

**POWER SYSTEM RELAYING  
COMMITTEE**

**OF THE**

**IEEE POWER ENGINEERING SOCIETY**

**Approved**

**MINUTES OF THE MEETING**

**May 20-24, 2002**

**Pittsburgh, PA**

**Power System Relaying Committee  
Main Committee Meeting Agenda  
May 23, 2002**

**Pittsburgh, PA**

- |       |   |           |
|-------|---|-----------|
| I.    | Call to order / introductions   | Nail      |
| II.   | Approval of Minutes   | Henville  |
| III.  | 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   |
| IV.   | Web Based Review of Papers  | Sidhu     |
| 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.   | WEB Based Review of Papers  | Sidhu     |
| X.    | "What is XML and it's application to substation protection and automation". | Apostolov |
| XI.   | Adjourn   |           |

**Call to order / introductions****Nail**

George Nail called the meeting of the IEEE/ PSRC Main Committee in Pittsburgh, PA to order at 8:02 AM on May 23, 2002.

**Approval of Minutes – Madison meeting and misc.****Winston**

The minutes of the January 2002 in Dana Point, CA were approved.

**Chairman's Report****Nail**

The PSRC, after careful consideration, has decided not to attempt to meet in conjunction with the PES General Meetings. These meetings, proposed for June or July dates, do not offer adequate opportunity for PSRC to accomplish its functions. In addition, the prospect of higher costs and reduced flexibility would surely result in lower attendance, which is considered unacceptable. The PSRC will attempt to increase its support of the PES General Meetings by appointing a task force to encourage and create programs for these meetings. These programs could include joint efforts with other technical committees to include tutorials, panel sessions, or other concepts.

The PSRC was also asked to comment on a proposal to allow certain guides to be translated into Portuguese and distributed in Brazil. A manufacturer offered to provide the translation and copies at no charge and IEEE is proposing these guides be distributed to Brazil engineers at no charge. The PSRC position is that adequate safeguards should be in place to assure an accurate translation. Distribution of guides in Brazil or anywhere else in the world should be at no charge. The PSRC is willing to distribute copies of guides to interested engineers at no cost to the IEEE.

**Technical Paper Coordinators Report****Taylor**

The planning meeting to coordinate the technical sessions for the Summer PES meeting was held in Chicago in late March. The PSRC will have 3 sessions—Wednesday morning, Wednesday afternoon, and Thursday morning. Miroslav Begovic will chair the Wednesday AM session of 4 papers relating to the topic, Advanced Relay Techniques. The Wednesday PM session will be chaired by Arvind Chaudhary and will provide 6 presentations on the topic of Analysis Tools & Concept. The Thursday morning session will have 4 papers on the topic of Fault Location Concepts and will be chaired by Mladen Kezunovic.

**PES Report****John McDonald**

The IEEE PES Executive Committee (ExCom) met on Thursday, March 21, 2002 at the IEEE PES T & D 2002 Latin America Conference and Exhibition in Sao Paulo, Brazil. 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 & D meetings. In the Spring ExCom met Thursday, March 21 in Sao Paulo, Brazil during the IEEE PES T & D 2002 Latin America Conference and Exhibition March 18-22. ExCom also participated in the Region 9 Chapter Chairs Meeting following the T and D Conference on March 22-24. In the Fall ExCom will meet Thursday, October 10 in Yokohama, Japan during the IEEE PES T & D – Asia Pacific Conference and Exposition October 6-10.

**Name Chosen For New PES Magazine**

The *Power Engineering Review* and *Computer Applications in Power* magazines will be discontinued in 2003, and replaced by a new bi-monthly magazine. Mel Olken has been selected as the editor-in-chief of the new magazine. The name for the new magazine is *IEEE Power & Energy Magazine...for electric power engineering professionals*.

#### New PES Executive Director Chosen

Bob Dent has accepted the position as the Power Engineering Society's second Executive Director. He will begin on May 13, 2002. Bob will be replacing Mel Olken, who will be retiring July 31, 2002. Bob was PES President in 1996-1997 and has extensive IEEE experience. PES wishes Bob all the best in his new role and we are all looking forward to working with Bob to help continue the success of the Power Engineering Society.

#### Chicago Focus Group Meeting

Electric utility and large manufacturer industry executives will meet with PES ExCom for lunch, presentation and question and answer session on Monday, July 22 during the IEEE PES Summer Meeting in Chicago. This is the third industry focus group meeting and the PES plans to continue holding similar focus group meetings at future PES General Meetings. These meetings provide valuable input to PES to bridge the gap between what industry leaders expect from the PES, their understanding of the PES, and what the PES can provide employers and employees.

#### Power Systems Basics for Business Professionals Course Being Given in Chicago

This 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 will be offered in conjunction with the IEEE PES Summer Meeting in Chicago on July 22.

#### Electronic Processing of Conference Papers

Starting with the 2003 General Meeting in Toronto the authors will be able to submit their conference papers electronically through a designated website. PES is now reviewing different alternatives before deciding on the most suitable platform to use.

#### Distinguished Lecturer Program (DLP) Activity in 2001

The current PES DLP list contains more than 50 lecturers with new technical and professional topics. These topics are in the area of power generation, power system engineering, power system relaying, rotating machinery, substations, surge protection, switchgear, FACTS controllers, FACTS transmission planning issues, deregulation, electric vehicles, standards/codes, superconductivity, distributed resources, and miscellaneous topics related to engineer's professional activities. In 2001 the DLP provided lecturers for over 25 PES chapters in regions all over the world. The goal for 2002 is to increase the usage of this program further by utilizing all available resources.

#### Upcoming Board Meeting

The IEEE PES Governing Board will meet on July 25, 2002 in Chicago, Illinois in conjunction with the IEEE PES Summer Meeting July 21-25.

#### **CIGRE Report**

At the 2001 Colloquium in Sibiu, Romania, several new working groups and task forces were proposed. One, Task Force 34.07 Use of Protective Relays in Substation Automation will have as its Convenor Alex Apostolov. Anyone wishing to participate can contact Alex. Also, two other working groups are forming, WG34.05 Modern techniques

#### **Cease**

for the protection, monitoring and control of Power Transformers, and WG34.10 Protection of Series compensated lines & series capacitor banks. These working groups are seeking members. Regular members are desired, however corresponding members are acceptable. Anyone wishing to participate either as a corresponding member or a regular member please contact me.

The 2002 General Session of CIGRE will be held August 25-30, 2002 in Paris, France. We received 2 papers from US authors and both were approved. Anyone interested in attending can contact me or the web site is <http://www.cigre.org/>.

The 2003 Colloquium will be held in Sydney, Australia. The 2004 General Session will be held in Paris as normal. The 2005 Colloquium is open. There has been a suggestion that the meeting be held in North America (i.e. US or Canada). Anyone interested may contact Moh Sachdev or myself.

The preferential subjects for the 2002 session of CIGRE are:

### **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 CIGRE Technical Committee in Paris is going forward with a reorganization of its technical committees. The proposed 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

### **EPRI Report**

### **Burger**

The EPRI Sponsored Utility Initiative and UCA Users Group will meet at 1:00pm Thursday afternoon. Early Thursday afternoon we will focus on reports of Utility projects and a Users Group presentation. The current status of UCA testing and IEC61850 will also be reviewed. Later we will have Users Group board and committee meetings. GOMSFE technical issues and work on resolving outstanding technical issues in preparation for release on Version 1.0 will be discussed on Friday. On Friday we will also have User Group committee meetings. Following the next PSRC meeting in Fla in September in addition to the Users Group meetings we also expect to have an Interoperability Demo with over 20 vendor demonstrating IED communications capabilities.

### **IEC Report**

### **Udren**

#### **TC 95 - Measuring Relays**

The blizzard of TC 95 standards drafts - driven by European Community pressure to develop the all-inclusive suite of environmental susceptibility tests for relays - has let up for the moment. There are no new IEC project drafts to evaluate in the present time window. The TC95 TAG, operating as part of PSRC WG I4, reviewed prior voting comments on a recent power-frequency conducted interference immunity test draft, 60255-22-7, and is developing some additional comments.

The two IEC relay surge tests reported in previous rounds, 60255-22-4 (fast transient tests) and 22-5 (lightning surge tests), have been approved in final voting and are to be issued as IEC Standards.

The next TC 95 Plenary Meeting takes place as part of the IEC General Meeting in Beijing, October 27 - November 1, 2002.

Here at the PSRC, we continue plotting a course for harmonizing PSRC product type test standards (C37.90.X) and corresponding IEC standards, reducing differences to only strongly required technical specifics, using the rules and opportunities of the IEEE - IEC Memorandum of Understanding on shared standards development and documents. The C37.90.2 revision WG will be looking at the exact wording of IEC 60255-22-3, and see if it is acceptable with only the test levels and acceptance criteria modified to meet US needs. IEEE can provide rights to IEC text and can publish the result as a new C37.90.2, if the WG finds this acceptable.

#### **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 Raleigh in March. 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. The next meeting venue for June has not been announced.

### **Standard Coordinators Report**

**Sachdev**

The Standards Coordinator, Mohindar Sachdev, met with the Chairs of the Working Groups writing and revising standards documents on May 21, 2002 in Ballroom IV, The Pittsburgh Hilton Hotel and Towers, Pittsburgh, PA.

Naeem Ahmad of the IEEE Standards Association attended the meeting and gave a brief presentation of the procedures for submitting standards for balloting and approval. The presentation was well received and will facilitate the submission of standards documents.

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

<b>Information on</b>	<b>Web site address</b>
PAR application, extension and other forms	<a href="http://www.standards.ieee.org/guides/par/">http://www.standards.ieee.org/guides/par/</a>
Style manual	<a href="http://www.standards.ieee.org/resources/glance_at_writing_new.html">http://www.standards.ieee.org/resources/glance_at_writing_new.html</a>
Template	<a href="http://www.standards.ieee.org/resources/glance_at_writing_new.html">http://www.standards.ieee.org/resources/glance_at_writing_new.html</a>
Status of standards etc	<a href="http://www.standards.ieee.org/db/status/status.txt">http://www.standards.ieee.org/db/status/status.txt</a>
NesCom activities	<a href="http://www.standards.ieee.org/board/nes/">http://www.standards.ieee.org/board/nes/</a>
RevCom activities	<a href="http://www.standards.ieee.org/board/rev/">http://www.standards.ieee.org/board/rev/</a>
SA Operations Manual	<a href="http://www.standards.ieee.org/sa/sa-view.html">http://www.standards.ieee.org/sa/sa-view.html</a>
SA Bylaws	<a href="http://www.standards.ieee.org/sa/sa-view.html">http://www.standards.ieee.org/sa/sa-view.html</a>
SB Operations Manual	<a href="http://www.standards.ieee.org/board/">http://www.standards.ieee.org/board/</a>
SB Bylaws	<a href="http://www.standards.ieee.org/board/">http://www.standards.ieee.org/board/</a>

The new policy in standards developments requires that 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>

### **STANDARD ACTIVITY SINCE THE SEPTEMBER 2001 MEETING OF THE PSRC**

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

#### **1. Standards Approved**

- C37.90.1 Standard Surge Withstand Capability (SWC) Tests for Protective Relays and Relay Systems
- C37.108 Guide for the Protection of Network Transformers

#### **2. Standards submitted for approval**

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

#### **3. Standards to be submitted for approval**

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

#### **4. Standards being recirculated**

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

#### **5. Standards being balloting**

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

#### **6. Standards submitted for balloting**

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

#### **7. Standards to be submitted for balloting**

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

#### **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. PAR withdrawn**

PC37.90 Standard for Relays and Relay Systems Associated with Electrical Power Apparatus: expired on December 31, 2001. This was a ten-year old PAR and was withdrawn

#### **10. New PAR approved**

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

#### **11. PAR extension applied for**

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  
PC57.13.1 Guide for Field Testing of Relaying Current Transformers  
PC57.13.3 Guide for the Grounding of Instrument Transformer Secondary Circuits and Cases

#### **12. PAR extensions approved by NesCom**

PC57.13.1 Guide for Field Testing of Relaying Current Transformers  
PC57.13.3 Guide for the Grounding of Instrument Transformer Secondary Circuits and Cases

#### **13. PAR expiring end of 2002**

PC37.95 Guide for Protective Relaying Of Utility-Consumer Interconnections  
PC37.104 Guide for Automatic Reclosing of Line Circuit Breakers for AC Distribution and Transmission Lines

#### **SUBMITTAL DEADLINES & STANDARDS BOARD MEETING SCHEDULE**

<b>PAR/Std Submittal Deadline</b>	<b>Standards Board Meeting</b>
May 3, 2002	June 13, 2002
August 2, 2002	September 12, 2002
November 1, 2002	December 11, 2002

## Substation Committee Report

John Tengdin

P1525 - Response to all the negative comments has been prepared by the Ballot Resolution Committee. A new draft of the document will be circulated this fall.

Work is underway on revising the SCADA standard C37.1 with a new title "Standard for SCADA and Automation Systems". Completion is not expected before late 2003.

A PAR has been approved and work has begun on P1613 :Standard Environmental Requirements for Communication Networking Devices in Electric Power Substations. The intent is to have the standard apply to devices in Networks that do not include relaying. C2 TF1 has 25 members and is already on draft 3 of the document. The TF has decided to lift, intact, the numbers and wave forms in C37.90, 90.1, 90.2, and 90.3. The major focus of the task force will on writing the conditions for acceptance as these are to be device tests, not system tests. The TF is on a track to go to ballot by October 2002.

A PAR has been approved and work has begun on P1615 Recommended Practice for Network Communications in Electric Power Substations. The standard will include such matters as virtual terminal, file transfer, DNP over TCP/IP. IEC61850-5-104.

The next Substation Committee Annual Meeting will be April 27-30, 2003 in Sun Valley, ID.

### **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

### **B: ADVISORY COMMITTEE**

**Chair: G.R. Nail**

**Vice Chair: R.P. Taylor**

#### **B1: Awards and Technical Paper Recognition**

**Chair: S.P. Conrad**

A Distinguished Service Award will be presented to Jim Stephens at the main committee meeting Thursday morning. Other activities focused on preparing for PES prize paper nominations and identifying published papers.

#### **B2: Fellows Awards**

**Chair: J.S. Thorp**  
No report.

**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**

The working group met with five members and two guests in attendance. The 2001 bibliography paper has been accepted for publication in the IEEE Transactions on Power Delivery. Assignments for preparing the 2002 bibliography paper were made. Mal Swanson will prepare a report highlighting the recent activities of the PSRC. Al Darlington will prepare comments, for discussion at the next meeting, on the recent NERC DAWG reports. Mukesh Nagpal joined the working group.

**B9: PSRC Web Site**

**Chair: Bill Lowe**

The latest web page enhancements were shown, along with the underlying HTML code. The features and problems of trying to use MS FrontPage as an HTML editor was explained. There was some discussion on obsolete web pages that show up on some sites and also the lack of development for some basic needed information. I will draft a letter containing a list of the obsolete pages and will also compile a list of what we consider minimal requirements for keeping the Sub-Committee web sites up to date. This letter will be mailed to the Sub-Committee Chairman and the designated web authors. Some suggestions for future main committee pages are, view/download options for some data, city names associated with the Main meeting minute archives, golf course listings in the City links, and a link to the IEEE X-plor site. Some topics for future B9 meetings include review of HTML editors, CGI command summaries, and mini tutorials.

**C: SYSTEM PROTECTION SUBCOMMITTEE**

**Chair: D. Novosel**

**Vice Chair: T. Seegers**

**C2: Power Quality Issues in Protective Relaying**

**Chair: T.W. Cease**

**Vice Chair: D. Hart**

Charles Perry from EPRI/PEAC presented material on Substation Monitoring with Smart Relays based on an EPRI project that evaluated multiple IED's ability to capture PQ data. Charles will verify whether the EPRI report can be made available to the C2 WG.

Russ Patterson from C2 WG member presented material on PQDIF (IEEE 1159.3 Power Quality Data Interchange Format) for exchange of PQ data between different devices, simulation tools and analysis applications. A new section in chapter 6 will be added to the report discussing PQDIF.

TW Cease stated that the report is almost complete but is still missing some input (IEC standards). Since the report is near completion, the WG needs to make any and all comments promptly with a goal of finishing the report by January 2003.

Damir Novosel commented that a transaction paper needs to be written based on the report with a goal of completion by September 2003.

Damir Novosel will make sure the web-site is ready to allow for posting/distributing of the report since it is getting large.

Alex Apostolov raised the issue of will the report will address the Definite Time Overcurrent protection versus Inverse Instantaneous Overcurrent protection of relay operations to improve PQ. Alex to fax hard copy of the paper to TW Cease for consideration of including this topic in the paper.

Action Items:

1. Incomplete writing assignments due no later than August 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
2. New Section in 6 (PQDIF) Russ Patterson
3. New writing assignment on issues of PQ monitoring and relays D. Hart
4. All authors to review section and to reduce figure size (e.g. jpg format) all
5. Send remarks to section authors by July 1st all
6. Review and provide comments on bibliography to be sent to TW Cease all
7. First complete draft to be discussed at next meeting September 9, 2002

**C3: New Technology for Transmission and Distribution Protection**

**Chair: A. P. Apostolov**

**Vice Chair: P. A. Solanics**

One presentation was made by Alexander Apostolov to the Main Committee on Thursday: "What is XML and How it Applies to Power System Protection and Control?"

The presentation was followed by questions and discussions.

**C5: Deployment and Use of Disturbance Recorders**

**Chair: B. Jackson**

**Vice Chair: W.M. Strang**

Working group reviewed the assignment and draft 3 of the outline for the paper. Also discussed was an IEEE paper "Fault and Disturbance Data Requirement for Automated Computer Analysis", which covers many of the same subjects proposed for the WG paper. The outline was accepted and writing assignments were made.

A brief presentation was made by Jim Ingleson on a power swing event. Jim showed the group a graph of the system frequency response for a power system disturbance.

**C6: Wide Area Protection and Emergency Control**

**Chair: M. Begovic**

**Vice Chair: D. Novosel**

After a discussion and overview of the last draft (Ver. 7.2) of the report, now over 80 pages long, the WG unanimously approved the report and submitted it to the consideration of the SC. Publication options of the report in its present form are to be decided by the SC (special publication of IEEE, or fee-based web downloading).

It was also decided to propose to the SC a creation of the new WG, entitled "Publications for Wide Area Protection and Emergency Control", with the following Assignment

Based on the report of C-6, create the following publications:

1. IEEE Transactions paper to present an overview of the C-6 report
2. Conference paper and presentation

Expected completion date should be no later than September 2003.

If approved by the SC, the new WG will meet in September 2003 in a single session (computer projector needed).

p.s. During the meeting, it was also decided that a paper be submitted based on the report for the Special Issue of IEEE Proceedings on "Energy Infrastructure Defense Systems". That task needs to be completed by September 1, 2002, and will be coordinated by M. Begovic. The effort was also discussed of producing an expanded version of the report in the form of a monograph, for which some publishers have approached the WG. The monograph would target the readership interested in future applications of WAPEC.

**C8: Phasor-Based Models for Analyzing Relay Performance**

**Chair: M. Meisinger**

**Vice Chair: M. S. Sachdev**

Mohindar Sachdev reported that he had not received any new assignments. He also reported that he had incorporated the assignments provided by Dr. Juergen Holbach at the January 2002 meeting in the Working Group paper.

The Chair reported that he had received a contribution from Elmo Price. Assignments from Gabriel Benmouyal and Alex Apostolov on Section III.C "Phasor-Based Software Model Examples" are awaited. These contributions are now due before June 30, 2002.

Vice Chair Mohindar Sachdev and Chair Mike Meisinger will get together in Chicago in July 2002 and will work on editing of the current draft of the paper.

**C9: Underfrequency Load Shedding and Restoration**

**Chair: A. Apostolov**

**Vice Chair: K. Behrendt**

The working group reviewed the guide's outline and commitments for writing assignments. A few writing assignments were received, but several more are expected within the next week. The chairman will assemble these writing assignments and issue Draft 1 by the middle of June. Assignments to review each section of the draft have been made. Comments will be collected and reviewed at the next meeting.

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

**C10: Effects on Changing Utility Environment on Protective Relaying**

**Chair: J. DeLa Re**

**Vice Chair: R. Hunt**

We presented written contributions from Mark Carpenter, Tom Domin and Vahid Madani. These contributions will help us to structure our paper/report to the subcommittee. We are still expecting contribution from two more members. The contributions seem to indicate a common pattern with increase functionality and documentation in each of the three areas of the system. Distribution, transmission and generation. Also, Special Protection Schemes are proliferating as a result of the changes in the structure of the utility industry.

In regards to our survey, to 05/15/2002, only 16 people had responded and more contributions are needed. The comment amongst the attendees of today's meeting is that the survey seems to indicate that is only for utility engineers. All members of PSRC are invited to respond to the survey. If a question is not applicable to your company/position, please just leave the question unanswered. We need the contributions of many to obtain significant results from the survey.

For those of you that did not receive a copy, please feel free to contact Jaime De La Ree or visit the C-10 web-page inside of the PSRC web-site.

The chair and vice-chair will condense contributions and results of the survey to write the first draft of the WG C-10 Paper. All members and guest are invited to discuss on the draft or to contribute to it.

Action Items:

Survey Response: Interested PSRC Members

First Draft of the paper: Jaime De La Ree, Rich Hunt July 15, 2002

**C11: Protection Issues During System Restoration**

**Chair: T. Sidhu**

**Vice Chair: D. Tziouvaras**

Draft #1 of the report was discussed. A number of suggestions for changes were made. Contributors of these sections will incorporate the suggested changes. New assignments were made. The new assignments and the revised sections are due to the Chairman by July 15, 2002. The new draft will be sent to the members for discussion at the Sept. meeting.

**Liaison Reports:**

**1. IEEE PES Power System Stability Controls SC**

**Gary Michel**

Following the business meeting, Brad Johnson chaired a technical paper session with three transactions papers and two proceedings papers. On January 29 afternoon, the Subcommittee sponsored the panel session Emergency Voltage Stability Controls; the attendance was 30-40. On January 30, the Subcommittee sponsored the panel session Fast-Acting Load Control for System and Price Stability with 30 in attendance.

Plans for the Chicago 2002 IEEE SPM meeting include a panel session on Power System Stability Controls Using Power Electronic Devices. John Doudna suggested a future panel session work on frequency control and Willie Wong proposed a session on system controls with wind generation.

The TF on Fast-Acting Direct Load Control for System and Price Stability chaired by Jeff Dagle met on January 28. The TF on Benchmark Systems for Stability Controls chaired by Ian Hiskens met on January 28. The WG on Power Systems Dynamic Measurements chaired by Dick Schulz met on January 28 with high attendance. The WG is preparing a report.

Liaison reports were received from Juan Sanchez-Gasca on the IEEE Excitation Subcommittee TF on Power System Stabilizers, and from Nelson Martins on CIGRE TF 38.02.23 on Coordinated Voltage Control in Transmission Networks.

Several notes from the Load Control panel session: Cannon Technologies and PEPCO panelists indicated that pager technology is available to shed air conditioner or other load in 10-15 seconds. CalSO and ISO New England panelists indicated that direct load control from an ISO is difficult because they don't directly interface with customers. This did not seem to be a problem, however, for PJM/PEPCO. Hopefully my recollections are accurate; the panel papers are on the above web site.

The 2002 IEEE SPM committee sponsored agenda is the following:

1) Tuesday, July 23 8:00 am-9:00 am Power System Stability Controls Subcommittee business meeting.

Chair C. Taylor of BPA

2) Tuesday, July 23 9:00 am-12:00pm Paper session Chair: W. Wong, ABB Consulting, sponsored by: Power System Dynamic Performance Committee with the following papers:

-PE-420PRS (02-2002) A Hybrid Method For Generator Tripping. by G. Karady, Arizona State University and J. Gu, Arizona State University

-PE-010PRS (04-2002) Convertible Static Compensator Performance Studies On the NY State Transmission System. By S. Arabi, Powertech Labs and B. Fardanesh, New York Power Authority and H. Hamadanizadeh, Powertech Labs

-PP Predictive Frequency Stability Control Based On Wide-Area Phasor Measurements. By M. Larsson, ABB Schweiz AG and C. Rehtanz, ABB Schweiz AG

-PE-094PRS (12-2001) PMU Configuration For System Dynamic Performance Measurement in Large Multi-Area Power Systems by I. Kamwa, IREQ and R. Grondin, IREQ

-PE-651PRS (12-2001) Control Loops Selection For Damping Inter-Area Oscillations of Electrical Networks by I. Kamwa, IREQ and A. Heniche, Laval University

3) Tuesday, July 23/2:00 PM Power System Stability Controls Using Power Electronic Devices Panel Session, sponsored by: Power System Dynamic Performance Chair: C. Taylor, Bonneville Power Administration

The presentations and panelists are as follows:

- Understanding and Solving Short-Term Voltage Stability Problems by J. Diaz De Leon II, American Superconductor, and C. Taylor, Bonneville Power Administration
- Secondary Voltage-Var Controls Applied To Static Compensators (STATCOMs) For Fast Voltage Control and Long Term Var Management by J. Paserba, Mitsubishi Electric Power Products, Inc.
- Large-Scale Wind Power Integration and Voltage Stability Limits in Regional Networks by M. Palsson, T. Toftevaag,, K. Uhlen, and J. Tande, of SINTEF Energy Research
- Frequency and System Damping Assistance From HVDC and FACTS Controllers by M. Baker, K. Abbott, and B. Gemmell, of ALSTOM T & D
- Emergency-Stability Controls Through HVDC Links by S. Corsi, A. Danelli, and M. Pozzi, of CESI

## **2. NERC EC**

Nothing major to report

**Winston**

## **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 a revised version of the survey report is complete. After circulation of the latest draft, the group discussed whether to continue revising the report to create charts rather than tables to summarize survey responses or to work with the report "as is" in order to complete by the September meeting. The decision was made to keep the tables, and that the report review sub team consisting of Skip Williams, Larry Lawhead, Rick Taylor, Jerry Johnson, and Pat Carroll will complete the review prior to September. The working group also decided that the most logical step in distributing the report when complete is to post it on the PSRC website, and to email the report location back to all relay engineers on the original survey mailing list.

In addition, Rick Taylor reported on his presentation of the survey at the Texas A & M Relay Conference. It was well received. Pat Carroll gave a presentation on the effects of instantaneous relay setting operation on distribution circuit reliability.

### **D2: Fault Locating**

**Chair: Karl Zimmerman**

**Vice Chair: Damir Novosel**

Working Group D-2 did not meet. The Fault Locating Guide has been submitted for ballot.

### **D3: Impact of Distributed Resources on Distribution Relay Protection**

**Chair: Tony Seegers**

**Vice Chair: Ken Birt**

Shoukat Khan and Raluca Capatina - Rata agreed to become members.

Copies of the outline & writing assignments were handed out. The remaining sections of the paper were assigned to be written by June.



Draft 1 will be produced and distributed before September.

Content of the paper appropriate for the Guide for Protective Relay Applications to Distribution Lines will be made available for inclusion in the guide. The paper should be complete enough to serve as a reference for the guide. This assumes it will be retrievable.

**D4: Automatic Reclosing**  
**Chair: W.M. Strang**  
**Vice Chair: M. Swanson**

The Guide's status: Reballoting now in IEEE hands. Expected publication date is December 2002.

Reviewed implementation steps to present guide to technical conferences in 2003:

- A. Abstract: Draft submitted by Jim Engleson. Bill to review.
- B. WG September meeting or January 2003 subcommittee rehearsal.
- C. PSRC Thursday morning presentation January 2003.
- D. Prepare Powerpoint. Barry Jackson/ Charlie Sufana.
- E. Presenters to be selected later in 2002.
- F. Technical Conferences targeted, abstract to be submitted, gain spot on schedule :  
WPRC, Texas A & M, Georgia Tech. (Primary)  
ECNE, MIPSYCON, PEA (Secondary)
- G. Expected sales volume (200 - 300) depending on price.

**D5: Guide for Protective Relay Applications to Distribution Lines**  
**Chair: W. P. Waudby**  
**Vice Chair: R. Crellin**

The working group reviewed and approved the Scope. The PAR can now be submitted for approval. The document number will be C37.230.

The working group discussed the Guide outline and made writing assignments. The assignments are due July 31<sup>st</sup>.

Bill Lowe created a web page for the working group. It will have meeting minutes, a membership list, and the most recent copy of the guide draft.

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

Draft 4 of the report was discussed. Demetrious Tziouvares accepted an assignment to provide a write up on transformer modeling and revise the Case File Nomenclature section. Various members will provide EMTP data for the basic system model. A number of revisions were suggested and will be incorporated in the next draft. It was agreed that the output of the working group will be a special report or paper which will be posted on the web site. Also, a summary paper will be developed and presented at various conferences. The expected completion date will be moved from 2002 to 2003. Memembers are requested to send their write up assignments to the chairman by July 26<sup>th</sup>.

## **DTF2: Out of Step Considerations on Transmission Lines**

**Moderator: M. McDonald**

The chairman opened the meeting with a brief statement as to how the task force came about : That being a perception that the majority of relaying personnel do not fully understand the out of step phenomena and how out of step protection should be applied.

The discussion that followed further enforced that belief. The consensus was that a general education on Out of Step is in order with guidance on how to determine where protection should be applied.

Members were requested to supply their Out of Step philosophy and the rationale behind it. This information should be sent to the chairman by June 30<sup>th</sup>. There is a significant interest in the subject. The consensus of the group was that a working group should be formed. A "Report to the Subcommittee" would likely be the output from the working group.

## **New Business**

Task force DTF2 is to become Working group D6.

A new working group was proposed by Elmo Price. The following is an abstract of the proposed working group:

Taskforce for Loss of AC Potential Considerations

Loss-of-potential protection is the detection of open voltage circuits and is normally applied to prevent incorrect operation of impedance and directional units. The open circuit is, more often than not, the result of a blown fuse. Therefore, the term Fuse Failure Protection is often used synonymously to Loss-of-potential. An open voltage circuit may also occur as a result of a number of other factors. LOP alarming and prompt restoration of the lost potential circuit is the best practice, but some control of voltage dependent measuring units . . . impedance, directional, may be required during the LOP state. Typical control choices are to: block system tripping, block impedance unit operation, make directional overcurrent units non directional, etc., or do nothing.

The working group will develop a special report that will review typical LOP protection schemes and points out potential application problem areas based on the system, control choices made, scheme or potential circuit redundancy, and more.

The benefit would be to have a resource that would guide the relay application engineer to select the appropriate LOP control to produce the least detrimental effect in the event of a fault during the LOP state.

This task force will convene in the next meeting as DTF3.

**High Impedance Fault Activity** - None reported.

## **H: RELAY COMMUNICATIONS SUBCOMMITTEE**

**Chair: M. S. Simon**  
**Vice Chair: K. J. Fodero**

**H1: Revision of IEEE Guide for Power Line Carrier Applications Joint WG**  
**Chair: B. Nelson**  
**Vice Chair: 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: K. Behrendt**  
**Vice Chair: B. Lowe**

The latest outline was distributed. Some members accepted assignments, but there are many areas of the outline that are available for volunteers. Assignments should be sent to Ken by August 1<sup>st</sup>. If the assignments are received by the due date a draft will be compiled and forwarded to the users and will also be available on the H2 web site, otherwise the first draft will be distributed at the next meeting.

**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: E. Udren**

Eric Udren chaired the meeting. C37.115 had already been successfully balloted prior to the Dana Point meeting; there were three negative votes to be addressed. One of these, a proposal to modify the title, requires a new PAR and voting cycle, and the Chairman and WG have elected not to take this step. Another voter could not find specific requirements, but the information he sought is in the document, and the Chairman (Dennis) intends to provide a reference list to the voter without modifying and reballoting the standard. The third negative vote was based on editorial problems that have now been fixed in response. The final result - with 93% affirmative votes, no recirculation is planned, and the Standard will be submitted for publication.

There were no agenda items requiring group action.

At the Subcommittee Meeting, it was pointed out that negative ballots require recirculation, even if they are unresolved, so that other voters can see the negative ballots and reject or agree to accept the document anyway. So the Chairman will need to prepare an explanatory letter and initiate a recirculation.

**H6 Application of Substation Ethernet LAN Communication for Protection and control**  
**Chairman: J. Burger**

**Vice Chairman: C. Sufana**

Copies of the first draft of the H6 paper entitled "Application Considerations of UCA 2 for Substation Ethernet Local Area Network Communication for Protection and Control" were handed out to everyone.

Mark Adamiak next brought everyone up to date on the IEC 61850 work. He pointed out that Chapters 7 and 8 are what this working group may be most interested in. Most all of the UCA work coming from the Utility Initiative will be incorporated in this IEC standard.

The remainder of the time was spent with everyone reviewing the draft by going chapter by chapter. Additional writing assignments were received and others made at the meeting with several of the chapters still not having an author. Mark Adamiak, Mark Simon, and Charlie Sufana are to edit the sections on GOOSE. Jerry Hohn also agreed to provide an update of his previous work for a Chapter on LAN h/w. Brent Brobak is going to develop a table listing various protocols for Chapter 2. Mark Simon will provide a copy of SLAM for review and a reduced version will be included in the document. Everyone was asked to review the document, offer suggestions, and provide any application cases that they may have.

**H7: PC37.94 Inter Relay Communication Protocol Standard**

**Chair: G. Michel**

**Vice Chair:**

H7 did not meet in Pittsburgh. The PC37.94 Re-circulation Ballot has been completed since the last meeting. Seventeen "Approval with No Comments Ballots" were received. The IEEE SCC14 Coordinator submitted one editorial comment. The negative balloter from the original ballot did not vote. After re-circulation balloting, PC37.94 Draft 7 submission material was sent to Moh Sachdev, IEEE PSRC Standards Coordinator for review and comment. Moh then submitted the documents to IEEE Standards. IEEE RevCom has scheduled PC37.94 to be reviewed at their next meeting on June 12, 2002.

**H9: Special Considerations in Applying PLC for Protective Relaying**

**Chair: M. Sandards**

**Vice Chair: M. McDonald**

Draft 7 of the special paper was distributed. Several writing assignments were accepted and are due to the chair by June 21, 2002. The chair will then incorporate the additions and forward to the editor for review by July1, 2002, who will return it to the chair by mid-August.

New Assignments are:

Check status of transformer at Consumers that was to be testing at RF – Rich Peinkos.

The use of contact opening to start carrier – Mark Simon

Monitoring of carrier output signal to insure correct operation of relay and monitoring circuits. – Shoukat Khan

Carrier Time delay dropout or carrier smoothing logic – Shoukat Khan

Note on UTC requirements to be added – Miriam Sanders

EMTP Modeling of transformer at RF – Bill Lowe

Overall editorial review to be done after draft 7 – John Appleyard

Outstanding Assignments are:

Estimating the need for traps on shunt cap banks – Tom Lanigan

Add note on Bibliography that this is a list of PLC references – Miriam Sanders

Use of frequencies above 300 kHz – Mike McDonald

Address the considerations needed when interfacing different vintage relay systems, ie electromechanical versus microprocessor – Paul Drum

The following were previously assigned and are noted as below:

- Underground lines and underground/overhead line combinations. – Dave Jamison, received
- Lines with tapped transformers including testing with transformers at RF characteristics including construction, voltages and to trap or not to trap. – John Zipp. John to do some testing on a 345 / 138 kV transformer and report back.
- Shunt capacitors / series capacitors/shunt reactors. – Solveig Ward - received
- Phase identified transfer trip on parallel lines. – Steve Rowe – received
- Line configuration changes, transpositions. – Tony Seegers - received
- Intro for use of PLC for relaying. – Miriam Sanders
- SSB & DPLC vs dedicated PLC use for protection. – Solveig Ward - received
- PLC References – Jim Huddleston. Received
- Multi-terminal lines, with frequency considerations, shared channel including wavelength considerations - John Zipp/Mike McDonald
- Very Short Lines - John Horwath – received
- Find references to early PLC Pilot installations – MPS, John Appleyard and Dave Jamison - received
- Review the line protection guide and compare with the dir vs non-dir carrier start information, Solveig Ward. - received
- Add a paragraph on a series reactor – Solveig Ward - received
- Add more information in trapping for shunt capacitor – Recommend trapping all three phases. However, it is not always economical. – John Appleyard - received
- Non- License of PLC – Mark Simon – received
- To use On-off or FSK, what are the pros and cons, reliability, etc – Tom Lanigan – received
- Frequency conservation section to include bandwidth and channel time considerations, - Mike McDonald - received
- Three terminal lines – Mike McDonald
- The requirement of a current loop – Mark Simon
- The use of contact opening to start carrier – Mark Simon

**H10: Revision of the Audio Tone Application Guide C37.93**

**Chair: B. Higinbotham**

**Vice Chair: J. Hohn**

The writing assignments associated with draft 7 were reviewed. New section 6.1.3.7 was also reviewed.

Bill Higinbotham has requested that all working group members review draft #8 prior to the September meeting and send him comments on additional changes or that the draft should go forward for ballot. Draft #8 will be sent to working group members in June.

**H11: Revision to the Syncrophasor Standard**

**Chair: K. Martin**

**Vice Chair:**

Draft 2.4b was distributed. After presentations and discussion, the WG agreed on a synchrophasor definition for the Standard. Several members were asked to draft revisions for the sections on “Synchrophasor Measurement” and “Phasor Measurement Requirements.”

Contributions on the “Sources of Synchronization” and “Test Waveforms” were also discussed.

## **Task Force Reports**

### **HTF1: Swichyard Data Acquisition**

**Chair: E. Udren**

Did not meet. At a previous meeting, the TF had reviewed technical features of IEC 61850-9-1 on serial point-to-point link for process data, based on a dedicated Ethernet LAN. One vendor informed the Chairman that this link will be demonstrated at the UCA demo on Thursday evening January 9, following the PSRC meeting. An update on 61850-9-2, process bus object definition within the substation control architecture, should be available for the May PSRC meeting, following the March meeting of IEC TC57 WG 12.

### **HTF8: File Naming Convention Standard**

**Chairman: A. Makki**

Copies of the final H8 report to the PSRC were distributed.

Discussions: The following issues were discussed:

The group talked about the benefits of using the naming convention. A number of members present related their positive experiences using large numbers of files.

The group talked about forming a new group to continue the H8 work by seeking to move to a proposed standard, a recommended practice, or a guide.

The group talked about expanding the scope to also include data that is not time sequenced.

The group talked about the possibility of including this work as a part of the COMTRADE standard.

The group also talked about supporting the 8.3 DOS naming convention.

The group talked about producing a survey of the various types of naming practices and standards.

Conclusions: The following conclusions were reached:

The group agreed to meet again at the next PSRC meeting.

The group recommends that the standard filename become part of the next revision of the Comtrade standard.

The group voted and unanimously agreed that the filename convention should become an IEEE standard. Preparation of the standard document will provide an opportunity for additional manufacturer and user involvement.

The group commissioned the Chairman to prepare and submit the PAR application for a Standard prior to the next meeting.

The group also agreed to consider expanding the scope to support the DOS 8.3 naming convention and files that are not Time Sequenced such as relay settings and fault reports.

## **Liaison Reports**

### **1. Power System Communications Committee**

**E. A. Udren**

PSCC Chairman John Newbury has assured the Liaison that minutes will be forthcoming within weeks. In the meanwhile, this is the information that is available:

The Carrier Application Guide, reported as it progressed for several years, should be published by next year at this time.

The Fiber Optic Communications SC is working on a tutorial on using different types of fiber.

The New Concepts and Protocols SCs have merged and are forming a WG for a new protocols tutorial.

The Radio SC held a highly successful tutorial at the Summer Power Meeting on mobile radio applications. They plan to enhance and repeat this.

### **2. Substation Committee**

**J. Tengdin**

In December 2001, the IEEE SA Standards Board approved the reaffirmation of C37.2 – 1996 Std Electrical Power System Device Function Numbers and Contact Designations. In the electronic balloting, there were no negative ballots. There were hitches in the electronic balloting process, and a “Lessons Learned” report has been forwarded to the Standards Coordinators of the Substations Committee and PSRC.

Work continues to resolve negative ballots on P1525, with reballoting to take place in 2002.

Work also continues on updating the SCADA standard. C37.1, to reflect the prevalent use of relays and other IEDs as data sources for SCADA.

At the Winter Power Meeting in New York later this month, work is expected to begin on a new standard to document substation configuration details. The proposed standard will address the connectivity of the power system devices, the connectivity of the IEDs to power system devices, and the connectivity of the IEDs to the communication system in a LAN environment (including hubs, switches, routers, protocol converters, gateways, and firewalls.

Respectfully submitted, John Tengdin – Chair, Substations C3

### **3. IEC TC57 Working Group 10, 11 and 12 Report**

**E. A. Udren**

Nothing reported at this meeting.

### **Coordination Reports**

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 15<sup>th</sup>, 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 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.

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. 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**

Moh Sachdev has agreed to take Chairmanship of this WG and complete the work. He has requested that comments on Draft 12 be sent to him by June 28, 2002. Draft 12 is available on the WG web page. A meeting of this WG is planned for September 2002.

### **I2: Terminology Usage Review**

**Chair: M. J. Swanson**

**Vice Chair: J.D. Huddleston, III**

The working Group met on Tuesday, May 21, 2002 with 4 members and 2 guests present. Mal Swanson, WG leader, presided. Mal gave an overview of the WG's direction as discussed at the January meeting. The 5 new terms on the last list were discussed and approved as amended. A list of current standards and guides in progress were assigned to those present for review for proper usage of terminology and any new or revised definitions for inclusion in C37.100. Jim Ingleson asked that "Transient overreach" be defined. Oscar Bolado joined our WG.



**I4: IEC Standards Advisory**  
**Chair: E. A. Udren**  
**Vice Chair: M. M. Ranieri**

Vote on 95/134/CDV 60255-22-7 Power Frequency Immunity Tests - This draft had been discussed in Dana Point. The US cast a vote not in favor - comments on test generator wiring and pass-fail criteria. At this meeting, we discussed test level concerns that we failed to include in our first round of comments. These additional comments are being prepared for transmission to the IEC WG through USNC. The USNC cast votes in favor of final (FDIS) drafts of 60255-22-4 and -22-5, surge tests, after prior discussions and both are now officially approved as IEC Standards. Jeffrey Evans, Chairman of TC 95, will be retiring at the end of his present term in 2004. The floor is open for nominations, but will be closing at the end of this week. A UK chairman has brought us a pretty balanced program; we don't know who or what may come next. I'm not aware of any US potential candidates. The next TC 95 Plenary Meeting will take place as part of the IEC General Meeting in Beijing, October 27 - November 1. The registration deadline for the US delegation is August 31. Typically, the meeting focuses on TC standards projects strategy, and procedural issues for projects in process; as opposed to technical issues. There are no new or open TC 95 standards projects at this time. We resurrected the discussion of the WG Chairman's White Paper to PSRC Officers on IEC versus IEEE Product Standards from last year. The paper is a discussion of our effectiveness in participation and influence by voting or commenting. What is the strategy for our C37.90.X standards in competition with IEC? How does I4 approach its coordination tasks? The strategy issues are elevated to a higher level now. Chairmen of the WGs creating C32.90.1 revision, C37.90.3, and C37.90.2 revision have all made the effort to define tests that are parallel to IEC type tests and do not require an entirely different test setup, without a good reason. However, for C37.90.2, we have defined a test which, in broad brush, is identical to IEC 60255-22-3 except for a 6 db higher test level and richer, more specific acceptance criteria. The question is - why write a document with different appearance and wording describing a test with only these very specific differences? The alternative is to use the words of the IEC standard with only these key changes. It was determined after the meeting, in discussion with Naeem Ahmad of IEEE, that we can do this and that the IEEE can publish such a standard with acknowledgement to IEC.

**I5: Trial-Use Standard for Low Energy Inputs to Protective Relays**  
**Chair: E. A. Udren**  
**Vice Chair: P. G. McLaren**

The standard Draft 8.5 approved by the WG, now called Draft 9, has been uploaded to IEEE Standards Board Server, and the invitation to ballot has been issued to the potential body of voters. A request to vote must be submitted to IEEE on the web by June 30. We expect results to discuss in September. The draft in PDF format appears 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 discussed questions raised about the need to clarify the wording in clauses 4.1.1 and 4.1.2. The comments were reviewed in detail with recommendations by the WG to

clarify clause 4.1.1 to eliminate confusion. In addition, a recommendation was also made to include all the applicable IEC voltage and maximum design voltage values into Table 4. Another area we discussed dealt with the need to clarify the dielectric requirement in footnote b. for Table 9. The WG recommendation was to include more information to indicate it applies ““where such circuits are isolated from ground.”” The WG will be polled via email to be sure that we have agreement on the additional proposed material to be included in the final draft. The final draft of C37.90 will be submitted to IEEE for electronic balloting after the final approval by the I6 WG members.

**17: 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.

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

**Chair: J.G. Gilbert**

**Vice Chair: J. Teague**

The WG met last on 9/18/2001. The ballot of PC37.90.1 received 100% approval. This standard has been approved by the Standards Board and should be published by the end of 2002. The summary paper is essentially complete. No meeting is planned for September 2002

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

**Chair: S. Mazumdar**

**Vice Chair: S.M. Usman**

Limitations of Table 1, Operational Test, and Table 2, Operating Aging Parameters, were discussed, and it was decided that the group will reformat these tables prior to electronic balloting.

**110: C37.98-1987 - Standard Seismic Testing of Relays**

**Chair: M. Nemier**

**Vice Chair: M. Bajpai**

Mason Clark has withdrawn as Chair, and Munnu Bajpai was unable to attend the May meeting because he can only attend PSRC when the meetings are in the West. Marie Nemire was elected at the new Chair. Munnu Bajpai will remain as the Vice-Chair. Marie Memire will request the style guide and template from Mohindar Sachdev. She will also request an electronic copy of C37.98. Prior to the next meeting, a draft version of the standard will be made available electronically in the correct style. Prior to the next meeting, Marie Nemier will review the list of IEC standards to see which may be similar. At the next meeting, assignments will be made to the members to review any IEC standards, if necessary. The following assignments have been made to review and comment on sections of C37.98:

Sections 1-2: Terry Crawley and Munnu Bajpai

Sections 3-4: Cliff Downs and Bob Sullivan

Sections 7: Mario Ranieri and Subinoy Mazumdar  
Comments on these sections should be made available at the next meeting.

**I11: Survey of Relay Test Practices**

**Chair: E. Krizauskas**

**Vice Chair: W.G. Lowe**

This WG did not meet at the Pittsburgh PSRC meeting. The PSRC report "A Survey of Relaying Test Practices" was approved by the PSRC officers on February 15, 2002. Ed distributed the approved report to all contributors shortly thereafter. An Acrobat file of the report is available on the "I" Subcommittee web site in the I11 working group section. Ed Krizauskas will submit the report for presentation at the upcoming Energy Association of Pennsylvania meeting in September, 2002, and will create a Power Point presentation for the report. The presentation will then be available to other Working Group members, who would be encouraged to present the report at their regional power engineering or protective relaying conferences. Ed would like 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 working group assignment has been completed. This working group was disbanded with thanks at the 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**

Mukesh Nagpal from BC Hydro joined the working group. Don Sevcik will review the membership listed on the web-site and to confirm that it is accurate. The PAR for this work has been extended to December 2004. Contributions from Harley Gilleland and Stan Thompson were reviewed. It was decided that the Guide would be expanded to include a separate section on Optical Sensors along with an appendix that provides appropriate background information on optical sensors related to field testing. Other types of low energy output devices will be excluded from the guide at this time based on the number of these devices in commercial operation. The new section will be developed from sections 5, 6 and 7 of Harley's contribution. Working Group members are to forward their contributions to Harley by 6/21. Harley will incorporate this input and redistribute the section to Working Group members for comment by 7/21. Additional comments will be incorporated by 8/21 and a final draft of the section sent to Working Group members by 8/21. The Chair and Vice-Chair will discuss Stan Thompson's contribution with Stan to determine what will be incorporated into the Guide.

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

**Chair: M.S. Sachdev**

**Vice Chair: B. Mugalian**

The minutes of the January 2002 meeting, distributed previously by Email and also distributed at the meeting, were approved. The Chair reported that a PAR extension application was submitted to NesCom of the Standards Board. The application was approved; the new PAR expires in December 2004. A report provided by Dr. Vittal Rebbapragada on the grounding methods reported in other IEEE publications was

reviewed. A new drawing identified from this report was chosen for including in the guide. The drawings previously prepared for the guide were reviewed and minor changes were proposed. Al Darlington will revise the drawings as well as prepare the new drawing and will forward them in the Visio and Metafile formats to Brian Mugalian and Mohindar Sachdev. Mohindar and Brian will get together in July in Chicago and will prepare the next draft using the IEEE template and will distribute it to the working group members by August 15. The members were requested to submit the outstanding assignments by the end of June.

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

**Chair: T.A. Phillippe**  
**Vice Chair: R. Young**

Mark Adamiak continued his presentation, expanding into TCP/IP and wide area networks. Previous topics covered were Ethernet, TDM, and fiber optics.

**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**

The WG now has a CT saturation calculator program on the IEEE PSRC website. The WG has applied for a PAR extension for the end of 2003. The PAR extension request will be reviewed at the June 13, 2002 Standards Board meeting. A review team was formed to get the guide into the proper "IEEE Standard Style Manual" format. Draft 3 of the guide is scheduled to be sent to the IEEE Editor for editorial comments in September 2002. A request for the formation of a balloting body should follow in October 2002.

**I16: Understanding Microprocessor-Based Technology Applied to Relaying**

**Chair: M.S. Sachdev**  
**Vice Chair: R. Das**

The minutes of the January 2002 meeting held in Dana Point, CA were approved as circulated by e-mail and posted on the web site. Over 85 percent of the draft of the document are complete at this time. The editing of the document is in progress. The members were reminded to submit the outstanding assignments by June 30. It was agreed that the outstanding sections that are not received on or before June 30 should be left out of the document. It was agreed that the document should be posted on the WG Web site before the September meeting. At the conclusion of this business the meeting was adjourned.

**I17: Trends in Relay Performance**

**Chair: W.M. Carpenter**  
**Vice Chair: J.D. Wardlow**

Additional 2001 data was gathered from several companies. Prior to the September meeting, this data will be put in paper form for WG review. The paper will be complete in May of 2003.

**I18: Harmonization of IEEE C37.90.2**

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

The WG has decided to examine the possibility of starting with the text of IEC 61000-22-3 and revising it as needed instead of continuing with the draft that currently exists. 61000-22-3 will be distributed and revised prior to the next meeting. The WG further requests that a task force to examine the applicability of IEC 61000-22-6 be formed. Bill Higinbotham will convene this new task force, which will look at possibility of a new standard on conducted electromagnetic interference. The first job will be to examine IEC 61000-22-6 which covers this subject. The number ITF3 has been assigned for this work.

**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. No further meeting of this WG are planned. The assignment has been completed. Thanks to all who participated in this work. This working group was disbanded by action of the Relay Practices Subcommittee on May 22, 2002.

#### **Task Force Reports:**

**ITF1: Relay Service Letter Database**  
**Chair: J.W. Ingleson**

One new letter has been received since the previous meeting. This letter, from RFL Electronics, discusses the importance of performing the recommended lithium battery replacement. Leakage may occur if the replacement recommendations are not followed. This letter will be placed into the database. The database is available on the ITF1 area of the subcommittee web site.

**ITF2: Relay Firmware Quality Assurance**  
**Chair: J.A. Whatley**  
**Vice-Chair: R. Beresh**

The final wording of the Purpose Statement and Scope Statement were both agreed upon. The WG title will be: "Recommended Practice for Microprocessor-based Protection Equipment Firmware Control." The PAR purpose statement shall read: "Provide a Recommended Practice for the identification and dissemination of changes and information relating to microprocessor-based protection equipment firmware, between manufacturers and users." The PAR scope statement shall read: "This Recommended Practice shall provide direction for the timely and efficient exchange of information between manufacturers and users of protection related equipment with respect to changes in device firmware and the impact thereof. The purpose of this exchange is to help reveal the technical and operational ramifications resulting from changes in device firmware. The scope of this Recommended Practice includes hardware changes only insofar as they impact firmware changes. This exchange of information is seen as a bilateral approach and by no means seeks to infringe upon proprietary or confidential information from either party." WG officers will be applying for a PAR after the meeting. Assignments were given to various individuals to:

- check for similar activities within the FAA, NASA, etc.
  - report on current utility practice in this area
  - report on current manufacturer activity in this area
  - report on any actives in CIGRE and IEC that may be comparable
- Output from the various assignments are due on the 9th of August, 2002 to allow compilation and assimilation prior to the Sept 2002 meeting in Florida.

**ITF3: Conducted Electromagnetic Interference**  
**Chair: W. Higinbotham**

I18 WG requested that a task force to examine the applicability of IEC 61000-22-6 on conducted electromagnetic interference. Bill Higinbotham will convene this new task force, which will look at possibility of a new standard on conducted electromagnetic interference, possibly based on IEC 61000-22-6 which appears to cover the subject. The number ITF3 has been assigned for this work..

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

This new task force will discuss common formats for protection IED data. The group will examine the possibility of forming a working group, or possibly more than one working group..

**Liaison and Coordination Reports:**

**Instrument Transformers Subcommittee of the PES Transformers Committee and Revision of C57.13-1993, IEEE Standard Requirements for Instrument Transformers:**  
**J. D. Huddleston, III**

The Transformers Committee has had two meetings since the Nashville meeting in April, 2000: one in Niagara Falls in October, 2000, and the Spring meeting in Amsterdam, The Netherlands in April, 2001. Liaison from the Instrument Transformers Subcommittee: I have the following comments to report: Document C57.13.5 is now shown as C57.13.05/D14 ""Draft of Trial-Use Guide of Test Requirements for Instrument Transformers Rated 115-kV Nominal System Voltage and Above"". This document was circulated to the SubCommittee members for concensus, including me, with comments due by April 11, 2001. The document increases the stringency of tests applied to this class of Instrument Transformers, and looks quite close to Ballot. PSRC does not have coordination. Coordination for W.G. PC57.13 (Revision of the C57.13 Standard: General Requirements for Instrument Transformers (Tom Nelson, Chair). This document was submitted to the SubCommittee members for comments along with the C57.13.05 document mentioned above. It appears to me to be a re-statement of the existing Standard, but with an unknown PAR expiration date. According to the statements in the Nashville Minutes, the PAR was extended through December, 2000, and that date has expired. Coordination for W.G. PC57.13.6: Instrument Transformers for Use with Electronic Relays and Meters, (Chris Ten-Haagen, Chair): The document continues to evolve with minor deletions and improvements. Changes agreed to at Nashville should have been incorporated in time for the Niagara Falls meeting.

**P384-NPEC, Standard Criteria for Independence of Class 1E Equipment and Circuits**  
**M. Bajpai**

No report furnished at this meeting.

**New Business:** The following have been named as new members of the Subcommittee: J.D. Wardlow, B. Mugalian, S.M. Usman, J.T. Tengdin, S. Mazumdar, B. Jackson, W. Higinbotham, B.A. Pickett.

Two new task forces were formed, numbered ITF3 and HITF5. The assignments of the new task forces are discussed above.

## **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**

Most of the two sessions were devoted to discuss late comments brought up by Mr. Robert Nelson. These comments are changing substantially the perspective of the present draft because the motion of limited frequency generator capacity is being introduced. Due to the fact that present Draft #12 is in the stage of being balloted by the main committee, a new document will have to be re-circulated for approval after the final ballot.

### **J3: Protection of Generators Interconnected with Distribution System**

**Chair: E. Fennell**

**Vice Chair: R.V. Rebbapragada**

There was a motion to redefine the assignment of the WG to "Protection of Generators Interconnected with Distribution System." The motion was discussed and was passed with an affirmative unanimous voice vote.

The WG discussed and it was agreed that the WG should confine in its scope to investigate the technologies associated with rotating machine type generators only, but not those distributed small generators that use static power conversion type packages such as those used in micro turbines. It was also discussed that the WG should embark on literature search and obtain industry information on the various technologies on small-dispersed generators connected to utility distribution systems. Towards this objective, the following assignments were made:

Wind Turbine generators: R. Vittal Rebbapragada

Tidal Power Generators: Om Prakash Nayak

Induction Generators: Bill Feero

Diesel Engine Driven Generators: Brad Nelson and Kirtess Boers

Small Hydro Generators: Pratap Mysore and W.G. Lowe

IEEE Std. 1001: E. Fennell

IEEE Publication, "Protection of Generators 3MVA or Less":

Murty Yalla

The above writing assignments are requested to due to the Chairperson by August 1, 2002. If there are any questions, please contact WG Chairman, Everett Fennell.

**J4: Revision of C37.102 AC Generator Protection Guide**

**Chair: M. Yalla**

**Vice Chair: K. Stephan**

Writing assignments received on Annex-A (Typical Relay Settings) were discussed. New writing assignments for additional sections were made. Draft #1 of the document will be generated by the September 2002 Meeting. Shoukat Khan joined the WG.

**J5: Generator Protection Setting Criteria**

**Chair: C.J. Mozina**

**Vice Chair: M. Reichard**

Murty Yalla chaired the meeting. The working group assignment was reviewed with minor changes and the paper title was approved. Joe Uchiyama and Phil Waudby's assignments from the Dana Point Meeting were reviewed. New writing assignments were made.

AVR Coordination – Underexcitation Coordination: Brad Nelson and Phil Waudby

AVR Coordination – Overexcitation Coordination: Randy Hamilton

Power System Stability – Steady State: Zeeky Bukhala

Power System Stability – Transient: Pat Kerrigan and Walk Elmore

Writing assignments are due to Chuck Mozina by July 10, 2002. New working group members are Walt Elmore, Shoukat Khan, and Terry Crawley.

**J6: Performance of Generator Protection During System Disturbances**

**Chair: S. Patel**

**Vice Chair: K. Stephan**

Draft #6 of the paper (mailed on 5/15/2002 for approval) was handed out to the attendees. After some discussion on the PSRC approval-procedure, the WG believes that the approvals can be in the form of simple e-mail; formal ballot can be used, however, it is not required. All WG and SC members are requested to send their approval/comments on the paper by 6/15/2002.

Once approved by the WG & SC, the paper will be submitted to the PSRC officers (by 6/30/2002) for their approval.

September 2002 WG meeting will focus on resolving any comments, preparing for presentation at future PSRC Main Committee Meeting, and submitting for publication as IEEE Transaction Paper.

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

**Chair: J.T. Uchiyama**

**Vice Chair: R. Das**

Chairman circulated Draft #1 of the guide to the members last week. The meeting started with the comments received from Rai Martilla on the proposed draft. Then, we had discussions on a several sections of the guide. Based on the discussions, some assignments were given for review and to modify different sections. We will continue discussions on Draft #1 (Draft #2) for next time.

**Liaison Reports**

**Electric Machinery Committee**

No report provided.

**C.J. Mozina**



## 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

No report

## 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

Writing assignments for the first portion of the guide were partially reviewed.

An animated discussion was held on the definitions of several terms: Primary, Backup, remote back up, local back up, and breaker failure. One working group member volunteered to work on the definitions section. This should clear up much of the confusion.

Several suggestions were made about the "Why Breaker Failure" section. This section will be reworked based on the suggestions.

NERC Reliability Council guides regarding breaker failure will be reviewed as a resource for the guide.

Those members with late assignments promised to get them in within the month.

New writing assignments are due July 15<sup>th</sup>.

### K4: Bus Protection Guide

Chair: S. P. Conrad

Vice Chair: R. W. Haas

The standard is being put into pdf format for balloting process. They are on the board agenda to extend the PAR until 2004.

### K5: Network Transformer Protection Guide

Chair: C. R. Sufana

Vice Chair: A. P. Napikoski

Draft 11 was approved at the March 20, 2002 Revcom meeting. The draft is currently with one of the editors at the IEEE headquarters.

Bill Feero, the K10 chair, was next on the agenda and brought the group up to date on P1547. The latest draft is 9 and Bill requested that he would like comments on section 4.1.4 by May 27, 2002.

Nigel McQuin, representing the Low Voltage Switchgear committee, pointed out that P1547 does not seem to have anything about low voltage breaker ratings for breakers used with generators. At the moment, there is no standard for circuit breakers below 1000 volts.

The first draft of the summary was presented next and Charlie Sufana, the chair, indicated that the working group had received an email from Bob Puckett, from the Low Voltage Switchgear Committee, pointing out that the wording indicating high voltage was really medium voltage and should be changed. Charlie Sufana said that the Guide would have to be reviewed and pointed out that this would have to be discussed with the editors since the Guide has been approved. He also indicated that there had been no mention of this in the previous two ballots. Everyone is asked to review the summary and get comments back to Charlie Sufana by June 10. It is hoped that the summary will be completed for the September meeting.

The WG will meet in single session for 15 people and will need no A/V.

**K6: Shunt Capacitor Protection Guide Tutorial**

**Chair: P. A. Mysore**

**Vice Chair: R. Hedding**

Gustavo Brunello gave a presentation on protection of shunt capacitor banks to Electrical Association Members of Ontario in January, 2002.

Simon Chano and Pratap Mysore gave a four hour tutorial at the Texas A&M relay conference pre-session on April 8, 2002. The topic was "Application and Protection of Shunt Capacitor Banks". This tutorial was prepared jointly with the Capacitor Sub-committee of the T&D Committee.

We have submitted one request for a presentation on protection at the New England meeting in October, 2002.

We have two PowerPoint presentations available, one on protection of shunt capacitors and the other on Application and Protection of Shunt Capacitors.

As we have completed our assignment, the chair requested the Sub-committee to close this working group assignment. I will request the webmaster to post the presentations on our webpage.

**K7: Guide for the Protection of Shunt Capacitor**

**Chair: K. A. Stephan**

**Vice Chair: P. G. Mysore**

The Working Group did not meet at this meeting. Draft 4 is being sent out for balloting.

**K8: Guide for Protective Relaying of Utility Consumer Interface**  
**Chair: I. Hasenwinkle**  
**Vice Chair: F. Griffin**

The working group did not meet at this meeting. The PAR expires September 2002.

There were changes that went into Draft 8. The IEEE asked to have draft 7 be sent to HQ and was approved. The draft 8 work will be picked up the editor.

**K10: SCC21 Distributed Resources Standard Coordination**  
**Chair: W. Feero**  
**Vice Chair: D. Dawson**

Copies of draft 9 of P1547 (the latest draft) were sent to members last week with a request to come to the meeting with specific comments on required changes. All suggested and required changes must be submitted to the P1547 chairman by May 28, 2002 to be considered at the next meeting of P1547 in Vail, CO, June 4 to 7.

To that end the following comments and concerns were raised.

Sub. Clause 4.1.1: The first sentence "The DR shall not actively regulate the voltage at the PCC." Is not clear. An example raised was, for a DR interior to a local EPS who would benefit from regulating its own bus, would the smaller effect at the PCC be not allowed?

Sub. Clause 4.1.2 was discussed in that it seemed not to be served by the overvoltage times allowed by Table 1 in Subclause 4.2.3. It was pointed out that if local load voltage rating required a faster clearing time then subclause 4.1.2 governs.

Sub . Clause 4.1.8.3 Paralleling Device: This is a new subclause because no IEEE Standard for testing low voltage switchgear exist for the generator breaker application. We are to see if there is a UL standard that at least partially covers this point.

Sub. Clause 4.2.3 Voltage: The question raised was where did the footnote go that provided for longer times if desired by both the DR and the EPS.

Sub. Clause 4.2.5 Loss of Synchronism: There was a big discussion on this sub clause. The resultant question is this sub clause required because it is primarily a voltage PQ issue which is covered by sub clause 4.3.2 Flicker? The consensus of the the group was that it should be removed.

Sub. Clause 5.1 Interconnection Testing: The title needs to be changed to Type Test. If this violates an IEEE Standards rule then change it to Factory Performance Testing.

After the June meeting in Colorado, the intent is to create a new draft 10 and form a new balloting body since the actual standard had failed on recirculation. The working group encourages all K Sub-committee members who are interested to be part of the new balloting body.

The working group ran out of time to address John Stevens' multi-unit inverter interface testing concern.

**K13: PC 37.116: Guide for Protective Relay Application of Transmission Line Series Capacitor Banks**

**Chair: F. P. Plumptre**

**Vice Chair: D. Hamai**

Dan Hamai chaired the meeting as the chairman was unable to attend.

Draft 3a was distributed and written contributions were discussed. Additional writing assignments were made for the protection and control philosophy, the series capacitor, reactor, harmonic protection, and additional protection considerations.

IEEE Std.824 "Standard for Series Capacitor Banks in Power Systems" has gone out for ballot. Working group members were asked to review this standard and to provide comments to Frank Plumptre by June 15, 2002. Our comments will be sent to the Transmission and Distribution Committee for consideration.

**Task Force Reports:**

**KTF3: Schemes and Measures to Prevent and Reduce Outage Durations in Substations**

**Chair: B. Pickett**

**Vice Chair: T. Sidhu**

Discussions took place on various practices and schemes that are being used and can be used to reduce outage durations in substations. There was some discussion on the output of the working group. It is anticipated that there will be a presentation by Bruce Pickett at the September meeting and that the task force will define its working group assignment.

**Liaison Reports:**

**Transformer Committee**

**J.D. Huddleston III -**

The Transformers Committee met in Vancouver, BC, April 14-18, 2002, but the Minutes are not yet available. The Minutes from the Orlando, FL meeting October 14-18, 2001 contained these items of interest:

Since the Amsterdam meeting, the following the following documents received affirmative ballots: PC57.119/D14.0 (Recirc); PC57.133/D4; C57.12.13-1996 (Reaff); and PC57.106/D6.1 (Revision).

Agreement was reached on the IEEE/NEMA copyright issue. Two major points are:

- IEEE and NEMA will have joint ownership of these ANSI Standards copyrights;
- IEEE will have sole responsibility for maintenance and future re-affirmations of these Standards [including C57.12.10 through C57.12.57].

This action allowed two previous ballots to be changed from Abstention to Approved: C57.12.32/D4 and C57.12.57.

The next meeting to be reported will be the Vancouver meeting. The next Transformers Committee meeting will be in Oklahoma City in the Fall.

## Coordination Reports:

### ANSI/IEEE Switchgear Standards

F. Plumptre.

a) **ANSI/IEEE Standard C37.20.3 Standard for Metal-Enclosed Interrupter Switchgear.**

Nothing is reported at this time.

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

Nothing is reported at this time.

### PC62.91-SPD, Revision of IEEE 32 Requirements, Terminology, and Test Procedures or Neutral Grounding Devices

D. C. Dawson.

No additional news.

### P1375 Guide for the Protection of Large Stationary Battery Systems

S.

Conrad

No additional news.

### P1409 Guide for Application of Power Electronics for Power Quality Improvements on Distribution Systems Rated 1 kV through 38 kV

S. Conrad

No additional news.

### P1106 Recommended Practice for Installation, Maintenance, Testing and Replacement of Vented Nickel-Cadmium Batteries for Stationary Application

S. Conrad.

No additional news.

### 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

R. Hedding.

No additional news.

### ANSI/IEEE Switchgear Standards

V. 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 additional news.

### PC37.20.1 Standard for Metal Enclosed Low Voltage Power Circuit Breakers

I. Hasenwinkle

No additional news.

### Old Business

Simon also asked for suggestions on the formation of new working groups. He asked if there was any interest for a WG on static var compensators. He indicated that there is a paper already out and it could be expanded into a guide. He believes that a Task Force should be started.

*Attachment:*  
 May 2002 PSRC Attendance  
 List

M.G. Adamiak	V.A. Gharpure	R. Meachem	D.A. Tziouvaras
N. Ahmad	H. Gilleland	M. Meisinger	J.T. Uchiyama
B.L. Anderson	A.T. Giuliani	P. Michael	E.A. Udren
A.P. Apostolov	E. Guro	D.H. Miller	S.M. Usman
J.C. Appleyard	U. Gururaj	G.P. Moskos	B.A. Vandiver
T.R. Beckwith	D. Hamai	B. Mugalian	S. Ward
M.M. Begovic	R. Hamilton	J. Murphy	W.P. Waudby
K. Behrendt	W.D. Harlow	K.K. Mustaphi	R.M. Westfall
G. Benmouyal	R.E. Hart	P.G. Mysore	R.L. Whittaker
R. Beresh	R. A. Hedding	M. Nagpal	J. B. Williams
K. Boers	C.F. Henville	G.R. Nail	P.B. Winston
O. Bolado	W. Higinbotham	O. Nayak	M. Yalla
S. Boutilier	J.W. Hohn	B.D. Nelson	L. Yang
B. Brobak	J. Holbach	R. J. Nelson	I. Zamora
G.A. Brunello	S.H. Horowitz	M. Nemier	S.E. Zocholl
A. J. Buanno	R. Horton	D.J. Novosel	
Z.A. Bukhala	J.D. Huddleston III	J.M. O'Brien	
J.F. Burger	R. Hunt	S.C. Patel	
R. Capatina-Rata	C.R. Huntley	R.W. Patterson	
M.L. Carden	M.A. Ibrahim	C. Perry	
W.M. Carpenter	J.W. Ingleson	R. D. Pettigrew	
P. Carroll	B. Jackson	T.A. Phillippe	
T.W. Cease	B.K. Johnson	R.J. Pienkos	
J.W. Chadwick, Jr	G.F. Johnson	R. Pineau	
S.R. Chano	A.R. Kazemi	E. Price	
AKS Chaudhary	P. Kemp	M.M. Ranieri	
F. Cobelo	B. Kennedy	R. E. Ray	
S.P. Conrad	P. Kerrigan	R. V. Rebbapragada	
R. Coppernoll	M. Kezunovic	E. Rodriguez-Renterra	
T.L. Crawley	S. Khan	M.S. Sachdev	
R. Crellin	G.L. Kobet	M.M. Saha	
B. Cronin	J.L. Koepfinger	S. Sambasivan	
A.N. Darlington	L. Kojovic	M. P. Sanders	
R. Das	P. Kumar	T. Seegers	
D. Dayton	S. Kunsman	T. Sidhu	
J. De La Ree	J. Lagree	M.S. Simon	
E. Derencinovic	H. Lauw	V. Skendzic	
B. Dickerson	L.P. Lawhead	L.E. Smith	
P. R. Drum	W.G. Lowe	W.M. Strang	
A. Dysko	A.Z. Makki	C.R. Sufana	
W. A. Elmore	K. Martin	R. Sullivan	
W.E. Feero	S. Mazumdar	M. Swanson	
E.C. Fennell	W.P. McCannon	R.P. Taylor	
C. Fink	J.D. McDonald	J.S. Thorp	
K. Fodero	M.J. McDonald	M. Toupin	
R. Garcia	P.G. McLaren	N. Trehan	