



**POWER SYSTEM RELAYING COMMITTEE**

**OF THE**

**IEEE POWER ENGINEERING SOCIETY**

**MINUTES OF THE MEETING**

**May 15-18, 2006**

**Albany, NY**

**Final**

**Approved**

**Power System Relaying Committee  
Main Committee Meeting Agenda  
May 18, 2006  
Albany, NY  
8:00 AM– 12:00 NOON**

- |      |  |                  |
|------|--|------------------|
| I.   | Call to order / Introductions  | Phil Winston     |
| II.  | Approval of Minutes/Financial Report   | Miriam Sanders   |
| III. | Reports of Interest  | Phil Winston     |
|      | A Technical Paper Coordinator's Report/Future Meetings                                   | Charlie Henville |
|      | B PES Report- points of interest   | John McDonald    |
|      | C CIGRE Report   | T. W. Cease      |
|      | D UCA Report   | Alex Apotolov    |
|      | E EPRI Report  | No Report        |
|      | F IEC Report   | Eric Udren       |
|      | G Standard Coordinator's Report  | Jeff Gilbert     |
|      | H Substation Committee Report  | John Tengdin     |
|      | I Other Reports of Interest  |                  |
| IV.  | Awards/ Recognition  | Frank Plumptre   |
| V.   | Subcommittee Reports   | Phil Winston     |
|      | K - Substation Protection  | Charlie Sufana   |
|      | H - Relaying Communications  | Alex Apostolov   |
|      | C - Systems Protection   | Tony Seegers     |
|      | D - Line Protection  | Roger Hedding    |
|      | J - Rotating Machinery   | Wayne Hartman    |
|      | I - Relaying Practices   | Jim Ingleson     |
| VI.  | Presentations  | Miriam Sanders   |
|      | A Afghanistan  | Joe Uchiyama     |
|      | B Appl. of UCA (MMS/ Ethernet) in Stations<br>LANs for Protection and Control (H6 Paper) | Alex Apostolov   |
| VII. | Adjourn  | Phil Winston     |

**Call to order / introductions****Winston**

Chairman Phil Winston called the meeting to order at 8:05 am.

**Approval of Minutes – September meeting and misc.****Sanders**

The minutes of the New Orleans January 2006 were approved. A brief financial summary was given. Our treasury is about \$15,000. Although it was reported at the meeting that this meeting would result in a significant deficit, it turned out to be a profit of approximately \$320.00.

**Chairman's Report****Winston**

Chair's Report May 2006

Mr. John McDonald has initiated many things which hopefully will lead to positive changes in PES and the meeting content. He wants your feedback; therefore if you have any ideas, please pass them on the Stan Horowitz, Arun Phadke, Rick Taylor, or Phil Winston. We are particularly interested in ideas from 'less tenured' attendees.

The PSRC is still on track to participate in the January 2008 Winter Technical Committees Meeting. More details will become available at the PES General Meeting.

Mr. Bob Pettigrew has accepted the invitation to become the new PSRC Secretary starting in January 2007.

**Technical Paper Coordinator's Report****Henville****Technical paper activity**

The rescheduled T&D Conference and Exposition is taking place next week (21-24 May) in Dallas, Texas. Two previously reported PSRC sponsored panel sessions will be held there and several PSRC sponsored papers will be presented in a poster session

The schedule for the PES General meeting in Montreal in June is presently posted on the PES website. There will be 30 papers sponsored by the PSRC (out of 45 proposed). They will be presented as follows

- 14 in a poster session
- 15 in three paper presentation sessions
- 1 in a joint panel session with the Power Engineering Education and Power System Dynamic Performance committees.

Paper session chairs will be Gustavo Brunello, Alex Apostolov and Simon Chano.

The joint panel session is worth noting as an activity that broadens the attendance and education of attendees. In the future, I will be encouraging more of these paper and panel sessions jointly sponsored between the PSRC and other technical committees.

The next meeting with PES is the Power Systems Conference and Exposition in 29 October to 1 November, in Atlanta, Georgia. Technical papers for that conference are presently being reviewed. 15 papers proposed to be sponsored by the PSRC (not counting invited panel session papers) have been submitted for that conference. There will also be two panel sessions at that conference.

- Upgrading and Retrofitting Utility Protective Relaying Systems - Chaired by Mark Carpenter
- Applications of Low Energy Analog Current and Voltage Transducers – Chaired by Eric Udren. This may be jointly sponsored by the Power System Instrumentation and Measurements Committee.

Thanks to those two individuals for taking the lead on these panel sessions.

**Future meetings**

The September 2007 meeting will be held from 17-20 September 2007, at the Hilton Charlotte University Place Hotel in Charlotte, North Carolina. Thanks to Barry Jackson and Jim O'Brien for their help in inspecting the selected hotel.

**CIGRE Report****Cease****PES Report****John McDonald**

The IEEE PES Executive Committee will meet on Wednesday, October 19, 2006 in conjunction with the IEEE PES ESMO Conference and Exposition in Albuquerque, New Mexico. This article covers the major activities that were discussed recently at the IEEE PES General Meeting in Montreal.

### **Transmission and Distribution Conference and Exposition in Dallas**

The number of registrants was 10,764, which was higher than the number of registrants in 2003 (10,312). The number of valid non-manufacturer attendees was 6,294, a 27% increase over 2003. There were 592 exhibiting companies, including 255 first time exhibitors and 128 international exhibitors from 22 countries. Many people worked very hard to ensure the success of this event, both in New Orleans prior to hurricane Katrina and in Dallas. PES would like to especially thank Tommy Mayne and Judd Putnam, two primary reasons for the success.

### **Future PES Meetings**

The shift of the 2005/2006 IEEE PES Transmission and Distribution Conference and Exposition from October 2005 to May 2006 caused a permanent future shift in dates for three PES Meetings: future Transmission and Distribution Conference and Expositions will be in the Spring beginning in 2008; future General Meetings will move from June to July beginning in 2008; and future Power System Conference and Expositions will be in the Spring beginning in 2009. In addition, PES Meetings Activities is getting back to their long range planning meeting scheme to finalize meeting dates and locations three to five years in advance. Future meetings and their corresponding dates are:

#### General Meeting

==>2007 TAMPA, FL, USA, June 24-28, 2007

==>2008 PITTSBURGH, PA, USA July 20-24, 2008

==>2009 CALGARY, ALBERTA, CANADA, July 26-30 2009 (tentative)

### **Transmission and Distribution Conference and Exposition**

==>2008 CHICAGO, IL, USA, April 20-23

#### Power System Conference and Exposition (PSCE)

==>2006, ATLANTA, GA, USA, October 29-November 1, 2006

==>2009 SEATTLE, WA, USA, March 15-18, 2009

### **2006 Wind Power Symposium**

This event took place in Washington, D.C. on April 20-21. PES was one of eight sponsoring organizations, which included three other IEEE Societies. The original budget was based on 150 registered attendees and there were 166 present. There were a number of distinguished speakers, including Andy Karsner, Assistant Secretary for Energy Efficiency and Renewable Energy in the Department of Energy, and Nora Brownell, FERC Commissioner.

### **Technical Committee Advisory Board (TCAB)**

The purpose of the Technical Committee Advisory Board (TCAB) is to represent Technical Committee views, needs and plans. The TCAB reports directly to me, and we plan to meet prior to every Governing Board Meeting. The members of the TCAB are invited to participate in the Governing Board Meetings through discussion, but will not have a vote. The TCAB began operating in February, with Arun Phadke as Chair. Arun gave a TCAB report during the Governing Board Meeting in Montreal.

### **Joint PES/AEI Course Offering**

The American Education Institute (AEI) teaches a number of courses worldwide. Jack Casazza of AEI first talked with PES in the summer of 2005 about areas of joint collaboration. PES is working with Jack and Frank Delea of AEI to give joint PES/AEI short courses, targeted to non-engineering audiences. PES and AEI, with assistance from Bullseye International, conducted a survey of over 40,000 non-engineering contact persons to learn the educational needs of this group. The survey results are being used to formulate an effective program of course offerings, together with the VP, Education/Industry Relations Activities.

## **IEEE Power & Energy Library (IPEL)**

The IEEE Power & Energy Library (IPEL) was launched at the IEEE PES Transmission and Distribution Conference and Exposition in Dallas. IPEL is a non-member product consisting of the publications of three IEEE Societies – Power Engineering Society, Industry Applications Society, and Power Electronics Society. The product is aimed at electric utilities, manufacturers of power equipment, and consultants in the power and energy area. It is not intended for use in academic institutions where the IEEE Electronic Library (IEL) is commonly purchased.

## **Expansion of IEEE Xplore Legacy base**

The IEEE Xplore legacy expansion has been extended to cover the period from 1975 to the present. The journals for 1963 through 1974 are on hand with IEEE, so further expansion is proceeding to cover the period from 1963 through 1974 by the end of this year. IEEE Publications has requested PES to locate the following journals: Power Apparatus and Systems 1952-1963, and Transactions of the American Institute of Electrical Engineers, Part 3: Power Apparatus and Systems 1952-1962.

## **IEEE Transactions on Power Systems Special Section on “Power System Performance Issues Associated with Wind Energy”**

The recent success of the Wind Power Symposium in April indicates that wind energy is fast becoming a mainstream technology and its integration into power systems is a very important issue that is generating significant research and development activity. This special section will focus on the impact of higher penetrations of wind energy on power system performance and associated modeling issues.

## **IEEE Expert Now On-line Courses**

PES has one course to date under the Expert Now program: Cyber Security of Substation Control and Diagnostic Systems. The VP, Education/Industry Relations Activities and the PES President-Elect are now working on a second Expert Now course in conjunction with the Industry Applications Society, so that PES can split the cost as well as attract a much broader audience. Four course topics were carefully considered, and the topic of Power Quality was chosen.

## **Power System Basics Course**

This course was successfully offered at the IEEE PES Transmission and Distribution Conference and Exposition in Dallas, with over 60 people attending the course. Fred Denny is the new Chair of the Power Engineering Education Committee's subcommittee responsible for this course. Fred is preparing a document on effective course promotion, always a challenging task since the target audience is non-power engineering professionals. This course was also offered in Montreal on Thursday, June 22.

## **Advisory Group on Education/Industry Relations**

The VP, Education/Industry Relations Activities has formed this Advisory Group to discuss technical information and educational needs of the electric power industry and how PES can assist in meeting these needs. The first meeting of the Advisory Group was in Montreal during the General Meeting.

## **Significant Reviewers**

PES has over 2,500 people who review technical papers for the three Transactions and the Power Engineering Letters. PES chose the top 2%, or 44 reviewers, as significant reviewers who were recognized at the Awards Luncheon during the Montreal General Meeting. Each of these reviewers review, on average, 70 papers each year, with some reviewing a maximum of 145 papers in one year! The average turnaround time for a review is around 25 days. Each significant reviewer also received a congratulatory letter from the VP, Technical Information Services and the President.

## **e-Newsletter**

Did you know that the PES e-Newsletter is posted on the 15<sup>th</sup> of every month? Input is always welcome about chapters/membership activities and Technical Committee activities. For example, the June 15<sup>th</sup> posting included a long article with many photographs about the April Substations Committee Meeting in Scottsdale.

## **Industry Leader Focus Group Meeting**

On Monday during the Montreal General Meeting PES Board members met with local industry leaders for lunch and for these three objectives: discuss opportunities for improved service to the industry and to Society

members by IEEE PES; obtain feedback from industry leaders on effectiveness of IEEE PES; and familiarize industry leaders with IEEE PES. After a short overview of IEEE PES, there was an open discussion guided by eight questions related to the three objectives above.

### **What Can You Do?**

There are many opportunities for you to participate in the PES. We have activities for all interests and desires. Please contact me with any questions or comments. After my last President column in IEEE Power & Energy magazine earlier this year, I received a number of emails from PES members worldwide responding to my plea "We want to hear from you!" We are in the process of getting each one plugged into PES in areas of their interest. So, please send me an email to get involved in IEEE PES! I can be reached at [j.d.mcdonald@ieee.org](mailto:j.d.mcdonald@ieee.org).

#### **EPRI Report**

**Hughes**

No written report at this meeting

#### **IEC Report**

**Udren**

#### **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 May 16, 2006, in the King Street 4 room of the Desmond Hotel, Albany, NY.

Yvette Ho Sang, Manager, Standards Publishing Programs, and Michelle Turner, Associate Project Editor, answered questions concerning standards development and publication.

The status of selected PARs, Standards and Guides, were reviewed at the meeting. 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 January 2006 meeting of the PSRC, are identified as well.

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

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

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

<b>Information on</b>	<b>Web site address</b>
Update your information with SA	
	<a href="http://standards.ieee.org/resources/development/">http://standards.ieee.org/resources/development/</a>
myBallot Voter presentation	<a href="http://standards.ieee.org/db/balloting/myballotdemo.ppt">http://standards.ieee.org/db/balloting/myballotdemo.ppt</a>
myBallot Chair presentation	<a href="http://standards.ieee.org/db/balloting/myballotchairdemo.ppt">http://standards.ieee.org/db/balloting/myballotchairdemo.ppt</a>
PAR application, extension and other forms	<a href="http://www.standards.ieee.org/guides/par/">http://www.standards.ieee.org/guides/par/</a>
Submitting a PAR	<a href="http://standards.ieee.org/guides/par/ePARform.html">http://standards.ieee.org/guides/par/ePARform.html</a>
PAR Extension	<a href="http://standards.ieee.org/guides/par/extension.rtf">http://standards.ieee.org/guides/par/extension.rtf</a>
Style manual	<a href="http://www.standards.ieee.org/guides/style/2000Style.pdf">http://www.standards.ieee.org/guides/style/2000Style.pdf</a>
Template	<a href="http://www.standards.ieee.org/resources/spasystem/index.html">http://www.standards.ieee.org/resources/spasystem/index.html</a>
Up-load drafts for balloting	<a href="http://standards.ieee.org/eprocess/upload_balloting_file/">http://standards.ieee.org/eprocess/upload_balloting_file/</a>
Request for invitation to ballot	<a href="http://standards.ieee.org/resources/development/">http://standards.ieee.org/resources/development/</a>
	<b>Follow: Balloting the Draft → Ballot Invitation → Requesting a Ballot Invitation</b>
Join a balloting pool	

Submit request for initiating balloting	<a href="http://standards.ieee.org/resources/development/">http://standards.ieee.org/resources/development/</a>
Follow: Balloting the Draft → Sponsor Ballot → Requesting Initiation of a Ballot	
Submit request for recirculation ballot	<a href="http://standards.ieee.org/resources/development/">http://standards.ieee.org/resources/development/</a>
Follow: Balloting the Draft → Sponsor Ballot → Requesting Initiation of a Ballot → Recirculation ballot	
Status of standards etc	<a href="Http://www.standards.ieee.org/db/status/status.txt">Http://www.standards.ieee.org/db/status/status.txt</a>
NesCom activities	<a href="http://www.standards.ieee.org/board/nes/">http://www.standards.ieee.org/board/nes/</a>
RevCom activities	<a href="http://www.standards.ieee.org/board/rev/">http://www.standards.ieee.org/board/rev/</a>
SA Operations Manual	<a href="http://standards.ieee.org/sa/sa-om-toc.htm">http://standards.ieee.org/sa/sa-om-toc.htm</a>
SA Bylaws	<a href="http://standards.ieee.org/guides/bylaws/index.htm">http://standards.ieee.org/guides/bylaws/index.htm</a>
SB Operations Manual	<a href="http://standards.ieee.org/guides/opman/index.html">http://standards.ieee.org/guides/opman/index.html</a>
SB Bylaws	<a href="http://standards.ieee.org/guides/bylaws/index.html">http://standards.ieee.org/guides/bylaws/index.html</a>

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### Some important Information

The IEEE-SA Standards Board Bylaws and the IEEE-SA Standards Board Operations Manual. The text of the changes made to these documents in 2005 can be found at <http://standards.ieee.org/board/pro/2005changes.pdf>

The IEEE Standards Association (IEEE-SA) Standards Board has launched a new online Project Authorization Request (PAR) Form. The upgraded online PAR Form ([http://development.standards.ieee.org/cgi-bin/NesCOM/myP\\_par?start](http://development.standards.ieee.org/cgi-bin/NesCOM/myP_par?start)) leads you step-by-step through the PAR process.

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### 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 PAR's were approved in the March 2006 IEEE-SA Standards Board meeting may be of interest to PSRC attendees.

PC37.2 - Standard Electrical Power System Device Function Numbers and Contact Designations. The PAR can be found at <http://standards.ieee.org/board/nes/projects/C37-2.pdf>. The PSRC has formed working group I14 to provide input.

P1775 - Powerline Communication Equipment - Electromagnetic Compatibility (EMC) Requirements - Testing and Measurement Methods. The PAR can be found at <http://standards.ieee.org/board/nes/projects/P1775.pdf>

P1613-2003/Cor 1 - Standard Environmental and Testing Requirements for Communications Networking Devices in Electric Power Substations - Corrigendum 1. The PAR can be found at <http://standards.ieee.org/board/nes/projects/1613-2003-Cor-1.pdf>.

P1692 - Guide for the Protection of Communication Installations from Lightning Effects. The PAR can be found at <http://standards.ieee.org/board/nes/projects/1692.pdf>

P1689 - Trial Use Standard for Cyber Security of Serial SCADA Links and IED Remote Access . The PAR can be found at <http://standards.ieee.org/board/nes/projects/1689.pdf>.

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.

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### Standards Activities Since The September 2005 Meeting

The status of the standards activities, which have taken place since the September, 2005, meeting of the PSRC, are as follows.

#### 1. Standards Published

C37.90 Standard for Relays and Relay Systems Associated with Electric Power Apparatus

- C37.118      Standard for Synchrophasors for Power Systems
- C37.119      Guide for Breaker Failure Protection
- C57.13.3     Guide for Grounding of Instrument Transformer Secondary Circuits and Cases (after resolving negative ballots)
- 2.      **Standards waiting to be Published**
  - None
- 3.      **Standards reaffirmed**
  - None
- 4.      **Standards withdrawn**
  - None
- 5.      **Standards approved**
  - None
- 6.      **Standards submitted for approval**
  - None
- 7.      **Standards to be submitted for approval**
  - None
- 8.      **Submitted for Balloting/ Recirculation**
  - C37.99      IEEE Guide for the Protection of Shunt Capacitor Banks
  - PC37.110    Guide for the Applications of Current Transformers Used for Protective Relaying Purposes
  - PC37.117    Guide for the Application of Protective Relays Used for Abnormal Frequency Load Shedding and Restoration
  - PC37.230    Guide for Protective Relay Applications to Distribution Lines
- 9.      **Standards Balloted**
  - PC37.230    Guide for Protective Relay Applications to Distribution Lines
- 10.     **Standards Re-circulated**
  - C37.99      IEEE Guide for the Protection of Shunt Capacitor Banks
  - PC37.110    Guide for the Applications of Current Transformers Used for Protective Relaying Purposes
- 11.     **Standards to be Re-circulated**
  - PC37.102    Guide for AC Generator Protection
  - PC37.105    Standard for Qualifying Class 1E Protective Relays and Auxiliaries for Nuclear Power Generating Stations
  - PC37.109    Guide for the Protection of Shunt Reactors
- 12.     **Standards due for 5 year review/to be submitted for Re-affirmation**
  - C37.90.3    IEEE Standard Electrostatic Discharge Tests for Protective Relays
  - C37.96      IEEE Guide for AC Motor Protection
  - C37.98      IEEE Standard Seismic Testing of Relays
  - C37.99      IEEE Guide for the Protection of Shunt Capacitor Banks
  - C37.101     IEEE Guide for Generator Ground Protection
  - C37.102     IEEE Guide for AC Generator Protection
  - C37.109     Guide for the Protection of Shunt Reactors
  - C37.110     IEEE Guide for the Application of Current Transformers Used for Protective Relaying Purposes
  - C37.112     IEEE Standard Inverse-Time Characteristic Equations for Overcurrent Relays
  - C57.13.1    Guide for Field Testing of Relaying Current Transformers

The PARs approved since January, 2006, submitted, and the PARs for which extension has been applied are as follows. PARs, which will expire in 2006, are also listed. Applications for extending the lives of these par's must be submitted before the 16 October 2006 submittal deadline (for the December 2006 standards board meeting).

**13. New PARs applied for**

None

**14. New PARs approved**

None

**15. PAR Extensions applied for**

None

**16. PAR Extensions approved**

None

**17. Modified PAR approve**

None

**18. Modified PAR Submitted**

None

**19. PARs Wthdrawn**

PC37.94a Standard for N Times 64 Kilobit Per Second Optical Fiber Interfaces Between Teleprotection and Multiplexer Equipment - Amendment 1: Addition of Alternate Interface Using Single-mode Fiber

**20. PARs expiring at the end of 2006**

- PC37. 98 Standard Seismic Testing of Relays
- PC37.101 Guide for Generator Ground Protection
- PC37.102 Guide for AC Generator Protection
- PC57.109 Guide for the Protection of Shunt Reactors
- PC37.110 Guide for the Applications of Current Transformers Used for Protective Relaying Purposes
- PC37.116 Guide For Protective Relay Application To Transmission-Line Series Capacitor Banks
- PC37.117 Guide for the Application of Protective Relays Used for Abnormal Frequency Load Shedding and Restoration
- PC37.230 Guide for Protective Relay Applications to Distribution Lines
- PC37.231 Recommended Practice for Microprocessor-based Protection Equipment Firmware Control
- PC57.13.1 Guide for Field Testing of Relaying Current Transformers

**SUBMITTAL DEADLINES & STANDARDS BOARD MEETING SCHEDULE**

**PAR/Standard Submittal Deadline**

**Standards Board Meeting**

April 28, 2006

June 6, 2006

August 4, 2006

September 14, 2006

October 16, 2006

December 1, 2006

Substation Committee Report

Dood

Since the January meeting with PSRC, Substations Committee Subcommittee C has met at their annual meeting in Scottsdale, AZ and at an ad hoc Work Session at the Western Area Power Delivery Conference (WAPDC) in Spokane, WA. WPDAC was schedule at the same time as the Substations Committee Annual Meeting and as a result the attendance by the “usual members” of the C Subcommittee meetings was light. However, attendance of newcomers was substantial and therefore we an opportunity to acquaint the newcomers with our mission and activities.

The Subcommittee C0 Data Acquisition, Processing and Control Systems Subcommittee met. The meeting agenda included:

- A presentation on attaining membership in the WGs and TF.
- Some ideas on organization changes that might improve the vision of the subcommittee
- A presentation by H. Lee Smith on the PEPCo auto-sectionalizing scheme that uses line fault current detector, relay information and “rules based” artificial intelligence to reconfigure faulted feeders.

Working Group C1, Application of Computer Aided Systems to Substations met. In the absence of the chair, Mr. Sciacca, Mr. Evans made a presentation on the new P-1686 project, Standard for Cyber Security of Substation IEDs”. Mr. Sciacca provided the presentation material. It was the presentation used in New Orleans in January at the PSRC Meeting.

Working Group C2, Application of Computer Aided Systems to Substations  
In the absence of the chair, Mason Clark, Mr. Evans conducted the meeting.

He then opened a discussion on the “educational” role of C2 as a group sponsoring tutorials, panel session and presentations. He suggested that the “group” could do some “brain storming” and generate some fresh ideas for topics. Mr. Evans outlined the process for producing a panel sessions as well.

Working Group C3 – Electric Network Standards, did not meet.

Task Force, C3TF1, met to review the recent draft of P-1615, Recommended Practice For Substation Networks. Many useful comments were made by a few of the newcomers, primarily those from Salt River Project.

The Ad Hoc meeting in Spokane reviewed work on C37.1, the “SCADA” standard. In addition, Mr. Tengdin held a meeting to discuss the recently approved PAR 1689, Trial Use Standard for Cyber Security Of Serial Links, based on the AGA-12 report. Mr. Tengdin is assembling a list of interested parties and has a draft of the proposed standard available.

## **B: ADVISORY COMMITTEE**

**Chair: P.B. Winston**

**Vice Chair: C. Henville**

### **B1: Awards and Technical Paper Recognition**

**Chair: F. Plumptre**

**Vice Chair: T. Sldhu**

The committee met on Tuesday, May 16 with vice chairs of each subcommittee in attendance

Frank Plumptre           ‘K’ Substation Subcommittee

[f.plumptre@ieee.org](mailto:f.plumptre@ieee.org)

Veslin Skendzic           ‘H’ Relaying Communications Subcommittee (unable to attend)

Rich Hunt               ‘C’ System Protection Subcommittee

[rich.hunt@ieee.org](mailto:rich.hunt@ieee.org)

Mike McDonald           ‘D’ Line Protection subcommittee

[mikemcdonald@amerem.com](mailto:mikemcdonald@amerem.com)

Kevin Stephan           ‘J’ Rotating Machinery Subcommittee

[kevin\\_stephen@wr.com](mailto:kevin_stephen@wr.com)

Tarlochan Sidhu

'I' Relaying Practises Subcommittee

[sidhu@eng.uwo.ca](mailto:sidhu@eng.uwo.ca)

Mal Swanson

'B" Membership

[mjswanson@mindspring.com](mailto:mjswanson@mindspring.com)

1./ Through the efforts of Mal Swanson, various awards were produced recognizing individuals within the PSRC

Welcome Back (Those who have been absent but have come back to the fold)

Thanks For (Specific Listed contribution)

Gold 40+ years of service

Silver 25+ years of service

Bronze 15+ years of service

In total some 70 awards were produced, these will be distributed over the next several main committee meetings

2./ Reminder for vice chair resp. to advise Awards and Recognition when a WG's work has been done (identify when the committee dissolves/document successfully produced)

3./ The Chair, Frank Plumtre, handed out a job description for the Awards and Recognition committee and asked for comments by next meeting

4./ A new chair for awards and recognition will be appointed at the January/07 PSRC meeting

5./ Post Meeting Note – Awards and Recognition will propose a recruiting campaign to elevate IEEE members to Senior Status. Comments invited from the awards and recognition committee on the best strategy for this by next meeting. Note: Anthony Sleva, a local IEEE Chapter chair in the NJ area has experience in this area and is willing to help us out at the next meeting.

Once we decide on a strategy, we will bring this forward to the officers for their approval/consideration.

**B2: Fellows Awards**

**Chair: J.S. Thorp**

The Fellows Committee meeting was chaired by Arun Phadke in Jim Thorp's absence. Damir Novosel gave a summary of the procedures followed at the PES Fellows committee, and emphasized the need to grade our candidates over a wider numeric range. This procedure was implemented by Jim Thorp this year, and it is agreed that future Fellows nominations from PSRC should be handled in the same fashion.

There was discussion about the fact that the PES Fellows Committee does not get to see the reference forms. It was agreed that this would be taken up at the PES Governing Board level to bring up at IEEE. (Bill Kennedy, our representative on IEEE Board, agreed in Montreal to pursue this matter further at IEEE level.)

The Fellows working group of PSRC has agreed to work on nominations for candidates for Fellow grade for the coming year.

**B3: Membership Committee**

**Chair: M.J. Swanson**

Attendance during the PSRC meeting in Columbus was 150-160, which is considered average for a May meeting.

11 new attendees were in our Newcomers Orientation meeting on Tuesday, which is considered a bit below normal. I took an active role in the conduct of the meeting.

One management support letter was written during the past 4 months.

Jim Ingleson arranged for Bryan Gwyn, Manager Protection Engineering at National Grid to attend our meeting. One New York ISO engineer also attended.

As a retention program, we are working with Frank Plumtre's Award Committee to generate special skills, Welcome Back and Service recognition awards. 65 Certificates have been generated, some of these have been awarded in the May meeting, and the rest will be awarded over the next several meetings.

I sent emails to the Sub-Committee Chairmen highlighting new attendees that have excellent attendance records. These people show commitment to PSRC, and they should be asked to accept challenging and stimulating work.

I am working with Charlie Henville on additional text for the "About PSRC" page on our website.

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

No activity to report

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

B5 Working Group members are preparing the 2006 Bibliography paper and assignments were made at the May meeting. 2005 bibliography paper is accepted for publication in the IEEE Trans. on Power Delivery.

**B8: Long Range Planning**  
**Chair: Rick Taylor**

The Long Range Planning TF continued its discussions in support of activities to make changes to the organization and programs of the PES General Meetings. The PSRC is well represented in the new TCAB, Technical Committee Advisory Board that John McDonald has created to improve the communications between the technical committees and the PES Board of Governors and administration. Arun Phadke heads up the TCAB, which also includes Stan Horowitz, T.W. Cease, Phil Winston, and Rick Taylor.

**B9: PSRC Web Site**  
**Chair: Bill Lowe**

Report and status of the PSRC web site for May 2006.

Accomplishments:

- All pages relating to the May 2005 meeting have been updated.
- Added information links to the Agenda page for the Albany area.
- The pes-psrc mailing list subscriber data and web email addresses have been updated per information that has been provide to me.
- Several work groups have requested assistance in developing web pages.
- Several sub committee pages were corrected because of minor problems.
- Sub-committee and WG web pages problems corrected as problems are found.
- Repair broken links due to web pages being hosted by different providers.

Future projects and items to explore:

- Continue to develop the "About PSRC" page. I will gladly welcome any ideas or text for the content for this page.
- New concepts for the main page will be explored. We have to find an easier way to get people to use our site. I think there should be a lot more information available on the main page. A test page will be developed.
- Update all necessary web pages relating to the September 2006 meeting.
- Update pes-psrc mailing list subscriber data and web email addresses.

## **C: SYSTEM PROTECTION SUBCOMMITTEE**

**Chair: T. Seegers**

**Vice Chair: R. Hunt**

The System Protection Subcommittee met on May 17<sup>th</sup>, 2006 in Albany, NY. 49 people attended the meeting, including 14 members.

8 WGs met at this meeting. There was lively discussion in the Subcommittee meeting concerning a few of the working groups.

WG C4 is changing the name to “Global Industry Experience with System Integrity Protection Schemes”, to reflect the expected input from their survey, and was approved by the C Subcommittee. WG C6 Relay Engineering in Power Engineering Curricula discussion centered around whether to include the impact of IEC61850 and the associated programming requirements, such as XML, into the document. WG C12 Performance of Relaying During Stressed Conditions debate centered around how to include wide area protection as part of the scope. The Subcommittee accepted the title change of the Working Group to “Performance of Relaying During Wide-Area Stressed System Conditions”.

The Chair reminded all attendees that WGs with a PAR must show the IEEE patent slides at the start of each meeting, and must document this action in the meeting minutes. This impacts only WG C9 Guide for Underfrequency Load Shed and WG C11 Guide for Power System Protection Testing. The C Subcommittee is urging all Working Groups to restate the Working Group assignment at the start of each meeting, and to place the assignment on the Working Group meeting agenda. The Vice Chair will send out a standard meeting minutes format to all WGs prior to the September meeting.

### **WG Reports:**

#### **C1: Cyber Security Issues for Relaying**

**Chair: Solveig Ward**

**Vice Chair: Jim O'Brien**

**Output: Paper**

**Established: 2004**

**Expected Completion Date: 2006**

The C1 working group met on May 16, 2006 with 8 members and 14 guests in attendance.

Sam Sciacca, Working Group Chair of Substation C1, gave an update on the progress of standard P-1686 for Substation IED Cyber Security. The current draft had been sent to members of this PSRC working group and is also available on the Substations Committee website. Comments are due in by the end of July and Substation C1 plans to meet again in September at the next PSRC meeting to finalize the document.

Draft 1.10 of the paper was discussed and a few writing assignment were added.

- Stan Klein is to expand on Section 8 and Mark Simon is to review Stan's work.
- Sam Sciacca is to write a section on what should be done after detection of an intrusion.
- Stan Klein is to summarize approved NERC requirements that pertain to relay cyber security (NERC CIP002 through 009) for section 15 or the appendix.

New assignments are due to the chair by the first of August.

The new draft of the document will be sent to working group members for review so it can be finalized at the September meeting.

Next meeting: single session, room for 30 people, computer projector

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

**Chair: Steve Kunsman**

**Vice Chair: Gary Kobet**

**Output: Report**

**Established: 2003**

**Expected Completion Date: 2006**

Working Group C3 did not meet at the May meeting in Albany.

Next meeting request single-session, computer projector and room for 20 participants.

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

**Chair: Vahid Madani**

**Vice Chair: Miroslav Begovic**

**Output: Survey**

**Established: 2004**

**Expected Completion Date: 2007**

WG C4 met on May 16<sup>th</sup> with 19 attendees (11 members and 8 guests)

A brief background of the C-4 efforts was provided and scope reviewed for the attendees.

The meeting Agenda included review of a complete list of comments received from the members (IEEE, CIGRE, and EPRI) as well the "C" subcommittee. Also, the draft version of the HTML format of the survey was displayed and discussed. The HTML has selection options, hyper links, and radio buttons to make it simpler for respondents to fill out the survey. Some clarifications and additional features were discussed and the necessary recommendations will be incorporated in the HTML.

The consensus of the members and guests is in support of the HTML format and structure as presented and reviewed. The final version of the HTML survey will be distributed to the WG members for trial testing before distribution.

Some members volunteered to review the questions related to operational history, for accuracy and clarity of the questions. The recommendation for the review of this section was made by the "C" subcommittee members and Officers during the comment period. Communication of the survey and tracking was briefly discussed and members updated provided to the attendees. We have requested to be on the CIGRE Agenda in late August / early September 2006. Since this topic has been discussed in previous WG sessions and comprehensive communication, tracking, and reminder programs are in place. At this time the survey is planned to launch in July / August and remain open for 3 months.

Request for change in the title:

From: Industry Experiences With System Integrity Protection Schemes (SIPS)

To: Global Industry Experiences With System Integrity Protection Schemes (SIPS)

This request was approved by the C Subcommittee on May 17<sup>th</sup>, 2006, at the C Subcommittee meeting.

Next Meeting – 1 Sessions, 30 People, Projector, Power strip

#### **C5: Deployment and use of Disturbance Recorders**

**Chair: Bill Strang**

**Vice Chair: Jeff Pond**

**Output: Report**

**Established: 2001**

**Expected Completion Date: 2006**

A Meeting of Working Group C5 was held May 16, 2006 in Albany with 7 members and 9 guests in attendance.

The latest Draft 12-4 was circulated for comments. The group discussed whether to finish the report or abandon the effort. After much discussion it was decided that the paper contains some good information and should be finished.

The organization and content of the paper were discussed. Tony Seeger and Rich Hunt recommended that the definitions be moved to the beginning of the document. Also, discussed in detail was section 10 of the report which needs to be rewritten.

The purpose of the report was clarified and this revision of the document will be sent to group members for editorial comments, with the exception of section 10, which is being rewritten. All editorial comments and the rewritten section 10 are to be sent to Bill Strang by May 26<sup>th</sup> for inclusion in the report. The revised draft will then be sent to working group members in June for review. The goal is to have the report ready for submission to the System Protection subcommittee at the September meeting.

Next meeting: single session, room for 20 participants, computer projector.

**C6: Relay Engineering in Power Engineering Curricula**

**Chair: Mani Venkata**

**Vice Chair: Jaime DeLaRee**

**Output: Transactions Paper**

**Established: 2003**

**Expected Completion Date: 2006**

The subject meeting took place on Wednesday, May 17, 2006, from 9:30 to 10:35 AM in Fort Orange 9. Thirteen members were present.

The paper on protection education was finalized. Venkata will take care of the final editing and minor corrections needed. We will seek the WG approval and the C- Subcommittee approval during the next meeting in Atlanta. Once approved by the Committee, the paper will be forwarded to T. W. Cease, EIC for IEEE Transactions on Power Delivery for publishing it at the earliest possible opportunity.

Next meeting: single session: room for 20 participants, computer projector.

**C9: Under Frequency Load Shedding and Restoration**

**Chair: Alex Apostolov**

**Vice Chair: Ken Behrendt**

**Output: IEEE Guide**

**Established: 1999**

**Expected Completion Date: 2006**

The working group met on Wednesday, May 17th, with 6 members and 5 guests present.

Chairman Alex Apostolov reported that a balloting body has been formed, and the draft document had been submitted for balloting. However, there was a problem with the wording on the document stating it was an "approved" document. IEEE rejected this, requiring that this wording be changed to "unapproved". Unfortunately Alex never received this information by email. He was recently made aware of this, and has now submitted the revised document for balloting.

We expect balloting to be completed before the next meeting, so Ken Behrendt will organize the comments and distribute them to the working group members for discussion at the next meeting.

Damir Novosel indicated that there has recently been some discussion about the affect of voltage changes on the effectiveness of underfrequency load shedding, based on some recent analysis of the August 14, 2003 blackout. The guide will be reviewed to make sure that it includes sufficient information and references about this topic.

The working group expects to meet in single session at the next PSRC meeting, and needs a room for 30 with a projector screen and outlet strip.

**C11: Guide for Protection System Testing**

**Chair: Vahid Madani**

**Vice Chair: Hyder DoCarmo**

**Output: Paper**

**Established: 2005**

**Expected Completion Date: 2008**

The Working Group met on May 16<sup>th</sup> in a single session with 28 people in attendance, including 17 members.

The WG members reviewed a list of pending contributions. The following writing assignments were discussed:

- Updated Introduction to enhance the discussions on LAN or fieldbus communications
- Benefits & Justification for Different Types of Tests
- Updated contributions on line protection, based on the comments received from previous meetings
- Analysis and retention of test results

At the September 2006 meeting, remaining contributions will be reviewed. The WG members anticipate starting the work on editing the formation of the editorial task team is expected.

Working copies of the Agenda, Guide, and briefings are posted on the PSRC web site.

Next Meeting – 30 People, 1 Session, Projector, Power strip

**C12: Performance of Relaying During Wide-Area Stressed System Conditions**

**Chair: Damir Novosel**

**Vice Chair: George Bartok**

**Output: Paper**

**Established: 2004**

**Expected Completion Date: 2007**

The Working Group met in double session with 12 members and 25 guests present. Four guests volunteered to contribute writing assignments and will thus become Working Group members.

The entire meeting was devoted to reviewing Draft 4 of the WG report including numerous newly submitted sections. Some restructuring of the report was made. There was agreement that further review of the report is needed to assure a focus on relay performance during wide-area events. It was proposed and accepted that the Working Group scope be clarified to include assessment of relay performance during only wide-area stressed system conditions. The WG chair will request to the Subcommittee that the title of the working group be changed to "Performance of Relaying During Wide-Area Stressed System Conditions".

Writing assignments were made for Section 5 covering the solutions to relaying performance problems identified in the report.

Single session, 40 attendees, computer projector.

**C13: Undervoltage Load Shed**

**Chair: Art Buanno**

**Vice Chair: Imai Sinichi**

**Output: Report**

**Established: 2005**

**Expected Completion Date: 2008**

The UVLS Working Group met for the third time with 32 in attendance in two sessions. This included 9 members and 23 guests.

The working group assignment and scope were reviewed with no changes.

A presentation was made by Damir Novosel on "Voltage Instability and Under-Voltage Load Shedding." A pdf file of the presentation slides will be sent to the working group.

Concerning confidentiality of existing UVLS practices; it was decided that the company's name should be cut out of the examples. However, we will include information on relative size of the utility.

It was decided that other definitions like safety net will be added Section 4.

A suggestion was made that Section 5 (UVLS Methods) and 7 (Existing Practices) could be combined. It was decided to keep them separate for now.

The expected content for each section was discussed. The purpose of the techniques used, pros & cons of technology used and points of measurements issues will be described in scheme design (Section 7). Higher level planning and decisions on the approach will be covered in the philosophy of the method selected (Section 3).

Information from the C9 working group will be collected to address issues on UVLS and UFLS coordination.

Some records of voltage collapse will be included in section 11 (Major Disturbances).

The contents of the outline were then discussed. Additional writing assignments were made.

The proposed schedule the working group assignment is presently as the following:

January 2007 – Completion of writing assignments

June 2007 – Complete editing

July-August 2007 – ballot paper

September 2007 – complete assignment

We request a projector and a room for 40 people at the next meeting. At this time, we request a time allotment for only a single session.

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

No activities to report

**NERC by Phil Winston**

The System Protection and Control Task Force (SPCTF) of NERC will be posting 2 products within the next 30-60 days. Both products are in the final stages of approval. The first product is a white paper on Switch On To Fault. The second product is a document on methods to increase transmission line loadability. This document is being coordinated with the new "Zone 3" requirements.

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

No activities to report

**D: LINE PROTECTION SUBCOMMITTEE**

**Chair: R.A. Hedding**

**Vice Chair: M.J. McDonald**

The Meeting was called to order by Chairman Roger Hedding at 4:30 p.m. on Wednesday May 17, 2006 in the Desmond King Street 2 room in Albany, NY. There were 21 members and 30 guests present. Subsequent to the meeting Tony Sleva was welcomed as a new SC member.

After introductions, the Minutes of the January meeting in New Orleans were Approved.

**Advisory Committee items of interest:**

John McDonald, the new PES Chairman, has formed a Technical Committee Advisory Board to investigate ways to make the PES more relevant. Four members (Stan Horowitz, Arun Phadke, Rick Taylor and Phillip Winston) will represent the PSRC. It has been proposed that there will be joint Technical Committee January meetings beginning in 2008. Details have not been finalized.

The Chairman requested that all WG chairman review their memberships and submit to him recommendations of individuals for elevation to the Main Committee membership.

**Working Group reports:** (see attached document)

WG Chairmen were reminded to include the scope of their work in opening their report – significant issues: WG D5 is needing a PAR extension in order to complete the Distribution Line Protection Guide ballot resolution. The D8 Pilot Protection WG is looking for someone to take over either as Chairman or Vice Chairman (subsequent to the meeting three individuals have expressed a willingness to serve). WG D7 requests an early meeting on Tuesday so as to be able to resolve any issues before their presentation on Thursday. The report will be sent (arrived May 22) to all SC members with two weeks allowed for comments.

**Liaison reports:** TC57: Alex Apostolov had nothing to report.

**New Business:**

A question was raised in regard to testing of relays that are now being mounted out on the distribution poles. Chairman Hedding stated there was no activity in that regard at this time but the topic should be pursued. Moh Sachdev stated there had been paper on this that is no longer in print which may be pursued.

Chairman Hedding read a letter (included below) from the NERC System Protection and Control Task Force requesting that the PSRC investigate the possibility of creating a standard for relay performance at extreme frequencies and voltages and a requirement that manufacturers include specified performance data for their products. An extended, lively discussion followed in regard to what NERC SPCTF would like, what the PSRC

may be able to do, and whether such data is actually feasible to be used, if available. A Task Force will be formed at the September meeting to address the request (DTF22 with Roger as Temporary Chair).

High Impedance Fault activity:

None reported.

The meeting was adjourned at 5:45 pm.

**NORTH AMERICAN ELECTRIC RELIABILITY COUNCIL**

Princeton Forrestal Village, 116-390 Village Boulevard, Princeton, New Jersey 08540-5731

April 28, 2006

Philip W. Winston  
Chairman, IEEE Power System Relaying Committee  
Georgia Power Company  
62 Lake Mirror Road  
Forest Park, Georgia 30297

Mr. Winston:

**Request for IEEE Power System Relay Committee Assistance**

The investigation into the August 14, 2003 blackout in the northeastern portion of North America has determined that a number of distance relays in the impacted area operated unexpectedly, apparently because of either low frequency or dynamically decreasing frequency.

As a result, the NERC Planning Committee of the North American Electric Reliability Council (NERC) has asked the NERC System Protection and Control Task Force (SPCTF) to request that the IEEE Power System Relaying Committee address these problems within IEEE Standards.

Accordingly, as chairman of the SPCTF, I am requesting that the IEEE Power System Relay Committee (PSRC) address these issues in either a revision of an appropriate existing IEEE Standard (perhaps, IEEE C37.90) or within a new standard.

Specifically, we are requesting that the PSRC address two specific issues:

1. Manufacturers of protective relays include within the operating specifications:
  - a. In-service minimum and maximum frequency range for in-specification operation
  - b. Rate-of-change-of-frequency ratings (df/dt) for in-specification operation
  
2. The PSRC establish minimum parameters for any protective relays designed after approval of a subject standard for:
  - a. In-service minimum and maximum frequency range for in-specification operation
  - b. Rate-of-change-of-frequency ratings (df/dt) for in-specification operation

We therefore request that you direct an appropriate Subcommittee/Working Group of the IEEE PSRC to develop a Project Authorization Request to initiate activities as noted above, and that you keep myself and Bob Cummings of NERC apprised of the status of IEEE PSRC activities to address this request.

I may be contacted by email at [cwrogers@cmsenergy.com](mailto:cwrogers@cmsenergy.com), and by phone at (517) 788-0027. Bob may be contacted by email at [bob.cummings@nerc.net](mailto:bob.cummings@nerc.net), and by phone at (609) 452-8060.

Thank you for your consideration,

Charles Rogers  
Chairman,  
NERC System Protection and  
Controls Task Force

cc: System Protection and  
Control Task Force

**D1: Cold Load Pickup Issues and Protection**

**Chair: Dean Miller**

**Vice Chair: Tony Sleva**

**Expected Completion Date: January 2007**

**Output: Special Report to the PSRC**

Attendees: 11 members and 8 guests.

The working group met in a single session on Wednesday, May 17, 2006 in Albany, NY.

PSRC Working Group D1 is continuing to develop a special report that deals with Cold Load pickup issues and the impact of cold load on protective relay applications.

Working Group D1 completed the following activities:

1. Anthony Noel described Con Edison's approach to re-energizing distribution networks and the studies and analysis developed since 1977.
2. John Boyle presented results of tests of heaters, incandescent lights, fluorescent lights, freezer motors, refrigerator motors, and air conditioner motors that recorded inrush current, the duration of inrush current, and steady state current for each of the aforementioned loads.

Next meeting requirements: single session, seating for 20, computer projector.

Prepared by Tony Sleva

**D4: Application of Overreaching Distance Relays**

**Chair: Russ Patterson**

**Vice Chair: Walter McCannon**

**Output: Report to the PSRC**

Working Group D4 met with 8 members and 13 guests. Total in attendance was 21.

The presentation planned for this meeting was rescheduled for the September meeting in Atlanta.

The chairman indicated that he had not finished editing a first "final" draft but would have it completed soon.

The outline had been solidified at the previous meeting in New Orleans so no further work could be done at this meeting and it was adjourned.

The chairman reaffirmed to the group that plans are to quickly wrap up the document.

Next meeting requirements: single session, seating for 50, computer projector

**D5: Guide for Protective Relay Applications to Distribution Lines**

**Chair: Phil Waudby**

**Vice Chair: Randy Crellin**

**Output: IEEE Guide PC37.230**

Meeting summary for the Tuesday May 16, 2006 meeting held in Albany, NY submitted by Phil Waudby.

The working group met in a double session with 39 attendees (23 members and 16 guests).

We received over 300 comments from the initial balloting of Draft 4.0 of the document. These comments were reviewed by Phil Waudby, Ron Beazer, Ken Birt and Randy Crellin prior to the meeting and approximately 40 issues were identified as requiring further discussion. During this double session meeting, we addressed about half of these issues and made revisions to the document.

We are currently planning on discussing the remaining issues at the September meeting and completing the necessary document revisions for re-balloting during October.

We will need to request a PAR extension in order to complete this document.

Draft 4.0, the spreadsheet of ballot comments received, and Draft 5.0 of the document are included in the PSRD D5 webpage. In an effort to expedite the document review process, everyone is encouraged to read this information and submit comments to Phil Waudby.

Next meeting requirements: double session, seating for 40, computer projector.

**D7: Loss of AC Voltage Considerations**

**Chair: Elmo Price**

**Vice Chair: Russ Patterson**

**Output: Report to the PSRC**

Working Group D7 met with 8 members and 7 guests. Total in attendance was 15.

The chairman informed the WG that the final draft of the document would be presented to the D subcommittee for their review.

The following assignments were accepted in preparation for a presentation by the WG to the PSRC in its September meeting. Prepare Power Point slides and send to the chairman by July 1st.

- Section 1, 3, and 9 - Elmo Price (will also be the presenter)
- Section 2 - Russ Patterson
- Section 4 and 5 - Walter McCannon
- Section 6 and Appendix A - Greg Sessler
- Section 7 - Ken Behrendt
- Section 8 - Art Buanno

Next meeting requirements: Single session, seating for 25, computer projector.

**D8: Justifying Pilot Protection on Transmission Lines**

**Chair: Russ Patterson – effective Sept. 2006 meeting**

**Vice Chair: Bogdan Kasztenny – temporary Chair**

**Output: Report to the PSRC**

The Working Group met in Albany on May 17, 2006 with 7 Members and 14 Guests.

Gary Kobet, the WG Chairman will not be attending the PSRC meetings, at least for some time. A call has been made for a volunteer to either serve as a Chairman or a Vice-Chairman.

Draft 1.3 of the report has been reviewed. Missing and new writing assignments have been assigned or re-assigned. In particular:

- Jim O'Brian agreed to help Bill Kennedy to complete section 3.2 on benefits of high speed reclosing on system stability.
- Bogdan Kasztenny to update his original section 2 to briefly cover line current differential relays, and add some explanatory figures to improve understanding of the section.
- Mike McDonald agreed to help Bill Kennedy with section 3.8 on regulatory requirements associated with pilot-assisted schemes.
- Dominick Fontana will follow up on a suggestion that fast fault clearing times resulting from pilot applications make it easier in a quantitative manner to meet the IEEE 80 substation design standard. If this lead is justified, Dominick will finish section 3.11 of the report.
- Mike McDonald will take a lead on section 4 on criteria for selecting pilot schemes.
- Paul Elkin with help with section 3.1.
- Bogdan Kasztenny and Ray Young will write about the impact of channel availability on voting schemes for pilot-assisted protection schemes.
- Alla Deronja agreed to write about directional comparison pilot backup for line current differential applications.

Writing assignments are due July 17.

Three contagious items have been discussed and resolved:

1. The WG will restrain itself from elaborating on types of pilot-assisted schemes, e.g. directional comparison, line current differential, phase or charge comparison; and focus on the general need for pilot-assisted protection.
2. The WG will not embark on advising as to which scheme or what kind of channel to select.
3. The WG will focus on transmission lines as in the original title and mandate from the D-Subcommittee.

One guest expressed a desire to become a member.

Next meeting requirements: single session, seating for 25, no audio visual.

Respectfully submitted by Bogdan Kasztenny, May 17, 2006

**D9: Revision of C37.113 - Guide For Protective Relay Applications To Transmission Lines**

**Chair: Mohindar Sachdev**

**Vice-Chair: Simon Chano**

**Established: 2005**

**Output: Revision of IEEE C37.113-1999 (R2004)**

**Expected Completion Date: 2009**

The Working Group D09, Revision of C37.113 - Guide for Protective Relay Applications to Transmission Lines, King Street 4 Room at The Desmond Hotel, Albany, NY from 04:15 PM to 05:45 PM on Tuesday, May 16, 2006. Sixteen members and fifteen guests were present.

Mohindar reported that he had received seven contributions since the January 2006 meeting of the WG. Another five contributions are outstanding. The usefulness of including examples of setting relays for protecting transmission lines and it was agreed that examples on setting a long line, a medium line, a short line, a pair of parallel lines, and a multi-terminal line be included in the guide. Seven new writing assignments were distributed.

The Chair then reported that he had started compiling the revised guide using the latest style manual of the Standards Association. Draft 1 of the revised guide will be distributed by the end of June.

Alex Apostolov, Bob Beresh, Randy Cunico, Alla Deronja, Stan Horowitz, Don Lukach and Tom Weidman joined the Working Group.

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

Next meeting requirements: single session, seating for 50, computer projector.

**D11: Effect of Distribution Automation on Relaying.**

**Chair: Fred Friend**

**Vice Chair: Gerald Johnson**

**Assignment:** To prepare a special report to the PSRC that describes the effect of Distribution Automation on relaying.

The Task Force met at 8 am on Wednesday, May 17, 2006 with 9 members and 9 guest in attendance – one new member.

Presentations were made by Rich Hunt, Juan Gers, and Pat Carroll describing some applications of Distribution Automation.

Additional presentations will be made at the September meeting in Atlanta. More volunteers are requested to make a presentation of their Distribution Automation encounters.

Next Meeting: Single session, seating for 30, computer projector. (please avoid conflict with D1 and D5).

**H: RELAY COMMUNICATIONS SUBCOMMITTEE**

**Chair: A. P. Apostolov**

**Vice Chair: V. Skendzic**

**H1: Teleprotection Review / Application Guide for Digital Teleprotection**

**Chairman: Marc Benou**  
**Vice Chair: Mark Allen**  
**Output: Application Guide**  
**Established: 2006**

Working Group H1 met for the first time as a working group in a single session with 6 members and 7 guests.

Introductions were made and a the IEEE-SA standards board bylaws on patents in standards were covered. A quick review of the January meeting was made.

The working group's efforts were focused on answering questions required when submitting for the PAR. The following were the results:

1. The title of the document is, "IEEE Application Guide for Digital Teleprotection". If this is deemed unacceptable by IEEE SA, the title "Guide for Power System Protective Relay Applications f Digital Teleprotection" will be submitted.
2. The name of the working group was agreed to be, "Application Guide for Digital Teleprotection."
3. The Scope was modified to be, "To develop a guide for application of digital teleprotection systems and schemes. The guide also describes performance, testing, maintenance and troubleshooting."
4. The purpose of the proposed project is, "The purpose of this standard is to help educate the relay engineer in the application of digital teleprotection."
5. The reason for the proposed project is, "Digital teleprotection systems are becoming more prevalent in the industry, and there is no specific guide that covers digital teleprotection applications subjects. The benefit to be provided is to allow relay engineers to better design and implement teleprotection systems."

It was asked if anyone was aware of other documents or projects with a similar scope. Two documents were mentioned, PSRC H9's paper, "Digital Communications For Relay Protection" and the CIGRE document, "Protection Using Telecommunications. WG 34/35.11 December 2000." It has been determined by the group that the output of H1 is unique enough to continue.

Before the next meeting in September 2006, the PAR will be submitted to IEEE SA. If the PAR is approved an outline will be distributed for the group to work on for the September meeting.

A room for 30 people in a single session is requested for the next meeting. A computer projector is requested.

**H3: Project PC37.94a - Standard for N Times 64 Kilobit Per Second Optical Fiber Interfaces Between Teleprotection and Multiplexer Equipment - Amendment 1: Addition of Alternate Interface Using Single-mode Fiber**

**Chairman: Tom Dahlin**  
**Vice Chair: Ken Behrendt**  
**Output: Report to the H Subcommittee**  
**Start: 2005**  
**Expected Completion Date: 2006**

Working Group H3 met for the last time in a single session on Wednesday, May 17, 2006 with 5 members and 1 guest. After introductions, minutes from the last meeting in New Orleans, LA were read and approved. At that meeting the consensus of the working group was to withdraw the current PAR for the following reasons:

After several meetings the working group was unable to identify multiple manufacturers of fiber optic components that would meet the intent of the original specifications. Low cost form factor components are no longer readily available due to low demand. The working group did not want to build specifications around components that may have a short life span. Most fiber component manufacturers are moving to higher speed components which would affect the line rate of the current specification.

The working group recognized an opportunity to pursue dual logo status with IEEE and IEC for the existing standard. The group could not seek dual log status with an open PAR for amendment.

The proposal to withdraw the PAR was accepted by the H subcommittee in New Orleans and the request for withdrawal was submitted on February 21, 2006. On April 3, 2006, we were informed that the request to withdraw the PAR "was approved by the IEEE-SA Standards Board on 30 March 2006. Since this project was

withdrawn, it is no longer an authorized project. Therefore, any future work performed on this project will not be covered by IEEE's indemnity policy".

At today's meeting it was agreed that no further work needed to be addressed at this time. A motion to **disband working group H3** was approved by the members and our work is complete.

It should be noted that in attendance was Michelle Turner who is a Program Manager with the IEEE. She agreed to check with Jodi Haasz as to the status of the dual logo request. I would appreciate any information on the process from any IEEE members.

**H4: Revision of C37.111 (Comtrade standard)**

**Chairman: R. Das**

**Vice Chair: A. Makki**

**Output: Standard**

**Expected Completion Date: 2005**

The Working Group H4, met with eleven members and eight guests.

Minutes of the January 2006 meeting were approved.

Mark Adamiak presented a possibility of combining the four files into one using xml format. Group requested Mark to explore it further towards the development of a demo program.

Chair presented a demo program which can combine four files into one file (similar to an xml file) and restore four original files from the combined file. Working group members and guests will finalize the file extension name within a week. Demo program will then be modified and distributed to all members for testing.

Two assignments were distributed. Assignments are due by June 30, 2006.

Chair will distribute Draft 0 of the standard to the members by July 31, 2006. All comments for discussions in the September meeting must be submitted to the chair by August 31, 2006.

Group will meet at the September 2006 meeting. Need a room for 40 people with a computer projector.

**H5: Common Format for IEDs**

**Chairman: L. Smith**

**Vice Chair: C. Brunner**

**Output: Recommended Practice**

**Start: 2003**

**Expected Completion Date: 2006**

See reports for working groups H5-A, B, C below

**H5-A: Common Format for IED Configuration Data**

**Chairman: Holbach Jurgan**

**Vice Chair: D. P. Bui**

**Output: Recommended Practice**

**Start: 2003**

**Expected Completion Date: 2006**

**H5-B: Common Format for IED Event Data**

**Chairman: M. Adamiak**

**Vice Chair: P. Martin**

**Output: Recommended Practice**

**Start: 2003**

**Expected Completion Date: 2006**

WG H5-b met on Wednesday morning with 10 members and 8 guests.

The work session consisted mainly in reviewing comments received so far and trying to define different types of events.

It was also agreed that we consider moving forward with the current work and initiate the process of making a standard at the subcommittee level.

The comments from Scott Anderson once more raised the question of the scope of work. For example, should specific IED identification information like the serial number be part of the common format, as this kind of data seems more related to maintenance activities than to analysis purposes. In that sense, data sources must be uniquely identified, which the currently proposed format can achieve. Bob Cummings from NERC explained that from a power system event analysis point of view, serial number or software upgrade information is not useful. Nevertheless, this additional optional data may be added to the common format but there was no agreement on what and how to define this new data.

The second part of the work session involved defining types of events. These classes of events are intended for filtering purposes. Many proposals were made, such as :

System events ;

Primary Equipment Events ;

Setting Change Events ;

Internal IED events ;

IED Alarms ;

Before adjourning the meeting, the Chairman asked the vendor representatives to test the XML schema with their implementations. An upgraded version of the schema will be sent out to them.

#### **H5-c: Common Data Format for IED Sampled Data**

**Chairman: Benton Vandiver**

**Vice Chair: B. McFetridge**

**Output: Recommended Practice**

**Start: 2003**

**Expected Completion Date: 2006**

The working group met on Wednesday, with 6 members and 7 guests present following non-concurrent sessions with H5-a and H5-b. The meeting minutes from the January meeting in New Orleans were approved by the group.

After a review of new contributions from Christoph Brunner sections 2.3 and 4.4 were added to draft #4 of the report. All updates will now be posted to the website, H subcommittee section for download. Further comments on the draft #4 are due by July 15<sup>th</sup> for inclusion in the last draft that will be distributed and reviewed prior to the September meeting. Goal is to complete the report by the January meeting.

Items outstanding include a contribution from Stan Thompson on a comparison of the binary format used in COMTRADE versus the other two standards. And the contribution from Alex and Christoph concerning the power quality data comparison.

The H5-c working group expects to meet again in concurrent sessions with H5-a and H5-b in a combined meeting requiring a room for 20 with PC projector and screen as part of the ongoing triple session. Report Status: Draft #4.

#### **H6: Application of UCA (MMS/Ethernet) in Station LANSs for Protection and Control**

**Chairman: J. Burger**

**Vice Chair: C. Sufana**

**Output: Special Report**

**Start: 1999**

**Expected Completion Date: 2006**

Minutes from the New Orleans January meeting were approved. Vice Chair Charlie Sufana presided in the absence of John Burger who was home recovering from a car accident. There were 7 members and 12 guests present.

There was discussion on the paper. Alex Apostolov indicated that there were a few inconsistencies, i.e. IEC Goose Bits versus Bit Pairs but felt these could be easily fixed.

There was also discussion on keeping the group going since the paper is essentially done. It was felt to keep the group going and be able implementation guidelines.

Alex Apostolov suggested that any follow up working group to H6 consider only IEC61850 for the next project.

Alex Apostolov presented a PowerPoint on UCA and IEC61850 from the summary paper. The discussion will be repeated at the MAIN meeting on Thursday. He presented a short history and explained how much of the IEC standard is the result of the MMS Manufacturing Message Specification work, the UCA2 effort, and from various IEEE Technical Reports. In 1997, IEC Technical Committee 57 Working Groups 10, 11, and 12 were charged with putting the standard together. The last version of GOMSFE 0.93 was moved to be under IEC61850.

Alex Apostolov explained a little about the communication services. The paper describes the services, the requirements, HMI/SCADA Applications, and control functions (GOOSE). GOOSE is a change of state and the subscribing devices must understand the message and act accordingly. The paper also presents the Profile Requirements.

Alex Apostolov then went into more detail about GOOSE, how it works, and how it migrated from UCA to IEC. It introduces a different method of communication; is not connection oriented, and uses multicasting. He also discussed the publisher alive capability (time for the message to live). He also brought up WAG (wide area GOOSE) that is being developed for substation to control center and substation to substation. IEC GOOSE can have analog values also sent in addition to the bit pairs. Virtual LAN (VLAN) is also supported. There is now an IEC GSSE which is backwards compatible with UCA GOOSE; as well as an IEC GOOSE.

Security concerns are also covered within the document. Technology is being developed for isolating the service and for traffic checking.

The working group will meet at the September meeting and will need a room for 20 people in a single session. It is unclear at this time if a computer projector will be needed. At the September meeting, the working group will determine where it will go next.

#### **H7: Comparison of IEEE / IEC Teleprotection Standards**

**Chairman: M. Simon**

**Vice Chair: E. Fortin**

**Output: Report to H Subcommittee**

**Start: 2005**

**Expected Completion Date: 2008**

Group met with 13 members and guests. This was the 2<sup>nd</sup> meeting as a working group. The group reviewed its growing list of standards that will be used as a basis of review. Assignments to collect additional standards were made and the group will continue its compilation and review next session. If anyone has lists of relevant standards please send them to Mark Simon. Don't be concerned if there are duplications with our existing collection.

Next Meeting 20 people / No A/V equipment

#### **H8 – File Naming Convention PC37.232**

**Chairman: A.Makki**

**Vice Chair: E. Gunther**

**Output: Recommended Practice**

**Start: 2003**

**Expected Completion Date: 2006**

The group met with 9 members and 1 guest present. The group immediately began to discuss the comments that were collected from the subcommittee poll.

A total of 21 comments were discussed and all of the comments were resolved before the meeting ended. Included in the comments were a few editorial corrections and the rest were acknowledgments of the good work that was done by the group. The exceptions were 2 comments about the use of 2 digits for the year instead of 4 digits. The group decided to keep the 2 digits in order to save space and in accordance with the minutes from the previous meetings.

The group agreed to immediately submit the new corrected draft version 5.1 for mandatory editorial review by IEEE and also to simultaneously initiate the formation of the balloting process. Accordingly the working group chair respectfully requested from the subcommittee chair to seek permission from the main committee to form the balloting group.

At the conclusion of business the meeting was adjourned. The group will meet again during the upcoming fall meeting. A room for up to 20 people with a flip chart was requested.

**H9: Understanding communications Technology Applied to Relaying**

**Chairman: M. Sachdev**

**Vice Chair: M. Benou**

**Output: Report to the H Subcommittee**

**Established: 2006**

**Expected completion: 2008**

The second meeting of the Working Group was held with eight members and four guests were present.

After introductions, the Working Group welcomed Marc Benou, the new Vice Chair. The group then worked on the outline of the report and succeeded in finalizing it. At the conclusion of this business, the Chair thanked the participants and adjourned the meeting.

The outline will be circulated among the members and volunteers will be sought for contributing to the report

**H11: Synchrophasor Standard, PC37.118**

**Chairman: K. Martin**

**Vice Chair: D. Hamai**

**Output: Standard**

**Established: 2001**

**Expected Completion Date: 2006**

Working Group H11 met at 11:00 am on Tuesday, May 16 in a single session. Nine members and twenty guests were present. The minutes from the January 10 meeting were read and approved. The IEEE Bylaws on Patents in Standards were read.

D. Hamai announced that the Standard was officially published on March 22.

D. Hamai announced that a response was drafted and sent to Herb Falk on his implementation concerns. The WG agreed that the response followed the discussion of the January meeting.

The paper to announce the Synchrophasor Standard was discussed. The WG agreed that all contributions should be drafted and then restructuring of the sections could be done. Each subsection was opened for discussion so the authors could receive input from the WG on topics to cover. M. Adamiak stated that there is a new NIST compliance site available; this could be included in the section on "Requirements for Compliance." There was some discussion on the material for the section on "Dynamic Measurements under C37.118." This section will emphasize that the standard does not address dynamic performance but does discuss PMU response time and compliance verification.

Writing assignments will be submitted to the WG chair by July 1 so that a complete draft can be distributed before the September meeting.

A WG member asked about providing a short update about the interest/applications of synchrophasors in the industry at each WG meeting. This would give members and guests information about how the standard is being used in the utility industry.

The working group will meet in September in a single session, need room for 25 people, and need a computer projector.

**H14: Telecommunication Terms for Relaying**

**Chairman: R. Ray**

**Vice Chair: R. Young**

**Output: Report**

**Established: 2003**

H14 met on Tuesday, with 4 members and 4 guests present.

Group reviewed a list of SONET terms that were submitted to the group by Mal Swanson. We agreed to put most of the terms into our glossary. The chair has moved all the new terms into the glossary and will be emailing it out to the to review between now and the next meeting. At the next meeting we

will do a final review and after that meeting the glossary should be available to be put on the PSRC Web site if it is desired to do so.

Room for 10 people plus a computer projector.

**HTF1: Timetagging in Protection and Disturbance Recording IEDs**

**Chairman: Bill Dickerson**

**Vice Chair:**

**Output: Report**

**Established: 2006**

Group met in a single session on Tuesday, May 16. This was the first meeting of the taskforce. Chair Bill Dickerson introduced the problem: different IEDs follow different conventions to generate time tags for events and measured values, which reduces their usefulness in later analysis.

There was a lively discussion, and Ken Behrendt of SEL brought up the issue of how this work relates to WG I11. The chair explained that I11 is dealing with reconstructing events, while this group is looking at methods to generate the time tags.

The group agreed on an objective proposed by Veselin Skendzic: "Investigate the feasibility of establishing common semantics and methodologies for time tagging events and time varying data in relaying and protection monitoring devices."

The group agreed to meet again in September to continue the discussion. There were 21 attendees. The group will need a single session for 25 with a flip chart.

**HTF2: Broadband Communications Over Power Line Carrier**

**Co-Chairs: Veselin Skendzic, Mark Simon**

**Established: 2003**

Taskforce met in a single session with 9 members / guests.

Meeting started with a presentation by Mal Swanson who presented BPLC related contents of an EPRI document titled: "*IntelliGrid Consumer Portal Telecommunications Assessment and Specification*".

Veselin Skendzic presented a NARUC report titled: "*NARUC Report of the broadband over powerlines taskforce*".

Meeting was concluded by Marc Simon who discussed latest provisions of the *US Energy Bill*.

Group will meet in a single session with a room for 20 and a computer projector.

**I: RELAYING PRACTICES SUBCOMMITTEE**

**Chair: J. W. Ingleson**

**Vice-Chair: T. S. Sidhu**

**Webmasters: T. S. Sidhu and M. Tamije Selvy**

**1. Introduction:** The Relaying Practices Subcommittee (SC) met on May 17, 2006 in Albany New York, LA. Jim Ingleson mentioned several items from the coordination and advisory meetings, including plans for a PES winter technical meeting, and the significance of Subcommittee membership.

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

**3. New Members:** Rich Young and Jerry Jodice were both voted into the I subcommittee as new members.

**4. Reports from the Working Group Meetings:** Updated information and a current report from each working group has been placed on each working group's web page, and will be updated whenever necessary. Formatting problems sometimes occur in copying WG reports to their website and thence to the SC minutes. We suggest that, if you perceive that there are formatting problems, you will consult the WG web page directly.

**I1: Understanding Microprocessor-Based Technology Applied to Relaying**

**Chair: M.S. Sachdev**

**Vice-Chair: Ratan Das**

**Output: PSRC Report**

### **Expected Completion Date: 2006**

The fifth meeting of the Working Group was held at 11:00 AM on May 16, 2006 in Suite 112, The Desmond Hotel, Albany, NY. Seven members and thirteen guests were present.

The minutes of the January 2006 meeting held in New Orleans, LA were approved as distributed by Email, posted on the WG web site and distributed at the meeting.

The Chairman reported that a contribution describing successive approximation A/D converters had been received. Draft on communication was expected in a day or so.

The issue of having a detailed section on Communication was discussed and it was agreed that this not be done because a separate report on "Understanding Communication Technology for Protection" is being prepared.

Fedrico Lopez joined the Working Group.

At the conclusion of these considerations, the meeting was adjourned.

### **I2: Terminology Usage Review**

**Chair: M. J. Swanson**

**Vice-Chair: Barb Anderson**

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

The I2 Working group met at 9:30 am on Tuesday, May 16, 2006 with six members. Mal Swanson chaired the meeting. Minutes from the last meeting were approved.

The Working Group then reviewed assignments.

Fred Friend reviewed PC37.230/D4.0. Seven terms will be added to SND#6.

Oscar Bolado reviewed C37.116. Two terms will be added to SND#6.

Walt Elmore reviewed C37.91. Five new terms will be added to SND#6.

Mark Schroeder reviewed a paper by the J5 working group. No new terms need to be added.

Mark Schroeder will review the document from working group J3.

Barb Anderson completed a review of three groups of definitions approved by the PSRC that were previously submitted by I2 to C37.100, Standard Definitions for Power Switchgear. Most of the definitions from the first group are included in this dictionary and are in the latest revision of IEEE 100, the main dictionary. Some of the terms from the second and a few in the third group are included in these two documents.

Mal Swanson has contacted Randy Dotson, who is the new Chairman of C37.100. This group will be starting to revise this dictionary in several months.

It was decided that Mal Swanson would ask for approval to submit a PAR that would create a standard which would include the terms from the three groups of definitions that were not included in IEEE 100. These terms will also be added to the website to make them available to PSRC members.

At the September, 2006 meeting, I2 will ask for Officer approval of the fourth group of approved definitions. Upon Officer approval, these terms can be sent to Switchgear C37.100.

The working group will start the balloting process of the fifth group of terms that have been generated by the group.

The meeting was adjourned at 10:45 am.

### **I3: Microprocessor-based Protection Equipment Firmware Control**

**Chair: R. Beresh**

**Vice-Chair: R. Whittaker**

**Output: Recommended Practice**

Workgroup I3, creators of the draft: Recommended Practice for Microprocessor-Based Protection Equipment Firmware Control, met Tuesday afternoon May 16, 2006 in Albany New York with four members and four guests. Chairman Bob Beresh called the meeting to order by mentioning the need to take a final look at the draft 13, (which includes changes made to accommodate comments received from the first balloting) before re-

circulating the document for affirmation. Of the over 200 comments received, many were editorial. Several balloters requested that stronger language be used to imply that certain clauses be mandatory instead of optional. Use of the words “must” or “shall” in place of “may” or “should”. Several comments impact the intent and some of these were included and others were dismissed after discussion by the members. References to papers, guides, or other standards were adjusted so that only those directly referred to in the text would be listed under “References”, and any others would be listed in the bibliography.

Notable changes include:

Under clause 4.7 a brief comment is included that requires the manufacturer to provide information about how to verify that the new firmware has been correctly installed.

Include a brief statement that a workaround may be provided so solve a software bug if this can suffice temporarily until revised firmware is provided. The firmware controller may decide to use a workaround as a permanent solution.

A sentence under clause 4.15 stating that the responsibility to maintain product destination and contact person/controller data by the manufacturer may be transferred to the OEM supplier or other vendor or tier of the supply chain.

Under clause 5.1, a comment to require that manufacturers not to filter out information was dismissed after discussion. Members felt that it would overburden the user to get an exhaustive amount of information providing every detail of operation of each internal function, many of which are transparent to the user and do not impact external functionality.

Under clause 5.1.1 members dismissed a comment that effectively would not allow subscription to be used as a primary means of notification. Some may prefer the subscription method.

The meeting was adjourned. Bob Beresh will prepare the document for re-circulation.

#### **I4: IEC Standards Advisory**

**Chair: E. A. Udren**

**Vice-Chair: M. M. Ranieri**

**Output: IEC Standards Advisory**

I4 did not meet during the May 2006 meeting.

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

**Chair: E. A. Udren**

**Vice-Chair: P. G. McLaren**

**Output: New Trial Use IEEE Standard P1331**

WG has been disbanded

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

**Chair: M.M. Ranieri**

**Vice-Chair: J. Teague**

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

WG has been disbanded

#### **I7: Guide for the Application of Rogowski Coils used for Protective Relaying Purposes**

**Chair: L. Kojovic**

**Vice-Chair: V. Skendzic**

**Output: New IEEE Guide**

Group met on Tuesday with 6 members and 5 Guests. Draft 2 was discussed along with the plans for completing and balloting the guide. Assignments were given following the discussion.

#### **I8: Application of Optical Current & Voltage Sensor Systems**

**Chair: H. Gilleland**

**Vice-Chair: B. Pickett**

**Output: New IEEE Guide**

The meeting was called to order by the Chair, Harley Gilleland. There were 7 members and 9 guests present.

Introductions were given. An agenda and work assignments (draft-3) were passed out and discussed. Discussions were led by Harley, Vahid, Don Porter, TW, Jeff.

The teams and team leaders were discussed and a few new team leaders were made to replace those that had left the WG. [New included Jeff (Performance), Rich Hunt (Applications), Brian Mugalin (Reliability & Failure)]

Distribution vs Transmission was discussed and tabled to later for further evaluation.

Harley gathered a list of user companies to poll about their experiences with optical sensors. He also entertained ideas on how to get contributions ramped up.

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

**Chair: S. Usman**

**Vice-Chair: R. Ball**

**Output: Revision of C37.105**

The working group met on May 16, 2006 with three members present and two guest as follows:

Members: Marie Nemier, Mario Ranieri & Jeff Burnworth

Guest: Murty Yalla & Bob Beresh

The comments received from the ballot were reviewed and discussed. Resulting changes from the comments were made to the latest draft of the document, draft 10-2. Approximately 2/3 of the comments were resolved by the working group members present. Assignments were made to complete the ballot comment resolution. Changes to the document were coordinated with C37.98 where appropriate.

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

**Chair: M. Nemier**

**Vice-Chair: M. Bajpai**

**Output: Revision of IEEE Standard C37.98**

The working group met on May 17, 2006 with three members present as follows:

Members: Marie Nemier, Mario Ranieri & Jeff Burnworth

Draft 4.0 of the document was discussed. A few minor changes shall be made. The changes to the document shall be coordinated with C37.105 where appropriate. The draft will be issued to the working group for an internal ballot.

### **I11 - Timing Considerations for Event Reconstruction**

**Chair: Jim Ingleson (j.w.ingleson@ieee.org)**

**Vice-Chair: Open Position**

**Established: January 2006**

**Completion: May 2007**

Assignment : Prepare a report to the PSRC on timing considerations for event reconstruction, including interpretation of data from Synchronized protection and recording IEDs.

Output : Report to PSRC, may also include recommendation for a future assignment, such as preparation of an IEEE Guide.

Our first meeting as I11 took place at the May 2006 PSRC Meeting in Albany, NY

The first meeting of this group under the number I11 was held at the May 2006 PSRC meeting in Albany, NY.

1. Continuing high attendance at meetings indicates high interest in this area.
2. New assignments made at this meeting were recorded by Jim Hackett:
3. Each person who listed themselves as a Member of this WG will be assigned to review at least one section of the work, before the next meeting.
4. All sections of the report are complete in draft and are all posted at the address below, and linked from this page.
5. Bill Dickerson will edit his contribution on IRIG-B network and make 3 (or more) sections out of it.

6. Ken Behrendt will send his section to the Chair as a .doc file.
7. GPS clocks are now almost perfect compared to the others variables discussed in our report Earlier clocks carried uncertainty ratings of 1 millisecond, but probably perform much better than this. New clock typically have uncertainties of 1 microsecond.
8. The connection of GPS clocks to various devices is done by a variety of methods, and we have found no single reference that covers all the methods. An NPCC report states that the interconnection network is assumed to contribute an uncertainty of 1 ms and a variable delay of up to 1 ms. There has been a general feeling at meetings of ITF2 that most installations are probably better than this, but there is no documentation.
9. Internal delays in recording devices are not widely understood, and are have not been quantified. Bill Dickerson and Jim Hackett have each prepared test procedures, which will be included in the group's report. Internal recorder delays on the order of 4 ms.
10. Additional delay is contributed by instrument transformers and wiring in the case of analog signals, and contact position sensing and wiring in the case of digitals. Assignments were made.
11. Jim Ingleson has reordered the report page to more closely correspond to the original outline.
12. Material Accumulating for this report will appear at this location:  
<http://www.pes-psrc.org/i/ITF2report.html>

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

**Chair: M. Meisinger**

**Vice-Chair: D.R. Sevcik**

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

I12 met Tuesday with 3 members and 1 guest. The outstanding issue of communicating to negative balloters what the Working Group did to resolve their negative ballots was discussed. As the vice-chair was unable to attend this meeting and has the assignment of completing this task, no further progress could be made. The Working Group chair will contact the vice-chair to ensure this task is complete by mid-June and that re-balloting will occur shortly thereafter.

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

**Chair: M.S. Sachdev**

**Vice-Chair: B. Mugalian**

**Output: Guide**

This working group did not meet during the May 2006 meeting and the WG has completed its tasks.

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

**Chair: John Tengdin**

**Vice-Chair:**

Seven people attended: George Bartok, Ratan Das, Bruce Muschlitz, Mario Ranieri, John Tengdin, Eric Udren, Murty Yalla

John Tengdin reported that the PES Substations Committee has an approved PAR for the updating of IEEE C37.2- 1996 – Device Function Numbers, and that he chairs the Substations Committee WG responsible for the update. He reported that this I 14 designation is tentative, in advance of approval of the new WG by the I Subcommittee this afternoon. (Post meeting note – approval did take place, Tengdin was named WG chair)

A number of suggestions have been made for this update:

- Alex Apostolov has suggested (and prepared) a table cross-referencing IEC 61850 logical nodes to C37.2 function numbers. His proposal was distributed.
- Eric Udren submitted a proposal for the use of Function 16 and a set of new suffixes to describe Data Communications Message Processing Devices.
- John Tengdin described other changes to be considered.

All those present stated they are interested in becoming members of WG I 14.

For the September meeting, will need a room for 20 and a computer projector.

In addition to those present, the following have stated they want to be a member of the WG: Alex Apostolov, Bob Beresh, Arvind Chaudhary, Bob Cummings, Jeff Gilbert, Joe Gould, Chris Huntley, Moh Sachdev, and Joe Uchiyama.

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

**Chair: G.P. Moskos**

**Vice-Chair: B. Jackson**

**Output: Revision of IEEE C37.110-1996**

The working group met in a double session with 7 members and 4 guests. Balloting for PC 37.110 closed on April 9, 2006. The ballot met the 75% returned ballot requirement. There were 155 eligible people in the ballot group and 125 votes were received (81% returned). There were 112 affirmative votes, 8 negative votes with comments and 5 abstention votes. During the double session, 6 of the 8 negative ballots were discussed. A plan to resolve these negative ballots was outlined.

A small review group was formed made up of the 7 working group members attending this meeting. The IEEE spreadsheets containing the negative ballot comments will be sent to this review group to help resolve the negative ballots.

The group is working toward completing the Final Recirculation Ballot by the end of September 2006

### **I17: Trends in Relay Performance**

**Chair: W.M. Carpenter**

**Vice-Chair: J.D. Wardlow**

**Output: Special Report**

I17 Trends in Relaying Performance met with one member and 7 guests. 2005 data was covered for two companies and ERCOT. Past trends were covered since 2000.

Additional data should be gathering and complete for the September Meeting.

## **4. Task Force Reports:**

### **ITF1: Relay Service Letter Database**

**Chair: J.W. Ingleson**

The database was last updated on March 15, 2005, and is available on the ITF1 area of the SC web site

### **J: ROTATING MACHINERY PROTECTION SUBCOMMITTEE**

**Chair: W. G. Hartmann**

**Vice Chair: K.A. Stephan**

The Subcommittee met on 5/17/06 with 12 members and 6 guests. Minutes from the January 2006 meeting in New Orleans were approved.

## **Reports from the WG Chairs**

### **J1: Protection Issues Related to Motors Connected to Variable Speed (Frequency) Drives**

**Chair: J. Gardell**

**Vice Chair: P. Kumar**

**Output: Report to the Main Committee**

Meeting # 10

The Working Group met for a double session with 11 members and 4 guests on May 17, 2006. The chairman reviewed the activities to date for the group including a status report on Draft II and received as well as outstanding writing assignments. During the discussion the chairman reiterated the need to complete this report by the end of 2006 to support the revision work of C37.96 that is planned to be started this year.

The remainder of the session was used to work through and review Draft II as well as submitted writing assignments. The important items that were covered during the meeting were organization, content, placement of the case examples in an appendix and additional salient points. Additional assignments received today as well as outstanding assignments are due June 15 to the Chairman. Once the assignments are received, the Chairman will organize the report into an IEEE format and distribute it to the Working Group Members prior to the September 2006 meeting.

The Working Group will meet for a double session in September to completely review and further edit the complete IEEE formatted draft of the report

### **J3: Protection of Generators Interconnected with Distribution System**

**Chair: E. Fennell**  
**Vice Chair: R. Pettigrew**  
**Output: Report to the Main Committee**

The Working Group (WG) did not meet. The WG paper is completed and has been reviewed by the PSRC Officers. In this subcommittee meeting, we discussed the final format whether to be a transactions or a report. We discussed archiving and permissions to present transactions versus reports. It was noted that none of the reports presently on the PSRC website have been removed.

The subcommittee voted on a proposal to make it a report. The vote carried 7 to 1 to be a report on the PSRC website.

**J4: Revision of C37.102 AC Generator Protection Guide**  
**Chair: M. Yalla**  
**Vice Chair: K. Stephan**  
**Established 2000**  
**Output: Guide**  
**Expected Completion Date: 2006**

Status: 19th meeting

This meeting of Working Group J4, C37.102 IEEE Guide for AC Generator Protection was held on Tuesday, May 16, 2006, with 14 members and 10 guests in a single session.

The recent recirculation ballot came back with 100% affirmative, no negative ballots. 153 ballots were received, 139 affirmative and 14 abstentions. Several editorial comments were received. Some corrections have already been made and others are left to the IEEE editors upon submission of the document for publication.

One technical comment was received about undesirable operation of loss of field relays during high system voltage and reactive power into the generator. The working group agreed this comment and associated work should be retained for a future revision to 37.102. The balloter submitting the comment agreed. NOTE: following the working group meeting, it was suggested this comment might be enough basis for a paper that would later be incorporated into C37.102 (possible new working group).

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

Introductions, 11 members, 18 guests

Charlie Henville presentation regarding coordination with field overcurrent. Major issues here are in regards to the field short-time overload capability and exciter short time overload characteristics and the applicable field overload/overcurrent relay, exciter transformer HV overcurrent relay, and any other applicable protective relay applications.

WG discussed revising the paper to implement Charley's points. WG members, Terry Crawley and Phil Waudby will write text to be added into the paper. These will be implemented into section VII of the latest revision.

WG member, Phil Waudby will write text regarding V/Hz protection issues with respect to compensation for load conditions on the transformer HV side.

Assignments are due by June 15, 2006. Chuck will send paper revision to WG members for review/comment following receipt of assignments, in order to have a revision ready by the September 2006 meeting.

**J7: Revision of C37.101, Generator Ground Protection Guide**  
**Chair: J.T. Uchiyama**  
**Vice Chair: R. Das**  
**Co-Vice Chair: Mike Reichard**

Output: Revised Guide

WG J7 met on May 16, 2006 in one session with 12 members and 6 guests.

The chair opened the meeting with introducing the status of this project as the following:

Stated the completion % of the verification of the documents (draft Nos. 10 and 14) with respect to ballot comments.

Distributed revised document (draft No. 12) prior to this meeting.

Expressed to all WG members an "appreciation of their hard work" and congratulated the completion of PC37.101 project.

Reported the results of IEEE staff's (Ms Ho Sang) brief review of document and positive result except Table 1 needs to be cleaner and figure numbers need to be consecutive.

**JTF1, Motor Bus Transfer**  
**Jon Gardell, Chair**

Output: Transactions paper or report

Meeting # 1 - 5/17/2006

The Task Force met for a single session with 8 members and 5 guests on May 17, 2006. The chairman reported on the history of this topic based on the previous Working Group's 1993 IEEE Transaction Paper on this subject. In the agenda potential issues and topics to be investigated were suggested. A very lively discussion transpired during the meeting with ten key areas of interest and concerns were identified. These were the following:

1. Conditions that occur prior to opening the breaker
2. Condition of the bus immediately following the opening of the breaker
3. Benefit and merit of testing, analytical simulation, and/or use of engineering judgment based on knowledge/experience in development of the transfer scheme.
4. Discussion and the bases for the 1.33 per unit voltage / per unit frequency as a limiting factor for safe motor bus transfer.
5. Transformer current levels due to bad transfer and subsequent potential damage.
6. Frequency response of relays involved in a motor bus transfer (scheme).
7. Various rationale for shedding load during transfer.
8. Collateral effects of transfers and resulting voltage drops (i.e. contactors dropping out on critical ancillary equipment, etc.).
9. The importance of applying high speed and precise Sync Check functions for motor bus transfers and the potential for consequential erroneous closing and drop out due to very high rates of slip frequency when traditional slow responding devices are applied.
10. Simultaneous versus sequential fast transfer, supervised versus unsupervised.

The assignment for the Task Force is to "Investigate issues and phenomena impacting the effectiveness and success of safe motor bus transfer".

The Chairman will pass on references to the membership pertaining to the subject matter prior to the September meeting for additional background.

The Task Force will meet for a single session in September to further review and define the scope of the effort and develop plans to achieve the assignment.

Chuck Mozina agreed to be liaison to IAS for this task force to see if there are any industrial concerns that can be incorporated into this assignment.

**JTF2, Protection Considerations for Combustion Gas Turbine Static Starting**  
**Chair, Mike Reichard**  
**Output: Report to the Subcommittee**

Third Meeting

1. Introductions, 9 members, 2 guests
2. The Task Force reviewed and approved the January meeting minutes.
3. Siemens presentation on their LCI product was not conducted. Wayne Hartmann was assigned to follow up on prior requests with Jurgen Holbach of Siemens to secure a commitment for a presentation in September.
4. WG addressed the following open questions:
  - a. When is excitation applied during the purge (initial) stage?

- b. What is the available fault current during the LCI start phases?
- c. At what frequency does the generator protection come on line during this process?
- 5. Mike Reichard presented to the group theoretical analysis of generator fault current during LCI startup sequences. This analysis will be converted to text form for review by the WG.
- 6. Mike Reichard will further investigate testing conducted by GE to ascertain whether data exists regarding generator fault decrement curves exist for LCI start scenarios.
- 7. A Toshiba representative, Hachidai Ito, was contacted to give a presentation during the September meeting. Wayne Hartmann was assigned to follow-on this request with an email to Hachidai after the meeting.

Assignment: Deliver a report or paper on special protection requirements on LCI starting of combustion turbines and effects on protective relaying.

A motion was made to convert the task force to a working group and was carried. JTF2 will now be Working Group J2.

## **Liaison Reports**

### **Electric Machinery Committee**

**C.J. Mozina**

The EMC had its annual general meeting at the PES yearly meeting in San Francisco in June of 2005. There were a number of Working Group meetings held and a Panel Session, hosted by the EMC. The EMC and its reorganized subcommittees met under the new structure. The Generators SC and the Motors SC met during the conference. The Materials SC met elsewhere. Minutes for the EMC are available at [www.ehw.ieee.org/soc/pes/emc/index.html](http://www.ehw.ieee.org/soc/pes/emc/index.html). The next EMC meeting will be at the PES General Meeting in Montreal in June 2006.

### **IAS I&CP Committee**

**C.J. Mozina**

The I&CPS Committee met on April 30- May 3, 2006 in Dearborn, MI.

Revisions of the Buff Book (IEEE Std. 242) – Progress continues to be slow due to the selection of specific Buff Book material to be removed from the Buff Book and incorporated into the “Rainbow or General Book” has not been agreed upon. An outline was put together of the proposed changes to the generator chapter. New chapters will be added on Distributed Generation and Telecommunication within industrial facilities. Discussions were held on adding a chapter on digital relays.

Grounding & Ground Fault Protection of Medium Voltage Generators - The second set of EMTP hybrid grounding study results was reviewed. Generator ground fault cases were run for neutral vacuum switch opening first followed by generator breaker opening. This sequence was then reversed. In both cases current chopping was simulated. The cable that connects the grounding devices to the generator neutral can be quite long (around 50 ft). The cable was modeled with 5 pi-sections. This resulted in some high frequency riding on the 60Hz voltage wave. No real surprises in cases run to date. More cases were defined at the meeting including opening the vacuum switch with a low level third harmonic current (a few amps) and current chopping. This is to simulate manual opening of the vacuum switch under normal conditions. Results are expected by the next WG meeting in Oct. 2006. A tentative date for the IAS paper, which will publish results, is Oct. 2007.

The next meeting of the I&CPS committee will be in Oct. 2006 in conjunction with the IAS General Meeting in Tampa, FL.

## **Coordination Reports**

None

## **Old Business**

On the reaffirmation of the motor protection guide C37.96 – Steve Conrad. We had approximately 30 negative comments that need to be addressed. Steve has drafted a letter to the balloter explaining that we acknowledge his comments and they will be considered for the next revision. Steve will send out the letter.

## **New Business**

Subcommittee needs a liaison for Nuclear Power Engineering Committee WG SC-4; Plant auxiliary protection. Prem Kumar accepted this position.

Discussed the need to prepare for revision/reaffirmation of C37.106. Decided to discuss further in January 2007 due to workload on subcommittee.

Phil Winston-NERC protection task force will now be getting involved with generator protection and coordination with controls. If interested, please get with Phil Winston, Tom Weidman, Mark Carpenter, Jim Ingleson, Mike McDonald. Mike Reichard expressed interest.

## **In-Service Aberrations**

A loss of field event was described where the relay worked fine but two lockouts (primary and backup) failed. The lockouts were failed due to operators holding the lockouts in the reset position after an earlier exciter trip initiated the lockouts. Errors in plant drawings did not show exciter wiring to lockout relays. Unit was off for a couple of days. Voltage was down to 80% and event lasted 6 minutes until unit was manually tripped. Unit is back on line with no apparent problems.

## **K: SUBSTATION PROTECTION SUBCOMMITTEE**

**Chair: C. R. Sufana**

**Vice Chair: F. P. Plumptre**

The Subcommittee met Wednesday May 17 2006, at Albany, New York with 14 members and 28 guests attending. The minutes of the previous meeting in New Orleans were approved.

### **ITEMS OF INTEREST FROM THE ADVISORY COMMITTEE MEETING:**

Charlie Sufana reported:

1. The IEEE copy write statement must be read out at the beginning every meeting per instructions from IEEE HQ.
2. John McDonald, our new PES chair would like ideas to strengthen the participation of technical committees in the PES meetings. As an example, it is recognized that Paper Sessions in the past have not been entirely successful in communicating the work (papers etc.) contributed by the technical committee. Please communicate your ideas to Arun Phadke.
3. There is a plan by PES to have all the technical committees to meet once a year at the same time and place, to allow an interchange of ideas and discussions. The first meeting date has not yet been assigned
4. PES Technical council will include two representatives from PSRC.

## **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: 2006**

The Working Group K01, Protection of Transformers Against Faults and Abnormal Conditions, met in the King Street 6 Room, The Desmond Hotel, Albany, NY at 08:30 AM on Wednesday, May 17, 2006. Fourteen members and twenty guests were present.

The minutes of the January 2006 meeting of the Working Group distributed via Email, posted on the WG Web site and distributed at the meeting were approved.

The Chair reported that balloting of Draft 5 of the guide was completed; twenty out of twenty-five ballots were returned. There were several editorial comments; the suggested changes were incorporated in Draft 5.1 that was distributed by Email. There were four negative ballots; three were resolved before the meeting and the

fourth ballot was resolved at the meeting. A couple of new changes were suggested at the meeting and it was agreed that the Chair proceed with the balloting of the guide after incorporating those changes.

At the conclusion of this business the meeting was adjourned.

For next meeting, require a single session for 40 people, with a computer projector.

### **K3: Reducing Outages Through Improved Protection And Autorestitution In Distribution Substations**

**Chair: Bruce Pickett**

**Vice Chair: Tarlochan Sidhu**

**Established, 2002**

**Output: Paper**

**Draft 8.0**

Working Group K3 met 5/17/06 with 7 members and 3 guests.

Draft 8 was reviewed.

The Agenda followed was:

1. Call to order and introductions
2. Minutes from previous meeting was reviewed.
3. Discussion on assignments outstanding
4. New assignments

George Moskos to condense his contribution to insert in the paper

Paul Elkin to review several sections in sect 6 & 4.

Bruce Pickett to revise a couple of the figures

Tarlochan- Overall editorial to summarize for Transactions Summary paper format.

Expectation is to get assignments in next month & resend out to WG for vote at next meeting.

Paper to be a Report to the PSRC Subcommittee & possible summary submission to Transactions.

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

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

**Chair: Simon Chano**

**Vice Chair: Dean Miller**

**Established, 2005**

**Output: Report to the PSRC**

**Draft 1.0**

Assignment - Develop a document that addresses the considerations in applying protection, control and monitoring functions that can be common in modern micro-processor relays. Discuss methods of integration and application of these functions into the overall protective system in order to reduce duplication, improve reliability and enhance simplicity. This document addresses subjects related to specific topics such as Breaker failure; Automatic reclosing; Synchronism check; Voltage monitoring; Oscillography and event recording; Remote and local breaker control; Breaker tripping; Duplicate Protective schemes and consideration issues related to maintenance and device testing.

The WG met on Tuesday morning, May 16, with 9 members and 10 guests present.

After Charlie Sufano described the IEEE position on patents and copyrights Simon initiated the discussion on draft 1 of the report that he has recently consolidated from the materials that had been presented to the working group over the last few meetings.

Mike Thompson described the material that he had submitted on the topic of breaker failure. It was decided that Bogden Kastenny and Frank Plumptre would work with Mike to expand the section of breaker failure to include the merits and disadvantages of implementing more complex but more dependable schemes and to deal with the legacy systems. Mike's format for this section would be followed. The effect of design on system testing would be addressed in the individual section and then summarize in a section dedicated to system testing which will be toward the end of the paper. Dominick Fontana will be modifying the diagrams he provided

in the section on breaker controls to improve the readability and add logic diagrams. Alla Deronja's contribution on having separate breaker control relays which included: sync-check, breaker failure and reclosing functions was discussed. It was felt that Randy Crellin's contribution would be used in the introduction of the paper and he is also writing an explanation of the eliminating the lockout relay as a separate function. Martin Best and Walter McCannon are to look at incorporating their writing contribution into the format of the report. Omar Avendano agreed to write a section on three phase automatic reclosing.

We will meet in September with one session and will need a room for 20 people with a computer projector.

#### **K6: SUDDEN PRESSURE RELAYING**

**Chair: Randy Crellin**

**Vice Chair: William Gordon**

Summary For the May 2006 meetings held in Albany , New York.

- The Working Group did not officially meet during this meeting.
- Four of the WG members (Randy Crellin, Don Luxach, Bill Gordon, and Charlie Sufana) met informally to discuss writing assignments that were made during the January meeting.
- Our current plan is to complete the initial draft of the paper by August and submit the document to the WG prior to the September meeting for review and comments.
- For the next meeting, we would like to request a single session, room for 25 people and a computer projector

#### **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: Reviewing Draft 14**

The Working Group met on Tuesday, May 16 with 4 members and 2 guests. Prior to this meeting, all negative ballots from the initial ballot had been resolved. Draft 14 showing technical changes as a result of balloting was issued just prior to the meeting and was discussed. With a few minor changes the document will be ready for recirculation just after this PSRC meeting. A recirculation cover letter has already been drafted and the recirculation submittals are nearly ready.

Simon Chano discussed a dual-coil reactor failure on a Static Var Compensator installation. It is believed enhanced negative-sequence protection would have minimized damage.

Next Meeting: Single session, 20 people, No A/V

#### **K8: GUIDE FOR THE PROTECTION OF SHUNT REACTORS.**

**Chair: Pratap Mysore**

**Vice Chair: xxx**

**Established, 2006**

**Output: Revision of ANSI/IEEE C37.99**

**Expected Completion date: 200x**

**Status: Reviewing Draft xx**

Taskforce, KTF8, met in one session with nine attendees on May 17, 2006. This session was to discuss the comments received during reaffirmation of C37.99-2000, IEEE guide for the protection of shunt capacitor banks. After reviewing comments, it was suggested to revise the guide by forming a working group. The scope of the working group is: " Revise C37.99 to address comments received during reaffirmation and to incorporate new protection methods available at present."

The next meeting requirement: one session for 25 attendees and a computer projector.

#### **K9: ARC FLASH**

**Chair: Karl Zimmerman**

**Vice Chair: Roger Hedding**

**Established: 2005**

**Output: Technical report**

## **Expected Completion Date: 20xx**

Assignment: Write a technical report to the Substation Subcommittee on protection tools that mitigate the effects of arc-flash and how arc-flash impacts protection.

Working Group K-9 met with 9 members and 6 guests. J.T. Uchiyama, C. Sufana, R. Lascu and D. Fredrickson joined the working group.

IEEE Standards Association Patent and License Information was shown, introductions were made, and writing assignments were discussed. Three have been received: Elmo Price, Roger Hedding and Tony Sleva.

Roger Hedding agreed to write the introduction. Tony Sleva's definitions came from NFPA70E and were distributed. They will be incorporated into a Draft 1 along with other contributions.

Karl Zimmerman suggested the possibility of conducting a survey to determine how utilities are handling the arc-flash issue. Bob Dempsey cautioned that we not overstep the scope of the PSRC. A discussion ensued. Consensus is to write the paper, then to do a survey after the paper is written.

Additional writing assignments were made: Pat Carroll 5.1. C. Sufana – Bibliography.

John Boyle concluded the meeting a very informative presentation on arc-flash energy calculations.

1.0 Introduction -- R. A Hedding

2.0 Definition of Arc Flash and Related Terms - T. Sleva

3.0 Summary of Applicable Standards (NEC, NFPA, IEEE) - M. Basler

4.0 Summary of Non-Protection Methods of Reducing Arc-Flash - E. Price

(list of references including Current Limiting Fuses)

4.1 Arc tolerant switchgear

4.2 Current limiting fuses

4.3 System design modifications, including increase power transformer impedance, addition of phase reactors and faster operating breakers.

Next meeting – single session, 30 people with a computer

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

**Chair: Gerald Johnson**

**Vice Chair: TBA**

**Established, 1999**

**Expected Completion Date: 200x**

**Output: Standard through the SCC 21**

K10--SCC21 Distributed Resources Standard Coordination working group met on May 16, 2006, with 5-members and 4-guests. I updated the group on progress of the active 1547 working groups based on the February 2006 meetings in Atlanta. The active working groups consist of:

- P1547.2 "Draft Application Guide for IEEE Standard 1547, Interconnecting Distributed Resources with Electric Power Systems"
- P1547.3 "Draft Guide For Monitoring, Information Exchange, and Control of Distributed Resources Interconnected with Electric Power Systems"
- P1547.4 "Draft Guide for Design, Operation and Integration of Distributed Resource Island Systems with Electric Power Systems"
- P1547.6 Recommended Practice for Interconnecting Distributed Resources With Electric Power Systems Distribution Secondary Networks" Joe Koepfinger, Chair; Tom Basso, Secretary

Draft 3.1 of the Application Guide was sent to the K10 membership in March and several members provided input that was included in Draft 4 which was posted last week, and forwarded to the K10 membership for additional review and comments. I also sent out an email last week informing the K10 membership that a balloting pool was being formed for 1547.3 and would close on May 15. P1547.4 and .6 are moving forward and information on their progress can be found on the SCC21 Web site. If you have special interest in the progress of a particular working group or would like to provide input, let me know and I will supply the appropriate password to get to the latest draft.

For the next meeting, the working group requests a single session for 20 attendees and no A/V.

**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: 2006**

**Draft 9.3**

Working group K13 met at 4:30 PM on Tuesday, May 16. Five members and one guest were present.

The ballot resolution comments were discussed. Since B. English represented the T & D Committee's WG 824, he was able to provide interpretation to many of the negative ballot comments and the proposed changes. The WG was able to make significant progress in getting these comments addressed.

With the help of B. English, Table 2 in section 4.3.2 was clarified (related to uA/A); Section 3.2.5 will address only subharmonic resonance, a new section 3.2.6 will address only SSR; Section 8.5.2 was modified. We were not able to reach consensus on section 8.3.1; the resolution comment will reflect this outcome.

Future meeting request, 1 session, for 10 people, no AV.

**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 1.2**

The Working Group met in Albany on May 17, 2006 with 17 Members and 14 Guests.

Draft 1.2 has been reviewed. Missing and new writing assignments have been assigned or re-assigned. In particular:

Lubomir Kojovic will work on part of section 6 on current transformers related to CT performance under fault conditions, accuracy classification, and non-traditional CTs. He will coordinate with Stan Zocholl.

John Horak will work on the balance of section 6 that has not been assigned so far.

Gustavo Brunello will review Annex A concerning setting calculation examples for high impedance schemes.

Simon Chano will work with Stan Zochol on Annex B concerning setting examples for low impedance schemes.

Writing assignments are due July 17.

An editorial team has been created to review the existing 50 pages of the draft. Gustavo Brunello, Alla Deronja, Sam Sambasiven, Fernando Calero and Federico Lopez volunteered to work on editing.

Two guests expressed a desired to become members, increasing the membership to 31.

Next time, Lubomir Kojovic will deliver a presentation on relay performance under fault conditions updating the Group on the latest CT Guide, related CIGRE activities, differences between the IEC and ANSI classifications of CTs, and the intended content of section 6 of the Guide.

Next meeting: single session, computer projector, seating for 35.

**Liaison Reports:**

There was nothing to report on these reports. However, it was suggested that the relevance of reporting on these items needs to be reviewed, as well as confirming the individual responsible for reviewing the item. In addition, there may be new items/proposed documents where liaison is relevant for example, the activities of the Substation Technical committee in PES.

Charlie Sufana to assign someone to look into this by next meeting.

**Old Business**

None to report

### **New Business**

1./ KTF8 Task Force to Reaffirm 'Guide For the Protection Of Shunt Capacitor Banks' formed a WG group at the request of the Subcommittee.

2./ Patrick Carroll presented a case for metal clad switchgear where a false trip of differential protection occurred when the grounding cart was racked in on a feeder position which was part of the bus differential protection zone. Subsequent to this operation, an external ground fault on another feeder created a ground loop which appeared to the protection as an internal fault – resulting in a protection misoperation.

Various solutions discussed including shorting and isolating CTs associated with the feeder position that had the grounding cart installed. Also emphasized, that its important to note short the relay leads to these CTs especially if the protection is high impedance bus differential.

3./ Steve Conrad discussed continuous load capabilities for CTs in metal clad with very high ambient temperatures re: overload capabilities of CTs. This was due to a planning request in his organization to accommodate higher load currents with existing equipment.

The WG gave him support for his position that CTs should not be overloaded beyond their capability for the given ambient temperature conditions.

### **Presentations:**

The PSRC Main Committee meeting is always enriched by some interesting topics. This meeting we had two great presentations. One a departure from the usual technical information in that Joe Uchiyama gave a very interesting report on his duty in Afghanistan. Joe's service to the US is truly an inspiration to all of us. In addition, Alex Apostolov **presented the working group H6 work on Application** of UCA (MMS/ Ethernet) in Stations LANs for Protection and Control.

### **Future Meetings:**

<b>Sept 18 – 21, 2006</b>	<b>Atlanta, GA</b>
<b>January 8-12, 2007</b>	<b>Phoenix, AZ</b>
<b>May 2007 14-18,</b>	<b>Nashville, TN</b>
<b>September 17-20, 2007</b>	<b>Charlotte, NC</b>

The meeting was adjourned by Chairman Winston.