

**POWER SYSTEM RELAYING
COMMITTEE**

OF THE

IEEE POWER ENGINEERING SOCIETY

MINUTES OF THE MEETING

September 13-16, 2004

Portland, OR

Approved

**Power System Relaying Committee
Main Committee Meeting Agenda
September
Portland, OR**

- | | | |
|-------|---|------------------------|
| I. | Call to order / Introductions | Taylor |
| II. | Approval of Minutes | 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. UCA Report | Burger |
| | F. EPRI Report | Hughes |
| | G. IEC Report | Udren |
| | H. Standard Coordinators Report | Sachdev |
| | I. Substation Committee Report | Evans |
| IV. | Subcommittee Reports | |
| | D - Line Protection | Carpenter |
| | K - Substation Protection | Sufana |
| | H - Relaying Communications | Fodero |
| | J - Rotating Machinery | Conrad |
| | I - Relaying Practices | Ingleson |
| | C - Systems Protection | Novosel |
| V. | Old Business | Taylor |
| VI. | New Business | Taylor |
| VII. | General Announcements | Taylor |
| VIII. | Presentations | |
| | Joint IEEE/PSRC Meeting in Calgary Sept. 2004 | Sachdev |
| | Guide for Differential and Polarizing Relay Circuit Testing | Sachdev (WG I1) |
| | Guide for Network Transformer Protection | Sufana (WG K5) |
| | Effects of Changing Utility Environment on Protective Relaying | Hunt (WG C10) |
| IX. | Adjourn | Taylor |

Call to order / introductions**Taylor**

Rick Taylor called the meeting of the IEEE/ PSRC Main Committee in Portland, OR to order at 8:00 AM on September 16th, 2004.

Approval of Minutes – May meeting and misc.**Henville**

The minutes of the St. Louis meeting May 17-20, 2004 were approved.

For the September 2004 meeting, the financial support of the Thursday breakfast by PacifiCorp was gratefully acknowledged.

Chairman's Report**Taylor**

The PSRC meeting in Portland continued our string of successful meetings. Careful preparation by Charlie Henville and Miriam Sanders, along with the contributions of local individuals and companies, resulted in a very productive meeting from both a business and a social perspective. Ken Martin and Dean Miller, directed and inspired by their lovely wives, took it upon themselves to take on the host/hostess roles. On behalf of PSRC, I thank them for their generosity.

At the last meeting, I reported that we had reached an agreement with IEEE to make our technical guides available at an improved price of \$30 for the pdf download and \$40 for hard copies. A review of sales statistics since this significant price reduction shows very little change in the number of guides being purchased. The most reasonable explanation is that there has been very limited marketing of this change. Many segments of our industry have not been made aware of this price change and, in fact, often are not even aware of the existence of our guides and other technical reports.

The PSRC has decided to actively market our output documents. We will begin by reviewing our web site to determine if we can provide a more eye-catching reference to these documents and facilitate the process of acquiring the documents. Another focus will be to actively market the guides [and perhaps other wg outputs] at the regional relay conferences. Ken Fodero has volunteered to lead this effort at the upcoming Western Protective Relay Conference. Ken's efforts will then serve as a blueprint for others to provide similar marketing at other venues.

We also intend to seek means to reach the industrial and rural electric cooperative segments of our market. The first approach to this end will be to produce a short "blurb" advertising the existence of these documents and providing reference to our web site. This blurb would be available for our members to send to individuals or groups that have an interest in protective relaying.

This meeting was my last meeting to serve as PSRC chair. I must say that the two years have gone by incredibly fast [as have my other 55 years!]. Many jokes have been made over the years about the results of solving problems by committee. The reason the PSRC is an exception to this committee criticism is quite simple. The PSRC is only a committee in name. In reality, the PSRC is a cohesive organization comprised of competent, dedicated, altruistic individuals, functioning as members of teams. It has been a highlight of my professional life to have been, and to continue to be, a part of this great organization. Thanks!

Technical Paper Coordinators Report**Winston**

There were two PSRC sponsored Technical Paper sessions at the PES General Meeting in Denver. The Monday afternoon session was chaired by Charlie Henville and the Tuesday morning session was chaired by Alex Apostolov. An additional 2 papers were presented at the Poster Session. The PSRC also co-sponsoring a panel related to the NE Blackout with the Technical Council and Tom Weidman did an outstanding job of representing the PSRC.

Fourteen papers have been sponsored by the PSRC for presentation at the PSCE meeting in New York. Additionally the PSRC is sponsoring a Panel Session on Wide Area Protection and Control which will be Chaired by Damir Novosel.

The Call for Papers for the 2005 General meeting has been issued with a paper submission deadline of December 13, 2004. The selected tracks are:

1. Understanding and Responding to System Wide Events,
2. Securing New Sources of Energy,
3. Improving Reliability and Power Quality,
4. Using Innovative Measurement and Control Techniques to Improve Customer Service,
5. Surviving New Markets and New Structures.

CIGRE Report

Cease

The 2004 General Session was held in Paris. The US submitted 4 papers for consideration for the conference under the Protection and Automation Study Committee (SC-B5). Three of the US SC-B5 papers were accepted. The preferential subjects for SC-B5 were 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, and 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

Included are the reports made by the Special Reporters for the papers at the SC B5 session.

The 2005 Colloquium will be held in Calgary, Canada. Details are available on the CIGRE B5 web site (www.cigre-usnc.org). A call for paper has been issued with a deadline for submittal of the abstract of November 30. Anyone wishing to submit a paper please send them to me no later than November 15.

The CIGRE SC-B5 / Preferential subjects for Calgary (2005) are:

- Transformer protection, monitoring and control
- Specification & Evaluation of Substation Automation Systems
- Protection & Control of Series Compensated networks

At the CIGRE meeting in Paris several new working groups were formed. Anyone looking to become involved in CIGRE activities let me know. I am looking for someone to be a member of these working groups (either regular or corresponding). 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.

Following is the scope and mission statement of SC B5. During the 2002 meeting in Paris a survey of attendees was undertaken to determine which subjects were considered to be of the most importance to the attendees. The results of the poll are include as well as the makeup of the group surveyed.

CIGRE SC-B5 / Scope:

Principles, design, application and management of power system protection, substation control, automation, monitoring and recording – including associated internal and external communications, substation metering systems and interfacing for remote control and monitoring

CIGRE SC-B5 / Mission:

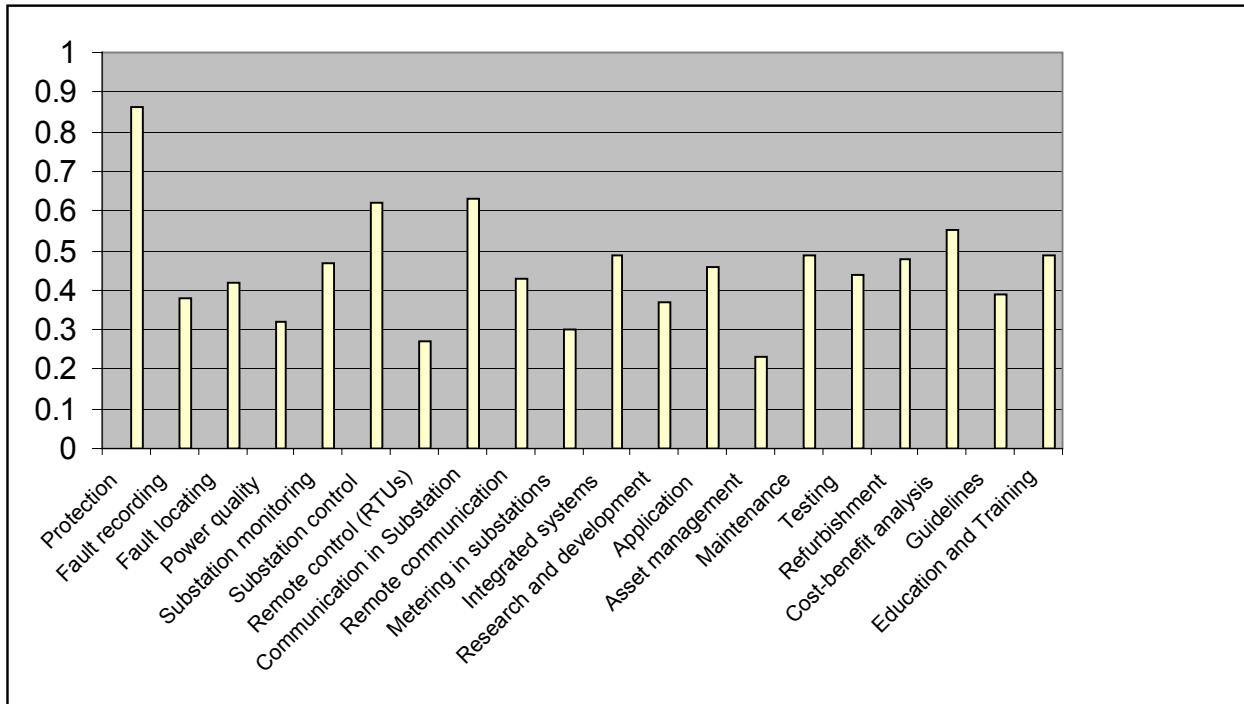
- Promotion of continued development and exchange of experience for safer and more effective operation of power systems
- To be first international reference for power system protection and substation automation issues, synthesizing state-of-the-art practices and developing recommendations

CIGRE SC-B5 / Opinion Poll August 2002

Affiliation of the participants:

Utility	Manufacturer	Industry	Consultant	University	Other
37.11%	32.99%	4.12%	13.40%	8.25%	4.12%

The results of the opinion poll on “subjects were considered to be of the most importance to the attendees” are shown below:



PES Report

No report at this meeting

John McDonald

EPRI Report

No written report at this meeting

Burger

IEC Report

See WG I4 Report

Udren

Standard Coordinators Report

Sachdev

The Standards Coordinator, Mohindar Sachdev, met with the Chairs of the Working Groups writing and revising standards documents at 8:00 AM / 9:45 AM on September 14, 2004 in 3 Sisters Room, Doubletree Hotel, Portland Lloyd Center, Portland, OR.

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 May 2004 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
Update your information with SA PAR application, extension and other forms	http://standards.ieee.org/resources/development/
Submitting a PAR	http://www.standards.ieee.org/guides/par/
PAR Extension	http://standards.ieee.org/guides/par/ePARform.html
Style manual	http://standards.ieee.org/guides/par/extension.rtf
Template	http://www.standards.ieee.org/guides/style/2000Style.pdf
Pre-balloting editorial review	http://www.standards.ieee.org/resources/spasystem/index.html http://standards.ieee.org/resources/development/ Follow: Balloting the Draft → Ballot Invitation → Submitting the Draft for Mandatory Editorial Coordination
Up-load drafts for balloting	http://standards.ieee.org/eprocess/upload_balloting_file/
Request for invitation to ballot	http://standards.ieee.org/resources/development/ Follow: Balloting the Draft → Ballot Invitation → Requesting a Ballot Invitation
Join a balloting pool	http://standards.ieee.org/resources/development/ Follow: Balloting the Draft → Join and Existing Balloting Pool
Submit request for initiating balloting	http://standards.ieee.org/resources/development/ Follow: Balloting the Draft → Sponsor Ballot → Requesting Initiation of a Ballot
Submit request for recirculation ballot	http://standards.ieee.org/resources/development/ Follow: Balloting the Draft → Sponsor Ballot → Requesting Initiation of a Ballot → Recirculation ballot
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/

Some Important Developments

1. As of 2005 January 01, there will be no paper ballots. All documents will be balloted electronically and requests for paper balloting will not be entertained by the Standards Association.
2. PAR Extension form has been revised and the new link for downloading this form is included in the above list.
3. New balloting procedures will be introduced in 2005. Sponsors will be allowed to start invitation to ballot, choose opening and closing dates, and delegate balloting privileges. The balloters will be allowed to view invitations to ballot, join balloting groups, download documents, submit ballots and comments, and review the responses of the sponsors to the comments.

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 each 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 MAY 2004 MEETING OF THE PSRC

The status of the standards approval activities, which have taken place since the May 2004 meeting of the PSRC, is as follows.

1. Standards Published

None

2. Standards waiting to be Published

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

- | | |
|----------|---|
| PC37.103 | Guide for Differential and Polarizing Circuit Testing |
|----------|---|

4. Standards approved

None

5. Standards submitted for approval

- | | |
|-----------|---|
| PC37.90.2 | Standard for Withstand Capability of Relay Systems to Radiated Electromagnetic Interference |
| PC37.103 | Guide for Differential and Polarizing Circuit Testing |
| C37.111 | Standard for Common Format for Transient Data Exchange (COMTRADE) for Power Systems |
| C37.113 | Guide for Transmission Line Protection |

6. Standards to be submitted for approval

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

7. Standards Balloted

- C37.111 Standard for Common Format for Transient Data Exchange (COMTRADE) for Power Systems (for Reaffirmation)
- C37.113 Guide for Transmission Line Protection (for Reaffirmation)
- PC57.13.3 Guide for Grounding of Instrument Transformer Secondary Circuits and Cases

8. Standards submitted for balloting

- C37.111 Standard for Common Format for Transient Data Exchange (COMTRADE) for Power Systems (for Reaffirmation)
- C37.113 Guide for Transmission Line Protection (for Reaffirmation)

9. Standards re-circulated

- PC37.90.2 Standard for Withstand Capability of Relay Systems to Radiated Electromagnetic Interference
- PC37.103 Guide for Differential and Polarizing Circuit Testing
- PC37.114 Guide for Determining Fault Location on AC Transmission and Distribution Lines

10. Standards to be re-circulated

- PC37.90 Standard for Relays and Relay Systems Associated with Electric Power Apparatus
- PC37.92 Standard for Low Energy Analog Signal Inputs to Protective Relays
- PC57.13.3 Guide for Grounding of Instrument Transformer Secondary Circuits and Cases (after resolving negative ballots)

11. Standard to be submitted for Re-affirmation

None

The PARs approved since May 2004, 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.

12. New PARs applied for

None

13. New PAR approved

None

14. PAR Extensions applied for

- PC37.101 Guide for Generator Ground Protection
- PC57.13.3 Guide for Grounding of Instrument Transformer Secondary Circuits and Cases

15. PAR Extensions approved

- PC37.118 Standard for Synchrophasors for Power Systems

16. Modified PAR approved

- PC37.92 Standard for Low Energy Analog Signal Inputs to Protective Relays

17. Modified PAR submitted

- PC37.92 Standard for Low Energy Analog Signal Inputs to Protective Relays

18. PARs expiring at the end of 2004

- PC37.90.2 Standard for Withstand Capability of Relay Systems to Radiated Electromagnetic Interference
- PC37.92 Standard for Low Energy Analog Signal Inputs to Protective Relays

PC37.97	Guide for Protective Relay Applications to Power System Buses
PC37.98	Standard Seismic Testing of Relays
PC37.101	Guide for Generator Ground Protection
PC37.110	Guide for the Application of Current Transformers used for Protective Relaying Purpose
PC57.13.1	Guide for Field Testing of Relaying Current Transformers
PC57.13.3	Guide for Grounding of Instrument Transformer Secondary Circuits and Cases

SUBMITTAL DEADLINES & STANDARDS BOARD MEETING SCHEDULE

PAR/Std Submittal Deadline	Standards Board Meeting
August 13, 2004	September 23, 2004
October 19, 2004	December 8, 2004
February 4, 2005	March 20, 2005
April 29 , 2005	June 24, 2005

Substation Committee Report

Evans

Substation Committee Data Acquisition, Processing and Control Systems Subcommittee (Subcommittee C) met with Power System Relaying Committee (PSRC) at their fall meeting in Portland, OR September 13 – 16, 2004. The C Subcommittee Working Group C1, Computer Application in Substation Monitoring and Control, arranged to meet jointly with PSRC Working Group C1 in two sessions to collaborate on an effort to assess security issues affecting substation protection and control. The respective chairs of the two working groups will produce a report outline for work assignments.

Subcommittee C Working Group C2, New Technologies In Substation Monitoring and Control, also met during this event. The meeting was attended by some PSRC members who made some interesting contributions to our discussions.

Subcommittee C task force C3TF1 met jointly with a PSRC group to discuss C3TF1's efforts to produce a recommended practice for substation communication networks. Since IEC 61850 is network based there a significant interest on the part of PSRC members in this effort. The information sharing that resulted from the joint meeting was beneficial to both groups.

The C Subcommittee also held a work session for the revision of C37.1. Several PSRC members attended this session and added to the discussions. We wish to thank them for their contributions.

As Chair of the C Subcommittee, I would like to thank PSRC for their hospitality and contributions. This has been one of the best joint meetings we have held.

OLD BUSINESS

None

NEW BUSINESS

None

FUTURE MEETINGS

January 10-13, 2005	San Diego, CA	San Diego Marriot Del Mar
May 23-25, 2005	Columbus, OH	Drury Hotels/Convention Center
September 8-16, 2005	Calgary, AB	The Westin Calgary

January 9-12, 2006

New Orleans, LA

(Joint with CIGRE SC B5)
Hotel Monteleone

B: ADVISORY COMMITTEE

Chair: R.P. Taylor

Vice Chair: P. B. Winston

B1: Awards and Technical Paper Recognition

Chair: R. Hedding

Vice Chair: F. Plumptre

No meeting was held in Portland

B2: Fellows Awards

Chair: J.S. Thorp

Nothing to report.

B3: Membership Committee

Chair: M.J. Swanson

Attendance during the PSRC meeting in Portland was 155, which is considered slightly lower than average.

10 new attendees were in our Newcomers Orientation meeting on Tuesday, which is considered normal.

Tracking retention:

New attendees at the January 2003 meeting: (4) attended all five meetings (Messrs. Christoph Brunner, Ashish Kulshrestha, Jon Sykes and David Weinbach); (0) attended four meetings, (4) attended three meetings; (4) attended 2 meetings, and (15) attended only their first meeting.

New attendees at the May 2003 meeting: (5) attended all four meetings (Messrs. P. Elkin, Fred Friend, J. Hackett, M. Schroeder, and Rich Young); (5) attended three meetings (Messrs. M. Cooper, R. Glen, M. Koiber and J. Speer); (1) attended two meetings; and (17) attended only their first meeting.

New attendees at the September 2003 meeting: (6) attended all three meetings (Messrs. D. Finney, K. Gardner, P. Martin, J. Niemira, T. Salewski, and G. Sessler); (6) attended two meetings, and (10) attended only their first meeting.

New attendees at the January 2004 meeting: (2) attended all two meetings; and (20) attended only their first meeting.

The above-mentioned attendees should be provided stimulating work so they can keep their interest high.

These previously mentioned attendees who started since 2000 are continuing their commitment: Oscar Bolado, Gustavo Brunello, Art Buanno, Bill Dickerson, Ashok Gopalakrishnan, Randy Horton, Bill Kennedy, Gary Kobet, Steve Kunsman and O. Nayak.

I am working with Bill Lowe and several others on an "About PSRC" page on our website.

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

No report

B8: Long Range Planning

Chair: George Nail

No activity to report

B9: PSRC Web Site

Chair: Bill Lowe

Accomplishments:

- Digital photos of the past meeting have been posted.
- All pages relating to the September meeting have been updated.
- Majordomo has been replaced by Listserv, by IEEE. The "how to Subscribe to the email list" web page has been updated. Lots of time spent learning the Listserv features. Names are being added to the email addresses.
- The pes-psrc mailing list subscriber data and web email addresses have been updated per information that has been provide to me.

Action items:

- Develop an "About PSRC" page. There is a link on the main page to an under construction page. I will be depending on others to provide the content. Mal Swanson will be providing some of the information that will be available through this page. We need volunteers to write the various portions that are needed. If contributors cannot be solicited, a working group will be formed to work on this project.
- Begin working on a page for advertising the guides and standards that the PSRC has developed. Repair the link to the discount guides.
- New concepts for the main page will be explored. We have to find an easier way to get people to use our site. I think there should be a lot more information available on the main page. A test page will be developed.
- Determine why users of Netscape and Mozilla web browsers are having trouble using the meeting pre-registration page. This form has been in place for more than a year and I do not recall similar problems in the past.
- There has been no simple way to obtain web statistics. The raw data is available from our site provider, but there are no simple or common tools to decipher this data. I am continuing to explore this topic. Ken Fodero has volunteered to help me with this.
- Update all necessary web pages relating to the September 2004 meeting.
- Update pes-psrc mailing list subscriber data and web email addresses.
- Work on a Main committee member web page.

C: SYSTEM PROTECTION SUBCOMMITTEE

Chair: D. Novosel

Vice Chair: T. Seegers

The System Protection Subcommittee met on September 15th, 2004 at 4:30 PM in Portland, Oregon. 42 people attended the meeting, including 14 members.

8 WGs met at this meeting. Task Force TF12 Performance of Relaying during Stressed Conditions met at the meeting as well. The C SC accepted the recommendation of the TF to form a new working group C8. Damir Novosel is appointed as a chair and George Bartok is appointed as a vice-chair of this new WG.

The C SC was informed that Tony Seegers will become a new chairman and Rich Hunt will become a new vice-chairman of the C SC in January 2005. The present chair thanked the C SC and WG members for achieving excellent results in last few years. The results have included reports and guides on very

timely and industry important topics. In last three years, 7 WGs have completed their assignments and 7 new WGs have been created.

WG Reports:

C1: Cyber Security Issues for Relaying

The C1 working group met in 2 joint sessions with the Substation Working Group C1. There were 5 members and 20 guests present in the first session and 7 members and 16 guests present in the second session.

Sam Sciacca (chair of PSSC C1) gave a status update of the Substation Working Group. Focus of C1 group is security of data and information in substations. Focus is on security of information from authorized individuals (or one who recently had authorized access) in substation and remote. Not addressing hacking, other groups are looking at that. Looking at procedures and audit trails.

Joe Gould of RuggedCom Inc gave a presentation on networks and network security issues. Specific items discussed include: Routers, Ethernet Switches, Firewalls, VPN, RAS (remote access service), Security policy.

Rick Liposchack of Microsol gave an overview of the INEEL Security Testbed Program.

There was discussion of the future direction of the two working groups. There is sufficient overlap in the issues being addressed by both working groups that the feeling was a joint effort is in order. In order to provide a timely output, a report should be produced with a recommended practice or standard developed at a later date if desired.

Solveig Ward and Sam Sciacca are to work together and decide on an outline for the report and hand out writing assignments.

C2: Power Quality Issues in Protective Devices

C2 met Tuesday September 14, 2004 in Portland, OR with 5 members and 3 guests present. The total number of members is 26.

Final draft of the report was sent out for working group ballot in August. No comments were received and only positive votes.

A contribution from Imacculada Zamora was received on the "Influence of Harmonic Distortion on Digital Protective Relays". This section will be included in the report and redistributed to the Working Group for comments by mid-October.

Next step is to send the final draft to the C-Subcommittee for balloting by mid-November with comments/ballots returned by December 15th. All comments will be reviewed at the January 11-14th PSRC meeting in San Diego.

Again - all members have been asked to review the document. The latest version of the document will be posted on the IEEE PSRC C Subcommittee website under WG C2. The link to the PSRC site will be provided in the distribution of the minutes along with the document.

C3: Processes, Issues, Trends and Quality Control of Relay Settings

Working Group C3 met Tuesday, September 14, 2004 in Portland, OR in a single session with 10 (of 26) members and 11 guests participating. 2 of these guests requested to become new members increasing the total membership to 28.

Outline was reviewed and final approval was obtained from the group. No additional changes to the outline are expected.

Most section owners have provided material for their respective sections. The initial draft will be sent to Damir Novosel, for posting to the PSRC website by September 24. Chairman to send link along with minutes to working group members.

Section still requiring input:

- Section 3.0 Quality Control and Quality Management System (**Eric Udren**, owner)
- Section 4.4 Test values (**Mike Jensen, Gary Kobet**)
- Section 6.3 Relay maintenance records (**Mike Jensen**)
- Section 8.0 Access Control (**Solveig Ward**, owner)

These individuals committed to complete these assignments by October 8. The document will be updated and reposted to the PSRC website. An e-mail will then be sent to all members and guests, directing a review of the updated draft to provide comments by December 15.

Part of the review should include a specific review of each section to develop recommendations based on our industry expertise. The intent is to provide this guidance to the regulatory bodies as the domain expert recommendations.

Dave Angell provided an overview of the WSCC requirements for relay setting review and analysis of relay operations/misoperations. **Arif Cubukcu** mentioned that one Canadian utility has similar guidelines and will provide their documentation. This material to be referenced in the document.

To review, output of the working group will be a PSRC report, with an associated Transactions paper summarizing the report. Target date for completion is 2006.

The January meeting will be used to review comments received on the October draft.

C4: Industry Experiences With Power System Protection Schemes (PSPS)

WG C-4 met in double sessions with 11 members and 30 guests.

Review of Assignments

Topics reviewed included:

- Definition for the scope of survey drafted by Charlie Henville – The scope to include UF, UV, SPS, and RAS applications. Also, noted was the possibility of NERC definition of SPS may be changing. If or when NERC revises the definition, the WG will review the new definition and if in-line with the C-4, the WG will use NERC acronym
- Outline has been proposed by Mark Adamiak, based on the preliminary list of questions discussed by the WG members. The outline will be mailed to the attendees for comments
- TW Cease will help the WG and coordinate with CIGRE to get a broader audience – There is a joint session of CIGRE and PSRC in September 2005 and information will be communicated with CIGRE in advance

Other discussions included:

- Industry experiences with wide area, RAS, and such applications should be highlighted
- Include operating practices as part of the survey

- Capture functionality of how PSPSs are to operate and work
- Survey questions should be such to add value to the users and may have some benefit to the manufacturers of the protective relays

Suggestions were made to include contact persons in case respondents have questions

Also, three members volunteered to prepare a process for ways most efficient for survey to be successful in terms of receiving responses and useful information for preparation of report

Presentation by Miroslav Begovic

The second session started with a review of the IEEE / CIGRE Committee report Industry experience with special protection schemes Paul Anderson and LeReverend

After the presentation, members discussed the next steps and members with new assignments. Writing assignments received will be distributed electronically to the members for the January 2005 meeting

C5: Deployment and use of Disturbance Recorders

The Working Group met on Wednesday, September 15, 2004 with 8 members and 5 guests present.

Vice Chairman Tony Napikoski conducted the meeting for chairman Strang who was unable to attend.

A copy of Draft 8 of the report was distributed. Outstanding writing assignments were reviewed. Several were received. The report needs to be edited with some rearrangement to better follow the outline.

Jim Ingleson did a presentation on the website where an earlier draft of the paper exists as links to individual sections. It was agreed to modify the website during the editing phase to keep the document as one piece.

A planned presentation by Larry Smith was postponed due to Larry's absence.

C6: Relay Engineering in Power Engineering Curricula

The C-6 Working group met on September 15th, with 11 members and guests present. After a constructive discussion, the group decided to develop a position paper and came up with the following outline.

Outline

- Introduction and Background
- History of Protection
- Importance of Protection for Industry
- Current Status of Courses at Universities Including International Universities
- Adequacy of Programs to Train Industry Engineers
- Prerequisites for Learning Protection
- Outline of Modules for Protection Courses
- Future Directions
- Reference (Bibliography)

A number of people volunteered for the tasks above.

C7: Guide for Protection System Testing

WG C-7 Met on September 15 in single session with total 40 (10 M, 10 G) in attendance:

Review of Assignments

The WG members reviewed several contributions and exchanged comments and observations and also had a presentation by Ratan Das

Writing assignment topics discussed included:

- Review Draft 2.1 Contributions
- Methods of Generating Test Modules and Cases to encompass real power system conditions and types of simulations such as Out-of-step, high loading etc.

Presentation by Ratan Das covering - Real Time Simulation Testing

- Reasons for testing
- Benefits of testing
- Discussion of firmware upgrades
- Over view of methods of testing, followed by comprehensive review of transient testing
- Analog and Digital Simulations
- Affects of load in relay performance
- Open and Closed loop testing
- Current reversal effects and importance of transient blocking algorithm

C9: Under Frequency Load Shedding and Restoration

The working group met on Tuesday, September 14th, with 10 members and 13 guests present. Draft 4 of the document has been updated based on comments received from the working group members. The draft document will now be sent to the IEEE Editor for pre-ballot review. The balloting body will be formed, in anticipation of balloting later this year. Because the balloting process is expected to go beyond year end, we are applying for a PAR extension.

The working group discussed writing an overview paper or transaction paper to provide a deliverable for presentation at a technical conference. The majority of the attendees agreed that a transaction paper, and an accompanying summary paper should be written. Three working group members (Alex Apostolov, Ken Birt, and Pratap Mysore) volunteered to write the transaction paper.

Power System Analysis, Computing & Economics Committee Liaison by Malcolm Swanson

No activities to report

NERC by Phil Winston

NERC representatives will be presenting Zone 3 recommendations after SC meetings.

Liaison Report of the IEEE PES Power System Stability Controls SC to the PSRC by Gary Michel

No activities to report

D: LINE PROTECTION SUBCOMMITTEE

Chair: M. Carpenter

Vice Chair: Roger Hedding

D1: Cold Load Pickup Issues and Protection

Chair: Tony Napikoski

Vice Chair: Dean Miller

No report

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

The working group did not meet.

Sent to standards board for December meeting. Completed.

D3: Impact of Distributed Resources on Distribution Relay Protection

Chair: Tony Seegers

Vice Chair: Ken Birt

Completed. Report on WEB site. Will present at regionals.

D4: Application of Overreaching Distance Relays

Chair : Russ Patterson

Vice Chair: Walter McCannon

The working group met with 46 attendees (17 members and 29 guests). This was 1st meeting of WG.

Walter McCannon agreed to accept vice chairman responsibility since Russ Patterson was moved to the Chairmanship in Randy Horton's absence.

Bill Kennedy gave a presentation pertaining to line loadability and the St. Clair curve.

Discussion followed about the possibility of expanding to include protection other than distance. A vote was taken and the majority of the group wanted to keep focus limited to distance protection.

Charlie Rogers discussed some NERC findings relating to heavy var requirements on heavily loaded lines and the effect on distance relaying.

The group began discussions to nail down the assignment. Assignment will include explanation of why overreaching zones are used (philosophy, risks etc.). Consensus was that the result of the WG would be a report to the PSRC with a paper produced for placement on the PSRC website and for presentation at various relay conferences.

A subgroup (Russ Patterson, Bill Kennedy, Simon Chano, Bogdan Kasztenny, and Eric Udren) was formed to more fully develop an assignment direction for the WG.

Volunteers For Write Up and Possible Presentation For Next Meeting

Russ Patterson (TVA zone 3 philosophy)

Simon Chano

John Burger

Next meeting will need computer projector and seating for up to 50 attendees

D5: Guide for Protective Relay Applications to Distribution Lines

Chair: W. P. Waudby

Vice Chair: R. Crellin

Working group met in double session with 19 members and 11 guests. The May meeting minutes were approved.

The working group reviewed the final 3 sub clauses of Clause 8. The Working group discussed comments submitted by Fred Friend on Clause 5 ns 7. A few writing assignments were made. They are due October 15th.

The WG requests permission to send the draft guide to subcommittee members for comment. This is expected to be done in November. These comments would then be discussed at the January meeting with the goal of balloting the guide after the January 2005 meeting.

Request double session for 40 people for next meeting.

D6: Out of Step Considerations on Transmission Lines

Chair: M. McDonald

Vice Chair: Mukesh Nagpal

WG D6 met in Portland, OR on September 14th, 2004 with 10 members and 9 guests present. The vice-chairman, Demetrios Tziouvaras, chaired the WG in the absence of the WG chairman.

The WG discussed the contents of draft 5 of the report and agreed to:

1. Add some additional definitions to the report.
2. Add some fundamental material on power system stability and the equal area criterion, including references.
3. Add two additional methods on the "Power Swings Detection Methods" section.
 - a. Swing-center voltage method by F. Illar
 - b. PSD using the phase angle difference from synchrophasor measurements or from line-drop compensation methods
4. Reorganize the material in the report for better readability.
5. Form a team of three members (Chairman, vice-chair and Bill Kennedy) to edit and produce a new draft before the next meeting.

WG members accepted new assignments and their contributions are due on October 15th, 2004. The WG vice-chair estimates that we will be in a position to ballot the WG after the January meeting that will be held in San Diego, CA.

D7: Loss of AC Voltage Considerations

Chair: E. Price

Vice Chair: R. Patterson

Working Group D7 met with 8 members and 6 guests. Draft 2.31 of the report on LOV Considerations was reviewed for content purpose and completeness. After drifting into far off areas it was decided to limit the scope of the report to loss of voltage considerations for line protection applications. There also still remain shortcomings that need to be addressed before a literary and technical editing process can begin.

The following contribution assignments were made with a completion date of November 19. Elmo will consolidate assignments by November 30 for review and comments by members before next meeting.

Art Buanno
Mike Jensen

- Write a section on LOV effects on other [than impedance and directional units] functions in the relay system that may be affected. I.e., reclosing, synch-check, etc.

- | | |
|--|--|
| Elmo Price | <ul style="list-style-type: none"> • Add a disclaimer stating that LOV applied to line protection may not be applicable to protection of other equipment. • Change miniature circuit breaker (MCB) to molded case circuit breaker (MCCB) • Add section on change detector • Add words about system grounding on application of LOV logic |
| Walter McCannon | <ul style="list-style-type: none"> • Work with Elmo and add figures under AC Voltage Circuit Configurations and Logic • Fix CTs on figures |
| Gary Kobet | <ul style="list-style-type: none"> • Write-up on open delta VTs and broken delta applications for voltage polarizing |
| Elmo Price
Gary Kobet
Rich Young | <ul style="list-style-type: none"> • Add figures and finish section on LOV logic |
| Elmo Price, Art Buanno,
Mike Jensen, Ken Brendt | <ul style="list-style-type: none"> • Write a discussion on other [than blown fuses] LOV cases. E.g. relay gets potential from VT, but separated from VT by bus tie breaker. (done) • Elmo to revise section on risk analysis and forward to Art, Mike and Ken for review by mid October |

Next meeting Requirements: Single meeting, 20 persons, computer projector

D10: EMTP Reference Models for Transmission Line Relay Testing

Chair: K. Mustaphi

Vice Chair: T. Sidhu

The working group met on Wednesday, Sept 15, 2004 with 5 members and 6 guests. 12 out of 15 members sent in their ballots on draft 9 with no negative ballots. 5 requested small editorial changes which will be in draft 10. Draft 10 will be sent to subcommittee members and will be posted on the website as well. It is expected that the paper will be presented to the PSRC members and regional conferences in 2005.

next meeting : one session, 25 people, no a/v

DTF1: Justifying Pilot Protection of Transmission Lines

Task Force DTF1 met Tuesday, September 14, 2004 in Portland, OR in a single session with 25 in attendance.

It was stated at the outset that the issue to be addressed was not the selection of which pilot scheme to use, but rather whether high-speed clearing down 100% of the line was required (with the alternative being three-zone non-pilot step distance using time coordination). Existing literature seems to address the former, without necessarily addressing the latter.

The proposed scope of the working group was:

- Describe specific criteria different utilities use for requiring pilot protection (high-speed reclosing, power quality, stability, limit fault damage, high SIR)
- Develop criteria utilities use for determining how many pilot systems are available (by voltage level, line criticality, etc) - Some utilities require one, two, three pilot systems
- For lines that have pilot protection, what should be done if pilot channel(s) become unavailable? Or for temporary configurations?
 - Operate step distance, switch line out, set zone 1 to overreach temporarily
 - Some would say: Relays are NOT required to operate the power system

- NOTE: Some relay systems are completely disabled (no 3ZNP) when pilot is off, e.g., some Uniflex, MOD III, etc.
- In main/transfer bus stations with spare line breaker/relays, should pilot protection be transferred to spare?

The scope will include both transmission and distribution lines.

After discussion of the issue and proposal, 16 attendees supported the creation of a working group, and 12 of those expressed interest in becoming members of the working group.

After additional discussion, it was noted this topic was not suited to a guide, since there are many considerations based on geographic location, isokeraunic level (lightning), regulatory requirements (if any, e.g., WSCC). Thus, the probable output of the working group will be a report to the D Subcommittee. Target date for completion has not been set.

The upcoming January 2005 meeting in San Diego will be used to develop the scope and an initial outline. Also there may be one or two short (5-10 minutes) presentations from utilities on their policies in requiring pilot protection.

Next meeting request single-session, 25 participants, with computer projector.

New Business

DTF1 will now be called D8.

C37.113 Transmission Line Protection Guide expires at the end of the year. It was reaffirmed with 3 negative ballots. They were resolved by saying they would be taken under advisement during the next update. It will be reaffirmed at December board meeting. The guide needs to be revised. A new working group is being formed, D9 chaired by Moh Sachdev, to update C37.113, the Transmission Line Protection Guide.

4 new members were added to the subcommittee:

Walter McCannon
Ken Birt
Randy Crellin
Bogdan Kasztenny

High Impedance Fault Activity

Charlie Henville reported on a phase to phase fault on a 138kV line that had a fault resistance of 50 ohms primary. It started out as a three phase fault.

345kV line hitting a tree started the May 14th blackout.

Moh Sachdev motioned the line protection subcommittee thank Mark for 3 years of exemplary service.

H: RELAY COMMUNICATIONS SUBCOMMITTEE

Chair: K. J. Fodero

Vice Chair: A. P. Apostolov

H2: PROTECTION USING SPREAD SPECTRUM COMMUNICATIONS

Chairman: Ken Behrendt
Vice Chair: Bill Lowe
Output:
Established: 2001
Expected Completion Date: 2003

The H2 working group met in a single session on Tuesday, September 14, 2004 with 8 members and 11 guests in attendance.

After introductions the chairman explained the status of the latest draft.

A lively discussion ensued relating to the clause about security. As the present paragraph read, it was interpreted as relating to data security not relay protection security. The clause will be re-written so that it pertains to the relay protection function and a reference will be made to the issue of data security. Also appendix 11.4 will be deleted.

Several areas of the draft were discussed and the following assignments were made.

- Ken Federo will rewrite the section on security.
- Dave Angell will revise example drawings and narrative to remove company references.
- Bill Lowe will revise example drawings and narrative to eliminate company references.
- Chris Huntley will send the chairman details of some reference documents.
- Murty Yalla will summarize the standard protocol table and remove references to manufacturers.
- All other members should submit comments to the Chair as soon as possible so the document can be finalized by the next meeting.

These additional assignments should complete the paper. Hopefully the next draft (Draft 5) will be final. It will be the goal to submit this paper to the main committee as early as the January meeting. A revised draft document (Draft 5) will be posted on the H2 web site after the assignments have been received.

The next meeting will consist of a single session. A room for 25 is needed.

H4: COMTRADE Issues

Chair: Ratan Das
Vice Chair: Amir Makki
Output: Recommended Practice
Expected Completion Date: 2005

The Working Group H5d, met on September 14, 2004. Eight members and eleven guests were present. The minutes of the May meeting held in St. Louis, MO was approved.

Chair informed the members about the reaffirmation of C37.111 standard and comments received, based on the information received from the Standards coordinator Prof. Sachdev. One of the comments was addressed in the assignment by Jim Hackett which was discussed during the meeting.

Discussions were held on two assignments by Jim Hackett and Benton Vandiver. Members suggested some changes in the first assignment. Written comments are due on the second assignment by Nov 15. All Assignments distributed earlier are due by Nov 15, 2004.

We will meet at the January 2005 meeting. We need a room for 40 people with a computer projector.

At the conclusion of this business, the meeting was adjourned..

H5: Common Data Format for IEDs

Chair: L. Smith
Vice Chair:

Output: Recommended Practice
Expected Completion Date: 2005

See reports from working groups H5-A, B and C below.

H5-A: Common Format for IED Configuration Data

Chair: D. Weinbach

Vice Chair: Dac-Phuoc Bui, Hydro Quebec TransEnergie

Output: Recommended Practice

Expected Completion Date: 2005

Met on Wednesday, September 15, 2004 at 8:00AM
23 in attendance. 11 Members and 12 guests

Summary:

Alex Apostolov and Benton Vandiver presented examples of XML files and a sample structure of a PDIS object.

The chairman and Art Buanno presented Arts example of Generator Protection functions and sub-functions. Ashok Gopalakrishnan presented requirements for distance relays and pointed out some possible areas needing further definition.

It was agreed that H5a should not duplicate any existing effort by creating IEEE standard that is parallel to but different from IEC standard. Instead, we will provide input to IEC 61850 Substation configuration language activity.

Krish Narendra asked if there was a way for logic equations to be represented. – Chairman reminded the group that this had been discussed at the prior two meetings and it was agreed that a standard representation of relay logic was outside the scope of H5a. A separate group might be formed to deal with this issue.

Concern was raised regarding Corruption of XML files – Arif Cubukcu volunteered that xml signatures can deal with this problem, and will provide further information

Assignments:

Note: The website will be used to distribute and share the following information.

Alex-	Will put together a single master logical node with all possible elements and the XML file that goes with it.
Krish-	Recorder node
Roger-	Protection channel requirements
Various vendor members-	how does existing structure match their products? What is missing?
Ashok-	Distance relay requirements

H5-B: Common Format for IED Event Data

Chair: M. Adamiak

Vice Chair: K. Narendra

Output: Recommended Practice

Expected Completion Date: 2005

WG H5-b met on Wednesday with 11 members and 4 guests. The meeting started with a presentation and subsequent discussion of a “Strawman” for the proposed XML format. Christoph Brunner followed up with a presentation showing the mapping of the IEC 61850 event log into XML. Ensuing discussion identified the following issues and subsequent tasks:

1. Christoph Brunner is to make his XML mapping available to the WG.
2. It was noted that additional information would be needed for a given event (such as the status of the active setting group for a fault event). Need to identify a mechanism of how to make this happen. Assigned to Christoph Brunner and Alex Apostolov
3. Need to create an example "style sheet/schema" for presenting the XML formatted events in a user-presentable format. Assigned to Erich Gunther, Alex Apostolov, and Mark Adamiak
4. It was noted that it was desirable to standardize on the "event data" formats that are to be included in the XML files. Assigned to Alex Apostolov to create the "standard" model for the PDIS trip event.
5. All attendees were tasked with providing the chairman suggested event organizations so that "standard" event types can be identified. Assigned to all attendees.
6. The concept of assigning an "event type" that would allow filtering of events was well accepted, however, there a need to identify the range of event types that might be needed. Strawman suggestions included:
 - System Events (faults, trips, overloads)
 - System Operation Alarms
 - Device Alarms
 - Relay Targets
 - Operation Alarms
 - Maintenance Alarms
 - System Operation Alarms
 - Setting Alarms
 - External Environment

Other items that were identified for inclusion in the XML format included:

- Allowance for Unicode for multi-language support
- Goal to standardize event names
- Standardize on "event values" (such as Fault Report data) wherever possible
- Look at the event file validation through the XML Schema
- Note that the time tag is to be UTC based
- Clarify the "TimeOfEntry" time tag in IEC 61850 vs. the 8-byte TimeStamp format

Need to create an application note on the application of the XML event format on a substation/system basis

Note that all assignments should be completed December 3, 2004.

H5-C: Common Format for IED Sampled Data

Chair: Benton Vandiver

Vice Chair:

Output: Recommended Practice

Expected Completion Date: 2005

The working group met on Wednesday, September 15, 2004, with 10 members and 7 guests present following concurrent sessions with H5-a and H5-b. The meeting minutes from the May meeting in St. Louis were reviewed and approved by the committee.

The long awaited presentation from Erich Gunther on the conversion of a COMTRADE file to a PQDIF file (and back) was presented to the group. A discussion on the process, problems, and identifiers (present and missing) in COMTRADE exposed areas for improvement in the existing standard for proper mappings to be made. The reverse conversion from PQDIF to COMTRADE also showed areas for improvement. This exercise was excellent and will be a key part of the WG report.

The topic of Data Formats and Data Types for existing standards and those identified as lacking in the existing COMTRADE were reviewed again along with the report outline. Initial writing assignments in

support of the WG report were solicited and some volunteers noted for some sections. All documents will be distributed to participants by email for review and comment.

The H5-c working group expects to meet again in concurrent sessions with H5-a and H5-b in a combined meeting requiring a room for 30 with PC projector and screen as part of a triple session.

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

Report not available.

H8: FILE NAME CONVENTION

Chair: A. Makki
Vice Chair: Ratan Das
Established: 2003
Expected Completion Date:

Report not available.

H11: REVISION TO THE SYNCROPHASOR STANDARD

Chairman: K. Martin
Vice-Chairman: Dan Hamai
Established: 2000
Output: Revised Standard PC37.118
Expected Completion Date: 2003

Working Group H11 met at 9:30 am on Wednesday, September 15 in a double session. Ten members and twelve guests were present. Draft 5.1 and a list of suggested changes were distributed.

The minutes from the May meeting were read and approved.

The WG has received an extension for the PAR from Dec 2004 to Dec 2006.

Draft 5.0, which incorporated all the changes recommended in the May meeting, was circulated in July for an Email vote. It was approved with a vote of 12 to 1. A number of additional changes were requested in response to this vote as well. Draft 5.1 was created to incorporate most of these recommended changes, and the rest were deferred until this Sept meeting.

In this meeting, draft 5.1 was reviewed along with the change list from the vote on draft 5.0. The WG decided to make the following changes:

An explanation of the $t_0 = 0$ for annex G will be added.

After lengthy discussion of the merits of having a single or multiple compliance levels for allowable measurement error, the WG decided to have 2 levels of compliance, level 0 which is a minimal set and level 1 which is the compliance set that was previously in the standard. (Other levels may be added in future versions of the standard, but they should be linked to the applications they serve.) Some

clarification was added to the table. Additional explanation will be added at the end of the table to clarify the terminology.

The fraction of second word (32 bit) will have the status byte changed to make it compatible with IEC61850. This word will be added to all messages to make them consistent in the full time stamp.

The definitions of time sync, PMU sync bit, and auto-aliasing will be updated by Mark A and Bill D and submitted to the WG Chair by Sept 24.

A number of wording changes that were suggested were adopted. There were also a number of requested changes that were not adopted.

The WG is in agreement that the standard is complete in substance. The changes worked out in the course of this meeting and the small writing assignments will be incorporated in the next draft (6.0). This will be circulated for a short 2 week review to the WG in early Oct. This review will only be for typographical errors or language clarification. After that, the Chair and members will review and correct formatting for the IEEE standards requirements, and then submit the document for IEEE editing review. It is hoped the document can go to balloting by the end of the year.

H14: Telecommunication Terms Used by Protection Engineers

Chairman: Roger Ray

Vice Chairman: Ray Young

Established: ?

Output: ?

Expected Completion Date: ?

Report not available.

Task Force Reports

HTF2: Broadband Communications over Power Line Carrier

Co-Chairmen: Veselin Skendic and Mark Simon

Established: 2003

Expected Completion Date: ?

The group met on Tuesday with 15 members.

Mark Simon informed the members about ongoing PES Communication Committee work (P1675, standard for Broadband over Powerline) who's PAR was approved in 2002. Members were informed about our early attempts to establish communications with this group.

Erich Gunther reported being present at the 1st P1675 meeting. He indicated high interest with app. 30-40 people present at the meeting. Current work emphasis is being put on means and methods for coupling / decoupling the BPLC signals on the line and safety aspects (equipment / practices) of this interface.

Erich Gunther also showed an ARLL video demonstrating potential interference between the BPLC devices and amateur radio equipment / services.

Dave Angel from Idaho power shared his company experience with the pilot deployment of a BPLC based Internet service. The pilot serves 20 underground and 30 overhead customers. Link to the customer premises is established using WI-FI technology.

Taskforce future was discussed at the end. The group decided to turn in our preliminary findings to the H subcommittee, and request that the taskforce be converted into a long term monitoring effort. The

frequency of the meetings would be reduced to app. 1-2 per year, with actual frequency being determined based on the availability of the new material.

HTF3: Asynchronous Fiber Optic Multiplexers

Chairman: Bill Higinbotham

Established: 2004

Expected Completion Date: ?

Report not available.

Liaison Reports

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

No report is yet available from PSCC. January meeting in San Diego.

2. Substation Committee - J. Tengdin

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

Coordination Reports

Old Business:

New Business:

I: RELAYING PRACTICES SUBCOMMITTEE

Chair: J. W. Ingleson

Vice-Chair and Webmaster: T. S. Sidhu

1. Introduction: The Relaying Practices Subcommittee (SC) met on September 15, 2004 in Portland, OR. Introductions were made, and an attendance list was circulated. The recorded meeting attendance was 19 Subcommittee Members and 11 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 some brief items from the Advisory Committee meeting.

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. Formatting problems sometimes occur in copying WG reports to their website and thence to the SC minutes. We suggest that, if you perceive that there are formatting problems, you will consult the WG web page directly.

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 Chair reported that, at its June 2004 meeting the Standards Board rescinded the approval of the guide on the advice of the IEEE's legal councils. The draft was revised as per the legal advice. The revised draft was recirculated. One negative ballot was resolved and the draft guide was submitted for the approval of the board at its September meeting.

I2: Terminology Usage Review

Chair: M. J. Swanson

Vice-Chair: Barb Anderson

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

The I2 Working group met at 11:00 am on Tuesday, September 14, 2004 with six members. Mal Swanson chaired the meeting. The Working Group then reviewed terms from various documents.

1. Terms from the Audio Tone Guide C37.93 were given final approval, and will be added to "Suggested New Definitions #5" (SND5).
2. Terms from the Guide for Fault Locating C37.114 were approved as revised, and will be added to SND5.
3. Terms from PC 37.110/D4 were discussed. Several terms were similar to those in IEEE 100 (1996) and (2000), and need to be given to the PC37.110 working group chairman to revise the document accordingly. Tony Napikoski will talk to the working group chairman to see if they want to make changes or additions to the definitions found in IEEE 100.
4. Terms from the Guide for Generator Ground Protection C37.101 were approved as submitted, and will be added to SND#5.
5. Two terms from the IEEE1344 Synchrophasor Standard (PC37.118) were approved, and will be added to SND#5. Roger Whittaker will ask Ken Martin to have the PC37.118 working group define two other terms from the document.
6. Fred Friend and Jeff Burnworth agreed upon changes to selected terms in C37.90.2.
7. Fred Friend has reviewed C37.117, which will be discussed at the next meeting.
8. Oscar Bolado has reviewed C37.231 and found no new terms.
9. Oscar Bolado will review PC37.98.
10. Frank Plumtre will review C37.116.

The Chairman then presented possible plans to recognize Jim Huddleston's many years of service to the PSRC. Rick Taylor will work on a Committee-wide recognition, possibly to be presented at the January, 2005 meeting. I2 discussed plans for the working group, as well, such as assigning Jim a mock document to review. Walt Elmore was asked to give a "roast" type speech, along the lines of the one he gave for the 50th (75th) PSRC Anniversary.

The meeting was adjourned at 12:30 pm.

I3: Microprocessor-based Protection Equipment Firmware Control

Chair: R. Beresh

Vice-Chair: D. Weinbach

Output: Recommended Practice

The meeting commenced with introductions. There were 16 members and guests in attendance. Draft 5 of the document was reviewed with respect to the following items:

- Details of the examples included in Annex “A”
- Discussion of the newly added Abstract
- Discussion of testing requirements subsequent to a firmware change
- Need for a bibliography
- Names included as contributors
- General discussion
- Review of the primary objective to ensure our compliance with the original intent.

The document will be revised as soon as possible and submitted for editorial review and then balloting.

Bob mentioned the new IEEE format for balloting regarding the “open balloting” process and encouraged all members to ballot as soon as possible.

The members were thanked for their contribution and perseverance.

I4: IEC Standards Advisory

Chair: E. A. Udren

Vice-Chair: M. M. Ranieri

Output: IEC Standards Advisory

WG I4 is a continuing group that reviews and develops US positions and inputs for IEC TC 95 (Measuring Relays) standards projects. I4 incorporates the Technical Advisory Group (TAG) to the US National Committee of IEC for TC 95.

The WG had no new Portland business and did not meet.

For the January 2005 meeting in Portland, we expect 1 session with 15 attendees and no projector needed.

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 did not meet. During the summer, a problem with the title of the standard was resolved with the standards board. Draft 12 is going for recirculation balloting in September.

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 WG met to review all the final negative ballot comments compiled for C37.90 D14. We also reviewed our final re-circulation letter and the list of changes made in D14 for D15 along with the detailed information shown in our IEEE spreadsheet. All this information along with a copy of our C37.90D15 was uploaded on Friday. We had a minor problem converting the C37.90D15 document into a pdf format and with some help from Moh on Tuesday, we were able to upload a new zip file with a corrected pdf version into the IEEE web site today. The chairman will send out copies of our original WG assignments to affirm our review of the comments and to confirm that all of the negative balloters are contacted again to request that they vote affirmative on C37.90D15. We also discussed our previously assigned WG

assignments for work on our summary paper. At this point all the necessary information for the re-circulation balloting process has been uploaded and after completion of the appropriate submittal form we look forward to the completion of this final phase of the process.

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

Chair: J. Teague

Vice-Chair: J.T. Tengdin

Output: New IEEE Standard C37.90.3

IEEE Std C37.90.3 was published by IEEE-SA in October 2001. The WG has completed a summary paper and has submitted it for approval. The summary paper explains the differences between IEEE C37.90.3-2001 and the relevant IEC standards, and the reasons for the differences. This WG has completed its assignment and was disbanded with thanks on January 15, 2003.

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

Chair: J.G. Gilbert

Vice-Chair: J. Teague

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

This WG has completed its assignment and has been disbanded with thanks by the Subcommittee. See WG web page for background information.

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

Chair: S. Mazumdar

Vice-Chair: S.M. Usman

Output: Revision of C37.105

The meeting of the Working Group I-9 for revision of IEEE Standard C37.105 "Qualification of Class 1E Protective Relays for Nuclear Power Generating Stations" was chaired by Sahib Usman, Vice-Chairperson of the Working Group. Seven members of the Working Group attended the meeting.

The attendees were informed that the latest draft 10 has been issued for balloting. The ballots are due by October 8, 2004. It is planned to resolve the comments, if any, during the next meeting scheduled for the second week of January 2005.

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

Chair: M. Nemier

Vice-Chair: M. Bajpai

Output: Revision of IEEE Standard C37.98

There were 5 members and 1 guest in attendance: Marie Nemier, Munnu Bajpai, Mario Ranieri, Vittal Rebbapragada, Jeff Burnworth, and Steve Kunsman; Mason Clark.

The major items discussed are as follows:

- Incorporating IEC 60255-21-3 test severity class into the C37.98. C37.98 does not use class ratings for relays. Another class, X, will be added to IEC 60255-21-3 table 3 to define a C37.98 relay. IEC 60255-21-3 table 2 will also be updated to include the new class X. The tables will then be added to C37.98. The location in the document was not yet determined. Another column will be added to table 2 to include the type of test, proof or fragility. Assignment: Mario Ranieri
- Figures 1 & 3 from C37.98 and Figure 1 from IEC 60255-21-3 shall be combined to one Figure with new labels for the points describing the standard response spectrum. The new figure shall be in a format compatible with the IEEE style manual and file type. Assignment: Jeff Burnworth and Munna Bajpai.

- IEEE C37.98 section 6.2.1.2 shall be rewritten to refer to a narrow band response spectrum as a site specific test (plant specific). Assignment: Vittal Rebbapragada.
- Steve Kunsman shall review Table 1 of C37.98 for correct terminology and develop a footnote for multifunction relays.

I11: Survey of Relay Test Practices

Chair: E. Krizauskas

Vice-Chair: W.G. Lowe

Output: Conference Paper

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

The previous such survey report was published in the IEEE Transactions on Power Delivery, Volume 9, Number 3, July, 1994.

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)

Working Group I12 met in the morning of 15 September with 3 members and 3 guests. The Working Group Chairman notified those present that the Vice-Chairman was completing Draft 6 of the guide and submitting it to the IEEE editor for review today. It is expected that the I12 Working Group will be able to submit the subsequent draft for balloting by the IEEE Standards Association shortly, but will need to apply for an extension of the PAR to complete its assignment.

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 Three Sisters, Doubletree Hotel, Portland OR on September 14, 2004. Seven members and four guests were present. The Chairman reported that balloting was completed by the SA. Three negative ballots were received. The working group discussed changes and corrections to the guide to address the negative ballots. Figure 9 is to be corrected to show a second ground connection per the text of the guide (Section 4.6.1.3). The revised document will be recirculated for balloting by the SA. The Chairman updated the PAR to include a revised scope and purpose of the guide. It would be useful to add a figure to Annex A describing why a ground shield is brought back through a window-type CT for proper operation. A summary of V. Rebbapragada's review of other standards will also be placed in an Annex B of the guide. Finally, S Usman will prepare a two-page summary paper for publication in the "Energy and Power" magazine of the IEEE PES. The working group will meet at the January 2005 meeting to review the result of the balloting and discuss the draft of the summary paper.

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

Chair: T.A. Phillippe

Vice-Chair: R. Young

Output: Special Publication

By action of the SC, this WG was transferred into Relay Communications (H) Subcommittee. Reports of this group will no longer appear under this SC.

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

Chair: G.P. Moskos

Vice-Chair: B. Jackson

Output: Revision of IEEE C37.110-1996

The working group did not meet in September and will be balloting shortly.

I16: Understanding Microprocessor-Based Technology Applied to Relaying

Chair: M.S. Sachdev

Vice-Chair: R. Das

Output: Guide

I16 did not meet during the September 2004 meeting.

I17: Trends in Relay Performance

Chair: W.M. Carpenter

Vice-Chair: J.D. Wardlow

Output: Special Report

The Working Group met on May 18, 2004 with 3 members and 9 guests. The performance data from 2003 was presented. A total of 4 years of data has been collected. Four companies participated in all four years, and 5 other companies participated in a fewer number of year. One company's data was inadvertently omitted from the tabulation. It will be added, the report put on the Web, and a presentation made in the future to the main committee. The committee will not meet again until the January 2005 meeting. The Working Group will continue to annually update the report.

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 4 members and 2 guests.

The present status of the standard was discussed. Recirculation was completed, with no negative ballots. The standard is on the RevCom agenda for the September meeting.

It was suggested that a summary paper be presented at several of the upcoming technical conferences. Conferences include Georgia Tech and Texas A&M. Roger Ray volunteered to present the paper at both conferences.

Jeff Burnworth will work with other Working Group members to develop the summary paper and submit for presentation at the identified conferences.

Action Items:

Jeff Burnworth

- Utilizing working group members, develop a summary paper.

- Submit summary paper for presentation at Georgia Tech and Texas A&M conferences.
Roger Ray
- Present summary at conferences.

I19: Analysis of Substation Data

Chair: L.E. Smith

Vice-Chair: B.A. Pickett

Output: Special Publication

The final report was posted on the I19 web page on April 17, 2002. It was presented at the 2002 Fault and Disturbance Analysis Conference at Georgia Tech. Chair, Larry Smith was given an award at this conference for his presentation. The assignment has been completed. Thanks to all who participated in this work. This working group was disbanded with thanks by action of the Relay Practices Subcommittee on May 22, 2002.

5. Task Force Reports:

ITF1: Relay Service Letter Database

Chair: J.W. Ingleson

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

ITF2: Application of Rogowski Coils used for Protective Relaying Purposes

Chair: L. Kojovic

The group met with 8 members and 9 guests. Meeting started with a short overview of the ongoing IEEE standardization activities, followed by a reviewing the taskforce "Assignment" / "Scope" statements, and the proposed guide outline. This group is ready to submit the PAR, and convert to a working group status at the next meeting.

Projected needs for the next meeting: 25 attendees, with Computer Projector.

ITF3: Conducted Electromagnetic Interference

Chair: W. Higinbotham

Vice-Chair: J. Burnworth

This TF has been disbanded with thanks by action of the Subcommittee.

ITF4: Optical Current and Voltage Sensor Systems

Chair: H. Gilleland

Assignment: Report to Subcommittee

Objective:

Determine if there was a need for and sufficient interest by PSRC members for the Task Force to recommend that a Working Group is set-up to develop Guide or a Standard for optical current sensor technology in relaying applications.

Activity:

The Task Force held four working sessions to discuss the issues related to this assignment. The meetings were all well attended, and there were a lot of spirited discussions

Recommendations:

- The Task Force decided to recommend that a PSRC Working Group be established to develop a Guide for the “Application of Optical Current and Optical Voltage Sensor Systems for Protective Relaying”.
- The Guide would address both current and voltage optical sensor system technology.
- Other non-conventional low-energy technologies, such as Rogowski coils, will be included as an Annex in the Guide.
- The Guide will address the issues and needs of PSRC members – it is not intended to duplicate or conflict with standard activity in-work or already completed

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 to that group. Reports will no longer appear under this SC.

J: ROTATING MACHINERY PROTECTION SUBCOMMITTEE

Chair: S. P. Conrad

Vice Chair: W. G. Hartmann

Chair: S.P. Conrad

Vice Chair: W. G. Hartmann

Reported by: J. D. Gardell

The Subcommittee met with 12 members and 6 guests in attendance on September 15, 2004 in Portland, Oregon. The meeting was started with introductions, sign-ins, and approval of the previous meeting’s minutes. The Chairman reported on the Advisory Committee meeting highlights.

J3: Protection of Generators Interconnected with Distribution System

Chair: E. Fennell

Vice Chair: R. Pettigrew

Output: Transaction Paper

The Working Group (WG) met with 8 members and 16 guests and was chaired by Bob Pettigrew, Vice Chair.

The WG reviewed Draft 5 of the transaction paper. Comments received were primarily editorial in nature. Expansion of Section II was requested (Definitions and Acronyms). The document will be reviewed again for consistency in terminology and grammatical usage.

The WG plans to submit the paper to the J Subcommittee for publication approval prior to the January 2005 meeting.

J4: Revision of C37.102 AC Generator Protection Guide

Chair: M. Yalla

Vice Chair: K. Stephan

Established: 2000

Output: Revised Guide

Expected Completion Date: 2004
Status: 14th meeting

This meeting of Working Group J4, C37.102 IEEE Guide for AC Generator Protection was held on Tuesday, September 14, 2004, with 13 members and 9 guests in a double session and was chaired by Kevin Stephan, Vice Chair.

Draft 5 of the guide was issued before this meeting and the changes from Draft 4 were discussed. Major discussions included acceptable time delays and insulation coordination for overvoltage relaying when used for tripping, reverse power settings on diesel generator units, use of saturated vs. unsaturated values for machine impedances, re-writing the section on sensitive ground fault protection to better explain the biased ground differential scheme, use of recording voltmeters for ground protection on high-impedance grounded machines, use of the 32 function on cross-compound units, and general comments on cleaning up figures, text, and the example settings annex.

Writing assignments are due October 15, 2004.

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

The Working Group (WG) met with 7 members and 13 guests and was chaired by Mike Reichard, Vice Chair.

The majority of the meeting was spent reviewing Draft 5 of the paper. Comments discussed during the meeting centered on formatting and editorial issues. Technical aspects of the paper are complete. Draft 6 will be submitted to the WG members for review prior to the paper being submitted to the SC for approval prior to the January meeting.

J6: Performance of Generator Protection During System Disturbances
Chair: S. Patel
Vice Chair: K. Stephan
Output: Transaction Paper

Working Group J6 met on Wednesday, September 15, 2004, in a single session with 5 members and 7 guests and was chaired by Kevin Stephan, Vice Chair.

IEEE has sent the chair the publication proof and it has been accepted. The IEEE is scheduled to be published the paper in October. The paper is available on the PSRC website until it is published by the IEEE.

Again the possible effect of the August 14, 2003 blackout event on this Working Group was discussed. Several representatives from the NERC task force were present at this meeting and noted that more detail is still coming. Coordination with underfrequency load shedding is a concern. One of the proposed technical exceptions to the NERC Rule 8a cites the J6 paper as a reference and proposes a similar setting criterion for distance relayed lines out of power plants. The NERC exception was discussed in detail and its intent is to allow lines leaving predominantly radial power plants to have their relays set based on generation rather than the thermal limits imposed by Rule 8a. The NERC staff emphasized the need for transmission and generation planners and protection engineers to work together to prevent blackout conditions.

The WG felt at present, there is no information available or anticipated to warrant an addendum or additional work to the J6 paper. Therefore, it is recommended that the group disband. The SC accepted this recommendation and the WG is disbanded.

Subhash Patel will contact Charlie Henville to discuss the possibility of presentation of the paper at regional relay conferences or other forums.

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

Chair: J.T. Uchiyama

Vice Chair: R. Das

Output: Revised Guide

The Working Group J7 met on September 14, 2004 with 9 members and 8 guests in attendance and was chaired by Ratan Das, Vice Chair.

The Vice Chair opened the meeting and informed the participants that the Chair Joe Uchiyama is in Kabul, Afghanistan for one-year assignment and the Vice Chair is in contact with the Chair for coordinating the activity of the working group. Chair has informed J Subcommittee chair that he will provide Draft 5 WORD file to him in November (At the time of issuing the minutes, Vice-chair has received the WORD file from the chair).

Vice Chair will provide reasons for working group PAR extension, which expires in 2004, to PSRC Standards Coordinator (Done). PSRC Standards Coordinator already provided reasons to IEEE Standards Coordinator.

Following is the summary of discussion on Draft 5:

Discussion was held to include high reactance grounding. It was decided that Method V: Resonant Grounding with a Ground-Fault Neutralized covered the subject.

Dale Finney's memo and section 18d write-up **Mike Reichard** to review Draft 5.

Dale Fredrickson's comments **Dale Fredrickson** to implement editorial comments into Draft 5.

Bob Pettigrew's comments **Bob Pettigrew to review**

- Page 14 to review why the "(?)"

- Review Section 6 and Table 1 for consistency

- Remove column (G) from Table 1, (**coordinate with Wayne Hartman** why (G) was included

Replace "COMPSHUT" with "complete shut down", page 22 in Draft 6 - **Ratan Das**

Revise following figures: AI **Darlington**

- Fig 8S, replace "52a" with "52b", page 32

- Fig 20, page 56 and Fig a and Fig b, page 61, remove red fonts

Review Draft 5:

Sections 1 & 2 – **Phil Waudby**

Section 3 – **Steve Conrad**

Section 4 - **Sudhir Thakur**

Sections 5 & 6 - **Wayne Hartman** and **Bob Pettigrew**

Section 7 – **Dale Fredrickson** and **Vittal Rebbapragada**

Section 8 (references and figures for conformity) - **Ratan Das**

Vice chair will provide zipped WORD file of Draft 5 (about 2.3 MB) to all members/guests, named above by 11/19/04. Members/guests will return the edited sections to the Vice-chair by 12/13/04. Vice-chair will incorporate all edited sections into Draft 6 and circulate to all members and guests by December 22, 2004.

JTF1: "Protection of VFD Motors" Task Force

Chair: J. Gardell

Output: Task Force Report

The Task Force (TF) met in a single session with 8 members and 5 guests and was chaired by Jon Gardell, Chairman on September 15, 2004 for a single session.

The two areas of discussion during the meeting were the two case studies and the Draft 1 paper outline. A key point of consideration that arose during the discussions was that some drive manufacturers are expressing reservation regarding application of additional external protection. This needs to be carefully considered and investigated by the TF.

The TF will take two parallel future steps next, which are to invite Mr. Ed Owen from GE as a guest speaker on drives and secondly to provide comment on the draft outline.

Comments are due to the chair by November 15, 2004. The chairman will revise the outline and distribute the comments to the members prior to the January 2005 meeting.

Liaison Reports

Electric Machinery Committee

No report

C.J. Mozina

IAS I&CP Committee

No report

C.J. Mozina

Coordination Reports

P958-EDPG, Guide for Adjustable Speed Drives

The IEEE has published the Guide and it is available from them either in PDF or paper format.

J. Gardell

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

No report.

R.V. Rebbapragada

P1010, Guide for Control of Hydroelectric Power Plants Wayne Hartmann

No report. Coordination complete.

Old Business

No report

New Business

The Subcommittee welcomed Mike Reichard and Mike Thompson as new members of the SC.

Ratan Das will provide a write-up suggesting a new activity in the area of guidance for testing to evaluate performance of generator relays.

K: SUBSTATION PROTECTION SUBCOMMITTEE

Chair: C. R. Sufana

Vice Chair: F. P. Plumptre

The Subcommittee met Wednesday September 15, 2004, at Portland, Oregon with 17 members and 26 guests attending. The minutes of the previous meeting in St. Louis were approved.

ITEMS OF INTEREST FROM THE ADVISORY COMMITTEE MEETING:

Charlie Sufana reported:

1. Starting January 2005, there will be a new procedure for handling the balloting process. The Working Groups will be responsible for deciding the start/stop dates, who is on the balloting body, etc.
2. There was discussion on how to advertise better the PSRC work. This might include new webpage designs. The Subcommittee members were encouraged to advertise at the various regional conferences.

Reports from the WG Chairs

K1: GUIDE FOR THE PROTECTION OF TRANSFORMERS AGAINST FAULTS AND ABNORMAL CONDITIONS

Chair: Mohindar Sachdev

Vice-Chair: Pratap Mysore

Established: 2003

Output: Subcommittee Report

Expected Completion Date: 2008

Draft 2

K1 working group met in one session on Wednesday September 15, 2004 with 11 members and 19 guests. Four of the guests signed up to be new members. Comments received on draft 1 and new assignments received after the last meeting were reviewed. New assignments were made. Draft 2 will be sent out for review before the next meeting. WG plans to meet in one session at the next meeting with a seating capacity for 40 participants and with a computer projector.

K2: BREAKER FAILURE PROTECTION

Chair: R.A. Hedding

Vice Chair: A. CHAUDHARY

Established, 2001

Output: ANSI C37.119

Expected Completion Date: 2006

Draft 4

K2 met with 17 members and 10 guests in a single session Tuesday morning, September 14, 2004. Prior to the meeting, the Guide was sent to the IEEE Editors for pre-ballot comments. Comments were received and incorporated into the Guide.

Final review of the Guide prior to balloting was completed after some changes. The Guide will be transferred to PDF format before sending it to the IEEE for balloting. Balloting should start this fall, with results available for our January meeting.

The Working Group is on target for a 2005 completion.

The Working Group will also have a presentation at WPRC of an introductory paper to generate interest before publication.

For next meeting need a one session for 40 participants plus a computer projector.

K3: REDUCING OUTAGES THROUGH IMPROVED PROTECTION AND AUTORESTORATION IN DISTRIBUTION SUBSTATIONS

Chair: B. Pickett

Vice Chair: T. Sidhu

Established, 2002
Output: Paper
Draft 5a

Working Group K3 met 9-15-04 with 5 members and 6 guests. Bruce Pickett (Chair) and Tarlochan Sidhu (Vice Chair) were unable to be present, Paul Elkin lead the meeting as acting chair.

Draft 5a was reviewed, concentrating on Sections 2, 4, and 6.

It was noted that the figures in the draft need to be reworked using standard symbology.

A lot of discussion occurred on the sections of the paper not yet written, producing several volunteers to work on these sections.

Eight new writing assignments were made:

Amhed Elneweihi – Section 2.4 and 2.5 – review and incorporate ‘use’ portions of Section 4.1 into 2.4 and 2.5.

Amhed Elneweihi – Section 2.7 – may have similar in document PC37.230.

Kirt Boers – Section 2.8.

Charlie Sufana – Section 2.9.

Paul Elkin – Section 2.10.

Tony Napakowski – Section 2.11.

Tim Kern – Section 2.12.

Kirt Boers – Sections 6.8 and 6.9 – combine and simplify.

These writing assignments will fill all open items on the existing outline.

Next meeting requirements – single session for 25 with a computer projector.

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: 2004

The WG meet with 3 members and 2 guests, in a subsequent meeting with the Standards Coordinator. It was agreed that the soon to expire PAR be withdrawn since time to ballot and resolve the draft would push out the life of the PAR. Therefore a new "K" designation will be requested for the January 2005 meeting

Next session need a computer project plus meeting room for 25 people.

K5: APPLICATION OF ANCILLARY PROTECTION and CONTROL FUNCTIONS to MULTIPLE RELAYS

Chair: Simon Chano

Vice Chair: Dean Miller

The working group met Tuesday September 14, 2004, in a double session with 11 members and 15 guests.

Michael Thompson, Walter McCannon, Mike Jensen, and Simon Chano gave presentations on the issues of applying breaker failure and automatic reclosing from multiple relay.

New presentations will also be given at the next January meeting. Frank Plumptre, Roger Hedding, Randy Crellin, Martin Best, and Larry Henrickson will give presentations on these issues.

Next meeting: two sessions, computer project for 40 people.

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: 2004

Status: Reviewing Draft 11

The Working Group met on Tuesday, September 14, 2004, in one session with 1 member and no guests. The discussion was limited. In May, Draft 10 was created which included the comments from an IEEE pre-ballot editorial review conducted after the January meeting. Draft 11 was created for this September meeting and included comments from the PSRC Terminology Usage Working Group review. During this PSRC meeting, Draft 11 was converted to PDF and uploaded to the IEEE to begin the formation of a balloting body. A request for invitation to ballot was also submitted to the IEEE. The PSRC Standards Coordinator also sent approval of the invitation to ballot to the PSRC's staff liaison. PSRC and Transformer Committee balloting body members should be e-mailed an invitation to ballot soon.

Next Meeting: Single Session 15 people, no A/V

K10 (Ex KTF1): SCC21 Distributed Resources Standard Coordination

Chair: Gerald Johnson

Vice Chair: TBA

Established, 1999

Expected Completion Date: 200x

Output: Standard through the SCC 21

K10--SCC21 Distributed Resources Standard Coordination working group met on September 15, 2004, with 7-members. We reviewed the progress of P1547.1, .2, .3, and .4 from the August meeting in Las Vegas:

- IEEE P1547.1- Draft 6 Standard for Conformance Tests Procedures for Equipment Interconnecting Distributed Resources with Electric Power Systems is ready to ballot and a ballot pool is presently being formed. Ballot is planned for October.
- IEEE P1547.2- Draft 1 of Application Guide for Interconnecting Distributed Resources with Electric Power Systems" is currently available with plans to have draft 2 out by the first of the year. We still have a lot of work to do but are making progress..
- IEEE P1547.3 - Draft Guide For Monitoring, Information Exchange, and Control of Distributed Resources Interconnected with Electric Power Systems. Don Hornak of Basler Electric is a member of this group and reported in our meeting today that this working group is struggling. The membership is lacking in utility participation and is primarily made up of IT types. Don and others are concerned that the final output of the group will be too complicated, and not lend itself to utility power engineers or consultants. Apparently SCC21 leadership has recognized the problem and is attempting to redirect the effort..
- IEEE P1547.4 – Draft Guide for the Design, Operation, and Integration of Distributed Resource Island Systems with Electric Power Systems met for the first time in Las Vegas and there are already some concerns about overlapping with 1547.2. Leadership of the two working groups will have to work closely to make sure we do not duplicate efforts. This group has a long way to go.

We had an open discussion on ways to keep PSRC personnel interested and informed on the subject of DG. One thing we plan to do is develop a list of utility, manufacturers, consultants, etc with DG experience that are willing to provide presentations on their actual experiences with different DG technologies, including installation, testing, verification, operation, problems, benefits, etc, and any protection and control issues that may have come up concerning utility guidelines, 1547 guidelines, regional guidelines, etc. Tony Napikoski of United Illuminating will present the first case study at our January working group meeting in San Diego and we have some interest from Detroit Edison for our May meeting.

Of course we will still be issuing draft documents concerning protection and control issues to the membership for review, comment, and, discussion, and relay that information back to the appropriate 1547.x working group.

Charlie Sufana also suggested that we contact the leadership of SCC21 and have them come in and do a presentation on 1547 on what their present and future goals are for the organization. If we can do this at the San Diego meeting, we can also invite the consultant that led the Rule 21 process in California and also led the harmonizing process of Rule 21 and IEEE 1547. This could be an hour or two presentation similar to the NERC presentation occurring later today. Lots of legwork will have to be done to make this happen. If it's a direction we want to go in, Jerry Johnson will contact the appropriate personnel and work with Charlie Sufana to line it up.

Next Meeting: Single Session 30 people, with A/V

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: 2005

Draft 8.1

Working Group K13 met on Tuesday September 14, in a single session with . 5 members and 5 guests were present. Vahid Madani filled in for Frank and Dan.

The attendees discussed the writing contributions and assignments for Draft 8.1.

The members discussed whether to retain the example derivations of voltage unbalance calculations in the Guide since the examples are for a particular (fixed) configuration and that the WG members have also prepared a spreadsheet for various types of fused and un-fused capacitor installations for certain types of series-parallel capacitor configurations. The WG members agreed to retain the calculations in the Appendix and just add clarifications highlighting that voltage unbalance calculations vary when the configurations change.

Also discussed were some of the figures and tables to make sure the Appendixes and content use similar terminologies.

The WG members believe that the guide is ready for internal balloting by the WG members. The WG members plan to discuss comments on the internal ballot at the January 2005 meeting.

Next Meeting: Single Session 15 people, no A/V

Liaison Reports:

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

No update

Coordination Reports:

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

1.a) ANSI/IEEE Switchgear Standards F. Plumptre.

No update

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

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

The Working Group met in Denver and is getting ready to have the Guide balloted.

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

No update

6. ANSI/IEEE Switchgear Standards, Vittal Rebbapragada

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

The document is in the reballoting stage.

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

No update

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

No update

Old Business

No old business

New Business

1. There was discussion on the subject of the effects of fault current limiters on protection systems. Peter McLaren has suggested that a task force be formed. Apparently CIGRE and EPRI have an interest in the subject. It was decided to see if a short presentation could be given at the January meeting. Mike Thompson will see if new SEL hire who worked on current limiters for his thesis could give a talk. Eric Udren may also have some knowledge on the equipment and the Chair will check with him.
2. Vahid Madani gave a short announcement of an upcoming conference at Clemson University on Wide Area Protection. The conference is from March 9 to 11, 2005 and is looking for speakers and panelists.
3. It was announced that Bill Kennedy is a new member of the Subcommittee.