

MINUTES OF THE IEEE/PES
TRANSFORMERS COMMITTEE

OCTOBER 17, 1984

BOSTON, MASSACHUSETTS

MINUTES OF THE IEEE/PES
TRANSFORMERS COMMITTEE
OCTOBER 17, 1984
BOSTON, MASSACHUSETTS

Members or Representatives Present - 82

Allen, B. F.	Lampe, W.
Allustiarti, R.	Liebich, R. E.
Alton, R. J.	Light, H. F.
Antalis, S. J.	Little, R.
Arjeski, E. H.	Long, L. W.
Arnold, J. C.	Lowe, R. I.
Bancroft, Roy	Manning, M. L.
Bellaschi, P. L.	McCormick, L. S.
Bennon, S.	McMillen, C. J.
Bergeron, J. J.	McNutt, D. J.
Borst, J. D.	McGill, J.
Cash, D. J.	Mehta, S. P.
Compton, O. R.	Melton, N. J.
Cook, Sr., F. W.	Millian, C.
Corkran, J.	Minkwitz, Sr., R. E.
Douglas, D. H.	Norton, E. T.
Douglass, J. D.	Patel, B. K.
Dutton, J. C.	Pearce, H. A.
Ebert, J. A.	Perco, D.
Edwards, E. C.	Roach, D. A.
Ensign, R. L.	Robbins, C. A.
Evans, C. G.	Savio, L. J.
Falkowski, P. P.	Smith, L. R.
Farber, W. R.	Stein, W. W.
Fischer, H. G.	Stensland, L. R.
Foster, S. L.	Tanton, A. L.
Gabel, Jr., H. E.	Thomas, R. C.
Goldman, A. W.	Thomason, F. W.
Grubb, R. L.	Thompson, J. A.
Gunnels, G.	Traub, T. P.
Harlow, J. H.	Truax, D. E.
Heinrichs, F. W.	Uptegraff, Jr., R. E.
Highton, K. R.	Veitch, R. A.
Hoefler, P. J.	Wagenaar, L. B.
Honey, C. C.	Walton, J. W.
Huber, Jr., F.	Whearty, R. J.
Hurty, C.	Wrenn, W. E.
Iliff, G. W.	Wurdeck, A. C.
Jacobsen, R. G.	Yannucci, D. A.
Kappeler, C. P.	Yasuda, E. J.
Keller, O.	
Kelly, J. J.	

Members Absent - 27

Allan, D. J.
Bowers, G. H.
Brutt, F. J.
Chitwood, E.
Crofts, D.
Daniels, M. G.
Easley, J. K.
Forster, J. A.
Frydman, M.
Gardham, C. M.
Gillies, D. A.
Griffard, W. F.
Hall, G.
Hawkins, T. K.

Kline, A. D.
Lipscomb, T. G.
Margolis, H. B.
Matthews, J. W.
McCrae, G. G.
Miller, C. K.
Mitchell, C. E.
Moore, H. R.
Musil, R. J.
Shefka, D. E.
Stetson, R. B.
Weincek, S. A.
Wilks, A.

Guests - 36

Antweiler, J.
Aubin, J.
Barnard, D.
Binder, Jr., W. B.
Boettger, W.
Bryant, G.
Ericsson, E.
Fallon, D. J.
Gerth, J.
Goodavish, J. F.
Heath, D.
Hoesel, C.
Hollister, R. H.
Hunter, B. G.
Jonnatti, A. J.
Kennedy, S. P.
Kennedy, W.
Kluczynski, T. J.

Koenig, E.
Lackey, J. G.
Lane, E. R.
Lee, R. E.
McAlpin, J. T.
Mittleman, M. I.
Nay, J.
Nobile, P.
Northrup, S.
Osborn, S. H.
Rahangdale, R.
Reitter, G. J.
Shenoy, V.
Singh, P.
Thenappan, V.
Vaillancourt, G. ✓
Young, F. N.
Zazulak, T. J.

MINUTES OF MEETING
IEEE/PES TRANSFORMERS COMMITTEE
BOSTON, MASSACHUSETTS
OCTOBER 17, 1984

1.0 Chairman's Remarks and Announcements

Chairman Savio convened the meeting at 8:00 a.m. with members or their representatives and guests present. Appreciation was expressed to Russell Minkwitz for his excellent job in hosting the meeting. All attendees made self introductions.

2.0 Approval of Minutes of the Vancouver, British Columbia - April 4, 1984 Meeting

The minutes of the 4/4/84 meeting were approved as mailed.

3.0 Report of the Administrative Subcommittee - L. J. Savio (Appendix A)

3.1 Future Meetings

<u>Date</u>	<u>Hotel</u>	<u>Double</u>	
St. Louis	April 14-17, 1985	Stouffer's Riverfront	
Toronto	October 27-30, 1985	Delta Chelsea Inn	
Little Rock	April 6-9, 1986	Excelsior	4/7 - 4/11/86
Pittsburgh	October 12-15, 1986	William Penn	
Fort Lauderdale	Spring 1987 4-13-14-15		4/6-4/10/87
New Orleans	November 1-4, 1987	Monteleone	4/10-4/15/88

4.0 Report of PES Standards Coordinating Committee - D. A. Yannucci (Appendix B)

5.0 Subcommittee Reports

Appendix

Audible Noise and Vibration	-	R. E. Liebich	C.
Bushings	-	L. B. Wagenaar	D.
Dielectric Tests	-	L. S. McCormack	E.
Insulating Fluids	-	H. A. Pearce	F.
Dry Type Transformers	-	R. E. Uptegraff, Jr.	L.
Instrument Transformers	-	R. C. Thomas	
Insulation Life	-	C. J. McMillan	K.
Performance Characteristics	-	J. D. Borst	G.
Transformer Standards	-		J.
West Coast	-		

6.0 Liaison Reports

H.

7.0 Technical Papers

- D. A. Yannucci I.

8.0 Membership

Present membership stands at 110 (including the 2 new members listed below) new members, approved by the Administrative Subcommittee, were recognized.

They were: John Lackey, Ontario Hydro and Len Swenson, Bonneville Power Authority.

A discussion concerning the rules of membership and the possible class of "Emeritus Member" was discussed.

9.0 Old Business

None

10.0 New Business

Dr. Peter Belloschi presented comments and reminiscences of our industry for this Centennial year.

11.0 Meeting Adjourned.

Respectfully submitted,

Olin Compton
Secretary to the Committee

ADMINISTRATIVE SUBCOMMITTEE

The Administrative Subcommittee met at 7:00 PM on Monday, October 15, 1984 with 14 members and 2 guests present:

1. Introductions were made.
2. Minutes of the Vancouver meeting were approved as written.
3. A report of PES Standards activities is attached as Enclosure I.
4. A report of Technical Council Activities was presented by Mr. Savio, summarized as follows:
 - a. Each technical committee has been requested to review and update their Committee and Subcommittee scopes including present-day and advance technologies. This update should be sent to Jerry Hagge (Chairman of the Task Force on Technical Council Procedure and Organization) by June 1, 1985.
 - b. The PES president, C. L. Wagner, intends to publish an annual publication devoted to the review of new technical developments. Each Subcommittee was requested to provide the Chairman with their ideas on the subject as soon as possible. See Enclosure II.
 - c. The Power Engineering Education Committee has requested a liaison representative from each Technical Committee. Anyone interested in representing our committee contact the Chairman.
 - d. Mr. Harold J. Fielder, Liaison Representative from the Chapters Council, requested a list of speakers from each Technical Committee. His report also highlights other areas of interest which is attached as Enclosure III.
 - e. The outgoing Chairman of the Technical Council (John Anderson) presented a report on various subjects which is attached as Enclosure IV.
5. A review of IEEE Standards Projects Status was presented by L. R. Smith, see Enclosure V.
6. A review of ANSI Standards Status was presented by J. Dutton, see Enclosure VI.

7. Subcommittee Activity:
 - a. Work will resume on C57.93 by the West Coast Subcommittee.
 - b. The Bushing Subcommittee will handle all C76 bushing standards.
8. Liaison Vacancies
 - a. Standards Coordinating Committee No. 1
 - b. ANSI C84
9. Papers for Power Group Meetings reported by D. A. Yannucci, see Enclosure VIII.
10. Future Committee Meetings:

<u>Date</u>	<u>Location</u>	<u>Hotel</u>
4/14-17/85	St. Louis, MO	Stouffer's Riverfront
10/27-30/85	Toronto, Ontario	Delta Chelsea Inn
4/6-9/86	Little Rock, AK	Excelsior
10/12-15/86	Pittsburgh, PA	William Penn
Spring 1987	Ft. Lauderdale, FL	
11/1-4/87	New Orleans, LA	Monteleone

11. Two new members were approved by the ADSUBCOM:

John Lackey of Ontario Hydro, and
Len Swenson of Bonneville Power Authority
12. The ADSUBCOM approved the 1985-1986 officers which are as follows:

D. A. Yannucci - Chairman
Olin Compton - Vice Chairman
Bob Veitch - Secretary
13. Committee funancies were discussed by the Chairman and the ADSUBCOM and it was decided:
 - a. To maintain a meeting to meeting fund balance of about \$1,500.
 - b. The host of the meeting will receive these funds from the previous host and the funds will pass from host to host.
 - c. The hosts will establish a separate account for their meeting.

Report of PES Standards Co-Ordinating Committee Activities

D. A. Yannucci

The Standards Co-Ordinating Committee met on Monday, July 16, 1984.

Frank Denbrock handed out copies of the new color coded forms, i.e., blue for the SPARs and yellow for the submitter's working guide.

Discussion arose on the problem of those requesting coordination after the 30 day time period of a SPAR transmittal. While the time period is considered adequate, most felt that additional time could be allotted. However, it is important that the names of these late coordinators be included in the original SPAR in order to keep all parties informed. It was also mentioned that those individuals requesting coordination after the final ballot of a proposed standard would be required to wait until the next revision.

With the transition of the ANSI Committees to Accredited Standards Committees (ASC), the Chairman handed out a report, copy attached, of the status of these designated committees. You will note that some of the ANSI Committees will be disbanded. The transition is effective September 1, 1984.

Frank Denbrock mentioned that EEI has expressed interest in participating in the standards making activities of T&D. Should this materialize, the IEEE Standards Board would have to approve this request.

The Chairman had earlier contacted John Essel regarding the continuance of the "Standards Corner" articles for the PES Review. He agreed that we should continue the program. A tentative schedule was handed out for review by the committee coordinators.

The Chairman inquired about IEEE Liaison Representatives to Standards Organizations which were proposed in letters dated February 15, March 12 and May 23, 1984. Bert Stanleigh stated that these proposals have been approved.

The next meeting will take place during the 1985 Winter Power Meeting in New York.

Report on
Accreditation under the Accreditation Standards Committee Method

<u>Desig</u>	<u>Title</u>	<u>ASC (Secretariat)</u>	<u>Status (Secretariat)</u>	<u>IEEE Representation</u>
A92	Mobile Scaffolds, Towers, and Platforms	5/16/84 Scaffold Industry Association		PES
C2	National Electric Code		Application 4/13/84 (IEEE)	IAS/PES
C8	Insulated Wires and Cables		Application 2/8/84 (IEEE) NEMA	IAS/PES
C9	Magnet Wire		Application 2/8/84 (NEMA)	EI/Mag
C12	Electricity Metering		Intends to become ASC (IEEE/NBS)	IAS/PES
C16	Communications Electronic Equipment		Will disband (IEEE)	IM
C19	Industrial Control Apparatus		Application 2/8/84 (NEMA)	IAS/IE/PES
C29	Insulations for Electric Power Lines		Intends to become ASC (NEMA)	IAS/PES
C34	Static Power Converting Equipment		Status undecided; Converting to an ASC or disbanding (NEMA)	IAS
C37	Power Switchgear		Intends to become ASC (IEEE/NEMA)	IAS/PES
C40	Storage Batteries		Disband (IEEE)	PES

C42	Definitions of Electrical Terms	Disband (IEEE)	StB
C50	Rotating Electrical Machinery	Intends to become ASC (IEEE/NEMA)	IAS
C55	Standards for Capacitors	Intends to become ASC (IEEE/NEMA)	IAS/PES
C57	Transformers, Regulators, and Reactors	Intends to become ASC (IEEE/NEMA)	IAS/PES
C60	Standardization of Electron Tubes	Intends to operate under EIA Accredited Organization Method	ED
C62	Surge Arresters	Intends to become ASC (IEEE/NEMA)	PES
C63	Radio-Electrical Coordination	Intends to become ASC (IEEE)	EMC/PES
C64	Brushes for Electrical Machines	Application 4/2/84 (NEMA)	PES
C68	High Voltage Testing Techniques	Will disband (IEEE)	IAS/PES
C73	Attachment Plugs and Receptacles	Application 2/10/84 (NEMA)	IAS
C76	Apparatus Brushing Standardization	Will disband (IEEE)	PES
C78	Electric Lamps	Application 2/8/84 (NEMA)	IAS
C83	Components for Electronic Equipment	Intends to Operate under EIA Accredited Organization Method	CHMT/Mag/SU

C84	Preferred Voltage Rating for AC Systems and Equipment	Application 2/8/84 (NEMA)	IAS/PES
C89	Speciality Transformers	Status undecided (NEMA); LB re: transition to close shortly	IAS/PES
C92	Insulation Coordination	Intends to become ASC (IEEE/NEMA)	PES
C93	Power-Line Carrier Equipment and Coupling Capacitor Voltage Transformers	Status undecided (NEMA) LB re: transition to close shortly	PES
C94	Semiconductor Devices	Intends to operate under EIA Accredited Organization Method	ED/IAS
C95	Radio-Frequency Radiation Hazards	Intends to become ASC (IEEE/US Navy)	EMB/EMC/IM/MTT/VT
C97	Low-Voltage Fuses, 600 Volts or Less	Intends to become ASC (IEEE/NEMA)	IAS/PES
C107	Use and Disposal of Askarel and Askarel-soaked Materials in Electrical Equipment	Status undecided; considering converting to ASC or disbanding (NEMA)	PES
C119	Connectors for Electric Utility Applications	Application 2/8/84 (NEMA)	PES
C135	Pole Line Hardware	Intends to become ASC (NEMA)	PES
C136	Roadway Lighting Equipment	Intends to become ASC (NEMA)	IAS/PES

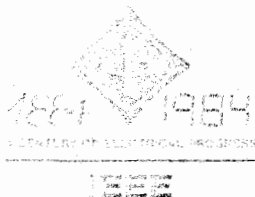
L1	Textile Safety Standards	Intends to become ASC (National Safety Council)	IAS
MC1	Programmable Test Measurement System	Will. disband (IEEE)	IM
N13	Radiation Protection	Intends to become ASC Health Physics Society	NPS/PES
N17	Research Reactors, Reactor Physics, and Radiation Shielding	Intends to operate under ANS Accredited Organization Procedure	NPS
N42	Nuclear Instruments	Intends to become ASC (IEEE)	NPS/PES
S4	Audio Engineering	Application 2/23/84 (Audio Engineering Society and EIA)	ASSP/MAG
X3	Information Systems	Application 3/6/84 (CBEMA)	StB/COMM/C
Z1	Quality Assurance	Application 5/22/84 (American Society for Quality Control)	R
Z244	Lockout Protection	Intends to become ASC (National Safety Council)	IAS/PES

Report on
Disbanded American National Standards Committees

<u>Desig</u>	<u>Title</u>	<u>Accredited Organization Committee</u>	<u>IEEE Representation</u>
A11	Standard for Lighting Factories, Work Places	IES	IAS
A17	Safety Standards for Elevators	ASME	IAS
A85	Security of Lighting of Outdoor Areas	IES	IAS
C72	Electric Water Heaters		IAS
MC105	Medical Electronics	ASTM	EMB
N19	Nonradiological Environmental Effects	ANS	NPS

Report on
American National Standards Committees
Not Yet Heard from re: Intention on Accreditation

<u>Desig</u>	<u>Secretariat</u>	<u>Title</u>	<u>Standards Under Jurisdiction of</u>	<u>IEEE Representation</u>
05	None	Specifications for Wood Poles	05.1, 05.2	PES
Z136	None	Safe Use of Lasers	Z136.1	EMB



POWER ENGINEERING SOCIETY

June 19, 1984

PLEASE REPLY TO:

J. W. Hagge
 Nebraska Public Power District
 P.O. Box 499
 Columbus, Nebraska 68601

Mr. L. J. Savio
 Consolidated Edison Company
 Four Irving Place
 New York, New York 10003

Dear Leo:

Subject: Update of Committee Scopes

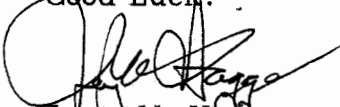
At the 1984 Winter Power Meeting in Dallas, the Technical Council approved a new Task Force on Technical Council Procedures and Organization. It is as Chairman of this Task Force that I am writing you.

One of the charges of the Task Force is to integrate PES Technical Operations into modern technologies in the most effective way. As a first step, we are requesting that each Technical Committee undertake a thorough review and update of the scopes of your main committee and each of your subcommittees. Include all present-day technologies and future technologies that you can think of. Feel free to propose new subcommittees for new technologies. Please have your revisions returned to me by June 1, 1985.

The Task Force will review, evaluate, and propose solutions to the Technical Council on all conflicts in scope or overlaps in committee activities. Following this, the Task Force will investigate possible restructuring of the Technical Council in its entirety. This will include new committees, transferring of subcommittees, and splitting up of present committees. The overall reporting relationships of the Technical Council will also be changed.

As you review your scopes, allow yourself to dream of what should be and then put it down in writing. Let's do a good job of modernizing PES and get involved in future technologies.

Good Luck.


 Jerry W. Hagge
 Chairman, Task Force on Technical Council
 Procedure and Organization

JWH:rs19/4

cc: J. G. Anderson
 M. I. Olken

- d. Pre-registration at a cost of \$20-30 will be tried for the St. Louis meeting. Those registering at the meeting (last registration) will pay an additional \$5.00.
 - e. The cost of the "Additude Adjustment Period" should be limited to about \$1,200.
14. Mr. McNutt reported on PES Awards, see Enclosure IX.
15. Other Business

I wish to thank all of you for your support during my term as Chairman. It has been a pleasure to serve as your chairman.

The meeting was adjourned at 10:15 PM.

Leo J. Savio
January 8, 1985



IEEE

POWER ENGINEERING SOCIETY

PLEASE REPLY TO:

1 River Road
 Building 2, Room 512
 Schenectady, NY 12345

Chapters Council Liaison Report
 PES Technical Council Meeting
 Seattle, Washington
 July 16, 1984

TO: Members of Technical Council

FROM: Harold J. Fiedler, Liaison Representative
 From Chapters Council

Gentlemen:

At the Dallas 1984 PES Technical Council Meeting, I presented a proposed Technical Council and Chapters Council Program Plan with the following objectives:

1. Develop technical programs and activities for use by local chapters;
2. Increase chapter participation in Technical Council activities.

The Technical Council approved the basic concepts of this plan. There are several items to be addressed in this report.

Chapter Program Activity Manual

I am pleased to report that with the help of the Technical Committees, our Chapters Program and Development Subcommittee, produced a Chapter Program Activity Manual. This manual was mailed to each Technical Committee Chairman on June 29, 1984. I had asked that each Technical Committee Chairman share this manual with his Vice Chairman.

There are several items in the manual worthy of mention:

1. Listing of 1984 Technical Committee Officers;
2. Tutorials and Special Publications;
3. Student Activities Programs (suggestions);
4. Videotape and Slide Presentation Package Programs;
5. Chapter programs with the subject and speaker categories by PES Technical Committee.

This manual will be of great value to our chapters. To be effective and remain current, I ask that each Technical Committee please provide me, under the direction of its Administrative Committee, a list of technical papers (and speakers) from the 1984 PES Summer Meeting which would be suitable for presentation at a local chapter meeting. Please use Exhibit No. 1 (Attachment No. 1) and Exhibit No. 4 (Attachment No. 2) for this purpose. This will permit the Chapters Council to keep the Chapter Program Activity Manual current and stimulate interest and membership in the Power Engineering Society.

PES Technical Committee Meetings

The May 1984 issue of the IEEE Power Engineering Review published a list of all Technical Committee Meetings for 1984 and 1985. This schedule of meetings (see Attachment No. 3) will be mailed to each PES Chapter with the objective of encouraging attendance at such meetings by local chapter members. To keep the schedule of meetings current, please complete Exhibit No. 3 (Attachment No. 4) and provide this information to me. I will see to it that this calendar of meetings will be mailed to the PES chapters by our Chapters Council.

National/Local Power Engineering Society

In the August 1984 issue of the Power Engineering Review, President Wagner emphasizes the importance that the Technical Council organization and the local chapter organizations need closer interaction in the following areas:

1. Access to technical programs and tutorials by local sections and chapters;
2. More support from local sections and chapters, on the national level, in the form of attendance, working committees, membership promotion, etc.

If the Technical Council will provide me with the information I addressed under "Chapter Program Activity Manual" and "PES Technical Committee Meetings," we will promote a closer working relationship between the local and national organizations. I am anxious to work with the Technical Council on these matters.

Student Membership

At the Dallas 1984 PES meeting, I reported on the need for a joint attack on the part of the Technical Council and Chapters Council to attract PES student members. President Wagner has recommended the following steps be taken to reverse the drop-off in student membership:

1. Remove the student impression that the power industry doesn't present new and exciting challenges.
2. Have each Technical Committee select two or three examples where new technology is being applied to provide improved solutions to new and old problems.

3. Compile the examples in item (2) above and prepare an article for the student publication "POTENTIALS" and awaken the students' interest in the power field.
4. Prepare a slide talk that can be presented to the Student IEEE Sections at one of their regular meetings.
5. Have one of our younger engineers write an article for POTENTIALS on what he or she is doing in the power field and why the power field plays a significant role in the progress of mankind.
6. Responsibility for carrying out the above steps would be as follows:
 - a. Each Technical Committee would prepare the basic material.
 - b. The magazine article would be done by the Power Engineering Education Committee or the Chapters Council Program and Development Committee.
 - c. Presentation of the slide talk would be handled by the Chapters Council.

The importance of the student membership matter is highlighted by a recent letter from Ms. Ilic-Spong to President Wagner. Please refer to Attachment No. 5. A summary of her letter is as follows:

1. Power system programs, relative to other electrical engineering areas, are either non-existent or poor;
2. Power engineering in universities is a "dying" area;
3. Undergraduate and graduate students for the power engineering programs are difficult to find;
4. Young faculty are giving up in the power engineering field.

These are harsh and disturbing comments.

The Chapters Council will be reviewing this matter at the 1984 Seattle meeting to develop ideas to reverse the downward direction in student membership. The Technical Council's help is needed! It is recommended that the Technical Committees prepare the basic material for this endeavor. Has anything been done by the Technical Committees in this area since the 1984 Dallas meeting? Please give me your inputs and comments.

Technical Committee Working Groups

A good way for PES members to become involved in Technical Committees is to become exposed to the activities of Technical Committee Working Groups. A list of these Working Groups, including their goals,

objectives and activities should be made known to the local chapters. Will each Technical Committee please complete Attachment No. 6 and provide this information to me? I will see to it that this information is disseminated by the Chapters Council.

This completes my report. Thank you for your attention.

Respectfully submitted,

Harold Fiedler

H.J. Fiedler
Liaison Representative
From Chapters Council

HJF/ems

Attachments

Exhibit No. 1
PES Speaker List
Technical Program

Technical Committee, SC or Working Group: _____

<u>Topic or Technical Paper</u>	<u>Speaker</u>	<u>Availability</u>	
		<u>Date(s)</u>	<u>Restrictions</u>
1.	Name: Address: Phone:		
2.			
3.			
n.			

Exhibit No. 4

PES Tutorials and Courses

Technical Committee, SC or Working Group: _____

Contact: Name _____

 Address _____

 Phone () _____

<u>Tutorial, Course or Topic</u>	<u>Resource Material</u>	<u>Remarks</u>
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IEEE Power Engineering Society Technical Committee Meetings

INSULATED CONDUCTORS

Contact: B. E. Smith, Virginia Electric and Power Co., P.O. Box 26,666, Richmond, VA 23261 (804) 771-3551

1984 November 12-14, St Petersburg, FL
1985 April 15-17, St. Louis, MO
1985 November 4-6, St Petersburg, FL

NUCLEAR POWER ENGINEERING

Contact: G. R. Leidich, Cleveland Electric Illuminating Co., P.O. Box 97, Perry, Ohio 44081 (216) 259-3737 ext 5246

1984 June 20-22, Charleston, SC
1984 November 14-16, San Antonio, TX

POWER ENGINEERING EDUCATION

Contact: A. J. Wood, Power Technologies Inc., P.O. Box 1058, Schenectady, NY (518) 374-1220

Committee meets during the Winter and Summer General meetings each year (See meetings schedule for dates)

POWER GENERATION

Contact: D. Diamant, Shawinigan Engineering Co. Ltd., P.O. Box 3010 Station B, Montreal, Que., Canada H3B 3L7, (514) 878-6158

Committee meets during the Winter and Summer General meetings and at the Joint Power Generation Conference (See meetings schedule for dates)

POWER SYSTEM COMMUNICATIONS

Contact: J. W. Hagge, Nebraska Public Power District, P.O. Box 499, Columbus, NB 68601 (402) 563-5271

1984 July 17-19, Seattle, WA (during Summer Meeting)
1984 October 23-25, San Diego, CA
1985 January 29-31, New York, NY (during Winter Meeting)
1985 July 16-18, Vancouver, BC (during Summer Meeting)

POWER SYSTEMS ENGINEERING

Contact: M. P. Bharvaraju, Public Service Electric and Gas Co., T14A P.O. Box 570, Newark, NJ 07101 (201) 430-6707

1984 July 18, Seattle (during Summer Meeting)
1984 October 28-31, Williamsburg, VA
1985 January 30, New York, NY (during Winter Meeting)

POWER SYSTEM INSTRUMENTATION AND MEASUREMENTS

Contact: P. H. Reynolds, Biddle Instruments, 510 Township Lines Road, Blue Bell, PA 19422 (215) 646-9200

Committee meets during the Winter and Summer general Meetings each year (See meetings schedule for dates)

POWER SYSTEMS RELAYING

Contact: W. A. Elmore, Westinghouse Electric Corp., 4300 Coral Ridge Drive, Coral Springs, FL 33065. (305) 752-6700 ext 2264

1984 May 22-24, Chicago, IL
1984 September 11-13, Boston, MA
1985 January 15-17, Sarasota, FL
1985 Mar 14-16, Albuquerque, NM
1985 September 17-19, Rockport, ME

ROTATING MACHINERY COMMITTEE

Contact: F. H. Grooms, Siemens-Allis, Inc., 4620 Forest Avenue, Norwood, OH 45212 (513) 841-3211

1985 Committee meets during the Winter General Meeting each year (See meetings schedule for dates)

STANDARDS COORDINATING

Contact: J. V. Bonucchi, Public Service of Indiana, 1000 East Main Street, Plainfield, IN 46168 (317) 838-1213

Committee meets during the Winter and Summer General Meetings each year. (See meetings schedule for dates)

SUBSTATIONS

Contact: W. J. Ackerman, Florida Power Corp., P.O. Box 14042 St Petersburg, FL 33733. (813) 384-7813

1984 April 29-May 3, Philadelphia, PA
1985 Late April-early May, Portland, OR
1986 Late April-early May, Phoenix, AZ

SURGE PROTECTIVE DEVICES

Contact: E. J. Yasuda, Bonneville Power Administration, P.O. Box 3621, Portland, OR 97208 (503) 230-4433

1984 April 24-27, Atlanta, GA
1984 September 25-28, Chattanooga, TN
1985 May 7-10, South Padre Island, TX

SWITCHGEAR

Contact: G. N. Lester, Chas. T. Main Inc., Southeast Tower, Prudential Center, Boston, MA 02199

1984 May 14-17, Philadelphia, PA
1984 September 24-27, Atlanta, GA
1985 April 29-May 2, Fort Lauderdale, FL

TRANSFORMERS

Contact: L. J. Savio, Consolidated Edison Co., 4 Irving Place, New York, NY (212) 460-4184

1984 April 1-4, Vancouver, B.C.
1984 October 14-15, Boston, MA
1985 April 14-17, St Louis, MO
1985 October 27-30, Toronto, Canada

TRANSMISSION AND DISTRIBUTION

Contact: J. J. Dougherty, EPRI, P.O. Box 10412 Palo Alto, CA 94303 (415) 855-2711

Committee meets during the Winter and Summer General Meetings each year. (See meetings schedule for dates)



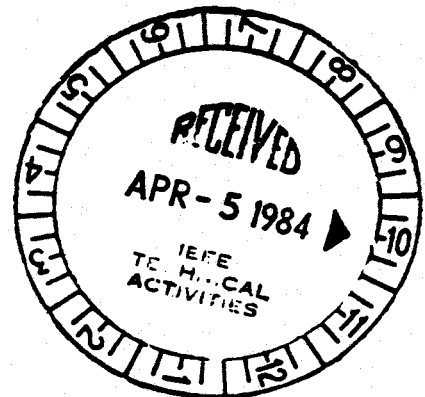
SCHOOL OF ELECTRICAL ENGINEERING

Cornell University

PHILLIPS HALL
ITHACA, NEW YORK 14853

ATTACHMENT NO. 5

April 2, 1984



Mr. c. L. Wagner
President of the
IEEE Power Engineering Society
345 East 47th Street
New York, NY 10017

Dear Mr. Wagner:

By now you have very likely forgotten our conversation at the last Winter Meeting in Dallas. At that time I had tried to give you some feedback on your new publication policies for the IEEE PAS Transactions papers. You advised me to write to you a letter regarding this. I would appreciate if you looked at this letter as some thoughts of a young professor in the area of power systems engineering. As you will see from it, I have concerns, that I would like to share with you, since I do not have the answers. The meeting on new publication policies just triggered me to think more about these problems.

Let me start by saying that this is my fourth year in academia, after having received my Ph.D. degree in the power systems area under Professor John Zaborszky at Washington University in St. Louis. (As a matter of fact I have come to this country from Europe to do my Ph.D. work under him, since he is world known in the area of control of power systems and have been very happy that I have done it.) Since my graduation, I have taught at the university, one year at Drexel University in Philadelphia, and two years at Cornell University in Ithaca. Because of the family situation (my husband did not get a long-term appointment at Cornell) I am due to my next move (hopefully last) to the University of Illinois at Urbana-Champaign, starting this fall. As you well know, all of these three schools are excellent engineering schools. I have been pushed, not by choice, into moving around but in the process of doing this I have learned that power system programs, relative to other electrical engineering areas, are either not existing or they are rather poor. One can very often hear a reaction when applying for a university job that power engineering area is a "dying" area. It is very hard for a new professor, who still

Mr. Wagner
Page 2
April 2, 1984

has many routes to choose at the beginning of the career to resist a temptation of transferring to a new area and doing research which is more in demand, or more "popular". The fact is that it is hard to find undergraduate and graduate students for power engineering programs. We have been rather successful in building a graduate program in power systems at Cornell, mainly by planning our graduate courses so that they have a strong emphasis of control and computer applications to power engineering. I have taught two graduate courses of this type at Cornell and am planning to do so in the future at the University of Illinois.

As a result of learning this I wanted to express in this letter my concern regarding the development of power engineering at the universities. I have also noticed a strong dissipation among the young faculty throughout the country; many of them have done their Ph.D. work very similar to mine, tried to develop their research and then given up! Part of the reason for this which I have heard from them is that it is very hard to publish academic type work in the PAS Transactions. I do not mean this letter to be offensive, but it is true that to get a positive response from the reviewers it sometimes takes too long. Potential authors need to know sooner what the status of their submitted papers is. I have personally managed to publish some results in the PAS Transactions and I am not giving up in the future. But, just to illustrate, my last paper I have submitted for a review is in the process of "postponing." Enclosed is the copy of the correspondence that I have received. Shouldn't I publish somewhere else?!

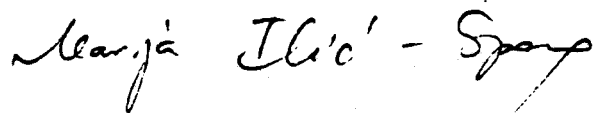
Let me finish by illustrating the situation of the power engineering programs in academia by one of my most recent experiences: Very recently the National Science Foundation (NSF) has established a five year research support for the most promising young scientists throughout the country called "Presidential Young Investigator Award." Enclosed is a copy of the description of the program for your reference. The results of the competition are out and among 100 scientists in engineering I believe that I was the only one to be awarded for the power systems work! I do not mean to emphasize anything personal by writing about this: Namely, it worries me that there are not that many young researchers in the area of power engineering in this country. There was just

Mr. Wagner
Page 3
April 2, 1984

one single award for electric power systems as a result! To me as a beginner it is almost scary to be in an area which is on its way down, according to many people. I personally find it very interesting and challenging and the award came, I believe, as a recognition of the way I perceive power engineering research. I would like to see more young people, both faculty and students, doing their research in power engineering since the future is theirs. After attending the meeting on new publication policies in Dallas I am even more concerned about the future of power engineering programs at universities. May be we do not need them and I do not see it!

Finally, let me say that I know that your time is very valuable and a long letter like this may not be most welcome. I have written it with the best intentions and would appreciate your feedback to it.

Sincerely,

A handwritten signature in cursive script that reads "Marija Ilic-Spong".

Marija Ilic-Spong

MIS/ls

Enc.

Exhibit No. 5

Technical Committee Working Groups

Technical Committee: _____

Working Group: _____

Contact: Name _____

 Address _____

 Phone () _____

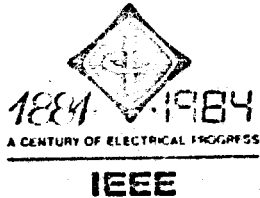
1. Goals, objectives, activities:

2. "Unsolved" or current problems:

a. _____

 : .
 :
 :'

b. _____



POWER ENGINEERING SOCIETY
TECHNICAL COUNCIL

Chairman
JOHN G. ANDERSON
General Electric Company
Building 5 - Room 306
1 River Road
Schenectady, NY 12345
(518) 385-2278

Vice Chairman
M. I. OLKEN
Gibbs & Hill, Inc.
11 Penn Plaza
New York, NY 10001
(212) 760-4482

Secretary
F. A. DENBROCK
Commonwealth Associates, Inc.
209 East Washington Avenue
Jackson, MI 49201
(517) 788-3800

CHAIRMAN'S REPORT
PES TECHNICAL COUNCIL MEETING
SEATTLE, WASHINGTON

JULY 16, 1984

To: Members of the Technical Council

Gentlemen:

Since our last meeting in Dallas, we have made progress in several key areas, but still have much to do. I would like to comment briefly on a few of the tasks ahead of us:

1. PUBLICATIONS

The closer we seem to get to an implementation of a revised publications policy, the more it tends to elude us. Our Publications Committee has the formidable task of creating a modernized set of PES publications that will best meet the needs of our membership, and doing this at the lowest possible cost consistent with good engineering and publications practices. This is still our #1 priority. It must be done very carefully, because a wrong move could easily make a shambles of our good intentions, and result in a loss of membership. On the other hand, a better set of technical publications can gain us new members and possibly reduce the cost to all of us of the publications we buy.

2. REORGANIZATION OF THE POWER GENERATION COMMITTEE

We have coming before us a proposed new scope and a new name for our Power Generation Committee. The intent is to have it assume a stronger and more visible role in energy conversion, energy policies and economics, energy technology conferences, and advanced "unconventional" energy systems development. It will play a major role in shaping the future of PES in energy policy and energy conversion technology. I urge the TC Committees to provide constructive support to this effort, and to help Dan Diamant and his committee speed this effort through the administrative process.

3. TC TASK FORCE ON PROCEDURES AND ORGANIZATION

At our last meeting it was agreed to discontinue our old Long Range Planning Task Force and to replace it with a more goal-oriented Task Force on Procedures and Reorganization. Jerry Hagge has agreed to serve as chairman of this new Task Force and is now seeking working members to make it effective. It's purpose is as follows:

- a. Keep Technical Council procedural guide updated and distributed to all committee chairmen.
- b. Propose procedures to streamline TC administration and review processes.
- c. Evaluate and propose solutions to the Technical Council for all conflicts in scope or overlaps in committee activities.
- d. Examine the basic structure of the Council and its technical committees and make proposals to the council for restructuring of any and all its components and to integrate PES technical operations into modern technologies in the most effective way.
- e. Measure the effectiveness of our various operations and report these measures to the TC chairman.

If you can help, call Jerry and volunteer.

4. IMPROVEMENT OF TECHNICAL SESSIONS

R. W. (Bob) Flugum is the new chairman of the TC Technical Sessions Improvement Committee. (In size and in function this is more like a Task Force than a Committee, and, perhaps should be designated as a Task Force). Our technical sessions can certainly stand improvement; in the past 100 years they seem to have changed very little. Bob Flugum needs your suggestions, and each technical committee should experiment with alternative ways of presenting the technical information it processes, and report all successes and failures to Bob.

5. OTHER FUTURE TC ACTIVITIES

Other activities that the Technical Council can promote under its new chairman include:

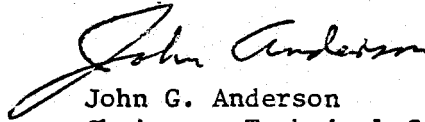
- a. Task Force on Future Technical Developments

Promote technical sessions on needed technology rather than what we already have.

- b. Restructure the Technical Council

This is my last meeting as Technical Council Chairman. It has been a privilege to work with all of you and I am grateful for the opportunity. Under your new chairman and vice-chairman, the Technical Council has the leadership to undergo sustained growth in the years ahead. Thanks for all your help.

Sincerely yours,



John G. Anderson
Chairman, Technical Council

JGA:ewa

REPORT
OF
THE STANDARDS SUBCOMMITTEE
IEEE TRANSFORMER COMMITTEE MEETING
BOSTON, MASSACHUSETTS
OCTOBER 15-17, 1984

My records have the subcommittee chairmen as listed below:

R. E. Uptegraff, Jr.	Dry-Type Transformers
J. D. Borst	Performance Characteristics
R. E. Liebich	Audible Sound and Vibration
R. M. Little	West Coast
L. S. McCormick	Dielectric Tests
C. J. McMillen	Insulation Life
H. A. Pearce	Insulating Fluids
L. R. Smith	Standards
R. C. Thomas	Instrument Transformers
Loren Waggenar	Bushing

The following is a summary of the activities and status of the various subcommittee projects as reported through October 15, 1984.

Project Status

PC57.12.00 - General Requirement for Liquid Immersed Distribution Power and Regulating Transformers

PC57.12.00 Table 6B - Revision of Dielectric Test Requirements for Distribution Transformers. This document is being balloted in the Transformer Committee. (No change)

C57.12.00, Section 5, and C57.12.90, Section 10 - Dielectric Tests for Transformers. Draft #4 was discussed at length in Vancouver and after several editorial changes is being re-balloted.

PC57.12.01 - General Requirements for Dry-Type Distribution and Power Transformers

Development of specific changes related to solid resin encapsulated coils is continuing. (No change)

PC57.12.91 - Test Code for Dry-Type Distribution and Power Transformers - Specific concerns to be worked on are partial discharge tests, thermal cycling tests, and insulation tests.

PC57.18.10 - Semi-Conductor Rectifier Transformer

A draft has been prepared for review. (No change)

- PC57.21 - American National Standard Requirements, Terminology and Test Code for Shunt Reactors
- This project is being discussed at the Task Force Level. Hope to get enough input in Boston to have draft ready for next meeting.
- PC57.93 - Guide for Installation of Liquid Immersed Power Transformers
- No report
- PC57.95 - Loading Guide for Regulators
- Approved by IEEE Standards Board March 22, 1984. Has been submitted to ANSI.
- PC57.96 - Guide for Loading Dry-Type Distribution and Power Transformers
- Draft #5 is in preparation to be balloted simultaneously in the Working Group and Dry-Type Transformer Subcommittee.
- C57.102 - IEEE Guide for Acceptance and Maintenance of Transformer Askarel in Equipment
- PAR sent back for revision. This project has been renumbered. Was P76. No progress reported. Will Henry Pearce bring this up-to-date?
- PC57.104 - Guide for the Detection and Determination of Generated Gases in Oil Immersed Transformers and their Relation to the Serviceability of the Equipment
- Further discussion of gas guide in preparation for sending out questionnaire.
- PC57.110 - Harmonic Load Current Heating of Transformers
- Draft #5 is being reviewed in the Working Group.
- PC57.111 - Guide for Acceptance and Maintenance of Silicone Liquid in Equipment
- Will review results of Draft #5 ballot in Boston.
- P21 - Revision of ANSI C76.1
- Draft #5 was balloted in the Subcommittee and Main Committee. Several negative ballots and comments to be resolved in Boston.
- P24 - Revision of ANSI C76.2
- Published in June 1984 as ANSI/IEEE 24.

- P65 - Thermal Evaluation of Ventilated Dry-Type Power and Distribution Transformers
Complete approval by ANSI BSR August 27, 1984.
- P93 - Transformer Impulse Tests (C57.98)
Approved by ANSI Subcommittee to be submitted to ANSI BSR.
- P262E - Revision of C57.12.90 Loss Tolerance and Measurement
P262E/D6 - Proposed addition to C57.12.90, Section 9.2.4.2. Corrections to Load Loss Measurements. Draft 6 being balloted in the Working Group. Returns due October 15, 1984.
P262E.1/D3 - Proposed revision of C57.12.90, Sections 8.1 and 8.2.2 (new). No load loss temperature correction. Still on hold pending verification of correction method. (No change)
P262E.2/D7 - Proposed addition to C57.12.90, Section 8.3.2.1 and deletion of Section 8.3.3. Voltmeter connection for no-load loss measurement. Being balloted in the Working Group with returns due October 15, 1984.
C57.12.90; 8.2.1 Assumed to be still waiting additional data. Need information as to status.
- P345 - Review of IEEE Std. 345-1972 Test Procedures for Thermal Evaluation of Oil Immersed Distribution Transformers (C57.100-1974)
Passed by Standards Board. Huber sent to Hansen on August 22 asking for ANSI ballot. New in ANSI C57.12.20 for action.
- P462C - Revision of C57.12.00, Section 5.9, Loss Tolerance and Measurements
Draft #3 still on hold pending resolution of correction method under P262E.1/D3. (No change)
- P462D - Revision of C57.12.00, Section 9.1. Wording of Ratio Tolerance.
Draft #4 failed in the Transformer Committee. Draft #5 is under development.
- P513 - Seismic Guide for Power Transformers and Reactors
Balloting completed. Final document ready for transmittal to IEEE Standards Board. (No report of change)

- P545 - Recommended Practice for Partial Discharge (Corona) Tests for Transformers
Still being discussed in working group. (No change)
- P546 - Revision of ANSI Requirements for Instrument Transformers C57.13-1978.
Draft #1 submitted to Transformer Committee for ballot. Due back October 12, 1984.
- P637 - Proposed Guide for the Reclamation of Insulating Oil and the Criteria for Its Use
Complete. Waiting for issue.
- P638 - Standard for Type Tests on Class 1E Transformers for Nuclear Power Generating Stations
The negative ballots received on draft #13 from NPEC SC-2 are being addressed.
- P670 - Switchgear and Transformers Working Group on Instrument Transformers for High-Voltage Circuit Breakers
New Chairman, John Reckleff of A.E.P., Columbus, Ohio has accepted chairmanship and will be starting this project up again.
- P731 - Revision of Guide for Loading Current Limiting Reactors, ANSI C57.99
Still looking for Task Force Chairman.
- P732 - Revision of Current Limiting Reactor Standards, ANSI C57.16
Jack McGill has now accepted this job and is forming a Working Group to start work.
- P745 - Guide for Conducting a Transient Analysis for Dry-Type Transformers (C57.XX)
Draft #5 approved by Transformer Committee. To be submitted to IEEE Standards Board.
- P756 - Guide for Loading Transformers Above 100 MVA
Published May 1984 as IEEE Std. 756.

- P757 - IEEE Guide for Loading Power Apparatus Bushings
Work under way in IEEE to incorporate new document in Bushing Application Guide C76.3 (P800).
- P784 - Transformer Through Fault Current Duration Guide
Awaiting publication by ANSI as C59.109
- P785 - Transformers Connected to Generators
Still under deliberation by Working Group. (No change)
- P786 - Transformer Failure Reporting and Reliability Analysis
Draft #6 is currently being balloted in the transformer committee with returns due September 28, 1984.
- P799 - Guide for Handling and Disposing of Askarels
Draft #5 ballot will be reviewed in Boston.
- P800 - Bushing Application Guide
Negative ballots and comments of Draft #2 ballot of P800.1. (Application of Bushings in Conservator Type Transformers) being reviewed in the subcommittee.

Work being done in ANSI C76 to incorporate a bushing application guide to include forward and already approved sections on purpose, scope, contriliver loading and loading of bushings applied to transformers above nameplate ratings.
- P801 - Recommendations for Revisions to ANSI C57.15 Requirements, Terminology, and Test Code for Step-Voltage and Induction-Voltage Regulators

Results of Draft #9 ballot will be discussed in Boston.
- P838 - Guide for Performing Overload Heat Runs

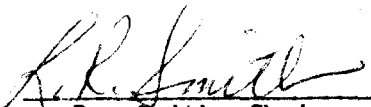
Draft #8 submitted to Working Group for Ballot. Returns due October 5, 1984.

- P842 - Loss Evaluation Guide
No report.
- P852 - Bushings to Operate in Gas-Insulated Substation
Draft #1 still in progress in Working Group: (No change)
- P954 - Guide for High Temperature Hydrocarbon
Will review Draft #4 in Boston.
- P1052 - Dry-Type Transformer Through Fault Current Duration Guide
New project.

I did not receive a report from the Instrument Transformers Subcommittee or West Coast Subcommittee.

A new PAR has been submitted to the Chairman for "Proposed Standard Test for Thermal Evaluation of Insulation Systems for Solid Cast and Resin Encapsulated Power and Distribution systems". A revised draft document is in preparation.

If readers of this report note any projects listed that are no longer active or valid and should be removed or if any active ones are not listed, please let me know so that I can add or delete as necessary. Please furnish P number, title, and relation to IEEE or ANSI Standard.


Ray Smith, Chairman
Standards Subcommittee

Comm mtg

STATUS OF IEEE AND ANSI C57 BALLOTS, AND PRINTING

~~9/27/84~~
10/11/84

ANSI C57
BALLOT NO.

OR	IEEE PROJ. NO.	BRIEF DESCRIPTION	IEEE STD BD SUBM.	ANSI C57 COMM SUBM.	PUB. REV.	ANSI BSR SUBM.	EDIT TYPE SET	PRINT
	P353	HVACC, C57.12.55, Dry Type	N/A	C		Subm. Subm.		
	P356	HVACC, C57.13.2, Inst. Tr.		C		Subm. Subm.		
	P65	ANSI/IEEE C57.12.56-198X Dry-Type Insul. Testing	C	C	C	C	App. - 8/27/84	
	P93	ANSI/IEEE C57.98-1982 Impulse Test Guide	C	C		Subm. Subm.		
	P784	ANSI/IEEE C57.109 Short-Circuit Duration	C	C		SUBM		
		C57.12.23 Underground 1 Ø Dist. Trans, HV Conn	N/A	C		SUBM		
		C57.12.26 Padmount 3 Ø Dist. Trans.	N/A	C		SUBM		
		C57.15 Req., etc. Step & Ind. Regulators						
		C57.95 Loading Guide Step & Ind. Regulators		C		SUBM		

Subm. = Submitted Bltg. = Balloting IP = In Process C = Complete N/A = Not Applicable

John C. Dutton

John C. Dutton, Chairman - IEEE Delegation to ANSI C57
14

- | | | | |
|--------------|-------------|--------------|-------------|
| cc: SI Sherr | WJ McNutt | TL Mayes | LW Long |
| B Stanleigh | LJ Savio | R Hansen | R Uptegraff |
| M Goulding | DA Yannucci | L McCormick | R Ensign |
| P. Lange | OR Compton | J Bonucchi | D Kelly |
| | RL Smith | W NEISWENDER | V Moran |

Papers for Power Group Meetings
D. A. Yannucci

1985 IEEE Winter Power Meeting

There was a total of 15 papers received for review. One paper has been withdrawn and another referred to the Insulation Society. In addition, four others have been transferred to the T&D Committee since they are system related. This leaves a total of nine papers that are in the process of review. More than fifty percent of the reviews are complete. If anyone still has reviews to complete, please do so. I am estimating that we will have six papers for the meeting; two sessions for the papers. We will be well under our quota.

I would personally like to thank all the reviewers for their effort. I also would like to encourage the membership to consider authoring more papers.

For your information, attached is the estimated attendance for the 1984 meeting. We are still faring well with attendance.

**SCHEDULE OF ESTIMATED ATTENDANCE
1984 SUMMER MEETING**

MONDAY, JULY 16

9:15 A.M.

TECHNICAL SESSION

Insulated Conductors I
Power Plant Control
Integration of Direct Load Control into System
Operations I
State Estimation I
System Planning I
Transformers I
Air Gap Breakdown and Surges
Towers, Poles and Conductors

PAPERS

(4)
(4)
(4)

(3)
(5)
(3)
(4)
(5)

ATTENDANCE

30
45
100

25
45
50
35
120

2:00 P.M.

Mini-Utilities for Aircraft, Mines, Large Buildings
& Marine Applications
Renewable Energy Projects and Photovoltaic Power
Generation
Industrial Structural Changes and the Future
Demand for Electricity
Single-Pole Switching for Stability and Reliability
State Estimation II
System Reliability Methods
Rotating Machinery Design and Analysis
Transformers II
Distribution Systems

PANEL
(4)

PANEL

PANEL
(3)
(4)
(5)
(4)
(5)

40
50

65
35
35
18
45
55

TUESDAY, JULY 17

9:00 A.M.

Insulated Conductors II
Design and Operating Aspects of Small Alternative
Energy Projects
Panel Discussion of the Proposed Revisions of the
Guide for Preoperational Testing of Class 1E
Systems at Nuclear Power Generating Stations (IEEE 415)
Optimal Load Flow
Rotating Machinery Theory and Design
Surge Protection
Electromagnetic Interference
Integration of Distribution Automation Concepts
and Equipment into the Utility Operating Environment
Lightning and Insulators

(3)
PANEL

PANEL

(4) 3 Presented
(4)
(3)
(3)
PANEL

(3)

30
66

40
37
25
30
150

30

2:30 P.M.

Special Session: The World-Wide Productivity Race

PANEL

275

WEDNESDAY, JULY 18

9:00 A.M.

Experiences of Young Engineers in Power Industry
Utility Interconnection with Dispersed Generating
Sources
Advanced Stabilization Controls
Load Management
Power System Relaying I
Induction Machine Analysis

PANEL
PANEL

(3)
(4)
(5)
(3)

80
97

35
74
55
20

WEDNESDAY, JULY 18 (con't)
9:00 A.M.

<u>TECHNICAL SESSION</u>	<u>PAPERS</u>	<u>ATTENDANCE</u>
Gas Insulated Substations	(4)	40
Switchgear I	(3)	23
Power System Transient Analysis	(4)	50

2:00 P.M.

Student Professional Awareness	PANEL	
Excitation Systems	(4)	18
Calculation Methods	(5)	75
Impacts of Cogeneration and Dispersed Sources on Electric Utility Systems	PANEL	66
Reactive Power Control	(4)	35
System Simulation for Operations	(4)	63
What's Happening in Load Management	PANEL	
Test and Measurement I	(3)	25
Induction Machines	(4)	35
Substations	(3)	45
Switchgear II	(4)	15
Grounding Practices for Mitigation of Induced Currents and Voltages	PANEL	100

THURSDAY, JULY 19
8:30 A.M.

Tutorial Course: Power Transformer Considerations of Current Interest to the Utility Engineer

9:00 A.M.

Realistic Aspects and Concepts for Nuclear Plant Maintenance	(1) + PANEL	25
Current Operational Problems	(2)	100
Forecasting Demand Side Activities	PANEL	40
Integration of Direct Load Control into Systems Operations II	(4)	75
System Analysis Techniques	(5)	30
System Planning II	(4)	30
Test and Measurement II	(3)	21
Power System Relaying II	(3)	38
Insulation Considerations in Rotating Electrical Machinery	(5)	17
Integrated Protection and Control of Transmission Substations	(1)	50

2:00 P.M.

Industry Experience in Qualifying Equipment to Nuclear Requirements	(3)	24
An Assessment of Utility Peak Load Forecasting Methodologies in the USA	PANEL	
Recent Advances in SSR Analysis	(5)	24
Residential Load Management Hardware Reliability Measurement and Procedures	PANEL	
Resource Scheduling	(4)	75
Security Optimization	(5) 4 Presented	40
Power System Relaying III	(5)	60
Synchronous Machines and Systems	(4) 3 Presented	15

FRIDAY, JULY 20
9:00 A.M.

Power System Communications	(3)	27
Economic Dispatch	(4)	35
Industry Perspectives of Utility Spot Pricing	(4)	35
Simulation Techniques for Stability Analysis	(5)	15
System Controls	(4)	17
The Role of Utility Marketing in Load Management	PANEL	05
Guide for Surge Testing on Low Voltage Electronic Systems	PANEL	25
AC and DC Field Effects	(4)	40

TECHNICAL COUNCIL PUBLICATIONS COMMITTEE

After careful review of all aspects of publication, coupled with the membership comments which were received, the Technical Council Publications Committee approved a new publications policy which reflects general membership needs while satisfying membership concerns. The cornerstones of this policy are:

1. Division of the present PA&S Transactions (4500 pages/year) into three new Transactions (Energy Conversion, Power Systems, and Power Delivery) consisting of approximately the same number of annual pages but divided approximately evenly between the three.
2. Each Transactions would be issued quarterly and contain 300-400 pages. To insure equal distribution and levelize staff work, one of the Transactions will be issued at 4-month intervals beginning in January, one every 4 months beginning in February and one every 4 months beginning in March. Therefore, a recipient of all three would continue to receive one issue per month.
3. From those papers accepted for each Transactions, approximately one per month will be selected for presentation in the Power Engineering Review. These papers will be chosen for their general interest to the entire membership. All review and selection will be under the aegis of the technical committees. In addition to these general interest papers, prize papers from non-PES sources will also be presented in the Review.

Prior to recommending this policy, meetings were held with IEEE personnel to review the financial aspects of such a change. It was concluded, based upon financial analysis prepared for the Publications Department and the PES Finance Committee, that the proposed policy would produce increased revenues. This is as a result of the printing of fewer total pages, anticipated increase in member subscriptions and maintaining non-member and institution subscriptions at prices determined by IEEE's pricing formulas for those purchasers. It was also concluded that the policy would produce sufficient revenue to offset the additional costs associated with the upgraded Review as well.

Yet to be considered is the paper review process itself which must be strengthened and tightened to insure that only quality papers are published. This process change will be the next

challenge to the Technical Council Publications Committee. Also, any review process would require strict adherence to deadline dates.

At this time the stated policy will apply to papers submitted for all PES sponsored meetings except the T&D Conference and PICA which will be reviewed separately at a later date.

It is envisioned that editors would be assigned for each Transactions and that a PES editor-in-chief would have overall responsibility for the coordination of the three as well as for the Review. The technical committees themselves would continue to be the sole vehicle for all paper review and selection.

The availability of the three Transactions would enable every PES member to avail him or herself of peer reviewed publications in a selected area of interest at moderate cost. By this vehicle it is anticipated that more members than presently subscribe would avail themselves of an oriented publication. In addition, complete general interest and non-PES prize papers would be presented to the entire PES membership each month at no additional cost.

To implement this policy, approval would be required from the IEEE Publications Board. This would, of course, be preceded by formal approval of the PES Ad Com after receiving Technical Council endorsement. If PES Ad Com approval can be obtained by November, 1984, we would be in position to request IEEE Publications Board approval in January 1985 and to implement the policy in 1986.

M.I. Olken

Report of PES Standards Co-Ordinating Committee Activities

D. A. Yannucci

The Standards Co-Ordinating Committee met on Monday, July 16, 1984.

Frank Denbrock handed out copies of the new color coded forms, i.e., blue for the SPARs and yellow for the submitter's working guide.

Discussion arose on the problem of those requesting coordination after the 30 day time period of a SPAR transmittal. While the time period is considered adequate, most felt that additional time could be allotted. However, it is important that the names of these late coordinators be included in the original SPAR in order to keep all parties informed. It was also mentioned that those individuals requesting coordination after the final ballot of a proposed standard would be required to wait until the next revision.

With the transition of the ANSI Committees to Accredited Standards Committees (ASC), the Chairman handed out a report, copy attached, of the status of these designated committees. You will note that some of the ANSI Committees will be disbanded. The transition is effective September 1, 1984.

Frank Denbrock mentioned that EEl has expressed interest in participating in the standards making activities of T&D. Should this materialize, the IEEE Standards Board would have to approve this request.

The Chairman had earlier contacted John Essel regarding the continuance of the "Standards Corner" articles for the PES Review. He agreed that we should continue the program. A tentative schedule was handed out for review by the committee coordinators.

The Chairman inquired about IEEE Liaison Representatives to Standards Organizations which were proposed in letters dated February 15, March 12 and May 23, 1984. Bert Stanleigh stated that these proposals have been approved.

The next meeting will take place during the 1985 Winter Power Meeting in New York.

Report on
Accreditation under the Accreditation Standards Committee Method

<u>Desig</u>	<u>Title</u>	<u>ASC (Secretariat)</u>	<u>Status (Secretariat)</u>	<u>IEEE Representation</u>
A92	Mobile Scaffolds, Towers, and Platforms	5/16/84 Scaffold Industry Association		PES
C2	National Electric Code		Application 4/13/84 (IEEE)	IAS/PES
C8	Insulated Wires and Cables		Application 2/8/84 (IEEE) NEMA	IAS/PES
C9	Magnet Wire		Application 2/8/84 (NEMA)	EI/Mag
C12	Electricity Metering		Intends to become ASC (IEEE/NBS)	IAS/PES
C16	Communications Electronic Equipment		Will disband (IEEE)	IM
C19	Industrial Control Apparatus		Application 2/8/84 (NEMA)	IAS/IE/PES
C29	Insulations for Electric Power Lines		Intends to become ASC (NEMA)	IAS/PES
C34	Static Power Converting Equipment		Status undecided; Converting to an ASC or disbanding (NEMA)	IAS
C37	Power Switchgear		Intends to become ASC (IEEE/NEMA)	IAS/PES
C40	Storage Batteries		Disband (IEEE)	PES

C42	Definitions of Electrical Terms	Disband (IEEE)	StB
C50	Rotating Electrical Machinery	Intends to become ASC (IEEE/NEMA)	IAS
C55	Standards for Capacitors	Intends to become ASC (IEEE/NEMA)	IAS/PES
C57	Transformers, Regulators, and Reactors	Intends to become ASC (IEEE/NEMA)	IAS/PES
C60	Standardization of Electron Tubes	Intends to operate under EIA Accredited Organization Method	ED
C62	Surge Arresters	Intends to become ASC (IEEE/NEMA)	PES
C63	Radio-Electrical Coordination	Intends to become ASC (IEEE)	EMC/PES
C64	Brushes for Electrical Machines	Application 4/2/84 (NEMA)	PES
C68	High Voltage Testing Techniques	Will disband (IEEE)	IAS/PES
C73	Attachment Plugs and Receptacles	Application 2/10/84 (NEMA)	IAS
C76	Apparatus Brushing Standardization	Will disband (IEEE)	PES
C78	Electric Lamps	Application 2/8/84 (NEMA)	IAS
C83	Components for Electronic Equipment	Intends to Operate under EIA Accredited Organization Method	CHMT/Mag/SU

C84	Preferred Voltage Rating for AC Systems and Equipment	Application 2/8/84 (NEMA)	IAS/PES
C89	Speciality Transformers	Status undecided (NEMA); LB re: transition to close shortly	IAS/PES
C92	Insulation Coordination	Intends to become ASC (IEEE/NEMA)	PES
C93	Power-Line Carrier Equipment and Coupling Capacitor Voltage Transformers	Status undecided (NEMA) LB re:transition to close shortly	PES
C94	Semiconductor Devices	Intends to operate under EIA Accredited Organization Method	ED/IAS
C95	Radio-Frequency Radiation Hazards	Intends to become ASC (IEEE/US Navy)	EMB/EMC/IM/MTT/VT
C97	Low-Voltage Fuses, 600 Volts or Less	Intends to become ASC (IEEE/NEMA)	IAS/PES
C107	Use and Disposal of Askarel and Askarel-soaked Materials in Electrical Equipment	Status undecided; considering converting to ASC or disbanding (NEMA)	PES
C119	Connectors for Electric Utility Applications	Application 2/8/84 (NEMA)	PES
C135	Pole Line Hardware	Intends to become ASC (NEMA)	PES
C136	Roadway Lighting Equipment	Intends to become ASC (NEMA)	IAS/PES

L1	Textile Safety Standards	Intends to become ASC (National Safety Council)	IAS
MC1	Programmable Test Measurement System	Will disband (IEEE)	IM
N13	Radiation Protection	Intends to become ASC Health Physics Society	NPS/PES
N17	Research Reactors, Reactor Physics, and Radiation Shielding	Intends to operate under ANS Accredited Organization Procedure	NPS
N42	Nuclear Instruments	Intends to become ASC (IEEE)	NPS/PES
S4	Audio Engineering	Application 2/23/84 (Audio Engineering Society and EIA)	ASSP/MAG
X3	Information Systems	Application 3/6/84 (CBEMA)	StB/COMM/C
Z1	Quality Assurance	Application 5/22/84 (American Society for Quality Control)	R
Z244	Lockout Protection	Intends to become ASC (National Safety Council)	IAS/PES

Report on
Disbanded American National Standards Committees

<u>Desig</u>	<u>Title</u>	<u>Accredited Organization Committee</u>	<u>IEEE Representation</u>
A11	Standard for Lighting Factories, Work Places	IES	IAS
A17	Safety Standards for Elevators	ASME	IAS
A85	Security of Lighting of Outdoor Areas	IES	IAS
C72	Electric Water Heaters		IAS
MC105	Medical Electronics	ASTM	EMB
N19	Nonradiological Environmental Effects	ANS	NPS

Report on
American National Standards Committees
Not Yet Heard from re: Intention on Accreditation

<u>Desig</u>	<u>Secretariat</u>	<u>Title</u>	<u>Standards Under Jurisdiction of</u>	<u>IEEE Representation</u>
05	None	Specifications for Wood Poles	05.1, 05.2	PES
Z136	None	Safe Use of Lasers	Z136.1	EMB



IEEE

POWER ENGINEERING SOCIETY

TRANSFORMERS COMMITTEE

Leo J. Savio, chairman

L. A. Swenson - ENTE
 Bonneville Power
 Administration
 P.O. Box 3621
 Portland, OR 97208
 (Above)

PLEASE REPLY TO:

AUDIBLE SOUND AND VIBRATION SUBCOMMITTEE
 Richard E. Liebich, Chairman

MINUTES OF THE MEETING OF THE AUDIBLE SOUND AND VIBRATION SUBCOMMITTEE
 at Boston, Massachusetts, October 16, 1984

The Subcommittee meeting was convened by the Chairman at 1:15 p.m. October 16, 1984. Twenty-six persons were present, including 10 members. Minutes of the last meeting in Vancouver, April 3, 1984, were read and approved.

The Chairman made three announcements from the Administrative Subcommittee meeting of the previous evening: the date and location of the next meeting (St. Louis, April 16, 1985), the importance of prompt return of pre-registration forms (at a \$5.00 savings), and renewal of plans for establishment of liaison with the ANSI S12 Committee on Industrial Noise Measurement and Control Standards.

The Secretary discussed review and consolidation of the Membership List in accordance with Transformer committee rules. Mr. Swenson also discussed the lack of a shunt reactor sound level limits table analogous to the NEMA TR-1 transformer noise limits table, and the question of organizational responsibility for such a table. He invited members to submit suggestions for achieving adoption of reactor sound limit standards.

The Secretary also read a letter to the AS & V Subcommittee dated April 6, 1984, from Mr. B. L. Avent of British Columbia Hydro and Power Authority, concerning testing of a transformer "significantly noisier under load than during . . . the usual full voltage, no-load test." The Chairman has asked the Secretary to forward this letter to Mr. Putnam for eventual response, after conferring further with his group.

The Chairman announced to the Subcommittee that, as a result of recommendations made to him directly by a majority of existing Working Group (WG) Chairmen during the past year and at the Steering Committee Meeting earlier in the day, a re-organization of WG activities will be made. Priority will be given to a goal of achieving a draft within one year of a new IEEE Standard, tentatively titled "Transformer Audible Sound Control." He has requested Mr. Swenson and Mr. Teplitzky to act as a joint Task Force to develop a proposed plan-of-action, including an outline of the technical scope and purposes of the Standard. The Chairman anticipates that the new effort will result in replacement of the existing Working Groups with a single Working Group for this purpose. Existing Working Groups will be re-designated Task Forces (TF). Their most immediate responsibility will be to support the new Working Group with preparation of specialized appendices to the Standard. Mr. McNutt suggested that an IEEE Guide could be more quickly promulgated than an IEEE Standard and would be more appropriate considering the existence of ANSI C57.12.90, Section 13 (adapted from the former NEMA TR-1 method). Mr. Teplitzky responded that a Standard is needed to adequately relate user and manufacturer.

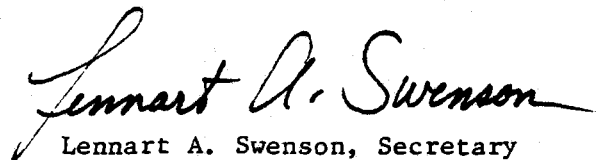
A lively discussion followed as to the purpose and scope of the proposed new Standard. Mr. McNutt and Dr. Girgis asked for some specific areas in which the Task Force principals and the Chairman feel the existing ANSI C57.12.90, Section 13 is inadequate. Mr. Teplitzky responded that regulatory requirements for EIS content require standardized calculational methods for relating standard statistical sound level descriptors and probability of tone audibility and community annoyance to manufacturers' factory measurements. Mr. Swenson commented on the need for a standardized computational method of relating far-field sound pressure levels to near-field (factory) measurements. The Chairman commented that he is aware of increasing use of computerized plant noise models by regulatory agencies (for the purpose of their review of EIS's in support of construction and operating license applications) that require all plant sound sources to be characterized by sound power level data (rather than sound pressure levels), resolved to octave-band and tonal values.

Dr. Lampe suggested that some these concerns (e.g., sound power calculations) were addressed in the 1984 revision of IEC Standard (Publication) 551, "Measurement of Transformer and Reactor Sound Levels," which has already been approved by the U.S. members of the IEC Technical Committee responsible for it. He further suggested that the Working Group analyze the situation by considering three sets of data: (1).a listing of the shortcomings of the existing ANSI Standard, (2).a listing of the techniques now available to meet these shortcomings, and, (3). an evaluation of the relative costs of these techniques.

Mr. McNutt pointed out that ANSI C57.12.90 is due for 5-year review in 1985, for reaffirmation or revision. Consequently, he urged that initial WG priority should be given to a possible modification of that Standard rather than to a "stand-alone" new IEEE Standard.

The Working Group principals agreed to immediately review both the existing ANSI C57.12.90, Section 13, and IEC 551-1984, and in the near future, forward in writing to the Members of the Subcommittee their recommendations concerning revision of ANSI C57.12.90, including the possibility of incorporating a sound power calculation procedure consistent with IEC 551-1984, vs. effort on a new IEEE Standard, Recommended Practice, or Guide.

The Chairman concluded the meeting with acknowledgment of the presence of many new guests, including two guests who have made especially distinguished contributions to the engineering and scientific literature on transformer noise audibility and annoyance: Mr. Robert J. Ringlee and Dr. Sanford A. Fidell. He expressed the appreciation of the Subcommittee to all guests for their attendance and extended an invitation to them to seek membership in the Subcommittee. He urged all in attendance to communicate directly and candidly with the Task Force principals regarding their positions and specific technical concerns in the matter of a new noise standard.



Lennart A. Swenson, Secretary
Audible Sound & Vibration Subcommittee

BUSHING SUBCOMMITTEEReport to the Transformers Committee

The Bushing Subcommittee met at 1:15 p.m. on Tuesday, October 16, 1984 with 12 members and 12 guests present.

It was announced that D. C. Bowman has replaced J. L. Puri as the Westinghouse representative, that S. H. Osborn has replaced A. L. Rickley as the Doble representative and that F. R. Stockum has resigned from the subcommittee. D. C. Bowman will also replace J. L. Puri as the secretary of the subcommittee. The subcommittee now has 17 members.

Results of ballot P21/d5 were disclosed as follows: Of the 125 ballots sent out, 92 ballots (74%) were returned; 59 votes (62%) were affirmative, 20 votes (22%) were affirmative with comment, 7 votes (8%) were negative and 6 votes (7%) were abstaining votes. The negative votes were resolved at the meeting and other comments will be incorporated into Draft 6.

ANSI C76.1/IEEE 21-1976 and all drafts of this revision through Draft 4 set the oil level on the inboard end of the bushing at the bottom end of the flange for the temperature test at rated current. Draft 5 changed the oil level to be at the top end of the flange. Six of the negative votes-all from manufacturer's representatives-objec-ted to this change on the basis of the large number of bushings which have been tested by the old method and which are still being supplied on a regular basis. These negative ballots were resolved by re-instating the old method.

Related to this particular issue is P800.1 - Application of Bushings in Conservator Type Transformers, which specified a 7% derating factor for application of bushings when the immersion oil comes to the gasket surface of the bushing. Resolution of the six negative main committee ballots on P800.1 was held up until the direction of immersion oil level was apparent and now that it is, an attempt will be made to resolve these ballots.

The fate of Working Group on Bushings to Operate in Gas Insulated Bus was discussed at this working group meeting and the Bushing Subcommittee. The resignation of F. R. Stockum leaves this committee without a chairman and a new one has not been found. Only seven people-five members and two guests-attended the working group meeting and this small number indicates the lack of interest in this subject. A vote of the Bushing Subcommittee showed seven votes as feeling that development of a guide for these bushings as a worthwhile goal while six votes did not feel it not a worthwhile cause. The possibility of forming a joint working group with the Substations Committee was also discussed in the Bushing Subcommittee. There was no consensus on this possibility. Some felt that the work should be done within the Transformers Committee while others feel that a joint working group would be more effective. I therefore ask members of this committee to give their opinions to me on the worthiness of developing such a guide. If there is support for developing the guide, I also ask for support in terms of volunteers for a chairman and others willing to work on this working group.

At the Vancouver meeting, it was decided and reported to this committee that the Bushing Subcommittee chairman would recommend to IEEE Standards Committee that the work of now defunct ANSI C76 Apparatus Bushing be done in C57 Transformers.

Committee. Further discussion with IEEE lead to the suggestion that matters would be simplified by transferring the C76 work over to the Transformers Committee. It was decided in the Administrative Subcommittee that this would be our recommendation. Along with this recommendation will be one that the Bushing Application Guide, P800, be published as an IEEE Guide.

The Bushing Subcommittee needs to do further work on the Bushing Application Guide. Immediate items include application of bushings to contaminated environment and high altitudes and to GSU applications using 105°C isolated phase bus. Interested volunteers are urged to contact me.

Finally, IEEE 24, Standard Performance Characteristics and Dimensions for Outdoor Apparatus Bushings, was published in June, 1984.

L. B. Wagenaar
Chairman

Meeting Minutes
Dielectric Tests Subcommittee
October 16, 1984 - Boston, MA

The Subcommittee met at 3:15 PM with 34 members and 36 guests in attendance.

The minutes of the previous meeting were approved as originally submitted.

The four Working Groups reported as follows:

Working Group for Revision of Dielectric Tests: G. W. Iliff

This group met on Monday and has 4 task forces actively engaged in various projects.

One task force is considering revisions to the dielectric tests requirements for shunt reactors. Bill Kennedy, who chairs this work reported that they are patterning these requirements after the new test requirements for transformers and are considering long time overvoltage tests. The biggest problem is how to test 3 phase reactors.

Another task force, chaired by Jim Douglas is discussing requirements for external clearances. At present they are concentrating on EHV transformers and would like comments from Working Group members on a proposed phase to phase clearance of 160 inches at 500 kV based on phase to phase switching surges of 3.8 PU or 142 inches when these voltages are held to 3.4 PU or less. At their next meeting this group intends to begin discussing clearance requirements at 345 kV.

Carl Hurty, who is interim chairman of the Task Force on Revision of the Impulse Guide reported that his group will be considering a number of additions to the present guide which will include information on switching surges, low impedance windings, instrumentation, and response times. They plan to meet during the St. Louis meeting and start work on this project.

George, himself, reported on the latest ballot on Section 5 of C57.12.00 and Section 10 of C57.12.90. After resolving several comments the document is now ready to be sent to the Stds. Board for review and approval.

At both the Working Group and the Subcommittee meetings unanimous approval was given to make one additional editorial change in the document. This change will add a note "5" to table 3 of Section 5 as follows:

"Values listed as "Nominal System Voltage" in some cases (particularly voltages 34.5 kV and below) are applicable to other lesser voltages of approximately the same value. For example: 15 kV encompasses nominal system voltages of 14400, 13800, 13200, 13090, 12600, 12470, 12000, 11950 etc."

Since this document has cleared the main committee we now need their approval to proceed with this addition. (This approval was granted by voice vote during the 10/17/84 meeting).

Effective at the end of the Boston meeting, Mr. Iliff requested to be relieved of the chairmanship of this Working Group. His request has been accepted and a new chairman will be appointed.

Mr. Iliff's work with this group has been outstanding and the thanks from the entire group was extended to him for his many hours of service.

Working Group on Revision of Dielectric Tests on Distribution Transformers:
W. R. Farber..

Their meeting was devoted to discussions of the ballots received on their proposed "Distribution Transformer Production Line Test Code." The Working Group agreed to revise the draft in line with negative ballots and comments received and to rebalot the Working Group before the St. Louis meeting.

Working Group on Dielectric Tests for HVDC Transformers and Reactors:
W. N. Kennedy.

This group put final touches to their proposed report entitled "Recommended Dielectric Tests and Test Procedures for Converter Transformers and Smoothing Reactors." The paper will now be typed in IEEE format, reviewed by the Working Group and hopefully submitted for presentation at the 1985 Summer Power meeting.

Working Group on Partial Discharge Tests: H. R. Moore

In the absence of Mr. Moore, their report was presented by George Vaillancourt.

The task forces met earlier in the day, and both sessions were well attended.

Mr. G. Vaillancourt, Chairman of the Task Force for measurement of Apparent Charge reported on the balloting within the Working Group on Revision 4 of the Trial Use Guide for Partial Discharge Measurement in Power Transformers and Shunt Reactors. The results were as follows:

- 19 Approved
- 8 Approved with comments
- 1 Not voting
- 2 Not approved
- 1 Not returned

Suggested changes made to resolve the comments were reviewed in details, but all of them were not resolved. After a complete discussion on the trial use document and some suggested changes, the Working Group decided that more work must be done before submitting it for another ballot. The following will be done:

1. All comments made on Revision 4 will be distributed to the Working Group.
2. Members of the Working Group were asked to submit any data on PD measurements to Mr. Vaillancourt by Feb. 1, 1985. This data will be considered in future revisions.
3. The width of the wide band will be given further consideration.

A preference vote on the question of narrow band and wide band methods indicated the following:

- 6 for both narrow and wide band methods
- 4 for wide band only

Mr. E. Norton, Chairman of the Task Force for Accoustic Detection of Partial Discharges resigned, and Mr. E. Hovells was appointed the new chairman. The task force prepared a Proposal Guide for the Detection of Accoustic Emissions from Partial Discharges in Oil Immersed Power Transformers. Draft 2 of this proposed guide was discussed at the task force meeting. Additions to the guide will be presented at the next meeting.

After this report, George made a proposal to the subcommittee to separate the next draft into two ballots; one to cover the basic document and one to cover the question of wide band vs narrow band instrumentation and to conduct the ballot in both the Working Group and the Subcommittee. After some spirited discussion, the proposal was withdrawn and the matter returned back to the Working Group.

During the discussion there appeared to be a need for a symposium or panel discussion concerning instrumentation. A presentation of this type will be investigated.

Since no other business was brought before the group, the meeting was then adjourned.

October 31, 1984

TO: IEEE TRANSFORMER COMMITTEE
Insulating Fluids Subcommittee

FROM: Henry A. Pearce, Chairman

SUBJECT: Minutes of Meeting held October 15-16, 1984 in Boston, MA

MEMBERS PRESENT

G. Bryant	T. Orbeck
F. Gryszkiewicz	H. Pearce
F. Heinrichs	T. Rouse
P. Hoeffler	L. Savio
O. Keller	J. Thompson
J. Kelley	R. Vincent
R. Lowe	L. Wagenaar
R. Musil	F. Young
S. Northrup	

GUESTS PRESENT

Mark Ashford	Texas Power & Light
Bob Lane	Shell Oil
Paul Griffin	Doble Engineering
Jim Antweiler	Square D
W. Boettger	Federal Pacific
Bob Hollister	Westinghouse
Bill Kafke	Gulf Research
B. Hunter	American Nuclear Inc.
Donald Fallon	Public Service Electric & Gas

INSULATING FLUIDS

The Insulating Fluids Subcommittee met on Monday and Tuesday October 15 & 16, 1984 with 16 members and 15 guests present.

1. The minutes of the April 1984 meeting were approved as submitted.
2. There were no membership changes.
3. The chairman reported that IEEE Headquarters has a new person in charge of printing of standards and that Project P637 "Guide for Reclamation of Insulating Oil and the Criteria for Its Use", should be printed early in 1985.

sent to IEEE Standards Board

4. Project P799 (PCB's) - Draft 5 of Project P799, "Guide for Handling and Disposal of Transformer Grade Insulating Liquids Containing PCB's", was balloted at the Transformers Committee level. 100 ballots have been received with 87 affirmative, 10 not voting, and 3 negative. With a present listing of 113 members this is now an official approval vote. Editorial changes will be made and the document will be submitted to the Standards Board and IEEE legal staff for review.
5. Project C57.111, Silicone - Draft 5 of "Guide for Acceptance and Maintenance of Silicone Liquid in Equipment" had been balloted at the subcommittee level. Four negative ballots and several with comments were received and the Working Group headed by Tor Orbeck will prepare another Draft.

- Draft 7 will be written and reviewed

It was reported that ASTM D27 had been requested to prepare a Silicone specification and their work is underway.

6. Project P954, High Temperature Hydrocarbon (Loss Flammable Hydrocarbon) Draft 3 of the "Guide for Acceptance of High Temperature Hydrocarbon" was balloted by the Subcommittee. Four negatives and several comments were received. These were reviewed and discussed at the Subcommittee meeting. The Working Group headed by Steve Northrup will prepare a new draft of this guide.

To be balloted within S/C

7. Project C57.104, Gas Guide. Copies of the survey questionnaire were passed out to the Subcommittee members. All members of the Transformer Committee will receive a copy in the mail along with a request to participate in the survey. This will be mailed out about the 1st of 1985.

- 90 responses so far - Darl Douglas asked for limits for factory testing - Check

8. The Subcommittee briefly discussed the subject of the static electrification at the transformer oil/insulation interface. EPRI is presently sponsoring a project to study this phenomena. Mark Ashford of Texas Power & Light presented slides of failures which may have been related to static charge. This may be a future project for this subcommittee.

*- not ready for a guide yet
- not enough info available at this point*

PERFORMANCE CHARACTERISTICS SUBCOMMITTEE
BOSTON, MA. - OCTOBER 16, 1984
MEETING MINUTES

I. INTRODUCTION/ATTENDANCE

The Performance Characteristics Subcommittee (PCS) met at 8A on Tuesday, October 16, with 38 members and 41 guests in attendance.

II. APPROVAL OF MINUTES

The minutes of the April 3, 1984, PCS Meeting were approved as submitted.

III. CHAIRMAN'S REMARKS

New PCS members added since the last meeting are:

Jerry L. Corkran - RTE
Robert E. Lee - Pennsylvania Power & Light Co.
Michael Mitelman - RTE
Dan Perco - Westinghouse Canada
B.K. Patel - Southern Company Services
Dave R. Smith - Westinghouse
Larry A. Lowdermilk - GE

Two PCS members have resigned; Ben Allen, due to retirement and Ron Schmid due to change of responsibility.

Dave Smith has been appointed liaison to the Network Transformer Protection Working Group of the IEEE Power Systems Relaying Committee for their effort to produce a Guide for the Protection of Network Transformers. His first liaison report is attached.

The Administrative Subcommittee met Monday night:

1. Chairman Savio requested that anyone interested in participating in a speakers bureau for Transformer Committee topics please contact him. Speakers would address local chapters.
2. Ray Smith indicates that C57.12.00 & C57.12.90 will be reprinted in 1985; we need to expedite PCS projects to make this issue.

3. The PES has proposed a new publications policy which segregates the Transactions by topic into Power Systems, Energy Conversion and Power Delivery, each to be issued on a quarterly basis. The Transformer Committee would be included in Power Delivery.
4. Chairman Savio asked that each Subcommittee review its scope and provide an update to him by year end. Your input on PCS scope is welcome.
5. Chairman Savio emphasized the importance of preregistration in aiding the meeting host in planning meeting details.

The Foreword to C57.109, Transformer Through Fault Current Duration Guide, has been submitted to the IEEE Standards Office according to Bill Griffard.

B.K. Patel has assumed Chairmanship of the Working Group on Transformers Directly Connected to Generators.

Subsequent to the meeting, the following individuals requested PCS membership:

William E. Boettger - Federal Pacific
Charles R. Hoesel II - Arizona Public Service
Vis Thenappan - ASEA Electric
Sam Mehta - ASEA Electric

These additions bring the current PSC membership to 52.

IV. AGENDA

The agenda was accepted as proposed.

V. WORKING GROUP (WG) REPORTS

1. Transformer Reliability - H.F. Light, Chairman

The WG met at 1P on Monday, October 15, 1984 with 12 members and 17 guests present.

The WG reviewed the results of the Transformer Committee ballot on Draft 6 of the Guide for Reporting Failure Data For Power Transformers and Shunt Reactors. A Task Force meeting will be held later this year to produce Draft 7 for Transformer Committee ballot prior to the Spring meeting.

2. Qualification of Transformers for Class 1E Application in Nuclear Power Stations - L.B. Stensland, Chairman

The WG met at 10:15 A on Monday, October 15, 1984 with 5 members and 1 guest present.

Since the previous meeting, two drafts have been produced. The last of these (P638/D13.2) was sent to NEPC SC-2 for comment. The Working Group will proceed to contact NEPC SC-2 members directly in an attempt to resolve negative comments.

3. Transformers Directly Connected to Generators - B.K. Patel, Chairman

The WG met at 1P on Monday, October 15, 1984 with 8 members and 1 guest present.

Prior to the meeting a complete guide had been assembled for review. In response to comments received, the guide will be updated prior to the next meeting for WG review.

4. Failure Analysis - D.J. Cash, Chairman

The WG met at 3P on Monday, October 15, 1984 with 19 members and 6 guests present.

A preliminary draft of a Guide for Failure Investigation, Documentation and Analysis for Power Transformers and Shunt Reactors resulted from Task Force effort in August. Based on comments received, the Task Force will finalize an official Draft 1 and submit it for WG review prior to the Spring meeting.

WG to be balloted before Toronto meeting

5. Loss Tolerance and Measurement - W.R. Henning, Chairman

The WG met at 8A on Monday, October 15, 1984 with 13 members and 9 guests present.

The WG ballot on P262E/D6 (Correction of Load Loss and Impedance Voltage Measurements for phase angle error) was reviewed. Since only editorial comments were received, Draft 7 will be prepared and balloted simultaneously in both the PCS and Main Committee.

*2 negative votes
TF 15/16 set up*

The WG ballot on P262E.2/D7 (Voltmeter Connections for No-Load Loss Measurement) received full approval. Draft 7 will now be balloted simultaneously in both the PCS and the Main Committee.

The WG addressed the subject of no-load loss temperature correction with detailed discussion on both the reference temperature and the correction method. As a result, the following positions were taken by the W.G.

- a. A reference temperature near ambient (25°C) should be established with a temperature measurement range (15°C-35°C) within which no correction should be made.
- b. For temperatures outside this range, a correction should be made.
- c. A simplified correction method is preferred. The WG will solicit correction data from manufacturers.

The WG will submit a PAR to develop a Guide for Transformer Loss Measurement. S. Mehta will chair a Task Force to develop the Guide.

6. Harmonic Load Current Heating - W.J. McNutt, Chairman

The WG met at 3P on Monday, October 15, 1984 with 13 members and 18 guests present.

*No Load Loss Temperature Corrections -
At this point, we should specify Temp for no-load losses
Loss measurement Guide.*

- Draft 5 balloted with TX Comm

Draft 5 of C57.110 (Recommended Practice for Establishing Transformer Capability When Supplying Nonsinusoidal Load Currents) was discussed. The WG reaffirmed that winding eddy current heating was the most probable limiting factor; however, it was acknowledged that structural part heating and core loss increase are potential considerations which should be mentioned in the Guide. A Draft 6 will be prepared and balloted in the WG prior to the next meeting.

The Task Force on Semiconductor Rectifier Transformers also met on Monday; Chairman George Bryant reports continued progress on a draft document.

VI. PROJECT REPORTS

1. P642, Ratio Tolerance - M. Mitelman

A proposed revision to clarify Section 9.1 (Tolerances for Ration), C57.12.00 was presented and discussed. After editorial changes, a Draft 5 will be balloted in both the PCS and the Main Committee.

2. Telephone Influence Factor Test - C.P. Kappeler

A proposal was discussed to add a TIF test to Table 14, C57.12.00, as an "other" test for 500 kVA and smaller. This proposal will be balloted in both the PCS and the Main Committee.

VII. OLD BUSINESS - None

VIII. NEW BUSINESS

- ATC Position Indicator Standardization

1. Lower Limit for Operating Temperature - C.P. Kappeler

As a result of cold-start operating problems on distribution transformers, the ANSI C57.12.2 Subcommittee requested consideration for reducing the lower temperature limit (C57.12.00-4.1.2.2) below -20°C. After lengthy discussion, those present indicated a preference for this to remain an "unusual operating condition" to be specified by the user.

Those present indicated a willingness to reconsider if NEMA or ANSI can determine the acceptability of a specific lower limit for distribution transformers. It was pointed out that the Canadian Standards allow -40°C and that IEC Standards allow -35°C.

2. Performance Data Reporting, Distribution Transformers - J.D. Borst

Loss reporting for distribution transformers is characterized by non-uniformity of both data and format requirements. There was not general interest expressed for the PCS to address this issue. C. Kappeler will convey this concern to ANSI C57.12.2 Subcommittee.

IX. NEXT MEETING

The next meeting will be held on April 16, 1985, in St. Louis.
The meeting was adjourned at 9:40A.

John D. Borst
Chairman

Liaison Report on Activities of:

Network Transformer Protection Working Group, Transformer and Bus Protection Subcommittee, IEEE Power Systems Relaying Committee.

The objective of this working Group is to "Prepare a guide on recommended protection of network transformers." An interim report presenting protection methods currently in use most likely will precede this guide. The working group, which is chaired by Mr. Tom Wiedman, of Commonwealth Edison Company, met at the Relaying Committee meeting in Boston during the week of September 9, 1984. At that meeting, it was agreed that a questionnaire on low-voltage network protection practices and operating experience would be prepared, with the initial mailing being to the members of the working group. A request has been made to the IEEE Standards Board to obtain a standards project number for this work.

Submitted by:

D. R. Smith 9/21/84

D. R. Smith
Westinghouse Electric Corp.
777 Penn Center Blvd.
Pittsburgh, PA 15235

IEEE/PES TRANSFORMER COMMITTEE
LIAISON REPORTS
OCTOBER 1984

ANSI C57.12.2 - C. P. Kappeler

The ANSI C57.12.2 Subcommittee met in Kansas City on May 4, 1984, and will meet in Boston on October 18 and 19. Work continues on the various distribution standards which are due for revision in 1985, a date which should be met.

The C57/27 joint working group on Cabinet Integrity has met twice since my last report, and has a draft ready for balloting in 1984.

The subcommittee has asked that the IEEE Transformer Committee review the issue of operating temperatures with regard to problems due to cold start-up in extremely cold environments. John Borsts' working group will address this problem.

ANSI C57.15 - A. C. Wurdack

Subcommittee C57.15 has not held a meeting during the last six months.

ANSI C62 - E. J. Yasuda

The following are brief activity summaries of the ANSI C62 and SPDC Meetings held subsequent to the April 1-4, 1984 Vancouver Transformer Committee Meeting:

- o Surge Protective Devices Committee Meetings (April 23-27), 1984 and September 24-28, 1984)

The revisions to ANSI C62.1981 - Surge Arresters for AC Circuits approved by the Standards Board in the spring of 1983 have been type-set for publication. Proof copies were sent to SPDC in September 1984 for final review. The revisions are incorporated into a new edition of ANSI C62.1 and not a supplement.

The draft standard (ANSI C62.11) on Metal-Oxide Surge Arresters was balloted within the SPDC working group. Ballots returned include editorial changes only. The draft will be edited, and then balloted in SPDC in the next few months.

Parts I (Introduction) and II (Neutral Grounding of Synchronous Generator Systems) were balloted within SPDC prior to the fall 1984 meeting. Ballot comments are presently being resolved.

The SPDC reaffirmed IEEE Standard 32 on Neutral Grounding Devices.

A new SPAR has been approved by NESCOM on "Guide for the Application of Surge Arresters in GIS". I will be the coordinator for the Transformers Committee. The task of the working group is to develop a section for inclusion in ANSI C62.2.

A new working group was formed to develop a standard on DC arresters. The initial task includes the review of tests performed on HVDC arresters installed in service.

The SPDC Administrative and Standards Subcommittee directed the head of the SPDC C62 delegations to recommend the C62 scope be revised to include neutral grounding devices (Standard 32) and neutral grounding methods (Standard 143). At the present, the C62 scope considers arresters only.

o ANSI C62 (September 11, 1984)

The Operating Procedures for the C62 Accredited Standards Committee was approved without changes. The IEEE preference on appeal procedures was not adopted. Consistent with the operating procedures, a Vice-Chairman (E. Cohen) was appointed and two working groups were elevated to subcommittees. These subcommittees are: IEC Surge Arrester Standards and Low Voltage Surge Protection.

IEC Working Group 4 on Gapless MOV Surge Arresters met in Chicago on May 8-10, 1984. An additional 2 meetings are scheduled before the final draft would be complete. As directed by TC37, a draft for ballot circulation on a six-month rule needs to be completed by the spring of 1986.

ANSI C68 - L. S. McCormick

No activity within the last six months.

ANSI C76 - N. J. Melton

ANSI C76 no longer exists. At the time of the demise of C76, we were attempting to get an Application Guide for Power Apparatus Bushings balloted and published. The transformer Committee needs to rescue this document (P-800) from limbo and get it published as an IEEE standard.

IEEE Joint Committee on Nuclear Power Stations - L. Stensland

The working group for Qualification of Class 1E Transformers for Nuclear Power Generating Stations will probably issue Draft 14 on P638 sometime before the end of this year to the IEEE/NPEC/SC-2 for ballot.

I have not received any information about their previous or forthcoming IEEE/NPEC/SC-2 meetings.

Standards Coordinating Committee No. 4 - Dr. M. L. Manning

(Insulating Materials and Systems) E. A. Boulter, Chairman, General Electric Company, Lynn Massachusetts 01910 (14 members). Howard Reymers, Secretary, Underwriters' Laboratories, 1285 Walt Whitman Road, Manville, New York 11747.

This committee met on January 30, 1984 in Dallas, Texas, Dallas Hilton Hotel (15 members present). Mainly work by this committee deals with the revision of IEEE No. 1 (General Principles for Temperature Limits in the Rating of Electric Equipment and for the Evaluation of Electrical Insulation). Part III of the revision has two parts -- the first part deals with temperature aspects; the second discusses multi-factor stress aspects. Work will continue at subsequent meetings to determine the important aspects of multi-factor stress aspects.

Presently the revised draft of IEEE 1 has: Part I, General Concepts, Scope and Definitions; Part II, Evaluation of the Thermal Capability of Insulating Materials; Part III, Thermal Evaluation of Electrical Insulating Systems; and Part IV, Limiting Temperatures and Their Measurement for Electrical Insulating Systems.

The comparison IEEE Standards, which complement concepts of IEEE 1, are IEEE 96-96-98-99-101A and IEC 85 and 216. All are under review. Hopefully, the next draft of IEEE 1 will be ready by June 1984.

Standards Coordinating Committee No. 4.1

(U.S. Technical Advisory Group for IECTC-63) E. A. Boulter, Chairman, General Electrical Company, Lynn, Massachusetts 01910 (26 members).

This committee met January 30, 1984 during the Dallas, Texas Winter Power Meeting, and will meet November 26, 1984 at Hilton Head, South Carolina. Documents IEC Report 791 (IEC 63) 19 and 20 - Performance Evaluation of Insulation Systems Based on Service Experience and Functional Tests - will be published. No. 20 is titled "The Multi-Factor Testing of Electrical Insulation Systems" and will be published as IEC Report 792.

Seventeen countries voted approval on these documents and only the United Kingdom voted against them. IEC 91 will have no IEEE counterpart unless SCC 4.1 and SCC 4.0 proceed to develop one. A committee (Multi-Factor Test) under the Electrical Insulation Society which is working on the technology of this type of testing.

Premature failure of electrical insulation and electrical insulation systems has safety aspects in commercial and consumer-oriented products. Sweden has proposed the establishment of TC 63 as a committee with a "Safety Pilot Function". This would

impose increased obligations to utilize functional testing as the acceptable means for determining the stress endurance of insulating systems. Many countries still do not use functional testing of insulation in equipment or models. They prefer lists of materials as the means to select insulation systems. IEC Publication 85 is used a reference to determine acceptable temperature rises for insulation systems. The US National Committee supports the adoption of new functional test methods for safety aspects and incentives. This new thermal evaluation standards should be oriented towards equipment types where the entire equipment or major component can be used as the test object. Individual equipment technical committees can delete portions of the tests not appropriate to their needs. If such a standard can be developed by TC 63, it could be followed by additional, generalized functional test standards for other factors of influence which can affect the safe operation of equipment.

The next meeting of SCC 4.1 and 4.0 is scheduled for November 7-8, 1984 at Hilton Head, South Carolina.

LJS/mps
10/11/84

STATUS OF IEEE AND ANSI C57 BALLOTS, AND PRINTING

9/24/84

ANSI C57
BALLOT NO.

OR	IEEE PROJ. NO.	BRIEF DESCRIPTION	IEEE STD BD SUBM.	ANSI C57 COMM SUBM.	PUB. REV.	ANSI BSR SUBM.	EDIT TYPE SET	PRINT
	P353	HVACC, C57.12.55, Dry Type	N/A	C		To Be Subm.		
	P356	HVACC, C57.13.2, Inst. Tr.		C		To Be Subm.		
	P65	ANSI/IEEE C57.12.56-198X Dry-Type Insul. Testing	C	C	C	C	App. - 8/27/84	
	P93	ANSI/IEEE C57.98-1982 Impulse Test Guide	C	C		To Be Subm.		
	P784	ANSI/IEEE C57.109 Short-Circuit Duration	C	C				
		C57.12.23 Underground 1 Ø Dist. Trans, HV Conn	N/A	C				
		C57.12.26 Padmount 3 Ø Dist. Trans.	N/A	C				
		C57.15 Req., etc. Step & Ind. Regulators						
		C57.95 Loading Guide Step & Ind. Regulators		C				

Subm. = Submitted Bltg. = Balloting IP = In Process C = Complete N/A = Not Applicable

John C. Dutton

John C. Dutton, Chairman - IEEE Delegation to ANSI C57
14

cc: SI Sherr	WJ McNutt	TL Mayes	LW Long
B Stanleigh	LJ Savio	R Hansen	R Uptegraff
M Goulding	DA Yannucci	L McCormick	R Ensign
P. Lange	OR Compton	J Bonucchi	D Kelly
	RL Smith		V Morgan

REPORT OF ACTIVITIES IN CIGRE SC-12 TRANSFORMERS

By

W.J.McNutt - U.S. Representative to CIGRE SC-12

The General Session of CIGRE was held in Paris in late August and early September, 1984. Transformer activities included an open Transformer Discussion session on September 3 and the Study Committee 12 meeting on September 4. During the Transformer Discussion there were three preferential subjects:

Thermal Aspects
Terminals and Connections (Bushings)
Resonant Overvoltages

Some of the highlight items from these activities are listed below.

A. Transformer Session (9-3-84)

Thermal Aspects

1. Experience with direct measurement of winding hot-spot temperature was reported from United Kingdom, Sweden, Finland, China, and the U.S.A. UK has 3 or 4 transformers in service with their Vapor-Therm sensor, which they report lowers the conductor temperature by 3% (heat sink). Sweden (and I believe Finland) use a fiber optic system similar to Luxtron (used in the U.S.). Both reported hot-spot temperatures higher than those calculated by the IEC method or another recommended method called "Multiflow". The exponents derived for conductor rise vs current varied widely and seldom confirmed either the IEC or ANSI recommended values. China gave few details, but reported a circumferential thermal gradient in a top disk section corresponding to the circumferential variation of the leakage flux field.
2. Finland reported hot-spot measurements on a fully loaded FOA transformer following shutdown of the coolers. The temperature rose approximately exponentially from an initial value of about 105°C to 147°C after 150 minutes.
3. The U.K. reported development of a gas-in-oil monitoring system for use on in-service transformers. Three prototypes are in service and the device is scheduled to be in production later this year. Data is recorded locally on a printer/plotter and is also loaded on a cassette. It can be subsequently transmitted from the cassette to a remote location.

Terminals and Connections (Bushings)

4. Considerable interest was shown in Epoxy Resin Impregnated Paper (ERIP) bushings (U.K., France, Germany, Austria). Slides of the 400 KV oil/SF₆ ERIP bushing showed it to be quite short. General usage for oil/air was reported to 230 KV and for oil/SF₆ to 400 KV.
5. A common concern voiced by U.K., Germany, and Italy was the additive effect of I²R and dielectric losses on bushing hot-spot temperature and stability. Several examples were cited for HV bushings where dielectric losses exceeded I²R losses. One example showed the hot-spot location in the dielectric rather than the conductor. Apparently IEC standards suggest the simulation of I²R losses with a resistance heater inside the hollow central conductor for a thermal stability test under maximum operating voltage. An East German speaker showed the results of a test

with actual current in the conductor (current circulated in a loop between two bushings with voltage applied by means of a hi-pot transformer - immersion oil at 90°C). The bushing went unstable after 40 hours (based on measurement of tan S), while it had previously been demonstrated to be stable on the simulation test.

6. The Netherlands reported a practice of taking gas-in-oil samples from operating bushings every 2 years. So far they have only found unusual gas in two bushings. One involved a loose internal connection to the cap. tap.

Resonant Overvoltages

7. A representative of a CIGRE Switching Equipment Working Group reported that their study showed four types of switching or fault events which could provide greater discrete frequency excitation to a transformer than the standard impulse wave.
 - (a) Two phase fault on a line close to the transformer. (Also SLGF, but this gives somewhat lower excitation.)
 - (b) Energizing a transformer terminated line or cable.
 - (c) Lightning stroke entering a station with the arrester remote from the transformer.
 - (d) Circuit breaker re-ignition when interrupting inductive loads.
8. A number of ways of damping the oscillatory voltage arising from the switching event were identified.
 - (a) Opening and closing resistors on circuit breakers associated with transformers.
 - (b) Multiple lines on the transformer bus.
 - (c) R-C damping circuit on transformer terminals.
9. Several speakers described failures of operating transformers which were triggered by oscillatory switching voltages. Most involved the tap winding in some way, or at least a discontinuity in the winding. One failure went from the knee of a zig-zag winding to ground.
10. A German report pointed out the fact that reduced BIL transformers have less demonstrated margin to tolerate resonant overvoltages, because of the lower level of high frequency excitation during the impulse test.
11. A South African delegate showed some very clear oscillograms of measured oscillatory voltages on a 33 KV system. One of these was an oscillation at the transformer terminal resulting from a lightning stroke. It contained oscillatory components in the 9-14 KHz range.

B. SC-12 Meeting (9-4-84)

1. Working Group 12-07 on Resonant Overvoltages will conclude its work with a summary report to be published in Electra. Their conclusions are very similar to those of the IEEE Working Group, namely
 - (a) Oscillatory applied voltages of high amplitude and little damping are rare.
 - (b) Transformer transient strength for impulse voltage capability is usually sufficient to avoid oscillatory voltage failures.
 - (c) System damping should be encouraged.
 - (d) No new transformer tests are called for.Floor discussion exposed a desire to be able to define what should be "Acceptable Duty" for applied oscillatory waves.

2. A new joint Working Group on HVDC Converter Transformers is in the process of formation. W. N. Kennedy will be the U.S. member, since he is the Chairman of the IEEE W.G. on HVDC Converter Transformer Dielectric Tests. The first meeting will be called soon to establish the Convener (Chairman) and to refine the scope of work.
3. A new Working Group on Thermal Aspects of Transformers is to be established, but no convener has been found yet. The Europeans are now showing more concerns for loading practices, temperature limits, direct measurement of hot-spots, etc.
4. Preferred subjects were set for the 1986 CIGRE General Session in Paris.
 - (a) Transformers For Special Purposes (Special duty requirements resulting from operating conditions.) HVDC Converter Transformers will be included.
 - (b) Diagnostic Methods For Transformers In Service. (Hot-spot measurements, PD measurement, detection of mechanical changes, microprocessor systems for surveillance.)
 - (c) Applications of New Materials For Power Transformers. (New steels, including amorphous, non-cellulosic insulation, synthetic insulating fluids, gas insulation, new structural materials.)
5. The 1985 CIGRE Transformer Colloquium will be held in Helsinki, Finland starting June 24. Two of the discussion subjects will parallel the 1986 Preferred Subjects - Diagnostic Methods and New Materials. The third subject will be experience with the new IEC/IEEE dielectric tests.

ANSI - C89 REPORT

10/17/84

S. J. Antalis

1. No ANSI - C89 Meeting was held since last report.
2. ANSI - C89.1 -- Dry Type Machine Tool and Control Transformers --
This Standard is up for re-affirmation. A NEMA section letter ballot will be out in October.
3. ANSI - C89.2 - General Purpose Dry Type Transformers --
This Standard is still in Committee Review for removal of all high voltage (>1.2KV) references to avoid conflict with new ANSI - C57 Dry Type Distributor Voltage Standards. A NEMA section letter ballot will be out in October. This will then be sent to the C89 Committee for review and ballot.
4. Work has been completed to transfer the C89 Committee to an "Accredited Standards Committee", pursuant to ANSI's new requirements.

S. J. Antalis
Liaison Representative

9/28/84

/ef

EPRI REPORT

1. EPRI is funding work with Westinghouse on static electrification of oil, C_2Cl_4 and mixtures of oil and C_2Cl_4 .
2. We are funding advanced winding concepts for large power transformers with Westinghouse leading to a Request for Proposal (RFP) on advanced power transformers some time next year.
3. General Electric, EHV Weidmann and Weidmann in Switzerland have successfully teamed up to produce an advanced insulation concept using the low resistivity pressboard for EHV converter transformers.
4. Amorphous metal transformer work is successfully progressing on wound core distribution transformers and stacked core power transformers with Allied, GE and Westinghouse.
5. Single channel partial discharge detectors are now being successfully marketed by McGraw Edison in Franksville, Wisconsin. Price \$2850.
6. Hot spot detectors have successfully been demonstrated and two manufacturers, Lextron and Technology Dynamics are busy reducing the cost of these detectors so they can be economically applied to medium power transformers and larger.
7. A 65 MVA C_2Cl_4 plus oil (75% - 25%) will be delivered this winter to consolidated Edison for a two year trial. It can be demonstrated that this unit can compete with a conventional oil filled unit.
8. Work is also continuing on loading of power transformers with Westinghouse.

E. T. Norton
EPRI

Papers for Power Group Meetings
D. A. Yannucci

1985 IEEE Winter Power Meeting

There was a total of 15 papers received for review. One paper has been withdrawn and another referred to the Insulation Society. In addition, four others have been transferred to the T&D Committee since they are system related. This leaves a total of nine papers that are in the process of review. More than fifty percent of the reviews are complete. If anyone still has reviews to complete, please do so. I am estimating that we will have six papers for the meeting; two sessions for the papers. We will be well under our quota.

I would personally like to thank all the reviewers for their effort. I also would like to encourage the membership to consider authoring more papers.

For your information, attached is the estimated attendance for the 1984 meeting. We are still faring well with attendance.

**SCHEDULE OF ESTIMATED ATTENDANCE
1984 SUMMER MEETING**

MONDAY, JULY 16
9:15 A.M.

<u>TECHNICAL SESSION</u>	<u>PAPERS</u>	<u>ATTENDANCE</u>
Insulated Conductors I	(4)	30
Power Plant Control	(4)	45
Integration of Direct Load Control into System Operations I	(4)	100
State Estimation I	(3)	25
System Planning I	(5)	45
Transformers I	(3)	50
Air Gap Breakdown and Surges	(4)	35
Towers, Poles and Conductors	(5)	120

2:00 P.M.

Mini-Utilities for Aircraft, Mines, Large Buildings & Marine Applications	PANEL	40
Renewable Energy Projects and Photovoltaic Power Generation	(4)	50
Industrial Structural Changes and the Future Demand for Electricity	PANEL	
Single-Pole Switching for Stability and Reliability	PANEL	65
State Estimation II	(3)	35
System Reliability Methods	(4)	35
Rotating Machinery Design and Analysis	(5)	18
Transformers II	(4)	45
Distribution Systems	(5)	55

TUESDAY, JULY 17
9:00 A.M.

Insulated Conductors II	(3)	30
Design and Operating Aspects of Small Alternative Energy Projects	PANEL	66
Panel Discussion of the Proposed Revisions of the Guide for Preoperational Testing of Class 1E Systems at Nuclear Power Generating Stations (IEEE 415)	PANEL	
Optimal Load Flow	(4) 3 Presented	40
Rotating Machinery Theory and Design	(4)	37
Surge Protection	(3)	25
Electromagnetic Interference	(3)	30
Integration of Distribution Automation Concepts and Equipment into the Utility Operating Environment	PANEL	150
Lightning and Insulators	(3)	30

2:30 P.M.

Special Session: The World-Wide Productivity Race	PANEL	275
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WEDNESDAY, JULY 18
9:00 A.M.

Experiences of Young Engineers in Power Industry	PANEL	80
Utility Interconnection with Dispersed Generating Sources	PANEL	97
Advanced Stabilization Controls	(3)	35
Load Management	(4)	74
Power System Relaying I	(5)	55
Induction Machine Analysis	(3)	20

WEDNESDAY, JULY 18 (con't)
9:00 A.M.

TECHNICAL SESSION
Gas Insulated Substations
Switchgear I
Power System Transient Analysis

PAPERS
(4)
(3)
(4)

ATTENDANCE
40
23
50

2:00 P.M.

Student Professional Awareness
Excitation Systems
Calculation Methods
Impacts of Cogeneration and Dispersed Sources on Electric
Utility Systems
Reactive Power Control
System Simulation for Operations
What's Happening in Load Management
Test and Measurement I
Induction Machines
Substations
Switchgear II
Grounding Practices for Mitigation of Induced Currents
and Voltages

PANEL
(4)
(5)
PANEL
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(4)
PANEL

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100

THURSDAY, JULY 19
8:30 A.M.

Tutorial Course: Power Transformer Considerations of
Current Interest to the Utility Engineer

9:00 A.M.

Realistic Aspects and Concepts for Nuclear Plant Maintenance
Current Operational Problems
Forecasting Demand Side Activities
Integration of Direct Load Control into Systems Operations II
System Analysis Techniques
System Planning II
Test and Measurement II
Power System Relaying II
Insulation Considerations in Rotating Electrical Machinery
Integrated Protection and Control of Transmission Substations

(1) + **PANEL**
(2)
PANEL
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2:00 P.M.

Industry Experience in Qualifying Equipment to Nuclear
Requirements
An Assessment of Utility Peak Load Forecasting Methodologies
in the USA
Recent Advances in SSR Analysis
Residential Load Management Hardware Reliability Measurement
and Procedures
Resource Scheduling
Security Optimization
Power System Relaying III
Synchronous Machines and Systems

(3)
PANEL
(5)
PANEL
(4)
(5) 4 Presented
(5)
(4) 3 Presented

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24
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FRIDAY, JULY 20
9:00 A.M.

Power System Communications
Economic Dispatch
Industry Perspectives of Utility Spot Pricing
Simulation Techniques for Stability Analysis
System Controls
The Role of Utility Marketing in Load Management
Guide for Surge Testing on Low Voltage Electronic Systems
AC and DC Field Effects

(3)
(4)
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PANEL
PANEL
(4)

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REPORT
OF
THE STANDARDS SUBCOMMITTEE
IEEE TRANSFORMER COMMITTEE MEETING
BOSTON, MASSACHUSETTS
OCTOBER 15-17, 1984

My records have the subcommittee chairmen as listed below:

R. E. Uptegraff, Jr.	Dry-Type Transformers
J. D. Borst	Performance Characteristics
R. E. Liebich	Audible Sound and Vibration
R. M. Little	West Coast
L. S. McCormick	Dielectric Tests
C. J. McMillen	Insulation Life
H. A. Pearce	Insulating Fluids
L. R. Smith	Standards
R. C. Thomas	Instrument Transformers
Loren Waggenar	Bushing

The following is a summary of the activities and status of the various subcommittee projects as reported through October 15, 1984.

Project Status

PC57.12.00 - General Requirement for Liquid Immersed Distribution Power and Regulating Transformers

PC57.12.00 Table 6B - Revision of Dielectric Test Requirements for Distribution Transformers. This document is being balloted in the Transformer Committee. (No change)

C57.12.00, Section 5, and C57.12.90, Section 10 - Dielectric Tests for Transformers. Draft #4 was discussed at length in Vancouver and after several editorial changes is being re-balloted.

PC57.12.01 - General Requirements for Dry-Type Distribution and Power Transformers

Development of specific changes related to solid resin encapsulated coils is continuing. (No change)

PC57.12.91 - Test Code for Dry-Type Distribution and Power Transformers - Specific concerns to be worked on are partial discharge tests, thermal cycling tests, and insulation tests.

PC57.18.10 - Semi-Conductor Rectifier Transformer

A draft has been prepared for review. (No change)

- PC57.21 - American National Standard Requirements, Terminology and Test Code for Shunt Reactors
- This project is being discussed at the Task Force Level. Hope to get enough input in Boston to have draft ready for next meeting.
- PC57.93 - Guide for Installation of Liquid Immersed Power Transformers
- Authorization to proceed with this guide was received September 5, 1983. Various sections of the guide were submitted by working group members and reviewed at the March 8, 1983 meeting of the West Coast Subcommittee. No working group meetings have been held since that time. We are presently trying to figure out a way to get the project moving again.
- PC57.95 - Loading Guide for Regulators
- Approved by IEEE Standards Board March 22, 1984. Has been submitted to ANSI.
- PC57.96 - Guide for Loading Dry-Type Distribution and Power Transformers
- Draft #5 is in preparation to be balloted simultaneously in the Working Group and Dry-Type Transformer Subcommittee.
- C57.102 - IEEE Guide for Acceptance and Maintenance of Transformer Askarel in Equipment
- PAR sent back for revision. This project has been renumbered. Was P76. No progress reported. Will Henry Pearce bring this up-to-date?
- PC57.104 - Guide for the Detection and Determination of Generated Gases in Oil Immersed Transformers and their Relation to the Serviceability of the Equipment
- Further discussion of gas guide in preparation for sending out questionnaire.
- PC57.110 - Harmonic Load Current Heating of Transformers
- Draft #5 is being reviewed in the Working Group.
- PC57.111 - Guide for Acceptance and Maintenance of Silicone Liquid in Equipment
- Will review results of Draft #5 ballot in Boston.

- P21 - Revision of ANSI C76.1
Draft #5 was balloted in the Subcommittee and Main Committee.
Several negative ballots and comments to be resolved in Boston.
- P24 - Revision of ANSI C76.2
Published in June 1984 as ANSI/IEEE 24.
- P65 - Thermal Evaluation of Ventilated Dry-Type Power and Distribution Transformers
Complete approval by ANSI BSR August 27, 1984.
- P93 - Transformer Impulse Tests (C57.98)
Approved by ANSI Subcommittee to be submitted to ANSI BSR.
- P262E - Revision of C57.12.90 Loss Tolerance and Measurement
P262E/D6 - Proposed addition to C57.12.90, Section 9.2.4.2.
Corrections to Load Loss Measurements. Draft 6 being balloted
in the Working Group. Returns due October 15, 1984.
P262E.1/D3 - Proposed revision of C57.12.90, Sections 8.1 and
8.2.2 (new). No load loss temperature correction. Still on
hold pending verification of correction method. (No change)
P262E.2/D7 - Proposed addition to C57.12.90, Section 8.3.2.1 and
deletion of Section 8.3.3. Voltmeter connection for no-load loss
measurement. Being balloted in the Working Group with returns
due October 15, 1984.
C57.12.90; 8.2.1 Assumed to be still waiting additional data.
Need information as to status.
- P345 - Review of IEEE Std. 345-1972 Test Procedures for Thermal Evaluation
of Oil Immersed Distribution Transformers (C57.100-1974)
Passed by Standards Board. Huber sent to Hansen on August 22
asking for ANSI ballot. New in ANSI C57.12.20 for action.
- P462C - Revision of C57.12.00, Section 5.9, Loss Tolerance and Measurements
Draft #3 still on hold pending resolution of correction method
under P262E.1/D3. (No change)


- P462D - Revision of C57.12.00, Section 9.1. Wording of Ratio Tolerance.
Draft #4 failed in the Transformer Committee. Draft #5 is under development.
- P513 - Seismic Guide for Power Transformers and Reactors
Balloting completed. Final document has been transmitted to IEEE Standards Board on April 24, 1984.
- P545 - Recommended Practice for Partial Discharge (Corona) Tests for Transformers
Still being discussed in working group. (No change)
- P546 - Revision of ANSI Requirements for Instrument Transformers C57.13-1978.
Draft #1 submitted to Transformer Committee for ballot. Due back October 12, 1984.
- P637 - Proposed Guide for the Reclamation of Insulating Oil and the Criteria for Its Use
Complete. Waiting for issue.
- P638 - Standard for Type Tests on Class 1E Transformers for Nuclear Power Generating Stations
The negative ballots received on draft #13 from NPEC SC-2 are being addressed.
- P670 - Switchgear and Transformers Working Group on Instrument Transformers for High-Voltage Circuit Breakers
New Chairman, John Reckleff of A.E.P., Columbus, Ohio has accepted chairmanship and will be starting this project up again.
- P731 - Revision of Guide for Loading Current Limiting Reactors, ANSI C57.99
Still looking for Task Force Chairman.
- P732 - Revision of Current Limiting Reactor Standards, ANSI C57.16
Jack McGill has now accepted this job and is forming a Working Group to start work.

- P745 - Guide for Conducting a Transient Analysis for Dry-Type Transformers (C57.XX)
Draft #5 approved by Transformer Committee. To be submitted to IEEE Standards Board.
- P756 - Guide for Loading Transformers Above 100 MVA
Published July 1984 as IEEE Std. 756.
- P757 - IEEE Guide for Loading Power Apparatus Bushings
Work under way in IEEE to incorporate new document in Bushing Application Guide C76.3 (P800).
- P784 - Transformer Through Fault Current Duration Guide
Awaiting publication by ANSI as C59.109
- P785 - Transformers Connected to Generators
Still under deliberation by Working Group. (No change)
- P786 - Transformer Failure Reporting and Reliability Analysis
Draft #6 is currently being balloted in the transformer committee with returns due September 28, 1984.
- P799 - Guide for Handling and Disposing of Askarels
Draft #5 ballot will be reviewed in Boston.
- P800 - Bushing Application Guide
Negative ballots and comments of Draft #2 ballot of P800.1. (Application of Bushings in Conservator Type Transformers) being reviewed in the subcommittee.
Work being done in ANSI C76 to incorporate a bushing application guide to include forward and already approved sections on purpose, scope, contriliver loading and loading of bushings applied to transformers above nameplate ratings.
- P801 - Recommendations for Revisions to ANSI C57.15 Requirements, Terminology, and Test Code for Step-Voltage and Induction-Voltage Regulators
Results of Draft #9 ballot will be discussed in Boston.

- P838 - Guide for Performing Overload Heat Runs
Draft #8 submitted to Working Group for Ballot. Returns due October 5, 1984.
- P842 - Loss Evaluation Guide for Power Transformers and Reactors
Draft 9 of the proposed guide was reviewed at the July 17, 1984 meeting of the working group. After an 8-hour discussion, it became apparent that there are some fundamental problems with philosophy and understanding that must be ironed out in order to progress further.
- P852 - Bushings to Operate in Gas-Insulated Substation
Draft #1 still in progress in Working Group. (No change)
- P954 - Guide for High Temperature Hydrocarbon
Will review Draft #4 in Boston.
- P1052 - Dry-Type Transformer Through Fault Current Duration Guide
New project.

A new PAR has been submitted to the Chairman for "Proposed Standard Test for Thermal Evaluation of Insulation Systems for Solid Cast and Resin Encapsulated Power and Distribution systems". A revised draft document is in preparation.

If readers of this report note any projects listed that are no longer active or valid and should be removed or if any active ones are not listed, please let me know so that I can add or delete as necessary. Please furnish P number, title, and relation to IEEE or ANSI Standard.


Ray Smith, Chairman
Standards Subcommittee

REPORT OF THE INSULATION LIFE SUBCOMMITTEE
TO THE TRANSFORMERS COMMITTEE

OCTOBER 17, 1984

PARK PLAZA HOTEL, BOSTON, MASSACHUSETTS

The Insulation Life Sub-Committee met Tuesday, October 16. Attendance was 25 members and 27 guests for a total of 52. All 3 of our Working Groups reported.

The first working group reporting was the Working Group on Thermal Evaluation of Power and Distribution Transformers by Al Wurdack, Chairman. That group met Monday, October 15, with 4 members and 20 guests in attendance.

Project 345, ANSI Standard C57.100, the revision of, The Standard Test Procedure for the Thermal Evaluation of Oil-Immersed Distribution Transformer, has been approved by the IEEE Standards Board and ANSI C57. It was, however, in limbo for several months. It was rescued from there, but now being held hostage pending approval of the printing expense.

A proposal to prepare a standard test procedure for the Thermal Evaluation of Oil-Immersed Power Transformers was initiated. Some difficulty was experienced in starting discussion of the goals and limits of the proposed procedure. It was apparent that most of the attendees, since they were primarily non-members of the Working Group, were not familiar with P345, ANSI C57.100, the Thermal Evaluation Procedure for Distribution Transformers. The need for such a procedure for Power Transformers was doubted by some and/or did not see what would be accomplished, or whether the benefits would warrant the effort. To provide background material for the members of the Working Group and others who may be interested, Al Wurdack will furnish a copy of P345 along with a condensed review of that procedure. A list of references will be compiled and the material dealing with the recent EPRI Power Transformer model tests of Power Transformers contained in the Appendix of the Trial Use Loading Guide for Transformers Above 100 mVA.

With this data and feedback from the membership of the Working Group and others interested, the Working Group will try to answer the following questions:

- a) Do we need such a procedure considering the time and effort that will be expended?
- b) Will a statement or paragraph in the contemplated loading guide revisions be sufficient?

There being no further discussion, the meeting was adjourned.

The next Working Group reporting was on Thermal Tests by Chairman Bob Veitch. This group met Monday with an attendance of 11 members and 9 guests.

After the Vancouver meeting, Draft 7 of the "Recommended Procedure for Performing Temperature Rise Tests at Loads Beyond Nameplate" was modified to incorporate changes which had been agreed to. Draft 8 was balloted by the Working Group as follows:

CJMT1

Ballots sent out	7
Approved with comments	8
Not approved	4
Total returned	19 (73%)

As a result of the ballot, 16 changes were proposed, accepted and will be included in Draft 9.

An additional major change was proposed by Dave Douglas, but this was not discussed at the meeting. Dave is proposing that a combined test for Parts A and B be recommended. Part A is a procedure for determining the thermal characteristics of the transformer, and Part B a procedure for performing a load cycle transient temperature rise test. Dave will prepare a write-up of his proposal that will be included in Draft 9. Bob requested that Draft 9 be submitted for ballot in both the Working Group and the Insulation Life Subcommittee. The Chairman agreed that both should be balloted to obtain a broader input to the Working Group.

The last Working Group Report was from Bill Wrenn, Chairman of the Loading Guide Working Group. Bill has assumed Chairmanship upon the retirement of Ron Olsson August 1st of this year. This group met Monday. There were 20 members and 15 guests in attendance. Three new members were added to the Working Group. T. P. Traub of Commonwealth Edison Co. replaced R. H. Tempel of that company. T. N. (Rock) Young replaced Clive Gordon as Toledo Edison's representative. Herb Pflanz, Consultant of Boston, has joined us to head the Task Force in revision of the Guide for Loading Current Limiting Reactors.

Ron Olsson, past chairman of the Working Group, was recognized by the Working Group for his years of productive leadership.

The Trial Use Guide for Loading Transformer above 100 MVA, IEEE No. 756 has been published and is now available for purchase.

The Regulator Guide, C57.95 is now passed by the IEEE Standards Review Board and the C57 Committee. It has been submitted to the ANSI Standards Review Board.

C57.91 and C57.92 Loading Guide revisions are now being reviewed under the leadership of Olin Compton. This group met immediately following adjournment of the Working Group. This Task Force and guests had a lively discussion of many of the facets of both guides. A study will be made of both guides considering the advisability of combining both guides into one.

A task force to revise the Guide for Loading Current Limiting Reactors, C57.99, was formed, headed by Dr. Herb Planz. This group as of now has only one user representative. If more users do not come forth, it might be considered reasonable to assume that no user loads these reactors sufficiently to require a loading guide, and the project will be dropped.

Jacques Aubin reported on the activities of IEC in regard to the revision of their publication No. 354, "Loading Guide for Oil-Immersed Transformers".

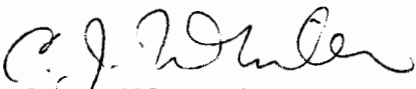
A change in the computer flow diagram to condense its treatment of the ambient temperature was adopted for the next submission for ballot among the national committees. This next draft will be available for ballot in the Spring of 1985. A consensus was achieved among the IEC Working Group to recognize thermally upgraded Kraft paper, establishing it at 15° higher hottest spot temperature and with the same rate of aging as plain Kraft paper (the Montzinger 6 Degree Rule).

Charles Mitchell requested information regarding retention time for earlier drafts of loading guides, such as those for transformers above 100 mVA. This was discussed and it was agreed that guidelines should be established. In our present litigious society, such considerations are of growing importance.

IEEE Guide No. 756, the Loading Guide for Power Transformers above 100 mVA, is issued as a one year "Trial Use" guide. The task force, which produced it, should stand ready to respond to questions and to carry it on to full ANSI Guide stature, unless it is decided to include it in the revision and/ or consolidation of C57.91 and C57.92.

That concluded the Working Group reports.

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


C. J. McMillen, Chairman
Insulation Life Subcommittee

DRY TYPE TRANSFORMER SUBCOMMITTEE
REPORT TO THE TRANSFORMERS COMMITTEE

The Dry Type Transformer Subcommittee met at 1:15 P.M. on Tuesday, October 16, 1984 with 12 members and 23 guests present. The Working Groups reported as follows:

1. Working Group on Standards for Dry Type Transformers Incorporating Solid Cast and Resin Encapsulated Coils, chaired by Mr. Egon Koenig, met Monday with 16 members and 7 guests. Mr. Mayshak and Mr. DePuy have resigned as members of this working group. The group reviewed four areas of interest:
 - a. Proposed changes in The General Requirements for Dry Type Transformers, ANSI C57.12.01, Table 3, to present alternate BIL insulation levels coordinating with corresponding different levels of surge protection. Mr. Mutschler agreed to prepare revised table in line with this discussion.
 - b. The subject of insulation arc resistance was introduced by the chairman; and after considerable discussion, it was decided to leave the specifications of arc resistance tests to the users.
 - c. Insulation flammability was next considered, there being some concern for the potential hazards to personnel should the insulation be ignited due to a transformer failure and fail to be extinguished upon opening the circuit to the transformer. It was decided that this subject should be further explored by reviewing the practices employed here and abroad. Mr. McGill and

Mr. Dutton volunteered to investigate sources for this kind of information.

d. Finally, the Working Group discussed partial discharge testing to determine insulation integrity as may be compromised by cracks and voids in the solid insulation of both conventional impregnated windings, as well as, windings with solid cast insulation. A two-step procedure was proposed. First, a partial discharge test method should be developed, including the equipment used, for this specific type of test, as may be proposed by transformer manufacturers. Second, criteria would then be developed to determine acceptable levels of partial discharge.

2. Working Group on Dielectric Problems, chaired by Mr. Jerry Corkran, met on Monday with 9 members and 14 guests present. As reported at the previous meeting in Vancouver, P745, "Guide for Conducting a Transient Voltage Analysis of a Dry Type Transformer Coil", was successfully balloted; and on October 8, 1984, the guide was sent to the Working Group for final review of editorial corrections before forwarding to the IEEE Standards Board. The subject of partial discharge test procedures was then reviewed with the intention of assisting Mr. Koenig's Working Group with a partial discharge test procedure. A poll of 12 dry type manufacturers revealed that no one consistent procedure was in use and that the Trial Use Guide for Partial Discharge Measurement in Power Transformers and Shunt Reactors is not applicable to dry type transformers in its present form. A motion made by Mr. Jonatti to request a task force to develop a guide for conducting

partial discharge tests on dry-type transformers was passed. A project authorization request (PAR) is being prepared.

3. Working Group on Thermal Evaluation of Insulation, chaired by Dr. George Bowers, met on Monday with 11 members and 6 guests present. The Working Group revised the discussion document, Thermal Evaluation of Insulation Systems for Solid Gast and Resin Encapsulated Power and Distribution Transformers. The document was then considered to be in good order suitable for submission to ballot of the Working Group.
4. Working Group to revise the Dry Type Transformer Loading Guide, ANSI C57.96, chaired by Mr. Bill Mutschler, met on Monday with 7 members and 8 guests present. The 5th draft of the revised standard was distributed. This draft incorporated all changes previously proposed, including a revised table of short time overload capabilities corresponding to various levels of prior steady state loading. The computer program used to develop this table was distributed, and the results derived, thereby, were discussed. It was concluded that alternative parameters derived from a variable time constant be applied to the program and that a revised draft be balloted by the Working Group. Members were requested to review draft #5 in the meantime and to send comments to the chairman for inclusion in draft #6.

5. Working Group on the Dry-Type Transformer Through-Fault Current Duration Guide, chaired by Mr. Roy Uptegraff, met Tuesday morning with 10 members and 12 guests present. Discussed were the results of a ballot sent to the Working Group on April 27, 1984. Although there was only one dissenting ballot, the reasons given for not approving the document were considered sufficiently significant as to call for a complete review of the relationship of the proposed guide to other guides presently accepted for use with liquid immersed distribution and power transformers. It was concluded that a new draft be developed to be more nearly consistent with the existing guides, namely, the Guide for Protective Relay Applications to Power Transformers, ANSI C37.91 and the liquid filled Transformer Through-Fault Current Duration Guide, ANSI C57.109.
6. Working Group on Evaluation of Insulation Systems for Specialty Transformers. As reported at the Vancouver meeting, this Working Group continues to be without a chairman, and the search is being continued to try to reactivate this Working Group.

9. Adjournment

10. The next meeting is April 14-17, 1985 at Stouffer's Riverfront in St. Louis, MO.

A handwritten signature in cursive script, appearing to read 'H.A. Pearce', written in dark ink.

H.A. Pearce, Chairman
Insulating Fluids Subcommittee