

**POWER SYSTEM RELAYING
COMMITTEE**

OF THE

IEEE POWER ENGINEERING SOCIETY

Preliminary/Unapproved

MINUTES OF THE MEETING

September 9-12, 2002

Ponte Vedra Beach, FL

**Power System Relaying Committee
Main Committee Meeting Agenda
September 12, 2002**

Ponte Vedra Beach, FL

- | | | |
|--------------|---|------------------|
| I. | Call to order / introductions | Nail |
| II. | Approval of Minutes/ Financial Report | Winston |
| III. | Calculation of CT transient performance using an Excel Spreadsheet | Swift |
| IV. | Reports of Interest | |
| | A. Chairman's Report | Nail |
| | B. Technical Paper Coordinators Report | Taylor |
| | 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 | Simon |
| | I - Relaying Practices | Gilbert |
| | J - Rotating Machinery | Pettigrew |
| | K - Substation Protection | Chano |
| VI. | Old Business | Nail |
| VII. | New Business | Nail |
| VIII. | General Announcements | Nail |
| IX. | Adjourn | |

Call to order / introductions**Nail**

George Nail called the meeting of the IEEE/ PSRC Main Committee in Pote Vedra, FL to order at 8:04 AM on September 12, 2002.

Approval of Minutes – Pittsburgh meeting and misc. Winston

The minutes of the May 2002 in Pittsburgh, PA were approved.

Chairman's Report**Nail**

Well, this is my last official communication as Chair of PSRC. It certainly was interesting to be the Chair for these two years. It started out with somewhat of a letdown, when we were led to believe the world of our computer driven society would end because of a Y2K meltdown.

By our January 2001 meeting, we were still not sure who was president. By our May meeting, some of our members were unable to come to the meeting due to the economy slowing down and various pending mergers. Our September meeting was one week after the infamous 911, but we still had about 50% of our normal attendance.

During 2002, with the country at war on terrorism and the stock market putting our 401k's in the toilet, we had well attended meetings with significant accomplishments. The first annual PES meeting was held in Chicago in July with PES still trying to get the technical committees to agree to meet with them. It is my understanding that since then, T&D and Substations Committee have opted not to meet at the PES Annual Meeting, so we are not alone.

I can honestly say that the high point in my career has been my association with PSRC over the last 25+ years. There is no way that I know how to express my appreciation to each of you for your help and cooperation. We are fortunate to have new officers for 2003 that are capable leaders who will take their responsibilities very serious.

Technical Paper Coordinators Report**Taylor**

No activity to report.

PES Report**John McDonald**

The IEEE PES Governing Board met on Thursday, July 25, 2002 at the Summer Meeting in Chicago, Illinois. 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 at the PES Winter and Summer Meetings. In 2002 ExCom has 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 – Latin America Conference and Exposition March 18-22. ExCom participated in the Region 9 Chapter Chairs Meeting following the T and D Conference on March 22. In the Fall, ExCom will meet Thursday, October 10 in Yokohama, Japan during the IEEE PES T and D Asia Pacific Conference and Exposition October 6-10.

PES Bylaw Change and PES Leadership

The Governing Board approved a change to the PES Bylaws to expand the number of At-Large Members from 2 to 4, starting in 2003. The purpose of this change is to expand the pool of talent to help provide guidance in PES' affairs and to build the leadership

team for the future. Many of PES' present and past leaders started their governance role by being At-Large Members of the Governing Board. This change provides an excellent opportunity to bring in some more new talent.

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 will be held by the PES Executive Committee at its next meeting in October. This is the third industry focus group meeting held by the PES (first one in Columbus, Ohio in January 2001 and second one in New York, New York in January 2002), 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 represent 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.

Technical Committee "Supplement Meeting" in Early 2003

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 "Supplement 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 will be available starting October 1 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 is organizing 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.

Upcoming Executive Committee Meeting

The IEEE PES Executive Committee will meet on October 10, 2002 in Yokohama, Japan in conjunction with the IEEE PES T and D 2002 Asia Pacific Conference and Exposition October 6-10.

CIGRE Report

Cease

The 2002 General Session of CIGRE was held August 25-30, 2002 in Paris, France. At this 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. Attached are summaries of the 16 papers discussed at the Paris session. The CIGRE web site will soon contain a summary of the discussions. They may be downloaded at <http://www.cigre.org/>. Anyone needing a copy of one of the papers can contact me.

The preferential subjects for the 2002 session of CIGRE were:

GROUP 34 (POWER SYSTEM PROTECTION AND LOCAL CONTROL)

Preferential Subject 1: Cost benefits of substation automation.

What are the savings in investment, operation and maintenance cost? What are the cost evaluation strategies and methods?

What are the driving forces of substation automation? What are the technical and economical criteria? What is the impact of modern communication and data

processing? How has asset management been influenced? What role do deregulation and global business orientation play?

Preferential Subject 2: Refurbishment of protection and substation control: experiences and strategies.

What are the criteria and methods for updating, improving, replacing/refurbishing? (Equipment age, failure statistics, cost consideration, operational requirements, etc.) To what extent are computer programs available and used? What services are offered on the market?

Are the possibilities of digital substation automation and communication including Internet technology fully used? To what extent are new technologies (sensors, process bus, etc) applied or planned to be used in future? Are vendor specific solutions accepted or open systems required?

What strategies and procedures have been developing in practice (total or step by step renewal, time frames, etc)? What are the recent experiences and lessons learned?

What is the impact of deregulation?

The 2003 Colloquium will be held in Sydney, Australia October 19-24, 2003. Attached is the announcement of that meeting containing information on venue, dates, preferential subjects and other matters of importance. The deadline for submitting the summary of a proposed paper is November 30, 2000. The summary has to be submitted through your national representative. US persons will submit the summary and paper through me for Canadians it is Moh Sachdev. Approval notification will be promptly sent. The deadline for submitting an approved paper is February 28, 2003. The preferential subjects for the 2003 Colloquium are:

1. Automation of New and Existing Substations
2. Fault and Disturbance Data Analysis
3. Modern Distance Protection Functions and Applications

The 2004 General Session will be held in Paris as normal. The 2005 Colloquium will be held in 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. Attached is 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.

The CIGRE Technical Committee in Paris has completed its reorganization of the technical committees. The mapping of old and new study committees is as follows:

New SC	Old SC	New Titles
A1	SC11	
A2	SC12	
A3	NEW	High Voltage Equipment
B1	SC21	
B2	SC22	
B3	SC23	
B4	SC14	

B5	SC34	Power System Protection and Substation Automation
C1	SC37	
C2	SC39	
C3	NEW	System Environmental Performance
C4	NEW	System Technical Performance and analysis
C5	NEW	Power Supply Regulation and Marketing
C6	NEW	Distribution Systems and Dispersed Generation
D1	SC15	
D2	NEW	Information Systems and Telecommunication for Power Systems

Attached is a PDF file with more details of the entire reorganization. Also attached is the revised scope of the new SC B5 (old SC34).

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.

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 and plan to discuss and resolved open technical issues, current IEC61850 status, Lab certification testing, etc. We will also have Users Group committee and board meetings. Our UCA work is rolled into the new IEC 61850 standard - an International Standard for station communications. We also plan to discuss proposed Utility communication demos, review interoperability/test plans and heard vendor reports on UCA products.

As part of the Users Group meeting, the vendors will discuss IED products that they will display as part of the UCA communications Interoperability demo. Approximately 20 vendors of MMS/Ethernet products will participate in a Thursday afternoon, 4 hour hands on demonstration with interested utility, vendor, consultants, etc. A 100 dollar registration fee is requested to help cover the costs of the Users Group including meeting rooms and food ie lunch, dinner and snacks.

IEC Report

Udren

TC 95 - Measuring Relays

The TC 95 Technical Advisory Group, which meets as PSRC IEC Advisory WG I4, is reviewing the following new relay standards projects:

- **Committee Draft IEC 60255-27 Product Safety Requirements for Measuring Relays and Protection Equipment**

We reported in January on the massive first draft of the IEC Product Safety Standard that is specific to protective relays. Recall that we solicited last year for potential US participants in the IEC WG, which required ability or support to travel to some meetings in Europe, but we do not have anyone. Now comes the second draft for our review. When complete and approved, this will determine new tests for compliance to the EC Low Voltage Directive for CE Mark - a giant manufacturers' issue. The development, and the specific contents, are driven by the EC regulatory process and will bind member nations. The IEC WG attempts to get a consistent set of requirements out of 60255-5 on insulation requirements and tests for relays; and 60950 and 61010 generic safety

standards - they are legally not free to wander outside that overall standards framework. This looks generally like a UL safety verification program, but many of the specific requirements are different. It has 100 Pages of detailed requirements and tests for circuit definition, rating, and separation, grounding, insulation, single-mode insulation failure tests, materials, fire and explosion containment, access and exposure of hazardous circuits, misuse and misconnection, overheating and burns, and much more. There are several specific problems for PSRC in dealing with this project:

- No expertise in the PSRC on much of the material outside of the insulation design and testing arena.
- Standard may conflict with some C37.90.0 requirements.
- Utilities never required UL approval, so existing utility relay designs in US may be way out of compliance. This creates export problems, and may open liability questions for manufacturers.
- For industrial relays meeting UL standards, this will still be a lot different and require multiple designs, or redesign, for sale to IEC specifiers.

The best we can do at this time, and what we are trying to do, is to get UL involved in commenting on this standard, and incorporating the lessons learned in its own relay qualification programs.

60255-26 EMC Requirements for Measuring Relays

We've previously seen this complete overview of all EMC testing to be performed on relays to meet IEC requirements - signal descriptions, levels, reference detail standards, all nicely organized by influenced ports. The enclosure environment is treated as a port. Four proposals we made to adjust tests to levels we thought were important, or which would align with C37.90.X practice, were not accepted as they ran afoul of IEC base electrical environment standards with which the IEC WG is obliged to comply.

60255-22-1, 1 MHz Burst (Oscillatory Transient) Immunity Test

We provided a copy of C37.90.1 and made a number of proposals to adjust the IEC standard to take advantage of its best features. The IEC WG clearly considered it and adopted two of our proposals, but rejected four others, again because of IEC base environmental standards requirements. This is the closest we'll get them to come, and we will vote in support.

TC 95 Meeting - The TC has circulated the agenda for its next plenary meeting in Beijing, October 24. It's mostly project review and general strategy. One item of interest is a review of their role in functional standards in light of IEC 61850 substation communications standard, and C37.2 device numbers - we want to find out what they have in mind.

TC 57 - Teleprotection and Power System Control

WG 10, 11, and 12 continue work on IEC 61850, Communication Networks and Systems in Substations, which defines a standard protocol for substation control and protection, including alternate communications stacks to be used with a standard substation-defined object-oriented user layer.

Many PSRC members and attendees also follow or take part in this work, which is attempting to merge with the EPRI UCA substation communications design.

The last meeting of WG10-12 was in Finland in July. All sections of the massive draft are in latter or final international voting cycles, except for Section 10 on conformance testing which needs much work. Core sections, including the Section 5 on requirements, and the four massive parts of Section 7 defining the object modeling

approach for substation communications, are headed towards or are in draft international standard (FDIS) form. Implementations of the IEC 61850 & UCA substation communications are to be demonstrated tonight as part of the UCA Meeting immediately following this PSRC meeting.

Standard Coordinators Report

Sachdev

The Standards Coordinator, Mohindar Sachdev, met with the Chairs of the Working Groups writing and revising standards documents on September 10, 2002 in Heritage A Room, The Sawgrass Marriott Resort and Beach Club, Ponde Vedra, FL.

The status of PARs, Standards and Guides, were reviewed at the meeting. The coordinator gave a brief presentation of the procedure for developing standards.

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 May 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 of each PAR and its title 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 PAR number in the list. All members of the PSRC are requested to review the newly approved PARs. If interested in the development work planned in a PAR, contact the Chair of the Working Group that is developing the document of interest to you and sign up for participating in the activity of that Working Group.

STANDARDS ACTIVITIES SINCE THE MAY 2002 MEETING OF THE PSRC

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

1. Standards Approved

PC37.90.1 Standard Surge Withstand Capability (SWC) Tests for Relays and Relay Systems Associated with Electric Power Apparatus

2. Standards submitted for approval

PC37.94 Standard for N times 64 kilobit per second Optical Fiber Interface between Tele-protection and Multiplexer Equipment

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

3. Standards to be submitted for approval

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

4. Standards recirculated

PC37.94 Standard for N times 64 kilobit per second Optical Fiber Interface between Tele-protection and Multiplexer Equipment

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

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

6. Standards submitted for balloting

- 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

7. Standards being balloted

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

8. Standards to be expedited for submission

- 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

The PARs approved since January 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

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

10. PAR extension approved by NesCom

- PC37.93 Guide for Power System Protective Relay Applications of Audio Tones over Telephone Channels
- PC37.97 Guide For Protective Relay Applications to Power System Buses
- PC37.110 Guide for the Applications of Current Transformers Used for Protective Relaying Purposes

SUBMITTAL DEADLINES & STANDARDS BOARD MEETING SCHEDULE

PAR/Std Submittal Deadline	Standards Board Meeting
November 1, 2002	December 11, 2002
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

This is the eleventh joint meeting of PSRC and the Substations Committee C0 Subcommittee working groups and task forces. Our first joint meeting was in Milwaukee September 1992. As before, we have scheduled our meetings that have small PSRC

interest to be held on Monday to avoid conflicts with PSRC meetings later in the week. These included a work session on updating the SCADA standard C37.1-1994. The new title of PC37.1 is "Standard for SCADA and Automation Systems" and will include the use of IEDs for data acquisition and control output. Working Group C1 met to discuss a proposed substation configuration language to document the power system configuration, the IEDs connected to the power system elements, and the substation communication system (LAN) to which the IEDs are connected. We also had a work session updating the Automation Tutorial. The tutorial is planned for the 2003 PES meeting in Toronto

We did have four of our task force and working group meetings on Tuesday, with good participation from PSRC members. These were:

- C2 TF2 – Use of Computer Technology in Substation Data Acquisition and Control
- C3 TF1 – Working on a new Recommended Practice P1615 "Recommended Practice for Network Communications in Electric Power Substations". This was the second meeting of the task force.
- C2 TF1 – Working on a new Standard P1613 "Standard Environmental Requirements for Communications Networking Devices in Electric Power Substations." This is for non-relaying applications. It is based on C37.90, C37.90.1, C37.90.2, and C37.90.3 test methods and wave forms, but without the requirement "No false trips". This was the fourth meeting of the task force, which began at the 2002 Winter Power Meeting. Because we were able to cut and paste from those four PSRC standards, we have been able to make rapid progress. We have been through four drafts prior to this PSRC meeting. We reviewed the latest draft (Draft 5). Based on the results of the meeting, we had very few changes and expect to go to Email ballot by October 2002. The Email ballot lists of PSRC, PSCC, and the Substations Committee will be invited to ballot.
- C2 – Application of New Technologies in Substation Monitoring and Control

We look forward to another productive joint meeting with PSRC at your September 22-25, 2003 meeting in Madison, WI.

OLD BUSINESS

None

NEW BUSINESS

None

FUTURE MEETINGS

September 9-12, 2002:	Ponte Verdi Beach, FL	Sawgrass Marriott
January 13-16, 2003	Scottsdale, AZ	Embassy Suites
May 19-22, 2003	Raleigh, NC	Hilton North
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

B: ADVISORY COMMITTEE

Chair: G.R. Nail

Vice Chair: R.P. Taylor

B1: Awards and Technical Paper Recognition

Chair: S.P. Conrad

No Report

B2: Fellows Awards

Chair: J.S. Thorp

The Fellows met and discussed the Fellow nomination process.

B3: Membership Committee

Chair: M.J. Swanson

No Report.

B4: O/P Manual & W.G. Training

Chair: J.C. Appleyard

No activity to report

B5: Bibliography and Publicity

Chair: T.S. Sidhu

Jeff Burnworth chaired the meeting, as the Chairman could not attend the Sept. PSRC meeting. The working group met with two members 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. Mal Swanson prepared a report highlighting the recent activities of the PSRC. This report was discussed at the WG meeting and as the attendance was low, it will be again discussed at the Jan. meeting. Al Darlington will prepare comments, for discussion at the next meeting, on the recent NERC DAWG reports.

B9: PSRC Web Site

Chair: Bill Lowe

No

C: SYSTEM PROTECTION SUBCOMMITTEE

Chair: D. Novosel

Vice Chair: T. Seegers

Steven Kunsman, Rich Hunt, Pete Solanics, and Ken Behrendt were welcomed as new members of the subcommittee.

It was noted that several working groups will complete their assignments by the end of next year. Proposals for new working group assignments are being solicited from anyone who has ideas.

C2: Power Quality Issues in Protective Relaying

Chair: T.W. Cease

Vice Chair: S. Kunsman

TW Cease reported that no writing assignments were submitted as committed last meeting. This is a major problem to complete the report. It was recommended that the Chair and Vice Chair take a more aggressive role in reminding the members of their assignments/commitments.

Damir Novosel (Chairman of C subcommittee) said the working group should strengthen their participation and commitment to the goal of the group. If members cannot commit then they should be removed from the committee.

Bob Beckwith had concerns that there were no standard for the definition of long-term measure of the voltage deviation. IEEE 1159 was referenced as a source for these definitions.

Charlie Henville concerned about protection based on power quality events. For example, high magnitude of harmonics causes problems in capacitor bank application. It was suggested that a section could be added on protection (tripping versus alarming). Harmonics impact on protection relays (IEEE standard 519 addresses some of these concerns) could be summarized as a new section.

Charlie Henville concerns on high order harmonics (greater than 1) and geometric magnetic influences (Bill Feero has done work in this area) on generator protection. Some concerns over the negative sequence protection as to whether tripping was a good or bad event.

Action Items:

1. Assignments Reviews assignments due 10/18/2002
Section 3.1-3.6 - Kirsh Narendra
Section 5 – Patrick Carrol
Section 4 - Gerald Johnson
Section 6 – Roger Hedding
2. Incomplete writing assignments due no later than October 15
Section 3.4 and 3.5 Alex Apostolov will recommend a person
Section 3.6 David Hart, Russ Patterson, Gary Kobet, Rene Jonker
Section 6 Alex to merge inputs (coordinate with Roger Hedding's review)
3. New Section in 6 (PQDIF) Russ Patterson
4. New writing assignment on issues of pq monitoring and relays D. Hart
5. All authors to review section and to reduce figure size (e.g. jpg format) all
6. Send remarks to section authors by October 15th all
7. Review and provide comments on bibliography to be sent to TW Cease all
8. First complete draft to be discussed at next meeting September 9, 2002
9. TW Cease to forward the latest document version to Damir for posting on the IEEE website.

C3: New Technology for Transmission and Distribution Protection

Chair: A. P. Apostolov

Vice Chair: P. A. Solanics

This working group has been disbanded. Due to continued high interest, this activity has been handed over to the PSRC main committee.

C4: Wide Area Protection and Emergency Control

Chair: M. Begovic

Vice Chair: D. Novosel

After a discussion and overview of the report, publication of the report was decided to be web download-based).

It was also decided to propose to the SC that a creation of the following papers be undertaken by the group members:

1. Summary paper, an overview of the entire report (coordinator: M. Begovic, contributor: D. Novosel)
2. Paper on Technology Issues and Infrastructure in WAPEC, (coordinator: A. Phadke, G. Michel, C. Henville, contributors:., Apostolov, M. Adamiak)
3. Paper on Analytical Issues and Implementation of WAPEC, (coordinator: J. Thorp, S. Horowitz, contributors: R. Hart, M. Ibrahim, K. Mustaphi)
4. Paper on Future Trends and Issues in WAPEC, (coordinators: D. Karlsson, A. Apostolov, contributors: G. Michel, K. Narendra)

It was also decided to invite all the former members of the Working Group C-6 to join the work of C-4 and co-author the above papers.

C5: Deployment and Use of Disturbance Recorders

Chair: B. Jackson

Vice Chair: W.M. Strang

The group reviewed draft 1 of the document. The discussion centered on definitions and purpose concerning what should be covered in the paper. After much discussion, a small group was assigned to meet and write the purpose.

Jim Ingleson presented a web based design for the paper. Jim has taken all of the submitted writing assignments and posted them on a server to allow members access to the latest updates.

C6: Wide Area Protection and Emergency Control

Chair: M. Begovic

Vice Chair: D. Novosel

Working group assignment is complete. Additional assignments related to this working group have been transferred to new working group C4.

C8: Phasor-Based Models for Analyzing Relay Performance

Chair: M. Meisinger

Vice Chair: M. S. Sachdev

Mohindar Sachdev reported that he had modified Section III.B as discussed at the January 2002 meeting. Comments were also received from Miraslov Begovic on the draft.

The contents and philosophy for selecting material for the paper were reviewed and it was decided that an example be included in an appendix to demonstrate the procedure for calculating phasors from sampled and quantized data, Mohindar Sachdev will provide this contribution. It was also agreed that the list of published equations, originally planned to be in Section III.C, be moved to an appendix. Alex Apostolov presented a list of words whose definitions should be provided in the paper. The Working Group approved this list and Alex promised to provide the definitions by October 15, 2002.

Rick Cornelison, Ashok Gopalakrishnan and Vasant Kamath joined the Working Group.

C9: Underfrequency Load Shedding and Restoration

Chair: A. Apostolov

Vice Chair: K. Behrendt

The working group discussed writing assignment contributions. One writing assignment is still needed to complete the collection. The working group discussed ways to expedite comments and the balloting process. Working group members are assigned to review individual sections of the guide. Marc Lacroix volunteered to join Mohammed Ibrahim in an overall review of the document to check for consistency and overlap. Comment will be collected and assimilated. A revised draft document will be sent to the members of the working group and subcommittee before the next meeting.

Assignments to review each section of the draft are shown in the attached table.

The scheduled completion date has been revised to September, 2003.

Section	Reviewer
Part 3, System Conditions	
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

C10: Effects on Changing Utility Environment on Protective Relaying

Chair: J. DeLa Re

Vice Chair: R. Hunt

Meeting provided a quick overview of the survey and survey results. Discussion focused on the outline of the intended report of the survey results, and on specific writing assignments. Writing assignments are due to Working Group Chair by November 15th, 2002. Chair to send out first draft for review by members by December 1st, 2002. Next meeting will focus on document format and review of first draft. New anticipated completion date of document is September, 2003.

Assignments and Action Items

- Chair to distribute raw survey data, in hard and soft form, to members with writing assignments by September 27th, 2002.
- Chair to distribute survey summary results to all Members and guests by September 27th, 2002.
- Members to complete writing assignments and forward to Chair by November 15th, 2002.
- Chair to send out completed first draft by December 1st, 2002.

C11: Protection Issues During System Restoration

Chair: T. Sidhu

Vice Chair: D. Tziouvaras

At the request of the chairman, Tarlochan Sidhu, Kaylan Mustaphi conducted the meeting.

Nine handouts, written by members, were distributed for comments and review. The attendees participated in the discussion and pointed out some issues related to generator protection and synchronization. Response to these issues will be included in the writing assignments to follow.

The next step for the working group will be to finalize a list of topics to be included in the paper and seek additional writing assignments.

Liaison Reports:

1. IEEE PES Power System Stability Controls SC

Gary Michel

On July 23, the Power System Stability Controls Subcommittee met from 8:00 to 9:00, with 65 members and guests attending. At the Subcommittee meeting, John Hauer presented an update on WECC wide-area measurements.

Following the business meeting, Willie Wong chaired a technical paper session with four transactions papers and one proceedings papers. On July 23 afternoon, Power System Stability Controls Subcommittee sponsored the panel session Power System Stability Controls Using Power Electronic Devices; the attendance was 70 - 80. The WG on Power System Dynamic Measurements, chaired by Dick Schulz met on July 22, minutes below. The TF on Fast-Acting Direct Load Control for System and Price Stability chaired by Jeff Dagle met on July 22 (Steve Widergren chairing). The TF on Benchmark Systems for Damping Controls chaired by Ian Hiskens met on July 24. Juan Sanchez-Gasca provided a report of the Excitation Subcommittee TF on Power System Stabilizers.

Plans for the Toronto meeting in July 2003 include panel sessions on:

- Gas Turbine Controls During Underfrequency Events
- Modeling and Controls for Wind Generation/Power System Interaction

- Direct Load Controls for System and Price Stability (sponsored by Task Force)

ADMINISTRATIVE ITEM: New Subcommittee chairman

Following the Toronto meeting, Nelson Martins will be Subcommittee chairman and Juan Sanchez-Gasca will be Subcommittee secretary. The Power System Dynamic Performance Committee policy will be four year terms for subcommittee chair and secretary, with the secretary becoming the new chair. Congratulations to Nelson and Juan.

The Working Group on Power System Dynamics Measurements (WG) met on Monday, Jan. 28, with 25 present. Dick Schulz, chair, opened the Meeting. Harold Kirkham spoke to the activities of the Instrumentation & Measurements committee.

Several members of this WG noted that Power System Relaying Committee (PSRC) activities have overlap with the work of this WG. These include: (1) The PSRC WG C5 is preparing a report "Deployment and Use of Disturbance Recorders"; it should be reviewed and referenced in section 1.2 of our report, (2) PSRC WG H8 [chaired by Jim Ingleson of this WG] is developing a standard naming format for disturbance recordings, (3) Ken Martin [BPA, member of this WG] chairs the PSRC WG H11 that is revising a standard (IEEE std 1344 and rewrite version C37-118) provide the synchro-phasor format. It was said that these PSRC reports should be available on the web site pes-psrc.org; the chair noted that he has not found any of this on the web yet, but has been able to get them by informal contacts with the PSRC WG chairs. Dick follows these activities, and attended some of these WG meetings. Jim Ingleson volunteered to create and send to us a list of the sites (URL information) for the relevant PSRC reports.

It was noted that many disturbance-recording devices were available, but that there are few systems to harmonize the data. Use of corporate WAN networks for data review and dissemination was discussed, but problems of security and confidentiality must be overcome. The owners and operators of the measurement units are often not the users of the data. John Kehler mentioned a "drop-chute" system where not-quite-real-time data was packaged and sent out to recipients, but no external access was allowed to request data. [John Kehler should be asked for more information about this system for inclusion in the minutes or report]. It was noted that AEP freely shares data after it is several days old, considering it to be of no commercial value at that point. Some question about the sampling rate and format of this type of available data was raised.

Jeff Dagle has a CD of software tools for integrating data from different recorders and performing analysis and monitoring for transmission reliability. These tools are part of an effort by the CERTS (CONSORTIUM FOR ELECTRIC RELIABILITY TECHNOLOGY SOLUTIONS), which is funded in part by DOE and California Energy Commission. Because of this, they have a WSCC focus, but should be well developed.

The need for generic descriptions and specifications of available (working) equipment was put forward to the attending vendors and requests must be sent out to those not in attendance.

John Kehler mentioned a Measurement Validation and Audit System (MVAS) used in WSCC, which should be reviewed and referenced [action item for John to send specs].

Bharat Bhargava volunteered to send details of Southern California Edison's monitoring experience.

Alex Golder volunteered to send specifications for his system and a reference list of his clients, to gather their experience.

Baj Agrawal offered to provide the WSCC monitoring requirements and specifications. Facilities >1000 MW and 'key' substations are monitored.

Jim Ingleson volunteered to provide a write-up on site selection. A figure of merit was assigned to utilities that have tested their underfrequency load shedding schemes and have some experience in validating their site selections. Recognition of evolution of power systems is required, so that sites are not kept purely for historical reasons.

It was agreed that material from panel sessions in 1999 and 1993 should also be added to the WG report.

Alex Golder presented experience from Australia using their quasi-continuous modal monitoring system. His presentation indicated that continuous recording of mode frequency and damping gave a different picture than snap-shots during disturbances.

2. NERC EC

Nothing major to report

Winston

3. IEEE/PES T&D Committee

Nothing major to report

Kuzunovic

D: LINE PROTECTION SUBCOMMITTEE

Chair: M. Carpenter

Vice Chair: Ron Westfall

D1: Effectiveness of Distribution Protection

Chair: P. Carroll

Vice Chair: C. Fink

The WG Chairman informed the group that the final survey report has been completed. Copies of the report were distributed to the group. An electronic copy will be sent to Bill Lowe for posting on the PSRC Web Site. A link will then be e-mailed to everyone on our survey mailing list as a means of distributing the report. The group then discussed the possibility of submitting the report as an IEEE Transaction paper. The consensus was that we would pursue this path if it does not require a significant amount of effort. The group also discussed presenting the survey results at relaying and distribution related conferences. It was agreed that a report abstract should be prepared and submitted to appropriate conferences for consideration. A volunteer group consisting of Patrick Carroll, Rafael Garcia, and Ken Birt will make minor revisions to Rick Taylor's power point presentation in preparation for future conferences PSRC volunteers will be solicited to present the power point presentation as required. The survey report presentation may also be a valid item for consideration at an upcoming PSRC Main Committee meeting. The general feeling of the group was that it had completed its assignment. However, the working group should continue distribution protection surveys as well as related issues in some fashion under new leadership. The working group will need to redefine its responsibilities.

The meeting concluded with a presentation by Rafael Garcia on a Sympathetic feeder trip that occurred on his companies distribution system. It was a load related time delayed trip which generated good discussion by the group. Thanks to Rafael for his presentation.

D2: Fault Locating

Chair: Karl Zimmerman

Vice Chair, Damir Novosel

The Working Group did not meet. The Fault Locating Guide balloting group approved last week. .

D3: Impact of Distributed Resources on Distribution Relay Protection

Chair: Tony Seegersr

Vice Chair: Ken Birt

Draft 1 of the paper was reviewed. References were requested of material already submitted. Those members who have not completed their writing assignments were duly encouraged. Additional writing assignments were made.

Comments and assignments should be returned to Tony Seegers by October 31, 2002. Tom Beckwith and Wayne Hartman agreed to become members.

D4: Automatic Reclosing

Chair: W.M. Strang

Vice Chair: Mal Swanson

Our guide is presently at the standards board for approval. The standards board meeting is scheduled for September 11th. The working group plans to prepare and present a summary of the guide at the following meetings:

1. PSRC Main Committee Jan. 2003
2. Texas A & M Relay Conference - April 2003
3. Georgia Tech Relay Conference - May 2002
4. Western Protective Relay Conference - October 2003

Only a few minor editorial changes are necessary prior to publication. Spelling of one word, several punctuation marks, as noted by comments from the recirculated ballot. This should not delay publication or printing following anticipated approval from the standards board.

Presentation to be prepared by Bill Strang, and reviewed by working group prior to presentation at the conferences. Photos of reclosing relays taken by Jim Huddleston II will be used to illustrate the history and evolution of these devices.

D5: Guide for Protective Relay Applications to Distribution Lines

Chair: W. P. Waudby

Vice Chair: Randy Crellin

The IEEE Standards board is to meeting September 12th to review the PAR. The working group discussed the writing assignments in Clauses 4 and 5.

D6: Out of Step Considerations on Transmission Lines

Chair: Mike McDonald

Vice Chair:

The working group agreed on an assignment: Prepare a paper that discusses the out of step phenomena and considerations in applying out-of-step protection on transmission lines.

A discussion followed on what should be in the paper and what type of study is necessary to determine where out of step protection needs to be applied.

The chairman and 4 volunteers will develop a preliminary outline for the paper within the next 3 weeks.

D10: EMTP Reference Models for Transmission Line Testing

Chair, K. Mustaphi

Vice Chair: T.Sidhu

Draft 5 of the report was discussed. Once we receive the write up on the transformer model, EMTP input file will be created which will be tested by interested members. Al Darlington agreed to produce drawings for the breaker section on behalf of Arvind Chaudhary. Ratan Das and Mukesh Nagpal provided materials for the case file nomenclature section which is required to be revised. Members are requested to send their writing assignments to the chairman by October 31st. Ashok Gopal Krishnan and Hyder DoCarmo joined the working group as new members.

DTF3: Task force for Loss of AC Voltage Considerations

Chair: E. Price

A task force of 15 attendees met on September 10th and discussed the assignment for loss of AC voltage (Potential) and voted unanimously to recommend a working group be formed. Nine attendees offered to be contributing members of the working group. Each member was requested to bring a loss of voltage issue that they have encountered in the past and present it at the next meeting.

The assignment is: Develop a special report that reviews and analyzes loss of AC voltage protection schemes. The report will point out potential application problem areas and possible solutions based on the protection scheme, power system configuration, control choices made, and voltage circuit redundancy.

New Business

Task force DTF3 is to become Working group D7. Mike McDonald, and Phil Waudby were asked to join the subcommittee.

High Impedance Fault Activity -

Steve Conrad related a story of slow clearing for a fault in the desert by a casino.

Ken Birt related a story about a boom from a crane that went into a 13kV line. Fault cleared when tired blew out.

Charlie Hennville reported on a Hand glider getting tangled in a 138kV line.

H: RELAY COMMUNICATIONS SUBCOMMITTEE

Chair: M. S. Simon

Vice Chair: K. J. Fodero

**H1: REVISION OF IEEE GUIDE FOR POWER LINE CARRIER APPLICATIONS
JOINT WORKING GROUP**

Chair: B. Nelson

Vice Chairman: M. Simon

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

Chair: Ken Behrendt

Vice Chair: Bill Lowe

A draft copy of the working group report was distributed and discussed. We are still waiting for several writing assignments. Several members volunteered to write about example Spread Spectrum Radio applications they have in service. Melodin Kezunovic volunteered to provide a report about techniques used at the university level to evaluate the performance of Spread Spectrum Radio applications. Dennis Holstein volunteered to prepare a section on security requirements.

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.

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

Draft 6 of C37.115 completed successfully the first 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 4 negative votes (92% affirmative) were received, and PC37.115 has met the 75% affirmation requirement.

One new technical comment was received. H4 debated the recommended change and decided to partially accept the recommendation. This change will be made and PC37.115 Draft 7 will be recirculated before the end of the year. In addition, editorial changes recommended by the Standards Association Editor will also be incorporated in Draft 7.

H5: Application of Substation Peer to Peer Communications
Chair: M. Yalla
Vice Chair: M. Adamiak

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

H6: APPLICATION OF SUBSTATION ETHERNET LAN COMMUNICATION FOR PROTECTION AND CONTROL
Chair: John Burger
Vice Chair: Charlie Sufana

No Report

H7: PC37.94 INTER RELAY COMMUNICATION PROTOCOL STANDARD
Chair: G. Michel
Vice Chair:

WG activity was reviewed since the June, 2002 RevCom Meeting. It was decided that an email response to the preliminary comments from a RevCom member should be sent to Dave Ringle of IEEE-SA RevCom Staff. Even though RevCom did not request a response. The WG felt it was important to document our response to RevCom. The response was emailed to Dave Ringle and two RevCom members on 9/11/02 morning before the RevCom meeting later in the day. Ken Fodero offered to write a draft PC 37.94 summary document after IEEE Standards Board approval. The WG will review it via email and submit to a PES publication.

No meeting room will be required for the next PSRC since the summary document can be handled via email.

H9: Special Considerations in Applying PLC for Protective Relaying
Chair: M. Sanders
Vice Chair: M. McDonald

Draft 8a of the special paper was distributed. Assignments were received and incorporated into the document. The paper is nearly its final stages. Only 2 more subjects were assigned to be added to the paper. The writing assignments are due to the chair by November 1, 2002.

Bruce Pickett suggested a paragraph on coordinating the spark gap settings on the HV equipment.

Roger Ray will submit a section on the reliability of the different types of coupling schemes as it relates to relaying.

John Appleyard will start his task of editing the paper.

Expected completion is by the January 2003 meeting. At that time, we will coordinate the presentation at regional conferences and web publication.

H10: REVISION OF THE AUDIO TONE APPLICATION GUIDE C37.93
Chair: Bill Higinbotham
Vice Chair: Jerry Hohn

Draft 9 was reviewed and editorial changes were made. This revised draft received the concencues of the working group and is ready for balloting.

H11: REVISION TO THE SYNCROPHASOR STANDARD

Chair: K. Martin

D. Hamai facilitated the meeting as the chairman was unable to attend. The minutes from the May 22 meeting were read and approved. Draft 2.5 was distributed.

Section 4 "Synchrophasor Measurement" was discussed and accepted. The WG agreed that the synchrophasor definition in Section 4.1 reflected the discussions in our May meeting. In the first paragraph of Section 4.1, the WG decided that the phrase "power signal" should be changed to "power system sinusoidal signals" or "measured signals" to avoid any inference to real power (MW) values.

The WG discussed the phase angle measurement at off-nominal frequency. The discussion centered around a steady-state frequency that was slightly above or below 60 Hz. This issue is different than the measurement during a transient where the frequency is changing in time. A. Phadke agreed to provide a write-up describing the phasor measurement at off-nominal frequency.

In the last paragraph of Section 5.1, the WG asked for clarification of the last sentence beginning "It shall be sufficient that under transient conditions...." G. Brunello agreed to review Section 5.1 and provide additional text to make the last sentence clearer.

Section 5.2 was discussed briefly. D. Hamai will ask K. Martin to review this section and provide additional text to complete this section.

Section 5.3 was discussed briefly. D. Hamai will ask B. Dickerson to review this section and provide additional text to complete this section.

The concept of "total vector error" in Section 5.4 was discussed. A graphical plot of the error might be useful in understanding this error. G. Benmouyal agreed to review and expand this section.

The WG discussed Section 5.5 in detail using V. Skendzic's "Test Waveforms" handout of May 22, 2002. Suggestions were made about the types of test waveforms and explanations describing the tests. V. Skendzic agreed to provide a draft for Section 5.5 and distribute to the WG for comments.

The WG was asked to review Section 6 "Message Format" and provide comments.

Task Force Reports

HTF1: SWITCHYARD DATA ACQUISITION

Chair: E. Udren

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 C2TF1 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.

Respectfully submitted, John Tengdin – Chair PES Substations Committee C2 TF1

HTF8: File Naming Convention Standard

Chair: A. Makki

Copies of the H8 report were distributed.

Discussions:

The group discussed the issue of submitting a PAR application for an IEEE Standard. The members feel that it is too soon to apply given that the Naming Convention is not a defacto practice yet.

The group talked about the significance of the Standard. The members feel that a common format for naming data files is essential. Today, utilities collect large numbers of data files from various types of devices and each manufacturer has a different way for naming data files.

The members discussed the need to document the various ways manufactures name their files and the need for a short naming convention that can be used with DOS and embedded systems.

The group also discussed ways to increase interest and participation in this work.

Conclusions:

The group agreed not to submit the PAR application for an IEEE standard.

The group agreed to modify the H8 report to include a survey of existing naming conventions and to define a DOS naming convention.

The group agreed to re-open H8 by the next PSRC meeting.

Liaison Reports

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

No Report

2. Substation Committee - J. Tengdin

No Report

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

Nothing reported at this meeting.

Old Business: PLC

The FCC has posted on their web site a Notice of Proposed Rule Making affecting the Power Line Carrier band. This posting is based on the October 1998 request for an allocation to Amateur Radio of 135.7 to 137.8 and 160 to 190 kHz (FCC RM-9404). PSRC as well as several utilities provided comments on the ARRL's proposal.

The FCC requires comments 45 days from publication in the Federal Register (from May 15th, 2002). Reply comments are due 60 days from publication in the Federal Register. The NPRM is 02-98. Information on this has been directly Emailed to everyone on the PSRC mailing list. For additional information please contact mark.simon@exeloncorp.com

New Business:

The PSRC officers, at Adcom, recommend that everyone that is a member of PSRC become a Senior member. The number of nominations that PSRC can make for "fellows" is related to the number of Senior members. Information on how to become a Senior member is on the IEEE web site.

The I subcommittee (Relay Practices) and H subcommittee will be co-sponsoring a task force called "Handling of Relay Event Info" The task force will meet for the first time in Sept.

The PSRC is investigating with PES a method to publish the Relaying Standards Compendium. Tony Giuliante would like a list of what the book or CD should contain. A starter list will be on the web site.

Comtrade has some issues that need to be resolved. A working group will start at the Sept meeting to resolve the issues prior to expiration of the standard. Close "liaison" with the IEC will need to take place as they have a standard which mirrors the IEEE's.

I: RELAYING PRACTICES SUBCOMMITTEE

Chair: J.G. Gilbert

Vice-Chair: J. W. Ingleson

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

Chair: M.S. Sachdev

Vice-Chair: J. D. Huddleston, III

The Chairman reported that Versions 12 and 14 of the guide were balloted since the May 2002 meeting of the PSRC. The results of the balloting process were briefly outlined by the Chair. He reported that less than 75% ballots were returned when Version 12 was balloted. Version 14 received a negative ballot from Mr. Phil Winston who was present at the meeting. Phil Winston indicated that he needs to have a marked up copy showing the changes made from Version 12 to 14. Jim Huddleston, Vice Chair will mark up a copy of Version 14 showing the changes by the end of September. The marked copy and copies of the comments received with the ballots of Version 12 will be provided to Phil. As soon as the negative ballot is resolved, the guide will be submitted to the Standards Association for balloting among the PSRC balloting pool.

I2: Terminology Usage Review

Chair: M. J. Swanson

Vice-Chair: J.D. Huddleston, III

The progress of those reading Standards and Guides for terminology usage was monitored. Ken Behrendt had requested that the term "transient over-reach" be defined. For a first approximation, the WG agreed on the following: transient over-reach. a tendency for a relay element to operate for a measured value that is more sensitive than the set operate value of the relay element. The results of the reviews of the Standards and Guides will be discussed at the January meeting.

I3: Microprocessor-based Protection Equipment Firmware Control

Chair: Jim Whatley

Vice-Chair: Robert Beresh

Update on PAR application: PAR application will be voted on during Sept 12th meeting of Standards Committee. There were some slight wording changes recommended by Moh Sachdev during the submittal stage. These did not impact the meaning or intent of the statements and were therefore adopted.

Assignments were reviewed from the previous meeting. Ken Fodero presented some interesting information regarding similar practices from the FAA.

Incomplete assignments were re-issued. The need for a standardized revision naming scheme was emphasized during discussions. A rough outline for the Recommended Practice was conceived and will be distributed to the membership.

Update: The PC37.231 PAR was approved by the Standards Board on September 12, 2002.

I4: IEC Standards Advisory

Chair: E. A. Udren

Vice-Chair: M. M. Ranieri

The WG met to act on the following:

- Committee Draft IEC 60255-27 Product Safety Requirements for Measuring Relays and Protection Equipment. We have the second draft on which to comment, and all the National Committee comments which were used to revise the first draft. When complete and approved, this standard will determine new tests for compliance to the EC Low Voltage Directive for CE Mark. The IEC WG attempts to get a consistent set of requirements out of 60255-5 on insulation requirements and tests for relays; and 60950 and 61010 generic safety standards. This looks generally like a UL safety verification program, but many of the specific requirements are different. There are several specific problems for PSRC in dealing with this project:
 - No expertise in the PSRC on much of the material, outside of the insulation design and testing.
 - Standard may conflict with some C37.90.0 requirements.
 - Utilities never required UL approval, so existing utility relay designs in US may be way out of compliance. This creates export problems for manufacturers, and may create liability for utilities once a relay-specific international safety standard exists.
 - For industrial relays meeting UL standards, this may still be a lot different and require multiple designs, or redesign, for sale to IEC markets. The WG reviewed key sections of the document. The best we can do at this time is to get UL involved in commenting on this standard, and incorporating the lessons learned in its own relay qualification programs.
 - Eric Udren and Jeff Burnworth are raising the issues and the draft through UL for technical support. Mario Ranieri will get information from NEMA on the UL-IEC rationalization situation as it relates to this standard. Gustavo Brunello has been working to upgrade the activities and coordination of the Canadian NC in TC 95; Michel Toupin will seek CSA input or support. We need comments by October 18.
- 60255-26 EMC Requirements for Measuring Relays - CDV level draft of the complete overview of all EMC testing to be performed on relays to meet IEC requirements - signal descriptions, levels, reference detail standards, all nicely organized by influenced ports. The enclosure environment is treated as a port.
- We had made four proposals to adjust tests to levels we thought were important, or which would align with C37.90.X practice, which were not accepted as they ran afoul of IEC base electrical environment standards with which the IEC WG is obliged to comply. Vote due in December; we are not planning an ineffective negative vote.
- 60255-22-1, 1 MHz Burst (Oscillatory Transient) Immunity Test - We provided a copy of C37.90.1 and made a number of proposals to adjust the IEC standard to take advantage of its best features. The IEC WG clearly considered it and adopted two of our proposals, but rejected four others, again because of IEC base environmental standards requirements. This is the closest we'll get them to come, and we will vote in support.

- TC 95 Meeting - The TC has circulated the agenda for its next plenary meeting in Beijing, October 24. It's mostly project review and general strategy. One item of interest is a review of their role in functional standards in light of IEC 61850 substation communications standard, and C37.2 device numbers - we want to find out what they have in mind.

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

Chair: E. A. Udren

Vice-Chair: P. G. McLaren

The WG did not meet in Ponte Vedra. The standard C37.92/Draft 9 is being balloted, with closing of the ballot on September 12. As of September 11, no negative ballots have been received, but a number of comments will need to be addressed up to and during the January 2003 meeting. Draft 9 in PDF format on the WG web page.

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

Chair: M.M. Ranieri

Vice-Chair: J. Teague

The WG and guests reviewed and discussed a number of new items that were recommended for inclusion in our standard by the Substations Committee C2TF1 group. The suggested recommendations were discussed in detail with the general consensus of all the attending WG members that they not be included in the revised draft of the standard. The WG did recommend that the information already included in our latest draft, PC37.90 D12.4 be included as noted and that one restrictive sentence shown in Clause 8.3.1 be eliminated. These changes are to be incorporated into our final draft. The WG chairman agreed to make the necessary changes immediately after our WG meeting and this was completed. All the WG members will receive a copy of our final draft PC37.90 D14 via email within the next few days. The final draft of PC37.90 D14 will be submitted to IEEE for electronic balloting by October 1st and the WG chairman will continue to work with our standards coordinator to complete this process.

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

Chair: J. Teague

Vice-Chair: J.T. Tengdin

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. No additional WG meetings are planned. This WG has completed it's assignment and will be disbanded.

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

Chair: J.G. Gilbert

Vice-Chair: J. Teague

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 essentially complete. No meeting was held in September 2002. The assignment is essentially complete and this WG will be disbanded.

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

I9 did not meet at the September 2002 PSRC. They report that they are preparing to ballot the C37.105 standard.

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

Chair: M. Nemier

Vice-Chair: M. Bajpai

1. IEC Standard 60255-21 parts 1-3 was identified as the IEC equivalent standard for seismic testing of relays. Marie Nemier shall request a copy of the standard through the IEEE and make it available to the WG members. All members present agreed to review the standard for comparison to C37.98 and bring comments to the next meeting.
2. Roy Ball will supply Marie Nemier a list of any other IEC standards. Marie Nemier will request any additional IEC standards from IEEE and make them available to the WG members for review.
3. Terry Crawley agreed to investigate if there are any other IEEE nuclear standards that should be reviewed for continuity.
4. It was agreed by the group that although the standard is written for use in both nuclear and non-nuclear applications, compliance to any nuclear standards should automatically comply with non-nuclear standards.
5. A short discussion was had about the difference in definition of zero period acceleration (ZPA) between C37.98 and IEEE 344. Marie Nemier agreed to prepare a technical presentation for the next meeting about ZPA and the difference of the two definitions. It was noted that this difference has caused some confusion in the industry and the revision of C37.98 should clarify the differences.

Assignments:

1. Review of IEC 60255-21 parts 1-3 - All WG members
2. Investigate IEC Standards - Roy Ball
3. Investigate IEEE Nuclear Standards - Terry Crawley
4. Request an official electronic copy of the Standard from IEEE (C37.98) - Marie Nemier

5. Input electronic standard into current style - Mario Ranieri
6. Present technical training in regards to ZPA at next meeting - Marie Nemier

I11: Survey of Relay Test Practices

Chair: E. Krizauskas

Vice-Chair: W.G. Lowe

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 WG members, who would be encouraged to present the report at their regional power engineering or protective relaying conferences. Ed would like to 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 WG assignment has been completed. This WG 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

A draft of the revised guide incorporating previously received writing assignments, including integration of a new section on low energy current sensors was distributed and discussed. Assignments were made to incorporate changes to this draft that were discussed at this meeting. 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.

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

Chair: M.S. Sachdev

Vice-Chair: B. Mugalian

Draft 3 of the guide in the prescribed template were distributed. The contents were reviewed. The WG identified two new figures and associated text and two appendices for including in the guide. The guide with these additions and editorial changes will be distributed in November 2002 and will be reviewed again at the January 2003 meeting.

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

Chair: T.A. Phillippe

Vice-Chair: R. Young

Mark Adamiak gave a presentation on basic communications concepts. After the presentation there was a discussion about future topics. Mark Adamiak suggested the topic of "XML". We will have either Alex Apostelov or Herb Falk of SISCO give the presentation. We will also discuss at the next meeting when we will start gathering the terms to be defined by this group.

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

Draft 3 revisions were reviewed including changes to conform to the IEEE Style Manual. The WG agreed to add Annex D, entitled "Optical Current Sensor Systems". Revisions will be included in Draft 4. The goal is to prepare the final draft by the end of the year and submit it for balloting. Discussed Glenn Swift's "CT Saturation Calculator" program and recommended it be presented to the Main Committee at the January 2003 meeting. The PAR for the WG has been extended to 2004.

I16: Understanding Microprocessor-Based Technology Applied to Relaying

Chair: M.S. Sachdev

Vice-Chair: R. Das

Contributions were received from Alex Apostolov just before the WG meeting. These contributions will be incorporated in the draft. Contributions are awaited from Demetrios Tziouvaras. Gary Michel and John Burger agreed to provide a draft for the section on Communication. All drafts are due on or before October 15, 2002. The contributions will be incorporated in the draft that will be provided to the WG members in December 2002.

I17: Trends in Relay Performance

Chair: W.M. Carpenter

Vice-Chair: J.D. Wardlow

Mark Carpenter distributed tabulated results for 7 companies in year 2000 and 6 companies in year 2001. The results were discussed. The paper will be complete in May of 2003.

I18: Harmonization of IEEE C37.90.2

Chair: J. Burnworth

Vice-Chair: W. Higinbotham

A lengthy discussion was held on how the WG should proceed with the revised standards, as it relates to harmonizing with IEC. This differences between the requirements of IEC 60255-22-3 and IEEE C37.90.2 were again discussed. The

WG concluded that C37.90.2 must retain the 35v/m signal level and the keying test over the entire swept frequency range. It was accepted to adopt the IEC frequency sweep rate and to include the IEC spot frequency test. To harmonize with the associated IEC standards, IEC60255-22-3 will be used as the document base for the IEEE C37.90.2 standard. Most of the content will be duplicated, with changes only to those areas of disagreement. IEC61000-4-3 will be referenced for use for the testing and measurement techniques to be used in performing the RFI tests. Jeff Burnworth will generate a new draft of C37.90.2, using IEC60255-22-3 as a starting document. Ken Fodero will supply a write-up for the keying/spot-frequency test section.

I19: Analysis of Substation Data
Chair: L.E. Smith
Vice-Chair: B.A. Pickett

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

No new letters have been received since the previous meeting. The database 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

This TF had its first meeting on September 10, 2002 to examine the need for a new conducted interference standard. Seven people signed on as members and five guests also attended the meeting. The group sees a need for investigation in this area and will review IEC60255-22-6 and IEC61000-4-6 prior to the next meeting.

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

This TF had its first meeting on September 11, 2002. No report from this meeting has been furnished. Jim Ingleson distributed copies of an abstract covering a paper by Dr. Tim Shaw to be presented at the 2003 Fault & Disturbance Analysis

Conference at GA Tech. This paper will cover web- based communicatios with IEDs. This TF will meet again in January 2003.

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 SC of the Transformers Committee. The Transformers Committee last met in Vancouver April 14-18, 2002. The Final Minutes from the Vancouver meeting are not yet posted, but those for the Instrument Transformers SC are available, from which I report.

Liaison from the Instrument Transformers SC: I have the following comments to report: Document C57.13.5/D14.04 "Draft of Trial-Use Guide of Test Requirements for Instrument Transformers Rated 115-kV Nominal System Voltage and Above" was balloted, I voted Affirmative with editorial comments. The WG Chair acknowledged receipt of my comments and later said they were accepted.

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

The latest word from the SC is that this parent document will be split into two documents, each with two parts, but whether the split is along voltage levels or function, current and voltage, is not clear. The C57.13 WG will address these issues. Also of note, the PAR for C57.13 Revision expires in December; since there has been at least one PAR extension, the WG must either go for new PARs or another extension.

Coordination for WG PC57.13.6: Instrument Transformers for Use with Electronic Relays and Meters, (Chris Ten-Haagen, Chair): This WG did not meet. It seems from the Minutes of the SC meeting that Mr. Ten Haagen has had difficulty in attending these meetings. The problem will be resolved by the next Transformers Committee meeting (in Tulsa, October 2002).

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 furnished at this meeting. Subsequent to the meeting M. Bajpai reported that this liaison is active, and that there would be a report at the January 2003 meeting.

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

9. New Business:

Marie Nemier has been named as a new member of the SC. She is the Chair of I10, Seismic Testing.

After discussion it was agreed that a new TF will be formed to address non-conventional "current transformers" including, but not necessarily limited to optical. M. Meisinger and G. Moskos will discuss the assignment and leadership of this new TF and will get back to J. Ingleson.

J: ROTATING MACHINERY PROTECTION SUBCOMMITTEE

Chair: R.D. Pettigrew

Vice Chair: S. P. Conrad

J1: Revision of C37.106-1987 Guide for Abnormal Frequency Protection for Power Generating Plants

Chair: G. Benmouyal

Vice Chair: E. Fennell

Results from the balloting committee were presented to the WG – 2 negative ballots with comments were received. The WG discussed the ballot issues and the chairman commented that one of the negative ballots has been changed to 'affirmative' prior to the WG meeting. The second negative ballot is still pending resolution. Draft 13 of the guide was discussed. Draft 14 will be re-circulated to the balloting body.

J3: Protection of Generators Interconnected with Distribution System

Chair: E. Fennell

Vice Chair: R.V. Rebbapragada

The WG did not meet in Jacksonville.

J4: Revision of C37.102 AC Generator Protection Guide

Chair: M. Yalla

Vice Chair: K. Stephan

The WG comments received on the new annex that discuss example settings were reviewed. Writing assignments were accepted for reviewing the application of distance relays for backup protection, providing an alternative loss-of-field calculation, reviewing breaker failure settings, and utilizing the example generator's data for frequency relay settings. Draft 1 of the revised guide was distributed.

The C37.110 Guide for the Application of Current Transformers Used for Protective Relaying Purposes will be cited. A statement regarding reset time for the 46 function will be added as well. Sam Sambasivan joined the WG.

J5: Generator Protection Setting Criteria

Chair: C.J. Mozina

Vice Chair: M. Reichard

Vice chair Mike Reichard, conducted the meeting for the absent Chair Mozina.

The W.G. Assignment Statement was review and agreed upon without revision.

The following was recommended for the W.G. Paper Outline:

The write-up for Section V. AVR Coordination-Underexcitation Coordination by Brad Nelson-Phil Waudby covers a majority of the Section VII topics. The members felt that Section VII could be eliminated and those items of Section VII not discussed in the Section V write-up would be contained in Section III. The Section IV assignment write-up by Shoukat Khan needs to include R-X Plot showing coordination with the generator capability curve.

The Section VI assignment write-up by Randy Hamilton was reviewed. The write-up should be revised using the sample machine data and include the 59 relay.

No other assignments were submitted or reviewed.

The following was recommended following the review of the Sample Generator Data from Phil Waudby:

The one-line diagram of C37.102, ANNEX A, Figure A.1 should be used for the paper in lieu of the copy a section from an actual one-line previously proposed.

If Figure A.1 were used for the one-line, then only the generator capability curve would be necessary for the paper. Generator and GSU data is shown on Figure A.1

Murty Yalla suggested that the overall paper should be reviewed for comment by Subash Patel, Chair J6, Performance of Generator Protection During Major System Disturbances.

J6: Performance of Generator Protection During System Disturbances

Chair: S. Patel

Vice Chair: K. Stephan

Draft 7 of the paper (dated 7/20/2002) was handed out to the attendees. This draft has already been sent to the PSRC officers for approval and submitted for terminology review and therefore this paper is nearly finished. There were a few comments to be discussed at this meeting but with only one member present the meeting was adjourned. Following the meeting, a few of the WG attendees had an excellent discussion on incorporating this group's work in other J subcommittee activities and its application to NERC activities as well.

J7: Revision of C37.101, Generator Ground Protection Guide

Chair: J.T. Uchiyama

Vice Chair: R. Das

Editing of the draft document is in the final stage. Clauses 7.18 and 8.0 were reviewed. Wayne Hartmann volunteered to provide a write-up for Clauses 7 and 8, and circulate to members by November 30, 2002. Al Darlington agreed to revise all of the figures in the guide.

Liaison Reports

Electric Machinery Committee

C.J. Mozina

No report provided.

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. Earlier editions were incomplete and subject to large changes, and did not have illustrations and tables. This draft is much more complete and appears that it is near balloting stage. Comments have been submitted via coordination.

K: SUBSTATION PROTECTION SUBCOMMITTEE

Chair: S. R. Chano

Vice Chair: C. R. Sufana

K2: Breaker Failure Protection

Chair: R.A. Hedding

Vice Chair: A. CHAUDHARY

A great deal of progress was made in the meeting. The controversy about the definitions of backup, local backup, and several other definitions key to the guide was finally resolved. The definitions finally agreed to differ from C37.100. C37.100 will have to be modified. All of the writing assignments and drawings were reviewed. Writing assignments for the remaining sections, Testing, and Breaker Failure Schemes were made. All working group members were requested to review the drawings and the text. Mr. Darlington graciously accepted the job to redraw the drawings so they are on a common format. Assignments are due October 15th.

K3: Schemes and Measures to Prevent and Reduce Outage Durations in Substations (Ex KTF3)

Chair: B. Pickett

Vice Chair: T. Sidhu

A presentation was given by Bruce Pickett and discussion followed.

It was agreed to form a working group with the output to be a paper or special report (to be determined at a future meeting). The topic of the paper/report would contain a short

section on devices and methods that can prevent faults, but the primary topic would revolve around relay protection schemes with autore restoration techniques, communication, and interaction between relay schemes tentatively entitled " Protection Schemes to Reduce Outage Durations in Substations".

Ken Cooley, also a member of the Substations Committee, will provide coordination with the Substation Committee.

Fernando Cobelo from ZIV will give a presentation on schemes at the January 2003 meeting.

K4: Bus Protection Guide
Chair: S. P. Conrad
Vice Chair: R. W. Haas

The guide is currently being prepared to go to IEEE SA. The PAR has been extended to 2004. The working group hopes to have balloting body formed soon.

K5: Network Transformer Protection Guide
Chair: C. R. Sufana
Vice Chair: A. P. Napikoski

Charlie Sufana indicated that he does not know when the printed version of the Guide will be out. There was some discussion on P1547. The balloting period for version 10 is from August 28 to September 26, 2002. Three new standards documents being developed by SCC21 concerning distributed resources interconnection. The titles of the additional (draft) documents in that series follow (see listing near the end of this memo for the scope and purpose of these additional IEEE standards development projects). IEEE P1589 Draft Standard For Conformance Test Procedures for Equipment Interconnecting Distributed Resources With Electric Power Systems; IEEE P1608 Draft Application Guide for IEEE Std. 1547 Standard for Interconnecting Distributed Resources With Electric Power Systems, and; IEEE P1614 Draft Guide for Monitoring, Information Exchange, and Control of Distributed Resources Interconnected With Electric Power Systems.

There was also discussion on a new proposed standard from FERC. Comments are due by November 4,2002, on 18CFR Part 35 RM02-12-000 Standardization of Small Generator Interconnection Agreements and Procedures. It is not clear at this time how any relay guides or standards may be effected.

Several drafts of the summary paper were discussed. One is 7 pages long; the other 8 pages. A few minor editorial changes were recommended. The next step is to submit the summary to the PSRC officers for approval before submitting the final version to the IEEE. As it is unclear as to how many pages are allowed; it was decided to submit both versions to the officers for their recommendation.

This was the last meeting of the working group as the PAR runs out at the end of the year. Charlie Sufana, the chair, thanked everyone for their efforts.

K7: Guide for the Protection of Capacitors
Chair: K. A. Stephan

Vice Chair: P. G. Mysore

Draft 5 of the guide was distributed and the changes from draft 4 were reviewed. We made some minor corrections to the figures. There was discussion regarding the correct usage of IEEE relay function numbers. A sentence will be added noting awareness of the possible need for redundant protection when utilizing multi-function protective relays. The meeting closed with great discussions about shunt reactor protection issues and reactor failure stories.

The working group considers this publication nearly ready for ballot. The Standards Coordinator has supplied contact information to send this guide to the IEEE Editor to verify conformance with the IEEE Style Guide. The guide will also be sent to the coordinating committees specified on the PAR. The process of forming a balloting body will follow.

K8: Guide for Protective Relaying of Utility Consumer Interface
Chair: Irwin Hasenwinkle
Vice Chair: Fred Griffin

Moh Sachdev indicated that the plan is to send the approved version of the guide for approval. The editorial comments will be sent to the IEEE separately.

K10: SCC21 Distributed Resources Standard Coordination (Ex KTF1)
Chair: William Feero
Vice Chair: Doug Dawson

The working group did not meet as the ballots are not back yet for P1547. P1547 Draft 10 is the latest.

K13: Guide for Protective Application of Transmission- Line Series Capacitor Banks (PC 37.116)
Chair: F. P. Plumptre
Vice Chair: Dan Hamai

Considerable discussion was spent on liaison with PES WG 824 which is charged with producing a guide on equipment aspects of series capacitors. Options considered were producing a joint document with WG 824 and a second option consisting continuing production of the K13 Guide and ensuring coordination with WG 824.

Writing assignments were also reviewed during the session.

Post meeting note, during the sub-committee meeting the options in coordination with WG 824 were discussed. During the meeting it was decided to continue with production of the PSRC guide with close coordination with WG 824.

Liaison Reports:

**1. Transformer Committee, J.D. Huddleston III -
Liaison from the Transformers Committee:**

The Transformers Committee met in Vancouver, BC, April 14-18, 2002, but the Final Minutes are not yet available. However, the Minutes of several Subcommittees were available to form the basis of this report.

Since my last report, I have received and balloted the following Standards: IEEE 637-1985 (Re-Affirmation); IEEE P1547/D10; C57.12.00/D2; and C57.12.90/D2. Other Invitations to Ballot are pending.

The recent termination of the MOU (Memorandum of Understanding) between 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 was explained in detail by Special Committee Notices.

The next meeting for the Transformers Committee will be in Tulsa, Oklahoma October 20-24, 2002.

Coordination Reports:

All coordination reports will be available after the January 2002 meeting.

1. ANSI/IEEE Switchgear Standards F. Plumptre.

a) C37.100.1, Common Requirements for IEEE Power Switchgear Standards

The next meeting is from Sept. 30 to Oct. 3, 2003. There will be an issued report afterwards.

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

Web site needs to be updated to have the agenda posted shortly after meeting. SC members should be updated annually or the links. WG should show assignment and updated roster. Roster needed for 2003 directory. Draft status can be added. The capacitor tutorial slides should be posted on the SC web shortly.

New Business

Moh Sachdev would like the Sub Committee to consider combining C37.91, C37.108, the PSRC Phase Shift Transformer protection paper, and the thermal overloading of transformers paper into one document. It was decided to create a task force (KTF1) to review if they can be consolidated into one document. The task force will consist of Moh Sachdev as the chair, with Simon Chano, Murty Yalla, Glenn Swift, Steve Conrad, Bruce Pickett, Martin Best, Mohamed Ibrahim, Roger Hedding, and Charles Sufana. The task force will meet for 1 session for 30 people with A/V.

It was also mentioned that C37.91 needs to be reaffirmed or completely redone.

Glenn Swift reported that he is on several overload guides and that the IEEE and IEC can not get together on a common hot spot calculation. He indicated that the groups tend to be dominated by manufacturers who would like to see a very accurate method developed.

Steve Conrad had a horror story. A generator transformer at a merchant plant had a sudden pressure and differential relay operation. Steve pointed out this is a case where the wiring had to be checked and found that it was wrong, as there were CTs shorted out close to relay.

Attachment:

September 2002 PSRC
Attendance List

M.G. Adamiak	E. Derencinovic	T.C. Lanigan	V. Skendzic
D. Adams	H. DoCarmo	L.P. Lawhead	L.E. Smith
S. Anderson	T. Domin	P. Lindberg	K.A. Stephan
A.P. Apostolov	M. Dood	B. Lyford	W.M. Strang
J.C. Appleyard	P. R. Drum	V. Madani	C.R. Sufana
R. Ball	W. A. Elmore	A.Z. Makki	M. Swanson
G. Bartok	G.E. Ferraro	W.P. McCannon	G. Swift
R. Beazer	C. Fink	J.D. McDonald	R.P. Taylor

T.R. Beckwith	K. Fodero	M.J. McDonald	J.T. Tengdin
R.W. Beckwith	R. Garcia	P.G. McLaren	J.S. Thorp
M.M. Begovic	J.M. Gardner	R. Meachem	M. Toupin
K. Behrendt	H. Gilleland	H.I. Mehta	J.T. Uchiyama
G. Benmouyal	A. Gopalkrishna	M. Meisinger	E.A. Udren
B. Bentert	D. Hamai	G.L. Michel	S.M. Usman
R. Beresh	R. Hamilton	D.H. Miller	B.A. Vandiver
H. Bilodeau	W.D. Harlow	G.P. Moskos	S. Ward
K. Boers	R.E. Hart	B. Mugalian	D.K. Ware
O. Bolado	W.G. Hartmann	B. Muschlitz	W.P. Waudby
S. Boutilier	R. A. Hedding	K.K. Mustaphi	D. Welton
K. Brouillette	L. Henriksen	G.R. Nail	C.G. Wester
G.A. Brunello	C.F. Henville	A.P. Napikoski	R.M. Westfall
A. J. Buanno	W. Higinbotham	K. Narendra	R.L. Whittaker
Z.A. Bukhala	J.W. Hohn	M. Nemier	P.B. Winston
J.F. Burger	J. Holbach	T.J. Nissen	M. Yalla
J. Burnworth	D. Holstein	D.J. Novosel	R. Young
D.W. Campbell	S.H. Horowitz	J.M. O'Brien	
R. Capatina-Rata	R. Horton	S. Olson	
M.L. Carden	J.D. Huddleston III	R.W. Patterson	
W.M. Carpenter	C.R. Huntley	R. D. Pettigrew	
P. Carroll	M.A. Ibrahim	A.G. Phadke	
T.W. Cease	J.W. Ingleson	B.A. Pickett	
J.W. Chadwick, Jr	B. Jackson	R.J. Pienkos	
S.R. Chano	C. Jensen	F.P. Plumptre	
AKS Chaudhary	G.F. Johnson	E. Price	
M. Clark	R.T. Jonker	M.M. Ranieri	
F. Cobelo	B. Kasztenny	R. E. Ray	
G. Colpron	T. Kern	M. Reichard	
S.P. Conrad	P. Kerrigan	N. Rich	
K.L. Cooley	M. Kezunovic	E. Rodriguez-	Renterra
J.R. Cornelison	G.L. Kobet	M.S. Sachdev	
T.L. Crawley	L. Kojovic	S. Sambasivan	
R. Crellin	W.C. Kotheimer	C. Samitier	
A.N. Darlington	P.A. Kotos	M. P. Sanders	
R. Das	P. Kumar	T. Seegers	
D. Dayton	S. Kunsman	D.R. Sevcik	
R.W. Dempsey	M. Lacroix	M.S. Simon	