



POWER SYSTEM RELAYING COMMITTEE

OF THE

IEEE POWER ENGINEERING SOCIETY

MINUTES OF THE MEETING

September 17-20th, 2007

Charlotte, NC

FINAL

**Power System Relaying Committee
Main Committee Meeting Agenda
September 20, 2007
Charlotte, NC
8:00 AM – 11:30 AM**

I. Call to order / Introductions	Charlie Henville
II. Approval of Minutes/Financial Report	Bob Pettigrew
III. Reports of Interest	Charlie Henville
A. Technical Paper Coordinator's Report/Future Meetings	Miriam Sanders
B. PES Report- points of interest	John McDonald
C. CIGRE Report	T. W. Cease
D. UCA Report	John Burger
E. EPRI Report	Joe Hughes
F. IAS Power System Protection Committee	Chuck Mozina
G. IEC Report	Eric Udren
H. Standard Coordinator's Report	Jeff Gilbert
I. Substation Committee Report	Mike Dood
J. NERC Report	Bob Cummings
K. Other Reports of Interest	
IV. Advisory Committee Reports	Charlie Henville
B1. Awards/ Recognition	Mike McDonald
V. Subcommittee Reports	Charlie Henville
C- System Protection	Tony Seegers
I - Relaying Practices	Tarlochan Sidhu
K - Substation Protection	Frank Plumptre
H - Relaying Communications	Alex Apostolof
D - Line Protection	Roger Hedding
J - Rotating Machinery	Wayne Hartman
VI. Presentations	Bob Pettigrew
• Revision of C37.102 - AC Generator Protection	Murty Yalla
• Guide to Relay Application to Transmission Line Series Capacitor Banks	Frank Plumptre
• Guide for Protection of Transformers Against Faults and Abnormal Conditions	Pratap Mysore
• TEPCO's Experiences of the Niigata-Chuetsu Earthquake on July 16th'.	Shinichi Imai
VII. Adjourn	Charlie Henville

I. Call to order / Introductions

Henville

Chairman Charlie Henville called the meeting to order at 8:05 am.

II. Approval of Minutes (May Meeting) & Financial Report

Pettigrew

The minutes of the Nashville (May, 2007) meeting were approved.

We had three meeting sponsors, Duke Power, Shaw EDS and ITEC Instrument Transformer. We appreciate their support for this PSRC meeting. A brief financial summary was given. The changes in registration cost and the elimination of the cash bar have resulted in a profit for the Nashville meeting and this should continue for the Charlotte meeting. This reverses the trend we have seen in the past.

III Chairman's Report

Henville

Welcome to one of the largest September meetings ever of the PSRC. Our association with other groups meeting at the same time, takes advantage of synergies in our attendance and objectives. Groups meeting at the same time are subcommittees of the Substations Committee and the Power Systems Communications Committee, as well as the UCA International Users group.

The technical paper coordinator will report on successes in collaboration with other PES technical committees at the PES General meeting last June in Tampa. We are happy to note the support of several organizations in helping our meeting as the Secretary/Treasurer will report.

Some changes to our organization are worthy of note.

- There is some increased attention to attendance requirements of working group members, especially with respect to Standards Development. Matt Ceglia from the Standards Office has talked about this at the subcommittee meetings.
- We are also slightly expanding the scope of our email list to include notification of non-commercial items of interest to our participants. We will be cooperating with related organizations for meeting announcements, calls for papers etc for associated organizations such as PES, CIGRE, etc. If you wish to restrict your emails to strict PSRC business, you will be able to opt out of the list with the expanded scope. An email will be sent to you soon on this matter.

Welcome to John MacDonald, President of the PES is who is here at this meeting. He will report to us on activities of PES.

Reports of Interest

A. Technical Paper Coordinator's Report – Sept. 2007

Sanders

The IEEE PES 2007 Annual meeting in Tampa, FL in June had great participation by the PSRC. The Super Sessions were greatly received and will be repeated at the next General Meeting in Pittsburgh in July 2008. Solveig Ward contributed the C1 working group's output on Cyber security and Murty Yalla presented J5 working group's output of Generator Protection Setting Criteria. Thanks very much to the Session chairs Solveig Ward and Tarlochan Sidhu for chairing the two paper sessions and to Phil Winston for moderating the super session on Monday.

The call for papers for the IEEE PES 2008 T&D Exposition in Chicago has closed on the PES website. We received 19 papers and 1 Transaction Paper. For those of you doing reviews, please be timely in your response.

The call for papers for the IEEE PES 2008 General Meeting in Pittsburgh has been posted on the PES website. The manuscript submission site will open about November 1, 2007, and close on November 30, 2007.

B PES Report

John McDonald

PES President John McDonald attended the PSRC Main Committee meeting and presented the PES report. The outline of this report is shown below:

- Meet the Governing Board
- Congratulations to 2007 IEEE PES Fellows
- Long Range Plan, 2007 Goals, Challenges
- Changing for 2008 and Beyond
- What's New at IEEE PES?
 - Technical Activities
 - Meetings
 - Technical Information Services
 - Education / Industry Relations
 - Membership / Chapters
 - Image Building
- Organizational Impacts
- Recommended Actions

Mr. McDonald's report, in PDF format, can be reviewed in it's entirety by visiting the PSRC web site.

C. CIGRE B5 Activities Report

Cease

The 2007 Colloquium will be held in Madrid Spain October 15-20, 2007. The preferential subjects for the colloquium are:

- PS-1 New trends in busbar protection
- PS-2 Acceptable Functional Integration in Substation P&C of Transmission System Protection
- PS-3 Protection of Transmission Lines & Co-ordination of Transmission System Protection

The US has 6 papers in the colloquium. The papers are listed below. These papers address PS 2&3. The US did not have any contributions for PS 1.

The 2008 session will be held in Paris August 24-29, 2008. The US has an allotment of 10 papers for all 16-study committees. Attached is a listing of the 10 papers accepted by CIGRE. In an effort to have more US papers included in the session several papers were recommended for the International category, in which the authors are from more than one country. Attached is a list of 8 papers that were accepted in that category. Don Russell created a category this year called Alternative Papers. He submitted 4 papers in that category and 3 were accepted. They are also included in the attached list.

Study Committee B5 has a large number of open working groups and as a result chose not to start any new working groups at this time. There are several working groups waiting to start. They need members. Anyone interested in becoming a member either corresponding or regular please see me. There are a number of opportunities available for anyone wishing to participate.

Madrid Colloquium

PS 2

1. A Phadke, et al, "Wide Area Measurement Applications in Functionally Integrated Protection Systems"
2. A Apostolov, et al, "Requirements For Testing of Transmission Line Protection Relays with High Level of Functional Integration"
3. A Apostolov, et al, "Transmission Line Protection Relays with High Level of Functional Integration"

PS 3

1. D Tziouvaras, S Chano, "Advancements in Transmission Cable Protection, Control and Monitoring"
2. M Kezunovic, "Improved Transmission Line Protection During Cascading Events"
3. A Apostolov, "Transient Simulation Requirements for Testing of Transmission Line Protection Systems"

USNC Quota

1. J. L. Kirtley, Jr. – "Improving Efficiency of Induction Motors Using Die-cast Copper Squirrel Cages"
2. G. Gauger, G. Lemm, A. Martins, M. Rapp – "Mineral Oil with Corrosive Sulfur – Method Evaluation to Identify False Negatives and Its Performance with blends of Natural Ester"
3. P. Reichmeider, S. E. Jacobson, C. W. Devine, D. N. O'Connell, J. R. Wilson, J. R. Colson – "Experience with New Methods for Live-Line Conductor Replacement"
4. K. Kutlev, L. Tang, R. M. Reymers – "Complete Methodology for Selecting Optimal Substation Solutions"
5. M. Adamiak, B. Kasztenny, J. Mazzeuw, D. McGinn, S. Hodder – "Considerations for Process Bus Deployment in Real-World Protection and Control Systems: A Business Analysis"
6. S. Venkataraman, H. Elahi, E. Larsen, K. Schreder – "The Linden Variable Frequency Transformer Merchant Transmission Project"
7. K. Moslehi, R. Kumar, A. Bose, C. Gelling – "Smart Infrastructure for a Self-Healing Power Grid — Concepts for Coordinated Intelligent Control"
8. J. C. Smith, M. Ahlstrom, R. M. Zavadil, B. Oakleaf, T. Godart – "The Role of Wind Forecasting in Utility System Operation"
9. L. Ott – "Implementation of Demand Response in the PJM Synchronized Reserve Market"
10. S. Chuang, C. W. Gellings – "Demand-side Integration in a Restructured Electric Power Industry"

International Quota papers

1. D. Lindsay, M. Roden, D. Willen, A. Keri, B. Mehraban – "Operating Experience of 13.2 kV Superconducting Cable System at AEP Bixby Station"
2. L. O. Barthold, D. E. Douglass, D. A. Woodford – "Maximizing the Capability of Existing EHV Transmission Lines"
3. J. Phillips, C. Engelbrecht – "The feasibility of using daytime corona inspection to identify contaminated insulators that needs to be washed"
4. R. Adapa, S. Maruvada, M. Rashwan, N. Hingorani, M. Szchetman, R. Nayak – "R&D Needs for UHVDC at 800 kV and Above"
5. Apostolov, B. Bastigkeit – "Testing of Modern Bus Protection Systems"
6. Apostolov, B. Vandiver, D. Tholomier – "Testing of Distance Protection Relays"
7. O. Huet, J. Ph. Tavella, T. Coste, J. Hughes – "Reaching out Seamless and Cost-effective Automation beyond IEC 61850"
8. X. Wang, H. Hamadani, K. Morison, A. Moshref, A. Edris, C. Bridenbaugh – "Systematic Approach for Identification of Voltage Collapse Areas and the Reactive Power Reserve Requirements in Large Interconnected Transmission Grids"

USNC Quota alternative papers submitted

1. M. Begovic, N. Hampton, R. Hartlein, J. Perkel –“Validation of the accuracy of practical diagnostic tests for power equipment”
2. T. Witham – “Secure Substation Networks: Implement for Today; Design for Tomorrow”
3. L. Kojovic – “Innovative Non-conventional Current Transformers for Advanced Substation Designs and Improved Power System Performance”

D. UCAIug Report

Burger

On Thursday afternoon, September 20, and Friday, September 21, after the PSRC Meetings in Charlotte, the UCA International Users Group (UCAIug) met to review the activities of 2007 and plan activities for 2008. The UCAIug official annual meeting was held on Friday morning.

The UCA International Users Group (UCAIug) is a not-for-profit consortium of leading utility user and supplier companies dedicated to promoting the integration and interoperability of electric/gas/water utility systems through the use of international standards-based technology. The Users Group is an International Organization that strongly supports open standards and free exchange of information. The activities of the UCAIug include training and educational programs, disseminating technical and business information, sponsoring promotional programs in coordination with industry trade events, providing a forum for members to coordinate their efforts with the various technical committees setting the standards, and implementing testing and product certification programs. Focus has been on IEC 61850, “Communication Networks and Systems in Substations”, the Common Information Model/Generic Interface Definition (CIM) per IEC 61970/61968, and OpenAMI/DR for advanced metering and demand response.

2007 was a great year for the Users Group with regard to growth and expansion of activities. We expanded from 40 members in October of 2005 to 72 members as of November of 2006 and today have 88 members. Our member companies come from 26 different countries (up from 20 last year).

Our International focus is reflected not only in our membership but in our close working relationship with the IEC. Our 61850 Technical Issues (Tissues) Group includes key members of IEC TC57/WG10 for the resolution of technical problems uncovered by utilities, developers and as a result of our UCAIug Testing Quality Assurance Program.

On the technical front, we have expanded our technical subcommittees to support the CIM (Common Information Model), OpenAMI/DR and IEC 61850 activities. Testing has rewritten the Users Group Quality Assurance Program to reflect this technical expansion. We are also working with the OpenHAN Group to develop use cases and requirements for the Utility/Consumer Interface.

For IEC 61850 Server testing, we have now tested 38 unique devices from 12 vendors (the certificates are posted on our web site). We have 2 qualified testers: KEMA, also working with AEP/Dolan, and ABB Switzerland (as a recognized tester added in 2006).

Next year, the UCAIug will focus on developing test procedures for IEC 61850 Clients and for verification of CIM and OpenAMI/DR models. The Technical Committees will also develop implementation agreements, technical specifications, papers and tutorials for our several areas. We expect to hold technical meetings in parallel with the 2008 PSRC meetings and at DistribuTech. Our annual meeting will be held in parallel with CIGRE in Paris in late August of 2008. In Paris, we expect to have demonstrations of conforming IEC 61850 products and will host a UCAIug hospitality booth.

Further information, the UCAIug Charter, public documents, access to the working areas and discussions, resolved Tissues, and an invitation to join the Users Group may be found at: www.ucausersgroup.org

E. EPRI Report

Hughes

EPRI has been working on projects to Integrate or “Harmonize” the IEC 61850 Standard with the Common Information Model standard developing under IEC 61970. This will enable the exchange of data from real time substation and field applications with EMS systems and those used by enterprise

“IT” systems and applications. In addition we are working on conformance test procedures as well as requirements for functional testing of equipment.

Transmission architecture development is working on requirements for key applications necessary to develop an industry level of integration for wide area monitoring and control based on IEC 61850.

F. IAS Power System Protection Committee

Mozina

The IAS Annual Meeting was held in New Orleans on Sept. 23-27. Also the Petro-Chemical Committee of the IAS met in Calgary in Sept. The following are items of interest to the PSRC that occurred at these meeting:

- **Color Book Reorganization** – The color books are to be combined to reduce their number and a common or “Base Book” developed which is to have common material that is now in a number of individual color books. This material would include items such as fault current calculation, voltage drop calculations and recommended equipment maintenance practices. Major interest for the PSRC is the Buff Book (Protection and Coordination of Industrial and Commercial Power Systems), which will be combined with the Blue Book (Low Voltage Protection Systems) into a single book. One of the goals is to break out the chapters, which address protection of individual areas (transformers, generator, cables, est.) so the IEEE could sell them separately. The individual chapters will each be assigned a PAR. At the Annual IAS meeting chairpersons were selected for each chapter. These chairpersons are to then form WGs to update the chapters.
- **Generator Grounding and Ground Fault Protection WG** – This WG is investigation potential transient overvoltages associated with hybrid generator grounding. The WG has completed extensive EMPT studies to define the switching surges created by switching the low resistance ground source at the neutral of the generator. This is required to reduce the ground current for internal generator stator ground faults. The generator is grounded during this period with a high resistance source. Surge protection has also been defined by the WG. The WG will report on its finding in a paper to be presented at the May IAS I&CPS conference.
- **Arc Flash** – Arc flash study guidelines are addressed by WG 1584 within the Petro-Chemical Committee of the IAS. This WG is currently updating the “ Guide for the Performing Arc Flash Hazard Calculations” This effort relates directly to the efforts of our WG K-9.

G. IEC Report

Udren

The USNC Technical Advisory Group (WG I4) is voting on three working drafts for TC 95 protective relay electrical environment and design standards. Two have been revised because of changes in IEC generic electrical environment standards developed outside the relay community. The changing protective relay standards are:

Committee Draft for Voting (CDV) for 60255-22-2 for Electrostatic Discharge Immunity Test – as with RF immunity tests, IEC has less demanding compliance levels – new draft appears not to be a challenge for manufacturers testing for IEEE and IEC standards.

CDV for 60255-22-4 for Electrical Fast Transient Burst Immunity Test – We had just harmonized C37.90.1 with the existing IEC standard to make joint IEEE/IEC testing easier for manufacturers. Now the IEC WG has raised the burst rate from 2.5 kHz to 5 kHz with an option for 100 kHz. The USNC will cast a negative vote with a request to retain the 2.5 kHz burst rate as the minimum requirement.

CD for 60255-1, a new Common Requirements standard that is parallel to IEEE C37.90.0 but has very different requirements.

We continue to learn from our colleagues who join us at PSRC from other nations how their experts and manufacturers contribute to and define the contents of these IEC relay standards through participation in IEC standards development WGs. The US is absent from most of these WGs, and we

are left with the opportunity to cast a single vote among all the active nations at the time of a draft circulation. Participation requires support for experts traveling to meetings, from managers in manufacturer and utility organizations. In cases where US experts do participate, we are strongly influencing or even leading the technical direction. We can see a good example of this in the following.

Draft 60255-151 - Functional standard for over/under current protection. This is a new standard from TC 95 Maintenance Team 3 chaired by Dr. Murty Yalla. The new draft Standard absorbs, updates, and supersedes IEC 60255-3 and IEEE C37.112-1996. This draft looks like a good standard for all users.

Draft 60255-127 - Functional standard for over/under voltage protection. This work by TC 95 MT4 is wrapping up soon and needs a particular input on application, as we described last time. For inverse time-voltage relays, the curve shown in the draft has simple 1/x inverseness. The authors seek a basis for a more sophisticated curve family based on application requirements. **The MT continues to solicit ideas or information on applications of inverse-time voltage relays where curve shape matters.** We've already received several helpful inputs from PSRC participants. Please share your ideas with Eric Udren or Murty Yalla.

IEC TC 57 is responsible for Teleprotection and Power System control, and is the center for development of IEC 61850 among many other industry initiatives. Christoph Brunner who chairs WG 10 developing 61850, reports TC 57 work on the following topics:

There are several working groups (WG17, WG18) that adopt IEC 61850 for applications other than substations. These working groups prepare the following documents:

- IEC 61850-7-410: control of hydro power plants
- IEC 61850-7-420: object models for distributed energy resources

Working group 10 prepares Edition 2 of IEC 61850. Edition 2 will incorporate many clarifications of technical issues (TISSUES) that have been identified during the first implementations of the standard. It will also incorporate new features used by other domains; one example is the modeling of statistical and historical evaluation of data. Models for power quality are being included.

A task force of WG 10 is addressing the use of IEC 61850 for communication between substations. Typical application is the communication used between two distance protection relays to implement the different teleprotection schemes. The result will be published as a technical report with the number IEC 61850-90-1. Items requiring standardization will be incorporated in Edition 2 of the other parts where appropriate.

A task force of WG19 is addressing the issue of using IEC 61850 for communication between substation and other field devices to control centers. It is expected to have a CDV of Edition 2 circulated at the end of this year.

H. Standard Coordinators Report

Gilbert

The Standards Coordinator, Jeffrey Gilbert, met with the Chairs of the Working Groups writing and revising standards documents at a session beginning at 8:00 AM on September 18, 2007, in the Lake 2 room of the Charlotte University Hilton

Matthew Ceglia, the Standards Association liaison to PSRC, reviewed requirements for showing SA Patent Policy slides and the need to record that the slides were shown in meeting minutes of any group that is working on a standard. He also explained the importance of confirming that a sufficient number of voting members are present to meet the requirement that a quorum be present for any vote to be valid. He suggested that the PSRC P&P document be reviewed to confirm that its voting members are clearly defined. Mr. Ceglia answered many questions from working group and subcommittee chairs.

The status of the PARs is summarized below. The actions to be taken for keeping up-to-date the approval of the PARs and for keeping live the Standards and Guides are identified. A summary of the specific approvals received, since the May 2007 meeting of the PSRC, are identified as well.

General Information

Information concerning the Standards Association (SA), Board of Governors, Committees of SA, and development of standards, recommended practices and guides and related issues is available on the following web site.

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

Standards Coordination Effort

PARs applied for by all Committees of the Power Engineering Society (PES) are circulated among the Standards Coordinators of the PES Committees. Every PAR approved by the Standards Board is posted on the SA Web site at the following address.

<http://standards.ieee.org/board/nes/approved.html>

The following PARs have been approved by the IEEE-SA Standards Board may be of interest to PSRC attendees.

PC37.68 - Guide for the Requirements for Microprocessor-Based Controls for Distribution Pole-Mount and Padmount Switchgear Rated above 1kV up to 38kV
PC57.13 - Standard Requirements for Instrument Transformers

If you are interested in the development work planned in a PAR, contact the Chair of the Working Group that is developing the document and sign up for participating in the activity of that Working Group.

Standards Activities Since The May, 2007 Meeting

The status of the standards activities, which have taken place since the May, 2007, meeting of the PSRC, are as follows.

1. Standards Published

C37.116 Guide for Protective Relay Application to Transmission-Line Series Capacitor Banks

C37.117 Guide for the Application of Protective Relays Used for Abnormal Frequency Load Shedding and Restoration

C37.231 Recommended Practice for Microprocessor Based Protection Equipment Firmware Control

C37.232 Recommended Practice for Naming Time Sequence Data Files

2. Standards waiting to be Published

None

3. Standards Reaffirmed

None

4. Standards submitted for reaffirmation

None

5. Standards approved

None

6. Standards submitted for approval

PC37.101-2006-Cor 1 Guide for Generator Ground Protection - Corrigendum 1: Annex A.2
Phasor Analysis (Informative)

PC37.230 Guide for Protective Relay Applications to Distribution Lines

PC37.235 Guide for the Application of Rogowski Coils used for Protective Relaying

7. Standards to be submitted for approval

PC37.110 IEEE Guide for the Application of Current Transformers Used for Protective Relaying
Purposes

8. Submitted for Balloting/ Recirculation

C37.95 IEEE Guide for Protective Relaying of Utility-Consumer Interconnections

C37.104 IEEE Guide for Automatic Reclosing of Line Circuit Breakers for AC Distribution and
Transmission Lines

C37.108 IEEE Guide for the Protection of Network Transformers
PC37.230 Guide for Protective Relay Applications to Distribution Lines

9. Standards Balloted

C37.104 IEEE Guide for Automatic Reclosing of Line Circuit Breakers for AC Distribution and Transmission Lines

PC37.101-2006-Cor 1 Guide for Generator Ground Protection - Corrigendum 1: Annex A.2 Phasor Analysis (Informative)

10. Standards Re-circulated

PC37.230 Guide for Protective Relay Applications to Distribution Lines

11. Standards to be Re-circulated

PC37.91 IEEE Guide for Protective Relay Applications to Power Transformers

PC37.105 IEEE Standard for Qualifying Class 1E Protective Relays and Auxiliaries for Nuclear Power Generating Stations

12. Standards due for 5 year review/to be submitted for Re-affirmation

C37.90.1 IEEE Standard for Surge Withstand Capability (SWC) Tests for Relays and Relay Systems Associated with Electric Power Apparatus

C37.91 IEEE Guide for Protective Relay Applications to Power Transformers

C37.95 IEEE Guide for Protective Relaying of Utility-Consumer Interconnections

C37.104 IEEE Guide for Automatic Reclosing of Line Circuit Breakers for AC Distribution and Transmission Lines

C37.105 IEEE Standard for Qualifying Class 1E Protective Relays and Auxiliaries for Nuclear Power Generating Stations

C37.108 IEEE Guide for the Protection of Network Transformers

C37.110 IEEE Guide for the Application of Current Transformers Used for Protective Relaying Purposes

13. Standards withdrawn

None

14. New PARs applied for

C37.96 Guide for AC Motor Protection

C37.105 IEEE Standard for Qualifying Class 1E Protective Relays and Auxiliaries for Nuclear Power Generating Stations

15. New PARs approved

C37.96 Guide for AC Motor Protection

16. PAR Extensions applied for

None

17. PAR Extensions approved

None

18. Modified PAR approved

None

19. Modified PAR Submitted

None

20. PARs Withdrawn

None

21. PARs expiring at the end of 2007

PC37.91 IEEE Guide for Protective Relay Applications to Power Transformers

- PC37.105 IEEE Standard for Qualifying Class 1E Protective Relays and Auxiliaries for Nuclear Power Generating Stations
 PC37.110 IEEE Guide for the Application of Current Transformers Used for Protective Relaying Purposes

SUBMITTAL DEADLINES & STANDARDS BOARD MEETING SCHEDULE

PAR/Standard Submittal Deadline	Standards Board Meeting
October 15, 2007	November 29, 2007
February 15, 2008	March 25, 2008
May 2, 2008	June 4, 2008

I. Substation Committee Report

Dood

Data Acquisition Processing and Control Systems Subcommittee

The Substations Committee C0 Subcommittee working groups and task forces met jointly with the PSRC at their September meeting in Charlotte, NC.

Working Group C1, Application of Computer Aided Systems to Substations met on Monday afternoon. The Chair, Mr. Sciacca gave an overview of P1686 – Standard for Substation IED Cyber Security. The comments from the 1st ballot recirculation were discussed in this meeting. Comments from two negative ballots were discussed and addressed. Strong authentication will be addressed as a possible 1686.1 extension.

A 2nd recirculation ballot will be initiated in the next 2 weeks.

A working session of WG C3 on PC37.1, Standard for Automation and SCADA Systems, met on Monday morning. The chair, Craig Preuss, led a discussion on comments received from the 1st recirculation ballot, which closed last week. The first recirculation resulted in a 95% affirmative response. A second recirculation will be required due to 7 comments received. This will be done within the next week. There was a lot of discussion on how to keep this group together as it is recognized that this is an evolving area that will require a continuing effort.

WG C4, P1689 - Title: Standard for Cyber Security Serial Data Links – Chair: John Tengdin met on Monday morning. John led a discussion on a proposal to withdraw the PAR of this project and to combine efforts with P1711. Reasons include:

- P1689 is defining requirements for cryptographic modules while P1711 is defining the cryptographic protocol for cyber security of serial SCADA links and engineering access points that implement the requirements of IEEE P1689. The feeling is that it will serve the industry better to make this one standard.
- The body of expertise for these two efforts overlaps, thus neither effort will suffer
- Since these efforts are dependent on each other it will solve some administration issues.

The working group was in agreement with this recommendation and a number of new members were added for this combined effort

Working Group C6 (P1711), Trial Use Standard for a Cryptographic Protocol for Cyber Security of Serial SCADA Links, met Monday afternoon. In the absence of the chair, Mike Dood chaired the meeting. The discussion centered on combining efforts with P1689 as discussed above. Everyone was in agreement with this approach. We spent the remainder of the time discussing the PAR modification required to incorporate the work of P1689 into P1711. Dave Whitehead will continue to be the chair of this effort. The next step will be to notify all members of both of these working groups and give them the opportunity to continue their work on this combined standard. A request will also be submitted for a modified PAR in the near future.

On Wednesday a joint meeting (PSRC I14 and Substation C5) on the revision of C37.2 was held. IEEE Standard Electrical Power System Device Function Numbers and Contact Designations. The chair, John Tengdin led discussion centered mainly centered on whether we should expand the current numeric convention past 99 or should we use acronyms for new functions that do fall under current device numbers. There was lot of good discussion and it was decided that a formal vote would be taken

of the two working groups to decide this issue. The current schedule is to complete draft 2 by the middle of October and issue an invitation to ballot shortly after that.

Substations Subcommittee C0 wants to once again thank the PSRC for their hospitality in allowing us to meet together. We also want to thank you for all the valuable contributions that we received in this joint meeting. We look forward to future joint meetings.

J. NERC Report

Cummings

PRC-023-1 — Transmission Relay Loadability

This draft standard will be posted in mid-October for the pre-ballot period (15 days), after which there will be a 30-day ballot period.

This standard is the poster child from the 2003 blackout and is pivotal for the industry. Please make sure that if anyone in your company is in the NERC Ballot Pool for this standard, that they vote for it. We really want to have a quorum and get it passed.

Protection System Maintenance — A Technical Reference

This Technical Reference or White Paper was passed by the NERC Planning Committee last week, and will be posted on the NERC web site under the SPCTF area today or tomorrow.

This document will serve as a reference for the Standards Drafting team that has been formed to review and consolidate standards:

PRC-005-1 — *Transmission and Generation Protection System Maintenance and Testing*

PRC-008-0 — *Underfrequency Load Shedding Equipment Maintenance Programs*

PRC-011-0 — *UVLS System Maintenance and Testing*

PRC-017-0 — *Special Protection System Maintenance and Testing*

SPCTF prepared this document to address issues related to maintenance, including FERC's desire to have time certain intervals for relay maintenance. This document shows logical periods for time-based maintenance intervals, but also sets the basis for Condition Based Maintenance programs in the standards. As a result, it is expected that the new maintenance standard will be much better.

The Standard Drafting Team will be beginning this work shortly.

PRC-001-0 — System Protection Coordination

Self nominations closed in May for this standards drafting team, but they may re-open. I urge any PSRC members to contact me if they would be interested.

Protection System Redundancy

SPCTF will be finalizing a technical reference today or tomorrow for submitting to the Planning Committee in December. Redundancy was dropped by the Version Zero standards drafting teams because they lacked technical expertise to address the issue. Lack of redundancy was pivotal in the tripping of 3 Palo Verde nuclear units on June 14, 2004.

The NERC Standards Committee will be soliciting for people to serve on the standards drafting team soon.

IV. B. ADVISORY COMMITTEE REPORTS

Henville

Chair: Charlie Henville

Vice Chair: Miriam Sanders

B1: Awards and Technical Paper Recognition

Chair: Mike McDonald

Vice Chair: Bob Beresh

The group met on Tuesday September 18th with 5 of 6 members present.

The Working Group reached consensus of which PSRC sponsored Guide/Standard will be recommended for the PES Award. By October 8th, we will have decided on which PSRC Paper/Report will be recommended for the PES Award. The group will also be recommending a paper for the remaining PES award.

A letter of appreciation has been developed which will be sent by the SC and WG Chairman to all members of Working Groups in recognition of completion of their assignment.

The 2005 Distinguished Service Award plaque was awarded in absentia to Bill Lowe who will receive his award via mail.

Certificates of Appreciation for Chairman of Working Groups that have completed their assignments:

I3: Robert Beresh - Relay Firmware Quality Assurance

J3: Everett Fennel – Protection of Small Interconnected Generators (mail)

Service Awards:

Members present: Tony Giuliante - 31 years
Paul Drum – 28 years (awarded at the Reception)

Others to be mailed: Bill Kotheimer – 42 years
Stan Zocholl – 32 years
Kalyan Mustaphi – 30 years
Vittal Rebbapragada – 27 years

B2: Fellows Awards

Chair: J.S. Thorp

The Working Group met in Charlotte on September 18, 2007

The PSRC, PES, and IEEE processes for the Election of Fellows were reviewed. The committee discussed attempting to get more PSRC members to become senior members. It was observed that you can apply for senior membership and line and the recommendations can also be submitted on line. On line applications for senior membership at a future PSRC meeting were to be investigated

B3: Membership Committee

Chair: M.J. Swanson

Attendance during the PSRC meeting was approximately 194. This is considered very good, even with our joint meeting with the PSCC and UCAlug.

19 new attendees were in our Newcomers Orientation meeting on Tuesday, which is considered a high number. I participated in the presentation.

No management support letters were written.

There were at least two Virginia Tech graduate students attending our meeting.

B4: O & P Manual and WG Training

Chair: R. Hedding

Nothing new to report. The next training session will be held at the January 2008 meeting in San Antonio.

B5: Bibliography and Publicity

Chair: T.S. Sidhu

Vice Chair: M. Nagpal

The WG met on Sept. 18, 2007 with three members in attendance. 2006 bibliography paper has been approved by the WG members and has been sent for approval of the PSRC officers. Once approved, it will be sent for publication in the IEEE Trans. on Power Delivery. Mal Swanson will work with the PSRC Chairman to assist in preparation of the publicity report. There have been no NERC reports to review. WG Chair has provided more than 70 years of bibliography (in word files) to PSRC webmaster (Russ Patterson) for possible creation of a searchable database

B8: Long Range Planning

Chair: Phil Winston

The Long Range Planning TF has no outstanding agenda items. The group continues to discuss the organization and programs of the PES General Meetings.

B9: PSRC Web Site

Chair: Jim Ingleson

Working Group B9 did not meet.

V. SUBCOMMITTEE REPORTS

C: SYSTEM PROTECTION SUBCOMMITTEE

Chair: T. Seegers

Vice Chair: R. Hunt

The C System Protection Subcommittee met on Wednesday, September 19th, 2007, in Charlotte, NC with 13 members and 40 guests in attendance.

4 Working Groups and 3 Task Forces met at this meeting. The members of the Subcommittee approved the minutes of the May 2007 meeting.

A significant portion of the meeting focused on the IEEE Standards for Working Groups operating under a PAR. To resolve contentious issues in the Working Group, the WG members must vote, and the vote must be recorded in the meeting minutes. The vote is only official if a quorum (>50%) of members has voted.

The Subcommittee has added Ken Birt, Alla Derojna, and Shinichi Imai as members. Effective with the January 2008 meeting, Rich Hunt will assume the Chair of C Subcommittee, and Solveig Ward will assume the Vice-Chair of C Subcommittee.

The Subcommittee approved the formation of Working Group C14, Use of Time Synchronized Measurements in Protective Relaying Applications. The WG will be Chaired by Jim O'Brien, Vice Chaired by Alla Derojna, and will produce a report to the Main Committee.

The Subcommittee decided not to form a Working Group to discuss issues around connecting IPPs to the transmission system. There was much debate as to the need for such a Working Group.

NERC liaison report: The NERC liaison report is being moved to the Main Committee meeting.

PSCE liaison report: nothing to report.

PSSC liaison report: The task force on blackouts has completed the report. The report is 245 pages, and is available as a special publication of the IEEE.

Cyber Security: Solveig Ward provided an update from the NERC UTC meeting. NERC has issued the cyber security standard, and is being reviewed by FERC. Members can make comments until October 8, 2007. The standard is to be published by the end of 2007. Utilities must be compliant by June 2008, and fully compliant by December 2008. Audits will begin in 2009. The statement "when not technically feasible" – when used for compliance, the reason must be documented.

Reports from the WG Chairs

C4: Global Industry Experience with System Integrity Protection Schemes

Chair: V. Madani

Vice-Chair: M. Begovic

WG C-4 met on September 18 in one session with total 19 in attendance (9 M, 10 G).

After review of the patent slides, the members discussed summary and samples of the surveys received. The WG had requested a 3 months extension for the survey results at the May 2007 meeting. The extension was granted and result of the extension is a significant increase in number of respondents. The overall number of respondents to date is around 75 and increasing – Many of the international respondents are representing their countries (CIGRE or ISOs acting on behalf of the Asset owners). The total number of schemes reported exceeds 500 (In May 2007, we reported approximately 300 schemes).

Vahid mentioned that of all the responses received, no one has mentioned ambiguity in the questions or that the respondent needed further clarification or information.

The next step is to start tabulating the responses. Vahid has volunteered to determine if there is a simple way to extract the data into a spreadsheet. Five members volunteered to assist in extracting responses from the survey based on the attempt to convert the survey responses and to help validate the entries for the responses received.

C9: Appl. of Prot. Relays used for Abnormal Freq. Load Shed. & Restoration

Chair: A. Apostolov

Vice-Chair: K. Behrendt

WG C-9 met on September 18 in a single session. The WG discussed the progress of the summary transactions paper.

C11: Guide for Protection System Testing

Chair: V. Madani

Vice-Chair: H. DoCarmo

WG C-11 met on September 18 in single session with total 43 in attendance (15 M, 28 G). After review of the patent slides, the WG members reviewed comments from multiple reviewers followed by new contributions on system testing. The following writing assignments were discussed:

- Reviewer Comments Received
- Sect. 2.6.4 Updated Dynamic Simulation Testing
- 4.1.1.2.6 Line Current Differential Scheme
- Sec. 7. Testing Protection and Control Systems with Unconventional Voltage and Current Sensing Inputs

In discussions with the I8 WG (Application of Optical Sensor Systems) and EG C-13 (Undervoltage load shedding scheme), it is also agreed that system testing will address these two from protection scheme and scheme performance perspectives. The C-11 WG members have the knowledgeable people as WG members that can make the contributions.

For the next meeting, the C-11 WG members will finalize all comments received and will form the balloting body.

C12: Performance of Relaying During Stressed Conditions

Chair: D. Novosel

Vice-Chair: G. Bartok

The Working Group met on Tuesday, September 18, 2007 with 10 members and 22 guests present. The meeting was chaired by George Bartok, the WG Vice Chair.

Prior to the meeting, Draft 9 of the Working Group Report was distributed to the members and guests on the mailing list. This draft includes all additional writing assignments and contributions since the May meetings as well as a complete document review by four WG members.

Several additional writing and review assignments were made. Most of these are for the purpose of further reducing the length of the WG report and making it more focused on the WG scope. The report is currently 95 pages in length. All writing and review assignments are due by November 20th.

C13: Undervoltage Load Shedding

Chair: A. Buanno

Vice-Chair: S. Imai

Working Group C13 did not meet at the September meeting in Charlotte. Work is proceeding on the first draft of the WG report.

CTF14: Use of Time Synchronized Measurements in Protective Relaying Applications

Chair: J. O'Brien

Vice-Chair: A. Deronja

Task Force CTF14 met on September 18, 2007, in Charlotte, NC, in a single session chaired by Jim O'Brien with 38 people in attendance with 15 of those interested in membership to finalize the need and scope of the future working group.

The working group formation has been approved. Its assignment will be as follows:
Produce a general report to PSRC Subcommittee C outlining practical relaying applications using time synchronized measurements.

The output will be a report.

The WG scope is presently defined as follows:

Develop a report that identifies time synchronized measurement data and parameters that are useful for developing relay settings, improving protection schemes and analyzing protective relay performance. The report will not include deployment of devices to acquire time synchronized measurements.

A discussion included questions on time synchronizing, C37.118, and 61850. It has been or being done outside of this group and, therefore, excluded from the scope but may be referenced in the report.

It was proposed to limit the topic to using the time synchronized measurements for the protective relaying applications focusing on wide area and transmission system protection. Other various topics concerning application of the time synchronized measurements can be addressed later and separately.

Possible items for the report outline include history of the use of the time synchronized measurements in protective relaying applications, future applications, and reliability of the communications infrastructure.

The chair asked the members to notify him by e-mail of presentation topics, which will be conducted on the future meetings in January and/or May, 2008.

CTF15: Testing and Design of SIPS

Chair: Y. Hu

Vice-Chair: R. Cummings

Task Force CTF-15 met on Wednesday, September 19, 2007 in single session with total 19 people in attendance. The task force discussed the need to form a working group to develop a report on the SIPS testing and design. The discussion had concluded with the followings:

- There is a need to have a good understanding of the current status of testing procedures and methods used to test SIPS. This will provide a basis for assessing the adequacy of current practice, and possibly for developing future IEEE guidelines or standards to guide the SIPS testing
- WG C-4 is conducting a survey on the global experience of SIPS applications, its results should be used for defining the scope of this future working group
- WG C-11 is working on producing a Guide for Power System Protections, which had included the testing of some SIPS schemes. The scope of this working group should take the results of C-11 into consideration
- C subcommittee had done some previous work in the wide-area protection area, the results of these work should be reviewed for defining the scope of this working group.
-

CIGRE had produced several documents related to SIPS, these documents should be reviewed for defining the scope of this future working group

The Task Force CTF-15 has decided to hold one more meeting in January 2008 to define the scope and the product of this future working group. Task force chair will take the lead to prepare a straw man statement and present it at the next meeting.

CTF16: Relay Scheme Design for Modern Relays

Chair: K. Birt

Vice-Chair: R. Lascu

CTF16, Relay Scheme Design for Modern Relays, met for the first time on Tuesday, September 18, 2007. There were 58 people in attendance.

There was considerable discussion about topics that should be included in the project scope if a working group is formed.

The group decided to meet again in January, to decide whether or not to form a working group. Before that meeting, participants are expected to review the 1999 PSRC report, "Relay Trip Circuit Design," which is on the PSRC web site. Participants are requested to email suggestions for topics to include in the scope to Ken Birt.

After the meeting, Raluca Lascu agreed to serve as vice chairman.

D: LINE PROTECTION SUBCOMMITTEE

Chair: R.A. Hedding

Vice Chair: M.J. McDonald

The Subcommittee met on September 19, 2007 with 24 members and 32 guests.

After introductions, Matthew Ceglia addressed the SC highlighting requirements for Quorum at any Standard or Guide WG meeting before a valid vote could be taken on any item. This should be included in the meeting minutes to document the requirement was met.

ADCOM items of interest

Working Group Chairman are reminded:

- Please insure that your Working Group website is up to date with the most recent information posted.
- Chairman are responsible for determining the need for coordination
- IEEE Slides are required to be shown at the start of your meetings if working under a PAR.
- Need papers for sessions at Chicago T&D Conference and Pittsburgh general meeting.
- January meeting will have slightly different registration procedure. Watch for details.
- In January we will have another working group chairman training session Tuesday morning.

Reports from the WG Chairs

D1: Cold Load Pickup Issues and Protection

Chair: Dean Miller

Vice Chair: Tony Sleva

Output: Report to PSRC

Expected completion date: Early 2008

Draft 5

Working Group D1 met with 11 members and 8 guests.

The working group met in a single session on Wednesday, September 19, 2007 in Charlotte, NC.

The changes made for Draft 5 were discussed.

Table 4 was modified to reflect winter loads as the example (air conditioning was changed to zero percent of the load).

Modified clause 6.1 to include instantaneous overcurrent elements and that these elements may have to be blocked or disabled to energize the circuit after an outage.

John Boyle initiated a discussion on the operation of single phase line reclosers during cold load pickup events and the effect of the reclosers' operations on the substation protection. This subject was not addressed in the paper. John accepted a writing assignment to write a paragraph on this subject. This paragraph will be added to clause 6.

Draft 6 of the paper will be distributed to the working group members by November 1. Comments on the paper are to be back to chairman by December 1. Those comments will be incorporated in the draft that will be sent to the Line Subcommittee for their approval.

D4: Application of Overreaching Distance Relays

Chair: Russell W. Patterson

Vice Chair: Walter P. McCannon

Output: Working group report to PSRC.

Established: May 2004

Expected completion date: January 2008

Working Group D4 met with 10 members and 12 guests. Total in attendance was 22.

The bibliography and reference sections were discussed as well as minor edits to the final draft. Several members have brought other needed editing to the chairman's attention and these will be addressed with a new final version being sent to the working group membership prior to the January meeting. After the D4 membership approves that final draft it will be sent to the D subcommittee and officers for comments/approval prior to being submitted as a final report.

The expectation is to have a finished paper by the next meeting.

D5: Guide for Protective Relay Applications to Distribution Lines

Chair: Phil Waudby

Vice Chair: Randy Crellin

Output: IEEE Guide PC37.230

Established: January 2002

Expected Completion Date: PAR extended to 2008

The working group met on Tuesday Afternoon, September 18th, in a single session with 24 attendees (16 members and 8 guests).

After introductions, circulation and acknowledgement of the IEEE-SA Guidelines on Patents, reading of the working group scope, and approval of the May 2007 meeting minutes, we discussed the current status of the document.

Upon recirculation of the guide (draft 6.1), we received three comments regarding arc flash and resonant grounding systems. The balloting body consisted of 143 people, with 118 returned ballots, 113 approvals, 3 negatives, and 2 abstentions. The arc flash comments were referred to Karl Zimmerman and his arc flash working group.

The document has been submitted to RevCom and is currently scheduled for their 9/26/07 meeting.

With no additional old and/or new business, the working group was adjourned with those individuals interested in working on the summary paper remaining.

Twelve people expressed an interest in working on the summary paper and presentation materials for the Georgia Tech, Texas A&M, Western, and Mipsycon conferences.

The summary paper writing assignments are due by November 1st and are as follows:

Scope – Phil Waudby

Fundamentals – Fred Friend

Configurations – Rafael Garcia
Schemes – Gustavo Brunello and Raluca Lasu
Examples – Dean Miller
Applications – Tony Seegers and Inma Zamora

D8: Justifying Pilot Protection on Transmission Lines

Chair: G. Kobet

Vice Chair: B. Kasztenny

Output: Report to the Subcommittee

Meeting #9 Draft: 5.0

The WG met on September 18, 2007 with 24 in attendance: 9 members and 15 guests. The minutes of the May 2007 meeting were approved as printed.

The Chairman suggested considering draft 5.0 as complete, and asked for comments and suggestions.

Alla Deronja pointed that the content of the report is wider than stated in the assignment.

John Boyle asked if the material covers “unjustifying” of pilot protection, that is, criteria or conditions to downgrade a given line and protect it without a pilot channel. It was agreed that by providing selection criteria the report actually covers this particular situation, although there is no explicit discussion and encouragement to downgrade protection techniques on existing lines.

Sec.3.10.3 was discussed. The section relates to voltage stability and recovery as related to slow trip times if no pilot protection is applied. Several examples were discussed.

Mike McDonald explained procedure of submitting the final draft to the subcommittee and making the material publicly available.

The Chairman set October 1 is a deadline for internal review of draft 5.0 within the WG membership.

D9: Revision of C37.113 - Guide for Protective Relay Applications to Transmission Lines

Chair: Mohindar Sachdev

Vice Chair: Simon Chano

Output: Revised IEEE Guide C37.113

Meeting #09

The Working Group met on September 18, 2007 with 14 members and 14 guests. Simon Chano, chaired the meeting in the absence of the Chair.

Draft 2 of C37.113 Guide for Protective Relay Applications to Transmission Lines was sent by the chair before the meeting for review by all WG members.

During the meeting, sections on definitions, fundamentals and system configuration were reviewed for technical content.

Since many new contents were added, a special request was made to have a copy of the draft showing all additions and modifications from the previous guide.

New assignments were given and Simon Chano requested members to review all new contributions and send their comments to Moh Sachdev weeks before the next meeting.

D11: Effect of Distribution Automation on Relaying

Chair: Fred Friend
Vice Chair: Jerry Johnson
Output: Report to the PSRC
Established: January 2005
Expected Completion Date: January 2010

The working group met with 6 members and 14 guests present, chaired by Fred Friend. Review of Draft 1.0 of the document begin covering Clauses 5.0, 5.1, 5.2, 5.3, 6.1.1, 6.4, 6.5, and 6.7. Two additional writing assignments were accepted: Clause 6.3, Steven Hodder (Victor Ortiz volunteered to assist after adjournment) and Clause 6.6 Don Parker. Mani Venkata will provide material on a DA project. Requirements for the next meeting: single session, meeting room for 30 people with a computer projector. Avoid conflict with D1, D5 and also K9.

D21: Investigate Supporting IEC STd for Distance Relay Characteristics

Chair: Alex Apostolov
Vice Chair: Alla Deronja
Output: IEEE/IEC Standard
Established: September 2006
Expected Completion Date: December 2008

Working Group D21 met on September 19, 2007, in Charlotte, NC, in a single session chaired by Alex Apostolov with 6 members and 7 guests present.

The scope of this working group is to provide an IEEE/PSRC technical input to the ongoing development of IEC Standard 60255-121, dealing with distance relays to standardize impedance relay characteristics, performance, accuracy, and testing aspects.

Murty Yalla provided an update to the group on the latest Standard development effort. The IEC WG MT4, working on the Standard, had a meeting in June in Nice. There were many comments on the current Standard draft and a lot of questions about relay characteristic testing. A task force within the IEC WG MT4 was formed to address the testing issue, and it includes relay vendor representatives from ABB, Siemens, Areva, and GE. The updated draft of the Standard may not be available until May of 2008. The Standard is aimed to define distance relay functions, operational characteristics, and vendor testing. The IEC WG has to review the draft before circulating.

Alex has joined the IEC WG and provided an input on IEC61850 and characteristics graphical representations.

There were several questions addressed on this meeting regarding the use of the Standard.

Testing of the distance function, how it is supposed to operate under normal and abnormal conditions, and an effect of abnormal conditions (for example, frequency deviation) on relay performance all will be addressed in the Standard.

The revised Standard will be very useful for new relay type and maintenance testing in a utility environment as it will address manufacturers' testing aspects in steady-state, dynamic, and transient conditions.

The inputs from other PSRC working groups such as H5A, dealing with common format for relay settings and including the line distance protection, and I7, which will address application testing of relaying equipment, including the line protection, will be collected and provided to the IEC WG.

The IEC WG MT4 will meet in November in Berlin, and Murty will provide an update to the group on the January, 2008, meeting.

An updated draft of the Standard will be circulated to the group as soon as it becomes available.

D22: Performance Testing of Transmission Line Relays for Frequency Response
Chair: Tom Weidman

Vice Chair: Solveig Ward

The D22 meeting met Wednesday, Sept 19, 2007 at 11:00 am with 10 members and 10 guests present. Bogdan Kasztenny, John Zipp, Jian-Cheng Tan, Bui Dai-phuoi, and Arvind Chaudhary joined the working group bringing the WG membership to 15.

Jun Verzosa presented testing of distance relays for UF response and rate of frequency response. To see if off-frequency testing of protection relays can be performed successfully with existing test systems like the Doble F6150 and F6Test software. Great job Jun, thank you.

Presentation Highlights are:

With the frequency tracking setting on, good results were obtained at 58 Hz using the constant test current method.

- With freq tracking on no trip occurred under load.
- With frequency tracking on and a load encroachment function, there is some underreach. With Prefault changed to 1.2 seconds then there is enough preconditions to assure relay does not operate even at 5 hz/sec decline.

With the frequency tracking turned off, unexpected results occurred. For example:

- zone 3 operated on reverse faults.
- Another was under load only where zone 4 tripped at 120% of setting at 59.15 Hz. The relay was exposed to a 0.1hz/sec rate of frequency decline, load current at 30 degrees and it had a 6.88 ohm zone 4 setting.

Solveig's Ward presented the conclusions of her paper, "Adapting Protection to Frequency Changes" as presented at Western Protective Relay. She stated that the paper discusses theory that is addressed in C13. Jun proved the theory.

Jun recommended the best way is to create a test is using Comtrade files. Another way is to use state simulation tests which is used to setup or program an event. All agreed a realistic test is possible. There were general discussions on the tendency of relays to misoperated largely due to memory function related issues. The test has to have a trip dependability component yet all agreed response to non-fault power system conditions as the electrical islands form should be the first focus. The general opinion is that the test should be applicable to all relays requiring such test.

Before adjourning the chairman asked the WG to provide outline topics by Nov. 1. The chairman will collate topics and send the outline out by Nov. 30 for comments by December 15.

DTF24: Transmission Line Applications of Directional Ground Overcurrent Relays

Chair: Rick Taylor

Vice Chair: Don Lukach

Output: Report to D Subcommittee

Output: Report to D Subcommittee/Transmission Line Guide Contribution

Assignment: Prepare a report to the Transmission Line Guide revision working group on the justifications and application criteria for directional ground overcurrent relays applied for protection of transmission lines.

Meeting # 2 - 9/19/2007

The WG met for a single session with 17 members and 13 guests.

The primary WG assignment is to provide a short discussion for the revision of the transmission line protection guide. In order to provide the required concise discussion, the WG agreed to focus on application of directional ground overcurrent protection on lines protected by at least one scheme of ground distance relaying. The WG members were asked to experiment with various pickup setting concepts, including a per cent of available line-end ground fault current, a fixed resistance added to a line-end ground fault, or any other technique that has been tried and proven.

The determination of time delay will also need to be considered. However, since the role of this relay is to supplement the ground fault protection provided by the zone 1 and zone 2 of the ground distance

protection, coordination could either emulate the zone 2 or provide additional time delay to allow the distance relaying to trip whenever ground fault resistance does not prevent detection.

After working group members have investigated pickup concepts, a "first draft" of the proposed contribution to the line guide will be submitted by the chair for member comments.

The WG also discussed extending the discussions and activity to address several of the variations that could affect the application of directional ground overcurrent protection. Since our assignment statement already includes the option of providing a report to the subcommittee, in addition to the line guide contribution, it is proposed to expand our activity to include such variations as:

- Effects of short lines on application settings;
- Effects of long lines on application settings;
- Effects of voltage level on application settings;
- Effects of tapped load and/or infeed on application settings;
- Pilot scheme setting practices for directional ground overcurrent elements;
- Contingency analysis considerations and practices;
- Considerations for using definite time versus inverse time elements;
- Effects of distributed zero sequence sources [separate from positive sequence sources]
- Etc.

Liaison Reports

Alex Apostolov gave an update on IEC TC57.

Coordination Reports

None

Old Business

C37.104 Guide for Automatic Reclosing of Line Circuit Breakers for AC Distribution and Transmission Lines re-affirmation ballot is open. Gary Kobet will Chair a working group to address any changes/modifications that need to be made.

New Business

Chairman Hedding noted that this was his last meeting as D SC Chair and that, effective January 1 2008, Russ Patterson would be the new D SC Vice Chairman.

High Impedance Fault Activity

None reported

H: RELAYING COMMUNICATIONS SUBCOMMITTEE

Chair: A. Apostolov

Vice Chair: V. Skendzic

The Subcommittee met on 09/19/07 with 21 members and 22 guests. Minutes from the May meeting were approved.

Reports from the WG Chairs

H1: Guide for Application of Digital Teleprotection

Chair: M. Benou

Vice Chair: M. Allen

Output: Guide

The H1 working group met with 11 members and 5 guests in attendance, chaired by Marc Benou.

The May minutes were distributed and approved. A quorum was present. Marc reviewed the activities of the working group in the January and May meetings. The new IEEE patent policy was distributed.

Draft 1 was handed out and it was noted that Mark Simon's writing assignment had been submitted but not included. Bob Ince, Tim Phillippe, Jim Ebrecht, and Mal Swanson volunteered for most of the previously unassigned writing assignments. There are 8 subsections left to be assigned. Members that have not turned in writing assignments were reminded to do so.

Discussion on draft 1 focused on the level of complexity desired by the working group in each subject. The working group was asked to review the submitted sections, which vary in the level of detail, so that the working group can come up with a consensus with how detailed each section should be. This will help members with their writing assignments.

The chair is responsible for trying to make the draft conform with the IEEE-SA standard format. Within 2 weeks after the meeting, the chair will send an updated electronic version of the draft to the working group.

Writing assignments are due to the chair by December 20, 2007

H2: Broadband Communications Over Power Line Carrier

Chair: M. Simon

Vice Chair: TBD

Output: Report to the Subcommittee

Working Group did not meet.

H3: Time Tagging in Protection and Disturbance Recording IEDs

Chair: B. Dickerson

Vice Chair: J. Ingleson

Output: Recommended Practice

The working group met on September 18, 2007 in a single session with 13 members and 8 guests, chaired by Bill Dickerson.

The IEEE Patent Policy slides were shown, and an opportunity was given for attendees to disclose any patent issues. None were identified.

Draft 1.0 of the document was distributed to the attendees. At this point, the draft is incomplete but there is a good start on several of the core sections of the R.P.

Writing assignments contributed by two working group members were presented and a lively discussion followed. The group made numerous suggestions for changes and additions to the section on Digital Event Time Stamps, mostly relating to different methods for de-bouncing and qualification of event detection. The group also discussed the proper convention to follow regarding time tagging of estimates for the Derived Quantities section (rms voltage, for example), which require a finite measurement period. The authors of those sections will incorporate the suggested changes and additions into their contributions.

Several new members joined the working group, and new writing assignments were made.

H4: Revision of C37.111 COMTRADE Standard

Chair: R. Das

Vice Chair: A. Makki

Established 2006

Output: Standard

The Working Group H4, met on September 18, 2007. Fifteen members and fifteen guests were present. Minutes of the May 2007 meeting were approved.

Discussions were held on Draft 2, primarily on Clause 9.0. Draft 3 will be issued within next two weeks incorporating all the changes discussed. Members will submit written comments by Nov 10, 2007.

There is a proposal for a Category D Liaison between PSRC and TC95 for adoption of Dual Logo and a meeting is proposed between PSRC and IEEE SA to discuss the issue further.

Draft 4 will be balloted among WG members before the next meeting

H5-a: Common Data Format for IED Configuration Data

Chair: J. Holbach
Vice Chair: D. P. Bui
Output: Report
No report submitted.

H5-b: Common Data Format for IED Event Data

Chair: M. Adamiak
Vice Chair: P. Martin
Output: Report
No report submitted.

H5-c: Common Data Format for IED Sampled Data

Chair: B. Vandiver
Vice Chair: B. McFetridge
Output: Report

The working group met on Wednesday, Sept 19, 2007, with 6 members and 10 guests present following sessions with H5-a and H5-b. The meeting minutes from the May meeting in Nashville were reviewed and approved by the group. The WG advisory slides were presented and reviewed as prescribed by the PSRC and opportunity provided for membership response.

The final Draft of the report was reviewed with focus on editorial changes from Christoph Brunner, the XML example from section 4.5 was made Annex – B and spelling corrections made. Table 5-2 was revised to reflect the data attributes recommended more clearly.

The report was updated and will be circulated to members in the coming week for approval. If no further comments are received, a final meeting in January will conclude the working group's assignment and the report delivered to the sub-committee. Final Draft is being circulated for approval.

H6 Substation Ethernet

Chair: J. Burger
Vice Chair: C. Sufana
Output: Report

The meeting was called to order by John Burger. There were 8 members and 27 guests present. John congratulated everyone on winning the PES technical paper award.

Minutes from the Nashville meeting were approved as presented.

Christoph Brunner gave a short slide show on what has been happening with IEC61850 improvements. He indicated Edition 1 is finished. Edition 2 covers TISSUES and involves substation-to-substation communications. New additions for the wind and water utilities are being developed. The schedule is for Edition 2 CDV 2007/FDIS 2008. There will probably be an edition 3 TISSUES and is centered on substation to control center aspects. Editions 2 and 3 will both update basic model extensions, domain model extensions.

Alex Apostolov next gave a brief update on CIGRE Task Force B4 92 functional testing of 61850-based systems.

Kay Clinard gave a presentation on UCA International Users Group (UCAIug). CIM, Open AMI, and IEC61850 are now part of UCA International. There are members from 26 countries. The quality assurance program certified 29 devices in 2007. It keeps getting larger every year. Kay indicated the primary mission is to advance interoperability.

Discussion of the summary paper followed. Alex Apostolov wrote the initial version. John asked for additional vendor and utility applications. The paper needs examples that utilize GOOSE. For example, RFL has an example on GOOSE messaging for teleprotection. John is requesting examples of practical applications by November 1.

There was also discussion of developing a survey as to the utility industry's acceptance of the standard. Questions as to why the IEC61850 or why the GOOSE is not being used are possible questions.

H7: Comparison of IEEE / IEC Teleprotection Standards

Chair: M. Simon

Vice Chair: E. Fortin

Output: Report

H7 met on Tuesday September 18th, 2007 with 10 members and guests. The compilation of the standards has been completed. Standards have been parsed into categories, which can be filtered in a spreadsheet format for easy comparison by the reader. A few additional scope statements will be added to the spreadsheet for completeness. The completed spreadsheet will be distributed to the working group prior to the next meeting. If the working group finds the spreadsheet completed, action will take place to post it to the spreadsheet.

The posted spreadsheet will be a "living document" which can be updated as IEEE and IEC standards are issued and retracted.

H8 File Naming Conventions

Chair: A. Makki

Vice Chair: R. Cornelison

Output: Standard C37.232

Introductions, 2 members, 1 guest.

C37.232 was published August 22, 2007. Due to the lack of attendees, assignments to write a summary paper will be via email or phone in the next few weeks. We hope to have the paper ready by the January meeting.

H9 Understanding Communications Technology for Protection

Chair: M. Sachdev

Vice Chair: M. Benou

Output: Report

The H9 working group met with 4 members and 7 guests in attendance. The vice chair led the meeting.

Marc reviewed the assignment of the working group. The individual sections of the paper were reviewed along with the members who have already accepted writing assignments..

H10 Device Naming Conventions

Chair: R. Cornelison

Vice Chair: J. Hackett

Output: Paper

Introductions, 6 members, 6 guests.

Stan Klein made a presentation on CIM (Common Information Model).

There was a review of the proposed name change for the Working Group with tentative consensus being achieved. The desire is to remove possible confusion with C37.2 (Device Function Number Standard). The Chair will consult with Alex Apostolov and will follow-up with members by email.

Agreement was reached on the purpose of the WG. Purpose is to create a PSRC Report that describes a convention to uniquely identify (name) installed Intelligent Electronic Devices (IEDs) for the purpose of sharing data collected by these devices.

H11 C37.118 Synchrophasor Standard Clarification & Interpretation

Chair: K. Martin

Vice Chair: D. Hamai

Output: Paper

Working Group H11 met at 8:00 am on Wednesday, September 19. 10 members and 11 guests were present.

The minutes from the May meeting were approved with no corrections.

Ken Martin reported:

- The interpretation of frequency measurement addressed at the May meeting has been posted on the FAQ website listing.

- The IEEE paper prepared by the WG was accepted in July for publication in the Transactions for Power Delivery. It was submitted in August. Publication date is still not announced.
- The standard was rejected for dual-logo certification by IEC TC57. they felt the standard is in conflict with IEC 61850. This may be appealed at some point, but is settled for now.
- There is still no alias IEEE for the WG for questions submitted. If anyone wishes to pursue it, their efforts are welcomed.
- Changes in the standard concerning the limitations of the 16-bit PMU ID code require a change in the standard. This will be addressed when standard is revised.

Mark Adamiak reported that IEC 61850 is now approved for intra-substation communications, so it could be used for WAMS with phasor data. A profile is still lacking for phasor measurements.

Bogdan Kasztenny made a presentation the effects of out-of-band signals and interpretation of the standard in that regard. Discussion followed. His writeup will be reviewed by the WG and posted to the FAQ web site once approved.

Ken recommended starting a new PAR since the standard will expire in 3 years and the last working group took 5 years to complete the standard. There are also a number of issues that have caused concern that need to be addressed. The revision process should address:

- The frequency measurement required in data reporting
- Performance and testing under dynamic conditions
- Coordination with 61850
- Correction and clarification of current considerations

The working group agreed it is timely to start the process. The chair will submit this to the subcommittee for approval.

H14 Telecommunications Terms Used By Protection Engineers

Chair: R. Ray

Vice Chair: R. Young

Output: Report

H14 met on Tuesday, September 18, 2007. Introductions were made.

There were 11 people present.

Group went over an assignment that was made to clear up the definitions of five terms for the glossary. We have completed the "Glossary of Communications Terms For Relay Engineers."

Group plans to post the document on the PSRC web page. Before posting the document will be circulated for comments/approval by the H subcommittee.

HTF1 IEEE 1588 Profile for Protection Applications

Chair: Galina Antonova

Vice-Chair: Bill Dickerson

Output: IEEE Report (TBD)

Task Force HTF1 met on September 18, 2007 in Charlotte, NC in a singled section chaired by Galina Antonova with 24 attendees.

Ken Martin, the chair of Working Group H11, gave a presentation on timing requirements for Synchrophasors. Ken indicated that the timing requirement is from 1 to 5 microseconds. Some discussion on timing requirements followed, including how indicative this is of power industry requirements.

The chair explained that a new version of IEEE 1588, to be completed late this year, introduces industry-specific profiles, which should be created by groups like PSRC based on their industry requirements. The chair initiated a discussion in respect of creating an IEEE 1588 profile(s) for power industry. There was a discussion on having a single or multiple profiles, based on system requirements. Some attendees were not familiar with what IEEE 1588 is and were asking what benefits does it offer over existing alternatives.

The chair and task force member explained the basics of IEEE 1588. There are two flavors of IEEE 1588: software-only version with performance similar to NTP, and a version with hardware assist, capable of higher accuracy better than 1 microsecond. With high volume consumer applications, e.g. Audio Visual Bridge (AVB), IEEE 802.1AS, the cost of products with hardware assist capability will decrease dramatically in near future. This will make precise timing over Ethernet available to the power industry at low cost.

Christoph Brunner stated that timing is considered as an important subject in IEC TC57 WG10 and could be included into Edition 3 of IEC 61850. IEC 61850 currently supports SNTP, but some applications require higher timing accuracy.

Attendees requested to provide information on different applications in power industry and timing accuracy associated with each. Bill Dickerson agreed to provide a summary of timing requirements for different applications for the next meeting.

Attendees also were interested in more information on IEEE 1588 and what it can offer to power industry. The chair agreed to cover this at the next meeting.

There was a general consensus that this work should be continued as a task force at the next PSRC meeting. The expectation is to develop a document in a PSRC framework, which will become a PSRC IEEE 1588 profile, specific to power industry requirements, which then can also be incorporated into IEC 61850 standard.

HTF2 Configuring Ethernet LAN Infrastructure

Chair: E.A. Udren

Vice Chair: J. Gould

Output: Report

The Task force was called to order by Eric Udren at 8:00am Wednesday September 19 in Charlotte with 29 attendees. The group reviewed the value of the project, including coordination with Substation Committee's IEEE 1615, Recommended Practice for Network Communication in Electric Power Substations. The TF decided that the project should be undertaken as a Technical Report, which may later be turned into a Recommended Practice. The Chairman presented a revised and enriched outline for the report. Attendees discussed the outline in detail and made additions and changes.

At the end of the meeting, many attendees signed up for writing assignments; others are to email indicating which sections they are willing to take on.

The group will meet in San Antonio, constituted as a Working Group if approved by Subcommittee H. The means of coordination with Substations Committee must be addressed.

The latest Report Outline, including revisions since Nashville plus those made at the Charlotte meeting, is to be posted on the PSRC Web Site.

Liaison Reports

Power System Communications Committee

E.A. Udren

The latest available minutes that serve as a basis of this report are from the PSCC meeting held jointly with PSRC in Scottsdale, AZ in January.

- PSCC Wire Line Subcommittee is working on:
- P1590 IEEE Recommended Practice for the Electrical Protection of Communication Facilities Serving Electric Supply Locations Using Optical Fiber Systems. – writing in process.
- P1692 IEEE Guide for the Protection of Communication Installations from Lightning Effects. – just begun.
- P487 IEEE Recommended Practice for the Protection of Wire Line Communication Facilities Serving Electric Supply Locations – balloted draft being revised per comments received.

BPL Carrier Subcommittee is working on:

- P1675 BPL Standard on Hardware and Installation nearing completion and should start the balloting process this spring.
- P1775 BPL Standard on Emissions nearing completion and should start the balloting process this spring.

Power Line Carrier Subcommittee is working on:

- C93.4 Standard for Power Line Carrier Line Tuning Equipment (30 – 500 kHz) Associated With Power Transmission Lines – writing in progress.

A joint PSCC-SC WG is working on:

- P1777 Recommended Practices for Using Wireless Data Communications in Power System Operation – just getting started.

Fiber Optic Working Group is working on:

- IEEE 1138 – Title not given – balloting in 2007.
- IEEE 1222 – Title not given – a specification; information is gathered.
- IEEE 1591.1 – Hardware Standard – writing in progress.
- IEEE 1591.2 and 1591.3 – no titles given - writing in progress.

TC57, WG10, 17, 18 and 19

Ch. Brunner

IEC TC57 is currently working on the following topics:

(1) There are two working groups (WG17, WG18), that adopt IEC 61850 for applications other than substations. These working groups prepare the following documents:

- IEC 61850-7-410: control of hydro power plants – this has been accepted as FDIS
- IEC 61850-7-420: object models for distributed energy resources – this is planned to be circulated as FDIS in the middle of next year

(2) Working group 10 prepares Edition 2 of IEC 61850. Edition 2 will incorporate many clarifications of so called TISSUES that have been identified during the first implementations of the standard. It will as well incorporate new features used by other domains; one example is the modelling of statistical and historical evaluation of data. Although included will be models for power quality. It is expected, to have a CDV of Edition 2 circulated at the end of this year.

(3) A task force of WG 10 is addressing the use of IEC 61850 for communication between substations. Typical application is the communication used between two distance protection relays to implement the different teleprotection schemes. The result will be published as a technical report with the number IEC 61850-90-1. Items requiring standardisation will be incorporated in edition 2 of the other parts where appropriate.

(4) A task force of WG19 is addressing the issue of using IEC 61850 for communication between substation and other field devices to control centres. One important aspect here is the harmonization with CIM.

Coordination Reports

Old Business

New Business

Taskforce HTF2 **Configuring Ethernet LAN Infrastructure** has completed the scope / assignment work and asked to be promoted to a full Working Group status. Formation of the new Working Group was approved at the subcommittee. The new WG name will be “H12”.

Six new members were nominated to the subcommittee.

I: RELAYING PRACTICES SUBCOMMITTEE

Chair: T. Sidhu

Vice Chair: R. Beresh

The Subcommittee met on Sept. 19, 2007 with 28 members and 25 guests. Matt Ceglia from IEEE Standards gave a brief presentation and emphasized the following for WGs developing standards or guides:

- importance of need for minutes
 - Quorum – ties to membership – 50%+1
 - No vote with exception (non-vote DNE yes or no)
 - WG voting important
 - Storage of documents within WG. Standard docs should not be shared with guests
 - Internet site is available to post WG information with password protection (for copyright material)
- Approval of previous I minutes from Nashville 2007 – approved
 - Mal Swanson will be giving a training session for new and WG chairs at the Jan. 2008 meeting.
 - Registration will be different for Jan. 2008 meeting as it is going to be a joint meeting with other technical committees – Reg. fees will be \$125 before meeting or \$150 on site, credit cards accepted

Reports from the WG Chairs

I1: Understanding Microprocessor Based Technology Applied to Relaying

Chair: Moh Sachdev

Vice Chair: Ratan Das

Established: 2005

Output: PSRC Report

Expected Completion Date: 2008

I1 did not meet at Charlotte. We are in the balloting process and yet short of required 75% of returned ballot.

Chair will issue reminder to the members to return their ballot. We intend to ballot among subcommittee members before the January meeting – chair will request subcommittee chair for this balloting once the results of working group balloting is completed.

We do not intend to meet at the January meeting.

I2: Terminology Review

Chair: Mal Swanson

Vice Chair: Barb Anderson

Output: Definitions for C37.100 and IEEE Std. 100

September 18, 2007 Meeting

The I2 working group met at 11:00 am on Tuesday, September 18, 2007 with seven members and four guests. One guest, Yuan Liao, joined the working group. Mal Swanson chaired the meeting. Minutes from the last meeting were approved.

Group #5 was emailed to the Officers for review.

PC37.233: Fred Friend reviewed this document and has one term that he will discuss with the Chairman of this working group.

C37.234: Oscar Bolado presented a revised definitions section of this document. The working group reviewed eleven of the terms, which Oscar will include in the next revision. Once the revised definitions have been approved in January, they will be added to Group #6. Oscar will discuss two additional terms with the Chair of C37.234.

C4 Working Group paper: Roger Whittaker revised definitions from this document, which will be addressed in January.

PC37.232: Mark Schroeder reviewed this document, which had one term that the working group revised to be added to Group #6.

Groups #1 through #6 are now posted on the PSRC website.

I4: IEC Standards Advisory

Chair: Eric Udren

Vice Chair: Mario Ranieri

Output: Output: Comments and votes to USNC of IEC on TC 95 (Measuring Relays) Standards projects and drafts. Reports to PSRC on IEC standards development.

Meetings are continuing

The WG met on September 19, 2007 with 6 members and 6 guests. With many IEC drafts in circulation, the top priority was to discuss two TC 95 CDV documents requiring a vote from USNC shortly, plus one of the functional standards being written by Maintenance Team 1 chaired by Dr. Murty Yalla. The WG reviewed:

CDV for IEC 60255-22-4, Electrical Fast Transient/Burst Immunity Test – This was circulated without a preceding CD. The biggest change is that the burst repetition rate has been increased from 2.5 kHz in the most severe category to 5 kHz minimum with 100 kHz as a higher rate claimed to be “closer to reality”. PSRC had just harmonized its C37.90.1 rate with the last IEC standard at 2.5 kHz. The change is driven by a new version of the base IEC EMC standard 61000-4-4. The USNC to vote against the draft, requesting that the required burst repetition rate of 2.5 kHz be retained, with options for higher rates.

CD for 60255-151 - Functional standard for over/under current protection. This is a new update that absorbs, updates, and supersedes IEC 60255-3 and IEEE C37.112-1996. Murty Yalla reviewed the contents – this was well received in prior reviews and Murty pointed out a few issues. He solicited formal comments for the MT1 meeting in November.

CDV for IEC 60255-22-2, Electrostatic Discharge Immunity Test – New higher levels. A few WG members are providing comments to use in our USNC voting recommendation after the meeting.

I7: Guide for the Application of Rogowski Coils Used for Relaying Purposes

Chair: Ljubomir Kojovic

Vice Chair: Veselin Skendzic

Output: Guide

Group met on Tuesday with 6 members and 2 guests.

The main conclusions are as follows:

Ljubomir Kojovic will make presentation at the PSRC Main Committee summarizing the completed IEEE Document PC37-235, “Guide for the Application of Rogowski Coils used for Protective Relaying Purposes”. Completed IEEE Transactions paper titled: “Guide for the Application of Rogowski Coils used for Protective Relaying Purposes” that summarizes the Guide and is approved for publishing.

The same paper will also be submitted for the IEEE GM 2008, Pittsburgh.

As continuation of work, WG suggests that I Subcommittee approve work on a PSRC Report that would cover practical aspects of Rogowski Coil applications for relaying purposes. The report would include Rogowski Coil design criteria, interface to relays, and protection schemes.

Next meeting: Need room for 20 people and a computer projector (CP)

I8: Guide for Applications of Optical Current & Voltage Systems

Chair: Harland Gilleland

Vice Chair: Bruce Pickett

Output: Guide

The Working Group met at Charlotte, September 18, 2007 with 15 members & 11 guests present. After introductions, the minutes of the previous May meeting was approved. Work assignments were discussed. Harley discussed the loss of the website information and how he had to work with the webmaster to restore the data to the website. Harley reviewed the Team list and had the team leaders review their progress. Don Parker became the new Team Leader for the Training section. Harley led discussion on the User Utility Contacts document which was reviewed and updated. Everyone was asked to review the website and submit comments and data.

Next meeting: room for 25, computer projector requested.

I9: Revision of C37.105 Standard for Qualifying Class 1E Protective Relays and Auxiliaries for Nuclear Power Generating Stations

Chair: Sahib Usman

Vice Chair: Roy Ball

Output: Revision of Standard C37.105

The Working group met with 5 members and 2 guests.

1. The working group met in two sessions
2. The attendees were informed that the application requesting extension of the PAR for two years was submitted to IEEE-SA.
3. Matthew Ceglia of IEEE-SA attended the meeting part-time, reviewed the application for extension of the PAR and advised of additional actions required to complete the application for meeting the requirements of IEEE-SA.
4. The members discussed most of the outstanding negative ballots/comments. The resolution of the comments is recorded in the updated spread sheet.
5. The tables in the latest draft D10-5 need to be revised/corrected. This will be completed prior to the next meeting.
6. The draft D10-5 is being updated incorporating the resolved comments.

I10: Revision of C37.98 Standard for Seismic Testing of Relays

Chair: Marie Nemier

Vice Chair: Munnu Bajpai

Output: Revision of Standard C37.98

The working group did not meet.

I11: Timing Considerations for Event Reconstruction

Chair: Jim Ingleson

Vice Chair: Jim Hackett

Output: Paper

The WG met with 6 members and 8 guests.

Reviewed comments received on the report that was sent to the Subcommittee and PSRC officers. Once two of the remaining comments are clarified, the revised report will be emailed to the members and the Subcommittee.

The goal is to finalize the report prior to the next meeting but we wish to reserve a meeting room for twenty people and a projector for the January meeting.

I12: Revision of C57.13.1 – Guide for Field testing of Relaying Current Transformers

Chair: Mike Meisinger

Vice Chair: Don Sevcik

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

I12 met Tuesday, September 18, 2007 with 4 members and 2 guests. The chair reviewed the status of the approved guide. The content of the summary paper that is being developed was discussed. The following items will be addressed:

- Items that were moved from this guide to other standards
- Items that were moved from other standards into this guide
- New items that were incorporated into this guide
- Other significant changes that were made to this guide

The vice-chair will draft a first version of the summary paper by October 5, 2007.

This Working Group plans to meet at the next PSRC meeting but if rooms are limited a half session is acceptable.

I14: Revision of C37.2-1996 Device Function Numbers

Chair: John Tengdin

Vice Chair: D. Holstein

Output: Revision of Standard C37.2-1996 joint with Substation WG C5

Meeting: 19Sept07

The working group met with 19 members and guests present (of the 39 on the roster).

The IEEE SA Patent slides were presented.

The major discussion was on proposed use of acronyms for new functions as: five of the previously identified candidates for re-use are still active, and we now have identified fifteen new functions needing a designation

The proposals are:

use numbers greater than 99 for new functions. Opponents point out that some utilities are already using those numbers (as provided for in the current standard).

use to use acronyms for the new functions (some of which already exist in other standards - PMU, RTU, SER, HIZ, HMI)

A straw poll was taken, with a majority of those present voting for acronyms and against the use of numbers above 99. Since those present did not represent a quorum of the total joint WG membership, Matt Cegia – IEEE SA suggested we do an Email survey of all the membership. That will be done in the next two weeks, and the results sent to all.

The next meeting will be in January 2008 in San Antonio, and will be listed as a Substations C5 meeting. All PSRC I14 members are invited to attend.

I15: Revision of C37.110 – Guide for the Application of Current Transformers Used for Protective Relaying Purposes

Chair: George Moskos

Vice Chair: Barry Jackson

Output: Revision of Standard C37.110-1996

The working group did not meet in Charlotte, N.C. The guide is near completion and the meeting time was used to meet with the IEEE Staff Liaison, Matt Ceglia, to outline what the next step was for the working group. It was determined that that WG-115 needed to have a second recirculation ballot in order to resolve the one remaining negative ballot which contained comments. The 2nd recirculation ballot was initiated on October 3, 2007 and is scheduled to close on October 13, 2007.

I17: Trends in Protective Relaying Performance

Chair: Mark Carpenter

Vice Chair:

Output: Periodic Reports to Subcommittee

WG met on September 19 with 3 members and 4 guests.

Oncor presented the results of retrofitting electromechanical line relays with microprocessor relays.

The working group will not meet in January 2008.

I18 Anomaly Checks for Relay Settings

Chair: Peter McLaren

Output: Report

Meeting # 1 – 09/19/07

The WG met for a single session with 7 members and 5 guests.

Following a short summary of what the Chair felt the group should consider several utility members described how their company presently managed the relay setting process. In one case settings could only be remotely changed from a secure room with restricted access. In another case remote access had been disconnected for the moment. Some relays had a separate port for setting changes and for oscillography etc. The latter port allowed remote access whereas the other only allowed access in the substation.

The Chair suggested that we could consider producing a “Shell” for various types of protection. If the requested settings did not conform to the shell then an alarm should be generated and downloading blocked. This should be done in a way which did not reveal to a hacker that the request had been blocked but yet alert a relay engineer or technician that they had made a mistake.

One member described a “Setting Shell” which his company used for all their relays of a given type irrespective of the manufacturer concerned. He also believed that the new technologies would continue to advance and that the cyber security problem had to be confronted and solved. There were too many benefits from remote access to give in to the hacker threat.

The substations committee had just completed a document (1686) which would be of interest to the group and a copy would be sent to the Chair.

It was decided to concentrate the initial effort on a survey of manufacturers and utilities to find out what was out there. Several members undertook writing assignments to suggest questions for the survey.

The Chair invited attendees to submit a short summary of their utilities’ present practice before the January meeting.

The group considered what should be its assignment statement and agreed on the following:

The WG will produce a report on relay software features and setting practices which minimize the possibility of wrong settings being downloaded to a relay. The WG will commence its task by conducting a survey of relay manufacturers and utilities to get information on present practice.

Action items:

Mike Dood would send a copy of the 1686 document to the Chair

Daniel Goodrich and Victor Ortiz will look at survey questions for manufacturers

Steve Turner will look at survey questions for utilities.

All members are invited to write a brief description of their company's present practice.

In order to allow time to distribute material for the January meeting members should try to complete their assignments by the end of November.

I19: Protective Relaying and Redundancy

Chair: S. Ward

Vice Chair: B. Gwyn

Output: Report to the main committee

Meeting #1

Estimated completion Date: Sept 2009

The Working Group met for a single session with 17 members and 21 guests in attendance on September 18, 2007.

This was the first meeting as a group, and the assignment and output were defined:

Assignment: Produce a special report addressing redundancy considerations for relaying.

Output: Report

Completion date: September 20

The outline was further refined, and a large number of assignments were handed out to be sent to the chair by December 1.

The working group will meet in January for a single session, 35 people, with computer projector, to continue work on the report.

I20: Revision of C37.90.1 SWC Tests

Chair: Tom Beckwith

Vice Chair: Tom Tennille

Output: Periodic Reports to Subcommittee

Meeting: Tuesday, September 18, 2007

The Working Group (WG) met in a single session with 10 Members and 5 Guests.

Tom Tennille was selected as Working Group Co-Chair.

The Relaying Practices Subcommittee has prepared a webpage for the working, and anything to be posted on the website is to be sent to Tarlochan Sidhu.

The ITF6 Task Force Reaffirmation of C37.90.1 SWC Tests voted in its January 2007 meeting to recommend the creation of this Working Group.

Notification will be sent to Dave Ringle, IEEE, when the PAR has been initiated to revise C37.90.1-2002 and that the ballot should be terminated. The standard will then remain active for the length of the PAR.

The Scope shall remain unchanged from the 2002 publication as follows:

This standard specifies design tests for relays and relay systems that relate to the immunity of this equipment to repetitive electrical transients. Two types of tests are specified. The oscillatory and fast transient SWC tests are defined as distinct tests. However, it is not intended to prohibit a combined test, provided all requirements of the individual SWC tests are met. The application of SWC tests to equipment other than relays and relay systems is the responsibility of those specifying the testing.

The Purpose shall be changed from the 2002 publication to read as follows:

This standard establishes a common and reproducible basis for evaluating the performance of relays and relay systems when subjected to repetitive transients on supply, signal, control, and communication lines or connections. This standard establishes that an evaluation is performed during both normal (non-tripped) and abnormal (tripped) relay operating conditions.

Tom Beckwith will prepare the request for a PAR.

Steve Turner will be the keeper of the main draft.

John Tengdin will work on coordination issues with other standards.

Discussion of issues identified for investigation

Comments submitted during the balloting process were reviewed and assignments made as necessary to address.

Mark Simon to address the Clause 3 & 4 comments by James Wilson concerning page 26

Jeff Burnworth will be working on the correction of the equation on A.3.2, page 19

Barb Anderson will handle the graphics question concerning Fig. 8 on page 13.

Steve Turner and Tom Beckwith will incorporate the other comments from the balloting process.

The ability to take exceptions to the standard or parts of the standard will be eliminated. Thus the standard will be taken as a whole as it stands.

The working group will investigate revisions or draft revisions of any IEC Standards that were incorporated in IEEE Std C37.90.1™-2002 to identify any IEC revisions that might require harmonization with the IEEE Standard.

Task Force Assignments – Individual assignments as noted above are to investigate the above identified areas and report back to the Working Group. Assignments are due December 1, 2007.

Requirements for next meeting in January; Single session; 20 attendees; Computer Projector

ITF1 Manufacturer's Service Letter Database

Chair: Jerry Jodice

Vice Chair:

Output: Service Letter Database

ITF#1 did not schedule a meeting for this PSRC session. However the subject of TF1 was discussed during the TF3 meeting.

- All Manufacturers Advisories received from Jim Ingleson are now scanned, and available on Doble's portal.
- This is a preliminary format, with Advisories listed by Manufacturer.
- To these data, some Presentations have been appended as examples of a possible continuing method of presenting WG#3 Reports as they are developed.

The objective is to integrate similar materials in one open location.

The site is accessible by the following process:

1. Go to www.doble.com
2. Select "log in"
3. Use "gmarconi@comcast.net" to log-in and
4. Use "jerry9" as the password.

Once the format of this site is approved, anyone can access the info, on request a log-in & password will be provided by the site administrator.

As additional info is acquired, it will be scanned/directed to this site

Having Doble host the database was discussed at I SC meeting in May 2007 and also, with the PSRC Chair, and both I SC members and PSRC Chair felt comfortable with the principle.

ITF3 Application Testing of Protection Systems

Chair: Jerry Jodice

Vice Chair: Bryan Gwyn

Output: Report to PSRC

Nine attendees participated in discussion after a review of key points and presentations from prior meetings, were presented.

ITF3 established the following actions toward creating an IEEE Report:

- Develop Standardized Tests for each application, beginning with Transmission Protection
- Create a Vocabulary based on existing works of IEEE and CIGRE.
- Utilize an evolutionary approach toward developing the Report, as members provide documented experiences.
- A group will be formed to develop suitable tests for each application & report to the TF.
- The attendees unanimously voted to request WG Status from I SC, at its upcoming meeting
- The attendees also unanimously voted to become members of the WG. Some members offered to help collect additional examples of unusual incidents, and to generate a Vocabulary, to insure better understanding of the subject matter.
- The WG Scope, and assignments will be developed at the January 2008 meeting

ITF7 Schematic Representation of Power System Relaying

Chair: Kevin Donahoe

Vice Chair: TBD

Output: TBD

Meeting # 1 - 9/19/2007

The Task Force met for a single session with 2 members and 10 guests on Wednesday, September 19, 2007.

Kevin Donahoe gave a presentation on the motivation behind initiating the TF. The attendees discussed a number of issues relevant to schematic representation in the hopes of describing the scope. Boundaries were identified between this TF and CTF16 Relay Scheme Design Using Microprocessor Relays and WG C3 Processes, Issues, Trends and Quality Control of Relay Settings.

Though we weren't ready to propose a scope yet it was agreed that there was interest in addressing this topic with a paper but probably not a guide.

Several attendees agreed to investigate the issues discussed and report back to the TF. It was suggested that we reference existing standards that address symbols and drafting. We will meet next time with the intent of determining membership and defining scope.

The TF will meet in January for a single session, 20 people, with computer projector and power strip to review and develop plans to complete our assignment.

ITF8 Revision to Guide for Grounding of Instrument Transformers

Chair: B. Muligan

Vice Chair:

Output: Revision to Guide

The WG did not meet

Liaison Reports

Instrument Transformer Subcommittee

There is nothing new to report. The Instrument Transformer sub committee meets twice a year. Jim Smith Chairman, C57.13

They have not met since our last meeting. They meet again in October

Working Groups activity includes the following:

C57.13 - IEEE Standard Requirements for Instrument Transformers

The PAR to Review IEEE Std. C57.13 -1993, expires 12/31/2007

A couple of IEC standards are being circulated for review.

Coordination Reports

None

Old Business

None

New Business

- New business – voted Tom Beckwith and Solveig Ward as new member of I SC.
- ITF3 has completed its work and the SC approved the recommendation that a new WG be formed. The WG I3 with title “Application testing of protection systems” was approved.
- The SC voted in favour of WG I7 presenting their paper on Rogowski coils at the PES meeting in Pittsburg, 2008
- A new task force, ITF2, was formed to look into the practical application issues related to Rogowski coils. The task force will meet at the May 2008 meeting.

J: ROTATING MACHINERY PROTECTION SUBCOMMITTEE

Chair: W. G. Hartmann

Vice Chair: K.A. Stephan

The Subcommittee met on 9/19/07 with 12 members and 5 guests. Minutes from the May 2007 meeting in Nashville, TN, were approved.

Reports from the WG Chairs

J1: Protection Issues Related to Motors Connected to Adjustable Speed (Frequency) Drives

Chair: J. Gardell

Vice Chair: P. Kumar

Established: 2003

Output: Report to the Subcommittee

Expected Completion: 2008

Status: Draft 5

1. The Working Group met for a Double Session with 9 Members and 3 Guests on September 18, 2007.
2. The Nashville Minutes of Meeting #13 were approved.
3. The main effort for this meeting was to review and resolve the comments received during the recent informal ballot conducted in August of the J Subcommittee and the Working Group Members.
4. The informal ballot went to 37 members with 12 Approvals and 7 Approvals with Comment Received. There were 18 Non-Responses that were assumed not to have comment.
5. The Working Group discussed the various comments generated during the informal balloting of the Working Group and Subcommittee Members. All comments were addressed and resolved by Working Group consensus. A limited number of assignments were given to accommodate those comments that required changes.
6. All assignments are due by October 15, 2007.
7. There will be an independent editing review of document by Steve Conrad.
8. After the completion of Steve Conrad's editing of the report, it will be sent to the PSRC Officers for approval with the objective to finish report by end of this year.
9. At this time, the Working Group requests a meeting room for 25 attendees with a computer projector for a double session in January. This is in case there is a need to further address any outstanding concerns that may arise and/or finalize the report.

J2: Protection Considerations for Combustion Gas Turbine Static Starting

Chair: Mike Reichard (Wayne Hartmann)

Vice Chair: Zeeky Buchala (Kevin Stephan)

Established: 2005

Output: Report to the Subcommittee

Expected Completion: 2009

Status: Draft 1a

- 1) Introductions, 6 members, 6 guests
- 2) The WG reviewed and approved the May 2007 meeting minutes.
- 3) The WG reviewed Draft 1a of the paper and reviewed and either resolved or made new assignments for all open items per Nashville and Charlotte Agendas. Draft 1b was created as a result.
 - a) Wayne to contact Mike Reichard and Murty Yalla to contact Ted Barnhardt about V/Hz writing assignment; page 6, 2c, yet to be written
 - b) Dale Finney to revise Fig. 4 (page 4) and make the small sine wave solid and the constant wave dashed for easier reading.
 - c) Wayne to revise generator 1-lines to include
 - (i) Use of (*) and (**) to denote operational use of elements
 - (ii) Add 49 to generators
 - (iii) Show proper connections for 64S and 59
 - (iv) Consistency in 51TN, 21/51V
 - (v) Correct UAT to GSU where required
 - d) Wayne to homogenize LCI protection 1-lines. Wayne to contact Hatch Ito [Toshiba] for verification of what protections are inherent in the drives vs. external relay. Wayne to contact Mike Reichard [GE] and Juergen Holbach [Siemens] for same issue. Mike Reichard and Zeeky Buchala to revise LCI section and break into discussion for protections inherent in the drive and external relays.
 - e) Murty Yalla joined the WG

Assignments are due to Mike Reichard by November 15, 2007

J3: Protection of Generators Interconnected with Distribution System

Chair: E. Fennell

Vice Chair: R. Pettigrew

Established: 2001

Output: Report to the Subcommittee

Status: Published

The Working Group did not meet this session. The SC voted to disband this WG.

J4: Revision of C37.102 AC Generator Protection Guide

Chair: M. Yalla

Vice Chair: K. Stephan

Established: 2000

Output: Guide

Status: Published

The Working Group did not meet this session. At the subcommittee meeting, a summary paper/report was discussed and tabled for now. Murty Yalla commented that he has been receiving good comments from users of the guide, especially on the new annex describing typical settings.

J5: Generator Protection Setting Criteria

Chair: C.J. Mozina

Vice Chair: M. Reichard

Established: 2001

Output: Paper

Status: Completed

The WG did not meet. The WG paper was completed and presented by the Chair at the main PSRC May meeting in Nashville. The paper was also presented by Murty Yalla at a PSRC sponsored session at the PES General Meeting in Tampa in June. The paper should be put on the PSRC website and be submitted to PES Transactions for publication.

The WG should be disbanded. The Chair would like to thank all the WG members for their contributions.

The Subcommittee voted to disband the WG. Murty Yalla reported 70 people attended the Tampa meeting.

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

Chair: J.T. Uchiyama

Vice Chair: R. Das

- 1. Co-Vice Chair: Mike Reichard**
- 2. Established: 2000**
- 3. Output: Revised Guide**
- 4. Status: Completed**

The Working Group did not meet this session, as the effort is complete. Chair is waiting for final approval on a corrigendum from NESCOM in a few weeks.

J8: Generator Tutorial Revision

Chair: Michael Thompson

Vice Chair: Chris Ruckman

Established: 2007

Output: Tutorial (published by PSRC)

Expected Completion Date: TBD

Status: Outline

Assignment: Review and Revise 95-TP-102, "IEEE Tutorial on the Protection of Synchronous Generators." The Working Group met for a single session with 15 members and 6 guests. 5 persons joined the working group.

The minutes of the Nashville, TN, meeting in May 2007 were approved.

Output will be a special publication of the PSRC and published on the PSRC website. Phase two output will be an eight-hour tutorial presentation. An expected date of completion has not been established. We are presently on draft none.

The chair circulated a proposed outline of the revised Tutorial and the original Tutorial table of contents.

Discussion and comments on the proposed outline:

Use of former section authors to revise material is acceptable but not preferred.

Tutorial organized into 5 basic areas:

- Section 1: Fundamentals
- Section 2: Fault Protection
- Section 3: Abnormal Operating Condition Protection
- Section 4: Off-Line and Special Operating Mode Protection
- Section 5: System Design

Chair asked for volunteers for section for first cut review/edit:

- Chapter 1: Fundamentals; C. Mozina, J. Gardell
- Chapter 2.1, Stator Phase Fault Protection; S. Kim, J. McElray
- Chapter 2.2: Stator Ground Fault Protection; J. Uchiyama, W. Hartmann
- Chapter 2.3: Field Fault Protection; S. Thakur
- Chapter 2.4: System Backup; C. Mozina, Q. Verzosa
- Chapter 2.5: Gen. Breaker Failure; C. Ruckman, S. Patel
- Chapter 3.1: Abnormal Frequency Protection; S. Conrad, G. Benmouyal
- Chapter 3.2: Overexcitation and Overvoltage Protection; R. Hamilton
- Chapter 3.3: Underexcitation/Loss of Excitation; M. Yalla, M. Thompson
- Chapter 3.4: Current Unbalance Protection; K. Stephan, M. Yalla, S. Thakur
- Chapter 3.5: Loss of Prime Mover; none
- Chapter 3.6: Out-of-Step Protection; J. Gers

- Chapter 3.7: Voltage Transformer Signal Loss; C. Ruckman, W. Hartmann
- Chapter 4.1: Inadvertent Energizing; C. Mozina, S. Thakur
- Chapter 4.2: Special Operating Modes; none
- Chapter 5.1: Tripping Modes; S. Kim, K. Stephan
- Chapter 5.2: Multifunction Generator Protection Systems; M. Yalla

Please submit writing assignments to the chair for compiling draft 1 by December 1, 2007. The chair will make a formal request to IEEE for copies of pertinent IEEE documents for use in WG activity and investigate methods for secure distribution of these documents. Individual writing teams should request the documents required for their individual writing assignments from the chair.

Beckwith Electric has volunteered resources to convert the OCR scan of the original document to a word document that will be available for use in completing writing assignments.

Schedule a single meeting with space for 25 persons and a computer projector is requested. It is also requested that the meeting be scheduled on Wednesday.

J9: Motor Bus Transfer

Chair: Jon Gardell

Vice Chair: Dale Fredrickson

Established: 2006

Output: Transactions paper or report

Expected Completion: TBD

Status: Outline

1. The Working Group (WG) met in a double session with 14 Members and 6 Guests on Wednesday, September 19, 2007. This was the fifth meeting. Tom Beckwith filled in for Dale Fredrickson as Vice-Chairman.
2. Jon Gardell gave an overview of the work performed to date and initiated a discussion of the scope of the investigation for the project, the content of the project, and the form that the project should take. It was determined that the Working Group should consider preparing a PSRC Working Group Report or an IEEE Transaction Paper rather than creating a guide on the topic at this time.
3. Russ Patterson of TVA volunteered to perform tests on bus transfer at one of their fossil power plants. A test plan will be developed by a few Working Group Members. The Chairman will solicit the help of these individuals.
4. The Chairman initiated a review of the project draft outline. There were the following recommended topic additions:
 - Transfers involving multiple levels of voltage
 - Field Tests and Simulation Results that reveal current levels and other effects resulting from motor bus transfer (MBT)
 - How to record bus transfer events - Instrumentation, Techniques and Data Requirements.
5. Tom Beckwith made a presentation on MBT Definitions and Terminology. The ensuing discussion resulted in a better understanding of the topic and some good suggestions for improvements in the definitions.
6. Murty Yalla and Mike Thompson joined the Working Group.
7. A number of assignments were made that are due by December 1, 2007 to the Chairman.
8. The Working Group requests a meeting room for 30 attendees with a computer projector for a double session in January.

J10: Guide for AC Motor Protection

Chair: Prem Kumar

Vice Chair: Dale Finney (Wayne Hartmann)

Established: 2007

Output: Guide Revision

Expected Completion:

Status: Outline

The meeting was held on 9/19/07 with 10 members and 6 guests.

After introductions, the Patent Slides were shown. The Nashville meeting minutes were approved with quorum.

Chair requested WORD document of final C37-96-2000 from IEEE. Matt Ceglia (IEEE) will send to the Chair in 3 weeks.

Chair explained PAR approval and scope.

Chair to contact Matt Ceglia regarding process for liaison with other Committees (ex., IAS).

Chair distributed C37.96-2000 contents for discussion. Discussions:

- Information on failure mechanisms of motors is being sought by Jon Gardell
- Understanding motor data sheet interpretation and translation into motor relay settings such as motor cooling time constants and motor running time constants [cooling time constant vs. cooling time, running vs. stopped cooling time, starts per hour, empirical determination of cooling time, relay determination of cooling time]
- Relevant tutorial type material that helps with derivation of relay settings such as explanation of motor speed-torque curves [voltage vs. torque with regard to starting requirements, breakdown/pull up torque]
- Inclusion of setting examples using protection elements similar to the annex of C37.102-2006. Enhance 21 element section.
- Coordination/application considerations for fuses over relay such as used with fused contactor applications [instantaneous considerations, phase fault clearing limitations] (Larry/Tom Farr)
- Considerations for settings derivations for reduced voltage starting (Tom Farr)
- Placement considerations of power factor correction capacitors relative to motor relay sensing CTs
- Summarize ASD powered motor protection considerations from Rotating Machinery Subcommittee paper effort (J1 Report)
- Motor bus transfer protection considerations from Rotating Machinery Subcommittee paper effort (J9 Report)
- Elaborate reasons for delay on ground fault protection using toroidal CT [capacitance from cables, motor inrush phase current differences, surge caps]
- Add information on how to apply surge capacitors (protection). There is material available for review from last C37.96 effort. Check if any other guides exist to address the subject in addition to C62. We should write then have reviewed by liaison.
- Considerations for application low ratio CTs, high ratio retrofit
- Use of dedicated BF on small motors to ensure clearing
- Explanations of insulation class and setting relevance. Bearing temperature also.
- Add information on motor failure modes
- Add information on motor speed torque curves and relevance to protection
- Add information from Buff Book that contains useful NEMA MG-1 content (design types, insulation class, etc.). Need to review to see if permission is required to use this data.

Organizational structure was discussed:

- Clause 8 on microprocessor relay protection does not need to be treated separately. Information on application of microprocessor relays should be merged as needed in the main body of the document.
- We will not add sections on partial discharge and on-line diagnostics that are not protective relay based.
- Thermal model details to be included are to be determined.

JTF3: NERC Generator Protection Response

Chair: Joe Uchiyama

Vice Chair:

Established: 2007

Output: Special Report

Expected Completion: TBD

Status: Outline

The TF did not meet this meeting. The chair has received study documents but proper names need to be removed before distribution. The chair will e-mail materials to task force members prior to January 2008 meeting.

Liaison Reports

Electric Machinery Committee

C.J. Mozina

The EMC met at the PES General Meeting in Tampa in June of 2007. The minutes for this meeting are not yet published. However, one of the agenda topics was a discussion of the possible merger of this Committee with the Energy Development & Power Generation Committee of the PES.

IAS I&CP Committee

C.J. Mozina

This report will be given at the main PSRC committee meeting. The written report is published under main committee liaison reports. A report will be prepared after the IAS General Meeting -- Sept. 23-27, 2007 in New Orleans.

Nuclear 1E WG

P. Kumar

No activity report

NERC

J. Uchiyama

NERC has finished a whitepaper on generator protection maintenance intervals.

Coordination Reports

Old Business

None

New Business

C37.106 Reaffirmation is coming up. Be thinking about possible revision items with this guide. It needs to start revision in 2008.

Standards Department

Matt Ceglia from IEEE Standards Association made presentations on official votes within standards working groups and the need to have quorum at the meetings. The storage (electronic access) of working standards documents was also discussed.

K: SUBSTATION PROTECTION SUBCOMMITTEE

Chair: F. P. Plumptre

Vice Chair: P.G. Mysore

The Subcommittee met Wednesday September 19, 2007, in Charlotte, NC with 16 members and 23 guests attending. The minutes of the previous meeting in Nashville, TN were approved.

ITEMS OF INTEREST FROM THE ADVISORY COMMITTEE MEETING:

Roger Hedding will be providing training for the working chairs and vice chairs at the January'08 meeting. Working group chairs are suggested to schedule half sessions if the meeting doesn't require full sessions.

Reports from the WG Chairs

K1: PROTECTION OF TRANSFORMERS AGAINST FAULTS AND ABNORMAL CONDITIONS

Chair: Mohindar Sachdev
Vice-Chair: Pratap Mysore
Established: 2003
Output: Revision of IEEE C37.91-2000
Expected Completion Date: 2007
Draft # 8.0

Meeting# 20

The Working Group K01, Protection of Transformers Against Faults and Abnormal Conditions, met in a single session on September 19, 2007 with 6 members and 7 guests present. The vice-Chair updated the attendees about the status of the ballot comment resolution. The draft 8.0 will be uploaded for recirculation. Roger Hedding presented the outline of the proposed summary paper.

K3: Reducing Outages Through Improved Protection And Auto restoration In Distribution Substations

Chair: Bruce Pickett
Vice Chair: Tarlochan Sidhu
Established, 2002
Output: Transaction Paper
Expected Completion Date: May 2008
Draft 10.1

The working group met on September 19, 2007 with 5 members and 9 guests in attendance. Draft 10 was reviewed and changes were made making it rev 10.1. New assignments were made. Tarlochan Plans to have the paper ready by January'08 meeting. Full paper would be submitted as a report to the subcommittee and the summary paper will be submitted as a transaction paper.

K5: APPLICATION OF COMMON PROTECTIVE FUNCTIONS IN MULTI-FUNCTION RELAYS

Chair: Simon Chano
Vice Chair: Dean Miller
Established, 2005
Output: Report to the PSRC
Expected completion date: December 2008
Draft 2.0

The Working Group met on Tuesday morning, September 18, with 14 members and 3 guests present. Draft 2 of the report was discussed. This draft was emailed to the working group members before the meeting. Paper outline sections 1, 2 and 3D need some more work where as sections 3A, 3B, 3C and 4 are nearing completed. Annex A will be deleted because this material will be included in the main body of the paper.

Writing assignments were made to review and revise the sections on reclosing and lockout functions.

The CIGRE paper "Hot And Cold Backup Protection As New Concepts In Protective Relaying" was distributed to the Working Group and it was decided to incorporate the contain of the paper into our Working Group paper.

An example for application of multiple breaker failure functions that is now in the main text of the paper will be modified and moved to the paper annex.

It was decided that breaker monitoring was outside of the scope and would not be included in the paper. A writing assignment was made for event and fault recording.

All of the writing assignments are due in two months.

K6: SUDDEN PRESSURE RELAYING

Chair: Randy Crellin
Vice Chair: William Gordon
Established: May 2005
Output: Report
Expected Completion date: May 2009
Draft 1.0

Meeting # 6

The working group met on Wednesday morning, September 19, 2007 for the sixth time in a single session with 4 members and 6 guests. One of the guests requested to join the working group, which currently has 16 members.

After introductions and approval of the May 2007 meeting minutes, there was a presentation by Josh Herz from the Qualitrol Corporation, a manufacturer of sudden pressure devices. After the presentation, there was a question and answer period which allowed the working group members to ask specific questions of the manufacturer.

At the end of the meeting, there were some brief discussions regarding the sudden pressure relaying survey and the working group members and guests were requested to submit their list of survey questions within the next few weeks (due 10/31/07).

K7: GUIDE FOR THE PROTECTION OF SHUNT REACTORS.

Chair: Kevin Stephan
Vice Chair: Pratap Mysore
Established, 1999
Output: Revision of ANSI/IEEE C37.109
Expected Completion date: 2006
Status: Completed

Working Group K7 met on Tuesday, September 18, 2007 with three members and four guests. During the last Subcommittee meeting in Nashville, it was decided that a summary paper would be written for C37.109-2006 to promote the new revision. A revised summary paper was created by updating the Guide's original IEEE Transactions summary paper. Draft 0 was distributed and reviewed at this meeting. Since the new summary is very similar to the old, it was discussed and decided that it is less appropriate as a Transactions paper and more appropriate as a report to the subcommittee, to be published on the PSRC website. Draft 0 will be e-mailed to working group members not in attendance for comments. A request to submit a subcommittee report will be made at this subcommittee meeting.

K8: GUIDE FOR THE PROTECTION OF SHUNT CAPACITORS

Chair: Pratap Mysore
Vice Chair: Arvind Chaudhary
Established, 2006
Output: Revision of IEEE C37.99
Expected Completion date: 2011
Status: Assignments to review clauses in the existing guide

The working group met in one session on Tuesday, September 18, 2007 with five members and two guests in attendance.

Pratap Mysore gave a presentation on "voltage differential protection of fuseless split Y banks". There were discussions on other method for mitigating the solar heating effect on protection. One suggested solution was to average out the differential voltage over time.

TRV effects on the circuit breaker due to the presence of current limiting reactors were discussed again. John Harder agreed to provide a write up to be included in the guide.

Matt Ceglia of IEEE has been contacted to get the word copy of the guide with figures embedded in the document. This will be sent out as soon as the chair receives the document.

Bruce Pickett presented an event where a capacitor unit flashed over to the frame that resulted in CT shorting.

Bruce Pickett joined the working group as a member.

K9: ARC FLASH

Chair: Karl Zimmerman

Vice Chair: Roger Hedding

Established: 2005

Output: Technical report

Expected Completion Date: 2008

Working group K9 met on Tuesday afternoon with 15 members and 6 guests. Daryl Hammond joined the Working Group.

After introductions, Draft 3 of the document was reviewed.

- Section 1.,2.,3.,4.,and 5 were reviewed. Some minor changes were suggested by the group.
- Section 6 was received and partially reviewed. Working group to review and forward comments.
- Section 7 Jim Niemira to write some conclusions and recommendations to place in this section.

Assignments are due November 1st.

K10: (Ex KTF1): SCC21 DISTRIBUTED RESOURCES STANDARD COORDINATION

Chair: Gerald Johnson

Vice Chair: TBA

Established, 1999

Expected Completion Date: 200x

Output: Standard through the SCC 21

K10--SCC21 Distributed Resources Standard Coordination working group met Sep 18, 2007 with 5-members and 5-guests. We discussed activities from the Aug 07 joint 1547 meeting held in Las Vegas. P1547.2, P1547.4, and P1547.6 working groups met during the week. P1547.2 "Draft Application Guide for IEEE Standard 1547, Interconnecting Distributed Resources with Electric Power Systems", P1547.4 "Draft Guide for Design, Operation and Integration of Distributed Resource Island Systems with Electric Power Systems", and P1547.6 Recommended Practice for Interconnecting Distributed Resources With Electric Power Systems Distribution Secondary Networks".

Comments prior to and during the meeting led to P1547.2 Draft 8, which is now posted, on the SCC21 Web site. We received a lot of good comments from K10 PSRC members on Draft 7, which were rolled into Draft 8. It is still our plan to have a document draft ready for ballot by the end of the year, probably draft 9.

P1547.3 "Draft Guide For Monitoring, Information Exchange, and Control of Distributed Resources Interconnected with Electric Power Systems" was approved by the standards board in late May and they have until late Nov to publish.

P1547.4 moved to Draft 3 after the Aug meeting and is available on the SCC21 web site.

P1547.6 moved to draft 1.1 but there is still much controversy about adding DG to spot networks. Charlie Sufana pointed out that network protectors are not designed for fault interrupt duty, which is a requirement if DG is added. Network guide is presently in the reaffirmation process and I plan to pass a copy of the document to the chair of .6.

At the SCC21 committee meeting held on Wed Aug 8, our chairman Dick DeBlasio reminded everyone that IEEE1547-2003 comes up for reaffirmation next year so get your comments ready. I will send out a reminder when process begins.

If you have special interest in the progress of a particular working group or would like to provide input, let the chair know and he will supply the appropriate password to get to the latest draft.

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

Chair: Frank Plumptre

Vice Chair: Dan Hamai

Established, 1999

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

Expected Completion Date: The guide was approved and published

The guide was approved and published. The working group will meet in half a session in January 2008 to discuss details of producing a paper.

K14: (PC 37.234): GUIDE FOR PROTECTIVE RELAY APPLICATION TO POWER SYSTEM BUSES

Chair: Bogdan Kasztenny

Vice Chair: Steve Conrad

Established, 2005

Output: Guide for the application of protection on power system buses

Expected Completion Date: 20xx

Draft 2

Minutes of K14 Working Group meeting held September 19, 2007, in Charlotte, NC.

The K14 Working Group met on September 19, 2007, in Charlotte, NC, with 11 members and 23 guests in a single session. Chairman Bogdan Kasztenny presided. The minutes of the May (Nashville, TN) 2007 meeting were approved as printed.

Bogdan Kasztenny opened the meeting with introductions followed by the explanation of the IEEE Patent notification. He then reviewed the status of the guide and passed out copies of Draft 5.0

Draft #5 of the Guide now contains the desired major topic material to cover bus protection, although some of the material may need to be relocated elsewhere in the document. Clause 6.1.1-3 and 6.1.6 were added as new material. The content needs to include a discussion on CT classifications including IEC classes. Arvind Chaudhary will finish this material. New material in Clause 6.2 discusses breaker disconnecter positions. Advanced numerical relaying methods 7.1.5 contains two new paragraphs. The use of trade name devices will be removed (i.e. Metrosil) throughout the document, new material is contained in high impedance relaying clause 7.1.1.5. Some discussion took place with regard to the need to properly size the non-linear device (MOV etc.) for thermal capacity in schemes where the MOV remains unshorted. Simon Chano will add an application example in which the MOV is not shortened out upon tripping and thus requiring proper thermal rating. Linear Couplers are discussed in clauses 6.1.4 and 7.1.4 briefly to recognize legacy applications. Clause 7.1.2 discusses the application of time-overcurrent relays differentially connected to provide bus protection. The setting recommendation subsection will be modified to provide general discussion and guidelines. John Burger will continue working on this clause. The CT requirement will be reviewed by Bartosz Wojszczyk. A summary can be considered (a table, for example). The application of auxiliary CTs is also revised.

The chair requested that the bibliography be checked to ensure completeness and removal of duplications and items not being used. Annex additions will be submitted to discuss 1) voltage input schemes (Bogdan Kasztenny), 2) logic for switchable buses (Bogdan Kasztenny) and 3) numerical example for setting a low impedance differential relay (Mike Thompson and Bogdan Kasztenny).

A presentation of Annex D to discuss the CT location issues associated with live tank breakers is planned for the January meeting in San Antonio, Texas (Sam Sambasivan).

The chair expressed the desire to review table of contents and the overall flow of the document involving several WG members (Thompson, Conrad, Kasztenny, Young, Mysore and Wojszczyk). The initial teleconference is to take place during the second week in October and continue until completed.

Also, WG members will be prompted to review portions of the document on a weekly basis providing feedback via e-mail and teleconference.

Bogdan Kasztenny will arrange for a free teleconference number.

Matt Ceglia commented on the overall document and recommended the removal of a figure which contains a watermark (6.1.7-1) and the addition of the IEEE patent statement in the front. Overall he feels the document is in very good shape and that the editors should not have substantial issues.

Liaison Reports:

There was nothing to report on these reports

Old Business:

None

New Business:

The chair informed the that the following guides are open for balloting
C37.95 – “Guide for Protective relaying of Utility Consumer Interconnections”
C37.108- “Guide for the protection of Network Transformers”

VII PRESENTATIONS:

Our main committee meeting is greatly enhanced by presentation by our members of the outputs of the different working groups. We always appreciate their efforts. This time we had four interesting presentations.

- Revision of C37.102 - AC Generator Protection Murty Yalla
- Guide to Relay Application to Transmission Line Series Capacitor Banks Frank Plumptre
- Guide for Protection of Transformers Against Faults and Abnormal Conditions Pratap Mysore
- TEPCO's Experiences of the Niigata-Chuetsu Earthquake on July 16th'. Shinichi Imai

Future Meetings:

January 7 – 10, 2008	San Antonio, TX
May 12-14, 2008	Kansas City, MO
September 7-11, 2008	Burnaby, B. C., Canada
January, 2009	Joint PES Meeting, Location TBD

VIII. The meeting was adjourned by Chairman Charlie Henville.