

**POWER SYSTEM RELAYING
COMMITTEE**

OF THE

IEEE POWER ENGINEERING SOCIETY

Approved
Rev. 2: Jan. 8, 2001

MINUTES OF THE MEETING

September 17-19, 2001

Madison, WI

**Power System Relaying Committee
Main Committee Meeting Agenda
September 19, 2001
Revised
Madison, WI**

- | | | |
|------|--|-----------|
| I. | Call to order / introductions | Nail |
| II. | Approval of Minutes/ Financial Report | Winston |
| III. | Reports of Interest | |
| | A. Chairman's Report | Nail |
| | B. Technical Paper Coordinators Report * | Taylor |
| | C. PES Report * | McDonald |
| | D. Cigre Report * | Cease |
| | E. EPRI Report * | Burger |
| | F. IEC Report * | Udren |
| | G. Standard Coordinators Report * | Sachdev |
| | H. Substation Committee Report | Tengdin |
| IV. | Subcommittee Reports- in order | |
| | I - Relaying Practices | Gilbert |
| | J - Rotating Machinery | Pettigrew |
| | K - Substation Protection | Chano |
| | D - Line Protection | Carpenter |
| | C - Systems Protection | Thorp |
| | H - Relaying Communications | Simon |
| V. | Old Business | Nail |
| VI. | New Business | Nail |
| VII. | General Announcements | Nail |

Adjourn

*** Indicates report was not made but will be included in the minutes**

Call to order / introductions**Nail**

George Nail called the meeting of the IEEE/ PSRC Main Committee in Madison, WI to order at 1:04 pm on May 19, 2001.

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

The minutes of the May, 2001 in Vancouver, BC, Canada were approved.

Chairman's Report**Nail**

The PSRC Meeting was held in Madison, Wisconsin less than a week after the WTC attack. We were happy to see over half of the people that had pre-registered actually show up. As a committee made up of experts and leaders in the industry, working group members eagerly took over leadership roles as needed where Chairs and Vice Chairs were not present. Most of the Working Groups actually met and made progress on their assignments. Since there were a lot of members absent the Subcommittee Meetings were suspended and the Main Committee met Wednesday afternoon.

Technical Paper Coordinators Report**Taylor**

16 papers relating to relaying have been approved for presentation at the 2001 T&D Conference to be held at the end of October in Atlanta. These papers will be divided into three sessions to be held on Tuesday morning from 9:00-12:00; on Wednesday afternoon from 2:00-5:00; and on Thursday afternoon from 2:00-5:00. The session chairs will be Rick Taylor for Tuesday, Alex Apostolov for Wednesday, and Phil Winston for Thursday.

Eight papers relating to relaying have been approved for presentation at the 2002 Winter PES meeting presently scheduled for New York in February. These papers will be divided into two sessions that will be coordinated at a meeting in October. Session chair volunteers are needed.

PES Report**John McDonald**

The IEEE PES Governing Board met on Thursday, July 19, 2001 during the IEEE PES Summer Meeting in Vancouver, BC, Canada. This report will summarize the highlights of the meeting.

What's In It for Me?

This is the title of a new PES booklet that you will soon receive in the mail. The booklet emphasizes the benefits of PES membership and participation to you, the engineer, and to your employer.

PES Annual Report

Beginning this year, the PES will publish an annual report highlighting the activities and accomplishments for the previous year. This is another effective way to show the benefits of PES membership to your employer.

2001 PES Organization Manual and Committee Directory

This Directory has been prepared and is available on the PES web site.

Standards Related to IT Security

The IEEE Standards Association (SA) Standards Board is emphasizing the need for standards related to IT security. The PES Standards Coordinating Committee (SCC) agreed in Vancouver that such a standard is required. The SCC will now identify the most appropriate Technical Committee to pursue this work.

China Society of Electrical Engineers (CSEE)/PES Cooperation

PES signed a Cooperation Agreement with CSEE at the 2000 Winter Meeting in Singapore. The two actions currently in process are:

Work with CSEE to establish “hot links” between the two Home Pages. This will permit easy access to highlights of the activities of both organizations to the members of either. The abstracts of all CSEE publications for at least the last five years are available in English. The PES will try to acquire them, evaluate their significance to PES, and determine if they can be sorted and searched for subjects and key words.

CIGRE/PES Policy for Cooperation

The PES approved and adopted at the Vancouver meeting the CIGRE/PES Policy for Cooperation, which had already been adopted by CIGRE. The objectives of the Policy for Cooperation are:

Regular and timely information exchange between the organizations on subjects that both are actively studying is beneficial to both organizations to avoid unnecessary duplication of effort.

Joint development of engineering information on subjects of interest to both organizations, and the organization of joint technical activities such as workshops and conferences for areas of joint interest in order to improve the dissemination of information to the engineering community.

A target of one joint activity to investigate and report on a significant industry topic every two years and one joint major conference every four years.

An oversight group of three tiers is being established: Executive Committee, Steering Committee and Study Area Liaisons. There will more information available as the Policy for Cooperation is implemented.

Agreement on the Structure – IEEE Power Quality Related Activities

The Parties to this Agreement are IEEE Standards Coordinating Committee 22, IEEE Industry Applications Society, IEEE Industrial Electronics Society, IEEE Power Electronics Society, and IEEE Power Engineering Society. In order to facilitate the development of a suite of standards applicable to all areas of power quality measurements and performance, it is agreed that the IEEE Power Engineering Society should function as the “host” society. The purpose of the development of a host society is to provide the infrastructure needed for holding meetings and the other items needed for standards development on an expedited basis, the publicity and exposure needed to garner industry support for the standards development effort, and direction on industry needs from the broader perspective of the Societies.

While PES is named as the host society, all four of the societies will be involved to the extent they desire in the development of the suite of standards. This is consistent with, and in direct support of, the Cooperation Agreement in place between the Societies. It is

also understood that coordination of standards development activities with a wide variety of other entities, both internal and external to IEEE, is required. Thus, it is also proposed that SCC22 remain functional as a Standards Coordinating Committee under the IEEE-SA Standards Board.

It is intended that the activities of this new entity in PES would be in a very visible position within the Technical Committee structure of PES. It is also intended that purview over associated measurements would be included in their scope. This is felt to be critical to the success of the effort, because standards on Power Quality cannot be developed in a meaningful way without being able to measure the parameters in an effective and consistent way. One proposal is for a new entity to be titled the "Power Quality Committee". Operations and procedures would be as documented under the "Technical Council Operations and Procedures Manual".

PES General Meetings

Beginning in 2003, the PES will have one General Meeting each year, rather than separate Winter and Summer Meetings as in the past. The 2003 General Meeting will be in Toronto on July 12-16. The 2004 General Meeting will be held in Denver on June 6-12. The dates for future general Meetings will be sometime during June 5 to 25 each year.

PES/IEE Cooperation

At a meeting in February at IEE Headquarters in London, it was agreed that PES will serve as a technical co-sponsor for the 2002 IEE PEMD (Power Electronics, Machines and Drives) Conference. Likewise, IEE will serve as the technical co-sponsor for the 2003 PES IEMDC (International Electric Machines and Drives Conference). A decision on future collaboration will be based on the results of the 2002-2003 collaboration.

Upcoming Board Meetings

The IEEE PES Executive Committee (ExCom) will meet on November 2 in Atlanta, Georgia in conjunction with the IEEE PES Transmission and Distribution Conference and Exposition.

CIGRE SC34 Report

No report

Cease

EPRI Report

The new UCA users group and EPRI/Utility technical meetings were cancelled due to national and international travel problems and company restrictions. The UCA interoperability demo, users group and technical meeting will immediately follow the next PSRC meeting at Dana Point in January 2002. We expect to have over 20 companies demoing their advanced protection equipment featuring high-speed, robust ethernet/MMS communications. All PSRC members are also welcome to attend the luncheon and full dinner on Thursday as part of the UCA demo.

Burger

IEC Report

TC 95 - Measuring Relays

Udren

We continue to deal with new TC 95 standards drafts driven by European Community pressure to develop the all-inclusive suite of environmental susceptibility tests for relays. These are relay-specific implementations of the electrical-environment influence tests covered in the generic IEC 61000-4 series of test standards, which are applied to broad categories of industrial electrical equipment. The Technical Advisory Group of TC95, which meets as PSRC WG I4, has an EMC overview WG draft on which to submit comments soon.

95/127/CD - 60255-26, Electromagnetic Compatibility Requirements For Measuring Relays And Protection Equipment.

This is a new document, seen in preliminary form about a year ago. It presents tables showing all of the EMC tests proposed to be applied to relays. It references the 61000-4 series for basic test setups, generators, and waveforms. This document lists specific magnitudes, repetitions, connection modes, and other parameters for tests on relays. It is still an overall summary - to actually run the tests, one must consult the specific relevant 60255 relay standard for details.

Tests include:

- Oscillatory surge withstand
- Fast transient surge withstand
- Electrostatic discharge withstand
- Electromagnetic radiation susceptibility.
- Conducted interference susceptibility
- Long-duration high-energy lightning surge withstand
- Power frequency magnetic field withstand
- Control circuit capacitive transient withstand
- Ripple and interruptions to dc auxiliary power supply
- Electromagnetic emissions
- Conducted emissions

These are in addition to impulse and hi-pot insulation verification tests required in the insulation coordination standard 60255-5, in the name of product safety.

Some of these tests have new requirements, and WG I4 has some overview comparison material available.

At the May meeting I reported on intention of TC 95 to initiate a WG on *product safety standards*, a new area where PSRC has not considered working. Should this get rolling, there will be yet another standard on safety requirements for relays, probably springing off from 60255-5 on insulation design requirements. It will probably go further, and will replace generic EC safety standards (Low Voltage Directive) used by relay manufacturers to certify CE marking. We have solicited a US member, but no one has stepped forward to date. WG membership without the US has now been published and the group will soon convene, but it would still be possible for the US National Committee to offer a participant.

TC 57 - Teleprotection and Power System Control

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

Many sections of the massive draft are in latter or final voting cycles, although the contents of some sections remain controversial. Many PSRC members and attendees also follow or take part in this work, which is closely related to the EPRI UCA substation communications design.

The next meeting of WG10-12 takes place in

Standard Coordinators Report

Sachdev

The Standards Coordinator, Mohindar Sachdev, could not meet with the Chairs of the WGs writing and revising standards documents in September because the Toronto to Chicago flight he had to take was cancelled. The status of PARs, Standards and Guides are reviewed in this report. The actions to be taken for keeping the approval of the PARs up-to-date and keeping the Standards and Guides live are identified. A summary of the specific approvals received since the May 2001 meeting of the PSRC and the actions that need to be taken soon are identified as well.

The IEEE Standards Web page has Word templates, the style manual, and operations manual that can be downloaded for use in developing new standards and for revising standards. The address of the Web site is as follows.

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

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

After 1 January 2000, proposed new standards and revised standards submitted for approval shall use metric units exclusively in the normative portions of the standard. Inch-pound data may be included, if necessary, in footnotes or annexes that are informative only.

For more information visit:

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

The activities of the Standards board are posted on the web site at

<http://www.standards.ieee.org/board/nes/> and

<http://www.standards.ieee.org/board/rev/>

A list of new, revised and withdrawn standards and standards projects listed by sponsoring IEEE Society are posted on the web site at

<http://www.standards.ieee.org/sa-mem/bdapp.html>

STANDARD ACTIVITY SINCE THE May 2001 MEETING OF THE PSRC

The status of the standards approval activities, which have taken place since May 2001 meeting of the PSRC, is as follows.

1. Standards Approved

- | | |
|----------|---|
| C37.90.3 | Standard Electrostatic Discharge Tests for Protective Relays (New Standard); was approved at the Standards Board meeting held in June 2001. |
|----------|---|

2. Standards to be submitted for approval

- PC37.90.1 Standard Surge Withstand Capability (SWC) Tests for Protective Relays and Relay Systems; reaffirmation balloting completed and negative ballot resolved. The standard should be submitted to the Standards Board for approval.
- PC37.95 Guide for Protective Relaying of Utility-Consumer Interconnections; negative ballots have been resolved. The balloting was completed six months ago. The standard should be submitted to the Standards Board for approval.

3. Standards reaffirmations in progress:

- C37.112 Standard Inverse-Time Characteristic Equations for Overcurrent Relays; reaffirmation balloting completed. The reaffirmation will be considered at the December meeting of RevCom.

4. Standards balloting in progress:

- PC37.104 Guide for Automatic Reclosing of Line Circuit Breakers for AC Distribution and Transmission; balloted - negative ballots are being resolved.

5. Standards submitted for balloting:

- C37.94 Standard for N times 64 kilobit per second Optical Fiber Interface between Tele-protection and Multiplexer Equipment; formation of balloting body requested.
- PC37.115 Standard Test Methods for Use in the Evaluation of Message Communications between Intelligent Electronic Devices in an Integrated Substation Protection, Control and Data Acquisition System; balloting in progress

6. Standards to be submitted for balloting:

- C37.92 Standard for Low Energy Analog Signal Inputs to Protective Relays; the standard should be submitted for balloting.

The PARs approved since January 2001, submitted since January 2001, and the PARs for which extension has been applied are as follows. The PARs, which will expire in the near future, are also listed. Applications for extending the lives of these PARs should be filed soon.

7. PAR application submitted to NesCom:

- PC37.119 Guide for Breaker Failure Protection of Power Circuit Breakers

8. PAR extensions approved by NesCom:

- PC37.103 Guide for Differential and Polarizing Circuit Testing extended to December 31, 2003

- PC37.106 Guide for Abnormal Frequency Protection for Generating Plants: extended to December 31, 2003
- PC37.114 Guide for Determining Fault Location on AC Transmission and Distribution Lines: extended to December 31, 2003
- PC37.115 Standard Test Method for Use in the Evaluation of Message Communications Between Intelligent Electronic Devices in an Integrated Substation: extended to December 31, 2003

9. PAR extensions applied for:

- PC37.90 Standard for Relays and Relay Systems Associated with Electrical Power Apparatus: expires on December 31, 2001

10. PAR expirations coming up:

- PC37.92 Standard for low Energy Analog Signal Inputs to Protective Relaying: expires on December 31, 2001

SUBMITTAL DEADLINES & STANDARDS BOARD MEETING SCHEDULE

PAR/Standard Submittal Deadline	Standards Board Meeting
October 26, 2001	December 6, 2001
February 8, 2002	March 21, 2002
May 3, 2002	June 13, 2002
August 2, 2002	September 12, 2002

OLD BUSINESS

None

NEW BUSINESS

None

FUTURE MEETINGS

September 15-23, 2001:	Madison, WI	Madison Concourse Hotel
January 7-10, 2002:	Dana Point, CA	Laguna Cliffs Marriott
May 20-23, 2002:	Pittsburgh, PA	Hilton Pittsburgh
September 9-12, 2002:	Ponte Verdi Beach, FL	Sawgrass Marriott
January 2003	Scottsdale, AZ	Embassy Suites
May 12-15, 2003	Raleigh, NC	Hilton North
September 22-25, 2003	Madison, WI (Tentative)	Madison Concourse Hotel

B: ADVISORY COMMITTEE

Chair: G.R. Nail

Vice Chair: R.P. Taylor

No items of significance to report.

B1: AWARDS AND TECHNICAL PAPER RECOGNITION

Chair: D.J. Novosel

The WG B1 did not meet in Madison. However, all necessary actions with WG members are taken to proceed with nominations for the IEEE PES Awards, the Distinguished Service Award and the Career Service Recognition Plaque.

The IEEE PES 2001 Working Group Recognition Award for Outstanding Technical Report was presented to John Boyle, Chairman, for the report "Considerations in Setting Instantaneous Overcurrent Relays on Transmission Lines". Working members also received a certificate recognizing their participation in preparing the report.

B2: FELLOWS AWARDS

Chair: J.S. Thorp

The working group did not meet. There is no activity to report.

B3: MEMBERSHIP COMMITTEE

Chair: M.J. Swanson

No report

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

Chair: J.C. Appleyard

No report

B8: BIBLIOGRAPHY AND PUBLICITY

Chair: T.S. Sidhu

The WG met with two members and one guest present. Minutes from the Vancouver meeting were approved. Assignments for preparing the 2001 bibliography paper were reviewed. Jim Stephens will try to swap his assignment with Bogdan Kasztenny. First draft of the publicity report for publication in the PES Review magazine has been prepared.

C: System Protection Subcommittee

Chair: J. S. Thorp

Vice Chair: D. Novosel

The System Protection Subcommittee did not meet in Madison. Four of the working groups did meet.

C2: Power Quality Issues in Protective Relaying

Chair: T.W. Cease

Vice Chair: David Hart

Output: Report to Main Committee and IEEE Transactions Paper

Charlie Henville presented a paper on Protective Relays and power quality based on a paper given at the summer power meeting

C5: Deployment and use of Disturbance Recorders

Chair: B. Jackson

Vice Chair: W.M. Strang

Output: Report to Main Committee and IEEE Transactions Paper

The working group met in Madison Wisconsin with 7 members and 10 guests. Chairman Barry Jackson was unable to attend due to recent events, the meeting was chaired by vice chairman Bill Strang.

The purpose of the paper was reviewed and discussed. It was indicated that one of the objectives of the working group should be to produce this document in a timely manner as the subject is considered by the attendees as necessary for their efforts in the near future. Without the aid of a printed agenda, the group outlined their interests and needs as shown in draft 3 of the outline. Specifically, areas of interest for discussion in the paper that were not previously included are:

Definition of waveform data collected by various devices

Discussion of analysis within the monitoring device of the data collected

Other uses of collected data, such as a diagnostic tool for targeting equipment maintenance

Data formats – reference to COMTRADE standard

Data retrieval – file naming convention paper (H8)

Status of related working group efforts, such as Improved Analysis of Substation Data (I19)

It was suggested that the paper include a summary table indicating the advantages or applicability of outputs of the various available monitoring devices.

Following a discussion of short and directed questionnaires, the group concluded that this was an expeditious way of collecting information on the types and characteristics of available monitors from the manufactures and the application needs of the utility industry. Bill Strang will submit these to the chairman before the next meeting.

C8: Phasor-Based Models for Analyzing Relay Performance

Chair: Mike Meisinger

Vice Chair: M. S. Sachdev

Output: Transactions Paper

The Working Group met with 3 members and 1 guest. Juergen Holbach's contribution was distributed and discussed. The lack of new material from members and guests with assignments continues to impede progress in completing the assignment. The rewrite of portions of Section III is specifically critical in bringing the content of the paper into alignment. Irwin Hasenwinkle offered comments to the overall flow of the paper and will provide these comments in an e-mail for distribution to Working Group members by the Vice-Chair.

After the Chair and the Vice-Chair have determined which assignments are still outstanding, the Chair will contact those contributors with outstanding assignments to determine if their input is forthcoming or re-assignment is required. The plan is to have all contributions compiled and distributed 2 months prior to the January meeting.

C9: Underfrequency Load Shedding and Restoration

Chair: A. Apostolov
Vice-Chair: K. Behrendt
Output: Guide

The working group reviewed the guide's outline and review commitments for writing assignments. A few writing assignments were received, but several are still needed. The chairman discussed a new schedule get a draft document created. All outstanding writing assignments should be submitted by the end of November, so the first complete draft document can be assembled and circulated for comments by the end of the year. A comment spreadsheet will be sent out to working group members with the draft to permit comments on the draft in a standard format. Contributors are requested to select a section of the document to review, preferably a section that they did not write.

Al Darlington joined the working group, and will create or edit drawings for the guide. Al will also contribute documentation based on load shedding schemes used in Florida.

The guide will include web addresses for links to other sources of under frequency load shedding documentation.

The scheduled completion date of December 2001 will not be meet. Perhaps December 2002 may be a more achievable completion date.

Liaison Report:

IEEE PES Power System Stability Controls SC to the PSRC- Gary Michael

The IEEE PES Power System Stability Controls Subcommittee (SC) had a business meeting on 17 July 2001 in Vancouver, with around 60 members and guests attending. Following the business meeting, the SC sponsored a morning technical paper session with two transaction's papers and three proceeding's papers. In the afternoon, the SC sponsored the panel session Recent Experience with Emergency Stability Controls. The panel session attendance was 60plus.

The Power System Dynamic Measurements WG chaired by Dick Schulz held a meeting on 16 July. The WG is preparing the paper "Preferred Capabilities for Power System Dynamics Measurements."

The SC formed a Task Force on Fast-Acting Load Control for System and Price Stability, with a kickoff meeting on 16 July. Jeff Dagle is chairman. Recalling the 2001 WM panel session, the SC are planning a second panel session at the 2002 WM. A position paper is also planned. The idea is to take advantage of current need for direct load control/real-time pricing for demand management and price-based load reduction. With appropriate design, the same infrastructure can be used for stability control, especially longer-term voltage stability.

The SC Task Force on Test Systems for Stability Controls chaired by Ian Hiskens did not meet.

The SC plans a 2002 WM panel session on emergency voltage stability controls. A 2002 SM panel session on stability controls involving power electronic devices is under

consideration. Also under discussion is work on advanced generator controls for restoration and islanding.

D: Line Protection Subcommittee

Chair: R.M. Westfall

Vice Chair: Mark Carpenter

The Line Protection Subcommittee did not meet in Madison, Wisconsin; however, all working groups did meet. Below are the working group reports.

D1: EFFECTIVENESS OF DISTRIBUTION PROTECTION

Chair: P. Carroll

Vice Chair: C. Fink

Output: IEEE Paper

The working group met with 8 members and 12 guests. After introductions and approval of the May meeting minutes, the WG Chairman informed the group that our latest effort to obtain additional survey participation has brought our total to only 49 participants. The group agreed that although this number is short of our goal and there is some concern over the validity of the survey, we need to move forward with the survey analysis and written report. John Boyle, Larry Lawhead, Charlie Fink, and Patrick Carroll agreed to perform a review of the survey participants and data as a validation check of the survey. This assignment is due to Patrick Carroll by October 1, 2001. The WG Chairman suggested a summary of past WG meeting presentations be added to our report. The group accepted this suggestion. There was also discussion of survey analysis capabilities and needs. The WG Chairman will ask Ed Krizauskas to provide summary information to WG members on "Survey Said" capabilities. Survey analysis and report assignments were then made. Patrick Carroll will cover the General, Considerations, and System Data sections. John Appleyard and Dean Miller will cover the Phase Protection and Ground Protection sections. Larry Lawhead will cover the Reclosing and System Faults sections. Skip Williams will cover the Cold Load Pickup and Magnetizing Inrush section. Charlie Fink will cover the System Operation section. Bob Pettigrew will cover the Effects of Dispersed Sources of Generation section. Patrick Carroll will also develop a summary of WG presentations. These assignments are due to Patrick Carroll by December 1, 2001. The meeting concluded with discussion of a microgrid concept being proposed in conjunction with Distributed Resources Standard P1547. Bill Ferro alerted members to the issues and concerns microgrids will create and solicited technical support to assess the concept.

D2: FAULT LOCATING

Chair: Karl Zimmerman

Vice Chair: Damir Novosel

Output: IEEE Guide

We received 21 responses from the "Consensus Ballot", 19 approvals and 2 negatives. Both negative responses have been resolved by changes made to the Draft 5 document. At this meeting, we discussed specific issues on one of the negative responses. All of the issues were resolved.

Next, the final draft will be sent to the IEEE Standards office according to procedure. The invitation to ballot and balloting process will likely take several months, so we are not planning to meet in January.

D3: IMPACT OF DISTRIBUTED RESOURCES ON DISTRIBUTION RELAY PROTECTION

Chair: Tony Seegers

Vice Chair: Ken Birt

Output: Special Report

There was some discussion of coordination with other working groups. PSRC working group JTF1 on protection of small interconnected generators chaired by Everett Fennel is one group to stay in contact with. There is also a working group under the Distribution Subcommittee of the T&D committee; PSRC WG K10 is listed as a liaison for them.

There was some discussion of what type of document the working group should produce. The consensus was to write a paper to the subcommittee. This could then be revised for submission as a transaction paper.

A very preliminary outline was distributed for discussion with some changes suggested. The main focus will be on distribution relaying, but the effects on the transmission/sub-transmission system will also be mentioned.

Two older documents on this topic will be distributed to members. These should be good starting points for the paper. Brad Nelson will send the chairman a copy of obsolete standard 1000 (from SCC 23 ?). Al Darlington will send a copy of a document on 3 MW and smaller generators. These will be distributed to the working group with the meeting minutes.

Tony Seegers, Ken Birt, Pat Carroll and Brad Nelson will review these documents by November 1, 2001 to see what can be used in our paper. Bill Feero will investigate the possibility of distributing a test written for a short course at the University of Wisconsin.

Ljubomir Kojovic will prepare some information on a test case for the next meeting.

It was suggested that short case histories of actual problems (war stories) be assembled. These could be included as an annex to the paper.

D4: AUTOMATIC RECLOSING

Chair: W.M. Strang

Vice Chair: Mal Swanson

Output: IEEE Guide

The working discussed the few remaining comments on Draft 7.3 of the Guide. All indicated changes to the draft will be made and Draft 8 will be submitted to IEEE for recirculation by mid-October, 2001.

D10: EMTP REFERENCE MODELS FOR TRANSMISSION LINE RELAY TESTING

Chair: K. Mustaphi

Vice Chair: T.Sidhu

Output: Transaction Paper

The new write-ups by Ljubomir Kojovic and Arvind Chaudhary on CTs, PTS, CCPD and Breaker controls were discussed. Arvind will send the figures in proper format. Ljubomir will add sample parameters to his write-up. The one-line diagram sent by Elmo Price requires bus names. Also, figures should match with the write-ups. One question came up regarding the naming of the transmission line – will it be by line numbers or line designated by association with the bus names? Lines associated with Bus Names appears to be the appropriate choice.

We are still looking for write-ups on the Transformer model (Bruce Mork) and revised write-ups on the Transmission Line (Demetrios) and Generator (Mukesh) models.

All the write-ups should be sent to the Chairman by Nov 30th.

H: RELAY COMMUNICATIONS SUBCOMMITTEE

Chair: M. S. Simon

Vice Chair: K. J. Fodero

The Relay Communications Subcommittee did not meet in Madison, Wisconsin. Below are the working group reports.

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

Chair: B. Nelson

Vice Chairman: M. Simon

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

H1 has completed its assignment in authoring clauses 9 and 10 for P643. Consensus by the working group has been reached.

When the balloting process is complete on P643 by the IEEE, the working group will re-convene to resolve any comments regarding these clauses as well as verify that there is no duplication with other elements of the guide.

H2: PROTECTION USING SPREAD SPECTRUM COMMUNICATIONS

Chairman: Ken Behrendt

Vice Chair: Bill Lowe

Output:

There were several discussions on various portions of the document outline and some changes were made. Volunteers are needed to begin writing assignments related to the outline. Jerry Hohn will review the H5 working group report on peer-to-peer communication for selected protective relay scheme requirements that may be included in the H2 report. Dan Nordell will check with the PSCC members to see if there any people that could assist with sections of this paper. Dan will also review IEC Standard 61850 to see if there are any specifications that may apply to spread spectrum use. The link for the H5 peer-to-peer communications document is <http://www.pes-psrc.org/h/H5doc.zip> or it can be found on the H Sub Committee page under Bulletins and then Reports.

The working group plans to meet in double session at the next PSRC meeting. The first session will be used for a presentation, and the second for continued work on the proposed working group report. A room for 40, with a projector screen and a power strip is needed.

Reference:

The revised H2 working group report title and assignment are as follows:

Title: *Using Spread Spectrum Radio Communication for Power System Protection Relaying Applications*

Scope:

This project will develop a working group report for the application of protective relays using spread spectrum radio communication for power system protection schemes. It will present background information, bibliography, and recommendations. It discusses spread spectrum radio communication technologies and topologies that may be applicable for use in protective relay schemes. It discusses practical considerations of interfaces, interoperability, reliability (security and dependability) availability, security against intrusion, and economics for spread spectrum radio communication..

Purpose:

There is currently no IEEE document describing the application of protective relays using spread spectrum radio communication. Protective relaying and spread spectrum radio communication technologies are rapidly changing and expanding. Understanding the opportunities and limits of these technologies is important to their successful mutual application. This document will be coordinated with the Audio Tone Guide to minimize duplication of effort. This document will provide information to assist in the application of spread spectrum radio communication technologies for protective relay schemes. Descriptions of some working systems and their performance will be provided.

Traditional microwave radio communication, and other evolving wireless communication, such as infrared communication, was considered for inclusion in this document, but it was agreed that their inclusion would expand the scope of the document beyond a manageable level. These subjects may be of interest for future working group assignments.

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

Chair: D. Holstein

Vice Chair: Eric Udren

Output: Standard

The standard will be out for ballot and ballot results will be discussed in January

H5: Application of Substation Peer to Peer Communications

Chair: M. Yalla

Vice Chair: M. Adamiak

Output: Paper

The WG H5 did not meet and the assignment was completed. The IEEE transactions paper was submitted to the IEEE and waiting on their response on the schedule publication of the paper. We do not plan to hold a meeting at the next meeting.

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

Chairman: John Burger

Vice Chairman: Charlie Sufana

Output: Special Report

No report

H7: PC37.94 INTER RELAY COMMUNICATION PROTOCOL STANDARD

Chair: G. Michel

Vice Chair:

H7 did not meet. The new standard is out for balloting. The group will discuss ballot results at the January meeting.

H8: FILE NAMING CONVENTION FOR TIME SEQUENCE DATA

Chair: Jim Ingleson

Vice Chair: Mark Taylor

Output: Report to the PSRC

The WG was able to hold a small meeting at the Madison IEEE PSRC Fall meeting. We understand that the circumstances were difficult and many of those who would otherwise have attended were not able to do so, because of travel restrictions and other problems.

1. Introduction - Copies of the latest version of the report were distributed. As always, any editorial comments are welcome.
2. Report Presentation – The final report of the WG was presented at the May PSRC Main Committee meeting. This was actually planned to take place at the September meeting, that is, at this meeting. The PSRC officers had time available on the addenda and offered us the opportunity to present, and as it turned out, it's a good thing we were able to do it then.
3. Question on File Start Time – A member has asked that the group consider using trigger time rather than file start time in the filename. After discussion, it was apparent that the group wished to keep the filename as it is and use file start time in the filename.
 - Comtrade 1999 does not address filename content, except for extension, so there is not really an issue of compatibility with Comtrade. Comtrade specifies 4 filename extensions, and whenever it speaks of the entire filename it speaks of an 8x3 filename. The group's interpretation of Comtrade is that it does not yet recognize the possibility of a filename longer than 8x3.
 - Comtrade 1999 section 5.3.7 says "There are two date/time stamps in the configuration file. The first one is for the time of the first data value in the data file. The second one is for the time of the trigger point." Therefore both times are recognized by Comtrade

- The WG report was presented to the PSRC in May 2001 and therefore the standard achieved a degree of official recognition at that point. Making a change is always possible, but would require at least one additional WG meeting, and a presentation to the main committee.
 - The standard filename is for use with any time sequence data (TSD) file, not only disturbance files, and many of these do not involve any trigger function. File start time is therefore the consistent parameter to use for all TSD files.
 - At the beginning, we recognized that one of the functions we wanted to do with the filename was to decide when various files held coincident data, and having file start time in the filename will facilitate this function.
 - For a given power system disturbance, triggers will occur at different time at various locations, due to power system dynamics, and due to various recorders using different trigger algorithms and parameters.
4. Conclusion Statement – The Chairman prepare a final version of the report and will draft a letter to the “H” Relay Communications Subcommittee that includes the following points:
- The final report of the WG was presented to the May PSRC meeting.
 - The WG assignment has been completed.
 - The final report is available on website of the PSRC at this address: www.pes-psrc.org/h/h08.html
 - As soon as possible, the report will also be available on the website of the Transient Recorder Users Council (TRUC). The address for this one is: www.truc.org
 - The group recommends that the standard filename become part of the next revision of the Comtrade standard.
 - The group recommends that the filename convention become a trial use standard. Preparation of the trial use standard document will provide an opportunity for additional manufacturer and user involvement.

H9: Special Considerations in Applying PLC for Protective Relaying

Chair: M. Sanders

Vice Chairman: M. McDonald

Output: Practical Paper for presentation at regional conferences

H9 Working Group did not meet at the Madison meeting. Limited travel by individuals due to the terrorists attack on the US has modified many people schedule, including the chair's.

The testing on an EHV transformer for the PLC frequency response is still planned by John Zipp of Consumers Energy.

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

Chairman: Bill Higinbotham

Vice Chairman: Jerry Hohn

Output: Revised application guide

H10 did not meet. The group is reviewing draft 5. Minor adjustments were made with the working group members being asked to finalize their audit of the document in preparation for ballot.

H11: REVISION TO THE SYNCROPHASOR STANDARD

Chairman: K. Martin

Output: Revised Standard PC37.118

Working group H11 did not meet. Nothing to report.

Task Force Reports

HTF1: SWITCHYARD DATA ACQUISITION

Chairman: E. Udren

Established: 1996

Expected Completion Date: 1998

HTF1 was not scheduled to meet, and will be scheduled when we have available a clear presentation of the status of IEC 61850-9-2, process bus communications still under development.

IEC 61850-9-1, uni-directional serial point to point link, was presented to the task force nearly two years ago and is in the later stages of IEC standards voting process.

Liaison Reports

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

No report

2. Substation Committee - J. Tengdin

No report

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

Nothing reported at this meeting.

I: RELAYING PRACTICES SUBCOMMITTEE

Chair: Jeff Gilbert

Vice Chair: J. W. Ingleson

The Relaying Practices Subcommittee did not meet in Madison, Wisconsin. Below are the working group reports.

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

Chair: W.J. Marsh, Jr.

Vice-Chair: J. D. Huddleston, III

Output: Revision of IEEE C37.103-1990

Did not meet in September, 2001.

I2: TERMINOLOGY USAGE REVIEW

Chair: Mal Swanson

Vice-Chair: J. D. Huddleston, III

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

No report furnished.

I4: IEC STANDARDS ADVISORY

Chair: Eric Udren

Vice-Chair: M. M. Ranieri

Established: 1989

Output: IEC Standards

Expected Completion Date: Continuing

No report

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

Chair: Eric Udren

Vice-Chair: Peter McLaren

Output: New Trial-Use IEEE Standard P1331

The WG has submitted the draft standard to IEEE again for balloting process, which should begin shortly. Because of the normal delays in dealing with ballot responses, the Standards Coordinator has recommended that the PAR be extended.

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

Chair: Mario Ranieri

Vice-Chair: James Teague

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

The working group met to review issues raised during the polling of PC37.90 Draft 12.1. The comments were reviewed in detail with two items still remaining to be resolved. The working group will be advised of the recommendations made at our meeting to resolve the two remaining issues. A request to extend the PAR has been submitted to IEEE and we expect to receive information on this in mid October.

I7: ELECTROSTATIC DISCHARGE TESTING FOR PROTECTIVE RELAYS

Chair: J. Teague

Vice-Chair: J. T. Tengdin

Output: New IEEE Standard C37.90.3

Did not meet in September, 2001.

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

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

The ballot of PC37.90.1 received 100% approval. A draft summary paper was reviewed. The chairman will make revisions and send the revised document to the working group.

I9. REVISION OF C37.105 - STANDARD FOR QUALIFYING CLASS 1E RELAYS AND AUXILIARIES FOR NUCLEAR POWER PLANTS

Chair: Subinoy Mazumdar

Vice-Chair: Sahib Usman

Output: Transactions Paper

A draft, formatted to the latest IEEE Standard Style Manual, has been prepared and discussed. Several changes have been discussed and agreed to.

I10. REVISION OF C37.98: STANDARD FOR SEISMIC TESTING OF RELAYS

Chair: Mason Clark

Vice Chair. Munnu Bajpai

Output: Revision of IEEE Standard C37.98

No report

I11: RELAY TEST PRACTICES SURVEY

Chair: Ed Krizauskas

Vice-Chair: Bill Lowe

Output: Transactions Paper

Did not meet in September, 2001.

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

Chair: Mike Meisinger

Vice-Chair: Don Sevcik

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

Draft #1 of the revised guide is being developed.

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

Chair: Moh Sachdev

Vice-Chair: Brian Mugalian

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

The minutes of the May 2001 meeting, distributed previously by Email and also distributed at the meeting, were approved. The guide and task of preparing drawings for the guide were reviewed. Al Darlington agreed to start preparing the Visio drawings. Brian Mugalian sent a paper copy of the guide to Al so he can begin work. Brian Mugalian will have a first draft of the guide for the January 2002 meeting. At the conclusion of this business, the meeting was adjourned.

I14: TELECOMMUNICATION TERMS/NEW TERMS USED BY PROTECTION ENGINEERS

Chair: Tim Phillippe

Vice-Chair: A. Apostolov

Output: Special Publication

No report.

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

Output: Revision of IEEE C37.110-1996

Comments on draft 2 were provided July 20, 2001. These comments will be incorporated into draft 3.

I16. ADVANCES IN MICROPROCESSOR RELAYS

Chair: M. Sachdev

Vice Chair:

Output: Special Report

Did not meet in September, 2001.

I17. Trends in Relay Performance

Chair: W. M. Carpenter

Vice-Chair: D. Wordlow

Output: Special Report

The 2000 and year to date 2001 results of two companies were presented. Plans to gather and publish the 2001 data were also discussed.

I18. C37.90.2 Withstand Capability of Relay Systems to Radiated Electromagnetic Interference from Transceivers

Chair: Jeff Burnworth

Vice-Chair: Bill Higinbotham

Output: Revision of C37.90.2

The Working Group has concluded what additional test methods and test requirements will be performed to IEEE C37.90.2 to increase the harmonization with the applicable IEC standards. The intended changes will not reduce or change the original test levels of the existing standard. Draft #1 of the revised specification has been partially completed and reviewed by the Working Group. Writing assignments have been made, and work continues in order to complete draft #1 prior to the next PSRC meeting in January.

I19: ANALYSIS OF SUBSTATION DATA

Chair: L. Smith

Vice-Chair: Bruce Pickett

Output: Special Publication

Did not meet in September, 2001.

Task Force Reports:

ITF1 Relay Service Letter Database: J. Ingleson. This task force does not meet

ITF2 Relay Firmware Quality Chair: J. A. Whatley

Vice-Chair: R. Beresh

Output: Special Publication

Expected Completion Date:

ITF2 did not meet at the September meeting in Madison. We are planning to submit a PAR after the Dana Point meeting in January

Liaison Reports:

Instrument Transformers Subcommittee of the PES Transformers Committee: Jim Huddleston III.

No report.

P420 IEEE Standard Design and Qualification of Class 1E Control Boards, Panels, and Racks Used in Nuclear Power Generating Stations: Cliff Downs.

No report.

Coordinator's Reports:

Revision of C57.13-1993 IEEE Standard Requirements for Instrument Transformers (Tom Nelson, chairman): Jim Huddleston.

No report.

Proposed C57.13.6 Instrument Transformers for Use with Electronic Relays and Meters (Chris Ten-Haagen, chairman): Jim Huddleston.

No report.

J: ROTATING MACHINERY PROTECTION SUBCOMMITTEE

Chair: R.D. Pettigrew

Vice Chair: S. P. Conrad

The subcommittee did not meet at the September PSRC Meeting due to the abbreviated meeting format

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

Chair: G. Benmouyal

Vice Chair: E. Fennell

Output: Standard Revision C37.106-1987

The working group reviewed the comments to the WG Ballot of Draft 11 of the document. Several minor changes were suggested and will be passed on to the WG Chairman.

The unresolved comments from George Parr were discussed. One change was suggested regarding the definition of "Load rejection".

Al Darlington will provide additional information for Annex A for the FRCC area.

It was felt that the revised standard should be submitted for ballot. Bob Pettigrew will request permission to form a balloting body at the main committee meeting.

(PS: Permission to form a balloting body was obtained at the Main Committee meeting.)

J4: REVISION OF C37.102 AC GENERATOR PROTECTION GUIDE

Chair: M. Yalla

Vice Chair: K. Stephan

Output: Standard Revision IEEE/ANSI C37.102

The writing assignments received since the Vancouver meeting were reviewed. Highlights include the need for a figure showing a European high-impedance ground protection scheme, discussion of tripping for rotor ground, acceptance of clause on hybrid high/low impedance stator grounding scheme, acceptance of clause on combustion turbine generators with adjustable speed drive starting, discussion of frequency protection of combustion turbines, and acceptance (with additions) of clause on excitation system protection.

J6: PERFORMANCE OF GENERATOR PROTECTION DURING SYSTEM DISTURBANCES

Chair: S. Patel

Vice Chair: K. Stephan

Output: Transaction Paper

The working group reviewed the changes made as a result of comments received from a “ballot” of the WG members. Draft 4 was reviewed. Among the reviewed changes were revision to under-voltage supervision of under-frequency relays, expansion to include both types of 51V relays, setting the 21 distance relay’s reach, elimination of discussion on 46 negative sequence relaying, revision of the under-voltage relaying, and revisions to figures. It is intended that the paper will be published as a Working Group Transactions paper.

J7: REVISION OF C37.101, GENERATOR GROUND PROTECTION GUIDE

Chair: J. Uchiyama

Vice Chair: R. Das

Output: Standard Revision IEEE/ANSI C37.101

The WG was not able to meet at the Madison PSRC meeting.

JTF1: PROTECTION OF SMALL INTERCONNECTED GENERATORS

Chair: E. Fennel

Output: Transactions Paper

Bob Pettigrew chaired the meeting for the TF Chairman.

The group discussed the assignment and discussed what members felt were their concerns associated with interconnecting small generators to the power system.

The consensus was to have this TF converted into a WG to discuss the generator protection functions that are typically applied to smaller machines (i.e. when do you need the functions 40, 51V, 32, 81O/U, 27/59, 78 and why). Specific application examples could be developed with setting calculations developed.

R. Pettigrew will attend the Main committee meeting and request that the TF be converted to a Working Group.

The output of this proposed working group was briefly discussed and the consensus was that a paper is more appropriate at this point than a Standard.

(PS: The Main committee agreed to convert JTF1 into a working group J3.)

JTF2: SETTING OF GENERATOR PROTECTIVE RELAYING

Chair: C. Mozina

Output: Standard Revision Tutorial

Bob Pettigrew chaired the meeting. The chair read the detailed agenda issued earlier by e-mail. In a subsequent e-mail from Chuck Mozina and Wayne Hartmann, they were concerned with discussing settings for all possible conditions. They propose this TF narrow the work to coordinating generator protection with generator control. Their proposed paper title is: “Coordination of Generator Protection with Generator Controls and System Stability Considerations.”

There was a discussion of NERC requirements to document the utility’s ability to coordinate the relay and control settings on their generators with the machine capabilities. NERC Compliance templates require such coordination.

Brad Nelson attended Carson Taylor's presentation on voltage collapse and generators are often set to trip before they need to, causing less than adequate voltage control for the power system.

Tim Nissen of OPPD said that MAPP (their power pool) asked them to provide proof that they've coordinated their generator protection with their AVR/controls.

There was agreement amongst the attendees that a tutorial type of paper that described the details of calculating the settings for the proposed relays (21, 24, 40, and 78) is needed.

(PS: At the Main Committee meeting the task force was converted to a WG, J5.)

Liaison Reports

1. Electric Machinery Committee, C. J. Mozina

No Report

Coordination Reports

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

No Report.

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

No report.

P1010, Guide for Control of Hydroelectric Power Plants, W. Hartmann

No Report

K: SUBSTATION PROTECTION SUBCOMMITTEE

Chair: S. R. Chano

Vice Chair: C. R. Sufana

The Substation protection Subcommittee did not meet in Madison, Wisconsin. Below are the working group reports.

K2: BREAKER FAILURE PROTECTION

Chair: R.A. Hedding

Vice Chair: A. Chaudhary

Output: ANSI C37.119

The PAR for the working group was approved August 17, 2001 by the Standards Board.

The Scope of the Guide was read. A discussion followed on what should be included in the guide. The proposed outline for the guide was reviewed and edited. Assignments were made to each take an assigned item in the outline and expand it. The following are those assignments:

I.	Introduction	John Appleyard
II.	Definitions (Terminology)	John Appleyard
III.	Why Breaker Failure	Roger Hedding
IV.	Local vs. Remote Back up	Simon Chano
V.	Breaker Failure modes	Larry Lawhead
VI.	Basic Breaker failure schemes	Ken Behrendt
VII.	Stand alone or part of existing protection	Alex Apostolov
VIII.	Factor influencing settings (Planning, topology,...)	Tom Lanigan
IX.	Smart Breaker controls and integration into scheme	Skip Williams
X.	Bus Protection as part of breaker failure protection	Alex Apostolov
XI.	Application examples McDonald	Paul Drum & Mike
XII.	Communications Based Breaker Failure Schemes	Alex Apostolov
XIII.	Testing Breaker Failure Schemes	Dan Reckerd
XIV.	Conclusion	
XV.	Bibliography	
XVI.	References	

The assignments are due October 18th to Roger Hedding who will compile and send out to group..

K4: BUS PROTECTION GUIDE

Chair: S. P. Conrad

Vice Chair: R. W. Haas

Output: Revision of Standard ANSI C37.97

The working group did not meet.

K5: NETWORK TRANSFORMER PROTECTION GUIDE

Chair: C. R. Sufana

Vice Chair: A. P. Napikoski

Output: Revision of Standard ANSI C37.108

There was discussion of Clause 4.1.4 of P1547 on Distributed Resources. The revised draft was issued to negative balloters only. There was wording added to the footnotes to address the relaying concerns (the footnotes are for guidance only and are not part of the standards requirements). Bil Feero is seeking wording that will resolve the negative ballots before the next P1547 meeting scheduled to be in Las Vegas from October 16 to October 18, 2001. There does not seem to be any wording that will satisfy all. There is the possibility that the SCC21 committee will remove the clause entirely and not address the network protector issue at all so as to allow the standard development to proceed.

Discussion then centered on the status of the latest draft, which is draft 11. Draft 11 was submitted for re-balloting with the ballots due back by September 17, 2001.

There was also discussion of the need for a summary paper. C. Sufana will contact the IEEE headquarters to see if they have an electronic version of the previous summary paper that can be forwarded to the working group. The consensus of the working group is that a smaller summary of 2 to 3 pages focusing on the changes in this latest revision with a brief discussion of the overall content is needed. Special emphasis will be placed on the problems of using generation on networks and network feeders.

K6: SHUNT CAPACITOR PROTECTION GUIDE Tutorial

Chair: Pratap A. Mysore

Vice Chair: Roger Hedding

Output: Revision of Standard ANSI C37.99 Tutorial

The WG reviewed some of the tutorial slides. The first tutorial is scheduled for the Minnesota Power System Conference in November this year. Other tutorials are also planned for 2002 including a presentation for the PSRC members during the main committee meeting in May-2002.

K7: GUIDE FOR THE PROTECTION OF SHUNT REACTORS

Chair: K. A. Stephan

Vice Chair: P. G. Mysore

Output: Revision of ANSI/IEEE C37.109.

Writing assignments to improve Draft 3 were reviewed. Major topics of discussion included further clarifying system considerations for a fault on an ungrounded-wye connected reactor bank connected to the delta tertiary of a power transformer, clarification of figures, and refining the new summary tables of shunt reactor relay protections.

Additional writing assignments were made for completing references, figures, and the summary tables of reactor relay protections. The upcoming Draft 4 will be circulated within the working group for consensus. Arvind Chaudhary joined the working group.

K8: GUIDE FOR PROTECTIVE RELAYING OF UTILITY CONSUMER INTERFACE

Chair: Irwin Hasenwinkle

Vice Chair: Fred Griffin

Output: Revision of ANSI Standard C37.95

The working group did not meet.

K10 (Ex KTF1): SCC21 Distributed Resources Standard Coordination

Chair: William Feero

Vice Chair: Doug Dawson

Output: Standard through the SCC 21

The salient changes in P1547 between draft 7 and draft 8 were discussed. They were:

Clause 1.2 Purpose The statement of “..requirements are minimum functional technical requirements...” has been replaced with a footnote “ Additional technical requirements and/or tests may be necessary for some limited situations.”

Some members felt this footnote gave the operating utilities sufficient negotiating room to cover for problems not adequately covered by P1547. Others were concerned that it meant that any time they needed anything beyond that specifically cover by P1547, they would find themselves arguing their case before a local PUC.

Clause 4.1.1 Voltage Regulation The statement that the DR shall not degrade voltage on the EPS outside of ANSI C84.1, Range A has been replaced by “... to frequently go outside of ANSI C84.1 Range A.”

The members wondered who was to decide what defines “frequently” in this context.

Clause 4.1.4 Distributed Resources on Distribution Secondary Grid and Spot Networks While this clause was unchanged excepted for an added caution in the footnote, many members are still opposed to having any generation connected to a network, spot or street.

Clause 4.2.1 Voltage Disturbances The phrase “...each phase to neutral or, alternatively, each phase-to-phase voltage” was dropped and replaced by “..the voltage (all voltages are considered to be balanced voltages).”

No member present knew how to interpret this change. Under fault conditions voltage are rarely balanced. Even under non-fault conditions distribution system voltages will have some unbalance. As presently written, this change from draft 7 to draft 8 will be unacceptable to most protection engineers.

Clause 4.2.5 Loss of Synchronism This clause was modified to add a table of DR sizes. For the size ranges 250 to 1500 there is an error. Greater must be changed to less.

Clause 5.4 Commissioning Test The major changes in the wording of this test is of concern to some members in that they read it as stating that, if factory test were performed, no commissioning test can be performed. Others felt that the sentence “In all cases, the manufacturers shall provide test procedures for DR unit commissioning to be used as a basis to demonstrate that all features claimed are provided and workable” was a clear statement that commissioning test were permitted.

Clause 5.5 Periodic Interconnection Tests The members noted that, as revised, periodic test intervals can only be set by the manufacturers. To many that may be unacceptable.

Since this draft 8 is out for re-circulation, no action can be taken by K 10. If this re-ballot fails, our input will be useful to P1547 in any revisions to follow. If it passes, these comments may be helpful in negative ballot resolution. Therefore, these minutes will be passed on to the P1547 Secretary.

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

Chair: F. P. Plumptre
Vice Chair: To be announced
Output: Guide

As A. Elneweihi was not able to attend this meeting, D. Hamai facilitated the meeting. D. Hamai reported that A. Elneweihi has decided to step down as chairman of this Working Group due to new job responsibilities. F. Plumptre will become the new chairman. The WG is currently looking for a new vice-chairman.

The action items from the May minutes were reviewed. Members will be contacted for outstanding writing assignments.

Members presented their written contributions on protection and control philosophy, MOV energy calculation, unbalance protection, system studies, platform faults, and platform power. Suggestions by the WG resulted and members agreed to edit their sections.

Draft 2.0 was reviewed to identify sections that have not been addressed. D. Hamai will contact the assigned contributors for status on their sections.

S. Chano expressed Ahmed Elneweihi's gratitude to the Working Group for their hard work and contributions to the Guide. The Working Group wishes the best for Ahmed in his new job.

Liaison Reports:

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

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

Liaison from the Transformers Committee:

Coordination Reports:

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

1. ANSI/IEEE Switchgear Standards F. Plumptre.

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

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

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

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

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

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

- 6. P1538 (When approved) Guide for Determination of Maximum Winding Temperature Rise in Liquid Filled Transformers, Dan Hollands**
- 7. P1409 Guide for Application of Power Electronics for Power Quality Improvements on Distribution Systems Rated 1 kV through 38 kV, Steve Conrad**
- 8. P1106 Recommended Practice for Installation, Maintenance, Testing and Replacement of Vented Nickel-Cadmium Batteries for Stationary Applications, Steve Conrad.**
- 9. PC37.74 Standard Requirements for Subsurface Vault, and Padmounted Load-Interrupter Switchgear and Fused Load-Interrupter Switchgear for Alternating Current Systems up to 38 kV, Roger Hedding.**
- 10. ANSI/IEEE Switchgear Standards, Vittal Rebbapragada**
 - a) PC37.30.01 Standard Requirements for High Voltage Air Switches, Switching Devices, and Interrupters.**
 - b) PC37.100.1 IEEE Standard of Common Requirements for Power Switchgear**
- 11. PC37.1 Standard for Metal Enclosed Low Voltage Power Circuit Breakers, Irwin Hasenwinkle**

Attachment

September 2001 PSRC Meeting
Attendance

A.P. Apostolov	J.W. Ingleson
J.C. Appleyard	L.M. Jacobson
M. Basler	L. Kojovic
K. Behrendt	T.C. Lanigan
H. Bilodeau	L.P. Lawhead
K.A. Birt	W.G. Lowe
K. Boers	K. Martin
J.R. Boyle	M.J. McDonald
Z.A. Bukhala	R. Meachem
J.F. Burger	H.I. Mehta
J. Burnworth	M. Meisinger
D.W. Campbell	D.H. Miller
W.M. Carpenter	B. Mugalian
P. Carroll	K.K. Mustaphi
S.R. Chano	P.G. Mysore
AKS Chaudhary	M. Nagpal
G. Chirco	G.R. Nail
M. Clark	A.P. Napikoski
A.N. Darlington	B.D. Nelson
D. Dayton	T.J. Nissen
A. Deronja	D. Nordell
M. Dood	R. D. Pettigrew
P. R. Drum	T.A. Phillippe
W. A. Elmore	M.M. Ranieri
J. B. Evans	D. Reckerd
R. Fanning	T. Seegers
W.E. Feero	D.R. Sevcik
C. Fink	M.S. Simon
J.G. Gilbert	V. Skendzic
S.E. Grier	K.A. Stephan
D.T. Griffin	J.E. Stephens
D. Hamai	W.M. Strang
W.D. Harlow	C.R. Sufana
R.E. Hart	S.I. Thompson
D. Hart	J.S. Thorp
I.O. Hasenwinkle	M. Toupin
R. A. Hedding	B.A. Vandiver
C.F. Henville	D. Weers
D. Herbst	J. B. Williams
J.W. Hohn	P.B. Winston
D. Holstein	K. Zimmerman