

**POWER SYSTEM RELAYING
COMMITTEE**

OF THE

IEEE POWER ENGINEERING SOCIETY

MINUTES OF THE MEETING

May 19-22, 2003

Raleigh, NC

**Power System Relaying Committee
Main Committee Meeting Agenda
May 22, 2003**

Raleigh, NC

- | | | |
|--------------|---|------------------|
| I. | Call to order / introductions | Taylor |
| II. | Approval of Minutes/ Financial Report | Henville |
| III. | Reports of Interest | |
| | A. Chairman's Report | Taylor |
| | B. Technical Paper Coordinators Report | Winston |
| | C. PES Report | McDonald |
| | D. Cigre Report | Cease |
| | E. EPRI Report | Burger |
| | F. IEC Report | Udren |
| | G. Standard Coordinators Report | Sachdev |
| | H. Substation Committee Report | Tengdin |
| IV. | Subcommittee Reports- in order | |
| | C - Systems Protection | Novosel |
| | D - Line Protection | Carpenter |
| | H - Relaying Communications | Fodero |
| | I - Relaying Practices | Gilbert |
| | J - Rotating Machinery | Conrad |
| | K - Substation Protection | Chano |
| V. | Old Business | Taylor |
| VI. | New Business | Taylor |
| VII | General Announcements | Taylor |
| VIII. | Presentations | |
| | ▪ Widow's Creek Disturbance | Kobet |
| | ▪ Misoperation detectives | Taylor |
| IX | Adjourn | |

Call to order / introductions**Taylor**

Rick Taylor called the meeting of the IEEE/ PSRC Main Committee in Raleigh, NC to order at 8:05 AM on May 22, 2003.

Approval of Minutes – Scottsdale meeting and misc. Henville

The minutes of the Scottsdale meeting January 13-16, 2003 were approved. It was noted that the registration fee of \$100 provided a small margin over costs, and would likely be maintained unless the reserves (presently about \$10,000) became too large.

Chairman's Report**Taylor**

The PSRC met at the North Raleigh Hilton Hotel in Raleigh. The current officers are Rick Taylor, Chair; Phil Winston, Vice Chair; Charlie Henville, Secretary; and Miriam Sanders, Assistant Secretary. Moh Sachdev has agreed to continue as Standards Coordinator.

Technical Paper Coordinators Report**Winston**

There will be three technical paper sessions at the PES General Meeting in Toronto sponsored by the PSRC. They will be Tuesday am and pm and Wednesday am. A total of sixteen papers will be presented at these sessions with an additional four being presented as part of the Poster Session on Monday.

A total of twenty three papers were submitted for the T&D meeting. Twenty of these papers were accepted for presentation during the poster session on Monday.

PES Report**John McDonald**

The IEEE PES Executive Committee met on Wednesday, April 9, 2003 in conjunction with the ESMO 2003 Conference in Orlando, Florida. This report will summarize the highlights of the meeting.

2003 Governing Board and Executive Committee Meetings

The PES Executive Committee (ExCom) meets twice each year, in addition to the two Governing Board Meetings. In 2003, ExCom scheduled the two meetings to support PES meetings. In the Spring, ExCom met Wednesday, April 9 in Orlando, Florida during the ESMO 2003 Conference April 7-10. In the Fall, ExCom will meet Thursday, September 11 in Dallas, Texas at the IEEE PES Transmission and Distribution Conference and Exposition. The Governing Board met on Thursday, January 30 in conjunction with the Joint Technical Committee Meetings in Las Vegas, Nevada, and will meet on Thursday, July 17 in conjunction with the PES General Meeting in Toronto, Ontario, Canada.

PES Contested Elections

The PES Governing Board approved the candidates recommended by the Nominations & Appointments Committee, chaired by immediate Past President Don Volzka, for the 2004-2005 positions of IEEE Division VII Director and PES President-Elect, Secretary and Treasurer. The approved candidates for the respective offices are:

IEEE Division VII Director

Mohamad E. El-Hawary, Dalhousie University, Halifax, Nova Scotia, Canada

John W. Estey, S&C Electric Company, Chicago, Illinois, USA

PES President-Elect

John D. McDonald, KEMA Consulting, Duluth, Georgia, USA

Hugh Rudnick, Pontificia Universidad, Santiago, Chile

PES Secretary

Judd L. Putnam, Oncor, Fort Worth, Texas USA

Noel N. Schulz, Mississippi State University, Mississippi State, Mississippi, USA

PES Treasurer

Brian L. Lee, BC Hydro, Vancouver, British Columbia, Canada

Alan C. Rotz, PPL Electric Utilities, Allentown, Pennsylvania USA

Individual voting members of PES may, by petition, propose names to be added to the ballot for these offices in accordance with IEEE and PES Bylaws. Nominating petitions for qualified candidates must be received at the PES Executive Office by June 13, 2003. For details, contact the PES Executive Office. To be eligible for nomination to the office of PES President-Elect, the nominee must have served as a member of the Governing Board in some capacity for at least two years.

All candidates will address the members during the General Membership Meeting on Monday morning at the 2003 PES General Meeting in Toronto on July 14, 2003.

Upcoming Executive Committee Meeting

The IEEE PES Governing Board will meet on July 17, 2003 in Toronto, Ontario, Canada in conjunction with the 2003 PES General Meeting July 13-17.

The following meeting highlights are summarized under their associated 2003 PES Society-level goals:

Goal I. Enhance employer support of membership and participation in PES

Soft Skills Course – Essential Communication Skills for Engineers

One soft skills course will be offered at the 2003 General Meeting in Toronto. A summary of the course is given below:

Employers want employees who write and speak with clarity. This means they must be able to hit the high points and compose tight, clean documents or information that can be acted upon by others. You can develop strong communications skills enabling you to relate complex ideas to people with varying backgrounds. This half-day course provides many suggestions for improving written and oral communications, and makes attendees aware of additional messages that they are sending to others.

Manpower Development and Assessment

A panel session will be held at the 2003 General Meeting in Toronto on manpower development and assessment with the following panelists and their presentation topics:

Lea-Ann Morton
University of Missouri – Rolla
University Career Opportunities Centers

Larry Hanneman
Iowa State University
University Coop/Internship Programs

Peter Sauer
University of Illinois
A Power Engineering Curriculum for the 21st Century

Prabha Kundur
Power Tech
Industry/University Research Collaboration

Paul Nauert
Ameren Services
Industry/University Interaction

Lowell Brothers
Southern Company
Industry/University Interaction

Power System Basics for Business Professionals Short Course

This course will be offered again at the PES General Meeting in Toronto in July 2003. The course material is being summarized in a series of articles in IEEE Power & Energy Magazine.

Goal II. Continue to implement new meetings structure

New Power Systems Conference and Exposition

The new Power Systems Conference and Exposition has been scheduled for October 10-14, 2004 at the Grand Hyatt Hotel in New York.

CIGRE-PES Policy for Cooperation

One action being taken under the CIGRE-PES alliance is the conduct of a conference on the subject “Quality and Security of Electric Power Delivery Systems” in Montreal October 6-10, 2003. The call for papers has been issued and the number of papers submitted has exceeded expectations.

Capturing Panel Session Presentations

A policy has been developed to capture panel session presentations for posting on the PES web site. The presentations will supplement the Panel Session Summaries submitted well before the meeting and published in the proceedings for the meeting. A limited number of presentations from

the panel sessions given at the Summer Meeting in Chicago in July 2002 will be posted on the PES web site. Copies of all panel session presentations given at the General Meeting in Toronto in July 2003 in either Microsoft PowerPoint or Adobe Acrobat format will be required.

Improving Paper Submissions

Authors of outstanding papers at conferences that are held under PES technical co-sponsorship are encouraged to upgrade their papers and submit to PES Transactions for review. Such papers will receive somewhat streamlined reviews for Transactions paper status. The technical chairs of such conferences have encouraged such a practice. As a result, PES has received improved versions of ten papers that were presented at the Med Power Conference that was held in Athens, Greece in November 2002.

Goal III. Increase membership among Graduates of the Last Decade (GOLD) and emerging industry segments

Graduates of Last Decade (GOLD) Outreach at General Meeting in Toronto in July 2003

An outreach to graduates of the last decade who are not currently PES members will be held during the PES General Meeting in Toronto in July 2003. For further information contact Barney Speckman, PES Vice President Membership/Chapters Activities (b.speckman@ieee.org).

To identify potential PES members in the emerging industry segments, the IEEE list of Technical Interest Profile (TIP) categories was obtained. Utilizing the Emerging Technologies areas developed by the Emerging Technologies Coordinating Committee at the 2002 Summer Meeting in Chicago, up to ten TIP categories were selected that closely match the Emerging Technologies areas. Those TIP categories were provided to the PES Executive Office to be cross-referenced against the IEEE / non-PES Members database to determine which members have selected one or more of the target TIP categories. A direct e-mail or regular mail solicitation will be drafted and sent to those targeted members.

Goal IV. Develop a new vision for PES' role in the development of standards and a strategy for implementation

Fast Track Standards

Three technical standards have been targeted for "fast track" handling. These standards are sponsored by the Substations, Transformers, and Transmission and Distribution Committees. The Substations Committee's fast track standard was approved in March 2003, requiring only ten months from beginning of writing to approval.

Goal V. Develop a realistic balanced budget for 2004

2004 Balanced Budget

The Finance Committee, Executive Committee and Governing Board have held many budget deliberations with the sincere desire to produce a realistic balanced budget for 2004, in spite of the higher IEEE infrastructure charges PES is now required to pay. The Executive Committee

made excellent progress in Orlando resulting in a 2004 budget with a small surplus, but more work will be required as the IEEE charges for 2004 are finalized later this year.

CIGRE Report

Cease

The 2003 Colloquium will be held in Sydney, Australia September 28 to October 3, 2003. The preferential subjects for the 2003 Colloquium are:

1. Automation of New and Existing Substations
Special Reporter: Walter Baass (Switzerland)
The US has 1 paper in this session
2. Fault and Disturbance Data Analysis
Special Reporter: Mladen Kezunovic (USA)
The US has 5 papers in this session
3. Modern Distance Protection Functions and Applications
Special Reporter: Demetrious Tziouvaras (USA)
The Us has 2 papers in this session

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

The 2004 General Session will be held in Paris as normal. The US has submitted 4 papers for consideration for the conference. In the past we have been able to have 2 papers included in the conference. The preferential subjects are as follows:-

PS1

Use and Benefits of Information Technology (IT) in Substation Automation, Protection and Local Control.

- Use and Benefits in monitoring, operational planning, maintenance planning, asset management
- Quality of information: security, accuracy/validity, contemporariness, speed of acquisition
- Use and experiences of internet/intranet and WEB applications in Protection and Substation Automation
- Standardization issues for Substation Automation, Protection and Control: present situation and experiences, expectations and limits, IEC 61850 perspectives

PS2

The needs for software aids/tools in Protection Management and Engineering: application, databases, testing/certification.

- Single entry databases for multi-user access, user interfaces, links with other bases
- Tools for protection settings and interaction with power system tools
- Tools for applying settings and for conjunctive operation of test equipment
- Documentation tools for life time management of protection equipment

The 2005 Colloquium will be held in Calgary, Canada. More details will be provided later.

There will be a joint CIGRE/IEEE-PES International Symposium titled "Quality and Security of Electric Power Delivery Systems" held in Montreal, Canada October 7-10, 2003. One of the topics is "Impact Of Protective Device Practices On System Quality, Reliability And Security.

Also there is a need for a member for CIGRE WG34.10 Protection of Series compensated lines & series capacitor banks. Anyone interested please contact me. The US member of WG B5-18: Guidelines for specification and evaluation of substation automation systems has indicated his desire to become a corresponding member. Any one interested in becoming a member of WG B5-18 please contact me.

EPRI Report

Burger

IEC Report

Udren

TC 95 - Measuring Relays

The TC 95 USNC Technical Advisory Group has no standards projects to review for vote in this cycle, but here are updates on standards projects we have previously reported:

- 60255-3 Dependent time (inverse time-overcurrent) relays – new Convenor to be named to pick up and complete the work. Can the US find one? Two obvious US candidates not available.
- 60255-22-1 1 MHz burst transient test – Awaiting issue of Final Draft International Standard (FDIS)
- 60255-22-6 EMC Requirements listing – Awaiting FDIS
- 60255-22-7 Power frequency immunity – *FDIS approved*; standard to be published.
- 60255-27 Safety Requirements – awaiting new committee draft. PSRC seeks and needs UL involvement for US commenting – discussed at length in prior reports.
- A number of the 60255-22-X EMC standards will be coming up for maintenance review. The same WG 02 will be dealing with them – *no update on this review*.
- IEC Chapter 447, Measuring Relays Dictionary, is to be restarted. Jack Chadwick would like to participate, but we need support for his participation.
- An ad hoc WG is set up to look at the state of and need for TC 95 functional standards. Some possible suggestions:
 - ◊ IEC Synchrophasor Standard – Convenor (Ken Martin availability TBD)
 - ◊ Some relay performance standards related to power quality – parallel to 61850 activity on this topic.
 - ◊ PSRC application guides are not suitable for standards, but might contain elements that could logically be standardized.

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 take part in this work, which is merging with the EPRI UCA substation communications design. Status of 61850 sections:

- 9-2 unidirectional ethernet process sampled data link – FDIS approved as standard.

- 7-3 communications structure – common data classes – FDIS approved as standard.
- Voting in process for:
 - ◊ Part 9-2, standard communications services mapping for process bus application
 - ◊ Part 7-4, logical node and data object addressing
 - ◊ Part 6, configuration description language
 - ◊ Part 2, Glossary.
- There is a new work item proposal for power quality additions to 7-3 and 7-4, led by Alex Apostolov.

Proposal for new Technical Committee TC8 on System Aspects for Electrical Energy Supply

This formation of a new technical committee holds the potential for significant realignment of activities in all other TCs developing power systems standards, including TC 95 (measuring relays), TC 57 (teleprotection and control), TC 17 (power switchgear), TC 65 (electrical environment), and many others.

Reading the list of proposed topics of standardization raises another prospect – the possibility that IEC will eventually develop standards for performance in many new areas of power system operation. For example, power quality standards associated with tariff classes, or absolute levels, which could impose dramatic new requirements on design of power systems and the components from which they are built. Performance standards could mandate changes in what relaying methods are acceptable for what portions of the system, performance of circuit breakers, control systems for wide area disturbances, and much more. Review the list. We will again face the challenge of participation, with unwillingness of US employers, standards bodies, or the government to fund individuals.

Standard Coordinators Report

Sachdev

The Standards Coordinator, Mohindar Sachdev, met with the Chairs of the Working Groups writing and revising standards documents at 8:00 AM / 9:45 AM on May 20, 2003 in Salon F room, North Raleigh Hilton Hotel, Raleigh, NC.

The status of PARs, Standards and Guides, were reviewed at the meeting. The status of the PARs is summarized in this report. The actions to be taken for keeping up-to-date the approval of the PARs and for keeping live the Standards and Guides are identified. A summary of the specific approvals received, since the January 2003 meeting of the PSRC, are identified as well.

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

<http://standards.ieee.org/>

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

| Information on | Web site address |
|--|---|
| PAR application, extension and other forms | http://www.standards.ieee.org/guides/par/ |
| Style manual | http://www.standards.ieee.org/resources/glance_at_writing_new.html |
| Template | http://www.standards.ieee.org/resources/glance_at_writing_new.html |

| | |
|-------------------------|---|
| Status of standards etc | http://www.standards.ieee.org/db/status/status.txt |
| NesCom activities | http://www.standards.ieee.org/board/nes/ |
| RevCom activities | http://www.standards.ieee.org/board/rev/ |
| SA Operations Manual | http://www.standards.ieee.org/sa/sa-view.html |
| SA Bylaws | http://www.standards.ieee.org/sa/sa-view.html |
| SB Operations Manual | http://www.standards.ieee.org/board/ |
| SB Bylaws | http://www.standards.ieee.org/board/ |

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

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

For more information on this policy, visit

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

Standards Coordination Effort

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

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

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

STANDARDS ACTIVITIES SINCE THE January 2003 MEETING OF THE PSRC

The status of the standards approval activities, which have taken place since the January 2003 meeting of the PSRC, is as follows.

1. Standards Published

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

2. Standards submitted for approval

| | |
|----------|---|
| PC37.106 | Guide for Abnormal Frequency Protection for Power Generating Plants |
| PC37.115 | Standard for Test Method for Use in the Evaluation of Message Communications Between Intelligent Electronic Devices in an Integrated Substation Protection, Control and Data Acquisition System |

3. Standards balloted before the January 2003 meeting but not submitted for approval so far

- C37.92 Standard for Low Energy Analog Signal Inputs to Protective Relays
- PC37.114 Guide for Determining Fault Location on AC Transmission and Distribution Lines

4. Standards balloted since the January 2003 meeting

- PC37.90 Standard for Relays and Relay Systems Associated with Electric Power Apparatus
- PC37.103 Guide for Differential and Polarizing Circuit Testing

5. Standards being balloted

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

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

6. New PARs applied for

None

7. PAR Revision applied for

- PC37.230 Guide for Protective Relay Applications to Distribution Lines

8. PAR Extensions applied for

- PC37.105 Standard for Qualifying Class 1E Protective Relays and Auxiliaries for Nuclear Power Generating Stations
- PC37.109 Guide for the Protection of Shunt Reactors

9. PARs approved by NesCom

None

10. PAR extension approved by NesCom

None

11. PARs expiring at the end of 2003

- PC37.92 Standard for Low Energy Analog Signal Inputs to Protective Relays
- PC37.114 Guide for Determining Fault Location on AC Transmission and Distribution Lines
- PC37.116 Guide For Protective Relay Application To Transmission-Line Series Capacitor Banks

SUBMITTAL DEADLINES & STANDARDS BOARD MEETING SCHEDULE

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

Substation Committee Report

John Tengdin

IEEE 1613 Standard Environmental and Testing Requirements for Communications Networking Devices in Electric Power Substations was approved by the IEEE SA board on March 18, 2003. This is for applications not involving protective relaying. It was built on PC37.90 (the version now being balloted by PSRC), C37.90.1-2001, C37.90.2-2001 with the test method now being incorporated by PSRC I-18, and on C37.90.3-2002 with minor changes to reflect non-relaying applications. The PDF version is scheduled to be available in mid July, and the paper version in mid August. Work on this document began in Substations C2TF1 on January 28, 2002 at the Winter Power Meeting in New York. The twenty-two member task force met by Email and at face to face meetings at the Substations Committee Annual Meeting in May, the Summer Power Meeting in July, and the joint meeting with PSRC in September. Draft 6 of the document was balloted by Email in November. Of the 102 in the balloting pool, 90 responded (88%) and with a 95% affirmative vote. That draft did not include the words "and Testing" in the title or text, which prompted one negative ballot and one comment in an Affirmative ballot. A recirculation ballot, making that change, took place in December 2002 with a 90% response and 95% affirmative, eleven months after the first meeting of the task force.

Work continues in updating C37.1 the "SCADA standard." The new title is "Standard for SCADA and Automation Systems".

Task Force C3TF1 is at work on a recommended practice for networked communications in a substation. This is an extension of IEEE 1379 Recommended Practice for RTU to IED Communications which was based on serial links.

A new task force was formed to consider all issues regarding the protection of data in transit and data at rest. Included is the matter of protecting dial-up maintenance ports in RTUs and other IEDs (including relays). These ports today are often protected only by simple passwords, which are easily hackable. Further, the utilities report that the passwords are seldom changed. The task force will also look at the issues of protecting SCADA communication links, building on the work now underway at the Gas Technology Institute for the American Gas Association. PSRC members are invited to participate as regular or corresponding members. The next meeting will be during the PES Meeting in Toronto.

Work is now complete on the revised version of the Automation Tutorial. It will be presented at the IEEE T&D Expo in Dallas in September.

OLD BUSINESS

None

NEW BUSINESS

None

FUTURE MEETINGS

| | | |
|------------------------|--------------|---------------------------------------|
| September 22-25, 2003: | Madison, WI | Madison Concourse and Governor's Club |
| January 12-15, 2004 | Tampa, FL | Wyndham Westshore |
| May 17-20, 2004 | St. Louis | Hyatt Regency |
| September, 2004 | Portland, OR | |

B: ADVISORY COMMITTEE

Chair: R.P. Taylor

Vice Chair: P. B. Winston

B1: Awards and Technical Paper Recognition

Chair: R. Hedding

Vice Chair T. Seegers

At the Main Committee meeting, the following awards and certificates were presented:

George Nail was presented with the 2002 Distinguished Service Award.

The following Subcommittee Chairs were presented with certificates of appreciation

- Jeff Gilbert; Relaying Practices
- Bob Pettigrew; Rotating Machinery
- Ron Westfall; Line Protection
- Jim Thorp; Systems Protection
- Mark Simon; Relaying Communications

The following past working groups chairs were presented with certificates of appreciation for having successfully completed their working group assignments.

- Bill Strang; Automatic Reclosing
- Pat Carroll; Effectiveness of Distribution Protection
- Tony Seegers; Transmission Line Protection systems Loadability
- Marty Yalla; Application of Substation Peer-to-Peer Communications
- Gary Michels; DSO Interface Standard
- Jeff Gilbert; Revision of C37.90.1 Surge Withstand Capability Testing for Protective Relays
- Ed Krizauskas; Survey of Relay Test Practices
- Larry Smith; Improved Analysis of Substation Data
- Mohamed Ibrahim; Protection of Phase Angle Regulating Transformers
- Stan Zocholl; AC Motor Protection Tutorial
- Charlie Sufana; Revision of Guide for Protection of Network Transformers
- Pratap Mysore; Shunt Capacitor Bank Protection Tutorial
- Miroslav Begovic; Wide Area Relaying

The following individuals were also recognized:

- Jim Huddleston III received a "thanks" award for all the events he's captured throughout all his decades of picture taking.
- Kevin Stephan received a certificate of appreciation for continuing to attend meetings even though his company stopped supporting his attendance.

- Al Darlington received a "Sleeper" certificate. In addition, since the January meeting, the Awards and Recognition WG has made nominations for the Baker, and Fink, awards to the PES.

B2: Fellows Awards

Chair: J.S. Thorp

The Fellows committee met and discussed the Fellows nomination cycle just completed. Some felt they would like more time to evaluate candidates. It was purposed that any PSRC nomination for fellow be sent to the PSRC Fellows Chair at the same time that a copy is sent to IEEE for early distribution to the PSRC Fellows. It was agreed that Jim Thorp would report that in the main meeting and in the minutes. In addition the information from Stan Horowitz about filling out the B3 form would be included in the minutes.

Fellow Nomination Assistance from Stan Horowitz

The following information may be useful to the nominators of IEEE Fellows. This is the result of several years at the PES Fellows Committee and reflects some of the experience in evaluating the nominees.

The first page, items 1,2,3, and 5 is factual and not critical to the evaluation. Item 4 is the proposed citation and must agree with the Technical Committee giving the nominee the most support. Usually there are not two or more Technical Committees so it is not a problem. Do not use excessive adjectives. Be concise.

Page 2, paragraph A, Item 6, Individual Contributions is VERY Important. This constitutes about 1/3 of the total considerations. Some of us assigned a numerical value to each of the sections based on 100 for all of them. Unofficial, of course, and not exact, but it helps the reviewer differentiate between close nominees. This section was worth 35 points. It is important to emphasize multiple contributions, multiple transactions and multiple societies. Paragraph B is important but it can be brief. Paragraph C should add something different to show breadth of expertise and experience.

Page 3, Item 7, Evidence of Technical Accomplishment, is about 20 on this numerical scale. Important and must be library publications, refereed papers, and, of course, any patents. Variety is helpful. Three major papers with synopsis is mandatory. Give as many other publications as are allowed.

Page 4, Item 8, 9, IEEE and Non IEEE Activities, Awards, Offices, etc. Important. Worth about 15 points. Fill it up, if possible. Show diversity, National. Local and International activity and recognition helps.

Page 4, Item 10 references. VERY Important . 20 or more points. Use at least 7 references although a minimum of 5 is required. This is the first item read by the reviewers at the IEEE level and sets the tone for the rest of his/her evaluation. Make absolutely sure that there are no bad or luke-warm references. Variety is important. Do not use more than 2 local references, i.e. same firm or closely allied with nominee. Make sure the references are sent in on time.

Page 4, Item 11 , Endorsement by IEEE Section, PES Committee, etc. Not required but very helpful.

B3: Membership Committee
Chair: M.J. Swanson

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

No activity to report

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

B9: PSRC Web Site
Chair: Bill Lowe

The website email addresses have been made password protected. The password is available when trying to access the addresses, but it is expected that this protection will be an impediment to machine readers of email addresses.

C: SYSTEM PROTECTION SUBCOMMITTEE

Chair: D. Novosel

Vice Chair: T. Seegers

The system protection Subcommittee met on May 21, 2003, with 46 people attending including 18 members.

Chair Novosel and vice-chair Seegers again praised working group chairmen on the outstanding progress made toward completing their assignments.

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

Note that two task forces met this time and two new working groups were formed. Their reports are given below under **C3 Trends and Issues With Relay Settings** and **C7 Multi-Station and System Testing**.

Working Group Reports:

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

C2 met Wednesday May 21, 2003 in Raleigh, NC with 11 members and 16 guests present. The total number of members is 26.

TW reviewed the open action items from last meeting.

Actions Complete from last meeting:

- Markus Korttesluoma provided a small write up on Section 3.4 and 3.5 (IEC and EN PQ Standards).
- John Boyle provided revisions to section 5 as a result of the group's comments.

Eric Udren informed the group that TC 57 has a New Work Item Proposal to develop Logical Nodes (IEC 61850-7-3,4) as part of the Working 10-12 (Alex Apostolov is the lead). Eric agreed to forward the proposal.

Jim Burke informed the group that there is a new IEEE T&D WG on Power Quality. He will also forward a recent paper on PQ trends.

Tony Seegers suggested sending the paper out in ballot format to motivate people to review the paper.

Eric Udren stated that a possible extension or follow-up to the paper to provide guideline or standard for PQ settings to coordinate power system protection. Jim Burke commented that it is really difficult to coordinate between relays and fuses based on the 3-5-cycle breaker operation.

Action Items:

1. Assignments Reviews assignments due July 31, 2003
Section 6 – Roger Hedding
Section 3.4 and 3.5 – Inmaculada Zamora
All sections – all members
2. Additional writing assignments due July 31, 2003
Section 3.6.3 Application of ITIC Curve for Distribution Networks Patrick Carroll
Section 3.6.1 Writing assignment on issues of PQ monitoring and relays Steve Kunsman
Section 3.6.4 and 3.6.5 How Application on the IEC and EN standards affects the protective relaying - Inmaculada Zamora
Summary/Recommendation paragraph on next steps after the report - Eric Udren
3. Jim Burke to distribute a recently published paper on PQ in word format. Sections maybe used for inclusion in the report.
4. Incomplete writing assignments due no later than July 31, 2003
All authors to review section and to reduce figure size (e.g. jpg format) all
5. Update and provide comments on bibliography - Sidhu
6. TW to confirm the latest document is posted on the IEEE website.
7. TW to send out a ballot document requesting Working Group members for comments and approval.

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

C3: Trends and Issues with Relay Settings

Chair: Steve Kunsman

Vice Chair: to be determined

CTF1 met Wednesday May 21, 2003 in Raleigh, NC with 26 participants.

Agenda for May 21, 2003:

- Introduction
- Overview of Objectives and Problem Statement
- Configuration Management (Software Development analogy)
- Experience from the utility members
- Firmware version control
- Protection Settings archives
- Open Discussion on the Scope and Content of this task force
- Next steps

Objective:

- 1) To discuss utility issues with complexity of relay settings, multiple setting groups, documentation handling, database consistency, relay records, etc.
- 2) Make a recommendation to the sub-committee to form a working group.

Problem Statement discussed:

The use of modern protection devices has increased complexity and ability to maintain system integrity due to:

- amount of integrated functions
- multi vendor installations
- different firmware versions
- different configuration tools
- number of different substation configurations

Upcoming standards, like IEC 61850, are addressing the compatibility issue, however, utility install base of different technologies protection device makes the task of managing the system infrastructure extremely difficult.

Open Discussion:

The issue of Relay Settings throughout the infrastructure is the single largest issue (Frank Plumtre).

Other discussion points included:

- Relay Firmware version control
- Relay compatibility to settings files
- Reference comparison as to settings installed versus master archive (electronic compare/difference software)
- Documentation of multiple settings
- Issues related to providing relay settings to non-relay engineers
- Ability/difficulty to locate bad settings in the install base when a problem is found (searchable settings database)
- Ability to develop logic diagrams to better understand the device functionality
- Relay maintenance records including periodic calibration
- Commissioning records (original baseline of settings)
- Firmware quality control
- Settings archiving/retrieving (how do you know what the latest settings should be?)
- Setting file format differences (different vendor formats and tools, like Aspen, formats)

It was also noted that coordination will be required with other working groups (I3 Relay Firmware Quality Assurance and H3 Common Format for IED Configuration Data)

Recommendation:

This discussion topic was highly supported with a unanimous decision to recommend formation of a C-working group to the subcommittee. Fourteen (14) of the participants have indicated interest in becoming WG members.

Proposed Assignment:

This proposed working group will prepare a report on “**Processes, Issues, Trends and Quality Control of Relay Settings.**”

The working group will include:

- Relay Settings and Multiple Settings Groups
- Installation and Commissioning Records
- Maintenance Records including periodic review
- Control Logic Documentation
- Device Documentation including Test and Calibration Records
- Documentation of the Relay Setting Process

Both Utility and Manufacturer will benefit from this proposed WG. Utilities will gain practical knowledge of peer utility experiences and will improve quality control and system reliability. Manufacturers will gain knowledge of operational issues and can improve future product developments.

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

C4: Wide Area Protection and Emergency Control

Chair: M. Begovic

Vice Chair: D. Novosel

The WG met in a single session with 12 members and 13 guests in attendance. The following account of the discussion reflects the decisions made on the assignments (partitioned among the papers previously agreed to be written):

- **(Paper 1):** Summary paper, an overview of the entire report (coordinator: M. Begovic, contributor: D. Novosel, S. Horowitz, D. Karlsson, M. Venkata, G. Michel, J. DeLaRee)
- The present draft is mostly a condensed compilation of the C-6 report, which needs to be further compressed: all sections will be shortened as appropriate. The following sections will be significantly reduced, and the reduced content transferred to the other papers: section on hidden failures (to be placed in paper 4); section on system protection schemes (SPS) and emergency control (to be placed in paper 4); section on technology infrastructure (PMU and communications – to be placed in paper 2). ACTION ITEMS:
- Miroslav: will do most of the editing and proofreading, will correct references and add Daniel Karlsson’s contribution on EdF installation, originally intended for paper 4, to the section on existing installations. Will also correct the list of authors.
- Damir: will do the proofreading.
- Gary Michel: will contribute a subsection on fast acting load shedding in Florida system (for the section on existing installations).
- Mani: will provide additional material on SPS.
- Jaime: will add a short account of recent results in hidden failure analysis.

- **(Paper 2)** On Technology Issues and Infrastructure in WAPEC, (coordinator: A. Phadke, contributors: G. Michel, C. Henville, M. Adamiak, Ken Martin, A. Apostolov, M. Begovic)
- The manuscript has been written and the contributors have done a very thorough job, covering both the C-6 report and providing interesting additional material. Charlie Henville has done one round of editing and the content is getting close to final form. ACTION ITEMS:
 - Gary Michel: will provide three additional references on communication issues.
 - Alex Apostolov: will provide a brief section on digital recording of wide area events.
 - Ken Martin: will add a Figure illustrating transient phasor response to his part.
 - Ken and Mark Adamiak: will write a brief section on latency times and issues in point-to-point communications using fiber optic links.
 - Miroslav: will add material to the section on voltage stability and a few additional references.
 - Charlie Henville: will provide additional text to support the Figure 4.
 - Arun Phadke: will edit the entire draft and references for accuracy (possibly considering merging Figures 1 and 2 into a single Figure, among other things).
- **(Paper 3)** On Analytical Issues and Implementation of WAPEC, (coordinator: J. Thorp, contributors: M. Ibrahim, K. Mustaphi, Mike Agudo, Ken Martin, Jim Cai). It was decided that the work on this paper be aborted, partly due to the concerns about overlapping content with the other three papers. Jim Thorp's contribution, originally intended for paper #2, will be relocated to paper #4.
- **(Paper 4)** On Future Trends and Issues in WAPEC, (coordinators: D. Karlsson, and S. Horowitz, contributors: G. Michel, K. Narendra, Jim Cai, M. Venkata, M. Begovic, J. DeLaRee)
- The work on this paper has advanced and rough draft has been favorably reviewed by the Working group. Jim Cai has done one round of editing. ACTION ITEMS:
 - Miroslav, Mani and Jim Cai will add material to the section on heuristic methods to provide additional overview of analytical methods in WAPEC.
 - Stan: will edit the entire manuscript, reduce the number of Figures (while keeping the important Figures contributed by Daniel Karlsson), add Jim Thorp's contribution to the manuscript, and add a section on hidden failures.
 - Jaime: will provide a section on hidden failures.
 - Jim Cai: will re-draw Figure 1 and review associated formulae for accuracy.
- Review members: Dr. Chul-Hwan Kim, Bill Kennedy and Rick Cornelison will review all three manuscripts for content and grammar.
- Current draft and minutes of meeting (assignments) will be distributed by the end of May. All contributions should be done by the end of July (those due to Arun Phadke are due end of June). Final editing by the authors to be done in August, and the three final drafts should be reviewed by the entire Working group by the September meeting.

- Damir proposed, and it was agreed that the Working Group do the internal balloting on the papers at the September meeting.
- Miroslav proposed creation of a Task Force, or a Working Group to do the Overview of SPS Installations in the world. Last such effort, undertaken under the auspices of IEEE and CIGRE, was done 10 years ago, and the SPS proliferation since then would make it a worthwhile task to re-review the current situation. It was decided to discuss the proposal at the Subcommittee meeting.

Expected completion date should be September 2003.

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

C5: Deployment and Use of Disturbance Recorders

Chair: B. Jackson

Vice Chair: W.M. Strang

Working Group C5 Met Tuesday afternoon May 20 with 12 members and 13 guests.

Chairman reviewed the purpose of the working group and opened discussion on the outline. The group reviewed additions to the outline and comments on issues not covered including: NERC standards, data security, and data sample rates.

Assignments were made to various sections of the outline.

The group had two short presentations. The first was on relay fault events and the display of wave forms by retrieval of data for a standard *DFR* event and a raw unfiltered *relay* event. Comparison was made on the differences between the two displays.

The second presentation showed a 90 second power swing event.

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

C7: Multi-Station and System Testing

Chair: V. Madani

Vice Chair: to be determined

Group met as CTF7 with 16 in attendance.

Benefits and Importance of tests

- Value to end-users
- Different users have different practices and applications
- More system testing would help in troubleshooting
- Traditional testing may not prove the overall system performance
- Discuss Maintenance benefits
- Value of synchronized end-to-end tests for fine-tuning of system testing
- Getting the glitches out of protection and control system
- Sensitivity tests (More of lab and modeling tests)

Proposal by the TF members and participants to form a WG

Assignment:

The Working Group will develop a guideline for System Application Test Requirements, Scope and level of tests, and Benefits for Overall Protective Schemes. This assignment includes SPSs, end-to-end testing, data collection requirements as well as the test procedure definitions.

WG – will develop the methods, extent, and types of tests and types of system tests at various voltage levels or application

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

C8: Phasor-Based Models for Analyzing Relay Performance

Chair: M. Meisinger

Vice Chair: M. S. Sachdev

The Working Group met at 11:00 AM on May 20, 2003 in Salon C Room, North Raleigh Hilton Hotel, Raleigh, NC. Seven members and six guests were present.

Mohindar Sachdev reported that he had previously distributed by Email Draft 8 of the paper and had asked for comments within three weeks. At the expiry of this period, the comments received from the members will be incorporated and the paper would be balloted among the members of the WG and the SC before submitting the paper to the Officers of the PSRC for approval.

After some discussion, the meeting was adjourned.

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

C9: Underfrequency Load Shedding and Restoration

Chair: A. Apostolov

Vice Chair: K. Behrendt

The working group met on Tuesday, May 20th, with 12 members and 18 guests present. Draft 2 of the document was circulated for comments prior to this meeting. Any additional comments received by the end of May will be incorporated into Draft 3, which will be sent to the working group and Subcommittee by June 15th for informal survey. Draft 3 survey responses should be returned by July 15th with comments. Any negative survey responses and significant comments will be resolved and incorporated in the next draft document by August 30th.

The working group discussed comments received about Draft 2. Damir Novosel discussed the differences between two presentations in the document on frequency-rate-of-change. Al Darlington provided dialogue about load shedding and abnormal frequency operation in the state of Florida. Other reports of abnormal frequency operation were solicited to supplement the reports already included in the document. Rich Hunt, Benton Vandiver, and John Ferraro volunteered to provide an overall review of Draft 3. Alex Apostolov and Vahid Mandani volunteered to write about monitoring and recording requirements for abnormal frequency operation.

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

C10: Effects on Changing Utility Environment on Protective Relaying

Chair: J. DeLa Re
Vice Chair: R. Hunt

The working met 9:30 AM, Wednesday, May 21, 2003 in Ballroom 5 with 7 members and 17 guests. The chairman distributed copies of the last meeting minutes and version 1.1 of the WG report.

Discussion centered on comments and modifications to the existing document.

Assignments and Action Items

- Chair and Co-Chair to rewrite introduction and to compile comments and discussions from WG members. Due date: 06/06/03
- Members and interested guest to review and comment the document. Due date: 07/06/03
- Second draft of the document to include new contributions, comments and changes to be distributed by chair and co-chair. The new document will include a front page in the form of a voting ballot. The purpose of this ballot is to initiate final review of the latest draft to complete the WG task at the September meeting. Due Date 07/30/03
- After the completion of the report, the working group will discuss the most appropriate way to present the result, conference paper, publication, etc.

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

C11: Protection Issues During System Restoration

Chair: T. Sidhu
Vice Chair: D. Tziouvaras

The working group met on May 20, 2003 with 6 members and 13 guests in attendance. The latest draft of the paper was discussed at the meeting. The paper is more than 90% complete. Three assignments to Simon Chano, Bill Kennedy, and Tarlochan Sidhu were made to complete the paper. The assignments are due to the chairman by June 20, 2003. An editorial team consisting of Pratap Mysore, Bill Kennedy, Demetrios Tziouvaras, and Tarlochan Sidhu was established. The paper will be sent to wg members by the end of July for their comments.

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

Liaison Reports:

- | | |
|--|--------------------|
| 1. IEEE PES Power System Stability Controls SC No report | Gary Michel |
| 2. NERC EC No report | Winston |
| 3. PES Power Systems Analysis, Computing, & Economics | Mal Swanson |

Other than the papers given and listed below, there are no activities to report that involve protective relaying.

Question: Does our Subcommittee want to know about papers that were given by members of this PES Committee or reviewed by the Committee? If by happenstance you say, yes, the papers given in the last 5 months involving protection are listed below:

1. J. Jung et al including A. Phadke, "Wide Area Protection and Control Using a Strategic Power Infrastructure Defense Systems", CIGRE General Conference, August 2002, Paris, FR.
2. W. R. Lachs, "New Horizon for System Protection Systems Schemes", February 2003 IEEE Transactions (Abstract on PES website).
3. J. A. Hossack et al, "A Multi-Agent Architecture for Protection Engineering Diagnostic Assistance" May 2003 IEEE Transactions.
4. E. M. Davidson et al, "A Tool-Set for Applying Model-Based Reasoning Techniques to Diagnostics for Power Systems Protection", May 2003 IEEE Transactions.

New Business

As a result of discussions, a new task force was formed to discuss the need for possible subcommittee involvement as follows:

CTF6 Support the Emphasis of Relay Engineering in Power Engineering Curriculum and Promote Relaying in General

Task Force Chair: Mani Venkata

Formed to discuss ways to support the encouragement of new engineers to choose emphasis on relay engineering as their career choice. This TF will also address how to better promote relaying in our industry and beyond. Mal Swanson will coordinate his activities in this area with Mani Venkata.

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

It is also accepted to work on forming a new Working Group to do the Overview of SPS Installations in the world. This activity will be done as a part of C4 WG.

D: LINE PROTECTION SUBCOMMITTEE

Chair: M. Carpenter

Vice Chair: Roger Hedding

D1: Effectiveness of Distribution Protection

Chair: P. Carroll

Vice Chair: C. Fink

Did not meet. Working group disbanded. Survey on website. Possible IEEE report being pursued..

D2: Fault Locating PC 37.114/D7 Guide for Determining the Fault Location on Transmission And Distribution Lines

Chair: Karl Zimmerman

Vice Chair: Damir Novosel

Did not meet. Still 3 unresolved negative ballots. Hope to be done and recirculated by September meeting. No meeting planned in September.

D3: Impact of Distributed Resources on Distribution Relay Protection

Chair: Tony Seegers

Vice Chair: Ken Birt

Working group D3 met on Tuesday, May 20, 2003. 9 members and 15 guests attended the meeting.

Bob Pettigrew gave a presentation detailing a protection study made for the addition of a distributed generator to a distribution system. Thanks are extended to Don Wardlow & wg 117 for graciously swapping meeting rooms to allow for use of the projector for this presentation.

Draft 2.0 of the paper was distributed. The remaining sections of the paper were reassigned to be written with the goal of beginning a wg review of the paper before September. It is now planned to complete our assignment by early 2004.

All assignments should be returned by June 13.

The following assignments were made:

Types of distributed resources – Mani Venkata.

Loss of primary source to substation power transformer - Frank Plumptre.

Direct connected generation - Pratap Mysore.

Sensitivity and clearing times – Bob Pettigrew.

Breaker closing – Frank Plumptre.

Conclusion – Charlie Sufana

Bibliography – Tarlochan Sidhu

For the Sept meeting, schedule a single session with room for 30, no projector

D4: Automatic Reclosing

Chair: W.M. Strang

Vice Chair: M. Swanson

Did not meet.

Guide published April 2003.

Bill Strang presented at Georgia Tech and Texas A&M Relay Conferences. At that time hard copies of guide were not available.

Guide available through IEEE for \$96.00 per copy. PSRC staff is negotiating with IEEE for an acceptable price for hardcopies. Printed and PDF copies are available.

Working group is finished assignment.

Vote to disband working group.

D5: Guide for Protective Relay Applications to Distribution Lines

Chair: W. P. Waudby

Vice Chair: R. Crellin

The working group met for a double session with 15 members and 22 guests. 6 new members were added.

Moh Sachdev working with IEEE to get the words North American removed from the title. A new PAR will be submitted.

The working group discussed the remaining assignments to clauses 5,6,& 7. Suggestions were made for revisions.

We are in a position to discuss Clause 8 during the September meeting. This will complete the work required for draft 1 of the document.

For September meeting : double session, 40 people, no a/v.

D6: Out of Step Considerations on Transmission Lines

Chair: M. McDonald

Vice Chair: Mukesh Nagpal

Met in a single session with 10 members and 17 guests.

A general discussion of the writing assignments took place and previously unassigned sections of the document were assigned.

Two detailed contributions were reviewed :

- Out of Step Detection Methods
- Estimating Requirements for Power Swing Detection

My goal is to have a first draft completed by the next meeting.

Next meeting single session, 25 people, no A/V.

D7: Loss of AC Voltage Considerations

Chair: E. Price

Vice Chair: R. Patterson

Working group D7, Loss of Voltage Considerations, met on May 20, 2003 with 5 members and 7 guest. It is presumed the low attendance was due to conflicts in the schedule of many interesting groups. Gary Kobet and Art Buanno presented losses of voltage problems occurring on the TVA and First Energy systems, respectively. The first draft was reviewed and writing assignments were made [as assigned below], which are due July 31.

LOV options

Elmo Price, Art Buanno

| | |
|---|----------------|
| LOV effects on Measuring Units | Russ Patterson |
| Technology | Jim O'Brien |
| LOV logic | Gary Kobet |
| LOV affects on distance and directional sensing | Mike Jensen |

Next meeting require single session, 25 people, PC Projector.

D10: EMTP Reference Models for Transmission Line Relay Testing

Chair: K. Mustaphi

Vice Chair: T. Sidhu

The working group met on Wednesday, May 21, 2003 with 12 members and 4 guests. Draft 7 of the report handed out. All the write-ups are now complete. Some review was done at the meeting. Om Nayak will complete the node assignment to the model by June 1st. Ashok Gopalakrishnan will create an ATP file by June 30th. Adam Dysko will generate a table showing testing scenarios by July 31st. These assignments were agreed to by the members.

In a previous meeting a document showing Assignment, Scope, and Output was requested from the chairman by the members. This document was handed out at the meeting and agreed to by the members.

Next meeting 1 session, 25 members, no A/V.

New Business

Bill Feero discussed the new projects under P1547 . Three new guides are being worked on :

1547.1 Standard testing

1547.2 Application Guide

Bill suggested all who are interested to become involved in the review of these guides.

Potential working groups promoted by Rick Taylor. How to protect critical lines feeding critical loads. A task force DTF1 will be convened at the next meeting.

High Impedance Fault Activity

None

Motion to adjourn

H: RELAY COMMUNICATIONS SUBCOMMITTEE

Chair: K. J. Fodero

Vice Chair: A. P. Apostolov

H1: REVISION OF IEEE GUIDE FOR POWER LINE CARRIER APPLICATIONS

JOINT WORKING GROUP

Chair: B. Nelson

Vice Chairman: M. Simon

Established: 1995

Output: Clauses 9 and 10 for the Revision of IEEE 643. 643 will be produced by the PSCC

Expected Completion Date: 1999

No meeting.

H2: PROTECTION USING SPREAD SPECTRUM COMMUNICATIONS

Chairman: Ken Behrendt

Vice Chair: Bill Lowe

Output:

Established: 2001

Expected Completion Date: 2004

The H2 working group met in a single session on Tuesday, May 20, 2003 with 9 members and 13 guests in attendance. A draft copy of the working group report was distributed and discussed. The working group discussed several writing assignments that were added to the draft, and identified the need for a few more writing assignments. Several members volunteered to write about additional example Spread Spectrum Radio applications, Yagi antennae application, intrastation antennae "path engineering", non-US rules and regulations on Spread Spectrum radio application, and application of line current differential relaying using spread spectrum radio. The group requests permission to extend the deadline for our Web Report to May, 2004, to allow time to complete writing assignments and edit and organize the report. The chairman will send reminders to those who volunteered writing contributions. A revised draft document will be posted on the H2 web site as contributions are received. The next meeting will consist of a single session. A room for 40, with a projector screen and a power strip is needed.

H4: PC37.115, Standard test method for use in the evaluation of message communications between IEDs in an integrated substation protection, control and data acquisition systems.

Chair: D. Holstein

Vice Chair: Eric Udren

Established: 1997

Output: Standard

Expected Completion Date: 1999

Working Group H4 met on May 20, 2003 with eleven members and guests. C37.115 has been successfully balloted. An editor has been assigned, and Dennis Holstein is working with the editor to clean up some of the figures in the document. To date, there is no estimated publication date. Work was begun on the outline of the summary paper. Four of the guests volunteered to help in writing the paper. For the next meeting in September, we are requesting a single session for 20 people plus a computer projector and screen.

H5: Common Data Format for IEDs

Chair: L. Smith

Vice Chair:

Output: Recommended Practice
Expected Completion Date: 2005

Working group H5 met in three meetings – one each of the three working groups working on common data format for IEDs.

After the working group meetings and a discussion between the Chairman and Vice-Chairman of the Communications Subcommittee and Larry Smith, a decision was made to have Larry Smith as the Chairman of Working Group H5 with the responsibility to guide the work and ensure close coordination between the different groups working on common data formats H5-A, B, C and D.

H5-A: Common Format for IED Configuration Data

Chair: D. Weinbach

Vice Chair:

Output: Recommended Practice

Expected Completion Date: 2005

Alex discussed whether Larry Smith be chair, or 3 separate task forces under 1 working group. Alex, Ken, and Larry to discuss. Mladen recommended coordinating with the file name group, as well as the 3. Alex concurred. Alex explained some basic 61850 terminology:

Configuration = settings files (logic, values)

IEC1131 =Programmable logic standard representation. Does it meet our needs?

Bricks = logical nodes

Setting data must be extracted from relays for analysis

Part 6 of 61850 – substation configuration language.

Christoph was asked to discuss substation configuration language at next meeting? He is not available, but will try to recommend someone else.

Tim Shaw of Qualitrol has already done and <xml> implementation – Alex will try to arrange a presentation in Madison. Vendors can offer converter from proprietary settings file to standard format. It was agreed that the output of this group will be a Recommended practice. Ashok commented that it is a fact that relays are set with proprietary names, and the output of this group must take that fact into account

Christoph provided IEC 61850 draft documents to email to members for working group internal use only.

Next meeting, we will try to arrange presentations on IEC 61850, xml, etc.

Mladen expressed concern about applicability of 61850 configuration methods to non-ied information sources.

Veselin suggested a real-world example – Qualitrol guy

IEC-61850 parts 7.2, 7.3, 7.4 are published

Larry asked if entire devices are defined in 61850. answer is yes.

We have to create a recommended practice for creating xml configuration information for legacy devices.

Ashok suggested method of representing manufacturer specific names

Question was raised about benefits of xml

Christoph – file names not well addressed in 61850

Need to interface with file naming WG.

Possible presentations in September: Ashok – cape, Benton – rio, ??? – Relay, ??? – 61850

Concern was expressed about size of xml files

Jack – has anyone written the assignment for this working group.

Proposed assignment:

To investigate the applicability of 61850 substation configuration language for representing settings information of legacy devices.

H5-B: Common Format for IED Event Data

Chair: M. Adamiak

Vice Chair:

Output: Recommended Practice

Expected Completion Date: 2005

Working group H5-B met on May 21, 2003. The need for a common data format for event data reporting was discussed. It is required to enable the development of tools for distributed event reporting and analysis.

The working group will investigate the possible use of the reporting models defined in IEC 61850 and XML as the common file format for event report files.

Mark Adamiak agreed to be the Chairman of this working group.

H5-C: Common Format for IED Sampled Data

Chair: B. Vandiver

Vice Chair:

Output: Recommended Practice

Expected Completion Date: 2005

Working group H5-C met on May 21, 2003. The need for a more strict definition of the configuration file in COMTRADE was discussed. This will reduce the possibilities for misinterpretation of this data that leads to lack of interoperability between multiple vendors creating such file and COMTRADE viewers.

The working group will investigate the possible use of the logical nodes defined in IEC 61850 for modeling of disturbance recording functions and their XML format in the Substation Configuration Language (Part 6 of IEC 61850).

Benton Vandiver agreed to be the Chairman of this working group.

H6: APPLICATION OF SUBSTATION ETHERNET LAN COMMUNICATION FOR PROTECTION AND CONTROL

Chairman: John Burger

Vice Chairman: Charlie Sufana

Output: Special Report

Established: 1999

Expected Completion Date: 2003

The H6 Working Group (Application Considerations of UCA 2 for Substation Ethernet Local Area Network Communication for Protection and Control) met May 20, 2003, with 14 guests and 10 members. John Burger chaired the meeting. The minutes of the Phoenix meeting were approved. John also announced that the UCA User's Group was not having a full meeting on Thursday and Friday but was holding a TISSUES meeting.

Christoph Brunner and Steve Kunsman gave an update on the status of IEC-61850. Parts 7.2, 7.3, 7.4. and 9.1 have passed vote. The voting on part 7.1 has closed, was approved and waiting to be published. Part 10 is in Committee Draft (CD) and is currently the least developed.

Mladen Kezunovic asked if harmonization has been achieved as pointed out in page 7 and 8. Steve Kunsman explained what has been achieved to date. John Burger explained that UCA will still exist but will be rolled into IEC-61850. The UCA Users Group will continue to work with the IEC.

John Burger announced that the next UCA User's Group full meeting will be at the September 2003 IEEE PSRC meeting in Madison, Wisconsin. There will be a TISSUES meeting after May 2003 IEEE PSRC meeting.

Discussion of Draft 3 of the paper followed. A brief overview of the entire paper was completed. John Burger pointed out that the network management section needs more input and that he would like to see more applications.

Mladen Kezunovic asked about IEC-61970 and whether there was going to be any attempt to interface with that standard. This Working Group is confining its writing to the local substation network. The paper will indicate that 968 and IEC-61970 are not covered. This paper does not cover communications outside of the substation. It was decided to put wording into the introduction to clarify what the paper covers.

The sections that need additional material were discussed and additional writing assignments were made.

The paper needs to have updates to:

1. Modify Chapters 1 and 2. Chapter 1 will be shortened and will indicate that the paper does not cover between substations. Chapter 2 will now cover history and integration.
2. Change any UCA only terminology to IEC-61850 wording; for example CASM and GOMSFE. Christoph Brunner, Steve Kunsman, and Alex Apostolov will take a look at this.
3. Remove any specific manufacturer's name or model numbers.
4. Chapter 4 will be modified to include the new GOOSE services. Mark Adamiak pointed out that the new GOOSE can have analog and binary data. The old GOOSE is now called GSSE. Christoph Brunner will add a few lines on the sample analog values of the new GOOSE.
5. Chapter 5 will have analog GOOSE applications added. Mark Adamiak will provide an example.
6. Add sections in Chapter 7 on security. John Burger will work on this section. Mark Adamiak suggested looking at IEC Working Group 15's work on adding security to TASE2.
7. Modify the figures in Chapter 8. Mark Adamiak suggested the figures be expanded to a full page and remove them from PowerPoint.
8. Chapter 10 will have the figures converted from PowerPoint by John Burger. John will also make in vendor neutral.
9. Chapter 11 will have some work done on the figures. The PowerPoint figures will be cleaned up and converted. Dave Campbell will help on this. Mark Adamiak suggested that a UCA to UCA/IEC-61850 section be added and that the GOOSE section needs to be updated. It was suggested that a complete stack be included and a profile picture be moved to Chapter 3. Christoph Brunner will work on the stack issue. Mark Adamiak indicated he will get a generic example of an analog GOOSE.
10. Charlie Sufana will develop the dictionary for Chapter 13 now that most of the chapters have been somewhat completed.
11. Everyone was asked to acquire additional case studies of applications.

There was also discussion as to publication of the paper. Mark Adamiak suggested a transaction summary paper be written that would point to the PSRC webpage. There were also suggestions that the paper could be presented at the various regional conferences and that a tutorial could be developed.

H7: PC37.94 INTER RELAY COMMUNICATION PROTOCOL STANDARD

Chair: G. Michel

Vice Chair:

Established: 1997

Expected Completion Date:

No meeting. The standard has been balloted.

H8: FILE NAME CONVENTION

Chair: A. Makki

Vice Chair:

Established: 2003

Expected Completion Date:

The group met with a total of 8 members and 10 guests present. Minutes of the previous meeting, the agenda and copies of draft 2.0 of the report were distributed.

Discussions:

The new name for the working group is: "Common Format for Naming Time Sequence Data Files" (COMNAMES). The main objective for the group was to write the assignment statement. The discussions focused on the following issues:

How file-naming conventions are essential for electronic data collection and filing systems. The group noted that the COMNAMES format has clearly proven itself and is already a standard practice. The group also discussed good filing habits especially avoiding the accumulation of too many files in the same folder.

How there is a need for having a universal format that can be used for all applications. The group noted that the current format supports many applications, but not all applications are supported. The group also noted that COMNAMES is not all things to all people. The group discussed ways of defining a universal format including the idea of dropping the required fields restriction and defining all of the fields as optional.

How short file names are more practical and efficient and how they work better when used with CDs and other operating systems. The group stressed the need to shorten the format and agreed that all users should always strive to create short names.

How the concept of applying the comma separated values (CSV) standard to the act of naming files is a most important contribution from COMNAMES. The group agreed that it is very helpful to view directory listings of CSV filenames using spreadsheet programs. The group also noted that a filing system is not complete without a folder naming convention, the term "COMFOLDERS" was mentioned.

How the H8 web site can be used to post up-to-date information about the work of the H8 working group. The web site will also be used to post tools that help in naming files such as the program for renaming to COMNAMES. The program was developed and donated by Robert Orndorff. The chairman promised to find some one to support the H8 web site.

How IED manufacturers that have their own filing formats may suffer from COMNAMES becoming a standard because they have to re-engineer. The group noted that the vast majority of IEDs in use today do not have filing formats. Instead, the IED's data is held in its internal memory registers. It is the job of the data collection equipment to collect and file. The group agreed that we need a format for those IEDs that don't have one.

Conclusions:

The group agreed on the following assignment statement: "to write a recommended practice for the common format for naming time sequence data files."

The chairman submitted the assignment statement to the "H" Relay Communications Subcommittee. The chairman requested a room plus projector for the next meeting.

Finally, it is a pleasure to announce that Ratan Das has volunteered to serve as the groups vice chairman.

H9: Special Considerations in Applying PLC for Protective Relaying

Chair: M. Sanders

Vice Chairman: M. McDonald

Established: 1999

Output: Practical Paper for presentation at regional conferences

H9 Working Group met in a single session on May 20, 2003 with 9 members and 10 guests. Draft 13 of the special paper was distributed. The paper is in its final stages.

The FCC has made a final ruling on the allocation of band to the Amateur Radio League. Mark Simon will rewrite the section and submit it by June 20, 2003. At that point, the paper will be submitted to the officers for approval.

Mark Simon also brought up the new document that is up for review at the FCC concerning use of broadband PLC. The FCC is asking if the 30-500 kHz band of PLC can be vacated and use the broadband PLC for relaying. Mark is asking for others to comment to FCC.

It was suggested that the PSRC continues to have a liaison relationship through a working group to keep on top of all the concerns and issues.

One last thing to do is to find out the submission dates for the regional conferences.

H10: REVISION OF THE AUDIO TONE APPLICATION GUIDE C37.93

Chairman: Bill Higinbotham

Vice Chairman: Jerry Hohn

Established: 1997

Output: Revised application guide

Expected Completion Date: 2000

No report.

H11: REVISION TO THE SYNCROPHASOR STANDARD

Chairman: K. Martin

Established: 2000

Output: Revised Standard PC37.118

Expected Completion Date: 2003

Working Group H11 met at 9:30 am on Wednesday, May 21 in a single session. Nine members and 1 guest was present. The minutes from the January meeting were read and approved. Draft 3.02 was distributed.

K. Martin provided an overview of the current version of the standard and summarized the changes that were made.

V. Skendzic presented an overview and discussion of section 5.3 which he had contributed. This section was discussed and some changes suggested. The in-band modulation test will be dropped, and V. Skendzic and B. Dickerson will collaborate on re-writing the introductory section. It was brought up that requiring magnitude compliance of voltage inputs to 200% of nominal may not be realistic. It was agreed that in Sect 5.2 and 5.3 the wording will be changed to 10% to 120% of rated, allowing the vendor to specify what the rated level is.

G. Benmouyal brought up the inconsistency of requiring an accuracy of 1% in compliance tests and requiring a time accuracy of 1 microsecond. While the matter could be left to the 1% error calculation, it was thought that we should still clarify time accuracy. The item was discussed and he will offer a paragraph to replace or integrate with 4.4 and 5.1.

A. Phadke brought up a concern about 'post-processing'. Filtering, decimation, and other processing of data after the original phasor derivation can significantly change the measured phase and relative time, depending on the processing. He will offer a paragraph for the next meeting that may either go in the body or annexes.

Time did not allow further discussion of contributions. Members were asked to review the formats as this would be good to finalize as soon as possible. A double session will be requested for the next meeting. Contributions and any section change recommendations are due Aug 4.

Task Force Reports

HTF1: SWITCHYARD DATA ACQUISITION

Chairman: E. Udren

Established: 1996

Expected Completion Date: 1998

At the 2002 Winter Power Meeting, the PES Substations Committee decided there is a need for an IEEE standard defining the environmental requirements for hubs, switches, routers, etc. installed in substations. A PAR was drafted and Task Force C2TF1 was formed to draft a new standard. It was also decided that this standard should not create new wave forms or test methods. Instead, the plan was to use these specifics from C37.90, C37.90.1, C37.90.2, and C37.90.3 and write new criteria for acceptance that reflect device level tests with no protective relay tripping involved. The PAR was approved March 11, 2002 with the title "P1613 IEEE Standard Environmental Requirements for Communications Networking Devices in Electric Power Substations. The first draft of P1613 was a cut and paste creation from C37.90, 90.1, 90.2, and 90.3 with place holders for the TBD criteria for acceptance tailored to device level tests and this application. The task force has met at the Substations Annual Meeting in May, at the PES Summer Meeting in July, and on Monday of this week. Copies of drafts were distributed via Email, with much work taking place between meetings via Email. Draft 4 revision 3 was reviewed in August and was the basis of discussions on 9/9/02. Out of that meeting came agreement on the language in Draft 5, which we plan to ballot in October. The members of the balloting pools of PSRC, PSCC, and Substations Committee will be invited to ballot.

HTF8: COMTRADE Issues

Chairman: A. Makki

Established: 2002

Expected Completion Date:

The Working Group HTF8, met on May 20, 2003. Twenty people attended the meeting. 12 of them joined the working group.

We had a lengthy discussion on the scope of the working group. It was decided that working group will have an assignment to 'Prepare a report on the application and use of the C37.111 Standard'. We will need a number for the working group. We will meet at Madison and a room for 40 people with a computer projector.

Liaison Reports

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

2. Substation Committee - J. Tengdin

IEEE 1613 Standard Environmental and Testing Requirements for Communications Networking Devices in Electric Power Substations was approved by the IEEE SA board on March 18, 2003. This is for applications not involving protective relaying. It was built on PC37.90 (the version now being balloted by PSRC), C37.90.1-2001, C37.90.2-2001 with the test method now being incorporated by PSRC I-18, and on C37.90.3-2002 with minor changes to reflect non-relaying applications. The PDF version is scheduled to be available in mid July, and the paper version in mid August. Work on this document began in Substations C2TF1 on January 28, 2002 at the Winter Power Meeting in New York. The twenty-two member task force met by Email and at face to face meetings at the Substations Committee Annual Meeting in May, the Summer Power Meeting in July, and the joint meeting with PSRC in September. Draft 6 of the document was

balloted by Email in November. Of the 102 in the balloting pool, 90 responded (88%) and with a 95% affirmative vote. That draft did not include the words "and Testing" in the title or text, which prompted one negative ballot and one comment in an Affirmative ballot. A recirculation ballot, making that change, took place in December 2002 with a 90% response and 95% affirmative, eleven months after the first meeting of the task force.

Work continues in updating C37.1 the "SCADA standard." The new title is "Standard for SCADA and Automation Systems".

Task Force C3TF1 is at work on a recommended practice for networked communications in a substation. This is an extension of IEEE 1379 Recommended Practice for RTU to IED Communications which was based on serial links.

A new task force was formed to consider all issues regarding the protection of data in transit and data at rest. Included is the matter of protecting dial-up maintenance ports in RTUs and other IEDs (including relays). These ports today are often protected only by simple passwords, which are easily hackable. Further, the utilities report that the passwords are seldom changed. The task force will also look at the issues of protecting SCADA communication links, building on the work now underway at the Gas Technology Institute for the American Gas Association. PSRC members are invited to participate as regular or corresponding members. The next meeting will be during the PES Meeting in Toronto.

Work is now complete on the revised version of the Automation Tutorial. It will be presented at the IEEE T&D Expo in Dallas in September.

I: RELAYING PRACTICES SUBCOMMITTEE

Chair: J.G. Gilbert

Vice-Chair: J. W. Ingleson

Webmaster: T. S. Sidhu

1. Introduction: The Relaying Practices Subcommittee (SC) met on May 21, 2003 in Raleigh, NC. Introductions were made, and an attendance list was circulated. The meeting attendance was 25 Subcommittee Members and 19 guests.

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

3. Items of interest from the Advisory Committee Meeting: The Chairman reported on three items from the Advisory Committee as follows. A compendium of relay standards is to be published on a CD. A "Honorary" grade of PSRC membership will be established and will be for Members who have been active for 40 years and are no longer attending. All WG chairs are asked to make sure that leadership is planned for scheduled WG meetings. If there is no one who can lead a scheduled meeting, that meeting should be cancelled.

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

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

Chair: M.S. Sachdev

Vice-Chair: J. D. Huddleston, III

Output: Revision of C37.103-1990

The Working Group met on May 21, 2003 with four members and seven guests present. Mr. Huddleston presided in the absence of Chairman. The comments received on the ballot of PC37.103/P14 were discussed. The comments listed on pages 1-4 were discussed and proposed resolutions made.

I2: Terminology Usage Review

Chair: M. J. Swanson

Vice-Chair: J.D. Huddleston, III

Output: Updates to IEEE 100: Standard Dictionary of Electrical and Electronic Terms

The WG met on May 20, 2003 with six members present. The final definition of "transient overreach" was adjusted. A series of terms from the PC37.93 were discussed. Working definition of each term were derived. New work was assigned to those present.

I3: Microprocessor-based Protection Equipment Firmware Control

Chair: R. Beresh

Vice-Chair: D. Weinbach

Output: Recommended Practice

The WG met on May 20, 2003 with 20 Members and Guests. Roger Whittaker is no longer able to attend due to budget constraints and Dave Weinbach has agreed to take over as vice-chair. Assignments were reviewed from the previous meeting. The first draft of our recommended practice was discussed at some length. A key point to keep in mind is the balance between the needs of the utility and the manufacturer. Discussions were held on the various subjects of "who, what, when, and why" with respect to firmware change notification. Writing assignments were handed out to various members and it is hoped that we will have the document near completion by the January meeting in Tampa.

I4: IEC Standards Advisory

Chair: E. A. Udren

Vice-Chair: M. M. Ranieri

Output: IEC Standards Advisory

The Working Group met at the May meeting with 8 members and 2 guests. There are no IEC TC 95 standards drafts on which to vote or comment in this cycle. The WG discussed the following topics:

1. IEC TC 95 Measuring Relays - Program of Work — status update from January meeting: 0A 60255-3 Dependent time (inverse time-overcurrent) relays — new Convenor to be named to pick up and complete the work. Can the US find one? Two obvious US candidates not available.
A 60255-22-1 1 MHz burst transient test — Awaiting FDIS
A 60255-22-6 EMC Requirements listing — waiting FDIS
A 60255-22-7 Power frequency immunity — *FDIS approved*; standard to be published.
A 60255-27 Safety Requirements — awaiting new CD. Seek UL involved for US.

2. Proposed Projects from last TC 95 Meeting

- A number of the 60255-22-X EMC standards will be coming up for maintenance review. The same WG 02 will be dealing with them — *no update on this*.
- IECV Chapter 447, Measuring Relays Dictionary, is to be restarted. Jack Chadwick would like to participate, but we need support for his participation.

- Open from last time: An ad hoc WG is set up to look at the state of and need for TC 95 functional standards. Some possible suggestions:
- IEC Synchrophasor Standard — Convenor (Ken Martin availability TBD)
- Some relay performance standards related to power quality — parallel to 61850 activity on this topic.
- See above on 60255-3.

3. IEC TC 57 — Teleprotection and Control

- IEC 61850, Communication Networks and Systems in Substations 9-2 unidirectional ethernet process sampled data link — FDIS approved
- 7-3 communications structure — common data classes — FDIS approved
- Voting in process for Part 9-2 SCSM for process bus, Part 7-4 logical node and data object addressing, Part 6 configuration description language, Part 2 Glossary.
- New work item proposal for power quality additions to 7-3 and 7-4, led by Alex Apostolov.
- New reference architecture for substation systems — attached.

Proposal for new Technical Committee on Wide-Area Power System Issues — See .pdf file on Scope and discussion for TC8; or see IEC Report for this meeting. Major realignment potential for many IEC power systems standards.

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

Chair: E. A. Udren

Vice-Chair: P. G. McLaren

Output: New Trial Use IEEE Standard P1331

The WG met to incorporate balloting results for C37.92/Draft 9 into a new Draft 10. We are resolving three negative ballots, and making other improvements suggested by affirmative voters. A revised matrix of comments and proposed resolutions, most negotiated with commentors, was circulated for reference. The WG reviewed Draft 10, which incorporates all of these changes except those needed for IEEE formatting. All technical issues were resolved at the meeting. With the IEEE standard reformatting, the draft should be ready for reballoting within the month. The draft Standard, and the comment sheet as reviewed at the meeting, are contained in the files that can be downloaded on the WG webpage.

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

Chair: M.M. Ranieri

Vice-Chair: J. Teague

Output: Revision of ANSI/IEEE C37.90-1989 (R1994)

The working group met to discuss the after balloting status of C37.90. The IEEE results of our electronic balloting are: 102 ballot responses, 4 of which were abstentions. Of the 98 ballots received, eleven were negative ballots. We received 79 % participation on the returned ballots and need to resolve the negative comments to move forward. WG members and guests reviewed all the comments we received with both approved and negative ballots. Our WG members and some guests volunteered for individual assignments to help to reconcile all the comments that we received via the IEEE electronic balloting process. The recommendations for reconciliation of the comments will be provided for use by the WG to prepare our final disposition of the negative ballots. The current assignments are due within 30 days. The compiled comments will be included into a new draft standard and sent via email for a review and comment by the WG members. The WG chair will utilize email to complete the resolution until we are able to proceed with the 10 day re-circulation process.

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

Chair: J. Teague

Vice-Chair: J.T. Tengdin

Output: New IEEE Standard C37.90.3

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

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

Chair: J.G. Gilbert

Vice-Chair: J. Teague

Output: Revision of IEEE Standard C37.90.1-1989(R1994)

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

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

Output: Revision of C37.105

The WG meeting was held on May 20, 2003 with five members and three guests in attendance. The latest draft D4 of the standard was discussed. A number of editorial changes were approved. It was agreed to explore how to address other standards for digital relays. It was felt that there is a need to pursue IEC coordination. The standard should be ready for balloting this fall.

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

Chair: M. Nemier

Vice-Chair: M. Bajpai

Output: Revision of IEEE Standard C37.98

The WG met on May 20, 2003 with seven members and two guests in attendance. The major items that were discussed are as follows:

1. The seismic capability of all functions of a multi-function relay should be addressed by test or analysis in the seismic qualification report. Roy Ball and Marie Nemier shall write a note to Table 1 in include this change.
2. It was discussed if 2 ms contact chatter is still acceptable with modern equipment. Roy Ball and Mario Ranieri shall review this.
3. Subinoy Mazumdar shall write Sections 1.1 and 1.2.
4. Vittal Rebbapragada has volunteered to write a section to be added to the standard to address non-nuclear applications. It was suggested that IEEE 693 "Recommended Practice for Seismic Design of Substations" should be used as non-nuclear reference and guide. Prior to the next meeting, this publications should be provided to all members for review.

It was agreed that all the above action items should be completed by Aug. 30, 2003 so that they can be made available to all members before the Sept. meeting.

I11: Survey of Relay Test Practices

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

The PSRC report “A Survey of Relaying Test Practices” was approved by the PSRC officers on February 15, 2002. Ed Krizauskas distributed the approved report to all contributors shortly thereafter. An Acrobat file of the report is available on the WG page. 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 Relaying Practices Subcommittee meeting on May 22, 2002.

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

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

The working group met on 5/21 at 8:00 AM with 5 members and 11 guests. Draft 3 of the Guide, which included Harley Gilleland's section on optical devices was circulated and reviewed with comments noted. It was decided that this section would be incorporated as Annex #3 rather than as a separate section in the Guide. This decision creates harmony with WG-I15's approach in dealing with optical devices.

The following comments and assignments were recorded: 1) Rich Hunt will review and provide input, if required, to the optical devices annex; 2) Del Weers commented that C10, C20 and C50 references in Section 2, paragraph 1 are not included in present C57.13 document; 3) Del Weers also pointed out that the reference to C57.13-1978 was not the most recent revision of this document; 4) Del will also provide input on a caution when dealing with remnant flux; 5) Bruce Pickett will provide input on a 4th method for Section 7; 6) Brain Mugalian will provide figures for Section 5.

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

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

The Working Group I13, Revision of C57.13.3 - Guide for Grounding of Instrument Transformer Secondary Circuits and Cases, met in Salon F, The Hilton North Raleigh, Raleigh, NC on May 20, 2003. Nine members and four guests were present. The minutes of the January 2003 meeting, distributed previously by Email and also distributed at the meeting, were approved. Draft 4 of the guide was reviewed by the working group members. Three more writing assignments were made and are to be submitted by June 15. These assignments will be incorporated into Draft 5 of the guide. The working group will ballot Draft 5 before the September 2003 meeting and will plan to discuss any outstanding issues at the September meeting.

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

Chair: T.A. Phillippe

Vice-Chair: R. Young
Output: Special Publication

This WG did not meet at the May 2003 meeting. By action of the Subcommittee, this WG was transferred into Relay Communications (H) Subcommittee. It became clear to the WG that their work was exclusively involving communications terms.

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

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

Review and revise IEEE Standard C37.110-1996, "Guide for the Application of Current Transformers Used for Protective Relay Purposes." The purpose of this guide is to present a comprehensive treatment of the organization and application of cts to assist relay application engineers in the correct selection and application of cts for protective relay purposes. Report: The working group met with seven members and six guests. Draft 5 will be issued electronically to all members during the week of June 23rd. Working group members has been asked to return comments during the week of July 14th. Revisions will be made and Draft 6 will be sent to the IEEE Editor and the Relaying Practices Subcommittee members for comments and review. The goal is to have all review comments returned prior to the Sept. 2003 meeting.

I16: Understanding Microprocessor-Based Technology Applied to Relaying

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

Recent Activity: The eighth meeting of the Working Group was held at 1:30 PM on May 20, 2003 in Grand Ballroom 5, North Raleigh Hilton Hotel, NC. Four members and eleven guests were present.

The minutes of the January 2003 meeting held in Scottsdale, AZ were approved as distributed via Email and posted on the web site.

Discussion: The Chairman reported that the no major comments were received so far on Draft 5 circulated before the meeting. The draft 5 is almost complete. It was decided to delete the section on communication.

Future Plan: It was decided to ballot the complete document (after adding table of contents and bibliography) among working group and subcommittee members before the next 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
Output: Special Report

Working Group I-17 met at 4:30 on May 20, 2003 with one member and one guest. In view of the sparse attendance, it was decided to use E-mail to request members of I-17 to comment on the document sent out by Mark Carpenter on May 15th. Comments will be due by July 1st. Reference: The working group report "Transmission Relay System Performance Measuring Methodology," dated 9/16/1999, is available on the WG web page.

I18: Harmonization of IEEE C37.90.2

Chair: J. Burnworth

Vice-Chair: W. Higinbotham

Output: Revision of C37.90.2

The working group met with 11 members 6 guests.

Draft #5 of C37.90.2 standard was distributed and reviewed. The document title will be revised to: Standard for Withstand Capability and Testing of Relay Systems to Radiated Electromagnetic Interference from Transceivers. Submittal for a revision to the PAR will be made after the revised standard completes balloting. Other comments were discussed, and some minor changes identified.

The following action items were identified.

a.) Bob Pettigrew - Develop and finalize figure #1, Test set-up. Bob will ask Al Darlington for assistance.

b.) Tom Beckwith (guest) – Review paragraph 4.0 and provide revised text on recommended margins.

c.) Veselin Skendzic – Provide a note for Test 5 in table 1 with reference to signal level.

d.) Jeff Burnworth - Incorporate comments and changes identified into draft #6.

e.) Working Group – Review Annex D, and send comments to Chairman.

Assignments requested due by August 1, 2003.

Goal – Draft #6 to be final for ballot submittal. Final review to be completed at or before next meeting in September.

I19: Analysis of Substation Data

Chair: L.E. Smith

Vice-Chair: B.A. Pickett

Output: Special Publication

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

5. Task Force Reports:

ITF1: Relay Service Letter Database

Chair: J.W. Ingleson

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

ITF2: This TF has become WG I3.

ITF3: Conducted Electromagnetic Interference

Chair: W. Higinbotham

Vice-Chair: J. Burnworth

The task force last met on Jan. 14, 2003 with 11 attendees. This TF has determined that a new standards document should not be established. This TF was disbanded with thanks by action of the Subcommittee.

ITF4: Optical Current and Voltage Sensor Systems

Chair: H. Gilleland

Assignment: Report to Subcommittee

The task force met on May 20, 2003 with 33 members and guests. After a discussion of the purpose/objective of the task force and a review of the industry activity of existing standards, it was recommended that a working group be formed with the purpose of developing a guide for optical sensor systems. The focus of the work was expanded to include voltage as well as current sensing. The task force will meet one more time in September to finalize the scope of the guide.

HITF5: Common Formats for Protection IED Data

Chair: A.P. Apostolov

This work is mainly in the scope of the Relaying Communications Subcommittee and has been transferred.

6 & 7. Liaison and Coordination Reports:

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

J. D. Huddleston, III - Here are my Liaison and Coordination Reports concerning the Instrument Transformers Subcommittee of the Transformers Committee. The Transformers Committee last met in Raleigh March 16-20, 2003, but the Minutes are not yet available.

Liaison from the Instrument Transformers Subcommittee: I have nothing new to report.

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

The Transformers Committee put this document out for re-affirmation on April 9th. This should give them time to decide how to pursue this revision.

Coordination for W.G. PC57.13.6: Instrument Transformers for Use with Electronic Relays and Meters, (Chris Ten-Haagen, Chair): AMENDED: This project has a new title and a new PAR dated February 13, 2003 and the new title is Standard for High Accuracy Instrument Transformers. This standard is designed to supplement C57.13 by defining 3 new accuracy classes for very low burdens.

Coordination for W.G. PC57.13.5: Trial-Use Standard of Performance and Test Requirements for Instrument Transformers of a Nominal System Voltage of 115-kV or Above. This is now a published standard, C57.13.5-2003.

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

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

M. Bajpai - M. Bajpai reported no activity on this item.

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

9. New Business: No items discussed under this item.

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

J: ROTATING MACHINERY PROTECTION SUBCOMMITTEE

Chair: S.P. Conrad

Vice Chair: W. G. Hartmann

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

Chair: G. Benmouyal

Vice Chair: E. Fennell

The Working Group met with 5 members and 5 guests.

Announcement was made by the Chair that the last draft balloted has been sent to the Standard Department for the final edition of the document. We are still awaiting the identification of the editor assigned to this task.

J3: Protection of Generators Interconnected with Distribution System

Chair: E. Fennel

Vice Chair: R. Pettigrew

The Working Group met with 11 members and 15 guests.

The Working Group reviewed the writing assignments that were prepared since the last meeting. Additional writing assignments were accepted by several WG members.

One particular emphasis of the paper will be how the operation of the distribution system effects the protection of the interconnected generators.

J4: Revision of C37.102 AC Generator Protection Guide

Chair: M. Yalla

Vice Chair: K. Stephan

The Working Group met with 13 members and 6 guests.

The Chair distributed draft #2 of the document. The WG reviewed the document and as a result additional writing assignments were made.

The plan is to send the revised document for comments from the WG and Subcommittee by September 2003. Balloting of the document is planned for May 2004

J5: Generator Protection Setting Criteria

Chair: C.J. Mozina

Vice Chair: M. Reichard

The Working Group met with 8 members and 8 guests.

The transient stability section of the paper was dropped to keep the paper to about 10 pages. The paper will be tutorial in nature to try to complement the efforts of WG J-4 (C37.102 revision) that also addresses relay setting criteria. The title of the paper was changed to better reflect its content. The new title will be "Coordination of Generator protection with generator AVR Control and Machine Capability."

Assignments:

1. Chuck Mozina will expand the section on steady state stability to provide more basis (tutorial) information.
2. Chuck Mozina will add a section on the one-line diagram and basic machine data for the example generator used in the paper.
3. Shoukat Khan will rewrite Section III using the example generator and add a section on coordinating the 21 relay setting with generator capability.
4. Wayne Hartmann will add load encroachment to the 21 relay coordination write up.
5. Irwin Hasnewinkle will review Section IV of the paper that addresses underexcited generator operation.
6. Mike Reichard will review Section V of the paper on coordination of the v/Hz protection with the AVR maximum excitation limiter.

J6: Performance of Generator Protection During System Disturbances

Chair: S. Patel

Vice Chair: K. Stephan

Working Group met with 5 members and 3 guests. Pat Kerrigan chaired the session in the absence of Subhash Patel (Chairman) and Kevin Stephan (Vice Chairman).

Minutes from previous meeting were approved. Minor editorial wording changes in document were discussed.

Steve Conrad agreed that we go ahead with the document assuming that the terminology review was performed.

Pat Kerrigan reported that Subhash Patel would prepare the slides for the proposed presentation at the Thursday main committee meeting at Madison in September. It was agreed that members would help him if he asked.

Steve Conrad said he would work with Subhash on the process of getting the paper published. Steve will also discuss with Subhash on whether a working group session should be held at the Madison meeting.

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

Chair: J.T. Uchiyama

Vice Chair: R. Das

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

The Chair opened the meeting and distributed draft #2 to all attendees. The WG reviewed the documents and have the following comments for the new draft:

1. Use C37.100, C37.2 and IEEE dictionary instead of IEEE Std. 100-1992.
2. Table #1 requires revision
3. Some figures require correction (sent to Al Darlington)
4. Figure 18.e will be reviewed by Wayne Hartmann
5. Figure 18.f (ABB's injection scheme will be added
6. Figures 20, 23a, 23b and 23 c will be revised (PT connections to be grounded wye)
7. Chuck Mozina will review Sections 7.21 and 7.22
8. Murty Yalla will review Section 8
9. Add device 64G in Section 9
10. Scan the CT excitation curve (Figure B.2)
11. Put drafts "unapproved" designation on each page

Assignments are due to the Chair by July 31, 2003.

JTF1: VFD Protection Issues Related to Motors

Chair: J. Gardell

Vice Chair: R. Das

The Working Group met in a single session with 15 attendees, with 9 individuals indicating interest in becoming members.

The discussions during the meeting centered around how to gain knowledge and understanding of variable frequency drives and connected motors, from both the operational characteristics and embedded protective functions in the drive's control perspectives. The TF decided that an attempt would be made to gain this knowledge by bringing in drive manufacturers and other knowledgeable parties to help technically educate us in these areas. Additionally, technical literature from these manufacturers will be obtained by the members associated with these manufacturers.

The TF recommends that we maintain this TF until a more detailed approach to address the topic with regard to proper protection is established and defined.

Liaison Reports

Electric Machinery Committee

C.J. Mozina

"No Activity" report. This committee meets at the PES Summer Meeting. Chuck Mozina will be in contact with them post the PES Summer Meeting.

Coordination Reports

P958-EDPG, Guide for Adjustable Speed Drives

J. Gardell

In discussion with Mr. Tom Higgins, WG Chair, the following is reported:

1. Draft #7 had a successful IEEE ballot during last year
2. Tom Higgins was in the process of submitting the approved draft to the IEEE Standards Board in January 2002
3. Tom Higgins was investigating whether a PAR revision might be required based on some changes in the Guide and Scope
4. I e-mailed Tom Higgins to inquire about the status 4/22/03

P408-NPEC, Standard Criteria for Class 1E Power Systems for Nuclear Power Generating Stations

R.V. Rebbapragada

IEEE Std. 741, "Protection of Class 1E Equipment and Systems" was reaffirmed by the balloting pool, as reported at the September 2002 meeting of the NPEC. Two negative ballots were received, and they were withdrawn, and the Standard will address the issues raised at the next revision. The PSRC should take a closer look at the Standard as it covers rotating machines and degraded grid voltage protections in this Standard.

P1010, Guide for Control of Hydroelectric Power Plants Wayne Hartmann

"No Activity" report. P1010 has received 4 minor comments from Wayne Hartmann. The p1010 stays clear of protection issues and refers to our Standards for guidance (C37.101, 102). The WG has balloted and the Chair will be reviewing our comments and the WG's. Wayne Hartmann will contact the Chair, address any questions and secure a copy of the document post this revision, which should be done (hopefully) by the PES Summer Meeting.

K: SUBSTATION PROTECTION SUBCOMMITTEE

Chair: S. R. Chano

Vice Chair: C. R. Sufana

The Subcommittee met Wednesday May 21, 2003, at Raleigh, North Carolina with 17 members and 21 guests attending. The minutes of the previous meeting in Phoenix were approved.

ITEMS OF INTEREST FROM THE ADVISORY COMMITTEE MEETING:

The officers have nominated 8 members for Fellows status. They should know by the end of the 2003, who the new Fellows will be.

The overall attendance has been constant with an average of about 165 to 170 people. Sixty to sixty five attendees represent utilities and each meeting has been averaging about 20 newcomers. The officers have identified a need for more people to participate in the rotating machinery area.

The Standards Coordinator is looking at putting the standards and guides inot a compendium CD and putting some of the old out of print documents on the webpage.

There are new procedures for PAR requests for extensions and balloting. All working group chairs are to check with Moh Sachdev for the latest procedure before sending anything to the IEEE headquarters. Moh indicated the headquarters people changed the procedure before the last meeting but the PSRC did not know about the changes. The working group chairs must also tell headquarters to start balloting after the balloting body has been formed.

Reports from the WG Chairs

K1: RATIONALIZATION OF TRANSFORMER PROTECTION STANDARDS, GUIDES AND REPORTS

Chair: Mohindar Sachdev

Vice-Chair: Pratap Mysore
Established: 2003
Output: Subcommittee Report
Expected Completion Date: 2008

The working group met for the first time on Wednesday May 21, 2003 in one session with 28 attendees, 15 of them opted to be members.

The assignment of the group is "To revise IEEE Guide C37.91-2000 and to expand protection of phase shifting transformers and to include thermal overload of transformers in the Guide."

The Working Group discussed and finalized the scope and the purpose.

During the Subcommittee meeting there was additional discussion about the scope. George Nail indicated that the PES will see if coordination is needed because of the fusing, thermal and surge arrester issues to be discussed. Charlie Henville said there may be conflict with the surge arrester people. He suggested that the document be called IEEE Guide for the Protection of Transformers Against Faults and Abnormal Conditions.

K2: BREAKER FAILURE PROTECTION

Chair: R.A. Hedding
Vice Chair: A. CHAUDHARY
Established, 2001
Output: ANSI C37.119
Expected Completion Date: 2006
Draft 2

K2 met with 29 members and 26 guests in a double session Tuesday morning, May 20, 2003. Clause 7, of draft 2, titled breaker failure schemes was reviewed in detail. Several assignments were made to change the wording on some figures, and expand several of the areas in various sub-clauses in clause 7. Progress is being made and we are moving toward completion.

Next meeting room for 60 people, computer projector, double session.

K3: Protection Schemes and Measures to Prevent and Reduce Outage Durations in Substations

Chair: B. Pickett
Vice Chair: T. Sidhu
Established, 2002
Output: Paper
Draft TBD

The working group met on Tuesday, May 20, 2003, with 8 members and 5 guests in attendance. The title was changed to "Reducing Outages Through Improved Protection and Autorestitution in Distribution Substations". The working group assignment is to produce a paper.

An initial outline for the paper was drafted, along with writing assignments. The chair is to email a summary to members and attendees for comments and contributions.

K4: BUS PROTECTION GUIDE

Chair: S. P. Conrad
Vice Chair: R. W. Haas

Established, 1999 (Originally 1983)

Output: Revision of Standard ANSI C37.97

Expected Completion Date: 2002

The working group met on Wednesday, May 21, 2003, with 4 members and 8 guests. The draft will be submitted to the IEEE SA office for balloting. This is to be done by June 15, 2003.

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

K7: GUIDE FOR THE PROTECTION OF SHUNT REACTORS.

Chair: K. A. Stephan

Vice Chair: P. G. Mysore

Established, 1999

Output: Revision of ANSI/IEEE C37.109.

Expected Completion date: 2003

Status: Reviewing Draft 7

The Working Group met on Tuesday, May 20, 2003, in one session with 4 members and 5 guests with Vice Chair Pratap Mysore presiding.

Changes in Draft 7 were discussed. This document will now be submitted to the IEEE Editor and Coordination Committees.

The PAR extension has been filed for consideration at the June 2003, RevCom meeting.

Charlie Henville presented field data on transient response of conventional instrument transformers and low energy instrument transformers during 230kV shunt reactor energization and de-energization.

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

K10 (Ex KTF1): SCC21 Distributed Resources Standard Coordination

Chair: William Feero

Vice Chair: Doug Dawson

Established, 1999

Expected Completion Date: 2001

Output: Standard through the SCC 21

The working group Wednesday May 21, 2003. There were 8 members and 2 guests present. The chair Bill Feero provided a review of the status of P1547, P1547.1, P1547.2, and P1547.3.

A request was made for volunteers to do a quick review of Draft 2 of P1547.2, which will be discussed at the June 4th to 5th meeting of SCC21 in Denver. Four people volunteered. The draft 2 of P1547.2 will be sent to these volunteers.

A request was made of all members to forward to Bill Feero the names of utility engineers directly involved with interconnections issues on secondary or street networks. It is these open and contentious issues that P1547 must take up now.

For the next meeting: Single session, 25 members, no A/V equipment.

During the subcommittee meeting there was additional discussion on the status of P1547. P1547 had a 91% approval vote but there were 18 negative ballots. Many of the negative ballots were not resolved which leads to speculation that the Standards Board may not approve the standard. Chuck Mozina asked if there were any comments on transformer connections in the standard. Bill Feero indicated that P1547 is starting to look like a textbook that should be reviewed totally by the PSRC. He indicated that P1547.1 is already 72 pages long and no way near completion.

Bill Feero also announced that he is looking for a vice chair. Ideally the vice chair should be able to go to the SCC meetings (approximately 3 per year) for the next 2 or 3 years.

K13 (PC 37.116): GUIDE FOR PROTECTIVE RELAY APPLICATION OF TRANSMISSION-LINE SERIES CAPACITOR BANKS.

Chair: F. P. Plumptre

Vice Chair: Dan Hamai

Established, 1999

Output: Guide for the application of protection on transmission series capacitor banks

Expected Completion Date: 2003

Draft 5

Working Group K13 met on Tuesday, May 20, 2003, in a single session. Five members and five guests were present.

Draft 5 of the guide was reviewed. With Draft 5, all writing contributions have now been received.

Liaison with IEEE WG 824 was discussed, including a review of their January 30, 2003, meeting minutes (which provided comments on K13 draft 4). Note, Working Group 824 in T&D is charged with producing a document on major equipment aspects of series capacitors.

New assignments were made to working group members to review existing sections of the draft document.

A request for a PAR extension has been submitted to the Standards Coordinator Moh Sachdev. Reasons for the request include increased work to ensure coordination with Working Group 824.

After review by Moh Sachdev, a copy of the PAR extension request will be submitted by the chair of K13.

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

Liaison Reports:

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

The Transformers Committee Meeting met in Raleigh March 16-20, 2003. The Minutes are not yet available.

Coordination Reports:

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

1. ANSI/IEEE Switchgear Standards F. Plumptre.

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

No update

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

No update

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

No update

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

No update

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

No update

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

No update

7. ANSI/IEEE Switchgear Standards, Vittal Rebbapragada

a) PC37.30.01 Standard Requirements for High Voltage Air Switches, Switching Devices, and Interrupters.

b) PC37.100.1 IEEE Standard of Common Requirements for Power Switchgear

PAR for PC37.100.1 approved June 21, 2000. Waiting to receive minutes from meeting held May 8, 2003.

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

ANSI approved this standard November 1, 2001 as ANSI STD. C37.20.3-2001. Coordination is no longer required.

Old Business

Simon Chano thanked everyone for reviewing papers for the Georgia Tech.

New Business

Simon Chano reminded everyone that the working group chairs are encouraged to not cancel a meeting if it is scheduled. If the chair can not attend, then the vice chair should run the meeting. Simon Chano asked for ideas for new working groups. None were received at this time.

Kalyan Mustaphi presented an application story about bus protection in which a directional overcurrent feeder relay failed to block the bus protection. He reminded everyone that CT connections should be checked for proper connection and polarity.

Tony Napikoski asked if there were any special concerns for gas insulated substations. Simon Chano indicated that his company had procedures and guides. Chuck Mozina indicated that there was something published about 15 years ago and that it should be in the transactions. He suggested contacting Bob Dempsey for additional information.

Charlie Henville gave a quick presentation of a project he participated in. The project compared low energy optical CTs and VTs against conventional devices.