manual revised with comments from Subcommittee chairs was resubmitted for approval prior to this meeting. A motion was made and seconded for approval. In discussion, Bipin Patel suggested that the Committee Scope (part 3.1.a) should include the areas of Maintenance and Handling. It was determined that this modification was acceptable and the motion was approved with this modification. The revised manual will now be submitted to Technical Council for approval.

4.6 Standards Subcommittee - G. H. Vaillancourt

4.6.1 Standards and Coordination Activities

Mr. Vaillancourt presented his status report on transformer standards and coordination activities. The complete report is shown as part of the Committee minutes.

Prior to this meeting, he had faxed the status listings of each standard to the responsible subcommittee chair to review and comment.

4.6.2 Documents Submitted to the Standards Board

Twenty-eight PARs were acted upon by NESCOM and two documents were submitted to REVCOM for approval. Some of the actions by NESCOM were PAR withdrawals by administrative action because no request for action had been received from the project sponsor. See the complete report for details.

The report includes a two page listing of PARs which require action, mainly requests for extension, in the near future to avoid administrative withdrawal. An Action Request Form is included in the report as Attachment 5. The PAR form dated 1/95 is also included as Attachment 6.

Mr. Patterson requested the status of the transfer of C57.12.50, .51, .52, and .55 standards from ANSI. The status was not known at this time. This subject would be addressed at the ASC C57 meeting on Wednesday.

A proposal was made to consider merging the dry-type and liquid-immersed transformer documents to eliminate the redundancy which exists in the documents. Discussion led to the proposal to authorize the Dry Type Subcommittee to proceed with merging C57.91 with C57.90, if the Subcommittee wishes to do so. This proposal was approved with nine affirmative and three negative votes. Mr. Patterson agreed to bring this subject before the Dry Type Transformers Subcommittee, which would have to maintain a working group to address the dry type transformer sections of C57.12.90. It was noted that this would require a revision of the present PAR for C57.12.90 to include the dry type transformer items. The Dry Type Transformers Subcommittee may also wish to have members participate in the Standards Subcommittee working group on Revisions to C57.12.90.

The Standards Board meeting schedule is also shown in the complete report.

4.6.3 Standards Subcommittee

The Subcommittee met earlier today. The working groups on Continuous Revisions of C57.12.00 and C57.12.90 will maintain lists of current revisions to these documents. These lists will be included with the next standards status reports.

John Borst, Chair of the WG Continuous Revisions to C57.12.00, distributed copies of the current revised draft of C57.12.00 (text only) to all the Administrative Subcommittee members.

4.6.4 PES Standards Coordinating Committee

This Committee met on July 24, 1995 in Portland, Oregon.

Luigi Napoli reported that revisions of the IEEE Standards Operation Manual and IEEE Standards Bylaws are now available. A new manual, the Standards Companion, is also available. This new manual details all the steps involved in IEEE standards development.

A form for requesting service from the SPA system was issued. A copy is included as Attachment 7.

A report was requested from all the technical committees on compliance with harmonization goals for 1995. Georges expected to have the response from the Transformers Committee to Anne O'Neill by December 1.

Many of the other technical committees reported problems with administrative withdrawal of standards this year. (Note that this refers to standards withdrawal - not PAR withdrawal.) This has not been a problem with our Committee.

Some problems still exist over jurisdiction of several documents by different committees. The Standards Board may have to define more precise rules to cover cases such as ours with PSIM on IEEE 62.

A presentation was made on the proposed open balloting process within IEEE. This will be addressed more in Mr. Binder's report.

4.7 Status of IEEE Standards - L. Napoli

Luigi was not present. Anne O'Neill stated that Luigi had no formal report to present.

Anne indicated that she had brought extra copies of documents such as the Standards Companion, Request for Services forms, SPA system information, and Senior Member applications. These were available in the registration area.

4.8 Status of ANSI C57 Committee - L. Savio

Mr. Savio did not attend this meeting. Mr. Harlow announced that Leo has resigned as IEEE Delegation Chair to ANSI C57. John Borst has just accepted this position. No formal report was presented.

4.9 Subcommittee Activities - Subcommittee Chairs

Mr. Harlow reminded the Subcommittee Chairs to limit discussion here to administrative matters. He also stated that presentations on Wednesday should be kept as brief as possible by reporting only on the main technical details. All technical details will, of course, be covered in later written reports.

4.9.1 Insulating Fluids - F. J. Gryszkiewicz

Joe Kelly mentioned today that he will miss the next two Transformers Committee meetings due to conflicting dates with ASTM D27. John Matthews stated that Joe had also mentioned this problem to him and we were planning to address this problem in the revision of the Host Manual. It was decided that the best method of avoiding is conflict is to have the meeting host check with other appropriate committees, including ASTM D27 and Doble, when scheduling future meetings.

4.9.2 Audible Sound and Vibration - Jeewan Puri

A PAR has been submitted for the Guide for Abatement of Audible Noise. A PAR will be submitted for a Test Procedure for Sound Intensity Measurement.

4.9.3 Dielectric Tests - L. B. Wagenaar

A new working group has been formed for Field Testing and Diagnostic Tests of Transformers. Mr. Rick Young will Chair this working group. It is expected that this document will cover a larger scope than the present part of IEEE 62 on transformers.

A request for advice was received from the Surge Protective Devices Committee in 1991 to resolve the discontinuity, in their document, between the Lightning and Switching Impulse curves for transformers. A task force has completed this assignment and presented the results to a working group. It was determined that this request does not have to be handled as an outside request for interpretation, and the Subcommittee Chair may now respond to the SPD Committee.

A request for liaison has been received from SPDC on IEEE 32 - Grounding Devices. A volunteer will be solicited at the subcommittee meeting tomorrow.

4.9.4 Instrument Transformers - J. E. Smith

Jim asked how we determine if an IEC Standard can be adopted to replace an existing IEEE Standard. Anne O'Neill responded that there are no cut and dry procedures. She recommended that a working group should be set up to evaluate the feasibility. If adopted, an IEEE number can be assigned. Note that you may wish to change some of the definitions and references. A form, Transnational Project Authorization Request (TPAR), is available to coordinate this process.

4.9.5 Underground Transformers and Network Protectors - P. E. Orehek

Carl Niemann represented Paul Orehek at this meeting.

The Subcommittee will sponsor a panel session on the Reliability, Design, and Practices of Underground Distribution Systems at the 1996 T&D Conference in Los Angeles. Carl will pursue the idea of carrying this topic over to the 1997 Summer Power Meeting in Berlin.

4.9.6 Performance Characteristics - B. K. Patel

PCS has experienced problems obtaining adequate ballot returns. Mr. Harlow stated that he has noted that there appears to be a general problem with ballot returns. He plans to address the Committee regarding this subject on Wednesday.

Bipin questioned how to coordinate with the international standards groups when submitting a PAR. Anne O'Neill stated that the present practice is to include the Canadian and US Technical Advisor. Other national technical advisors can be added if their names are known.

The proposed Committee meeting schedule should be sent to the Subcommittee chairs earlier to provide adequate time for review with the working group chairs.

The TF on Survey of GSU Transformer Failures has completed it's work and the survey is ready to send to IEEE as a Special Publication. Wally Binder indicated that he will present it to the Publication Committee of Technical Council for approval.

Don Cash will be balloting the reaffirmation of C57.125 - Failure Analysis Guide.

4.9.7 Bushings - F. E. Elliott

C57.19.100 - Guide for Application of Power Apparatus Bushings has been published. C57.19.101 - Guide for Loading Power Apparatus Bushings will now be withdrawn.

4.9.8 Distribution Transformers - K. S. Hanus

Ken requested the status of the C57 trademark issue with NEMA. Mr. Harlow indicated that this issue has been dropped by NEMA and is no longer a problem. We have the options of developing standards as IEEE documents, which are approved by the IEEE Standards Board, or alternatively as ANSI documents, which also require ASC approval.

P1265 - Bar Coding can be approved and published as an IEEE document in December 1995. The additional approval by ASC C57 would delay publication by at least three months. It is our option to choose which path to take. Mr. Hanus stated that the Subcommittee desires to maintain the C57 numbering, therefore it will take the longer route to be approved as C57.12.35.

The combination of documents C57.12.22 and C57.12.26 into a single document numbered C57.12.34 may have a copyright problem because no significant changes are made from the original documents. How can this be approved by IEEE with the required IEEE copyright statement if IEEE does not own the copyright? Mr. Harlow requested Anne O'Neill check this issue with the Standards Board.

4.9.9 Insulation Life - L. W. Pierce

No activities to report.

4.9.10 West Coast - G. A. McCulla

Dan de la Cruz represented Gary McCulla at this meeting. The first draft of the Guide for Phase-Shifting Transformers has been completed.

4.9.11 Dry Type Transformers - W. Patterson

No activities to report.

4.9.12 HVDC Converter Transformers & Reactors - W. N. Kennedy

Bill Kennedy was absent due to illness. Mr. Harlow reported that Bill's health was improving and he planned to return to work in January. He expects to be with us in San Francisco.

4.10 Awards Subcommittee - J. D. Borst

Mr. Borst's full report will be shown in the Committee minutes.

4.10.1 Committee Service Awards

Mr. Borst announced that Certificates of Appreciation have been prepared for six members. They are:

L. B. Wagenaar	F. E. Elliott
J. B. Templeton	T. P. Traub
D. S. Brucker	R. A. Veitch

The Subcommittee Chairs were requested to identify any persons deserving an award at the next meeting and reminded them that Jim Harlow will be the Awards Subcommittee Chair at that time.

4.11 Vice Chair's Report - W. B. Binder, Jr.

Mr. Binder presented his written report. This report is included in the Committee minutes.

The revised Transformers Committee Operations and Procedures manual was reviewed and approved earlier in this meeting.

4.11.1 Technical Council Organization and Procedures Committee

The O&P Committee adopted a minimum practice for standards interpretations. More details for procedures will be furnished by the Standards Board. Transformers Committee interpretations can be published in the C57 Collection of Standards.

The proposed open balloting process was also reviewed.

4.12 Secretary's Report - J. W. Matthews

4.12.1 Membership Review

Voting Members - Heinz Fischer resigned since the last meeting. Don Ayers changed his voting status from Producer to General Interest. Jesse Patton and Devki Sharma changed their voting status from User to General Interest. Cal Kappeler changed his status from Voting Member to Emeritus Member.

Emeritus Members - I received a note from Mrs. Richard Kaufman that her husband had passed away on September 19, 1994. George Iliff's present address was found with the help of Peter Iijima.

Following these changes, and prior to the addition of new members at this meeting, membership stands at:

Voting Members - 165
Emeritus Members - 15

Voting Classifications:	Producers -	73
	Users -	53
	General Interest -	39

Poor Attendance Records - The following Voting Members have not attended a Committee meeting since November 1993: G. H. Hall, D. S. Lyon, K. T. Massouda, J. D. Ramboz, and D. W. Sundin. If they are not in attendance at this meeting, I will contact them to determine their interest in maintaining membership.

4.12.2 New Member Applications

Membership applications have been received from the following persons for review at this meeting:

Applicant - Company - Voting Classification - Sponsor

Peter E. Krause - Western Area Power Administration - User - Patel
Timothy D. Lewis - Acme Electric Corporation - Producer - Patterson
Richard P. Marek - ABB Power T&D Company - Producer - Patel/Patterson
Nigel P. McQuin - PSM Technologies - General Interest - Patel
V. S. N. Sankar - Ontario Hydro - User - Pierce/Wagenaar
Kenneth R. Skinger - Stone & Webster Engineering - General Interest
William G. Wimmer - Virginia Power - User - Hanus

All seven of these applications were accepted.

Following these additions, membership now stands at 172 voting members, with 75 producers, 56 users, and 41 general interest.

4.12.3 Request For Corresponding Membership

I responded to Mr. Peter Stewart, Wilson Transformer - Australia, regarding his request for acceptance as a Corresponding member. I explained the requirements for membership and enclosed copies of a membership application, minutes of the last meeting, and the Administrative Subcommittee directory. I urged him to begin participation by correspondence on the Working Group and Subcommittee level. I have not received a response to that letter.

4.12.4 PES Directory Rosters

After compiling all the rosters in electronic files, I was surprised to learn that the IEEE Office could not accept the listings in electronic format. I printed the listings and mailed the hardcopy to be printed in the 1996 PES Directory. Updating these listings will be simpler, however, now that we have them in this format.

4.12.5 Meeting Minutes

Minutes of the Kansas City meeting were reproduced at no cost, compliments of Ken Hanus and TU Electric. Postage costs were $1,127.40 for 327 mailings, which averages $3.45 per mailing. The total income from the 286 registrants was $2,860.00. Note that the net cost of the minutes varies for each meeting and the $10 portion of the registration fee is a valid nominal fee.

Again, I request the Subcommittee Chairs to submit their minutes within 30 days of the meeting (by December 6, 1995 for this meeting). This request is particularly important now because I must transfer the secretarial duties to the new Committee Secretary at the end of this year. The submittal should include a printed copy and an electronic file on a 3 1/2" diskette. The file should be formatted in Word 6.0 or WordPerfect 5.1 (or earlier versions).

4.13 Old Business

No old business items were presented.

4.14 New Business

No new business items were presented.

4.15 Adjournment

There being no further business, Mr. Harlow adjourned the meeting at 10:40 p.m.

Respectfully submitted,

John W. Matthews, Secretary

AdSub Attachment 4.4.2-1

IEEE/PES Transformers Committee Meeting Locations

Year	Spring	Fall	Committee Chair
1998	Little Rock, AR	TBA	Matthews
1997	Graz, Austria (summer)	St. Louis, MO	Binder
1996	San Francisco, CA	Burlington, VT	Binder
1995	Kansas City, MO	Boston, MA	Harlow
1994	Dallas, TX	Milwaukee, WI	Harlow
1993	Portland, OR	St. Petersburg, FL	Borst
1992	Birmingham, AL	Cleveland, OH	Borst
1991	Phoenix, AZ	Baltimore, MD	Veitch
1990	Denver, CO	Montreal, PQ, Canada	Veitch
1989	Chicago, IL	Charlotte, NC	Veitch
1988	Washington, DC	Long Beach, CA	Compton
1987	Ft. Lauderdale, FL	New Orleans, LA	Compton
1986	Little Rock, AR	Pittsburgh, PA	Yannucci
1985	St. Louis, MO	Toronto, ON, Canada	Yannucci
1984	Vancouver, BC, Canada	Boston, MA	Savio
1983	Atlanta, GA	Detroit, MI	Savio
1982	Los Angeles, CA	Philadelphia, PA	McNutt
1981	Portland, OR	Phoenix, AZ	McNutt
1980	Williamsburg, VA	Milwaukee, WI	Bonucchi
1979	San Diego, CA	Houston, TX	Bonucchi
1978	Miami, FL	Chattanooga, TN	Bennon
1977	Charlotte, NC	Montreal, PQ, Canada	Bennon
1976	New Orleans, LA	San Francisco, CA	Honey
1975	Lakeland, FL	Denver, CO	Honey
1974	Pittsburgh, PA	Scottsdale, AZ	Alexander

5.0 Transformers Standards - G. H. Vaillancourt

5.1 Transformers Standards and Co-ordination Activities

The transformers standards status is given in the first four attachments:

Attachment 1 (12 pages) is a list, in numerical order, of all the C57 standards and others, including five ANSI C57 standards which are being listed under the Standards Subcommittee because they have not been found a home yet in the other Subcommittees. Some standards are also listed more than once, this occurs when more than one group is working on the same standard, i.e. C57.12.00 and C57.12.90. There are in all, 114 standards or projects listed.

Attachment 2 (4 pages) is a report of co-ordination activity on standards belonging to other PES Committees. This attachment is sorted by PES Committee names.

Attachment 3 (1 page) is a list of IEEE Societies or PES Committees that have asked for co-ordination on the standards for which we are responsible.

Attachment 4 (24 pages) is sorted by Subcommittee names. It contains a listing of the projects, for which a given Subcommittee is responsible, and co-ordination activities with other PES Committees. The standards that are not assigned yet, or do not belong to the Transformers Committee, are listed under the Standards Subcommittee. For the publication of the Transformers Committee Minutes, this attachment will be split by Subcommittee names, and each section will accompany, the corresponding Subcommittee report.

Note - Attachment 4 is not included in report to Standards Coordinating Committee

5.2 Documents Submitted to Standards Board

5.2.1 NESCOM 06/14/95 (PAR's)

PC57.12.00	New PAR approved
PC57.12.20	Extended to June 1997
PC57.12.00h,i,j	PAR's withdrawn
PC12.70	New PAR approved
PC12.80	New PAR approved
PC57.12.90-Part I	New PAR approved
PC57.12.90b,c	PAR's withdrawn
PC57.20	Extended to June 1997
PC57.129	Extended to June 1997
P1258	PAR revision approved
P1277	Extended to June 1997

5.2.2 REVCOM 06/14/95 (Standards)

C57.12.91	Revision approved
C57.91	Revision approved

5.2.3 NESCOM 09/21/95 (PAR's)

PC57.12.00l	PAR withdrawn
PC57.12.34(P1447)	New PAR approved
PC57.12.44	New PAR approved
PC57.12.90d	PAR withdrawn
PC57.13.4(P832)	PAR withdrawn
PC57.15	New PAR approved
PC57.19.03	Extended to June 1997
PC57.21a	PAR withdrawn
PC57.99	PAR withdrawn
PC57.100	PAR withdrawn
PC57.112	PAR withdrawn
PC57.127	PAR withdrawn
PC57.128	PAR withdrawn
PC57.133 (C57.12.90 Part II,	New PAR approved
PC57.134(P1444)	New PAR approved
P513(C57.114)	PAR withdrawn
P954(C57.121)	PAR withdrawn

5.3 Standards Due for Reaffirmation, Revision, Or Withdrawal Well Before December 1996

C57.12.01, C57.12.58, C57.12.59, C57.13.2, C57.19.00, C57.19.01, C57.96, C57.104, C57.106, C57.115, C57.120, C57.124, C57.125

5 .4 Par Submittals

Like I said in the previous two reports, there has been a lot of neglect in the submittal of project authorisation requests (PAR's) over the last few years, and also the limit of four year lifetime on PAR's was approved over four years ago now. The result is that the IEEE Standards Department has now withdrawn many PAR's. They are still offering to extend the PAR's until June 1997, provided that it is requested by the Working Group Chair responsible for the project. The request can be made by filling up the special form provided (Attachment 5). In some cases it may be more advantageous to apply for a new PAR, but in general I would encourage you to request your working group Chairs, to ask for an extension by completing the form and sending it to Rona Kershner as soon as possible. This should solve the problem for at least another one and a half years for a good percentage of the PAR's.

Following is a list of all the PAR's that require action as soon as possible or else they will be up for administrative withdrawal. Please use the PAR form dated 1/95 (Attachment 6) for all new PAR submittals.

5.4.1 Bushing Subcommittee

PC57.19.00	Submit new PAR
PC57.19.01	PAR application in progress
PC57.19.03	Extension to June 1997

5.4.2 Dielectric Tests Subcommittee

PC57.21	Submit new PAR
PC57.98	Request PAR withdrawal, new PAR will be required later
PC57.113	Submit new PAR
PC57.127	Submit new PAR
PD Loc. Guide	Combine with C57.127
P1350	Request PAR withdrawal, work to continue in SPD

5.4.3 Distribution Transformers Subcommittee

PC57.12.20	PAR extended to June 1997
PC57.12.25	Request extension to June 1997
PC57.12.27	Request extension to June 1997
PC57.12.33	Apply for PAR
PC57.12.35(P1265)	PAR for number change in progress

5.4.4 Dry-Type Transformers Subcommittee

PC57.12.58	Request PAR extension
PC57.124	Request PAR to revise
PC57.12.91	Extended to June 1997
PC57.16	New PAR submitted for title change
PC57.96	Request extension to June 1997
P 259	PAR submittal in progress

5.4.5 HVDC Converter Transformers Subcommittee

PC57.129	Extended to June 1997
P 1277	Extended to June 1997

5.4.6 Instrument Transformers Subcommittee

PC57.13.4 (P832)	Apply for new PAR if wanted
PC57.13.5	Submit new PAR for title change

5.4.7 Insulating Fluids Subcommittee

PC57.104	Apply for new PAR
PC57.106	Apply for new PAR
PC57.121 (P954)	PAR withdrawn, apply for new PAR

5.4.8 Insulation Life Subcommittee

PC57.91	Apply for new PAR
PC57.92	Request PAR withdrawal, work included in PC57.91
PC57.119	Request extension to June 1997

P 1276	PAR application in progress

5.4.9 UG TR & Network Protectors Subcommittee

PC57.12.57	New PAR may be needed

5.4.10 West Coast Subcommittee

PC57.93	PAR extended to June 1997
PC57.128	Apply for new PAR
PC57.135	PAR application in progress

5.4.11 Standards Subcommittee

C57.12.10	ANSI Std, needs a home in IEEE
C57.12.13	ANSI Std, needs a home in IEEE
C57.12.53	Only title exists
C57.12.54	Only title exists
C57.17	ANSI Std, needs a home in IEEE

5.5 Next Standards Board Meetings and Submittal Deadlines

Meeting Date	Deadline for PAR (1)	Deadline for STD (2)
December 12, 1995	September 3, 1995	November 3, 1995
March 21, 1996	December 2, 1995	February 2, 1996
June 18, 1996	March 10, 1996	May 10, 1996
September 19, 1996	June 9, 1996	August 9, 1996
December 10, 1996	September 1, 1996	November 1, 1996

Note 1: A PAR must be sent to the Standards Subcommittee Chair before the stated deadline, he then has to circulate it to all the other PES Committees before he can submit it to the IEEE Standards Department. This requires two extra months.

Note 2: Standards must be submitted directly to the IEEE Standards Department before the stated deadline to be considered at the next Standards Board Meeting.

5.6 Standards Subcommittee Meeting

The Standards Subcommittee met on Monday November 6, 1995 at 9:15 AM. The minutes of the Kansas City meeting were approved as written. The operating procedure for continuous revision of C57.12.00 and C57.12.90 was reviewed once more. This procedure consists in collecting all the changes approved by the technical subcommittees since the last revision and incorporating them into a document for ballot. Originally, it was planned to synchronise publication of the new revision with the publication of the C57 collection by IEEE (Phone Book) which occurs about every two years. The next publication of the Phone Book was expected to occur early in 1996, accordingly we

had planned to ballot both documents during the Summer of 1995. Unfortunately the Phone Book was published prematurely in June 1995 and our plans were completely thrown off. Because of this, it was decided that the ballots would now be postponed at least for another six months since there is no more any rush to do it. The good side of this is that there will be time to incorporate more of the needed changes into the new revision. Next, a new cut-off date to receive completed changes from the technical subcommittees was chosen, it is now April 17, 1996. This date coincides with the next Transformers Committee Meeting in San Francisco. All completed changes that will have been received by that date will go into the final ballot that should occur during the Summer of 1996. It is expected that the ballot will be conducted according to the new balloting procedure that PES is actually putting into place. Therefore formation of the balloting group will need to be started early in 1996.

Following this, a very important point was brought up by a person in the attendance. Some confusion exists regarding the difference in scope between C57.12.00, the requirements and C57.12.90, the test code. It is very important that a given change be made in the document where it belongs and not in the other document as has sometimes occurred in the past. Everyone present agreed that this should not be allowed to happen and the chairs of both working groups on continuous revision were demanded to keep their eyes open to prevent this.

The next item on the agenda was presentation of the working groups reports. John Borst the Chair of the Working Group on Continuous Revision of C57.12.00 reported that the new PAR for revision of the document had been accepted at the June 15,1995 Standards Board Meeting. He has now produced a draft that includes all the changes approved so far at the technical subcommittees level. He will next produce a list of all pending changes that will be published in the Transformers Committee meeting minutes.

The next working group report was presented by Steve Smith, the Chair of the Working Group on continuous revision of C57.12.90. He reported that he now has the complete text of the document available on diskette in Word Perfect or Microsoft Word 6.0 format. He has made further editorial corrections to eliminate as many errors as possible. He then distributed a copy of the revised text for clauses 1 to 4. This text was taken from the original document and rearranged to make it conform to the latest revision of the IEEE Style Manual, but no change was made to the wording. He had also prepared a list of presently active revision that he distributed. That list will be updated for each meeting.

The third working group which is chaired by Tom Traub is on Terminology, Units and Terminal Markings. Tom reported the PARs for revision of C57.12.70 and C57.12.80 had been both approved by the Standards Board. Copyright release for C57.12.70 has been received from ANSI but work has not started yet on it. It first will be rearranged to conform with the IEEE Style Manual. Tom has started work on C57.12.80 and the format is now conform to IEEE style. Some new definitions were added and some outmoded ones were taken out. A revised copy will be distributed to the working group members for comments before the next meeting.

Following the working group reports back at the Standards Subcommittee level, the issue of working group membership was discussed. It was decided to nominate as members of the working groups on continuous revision the working group chairs in technical subcommittees who are responsible for changes in C57.12.00 and C57.12.90. Their participation at the next Standards

Subcommittee meeting will be expected and welcome. There was next a discussion about harmonisation of standards. During that discussion, Tom Traub suggested that a working group be formed in the Standards Subcommittee to make a comparison between Transformers Committee and IEC standards. This matter will put on the agenda for the next meeting in San Francisco.

There being no other new business, the meeting was adjourned.

5.7 PES STANDARDS COORDINATING COMMITTEE MEETING

The Standards Coordinating Committee met, Monday, July 24, 1995 in Portland, Oregon.

Luigi Napoli reported that revised versions of the IEEE Standards Operation Manual (April 1995) and IEEE Standards Board Bylaws (December 1994) are now available. The changes in the Operation Manual cover a number of specific detail, but major revisions have been made to clauses covering sponsor balloting, the New Opportunity in Standards Committee (NosCom), sponsor responsibilities, standard submission to the IEEE Standards Board, trial-use standards, appeals, drafts, and informative annexes. A new manual titled: IEEE Standards Companion is also available since September 1995. The Standards Companion takes you through all the stages and steps involved in IEEE standards development. It describes the method by which a fully developed, officially approved standard is created. It offers background, details, and lessons learned on the process. It tries to explain standards development in a friendly manner and offer practical suggestion to assist standards developers. It also contains sample correspondence, guidance on how to handle negative ballots, tips on submitting PARs, and methods for handling interpretation requests. To request copies of either one or of the three new manuals, please contact Terry deCourcelle in the IEEE Standards Department at (908) 562-3827.

Luigi also handed out to the attendance a request for service form for the SPA system, copy of that form can be found as Attachment 7. The services that are offered are: file transfer, BBS, FTP, electronic mail, World Wide Web posting, and document authoring.

Anne O'Neill requested that each Standards Co-ordinator produces a report on compliance of each Technical Committee with the goals stated at the SCC Meeting of January 31,1995. The report is due for November 1, 1995. These goals relate to effort made in each committee or subcommittee to promote internationalisation of standards. They were fully stated in my previous report.

One of the items on the agenda was the subject of PES Standards administrative withdrawal. Many of the Standards Co-ordinators present reported that this has been a big problem within their respective committee. Ways to prevent this from occurring were discussed. At the end, it was concluded that in most cases, each committee had been given advance notice and sufficient time to react before a standard was administratively withdrawn. Remarks were made that the job of standard co-ordinator is becoming almost too heavy to handle due to the increasing number of PES standards. It is also often the case that Subcommittee Chairs do not react quickly enough or not at all even when given sufficient notice.

The problem of turf is continuing to be an issue in PES committees. How jurisdiction over Standard 62 is to be shared is still not determined. There is also a problem with P1442 between PSIM and T&D Committees. Another issue is the scope P1299 that overlaps the jurisdiction of at least three

PES Committees. Ultimately there may be a need to ask the Standards Board to define more precise rules to take care of these cases.

The Secretary of the Technical Council Harry Jones gave a presentation on the new proposed balloting process for PES. The new process is centered on the formation of balloting groups amongst IEEE members through invitations to participate that would be published in IEEE publications. A balloting group would consist of the following:

- The sponsoring Working Group or Task Force members who both wish to vote and are IEEE members.
- Those IEEE members who submit a completed Invitation to Ballot form.
- Members of the sponsoring Technical Committee and the sponsoring Subcommittee wishing to ballot the document.

The ballot shall be conducted using the procedure published in the latest revision of the IEEE Standards Operation Manual which can be obtained as mentioned above.

A copy of the procedure has now been sent to all Standards Co-ordinators and comments are requested no later than October 31, 1995.

After presentation of Standards Co-ordinators reports the meeting was adjourned.

Respectfully submitted,

G. H. Vaillancourt, Chair

Following this report, Georges announced that Tom Traub has accepted the new position of Vice Chair in the Standards Subcommittee. The principle task of this position will be to administer PARs.

COORDINATION ACTIVITY OF STANDARDS SUBCOMMITTEE AS PER: 01/10/96

PROJECT NO. / DATE	TITLE	PES COM.	CONTACT IN PES COM.	CONTACT PHONE	COORDINATOR TRANS. COM.	COMMENT OR STATUS OF DOCUMENT / COORD. PHONE
P 454	PARTIAL DISCHARGE MEASUREMENTS					
03/31/94		PSIM	BARRY WARD	215-646-9200	G. H. VAILLANCOURT	WILL ADOPT IEC-270 514-652-8515
P 62	GUIDE FOR DIAGNOSTIC OF POWER APPARATUS					
03/17/94		PSIM	DAVID TRAIN	617-926-4900	R. A. VEITCH	DRAFT PUBLISHED IN C57 COLL. 905-731-9178
PC37.107	STANDARD FOR DIGITAL PROTECTIVE RELAY INTERFACES					
12/28/85		PSR	STIG L. NILSSON	408-335-9061	G. H. VAILLANCOURT	EVALUATING BALLOT RESULTS 514-652-8515
NEW	GUIDE FOR RECOMMENDED ELECTRICAL CLEARANCES AND INSULATION LEVELS IN AIR INSULATED SUBSTATIONS					
02/20/95		SUBS	RICHARD COTTRELL	517-788-0817	G. VAILLANCOURT	APPLYING FOR PAR 514-652-8515
P1291	GUIDE FOR PARTIAL DISCHARGE MEASUREMENTS IN POWER SWITCHGEAR					
10/22/91		SWGR	E. F. VEVERKA	414-835-1544	G. H. VAILLANCOURT	ANSI APPROVED 08/30/93 514-652-8515
P1325	RECOMMENDED PRACTICE FOR REPORTING FIELD TROUBLE DATA FOR POWER CIRCUIT BREAKERS					
03/17/92		SWGR	D. M. LARSON	203-634-5739	G. H. VAILLANCOURT	INFORMATION COPY REQUESTED 514-652-8515
NEW	GUIDE FOR VOLTAGE AND PHASING DETECTORS FOR USE IN HV SYSTEMS IN ELECTRIC POWER UTILITIES					
03/04/94		PSIM	PETER H. REYNOLDS	215-646-9200	G. H. VAILLANCOURT	514-652-8515

STATUS REPORT OF STANDARDS OF IEEE/PES TRANSFORMERS COMMITTEE

DATE: 01/10/96

ATTACHMENT 4

SUBCOMMITTEE: STANDARDS / CHAIRPERSON: G. VAILLANCOURT / PHONE: (514)652-8515 / FAX: (514)652-8555

STANDARD NO. / PROJECT NO.	TITLE OF DOCUMENT / WORKING GROUP	WG CHAIRPERSON	TF CHAIRPERSON	COMMITTEES REQUESTING COORDINATION	PUB_DATE	PAR_DATE	REV_DUE_YEAR	WG_PHONE	LATEST STATUS / COMMENTS
C57.12.00	GENERAL REQUIREMENTS FOR LIQUID-IMMERSED DISTRIBUTION, POWER, AND REGULATING TRANSFORMERS			T&D PSRC SWG	SUBS	IAS	IEC-TC1		MAKING RUNNING LIST OF CHANGES
VARIOUS	CONTINUOUS REV. OF C57.12.00	BORST J. D.			06/16/93	06/15/95	1998	(314)659-6119	WG COLLECTING CHANGES
C57.12.10	TRANSFORMERS 230kV AND BELOW -8333/10417kVA 1 PH, -100000 kVA 3 PH w/o LTC, -100000kVA w/ LTC - SAFETY REQUIREMENTS								ANSI STANDARD
ANSI	ANSI C57.12.1				06/04/87	/ /	1993		NEEDS A HOME, DUE FOR REAF.
C57.12.13	CONFORMANCE REQUIREMENTS FOR LIQUID-FILLED TRANSFORMERS USED IN UNIT INSTALLATIONS INCL. UNIT SUBSTATIONS								ASSIGN TO SUBCOMMITTEE
ANSI	HVACC ON HIGH VOLTAGE TRANSFO				09/02/81	/ /	1987		NEMA STANDARD
C57.12.53	REQUIREMENTS FOR DRY-TYPE, UNDERGROUND, SINGLE-PHASE WITH SEPARABLE INSULATED H-V 24940 grdY/14400 V AND <; LV 240/120 V								ONLY TITLE EXIST (NO PAR)
ANSI					/ /	/ /	0		IS IT REQUIRED?
C57.12.54	REQUIREMENTS FOR DRY-TYPE, UNDERGROUND 3 PHASE DISTRIBUTION TRANSFORMERS,2500 kVA OR <, HV 24940 grdY/14400 OR <,LV 480V								ONLY TITLE EXISTS
ANSI					/ /	/ /	0		IS IT REQUIRED?
C57.12.70	TERMINAL MARKINGS AND CONNECTIONS FOR DIST. & POWER TRANSFORMERS			T&D SUBS ICC					REVISING TERMINOLOGY
NONE	TERMINOLOY, UNITS AND MARKING	TRAUB T. P.			06/18/92	06/14/95	1997	(312)394-2704	PAR APPROVED 06/14/95
C57.12.80	TERMINOLOGY FOR POWER & DISTRIBUTION TRANSFORMERS			T&D SUBS					WILL START REVISION
NONE	TERMINOLOGY, UNITS AND MARKING	TRAUB T. P.			05/01/92	06/14/95	1997	(312)394-2704	PAR APPROVED 06/14/95
C57.12.90	STANDARD TEST CODE FOR LIQUID-IMMERSED DISTRIBUTION, POWER, AND REGULATING TRANSFORMERS & GUIDE FOR SC TESTING OF			T&D PSRC SWG	IECTC14	USTAG			MAKING RUNNING CHANGE LIST
VARIOUS	CONTINUOUS REV. OF C57.12.90	SMITH S. D.			03/16/93	06/15/95	1998	(606)879-2757	WG COLLECTING CHANGES
C57.17	REQUIREMENTS FOR ARC FURNACE TRANSFORMERS								LAST REVISED IN 1986
ANSI	ANSI DOCUMENT				/ /	/ /	1986		ANSI DOCUMENT

6.0 Recognition and Awards - J. D. Borst

6.1 Certificates of Appreciation

Certificates of Appreciation will be presented to the following individuals at the Transformers Committee meeting on November 8, 1995:

Loren B. Wagenaar	Chair, Bushing Subcommittee
James B. Templeton	Chair, Dielectric Tests Subcommittee
David S. Brucker	Chair, West Coast Subcommittee
Fred E. Elliott	Chair, Working Group on Bushing Application Guide
Tom P. Traub	Chair, Working Group on Load Tap Changer Performance Requirements
Robert A. Veitch	Chair, Working Group on Diagnostic Field Testing and Monitoring of Transformers

We congratulate these individuals for their contributions and leadership.

6.2 IEEE Standards Department

No awards were issued by the IEEE Standards Board during this time period.

6.3 IEEE PES AWARDS COMMITTEE

The PES Awards Committee met July 24, 1995, in Portland in conjunction with the Summer Power Meeting to review committee responsibilities and the process for selecting PES Prize Papers. The members received information on the awards for which the Committee is responsible and the forms for nominations. Also, due dates were reviewed as well as the number of required copies. For prize paper, report and standards awards, the document copies are to be obtained from IEEE. The Committee now has a budget to covers expenses for standards, guides, etc. (21 copies) for such award nominations.

A request was distributed for nominees for the IEEE Award for Engineering Excellence. The Committee has begun consideration of an award for engineering excellence for PES.

The Committee agreed that all future award certificates should include the signature of the Technical Council Chair.

John D. Borst
Chair, Awards Subcommittee

7.0 Reports of Technical Subcommittees

The following reports are those of the technical subcommittees of the Transformers Committee. In most cases they are the complete minutes of meetings held earlier and they are identified as minutes. Some are summary reports of the Subcommittee activities during the previous week.

Secretary's Note: The subcommittee reports have been edited to the format of the IEEE Style Manual. No changes have been made to the content of these reports except removal of attendance lists.

Following each report is a listing of the current status of each of the subcommittee's assigned standards.

7.1 Distribution Transformers - K. S. Hanus

Marriott Longwharf, Boston MA
Tuesday, November 7, 1995

7.1.1 Chair's Remarks & Announcements

The meeting convened at 2:00 PM in Salons A,B & C with the introduction of the members and guests and signing of the attendance roster.

Minutes of the last meeting in Kansas City were approved with no changes.

The chair covered key points of the ADCOM meeting from the evening before. The key points were:

265 registered, 51 spouses

Future Meetings:

April 14-17, 1996, ANA Hotel San Francisco, $140 sgl/dbl
Fall 1996 Vermont
Spring/Summer 1997 Graz Austria
Fall 1997 St. Louis
Spring 1998 Littlerock

The subcommittee was made aware of an anti-trust incident in the T&D Committee that has prompted a request that " ...the IEEE Technical Council take a specific action to insure that information that would normally be protected as being of a competitive nature (such as pricing) is not discussed at or distributed in conjunction with IEEE PES sponsored activities".

The IEEE's position on metrification was reviewed. As of 1/1/96 the policy was to show metric dimensions as an alternate as depicted by this example - 1 inch (25.4 mm). As of 1/1/98 the policy will be show 51 mm (2 in) and as of 1/1/2000 the policy will be show 51mm, exceptions could be inch specific dimensions which cannot be converted to metric numbers.

Par extensions are needed for the following documents:
12.25 extend to July 1997
12.27 revoked?
12.33 loss evaluation - PAR needed
12.35 bar coding - PAR extension needed

Send PAR extension forms to Rona Kershner by the Standards Board. Dates:

Meeting Date	New/Rev. Doc.	PAR's
December 12, 1995	----------	11/03/95
March 21, 1996	12/2/95	02/02/96

.35 approved by Standards Board and C57, published by IEEE
.34 approved by Standards Board and C57, publish by NEMA

Bill Wimmer approved as member of Transformer Committee.

7.1.2 A report from each of the working group chairs was given.

7.1.2.1 C57.15 Step-Voltage Regulators

The working group discussed comments received on draft III dated 4/2/95. The discussion centered around the kVA and ampere ratings with relation to the 55 and 65 degree C rise ratings. Also the working group discussed the various tests required for regulators in the test section which has much in part been copied from ANSI Std. 4-78. It was talked about the fact the standard is written to stand alone instead of referring to other standards for such items as testing requirements. An existing task force will continue to address this and will issue a draft IV before the next meeting.

7.1.2.2 C57.12.20 Polemount Transformers

The working group discussed the two negative ballots that remained from the Main committee ballot. The negatives have been responded to and now the document will be recirculated before submission to the standards board. After standards board approval the document will be published as an ANSI standard by NEMA. It was noted that an electronic copy of the document has been sent to IEEE and NEMA should get this from IEEE when the document is approved by the standards board.

The working group continued discussing comments obtained from the last document ballot. The major part of the discussion centered around section 5.2 which covers dielectric testing, figure two which covers interchangeability dimensions and other minor comments. A task force was formed to work out some of the discussed items so a draft II can be published before the next meeting.

7.1.2.3 C57.12.22 Three Phase Livefront Padmount Transformers

The document has been recirculated and approved by the standards board. It is now in the process of being published by NEMA.

7.1.2.4 C57.12.23 Submersible Single Phase Transformers

The C57 12.23 document has been approved by the ANSI Board of Standards Review and is now awaiting publication by NEMA.

7.1.2.5 C57.12.25 Single Phase Deadfront Padmount Transformers

The working group reviewed the results of a working group ballot which was performed between now and the last meeting. Of the 41 ballots mailed 21 were returned approved and 3 negative. The major portion of the meeting revolved around discussions on various sill dimensions on the type I & II transformer primary/secondary compartment layouts. A task force was formed to try and resolve these issues before the next meeting.

7.1.2.6 C57.12.34 Three Phase Padmount Transformers

A PAR has been approved for this combination document with a number of C57.12.34.

The working group discussed available short circuit currents and how this relates to the impedance ranges listed in the draft document. It was determined the short circuit values will be defined as the duty available at the secondary terminals. Too many variables kept the group from being able to factor in service entrance conductors into the short circuit calculations. A working group ballot is planned before the next meeting.

7.1.2.7 C57.12.26 Three Phase Deadfront Padmount Transformers

The C57 12.26 document has been approved by the ANSI Board of Standards Review. It is now awaiting publishing by NEMA.

7.1.2.8 C57.12.35 Bar Coding

The document was balloted at the main committee level with 2 unresolved negatives. The document will now be sent out for a re-circulation ballot as a result of the negatives. The working group continued to review the comments received from the ballot. Most were of a editorial nature with substantive items deferred for the next revision of the document.

A task force was set up to develop a survey for the users and manufacturers to obtain information about how the standard will be used, what hardware will be used in bar coding systems and other related issues so the next revision of the document will better address industry needs.

7.1.2.9 Coating Integrity Documents (.28, .29, .30 & .31)

.29 Coastal Environment for Padmount equipment The working group will meet to discuss alternatives to the SCAB test in the current document. Equivalency tests have been underway and reports will be presented.

.28 Padmount integrity document The document has been satisfactorily balloted and is in the process of being published.

.31 Polemount The document has been satisfactorily balloted and is in the process of being published.

.32 Submersibles The document has been satisfactorily balloted and is in the process of being published.

7.1.2.10 C57.12.33 Guide for Evaluation of Losses in Distribution Transformers.

The working group heard from the three entities doing similar work to the document being developed by the WG.

Phil Hopkinson (NEMA) discussed the work being done by NEMA which will typically cover transformers used in the Commercial and Industrial areas.

Ben McConnell from Oakridge National Labs discussed there report they are producing for the DOE. It is expected the DOE will receive the report in January. The document generally states transformers used by utilities are generally of appropriate efficiency because most utilities perform evaluations.

Steve Rosenstock a contractor for the EPA discussed the Energy Star Program available to utilities. He also talked about a software program EEI is funding and developing for the sizing of transformers.

Lastly the working group was assured sensitivity analysis of variables in the document will be sent out to the WG before the next meeting.

7.1.3 New Business

Requirements for membership to the working groups were discussed and the following guidelines were agreed upon:

1. 2nd meeting can become WG & SC member
2. 2 meetings as WG/SC member and then can apply to main committee
3. Miss 2 or more consecutive meetings and subject (by letter) being removed
4. Missed two meetings and will not be subject to vote in ballot (w/exceptions)

Co-Secretariat Duties of NEMA & IEEE- A flow chart showing the process a document goes through from development to final approval as a standard or guide was discussed. The copy handed out at the meeting was an older version and a newer version is attached to these minutes. The flow chart shows the responsibilities of NEMA and IEEE with regards to the secretariat responsibilities.

7.1.4 Working group assignments

The current assignments are as follows:

.20 Glenn Andersen / Allen Wilks
.21 Ali Ghafourian
.22 Ken Hanus
.23 Bob Scheu

.25	John Lazar / Norvin Mohesky
.26	Gerry Paiva
EDT	David Rollins/Angie McCain
Bar Coding	Ron Jordan / Ed Smith
Loss Evaluation Guide	Tom Pekarek/Don Duckett
Combination .22&.26	Clyde Pearson/Ron Stahara
57.15	Tom Diamantis/Craig Colopy

STATUS REPORT OF STANDARDS OF IEEE/PES TRANSFORMERS COMMITTEE — DATE: 01/10/96

ATTACHMENT 4

SUBCOMMITTEE: DISTRIBUTION TRANSFORMERS / CHAIRPERSON: KEN HANUS / PHONE: (817)882-6020 / FAX: (817)882-6038

STANDARD NO. / PROJECT NO.	TITLE OF DOCUMENT / WORKING GROUP	WG CHAIRPERSON	TF CHAIRPERSON	COMMITTEES REQUESTING COORDINATION	PUB DATE	PAR DATE	REV DUE YEAR	WG PHONE	LATEST STATUS / COMMENTS
C57.12.20	OVERHEAD-TYPE DISTRIBUTION TRANSFORMERS, 500 kVA AND SMALLER: H V 34500 VOLTS AND BELOW, L V 7970/13800Y & BELOW			T&D IAS/REP SCC14					PAR EXTENDED TO 06/30/97
PC57.12.20	POLE MOUNTED DISTRIBUTION TR	ANDERSON G. W.			01/11/88	12/05/91	1993	(913)339-2931	REBALLOT REVISION
C57.12.21	STANDARD REQUIREMENTS FOR PAD-MOUNTED, COMPARTMENTAL-TYPE, SELF-COOLED, SINGLE-PHASE DIST TRANSFORMERS WITH HV BUSHINGS			T&D IAS/REP					TO BE PUBLISHED BY ANSI
PC57.12.21	3-PHASE PADMOUNT TR LIVE FRONT	GHAFOURIAN A.			10/22/79	06/27/91	1985	(601)796-4255	
C57.12.22	PAD-MOUNTED,COMPARTMENTAL-TYPE SELF-COOLED,3-PHASE DIST. TR WITH HV BUSHINGS,2500kVA AND SMALLER:...REQUIREMENTS.			T&D IAS/REP IAS/PSE					AWAITING PUB. BY NEMA
PC57.12.22	3 PHASE PADMOUNT TR LIVE FRONT	HANUS K.			01/09/95	06/27/91	1999	(817)882-6025	TO INCORPORATE INTO C57.12.34
C57.12.23	UNDERGROUND-TYPE,SELF-COOLED, 1-PHASE DISTRIBUTION TR WITH SEPERABLE INSULATED HV CONNECT HV 24940GrdY..LV,240..;167kVA.			T&D IC IAS/REP IAS/PSE					ANSI APPROVED 02/18/94
PC57.12.23	1-PHASE SUBMERSIBLE TR	SCHEU R. W.			09/19/85	06/27/91	1996	(704) 462-3164	TO BE PUBLISHED BY NEMA
C57.12.25	REQUIREMENTS FOR PAD-MOUNTED COMP-TYPE,SELF-COOLED,1-PHASE DISTRIBUTION TR W/SEP INS HV CONN,HV 34500GrdY...167kVA...			T&D IC IAS/REP IAS/PSE					PAR IS EXPIRING
PC57.12.25	1-PHASE PADMOUNT TR DEADFRONT	MOHESKY N.			05/11/90	06/27/91	1995	(314)239-6783	ACTION REQUIRED ON PAR
C57.12.26	PAD-MOUNTED COMPARTMENTAL-TYPE SELF-COOLED,3-PHASE DIST TR for USE W/ SEPERABLE INSULATED HV CONN.,HV 34500GrdY..2500kVA			T&D IC IAS/REP IAS/PSE SCC14					TO INCORPORATE INTO C57.12.34
PC57.12.26	3-PHASE PADMOUNT TR DEADFRONT	PEARSON L. C.			06/17/92	12/05/91	1997	(817)882-6025	TO BE PUBLISHED BY NEMA
C57.12.28	PAD-MOUNTED EQUIPMENT - ENCLOSURE INTEGRITY								JOINT C37/C57 PROJECT
ANSI	JOINT WG ON CABINET INTEGRITY	MARTIN J.			06/24/87	/ /	1994		IN BALLOT IN ASC C57
C57.12.29	PAD-MOUNTED EQUIPMENT - ENCLOSURE INTEGRITY IN COASTAL ENVIRONMENTS								PUBLISHED IN 1992
ANSI	JOINT WG ON CABINET INTEGRITY	MARTIN J.			/ /	/ /	1996		NOT TRANSFORMERS COMM.
C57.12.30	SUBMERSIBLE EQUIPMENT - ENCLOSURE INTEGRITY								TO BE BALLOTED
ANSI	JOINT WG ON CABINET INTEGRITY	MARTIN J.			/ /	/ /	1994		NUMBER TO BE CHANGED

STATUS REPORT OF STANDARDS OF IEEE/PES TRANSFORMERS COMMITTEE — DATE: 01/10/96

ATTACHMENT 4

SUBCOMMITTEE: DISTRIBUTION TRANSFORMERS / CHAIRPERSON: KEN HANUS / PHONE: (817)882-6020 / FAX: (817)882-6038

STANDARD NO. / PROJECT NO.	TITLE OF DOCUMENT / WORKING GROUP	WG CHAIRPERSON	TF CHAIRPERSON	COMMITTEES REQUESTING COORDINATION / PUB DATE	PAR DATE	REV DUE YEAR	WG PHONE	LATEST STATUS / COMMENTS
C57.12.31	COATING STANDARD FOR POLE MOUNTED TRANSFORMERS							JOINT C37/C57 PROJECT
ANSI	JOINT WG ON CABINET INTEGRITY	MARTIN J.		/ /	/ /	1994		IN BALLOT IN ASC C57
C57.12.32	ENCLOSURE INTEGRITY OF SUBMERSIBLE EQUIPMENT							
ANSI				/ /	/ /	0		
C57.15	REQUIREMENTS, TERMINOLOGY, & TEST CODE FOR STEP-VOLTAGE REGULATORS			SUBS	IAS/PSE			SCOPE REVISED
NONE	VOLTAGE REGULATORS C57.15	DIAMANTIS T.		03/18/87	09/21/95	1997	(315)428-5688	APPROVED BY ANSI 12/02/92
C57.12.35	STANDARD FOR BAR CODING FOR DISTRIBUTION TRANSFORMERS (POLE-MOUNTED, PAD-MOUNTED AND UNDERGROUND)			AIM/TSC	IAS/REP TD	EEI	NEMA	PAR APPROVED 12/15/95
P1265	BAR CODE STANDARD	JORDAN RON		/ /	12/15/95	1994	(619)482-3239	PROJECT NO. CHANGED
IEEE1388	STANDARD FOR THE ELECTRONIC REPORTING OF TRANSFORMER TEST DATA			EEI	NEMA	ASC X12 PSR	CS SAB	PREPARING D1
P1388	ELECTRONIC TEST DATA	McCAIN A.		/ /	09/15/93	0	(410)291-3231	NO. CHANGED FROM C57.132
C57.12.27	STANDARD FOR TRANSFORMERS - LIQUID FILLED DISTRIBUTION TRANSFORMERS USED IN PAD-MOUNTED INSTALLATIONS, INCLUD. UNIT SUBS							PAR IS EXPIRING
PC57.12.27		MILLER J. R.		/ /	06/27/91	0	(314) 634-2111	ACTION REQUIRED ON PAR
C57.12.33	GUIDE FOR EVALUATION OF LOSSES IN DISTRIBUTION TRANSFORMERS							PAR APPLICATION IN PROGRESS
PC57.12.33	LOSS EVALUATION IN DIST. TR.	PEKAREK T.		/ /	/ /	0	(216) 479-3400	
C57.12.34	REQUIREMENTS FOR THREE PHASE PAD-MOUNTED DISTRIBUTION TRANSFORMERS			ICC				PAR APPROVED
PC57.12.34	THREE PH PAD-MOUNT TRANSFORMER	PEARSON L. C.		/ /	09/21/95	0	(817)882-6025	TO COMBINE C57.12.22 & .26

7.2 Dry-Type Transformers - W. F. Patterson

The written subcommittee report was not received in time for printing.

Following presentation of the oral report, there was some discussion regarding combination of the dry-type transformer test requirements with the liquid-immersed transformer test requirements. Wes had stated that this subject was approached by the SC due to the number of similarities between C57.12.90 and .91. The proposed project was tabled, however, because the SC could not reach consensus on whether or not the project should be undertaken due to the numerous subtle differences.

Nigel McQuin suggested that a third document could be created to cover the common parts of the two documents.

Bipin Patel suggested that the WG on Combined Revisions for C57.12.90 could handle the combined requirements from C57.12.90 and .91 and the Performance Characteristics WG could then handle the specific liquid-immersed transformer requirements and the Dry-Type Transformers WG could handle the specific dry-type transformer requirements.

STATUS REPORT OF STANDARDS OF IEEE/PES TRANSFORMERS COMMITTEE — DATE: 01/10/96

ATTACHMENT 4

SUBCOMMITTEE: DRY-TYPE TRANSFORMERS / CHAIRPERSON: W. PATTERSON / PHONE: (919)848-1860 / FAX: (919)856-2418

STANDARD NO. / PROJECT NO.	TITLE OF DOCUMENT / WORKING GROUP	WG CHAIRPERSON	TF CHAIRPERSON	COMMITTEES REQUESTING COORDINATION	PUB DATE	PAR DATE	REV DUE YEAR	WG PHONE	LATEST STATUS / COMMENTS
C57.12.01	GENERAL REQUIREMENTS FOR DRY-TYPE DIST. AND POWER TR INCL THOSE WITH SOLID CAST &/or RESIN-ENCAPSULATED WINDINGS								ASK FOR PAR EXTENSION
NONE	NOT SPECIFIED	JONATTI A.			02/02/89	09/28/82	1996		EXTENDED TO DEC 96
C57.12.50	REQ. FOR VENTILATED DRY-TYPE DISTRIBUTION TR, 1-500kVA, 1 PHASE, AND 15-500kVA, 3-PHASE HV 601-34500VOLTS,LV 120-600V								COPYRIGHT NOT RELEASED
NONE	NONE ASSIGNED				06/12/89	/ /	1994		BALLOT REAFFIRMATION
C57.12.51	REQ. FOR VENTILATED DRY-TYPE POWER TR, 501kVA & LARGER, 3 PHASE, WITH HV 601-34500V, LV 208Y/120 TO 4160 VOLTS								COPYRIGHT NOT RELEASED
NONE	NONE ASSIGNED				06/12/89	/ /	1994		BALLOT REAFFIRMATION
C57.12.52	REQ. FOR SEALED DRY-TYPE POWER TRANSFORMERS, 501kVA & LARGER, 3 PHASE, WITH HV 601-34500V,LV 208Y/120 TO 4160 VOLTS								COPYRIGHT NOT RELEASED
NONE	NONE ASSIGNED				06/12/89	/ /	1994		BALLOT REAFFIRMATION
C57.12.55	CONFORMANCE STANDARD FOR TR- DRY-TYPE TRANSFORMERS USED IN UNIT INSTALLATIONS, INCL. UNIT SUBSTATIONS								COPYRIGHT NOT RELEASED
NONE					04/07/86	/ /	1992		BALLOT REAFFIRMATION
C57.12.56	TEST PROCEDURE FOR THERMAL EVALUATION OF INSULATION SYST FOR VENTILATED DRY-TYPE POWER & DISTRIBUTION TRANSFORMERS								TO BE PUBLISHED
PC57.12.56	THERMAL EVALUATION OF DRY-TYPE PROVOST R. L.				08/27/84	/ /	1995	(302)999-2225	ANSI APPROVED 01/04/94
C57.12.58	GUIDE FOR CONDUCTING TRANSIENT VOLTAGE ANALYSIS OF A DRY-TYPE TRANSFORMER COIL			IEC IAS					REVISE OR REAFF. BY DEC 96
P745	DRY TYPE DIELECTRIC PROBLEMS	KLINE A. D.			06/27/91	06/28/78	1996	(404)762-1642	REQUEST PAR EXT. TO JUNE 97
C57.12.59	GUIDE FOR DRY-TYPE TRANSFORMER THROUGH-FAULT CURRENT DURATION								EXTENDED 12/1996
NONE	DRY-TYPE THRU FAULT DUR GUIDE	NONE			01/01/89	09/13/84	1996		ASK FOR PAR EXTENSION
C57.12.60	TEST PROCEDURES FOR THERMAL EVALUATION OF INSULATION SYSTEMS FOR SOLID-CAST & RESIN ENCAP POWER & DIST TRANSFORMER			IAS NEMA IEC					APPROVED BY SB 10/25/92
PC57.12.60	THERMAL EVALUATION OF DRY-TYPE PROVOST R. L.				10/25/92	08/17/89	1994	(302)999-2225	BEING BALLOTTED IN C57

STATUS REPORT OF STANDARDS OF IEEE/PES TRANSFORMERS COMMITTEE

DATE: 01/10/96

ATTACHMENT 4

SUBCOMMITTEE: DRY-TYPE TRANSFORMERS / CHAIRPERSON: W. PATTERSON / PHONE: (919)848-1860 / FAX: (919)856-2418

STANDARD NO. / PROJECT NO.	TITLE OF DOCUMENT / WORKING GROUP	WG CHAIRPERSON	TF CHAIRPERSON	COMMITTEES REQUESTING COORDINATION: PUB_DATE	PAR_DATE	REV_DUE_YEAR	WG_PHONE	LATEST STATUS / COMMENTS
C57.12.91	TEST CODE FOR DRY-TYPE DISTRIBUTION AND POWER TRANSFORMERS			SPD	EM			REVISION APPROVED 06/15/95
PC57.12.91	TEST CODE FOR DRY TYPE TR	BARNARD D.		11/29/78	06/01/89	1984	(919)738-4251	REVISION OF PAR NEEDED
C57.16	STANDARD REQUIREMENTS, TERMINOLOGY, AND TEST CODE FOR DRY-TYPE AIR-CORE SERIES CONNECTED REACTORS			NEMA	IAS	T&D		TITLE CHANGE!
PC57.16	DRY TYPE REACTORS	DUDLEY R.		09/19/58	03/21/91	1976	(416)298-8108	NEW PAR SUBMITTED
C57.21	REQUIREMENTS TERMINOLOGY, AND TEST CODE FOR SHUNT REACTORS RATED OVER 500kVA							PAR MORE THAN 4 YEAR OLD
PC57.21	DRY TYPE REACTORS	DUDLEY R.		04/02/91	/ /	1995	(416)298-8108	ACTION NEEDED ON PAR
C57.94	RECOMMENDED PRACTICE FOR INSTALLATION, APPLICATION,OPERATION & MAINTENANCE OF DRY-TYPE GEN PURPOSE DIST & POWER TR							PUB. 1982, REAFFIRMED 1987
NONE	APPLICATION OF DRY-TYPE TR			12/09/87	/ /	1992		BALLOTTING REAFFIRMATION
C57.96	GUIDE FOR LOADING DRY-TYPE DISTRIBUTION AND POWER TRANSFORMERS			T&D	SCC14	SCC10		EXTENDED 12/96
PC57.96	CAST COIL LOADING GUIDE	PIERCE L.		04/26/89	05/06/91	1996	(706)291-3166	APPLY FOR PAR EXTENSION
C57.99	GUIDE FOR LOADING DRY-TYPE AND OIL-IMMERSED CURRENT-LIMITING REACTORS							NEEDS REVISION (PAR TOO OLD)
P731	DRY TYPE REACTORS	DUDLEY R.		/ /	03/28/78	1990	(416) 298-8108	PAR WITHDRAWN
C57.124	RECOMMENDED PRACTICE FOR THE DETECTION OF PD AND THE MEASUREMENT OF APPARENT CHARGE IN DRY-TYPE TRANSFORMERS			NONE				REVISE OR REAFF. BY DEC 96
PC57.124	DRY TYPE DIELECTRIC PROBLEMS	KLINE A. D.		06/29/91	06/27/91	1996	(404)762-1642	REQUEST PAR EXTENSION
IEEE 259	TEST PROCEDURE FOR EVALUATION OF SYSTEMS OF INSULATION FOR SPECIALTY TRANSFORMERS							PUBLISHED
P259	SPECIALTY TRANSFORMERS	SIMPSON R. W. JR.		06/22/72	09/26/91	1979	(603)284-4362	PAR SUBMITTAL IN PROGRESS
C57.134	GUIDE FOR THE DETERMINATION OF HOTTEST SPOT TEMPERATURE IN DRY TYPE TRANSFORMERS							PAR APPROVED
PC57.134	DRY TYPE HOT SPOT DETERMINATIO	PAYNE P.		/ /	09/21/95	0	(202)388-2138	

COORDINATION ACTIVITY OF DRY TYPE SUBCOMMITTEE AS PER: 01/10/96

PROJECT NO.	TITLE				COMMENT OR STATUS OF DOCUMENT
DATE	PES COM.	CONTACT IN PES COM.	CONTACT PHONE	COORDINATOR TRANS. COM.	COORD.PHONE
P1303	GUIDE FOR STATIC VAR COMPENSATOR FIELD TESTS				
09/17/92	SUBS	PHILIP R. NANNERY	914-577-2591	R. F. DUDLEY	APPROVED BY SB 06/94 416-298-8108

7.3 HVDC Converter Transformers & Reactors - W. N. Kennedy

Mr. Kennedy was absent due to illness, and the Subcommittee did not meet.

STATUS REPORT OF STANDARDS OF IEEE/PES TRANSFORMERS COMMITTEE — DATE: 01/10/96

ATTACHMENT 4

SUBCOMMITTEE: HVDC CONVERTER TR & REACTOR / CHAIRPERSON: W. N. KENNEDY / PHONE: (317)286-9387 / FAX: (317)286-9549

STANDARD NO. / PROJECT NO.	TITLE OF DOCUMENT / WORKING GROUP	WG CHAIRPERSON	TF CHAIRPERSON	COMMITTEES REQUESTING COORDINATION: PUB_DATE	PAR_DATE	REV_DUE_YEAR	WG_PHONE	LATEST STATUS / COMMENTS
C57.129	GENERAL REQUIREMENTS & TEST CODE FOR OIL-IMMERSED HVDC CONVERTER TRANSFORMERS AND SMOOTHING REACTORS FOR DC POWER TRANSM			FM T&D PSIM SUB				PAR EXTENDED TO JUNE 97
PC57.129	SUBCOMMITTEE	KENNEDY W. N.		/ /	09/26/91	0	(317)286-9387	TO BALLOT D9
IEEE1277	GENERAL REQUIREMENTS & TEST CODE FOR OIL-IMMERSED AND DRY-TYPE HVDC SMOOTHING REACTORS			SUB				NEW DRAFT BEING PREPARED
P1277	SUBCOMMITTEE			/ /	09/25/91	0		PAR EXTENDED TO JUNE 1997

COORDINATION ACTIVITY OF HVDC CONV. TR & SMOOTHING REAC SUBCOMMITTEE AS PER: 01/10/96

PROJECT NO. / DATE	TITLE	PES COM.	CONTACT IN PES COM.	CONTACT PHONE	COORDINATOR TRANS. COM.	COMMENT OR STATUS OF DOCUMENT / COORD.PHONE
P1030.3	GUIDE FOR SPECIFICATION OF HVDC PERFORMANCE - PART III, DYNAMIC PERFORMANCE					DISCUSSING DRAFT IN WG
12/05/91		T&D	LEWIS VAUGHAN	514-652-8457	WILLIAM N. KENNEDY	317-286-9387

7.4 Instrument Transformers - J. E. Smith

7.4.1 Chair's Remarks & Announcements

The Instrument Transformer Subcommittee met at 2:00 p.m. with ten members and eight guests present . The minutes of the April 25, 1994 meeting in Kansas City were approved as written.

The spring meeting will be held April 14-17, 1996 at the ANA hotel in San Francisco. Future meetings will be held in Burlington, VT. October 27-30, 1996, Graz Austria July 15 - 18, 1997 and St. Louis, MO. fall of 1997.

The IEEE Transformers Administration Committee requested Subcommittee chairs to make the following announcements concerning. Anti-Trust Concerns and the IEEE metric policy:

> Anti-Trust Concerns - An incident in the T & D Committee has prompted a request that "... the IEEE Technical Council take a specific action to insure that information that would normally be protected as being of a competitive nature (such as pricing) is not discussed at or distributed in conjunction with IEEE PES sponsored activities".
>
> There will be more on this later. Mel Olken will provide guidance regarding existing IEEE or PES rules.
>
> IEEE Metric Policy - A three stage progression to the use of metric units in IEEE Publications has been announced. The first stage effective January 1, 1996 dictates that proposed new standards and revised standards submitted for approval shall include metric units , such as in the form 1 inch (25.4mm). Effective January 1, 1998 the metric unit is the preferred, such as 51mm (2in). Finally, effective January 1, 2000 the metric unit is to be used exclusively.

C57.13.2 - Conformance testing and C57.13.3 - Grounding of instrument transformers need to be reconfirmed or withdrawn by December 9, 1996.

Ross McTaggart was elected secretary of the Instrument Transformer Subcommittee.

Proposed guide for the detection of partial discharges and the measurements of apparent charge within instrument transformers has been lost in system.(Lasted reported in the November 2, 1993 minutes that the proposed guide was to be sent to the March 1994 standards board for approval.) Chair Smith will obtain I.E.C. and C.S.A. standards for partial discharge for the April meeting.

7.4.2 Working Group On Test Requirements

Instrument Transformers for nominal voltage 115 KV and above met at 8:00 am. November 7, 1995 with 22 attendees.

The following items were discussed:

- Processed mineral oil specification and gas-in-oil table were submitted to the working group for review.

- Modified dielectric values were discussed.
- Type test and routine test programs for VT were submitted by the working team.
- Detailed test program on CT was submitted by the CT working team.
- Pierre Riffon of Hydro Quebec accepts responsibility of reviewing special test items. Loren Wagenaar of AEP submitted partial discharge test levels for power transformers to the working group for reference.
- Chair will prepare a draft available latest first week of March, 1996 for members to review for next meeting in San Francisco.

7.4.3 Minutes for the working group on revision C57.13 - Tom Nelson - Chair.

Meeting held November 7, 1995 at 9:30 am. There were 8 members and 12 quests (2 requested membership).

There was no agenda for the meeting, but several items were discussed. A discussion was held on assigning an uncertainty to the standard burdens was discussed, and many felt it was a good idea. I will talk to manufacturers of standard burden boxes to see what kind of uncertainties are typical for them. A question arose about what is definition for the K class, with no answers. Harmonic performance of ct's is an area that is expected to become an issue, but there is not enough time to gather the necessary data to meet the deadline for this revision of C57.13., this would be a good area for a new working group in the future. A tentative deadline of fall 1996 was set for the working group balloting of the changes the working group will make, in order to get standard done on time

7.4.4 The working group on use of Instrument Transformers with Electronic Meters and Relays

Met on November 7, 1995 at 11:00 am. There were 11 members and guests present. Chair, Christen Haagen C57.13.6

7.4.5 Old Business

Approval of minutes, Kansas City, Missouri.

7.4.6 New Business

Proposal for 0.15 accuracy class was circulated for discussion by Chair, Jim Smith suggested that in the interest of harmonization with IEC-185, we might consider a 0.1 and 0.2 accuracy class modeled after that standard. Also asked if new burdens should be considered to reflect low power factor common in current circuit of electronic meters. Perhaps standard for an IT dedicated (only) to very low burden meters should be addressed.

Vadim Raff indicated that the 0.15 proposal fell between, and was simpler because it is not stepped at lower test points.

7.4.7 Other Issues Discussed

Possibly defining a test point at 1% rated current, perhaps 0.6%. Initial publishing as a guideline - C57.13.6, vs. immediately changing C57.13 should consider relay accuracy.

In order to solicit more user feedback, the author requests the subcommittee chair to ballot the attached proposal. Members were asked to consider proposals for the next meeting and to suggest in more detail relay definitions as they apply to static relays.

W. E. Morehart
Secretary

Proposed Changes To IEEE C57.13
Section 5.1 Basis For Accuracy Classes

Add To End Of Paragraph a):

Optionally, current transformers of higher accuracy may be specified to a uniform limit of +/- 0.15 from 5% through the rating factor.

Section 5.3 Standard Accuracy Classes
Additions To Table 6 - (Bold Print)

Metering Accuracy Class	Voltage Transformers (At 90% to100% of Rated Voltage)		Current Transformers					
			At 100% of Rated Current through RF		At 10% of Rated Current		**At 5% of Rated Current**	
	Min	Max	Min	Max	Min	Max	**Min**	**Max**
0.15	**.9958**	**1.0015**	**.9985**	**1.0015**	**.9985**	**1.0015**	**.9985**	**1.0015**
0.3	.9970	1.003	.9970	1.0030	.9940	1.0060	*	*
0.6	.9940	1.006	.9940	1.0060	.9880	1.0120	*	*
1.2	.9880	1.012	.9880	1.012	.9760	1.0240	*	*

*** = not defined**

Also - Modify Parallelogram In Figure 2 and Figure 3 to Reflect Above.

No new or changes to burdens.
No changes to relay definitions.
No changes in range of system load power factor (0.6-1.0)

Submitted by Chris Haagen 11/17/95 to C57.13.6 working group.

STATUS REPORT OF STANDARDS OF IEEE/PES TRANSFORMERS COMMITTEE — DATE: 01/10/96

ATTACHMENT 4

SUBCOMMITTEE: INSTRUMENT TRANSFORMERS / CHAIRPERSON: J. E. SMITH / PHONE: (919)827-2121 / FAX: (919)827-2121

STANDARD NO. / PROJECT NO.	TITLE OF DOCUMENT / WORKING GROUP	WG CHAIRPERSON	TF CHAIRPERSON	COMMITTEES REQUESTING COORDINATION / PUB_DATE	PAR_DATE	REV_DUE_YEAR	WG_PHONE	LATEST STATUS / COMMENTS
C57.13	REQUIREMENTS FOR INSTRUMENT TRANSFORMERS			PSIM	PSR	SPD		
P546	SUBCOMMITTEE			03/30/94	06/14/94	1999		REV. PAR APPROVED 06/14/94
C57.13.1	GUIDE FOR FIELD TESTING OF RELAYING CURRENT TRANSFORMERS							R1992
PSRC	SUBCOMMITTEE			08/25/87	/ /	1997		RELAY COMM. DOCUMENT
C57.13.2	CONFORMANCE TEST PROCEDURES FOR INSTRUMENT TRANSFORMERS							REVISE OR REAFF. BY DEC 96
NONE	SUBCOMMITTEE			04/16/86	09/26/91	1996		REQUEST PAR EXT. TO JUNE 97
C57.13.3	GUIDE FOR THE GROUNDING OF INSTRUMENT TR SECONDARY CICUITS AND CASES							TRANSFER FROM PSRC COMMITTEE
NONE	SUBCOMMITTEE			01/23/87	/ /	1995		R1990
C57.13.4	DETECTION OF PARTIAL DISCHARGE AND MEASUREMENT OF APPARENT CHARGE WITHIN INSTRUMENT TRANSFORMERS			T&D				PAR WITHDRAWN
P832		JONNATTI A. J.		/ /	05/28/80	0	(813)785-2788	DOCUMENT NEVER SUBMITTED TO SB
C57.13.5	GUIDE FOR PARTIAL DISCHARGE MEASUREMENT IN INSTRUMENT TRANSFORMERS 69 kV AND ABOVE			SWGR	EM			TITLE CHANGE NEEDED IN PAR
PC57.13.5	SUBCOMMITTEE	MA J.		/ /	06/14/94	0	(706)554-8800	SUBMIT NEW PAR WITH CHANGES
C57.13.6	REQUIREMENTS FOR INSTRUMENT TRANSFORMERS FOR USE WITH ELECTRONIC REVENUE METERS AND RELAYS			PSIM	PSR	TD	PSC	PAR DISSAPROVED **ACTION**
PC57.13.6	SUBCOMMITTEE	TEN-HAAGEN C. W.		/ /	/ /	0	(603)749-8433	MAKE CHANGES AND RESUBMIT PAR

COORDINATION ACTIVITY OF INSTRUMENT TRANSFORMERS SUBCOMMITTEE AS PER: 01/10/96

PROJECT NO. / DATE	TITLE	PES COM.	CONTACT IN PES COM.	CONTACT PHONE	COORDINATOR TRANS. COM.	COMMENT OR STATUS OF DOCUMENT / COORD. PHONE
P1304	CURRENT MEASURING SYSTEMS WHICH USE OPTICAL TECHNIQUES					
06/18/92		PSIM	T. R. McCOMB	613-990-5826	J. N. DAVIS	404-393-9831
PC37.110	GUIDE FOR THE APPLICATION OF CURRENT TRANSFORMERS USED FOR PROTECTIVE RELAYING PURPOSES					REVISION (D21) BALOTTED IN PSR
05/31/90		PSR	GRAHAM CLOUGH	206-737-6912	J. E. SMITH	919-827-4286
PC37.97	GUIDE FOR PROTECTIVE RELAY APPLICATION TO POWER SYSTEM BUSES					ANSI APPROVED 05/20/91
12/10/87		PSR	STEVE CONRAD	505-848-2642	JOHN N. DAVIS	404-393-9831
PC57.13.1	GUIDE FOR FIELD TESTING OF RELAYING CURRENT TRANSFORMERS					REAFFIRMED 1992
12/31/80		PSR	ARUN G. PHADKE	703-231-7029	JOHN N. DAVIS	404-393-9831

7.5 Insulating Fluids - F. J. Gryszkiewicz

The Insulating Fluids Subcommittee met in Boston, MA on Monday and Tuesday, November 6 and 7, 1995 with 32 members and 26 guests in attendance. Of the 26 guests in attendance, 2 requested membership on the Subcommittee. This brings the total membership of the Insulating Fluids Subcommittee to 74.

The minutes of the meeting held in Kansas City, MO (April 24 and 25, 1995) were approved as submitted.

7.5.1 Current Subcommittee Projects

7.5.1.1. C57.130 - Trial Use Guide for the Use of Dissolved Gas Analysis During Factory Thermal Tests for the Evaluation of Oil Immersed Transformers and Reactors

The Working Group met concurrently with the Insulating Fluids Subcommittee on Monday, November 6. Since the last meeting in Kansas City, Draft 9.1 of the document was balloted at the Subcommittee level. The results of the ballot were as follows:

Affirmative	20
Affirmative With Comments	10
Abstentions	3
Negative	5

The ballots for Draft 9.1 were reviewed at the meeting and the negative ballots resolved. The Subcommittee unanimously voted to submit Draft 10 for Main Committee balloting prior to the next meeting in San Francisco.

7.5.1.2 P1258 - Trial Use Guide for the Interpretation of Gases Generated in Silicone-Immersed Transformers

The Working Group met concurrently with the Insulating Fluids Subcommittee on Tuesday, November 7. Since the last meeting in Kansas City, Draft 7 of the document was balloted at the Subcommittee level. The results of the ballot were as follows:

Affirmative	18
Affirmative With Comments	5
Abstentions	13
Negative	2

All negative ballots were resolved. The Subcommittee unanimously voted to submit Draft 8 for Main Committee balloting prior to the next meeting in San Francisco.

7.5.2 Other Business

7.5.2.1 -Water in-Oil and Water-in-Paper Insulation

The Insulating Fluids Subcommittee was requested to look into the issue of the potential for the development of operating problems due to changes in moisture content at critical dielectric locations in loaded transformers. The original request for assistance indicated that moisture contained in the insulation at critical locations such as turns and other high electrical stress areas can greatly reduce the dielectric strength in those areas, as well as greatly increase the risk of a bubbling failure in those areas. This Task Force was organized to further explore this subject and to see how it fits within the scope of the Subcommittee.

Task Force Chair Frank Heinrichs presented his final report on Monday November 6. The report recommended that since the scope of the Insulating Fluids Subcommittee is limited to the liquid portion of the insulating system, the subject of water-in-paper insulation should be referred to either the Performance Characteristics Subcommittee or the Dielectric Tests Subcommittee. The Insulating Fluids Subcommittee Chair will discuss this item with the subject subcommittee chairmen.

The subject of water-in-oil and the effects of temperature on the solubility of water-in-oil will be addressed in the next revision of the oil guide, C57.106. The Task Force project was thus completed and the Task Force dissolved.

7.5.2.2 C57.121 - Guide for Acceptance and Maintenance of Less Flammable Hydrocarbon Fluid in Transformers

The Working Group Chair, Patrick McShane, is preparing a PAR for work to begin on this project. A Working Group ballot will be conducted prior to the next meeting in San Francisco. Members of this Working Group include:

Patrick McShane - Chair
Ted Haupert
Dave Sundin
Frank Gryszkiewicz
Joe Kelly
Fredi Jakob

7.5.2.3 C57.104 - IEEE Guide for the Interpretation of Gases Generated in Oil-Immersed Transformers

This guide is scheduled for reaffirmation or revision action by December 1996. A Working Group was formed which consists of:

Frank Heinrichs
Fredi Jakob
Paul Griffin
Joe Kelly
Gene Kallaur
Jim Brown

Ted Haupert
Ed Howells

A PAR will be issued and the Working Group will review the guide to determine the course of action to be taken for reaffirmation.

7.5.2.4 C57.106 - IEEE Guide for Acceptance and Maintenance of Insulating Oil in Equipment

This guide is scheduled for reaffirmation or revision action by December 1996. A Working Group was formed which presently consists of:

Frank Gryszkiewicz
Patrick McShane
Gene Kallaur

Additional membership for this Working Group will be sought by the Subcommittee Chair prior to the San Francisco meeting. A PAR will be issued and the Working Group will review the guide to determine the course of action to be taken for reaffirmation.

7.5.3 Anti-Trust Concerns

The following excerpt is taken from the Main Committee Chair's report:

An incident in the T&D Committee has prompted a request that "...the IEEE Technical Council take a specific action to insure that information that would normally be protected as being of a competitive nature (such as pricing) is not discussed at or distributed in conjunction with IEEE PES sponsored activities".

There will be more on this later. Mel Olken will provide guidance regarding existing IEEE or PES rules.

This concluded the business for the Insulating Fluids Subcommittee at this session. The Subcommittee will next meet in San Francisco on Monday and Tuesday, April 15 and 16, 1996.

Frank J. Gryszkiewicz, Chair
Eugene Kallaur, Secretary

STATUS REPORT OF STANDARDS OF IEEE/PES TRANSFORMERS COMMITTEE — DATE: 01/10/96

ATTACHMENT 4

SUBCOMMITTEE: INSULATING FLUIDS / CHAIRPERSON: F. GRYSZKIEWICZ / PHONE: (617)926-4900 / FAX: (617)926-0528

STANDARD NO. / PROJECT NO.	TITLE OF DOCUMENT / WORKING GROUP	WG CHAIRPERSON	TF CHAIRPERSON	COMMITTEES REQUESTING COORDINATION / PUB_DATE	PAR_DATE	REV_DUE_YEAR	WG_PHONE	LATEST STATUS / COMMENTS
C57.104	GUIDE FOR THE DETECTION AND DETERMINATION OF GENERATED GAS IN OIL-IMMERSED TRANSFORMERS & THEIR RELATION TO SERVICEABIL.			PSR T&D				REVISE OR REAFF. BY DEC 96
PC57.104		HEINRICHS F. W.		06/07/92	05/31/90	1996	(412)941-6924	REQUEST PAR EXT. TO JUNE 97
C57.106	GUIDE FOR ACCEPTANCE AND MAINTENANCE OF INSULATING OIL IN EQUIPMENT			NONE				REVISE OR REAFF. BY DEC 96
PC57.106	SUBCOMMITTEE			11/20/91	06/19/86	1996		REQUEST PAR EXT. TO JUNE 97
C57.111	GUIDE FOR ACCEPTANCE OF SILICONE INSULATING FLUID AND ITS MAINTENANCE IN TRANSFORMERS			IAS T&D ED&PG IEC				REAFFIRMED 03/15/1995
NONE	SUBCOMMITTEE			02/02/89	12/10/87	2000		ASK FOR FOR PAR EXTENSION
C57.121	GUIDE FOR ACCEPTANCE AND MAINTENANCE OF LESS FLAMMABLE HYDROCARBON FLUID IN TRANSFORMERS			PSRC T&D IAS IEC				PAR APPLIED FOR
P954	HYDROCARBON FLUIDS	McSHANE C. P.		02/22/88	04/12/82	1996		REAF DISAPPROVED 03/15/95
C57.130	T-U GUIDE FOR USE OF DISS. GAZ ANALYSIS DURING FACTORY THERMAL TESTSFOR THE EVALUATION OF OIL-IMMERSED TRANS. AND REACT.			NONE				D09.1 BEING REVIEWED
PC57.130	GAS ANALYSIS DURING FACT.TESTS KINNEY J. P.	F. W. HEINRICHS		/ /	03/17/93	0	(706)291-3163	CHANGE IN TITLE AND SCOPE
IEEE 637	GUIDE FOR THE RECLAMATION OF INSULATING OIL AND CRITERIA FOR ITS USE							REAFFIRMED 03/18/92
P637	SUBCOMMITTEE			06/04/84	/ /	1997		
IEEE 799	GUIDE FOR HANDLING AND DISPOSING OF ASKARELS			EIS IAC T&D				REAFFIRMED 03/18/92
P799	SUBCOMMITTEE			11/17/86	09/27/79	1997		
IEEE1258	TRIAL-USE GUIDE FOR INTERPRETATION OF GASES GENERATED IN SILICONE-IMMERSED TRANSFORMERS			T&D ICC				PAR REVISION APPROVED
P1258	GUIDE FOR GAS ANALYSIS-SILICON	GRYSZKIEWICZ f.		/ /	06/15/95	0	(617)926-4900	D08 TO BALLOT
C57.137								
PC57.137				/ /	/ /	0		

COORDINATION ACTIVITY OF INSULATING FLUIDS SUBCOMMITTEE AS PER: 01/10/96

PROJECT NO. / DATE	TITLE	PES COM.	CONTACT IN PES COM.	CONTACT PHONE	COORDINATOR TRANS. COM.	COMMENT OR STATUS OF DOCUMENT / COORD.PHONE
P 980 09/17/92	GUIDE FOR THE CONTAINMENT AND CONTROL OF OIL-SPILLS IN SUBSTATIONS	SUBS	RICHARD G. COTTRELL	517-788-0817	F. GRYSZKIEWICZ	GUIDE EXTENDED TO 12/94 617-926-4900

7.6 Insulation Life - L. W. Pierce

The Insulation Life Subcommittee met on Tuesday, Nov. 7, 1995 in Boston, Mass. with 30 members and 27 guests in attendance. The minutes of the April 25, 1995 meeting in Kansas City, Missouri were approved as written.

The reports of the Working Groups and Task Forces were then given.

7.6.1 Task Force on Hottest Spot Temperature Rise Determinations - Don Platts, Chair.

The Task Force met on Monday Nov. 6, 1995 at 8:00 AM and continued the meeting with a second session at 2:50 PM. There were 21 members, 7 new members, and 31 guests present. The minutes of the April 24 meeting in Kansas City were approved after adding a letter from Ed Norton amplifying his remarks at the meeting.

The Working Group reviewed the comments received from the balloting of Draft #2. A summary of the balloting was as follows:

Ballots mailed	35
Approved	12
Approved with Comments	3
Negative	3

Each of the three negatives was submitted for the same reason. They requested that elimination the fourth option, using the IEC method of applying a multiplier to the winding rise, to get the hot spot rise. The concerns were the inaccuracy of the method, and that "the multiplier to be used is specific to the transformer design, and it is highly unlikely that the task force..." would be able to develop an acceptable procedure. With little discussion, the Task Force voted concurrence, and that option will be removed.

During the review of the comments, the Task Force reviewed and accepted many comments for editorial changes. Bob Grubb pointed out that this draft will require substantial rework to conform to the IEEE Style Manual. This will be incorporated into the next draft.

Draft #2 included a summary of the three methods for determining the hot spot rise, and then included detailed descriptions of the steps necessary for implementing each option. There was a lengthy discussion concerning the content of these summaries, and the important information that was not included. The Chair suggested that the summary be omitted to shorten the document, and to improve it. The Task Force concurred.

Option #3 establishing design families was reviewed extensively. The objective is that a product line can be grouped into design families based on loss characteristics and physical size. The highest loss unit in the family would be tested or calculated per the detailed methods in option 1 or 2. All others in the family would then also meet the requirements. The Task Force concluded that both calculations and testing with direct reading sensors would not be required.

The Task Force reviewed the idea that the calculation methods need to be based on verifiable models. The results of the calculations must be tested by experimental means to ensure reliability. This is required, regardless of the option chosen by a manufacturer.

The Task Force discussed the question of whether basing the comparison on tested losses was appropriate for ensuring compliance with the hottest spot temperature requirements. Apparently there can be exceptions. This question has not yet been resolved.

The example used to explain the concept of using a design family to demonstrate compliance will be rewritten as an annex.

Don Platts will incorporate the comments into Draft 3. It will be balloted within the Task Force before the next meeting. Any additions or corrections from Task Force members, submitted prior to the end of December will be incorporated into Draft #3.

7.6.2 Working Group on High Temperature Insulation for Liquid-Immersed Power Transformers. Michael A. Franchek, Chair.

The Working Group met at 9:30 AM on November 6, 1995 with 23 members and 23 guests present with 1 guest requesting membership. The Chair will review the attendance and balloting records of Working group members, eliminating those who haven't participated in the last 2 years, and the Chair will issue a new membership list to the Working Group.

After introductions, the minutes of the April 24, 1995 meeting were approved as written.

As the first order of business, The Chair discussed the ballot of Draft 4.0 of this document. The results of the ballot was as follows:

Group	Working Group	Subcommittee
Number Mailed	47	65
Number Returned	30	41
Percent Returned	64	63
Number Approved	22	30
No. App. with Comments	6	10
Number Negatives	2	1

The percentage of ballots returned was less that the required 75 %, and since there were three negative ballots, the Chair informed the Working Group that he will be reballoting these two groups. The Chair then reviewed and the Working Group discussed the three negative ballots. All three of the negative ballots have been largely resolved, and the changes plus other changes due to the comments received will be incorporated into a Draft 5.0 for this reballoting.

The first negative ballot involved Section 12, and Annex A. The Chair read a proposed revision to paragraph 1 of Section 12, and it was approved with two changes:

- Change European and US Manufacturers to European and North American.

- Remove the word "combustible" before "gas" since other gases are analyzed in DGA analysis as well.

The Working Group also approved removal of Table A2, as it was deemed to be misleading and counter to the predictive intent of DGA.

The second and third negative ballots involved a number of additional subjects, including Figures 1 & 2, Section 7 and Section 11. In each of these areas, the reasons for the negative ballots have been largely resolved, with the changes voted on by the Working Group. Items agreed to in order to resolve these negatives include:

- Putting numbers back into Figures 1 and 2, but noting strongly that these are only examples, not universal relationships.

- Rewriting portions of Section 7 to remove a discussion of data in air, and to reword some of the "judgmental" portions.

- Add specific examples where enamels have been qualified for in oil applications, and cautioning about the other data, with a suggestion that untested products should be tested per C57.100, as is discussed in Section 5.3.

The Chair then commented as to his plans to reballot the Working Group and the Insulation Life Subcommittee incorporating the negative resolutions, as well as the editorial comments, by the end of the year.

Other Business:

The Chair submitted the PAR extension request to IEEE on a 1994 form, and is resubmitting on a 1995 form.

The Chair informed the Working Group of the resignation from the Working Group of Bill McNutt. The Chair will send a note of thanks to Bill for his hard work as Secretary of the Working Group. The Chair will be soliciting a volunteer to take Bill's place as Secretary.

The Chair asked the members of the Working Group to submit any DGA information they have on transformers with high temperature insulation, to expand upon the data presented in Table A1. Comments from the Working Group suggested that the mobile data be looked at separately from other units, in that the load/run time on these units would be significantly different than upgraded power units.

7.6.3 Task Force on Definition of Thermal Duplicate-Barry Beaster Chair

The Task Force met on Monday, November 6, 1995 with 8 members and 18 guests attending. New members, Javier Arteaga (Magnetek), Thomas Holifield(Howard), Stephen Antosz(Black & Veatch), Mark Perkins (ABB), and Peter Balma (Public Service Electric & Gas Co.) were added to the roster.

Discussion of Draft 3.1 dated October 20, 1995 was held during the meeting so that Draft 4 could be prepared and balloted prior to the next meeting. The following is a summary of the discussion.

1. Draft 4.0 should be written following the new IEEE Style Guide. The present draft is not in the correct format.

2. In Clause 8.5.2, the type of cooling equipment should be expanded to identify radiators and radiators and forced oil coolers, not just the cooling designations.

3. In Clause 8.5.3, the type of coil for each winding was agreed to be left as written. This prevents a helical and disk coil to be judged as thermally similar.

4. In Clause 8.6.2, there was discussion regarding the determination of a thermal duplicate at the quotation stage. It was agreed that using measured losses is not appropriate. Draft 4.0 will adjust the calculated losses of the transformer being considered as a thermal duplicate by the ratio of the tested to calculated losses on the first transformer.

5. In Clause 8.6.3, the term "external cooling dissipation capacity" should be specified as "external cooling dissipation rate".

6. In review of the alternative equations for average oil and top oil rise, a numerical example will be provided.

7. In Clause 8.6.8, it was agreed that since average winding rise and top oil rise are provided, winding gradient is not needed. It will be dropped from the definition in draft 4.0.

8. At several points in the meeting the issue of a lack of information on the original design calculations for repaired units was raised. This complicates the determination for upgrading repaired transformers. This issue was not resolved and will have to be addressed, perhaps as a section entitled "Special Considerations".

The above changes will be incorporated into the next draft.

7.6.4 Task Force on Revision of Temperature Test Code (Section 11 of C57.12.90) - George Henry Chair

The Task Force met at 1:20 P.M., November 6, 1995 with 8 members and 11 guests present. Barry Beaster (ABB) and Michael Barnes (Qualitrol) were added as members bringing the total Task Force membership to 14.

The minutes of the April 24, 1995 meeting in Kansas City were approved as submitted.

The Task Force reviewed the new Draft 2 of the document. The following changes were discussed and will be incorporated into Draft 3.

1. Clause 11.1.3. Correction of Temperature Rise Test Results. This will be relocated to follow clause 11.2, which discusses the methods for making temperature measurements.

2. The cooling class designations, used to assign values to exponents m and n in the temperature correction formula, will be updated.

3. Clause 11.2.2, Liquid Rise Measurement. New wording will be added to define bottom oil temperature and the method for its measurement. Lin Pierce volunteered to provide a draft for the new wording.

4. Clause 11.2.3.1, Correction of Winding Temperature to Instant of Shutdown. It was agreed to move the Cooling Curve Method ahead of the Empirical Method. The Cooling Curve Method will be designated the Preferred Method. Dropping the Empirical Method was discussed, however, it was agreed to retain the empirical method, for the present, unless a compelling justification for removal is determined.

5. For the Cooling Curve Method, an exponential curve fit to resistance/time data is specified. The Task Force had discussion on the following issues:

   a) Is a series of four resistance/time readings the minimum number of readings specified in the present document sufficient to yield accurate extrapolations of resistance to time of shutdown? Should the minimum number of readings be changed to 8 or 10 or some other number?

   b) Should an elapsed time limit be specified for collecting resistance/time readings? How should this time limit be determined?

   These issues were not resolved. The Chair will continue to explore these issues and will consider introducing working changes in Draft 3 to address these concerns.

Draft 3 will be submitted for simultaneous ballot of the Task Force, The Thermal Test Working Group, and the Insulation Life Subcommittee.

7.6.5 Working Group on Thermal Tests - R. L. Grubb, Chair, D. L Fallon , Secretary

The Working Group on Thermal Test met at 4:15 P.M. on Monday, November 6, 1995 with 10 members and 11 guests in attendance. Two of the guests have requested membership and are welcomed to the Working Group. These members are -

Michael Franchek	System Sales
Thomas Holifield	Howard Industries

The only remaining activity on the W.G. agenda is the final approval of PC57.119 as the progress reports of the T.F. Definition of Thermal Duplicate, T.F. on Hottest Spot Temperature Rise Determination, and T.F. on Revision of Temperature Test Code have been moved to the Insulation Life Subcommittee. The Chair reported that he had completed a draft 13 of PC57.119 in early June which included the resolution of the negatives ballots on draft 12 and incorporation of the comments and other changes discussed in our WG meeting over the past two years.

A copy of the new draft 13 was submitted to the IEEE Standards Department for review by a Project Editor, prior to a reballot as recommended in a comment received on the Standards Coordination Ballot of Draft 12. The standards department informed the Chair that draft 13 (which followed the style of earlier drafts) did not comply with their requirements for new documents and did not conform to the 1994 IEEE Style Manual. The most serious discrepancies were:

1) The document was written in three parts. Multi-part documents are no longer acceptable.

2) Only one scope is allowed and it must be the first subclause in the Overview which must be clause 1. Each of the three parts of this document presently has its own scope.

3) Terms used in the document, but not defined in the IEEE Std 100-1992 Dictionary, or the latest edition of Webster's New Collegiate Dictionary must be defined in a definitions section.

4) All clauses must have titles. Most of draft 12 did not.

During discussion with Kristin Dittman, Managing Editor, and Rochelle Stern, Project Editor, two possible solutions were considered.

- Divide the document into 3 documents, retaining the "stand alone" style of the three parts. This would have required three new PAR's be issued and delay the document.

- Combine the three parts into one document, with the scope as written on the present PAR, which had been revised to combine the scope of the three parts on the last revision.

The first alternative was rejected by the Chair, because it would have delayed the document to obtain approval for the new PAR's.

The recommended practice was reorganized into a new draft 13 according to the new requirements as follows.

1) Overview and Definitions clauses were added in accordance with the 1994 IEEE Style Guide.

2) Procedures, common to the three parts in draft 12, were combined into sections 4 through 9 titled - Symbols, General, Precautions, Monitored data, Recorded data, and Oil samples.

3) Remaining parts Draft 12, Part A, were reorganized into clause 10, titled "Test procedure for determine the thermal characteristics of oil-immersed power transformers."

4) Remaining parts of Draft 12, Part B, were reorganized into clause 11, titled "Test procedure for performing load cycle temperature rise tests."

5) Remaining parts of Draft 12, Part C, were reorganized into clause 12, titled " Integrated test procedure for determining thermal characteristics and for performing load cycle temperature rise tests."

6) Draft 12, Part A, clause 8.2, containing the loading guide equations rewritten with the new symbols as reference information, was relocated to Annex A.

7) Appendixes A and B were changed to Annex B and C respectively.

8) All references in the parts of draft 12 and its appendixes, which were not ANSI Standards, were combined and rearranged alphabetically in a new annex D, the last annex in accordance with the Style Guide.

The reorganized draft 13 was completed too late to be mailed and reballoted before this meeting. Copies were distributed at the meeting for a review of the reorganization and the new sections. Copies will be mailed to WG members not present.

Linden Pierce pointed out that, in the new organization, it was less obvious that the user must specify which of the three different test procedures were required. There was consensus that a sentence should be added to the overview stating that the user should specify which of the procedures should be used.

The new Definitions clause, Clause 3, was reviewed during the meeting. A typographical error and editorial changes were discussed and will be incorporated into the document. There was some discussion of the correctness of the terms "average winding temperature", hottest spot temperature, and "winding hottest spot temperature". The chair pointed out that there had been confusion as to the meaning of these terms in the past and that this issue had been brought before the Transformers Committee, but no action was taken to define them in a document. The definitions as written were believed to be those most generally acceptable.

Working Group members were requested to return ballots on the reorganization and the new sections of draft 13 by the end of November.

7.6.6 Working Group on Thermal Evaluation of Liquid Immersed Power & Distribution Transformers. Larry Lowdermilk, Chair.

This Working Group did not meet.

7.6.7 Old Business-Combined Effects of Thermal and Dielectric Stresses on Insulation Life.

No papers on this subject were submitted by the membership since the last meeting. There was no other old business.

7.6.8 New Business

The Chair announced that new members of the Insulation Life Subcommittee are, Jim McIver (GE), Virendra Jhonsa (Atlantic Electric), Chuck Kelly (S. D. Myers), Joseph Kelly (S. D. Meyers, and Michael Barnes (Qualitrol).

The Chair announced that the Loading Guide for Mineral Oil Immersed Transformers was approved by the IEEE Standards Board on 14 June 1995. Draft 11.3 dated October 24, 1994 which

was the draft submitted to the Standards Board was mailed to all Working Group and Subcommittee members. It will be issued as C57.91-1995. C57.92 and C57.115-1991 will be withdrawn since they were combined into the new C57.91.

The Chair reminded the membership that submission of ballots is a criteria for continued membership in the Subcommittee or a Working Group. Membership rosters are to be purged of inactive members.

Respectfully Submitted by:

Linden W. Pierce

STATUS REPORT OF STANDARDS OF IEEE/PES TRANSFORMERS COMMITTEE

DATE: 01/10/96

ATTACHMENT 4

SUBCOMMITTEE: INSULATION LIFE / CHAIRPERSON: L. W. PIERCE / PHONE: (706)291-3166 / FAX: (706)291-3167

STANDARD NO. / PROJECT NO.	TITLE OF DOCUMENT / WORKING GROUP	WG CHAIRPERSON	TF CHAIRPERSON	COMMITTEES REQUESTING COORDINATION / PUB_DATE	PAR_DATE	REV_DUE_YEAR	WG_PHONE	LATEST STATUS / COMMENTS
C57.12.00	DEFINITION OF THERMAL DUPLICATE			EM	IAS	I&CPS	PESC	PAR WITHDRAWN
PC57.12.001	THERMAL TESTS	GRUBB R. L.	BARRY BEASTER	/ /	05/31/90	1997	(414)547-0121	WORK INCLUDED IN C57.12.00
C57.12.90	STANDARD TEST CODE FOR LIQUID-IMMERSED DISTRIBUTION, POWER, AND REGULATING TRANSFORMERS							WILL START REVISING SECT. 11
NEW	REVISION OF SECTION 11	HENRY G.		/ /	/ /	1998	(501)534-5332	
C57.91	GUIDE FOR LOADING MINERAL OIL-IMMERSED TRANSFORMERS			SUB	T&D	PSE		REVISION APPROVED 06/15/95
PC57.91	GUIDES FOR LOADING	PIERCE L.		03/21/91	06/13/85	1996	(706)291-3166	REVISION OF PAR NEEDED
C57.92	GUIDE FOR LOADING MINERAL OIL-IMMERSED POWER TRANSFORMERS UP TO & INCL 100 MVA WITH 55 C OR 65 C AVE. WINDING RISE			T&D	SUB	PSE		PAR SHOULD BE CLOSED
PC57.92	GUIDES FOR LOADING	PIERCE L.		03/21/91	06/28/85	1996	(706)291-3166	TO BE COMBINED INTO C57.91
C57.95	GUIDE FOR LOADING LIQUID-IMMERSED STEP-VOLTAGE AND INDUCTION-VOLTAGE REGULATORS							NO WORK IN PROGRESS
NONE	GUIDES FOR LOADING			03/21/91	/ /	1996	(314)554-3097	BALLOT FOR REAF. REQUESTED
C57.100	TEST PROCEDURE FOR THERMAL EVALUATION OF OIL-IMMERSED DISTRIBUTION TRANSFORMERS			NPE	EM	T&D	SPD	APPROVED BY ANSI 12/02/92
C57.100	THERMAL EVALUATION	LOWDERMILK L. A.		03/18/92	10/20/88	1997	(704)462-3113	PAR WITHDRAWN
C57.115	GUIDE FOR LOADING MINERAL-OIL-IMMERSED POWER TRANSFORMERS RATED IN EXCESS OF 100MVA (65 C WINDING RISE)							REVISE OR REAFF. BY DEC 96
P756	GUIDES FOR LOADING	PIERCE L. W.		03/21/91	06/15/91	1996	(706)291-3166	ANSI APPROVED 01/13/92
C57.119	RECOMMENDED PRACTICE FOR PERFORMING TEMP. RISE TESTS ON OIL-IMMERSED POWER TRANSFORMER AT LOADS BEYOND NP RATING (P838)			SWGR	SUBS	SCC4	PSRC	IAS EI NEW PAR APPROVED 09/17/92
P838	THERMAL TESTS	GRUBB R. L.		/ /	09/17/92	0	(414)547-0121	REVISED PAR (TITLE & SCOPE)
IEEE1276	TRIAL-USE GENERAL REQUIREMENTS FOR LIQUID-FILLED DISTRIBUTION AND POWER TR UTILIZING HIGH TEMP SOLID INSULATING MATERIAL			T&D				PAR SUBMITTAL IN PROGRESS
P1276	HIGH TEMPERATURE INSULATION	FRANCHEK M. A.		/ /	09/25/91	0	(802)748-3936	STUDYING HI-T MATERIALS

COORDINATION ACTIVITY OF INSULATION LIFE SUBCOMMITTEE AS PER: 01/10/96

PROJECT NO.	TITLE				COMMENT OR STATUS OF DOCUMENT
DATE	PES COM.	CONTACT IN PES COM.	CONTACT PHONE	COORDINATOR TRANS. COM.	COORD.PHONE
P420	STANDARD FOR THE DESIGN AND QUALIFICATION OF CLASS 1E CONTROL BOARDS, PANELS, AND RACKS USED IN NUCLEAR GENERATING STN				INFORMATION COPY
11/05/94	NPE	M. S. ZAR	312-269-2222	L. W. PIERCE	706-291-3166

7.7 Performance Characteristics - B. K. Patel

7.7.1 Introduction/Attendance

The Performance Characteristics Subcommittee (PCS) met at 9:30 a.m. on Tuesday November 7, 1995 with 61 members and 38 guests attending. The members included three new members who signed up at the meeting.

7.7.2 Approval of Meeting Minutes

The minutes of the April 25, 1995 PCS Meeting in Kansas City, MO were approved as written.

7.7.3 Chair's Remarks

7.7.3.1 Administrative Subcommittee Notes

Several items of the discussions held at the November 6, 1995 Administrative Subcommittee meeting were highlighted as follows:

1. Jim Sim will assume chair of the PCS as Bipin Patel will move on to the Secretary's position.

2. The next Transformers Committee meeting will be held in San Francisco, CA on April 14-17, 1996. Dan de la Cruz of Pacific Gas & Electric will host the meeting.

3. John Borst has prepared a list of the past IEEE Transformers Committee meeting dates and locations since 1974. The list will be included in the main committee's minutes for general information.

4. Don Cash will ballot C57.125, Failure Analysis guide for reaffirmation prior to next meeting in San Francisco, CA.

5. An anti-trust concern for the TC was read at the meeting from Chair's Report of November 8, 1995, as follows for members' and guests' information:

   An incident in the T & D Committee has prompted a request "... the IEEE Technical Council take a specific action to insure that information that would normally be protected as being of a competitive nature (such as pricing) is not discussed at or distributed in conjunction with IEEE PES sponsored activities."

7.7.3.2 Membership

New Members, Mike Barnes (Qualitrol), Jerry Frank, (Oison Electric), Dennis Marlow (Ferranti-Packard), and Wes Schwartz (Square D) were added to the roster. Members who resigned and those with poor attendance at past meetings were contacted and these were deleted from the roster: D. E. Ayers, T. Bode, R. H. Frazer, A. J. Martinez, K. T. Massouda, F. J. McCann, J. B. Templeton and J. G. Wood. Membership now stands at 93.

7.7.4 Agenda Changes

Added a new business item as described later.

7.7.5 Working Group Reports

7.7.5.1 Semi-Conductor Rectifier Transformers C57.18.10 - S. P. (Sheldon) Kennedy

The Working Group met on Monday, November 6, 1995, at 8:00 a.m. and 9:30 a.m. There were 19 members and 14 guests attending.

Minutes of the April 24, 1995, meeting in Kansas City, MO were approved.

New members, John Grace, Eric Kauffman, Allan Ludbrook, and Robert Veitch were welcomed into the working group. After the meeting Phil Hopkinson requested that his membership be re-instated.

The meeting then moved to discussion of the recently distributed Draft 9. Comments received to date were reviewed. One negative ballot was received from Jerry Frank, so it was addressed first.

Jerry Frank objected to the use of Harmonic Loss Factors, F, instead of K-Factor. After much discussion, a motion was made to continue the use of Harmonic Loss Factors, F, in C57.18.10 and exclude any reference to K-Factor. 18 affirmative votes and one abstention were given. The motion passed.

Jerry then made a motion that a reference to K-Factor be given in the forward. One of the subjects of the harmonic loss factors, Fwe, is similar mathematically to K-Factor, but applied differently. Jerry made a motion that we state that:

> "The Winding Eddy Current Harmonic Loss Factor, Fwe, is similar, but not necessarily the same as K-Factor, as used in UL 1561 and UL 1562."

This motion received 5 affirmative votes and 14 negative votes. The motion did not pass.

Jerry Corkran next made a proposal that the finite element analysis be noted as a method of Loss Calculation. We decided to also allow other methods, which may yet to be developed at this time. We will state that:

> "It is recognized that the loss calculation method referenced will yield conservative results. More sophisticated mathematical methods may be used at the manufacturer's discretion."

This motion received unanimous approval.

As this Draft 9 appears to be nearing final form, it was moved and approved to ballot both the Working Group and the Performance Characteristics Subcommittee with the next draft.

A cautionary note regarding low power factor loss measurements was proposed by Don Kline. As we are not proposing methods in this standard and work is on going in other work groups, it was moved to place this cautionary note in the forward.

In the second Working Group Session we discussed comments received from Ken Ziemann. It was approved to accept his proposal to clarify the definition of E_s to be the "open circuit no load" transformer secondary winding line-to-neutral voltage (RMS). In conjunction with this, it was also approved to emphasize that in clause 6.6 "Compensation on Rectifier Transformers." the specifying engineer has the responsibility to make the proper compensations and to specify Eg. transformer kVA and transformer impedance.

Ken Ziemann also made proposals that interphase transformer loss measurement methods be reviewed and modified. After some discussion it was decided that this would become a major undertaking at this time. We recommend that this be done during the next standard review, after this one is approved.

Ken also noted that example 2 referred to a 12 pulse transformer when it was really a 6 pulse transformer. This error will be corrected.

Subhas Sarkar requested a note to be added to the forward warning of possible resistance measurement errors during heat run tests. Low voltage, high current windings have very low resistance, often with bolted joints. Connection losses may alter normal resistance measurements. Work on this topic would also be undertaken in the future.

Allan Ludbrook submitted several editorial comments. He also recommended further references to IEEE 519, especially regarding voltage harmonics.

Dhiru Patel also noted some editorial comments. Dhiru also recommended clarification of remarks in clause 5.1.2 regarding voltage and frequency, usual service conditions. Phil Hopkinson will submit a recommendation for the next draft.

Further consideration regarding the application of loss calculations on 3 winding transformers was recommended. The examples will be reviewed by Don Kline and Allan Ludbrook. Recommendations will be submitted.

The meeting adjourned at 10:45 a.m.

7.7.5.2 LTC Performance Requirements - T. P. (Tom) Traub

The WG did not meet since its work has been completed.

7.7.5.3 Revisions to C57.12.00 - P. E. (Peter) Krause

The Working Group met at 1:20 p.m. on Monday November 6, 1995 with 29 present.

Testing of control circuits, CT secondary circuits, and secondary wiring was discussed. A proposal to include such tests in the standard was balloted in early September, 1995. The WG agreed that

rather than adding a new subclause, 8.2.3, these tests should be incorporated in Table 17 as Routine Tests. The group was opposed to reference to any standard that suggests impulse testing but was in favor of 60 Hz, high-potential tests.

Also balloted in September was a proposal to add a sub-clause 8.3.3, requiring "Manual and Electrical Operation Tests of LTCs." The group agreed that deferral of this proposal to another WG (possibly C57.131) should be pursued.

It was pointed-out that control circuit, CT secondary circuits and secondary wiring testing was being considered to the Dielectric Test SC and the at coordination is necessary.

A ballot of the PCSC regarding a proposal to include loss testing of auxiliary equipment has been circulated. Since some WG members may not belong to PCSC, the will be sent to them as well and the ballot deadline will be appropriately extended.

Don Platts reported that balloting of the PCSC regarding Cooling Class Designation was indicating it should pass, however, only 62% were returned. He will extend the deadline 30 days for letter response.

Chuck Murray discussed the nameplate proposal to include PCB content wording. The proposal to add month/year of manufacture also passed PCSC. The proposal to remove 150 kV MIL units from requirement to list various masses is tabled until a member wishes the WG to re-open the issue. At present no member is pressing the matter and the originator of the idea is unknown to the WG Chair. The two passed nameplate proposals will be given to the WG on Continuous Revision of C57.12.00 for inclusion in the next balloting of the Main Committee.

Table 17 of C57.12.00-1993 lists Mechanical Lifting and Moving Devices as requiring Design Testing yet nowhere in the standards is such testing defined. There is a need for definition or possibly to remove this requirement. Mr. Paiva pointed-out that the Distribution standards reference MIL #209C for eyelets and this might be a place for us to begin. It was suggested a task force might look into this. After review, the chair will consider the best direction to take.

Losses in Preventive Autotransformers in the bridging position should be addressed in C57.12.00. This will be investigated further.

The meeting adjourned 2:30 p.m.

7.7.5.4 Revisions to C57.12.90 - H. J. Sim

The WG on Performance Characteristics Subcommittee Revision of C57.12.90 (Part I) met on Monday, November 6, 1995 at 9:30 am with 6 members and 17 guests attending. 7 guests requested membership and were accepted. The current membership now is 17. The new members are Dennis Marlow (Ferranti-Packard), Nigel McQuin (PSM High Power Lab), Tony Thornton (Howard Industry), Jim Antweiler (Square D Co.), Jerry Corkran (Cooper Power Systems), Ron Fox (ABB), and Stephen Antosz (Black Veatch).

After introductions, the minutes of the Kansas City meeting were approved as submitted.

We reviewed the ballot results on the proposed clause 15, Certified Test Data. Total of 95 ballots was mailed out in June to the members of the PCS and as of October 31, 1995, 86 of them were returned. (90.4% returned) There were 67 affirmative ballots, 7 affirmative with comments, 10 negatives, and 1 abstention. (88.1% affirmative)

All of the comments received with ballots were reviewed. Some of the more significant issues discussed are as follows:

- Bottom oil temperature is not "clearly" defined anywhere in the standards. The bottom oil temperature is "loosely" defined and measurement is described in clause 11.2 c) of C57.12.90. The chair discussed with the person who cast a negative ballot on this subject and reached an agreement to withdraw his negative ballot. This resolution changed 4 negative ballots to affirmatives. The agreement was that the chair will request the clarification to the Insulation Life Subcommittee (Task Force on Revision of Temperature test code) to define the bottom oil temperature and measurement of it during their work on revision of the clause 11.

- Several negative ballots were to do with too much information while others were to do with not enough information. We have tried to develop a draft that compromised each of these comments by adding *'s for those items that are considered optional information for distribution transformers. We still need to resolve 5 negative ballots on this issue.

- Jerry Corkran made a motion to add an * next to b) 2) Type of construction (Core form or Shell form) to make this an option item for distribution transformers, Jim Antweiler seconded and there were 9 members for this motion with 0 opposing it. Discussion of an issue of including Short-circuit test reports in the Certified test data resulted in leaving the current draft as written which requires this data to be included only when specified by the user.

- Discussion of an issue of including Short-circuit test reports in the Certified test data resulted in leaving the current draft as written which requires this data to be included only when specified by the user.

- An issue raised on losses associated with "Preventative Autotransformers" in the bridging position of a LTC transformers is valid but should be addressed by PCS revision to C57.12.00 and the chair is directed to forward it to Pete Krause.

- Editorial changes to the draft authorized by the Working Group were as follows:

    - Delete BSL from b) 10) since it is considered redundant.
    - Delete c) 6) iv), Winding current for total loss run, which is redundant.
    - Change c) 13) "Sound level tests" to "Sound level test results" for consistency.
    - Change c) 5) "Exciting Current" to "Excitation Current" for consistency.
    - Change c) 6) ii) "Winding Currents" to "Line Currents" for clarity.

The Working Group authorized the chair to request the Performance Characteristics Subcommittee to direct us if we need to re-ballot the proposal. Sam Mehta made a motion at the

PCS meeting to forward this document to Standards Subcommittee and Ron Barker seconded. Successful voice vote was taken to move this motion.

There were no old or new businesses at this meeting.

The meeting adjourned at 10:45 am.

7.7.5.5 Revision of C57.110 - R. P. (Rick) Marek

The meeting was held on Monday November 6, 1995, at 2:50 p.m. in Boston MA. with 24 members and 16 guests attending. Two guests requested membership.

The first order of business was approval of the Kansas City, MO. minutes. They were approved without comment.

A report by Mike Butkiewicz on the eddy loss survey was distributed. To date, four dry type & four liquid filled responses have been received. A request was again made for more information. Mike feels that either the data set is too small or the data is inconsistent. He has requested technical assistance, since he is not at manufacture. Allan Ludbrook has volunteered to assist in analyzing the data, along with the previous volunteers, Tony Siebert & Bill Mutschler.

Proposed scope changes by Don Kline and Jerry Frank were distributed. The new scope will read "This recommended practice applies only to two wining transformers covered by NEMA ST-20, ANSI/IEEE C57.12.00-19XX AND C57.12.01-19XX. It does not apply to rectifier transformers." It was noted that rectifier transformers are considered to be dedicated units and this clarification will be added to the forward. Rectifier units are covered by ANSI/IEEE C57.18.10.

A negative comment to Draft 3 concerning the derating of existing transformers was resolved. Jerry Frank will add a footnote to point out potential legal problems if the transformer is UL listed.

Tony Jonnatti raised a question concerning the proper Nameplate KVA for a unit designed to meet a specific harmonic loading patter. The general consensus was that the RMS KVA should be listed on the nameplate. The RMS KVA heat run data is generally used with calculations to correct for a specific harmonic loading pattern. A procedure should be added to the document, but there were no volunteers.

Mike Butkiewicz and Jerry Frank submitted examples of harmonic loading with high 3rd harmonic content. These examples should be reviewed by the members.

The concern raised in the Kansas City meeting that small liquid type transformers are derated too conservatively was addressed. A task force was formed to develop the necessary formulas and procedures. The members of the task force are Dudley Galloway (task force chair), Jerry Corkran, Linden Pierce and Sheldon Kennedy.

Nigel McQuin commented on sections 3.4 - Electrostatic Ground Shields, 5.3 Alternate Loading Method I and 5.4 Alternate Loading Method II. The group agreed with Nigel's comments and he will submit an update for these sections.

Comments on Draft 3 submitted by Jerry Corkran and James Deffenbaugh were distributed for review and comment.

A great deal of correspondence regarding the omission of the term K-Factor has occurred since the last meeting. Copies of this correspondence were distributed for review. Members are requested to review this issue and respond in writing.

The meeting adjourned at 4:07 p.m.

7.7.5.6 Loss Tolerance and Measurement - W. R. (Bill) Henning

The WG on Loss Tolerances and Measurement met on Monday, November 6, 1995, at 2:50 p.m. in Boston, MA with 21 members and 13 guests attending. At our last meeting in Kansas City, MO. the attendance sheet failed to circulate completely around the room. Therefore the attendance statistics, as given in the minutes, need to be modified.

Next, Ramsis Girgis gave a report of the meeting of the Task Force on a Guide for Transformer Loss Measurements. Two additions to the guide were made. The first is a section that discusses the need for and represents various methods of correcting for power loss in the shorting connection. The second addition to the guide is the inclusion of an example showing the effect of phase angle errors on a distribution transformer with a relatively high value of load loss power factor.

Eddy So presented a report on the meeting of the Task Force on Low Power Factor Power Measurement. On this meeting the evaluation and expression of measurement uncertainties was discussed. Ernst Hanique and Ramsis Girgis agreed to submit examples for low power factor power transformers.

The next item on the agenda for the WG was a request of interpretation of C57.12.90 on measurements and correction to measurements of no-load losses for transformers with amorphous metal cores. Don Ballard agreed to draft a written response to the request.

The last point of discussion for the Working Group is a proposal to revise Table 19 of C57.12.00-1993.

Table 19 specifies a tolerance of 10% on no-load losses and 6% on total losses. The proposal now reads as follows: "9.3 Tolerance for Losses". Unless otherwise specified, the losses represented by a test of a transformer shall be subject to the following tolerances: The no-load losses of a transformer shall not exceed the specified no-load losses by more than 10%, and the total losses of a transformer shall not exceed the specified total losses by more than 6%. Failure to meet loss tolerances shall not warrant immediate rejection by lead to consultation between purchaser and manufacturer about further investigation." A ballot of the Work Group will be conducted on this proposal.

The meeting adjourned at 4:05 p.m.

7.7.5.7 Revision to Guide for Short Circuit Testing (C57.12.90 Part II) - N. P. (Nigel) McQuin

The WG met as a joint meeting with C57.12.90 Part I on Monday, November 6, 1995 at 9:30 a.m. The PAR for this document was approved by the IEEE Standard Board on September 21, 1995, the assigned project number is PC57.133. From this point on a separate WG meeting will be established for future meetings. A separate attendance roster was circulated at the meeting that indicated a five member WG is established.

The initial work scope of the PC57.133 project was outlined to include:

A) Revise the introduction to be appropriate for the new guide, with a special note explaining the origin of the document and its relationship to C57.12.90.

B) Establish a reference section relevant for the new guide.

C) Sections 2.5.2, 2.6.1 and 2.6.2 will be brought up to date to reflect modern instrumentation capabilities.

D) Section 3.4 on the LVI test method will be completely revised to include modern instrumentation capabilities and practices.

E) Section 4.1.4 and figures 1-19 on LVI result interpretation will be revised to include modern interpretation and processing techniques.

F) The bibliography will be revised appropriately.

A first draft of revised text will be prepared and be available for discussion at the Spring meeting, the Chair seeks comments and text on the declared work scope.

The Part II Meeting was adjourned at 9:50 a.m., and the meeting then proceeded with Part I business.

7.7.6 Project Reports

7.7.6.1 Survey of GSU Transformer Failures - D. J. Cash/H. F. Light

Task force met Monday, November 6, 1995 at 11:00 a.m. at the Marriott Long Wharf in Boston, MA. with 9 members and 24 guests attending.

First order of business was to thank Mr. Donald Cash for holding the previous task force meeting in Kansas City. It has been numerous times that he has assisted this task force chair and it is deeply appreciated.

Survey replies of GSU transformer failures have been received from 96 of 117 companies contacted as listed in the index of both Vol. I and Vol. II. Request letters were sent to 122 companies but due to holding status of some, it turned out to be 117 actual companies. Volume I

and II are now completed to date, were available for task force members to review and is ready to be sent to IEEE for publication. Volume II is quite large and the task force chair is not sure how it will be published.

Some discussion took place regarding current status of EEI and documentation's of this nature in the future. These documents will now be submitted to the IEEE Technical Council for approval as a PES Special publication. Time frame of publication/availability is unknown at this time.

With this work completed the task force chair requests of the Subcommittee Chair that this task force now be dissolved. It was suggested the time slot for the meeting be held open with no future meetings held. Should there be interest in the fortune, this work could be pushed up 3-4 years down the road with a supplemental update.

7.7.6.2 C37.91 Guide for Relay Application - R. L. (Ron) Barker

Progress Report on Revision of C37.91-199?/Draft 3 Guide for Protective Relay Applications to Power Transformers.

The Power System Relay Committee is progressing slowly with this document, but is still making progress. They have asked us to review this application guide for its accuracy in wording and intent as it pertains to power transformers.

I will send out Draft 4 the week of November 13, 1995, to any transformers committee members who are willing to review and comment on the document. Our comments will be forwarded to the relay committee in December 1995. The document should be completed in early 1996.

7.7.7 Old Business - None

7.7.8 New Business

Dry type transformer application, and presentation by Jeewan Puri.

Jeewan Puri presented a topic on dry type transformers application that he felt may require to setup a new task force or working group for further investigation. Due to lack of time, the presentation had to be curtailed and will be rescheduled at the next meeting. His hand-written letter of request for the presentation/new work is copied as follows:

Date: 11/8/95

To: Bipin Patel
Performance Characteristics Subcommittee

From: Jeewan Puri
Square D Co.

Subject: Destructive interactions between breakers and transformers

In view of our observations of the destructive interaction between the Vacuum Breaker and one of the dry type Transformers at UPS Data Center in Atlanta, GA, I propose that a Working Group consisting of experts from Transformers, Breakers and distribution system design industry be appointed to review this problem and write an application guide pointing out the system/breaker parameters that could cause equipment damage by exciting resonance in transformers windings.

As I pointed out in my brief presentation in your SC meeting, the subject of breaker induced transients in transformers is well recognized. However, effort is needed to compile this information into a guide to accomplish the following:

1. Identify the system parameters in the primary and secondary side circuits of the transformers that must be investigated by the user for recognizing this problem.

2. Recommend appropriate action for avoiding the destructive interaction between breakers and transformers during the switching operations.

I propose that the first task of this Working Group should be to research the existing information and standards on this subject and point out any additional investigations necessary (if any) for writing this guide.

As their next task, they should recommend as to where this information should be referenced for maximum effectiveness.

Dr. Bob Degeneff and I agree to help in any way we can in this effort.

7.7.9 Next Meeting

The next meeting will be held on Tuesday, April 16, 1996 in San Francisco, CA.

The meeting adjourned at 11:05 a.m.

Respectfully submitted,

B. K. Patel, PCS Chair

STATUS REPORT OF STANDARDS OF IEEE/PES TRANSFORMERS COMMITTEE — DATE: 01/10/96

ATTACHMENT 4

SUBCOMMITTEE: PERFORMANCE CHARACTERISTICS / CHAIRPERSON: BIPIN PATEL / PHONE: (205)877-7740 / FAX: (205)868-5103

STANDARD NO. / PROJECT NO.	TITLE OF DOCUMENT / WORKING GROUP	WG CHAIRPERSON	TF CHAIRPERSON	COMMITTEES REQUESTING COORDINATION: PUB_DATE	PAR_DATE	REV_DUE_YEAR	WG_PHONE	LATEST STATUS / COMMENTS
C57.12.00	GENERAL REQUIREMENTS FOR LIQUID-IMMERSED DISTRIBUTION, POWER, AND REGULATING TRANSFORMERS							INCLUDE IN NEXT REVISION
PC57.12.00m	PCS REVISION OF C57.12.00	KRAUSE P.		/ /	/ /	0	(303)275-27301	COORDINATE WITH J. BORST
C57.18.10	REQUIREMENTS FOR SEMICONDUCTOR RECTIFIER TRANSFORMERS			NONE				PAR EXT. TO 06/97 REQUESTED
PC57.18.10	SEMI-CONDUCTOR RECT TR	KENNEDY S. P.		/ /	12/28/81	0	(716)896-6500	PAR HAS BEEN FOUND
C57.21	REQUIREMENTS,TERMINOLOGY, AND TEST CODE FOR SHUNT REACTORS RATED OVER 500kVA			EM	T&D PSR			APPLY FOR PAR EXTENSION
PC57.21	TEST CODE FOR SHUNT REACTORS	McGILL J. W.		04/02/91	06/09/88	2000	(414)475-3422	R1995
C57.105	GUIDE FOR APPLICATION OF TRANSFORMER CONNECTIONS IN THREE-PHASE DISTRIBUTION SYSTEMS							REAFFIRMED BY SB 06/17/92
PC57.105	PROJECT	REITTER G.		06/17/92	/ /	1997	(415)591-4463	BEING BALLOTED IN C57
C57.109	GUIDE FOR THROUGH-FAULT CURRENT DURATION			PSR				APPLY FOR PAR TO REVISE
PC57.109	SHORT-CIRCUIT DURATION	PATEL B.		03/16/93	06/27/91	1998	(205)877-7740	
C57.110	RECOMMENDED PRACTICE FOR ESTABLISHING TRANSFORMER CAPABILITY WHEN SUPPLYING NONSINUSOIDAL LOAD CURRENTS			T&D PSR NEMA				REAF. ANSI 07/93
PC57.110	REVISION OF C57.110	MAREK R. P.		12/03/92	09/15/93	1997	(804)838-8080	PAR APPROVED 09/15/93
C57.116	GUIDE FOR TRANSFORMERS DIRECTLTY CONNECTED TO GENERATORS							REAFFIRMED
NONE	TR DIRECTLY CONNECTED TO GEN	REITTER G.		01/03/89	06/28/79	1999	(415)508-2864	IS REVISION NEEDED?
C57.117	GUIDE FOR REPORTING FAILURE DATA FOR POWER TRANSFORMERS AND SHUNT REACTORS							REAFFIRMED BY SB 06/17/92
P786	TRANSFORMER RELIABILITY	ALTMAN M.		06/17/92	/ /	1997	(407)694-4975	ANSI APPROVED 7/93
C57.123	GUIDE FOR TRANSFORMER LOSS MEASUREMENT							PAR TOO OLD
P1098	LOSS TOLERANCE AND MEASUREMENT	HENNING W. R.	RAMSIS GIRGIS	/ /	06/13/85	0	(414)547-0121	PAR EXT. TO 06/97 APPROVED
C57.125	GUIDE FOR FAILURE INVESTIGATION, DOCUMENTATION AND ANALYSIS FOR POWER TRANSFORMERS AND SHUNT REACTORS			T&D	ED&PG PSE	SWGR		BALLOTING REAFFIRMATION

STATUS REPORT OF STANDARDS OF IEEE/PES TRANSFORMERS COMMITTEE DATE: 01/10/96

ATTACHMENT 4

SUBCOMMITTEE: PERFORMANCE CHARACTERISTICS / CHAIRPERSON: BIPIN PATEL / PHONE: (205)877-7740 / FAX: (205)868-5103

STANDARD NO. / PROJECT NO.	TITLE OF DOCUMENT / WORKING GROUP	WG CHAIRPERSON	TF CHAIRPERSON	COMMITTEES REQUESTING COORDINATION / PUB_DATE	PAR_DATE	REV_DUE_YEAR	WG_PHONE	LATEST STATUS / COMMENTS
PC57.125	FAILURE ANALYSIS	ALTMAN M.		06/27/91	06/28/87	1996	(407)694-4975	REQUEST PAR EXTENSION
C57.131	REQUIREMENTS FOR LOAD TAP CHANGERS			EM	T&D			APPROVED BY REVCOM 03/15/95
PC57.131	LTC PERFORMANCE REQUIREMENTS	TRAUB T. P.		/ /	08/17/89	0	(312)394-2704	APPROVED BY REVCOM
IEEE 638	QUALIFICATION OF CLASS 1E TR FOR NUCLEAR POWER GENERATING STATIONS			NPE	SUB	SC2	SCC10	APPROVED BY SB 03/18/92
P638	QUALIFICATION OF TR FOR 1E APP	PIERCE L. W.		03/19/92	10/29/90	1997	(706)291-3166	NEW PAR APPROVED 12/04/90
C57.12.90	STANDARD TEST CODE FOR LIQUID-IMMERSED DISTRIBUTION, POWER, AND REGULATING TRANSFORMERS							NEW PAR NESCOM 03/15/95
PC57.12.90	PCS REVISION TO C57.12.90 P1	SIM JIN		/ /	/ /	0	(919)734-8900	REVISING TEST DATA
C57.133	GUIDE FOR SHORT-CIRCUIT TESTING OF DISTRIBUTION AND POWER TRANSFORMERS			T&D,SWG PSR		IECTC14 SUBS	IAS/PSE IAS/REP	PAR APPROVED
PC57.133	SHORT-CIRCUIT GUIDE	McQUIN N.		/ /	09/21/95	0	(412) 829-1205	PART II OF C57.12.90

COORDINATION ACTIVITY OF PERFORMANCE CHARACTERISTICS SUBCOMMITTEE AS PER: 01/10/96

PROJECT NO. / DATE	TITLE	PES COM.	CONTACT IN PES COM.	CONTACT PHONE	COORDINATOR TRANS. COM.	COMMENT OR STATUS OF DOCUMENT / COORD.PHONE
PC37.91	GUIDE FOR PROTECTIVE RELAY APPLICATION TO POWER TRANSFORMERS					
03/19/92		PSR	MIRIAM SANDERS	919-856-2457	RON BARKER	804-257-4671
NEW	MEASUREMENT OF POWER AT LOW POWER FACTOR					
02/15/94		PSIM	EDDY SO	613-993-2660	W. R. HENNING	414-547-0121
PC37.10	GUIDE FOR DIAGNOSTICS AND FAILURE INVESTIGATION OF POWER CIRCUIT BREAKERS					DRAFT IN REVISION IN WG
05/01/91		SWGR	L. ROLANDO SAAVEDRA	504-363-8765	WALLACE B. BINDER JR.	216-384-5625
PC37.109	GUIDE FOR THE PROTECTION OF SHUNT REACTORS					REAFFIRMED 1993
03/28/85		PSR	LAVERN L. DVORAK	303-231-1636	MIKE ALTMAN	407-694-4975

7.8 Underground Transformers & Network Protectors - P. E. Orehek

Carl Niemann presented the oral report in the absence of Paul Orehek.

7.8.1 Introduction/Attendance

The Underground Transformers and Network Protectors Subcommittee met at 9:30 a.m. on November 7, 1995, with 11 members and one guest present. The membership was informed that Paul Orehek had to leave for personal reasons and Carl Niemann would be chairing the meeting.

7.8.2 Approval of Minutes

The minutes of the April 25, 1995 meeting in Kansas City, Missouri were approved as submitted.

7.8.3 Chair's Remarks

Administrative Subcommittee Notes

A. Attendance at this meeting included 265 registrants and 51 spouses. 161 people have signed up for the lunch and 147 for the dinner.

B. The hotel for the Spring 1996 meeting in San Francisco will be the ANA. Rooms will be $140/night.

C. The Spring 1998 meeting will be in Little Rock, Arkansas.

D. Request by Jim Harlow that the panelists that will be giving the panel session at the 1996 IEEE/PES T&D Conference and Exposition in Los Angeles consider giving the same panel session at the 1997 Summer Power Meeting in Berlin

E. Per Luigi Napoli, C57 will not be trademarked and it can be used by IEEE. There is still the question of copyright on the existing standards

F. The chair informed the members that this would be Matt's last meeting as he would be retiring at the end of the year. Everyone expressed their feelings that Matt would be missed. Matt informed the group that there would be two people taking his place, Gary Miller and Lani Alston.

7.8.4 Working Group Reports

7.8.4.1 Three-Phase Underground-Type Transformers (C57.12.24) C.G. Niemann - Chair

Meeting was called to order at 1:20 p.m. with 11 members and two guests in attendance.

The minutes of the meeting on April 24, 1995 in Kansas City, Missouri were approved as submitted.

The chair passed out a copy of the revised standard that had finally been printed, and informed the members that at the next meeting in San Francisco we would begin working on the next revision. He also informed them that in the mean time he would be submitting the new PAR.

A discussion arose about tank pressure testing that had started at the .40 Working Group meeting. This discussion will continue at the next meeting when more information is available from the pad-mounted standard.

There being no additional new or old business, the meeting was adjourned at 1:35 p.m.

7.8.4.2 Liquid Filled Secondary Network Transformers (C57.12.40) E.A. Bertolini - Chair

The working group met on Monday, November 6, 1995 at 10:55 a.m. with 13 members and two guests in attendance.

The minutes of the April 24, 1995 meeting in Kansas City, Missouri were approved as submitted.

The chair stated that the C57.12.40 galley proof was reviewed and returned to John Gauthier, at the end of September 1995.

The discussion for utilizing "O" ring seals on transformer groundswitch shafts was reviewed again and the Working Group did not want to reconsider utilizing this method of sealing.

The maximum pressures of transformers was discussed at length. Everyone agreed to a maximum tank design pressure of 15 psi and a maximum tank test pressure of 7 psi, without permanent tank deformation. The maximum tank operating pressure, under normal conditions (which is the pressure resulting from operating at rated kVA and 300C ambient temperature), was estimated to be 5psi. Mr. Klaponski will attend the three-phase padmounted transformer Working Group meeting, who have adopted pressure values, and report on their course of action. Pressure relief devices will not be included in the standard.

Two items of new business were discussed:

a.) Working Group member status - contact members after two absences and ask for their intentions to stay as members. For drop outs, contact EEI for replacement member.

b.) Start survey for use of stainless steel tanks for consideration for insertion into the standard.

There being no additional business the meeting was adjourned at 12:05 p.m.

7.8.4.3 Secondary Network Protectors (C57.12.44) D.H. Mulkey - Chair

The Working Group met at 8:00 a.m. on Monday, November 6, 1995 with 11 members and two guests present.

The minutes of the April 24, 1995 meeting in Kansas City, Missouri were approved as submitted.

The following revisions were discussed:

Reviewed low-loss fuse curves and pictures. Jock Moffat will collect current limiting, Dan Mulkey will collect alloy and copper, and Ed Bertolini will make pictures.

Changed 6.3.2 to 10 megohms @ 2500 volts for both 480 and 216 volts.
Changed 10.5.13 on secondary disconnects.

Added two stud diagrams and two spade diagrams to 11.5.1 and 11.5.2.

Deleted C3 and C4 and revised C5, in the Annex, on pumping.

Bruce Nutt will look at definitions for next meeting and Jock Moffat and Dan Mulkey will review the C37 and C57 references.

The topic of generation on the low side of network protectors was discussed. It was decided to add 4.1.4 which will state that 'normal service is with generation on high side only'.

Working Group requested only one session for the next meeting in San Francisco.

There being no additional business, the meeting was adjourned at 10:20 a.m.

7.8.4.4 Ventilated Dry-Type Network Transformers (C57.12.57) B. Nutt - Chair

The meeting was called to order at 1:35 p.m. on Monday, November 6, 1995, with seven members and two guests present. Telephone and mailing information was updated by members present.

The minutes of the April 24, 1995 in Kansas City, Missouri were approved as submitted.

The status of the balloting of C57.12.57 was discussed. No feedback has been received and the chair will check the balloting status.

There being no additional items of old or new business, the meeting was adjourned a 1:45 p.m.

7.8.5 Future Meetings

The location and dates for future meetings are as follows:

April 14-17, 1996	San Francisco, California
October 27-30,1996	Burlington, Vermont
July 15-18,1997	Graz, Austria
November 1997	St. Louis, Missouri
Spring 1998	Little Rock, Arkansas

The Subcommittee meeting adjourned at 10:45 a.m.

Respectfully submitted, Paul E. Orehek, Chair

STATUS REPORT OF STANDARDS OF IEEE/PES TRANSFORMERS COMMITTEE — DATE: 01/10/96

ATTACHMENT 4

SUBCOMMITTEE: UG TR & NETWORK PROTECTORS / CHAIRPERSON: PAUL OREHEK / PHONE: (201)430-7743 / FAX: (201)242-8740

STANDARD NO. / PROJECT NO.	TITLE OF DOCUMENT / WORKING GROUP	WG CHAIRPERSON	TF CHAIRPERSON	COMMITTEES REQUESTING COORDINATION: PUB_DATE	PAR_DATE	REV_DUE_YEAR	WG_PHONE	LATEST STATUS / COMMENTS
C57.12.24	UNDERGROUND-TYPE 3-PHASE DISTRIBUTION TRANSFORMERS,2500kVA AND SMALLER: HV,34500GrdY..& BELOW,LV,480 V AND BELOW			T&D IC	IAS/PEP	IAC/PSE		PUBLISHED BY ANSI 06/94
PC57.12.24	3-PHASE UG-TYPE TRANSFORMERS	NIEMANN C.		05/10/88	06/27/91	1993	(708)410-5307	ANSI APPROVED 05/23/94
C57.12.40	REQUIREMENTS FOR SECONDARY NETWORK TRANSFORMERS, SUBWAY & VAULT TYPES (LIQUID IMMERSED)			SCC14				ANSI APPROVED 02/28/94
PC57.12.40	LIQUID-FILLED NETWORK TRANSFMR	BERTOLINI E. A.		03/19/92	12/05/91	1997	(212)460-4913	AWAITING PUBLICATION BY NEMA
C57.12.44	STANDARD REQUIREMENTS FOR SECONDARY NETWORK PROTECTORS			T&D SWGR	IAS/REP	IAS/PSE	EEI NEMA	PUBLISHED DEC 94
PC57.12.44	SECONDARY NETWORK PROTECTORS	MULKEY D. H.		12/20/94	09/21/95	1999	(415)973-4699	PAR APPROVED 09/21/95
C57.12.57	REQUIREMENTS FOR VENTILATED DRY-TYPE NETWORK TRANSFORMERS 2500kVA AND BELOW, W/HV 34500V AND BELOW,LV 216Y..AND 480Y..			T&D EEI/T&D SCC14				TO BALLOT D6 IN TC
PC57.12.57	DRY-TYPE NETWORK TRANSFORMERS	NUTT B.		03/18/92	12/05/91	1997	(214)698-7447	REAFFIRMED 03/18/92

COORDINATION ACTIVITY OF UG TR & NETWORK PROTECTORS SUBCOMMITTEE AS PER: 01/10/96

PROJECT NO. / DATE	TITLE	PES COM.	CONTACT IN PES COM.	CONTACT PHONE	COORDINATOR TRANS. COM.	COMMENT OR STATUS OF DOCUMENT / COORD.PHONE
PC37.108	GUIDE FOR THE PROTECTION OF NETWORK TRANSFORMERS					REAFFIRMED 1994
09/28/84		PSR	THOMAS E. WIEDMAN	312-394-2593	D. H. MULKEY	415-973-4699

7.9 West Coast - D. S. Brucker

The West Coast Subcommittee did not meet at the main committee meeting in Boston. Dan de la Cruz reported on the Working Group on Phase Shifting Transformers which did meet in Boston. Dan also announced, as host for the next meeting in San Francisco, that the room rates at the Ana Hotel will be $140 plus tax, single or double. Coast to coast airfare is about $400 with a Saturday layover.

IEEE WEST COAST TRANSFORMER SUBCOMMITTEE
MEETING MINUTES
Friday, November 17, 1995
San Francisco, CA

The meeting was called to order by Chair Dave Brucker, at 8:35 AM. The Chair informed those present that a sudden family sickness prevented Gary McCulla from attending the meeting.

The minutes from the May, 1995 meeting were read by the Chair. Several typographical errors were noted. The Chair apologized for this noting that the minutes were scanned from a FAX and the conversion and proof reading were less than optimum.

Subsequent to this meeting it was also noted that no mention was made of the Subcommittees' will for the continuance in their respective capacities on the Subcommittee for another year of Dave Brucker and Gary McCulla. Work priorities prevented Mr. McCulla from assuming the responsibilities of Chair and no other individuals on the Subcommittee were willing to assume these duties at this time. Changes to the May meeting to reflect this action by the Subcommittee were solicited by FAX. The minutes were approved subject to correction of these errors and omissions.

7.9.1 Old Business

7.9.1.1 Grounding Transformer Application Guide

Burhan Becer and John Norberg are pursuing this matter. Further discussion was deferred until the next Working Group meetings.

7.9.1.2 Loss Evaluation Guide

Evertt Hagger is leading this effort. He will report on his progress at the next Working Group meetings.

7.9.1.3 Phase Shifting Transformer Working Group

Chair Edgar Trummer's report on the Boston session is attached. Chair Trummer was not able to attend the Subcommittee's business meeting so the results of the prior day's meeting were not discussed. The acting Secretary observes that many excellent comments and suggestions were received by Mr. Trummer. There is no doubt that this Working Group will make quick progress in finalizing a Guide.

7.9.1.4 Life Extension Working Group

This effort, led by Bob Stewart, made significant progress in their initial WG meeting on the prior day. The Working Group decided that issuing a paper covering this subject matter would make the most productive use of their efforts in shortest possible time.

7.9.1.5 Installation (C57.93) Working Group

The Chair reported that according to Jim Gillies, WG Chair, we may expect balloting on this Guide in December. A copy of his report is attached.

7.9.2 New Business

Dave Brucker reported on the existence of present Standards for Pad Mounted Transformers, 38 to 69Kv and 10 to 16 MVA. Present IEEE Standards cover padmounted units up to and including 2500Kva. Existing standards for power transformers start at 10,000Kva. This gap in Standards presents an opportunity for the Western Subcommittee to investigate and act upon. After some discussion by the group, it was decided to leave this subject alone for the present and revisit it in a year or so when there maybe a better feel for the need for such a Guide or Standard.

The Chair informed the members that all outdated and inactive Standards or Guides within the Subcommittee's area of responsibility would be reviewed and acted upon in accordance with the Standards Committee's policy, i.e., review, retire, etc.. Activity is now underway on the Loss Evaluation Guide. The expected passage of C57.93 will obsolete and retire Guides C57.12.11 and C57.12.12.

The Chair requested and received concurrence to begin action to retire C57.114, Seismic Guide for Power Transformers and Reactors. The work on the revision of IEEE 693, Guide for the Seismic Design of Substations, has made this document obsolete.

The deletion of the PAR for C57.128, Fire Protection of Outdoor Liquid-Immersed Power Transformers, will be confirmed with the Standards Committee. This work will overlap and be redundant as a result of work done by other IEEE Committees.

The appropriate Committee Chairs will be contacted and notified that coordination activities for Working Groups dealing with the Commissioning of Electrical Systems in Hydroelectric Power Plants, Substation Fire Protection, and the Installation of Temporary Substations, will be terminated. Coordination with the West Coast Subcommittee is no longer required. The Chair was asked to prepare a briefing on the current activities of the Main Committee on major items of interest, such review to be incorporated in each subsequent West Coast meeting.

The question of forming a Working Group to address the matter of Transformer or Substation Noise was presented to the Subcommittee. After some discussion, the matter was tabled until further information is available on current potentially conflicting activities of the Substations and Transformers Committees is available. The matter will be presented for further discussion at the next meeting of this Subcommittee.

7.9.3. Next Meeting

The Working Groups will meet in Bellevue, WA on Friday, April 12, 1996. The Phase Shifting Working Group will also meet in San Francisco during the subsequent Main Committee the following week. A coordination meeting by representatives from the IEEE 693 WG will be held in San Francisco. The West Coast Subcommittee business meeting will be held in San Francisco sometime during the Main Committee meeting.

The meeting was adjourned at 9:40 AM

Respectfully Submitted by David S Brucker acting for
Gary McCulla
Vice Chair/Secretary
West Coast Transformer Subcommittee

7.9.4 Report of the Working Group On Phase Shifting Transformers

The Working Group met under the Chair of Edgar Trummer at 2:50 PM on November 6, 1995 with 9 members and 9 guests present. Six guests requested membership.

A proposed draft of a Guide for the Application, Specification, and Testing of Phase Shifting Transformers was distributed by the Working Group. This draft basically defined the outline for the Guide. Discussions were held on the draft.

It was proposed to have the working group members work on assigned sections of the guide as follows:

Tom Traub	Terminology and Definitions;
Jim Fyvie	Discussion on phase angle regulation at no-load and full-load (The maximum phase angle at full-load is dependent upon the through power, power factor, and phase shifting transformer impedance);
Harold Moore	Theory of phase-shifting transformers;
Donald Chu	Bibliography;
James Harlow	Load tap changer (LTC) control;
Jack McGill	Factory test requirements; and,
Robert Veitch	Guide format for conformance to IEEE Standards.

Meetings were scheduled for two sessions. The Working Group business was completed and the meeting adjourned at 4:15 PM.

Respectively submitted,

Donald Chu, WG Secretary

STATUS REPORT OF STANDARDS OF IEEE/PES TRANSFORMERS COMMITTEE

DATE: 01/10/96

ATTACHMENT 4

SUBCOMMITTEE: WEST COAST / CHAIRPERSON: DAVID BRUCKER / PHONE: (415)692-4431 / FAX: (415)692-0483

STANDARD NO. / PROJECT NO.	TITLE OF DOCUMENT / WORKING GROUP	WG CHAIRPERSON	TF CHAIRPERSON	COMMITTEES REQUESTING COORDINATION: PUB_DATE	PAR_DATE	REV_DUE_YEAR	WG_PHONE	LATEST STATUS / COMMENTS
C57.12.11	GUIDE FOR INSTALLATION OF OIL-IMMERSED TRANSFORMERS (10MVA & LARGER, 69-287kV RATING)							TO BE REPLACED BY C57.93
PC57.93	CON. INSTALLATION GUIDES	GILLIES D. A.		05/09/80	/ /	1992	(503)622-4847	LIFE EXTENSION TO 12/92
C57.12.12	GUIDE FOR INSTALLATION OF OIL-IMMERSED TRANSFORMERS 345kV AND ABOVE							TO BE REPLACED BY C57.93
PC57.93	CON. INSTALLATION GUIDES	GILLIES D. A.		05/09/80	/ /	1992	(503)622-4847	LIFE EXTENSION TO 12/92
C57.93	GUIDE FOR INSTALLATION OF LIQUID-IMMERSED POWER TRANSFORMERS.			NONE				PAR EXTENDED TO JUNE 1997
PC57.93	CONSOLIDATION OF INST. GUIDES	GILLIES D. A.		/ /	06/01/89	0	(503)622-4847	WITHDRAW 12.11/12.12 WHEN APP.
C57.114	SEISMIC GUIDE FOR POWER TRANSFORMERS AND REACTORS			NPE	SUBS.			STD WITHDRAWN (OBSELETE)
P513	SIESMIC GUIDE	OKLU S.		02/15/90	09/06/73	1995	(213)481-4823	PAR WITHDRAWN
C57.120	LOSS EVALUATION GUIDE FOR POWER TRANSFORMERS AND REACTORS			SUB	EM	ED&PG	IAS	IEC	REVISE OR REAFF. BY DEC 96
P842	LOSS EVALUATION GUIDE	JACOBSEN R.		12/03/91	05/01/80		1996		PAR EXTENSION NEEDED
C57.128	FIRE PROTECTION OF OUTDOOR LIQUID-IMMERSED POWER TRANSFORMERS			NPE	SUB	PSR			PAR TOO OLD
PC57.128	FIRE PROTECTION	HAGER R.	NORBERG J.	/ /	06/01/89	0			PAR WITHDRAWN
C57.135	GUIDE FOR APPLICATION, TESTING, INSTALLATION AND OPERATION OF PHASE ANGLE SHIFTING TRANSFORMERS								NEW PROJECT
PC57.135	PHASE ANGLE SHIFTING TRANSFO.	TRUMUER E.	DON CHU (WG SEC)	/ /	/ /	0	(602)236-8621		PAR SUBMITTAL IN PROGRESS

COORDINATION ACTIVITY OF WEST COAST SUBCOMMITTEE AS PER: 01/10/96

PROJECT NO. / DATE	TITLE	PES COM.	CONTACT IN PES COM.	CONTACT PHONE	COORDINATOR TRANS. COM.	COMMENT OR STATUS OF DOCUMENT / COORD. PHONE
P1268	GUIDE FOR INSTALLING TEMPORARY SUBSTATIONS					
03/30/91		SUBS	SHASHI G. PATEL	404-362-5386	D. A. GILLIES	D1 READY FOR WG COMMENTS 503-622-4847
P 979	GUIDE FOR SUBSTATION FIRE PROTECTION					
06/18/92		SUBS	A. J. BOLGER	604-663-2879	D. W. SUNDIN	MUST COMPLETE IN 1994 414-524-3221
P 693	RECOMMENDED PRACTICE FOR SEISMIC DESIGN OF SUBSTATIONS					
09/18/90		SUBS	RULON FRONK	213-481-3327	DAVID BRUCKER	NEW PAR 12/93 415-692-4431
P1248	GUIDE FOR THE COMMISSIONING OF ELECTRICAL SYSTEMS IN HYDROELECTRIC POWER PLANTS					
12/06/90		ED&PG	LOUIS A. TAUBER	503-326-2323	D. A. GILLIES	503-622-4847

7.10 Audible Sound and Vibration - J. Puri

The Subcommittee met on Tuesday, November 7 at 10:55 AM in two sessions. Twelve members and fourteen guests were present.

Three new members were welcomed to our Subcommittee. This brings our total membership to 29.

After the introduction of guests and members, the minutes of our previous meeting at Kansas City were approved.

Three main items were discussed.

7.10.1 Guide for Sound Level Abatement

Mr. Jack McGill (WG Chair) distributed the second draft of the Sound Level Abatement Guide. It was agreed that the scope and the technical content of this document is now sufficient for the WG to work on. A PAR for this project is now in progress. This WG will now start meeting independently for further refining the contents of this document.

Dr. Karen Weissman of Quiet Power made an excellent presentation on the active noise cancelation methods for noise abatement in power transformers. This technology will definitely be a cost effective alternative in the near future and will be included in the Sound Level Abatement Guide.

7.10.2 Noise Intensity Measurement

Mr. Ernst Hanique distributed a proposed draft for noise intensity measurements for inclusion in C57.12.90. The Subcommittee members will review this draft and provide their input to Mr. Hanique directly. The next draft of this proposal will be reviewed in our next meeting.

7.10.3 Transformers Noise Level Standards

Mr. George Reitter and Dr. Bob Degeneff (could not attend this meeting) have compiled sufficient information from oil filled transformer manufacturers. Dr. Degeneff will propose a noise level table and send it to power transformer manufacturers and obtain their comments. This information will be reviewed in our next meeting.

7.10.4 New Business

According to the presently defined scope of this subcommittee, the Chair proposed that this Subcommittee should take ownership of the noise level standards for Dry Type transformers also. We should assure that these standards do not become obsolete with time like the ones in NEMA Table TR 1 for power transformers.

Jeewan Puri, Chair

STATUS REPORT OF STANDARDS OF IEEE/PES TRANSFORMERS COMMITTEE

DATE: 01/10/96

ATTACHMENT 4

SUBCOMMITTEE: AUDIBLE SOUND & VIBRATION / CHAIRPERSON: JEEWAN PURI / PHONE: (704)282-7413 / FAX: (704)282-7425

STANDARD NO. / PROJECT NO.	TITLE OF DOCUMENT / WORKING GROUP	WG CHAIRPERSON	TF CHAIRPERSON	COMMITTEES REQUESTING COORDINATION: PUB DATE	PAR DATE	REV DUE YEAR	WG PHONE	LATEST STATUS / COMMENTS
C57.12.90	STANDARD ON SOUND INTENSITY MEASUREMENT							PART OF C57.12.90
PC57.12.90x			TULI S.	/ /	/ /	0		COORDINATE WITH STEVE SMITH
C57.112	GUIDE FOR THE CONTROL OF TRANSFORMER SOUND			NONE				NEW TASK FORCE TO START WORK
P523	SUBCOMMITTEE	PURI J.		/ /	12/28/73	0	(704)282-7413	PAR WITHDRAWN
C57.136	GUIDE FOR SOUND LEVEL ABATEMENT AND DETERMINATION IN OIL-FILLED TRANSFORMERS							DRAFT 1 PRODUCED
PC57.136		McGILL J.		/ /	/ /	0	(414)475-3422	PAR REQUEST IN PROGRESS

COORDINATION ACTIVITY OF AUDIBLE SOUND AND VIBRATION SUBCOMMITTEE AS PER: 01/10/96

PROJECT NO. / DATE	TITLE	PES COM.	CONTACT IN PES COM.	CONTACT PHONE	COORDINATOR TRANS. COM.	COMMENT OR STATUS OF DOCUMENT / COORD. PHONE
P 656	STANDARD FOR THE MEASUREMENT OF AUDIBLE NOISE FROM OVERHEAD TRANSMISSION LINES					PUBLISHED 12/92
03/08/91		T&D	JAMES R. STEWART	518-395-5025	ALAN M. TEPLITSKY	212-460-4859

7.11 Bushings - F. E. Elliott

7.11.1 Introduction and Membership

Chair Fred Elliott opened the meeting at 11:00 AM and welcomed the members and guests. The meeting was attended by 16 members and 16 guests. Three guests requested membership on the Subcommittee.

7.11.2 Chair's Remarks

Mr. Elliott, after attending the Administrative Subcommittee meeting reported the following:

An Incident in the T & D Committee has prompted the following request:

> The IEEE Technical Council take a specific action to insure that information that would normally be protected as being of a competitive nature(such as pricing) is not discussed at or distributed in conjunction with IEEE PES sponsored activities

7.11.3 Minutes of April 25, 1995 Meeting Held in Kansas City, MO

The minutes were approved as written.

7.11.4 Working Group / Task Force Reports

7.11.4.1 Working Group Report on Bushing Application Guide (PC57.19.100)

Fred Elliott reported that the IEEE Guide for Application of Power Apparatus Bushings C57.19.100, was published on August 14, 1995. This guide replaces the Trial use Guide C57.19.101 which will be withdrawn.

7.11.4.2 WG on Performance Characteristics and Dimensions for Outdoor Apparatus Bushings (PC57.19.01)

Chair P. Singh reported that his WG met on November 11, 1995 with 17 members and 13 guests present. Six guests requested membership to the WG. He reported on the following:

1. PAR - A PAR has been submitted to Mr. George Vaillancourt who is the Standards Subcommittee Coordinator.

2. Approval of Kansas City Meeting Minutes - The minutes were approved as written.

3. Draft 1 Ballot Results - P. Singh presented the results of ballot on Draft 1 as follows:

Sent	Returned	Affirmative	Affirmative with Comments	Negative	Abstain
23	22	11	6	4	1
	21				
	91%	52%	29%		
			81%	19%	

4. Discussion on Ballot Comments

a. Table 1

- It was agreed to change the titles in column 4 and 5 to include the wording "Light Contamination" and "Heavy Contamination" respectively.

- It was agreed to revise column 4 and 5 creep values to line up with Light (28 mm/kV) and Heavy (44 mm/kV) creep values of C57.19.100-1995. These values are based on nominal line to ground voltages.

- It was agreed to add a "Note" below the table indicating that nominal voltage classes are as per Transformer Standard C57.12.00.

b. Table 2

- It was agreed to add metric dimensions in millimeters with the exception of threaded terminals. This exception may also apply to hole sizes for the mounting flange.

- It was agreed by a majority vote to change the top terminal thread size for 34.5 kV and 69 kV class 2000 amp rating from 1.5-12 to 2-12.

5. Bushing Mounting Dimensions

There was a lot of discussion about the flange bolting dimensions. Both pros and cons of changing the diameters were discussed at length. It was finally decided that bushing manufacturers would provide the smallest attainable dimensions to the working group chair within 4 weeks. Tables 2 and 3 of draft 1 would then be modified based on the limitations.

It was clear during the meeting that interchangeability with existing bushings is a major concern and should not be ignored.

The meeting was adjourned at 12:15 PM.

7.11.4.3 Working Group Report on Bushings for DC Applications (PC57.19.03)

Chair Olof Heyman reported that his WG meeting was held at 1:20 PM on November 6, 1995. It was attended by 12 members and 7 guests. He reported the following:

1. Results of The Transformer Committee Ballot

Sent	Returned	Affirmative	Negative	Abstain
164	129	95	2	32
	78 %	97 %		

2. Discussion of Negative Ballots

a. Clause 5.2 Rated Frequency - The paragraph will be completed by adding the following: "Rated frequency for bushings used for pure DC application shall be "DC"

b. Table 4 - The following note will be added: "If the bushing condenser has more than 100 conductive layers the accepted percentage change in capacitance will be ((1/No. of Layers)X100)".

c. Clause 7.2.2, Sequence of Impulse Test during Type Tests The sequence will be changed according to the new proposal in IEC 137 Clause 23. The test sequence will be 15 positive full wave shots, followed by 1 negative full wave shot, followed by 5 negative chopped wave shots, followed by 14 negative full wave shots.

d. Clause 7.2.4.1, Wet Switching Impulse Test The test procedure will be changed according to the standard procedure in ANSI Std. 4. This means that the rain intensity will be decreased to 1-2 instead of 5 mm/min and the resistivity will be decreased from 178 to 100 Ohm-m. This revised procedure is also recommended by ANSI and is also the one used by IEC 137

It was identified that all references to ANSI Std. 4 in the present draft are made to the 1978 publication. As a new revision was published in October 1995, these references have to be reviewed. Frank Richens volunteered to look into this.

e. 7.2.5.3, Polarity Reversal Test This test will be extended according to a paper from WG12/14 in CIGRE. The time between reversals will be 90 minutes instead of 60 minutes and the last period will be 45 minutes instead of 30 minutes.

3. Reballoting of Changes - With the changes mentioned above, all the negative ballots were resolved. It was agreed by the WG that the changes should be balloted in the Transformer Committee before the standard could be sent to the IEEE Standards office for final approval. This will be done as soon as possible.

4. PAR Extension - An extension up to June 30, 1997, has been received from the Administrator of the IEEE Standards board. The WG felt confident that they would be completed by then.

7.11.4.4 Task Force on Draw Lead Bushings

Chair Russ Nordman reported that his meeting was held at 4:15 PM on November 6, 1995 with 7 members and 18 guests present. Eight members requested membership to the TF. He reported the following:

1. Minutes from previous meeting were approved as written.

2. Issues on drawleads from the initial meeting were reviewed and additional comments requested. Several new items were added. These issues relate to the scope of the task force as it is not fully defined at this time.

3. The questionnaire being developed for the transformer committee should ask for additional concerns regarding the drawleads and bushings. It will be sent before the next meeting.

4. It was suggested to create another questionnaire for bushing manufacturers to develop a better understanding of thermal conditions relating to drawleads. This should be drafted before the next meeting.

5. Problems relating to bushing drawleads were discussed and few examples were available . Response from the above questionnaire will be helpful.

The meeting was adjourned at 5:30 PM

7.11.5 Liaison to IEC 137

No report was presented as Bill Saxon was not present at the meeting.

7.11.6 Old Business

7.11.6.1 Indoor Bushing Application

1. A number of questions like flammability, creepage, and wet tests were raised.

2. Table 10 of C57.12.00-1993(Attachment 2) specifies test values for indoor bushings

3. Fred Elliott agreed to check the scope of the Bushing Subcommittee for indoor applications.

7.11.6.2 Provision for Current Transformers

As decided in the Administrative Subcommittee, Fred Elliott will submit to the Instrument Transformer Subcommittee, the results of the Bushing Subcommittee Ballot for their input.

7.11.6.3 Revision of C57.19.00

A notice has been received from the IEEE Standards Board to take action to either revise or reaffirm this standard by the end 1996. see Attachment - 3.

It was also agreed that Fred Elliott will submit a PAR for the revision of this standard. Members were requested to submit proposals for the revision of this standard. A decision will be made at the next meeting whether we need a Task Force .

7.11.6.4 Short Circuit Rating

A proposal submitted by Keith Ellis will be included as an item for discussion when the work on revision of this standard is taken up. See Attachment 4.

7.11.6.5 Bushing Thermal Basis Of Rating

P. Singh discussed the proposal submitted at the Kansas City meeting in April this year. A graphical representation of the proposal was distributed. The proposal recommends to have 75 C hottest spot rise, 55 C Oil rise above the an Ambient of 30 C. This will make this standard in line with the CSA Bushing Standard proposal. The average ambient of 30 C will be in line with the C57.12.00. This proposal will an item for discussion when the work on the revision of C57.19.00 is taken up.

7.11.6.6 600 Steep Front Chopped Wave Test

The proposal submitted by Keith Ellis at the last meeting was discussed. Keith alluded to some bushing problems during steep front testing.

Harold Moore explained that he was aware of three cases where the bushings experienced over voltage due to miscalibration of the voltage divider. He explained that these situations were due to test equipment and not due to bushings.

A comment was made that 600 Chop test was related to CT's due to the application of disconnect switches.

Loren Wagenaar indicated that the stations are well protected and did not believe that equipment could get such steep fronts.

Keith Ellis agreed to review his proposal and resubmit if necessary.

7.11.7 Adjournment

The meeting was adjourned at 2:45 PM

Pritpal Singh, Secretary
Bushing Subcommittee

Following the Subcommittee report, Nigel McQuin asked if the Subcommittee has liaison with the NEMA SG4 Committee regarding the standardization of bushing dimensions. Fred Elliott replied that this would be established when the PAR is submitted.

STATUS REPORT OF STANDARDS OF IEEE/PES TRANSFORMERS COMMITTEE — DATE: 01/10/96

ATTACHMENT 4

SUBCOMMITTEE: BUSHING / CHAIRPERSON: FRED ELLIOTT / PHONE: (503)230-3807 / FAX: (503)230-3212

STANDARD NO. / PROJECT NO.	TITLE OF DOCUMENT / WORKING GROUP	WG CHAIRPERSON	TF CHAIRPERSON	COMMITTEES REQUESTING COORDINATION: PUB_DATE	PAR_DATE	REV_DUE_YEAR	WG_PHONE	LATEST STATUS / COMMENTS
C57.19.00	GENERAL REQUIREMENTS AND TEST PROCEDURES FOR OUTDOOR APPARATUS BUSHINGS (IEEE 21)			T&D	PSR	IC	SWGR	REVISE OR REAFF. BY DEC 96
PC57.19.00	SUBCOMMITTEE	ELLIOTT F. E.		07/23/91	04/01/79	1996	(614)223-2259	REQUEST PAR EXT. TO JUNE 97
C57.19.01	STANDARD PERFORMANCE CHARACTERISTICS AND DIMENSIONS FOR OUTDOOR APPARATUS BUSHINGS (IEEE 24)			SPD	IAS	IC	SWGR	REVISE OR REAFF. BY DEC 96
PC57.19.01	REVISION TO C57.19.01	SINGH PRITPAL		08/05/91	11/01/89	1996	(901)696-5228	PAR SUBMITTAL IN PROGRESS
C57.19.03	STANDARD REQUIREMENTS, TERMINOLOGY AND TEST CODE FOR BUSHINGS FOR DC APPLICATIONS			SPD	IC	SWGR		PAR EXTENDED TO JUNE 1997
PC57.19.03	BUSHINGS FOR DC APPLICATION	HEYMAN OLOF		/ /	11/09/89	0		
C57.19.100	GUIDE FOR APPLICATION OF APPARATUS BUSHINGS.			SWGR	SUB	PSR		PUBLISHED 08/24/95
P800	BUSHING APPLICATION GUIDE	ELLIOTT F. E.		/ /	09/27/79	1999	(503)230-3900	REPLACES C57.19.101
C57.19.101	GUIDE FOR LOADING POWER APPARATUS BUSHINGS							TO BE WITHDRAWN
P757	BUSHING APPLICATION GUIDE	ELLIOTT F. E.		10/20/88	/ /	1997	(503)230-3900	REPLACED BY C57.19.100
NEW	TASK FORCE TO STUDY APPLICATON AND PROBLEMS OF DRAW-LEADS FOR BUSHINGS							NEW TASK FORCE
NEW	DRAW-LEADS FOR BUSHINGS	NORDMAN RUSS	R. NORDMAN	/ /	/ /	0	(414)547-0121	

COORDINATION ACTIVITY OF BUSHINGS SUBCOMMITTEE AS PER: 01/10/96

PROJECT NO. / DATE	TITLE	PES COM.	CONTACT IN PES COM.	CONTACT PHONE	COORDINATOR TRANS. COM.	COMMENT OR STATUS OF DOCUMENT / COORD.PHONE
P 957	GUIDE FOR CLEANING INSULATORS					OLD GUIDE EXTENDED TO 12/94
09/17/92		T&D	WILLIAM L. GIBSON	415-973-3747	L. B. WAGENAAR	614-223-2259
PC37.04b	MECHANICAL LOADING REQUIREMENTS OF CIRCUIT BREAKER TERMINALS					SUPPLEMENT APPROVED 1991
09/28/90		SWGR	GEORGE R. HANKS	615-751-4020	LOREN B. WAGENAAR	614-223-2259

7.12 Dielectric Tests - L. B. Wagenaar

The Subcommittee met in Boston, MA on November 7, 1995 with 39 members and 32 guests present. The following business was covered during the meeting:

7.12.1 Chair's Remarks

The chair reviewed some of the items which were discussed at the previous evening's meeting of the Administrative Subcommittee. The chair of the Transformers Committee requested that the following be read at the subcommittee meetings: "...the IEEE Technical Council (shall) take a specific action to insure that information that would normally be protected as being of a competitive nature (such as pricing) is not discussed at or distributed in conjunction with IEEE PES sponsored activities." More will be supplied on this topic later.

The next meeting of the Transformers Committee will be at the Ana Hotel in San Francisco, CA on April 14-17, 1996. The Spring, 1997 meeting will be held in Graz, Austria on July 15-18, 1997. This is the week before the Summer Power meeting in Berlin.

A panel session on internationalization of standards will be held during the last period this afternoon.

7.12.2 Approval of Minutes of Kansas City Meeting

The minutes of the April 25, 1995 meeting in Kansas City were approved as written.

7.12.3 Working Group on Revision of Dielectric Tests - Bertrand Poulin, Chair

The Working Group met at 4:15 p.m. on November 6, 1995 with 17 members and 22 guests. Minutes of the Kansas City meeting were approved as written.

7.12.3.1 Task Force on the Revision of Induced Tests - Mark Perkins, Chair

The task force meeting was held on November 5 with 13 members and 15 guests present. The chair first presented recommendations of a small sub-group, consisting of Mark Perkins, Bertrand Poulin, Subhash Tuli, Georges Vaillancourt and Loren Wagenaar, which met on November 5. The recommended changes included the following:

a. No changes to C57.12.00.

b. Replace the present references to RIV in C57.12.90 to apparent charge. The current part of the standard which refers to RIV measurements will be included as an appendix to C57.12.90 for reference purposes.

c. Replace the current wording of Sec. 5.2.6 of C57.113 with a paragraph and a table modified from the September, 1995 draft revision of IEC Standard 270, Sec. 4.3.3.8, page 13, with reference to less than 30 Hz omitted. This will allow commonly used instrumentation to continue to be used and still comply with ANSI standards.

The task force then discussed the need to define sporadic discharges. This was felt to be an important topic for future discussion and standardization, after the current revision work is complete.

The task force then discussed whether there should be a requirement on the maximum allowable partial discharge values between two terminals of an individual transformer. Since the partial discharges are both less than the limit and non-damaging, it was decided that there should not be any change to the current standard in this regard.

7.12.3.2 Task Force on Metal Oxide Surge Arrester Coordination with Power Transformer Insulation - Bob Degeneff, Chair

The task force met on November 6 with eight members and six guests present. The chair first reviewed the agreement reached at the Kansas City meeting that the following five points be used:

1. Peak of front of wave, plotted at 0.5 μs
2. Peak of chopped wave, plotted at 3.0 μs
3. Peak of full wave (BIL), plotted at 8.0 μs
4. Peak of switching impulse (BSL), plotted at 300 μs
5. Point plotted at 2000 μs where the magnitude is determined by an intersection of a line extended from the BSL point at a slope determined between the BSL and the induced test.

The task force approved this curve on the basis that it is more realistic than the existing one and recommended that the working group also accept it. Loren Wagenaar agreed to ask the Administrative Subcommittee the proper form to transmit this information back to the IEEE Surge Protective Devices Subcommittee. This was done, and the AdCom's advice is to treat this as a "request for advice." The working group chair was therefore instructed to write a letter giving this information to the SPD Committee. The task force will also write a technical paper recording the history of the existing curve and the rationale behind the proposed curve.

7.12.3.3 Waveshape Correction Factor

Loren Wagenaar presented results of a short study on a possible approach to resolve the issue of waveshape correction factors for deficient lightning impulse waveshapes. He used the Fourier Transform of a standard 1.2 x 50 μs wave as the basis and analyzed the effect of changing front times and times to half value of the impulse. Conclusions of the study were as follow:

1. All of the waveshapes display a hump in the frequency range of roughly 10 to 100 KHz.
2. Increasing the front time of an impulse reduces the content of the high frequency part of the spectrum without significantly affecting the content of the low frequency part.

3. Decreasing the time to half value reduces the content of the low frequency part of the spectrum without significantly affecting the high frequency part.

As a consequence, if a correction factor is applied to the amplitude of an impulse to compensate for a front time too long (greater than 1.56 μs), the part of the frequency characteristic in the 10 to 100 KHz would be greater than the specified level. This could result in overstressing those parts of a transformer which respond to those frequencies. Similarly, if the time to half value is smaller than 40 μs and is compensated by increasing the amplitude of the applied wave, the part of the frequency characteristic in the 10 to 100 KHz range would again be greater than the specified level.

In the discussion, it was suggested to coordinate the application of correction factors in such a way that none of the frequencies would be above the nominal values. Loren agreed to study this aspect further and present his conclusions at the next meeting.

7.12.3.4 Old Business

Two corrections to Table 5 of C57.12.00 were proposed. The first one is the correction of a typing error in the last revision. In the 230 kV nominal system voltage, the applied voltage level for a 325 kV BIL transformer is listed as 275 kV. This value should have been 360 kV as in the two previous editions of the standard. Since this is only an editorial change, the correction has been submitted to the Working Group on the Revision of C57.12.00 and will appear in the next revision.

The second change deals with the harmonization of Tables 3 and 5. Table 3 shows two different BIL levels for 69 kV system voltage: 250 and 350 kV. Table 5 shows only 250 kV. Javier Arteaga distributed a written proposal to the working group. This proposal will be balloted within the subcommittee.

7.12.3.5 New Business

Jeff Fleeman sent Mark Perkins a letter proposing to change the induced test levels for 735 and 765 kV transformers to 1.8 and 2.0 p.u. for the one-hour and enhancement test levels, respectively. This would replace the current levels of 1.5 and 1.7, respectively, but none of the users of these transformers test them at these levels. A written proposal for a revision of Table 5 of C57.12.00 will be balloted within the working group and the subcommittee before the next meeting.

7.12.4 Working Group on Revision of Dielectric Tests for Distribution Transformers - John Rossetti, Chair

The Working Group met on November 5 with eight members and six guests present. Minutes of the Kansas City meeting were approved as written.

7.12.4.1 Guide on Distribution Transformer Protection

This document is being written by a SPD Committee task force within Working Group 3.4.14. John Rossetti reported on Clause 2.1.3, "Lightning Surges Entering Via the Secondary." The clause references the Transformer Committee task force report, "Secondary (Low Side) Surges in Distribution Transformer," written by the Low-Side Surges Task Force within this working group.

A copy of the final draft of the new guide will be sent out to the working group members when it is completed by the SPD Committee working group.

7.12.4.2 Clause 10.4, Routine Impulse Test for Distribution Transformers, of C57.12.90

Since the last meeting, the subcommittee membership list was reviewed and several members were subsequently dropped. In the process, telephone calls were made to several members and ballots were resent to their correct addresses. Final results of the working group/subcommittee ballot on this subject are as follow:

	WG	SC
Ballots sent out	26	84
Total Returned	21 (81 %)	64 (76 %)
No Response	5 (19 %)	20 (24 %)
Affirmative	21 (100 %)	61 (95 %)
Negative	0	0
Abstention	0	3 (5 %)

The ballot therefore passed both the working group and the subcommittee, and the revision has therefore been sent to Steve Smith, chair of the Working Group on the Revision of C57.12.90. The combined revisions will be balloted by the Transformers Committee in Spring, 1996.

7.12.4.3 Task Force on Revision of Test Guide for Routine Impulse Tests on Distribution Transformers - Don Ballard, Chair

The task force met earlier on November 6. Chair Ballard reported on the review of the first four clauses the guide. Various editorial changes, including clarification of the wording, were proposed. This process was continued in Section 5 during the working group meeting. Changes will be incorporated into the next draft and balloted by the task force, working group and subcommittee before the Spring, 1996 meeting. This process will provide the necessary feedback from a broader group within the Transformers Committee and will speed up the approval process. The PAR for this project is due to expire in 1997.

7.12.5 Working Group on Partial Discharge Tests in Transformers - Edgar Howells, Chair

The working group met on November 6 with seven members and 20 guests present. As there was no meeting of the group in Kansas City, no minutes were presented. The main order of business was the letter ballot on the "Trial Use Guide for the Location of Acoustic Emissions from Partial Discharges in Oil-immersed Power Transformers and Reactors." Both the working group and the subcommittee had been balloted. Of the 84 ballots sent out, only 32 were returned. Of these, 27 were to accept, four were accept with comments and one was to reject.

The author of the negative ballot was Stan Osborn, who unfortunately died before the ballot could be resolved. Stan felt that the guide's wording implied that the techniques described were the only ones available and left no room for other developments. This issue was discussed during the meeting and extra wording was developed to state that the guide contained only typical examples of systems available at present. The chair was given a contact at Doble Engineering knowledgeable

on the subject, and this person will be contacted in order to ensure that this situation has been resolved. Most of the other comments were editorial in nature, and changes were implemented into the next draft. The next draft will be reballoted within the working group and subcommittee before the next meeting.

7.12.6 Working Group on Diagnostic Field Testing and Monitoring of Liquid Filled Power Transformers, Regulators and Reactors - Rick Young, Chair

The working group held its initial meeting on November 7 with 64 members and guests present. The group was formed as a continuation and expansion of a task force which worked with the Power Systems Instrumentation and Measurements (PSIM) Committee's revision to IEEE Standard 62, Guide for Diagnostic Field Testing of Electric Power Apparatus, Part I: Oil Filled Power Transformers, Regulators and Reactors. The continuation efforts will be directed toward diagnostic field testing and efforts regarding the expanded scope will be directed toward in-service maintenance.

Discussion included the following aspects:

1. Definitions of field diagnostic testing and in-service monitoring

2. Scope of the working group, especially with regard to its relationship to IEEE 62 and existing C57 documents

3. Economics of monitoring vs. maintenance costs and protection of assets

4. Need to find out what work is currently underway in these areas from manufacturers, users and other industry committees

5. Need to consolidate and organize data received from monitoring equipment and to make informed decisions

6. Issues of data communication and protocol for various monitoring equipment and other substation equipment.

The consensus of the group was that it initially work within existing standards in the area of field diagnostic testing. The area of in-service monitoring is new and will possibly lead to the working group's first PAR.

A motion was made and passed unanimously to request a panel session at the Transformers Committee meeting in San Francisco to present information on transformer in-service monitoring equipment from both the manufacturer's and user's perspective. The chair requested volunteers for the panel session and to study the following areas:

1. Work being done within other international standards organizations

2. Review of IEEE 62 and existing C57 standards for areas of need

3. Study of data language and protocol issues for transformer monitoring devices.

Chair Young requested that general information from manufacturers and users on existing in-service monitoring equipment and experiences be sent to him. This information will consolidated and used in the working group.

The chair will also contact the PSIM committee to discuss our mutual interests in the area of field diagnostic testing.

7.12.7 Requests for Interpretation

7.12.7.1 C57.12.90, Par. 10.1.7, Dielectric Tests in Field

A request was received from an individual from a small transformer repair shop asking whether they were subject to this clause, which states that distribution and Class I power transformers shall be tested at 85 % of the factory levels or 1.5 times normal operating voltage, whichever is less. In the example cited, the last value was far less than the former. The chair asked several members of the subcommittee if this clause is meant only for field testing or if it also applies to repair facilities. Both answers were received, and therefore, the question was raised at the subcommittee meeting. There was general agreement that several factors, such as the age and condition of the transformer, will dictate the proper action in the repair shop. However, there was no clear consensus to the answer to the main question. The issue will be referred to a new working group on field testing or to a special task force on the subject.

7.12.7.2 C57.12.90, Par. 10.4, Routine Impulse test for Distribution Transformers

This is an old issue for which the new chair has very little information: The letter from Mr. Trevor Lusiuk has been misplaced by the previous chair, and Mr. Lusiuk's company or address is not known and can not be located in the IEEE Directory. This item will be dropped unless Mr. Lusiuk's address can be located.

7.12.8 Liaison Activities

John Crouse reported on the meetings of the IEEE Working Group on Insulation Coordination, which were held in Costa Mesa, CA on April 27-28 and in Portland, OR on July 27-28. Part I: "Standard for Insulation Coordination - Definitions, Principles and Rules" has been completed. Part 2: "Application Guide" will be reviewed at the next meeting, scheduled for November 16-17.

7.12.9 Old Business

Subash Tuli sent out a ballot to members of the subcommittee, due on October 31, 1995, on tests for the low voltage wiring and current transformers. Only 64 % of the ballots were returned, so that a 30-day extension was granted.

7.12.10 New Business

The Surge Protective Devices Committee has requested liaison with the Transformers Committee. The initial issue will be to provide input to a revision of IEEE 32, "Standard for Requirements, Terminology, and Test Procedures for Neutral Grounding Devices," but there will be others in the future. Dr. Bob Degeneff, who is presently the liaison with one of the working groups within SPD, has agreed to become the liaison to the main committee.

Respectfully submitted,

Loren B. Wagenaar

STATUS REPORT OF STANDARDS OF IEEE/PES TRANSFORMERS COMMITTEE — DATE: 01/10/96

ATTACHMENT 4

SUBCOMMITTEE: DIELECTRIC TESTS / CHAIRPERSON: L. B. WAGENAAR / PHONE: (614)223-2259 / FAX: (614)223-2214

STANDARD NO. / PROJECT NO.	TITLE OF DOCUMENT / WORKING GROUP	WG CHAIRPERSON	TF CHAIRPERSON	COMMITTEES REQUESTING COORDINATION: PUB_DATE	PAR_DATE	REV_DUE_YEAR	WG_PHONE	LATEST STATUS / COMMENTS
C57.12.90	REVISION OF THE INDUCED TEST							INCLUDE IN C57.12.90
PC57.12.90d	REVISION OF DIELECTRIC TESTS	POULIN B.	M. PERKINS	/ /	09/28/90	0	(408)957-8326	COORDINATE WITH STEVE SMITH
C57.21	REQUIREMENTS,TERMINOLOGY AND TEST CODE FOR SH. REACTORS OVER 500kVA			NONE				PAR MORE THAN 4 YEAR OLD
PC57.21a	DIELC TESTS OF SHUNT REACTORS	KENNEDY W. N.		04/02/91	12/11/86	1995	(317)286-9387	PAR WITHDRAWN
C57.98	IEEE GUIDE FOR TRANSFORMER IMPULSE TESTS			NONE				PUBLISHED JAN 95
PC57.98	REVISION OF DIELECTRIC TESTS	POULIN B.	R. E. MINKWITZ, SR.	06/01/86	02/01/86	1992	(408)957-8326	DISCUSS PAR BUSINESS
C57.98	GUIDE FOR PERFORMING ROUTINE LIGHTNING IMPULSE TESTS ON DIST.TRANSFO			T&D	PSIM	PSC	ASC 62 EM	TO PUBLISH AS SUP. TO C57.98
PC57.98a	REV. DIELECTIC TESTS DIST TR	ROSSETTI J.	D. E. BALLARD	/ /	04/30/91	0	(901)528-4743	PAR EXTENSION TO 06/97 APPR.
C57.113	GUIDE FOR PARTIAL DISCHARGE MEASUREMENT IN LIQUID-FILLED POWER TRANSFORMERS AND SHUNT REACTOR							REVISE OR REAFF. BY DEC 96
P545	P. D. TESTS FOR TRANSFORMERS	HOWELLS E.		12/05/91	09/25/91	1996	(414)835-1500	REQUEST PAR EXT. TO JUNE 97
C57.127	GUIDE FOR THE DETECTION OF ACOUSTIC EMISSIONS FROM PARTIAL DISCHARGES IN OIL-IMMERSED POWER TRANSFORMERS			T&D	ED&PG	CIGRE IEC		PAR WITHDRAWN BY SB
PC57.127	P. D. TESTS FOR TRANSFORMERS	HOWELLS E.		/ /	03/10/88	0	(414)835-1500	APPLY FOR PAR TO REBALLOT
IEEE1350	GUIDE FOR PROTECTION OF DISTRIBUTION TRANSFORMERS WITH EMPHASIS ON SECONDARY (LOW VOLTAGE SIDE) SURGES			SPD	T&D	IC		CONTINUE WORK IN SPD
P1350	REV. DIELECTRIC TESTS DIST TR	ROSSETTI J.	W. A. MAGUIRE	/ /	03/17/93	0	(901)528-4743	ASK FOR PAR WITHDRAWAL
NEW	GUIDE FOR THE LOCATION OF ACOUSTIC EMISSIONS FROM PARTIAL DISCHARGES IN OIL-IMMERSED POWER TRANSFORMERS							BALLOTTING WORKING GROUP
NO PAR YET	P. D. TESTS FOR TRANSFORMERS	HOWELLS E.		/ /	/ /	0	(414)835-1500	SUBMIT PAR AS SOON AS POSSIBLE
IEEE 62.1	GUIDE FOR DIAGNOSTIC FIELD TESTING OF POWER APPARATUS, PART I: OIL-FILLED POWER TRANSFORMERS, REGULATORS AND REACTORS							APPROVED BY REVCOM 03/15/95
P 62	DIAGNOSTIC FIELD TESTS OF TR.	YOUNG F. N.		/ /	03/17/94	0	(216)447-2649	PUBLISHED

COORDINATION ACTIVITY OF DIELECTRIC TESTS SUBCOMMITTEE AS PER: 01/10/96

PROJECT NO. / DATE	TITLE	PES COM.	CONTACT IN PES COM.	CONTACT PHONE	COORDINATOR TRANS. COM.	COMMENT OR STATUS OF DOCUMENT / COORD.PHONE
P 4	STANDARD TECHNIQUES FOR HIGH-VOLTAGE TESTING					JUST PUBLISHED
02/02/89		PSIM	TERRY McCOMB	613-990-5826	G. VAILLANCOURT	514-652-8515
P1122	DIGITAL RECORDERS FOR MEASUREMENTS IN HIGH VOLTAGE IMPULSE TESTS					APPROVED BY SB 03/17/94
12/03/92		PSIM	T. R. McCOMB	613-990-5826	BERTRAND POULIN	408-957-8326
P1223	POWER SYSTEM DIGITAL TESTING TECHNIQUES					
08/17/89		PSIM	T. R. McCOMB	613-990-5826	R. MINKWITZ, SR.	617-828-3241
C62.62	PERFORMANCE CHARACTERISTICS FOR SURGE PROTECTIVE DEVICES CONNECTED TO LOW VOLTAGE AC POWER CIRCUITS					RESOLVING NEGATIVE BALLOTS
03/21/91		SPD	E. GALLO		MAHESH P. SAMPAT	704-462-3226
PC62.11	STANDARD FOR METAL-OXIDE SURGE ARRESTERS FOR AC POWER CIRCUITS					NEW PAR 6/14/94
06/14/94		SPD	R. M. SIMPSON	919-836-7059	W. A. MAGUIRE	501-377-4273
PC62.22	GUIDE FOR APPLICATION OF METAL OXIDE SURGE ARRESTERS FOR AC SYSTEMS					INCLUDE DIST. TRANSFORMER
12/02/93		SPD	J. WOODWORTH	716-375-7270	ROBERT DEGENEFF	518-276-6367
PC62.42	GUIDE FOR THE APPLICATION OF LOW-VOLTAGE SURGE PROTECTIVE DEVICES					REVISED PAR 9/22/94
07/18/94		SPD	R. DAVIDSON JR.		MAHESH P. SAMPAT	704-462-3226
PC62.2.01	APPLICATION GUIDE FOR SURGE PROTECTION OF ELECTRIC GENERATING PLANTS					
06/01/84		SPD	G. L. GAIBROIS	313-237-9332	VACANT	

EPRI

Electric Power
Research Institute

Leadership in Science and Technology

MEMORANDUM

October 31, 1995

TO: Mr. John W. Matthews
Secretary, IEEE Transformers Committee
Baltimore Gas & Electric Co.
Windsor Office Building
7152 Windsor Boulevard
Baltimore, MD 21244-2779

FROM: Stan Lindgren, Project Manager

SUBJECT: **EPRI LIAISON REPORT**

The following report is for inclusion in your minutes for the April 25, 1995 meeting.

1. EHV Converter Transformer:

   - Test results confirmed 25% or greater major insulation size reduction can be attained with some further work.
   - Final report will be published pending patent filing actions.

2. Advanced Power Transformer:

   - Reduced total owning cost has been demonstrated.
   - A 47 MVA three phase core form prototype was built and successfully short circuit tested March, 1991 delivered to HL&P and is in service. An IEEE paper, 94 SM 414-3 PRD was presented at the IEEE/PES 1994 Summer Meeting in San Francisco.
   - Development of shell form insulation, winding and physical models continues. 1425 BIL dielectric models have been tested successfully. A 25 MVA single phase, 161 kV model testing program including short circuit is in process.

3. Static Electrification in Power Transformers:

   - This is the suspected failure mechanism in over 24 core form and shell form FOA transformers worldwide. Recent failures involve 20 year old transformers.
   - Work has focused on the effects of temperature and moisture transients. Tests on representative transformer cooling components have been completed (Final Report TR-102112). A project continues to monitor a large FOA transformer in the field. Data is being collected and monitored at a remote location that shows increased static electrification activity at low oil temperatures with pumps running. Phase I of a comprehensive test program was completed on a 333 MVA single phase 500kV autotransformer that is fully instrumented to monitor static electrification effects during a series of experiments. A broad

range of partial discharge activity was produced. A Phase II second round of tests is being planned for early 1996 to confirm and expand on the results.

- Progress is being made in understanding the effects of BTA oil additive on static electrification through flow model experiments. An final report is published, TR-104973.

- A fourth EPRI sponsored workshop was held in Milwaukee September, 1994., which reported on progress in monitoring and tests on full-scale transformers plus field incidents involving both shell-form and core-form transformers. Proceedings are published, TR-105019.

4. Bubble Evolution in Overloaded Transformers:

- Very rapid load changes can cause bubble formulation under some conditions and reduce 60 Hz and impulse dielectric strength. This has been demonstrated in models with rapid/high O.L.

- A computer program covering bubble evolution plus the ANSI Loading Guide formulas has been developed as an EPRIGEMS, AP-102649, available as of July, 1993. Some software problems were found by users. Corrections have been made, and a new version (PTLOAD 4.1) is now available.

- Additional work is in process to experimentally study moisture dynamics associated with rapid overloads and cool-down cycles plus detect inception of partial discharges caused by bubble evolution.

5. High Voltage Instrument Transformers

EPRI sponsored a workshop 9/90 to provide a forum to compare and categorize failure information, failure modes and potential mitigation measures. This was an outgrowth of the roundtable in Washington DC 4/88. Proceedings, TR 100205, are published. A Project was completed to study fast disconnect switching transient effects on HVCTs. Mathematical modeling was checked experimentally through laboratory tests and switching tests in a 500 kV substation with very high speed instrumentation. Effects of switching resistors during disconnect switching has been studied and found to reduce bus transients and stresses by up to 80%. A final report is published, TR-104961.

A new project is being initiated to monitor HVCTs, bushings and potheads in service including on-line tan delta. Suspect units will be removed from service and tested to failure in a laboratory to develop "end-of-life" criteria for interpretation of field monitoring data.

6. Thermal Models for Real-Time Monitoring

This project involves all transmission components including power transformers regarding software development and a field test involving two substations on a utility system. The field test has been completed. A final report is near publication, TR-105421. An IEEE paper, 94 SM 473-9 PWRD, was presented at the IEEE/PES 1994 Summer Meeting in San Francisco. A second paper, "Field Application of a Dynamic Thermal Circuit Rating Method", will be presented at the IEEE/PES 1996 Winter Meeting in Baltimore.

7. Microelectronic Fault Gas Analyzer

This project is a continuation of earlier EPRI efforts to develop an on-line low cost gas analyzer that were abandoned because of baseline drift of the sensors. The new project utilizes a different type of sensor to monitor multiple gases. A field demonstration program is underway with 12 prototypes in service during 1994 and additional units during 1995 for a total of 35. Individual ppm for hydrogen, acetylene, ethylene and carbon monoxide is monitored.

8. Power Transformer Remaining Life Prediction & Extension

This project involves two areas of work:

- Furaldehyde in Transformer Oil

  A project is in process to develop a correlation between furaldehydes in oil samples with degree of polymerization found in paper insulation samples taken from a significant number of transformers in service. Additional laboratory experimental work is being added to search for trace chemicals that are an early indication of insulation degradation that can be sensed with on-line monitoring.

- Vibration & Frequency Response Analysis (FRA)

  A project has been initiated to develop a correlation between existing winding conditions and vibration & FRA tests before and after internal inspection and reclamping of the same transformers.

  The objective is to develop noninvasive field test methods that can be used to predict winding condition in the broad variety of existing power transformers without entering the transformer.

9. Transformer Expert System

A project is in process to capture the knowledge of transformer experts and make it usable in an off-line software tool for evaluation of transformer design questions, condition assessment, problem diagnosis, and identification of maintenance needs.

10. Guidelines for Life Extension of Substations

These guidelines, now published in Final Report TR-105070, include a large section on transformer inspection, condition assessment, testing, and maintenance practices.

11. Maintenance-Free LTC

A new project is being initiated to identify and categorize specific LTC problems, causes and populations involved; evaluate existing mitigation measures; and identify R&D needed to achieve substantial reduction in LTC maintenance requirements. A workshop is being planned for late 1996.

cc: Jim Harlow, Beckwith
Mark Wilhelm

SRL9862.M.BinderRev..3

8.2 SCC4 - P. A. Payne

SCC4 -STANDARDS COORDINATING COMMITTEE NO. 4
ELECTRICAL INSULATION

IEEE TRANSFORMER COMMITTEE MEETING
MARRIOTT LONG WHARF - BOSTON, MA
NOVEMBER 8, 1995 LAISON REPORT

Standards Coordinating Committee No. 4 has laison and cross membership with the USNC Technical Advisory Group for IEC/TC98.

IEC/TC98, Electrical Insulation Systems Technical Committee met in Krista Sweden April 4-6, 1995. The following organizational structure was approved.

Working Group 1 - To complete development of IEC 505-1, Evaluation and Qualification of Electrical Insulation Systems.

Working Group 2 - To establish for Electrical Insulation Systems requirements of Thermal, Electrical, Environmental and Multi-factor Electrical Insulation System evaluation for IEC 505-2.

Working Group 3 - To ~~delop~~ develop test procedures for thermal evaluation and qualification of Electrical Insulation Systems.

Advisory Board - To identify and recommend projects, promote communication with Product Technical Committees and international organizations, advise on pertinent EIS content in existing Product Standards, and monitor changing technology.

The Working Groups are progressing with development of IEC 505-1 and IEC 505-2.

Respectively submitted,

Paulette A. Payne

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8.3 CIGRE SC12 - W. N. Kennedy

Mr. Kennedy was absent due to illness and no report was given.

9.0 New Business

9.1 Common Clauses Working Group - Nigel McQuin

Nigel McQuin stated that the Switchgear Committee has formed a working group to compile common clauses between the various C37 standards. He suggested that we should consider forming a similar working group for the C57 standards. Jim Harlow stated that one application came quickly to mind that would benefit from this suggestion and there could be numerous others. It would be appropriate for this to be considered by the Standards Subcommittee. Jim asked Nigel to get together with Georges Vaillancourt to discuss what standards would fall into this catagory and how to pursue the suggestion.

Dennis Allan commented that the IEC is attempting to do this for all substation equipment.

9.2 IEC Standards Listing - Bipin Patel

Bipin Patel stated that it would help with the harmonization process to have a complete listing of IEC transformer standards. Jim Harlow commented that it is one of the Committee goals for next year to establish a listing of the IEC Standards which shows the comparison with the C57 Standards.

Nigel McQuin commented that the Switchgear Committee has established this type of comparison listing for switchgear standards and cautioned that the listing should be clearly identified as comparable, not equivalent.

10.0 Adjournment

Wally Binder thanked Jim Harlow for his excellent leadership of the administration and the Committee thanked him with a round of applause.

The meeting was adjourned at 11:08 AM.

Respectfully submitted,

John W Matthews

John W. Matthews, Secretary

STATUS REPORT ON STANDARDS OF IEEE/PES TRANSFORMERS COMMITTEE
ATTACHMENT 1

DATE: 01/10/96
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STANDARD NO / PROJECT NO	TITLE OF DOCUMENT / SUBCOMMITTEE	SC CHAIRPERSON	WG CHAIRPERSON	COMMITTEES REQUESTING COORDINATION / PUB_DATE	PAR_DATE	REV_DUE_YEAR	SC_CH_PHONE	LATEST STATUS / COMMENTS
C57.12.00	GENERAL REQUIREMENTS FOR LIQUID-IMMERSED DISTRIBUTION, POWER, AND REGULATING TRANSFORMERS			T&D	PSRC	SWG	SUBS	IAS IEC-TC1 MAKING RUNNING LIST OF CHANGES
VARIOUS	STANDARDS	G. VAILLANCOURT	BORST J. D.	06/16/93	06/15/95	1998	(514)652-8515	WG COLLECTING CHANGES
C57.12.00	DEFINITION OF THERMAL DUPLICATE			EM	IAS	I&CPS	PESC	PAR WITHDRAWN
PC57.12.001	INSULATION LIFE	L. W. PIERCE	GRUBB R. L.	/ /	05/31/90		1997 (706)291-3166	WORK INCLUDED IN C57.12.00
C57.12.00	GENERAL REQUIREMENTS FOR LIQUID-IMMERSED DISTRIBUTION, POWER, AND REGULATING TRANSFORMERS							INCLUDE IN NEXT REVISION
PC57.12.00m	PERFORMANCE CHARACTERISTICS	BIPIN PATEL	KRAUSE P.	/ /	/ /		0 (205)877-7740	COORDINATE WITH J. BORST
C57.12.01	GENERAL REQUIREMENTS FOR DRY-TYPE DIST. AND POWER TR INCL THOSE WITH SOLID CAST &/or RESIN-ENCAPSULATED WINDINGS							ASK FOR PAR EXTENSION
NONE	DRY-TYPE TRANSFORMERS	W. PATTERSON	JONATTI A.	02/02/89	09/28/82	1996	(919)848-1860	EXTENDED TO DEC 96
C57.12.10	TRANSFORMERS 230kV AND BELOW -8333/10417kVA 1 PH, -100000 kVA 3 PH w/o LTC, -100000kVA w/ LTC - SAFETY REQUIREMENTS							ANSI STANDARD
ANSI	STANDARDS	G. VAILLANCOURT		06/04/87	/ /	1993	(514)652-8515	NEEDS A HOME, DUE FOR REAF.
C57.12.11	GUIDE FOR INSTALLATION OF OIL-IMMERSED TRANSFORMERS (10MVA & LARGER, 69-287kV RATING)							TO BE REPLACED BY C57.93
PC57.93	WEST COAST	DAVID BRUCKER	GILLIES D. A.	05/09/80	/ /	1992	(415)692-4431	LIFE EXTENSION TO 12/92
C57.12.12	GUIDE FOR INSTALLATION OF OIL-IMMERSED TRANSFORMERS 345kV AND ABOVE							TO BE REPLACED BY C57.93
PC57.93	WEST COAST	DAVID BRUCKER	GILLIES D. A.	05/09/80	/ /	1992	(415)692-4431	LIFE EXTENSION TO 12/92
C57.12.13	CONFORMANCE REQUIREMENTS FOR LIQUID-FILLED TRANSFORMERS USED IN UNIT INSTALLATIONS INCL. UNIT SUBSTATIONS							ASSIGN TO SUBCOMMITTEE
ANSI	STANDARDS	G. VAILLANCOURT		09/02/81	/ /	1987	(514)652-8515	NEMA STANDARD
C57.12.20	OVERHEAD-TYPE DISTRIBUTION TRANSFORMERS, 500 kVA AND SMALLER: H V 34500 VOLTS AND BELOW, L V 7970/13800Y & BELOW			T&D	IAS/REP SCC14			PAR EXTENDED TO 06/30/97
PC57.12.20	DISTRIBUTION TRANSFORMERS	KEN HANUS	ANDERSON G. W.	01/11/88	12/05/91	1993	(817)882-6020	REBALLOT REVISION

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				PUB_DATE	PAR_DATE	REV_DUE_YEAR	SC_CH_PHONE		
C57.12.21	STANDARD REQUIREMENTS FOR PAD-MOUNTED, COMPARTMENTAL-TYPE, SELF-COOLED, SINGLE-PHASE DIST TRANSFORMERS WITH HV BUSHINGS			T&D	IAS/REP				TO BE PUBLISHED BY ANSI
PC57.12.21	DISTRIBUTION TRANSFORMERS	KEN HANUS	GHAFOURIAN A.	10/22/79	06/27/91	1985	(817)882-6020		
C57.12.22	PAD-MOUNTED,COMPARTMENTAL-TYPE SELF-COOLED,3-PHASE DIST. TR WITH HV BUSHINGS,2500kVA AND SMALLER:...REQUIREMENTS.			T&D	IAS/REP	IAS/PSE			AWAITING PUB. BY NEMA
PC57.12.22	DISTRIBUTION TRANSFORMERS	KEN HANUS	HANUS K.	01/09/95	06/27/91	1999	(817)882-6020		TO INCORPORATE INTO C57.12.34
C57.12.23	UNDERGROUND-TYPE,SELF-COOLED, 1-PHASE DISTRIBUTION TR WITH SEPERABLE INSULATED HV CONNECT HV 24940GrdY..LV,240..;167kVA.			T&D	IC	IAS/REP	IAS/PSE		ANSI APPROVED 02/18/94
PC57.12.23	DISTRIBUTION TRANSFORMERS	KEN HANUS	SCHEU R. W.	09/19/85	06/27/91	1996	(817)882-6020		TO BE PUBLISHED BY NEMA
C57.12.24	UNDERGROUND-TYPE 3-PHASE DISTRIBUTION TRANSFORMERS,2500kVA AND SMALLER: HV,34500GrdY..& BELOW,LV,480 V AND BELOW			T&D	IC	IAS/REP	IAC/PSE		PUBLISHED BY ANSI 06/94
PC57.12.24	UG TR & NETWORK PROTECTORS	PAUL OREHEK	NIEMANN C.	05/10/88	06/27/91	1993	(201)430-7743		ANSI APPROVED 05/23/94
C57.12.25	REQUIREMENTS FOR PAD-MOUNTED COMP-TYPE,SELF-COOLED,1-PHASE DISTRIBUTION TR W/SEP INS HV CONN,HV 34500GrdY...167kVA...			T&D	IC	IAS/REP	IAS/PSE		PAR IS EXPIRING
PC57.12.25	DISTRIBUTION TRANSFORMERS	KEN HANUS	MOHESKY N.	05/11/90	06/27/91	1995	(817)882-6020		ACTION REQUIRED ON PAR
C57.12.26	PAD-MOUNTED COMPARTMENTAL-TYPE SELF-COOLED,3-PHASE DIST TR for USE W/ SEPERABLE INSULATED HV CONN.,HV 34500GrdY..2500kVA			T&D	IC	IAS/REP	IAS/PSE	SCC14	TO INCORPORATE INTO C57.12.34
PC57.12.26	DISTRIBUTION TRANSFORMERS	KEN HANUS	PEARSON L. C.	06/17/92	12/05/91	1997	(817)882-6020		TO BE PUBLISHED BY NEMA
C57.12.27	STANDARD FOR TRANSFORMERS - LIQUID FILLED DISTRIBUTION TRANSFORMERS USED IN PAD-MOUNTED INSTALLATIONS, INCLUD. UNIT SUBS								PAR IS EXPIRING
PC57.12.27	DISTRIBUTION TRANSFORMERS	KEN HANUS	MILLER J. R.	/ /	06/27/91	0	(817)882-6020		ACTION REQUIRED ON PAR
C57.12.28	PAD-MOUNTED EQUIPMENT - ENCLOSURE INTEGRITY								JOINT C37/C57 PROJECT
ANSI	DISTRIBUTION TRANSFORMERS	KEN HANUS	MARTIN J.	06/24/87	/ /	1994	(817)882-6020		IN BALLOT IN ASC C57
C57.12.29	PAD-MOUNTED EQUIPMENT - ENCLOSURE INTEGRITY IN COASTAL ENVIRONMENTS								PUBLISHED IN 1992
ANSI	DISTRIBUTION TRANSFORMERS	KEN HANUS	MARTIN J.	/ /	/ /	1996	(817)882-6020		NOT TRANSFORMERS COMM.

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C57.12.30	SUBMERSIBLE EQUIPMENT - ENCLOSURE INTEGRITY							TO BE BALLOTED
ANSI	DISTRIBUTION TRANSFORMERS	KEN HANUS	MARTIN J.	/ /	/ /	1994	(817)882-6020	NUMBER TO BE CHANGED
C57.12.31	COATING STANDARD FOR POLE MOUNTED TRANSFORMERS							JOINT C37/C57 PROJECT
ANSI	DISTRIBUTION TRANSFORMERS	KEN HANUS	MARTIN J.	/ /	/ /	1994	(817)882-6020	IN BALLOT IN ASC C57
C57.12.32	ENCLOSURE INTEGRITY OF SUBMERSIBLE EQUIPMENT							
ANSI	DISTRIBUTION TRANSFORMERS	KEN HANUS		/ /	/ /	0	(817)882-6020	
C57.12.33	GUIDE FOR EVALUATION OF LOSSES IN DISTRIBUTION TRANSFORMERS							PAR APPLICATION IN PROGRESS
PC57.12.33	DISTRIBUTION TRANSFORMERS	KEN HANUS	PEKAREK T.	/ /	/ /	0	(817) 882-6020	
C57.12.34	REQUIREMENTS FOR THREE PHASE PAD-MOUNTED DISTRIBUTION TRANSFORMERS			ICC				PAR APPROVED
PC57.12.34	DISTRIBUTION TRANSFORMERS	KEN HANUS	PEARSON L. C.	/ /	09/21/95	0	(817) 882-6020	TO COMBINE C57.12.22 & .26
C57.12.35	STANDARD FOR BAR CODING FOR DISTRIBUTION TRANSFORMERS (POLE-MOUNTED, PAD-MOUNTED AND UNDERGROUND)			AIM/TSC	IAS/REP TD	EEI	NEMA	PAR APPROVED 12/15/95
P1265	DISTRIBUTION TRANSFORMERS	KEN HANUS	JORDAN RON	/ /	12/15/95	1994	(817)882-6020	PROJECT NO. CHANGED
C57.12.40	REQUIREMENTS FOR SECONDARY NETWORK TRANSFORMERS, SUBWAY & VAULT TYPES (LIQUID IMMERSED)			SCC14				ANSI APPROVED 02/28/94
PC57.12.40	UG TR & NETWORK PROTECTORS	PAUL OREHEK	BERTOLINI E. A.	03/19/92	12/05/91	1997	(201)430-7743	AWAITING PUBLICATION BY NEMA
C57.12.44	STANDARD REQUIREMENTS FOR SECONDARY NETWORK PROTECTORS			T&D	SWGR	IAS/REP IAS/PSE	EEI NEMA	PUBLISHED DEC 94
PC57.12.44	UG TR & NETWORK PROTECTORS	PAUL OREHEK	MULKEY D. H.	12/20/94	09/21/95	1999	(201)430-7743	PAR APPROVED 09/21/95
C57.12.50	REQ. FOR VENTILATED DRY-TYPE DISTRIBUTION TR, 1-500kVA, 1 PHASE, AND 15-500kVA, 3-PHASE HV 601-34500VOLTS,LV 120-600V							COPYRIGHT NOT RELEASED
NONE	DRY-TYPE TRANSFORMERS	W. PATTERSON		06/12/89	/ /	1994	(919)848-1860	BALLOT REAFFIRMATION
C57.12.51	REQ. FOR VENTILATED DRY-TYPE POWER TR, 501kVA & LARGER, 3 PHASE, WITH HV 601-34500V, LV 208Y/120 TO 4160 VOLTS							COPYRIGHT NOT RELEASED
NONE	DRY-TYPE TRANSFORMERS	W. PATTERSON		06/12/89	/ /	1994	(919)848-1860	BALLOT REAFFIRMATION

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C57.12.52	REQ. FOR SEALED DRY-TYPE POWER TRANSFORMERS, 501kVA & LARGER, 3 PHASE, WITH HV 601-34500V,LV 208Y/120 TO 4160 VOLTS							COPYRIGHT NOT RELEASED
NONE	DRY-TYPE TRANSFORMERS	W. PATTERSON		06/12/89	/ /	1994	(919)848-1860	BALLOT REAFFIRMATION
C57.12.53	REQUIREMENTS FOR DRY-TYPE, UNDERGROUND, SINGLE-PHASE WITH SEPARABLE INSULATED H-V 24940 grdY/14400 V AND <; LV 240/120 V							ONLY TITLE EXIST (NO PAR)
ANSI	STANDARDS	G. VAILLANCOURT		/ /	/ /	0	(514)652-8515	IS IT REQUIRED?
C57.12.54	REQUIREMENTS FOR DRY-TYPE, UNDERGROUND 3 PHASE DISTRIBUTION TRANSFORMERS,2500 kVA OR <, HV 24940 grdY/14400 OR <,LV 480V							ONLY TITLE EXISTS
ANSI	STANDARDS	G. VAILLANCOURT		/ /	/ /	0	(514)652-8515	IS IT REQUIRED?
C57.12.55	CONFORMANCE STANDARD FOR TR- DRY-TYPE TRANSFORMERS USED IN UNIT INSTALLATIONS, INCL. UNIT SUBSTATIONS							COPYRIGHT NOT RELEASED
NONE	DRY-TYPE TRANSFORMERS	W. PATTERSON		04/07/86	/ /	1992	(919)848-1860	BALLOT REAFFIRMATION
C57.12.56	TEST PROCEDURE FOR THERMAL EVALUATION OF INSULATION SYST FOR VENTILATED DRY-TYPE POWER & DISTRIBUTION TRANSFORMERS							TO BE PUBLISHED
PC57.12.56	DRY-TYPE TRANSFORMERS	W. PATTERSON	PROVOST R. L.	08/27/84	/ /	1995	(919)848-1860	ANSI APPROVED 01/04/94
C57.12.57	REQUIREMENTS FOR VENTILATED DRY-TYPE NETWORK TRANSFORMERS 2500kVA AND BELOW, W/HV 34500V AND BELOW,LV 216Y..AND 480Y..	T&D	EEI/T&D SCC14					TO BALLOT D6 IN TC
PC57.12.57	UG TR & NETWORK PROTECTORS	PAUL OREHEK	NUTT B.	03/18/92	12/05/91	1997	(201)430-7743	REAFFIRMED 03/18/92
C57.12.58	GUIDE FOR CONDUCTING TRANSIENT VOLTAGE ANALYSIS OF A DRY-TYPE TRANSFORMER COIL	IEC	IAS					REVISE OR REAFF. BY DEC 96
P745	DRY-TYPE TRANSFORMERS	W. PATTERSON	KLINE A. D.	06/27/91	06/28/78	1996	(919)848-1860	REQUEST PAR EXT. TO JUNE 97
C57.12.59	GUIDE FOR DRY-TYPE TRANSFORMER THROUGH-FAULT CURRENT DURATION							EXTENDED 12/1996
NONE	DRY-TYPE TRANSFORMERS	W. PATTERSON	NONE	01/01/89	09/13/84	1996	(919)848-1860	ASK FOR PAR EXTENSION
C57.12.60	TEST PROCEDURES FOR THERMAL EVALUATION OF INSULATION SYSTEMS FOR SOLID-CAST & RESIN ENCAP POWER & DIST TRANSFORMER	IAS	NEMA IEC					APPROVED BY SB 10/25/92
PC57.12.60	DRY-TYPE TRANSFORMERS	W. PATTERSON	PROVOST R. L.	10/25/92	08/17/89	1994	(919)848-1860	BEING BALLOTTED IN C57

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C57.12.70	TERMINAL MARKINGS AND CONNECTIONS FOR DIST. & POWER TRANSFORMERS			T&D	SUBS	ICC		REVISING TERMINOLOGY
NONE	STANDARDS	G. VAILLANCOURT	TRAUB T. P.	06/18/92	06/14/95	1997	(514)652-8515	PAR APPROVED 06/14/95
C57.12.80	TERMINOLOGY FOR POWER & DISTRIBUTION TRANSFORMERS			T&D	SUBS			WILL START REVISION
NONE	STANDARDS	G. VAILLANCOURT	TRAUB T. P.	05/01/92	06/14/95	1997	(514)652-8515	PAR APPROVED 06/14/95
C57.12.90	STANDARD TEST CODE FOR LIQUID-IMMERSED DISTRIBUTION, POWER, AND REGULATING TRANSFORMERS & GUIDE FOR SC TESTING OF			T&D	PSRC	SWG	IECTC14 USTAG	MAKING RUNNING CHANGE LIST
VARIOUS	STANDARDS	G. VAILLANCOURT	SMITH S. D.	03/16/93	06/15/95	1998	(514)652-8515	WG COLLECTING CHANGES
C57.12.90	STANDARD TEST CODE FOR LIQUID-IMMERSED DISTRIBUTION, POWER, AND REGULATING TRANSFORMERS							WILL START REVISING SECT. 11
NEW	INSULATION LIFE	L. W. PIERCE	HENRY G.	/ /	/ /	1998	(706)291-3166	
C57.12.90	REVISION OF THE INDUCED TEST							INCLUDE IN C57.12.90
PC57.12.90d	DIELECTRIC TESTS	L. B. WAGENAAR	POULIN B.	/ /	09/28/90	0	(614)223-2259	COORDINATE WITH STEVE SMITH
C57.12.90	STANDARD TEST CODE FOR LIQUID-IMMERSED DISTRIBUTION, POWER, AND REGULATING TRANSFORMERS							NEW PAR NESCOM 03/15/95
PC57.12.90	PERFORMANCE CHARACTERISTICS	BIPIN PATEL	SIM JIN	/ /	/ /	0	(205)877-7740	REVISING TEST DATA
C57.12.90	STANDARD ON SOUND INTENSITY MEASUREMENT							PART OF C57.12.90
PC57.12.90x	AUDIBLE SOUND & VIBRATION	JEEWAN PURI		/ /	/ /	0	(704)282-7413	COORDINATE WITH STEVE SMITH
C57.12.91	TEST CODE FOR DRY-TYPE DISTRIBUTION AND POWER TRANSFORMERS			SPD	EM			REVISION APPROVED 06/15/95
PC57.12.91	DRY-TYPE TRANSFORMERS	W. PATTERSON	BARNARD D.	11/29/78	06/01/89	1984	(919)848-1860	REVISION OF PAR NEEDED
C57.13	REQUIREMENTS FOR INSTRUMENT TRANSFORMERS			PSIM	PSR	SPD		
P546	INSTRUMENT TRANSFORMERS	J. E. SMITH		03/30/94	06/14/94	1999	(919)827-2121	REV. PAR APPROVED 06/14/94
C57.13.1	GUIDE FOR FIELD TESTING OF RELAYING CURRENT TRANSFORMERS							R1992
PSRC	INSTRUMENT TRANSFORMERS	J. E. SMITH		08/25/87	/ /	1997	(919)827-2121	RELAY COMM. DOCUMENT

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C57.13.2	CONFORMANCE TEST PROCEDURES FOR INSTRUMENT TRANSFORMERS							REVISE OR REAFF. BY DEC 96
NONE	INSTRUMENT TRANSFORMERS	J. E. SMITH		04/16/86	09/26/91	1996	(919)827-2121	REQUEST PAR EXT. TO JUNE 97
C57.13.3	GUIDE FOR THE GROUNDING OF INSTRUMENT TR SECONDARY CICUITS AND CASES							TRANSFER FROM PSRC COMMITTEE
NONE	INSTRUMENT TRANSFORMERS	J. E. SMITH		01/23/87	/ /	1995	(919)827-2121	R1990
C57.13.4	DETECTION OF PARTIAL DISCHARGE AND MEASUREMENT OF APPARENT CHARGE WITHIN INSTRUMENT TRANSFORMERS			T&D				PAR WITHDRAWN
P832	INSTRUMENT TRANSFORMERS	J. E. SMITH	JONNATTI A. J.	/ /	05/28/80	0	(919)827-2121	DOCUMENT NEVER SUBMITTED TO SB
C57.13.5	GUIDE FOR PARTIAL DISCHARGE MEASUREMENT IN INSTRUMENT TRANSFORMERS 69 kV AND ABOVE			SWGR	EM			TITLE CHANGE NEEDED IN PAR
PC57.13.5	INSTRUMENT TRANSFORMERS	J. E. SMITH	MA J.	/ /	06/14/94	0	(919)827-2121	SUBMIT NEW PAR WITH CHANGES
C57.13.6	REQUIREMENTS FOR INSTRUMENT TRANSFORMERS FOR USE WITH ELECTRONIC REVENUE METERS AND RELAYS			PSIM	PSR	TD	PSC	PAR DISSAPROVED **ACTION**
PC57.13.6	INSTRUMENT TRANSFORMERS	J. E. SMITH	TEN-HAAGEN C. W.	/ /	/ /	0	(919)827-2121	MAKE CHANGES AND RESUBMIT PAR
C57.15	REQUIREMENTS, TERMINOLOGY, & TEST CODE FOR STEP-VOLTAGE REGULATORS			SUBS	IAS/PSE			SCOPE REVISED
NONE	DISTRIBUTION TRANSFORMERS	KEN HANUS	DIAMANTIS T.	03/18/87	09/21/95	1997	(817)882-6020	APPROVED BY ANSI 12/02/92
C57.16	STANDARD REQUIREMENTS, TERMINOLOGY, AND TEST CODE FOR DRY-TYPE AIR-CORE SERIES CONNECTED REACTORS			NEMA	IAS	T&D		TITLE CHANGEI
PC57.16	DRY-TYPE TRANSFORMERS	W. PATTERSON	DUDLEY R.	09/19/58	03/21/91	1976	(919)848-1860	NEW PAR SUBMITTED
C57.17	REQUIREMENTS FOR ARC FURNACE TRANSFORMERS							LAST REVISED IN 1986
ANSI	STANDARDS	G. VAILLANCOURT		/ /	/ /	1986	(514)652-8515	ANSI DOCUMENT
C57.18.10	REQUIREMENTS FOR SEMICONDUCTOR RECTIFIER TRANSFORMERS			NONE				PAR EXT. TO 06/97 REQUESTED
PC57.18.10	PERFORMANCE CHARACTERISTICS	BIPIN PATEL	KENNEDY S. P.	/ /	12/28/81	0	(205)877-7740	PAR HAS BEEN FOUND
C57.19.00	GENERAL REQUIREMENTS AND TEST PROCEDURES FOR OUTDOOR APPARATUS BUSHINGS (IEEE 21)			T&D	PSR	IC	SWGR	REVISE OR REAFF. BY DEC 96
PC57.19.00	BUSHING	FRED ELLIOTT	ELLIOTT F. E.	07/23/91	04/01/79	1996	(503)230-3807	REQUEST PAR EXT. TO JUNE 97

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C57.19.01	STANDARD PERFORMANCE CHARACTERISTICS AND DIMENSIONS FOR OUTDOOR APPARATUS BUSHINGS (IEEE 24)			SPD	IAS	IC	SWGR	REVISE OR REAFF. BY DEC 96
PC57.19.01	BUSHING	FRED ELLIOTT	SINGH PRITPAL	08/05/91	11/01/89	1996	(503)230-3807	PAR SUBMITTAL IN PROGRESS
C57.19.03	STANDARD REQUIREMENTS, TERMINOLOGY AND TEST CODE FOR BUSHINGS FOR DC APPLICATIONS			SPD	IC	SWGR		PAR EXTENDED TO JUNE 1997
PC57.19.03	BUSHING	FRED ELLIOTT	HEYMAN OLOF	/ /	11/09/89	0	(503)230-3807	
C57.19.100	GUIDE FOR APPLICATION OF APPARATUS BUSHINGS.			SWGR	SUB	PSR		PUBLISHED 08/24/95
P800	BUSHING	FRED ELLIOTT	ELLIOTT F. E.	/ /	09/27/79	1999	(503)230-3807	REPLACES C57.19.101
C57.19.101	GUIDE FOR LOADING POWER APPARATUS BUSHINGS							TO BE WITHDRAWN
P757	BUSHING	FRED ELLIOTT	ELLIOTT F. E.	10/20/88	/ /	1997	(503)230-3807	REPLACED BY C57.19.100
NEW	TASK FORCE TO STUDY APPLICATON AND PROBLEMS OF DRAW-LEADS FOR BUSHINGS							NEW TASK FORCE
NEW	BUSHING	FRED ELLIOTT	NORDMAN RUSS	/ /	/ /	0	(503)230-3807	
C57.21	REQUIREMENTS,TERMINOLOGY, AND TEST CODE FOR SHUNT REACTORS RATED OVER 500kVA			EM	T&D	PSR		APPLY FOR PAR EXTENSION
PC57.21	PERFORMANCE CHARACTERISTICS	BIPIN PATEL	McGILL J. W.	04/02/91	06/09/88	2000	(205)877-7740	R1995
C57.21	REQUIREMENTS TERMINOLOGY, AND TEST CODE FOR SHUNT REACTORS RATED OVER 500kVA							PAR MORE THAN 4 YEAR OLD
PC57.21	DRY-TYPE TRANSFORMERS	W. PATTERSON	DUDLEY R.	04/02/91	/ /	1995	(919)848-1860	ACTION NEEDED ON PAR
C57.21	REQUIREMENTS,TERMINOLOGY AND TEST CODE FOR SH. REACTORS OVER 500kVA			NONE				PAR MORE THAN 4 YEAR OLD
PC57.21a	DIELECTRIC TESTS	L. B. WAGENAAR	KENNEDY W. N.	04/02/91	12/11/86	1995	(614)223-2259	PAR WITHDRAWN
C57.91	GUIDE FOR LOADING MINERAL OIL-IMMERSED TRANSFORMERS			SUB	T&D	PSE		REVISION APPROVED 06/15/95
PC57.91	INSULATION LIFE	L. W. PIERCE	PIERCE L.	03/21/91	06/13/85	1996	(706)291-3166	REVISION OF PAR NEEDED
C57.92	GUIDE FOR LOADING MINERAL OIL-IMMERSED POWER TRANSFORMERS UP TO & INCL 100 MVA WITH 55 C OR 65 C AVE. WINDING RISE			T&D	SUB	PSE		PAR SHOULD BE CLOSED
PC57.92	INSULATION LIFE	L. W. PIERCE	PIERCE L.	03/21/91	06/28/85	1996	(706)291-3166	TO BE COMBINED INTO C57.91

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C57.93	GUIDE FOR INSTALLATION OF LIQUID-IMMERSED POWER TRANSFORMERS.			NONE					PAR EXTENDED TO JUNE 1997
PC57.93	WEST COAST	DAVID BRUCKER	GILLIES D. A.		/ /	06/01/89	0	(415)692-4431	WITHDRAW 12.11/12.12 WHEN APP.
C57.94	RECOMMENDED PRACTICE FOR INSTALLATION, APPLICATION,OPERATION & MAINTENANCE OF DRY-TYPE GEN PURPOSE DIST & POWER TR								PUB. 1982, REAFFIRMED 1987
NONE	DRY-TYPE TRANSFORMERS	W. PATTERSON			12/09/87	/ /	1992	(919)848-1860	BALLOTTING REAFFIRMATION
C57.95	GUIDE FOR LOADING LIQUID-IMMERSED STEP-VOLTAGE AND INDUCTION-VOLTAGE REGULATORS								NO WORK IN PROGRESS
NONE	INSULATION LIFE	L. W. PIERCE			03/21/91	/ /	1996	(706)291-3166	BALLOT FOR REAF. REQUESTED
C57.96	GUIDE FOR LOADING DRY-TYPE DISTRIBUTION AND POWER TRANSFORMERS			T&D	SCC14	SCC10			EXTENDED 12/96
PC57.96	DRY-TYPE TRANSFORMERS	W. PATTERSON	PIERCE L.		04/26/89	05/06/91	1996	(919)848-1860	APPLY FOR PAR EXTENSION
C57.98	IEEE GUIDE FOR TRANSFORMER IMPULSE TESTS			NONE					PUBLISHED JAN 95
PC57.98	DIELECTRIC TESTS	L. B. WAGENAAR	POULIN B.		06/01/86	02/01/86	1992	(614)223-2259	DISCUSS PAR BUSINESS
C57.98	GUIDE FOR PERFORMING ROUTINE LIGHTNING IMPULSE TESTS ON DIST.TRANSFO			T&D	PSIM	PSC	ASC 62	EM	TO PUBLISH AS SUP. TO C57.98
PC57.98a	DIELECTRIC TESTS	L. B. WAGENAAR	ROSSETTI J.		/ /	04/30/91	0	(614)223-2259	PAR EXTENSION TO 06/97 APPR.
C57.99	GUIDE FOR LOADING DRY-TYPE AND OIL-IMMERSED CURRENT-LIMITING REACTORS								NEEDS REVISION (PAR TOO OLD)
P731	DRY-TYPE TRANSFORMERS	W. PATTERSON	DUDLEY R.		/ /	03/28/78	1990	(919)848-1860	PAR WITHDRAWN
C57.100	TEST PROCEDURE FOR THERMAL EVALUATION OF OIL-IMMERSED DISTRIBUTION TRANSFORMERS			NPE	EM	T&D	SPD		APPROVED BY ANSI 12/02/92
C57.100	INSULATION LIFE	L. W. PIERCE	LOWDERMILK L. A.		03/18/92	10/20/88	1997	(706)291-3166	PAR WITHDRAWN
C57.104	GUIDE FOR THE DETECTION AND DETERMINATION OF GENERATED GAS IN OIL-IMMERSED TRANSFORMERS & THEIR RELATION TO SERVICEABIL.			PSR	T&D				REVISE OR REAFF. BY DEC 96
PC57.104	INSULATING FLUIDS	F. GRYSZKIEWICZ	HEINRICHS F. W.		06/07/92	05/31/90	1996	(617)926-4900	REQUEST PAR EXT. TO JUNE 97
C57.105	GUIDE FOR APPLICATION OF TRANSFORMER CONNECTIONS IN THREE-PHASE DISTRIBUTION SYSTEMS								REAFFIRMED BY SB 06/17/92
PC57.105	PERFORMANCE CHARACTERISTICS	BIPIN PATEL	REITTER G.		06/17/92	/ /	1997	(205)877-7740	BEING BALLOTED IN C57

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C57.106	GUIDE FOR ACCEPTANCE AND MAINTENANCE OF INSULATING OIL IN EQUIPMENT			NONE				REVISE OR REAFF. BY DEC 96
PC57.106	INSULATING FLUIDS	F. GRYSZKIEWICZ		11/20/91	06/19/86	1996	(617)926-4900	REQUEST PAR EXT. TO JUNE 97
C57.109	GUIDE FOR THROUGH-FAULT CURRENT DURATION			PSR				APPLY FOR PAR TO REVISE
PC57.109	PERFORMANCE CHARACTERISTICS	BIPIN PATEL	PATEL B.	03/16/93	06/27/91	1998	(205)877-7740	
C57.110	RECOMMENDED PRACTICE FOR ESTABLISHING TRANSFORMER CAPABILITY WHEN SUPPLYING NONSINUSOIDAL LOAD CURRENTS			T&D PSR NEMA				REAF. ANSI 07/93
PC57.110	PERFORMANCE CHARACTERISTICS	BIPIN PATEL	MAREK R. P.	12/03/92	09/15/93	1997	(205)877-7740	PAR APPROVED 09/15/93
C57.111	GUIDE FOR ACCEPTANCE OF SILICONE INSULATING FLUID AND ITS MAINTENANCE IN TRANSFORMERS			IAS T&D ED&PG IEC				REAFFIRMED 03/15/1995
NONE	INSULATING FLUIDS	F. GRYSZKIEWICZ		02/02/89	12/10/87	2000	(617)926-4900	ASK FOR FOR PAR EXTENSION
C57.112	GUIDE FOR THE CONTROL OF TRANSFORMER SOUND			NONE				NEW TASK FORCE TO START WORK
P523	AUDIBLE SOUND & VIBRATION	JEEWAN PURI	PURI J.	/ /	12/28/73	0	(704)282-7413	PAR WITHDRAWN
C57.113	GUIDE FOR PARTIAL DISCHARGE MEASUREMENT IN LIQUID-FILLED POWER TRANSFORMERS AND SHUNT REACTOR							REVISE OR REAFF. BY DEC 96
P545	DIELECTRIC TESTS	L. B. WAGENAAR	HOWELLS E.	12/05/91	09/25/91	1996	(614)223-2259	REQUEST PAR EXT. TO JUNE 97
C57.114	SEISMIC GUIDE FOR POWER TRANSFORMERS AND REACTORS			NPE SUBS.				STD WITHDRAWN (OBSELETE)
P513	WEST COAST	DAVID BRUCKER	OKLU S.	02/15/90	09/06/73	1995	(415)692-4431	PAR WITHDRAWN
C57.115	GUIDE FOR LOADING MINERAL-OIL-IMMERSED POWER TRANSFORMERS RATED IN EXCESS OF 100MVA (65 C WINDING RISE)							REVISE OR REAFF. BY DEC 96
P756	INSULATION LIFE	L. W. PIERCE	PIERCE L. W.	03/21/91	06/15/91	1996	(706)291-3166	ANSI APPROVED 01/13/92
C57.116	GUIDE FOR TRANSFORMERS DIRECTLTY CONNECTED TO GENERATORS							REAFFIRMED
NONE	PERFORMANCE CHARACTERISTICS	BIPIN PATEL	REITTER G.	01/03/89	06/28/79	1999	(205)877-7740	IS REVISION NEEDED?
C57.117	GUIDE FOR REPORTING FAILURE DATA FOR POWER TRANSFORMERS AND SHUNT REACTORS							REAFFIRMED BY SB 06/17/92
P786	PERFORMANCE CHARACTERISTICS	BIPIN PATEL	ALTMAN M.	06/17/92	/ /	1997	(205)877-7740	ANSI APPROVED 7/93

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C57.119	RECOMMENDED PRACTICE FOR PERFORMING TEMP. RISE TESTS ON OIL-IMMERSED POWER TRANSFORMER AT LOADS BEYOND NP RATING (P838)	SWGR	SUBS	SCC4	PSRC	IAS	EI	NEW PAR APPROVED 09/17/92
P838	INSULATION LIFE	L. W. PIERCE	GRUBB R. L.	/ /	09/17/92	0	(706)291-3166	REVISED PAR (TITLE & SCOPE)
C57.120	LOSS EVALUATION GUIDE FOR POWER TRANSFORMERS AND REACTORS	SUB	EM	ED&PG	IAS	IEC		REVISE OR REAFF. BY DEC 96
P842	WEST COAST	DAVID BRUCKER	JACOBSEN R.	12/03/91	05/01/80	1996	(415)692-4431	PAR EXTENSION NEEDED
C57.121	GUIDE FOR ACCEPTANCE AND MAINTENANCE OF LESS FLAMMABLE HYDROCARBON FLUID IN TRANSFORMERS	PSRC	T&D	IAS	IEC			PAR APPLIED FOR
P954	INSULATING FLUIDS	F. GRYSZKIEWICZ	McSHANE C. P.	02/22/88	04/12/82	1996	(617)926-4900	REAF DISAPPROVED 03/15/95
C57.123	GUIDE FOR TRANSFORMER LOSS MEASUREMENT							PAR TOO OLD
P1098	PERFORMANCE CHARACTERISTICS	BIPIN PATEL	HENNING W. R.	/ /	06/13/85	0	(205)877-7740	PAR EXT. TO 06/97 APPROVED
C57.124	RECOMMENDED PRACTICE FOR THE DETECTION OF PD AND THE MEASUREMENT OF APPARENT CHARGE IN DRY-TYPE TRANSFORMERS	NONE						REVISE OR REAFF. BY DEC 96
PC57.124	DRY-TYPE TRANSFORMERS	W. PATTERSON	KLINE A. D.	06/29/91	06/27/91	1996	(919)848-1860	REQUEST PAR EXTENSION
C57.125	GUIDE FOR FAILURE INVESTIGATION, DOCUMENTATION AND ANALYSIS FOR POWER TRANSFORMERS AND SHUNT REACTORS	T&D	ED&PG	PSE	SWGR			BALLOTING REAFFIRMATION
PC57.125	PERFORMANCE CHARACTERISTICS	BIPIN PATEL	ALTMAN M.	06/27/91	06/28/87	1996	(205)877-7740	REQUEST PAR EXTENSION
C57.127	GUIDE FOR THE DETECTION OF ACOUSTIC EMISSIONS FROM PARTIAL DISCHARGES IN OIL-IMMERSED POWER TRANSFORMERS	T&D	ED&PG	CIGRE	IEC			PAR WITHDRAWN BY SB
PC57.127	DIELECTRIC TESTS	L. B. WAGENAAR	HOWELLS E.	/ /	03/10/88	0	(614)223-2259	APPLY FOR PAR TO REBALLOT
C57.128	FIRE PROTECTION OF OUTDOOR LIQUID-IMMERSED POWER TRANSFORMERS	NPE	SUB	PSR				PAR TOO OLD
PC57.128	WEST COAST	DAVID BRUCKER	HAGER R.	/ /	06/01/89	0	(415)692-4431	PAR WITHDRAWN
C57.129	GENERAL REQUIREMENTS & TEST CODE FOR OIL-IMMERSED HVDC CONVERTER TRANSFORMERS AND SMOOTHING REACTORS FOR DC POWER TRANSM	EM	T&D	PSIM	SUB			PAR EXTENDED TO JUNE 97
PC57.129	HVDC CONVERTER TR & REACTOR	W. N. KENNEDY	KENNEDY W. N.	/ /	09/26/91	0	(317)286-9387	TO BALLOT D9

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C57.130	T-U GUIDE FOR USE OF DISS. GAZ ANALYSIS DURING FACTORY THERMAL TESTSFOR THE EVALUATION OF OIL-IMMERSED TRANS. AND REACT.			NONE				D09.1 BEING REVIEWED
PC57.130	INSULATING FLUIDS	F. GRYSZKIEWICZ	KINNEY J. P.	/ /	03/17/93	0	(617)926-4900	CHANGE IN TITLE AND SCOPE
C57.131	REQUIREMENTS FOR LOAD TAP CHANGERS			FM	T&D			APPROVED BY REVCOM 03/15/95
PC57.131	PERFORMANCE CHARACTERISTICS	BIPIN PATEL	TRAUB T. P.	/ /	08/17/89	0	(205)877-7740	APPROVED BY REVCOM
C57.133	GUIDE FOR SHORT-CIRCUIT TESTING OF DISTRIBUTION AND POWER TRANSFORMERS			T&D,SWG PSR	IECTC14 SUBS	IAS/PSE IAS/REP		PAR APPROVED
PC57.133	PERFORMANCE CHARACTERISTICS	BIPIN PATEL	McQUIN N.	/ /	09/21/95	0	(205)877-7740	PART II OF C57.12.90
C57.134	GUIDE FOR THE DETERMINATION OF HOTTEST SPOT TEMPERATURE IN DRY TYPE TRANSFORMERS							PAR APPROVED
PC57.134	DRY-TYPE TRANSFORMERS	W. PATTERSON	PAYNE P.	/ /	09/21/95	0	(919)848-1860	
C57.135	GUIDE FOR APPLICATION, TESTING, INSTALLATION AND OPERATION OF PHASE ANGLE SHIFTING TRANSFORMERS							NEW PROJECT
PC57.135	WEST COAST	DAVID BRUCKER	TRUMUER E.	/ /	/ /	0	(415)692-4431	PAR SUBMITTAL IN PROGRESS
C57.136	GUIDE FOR SOUND LEVEL ABATEMENT AND DETERMINATION IN OIL-FILLED TRANSFORMERS							DRAFT 1 PRODUCED
PC57.136	AUDIBLE SOUND & VIBRATION	JEEWAN PURI	McGILL J.	/ /	/ /	0	(704)282-7413	PAR REQUEST IN PROGRESS
C57.137								
PC57.137	INSULATING FLUIDS			/ /	/ /	0		
IEEE 62.1	GUIDE FOR DIAGNOSTIC FIELD TESTING OF POWER APPARATUS, PART I: OIL-FILLED POWER TRANSFORMERS, REGULATORS AND REACTORS							APPROVED BY REVCOM 03/15/95
P 62	DIELECTRIC TESTS	L. B. WAGENAAR	YOUNG F. N.	/ /	03/17/94	0	(614)223-2259	PUBLISHED
IEEE 259	TEST PROCEDURE FOR EVALUATION OF SYSTEMS OF INSULATION FOR SPECIALTY TRANSFORMERS							PUBLISHED
P259	DRY-TYPE TRANSFORMERS	W. PATTERSON	SIMPSON R. W. JR.	06/22/72	09/26/91	1979	(919)848-1860	PAR SUBMITTAL IN PROGRESS

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IEEE 637	GUIDE FOR THE RECLAMATION OF INSULATING OIL AND CRITERIA FOR ITS USE							REAFFIRMED 03/18/92
P637	INSULATING FLUIDS	F. GRYSZKIEWICZ		06/04/84	/ /	1997	(617)926-4900	
IEEE 638	QUALIFICATION OF CLASS 1E TR FOR NUCLEAR POWER GENERATING STATIONS			NPE SUB SC2 SCC10				APPROVED BY SB 03/18/92
P638	PERFORMANCE CHARACTERISTICS	BIPIN PATEL	PIERCE L. W.	03/19/92	10/29/90	1997	(205)877-7740	NEW PAR APPROVED 12/04/90
IEEE 799	GUIDE FOR HANDLING AND DISPOSING OF ASKARELS			EIS IAC T&D				REAFFIRMED 03/18/92
P799	INSULATING FLUIDS	F. GRYSZKIEWICZ		11/17/86	09/27/79	1997	(617)926-4900	
IEEE1258	TRIAL-USE GUIDE FOR INTERPRETATION OF GASES GENERATED IN SILICONE-IMMERSED TRANSFORMERS			T&D ICC				PAR REVISION APPROVED
P1258	INSULATING FLUIDS	F. GRYSZKIEWICZ	GRYSZKIEWICZ f.	/ /	06/15/95	0	(617)926-4900	D08 TO BALLOT
IEEE1276	TRIAL-USE GENERAL REQUIREMENTS FOR LIQUID-FILLED DISTRIBUTION AND POWER TR UTILIZING HIGH TEMP SOLID INSULATING MATERIAL			T&D				PAR SUBMITTAL IN PROGRESS
P1276	INSULATION LIFE	L. W. PIERCE	FRANCHEK M. A.	/ /	09/25/91	0	(706)291-3166	STUDYING HI-T MATERIALS
IEEE1277	GENERAL REQUIREMENTS & TEST CODE FOR OIL-IMMERSED AND DRY-TYPE HVDC SMOOTHING REACTORS			SUB				NEW DRAFT BEING PREPARED
P1277	HVDC CONVERTER TR & REACTOR	W. N. KENNEDY		/ /	09/25/91	0	(317)286-9387	PAR EXTENDED TO JUNE 1997
IEEE1350	GUIDE FOR PROTECTION OF DISTRIBUTION TRANSFORMERS WITH EMPHASIS ON SECONDARY (LOW VOLTAGE SIDE) SURGES			SPD T&D IC				CONTINUE WORK IN SPD
P1350	DIELECTRIC TESTS	L. B. WAGENAAR	ROSSETTI J.	/ /	03/17/93	0	(614)223-2259	ASK FOR PAR WITHDRAWAL
IEEE1388	STANDARD FOR THE ELECTRONIC REPORTING OF TRANSFORMER TEST DATA			EEI NEMA ASC X12 PSR			CS SAB	PREPARING D1
P1388	DISTRIBUTION TRANSFORMERS	KEN HANUS	McCAIN A.	/ /	09/15/93	0	(817)882-6020	NO. CHANGED FROM C57.132
NEW	GUIDE FOR THE LOCATION OF ACOUSTIC EMISSIONS FROM PARTIAL DISCHARGES IN OIL-IMMERSED POWER TRANSFORMERS							BALLOTTING WORKING GROUP
NO PAR YET	DIELECTRIC TESTS	L. B. WAGENAAR	HOWELLS E.	/ /	/ /	0	(614)223-2259	SUBMIT PAR AS SOON AS POSSIBLE

COORDINATION ACTIVITIES OF THE IEEE/PES TRANSFORMERS COMMITTEE — DATE: 01/10/96
ATTACHMENT 2 — PAGE NO: 1 OF 4

PROJECT NO. / DATE	TITLE	PES COM.	CONTACT IN PES COMMITTEE.	CONTACT PHONE NO.	TRANSFORMERS COMMITTEE COORDINATOR	STATUS OF DOCUMENT SUBCOMMITTEE TR. COM.	COORD. PHONE
P1248	GUIDE FOR THE COMMISSIONING OF ELECTRICAL SYSTEMS IN HYDROELECTRIC POWER PLANTS						
12/06/90		ED&PG	LOUIS A. TAUBER	503-326-2323	D. A. GILLIES	WEST COAST	503-622-4847
P420	STANDARD FOR THE DESIGN AND QUALIFICATION OF CLASS 1E CONTROL BOARDS, PANELS, AND RACKS USED IN NUCLEAR GENERATING STN					INFORMATION COPY	
11/05/94		NPE	M. S. ZAR	312-269-2222	L. W. PIERCE	INSULATION LIFE	706-291-3166
NEW	MEASUREMENT OF POWER AT LOW POWER FACTOR						
02/15/94		PSIM	EDDY SO	613-993-2660	W. R. HENNING	PERFORMANCE CHARACTERISTICS	414-547-0121
NEW	GUIDE FOR VOLTAGE AND PHASING DETECTORS FOR USE IN HV SYSTEMS IN ELECTRIC POWER UTILITIES						
03/04/94		PSIM	PETER H. REYNOLDS	215-646-9200	G. H. VAILLANCOURT	STANDARDS	514-652-8515
P 4	STANDARD TECHNIQUES FOR HIGH-VOLTAGE TESTING					JUST PUBLISHED	
02/02/89		PSIM	TERRY McCOMB	613-990-5826	G. VAILLANCOURT	DIELECTRIC TESTS	514-652-8515
P 62	GUIDE FOR DIAGNOSTIC OF POWER APPARATUS					DRAFT PUBLISHED IN C57 COLL.	
03/17/94		PSIM	DAVID TRAIN	617-926-4900	R. A. VEITCH	STANDARDS	905-731-9178
P 454	PARTIAL DISCHARGE MEASUREMENTS					WILL ADOPT IEC-270	
03/31/94		PSIM	BARRY WARD	215-646-9200	G. H. VAILLANCOURT	STANDARDS	514-652-8515
P1122	DIGITAL RECORDERS FOR MEASUREMENTS IN HIGH VOLTAGE IMPULSE TESTS					APPROVED BY SB 03/17/94	
12/03/92		PSIM	T. R. McCOMB	613-990-5826	BERTRAND POULIN	DIELECTRIC TESTS	408-957-8326
P1223	POWER SYSTEM DIGITAL TESTING TECHNIQUES						
08/17/89		PSIM	T. R. McCOMB	613-990-5826	R. MINKWITZ, SR.	DIELECTRIC TESTS	617-828-3241
P1304	CURRENT MEASURING SYSTEMS WHICH USE OPTICAL TECHNIQUES						
06/18/92		PSIM	T. R. McCOMB	613-990-5826	J. N. DAVIS	INSTRUMENT TRANSFORMERS	404-393-9831
PC37.107	STANDARD FOR DIGITAL PROTECTIVE RELAY INTERFACES					EVALUATING BALLOT RESULTS	
12/28/85		PSR	STIG L. NILSSON	408-335-9061	G. H. VAILLANCOURT	STANDARDS	514-652-8515

COORDINATION ACTIVITIES OF THE IEEE/PES TRANSFORMERS COMMITTEE — DATE: 01/10/96
ATTACHMENT 2 — PAGE NO: 2 OF 4

PROJECT NO. / DATE	TITLE / PES COM.	CONTACT IN PES COMMITTEE.	CONTACT PHONE NO.	TRANSFORMERS COMMITTEE COORDINATOR	STATUS OF DOCUMENT / SUBCOMMITTEE TR. COM.	COORD. PHONE
PC37.108	GUIDE FOR THE PROTECTION OF NETWORK TRANSFORMERS				REAFFIRMED 1994	
09/28/84	PSR	THOMAS E. WIEDMAN	312-394-2593	D. H. MULKEY	UG TR & NETWORK PROTECTORS	415-973-4699
PC37.109	GUIDE FOR THE PROTECTION OF SHUNT REACTORS				REAFFIRMED 1993	
03/28/85	PSR	LAVERN L. DVORAK	303-231-1636	MIKE ALTMAN	PERFORMANCE CHARACTERISTICS	407-694-4975
PC37.110	GUIDE FOR THE APPLICATION OF CURRENT TRANSFORMERS USED FOR PROTECTIVE RELAYING PURPOSES				REVISION (D21) BALOTTED IN PSR	
05/31/90	PSR	GRAHAM CLOUGH	206-737-6912	J. E. SMITH	INSTRUMENT TRANSFORMERS	919-827-4286
PC37.91	GUIDE FOR PROTECTIVE RELAY APPLICATION TO POWER TRANSFORMERS					
03/19/92	PSR	MIRIAM SANDERS	919-856-2457	RON BARKER	PERFORMANCE CHARACTERISTICS	804-257-4671
PC37.97	GUIDE FOR PROTECTIVE RELAY APPLICATION TO POWER SYSTEM BUSES				ANSI APPROVED 05/20/91	
12/10/87	PSR	STEVE CONRAD	505-848-2642	JOHN N. DAVIS	INSTRUMENT TRANSFORMERS	404-393-9831
PC57.13.1	GUIDE FOR FIELD TESTING OF RELAYING CURRENT TRANSFORMERS				REAFFIRMED 1992	
12/31/80	PSR	ARUN G. PHADKE	703-231-7029	JOHN N. DAVIS	INSTRUMENT TRANSFORMERS	404-393-9831
C62.62	PERFORMANCE CHARACTERISTICS FOR SURGE PROTECTIVE DEVICES CONNECTED TO LOW VOLTAGE AC POWER CIRCUITS				RESOLVING NEGATIVE BALLOTS	
03/21/91	SPD	E. GALLO		MAHESH P. SAMPAT	DIELECTRIC TESTS	704-462-3226
PC62.11	STANDARD FOR METAL-OXIDE SURGE ARRESTERS FOR AC POWER CIRCUITS				NEW PAR 6/14/94	
06/14/94	SPD	R. M. SIMPSON	919-836-7059	W. A. MAGUIRE	DIELECTRIC TESTS	501-377-4273
PC62.2.01	APPLICATION GUIDE FOR SURGE PROTECTION OF ELECTRIC GENERATING PLANTS					
06/01/84	SPD	G. L. GAIBROIS	313-237-9332	VACANT	DIELECTRICC TESTS	
PC62.22	GUIDE FOR APPLICATION OF METAL OXIDE SURGE ARRESTERS FOR AC SYSTEMS				INCLUDE DIST. TRANSFORMER	
12/02/93	SPD	J. WOODWORTH	716-375-7270	ROBERT DEGENEFF	DIELECTRIC TESTS	518-276-6367
PC62.42	GUIDE FOR THE APPLICATION OF LOW-VOLTAGE SURGE PROTECTIVE DEVICES				REVISED PAR 9/22/94	
07/18/94	SPD	R. DAVIDSON JR.		MAHESH P. SAMPAT	DIELECTRIC TESTS	704-462-3226

COORDINATION ACTIVITIES OF THE IEEE/PES TRANSFORMERS COMMITTEE
ATTACHMENT 2

DATE: 01/10/96
PAGE NO: 3 OF 4

PROJECT NO. / DATE	TITLE / PES COM.	CONTACT IN PES COMMITTEE.	CONTACT PHONE NO.	TRANSFORMERS COMMITTEE COORDINATOR	STATUS OF DOCUMENT / SUBCOMMITTEE TR. COM.	COORD. PHONE
NEW	GUIDE FOR RECOMMENDED ELECTRICAL CLEARANCES AND INSULATION LEVELS IN AIR INSULATED SUBSTATIONS				APPLYING FOR PAR	
02/20/95	SUBS	RICHARD COTTRELL	517-788-0817	G. VAILLANCOURT	STANDARDS	514-652-8515
P 693	RECOMMENDED PRACTICE FOR SEISMIC DESIGN OF SUBSTATIONS				NEW PAR 12/93	
09/18/90	SUBS	RULON FRONK	213-481-3327	DAVID BRUCKER	WEST COAST	415-692-4431
P 979	GUIDE FOR SUBSTATION FIRE PROTECTION				MUST COMPLETE IN 1994	
06/18/92	SUBS	A. J. BOLGER	604-663-2879	D. W. SUNDIN	WEST COAST	414-524-3221
P 980	GUIDE FOR THE CONTAINMENT AND CONTROL OF OIL-SPILLS IN SUBSTATIONS				GUIDE EXTENDED TO 12/94	
09/17/92	SUBS	RICHARD G. COTTRELL	517-788-0817	F. GRYSZKIEWICZ	INSULATING FLUIDS	617-926-4900
P1268	GUIDE FOR INSTALLING TEMPORARY SUBSTATIONS				D1 READY FOR WG COMMENTS	
03/30/91	SUBS	SHASHI G. PATEL	404-362-5386	D. A. GILLIES	WEST COAST	503-622-4847
P1303	GUIDE FOR STATIC VAR COMPENSATOR FIELD TESTS				APPROVED BY SB 06/94	
09/17/92	SUBS	PHILIP R. NANNERY	914-577-2591	R. F. DUDLEY	DRY TYPE	416-298-8108
P1291	GUIDE FOR PARTIAL DISCHARGE MEASUREMENTS IN POWER SWITCHGEAR				ANSI APPROVED 08/30/93	
10/22/91	SWGR	E. F. VEVERKA	414-835-1544	G. H. VAILLANCOURT	STANDARDS	514-652-8515
P1325	RECOMMENDED PRACTICE FOR REPORTING FIELD TROUBLE DATA FOR POWER CIRCUIT BREAKERS				INFORMATION COPY REQUESTED	
03/17/92	SWGR	D. M. LARSON	203-634-5739	G. H. VAILLANCOURT	STANDARDS	514-652-8515
PC37.04h	MECHANICAL LOADING REQUIREMENTS OF CIRCUIT BREAKER TERMINALS				SUPPLEMENT APPROVED 1991	
09/28/90	SWGR	GEORGE R. HANKS	615-751-4020	LOREN B. WAGENAAR	BUSHINGS	614-223-2259
PC37.10	GUIDE FOR DIAGNOSTICS AND FAILURE INVESTIGATION OF POWER CIRCUIT BREAKERS				DRAFT IN REVISION IN WG	
05/01/91	SWGR	L. ROLANDO SAAVEDRA	504-363-8765	WALLACE B. BINDER JR.	PERFORMANCE CHARACTERISTICS	216-384-5625
P 656	STANDARD FOR THE MEASUREMENT OF AUDIBLE NOISE FROM OVERHEAD TRANSMISSION LINES				PUBLISHED 12/92	
03/08/91	T&D	JAMES R. STEWART	518-395-5025	ALAN M. TEPLITSKY	AUDIBLE SOUND AND VIBRATION	212-460-4859

COORDINATION ACTIVITIES OF THE IEEE/PES TRANSFORMERS COMMITTEE — DATE: 01/10/96

ATTACHMENT 2 — PAGE NO: 4 OF 4

PROJECT NO. / DATE	TITLE	PES COM.	CONTACT IN PES COMMITTEE.	CONTACT PHONE NO.	TRANSFORMERS COMMITTEE COORDINATOR	STATUS OF DOCUMENT SUBCOMMITTEE TR. COM.	COORD. PHONE
P 957 09/17/92	GUIDE FOR CLEANING INSULATORS	T&D	WILLIAM L. GIBSON	415-973-3747	L. B. WAGENAAR	OLD GUIDE EXTENDED TO 12/94 BUSHINGS	614-223-2259
P1030.3 12/05/91	GUIDE FOR SPECIFICATION OF HVDC PERFORMANCE - PART III, DYNAMIC PERFORMANCE	T&D	LEWIS VAUGHAN	514-652-8457	WILLIAM N. KENNEDY	DISCUSSING DRAFT IN WG HVDC CONV. TR & SMOOTHING REAC	317-286-9387

COORDINATION ACTIVITY OF IEEE/PES TRANSFORMERS COMMITTEE

LIST OF LIAISON REPRESENTATIVES

ATTACHMENT 3

DATE: 01/10/96

ACRONYM	SOCIETY/COMMITTEE	LIAISON REPRESENTATIVE	PHONE NUMBER
AIM/TSC	AUTOMATIC IDENTIFICATION MANUFACTURERS (TSC COMM.)		
CS	COMPUTER SOCIETY	G. S. ROBINSON	(508) 442-0248
ED&PG	ENERGY DEVELOPMENT AND POWER GENERATION COMMITTEE	C. A. LENNON JR.	(702) 293-8817
ED&PG	ENERGY DEVELOPMENT AND POWER GENERATION	R. E. HOWELL	(702) 794-5395
EEI	EDISON ELECTRIC INSTITUTE (T&D COMM.)	M. C. MINGOIA	(202) 508-5177
EI	ELECTRICAL INSULATIONS	E. A. BOULTER	(508) 546-3009
EM	ELECTRIC MACHINERY COMMITTEE	B. GUPTA	(416)231-4111
IAS	INDUSTRY APPLICATION SOCIETY	B. C. JOHNSON	(512) 396-5880
IAS/PSE	IAS/POWER SYSTEM ENGINEERING COMMITTEE	R. W. INGHAM	(313) 236-0130
IAS/REP	IAS/RURAL ELECTRIC POWER COMMITTEE	L. E. STETSON	(402) 472-2945
IC	INSULATED CONDUCTORS COMMITTEE	F. E. KIMSEY	(704) 373-6562
IEC/SC36A	IEC INSULATED BUSHINGS SUBCOMMITTEE 36A	BILL SAXON	(704) 382-6534
IEC/TC42	IEC HIGH VOLTAGE TESTING TECHNIQUES COMMITTEE 42	G. H. VAILLANCOURT	(514) 652-8515
IEC/USTAG	INTERNATIONAL ELECTROTECHNICAL COMMISSION	R. S. GIRGIS	(317) 286-9532
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION	J. GAUTHIER	(202) 457-8400
NPE	NUCLEAR POWER ENGINEERING COMMITTEE	M. S. ZAR	(312) 269-2222
PSC	POWER SYSTEM COMMUNICATIONS COMMITTEE	G. Y. ALLEN	(416) 259-7986
PSE	POWER SYSTEM ENGINEERING COMMITTEE	R. BEDNARIK	(212) 460-2943
PSIM	POWER SYSTEM INSTRUMENTATION MEASUREMENT COMMITTEE	T. R. MC COMB	(613) 990-5826
PSRC	POWER SYSTEM RELAYING COMMITTEE	R. W. HAAS	(513) 231-2584
SCC14	COORD. COM. ON QUANTITIES UNITS AND LETTER SYMBOLS	B. BARROW	(703) 285-5444
SCC4	COORDINATING COMMITTEE ON THERMAL RATING	P. E. ALEXANDER	(219) 458-4576
SPD	SURGE PROTECTIVE DEVICES COMMITTEE	J. B. POSEY	(216) 887-5129
SUBS	SUBSTATIONS COMMITTEE	GARY ENGMANN	(407) 419-3521
SWGR	SWITCHGEAR COMMITTEE	D. F. PEELO	(604) 528-3034
T&D	TRANSMISSION AND DISTRIBUTION COMMITTEE	C. KRISHNAYA	(514) 652-8342
TC	TRANSFORMERS COMMITTEE	G. H. VAILLANCOURT	(514) 652-8515
TSC	TECHNICAL SYMBOLOGY COMMITTEE (PART OF AIM)		

IEEE/PES TRANSFORMERS COMMITTEE ATTENDANCE STATISTICS

GROUPS	Cleveland Oct. 1992	Portland Mar. 1993	St. Pete Nov. 1993	Dallas Mar. 1994	Milwaukee Sep. 1994	Kansas City Apr. 1995	Boston Nov. 1995		MAX	AVG
SC INSTRUMENT TRANSFORMERS	26	21	28	21	13	13	18		28	20
WG Test Req Instr Transf >115 kVA					22	30	22		30	25
WG Revision of C57.13					11	13	20		20	15
SC INSULATING FLUIDS	61	57	62	50	44	61	58		62	56
WG Gas Analysis During Factory Tests		57	62		44	61	58		62	56
WG Gas Analysis Silicone Transformers					44	61	58		61	54
SC INSULATION LIFE	138	83	60	63	45	49	57		138	71
WG Guides for Loading	70	69	73	61					73	68
WG Thermal Eval. of Distr. and Power Transf.	32	38	35	11					38	29
WG Thermal Tests	32	34	39	30	58	34	21		58	35
TF Revision of Temperature Test Code					20	22	19		22	20
TF Thermal Duplicate				27	31		26		31	28
TF Hottest Spot Temp. Rise				31	36	44	52		52	41
WG High Temperature Insulation	60	55	58	52	48	50	46		60	53
SC PERFORMANCE CHARACTERISTICS	69	60	97	83	93	88	99		99	84
WG Loss Tolerance and Measurement	38	39	32	35	45	36	34		45	37
TF Loss Measurement Guide					16				16	16
TF Low Power Factor Measurements					33				33	33
WG LTC Performance Requirements	37	38	37	37	41				41	38
WG PCS Rev. C57.12.00				20	21	38	29		38	27
WG PCS Rev. C57.12.90 Part I				15	19	15	23		23	18
WG PCS Rev. C57.12.90 Part II							5		5	5
WG Revision C57.110		38	32	35	30	39	40		40	36
WG Semi-Conductor Rectifier Transformers	23	31	23	23	22	29	33		33	26
TF Survey GSU Transf Failures					16	18	33		33	22
SC STANDARDS				13	12	17	14	*	17	14
WG Continuous Revision C57.12.00						15	15	*	15	15
WG Continuous Revision C57.12.90						15	15	*	15	15
WG Diagnostic Field Testing of Transf					21	37	29	*	37	29
SC UNDERGROUND TRANSFORMERS AND NETWORK PROTECTORS	17	17	19	20	19	15	12		20	17
WG Three-Phase Underground Transfs.	14	9	16	16	16	10	13		16	13
WG Liquid-Filled Sec. Network Transfs.	17	16	15	16	15	15	15		17	16
WG Secondary Network Protectors	19	13	20	17	13	13	13		20	15
WG Dry-Type Network Transfs.	15	18	12	10	12	6	9		18	12
SC WEST COAST	14					26			26	20
WG Consolidation of Installation Guides									0	0
WG Phase Shifting Transformers						15	18		18	17
WG Seismic Guide									0	0
WG Loss Evaluation Guide									0	0
WG Fire Protection									0	0

NOTE: Data maintained for four years only.

* = estimated

filename=tcattend.xls

IEEE/PES TRANSFORMERS COMMITTEE ATTENDANCE STATISTICS

GROUPS	Cleveland Oct. 1992	Portland Mar. 1993	St. Pete Nov. 1993	Dallas Mar. 1994	Milwaukee Sep. 1994	Kansas City Apr. 1995	Boston Nov. 1995		MAX	AVG
Committee Registration: Members and Guests	245	213	283	247	275	286	272		286	260
Spouses	40	48	97	43	55	45	51		97	54
Luncheon	120	112		125	149	158	165		165	138
SC ADMINISTRATIVE	18	16	21	20	22	22	20		22	20
SC AUDIBLE NOISE AND VIBRATION	0	26		29	32	18	26		32	22
SC BUSHINGS	22	17	18	39	36	35	32		39	28
WG Bushing Application Guide	27	21	19	22	23				27	22
TF Draw Lead Bushings						18	25		25	22
WG DC Applications of Bushings	12	17	13	17	19	21	19		21	17
WG Revision C57.19.01	13	12	13	22	23	32	30		32	21
SC DIELECTRIC TESTS	104	88	98	79	84	99	71		104	89
WG Revision of Dielectric Tests	58	40	60	53	56	40	39		60	49
TF on Revision of the Induced Test		25	33	38	30	48	28		48	34
TF Metal Oxide Surge Arrester Coordination	27	27	35	25	35	31	14		35	28
WG Rev. Dielectric Tests on Distr. Transf.	19	17			16	15	14		19	14
TF Rev. Distr. Impulse Guide					17	19	18	*	19	18
WG Diagnostic Field Testing and Monitoring							64		64	64
WG Partial Discharge Tests	40	66	28	23	27		27		66	35
SC DISTRIBUTION TRANSFORMERS	35	35	52	47	49	48	44	*	52	44
WG Overhead Type Distr. Transfs. C57.12.20	23	23	35	34	34	30	30	*	35	30
WG Single-Phase Submersible C57.12.23					15	30	23	*	30	23
WG Single-Phase Deadfront Padmount C57.12.25	28	28	28	30	28	30	29	*	30	29
WG Bar Coding				22	30	35	29	*	35	29
WG Loss Evaluation				44	57	40	47	*	57	47
WG Electronic Data Transmittal				27	36	35	33	*	36	33
WG Combination of C57.12.22 and .26				27	28	30	28	*	30	28
WG Step-Voltage and Induction Regs C57.15					25	40	33	*	40	33
SC DRY-TYPE TRANSFORMERS	26	39	38	33	41	45	37	*	45	37
WG Test Code C57.91	25	31	27	24	28		27	*	31	27
WG Dry-Type Reactors	9	12	7	7	12	13	10	*	13	10
WG Dry-Type Reactors - HVDC Smoothing			8	5	10	6	7	*	10	7
WG Dry-Type Thermal Eval. and Flammability	16	26	20			20	21	*	26	21
WG Dry-Type General Requirements C57.12.01			31	21	21	36	27	*	36	27
WG Insulation Req. for Specialty Transf.	11	6	11	8	10	10	9	*	11	9
WG Cast Coil Loading Guide	19	30	17	17	16	24	21	*	30	21
WG Hot Spot Diferentials			27	16	31	38	28	*	38	28
SC HVDC CONVERTER TRANSFORMERS AND REACTORS	13	19	17		15	13			19	15

NOTE: Data maintained for four years only.

* = estimated

PLEASE RETURN THIS FORM TO:

RONA KERSHNER
IEEE STANDARDS OFFICE
445 Hoes Lane
P.O. Box 1331
Piscataway, NJ 08855-1331
FAX (908) 562-1571

The Working Group requests that NESCOM take the following action with regard to

PAR # _____.

[ ] The Working Group wishes to withdraw the PAR (Note: This requires confirmation by the Sponsor).

[ ] The Working Group wishes to revise the PAR (Note: This requires submission by Sponsor) as follows:

[ ] A revised PAR is attached
[ ] A revised PAR will be provided by _____ (date)

[ ] The Working Group requests that NESCOM extend the lifteime of the PAR to June, 1997 with the expectation that the Working Group will submit the work to REVCOM prior to that date.

[ ] The Working Group requests exemption of the PAR from the four-year rule for the following reason: (Reason provided by the Working Group or Sponsor).

Comments:

Signed: _____
Working Group Chair or Sponsor Chair as appropriate

Phone: _____

Attachment 6

IEEE STANDARDS BOARD

PROJECT AUTHORIZATION REQUEST (PAR) FORM

1. Sponsor Date of Request: _____	2. Assigned Project Number: _____ *Confer with staff*	3. PAR Approval Date: _____ *Leave blank*

4. PROJECT TITLE, COPYRIGHT AGREEMENT, AND WORKING GROUP FOR THIS PROJECT

I will write/revise a Standards Publication with the following TITLE *(Check only one, Spell out all acronyms)*

- ❑ STANDARD FOR (Document stressing the verb "SHALL.")
- ❑ RECOMMENDED PRACTICE FOR (Document stressing the verb "SHOULD.")
- ❑ GUIDE FOR (Document stressing the verb "MAY.")

TITLE: _____

_____

_____

I hereby acknowledge my appointment as Official Reporter/W.G. Chair to the _____
(Name of Working Group)

In consideration of my appointment and the publication of the Standards Publication identifying me, at my option, as an Official Reporter, I agree to avoid knowingly incorporating in the Standards Publication any copyrighted or proprietary material of another without such other's consent and acknowledge that the Standards Publication shall constitute a "work made for hire" as defined by the Copyright Act, and, that as to any work not so defined, I agree to and do hereby transfer any right or interest I may have in the copyright to said Standards Publication to IEEE.

NAME: _____ DATE: _____
(Signature of Official Reporter/W.G. Chair)

Type or print name of Working Group Chair: _____

Title: _____ IEEE Member No: _____

Company: _____ Telephone: _____

Address: _____ Fax: _____

City: _____ State: _____ ZIP: _____ E-mail: _____

5. Describe This Project: *(Choose ONE from each group below.)*

(a) MODIFICATION of an existing PAR. ❑ YES ❑ NO
(Indicate PAR number/approval date.) _____

(b)
- ❑ NEW STANDARD
- ❑ REVISION of an existing standard. (Indicate standard number and year.) _____
- ❑ SUPPLEMENT to an existing standard. (Indicate standard number and year.) _____

(c)
- ❑ FULL USE *(5-year life cycle)*
- ❑ TRIAL USE (2-year life cycle)

6. Scope of Proposed Project: *(What is being done, including the technical boundaries of the project.)*

REV. 1/95

Attachment 6

PROJECT AUTHORIZATION REQUEST (PAR)

(CONTINUED)

7. **Purpose of Proposed Project:** *(Why is it being done, including the intended user(s) and benefits to the user(s).)*

8. **Sponsor:** *(Give full name; spell out all acronyms.)*

Society/Committee: _____

9

(a) Are you aware of any patents, copyrights, or trademarks relevant to this project?
❑ YES *(Attach an explanation.)* ❑ NO ❑ DO NOT KNOW

(b) Are you aware of any other standards or projects with a similar scope?
❑ YES *(Attach an explanation.)* ❑ NO ❑ DO NOT KNOW

(c) Is this standard intended to form the basis of an international standard?
❑ YES *(Attach an explanation.)* ❑ NO ❑ DO NOT KNOW

(d) Is this project intended to focus on health, safety, or environmental issues?
❑ YES *(Attach an explanation.)* ❑ NO ❑ DO NOT KNOW

10. **Proposed Coordination/Recommended Method of Coordination**
(Coordination is accomplished by the following: Circulation of Drafts or Liaison Membership or Common Membership.)

(a) **Mandatory Coordination:**
SCC 10 (IEEE Dictionary) and IEEE Staff Editorial Review — Circulation of Drafts
SCC 14 (Quantities, Units, and Letter Symbols) — Circulation of Drafts

(b) **IEEE Coordination Requested by Sponsor:** *(Use additional page if necessary.)*
If you believe your project will require a Registration Authority, please list IEEE RAC *(refer to Working Guide.)*
(If no coordination is required, please attach an explanation.)

COORDINATION	METHOD OF COORDINATION		
	❑ circ./drafts	❑ liaison memb.	❑ common memb.
	❑ circ./drafts	❑ liaison memb.	❑ common memb.
	❑ circ./drafts	❑ liaison memb.	❑ common memb.
	❑ circ./drafts	❑ liaison memb.	❑ common memb.
	❑ circ./drafts	❑ liaison memb.	❑ common memb.

(c) **Additional Coordination Requested by Others:** *(Leave blank — To be completed by the Standards Staff.)*

11. **Submitted By:** *(This must be the Sponsor Chair or the Sponsor's Liaison Representative to the IEEE Standards Board.)*

Signature of Submitter: _____ Date: _____ IEEE Member No. _____

Name: _____ Title: _____

Company: _____ Telephone: _____

Address: _____ Fax: _____

City: _____ State: _____ ZIP: _____ E-mail: _____

DO NOT WRITE BELOW THIS LINE

Signature IEEE Officer: _____ Date _____

Title: _____

Attachment 7

SPAsystem™

Request for Services Form v. 2.0

To make use of any SPAsystem services, please complete this form and fax it (and any separate sheets) to the attention of the SPAsystem Administrator at 908-562-1571, or mail the package to

SPAsystem Administrator, IEEE Standards
445 Hoes Lane
Piscataway, NJ 08855-1331 (USA)

Within five business days, we will let you know when you can expect the services to be available.

> *NOTE: This form should be completed and signed by the person who will be the SPAsystem Liaison for the Working Group and any associated subgroups.*

1. General Information

a. Project number: _____ **b.** WG Liaison: _____

c. Phone: _____ **d.** Fax: _____ **e.** e-mail: _____

f. *How will your group access the SPAsystem? (check one)*

_____ dial-up lines (modem) _____ Internet _____ both

g. *On a separate sheet, please list the names of the WG members who would like accounts on the SPAsystem, including e-mail addresses (if any), mailing addresses, and voice and fax numbers.*

2. File transfer

a. *How would you like to exchange files among your WG members? (check one or both)*

_____ bulletin board (available by dialup and Internet) _____ ftp (available by Internet)

b. *On a separate sheet, please provide a rough estimate of file-transfer volume; e.g., how many files at any given time, average file size, how many transfers per day/week, etc.*

3. BBS

a. *Please list the directories you would like to have created, and indicate their position in the directory hierarchy — for example,*

```
STD_000_MAIN_DIRECTORY (public)
      STD_000_ANNOUNCEMENTS (public)
      STD_000_ACTIVE_FILES (private)
            STD_000_DRAFT_1 (private)
```

In this example, each line is a separate subdirectory, each indent to the right indicates a deeper position in the hierarchical tree, and each directory is designated either public (anybody can read) or private (only WG members can read). Please use this model to create your directory structure on a separate sheet.

4. FTP

Please use the model in the previous section (3) to list the directory names and structure you would like available by ftp. If you would like files to exist on both the BBS and the ftp area, and if you would like the directory setup to be

the same for both, please check "same as BBS" below. Otherwise, please use a separate sheet to list the directories you would like.

_____ same as BBS _____ see separate ftp sheet

5. Electronic mail

a. Reflectors: *An e-mail reflector is a named list of e-mail addresses; sending a message to the name of the list (stds-1123@ieee.org, for example) will automatically send that message to all the addresses on the list. For each reflector, please provide the following information on a separate sheet of paper:*

- suggested name of reflector
- list of e-mail addresses for the reflector (please, only addresses with proper upper and lower case):

b. Personal e-mail: *As part of the setup, each WG member is given an account. For users with no other e-mail account, this login provides an* ieee.org *address. For WG members who already have an e-mail address elsewhere, we can forward all SPAsystem e-mail to that address if the user would prefer.*

On the sheet for Question 1g, please mark the e-mail addresses of those users who would like their SPAsystem e-mail forwarded to a different location. For example:

```
Teresa Edison ..... t.edison@rutgers.edu
Larry Gerber
Evan Costello ..... e_costello_H5dfy@warner.com
```

6. World Wide Web

a. *All postings on our WWW server are public. Before a file can be posted, it must be put into a format called "HTML," the native format for the Web. Please check one of the following statements:*

____ No need for WWW services yet

____ Need WWW services; WG can produce its own HTML pages

____ Need WWW services; WG cannot produce its own HTML pages

7. Authoring

The SPAsystem document database will be based on the Standard Generalized Markup Language (SGML) format. For Working Groups that wish to create standards in SGML (either with an SGML-compliant text editor or through the manual tagging of text), a suite of authoring document type definitions (DTDs) and instructions is available. For Working Groups that cannot or do not wish to work directly in SGML, a stylesheet is available for use with popular word-processing packages.

a. Will you be creating your document directly in SGML? ____ yes ____ no

If you answered "no," you may skip to question (b).

1. Are you familiar with SGML concepts and syntax? ____ yes ____ no
2. Do you have an SGML-compliant text editor? ____ yes ____ no
3. If "no," do you have an SGML parser (such as SGMLS)? ____ yes ____ no

b. What word-processing software are you currently using to develop standards? _____

c. What computer platform will you be using (e.g., Windows, Macintosh, UNIX, etc.)? _____

8. Signature

By signing below, you will become the SPAsystem Liaison for your Working Group and any subgroups.

Signature:_____ Date:_____