

**POWER SYSTEM RELAYING
COMMITTEE**

OF THE

IEEE POWER ENGINEERING SOCIETY

MINUTES OF THE MEETING

MAY 10 - 13, 1999

ALBUQUERQUE, NM

**POWER SYSTEM RELAYING COMMITTEE
MAIN COMMITTEE MEETING**

**Albuquerque, NM
Thursday, May 13, 1999**

I. CALL TO ORDER **Arun Phadke, Chairman**

II. APPROVAL OF MINUTES **Rick Taylor, Secretary**

The minutes of the Las Vegas meeting were approved following minor revisions.

III. FINANCIAL REPORT **Rick Taylor, Secretary**

The financial report is available upon request from Rick Taylor.

IV. REPORTS OF INTEREST

A. PSRC Technical Paper Coordinator's Report **George Nail**

The Power Engineering Society has restructured the Winter and Summer Power Meetings. In the past, Transaction Papers were presented at these meetings. The new structure has de-coupled the Transaction Papers from the meetings. Transaction Papers now do not have any deadlines and are not normally presented. Only conference papers are accepted for presentation at the meetings. At the Edmonton Summer Power Meeting, there will be seven papers presented in two paper sessions. We will also have one panel session. John Tengdin and Tarlochan Sidhu will each chair one of the paper sessions and Dennis Holstein will chair the panel session. At the Singapore Winter Power Meeting, PSRC will not have any paper sessions. However, PSRC will have one panel session chaired by Mladen Kezunovic.

B. Power Engineering Society Report **Gary Michel**

No activities to report.

C. Cigre **Chuck Mozina**

Report pending

D. EPRI **Jerry Melcher**

No written report.

E. IEC Report **Eric Udren**

TC 95 RELAY STANDARDS

The TC 95 TAG, which meets with PSRC WG I4, is developing comments on the one document now distributed to the National Committees - 95/80/CDV, IEC 60255-24, COMTRADE. This is the result of the US submission of the PSRC COMTRADE for IEC adoption, and the work of Dr. Arun Phadke's IEC Working Group that created this

version. The US comments will comprise the last set of revisions made in the PSRC COMTRADE WG. Keeping the PSRC and IEC versions in synchronism, with two independent voting bodies and cycles, is proving to be a challenge. We want the two to be completely identical, and they must be at least functionally identical.

TC 57 SUBSTATION CONTROL AND COMMUNICATIONS STANDARDS

The IEC has distributed Committee Drafts (CDs) of four key protocol and architecture definition sections of IEC 61850, Communications Networks and Systems in Substations, with comments due back to the IEC in May. The draft distribution and commenting is handled by Lee Smith, the head of the US delegation to TC 57 WGs 10,11,12 which are writing the standard.

Separately, WG 12 is issuing a CD for a simplified unidirectional serial data link for communicating streaming sampled data from switchyard sources to relays and IEDs in the control house which process the data. This is a practical switchyard data acquisition solution, which could be used in the near term, subject to addition of binary status data transmission as proposed by the US delegation. This activity is overseen in PSRC HTF1.

US NATIONAL COMMITTEE FUNDING POLICY

The funding of USNC remains as a nagging problem. Last year's withdrawal of ANSI funding, and the substitution of various taxes on participants and industry organizations, yielded less than half the required funds. This year's \$250 bills to TAG members have been sent out, and these volunteers are justifiably upset. Furthermore, this taxing approach has tilted the TC 95 TAG entirely to manufacturers who are willing to pay the bills for their employees. This runs counter to the basic standards processes of the IEEE, which seek balance between users and manufacturers.

The IEEE and the PSRC have a role to play, including perhaps a financial one, in carrying out the IEEE mission of coordination between IEEE and IEC standards processes. This is to be discussed at future PSRC ADCOM meetings.

F. Standard Coordinator's Report Miriam Sanders

Posted separately on web page.

G. Substations Committee Report John Tengdin

The Substations Committee held its annual meeting in Milwaukee the week of May 2. Several of their activities are of interest to PSRC:

1. Work is underway in Subcommittee C3 to revise and update C37.1 (the SCADA standard). The new title will be "Standard for SCADA and Automation Systems". The revised document will include substations architectures without a conventional RTU, with all data acquired through IEDs such as relays.
2. Work is also underway in C2TF4 to create Standard P1525. This effort is to convert EPRI Report RP-3599 "Requirements Specifications for Integrated Protection, Control, and Monitoring" and the companion "build to" specification

into an IEEE standard. The data dictionary in RP3599 will be replaced by GOMSFE data objects, and will appear in a normative annex.

3. A new task force (C3TF1) was formed to recommend the action to be taken on Standard 1379 - Trial Use Recommended Practice for IED to RTU Communications. This standard will expire in March 2000. The TF report is to be presented at the C3 meeting in Edmonton at the SPM.

At the Main Committee meeting, we heard a very interesting presentation by Peter Lefkin, the Secretary Treasurer and CFO of the new IEEE-ISTO (Industry Standards and Technology Organization). It is affiliated with IEEE and the IEEE Standards Association, but was set up under a different section of the Revenue Code. Thus, trade associations, user groups, advocacy groups, etc. can be set up under its umbrella. One of its purposes is to provide a home for groups who are trying to fast track agreements on ad hoc standards. Their work could then be turned over to an appropriate IEEE body to convert into an IEEE standard. I recommend PSRC schedule a presentation on the ISTO at the next Main Committee meeting.

The C0 Working Groups of the Substations Committee are looking forward to the joint meeting with PSRC in Louisville. To avoid conflicts with PSRC WG or TF meetings, their meetings will be scheduled for Monday. If you have an interest in any of the Substation Committee activities, plan to arrive in Louisville early.

V. SUBCOMMITTEE REPORTS

Subcommittee reports are available under "Minutes" on the Web Page.

VI. Old Business

Nothing to report in these minutes.

VII. New Business

Nothing to report.

FUTURE MEETING LOCATIONS AND DATES:

| | | |
|-------------------------|------------------------|--------------------------|
| September 13 - 16, 1999 | Louisville, Kentucky | The Camberly Brown Hotel |
| January 10 - 13, 2000 | San Diego, California | Mission Valley Hilton |
| May 8 - 11, 2000 | Grand Rapids, Michigan | Amway Plaza Hotel |
| September 11 - 14, 2000 | Andover, Massachusetts | Rolling Green Inn |
| January 8 - 11, 2001 | Austin, Texas | Hilton - Austin North |
| May 21 - 24, 2001 | Vancouver, BC, Canada | The Empire Landmark |

B: ADVISORY COMMITTEE

Chair: A.G. Phadke

Vice Chair: G.R. Nail

May 13, 1998 Meeting

Expected Completion Date: Continuous

Several issues were discussed in the Administrative Committee. The recent suggestion to the effect that IEEE use electronic balloting for our standards was rejected by the PSRC. Our feeling is that the saving in the process would be minimal, as the standard documents must still be mailed, and in that case including the ballot in the same mailing is no burden to IEEE. Sending the standard itself electronically is not desirable, as standards with figures make for very large files, and those of our members who access the internet through modems would be spending inordinate amounts of time in down-loading the standard.

The question of reorganization of the Power Engineering Society Technical Council was discussed, although no clear consensus resulted. The Chairman of PSRC will put together some ideas on this question, and forward them to the Chairman of the Task Force responsible for this activity.

It was noted that a PES task force has been formed to edit a volume of outstanding papers of the last century. The volume will be distributed during the spring of year 2000. The PSRC has charged the Long Range Task Force to come up with a recommended list of papers. They are also asked to provide a paragraph describing the reasons why the paper is considered to be outstanding. Tony Giuliante has taken on the responsibility of coordinating this activity in the Long Range Task Force. They will complete this task by our September meeting.

Stan Horowitz continues to collect material for the PSRC memorial volume to be published at the time of January 2000 meeting in San Diego. The membership of PSRC is reminded that we need contributions: memories of important events or personalities who have changed the course of relaying technology over the years. Anecdotes, letters, news items, previously published stories, all are welcome. Please contribute your ideas directly to Stan Horowitz.

This was the first time that the AdCom was the venue for reports and discussions by the Sub Committee chairs in lieu of the Monday afternoon meetings. We will continue with this schedule in the future.

Moh Sachdev has been officially appointed the PSRC Webmaster. He will report to the Officers of PSRC as the Chairman of Working Group B9. He will be responsible for coordinating all the SC reports for the web, as well as for putting the AdCom pages on the web. Chuck Wagner and Will Marsh are recovering from surgery. We wish them speedy recovery.

We also noted with regret the passing away of Howard Calhoun, John Linders, and Larry Mankoff since our last meeting. They will be missed.

B1: AWARDS AND TECHNICAL PAPER RECOGNITION

Chair: M.S. Simon

Vice Chair: B. Nelson

Output: Review & Recommend PSRC Publications

Expected Completion Date: Continuous

The Awards and Paper Recognition Working Group met to plan and schedule the remainder of this year's work and review the submittals to the Power Engineering Society since the last meeting.

Upcoming nominations this fall will include submittals for prize paper and working group awards. Nominations will be due to the PES on October 25.

At the main meeting on May 13, an announcement was made reflecting that the PES Prize Paper award for 1999 will be announced at the summer power meeting. The award will be given to Charle Henville. His paper entitled "Digital Relay Reports Verify Power System Models" was the winner.

B2: FELLOWS AWARDS

Chair: J.S. Thorp

Output: Review Fellow Nominations

Expected Completion Date: Continuous

B2 Fellows Awards Working Group did not meet. Input from PSRC Fellows on nominations is due to Jim Thorp by May 21, 1999

B3: MEMBERSHIP COMMITTEE

Chair: M. Swanson

Output: Improve PSRC Participation

Expected Completion Date: Continuous

The Working Group did not formally meet, but conducted the following activities during the Albuquerque meeting.

Mal Swanson assisted George Nail with the Newcomers Orientation meeting. Eleven new members will be contacted with follow-up information and encouragement to attend further meetings.

Mal Swanson presented the annual membership plan to the Advisory Subcommittee. Several adjustments were suggested, and new techniques for increasing participation by utility protection engineers were discussed.

The revised plan will be submitted to the officers of the PSRC for approval.

B4: O/P MANUAL & W.G. TRAINING

Chair: J. Appleyard

Vice Chair: M. Swanson

Output: Update O/P Manual

Expected Completion Date: Continuous

WG Chairs met on May 11, 1999 with 37 members attending, and John Appleyard presiding.

Several question concerning web-sites, file management, downloading and transferring files, passwords were asked. Some answers were provided and others will be provided either as a part of an education event or as when procedures are defined.

Moh Sachdev and Tony Giuliani demonstrated capabilities of the PSRC web-site.

B7: TECHNICAL PAPER REVIEW

Chair: J.S. Thorp

Output: Review Protection Papers

Expected Completion Date: Continuous

The Working Group was disbanded in January 1999 because the PSRC now is not directly involved in the review of papers for the IEEE Transactions on Power Delivery. The papers for

the Summer and Winter Meetings of the PES are being handled by the Vice Chairman of the PSRC.

B8: BIBLIOGRAPHY AND PUBLICITY

Chair: T.S. Sidhu

Output: Transactions Paper

Expected Completion Date: Continuous

The working group met on May 11, 1999 with six members and one guest present. The minutes of the Las Vegas meeting were approved as circulated. The Chairman informed the group that the 1998 bibliography paper has been completed and submitted to the PES office for publication in the IEEE Transactions on Power Delivery.

Assignments for preparing the 1999 paper were made. Phil Winston has started a task force with responsibility for updating the Relay Engineers' Mailing List. Jeff Burnworth will attend meetings of this task force on behalf of the Bibliography and Publicity working group.

A report highlighting the 1998 activities of the PSRC has been published in the April 1999 issue of the PES Review. Jim Stephens will prepare the publicity write-up for the 1999 activities.

B9: PSRC WEB MASTER

Chair: M.S. Sachdev

Output: Web Sites

Expected Completion Date: Continuous

The PSRC Web site is operational at the following URL.

<http://www.ewh.ieee.org/soc/pes/psrc/>

Web sites for all the subcommittee of the PSRC are also operational. They can be accessed either at their respective URLs or via the links provided at the PSRC Web site. Five Working Groups of the PSRC have also developed their Web sites. The WG Web sites can be accessed from the links provided on the SC Web sites.

The PSRC Web site includes up to date information on

- scope of the PSRC,
- future meetings,
- bulletins,
- minutes of three most-recent meetings of the PSRC,
- report on standards activities
- agenda of the upcoming meeting,
- Email addresses of members,
- links to Subcommittee Web sites and
- links to other organizations.

The information on future meetings includes the dates, location and URLs of the hotels and cities where the meetings will be held.

One of the objectives at this time is to stream line the placing of important information on the Web in a timely manner.

Three issues are being considered for expanding the Web site. The first issue is to place the names and photographs of all PSRC participants on the Web site. The second issue is to include the links for the Web sites of relay manufacturers. The third issue is to include a registration form for the future meetings on the PSRC Web sites so that the members may register.

C: System Protection

Chair: J. S. Thorp, Chair

Vice Chair: D. Novosel, Vice-Chair

The System Protection Subcommittee met on May 12, 1999 with 16 members and 26 guests in attendance.

C1: SOFTWARE MODELS FOR RELAYS

Chair: P. G. McLaren

Vice Chair: K. K. Mustaphi

Established: 1995

Output: IEEE Transactions Paper

Expected Completion Date: 1999

The Working Group met with 7 members and 7 guests present. The chairman reported the results of the sub-committee ballot which included One negative ballot (from a member of the WG) requesting two of his references to be added to the paper. Following discussion the WG passed a motion, "That the additional references not be added on the grounds that the WG had not had time to consider the references." (Sachdev, Tziouvaras). The chairman explained that the WG would continue in existence to deal with any discussions of the paper following publication.

C3: NEW TECHNOLOGY RELATED TO TRANSMISSION AND DISTRIBUTION PROTECTION

Chair: A. P. Apostolov

Vice Chair: P. A. Solanics

Established: 1994

Output: Report to Main Committee and IEEE Transactions Paper

Expected Completion Date: 1999

The WG met on May 11, 1999; 10 members and 37 guests were present. One presentation was made at the meeting: **Optical Current Sensor Systems – Where are we now ? Where are we going ?** by Harley Gilleland

There were very interesting discussions and comments on different aspects of the presentations. The second part of the working group meeting was dedicated to discussions on the use of protective relays for breaker control. Several utilities are implementing panels without control switches. Test switches however are there to stay. Selection of topics for presentations at the September 1999 meeting will be made by the end of July 1999. Minutes of the meeting and other Working Group information will be available on the Web site as soon as a PSRC server is available.

C4 :APPLICATION OF INTELLIGENT SYSTEMS IN PROTECTION ENGINEERING

Chair: M. Kezunovic

Vice Chair: D. Novosel

Established: 1993 Output: Subcommittee Report

Expected Completion Date: 1998

Status: Final report completed.

No meeting was held at this time. The Working Group report will be put on the subcommittee web page when the chair receives an electronic version from M. Kezunovic. The Working Group will stay in existence until the panel at the Singapore IEEE winter meeting.

C6 :Wide Area protection and emergency control

Chair: Miroslav Begovic

Vice Chair: Damir Novosel

Established, 1996

Expected Completion Date: 2000

The Working Group met in a single session with 8 members and 5 guests in attendance. The work began with a brief presentation about the Panel Session "Wide Area Protection and Emergency Control", which was held as part of the program of the 1999 IEEE PES Winter Meeting in New York, in February 1999. The presenters were Chair and Co-Chair of the Working Group C-6, and representatives of French, Swedish, and two US utilities (BPA and AEP). The session was well attended and the discussion was lively. The Group then continued discussion of the draft of our report. It was decided to make contacts with a few additional potential corresponding members in order to provide additional useful information for the reports, such as reliability of the SPS, analytical framework for wide area disturbance analysis, and addition of more material to our data base of wide area disturbances. New assignments were also made for additions to and revisions of the report. We are planning to meet in September in a single session (overhead projector will be needed.)

C7 :EMTP Applications to Power System Protection

Demetrios Tziouvaras, Chair

Lubomir Kojovic, Vice Chair

Established, 1997

Expected Completion Date: 2001

The WG presented a one day tutorial on Monday, May 9, 1999. There were 30 people in attendance. The WG met on May 11, 1999 with 5 members and 13 guests present. The WG agreed to bring the existing tutorial to PES status and present it to IEEE summer and winter meetings and other regional conferences.

C8 :Phasor-Based Models for Analyzing Relay Performance

Mike Meisinger, Chair

M. S. Sachdev, Vice Chair

Established, 1997

Expected Completion Date: 2002

Output: Transactions Paper

Liaison Reports:

The Working Group met at 8:00 AM on May 12, 1999 in G-H Salon, Albuquerque Marriott, Albuquerque, NM. Ten members and Ten guests were present.

The Minutes of the WG meeting held on January 13, 1999 in Las Vegas, NV as distributed by Email were approved. Copies of Section III.B.3, "Software Program Development Tools" prepared by Gabriel Benmouyal were distributed. The suitability of the draft was reviewed and some comments that were minor in nature were provided to Gabriel.

It was agreed that the members should send their contributions to Moh Sachdev by June 15, 1999. Moh will compile the paper and distribute it to the members soon afterwards

C9 : Guide for the Application of Protective Relays used for Abnormal Frequency Load Shedding and Restoration

Alex Apostolov, Chair

Ken Behrendt, Vice Chair

Established, 1999

Expected Completion Date: 2001

The Working Group met on May 11, 1999. Alex Apostolov began the single session working group meeting with introductions. There were 24 in attendance, with 13 members and 11 guests. Mukesh Nagpal, from Power Tech Labs, presented the tutorial portion of his paper titled "Static and Dynamic Design of Frequency Load Shedding Schemes". After some discussion on the proposed wording for the Working Group Project Authorization Request, the attendees agreed on the following revised title, scope and purpose for the guide, with a planned completion date of December, 2001:

Title: Guide for the Application of Protective Relays used for Abnormal Frequency Load Shedding and Restoration

Scope:

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

Purpose:

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

C10: EFFECTS OF COMPANY RE-STRUCTURING ON PROTECTIVE RELAYING

Jaime De La Ree, Chair

Tefvik Sezi, Vice Chair

Established, 1999

Output: A paper to the main committee and an IEEE Transactions Paper

Expected Completion Date: 2002

The WG met on Tuesday, May 11, 1999. There were 9 members and 16 guests in attendance. The Working Group agreed on an assignment:

The Working Group will study the impact of the changing utility environment on the prevailing protection practices. The WG outcome will be a paper to the main committee and an IEEE paper.

C4TF Relay Protection Issues during System Restoration

Tarlochan Sidu, Chair

The Task Force will meet at the next meeting to consider forming a Working Group.

LIASON REPORTS:

IEEE Working Group on Power System Dynamics Measurements, G. Michel

No report.

NERC Engineering Committee, Phillip B. Winston

No activity of interest to report.

PES Power System Analysis, Computing and Economics Committee, Mal Swanson

No report

T&D Committee, M. Kezunovic

No report.

D: LINE PROTECTION SUBCOMMITTEE

R.M. Westfall, Chairman

Mark Carpenter, Vice Chairman

The Line Protection Subcommittee met in Albuquerque on May 12, 1999 with 26 members and 31 guests present and Chairman Ron Westfall presiding. The minutes of the Las Vegas meeting were approved.

D1: EFFECTIVENESS OF DISTRIBUTION PROTECTION

P. Carroll, Chairman

C. Fink, Vice Chairman

Established: 1994, Output: IEEE Paper

Expected Completion Date: 2000

Status: Draft #2

Working Group D-1 met with 7 members and 21 guests. After introductions and approval of the January minutes, there was a presentation by Bill Feero, Chairman of the newly formed "Distributed Resource Standard Coordination" working group. Bill explained that his WG would represent the PSRC and provide input in the development of SCC21's Standard on Interfacing of Distributed Resources. There was much interest and discussion on the subject and a participant sign-up list was circulated. The meeting continued with a survey status update by Pat Carroll as follows: Final comments will be incorporated into the survey and sent to members for review at our next meeting, the mail list task force will have a new list for our next meeting, and we are still on track for a year 2000 completion date.

D2: FAULT LOCATING

Karl Zimmerman, Chairman

Damir Novosel, Vice Chairman

Established: 1996, Output: IEEE Guide

Expected Completion Date: 2001

Status: Draft #3

Working Group D-2 met with 10 members and 18 guests. We distributed Draft 3 to all present and discussed the guide at length. Changes made from Draft 2 included:

- 500 kV system example showing performance of single and double ended fault locating Z methods
- Section on effect of untransposed lines on fault locating
- Expanded discussion on series compensation

New assignments were made:

- Review of Draft 3 (all members)
- Section 4-D, Distribution Systems (P. Carroll, D. Novosel, R. Das)
- Section 5, Travelling Wave Experience (R. Young)
- Section 2, One-Ended Fault Location (G. Benmouyal, M. Ibrahim)
- Section 4-L, Untransposed Lines (A. Apostolov)
- Section 4-M, Add Examples (K. Zimmerman)
- Section 4-A, Three-terminal Lines (D. Tziouvaras)
- Section 6, Other Techniques (M. Kezunovic)

All comments and contributions must be made to W.G. Chair by August 1, 1999 to be included in next draft. Next draft will also be put in IEEE format using Styles document. Draft 3 will be sent to Substation and T&D Committees for review in the next few weeks.

D4: AUTOMATIC RECLOSING
W.M. Strang, Chairman
Mal Swanson, Vice Chairman
Established: 1996, Output: IEEE Guide
Expected Completion Date: 2001
Status: Current Draft 4.5

Working Group D-4, Automatic Reclosing, met on May 11, 1999 with 15 members and 13 guests attending, and Bill Strang presiding.

Draft 4.5 was distributed. Discussions centered around such subjects as nomenclature, derating breaker duty calculations, dead time, and bus breaker reclosing.

Revision assignments are due June 1. The first balloting is due shortly thereafter.

4 people joined the working group.

D6: TRANSMISSION LINE PROTECTIVE SYSTEMS LOADABILITY
Tony Seegers, Chairman
J.B. Williams, Vice Chairman
Established: 1997, Output: IEEE transactions paper
Expected Completion Date: 2001
Status: Draft 1

Working Group D-6, Transmission Line Protective System Loadability, met on May 12, 1999 at 9:30 a.m., with 14 members and 8 guests. Dean Miller was added as a member.

Draft 1 of the document was passed out and discussed.

Members were asked to review draft and provide comments by July 1. Other assignments were made as appropriate.

The editorial task force will look at the overall outline of the paper and recommend any changes.

Discussion was made about the output of the group – transaction paper, conference paper.

D10: EMTP REFERENCE MODELS FOR TRANSMISSION LINE RELAY TESTING
K. Mustaphi, Chairman
T.Sidhu, Vice Chairman
Established: 1998, Output: Paper
Expected Completion Date: 2001
Status: new working group

Working Group D-10 met with 12 members and 11 guests on May 12, 1999. As decided in the last meeting, members developed few samples of benchmark system model. One of the simpler models was chosen as a starting point. This model will have two busses with one set of parallel lines, an equivalent line, generators, transformer breakers, CT's, PT's and CCPD. Elmo Price, with assistance from Glen Swift and John Zipp, will develop a list of tests that this model can do. Mukesh Nagpal, Arvind Chaudhary, and Ljubomir Kozovic volunteered to supply samples of models for each HV component in the benchmark model. The chairman will gather the materials by July 1 and then distribute them to members afterwards for their comments. There was some discussion about which version of EMTP will be appropriate for our usage. The other working group, EMTP Task Force, is investigating the versions for their usage. The members decided to use the same version when known. At the present time, sample models will be generated in ATP version that the majority of the relay engineers use.

D12: LINE PROTECTION GUIDE TUTORIAL

J. Zipp, Chairman

Elmo Price, Vice Chairman

Established: 1998, Output: Tutorial

Expected Completion Date: 2000

Status: new working group

Working Group D-12 met in Albuquerque on May 12, 1999 with 12 members and 12 guests. One new member, Ratan Dos, was added to the working group.

During the meeting, past assignments to the outline section in the Tutorial Draft Outline were reviewed. Several issues were identified which were addressed:

- Presenters Pool – identify presenters that will be available for tutorials
- Tutorial Content – limited to the content of the Guide
- Website will be formed by the W.G. Chairman to deposit latest draft
- Standardization of overheads – Elmo Price will suggest a standard for the overheads at the next meeting

New assignments – Each assignee will refine their last assignment per the meeting discussion.

D14: TRANSMISSION LINE PROTECTION GUIDE

W.M. Carpenter, Chairman

A.N. Darlington, Vice Chairman

Established: 1992, Output: IEEE Guide

Expected Completion Date: 1999

Status: Draft #19

Working Group D-14 did not meet in Albuquerque. Since the January meeting, the ballot for **The Guide for the Protective Relay Applications to Transmission Lines** was re-circulated. There were 74 affirmative votes, 1 negative vote, and 7 abstentions. The negative ballot was resolved without technical change to the document. Several suggested editorial changes will be incorporated in the document, and the document will be forwarded to the IEEE office this summer.

D15: HIGH IMPEDANCE FAULT DETECTION

A.P. Napikoski, Chairman

J.T. Tengdin, Vice Chairman

Established: 1997, Output: IEEE transactions paper

Expected Completion Date: 2001

Status: Working Group to disband

Working Group D-15 High Impedance Fault Detection did not meet in Albuquerque. After surveying the Working Group, the Working Group Chair is recommending disbanding the Working Group and covering any high impedance fault activity at the Line Protection Subcommittee meeting.

LIAISON REPORTS

1. Distribution Automation Working Group, Distribution Subcommittee, & D Committee,

J. T. Tengdin, Liaison

No report.

- 2. P1124 - Guide for Analysis and Definition of DC Side Harmonic Performance of HVDC**
M. S. Sachdev, Liaison
No report.

Old Business:

The Subcommittee agreed to disband Working Group D-15, High Impedance Fault Detection and to provide a forum to report any high impedance fault events or activity as a part of the regular Subcommittee meeting.

New Business:

Working group chairpersons are to update the working group membership list prior to the September subcommittee meeting.

General Discussion:

None.

H: RELAY COMMUNICATIONS SUBCOMMITTEE

Chair: M. G. Adamiak

Vice Chair: M. S. Simon

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

Chair: B. Nelson

Vice Chairman: M. Simon

Established: 1995

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

Expected Completion Date: 1999

H1 Working Group met in a single session on May 11th, 1999 with 13 members and 8 guests. The working group assignment is to provide clauses 9 and 10 for the PLC application guide P643. Clauses 9 and 10 concentrate on the protective relay application of PLC. P643 is being revised by the PSCC. Roger Ray is the working group chairman.

There is still a fair amount of work remaining on P643 in the way of incorporating figures and further review. With the H1 work complete, the WG decided to ask the subcommittee to be put "on hold" status until P643 is ready for review. At the subcommittee meeting the Chair, Mark Adamiak, agreed.

The group discussed interest in further activities in the area of Power Line carrier. Several ideas were reviewed from a September 13, 1994 list among others. It was chosen that the most beneficial work would be in the area of Relaying using Power Line Carrier on tapped lines. Miriam Sanders will be the working group chairperson. Anyone interested in being on the working group should contact her or attend the first meeting to be held in September.

John Zipp agreed to review the application of "A" contacts and "B" contact coordination. This will be circulated to the membership for review via Email since we will not be having a meeting in September.

Please forward any comments to the Chair: (please note revised Email address) BradNelson@alliant-energy.com or by US mail to Brad Nelson, Wisconsin Power & Light, P.O. Box 192, Madison, WI, 53701-0192.

H2: COMTRADE STANDARD REVISION

Chair: R. Ryan

Vice Chair: C. Shank

Established: 1995

Output: Revised Standard C37.111-199x

Expected Completion Date: May 1999

Report of meeting, May 12 1999, Albuquerque, NM
3 members, 6 guests attended

1. Minutes of Previous Meeting.

Motion: That the minutes of the previous meeting be taken as read. Proposed -Xavier, Seconded -Mehta. Passed Unanimously

2. Discussion of Ballot, Approval and Publication Issues

- The ballot was returned in Jan with one negative ballot.

- The sole negative ballot was resolved after the respondent considered the WG attempts to meet his objections.
- A revised draft including comments from the ballot and this meeting was sent with submission paperwork to IEEE on 1/25/99.
- The revised draft was considered by IEEE Standards REVCOM members and all objections were resolved.
- The Standard was approved by REVCOM at their March meeting.
- AN IEEE editor has been assigned to work with us to prepare the Standard for publication.
- H Subcommittee Chairman Mark Adamiak will contact IEEE to find out about pricing and possible discount sale at PSRC meetings.
- We will ask for a show of hands for potential purchasers at the Main Committee meeting on Thursday.
- We will advise the IEEE that we expect demand to be high and ask that they print at least 200 copies.

3. Discussion of Summary Paper

Mr. Plumptre pointed out that his name is misspelled in the paper, the Chairman asked the WG to review the existing document for similar errors or omissions. The meeting expressed a desire for a rework of the application examples before the paper be submitted to the subcommittee for approval. The following procedure was adopted by voice:

- At Wednesday 5/12 meeting, the Chairman will seek approval to ballot the H subcommittee once the rework is complete.
- The Chairman will notify by email all WG members of the desire for application examples.
- Members and interested parties must send examples to the Chairman within two weeks. Examples that have been realized in practice should not be more than 2/3 column if a graphic is included, half a column if no graphic. Ideas for new or unrealized examples, especially those made possible by the revisions we have made, should be one or two sentences suitable for inclusion in a bulleted list.
- The Chairman will collate the submissions and send the proposals to the WG members for an approval vote on a scale of 1 to 10. The examples used in the original version of the paper will also be submitted for vote. The examples with the highest vote/scale count will be included in the paper. Members will be notified of the rating of the examples in one month.
- Mike Xavier Jr. Volunteered to do the rework. The Chairman will pass the rated examples to Mike for inclusion in the document as space permits.
- The H subcommittee Chairman will advise H2 Chairman of the procedure for H subcommittee and main Committee ballot.

Once we have an approved paper we will seek to have it published in transactions. Presentation of papers at other venues after this point will consist of the official IEEE paper and will require copyright release from IEEE.

With the approval of the subcommittee, Mike Xavier presented a paper at Transient Recorder Users Conference, May 1999 which was based on the WG summary paper. Since we have been asked to get the word out as soon as possible other members of the WG will present papers based on the WG summary paper at other conferences.

The summary paper has (or will be) proposed for presentation at the following conferences.

Electric Council of New England

Sept. 1999

(Bob Ryan - Pending)

| | | |
|--------------------------------------|--------------|-----------------|
| Western Protective Relay Conference | October 1999 | (Chuck Shank) |
| Canadian CCECE Conference | May 1999 | (Peter McLaren) |
| ICDS Simulator Conference Sweden | May 1999 | (Peter McLaren) |
| Minnesota Power Conference | Oct 1999 | (Ken Behrendt) |
| Iowa Relay and Substation conference | 1999 | (Ken Behrendt) |

4. New Business

The Chairman advised that the final drafts of the revision as we worked toward approval caused a diversion from the version submitted to IEC around this time last year. The Chairman will collate the changes in the drafts and send them to the Chair of the IEC Advisory WG, Mr. Erik Udren, and to the Chair of the IEC COMTRADE WG, DR. Arun Phadke with two weeks.

5. Adjournment. There being no further business the meeting Adjourned at 12:15

H3: Comtrade Users Working Group

Chair: C. Shank

Vice Chair:

Established:

Output: Standard

Expected Completion Date:

The Working Group did not meet.

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

Chair: D. Holstein

Vice Chair:

Established: 1997

Output: Standard

Expected Completion Date: 1999

H4 planned to meet in double session. However, due to scheduling conflicts with other working group and task force meetings, the first session was canceled. Attendance at the second session was so poor that no effective work was accomplished. Nine members and seven guests attended the meeting.

Dennis Holstein presented an overview of the working group task to develop PC37.115 as a test suite of messages, simulating real-world event or sequence, between a device under test and a "black box" simulating the rest of a substation control system. H4 will not develop any protocol, but focuses instead on how to evaluate the suitability or performance of solutions in actual application situations.

The minutes were reviewed and accepted. The agenda was reviewed and accepted.

Liaison reports were presented to describe ongoing work in other venues that are relevant to H4's work. John Tengdin described Substation Committee work in progress, Dennis Holstein described the ongoing work in Standards Coordinating Committee 36 and in the IEC TC57 WG 10, 11 and 12, and in CIGRE TF34.01.

Dennis Holstein presented an overview of the panel session sponsored by PSRC at the Summer Power Meeting in Edmonton, Canada in July. The panel will highlight the work in progress by several H working groups and task forces including H4.

John Beatty, Chairman of WG H5, presented the schedule for delivering application scenarios to

H4. The scenario authors will complete an update of the work-in-progress by June 30th. H5 plans to have a final report published by April 14, 2000.

H4 has adjusted their development schedule for C37.115 to accommodate H5's schedule. H4 will develop a series of Editor's Books that will be used for markup and coordination. Book 1 (Draft 1) is planned for August 7th. Additional books will be developed to reflect review comments and recommendations. The final book (last draft) is planned for April 15, 2001, and will be used for electronic balloting. The purpose of seeking coordination beginning with Draft 1 is to avoid surprises and delays near the end of the project.

Task leaders have accepted assignment and responsibility for specific clauses and annexes in PC37.115. Each task leader will make concrete recommendation for changes, and when the recommendation is accepted, the change will be reflected in the next Editor's Book for markup.
Old Action Items

- 1 Dennis found that it is not permissible for a standard to make a normative reference to another standard still in draft form. Instead, the standard must create a normative annex to contain the normative data from the reference standard in draft form. When the reference standard draft becomes a standard, the annex may be dropped and then it is included as a normative reference. Action Closed.
- 2 Dennis Holstein has added all H5 scenario authors to the membership list of H4 and to the H4 EMAIL Exploder. The list will be updated as new H5 members are identified. Action Closed.
- 3 Dennis Holstein has obtained a consensus from H4 members on the technique used to describe the scenario transaction sequences. Action Closed.
- 4 Paul Thorpe will provide an example on the size of embedded ASN.1 code for a communication router. Dennis Holstein will contact Paul to get the example. Action item remains open.

New Action Items

- 5 Dennis Holstein will solicit from each task leader a status report and post the report on the PC37.115 web site.

H5: Application of Substation Peer to Peer Communications

Chair: J. Beatty

Vice Chair: S. Borlase

Output: Paper

Expected Completion Date: 1999

At the Albuquerque meetings, H5 Working Group (WG) met in double sessions on May 11, 1999. A total of 27 members and guests attended the two working sessions, compared to 31 persons at the Las Vegas meetings. Several international guests were present.

- Members and Guests were introduced. The Minutes from the Las Vegas meeting were discussed and accepted as recorded in the PSRC Web site.
- The unexpected resignation of Vice Chairman Stuart Borlase via E-mail letter due to his company's internal decision was announced to attendees. Chairman Beatty also read a return E-mail to Stuart that sadly accepted his resignation, thanked him for his positive

contributions, and included an invitation to return to PSRC involvement as soon as possible.

- H5 WG member Murty Yalla was selected as the new H5 WG Vice Chairman effective immediately. Mason Clark volunteered to assume responsibility for the document subsections previously authored by Stuart Borlase.
- The Authors Status List was discussed and updated in detail with author input, revised schedules, and addition of specific subsection reviewers. Several authors submitted document subsection drafts at the meeting or in the days just prior to the meeting. Other authors indicated their contributions are to be submitted in the next two weeks. These will be added to the draft document for an expedited review.
- H4 WG members indicated that the approximate two month delay in producing a H5 WG draft document beyond our schedule established in Las Vegas was causing difficulties for H4 WG production plans. H4 WG will start their first "Book" in the next several weeks with as much H5 WG documentation as is available at that time.
- Revised H5 WG Document Schedule Dates were set as follows:
 - 5/30/1999 = ALL H5 DOCUMENT SECTIONS WRITTEN – READY FOR FIRST REVIEW
 - 6/30/1999 = FIRST REVIEWS FINISHED – SUBMIT DRAFT DOCUMENT TO WG H4
 - 9/1/1999 = FEEDBACK FROM WG H4
 - 12/1/1999 = H5 DOCUMENT REVIEWS
 - 1/1/2000 = H5 DOCUMENT Y2K UPDATE
 - 2/1/2000 = H5 REPORT FINAL REVIEW COMPLETE
 - 4/1/2000 = H5 REPORT READY FOR PUBLICATION

H7: INTER RELAY COMMUNICATION PROTOCOL STANDARD

Chair: G. Michel

Vice Chair:

Established: 1997

Expected Completion Date:

Twenty members and guests attended the May 12, 1999 meeting. The Working Group agreed to change the standard title to "N times 64 kilobits per second Optical Fiber Interface Between Teleprotection and Multiplexer Equipment." The scope and PAR will be changed to reflect this change. It was agreed that 50 micrometer optical fiber diameter be included in the standard along with 62.5 micrometer. It was unanimously agreed to proceed with the NL-4 proposal as the basis from standard writing. The outline was changed to reflect the latest changes. Four members agreed to write sections of the standard by the end of June. Additionally two members volunteered to test the interface and another member agreed to write the definitions section later.

H8: FILE NAMING CONVENTION FOR TIME SEQUENCE DATA

Chair: Jim Ingleson

Established: May, 1999

Output: Report to the PSRC

Expected Completion Date: September, 2000

Summary – At this initial meeting, the group agreed on a group name, an assignment statement, and target completion date. The group intends to define both 8.3 and extended file names for time sequence data.

Present:

| | |
|-------------------|--|
| Jim Ingleson | ingleson@iso.com |
| Amir Z. Makki | amir@softstuf.com |
| Mark Taylor | dmtaylor@southernco.com |
| Larry Johnson | ljohnson@pseg.com |
| Carlos H. Castro | carlos.castro@pseg.com |
| Harish I. Mehta | harish@mehtatech.com |
| Michael A. Xavier | mikex@e-maxinstruments.com |
| Charles Kinne | charles.p.kinne@nspco.com |
| Bob Ryan | bobryan@seline.com |
| Mark Adamiak | mark.adamiak@indsys.ge.com |
| J.W. Chadwick | jnfchadwick@coastalnet.com |

The original suggestion for this work came from the Transient Recorder Users Council (TRUC). A paper was presented at the 1998 Fault and Disturbance Analysis Conference titled “Survey of Event File Naming Schemes” by Amer & Maria Makki, Angela Rothweiler, Shahraiar Semati, Mark Taylor, and Larry Johnson. This paper will serve as the starting point for this work.

It was agreed that the working group name will be “File Naming Convention for Time Sequence Data.”

The “H” number has not yet been assigned. Subsequent to the meeting, this working group became “H8.”

The group agreed on the following assignment statement:

“Design a file naming convention for time sequence data files commonly used by protection engineers. With the proliferation of files from numerous data sources it becomes desirable to imbed in the file name relevant information. Such a convention will facilitate the process of finding specific files. Prepare a report for the PSRC.”

The following clarification was agreed upon, but will not be part of the assignment statement:

“Sequence data is definable in time through either a time stamp or sequence number with sampling rate. Time sequence data includes data collected by monitoring devices including DFRs, DDRs, SERs, Relays, etc. This also includes event files generated by trending programs, simulators. Include in the filename the most important information, as determined by the working group.”

Issues Discussed: (Agreement has not been reached on these issues.)

We will start with the 8.3 filename and then define an extended filename.

Will the filename which this group designs be compatible with COMTRADE?

Is the file extension available to this group?

Storage format or exchange format?

Multiple files allowed for same occurrence?

Encryption, Decoding, Friendly File Names?

Possible long filename: station_device_date_time_type_severity.ext

Comtrade extensions: .dat .hdr .cfg .ini

Information to be contained in filename:

Time & Date

Station

Severity

Recorder Number

File Format

Type & Manufacturer

Assignments:

Amir: Obtain Microsoft file name publication, send to chairman for distribution.

Mike & Amir: Write short position statement, send to Chairman for distribution.

Schedule: Target completion date is September of 2000.

H9: INTER SUBSTATION PROTECTION USING DIGITAL COMMUNICATIONS

Chairman: G. L. Michel

Vice Chairman: G. Pleinka

Established: 1993

Output: Transaction Paper

Expected Completion Date: 1997

The work of H9 will be posted on the PSRC Web site. Please look under the H working group for details.

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

Chairman: Ken Fodero

Vice Chairman: Bill Higinbotham

Established: 1997

Output: Revised application guide

Expected Completion Date: 2000

The group met for a single session at 11:00 to 12:15 on Wednesday May. 12, 1999

In attendance were 10 members and 3 guests.

The group welcomes George Gresko of PECO energy who will be replacing Jim Waldron.

Writing assignments were critiqued and more assignments were anxiously accepted.

The group will be using the Communications Group WEB page to keep the latest version available to the members. Mark Simon will be helping us out with this effort.

Task Force Reports

HTF1: SWITCHYARD DATA ACQUISITION

Chairman: E. Udren

Established: 1996

Expected Completion Date: 1998

SCOPE: Develop US contributions to and position for IEC TC 57 WG 12 standards development. The focus is the data communications interface between the switchyard process information (cts, vts, apparatus status, etc.) and control-house systems. The standardized communications system is known as the process bus. This will be defined in components of IEC 61850, Communication Networks and Systems in Substations, now in development.

Completion date: controlled by IEC TC 57 progress on 61850; estimated 2002.

The Task Force met on May 11 with 7 members and 19 guests. The Chairman gave an educational presentation covering the following:

1. Overview of what a process bus is.
2. Depiction of the general substation automation architecture conceived in IEC 61850 standards project.
3. Focus on the use of Ethernet optical links to switchyard apparatus; and the possibility of having all process and control equipment in the substation on a single LAN with only switched hubs to separate portions of the equipment or zones of protection.
4. Discussion of Ethernet loading limits which impact how the equipment is configured in the LAN.
5. Presentation of an important offshoot of the overall process bus work - SCSM Part 9 Section 1. This is a standard serial unidirectional link protocol for conveying streaming process data samples from switchyard sources, which broadcast to relays and IEDs acting only as passive listeners.
6. Explanation of US delegation efforts to include status or binary data fields in the streaming data of the unidirectional serial link.
7. Description of problems the IEC authors recently introduced in the latest draft by redesigning the format of binary status data transmission.
8. Proposal that the Task Force look at a parallel Ethernet downlink for sampling synchronization and for control of power apparatus. This downlink is not under consideration at the IEC at this time.

The Chairman will circulate the PowerPoint presentation to the attendees, along with a copy of the Committee Draft of IEC 61850-9-1 specifying the standard unidirectional serial link.

Tasks for September are:

- To develop a correction of errors in the IEC implementation of binary status transmission in the new CD for 61850-9-1.
- To develop a concept for a unidirectional downlink for synchronization and control.

HTF2: SUBSTATION ETHERNET LAN COMMUNICATION FOR PROTECTION

Chairman: John Burger

Vice Chairman: Charlie Sufana

Output: Recommended Practice

Established: 1999

Expected Completion Date: 2003

Total present: 35

The HTF2 task force met for the first time with 35 people present and 15 volunteering to become members. Chairman of the task force is John Burger and the Vice Chairman is Charles Sufana.

John Burger started the meeting by explaining the history of the UCA/RP-3599/Utility Initiative/MMS project. He presented several handouts that discussed the status and goals of the Utility Initiative. Also presented were portions of the IEC CD (Committee Draft) 61850

There was also discussion on how this group's efforts related to the work of IEC TC (Technical Committee) 57 WG (Working Group) 10, 11, and 12. Mark Adamiak pointed out that this task force will address peer to peer communications which are not currently covered in CD 61850.

The assembled then debated what product the proposed Working Group would develop. Discussion centered on whether a standard or an application guide should be printed. It was

decided to develop a recommended practice entitled: **Recommended Practice for Substation Ethernet LAN Communication for Protection.** Coordination with the Substation Committee will also be sought.

It was decided that before the September meeting that John Burger would send out to everyone proposed wording for the scope, purpose, and outline. It is anticipated that a PAR will be finalized at the next meeting.

For the September meeting, the task force requests a room for 50 with an overhead.

Liaison Reports

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

There is no activity to report.

2. Substation Committee - J. Tengdin

The Substations Committee held its annual meeting in Milwaukee the week of May 2. Several of their activities are of interest to PSRC:

- 1- Work is underway in Subcommittee C3 to revise and update C37.1 (the SCADA standard). The new title will be "Standard for SCADA and Automation Systems". The revised document will include substations architectures without a conventional RTU, with all data acquired through IEDs such as relays.
- 2- Work is also underway in C2TF4 to create Standard P1525. This effort is to convert EPRI Report RP-3599 "Requirements Specifications for Integrated Protection, Control, and Monitoring" and the companion "build to" specification into an IEEE standard. The data dictionary in RP3599 will be replaced by GOMSFE data objects, and will appear in a normative annex.
- 3- A new task force (C3TF1) was formed to recommend the action to be taken on Standard 1379 - Trial Use Recommended Practice for IED to RTU Communications. This standard will expire in March 2000. The TF report is to be presented at the C3 meeting in Edmonton at the SPM.

At the Main Committee meeting, we heard a very interesting presentation by Peter Lefkin, the Secretary Treasurer and CFO of the new IEEE-ISTO (Industry Standards and Technology Organization). It is affiliated with IEEE and the IEEE Standards Association, but was set up under a different section of the Revenue Code. Thus, trade associations, user groups, advocacy groups, etc. can be set up under its umbrella. One of its purposes is to provide a home for groups who are trying to fast track agreements on ad hoc standards. Their work could then be turned over to an appropriate IEEE body to convert into an IEEE standard. I recommend PSRC schedule a presentation on the ISTO at the next Main Committee meeting.

The C0 Working Groups of the Substations Committee are looking forward to the joint meeting with PSRC in Louisville. To avoid conflicts with PSRC WG or TF meetings, their meetings will be scheduled for Monday. If you have an interest in any of the Substation Committee activities, plan to arrive in Louisville early.

3. IEC TC57 Working Group 10, 11 and 12 Report - J. Tengdin

TC57 WG 10, 11, & 12 met in Rome March 1-4, 1999 to review committee drafts of the various parts of IEC-61850. Working Group 10 prepared a New Work Item Proposal (NWIP) to develop a Substation Configuration Language. This is to be Clause 5 of IEC-61850. The Committee Drafts (CDs) of several sections have now been distributed to the various national committees. The documents are in very rough shape, so at least one more iteration will be required before

the documents reach the status of CDV (Committee Draft for Voting). My estimate is that IEC-61850 will not become an IEC standard before the end of 2001. Respectfully submitted, John T. Tengdin, US member of TC57 WG12.

4. SCC 36 - D. Holstein

The purpose of this letter is to report on the work in progress by Standards Coordinating Committee (SCC) 36. Dennis Holstein and Alex Apostolov are the PSRC representatives to SCC36. The report addresses only areas of interest to PSRC.

SCC36 met in New Orleans on April 16, 1999 following the IEEE Transmission and Distribution Exposition.

The next meeting is planned for November 5, 1999 in Pittsburgh, PA. The next meeting, and subsequent meetings, will include a fee for the meeting. EPRI is no longer going to pay for the expense of the SCC36 meetings.

At this time SCC36 consists of 13 active members. Of the active members, 11 (including proxies) attended the meeting. Secretary will write a letter to all members, stating that if you miss 2 successive meetings without being excused, you are subject to removal from the active membership list. PSRC has always had at least one member present at each SCC36 meeting. PSRC members absent were excused in each case.

The operating procedure was modified as follows. The SCC chair, or an IEEE society, or the IEEE Standards Board appoints the members of the SCC36 and its subcommittees.

According to Koepfinger, SCC36 Chairman, IEEE has a contract with EPRI to publish the document. Therefore the members cannot vote on whether or not the document should be published. The members can express an opinion, but it is only an opinion and not binding.

The issue of the status of the work in progress will be included in the introduction so that a reader will know that this work has been superseded. The following text will be included: "The technical specifications described in this report represent a consensus of expert opinion at the time of publication, as developed under EPRI sponsorship. This work will be carried forward through the standards process of a number of organizations."

General Comments and Responses that address the issues raised by Arun Phadke and John McDonald

- 1 The term specification will be used internal to the document. The term technical report will be used to identify the document. **The official title of the document is Utility Communication Architecture (UCA™) Version 2, TR1550. The document will be identified as a press book on the title page.**
- 2 The term clause will be used in the normal English language sense.
- 3 Remove reference to future MMS Forum because it no longer exists.

The reference to other documents such as RP3599 should be used in the past tense. The current work is P1525, which is an approved project with the Substations Committee (C2TF4 – Dennis Holstein, Chairman).

Specific Comments and Responses

- 1 FTAM and Virtual Terminal references will be removed from the report.
- 2 Log reporting needs to be examined in a more detailed transaction sequence. George Schimmel states that the log agent is only responsible for logging the data. When the log is full or ready to respond to a query the response is handled by the event agent and the report agent.

- 3 There is an issue over security. Stan Klein states that security as specified is not applicable worldwide. Dennis Holstein states that if the encryption algorithm is placed in the public domain, then the system is inherently not secure.
- 4 There is a major issue about multicasting through routers, which connect subnets as defined by the layer 3 addressing. This requires an application to process the packet and send a new message. All intermediate processes must be included in the total time to send/receive against the requirement.
- 5 Naming conventions should be limited to 32 characters. This is a hard MMS constraint a variable name (MMS's alternate access could be used to resolve this issue), but 32 is still a reasonable bound.
- 6 ASN.1 issues will be discussed as future work item.
- 7 Joe Koepfinger recommended that GOMSFE be moved into an IEEE Standard. I'm not sure what action will be taken to do this. Holstein is of the opinion that if this is done, it should be done by the PES Substation Committee with cooperation from PSRC.

The focus of SCC 36 is shifting from simply publishing the EPRI UCA documents as an IEEE report to marketing UCA, which is not an IEEE standard. SCC 36 believes that this is simply educating the community on the value of UCA. Holstein & Tengdin do not believe that this is an appropriate activity for SCC36, but should be the responsibility of a trade organization or users group. Specifically, the ITSO should be in charge of this activity, and SCC 36 should report to the ITSO. **PSRC Leadership needs to determine whether or not this is acceptable, and advise their representative to SCC36 as to the PSRC position.**

Coordination Reports

C93 - Liaison Report on ANSI C93 Committee - Roger Ray

No report.

Old Business

Proposal by the ARRL for a Low Frequency Allocation - Mark Simon

There have been only a few submittals on behalf of utilities in comment on the ARRL's proposal to acquire spectrum in the PLC band. While any further comments would be considered late, they may still be of merit, especially if they have technical viewpoints discussing power system reliability.

The FCC nor the ARRL have indicated when the FCC will make a judgement on this issue. In the mean time, the FCC is allowing some experimentation in the band by allowing 12 amateurs in Northern Virginia to conduct tests on 136.75 kHz for one year.

Comments that have been posted to the FCC can be reviewed at their web site of www.fcc.gov under the section "comments". Look under preceding RM-9404. If you need assistance in filing comments please contact Mark Simon, mark.s.simon@ucm.com or 708-410-5385.

New Business

SC Chairs will be asked to participate at a greater level in the PAR process. Please provide copies of your par to Mark Adamiak.

Arun is on a committee that is looking at the organization of the PES. There may be some realignment of the PSRC, PSCC (communications) and PSSC (substation) in areas where there is overlap. Some of the activities that fall under H may be affected especially where there is joint work in progress.

I: RELAYING PRACTICES SUBCOMMITTEE

Chair: J.L. McElray

Vice Chair: Brad Nelson

The Relaying Practices Subcommittee (SC) met on May 12, 1999, in Albuquerque, NM. A total of 24 members and 17 guests attended. Minutes of the previous January 1999, meeting were approved. The new location for the SC web page is <http://www.ewh.ieee.org/soc/pes/psrc/i/>. (Note the change from I to i at the end of the URL.) Under the web location you can see the subcommittee membership, reports from working groups, agenda and minutes.

I1: REVISION OF IEEE C37.103 - GUIDE FOR DIFFERENTIAL AND POLARIZING RELAY CIRCUIT TESTING

Chair: W.J. Marsh, Jr.

Vice-Chair: L. Smith

Established: 1996

Output: Revision of IEEE C37.103-1990

Expected Completion Date: 2000

The members of the WG felt that test methods and circuits for cts should be included in PC57.13.1 Guide for Field Testing of Relaying Current Transformers, and then only referenced in this WG's guide. PC57.13.1 is currently under revision by another WG (I12). The WG and SC leadership will confer on this transfer of testing documentation. Otherwise, any other additions and changes to this guide shall be submitted to the chairman.

I2: TERMINOLOGY USAGE REVIEW

Chair: B.L. Beckwith

Vice-Chair: J. D. Huddleston, III

Established: 1986

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

Expected Completion Date: Continuing

The WG did not meet.

I3: RELAY PERFORMANCE MEASURING CRITERIA

Chair: W.M. Carpenter

Vice-Chair: F. Marquez

Established: 1996

Output: Special Publication

Expected Completion Date: 1999

The WG discussed questions regarding the application of the criteria to actual events at various utilities. Several utilities presented their performance numbers for 1998. All were asked to submit comments by June.

I4: IEC STANDARDS ADVISORY

Chair: Eric Udren

Vice-Chair: M. M. Ranieri

Established: 1989

Output: IEC Standards

Expected Completion Date: Continuing

TC 95 - Measuring Relays: The working group received the IEC COMTRADE draft standard 95//80/CDV, which is identical to a recent version of the PSRC COMTRADE. Our US comments and vote are due to the IEC in June. There was no controversy regarding the

contents of the draft. We have a problem in maintaining coordination between the PSRC and IEC drafts. Bob Ryan, chairman of the PSRC COMTRADE revision WG, informed this WG chairman that the PSRC COMTRADE was now having pages of changes due to comments from the last PSRC voting cycle. To update the IEC draft, we will submit a listing of changes as the US comments to the IEC COMTRADE CDV. Bob Ryan promised a tabulation of these changes by the beginning of June. It is likely that other National Committees will also submit comments on the IEC draft; and we do not know at this time how we will be able to incorporate those into the PSRC draft. It may be necessary to submit a negative vote late in the IEEE cycle with the IEC revisions as comments.

TC 57 - Teleprotection and Control: Crucial Part 7, Sections 1-4 of IEC 61850 Communications Networks and Systems in Substations are out as Committee Drafts (CDs) to the National Committees. US members of the IEC WGs report that these CDs were driven by management pressure and are far from ready for standardization. Also, a CD is about to be issued for a serial unidirectional streaming data link which is a reduction of the process bus eventually to be standardized by WG 12. See minutes of HTF1 for more information.

Funding of US National Committee: The TAG members are unhappy to have just received bills for \$250 from the USNC of IEC in order to maintain their volunteer status. This is to be brought up to ADCOM at the September meeting. See IEC Report for more information.

I5: TRIAL-USE STANDARD FOR LOW ENERGY INPUTS TO PROTECTIVE RELAYS

Chair: Eric Udren

Vice-Chair: Peter McLaren

Established: 1992

Output: New Trial-Use IEEE Standard P1331

Expected Completion Date: 1999

The WG reviewed the final draft 8.3 of P1331, incorporating results from the January 1999 meeting and accepted by the WG as ready for SC ballot. The copy of the old PAR shows that a large number of unaddressed coordinations are needed, and will be obtained as the balloting body is formed. The chairman's outline for the summary paper was reviewed and modified. Volunteers accepted writing assignments for completion by June 30. The WG also discussed the need to make manufacturers aware of the details and application of the forthcoming standard.

I6: REVISION OF C37.90 - STANDARD FOR RELAYS AND RELAY SYSTEMS ASSOCIATED WITH ELECTRIC POWER APPARATUS

Chair: Mario Ranieri

Vice-Chair: James Teague

Established: 1993

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

Expected Completion Date: 1999

Changes between drafts 5 and 6 were reviewed first, followed by discussion to reach resolution on altitude and temperature correction factors for dielectric testing. Peter Kotos agreed to do some research on this subject before the next meeting and work toward resolution will continue at the September meeting. Resolution was reached on various other text issues including an expansion of Annex A offered by Jack Chadwick which will list IEC relay standards that do not have an IEEE equivalent at this time. For the September meeting, a new draft will be prepared by the chairman and distributed to WG members. [The WG chairman is to request a two-year PAR extension.]

I7: ELECTROSTATIC DISCHARGE TESTING FOR PROTECTIVE RELAYS

Chair: J. Teague

Vice-Chair: M. S. Simon

Established: 1992

Output: New IEEE Standard C37.90.3

Expected Completion: 1999

The WG discussed draft 2 and agreed to adopt this draft as the final version. This version will be forwarded to the coordinators and the IEEE for "Style" review. Also, a balloting body has been requested. The WG will meet in September if there is sufficient need due to comments received from the coordinators and style review.

I8: REVISION OF C37.90.1 - SURGE WITHSTAND CAPABILITY (SWC) TESTS FOR PROTECTIVE RELAYS AND RELAY SYSTEMS

Chair: J. G. Gilbert

Vice-Chair: J. Teague

Established: 1994

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

Expected Completion: 1999

The chairman first reviewed the differences between draft 2 and draft 3. The meeting continued with discussion on other parts of the document. As a result of the discussions, figures 3 and 4 will be revised by Jeff Burnworth and figures 5, 6, and 7 will be revised by Jeff Gilbert. Agreement was also reached on changes to various sections of the text that will be included in the next draft and distributed by the chairman. Work will continue on the document at the September meeting. [The WG is to request a balloting body and a two-year PAR extension.]

I11: RELAY TEST PRACTICES SURVEY

Chair: Jim Ingleson

Vice-Chair: Ed Krizauskas

Established: 1998

Output: Transactions Paper

Expected Completion Date: 2001

WG member Larry Lawhead prepared a revised electronic survey. The WG went through the revised questionnaire. While Lawhead had made a number of editorial corrections, he is reporting that changes in survey questionnaire logic are difficult. Any such change means building the survey over again. After going entirely through the survey, a number of changes or corrections were developed.

I12: REVISION OF C57.13.1 - GUIDE FOR FIELD TESTING OF RELAYING CURRENT TRANSFORMERS

Chair: Mike Meisinger

Vice-Chair: Fidel Marquez

Established: 1998

Output: Revision of IEEE/ANSI C57.13.1-1981 (R1992)

Expected Completion Date: 2002

A proposal to move parts of PC37.103 Guide for Differential and Polarizing Circuit Testing, currently under revision, to this guide will be discussed by the WG and SC leadership. Also, the use and application of hysteresis loop tests was discussed as an alternative to running saturation curves on cts. This will be added to the revision of the guide. Harley Gilleland will

coordinate a section on low energy devices.

I13: REVISION OF C57.13.3 - GUIDE FOR GROUNDING OF INSTRUMENT TRANSFORMER SECONDARY CIRCUITS AND CASES

Chair: Moh Sachdev

Vice-Chair: Brian Mugalian

Established: 1998

Output: Revision of IEEE/ANSI C57.13.3-1983 (R1990)

Expected Completion Date: 2001

V. Rebbapragada described the grounding requirements listed in IEEE standards Std. 80, 525 and 1050. These will be considered in the revision of this guide. He will also review the IEC and IEEE-IAS Standards on grounding and will make a presentation at the next meeting. Eric Udren reviewed the work of W.G. I5 (P1331 Trial Use Standard for Low Energy Inputs to Protective Relays) that describes grounding and shielding of low-voltage outputs from optical or other current/voltage transformers. The WG invited Udren to make a detailed presentation at the next WG meeting. Harley Gilleland described the ABB optical current transformer and method of transmitting signals from electronic modules in the control house and transducers. Gilleland agreed to make a detailed presentation at the next WG meeting. The WG reviewed comments (on Section 1.3 of the Guide) received from Gerald Fenner. The WG will continue to review the background material and prepare a list of contradictions between this guide C57.13.3 and other standards. Wayne Hartmann joined the working group and volunteered to work on the diagrams for the guide.

I14: TELECOMMUNICATION TERMS/NEW TERMS USED BY PROTECTION ENGINEERS

Chair: D. Zugris

Vice-Chair: A. Apostolov

Established: 1998

Output: Special Publication

Expected Completion Date: 2003

The WG did not meet.

I15: REVISION OF C37.110 - GUIDE FOR THE APPLICATION OF CURRENT TRANSFORMERS USED FOR PROTECTIVE RELAYING PURPOSES

Chair: G. P. Moskos

Vice-Chair: B. Jackson

Established: 1998

Output: Revision of IEEE C37.110-1996

Expected Completion Date: 2003

The WG is adding more ct application examples to the guide, such as the application of auxiliary cts and the selection of cts for line protection. Based on a draft of the guide, assignments were made with a deadline of July 1, 1999. Discussion is continuing regarding including optical sensors in the guide.

I19: ANALYSIS OF SUBSTATION DATA

Chair: L. Smith

Vice-Chair: C. Shank

Established: 1995

Output: Special Publication

Expected Completion Date: 1999

The WG solicited volunteers to prepare scenarios for the publication. A simplified flow chart will also be developed.

Task Force Reports:

ITF1 Relay Service Letter Database: J. Ingleson. Two new letters were added in January 1999. Information is available at <http://www.ewh.ieee.org/soc/pes/psrc/i/>, then click I SC Bulletins, then REPORTS, then REPORT Relay Service Data.

Liaison Reports:

Industry Applications Society (IAS)/Industrial & Commercial Power Systems Department/Power Systems Protection Committee: A. C. Pierce. As of this meeting, this liaison report moves to the Substation Protection SC.

Instrument Transformers Subcommittee of the PES Transformers Committee: Jim Huddleston III. There are three major projects at this time: C57.13.5 Trial-Use Guide for Test Requirements for High Voltage Instrument Transformers Rated 115 kV System Voltage and Above (with two recent WG sessions); revision of C57.13-1993 Standard Requirements for Instrument Transformers; and C57.13.6 Instrument Transformers for Use with Electronic Relays and Meters.

P420 IEEE Standard Design and Qualification of Class 1E Control Boards, Panels, and Racks Used in Nuclear Power Generating Stations: Cliff Downs. Contact was made with the chairman of the P420 WG who had forwarded revision draft 2. The WG expects to ballot in 1999. Downs has reviewed draft 2 and does not see any issues of concern to the PSRC.

Power System Planning and Implementation Committee: No liaison.

Power System Dynamic Performance Committee: This liaison function was moved to the System Protection SC.

Coordinator's Reports:

P384-NPEC, IEEE Standard Criteria for Independence of Class 1E Equipment and Circuits: Munnu Bajpai. No activity to report.

Revision of C57.13-1993 IEEE Standard Requirements for Instrument Transformers: Jim Huddleston.. The WG met on November 10, 1998. Tom Nelson stated that the present PAR expires in 1999 and has asked for a two-year extension. Nothing was said about a new draft for this document.

Proposed C57.13.6 Instrument Transformers for Use with Electronic Relays and Meters: Jim Huddleston. The WG met on November 10, 1998. The latest draft was reviewed and several comments and changes were proposed. The WG agreed this document will not be incorporated into the parent standard, C57.13, on the present revision.

T&D Committee: No liaison.

Old Business:

No issues were taken up.

New Business:

A new task force, ITF2, was formed under Moh Sachdev to review the 1997 tutorial on Advancements in Microprocessor Based Protection and Communication (IEEE 97TP120-0).

The goal is to review the need for further guidance to engineers on how to select digital relays. The new TF membership is limited for the first two meetings to the membership of the previous tutorial WG. The ITF2 will report to the SC after three meetings.

Another new task force, ITF3, was formed to evaluate the need for revision of C37.98 Standard for Seismic Testing of Relays, including revisions to style and units, plus any other necessary improvements. The ITF3 chairman is Mason Clark, with Munnu Bajpai as vice-chairman. The SC invites anyone who is interested to join this WG.

Munnu Bajpai agreed to accept the task as coordinator for P323: Standard for Qualifying Class 1E Equipment for Nuclear Power Generating Stations.

For WGs with PARs, as you are nearing completion, look for volunteers to write a summary paper and also persons to present the summary papers at regional relay conferences.

All WG Chairs working under a PAR are to send a copy of their PAR to the SC chairman and vice-chairman by July 1999.

WG chairmen are to send WG membership lists in WORD format to Jeff McElray before the next PSRC meeting in September 1999.

J: ROTATING MACHINERY PROTECTION SUBCOMMITTEE

Chair: W.P. Waudby

Vice Chair: R.D. Pettigrew,

The subcommittee met on May 12, 1999 with 14 members and 9 guests present. Minutes of the January 13, 1999 meeting in Las Vegas, NV were approved. The Chairman discussed briefly the items of interest from the Advisory Committee.

- PSRC Mail List Update Program.
- Working Group Members Lists need to be submitted to Phil Waudby (e-mail) by June 1st.
- Discussed issues regarding ballots to reaffirm existing standards.

J1: REVISION OF C37.106-1987 GUIDE FOR ABNORMAL FREQUENCY PROTECTION FOR POWER GENERATING PLANTS

Chair: G. Benmouyal

Vice-Chair: T. Sezi

Established: 1996

Output: Standard Revision of IEEE/ANSI C37.106-1987

Expected Publication Date: December 1999

Status: Working on Draft 5

The working group met on Tuesday with 10 members and 7 guests.

Draft 4 of the revised guide was discussed. Draft 5 of the document should have all the final plots and figures in accordance with the IEEE Standards Department practices. Section 5 of the draft will be rewritten in order to remove all descriptions of the under frequency protection schemes that have become obsolete.

J2: AC MOTOR PROTECTION TUTORIAL

Chair: S. Zocholl

Vice-Chair: M. Baldwin

Established: 1998

Output: Tutorial on AC Motor Protection

Expected Completion Date: 2000

Status: Reviewing Working Group Assignments

The fourth meeting of the Working Group was attended by 6 members and 8 guests. Pat Kerrigan joined as a member of the Working Group. The Working Group discussed format issues and will use Visio for drawings and Word 6.0 saved in rich text format. Drawings will be imported in Meta File format. The issues of format should be standardized at the Subcommittee or at the Main Committee level to produce uniform documents produced by PSRC working groups.

The Working Group then reviewed assignments tutorial outline items 4.1 Thermal Models by S.E. Zocholl and Jeff McElray and items 4.5 Current Unbalanced by Paul Lerely. These were presented in Power Point. Assignments were also received from George Parr on item 4.3 Locked Rotor Protection. Subinoy Mazumdar also submitted a prose on item 4.6 Abnormal Voltage. The members of the Working Group with outstanding assignments were asked to complete their assignments in Power Point for the next meeting.

J3: REVISION OF THE AC MOTOR PROTECTION GUIDE

Chair: J.D. Gardell

Vice-Chair: M. Bajpai

Established: 1993
Output: Standard Revision IEEE/ANSI C37.96
Expected Completion Date: 1999
Status: Resolving Ballot Issues

The Working Group J3, to revise AC Motor Protection did not meet in Albuquerque.

The plan is to revise as draft #5.

Per discussion with M. Sanders, this draft will need to be re-circulated for changes only and re-ballot. The group will meet in Fall 1999 to discuss final draft #5.

J4: SEQUENTIAL TRIPPING OF GENERATORS

Chair: E.C. Fennell
Vice-Chair: K.C. Kozminski
Established: 1993
Output: Transaction Paper
Expected Completion Date: 1996
Status: Paper sent to IEEE for publication

The Working Group assignment is completed.

J5: IMPACT OF LARGE STEEL MILL LOADS ON GENERATING UNITS

Chair: P.A. Solanics
Vice-Chair: K.C. Kozminski
Established: 1995
Output: Transaction Paper
Expected Completion Date: 1998
Status: Paper done and will be sent to IEEE for publication

The Working Group did not meet. No additional meetings are planned. A request to present the paper at the Fall meeting was made. Additionally, the paper may be presented at a winter or summer IEEE meeting.

J6: PERFORMANCE OF GENERATOR PROTECTION DURING SYSTEM DISTURBANCES

Chair: S. Patel
Vice-Chair: K. Stephan
Established: 1998
Output: Transaction Paper
Expected Completion Date: 2000
Status: Forming Draft 0

Working Group J6 met on Tuesday, May 11, in a single session with 13 members and 10 guests.

The Working Group discussed its assignment and arrived at the consensus that the main purpose of its transactions type paper is to discuss generator relay settings with consideration for power system protection and generator systems (i.e. turbine, regulator, excitation) protection operation during power systems disturbances. The paper is to include setting recommendations. This paper may serve as a source in future revisions of the Generator Protection Guide.

Details about these specific protections were discussed:

- Backup 21, 51V, 46

- MEL/URAL
- Excitation systems protection
- Loss of field 40
- Overexcitation 24

Along with steady-state and dynamic state consideration.

Most of the writing assignments were received on or before the meeting. Ratan Das, Pat Kerrigan, Mike Reichard, Charlie Henville, Murty Yalla, Joe Uchiyama volunteered for the remaining writing assignments which are due June 11, 1999. From these we will be able to crate Draft 0.

Charlie Henville, Pat Kerrigan, Mohammed Ibrahim are now WG members.

J7: REVISION OF C37.105 IEEE STANDARD FOR QUALIFYING CLASS 1E PROTECTIVE RELAYS AND AUXILIARIES FOR NUCLEAR POWER GENERATING STATIONS

Chair: S. Mazumdar

Vice-Chair: S. Usman

Established: 1999

Output: Standard Revision IEEE C37.105-1987

Expected Completion Date: 2003

Status: New Working Group being formed

J11: APPLICATION OF MULTI-FUNCTIONAL PROTECTION SYSTEMS

Chair: M. Yalla

Vice-Chair: E.C. Fennell

Established: 1994

Output: Transaction Paper

Expected Completion Date: January 1998

Status: Paper presented at 1999 Winter Power Meeting

The transaction paper was presented at the IEEE PES Winter Meeting in New York. There was one written discussion at the presentation. We are waiting to receive any further written discussions (the due date for IEEE to receive discussions was April 30th, 1999). After all the discussions are received, the Chairman will draft a closure and pass it on to the Working Group for comments before submitting to the IEEE for publication.

No meeting is planned at the next meeting. The Working Group will be disbanded after the closure is submitted.

Liaison Reports

1. Electric Machinery Committee, C.J. Mozina

There were no protection issues to report on. C. Mozina will make the Committee aware of our work on "Impact of Large Steel Mills on Generating Units" and the "Motor Protection Tutorial".

Coordination Reports

1. P958-EDPG, Guide for Adjustable Speed Drives, J. Gardell

No report given

2. P408-NPEC, Standard Criteria for Class 1E Power Systems for Nuclear Power Generating Stations, K.J. Khunkhun

No Report Given.

3. C50.41, ANSI Standard for Polyphase Induction Motors for Power Generating Stations, R. Pettigrew

A negative ballot was sent to the latest draft of the standard.

4. P1010, Guide for Control of Hydroelectric Power Plants, Wayne Hartmann

The coordination contact for the Guide for Control of Hydroelectric Power Plants (P1010) has been changed from Donald McCabe to John Yale.

The P1010 Group, Guide for Control of Hydroelectric Power Plants, is in the process of their 5-year review. As of today, they are in the process of deciding what sections will have major or minor changes. It was suggested that we wait until after the July 1999 IEEE Summer Meeting for review and comment. During the meeting, the Group will decide on major/minor revision status. Shortly after, we will be passed the minor revision sections for review and comment. The major revision sections will be passed to us after the revision work is complete.

Old Business

None.

New Business

Generator Ground Protection Guide. A new Working Group will be formed to revise this guide. A volunteer for Chairman is needed.

K: SUBSTATION PROTECTION SUBCOMMITTEE

Chair: C. F. Henville

Vice Chair: S. R. Chano,

The Subcommittee met on May 12, 1999, with 23 members and 15 guests present. The minutes of the previous meeting in Las Vegas were approved with no modifications.

K1: PROTECTION OF PHASE ANGLE REGULATING TRANSFORMERS.

Chair: Mohamed Ibrahim

Vice Chair: Frank Plumptre

Established, 1995

Expected Completion Date: 2000

Output: Special Publication

The WG met to discuss the Substation Committee ballot results. The ballot was sent to 26 members, to whom 24 replied, 18 approved, one abstained, four approved with comments and one negative ballot. The WG resolved all the comments including the negative ballot. The special publication will be posted on the PSRC Web prior to the next meeting. K1 will continue to be in existence with the objective to write a summary paper for presentation at regional relay conferences and IEEE proceedings. 8 members and 2 guests attended the meeting.

K2: TRANSFORMER PROTECTION GUIDE

Chair: R. Hedding

Vice Chair: R.W. Haas

Established: 1991

Output: Revision of Standard ANSI C37.91

Expected Completion Date: 1999

Ballot re-circulation-Draft 12

The K2 working group met in a single session with 10 members and 12 guests in attendance. The results of the circulation of the document were discussed. Eight negative ballots were counted. Four of which were defaults because the balloting persons didn't vote but were subsequently changed to affirmative after contact with these balloting persons was made. Three negative ballots were resolved at the session after some minor drawing and document wording changes were made. This leaves one negative ballot which doesn't seem to have a resolution. Several editorial changes were suggested by the IEEE standards editors. These are incorporated into draft 12. As soon as all the drawings are in the proper format, TIFF or EPS, the document will be transmitted to REVCOM for approval. It's hoped to make August 6th a deadline for the September REVCOM meeting.

K3: TRANSFORMER THERMAL OVERLOAD PROTECTION

Chair: Glenn Swift

Vice Chair: S. Zocholl

Established 1995

Expected Completion Date: 1999

Output: Transactions paper

Draft 1

The major item of the meeting was to discuss the first draft of an IEEE Transactions paper based on the Working Group's recently approved report. The draft had been circulated as an e-mail attachment without any reported reception difficulties. Several comments and suggestions were made. and the chairman will act on these to re-circulate a second draft, with changes clearly marked. This process will be repeated more that once, if possible, before the

next PSRC meeting. Charlie Henville thanked Carlos Castro for his extensive past efforts as chairman. and explained the procedure for requesting a panel session at the next PES Winter or Summer Meeting: namely through George Nail as the PSRC Vice-Chairman. 17 members and 11 guests attended the meeting.

K4: BUS PROTECTION GUIDE

Chair: S. P. Conrad

Vice Chair: R. W. Haas

Established, 1999 (Originally 1983)

Output: Revision of Standard ANSI C37.97

Expected Completion Date: 2000

The WG met in a single session with 10 members and 15 guests present. John Horak joined the WG. Mohamed Ibrahim presented his writing assignment on the inclusion in the guide for low, medium, and high impedance differential relaying for bus protection. After some discussion the WG decided to include an introductory paragraph discussing the effects for each of the various impedance types on CT performance and the advantages and disadvantages of each method. These are to be identified as Clauses 4.4.1. through 4.4.5. Clause 4.4.6 discusses the application of MOCTs for bus protection. Tevik Sezi discussed the concept of Decentralized Low Impedance Bus Protection Scheme for Zone Selective Tripping. This discussion also led to the conclusion that the use of switchyard bay units lends itself to the ability to mix CTs. This discussion will be included as part of the above sub-clauses. Both Mohamed and Tevik are to collaborate and send to the chairman a re-write of their assignments by June 30, 1999. Doug Dawson discussed his assignment of the existing Clause 4.4 Directional Comparison Bus Relaying. The revised write-up includes a discussion on feeder relaying blocking of the sensitive bus protection during a feeder fault, thus allowing "Fast Bus Fault" protection. The WG agreed to delete the Annex D that discussed the application of electromechanical relays and the associated dc schemes for Directional Comparison Bus Relaying. The chair will distribute Draft 14 including the above assignments to the WG, prior to the September 1999 meeting in Louisville. Based on the returned comments the Chair suggested that the document be submitted for a WG ballot in the September time frame in preparation for a subsequent ballot of the IEEE balloting body.

K5: NETWORK TRANSFORMER PROTECTION GUIDE

Chair: C. R. Sufana

Vice Chair: J. J. Horwath

Established, 1994

Output: Revision of Standard ANSI C37.108

Expected Completion Date: 1999

Draft ballot

Working Group K5 met in a double session to review and resolve the negative ballots and comments received as a result of the balloting process. The majority of the negative ballots were resolved and the remaining comments will be discussed at the September meeting. The goal of the working group is to submit a new draft for re-circulation soon after the September meeting. Members are to return rewrites for several sections by July 1, 1999. There were 8 members and 7 guests in attendance during the meeting.

K6: SHUNT CAPACITOR PROTECTION GUIDE

Chair: G. Fenner

Vice Chair: S. R. Chano

Established, 1994

Output: Revision of Standard ANSI C37.99
Expected Completion Date: 1999
Re-circulation draft 7

The WG met in a double session to discuss the ballot results. 71 out of 84 eligible voters returned their ballots with 60 affirmative votes, 4 negative votes and 7 abstentions. There were 21 affirmative votes with comments. The members were able to resolve all the negative ballots. A new Draft 7 will be issued to the WG and to those who have balloted with comments. Re-circulation of the new Draft will include the necessary required revisions as per the IEEE style manual. The aim of the WG is to incorporate the necessary revisions to the drawings including The tremendous comments received from the balloting body. Jim Stephens was added to the membership list. 9 members and 16 guests attended the meeting.

K7: Shunt Reactor Protection Guide
C. F. Henville, Chair (temporary)
Established, 1999

Output: Revision of ANSI/IEEE C37.109.
Expected Completion Date 2001

The working group did not meet in Albuquerque. The re-affirmation ballot of the Guide was successful, with 61 of 72 (84%) eligible ballots returned. Of the ballots returned, there were 57 affirmative votes and 4 abstentions. The PSRC Standards Coordinator will take the necessary steps to get this standard reaffirmed by the Standards Board. A task force of interested members discussed possible areas in which the existing guide might be updated. Kevin Stephan agreed to chair this working group, and Pratap Mysore will be the vice chair. Kevin will apply for a PAR before the next PSRC meeting, and it is expected that the WG will meet then to proceed with revision of the standard.

K8: GUIDE FOR PROTECTIVE RELAYING OF UTILITY CONSUMER INTERFACE

Chair: Irwin Hasenwinkle

Vice Chair: Fred Griffin

Expected Completion Date: 1999

Output: Revision of ANSI Standard C37.95
Draft 5

The WG did not meet at the May PSRC meeting. Balloting of the document was delayed but it is expected to be completed before the September meeting.

K9: RELAY TRIP CIRCUIT DESIGN

Chair: D. C. Dawson

Vice Chair: J. Gosalia

Established, 1988

Output: IEEE Special Publication
Expected Completion Date: 1998

The Working Group did not meet at the May 1999 PSRC meeting in Albuquerque. The final version of the Relay Trip Circuit Design special publication has been available in the K SC Bulletins area of the PSRC Web Site. The final version is the same as Draft 7 except for changes to the title page to indicate that it is completed work. The companion paper has been sent to the K SC members for their approval or comments. When any necessary revisions have been made, the paper will be submitted to IEEE for publication as conference proceedings. A note was placed on USENET in the **sci.engr.electrical.sys-protection** newsgroup that the document is available for downloading.

K10 (Ex KTF1): SCC21 Distributed Resources Standard Coordination

Chair: William Feero

Vice Chair: (Vacant)

Established, 1999

Expected Completion Date: 2001

Output: Standard Through the SCC 21

The task force met in a single session with 11 members and 5 guests present.. John Stevens of Sandia Labs (the 929 Working Group Chairman of SCC21) made a presentation of the status of the official ballot of P929/D10 "Recommended Practice for Utility Interface of Photovoltaic (PV) Systems". Of the 23 ballots sent out, 22 were returned. Only one was negative. Only two approvals with comment were received. The recent UL1741 Draft, March 1999, was discussed by John Stevens and KTF1 members. It is expected that both IEEE 929 and UL1741 should become available soon. The rest of the meeting was spent discussing SCC21's present focus, P1547. This document, to be titled **Standard for Interconnecting Distributed Resources with Electric Power Systems**, will be produced by the IEEE SCC21 Distributed Resources and Electric Power Systems Interconnecting Working Group. The Scope is: *This Standard establishes criteria and requirements for interconnecting of distributed resources (DR) with electric power systems.* The Purpose is: *This document provides a uniform standard for interconnection of distributed resources with electric power systems. It provides requirements relevant to the performance, operation, testing, safety considerations, and maintenance of the interconnection.* This Standard is on a fast track to become available by September 2001, going out for final vote in March 2001. To do this, SCC21 has scheduled working meetings every two months. In recognition that this Task Force was initially formed to react to UL1741 and drafts of 929, but now has evolved into a long term mission of interfacing with the developers of SCC21/P1547, it was suggested to reform this TF into Working Group named "SCC21 Distributed Resources Standard Coordination". The assignment is: "To interface with SCC21/P1547 in order to reduce unnecessary delays by getting PSRC input into the process without having to wait for after-the-fact coordination." The presently proposed coordination is by receiving drafts from SCC21.

The Subcommittee agreed to change the status of Task Force KTF1 to a working group, which will be designated WG K10, with the name and assignment as noted above.

K13 (Ex KTF13): GUIDE FOR PROTECTIVE RELAY APPLICATION OF TRANSMISSION-LINE SERIES CAPACITOR BANKS

Chair: A. F. Elnewehi

Vice Chair: F. P. Plumptre

Established, 1999

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

Expected Completion Date: 2003

The draft of the PAR document was sent to the PSRC Standards Coordinator on March 07, 1999. The TF is awaiting the results of that review. Frank Plumptre chaired the meeting in the absence of Ahmed Elnewehi, with 5 members and 2 guests in attendance (including one new member). There was some discussion on thyristor controlled series capacitors which would not be covered in this guide as this will not be within the scope of the document. An outline of the proposed guide was agreed to and assignments were handed out. and are due one month in advance of the Sept 99 PSRC meeting. The focus of these assignments is to describe example installations from various utilities. These examples would also reflect the different protection philosophies used by various vendors.

The Subcommittee agreed to change the status of Task Force KTF13 to a working group, which will be designated WG K13.

Liaison Reports:

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

Nothing new to report. The Transformer Committee was scheduled to meet in New Orleans in April, 1999.

Coordination Reports:

1. ANSI/IEEE Switchgear Standards F Plumptre.

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

Nothing to report.

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

Position taken on Altitude Correction Factors. This will be balloted in ADSCOM and put in the balloting pool. Part of the mandate is to incorporate the non-controversial topics of IEC 694. Accordingly, IEC 694 will be broken up into five sections for review and incorporation into C37.100.1 as soon as possible.

2. ANSI/IEEE Standard C37.20.2 Standard for Metal-Clad Switchgear, C. F. Henville.

Draft 8 of this standard ballot results were 87% returned, 82% affirmative. Minor editorial changes will satisfy two of the negative ballots. Other negative ballot comments will be addressed in the next revision of the standard. The document will now proceed to REVCOM. This document satisfactorily addresses all PSRC concerns about low ratio cts with high fault currents.

3. Transformer Committee, Project C57.119, Recommended Practice for Performing Temperature Tests on Oil Immersed Power Transformers at Loads Beyond Nameplate Rating. J.E. Stephens

The WG Chair still needs to make minor revisions per ballot results and return to IEEE for publication.

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

The WG is awaiting technical input from the Transformers Committee on updating temperature rise and other rating information.

5. C37.66 Requirements for Capacitor Switches for Ac Systems, S R Chano.

Nothing is reported.

6. P1375 Guide for the Protection of Large Stationary Battery Systems, T. E. Weidman

Nothing is reported

7. C57.12.01 General Requirements for Dry-Type Distribution and Power Transformers Including Those with Solid Cast and/or Resin Encapsulated Windings, J. D. Huddleston III

This WG met in Leon, Guanajuata, Mexico on November 8-11, 1998, with Mr. Jonnatti, Chair. He announced that this Standard will be printed in December, 1998, and discussed issues for revising this C57.12.01-1998, starting in the Spring of 1999. Draft 1 is the only available document until revision gets underway.

8. P1538 (When approved) Guide for Determination of Maximum Winding Temperature Rise in Liquid Filled Transformers, Dan Hollands

Nothing is reported

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

Nothing is reported.

Old Business

Charlie Henville suggested to all Subcommittee K WG Chairs to send a brief paragraph reflecting the activity of the WG to Charles Sufana for inclusion on the WEB.

New Business

The Chair welcomed Pratap Mysore as a new member in the Substation Protection Subcommittee.