POWER SYSTEM RELAYING COMMITTEE

OF THE

IEEE POWER ENGINEERING SOCIETY

MINUTES OF THE MEETING

January 13-16, 2003

Scottsdale, AZ

Approved at the Raleigh Meeting of the Main Committee, 22 May 2003

Power System Relaying Committee
Main Committee Meeting Agenda
January 16, 2003

Scottsdale, AZ

I.	**Call to order / introductions**		**Taylor**
II.	**Approval of Minutes/ Financial Report**		**Henville**
III.	**Presentation of Recently Completed PC37.104, Guide for Automatic Reclosing of Line Circuit Breakers for AC Transmission and Distribution Lines**		**Strang**
IV.	**Reports of Interest**		
	A.	**Chairman's Report**	**Taylor**
	B.	**Technical Paper Coordinators Report**	**Winston**
	C.	**PES Report**	**McDonald**
	D.	**Cigre Report**	**Cease**
	E.	**EPRI Report**	**Burger**
	F.	**IEC Report**	**Udren**
	G.	**Standard Coordinators Report**	**Sachdev**
	H.	**Substation Committee Report**	**Tengdin**
V.	**Subcommittee Reports- in order**		
		C - Systems Protection	**Novosel**
		D - Line Protection	**Carpenter**
		H - Relaying Communications	**Fodero**
		I - Relaying Practices	**Gilbert**
		J - Rotating Machinery	**Conrad**
		K - Substation Protection	**Chano**
VI.	**Old Business**		**Taylor**
VII.	**New Business**		**Taylor**
VIII	**General Announcements**		**Taylor**
IX	**Adjourn**		

Minutes of IEEE PSRC Meeting January 13-16 2003

Call to order / introductions **Nail**

Rick Taylor called the meeting of the IEEE/ PSRC Main Committee in Scottsdale, AZ to order at 8:05 AM on January 16, 2003.

Approval of Minutes – Ponte Vedra Beach meeting and misc. Henville

The minutes of the Ponte Vedra Beach meeting September 9-12, 2003 were approved. It was noted that although the registration fee was $80 for the Scottsdale meeting, that in future meetings, the fee would likely have to be raised to $100 in order to cover costs.

Chairman's Report **Taylor**

The PSRC met at the Embassy Suites Hotel in Phoenix. Also meeting with us were the Communications Committee, 3 Cigre working groups, and the UCA2 users group. Our attendance and participation were excellent with more than 180 registered for our meeting. This meeting was the first for the new officer positions. The current officers are Rick Taylor, Chair; Phil Winston, Vice Chair; Charlie Henville, Secretary; and Miriam Sanders, Assistant Secretary. Moh Sachdev has agreed to continue as Standards Coordinator.

At the Advisory Committee meeting, it was decided that the working groups under the administrative subcommittee [those with a B identifier], should be represented at future AdCom meetings. This would include the Fellows Awards chair, Jim Thorp; the Membership chair, Mal Swanson; the O&P Manual Revision / Working Group Training Chair, John Appleyard; the Bibliography and Publicity chair, Tarlochan Sidhu; the Long Range Task Force chair, George Nail; and the Web Site chair, Bill Lowe. The Awards and Recognition Working Group, chaired by Roger Hedding meets at the same time as the AdCom meeting. It is recommended that Roger provide a report to the PSRC chair following his meeting.

The Long Range Task Force has been asked to review the concept of "Honorary Member" and to make recommendations as to the purpose of this membership level and how it should be implemented.

Among the goals and objectives established for the next two years, we plan to review the equipment standards supported by PSRC and make efforts to eliminate both duplication and conflict with existing IEC standards. We also plan to strongly encourage our main committee and subcommittee members to apply for Senior Member status with IEEE. From the viewpoint of the PSRC, an increase in Senior Members enhances our stature and image and improves our ability to nominate and support Fellow candidates. From the viewpoint of the individuals, Senior Member status is prestigious and is recognized by the engineering community and by employers as a significant achievement.

Another goal we will pursue is to resume training of working group chairs and grooming of potential working group chairs. It is important we provide these dedicated volunteers with the information and support necessary to accomplish their assignments. It is equally important to identify potential leaders as early as possible and to establish a pool of qualified personnel to be available to lead future working groups.

Technical Paper Coordinators Report **Winston**

The next conference for which technical paper sessions are to be coordinated is the PES General Meeting, scheduled for Mid-July in Toronto, Canada. To date IEEE has referred thirty-eight papers to the PSRC for review and/or consideration. It is tentatively planned to

have three technical sessions with the remaining accepted papers being referred to the poster session.

Additionally, papers are being submitted for consideration for the PES T&D Meeting in September in Dallas.

PES Report **John McDonald**

The IEEE PES Executive Committee (ExCom) met on Thursday, October 10, 2002 at the IEEE PES Transmission and Distribution Conference and Exhibition 2002 Asia Pacific in Yokohama, Japan. This report will summarize the highlights of the meeting.

2002 Governing Board and Executive Committee Meetings

The PES Executive Committee (ExCom) meets twice each year, in addition to the two Governing Board Meetings. In 2002 ExCom scheduled the two meetings to support regional PES T and D meetings. In the Spring, ExCom met Thursday, March 21 in Sao Paulo, Brazil during the IEEE PES T and D 2002 – Latin America Conference and Exposition March 18-22. ExCom participated in the Region 9 Chapter Chairs Meeting following that event on March 22. In the Fall, ExCom met Thursday, October 10 in Yokohama, Japan at the IEEE PES Transmission and Distribution Conference and Exhibition 2002 Asia Pacific. ExCom also participated in the Region 10 Chapter Chairs Meeting following that event on October 11.

PES Elections

The preference is to have contested elections for the three elected PES positions of President-Elect, Secretary and Treasurer and for the IEEE position of Division VII Director. All interested candidates should contact Don Volzka, Chair of the PES Nominations & Appointments Committee, to express their interest (d.volzka@ieee.org). Candidates for President-Elect must have at least two years of Governing Board experience.

Technical Information Services Accomplishments

All Transactions Editor-in-Chiefs and most editors are using the Manuscript Central platform, resulting in shorter cycle times and more papers being processed. Significant progress has been made in clearing older papers. With the improvements in the paper review process, paper submissions as well as published page counts are increasing. Special provisions have been made for fast track review of high quality conference papers published in PES-sponsored conferences. A Manuscript Central site has been established for electronic submission of “PES Letters” directly by authors. Work is continuing on the design of the new PES web site, which will be launched by the end of 2002. An electronic platform (similar to Manuscript Central) has been established for authors of the ESMO Conference (April 2003) to upload their papers directly. This site will also be used for review and author notification. A similar site will also be available for the 2003 General Meeting papers.

Industry Focus Group Meeting in Chicago

During the recent IEEE PES Summer Meeting in Chicago, the PES Executive Committee held an industry focus group meeting with local industry leaders to learn what their expectations are from the PES, and to ensure they are familiar with the PES, its activities, and the benefits of PES participation. The seven industry leaders who participated were Tom Voss, Executive VP,

Ameren Services; Charles Lipsky, Vice President & Chief Engineer, New York Power Authority, Chairman NPCC; Ernie Hiatt, Davies Consulting; Jose Delgado, CEO and President, American Transmission Company; Robert Snow, Manager System Planning, Public Service Electric & Gas; Jim Hallar, Northern Indiana Public Service Company; and Greg Dudkin, Executive Vice President Operations, Commonwealth Edison. Charles Lipsky and Robert Snow participated in the previous Focus Group Meeting held in January during the Winter Meeting, and were invited to participate again in Chicago. Mariesa Crow summarized the findings from this meeting and action items were taken on by those responsible for areas in which suggestions were made. A follow-up discussion was held by the PES Executive Committee at this meeting. This is the third industry focus group meeting held by the PES, and the PES plans to continue holding such focus group meetings at the General Meetings in the future. These meetings provide valuable input that will help PES provide ever-increasing value for our members and their employers and should help meet the PES goal of enhancing employer support for participation in PES activities.

Power Systems Basics for Business Professionals Short Course Given in Chicago

This short course is intended to provide an overview of power system operation and regulatory and policy issues for professionals without an engineering background (i.e., no equations), and was offered in conjunction with the IEEE PES Summer Meeting in Chicago in July. The fee for the Special Tutorial was $150 and full conference registration was not required to attend. Space was reserved for 50 attendees and there were over 100 registrants with a waiting list! There were many positive evaluations and this short course will be offered again.

2003 IEEE PES Winter Technical Committee Meeting

With the change in meeting format with one General Meeting in the May/June timeframe and a conference and exposition in the October timeframe, those Technical Committees that have met at the Winter and Summer meetings will undergo a change in their meeting schedule to meet at these new venues. However, in 2003, the General Meeting and the T and D Conference and Exposition are not in line with the ideal timing due to venue availability. Accordingly, for 2003, the Technical Activities Department, using the services of IEEE Conference Management Services, is planning a Winter Technical Committee Meeting for all Technical Committees in January. The meeting is distinctly to be a gathering place for any Technical Committees that wish to participate. The IEEE PES Transmission and Distribution Committee, the Substations Committee, the Energy Development & Power Generation Hydroelectric Power Subcommittee, and the IEEE Standards Coordinating Committee on Power Quality (SCC 22) will meet at the Riviera Hotel in Las Vegas January 27-30, 2003. Detailed meeting schedules and registration information are available on the “Meetings” page of the PES web site. For more information please contact: T&D Committee, Richard Piwko, +1 518-385-7610; Substations Committee, John McDonald, +1 678-966-0363 x227; ED&PG Committee, Steve Brockschink, +1 503-297-1631; and SCC 22, David Vannoy, +1 302-528-1938.

Industry/Education Manpower Development Workshop

A Power Engineering Industry/Education Manpower Workshop was held May 19-21 in St. Louis. The workshop included presentations by the IEEE PES Council on Manpower Needs, from both the industry and academic perspectives, as well as breakout sessions on the following topics: model power engineering curriculum for the 21st century; power engineering job situation; the role industry can play in education; promoting power engineering to students; power engineering

research and development; and diversity in power engineering. A panel session on this subject is planned for the IEEE PES General Meeting in July 2003 in Toronto.

Standards Strategy Task Force

The PES Standards Coordinating Committee has organized a Task Force of select persons representing the key standards-writing Technical Committees to develop a standards strategy for PES. Such persons are meeting under the leadership of Gary Engmann and input from all interested parties would be welcome.

CIGRE-PES Policy for Cooperation

One action being taken under the CIGRE-PES alliance is the conduct of a conference on the subject "Quality and Security of Electric Power Delivery Systems" in Montreal October 6-10, 2003. PES President-Elect Teddy Püttgen participated in the first organizational meeting held May 21-22, 2002 in Brussels, Belgium with Technical Program Committee representatives Erich Gunther and Rao Thallam. John Estey, Bob Dent and Teddy Püttgen attended the CIGRE Conference in Paris in August. During the Conference, they met with David Croft, CIGRE President; Jean Kowal, CIGRE Secretary General; Yves Filion, Co-Chair of the Montreal meeting; and Alain Robert, Chair of the Technical Committee for the Montreal meeting.

Upcoming Governing Board Meeting

The IEEE PES Governing Board will meet on January 30, 2003 in Las Vegas, Nevada in conjunction with the 2003 IEEE PES Winter Technical Committee Meeting January 27-30.

CIGRE Report **Cease**

At the 2002 General Session of CIGRE in Paris, France meeting Study Committee 34 became Study Committee B5. Also at this meeting the chairmanship of SC-B5 changed from Gerhard Ziegler to Ivan de Mesmaeker. Paul Hindle remains as the secretary

The 2003 Colloquium will be held in Sydney, Australia September 28 to October 3, 2003. For details of that meeting including information on venue, dates, preferential subjects and other matters of importance please visit the websites for the meetings shown below. The preferential subjects for the 2003 Colloquium are:

1. Automation of New and Existing Substations
   Special Reporter: Walter Baas (Switzerland)
   The US has 1 paper in this session

2. Fault and Disturbance Data Analysis
   Special Reporter: Mladen Kezunovic (USA)
   The US has 5 papers in this session

3. Modern Distance Protection Functions and Applications
   Special Reporter: Demetrious Tziouvaras (USA)
   The Us has 2 papers in this session

Up-to-date information can be found on the Australian web site http://www.cigre.org.au/ or you can link there from the SCB5 web site http://www.cigre-sc34.org/.

The 2004 General Session will be held in Paris as normal. The 2005 Colloquium will be held is Calgary, Canada. More details will be provided later.

There will be a joint CIGRE/IEEE-PES International Symposium titled “Quality and Security of Electric Power Delivery Systems” held in Montreal, Canada October 7-10, 2003. The CIGRE Website has a call for papers for that conference. One of the topics is “Impact Of Protective Device Practices On System Quality, Reliability And Security”. The deadline for receipt of abstracts is January 6, 2003. The full paper will be required by June 2, 2003.

Also there is a need for a member for CIGRE WG34.10 Protection of Series compensated lines & series capacitor banks. Anyone interested please contact me.
T. W. Cease Phone, +1 (423) 344-2369 email twcease@ieee.org

EPRI Report **Burger**

Starting at noon on Thursday, following the main committee meeting, we will have an open, general UCA Users Group meeting and 'Interoperability Demo'. At the general meeting we will have presentations

IEC Report **Udren**

Standard Coordinators Report **Sachdev**

The Standards Coordinator, Mohindar Sachdev, met with the Chairs of the Working Groups writing and revising standards documents at 8:00 AM / 9:45 AM on January 14, 2003 in Ballroom A / Ponte Verde II room, Phoenix-Scottsdale-Paradise Valley Embassy Suites, Phoenix, AZ.

The status of PARs, Standards and Guides, were reviewed at the meeting. The status of the PARs is summarized in this report. The actions to be taken for keeping up-to-date the approval of the PARs and for keeping live the Standards and Guides are identified. A summary of the specific approvals received, since the September 2002 meeting of the PSRC, are identified as well.

Information concerning the Standards Association (SA), Board of Governors, Committees of SA, the Development of standards, Recommended Practices and Guides and related issues is available on the following web site.

http://standards.ieee.org/

Some of the other web sites for obtaining useful information are as follows.

Information on	Web site address
PAR application, extension and other forms	http://www.standards.ieee.org/guides/par/
Style manual	http://www.standards.ieee.org/resources/glance_at_writing_new.html
Template	http://www.standards.ieee.org/resources/glance_at_writing_new.html
Status of standards etc	http://www.standards.ieee.org/db/status/status.txt

NesCom activities	http://www.standards.ieee.org/board/nes/
RevCom activities	http://www.standards.ieee.org/board/rev/
SA Operations Manual	http://www.standards.ieee.org/sa/sa-view.html
SA Bylaws	http://www.standards.ieee.org/sa/sa-view.html
SB Operations Manual	http://www.standards.ieee.org/board/
SB Bylaws	http://www.standards.ieee.org/board/

The new policy in developing standards requires the implementation of the following metric policy.

> **Proposed new standards and revised standards submitted for approval shall use metric units exclusively in the normative portions of the standard. Inch-pound data may be included, if necessary, in footnotes or annexes that are informative only.**

For more information on this policy, visit

http://www.standards.ieee.org/announcements/metricpolicy.html

Standards Coordination Effort

PARs applied for by the Committees of the Power Engineering Society (PES) are being circulated among the Standards Coordinators of the PES Committees. The number and title of each new PAR approved by the Standards Board is posted on the PSRC Web site at the following address.

http://www.pes-psrc.org/Astandards.html

The copy of the PAR can be viewed by clicking at the number of the PAR in the list. All members of the PSRC are requested to review the newly approved PARs. If you are interested in the development work planned in a PAR, contact the Chair of the Working Group that is developing the document and sign up for participating in the activity of that Working Group.

STANDARDS ACTIVITIES SINCE THE SEPTEMBER 2002 MEETING OF THE PSRC

The status of the standards approval activities, which have taken place since the September 2002 meeting of the PSRC, is as follows.

1. Standards Approved

PC37.94	Standard for N times 64 kilobit per second Optical Fiber Interface between Tele-protection and Multiplexer Equipment
PC37.95	Guide for Protective Relaying of Utility-Consumer Interconnections
PC37.104	Guide for Automatic Reclosing of Line Circuit Breakers for AC Transmission and Distribution Lines

2. Standards submitted for approval

PC37.95 Guide for Protective Relaying of Utility-Consumer Interconnections

PC37.104 Guide for Automatic Reclosing of Line Circuit Breakers for AC Transmission and Distribution Lines

3. Standards to be submitted for approval

PC37.106 Guide for Abnormal Frequency Protection for Power Generating Plants

PC37.115 Standard for Test Method for Use in the Evaluation of Message Communications Between Intelligent Electronic Devices in an Integrated Substation Protection, Control and Data Acquisition System

4. Standards recirculated

PC37.106 Guide for Abnormal Frequency Protection for Power Generating Plants

PC37.115 Standard for Test Method for Use in the Evaluation of Message Communications Between Intelligent Electronic Devices in an Integrated Substation Protection, Control and Data Acquisition System

5. Standards balloted

C37.92 Standard for Low Energy Analog Signal Inputs to Protective Relays

PC37.114 Guide for Determining Fault Location on AC Transmission and Distribution Lines

6. Standards submitted for balloting

PC37.90 Standard for Relays and Relay Systems Associated with Electric Power Apparatus

PC37.93 Guide for Power System Protective Relay Applications of Audio Tones over Telephone Channels

PC37.103 Guide for Differential and Polarizing Circuit Testing

7. Standards being balloted

None

8. Standards to be expedited for Balloting

PC37.105 Standard for Qualifying Class 1E Protective Relays and Auxiliaries for Nuclear Power Generating Stations

The PARs approved since September 2002, submitted, and the PARs for which extension has been applied are as follows. The PARs, which will expire in the near future, are also listed. Applications for extending the lives of these PARs should be filed soon.

9. New PAR applied for

None

10. PAR approved by NesCom

PC37.230	Guide for Protective Relay Applications to Distribution Lines
PC37.231	Recommended Practice for Microprocessor-based Protection Equipment Firmware Control

11. PAR extension applied for

None

12. PAR extension approved by NesCom

None

13. PARs expiring at the end of 2003

PC37.92	Standard for Low Energy Analog Signal Inputs to Protective Relays
PC37.103	Guide for Differential and Polarizing Circuit Testing
PC37.105	Standard for Qualifying Class 1E Protective Relays and Auxiliaries for Nuclear Power Generating Stations
PC37.106	Guide for Abnormal Frequency Protection for Power Generating Plants
PC37.109	Guide for the Protection of Shunt Reactors
PC37.114	Guide for Determining Fault Location on AC Transmission and Distribution Lines
PC37.115	Standard for Test Method for Use in the Evaluation of Message Communications Between Intelligent Electronic Devices in an Integrated Substation Protection, Control and Data Acquisition System
PC37.116	Guide For Protective Relay Application To Transmission-Line Series Capacitor Banks

SUBMITTAL DEADLINES & STANDARDS BOARD MEETING SCHEDULE

PAR/Std Submittal Deadline	Standards Board Meeting
February 7, 2003	February 28, 2003
May 2, 2003	June 12, 2003
August 1, 2003	September 11, 2003
October 31, 2003	December 10, 2003

Substation Committee Report **John Tengdin**

Summary of activities since the September 2002 PSRC meeting:

P1613 “Draft Standard Environmental and Testing Requirements for Communications Networking Devices in Electric Power Substations” has been successfully balloted and will be considered for approval at the next meeting of RevCom (March 2002). Work on this standard began January 28, 2002 at the PES Winter Meeting in New York. The first ballot was on Draft 6 was in October 2002, resulting in 94% approval and three Negative ballots. A Recirculation ballot on draft 7 was completed on December 21, 2002 with 95% approval (84 Affirmative, 3 Negative ballots still unresolved):. This document built heavily on C37.90, 90.1, 90.2, and 90.3, so the work was able to move forward rapidly.

OLD BUSINESS

None

NEW BUSINESS

None

FUTURE MEETINGS

September 22-25, 2003	Madison, WI	Madison Concourse Hotel
January 12-15, 2004	Tampa, FL	Wyndham Westshore
May 17-20, 2004	St. Louis	Hyatt Regency
September, 2004	Portland, OR	

B: ADVISORY COMMITTEE

Chair: G.R. Nail
Vice Chair: R.P. Taylor

B1: Awards and Technical Paper Recognition

Chair: R. Hedding
Vice Chair T. Seegers

The first order of business will be to review papers for possible Baker, Fink, and Thompson awards. A short list is due the chairman Feb. 15th. Several other awards were discussed.

The chairman asked the members to review their subcommittees and tell the chair what working groups are finishing, and what subcommittee chairs are finishing their duties.

B2: Fellows Awards

Chair: J.S. Thorp

The Fellow committee met in Scottsdale to provide assistance to those who were preparing Fellow nominations for March 2003. Trouble down loading forms from the IEEE web page was discussed. Subsequent to the meeting it was verified that the problem had been solved and forms could be downloaded. Thorp announced that 2003 was the last year of his appointment to the PES Fellows Committee.

B3: Membership Committee

Chair: M.J. Swanson

Attendance during the PSRC meeting in Phoenix on January 13-16, 2003 topped 190.

13 new attendees were in our Newcomers Orientation meeting on Tuesday.

Working on two utility management support appeal letters.

Personally, recommended one member for Senior Member.

Attendance trend curve and proposed Membership work plan will be submitted in 30 days.

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B4: O/P Manual & W.G. Training
Chair: J.C. Appleyard

No activity to report

B5: Bibliography and Publicity
Chair: T.S. Sidhu
Vice Chair: M. Nagpal

The working group met with six members and three guests in attendance. The 2001 bibliography paper has been accepted for publication in the IEEE Transactions on Power Delivery. Assignments for preparing the 2002 bibliography paper were made. A table showing these assignments is attached. The assignments are due to the Chairman as soon as possible but no later than Jan 30, 2003. Mal Swanson prepared a report highlighting the recent activities of the PSRC. This report was discussed at the WG meeting and it needs revision. The report will be sent to the WG members for their comments. Al Darlington will prepare comments, for discussion at the next meeting, on the recent NERC DAWG reports. Mukesh Nagpal agreed to serve as Vice-Chair of the working group.

B9: PSRC Web Site
Chair: Bill Lowe

B9 met on January 14 with 9 people in attendance. The latest web page developments were displayed. There was some discussion on obsolete web pages that show up on some sites and it was decided that the links to these pages would be disabled. When the pages are used, the links can be reestablished. Some suggestions for future main committee pages are, additional links to other IEEE pages, password protecting the Email page, dating the membership information, and trying to verify that pages work with all browsers. There was some discussion on the various ways of making minor changes to web pages, that is, the type of tools used to do this job. This group will not meet at the Raleigh meeting.

C: SYSTEM PROTECTION SUBCOMMITTEE
Chair: D. Novosel
Vice Chair: T. Seegers

The system protection Subcommittee met on January 15, 2003, with 36 people attending including 16 members.

Chair Novosel and vice-chair Seegers praised working group chairmen on the progress made in pushing their assignments toward completion.

It was noted again that several working groups will complete their assignments by the end of this year. Proposals for new working group assignments are being solicited.

Working Group reports:

C2: <u>Power Quality Issues in Protective Relaying</u>
Chair: T.W. Cease
Vice Chair: S. Kunsman

C2 met Wednesday January 15, 2003 in Phoenix, AZ with 7 members and 12 guest present. The total number of members is 26.

TW Cease reviewed the completed writing assignments and reviews. Since David Hart is no longer participating, his open writing assignment (section 3.6.1) is now assigned to Steve Kunsman.

Patrick Carroll commented that Section 3.6.3 is written based on transmission where ITI curve is traditionally applied at the distribution level. Additions for the distribution network are needed. Patrick will contribute to this section.

Summary section will be completed by TW Cease and Steve Kunsman once the paper is complete. All members should be working on the bibliography section. Anyone who has references that need to be noted should forward these to TW Cease.

Section 3.4 and 3.5 need input from IEC and EN domain expert on how these standards are applied to relaying. Steve Kunsman will locate source from Europe to contribute to these sections.

Action Items:

1. Assignments Reviews assignments due February 28, 2003
   Section 6 – Roger Hedding
   All sections – all members
2. Additional writing assignments due February 28, 2003
   Section 3.6.3 Application of ITI Curve for Distribution Networks Patrick Carrol
   Section 3.6.1 Writing assignment on issues of PQ monitoring and relays Steve K.
3. Incomplete writing assignments due no later than February 28, 2003
   Section 3.4 and 3.5 Steve Kunsman will recommend a person
   All authors to review section and to reduce figure size (e.g. jpg format)
4. Review and provide comments on bibliography to be sent to TW Cease
5. TW Cease to forward the latest document version members and guest by January 17, 2003 and to forward to Damir for posting on the IEEE website.

Next meeting requires **1 session**, room for **35 people**, & **computer projector**.

C4: Wide Area Protection and Emergency Control
Chair: M. Begovic
Vice Chair: D. Novosel

The WG met in a single session with 8 members and 16 guests in attendance. Following was decided at the meeting:

- Not only C6 members (authors of the original WAPEC document) will contribute to the papers
- Paper #2, 3, and 4 will include additions, not available in the C6 report
- Schedule:

Outline and assignments	February 15
Draft papers	May 1
More or less complete papers	September 1

- Present membership is identified, including assignments.
  E-mail will be sent to C6 members and invite them to contribute. By end of January, M. Begovic
  Responses, including papers to contribute to or review, need to be received by February 15 to be a member.
- List of papers with contributors:

1. Summary paper, an overview of the entire report (coordinator: M. Begovic, contributor: D. Novosel, S. Horowitz, S. Kunsman)
2. Paper on Technology Issues and Infrastructure in WAPEC, (coordinator: A. Phadke, contributors: G. Michel, C. Henville, M. Adamiak, Ken Martin)
3. Paper on Analytical Issues and Implementation of WAPEC, (coordinator: J. Thorp, contributors: M. Ibrahim, K. Mustaphi, Mike Agudo, Ken Martin, Jim Cai)
4. Paper on Future Trends and Issues in WAPEC, (coordinators: D. Karlsson, and S. Horowitz, contributors: G. Michel, K. Narendra, Jim Cai)
   - Review members
   - Ashish Kulshrestha
   - Bill Kennedy
   - Rick Cornelison

Expected completion date should be September 2003.

Next meeting requires **1 session**, room for **30 people**, & **computer projector**.

C5: Deployment and Use of Disturbance Recorders
Chair: B. Jackson
Vice Chair: W.M. Strang

Working group met on Tuesday at 4:30 p.m. with 7 members and 17 guests.

The chairman reviewed the assignment of the WG and a purpose statement to clarify what should be included in the paper.

The group started a review of definitions and terms, which led to much discussion. Other items discussed include the outline of the paper and how various topics should be arranged in the outline. It was suggested to make four main topics and revise the outline to include four main topics as follows:

Introduction
Applications/ analysis
Deployment
Definitions

Assignments were made on two topics. The chairman will work with those assigned to develop a more detailed outline to be available to the group before the next meeting.

Next meeting requires **1 session** room for **30 people** & **computer projector**.

C8: Phasor-Based Models for Analyzing Relay Performance
Chair: M. Meisinger
Vice Chair: M. S. Sachdev

The Working Group met at 11:00 AM on January 14, 2003 in Raven Room, Phoenix-Scottsdale-Paradise Valley Embassy Suites, Phoenix, AZ. Eight members and thirteen guests were present.

Mohindar Sachdev reported that he had edited the draft but a few modifications and corrections are needed before the paper is ready for publication. He further reported that contribution for Section II - Definitions of Terms was received on January 12 and will be incorporated in the paper. Published equations were provided by Gabriel Benmoyal and Elmo Price some time back but have not been incorporated into the paper. The equations will be incorporated in an Appendix of the paper.

Juergen Holbach agreed to revise the sections on Ground Fault Distance Relay and parallel line compensation so that the number of equations in those sections is minimal. Mohindar Sachdev will add an abstract, key words and a conclusion.

It is planned to complete and circulate the paper among the members of the WG and C Subcommittee for comments of Substance before the next meeting of the PSRC.

At the conclusion of this business the meeting was adjourned.

Next meeting requires **1 session** & room for **25 people**.

C9: Underfrequency Load Shedding and Restoration
Chair: A. Apostolov
Vice Chair: K. Behrendt

The working group met on Tuesday, January 14th, with 16 members and 16 guests present. The working group discussed a proposed schedule to expedite the completion of the guide. Draft 1 of the document was circulated for comments prior to this meeting. Any additional comments received by the end of January will be incorporated into Draft2, which will be sent to the working group by February 15th. Draft 2 will be accompanied by an approval survey. Survey results should be sent to the working group chairman be March 31st. Survey results, and associated comments should be resolved by April 30th, at which time a final working group document should be ready for balloting.

The working group confirmed their assignments to review individual document sections, and read the entire document to assure conformity and check for duplication of material. Guests who attended the meeting were also invited to review the document.

Review assignments are shown in the attached table:

Section	Reviewer
Part 3, System Conditions	Jerry Johnson
Part 4, Abnormal Frequency Operation	Bill Strang
Part 5, UF LS and Rest. Philosophy	Ali Kazemi
Part 6, Load Shedding Methods	Bill Strang
Part 7, Load Restoration Methods	Mohammed Ibrahim
Part 8, Frequency measuring principles	Ken Behrendt
Part 9, Operating principles	Ken Behrendt
Part 10, Scheme design	Rich Hunt
Part 11, Effects of Voltage Change	Dean Miller
Part 12, Existing practices	Jerry Johnson
Part 13, Setting criteria	Eric Udren
Part 14, Testing	Alex Apostolov
Overall Review	Mohammed Ibrahim, Marc Lacroix

Reminder:
All writing assignments shall be submitted in either Word 97 or RTF format with a file name that includes the document section number, revision number, and authors last name (<section_number_Rn>_AuthorsLastName>.zip, or .doc, or .rtf). Figures should be included in the text, and also sent as separate graphic file attachment. References to Figures included in the text should include the name of the Figure.

Reference:

Title: PC37.117 - *Guide for the Application of Protective Relays used for Abnormal Frequency Load Shedding and Restoration*

Scope:
This project will develop a Guide for the application of protective relays used for load shedding and restoration during electric power system abnormal frequency conditions. It will present background information, bibliography, and recommendations. It discusses abnormal frequency power system behavior, existing load shedding and restoration practices, the abnormal frequency function of typical protective relays, and possible new methods for improved load shedding and restoration. This project is limited to electric power system applications and will not include Abnormal Frequency Protection for Power Generating Plants.

Purpose:
There is currently no IEEE Guide for the application of protective relays used for load shedding and restoration during electric power system abnormal frequency conditions. This Guide will complement the IEEE Guide for Abnormal Frequency Protection of Power Generating Plants. It will provide information to assist in the application of load shedding and restoration schemes. Methods and examples will be provided.

Milestones:
The PAR has been approved and the working group document has been assigned the number PC37.117.

Next meeting requires **1 session** room for **40 people** & **computer projector**.

C10: Effects on Changing Utility Environment on Protective Relaying
Chair: J. DeLa Re
Vice Chair: R. Hunt

The working group met for a double session at 9:30 AM, Wednesday, January 15, 2003 in Ballroom C with 6 members and 14 guests.

Meeting provided a discussion of completed writing assignments. Also finalized the outline of the report, and made new writing assignments. Revisions are due by February 15th, while new section is due by March 1st. Chair to send out completed first draft for review by March 15th. Next meeting will focus on discussion of first draft.

Assignments and Action Items:

- Revisions to existing contributions due to Chair by February 15th, 2003.
- New section writing assignment due to Chair by March 1st, 2003.
- Chair to send out completed first draft by March 15th, 2003.
- Comments on draft due to Chair by April 15th.

Our next meeting will be a single session to review the completed first draft of the document.

Next meeting requires **1 session**, room for **20 people**, & **computer projector**.

C11: Protection Issues During System Restoration
Chair: T. Sidhu
Vice Chair: D. Tziouvaras

The working group met on Tuesday January 14 with 11 members and 12 guests. It was decided that the output of the working group should be a transactions paper. Draft 4 of the write-up was discussed. Five assignments to complete the write-up based on the identified issues were made. Due date for all assignments is February 15. The chairman will compile the paper and send it to the members by April 15. This draft will be discussed at the May meeting

Next meeting requires **1 session**, room for **30 people**, & **computer projector**.

Liaison Reports:

1. IEEE PES Power System Stability Controls SC **Gary Michel**
The IEEE PES Power System Stability Controls and the Power System Dynamics Measurements Working Group have not met since the September 2002 PSRC meeting so there is no liaison report.

2. NERC EC **Phil Winston**
Nothing major to report

3. IEEE/PES T&D Committee **Mladen Kezunovic**
No report

New Business

The main item of new business is the request for new ideas for working groups. Two new proposals were discussed resulting in the formation of two task forces to explore the ideas. They are as follows:

CTF1: Trends and Issues with Relay Settings

To address utility issues with complexity of relay settings, multiple setting groups, documentation handling, database consistency, relay records, etc.

Task force chairman: Steve Kunsman

Next meeting requires **1 session**, room for **30 people** + **computer projector**

CTF7: Multi-station and System Testing

To address End-to-end testing using secondary signals, Special Protection Schemes, etc.

Task force Chairmen: Vahid Madani and Mike Agudo

Next meeting requires **1 session**, room for **30 people** + **computer projector**

D: LINE PROTECTION SUBCOMMITTEE
Chair: M. Carpenter
Vice Chair: Roger Hedding

D1: Effectiveness of Distribution Protection
Chair: P. Carroll
Vice Chair: C. Fink

The working group met with 7 members and 15 guests. After introductions and approval of the Sept 2002 meeting minutes, the status of the WG and Survey was presented by the Chairman. The report has been posted on the PSRC Website and the survey participants will be sent an email announcing the report is available on our website. Once this is done, our working group assignment will be completed. However, there was a suggestion that it would be beneficial to publish the report as a transaction paper if it could be submitted as it is. The working group chairman will pursue this item. There was also discussion on presenting the report at appropriate conferences. The working group chair will complete the power point presentation. Volunteers will be sought out as needed.

The meeting continued with a presentation by John Boyle. John reviewed event records of some interesting and unusual disturbances he has encountered. Thanks to John for his

presentation. The meeting concluded with a call for interest in forming a group that would analyze and report on distribution system disturbances.

The D1 working group will be disbanded.

D2: Fault Locating PC 37.114/D7 Guide for Determining the Fault Location on Transmission And Distribution Lines
Chair: Karl Zimmerman
Vice Chair: Damir Novosel

WG D2 met with 5 members and 11 guests on Tuesday morning.

First, we discussed the results of the official ballots:
PC 37.114 /D7 Closing date 10-10-02

1. This ballot met the 75% returned ballot requirement. 78 eligible people in ballot body.

   54 affirmative votes
   3 negative votes
   2 abstentions
   59 75% returned

2. The 75% affirmation requirement being met:

   54 affirmative votes
   3 negative
   57 votes 94% affirmative

We addressed the negative ballots. We agreed to add some clarifications in section 6.2 and to add some definitions which would resolve 2 of three negative ballots. The third negative ballot was not present. However, the WG chair has discussed some possible revisions with the ballotter which would address his concerns.

Tony Seegers., Pat Carroll, Damir Novosel, and Karl Zimmerman will act as an editorial group to implement these changes and also consider other comments from the balloting body. We expect to be done no later than March 1, 2003.

We will then apply for a fast turn around recirculation ballot in time for completion by the May meeting.

We expect to meet in May to close out the final issues with a single session for 25 attendees.

D3: Impact of Distributed Resources on Distribution Relay Protection
Chair: Tony Seegers
Vice Chair: Ken Birt

Working Group D3 met jointly with wg K10 in a single session on Tuesday, January 14, 2003. 15 members and 22 guests attended the meeting.

Bill Feero gave a presentation on P1547 and associated work. Draft 10 of P1547 passed but negative ballots are being addressed. It will be reballoted.

Draft 1 of the paper was reviewed.

Distributed Resources (DR) is the preferred term . Voltage regulation issues will not be addressed in the paper.

Comments and assignments should be returned to Tony Seegers by the end of February.

After comments are incorporated, Draft 2.0 will be distributed. Comments on draft 2.0 should be returned to Tony Seegers by April 15th.

The following assignments were made:

Direct Connected generators - Kalyan Mustaphi, or Pratap Mysore
Type of distributed generation - Karl Zimmerman
Safety - Pat Carroll
Breaker Closing - Don Sevcik

For May meeting , single session , 30 - people

D4: <u>Automatic Reclosing</u>
Chair: W.M. Strang
Vice Chair: M. Swanson

The working group met with 12 members and 8 guests. Bill Strang presiding.

Guide Status: Expected publication in March 2003.

Presentation at technical conferences:

1. Paper draft will be reviewed by 8 working group members and comments submitted to Bill Strang by Feb. 1st.
2. Bill Strang will present guide summary to PSRC on Thursday, Jan. 16th.
3. Paper is approved for presentation to Texas A&M, and Georgia Tech. Roy Hart will apply to WPRC planning committee for Oct. 2003 presentation.

D5: <u>Guide for Protective Relay Applications to North American Distribution Lines</u>
Chair: W. P. Waudby
Vice Chair: R. Crellin

The working group met for a double session with 17 members and 18 guests.

The working group discussed the writing assignments in Clauses 4 ,6, and 7. Several assignments were made to strengthen the description of protective devices and schemes. The examples in the guide will be written to provide a philosophical approach and application trade off's without having hard numbers. This approach is taken to minimize legal encumberments for members. Assignments are due March 15trh.

D6: Out of Step Considerations on Transmission Lines
Chair: M. McDonald
Vice Chair: Mukesh Nagpal

The working group met in a single session on Tuesday, 14th January,03 with 16 members including 7 new members, and 17 guests. Demetrious Tziouvaras made an excellent presentation on fundamentals of out of step protection. The chair distributed the initial outline of the paper to the working group members for their review and suggestions. The members were also asked to express their preferences on their writing assignments from the topics in the outline. Responses from the members are due on Feb. 1st.

D7: Loss of AC Voltage Considerations
Chair: E. Price
Vice Chair: R. Patterson

Nine (9) members where present with six (6) guests in attendance. The Chairman reviewed the reason for and intent of this W.G.

A presentation describing misoperations of a protective relay system due to problems in relay LOP logic was presented (by Russ Patterson) and discussed by the group. This problem is documented in a paper "Protection Application Issues Near Strong Grounding Paths" presented at the 3 major protection conferences.

Elmo Price presented the first rough draft outline for the paper.
Discussion followed with suggested changes/additions being incorporated into the outline. A write-up by Sam Sambasivan was passed out and considered for inclusion in various sections of the outline. Several attendees described LOP problems and solutions they have encountered.

Several assignments were accepted for various sections in the outline to be completed by April 1:

1) The entire group was tasked with reviewing the outline to bring further suggested changes/additions to the next W.G. meeting.
2) Mike MacDonald - write-up on three-phase voltage missing.
3) Brad Nelson - prepare write-up for section on AC Voltage Sources to relays.
4) Jim Obrien - prepare write-up for section on Risk Analysis
5) Charlie Fink - prepare write-up on Applications (LOV options section).
6) Randy Horton - prepare write-up on load encroachment

D10: EMTP Reference Models for Transmission Line Relay Testing
Chair: K. Mustaphi
Vice Chair: T. Sidhu

The working group met on Wednesday, January 15, 2002 with 7 members and 2 guests. Draft 6 of the report was discussed and a number of items that need action were identified. Assignments were made to complete the following tasks:

1. Provide modelling data for generator and transformer
2. Provide modelling data for transmission lines
3. Write up file naming convention
4. Description of reference model and naming of nodes for ATP model

Assignments are due to the chairman by April 5, 2003. It was also decided to look at re-organization of the document. The chairman will also clarify the assignment and scope of the working group.

New Business

Potential working groups promoted by Karl Zimmerman:
Fault Location on Series Compensated lines. - No Interest
Fault location for varying fault resistance - No Interest

Potential working group promoted by Pat Carroll:
Evolving multi phase multi circuit faults. Little interest

Potential working group promoted by Ken Behrendt:
Multi terminal distribution lines tied together for more reliable system.

Potential working group promoted by Mark Carpenter:
Total penetration of distributed generation on feeder before relaying not work any longer. More of a system issue. D3 discussing part of this already.

Members inquired why title of D5 was changed by Standards Board to include the words "North American". Mark Carpenter to investigate and report.

High Impedance Fault Activity

Walter McCannon reported on an instance where a truck ran into a transformer.

Al Darlington motioned to adjourn.

H: RELAY COMMUNICATIONS SUBCOMMITTEE
Chair: K. J. Fodero
Vice Chair: A. P. Apostolov

H1: REVISION OF IEEE GUIDE FOR POWER LINE CARRIER APPLICATIONS JOINT WORKING GROUP
Chair: B. Nelson
Vice Chairman: M. Simon

Established: 1995
Output: Clauses 9 and 10 for the Revision of IEEE 643. 643 will be produced by the PSCC
Expected Completion Date: 1999

H1 has completed its assignment in authoring clauses 9 and 10 for P643.
Consensus by the working group has been reached.
When the balloting process is complete on P643 by the IEEE, the working group will re-convene to resolve any comments regarding these clauses as well as verify that there is no duplication with other elements of the guide.

H2: PROTECTION USING SPREAD SPECTRUM COMMUNICATIONS
Chairman: Ken Behrendt
Vice Chair: Bill Lowe
Output:
Established: 2001
Expected Completion Date: 2003

The H2 working group met in a single session on Wednesday, January 15, 2003 with 11 members and 16 guests in attendance.
The assignments that have been received so far were put together in a rough draft and the draft was distributed and discussed by the members and guests. A copy of the draft is available on the H2 Work Group web page. We are still waiting for several writing assignments. Several members volunteered to write about example Spread Spectrum Radio applications they have in service. There are many areas of the paper that still require input and any contributions would be appreciated. Assignments will be due by March 1st so that the next draft can be compiled and distributed to the members.
The chairman will send reminders to those who volunteered writing contributions. A revised draft document will be posted on the H2 web site as contributions are received.
The next meeting will consist of a single session with an OH screen, power strip and room for 40 people.

H4: PC37.115, Standard test method for use in the evaluation of message communications between IEDs in an integrated substation protection, control and data acquisition systems.
Chair: D. Holstein
Vice Chair: Eric Udren
Established: 1997
Output: Standard
Expected Completion Date: 1999

H4 met on January 14, 2003, 15 members and guests attended the meeting.
Draft 9 of PC37.115 completed successfully several Recirculation ballot. The ballot pool consists of 60 eligible voters. This ballot received 52 votes (83%), and has met the 75% returned ballot requirement. 46 affirmative and 3 negative votes (94% affirmative) were received, and PC37.115 has met the 75% affirmation requirement.
PC37.115 is now ready to go to IEEE SA for approval. This should be accomplished before our next meeting.
Jay Wack from TecSec presented an overview of the security technology currently available to

protect data in transit and at rest. Protection of data at rest includes who can use the data and when their use of the data expires.
Members and guests were asked to give some thought to what H4 should do next. Proposals will be discussed at the next meeting.

H5: Application of Substation Peer to Peer Communications
Chair: M. Yalla
Vice Chair: M. Adamiak
Output: Paper
Expected Completion Date: 2001

H5 has completed their assignment there will be no further reports.

H6: APPLICATION OF SUBSTATION ETHERNET LAN COMMUNICATION FOR PROTECTION AND CONTROL
Chairman: John Burger
Vice Chairman: Charlie Sufana
Output: Special Report
Established: 1999
Expected Completion Date: 2003

H6 met with 25 guests and 11 members in a single session with John Burger presiding. A review of the current draft was made with a quick overview done first.
Several chapters were reviewed in depth. Chapter 7 security was discussed. There are several projects in the works concerning passwords, encryption, and embedded systems. One of the areas of concern is denial of service where a hacker does not really break into the system but bottles up the system to prevent or slow down entry.
Dennis Holstein suggested that a table be added to show what security is covered in UCA. He also indicated that part of Chapter 7 is in the Substation Communication Tutorial. Dennis indicated that the Department of Defense has as issued a report on security but distribution of the report may be limited. Dennis further indicated that the gas industry has developed a test plan.
Chapter 8 is a new chapter. This section concerns the system architecture. Fiber is probably going to be the communication media that will be the most common. It was decided that chapter 7 and 8 are to be reversed in the order of the document. John Burger thanked Jerry Hohn and Marzio Pozzoli for their contributions to this chapter.
Dennis Holstein suggested that Chapter 8 reference P1613. It was also decided that the EPRI reports should also be referenced.
One action item that resulted from review of this chapter is to make sure the paper is vendor neutral. An editorial group is to be created that will sanitize the paper.
Veselin Skendzic pointed out that the security issue gets more interesting when you go from a physically secure site to outside the station. Dennis Holstein indicated that he has drawings that he will share that show this security issue.
It was pointed out that figures 8.4 and 8.5 need to have text added to explain the figure.
Chapter 9 on conformance testing was discussed. There was some discussion that any tests should be run with unloaded conditions and loaded conditions. Dennis Holstein asked if performance tests should be included. It was decided that a chapter should be added that discusses performance tests or evaluation. Alex Apostolov indicated that he has in mind to have tests for protocol and functionality and that he had SISCO test scripts. Steve Kunsman said IEC 61850 has some descriptions. Dennis Holstein indicated that C37.115 has what should be measured, the test setup, etc.
Mark Adamiak and Alex Apostolov volunteered to create a performance evaluation chapter.

Steve Kunsman suggested that a short section should be added to chapter 3 on Ethernet basics. The working group is also looking for application examples for chapter 11; vendors are especially welcome to submit examples. Chris Huntley suggested that each application should give an indicaiton of the Ethernet bandwidth required. Mark Adamiak wondered if the Ontario Hydro tests are available.
The working group will meet in a single session for 50 people and will need/will not need A/V equipment.

H7: PC37.94 INTER RELAY COMMUNICATION PROTOCOL STANDARD
Chair: G. Michel
Vice Chair:
Established: 1997
Expected Completion Date:

No meeting. The standard has been balloted.

H8: FILE NAME CONVENTION
Chair: A. Makki
Vice Chair:
Established: 2003
Expected Completion Date:

The group meet and a total of 12 members and guests were Present.
Discussions: The following issues were discussed:
Is it within the scope of the PSRC to define a standard format for naming files? It was noted that because relays generate large numbers of files, a standard format is needed.
Does is it make sense to have a universal naming format, or should it be application specific? It was noted that the format supports many applications, however, not all application are supported. Maybe the name should be changed to “Utility Naming Convention”.
The group agreed that the term “Naming Convention” has to be tightly defined. The scope of the convention and who has to adhere to it is of key importance. Does it apply to setting data, transient data, load data and so on? It was noted that the current format applies only to files that have time sequence data (TSD).
The group agreed that the proposed filenames are lengthy and are difficult to manually assign. It was noted that the intent is to have the filenames assigned automatically by the originating equipment. Maybe multiple conventions are needed: 8.3 (for operating systems that do not support long names), short (for manual entry), and long (for building repositories of TSD files).
Who is the benefactor of the convention? The group agreed that the utility users, the application developers, NERC, FERC and so on are the prime beneficiaries. The potential usage includes a national bank of TSD files. The potential applications include providing a way for naming the name part of a web site address in order to realize the rotating globe application.
Why go for a standard format now? It was noted that a recommended practice or a trial use standard is a more conservative approach and allows for time to coordinate with other working groups that may also have similar requirements.
The group noted that the Latitude field does not have a specific length requirement. The convention recommends 3 digits for compatibility with the national TSD bank application. However, the user may use whatever length he/she deem sufficient.
Finally, a few mistakes in the report were noted: The “wrk12” type of the source code example is defined as “type wrk12:string[12]”. The label “Draft 4” is a mistake. It should be “Draft 1” because this is a new working group. The old H8 report was completed, submitted and accepted as “Draft 3.1”.
Recommendations: The following conclusions were reached:

The group decided that the above issues are valid and that the group should continue it's work and meet at the next PSRC meeting. The group recommends two time slots (back-to-back sessions) for the next meeting.
The group did not have enough time to agree on, compile and submit the assignment statement to the "H" Relay Communications Subcommittee. The Chairman will have a draft version of the assignment statement ready prior to the next meeting.
The current name for the working group is: Utility Naming Format for Time Sequence Data Files.

H9: Special Considerations in Applying PLC for Protective Relaying
Chair: M. Sanders
Vice Chairman: M. McDonald
Established: 1999
Output: Practical Paper for presentation at regional conferences

H9 Working Group met in a single session on January 14, 2003 with 6 members and 12 guests. Draft 11 of the special paper was distributed. The paper is nearing its final stages. Only 1 more subject was assigned to be added to the paper. The writing assignments are due to the chair by February 14, 2003..
John Appleyard has begun the initial editing of the paper for common voice and organization.
Jack Soehren offered to add a short section on offsetting frequencies for on-off PLC for short lines.
Ed Derecinovic has expanded the section on use of frequencies above 200 kHz. Solveig Ward has offered to have this section reviewed as another manufacturer for application.
The plan is to have all the assignments incorporated and distribute the document to all working group members and subcommittee members for a final review. Then to submit to PSRC officers.

H10: REVISION OF THE AUDIO TONE APPLICATION GUIDE C37.93
Chairman: Bill Higinbotham
Vice Chairman: Jerry Hohn
Established: 1997
Output: Revised application guide
Expected Completion Date: 2000

H10 did not meet in Scottsdale. The Chairman is in the process of forming a balloting body. It is anticipated that balloting will be completed by the PSRC May meeting. The May meeting will be used to resolve comments from balloting.

H11: REVISION TO THE SYNCROPHASOR STANDARD
Chairman: K. Martin
Established: 2000
Output: Revised Standard PC37.118
Expected Completion Date: 2003

Working Group H11 met at 9:30 am on Wednesday, January 15. Ten members and five guests were present.
Draft 2.51 was distributed. The contributions on the phasor representation at off-nominal frequencies and accuracy limits were discussed and accepted.
The contribution on testing was discussed; it was decided that the explanation and figures should be used as benchmark tests in the Standard. Further work will be done on the Compliance Tests section by the WG.

Task Force Reports

HTF1: SWITCHYARD DATA ACQUISITION
Chairman: E. Udren
Established: 1996
Expected Completion Date: 1998

At the 2002 Winter Power Meeting, the PES Substations Committee decided there is a need for an IEEE standard defining the environmental requirements for hubs, switches, routers, etc. installed in substations. A PAR was drafted and Task Force C2TF! was formed to draft a new standard. It was also decided that this standard should not create new wave forms or test methods. Instead, the plan was to use these specifics from C37.90, C37.90.1, C37.90.2, and C37.90.3 and write new criteria for acceptance that reflect device level tests with no protective relay tripping involved. The PAR was approved March 11,2002 with the title "P1613 IEEE Standard Environmental Requirements for Communications Networking Devices in Electric Power Substations. The first draft of P1613 was a cut and paste creation from C37.90, 90.1, 90.2, and 90.3 with place holders for the TBD criteria for acceptance tailored to device level tests and this application. The task force has met at the Substations Annual Meeting in May, at the PES Summer Meeting in July, and on Monday of this week. Copies of drafts were distributed via Email, with much work taking place between meetings via Email. Draft 4 revision 3 was reviewed in August and was the basis of discussions on 9/9/02. Out of that meeting came agreement on the language in Draft 5, which we plan to ballot in October. The members of the balloting pools of PSRC, PSCC, and Substations Committee will be invited to ballot. Attached is the cover letter we intend to use.

HI TF5: COMMON DATA FORMAT FOR IED DATA
Chairman: A. Apostolov
Vice-chairman: K. Fodero
Established: 2002
Expected Completion Date:

The task force met on Wednesday, January 15, with 38 attendees present. Christoph Brunner made a presentation on the Substation Configuration Language defined in IEC 61850-6 and specifically the configuration of multifunctional IEDs.
The task force discussed the types of data available in the IEDs and the different users of this data. Three main types of data were identified: Configuration data, Event data and Sampled data. An anonymous decision was made to establish 2 new working groups to address the configuration and event data. The task force HTF8 Comtrade issues was recommended to become a working group to address the sampled data. The efforts of these three working groups have to be very closely coordinated.
Larry Smith volunteered to become Chairman of the two working groups on Sampled and Event data. Benton Vandiver accepted to be the Vice-Chairman of the working group on Sampled data. We still need volunteers for Chairman and Vice-Chairman for the configuration data working group.

HTF8: COMTRADE Issues
Chairman: A. Makki
Established: 2002
Expected Completion Date:

The group meet and a total of 18 members and guests were Present.
Discussions: The group discussed the following issues:
Modifying the standard's file name convention from the 8.3 DOS format to the latest in NTSF and FAT32 naming conventions.
Adopting the "Naming Convention for Time Sequenced Data" reported by the H8 working group to also name COMTRADE files.
Saving large files to multiple floppy disks. It was proposed that a simple method, to break up the data files and to recombine them, should be adopted.
Combining the four (INF, HDR, CFG, DAT) files that define a complete COMTRADE record into a single file format. Other proposals included combining the 3 (INF, HDR, CFG) information files in one file and leaving the data file as a stand-alone.
Addressing the new dynamic sampling function that is referenced in the 1999 version. It was proposed that an additional column be added to the data file to indicate the specific value of the sampling frequency at each sample entry.
Working with the IEC COMTRADE Standard. It was noted that the IEEE PSRC standard was adopted by IEC "as is", there are no differences or additions.
Handling the various types of implementations of the format that exist today. It was noted that dozens of various derivatives and interpretations currently exist. It was proposed that a tightening of the format is needed.
Modifying the standard to allow for scripting of Virtual Channels or Software Channels (analog and digital).
Providing additional examples for developing source code to work with COMTRADE records. It was noted that such examples could be used to streamline the process of reading and writing COMTRADE files in order to minimize the occurrence of multiple interpretations.
Assigning a task force group to address the current compatibility issues as related to the 1991 and 1999 versions and to the future issues that may result from the proposed revisions. The group will also address any other compatibility issues that may exist with any other working group or current practice/standard.
Assigning a second task force group to address the need for compiling an applications guide for the COMTARDE standard. It was noted that the standard is being used for various types of applications including applications for generating and/or exchanging records that are not transient in nature.
Preparing for the standard's reaffirmation. It was noted that the standard is up for review in 2004.
Recommendations: The following decisions were reached:
The group decided that a number of the above issues are valid and that the standard should be revised accordingly. The group voted unanimously to recommend to the "H" Relay Communications Subcommittee that a new working group be assigned to address all of the issues that are listed above.
The group also recommends assigning two (2) task force groups to address the compatibility and application issues as listed above.
The group agreed that the standard be affirmed in 2004 independent of the on going work of the proposed groups. The group also recommends that any future work on the standard be coordinated with IEC.
Ratan Das volunteered to chair the new working group and Larry Smith volunteered to chair the compatibility issues task force. We need one more "brave heart" to host the application issues task force. All three groups can meet at the same time. An extended time slot (2 or 3 sessions) was recommended for the next meeting.

Liaison Reports

1. Power System Communications Committee - E. A. Udren

2. Substation Committee - J. Tengdin

3. IEC TC57 Working Group 10, 11 and 12 Report - E. A. Udren

Nothing reported at this meeting.

Coordination Reports

Old Business:

New Business:

Three new working groups are being established to resolve the issues for common data format from IEDs.
Working group H3: Common Data Format for IED Configuration Data
Working group H5: Common Data Format for IED Event Data
Working group H12: Common Data Format for IED Sampled Data (COMTRADE Issues)
These three working groups, together with WG H8: File Name Convention will work closely together to ensure that there are no conflicts in the standards being developed. This effort will be based on existing IEEE and IEC standards such as COMTRADE and IEC 61850 and provide input to their further development.

I: RELAYING PRACTICES SUBCOMMITTEE
Chair: J.G. Gilbert
Vice-Chair: J. W. Ingleson
Webmaster: T. S. Sidhu

1. Introduction: The Relaying Practices Subcommittee (SC) met on January 15, 2003 in Scottsdale, AZ. Introductions were made, and an attendance list was circulated. The meeting attendance was 21 Subcommittee Members and 18 guests.

The following Subcommittee Members were present at this meeting: J.G. Gilbert, J.W. Ingleson, R. Beresh, J.R. Boyle, J. Burnworth, W.M. Carpenter, B. Jackson, W.C. Kotheimer, M. Meisinger, G.P. Moskos, B. Mugalian, M. Nemier, R.D. Pettigrew, M.M. Ranieri, M.S. Sachdev, D. Sevcik, T.S. Sidhu, M.J. Swanson, D.A. Tziouvaras, E.A. Udren

18 guests were present at this meeting.

2. Approval of minutes of the previous meeting: The minutes of the previous meeting were approved with no changes.

3. Items of interest from the Advisory Committee Meeting: The Chairman reported on one item from the Advisory Committee. A seminar in professional ethics is planned for Monday afternoon before the beginning of the May meeting. Also, once again, all PSRC participants are urged to apply for IEEE Senior Membership, if they have not already done so.

4. Reports from the Working Group Meetings: Updated information and a current report from each working group has been placed on each working group's web page, and will be updated when necessary.

I1: Revision of C37.103, Differential and Polarizing Relay Circuit Testing

Chair: M.S. Sachdev
Vice-Chair: J. D. Huddleston, III
Output: Revision of C37.103-1990

The WG did not meet during the PSRC meetings in January, 2003. The draft guide was submitted to the Standards Association for balloting. The Standards Association issued an invitation to ballot that closes on September 15, 2003. As soon as the balloting body is established, it will be reviewed and approved and the guide will then be balloted by the Standards Association. I expect the balloting to be completed before the next meeting. If any negative ballots are received, an attempt will be made to resolve them by Email.

I2: Terminology Usage Review

Chair: M. J. Swanson
Vice-Chair: J.D. Huddleston, III
Output: Updates to IEEE 100: Standard Dictionary of Electrical and Electronic Terms

The WG met on Jan. 14, 2003 with 5 members present. The definition of ""transient overreach"" was considered. Other terms that were discussed were found to be outside the PSRC jurisdiction. The Vice-Chairman will research other terms that can be considered at the May 2003 meeting. Two other documents will also be considered at this meeting.

I3: Microprocessor-based Protection Equipment Firmware Control

Chair: R. Beresh
Vice-Chair: R. Whittaker
Output: Recommended Practice

The WG met on Jan 14, 2003 with 19 attendees. Bob Beresh to take over as chair and Roger Whittaker to take over as vice-chair. Paper work to be completed shortly. Assignments were reviewed from the previous meeting. The issue of firmware revision was broken down into various categories as an initial attempt at a document outline. Discussions were held on each category and writing assignments were issued based on the discussions. The detailed minutes from the meeting will contain the substance of the discussions and the assigned tasks.

I4: IEC Standards Advisory

Chair: E. A. Udren
Vice-Chair: M. M. Ranieri
Output: IEC Standards Advisory

The Working Group met with 8 members and 2 guests. There are no IEC TC 95 standards draft on which to vote or comment in this cycle. The WG discussed the following topics:
1. IEC TC 95 Program of Work
60255-3 Dependent time (inverse time-overcurrent) Relays - Stan Zocholl is moving on to other activities; the work is presently stopped. This had been proposed from the US; we have identified a potential new Convenor to pick up and complete the work. If the US National Committee can''t come up with one, the IEC will appoint a European convenor.

60255-22-1 1 MHz burst transient test - passed CDV, to FDIS. We had commented on many previous cycles.
60255-22-6 EMC Requirements listing - passed CDV, to FDIS. Excellent listing, by product ports.
60255-22-7 Power Frequency Immunity Tests - passed CDV, to FDIS. Aimed at simulating capacitively coupled interference to contact input circuits. US comments of substance on pass-fail criteria and coupling networks were not accepted.
60255-27 Safety Requirements - second draft circulated & comments returned. The US has not commented, and neither the WG nor the PSRC have the expertise to comment. Early attempts to engage UL have not worked. The WG members who work for manufacturers agreed to make as a group of UL customers and a US standards body, a formal request to UL to participate and support our group in commenting on this standard, and helping us to deal with acceptance issues in the North American manufacturer's community. Eventually, UL will likely adopt the IEC standard.
2. TC 95 Beijing Meeting in October 2002:
- A number of the 60255-22-X EMC standards will be coming up for maintenance review. The same TC 95 WG 02 will be dealing with them.
- An ad hoc WG is set up to look at the state of and need for TC 95 functional standards. (Note: They cited 61850-7-4 (TC 57) as a fine example of a functional standard which needed more input from TC 95 than it got.) See Annex D of Minutes (P. 14). This gets closer to PSRC activities. We would like to get US volunteers to participate in this ad hoc WG.
- A significant opportunity - IEC TC 95 has interest in C37.2 ANSI numbering - make an IEC standard that embodies this. The USNC would like to propose a working group to TC 95, but needs a convenor. After-meeting discussion: John Tengdin, who led the C37.2 revision, is available but needs support.
- IEV Chapter 447, Measuring Relays Dictionary, is to be restarted. Jack Chadwick indicated interest in participating. Other participant volunteers are welcome.
- See above on restarting of 60255-3, dependent-time relays.

I5: Trial-Use Standard for Low Energy Inputs to Protective Relays

Chair: E. A. Udren
Vice-Chair: P. G. McLaren
Output: New Trial Use IEEE Standard P1331

The WG met to review balloting results for C37.92/Draft 9. The ballot was successful, with 94% returned (49 out of 52) and 3 negative votes (93% affirmative). The meeting focused on review of comments to resolve the three negative ballots, and make other improvements suggested by supportive voters. There were proposals for handling of all of these comments (see document attachment); most of the key ones were reviewed and updated. The comment responses are to be reviewed by the WG by February 14. We then take these to the commentators to get acceptance, and revise the draft. There are also a number of format changes requested by the IEEE Standards Coordinator. The completed revision will be Draft 10, to be issued on a 10 day recirculation approval balloting. The draft Standard, and the comment sheet as reviewed at the present meeting, are contained in the files that can be downloaded on the WG web page.

I6: Revision of C37.90, Relay and Electrical Power Apparatus

Chair: M.M. Ranieri
Vice-Chair: J. Teague
Output: Revision of ANSI/IEEE C37.90-1989 (R1994)

The working group met on Jan. 14, 2003 to discuss the status of our C37.90 standard that was submitted for electronic balloting. The invitation to ballot form was completed and submitted and

M. Sachdev will follow-up with IEEE with our balloting body list. The WG discussed our summary paper requirement to outline information to be included in this paper. J. Tengdin volunteered to coordinate and write up the summary paper with additional input from J. Burnworth and M. Ranieri to provide a comparison of the IEC and IEEE requirements. The WG Chair will send out electronic copies of the summary papers for C37.90.1 and C37.90.3 to all the WG members. We hope that to complete the first draft of our summary paper before our next WG meeting in May.

I7: Revision of C37.90.3, Electrostatic Discharge Testing for Protective Relays

Chair: J. Teague
Vice-Chair: J.T. Tengdin
Output: New IEEE Standard C37.90.3

IEEE Std C37.90.3 was published by IEEE-SA in October 2001. The WG has completed a summary paper and has submitted it for approval. The summary paper explains the differences between IEEE C37.90.3-2001 and the relevant IEC standards, and the reasons for the differences. This WG has completed it's assignment and was disbanded with thanks by the Subcommittee.

I8: Revision of C37.90.1, Standard Surge Withstand Capability Test

Chair: J.G. Gilbert
Vice-Chair: J. Teague
Output: Revision of IEEE Standard C37.90.1-1989(R1994)

The WG met last on 9/18/2001. The ballot of PC37.90.1 received 100% approval. This standard has been approved by the Standards Board and should be published by the end of 2002. The summary paper is complete. This WG was disbanded, with thanks, by the Subcommittee, on January 15, 2003.

I9: Revision of C37.105 - Standard For Qualifying Class 1E Relays And Auxiliaries For Nuclear Power Plants

Chair: S. Mazumdar
Vice-Chair: S.M. Usman
Output: Revision of C37.105

The WG meeting was held on Jan. 14, 2003 with 4 members and two guests in attendance. The latest draft D4 of the standard was discussed. It was indicated that it needs editing to fully conform to the IEEE Standards Style Manual. A few technical changes and addition of bibliography section were suggested. The draft will be revised and sent to members for their review. Any comments will be sent to the Chairman. The draft will be finalized for issue for balloting at the May 2003 meeting.

I10: C37.98-1987 - Standard Seismic Testing of Relays

Chair: M. Nemier
Vice-Chair: M. Bajpai
Output: Revision of IEEE Standard C37.98

The WG met on Jan. 14, 2003 with 4 members and 2 guests in attendance. The initial Draft 1.0 is complete and adheres to the IEEE style manual. This will be used as a basis for all future drafts. Wording shall be developed for Section 1.2 and other sections indicating that plant specific settings, inputs etc. may be used in lieu of the settings recommended by the standard. The settings in the standard should be used when plant specifics are not available or when qualifying

a product line. The group shall develop an annex containing a comparison of IEC 255-21 Parts 1-3 and IEEE C37.98. Sections indicating determination of failure shall be reworded to indicate determination of test acceptance. Further discussions took place about how to harmonize the C37.98 definition of ZPA with the IEEE 344 definition. A new draft incorporating the comments from this meeting will be sent to the members for comments prior to the May 2003 meeting.

I11: Survey of Relay Test Practices

Chair: E. Krizauskas
Vice-Chair: W.G. Lowe
Output: Conference Paper

The PSRC report ""A Survey of Relaying Test Practices"" was approved by the PSRC officers on February 15, 2002. Ed Krizauskas distributed the approved report to all contributors shortly thereafter. An Acrobat file of the report is available on this page. Ed will submit the report for presentation at an upcoming Energy Association of Pennsylvania meeting, and will create a Power Point presentation for the report. The presentation will then be available to other Working Group members, who would be encouraged to present the report at their regional power engineering or protective relaying conferences. Ed would like the recognize and thank the following individuals for their substantial efforts in the development of the report: Bob Bentert, Bill Lowe, Jim Ingleson, Moh Sachdev, Larry Lawhead, and Stan Thompson. The working group assignment has been completed. This working group was disbanded with thanks at the Relaying Practices Subcommittee meeting on May 22, 2002.

I12: Revision of C57.13.1, IEEE Guide for Field Testing of Relaying Current Transformers

Chair: M. Meisinger
Vice-Chair: D.R. Sevcik
Output: Revision of ANSI/IEEE C57.13.1-1981 (R1992)

The working group met on Jan. 15, 2003 with 4 members and 6 guests in attendance. Draft 2 of the revised guide incorporating previously received writing assignments, including integration of a new section on low energy current transformers was distributed and discussed. Assignments were made to incorporate the discussed changes. The next draft will be sent out before the next meeting. The Chairman expressed the need for input from low energy current sensor users that have experience in field-testing of these devices. Also see Item 9A below.

I13: C57.13.3 IEEE Guide for Grounding of Instrument Transformer Secondary Circuits and Cases

Chair: M.S. Sachdev
Vice-Chair: B. Mugalian
Output: Guide

The Working Group met in Ballroom C, Phoenix-Scottsdale-Paradise Valley Embassy Suites, Phoenix, AZ at 8:00 AM on January 15, 2003. Eight members and two guests were present. The minutes of the September 2002 meeting, distributed previously by Email and posted on the WG Web site, were approved. Progress on seven items assigned at the September meeting was reviewed and one previous assignment and a new assignment were distributed. One assignment is due on January 31 and the second assignment is due on February 15. The Chair will incorporate the submissions in the draft and will distribute the document amongst the WG members by the end of February. If no comments of substance are received, the process of balloting the guide will be initiated. At the conclusion of this business, the meeting was adjourned. Also see Item 9A below.

I14: Telecommunication Terms/New Terms Used by Power System Protection Engineers

Chair: T.A. Phillippe
Vice-Chair: R. Young
Output: Special Publication

The WG met on Jan. 15, 2003 with 8 people in attendance. The scope of working group was discussed. It was decided that the group would start gathering terms for the dictionary. The members will send their lists to Tim Phillippe or Ray Young or bring them to the May 2003 meeting.

I15: Revision of C37.110, IEEE Guide for the Applications of Current Transformers Used for Protective Relaying Purposes

Chair: G.P. Moskos
Vice-Chair: B. Jackson
Output: Revision of IEEE C37.110-1996

The working group met on Jan. 14, 2003 with 6 members and 8 guests in attendance. Draft 3 was reviewed and editorial changes were noted. The changes will be included in Draft 4. Any additional comments for Draft 4 need to be received by Feb. 28, 2003. The WG decided to include an Annex on optical current sensors. A pdf file of the latest draft revision will be sent to the IEEE for formation of a balloting body. A word file will be sent to the IEEE Editor for editorial comments. Also see Item 9A below.

I16: Understanding Microprocessor-Based Technology Applied to Relaying

Chair: M.S. Sachdev
Vice-Chair: R. Das
Output: Guide

The seventh meeting of the Working Group was held at 1:30 PM on January 14, 2003 in Ballroom B, Phoenix-Scottsdale-Paradise Valley Embassy Suites, Phoenix, AZ. Seven members and thirteen guests were present. The minutes of the September 2002 meeting held in Jacksonville, FL were approved as circulated by e-mail and posted on the web site.
Contributions were received from Tarlochan Sidhu and Gary Michel just before the WG meeting. These contributions will be incorporated in the draft. The Chair reported that he edited a major part of the document since the last meeting. He further stated that he plans to edit the remaining document during the next six weeks. The document will be circulated before the next meeting among the members of the WG and the I Subcommittee for comments of substance. The objective at this time is to complete the report by the September meeting of the PSRC. At the conclusion of this business the meeting was adjourned.

I17: Trends in Relay Performance

Chair: W.M. Carpenter
Vice-Chair: J.D. Wardlow
Output: Special Report

The working group met on Jan. 14, 2003. Draft 2 of the document is complete. Seven different companies have reported their transmission system relay performance. Six reported 2000 and 2001, one reported 2000 only and one reported 2001 only. Several companies indicated a commitment to provide 2002 data. It is expected that paper will be ready for presentation either in May or Sept. 2003 to the subcommittee and/or main committee.

I18: Harmonization of IEEE C37.90.2

Chair: J. Burnworth
Vice-Chair: W. Higinbotham
Output: Revision of C37.90.2

The working group met on Jan. 15, 2003 with 6 members 2 guests. Draft #4 of the revised C37.90.2 standard was distributed and reviewed. Comments were discussed, and changes identified. Section 5.2 Spot Frequencies, was not included in the draft. The following action items were identified.
a.) Mark Simon - Develop a summary on methods of field measurement when performing the described tests. Summary to include information on IEC 6100-4-3.
b.) Ken Fodero - Complete previous assignment of developing section 5.2 Spot Frequencies test.
c.) Jeff Burnworth:
a. Incorporate comments and new sections into draft #5.
b. Review PAR requirements based on latest draft content.
c. Distribute latest edition of IEC 61000-4-3 to Working Group members.
Assignments are requested due by April 1, 2003.

I19: Analysis of Substation Data

Chair: L.E. Smith
Vice-Chair: B.A. Pickett
Output: Special Publication

The final report was posted on the I19 web page on April 17, 2002. It was presented at the 2002 Fault and Disturbance Analysis Conference at Georgia Tech. The assignment has been completed. Thanks to all who participated in this work. This WG was disbanded with thanks by action of the Relay Practices SC on May 22, 2002. The I19 final report is available on the WG web page.

5. Task Force Reports:

ITF1: Relay Service Letter Database

Chair: J.W. Ingleson

The database was updated on November 14, 2002, and is available on the ITF1 area of the SC web site.

ITF2: This TF has become WG I3.

ITF3: Conducted Electromagnetic Interference

Chair: W. Higinbotham
Vice-Chair: J. Burnworth

The task force met on Jan. 14, 2003 with 11 attendees (5 members, 6 guests). Meeting minutes from the September meeting were read. IEC 60255-22-6 was distributed to all in attendance, and reviewed. Following the review, a discussion was had as to the need for a separate IEEE document to address the same or similar requirements as the IEC standard. A proposal was then stated as follows:
Proposal: An independent IEEE document or standard that addresses the test requirements established by IEC 60255-22-6 is not required. The present IEC standard satisfies all known present industry needs. No problems have been reported or noted to the PSRC that need to be

addressed by a new standard in the area of low frequency conducted disturbances induced by radio frequency fields.
A vote was taken, and all attending members agreed (yes) to the proposal (no new standard). It was also suggested that Working Group I18 include an informative to identify and discuss the applicable conducted disturbance standard in the revised C37.90.2 document. One guest commented, and all agreed, that the format used for standards by IEC that requires other standards to be used to complete and are not all-inclusive, continues to be disliked by users. A new Working Group and Standard will not be established.

ITF4: Non-Conventional (Optical) Current Transformers
Chair: H. Gilleland

The task force met on Jan. 14, 2003 with 25 guests. The majority of the first meeting involved a discussion on whether WG I12 and WG I15 should include references to optical sensors in their respective guides. It was determined at this meeting that it would be left up to the individual working groups to decide. There was enough interest in the topic that the task force will meet again in May 2003. A work assignment will be defined at this meeting. Also see Item 9A below.

HITF5: Common Formats for Protection IED Data
Chair: A.P. Apostolov

This TF will no longer report to Practices, as it has been determined that their work is mainly in the scope of the Relaying Communications Subcommittee.

6 & 7. Liaison and Coordination Reports:

Instrument Transformers SC of the PES Transformers Committee and Revision of C57.13-1993, IEEE Standard Requirements for Instrument Transformers:

J. D. Huddleston, III - Here are my Liaison and Coordination Reports concerning the Instrument Transformers Subcommittee of the Transformers Committee. The Transformers Committee last met in Oklahoma City, Oklahoma on October, 2002, but the Minutes of the Instrument Transformers Subcommittee are not yet posted, so my report is based on the Vancouver Minutes of April, 2002 and other data posted on the Transformers Committee web site.

Liaison from the Instrument Transformers Subcommittee: I have the following comments to report: Document C57.13.5/D15 “Draft of Trial-Use Guide of Test Requirements for Instrument Transformers Rated 115-kV Nominal System Voltage and Above” has completed a recirculation ballot with a 96% affirmative vote.

Coordination for W.G. PC57.13 (Revision of the C57.13 Standard: General Requirements for Instrument Transformers (Tom Nelson, Chair)

The PAR for this document should have expired at the end of December, and, if so, the parent Standard for Instrument Transformers will be Administratively Withdrawn. The W.G. still hasn’t decided whether to split this Standard into two, 2-part Standards or four separate Standards; various combinations have been proposed.

Coordination for W.G. PC57.13.6: Instrument Transformers for Use with Electronic Relays and Meters, (Chris Ten-Haagen, Chair): Mr. Jim Smith, the Subcommittee Chairman, sent this

document out for a November, 2002 replay for a Subcommittee consensus. I found it confusing, calling itself a Standard in some areas and a Trial Guide in others.

See the Transformers Committee web page at http://www.Transformerscommittee.org for further details.

P384-NPEC, Standard Criteria for Independence of Class 1E Equipment and Circuits

M. Bajpai - No report was furnished at this meeting.

8. Old Business: There was no old business discussed at this meeting.

9. New Business - Membership & Officers: The following have been named as new members of the Subcommittee: Harley Gilleland and Roger Whittaker. Tarlochan Sidhu has taken the position of Subcommittee Webmaster. These actions were approved by acclamation.

9A. New Business - Votes regarding Non-Conventional (Optical) Current Transformers

4 separate votes were taken regarding the question of optical CTs in CT documents. There votes relate to the work of ITF4, I12, I13, and I15.
- To deal with these questions separately, CARRIED.
- To include optical devices in the work of I12, as recommended by WG I12, CARRIED.
- To include optical devices in the work of I13, as recommended by WG I13, CARRIED.
- To include optical devices in the work of I15, as recommended by WG I15, CARRIED.

10. Adjournment: Mr. Gilbert adjourned the meeting on schedule.

Respectfully submitted,
J. W. Ingleson, Vice-Chairman, Relaying Practices Subcommittee

J: ROTATING MACHINERY PROTECTION SUBCOMMITTEE
Chair: S.P. Conrad

Vice Chair: W. G. Hartmann

The Subcommittee met in Scottsdale, AZ on January 15, 2003 with 12 members and 6 guests. The minutes were approved with a spelling correction noted. The chair recognized Bob Pettigrew for his recently completed service a outgoing chair and welcomed Wayne Hartmann as the incoming vice chair.

J1: Revision of C37.106-1987 Guide for Abnormal Frequency Protection for Power Generating Plants
Chair: G. Benmouyal
Vice Chair: E. Fennell

The Working Group met with 7 members and 5 guests.

Announcement was made that following the recirculation of the draft; the only remaining negative ballot has been resolved.

The draft of the Guide will be submitted to the IEEE Standards Department for the official edition of the document.

J3: Protection of Generators Interconnected with Distribution System
Chair: E. Fennel
Vice Chair: R. Pettigrew

The Working Group met with 15 members and 16 guests.

The Working Group reviewed the assignment and agreed to revise title and scope of work to include interconnected of small generators to the transmission system power system. The new title of the transaction paper is "Protection of Small Generators Interconnected to the Power System.

Additionally, writing assignments were made for the first draft of the paper.

A new Vice Chairperson was selected, Robert Pettigrew.

J4: Revision of C37.102 AC Generator Protection Guide
Chair: M. Yalla
Vice Chair: K. Stephan

The Working Group met with 16 members and 7 guests.

Writing assignments on the new Annex for example settings were reviewed. Further assignments were accepted for refining underfrequency, loss of field, phase distance backup, 100% stator ground fault reverse power/sequential trip and differential protection examples in the Annex.

In addition, assignments were given for a review of IEEE Std. 502 and adding a clause on off-line excitation protection to the main document. Overall review comments from Terry Crawley and Don Smaha (correspondence) were considered and incorporated as necessary. The Working Group is being careful to be consistent with other works in progress by the J Subcommittee.

J5: Generator Protection Setting Criteria
Chair: C.J. Mozina
Vice Chair: M. Reichard

The Working Group met with 8 members and 9 guests.

1. Most of the Working Group meeting was spent discussing the fact that much of the proposed paper content will be published in the Annex of C37.102. Two options were discussed:
    a. Pull subject matter form the existing Annex A of C37.102 draft (setting examples) and provide basic tutorial calculation information in front end of the paper
    b. Disband Working Group J5 and put basic calculation tutorial information into C37.012

2. It was decided to select option A. Most Working Group members believe that because of NERC time table requiring verification of coordination of generator protection with generator control a paper will reach users faster than the C37.102 standard.
3. Assignments:
    a. Working Group members are to review section I, II and III of the paper with comments due to the Chair by February 15, 2003.
    b. The Chair will incorporate these comments and pull the setting examples from Annex A of C37.102 for a first draft to the Working Group by March 15 for review.
    c. Comments on this draft are due to the Chair by April 15 so they can be addressed before the May PSRC Meeting.

J6: <u>Performance of Generator Protection During System Disturbances</u>
Chair: S. Patel
Vice Chair: K. Stephan

The Working Group met with 8 members and 9 guests.

Draft 7W of the paper (dated 12/18/02) was issued in December. This draft includes the editorial comments form the PSRC Officers. With a few editorial comments received at this meeting and review by the Terminology Usage Working Group (I2) this paper is ready for submission to the IEEE for publication.

In earlier PSRC Meetings there was discussion of presenting this paper at the May 2003 Main Committee Meeting. Due to timing of the paper and the Chair's prior commitments for May, the Working Group would like to have the presentation considered for the September 2003 or later PSRC Meeting instead.

J7: <u>Revision of C37.101, Generator Ground Protection Guide</u>
Chair: J.T. Uchiyama
Vice Chair: R. Das

The Working Group met in a single session with 8 members and 9 guests.

We discussed the write-up on 100% stator ground fault protection scheme and figures. It was decided to revise the scheme write up and the revised write up is due by Feb. 28, 2003. Figures require some inputs related to device numbers - it has to be harmonized with C37.102. Chair will discuss the issue with the Chair of J4 and resolve the issue so that figures can be finalized and incorporated into the next draft and circulated before the next meeting. We will discuss the revised draft in the next meeting.

Liaison Reports

<u>Electric Machinery Committee</u> **C.J. Mozina**

The Committee will meet at the June 2003 PES General Meeting in Toronto. Two key generator standards, C50.12 and C50.13, that are referenced in many of our PSRC generator documents have been updated and will be submitted for balloting after the June 2003 PES Meeting.

Coordination Reports

P958-EDPG, Guide for Adjustable Speed Drives **J. Gardell**
No report.

P408-NPEC, Standard Criteria for Class 1E Power Systems for Nuclear Power Generating Stations **R.V. Rebbapragada**
No report

P1010, Guide for Control of Hydroelectric Power Plants **Wayne Hartmann**
Pursuant to coordination with John Yale of the P1010 Working Group, "Guide for the Control of Hydroelectric Power Plants," we have obtained the latest draft, Version D, dated 7/02. Comments have been submitted via coordination. The Rotating Machinery Chair will circulate the document with W. Hartmann's comments for any final comments before unified comment transmittal to the P1010 Group.

New Business:

Jon Gardell raised the issue of the adequacy of motor protection for those motors connected via VSD/VFD systems. A discussion of the SC led the establishment of a task force to study the issues and report back to the SC. The chair will schedule a meeting for the new task force to meet in May at the Raleigh PSRC meeting. Jon Gardell volunteered to chair this activity.

K: SUBSTATION PROTECTION SUBCOMMITTEE
Chair: S. R. Chano
Vice Chair: C. R. Sufana

The Subcommittee met Wednesday January 15, 2003, at Phoenix, Arizona with 14 members and 15 guests attending. The minutes of the previous meeting in Jacksonville, FL were approved.

ITEMS OF INTEREST FROM THE ADVISORY COMMITTEE MEETING:

Simon Chano had an item regarding a tentative meeting on professional ethics. More details will be presented at the main meeting. This meeting will be held on Monday afternoon at the next PSRC meeting and will cover definitions, how to avoid pitfalls, express goals, etc.

Rick Taylor discussed contacting a company that does this type of training. A course of this type will help with PE CEU or PDH credit. Cost would be about $100 per person and last about 4 hours. If successful, the PSRC may schedule similar classes once a year.

Charles Sufana asked if the PSRC was considering having the PSRC meeting be counted toward CEU or PDH credit. Rick Taylor said they could look into that.

Reports from the WG Chairs

KTF1: RATIONALIZATION OF TRANSFORMER PROTECTION STANDARDS, GUIDES AND REPORTS
Chair: Mohindar Sachdev
Vice-Chair:

Established: 2002
Output: Subcommittee Report
Expected Completion Date: 2003

The Task Force met at 11:00 AM on January 15, 2003 in Ballroom A, Phoenix-Scottsdale-Paradise Valley Embassy Suites, Phoenix, AZ.

The Chair briefly outlined the purpose for which the task force was formed. He also provided copies of the two guides and two special reports presently available from the Standards Board and the PSRC.

After discussion, in which the members of the Task Force and the guests participated, it was concluded as follows.

The Task Force recommends to the Subcommittee that a Working Group be formed for revising the C37.91-2000 IEEE Guide for Protective Relay Applications to Power Transformers and incorporate in the revised version relevant information from the PSRC special reports on phase shifting transformers and thermal performance of transformers.

At the conclusion of this business the meeting was adjourned.

At the K subcommittee meeting it was decided to make the Task Force into Working Group K1. A new PAR will be requested from IEEE before the next May meeting.

K2: BREAKER FAILURE PROTECTION
Chair: R.A. Hedding
Vice Chair: A. Chaudhaury
Established, 2001
Output: ANSI C37.119
Expected Completion Date: 2006
Draft 1
K2 met in a double session Tuesday morning, January 15, 2003, with 37 members and 25 guests. All of the writing assignments have been completed. Draft 1A was developed. Clause 7 on Schemes, was thoroughly reviewed. The rewrite of clause 5, Back up protection, and clause 6, breaker failure modes were also reviewed. Several new writing assignments were issued.

Two new members of the working group were welcomed: George Nail, and Walt Elmore.

Next meeting we will need a double session for 60+ people and a projector.

K3 (Ex KTF3): Protection Schemes and Measures to Prevent and Reduce Outage Durations in Substations
Chair: B. Pickett
Vice Chair: T. Sidhu
Established, 2002
Output: TBD
Draft TBD
The working group met on January 15, 2003, with nine members and fourteen guests in attendance. Fernando Cobelo made an interesting presentation on some schemes being used in Spain to provide improved protection and reduce outages. This was followed by discussion by the attendees. There was some discussion on the title of the working group and it was suggested to discuss it further. The chairman will send a suggested title, scope, assignments, and an outline

to the members for discussion at the next meeting. The output of the working group should also be decided at the next meeting.

K4: BUS PROTECTION GUIDE
Chair: S. P. Conrad
Vice Chair: R. W. Haas
Established, 1999 (Originally 1983)
Output: Revision of Standard ANSI C37.97
Expected Completion Date: 2002

The working group met with 4 members and 8 guests. The chair will issue the draft to the Standards Board in preparation to ballot the guide. The Working Group expects to dedicate the May meeting to resolving ballot issues.

The next meeting 20, single session, no A/V equipment needed.

K7: GUIDE FOR THE PROTECTION OF SHUNT REACTORS.
Chair: K. A. Stephan
Vice Chair: P. G. Mysore

Established, 1999
Output: Revision of ANSI/IEEE C37.109.
Expected Completion date: 2003
Status: Reviewing Draft 6

The Working Group met on Tuesday, January 14, 2003, in one session with 5 members and 1 guest.

Draft 6 of the guide was distributed and the changes from draft 5 were reviewed. The document is ready to be issued to the IEEE editors for review prior to submittal of all information to form a balloting body. A comparison document showing all changes made from the present in-effect standard will be sent to the committees specified for coordination on the PAR form. This may provide useful information prior to the ballot. The PSRC Standards Coordinator and chair agree it is prudent to apply for a two year extension to the PAR to make sure it does not expire before the process is complete.

For the next Meeting: Single Session, 15 people, no A/V

K8: GUIDE FOR PROTECTIVE RELAYING OF UTILITY CONSUMER INTERFACE.
Chair: Irwin Hasenwinkle
Vice Chair: Fred Griffin
Expected Completion Date: 2002
Output: Revision of ANSI Standard C37.95
Guide approved

The working group did not meet, however Irwin Hasenwinkle indicated that the Guide had been approved. It was decided that the Working Group be disbanded. Simon Chano thanked the Chair and the WG members for producing a good document.

K10 (Ex KTF1): SCC21 Distributed Resources Standard Coordination
Chair: William Feero
Vice Chair: Doug Dawson
Established, 1999
Expected Completion Date: 2001
Output: Standard through the SCC 21

K10 held its meeting jointly with D3 since the two Working Groups draw the same engineers to both respective meetings. In the future, the two groups will make every effort to ensure the meetings are not scheduled in the same time slot. The chair of K10 took the first half hour to present part of 2 slide presentations developed last fall by the SCC21 on the status of P1547.

Of note was:

1. P1547 has been approved by 90% of the balloting group. Since there were still 20 negative ballots, it must be recirculated later this month.

2. Three new working groups have been initiated by SCC21.
   a) P1547.1 Standard for Conformance Test Procedures for Equipment Interconnecting Distributed Resources with Electric Power Systems
   b) P1547.2 Application Guide for IEEE P1547 draft standard for Interconnecting Distributed Resources with Electric Power Systems
   c) P1547.3 Guide for Monitoring, Information Exchange, and Control of DR Interconnected with Electric Power Systems

Because the official acceptance of P1547 as a standard is not yet assured and because the SCC21 has already initiated the above listed working groups, K10 will continue until all of the P1547 series have been completed. At the meeting the attending members were asked if they only were interested in coordinating with one of the .1, .2, .3 series. Everybody that expressed an interest wanted to coordinate with P1547.2. Seven wanted to also coordinate with P1547.1 and only four wanted to coordinate with P1547.3. While the Working Group had thought that creating task groups might be desirable, the overlapping interest suggests that the Working Group stay with the present working group level discussion.

For the next meeting: 30 people, single session, O/H requested.

It was announced at the K subcommittee meeting that Jon Gardell will provide coordination from the J subcommittee. There was also discussion about combining D3 and K10 but it was decided to keep them separate and to get better scheduling for the D3, J4, and K10 Working Groups.

K13 (PC 37.116): GUIDE FOR PROTECTIVE RELAY APPLICATION OF TRANSMISSION-LINE SERIES CAPACITOR BANKS.
Chair: F. P. Plumptre
Vice Chair: Dan Hamai
Established, 1999
Output: Guide for the application of protection on transmission series capacitor banks
Expected Completion Date: 2003

Draft 4

Working Group K13 met at 3:00 pm on Tuesday January 14, 2003 with Dan Hamai Vice Chair presiding. Six members and two guests were present.

The Working Group discussed further the possibility of a joint guide between the PSRC and the T&D Committee on series capacitors. The Working Group will continue with its work on the Guide, pursue opportunities to jointly meet with the T&D 824 Working Group, and merge the two guides if feasible near completion of the two works.

A list of subtopics was developed for the outstanding sections. Working Group members agreed to submit writing assignments by the end of February.

The chairperson will begin working on a PAR extension until the end of 2005..

At the next meeting: 15 people, single session, no a/v

Liaison Reports:

1. Transformer Committee, J.D. Huddleston III -

The last Coordination item I had was published as a Standard.

Liaison from the Transformers Committee:

The Transformers Committee met in Oklahoma City, Oklahoma, in October 2002, but the Final Minutes are not yet available. However, the Minutes of several Subcommittees were available to form the basis of this report.

The Committee continues on its course of making, revising, and re-affirming Standards including those which are under continuous revision (C57.12.00, C57.12.01, etc.) but nothing particularly pertinent to PSRC.

The recent termination of the MOU (Memorandum of Understanding) between the IEEE and NEMA as Co-Secretariat of ASC C37, C57, and C62 by action of the IEEE Standards Association in their February 25-26, 2002 meeting continues to have repercussions, although revision of these Standards continues under the IEEE SA umbrella for indemnification of IEEE Members. Industry focus groups will meet again later this year to determine which direction this standard development should go, such that we can expect more on this topic. Since the PSRC has a large stake in the C37 Standards, we will undoubtedly see changes in the way we do our work.

For details, see http://www.Transformerscommittee.org .

The next meeting for the Transformers Committee will be in Raleigh, NC on March 16-20, 2003.

Coordination Reports:

All coordination reports will be available after the January 2003 meeting.

1. ANSI/IEEE Switchgear Standards F. Plumptre.

a) C37.100.1, Common Requirements for IEEE Power Switchgear Standards
No update

2. PC62.91-SPD, Revision of IEEE 32 Requirements, Terminology, and Test Procedures for Neutral Grounding Devices, D. C. Dawson.

No update

3. P1375 Guide for the Protection of Large Stationary Battery Systems, S. Conrad

No update

4. P1409 Guide for Application of Power Electronics for Power Quality Improvements on Distribution Systems Rated 1 kV through 38 kV, Steve Conrad

No update

5. P1106 Recommended Practice for Installation, Maintenance, Testing and Replacement of Vented Nickel-Cadmium Batteries for Stationary Applications, Steve Conrad.

No update

6. PC37.74 Standard Requirements for Subsurface Vault, and Padmounted Load-Interrupter Switchgear and Fused Load-Interrupter Switchgear for Alternating Current Systems up to 38 kV, Roger Hedding.

No update

7. ANSI/IEEE Switchgear Standards, Vittal Rebbapragada
a) PC37.30.01 Standard Requirements for High Voltage Air Switches, Switching Devices, and Interrupters.
b) PC37.100.1 IEEE Standard of Common Requirements for Power Switchgear

No update

8. PC37.20.1 Standard for Metal Enclosed Low Voltage Power Circuit Breakers, Irwin Hasenwinkle

No update

Old Business

No old business

New Business

Steve Conrad described a bus differential relay misoperation and wanted to know if anyone had used a undervoltage relay to supervise tripping. Fernando Cobelo indicated that there are relays that have voltage supervision.

Simon Chano asked for any new WG proposals. There were none.

Three new members to the subcommittee were announced. They are Moh Sachdev, Tarlochan Sidhu, and Bruce Pickett.