



POWER SYSTEM RELAYING COMMITTEE

OF THE

IEEE POWER ENGINEERING SOCIETY

MINUTES OF THE MEETING

Jan. 9-12, 2006

New Orleans, LA

Final

Approved

**Power System Relaying Committee
Main Committee Meeting Agenda
January 12, 2006
New Orleans, LA
8:00 AM– 12:00 NOON**

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|-------------|---|-------------------------|
| 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 | John Burger |
| | E EPRI Report | Joe Hughes |
| | 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 Plumtre |
| 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 IEEE/IEC Dual logo | Jodi Haasz |
| | B Protection Using Spread Spectrum Communications | Ken Behrendt |
| | C Power Quality Issues in Protective Devices | T. W. Cease |
| | Adjourn | Phil Winston |

Call to order / introductions**Winston**

Chairman Phil Winston called the meeting to order at 8:00 am.

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

The minutes of the Calgary September 2005 were approved. A brief financial summary was given. Our treasury is about \$15,000, with this meeting resulting in a deficit of just under \$2500.

Chairman's Report**Winston**

Although the success of this meeting was in doubt as recently as thirty days ago, our membership has responded fantastically. Our attendance is well above average and the hotel has been extremely helpful. The hotel staff's efforts as well as those of all the surrounding businesses have made this an enjoyable experience and show the resiliency of the New Orleans community. All of those involved in the arrangements for this meeting are to be congratulated for their efforts.

Mr. John McDonald met with the past Chairs of the PSRC to get their feedback on several issues. Included in them were how the PES can be more responsive to the needs of the Technical Committees, as well as how we can foster more participation in a proposed PES Winter Technical meeting. John is indeed attempting to make positive changes within the PES and all of our support and input is requested by John.

The following individuals have accepted the invitation to become members of the PSRC Main Committee: Kenneth Birt, Oscar Bolado, Randy Crellin, Harley Gilleland, Juergen Holbach, Bogdan Kasztenny, Russ Patterson, Veselin Skendzic, Benton Vandiver, and Del Weers.

Additionally, the following two individuals have accepted the invitation to become Honorary Members of the PSRC: Jim Huddleston and Mohamed Ibrahim.

Technical Paper Coordinator's Report**Henville**

For the first time, the PSRC email distribution list was used to request reviewers for the conference papers for the PES 2006 General meeting. Two calls for reviewers were sent out. The response was very encouraging, and I thank all those who offered to review papers and a special thanks to those who responded with prompt and thoughtful reviews. It is very encouraging to see the support from PSRC attendees to help keep high quality in PSRC sponsored papers.

45 papers were proposed for the 2006 General meeting, and the revision process is presently under way. An encouraging note is that one reviewer spotted an opportunity to incorporate a proposed paper into a panel session from another technical committee. This is one example of the inter-committee cooperation that I had hoped to would improve the presentations at PES meetings.

Would anyone interested in chairing a PSRC paper session at the 2006 General meeting please contact me after the meeting and by email to confirm their interest and availability.

An interesting note is the number of papers based on Mathematical Morphology for the 2006 General meeting. For a technique that had been rarely used previously, it suddenly seems to have gained remarkable popularity as a signal processing method for power system protection in a very short space of time.

No PSRC sponsored panel sessions are proposed for the 2006 General meeting, but both panel sessions that were supposed to have been presented to the deferred 2005 T&D Conference and Exposition (that was to have happened here in New Orleans in October of last year) are confirmed for the rescheduled T&D event in Dallas in May of this year. Thanks to Mark Adamiak and Ken Martin for keeping these panel sessions active and on the conference schedule.

Future meetings

The Spring 2007 meeting will be held from 14-18 May 2007, at the Sheraton Music City Hotel in Nashville Tennessee. Thanks to Russ Patterson and TW Cease for their help in evaluating hotels. There will be one week between the Georgia Tech Relay conference and the PSRC meeting.

CIGRE Report**Cease**

The 2006 General Session will be held in Paris from August 27 to September 1, 2006. The preferential subjects for SC-B5 are as follows:

PS 1. Impact of IEC61850 on Protection and Automation

- Experiences of Utilities and Manufacturers
- Specification
- Migration strategies
- System integration and testing
- Procurement practices: Multi-vendor/ System integrator responsibilities
- Project execution: Implementation, Tools, and Commissioning
- Operation and Staff training

PS 2. Protection Systems and Substation Automation for Major disturbances

- New local protection and control approaches to minimize impact:
 - Actions to prevent cascade tripping,
 - Load shedding, islanding,
 - Autoreclosing
- Techniques for maintaining system integrity and security during large disturbances
 - Actions to maintain system stability
 - System Protection Schemes
 - Power restoration practices

The US had 2 paper accepted for the B5 session. Both papers address preferential subject 1. The papers are: "Optimal Strategies for System-Wide Protection and Control Replacement Programs" by P. Myrda, E. A. Udren, D. Bates, and D. Novosel and "Testing of IEC61850 Sampled Analog Values Based Functions" by Benton Vandiver and Alexander Apostolov.

At the Calgary meeting CIGRE agreed to start the following 5 working groups, anyone interested in becoming a member either corresponding or regular please see me.

1) Management of Protection Relay Settings, 2) Applications for protection schemes based on IEC61850, 3) Functional Testing of IEC61850 based systems, 4) Impact of Renewable Energy Sources & Distributed generation on S/S P&A, and 5) Protection, control & monitoring of shunt reactors

Following is the scope and mission statement of SC B5 and a listing of the Study Committees.

CIGRE SC-B5 / Scope:

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

CIGRE SC-B5 / Mission:

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

CIGRE Study Committees

A1 Machines électriques tournantes/Rotating Electrical Machines

A2 Transformateurs/Transformers

A3 Equipement à haute tension/High Voltage Equipment

B1 Câbles isolés/Insulated Cables

B2 Lignes aériennes/Overhead Lines

B3 Postes/Substations

B4 CCHT et électronique de puissance/HVDC and Power Electronics

B5 Protection et automatisme/Protections and Automations

C1 Développement et économie des réseaux/System Development and Economics

C2 Conduite et exploitation des réseaux/System Control and Operation

C3 Réseaux et environnement/System Environmental Performance

C4 Performances techniques des réseaux/System Technical Performance

C5 Marché de l'électricité et régulation/Electricity Markets and Regulation

C6 Réseaux de distribution et production décentralisée/Distribution Systems and Dispersed Generation

D1 Matériaux et technologies émergentes/Materials and Emerging Technologies

D2 Systèmes d'information et télécommunications/Information Systems and Telecommunications

PES Report

John McDonald

The IEEE PES Governing Board will meet on Thursday, January 19, 2006 in Atlanta, Georgia. The 2006 Power System Conference and Exposition (PSCE) local host committee members from Georgia Power and PES Atlanta Chapter officers will join the Governing Board for dinner in Atlanta on January 18.

The rescheduled IEEE PES T&D Conference and Exposition will be held on May 22-24, 2006 in Dallas, Texas.

Thanks and Appreciation

We will all miss John Estey's leadership and wisdom on the Governing Board, something we took for granted for many years. John had a significant impact on both the IEEE Board and the PES Board and he will be missed.

After being PES President and IEEE Division VII Director, Don Russell graciously agreed to be VP, Meetings Activities for the past four years. Don asked me to join the PES Board when he took over as PES President in 1998, so Don has been present at every Board Meeting I have attended. We will miss Don's experience on the Board.

Vijay Vittal will leave the Board as VP, Education/Industry Relations Activities to become Editor-in-Chief of the Transactions on Power Systems, as well as several other PES positions. We thank Vijay for his work on the Board.

Two Members-at-Large will no longer be on the Board. We thank Chris Hickman for his three years on the Board and his efforts helping in Long Range Planning. Though he will not officially be on the Board in 2006, we hope he continues to participate in the Long Range Planning Committee. We thank Xiaoxin Zhou for his three years on the Board and his leadership in the Asia Pacific T&D Conference and Exposition in Dalian, China in August 2005.

Elected and Automatic Governing Board Positions

Bill Kennedy is our newly elected IEEE Division VII Director. Bill is Principal Engineer with the Alberta Electric System Operator (AESO). Bill was recently on the IEEE Board as a Region Director, and brings to PES extensive IEEE Board experience. Bill has also participated in the Power System Relaying Committee for the past five years. We look forward to working with Bill on IEEE issues and their impact on PES.

We thank Teddy Puttgen for his leadership the past two years as President, and for his many international travels to support PES involved conferences. Teddy will continue working with the 2005-2006 Transmission and Distribution Conference and Exposition Local Organizing Committee, which he initiated in October/November 2005. As PES Past-President Teddy chairs the PES Nominations & Appointments (N&A) Committee, which he will formulate very soon. Teddy has been the Georgia Power Professor and Vice Chair of the School of Electrical and Computer Engineering at the Georgia Institute of Technology. He has also been the Director and Management Board Chair of the National Electric Energy Test, Research and Application Center (NEETRAC). Teddy will move from Atlanta to Lausanne, Switzerland in April 2006 to begin a new career with the Swiss Federal Institute of Technology. We wish Teddy the very best in his move to Switzerland and with his new career position, and look forward to working with him as PES Past President.

Wanda Reder is our newly elected PES President-Elect. Wanda is Vice President of the Power Systems Division for S&C Electric Company in Chicago. Wanda has been on the Board the past four years as Member-at-Large, and her aging workforce research and findings have been important input to our Long Range Planning Committee efforts the past two years. Wanda will now chair this committee as President-Elect.

Wanda's active involvement in Board activities for four years will make the transition to President-Elect much easier. We look forward to working with Wanda in her new role as President-Elect!

Noel Schulz was elected to her second term as PES Secretary. Noel is an Associate Professor, TVA Professorship in Power Systems Engineering, in the Department of Electrical and Computer Engineering at Mississippi State University. Noel has done an exceptional job as Secretary and we look forward to working with Noel in her second term. Having an experienced Secretary helps the entire Board, especially the President!

Al Rotz was elected to his second term as PES Treasurer. Al has been with PPL Electric Utilities for over 35 years, with assignments that included Industrial Sales, System Planning, Field Engineering and Construction, Substation and Distribution Engineering, and Attachment and Telecom Business Services with a variety of management positions. Al was an active participant in the Substations Committee from 1995 to 2000. Al has done an exceptional job as Treasurer, sorting through the complex world of IEEE finances, and we are fortunate, as with Noel, that we have the continuity of two experienced people continuing in second terms with the Board.

Appointed Governing Board Positions – Vice Presidents

Keith Gray continues in his second year of a two-year term as Vice President, Technical Activities. Keith is Technology Director with ABB in Napa, California. Keith represents the 17 PES Technical Committees on the Board, in addition to those Board members who themselves have Technical Committee experience. To assist Keith, we have chosen many new Board members who also have Technical Committee experience. We look forward to continue working with Keith in the last year of his term, with increased Board support for Technical Committee activities.

Enrique Tejera will begin his third one-year term as Vice President, Membership/Chapters Activities. Enrique spent eleven years with IRHE, Panamanian electric utility, and has been with the Panama Canal Authority for thirteen years. He provides services as a consultant for T&D and generation projects, and in electrical design for residential, commercial and industrial installations.

Prabha Kundur joins the Board as the new Vice President, Education/Industry Relations Activities. Prabha is President and CEO of Powertech Labs, after working at Ontario Hydro for 25 years in the planning and design of power systems. Prabha has been actively involved in the PES for over 35 years, is an IEEE Fellow, and is the Immediate Past Chair of the Power System Dynamic Performance Committee. He is also active in CIGRE, and has received a number of IEEE and IEEE PES awards. We are fortunate to have Prabha joining us on the Board and we look forward to working with him.

John Paserba joins the Board as the new Vice President, Meetings Activities. John is Manager of the Power Systems Studies Department at Mitsubishi Electric Power Products, Inc. in Warrendale, Pennsylvania. John is a Fellow of the IEEE and is currently Vice Chair of the Power System Dynamic Performance Committee. John served as General Chair for the successful 2004 Power System Conference and Exposition (PSCE) in New York, and is the General Chair for the 2006 PSCE in Atlanta. John brings his experience in planning and implementing the PSCE to PES to lead all meetings activities. John had six months of transition time with this new position with Don Russell in 2005.

Mani Venkata will begin his third one-year term as Vice President, Technical Information Services Activities. Mani is the Vice President, T&D Planning and Design, for the KEMA T&D Consulting group with KEMA, Inc. Recently, Mani was Dean of Engineering at Clarkson University and Chairman of Electrical and Computer Engineering at Iowa State University. Mani is an IEEE Fellow, and has extensive experience with the Power Engineering Education Committee and has participated with the Power System Relaying Committee.

Appointed Governing Board Positions – Members-at-Large

These positions are appointed by the PES President, and approved by the PES Board. They are one-year terms with a maximum of five terms.

Malcolm Thaden will begin his third one-year term as a Member-at-Large on the Board. Malcolm is retired from Potomac Electric Power Company, where he spent 33 years in various engineering positions, including Manager of Substation Engineering, and Principal Engineer for Asset Management and for Transmission and Substation Engineering. He is the outgoing Chair of the Energy Development and Power Generation Committee, and a member of the IEEE Standards Association Standards Board and Chair of its Review

Committee (RevCom). Malcolm has effectively represented standards activities, as well as Technical Committee activities, on the PES Board.

Arun Phadke will begin his first term as Member-at-Large on the Board. Arun is an Emeritus University Distinguished Professor at Virginia Tech, retiring in June 2003. He is a Fellow of the IEEE, Past Chair of the Power System Relaying Committee, former Editor-in-Chief of the Transactions on Power Delivery, and has received IEEE and IEEE PES awards. We look forward to Arun's extensive experience helping us with Board activities.

Eduardo Arriola will begin his first term as Member-at-Large on the Board. Eduardo is Head of the Electrical Engineering Department at the Universidad Nacional Autonoma de Mexico (UNAM) and part-time Professor of Masters Degree Power Engineering courses. The Electrical Engineering Department has approximately 4,000 students and is the largest department in the School of Engineering at UNAM. Eduardo retired as Vice President for Planning for Comision Federal de Electricidad (CFE), Mexico's national electric utility, in 1991. Eduardo has been involved in the IEEE for 33 years, in local leadership positions in Mexico and in IEEE Board positions. Eduardo brings to the PES Board extensive academic and industry experience, as well as IEEE Board experience.

Chris Root will begin his first term as Member-at-Large on the Board. Chris is Senior Vice President for T&D Technical Services for National Grid USA. Chris has been actively involved in our Long Range Planning Committee efforts for two years, educating us on his effective programs to address the aging workforce issues at National Grid. We are fortunate to have Chris' contributions at the PES Board level now, in addition to the Long Range Planning Committee.

Appointed Governing Board Positions – Region Representatives

These positions are nominated by the Vice President, Membership/Chapters Activities, appointed by the PES President, and approved by the PES Board. They are two-year terms with a maximum of three terms.

Brian Lee will begin his second two-year term as Region Representative for Regions 1-7 (USA and Canada).

Due to increased work responsibilities as well as increased responsibilities on an association board, Pierre Bornard resigned as Region 8 (Europe, Middle East and Africa) Representative in the middle of his second two-year term effective at the end of 2005. Bruno Meyer will serve the last year of Pierre's term, and then begin his first two-year term as Region 8 Representative.

Juan Carlos Miguez will begin his first two-year term as Region 9 (Latin America) Representative.

Subrata Mukhopadhyay will begin the second year of his first two-year term as Region 10 (Asia and Pacific) Representative. His 35 years of experience includes teaching and research in Roorkee and power system planning, design and operation with the Central Electricity Authority of the Government of India, where as Chief Engineer he heads the division responsible for power system design. Subrata is hosting the PES 2006 April Executive Committee Meeting in New Delhi, India, which will be held the day before the 2006 IEEE Power India Conference, which IEEE PES is technically sponsoring.

Standing Committee Chair Appointments

These positions are appointed by the PES President, and approved by the PES Board. They are one-year terms with a maximum of five terms.

Osama Mohamed will begin his fifth and last year as Chair of the Constitution & Bylaws Committee. We have made a number of changes during Osama's chairmanship and he has been busy incorporating the Board decisions into the modified wording needed. Osama is a Professor in the Department of Electrical and Computer Engineering at Florida International University.

Dick Kafka, from Potomac Electric Power Company, will begin his first term as Fellows Committee Chair. We thank Dick Farmer for the excellent work he did as chair of this committee the past three years. Dick Kafka was a member of the committee and brings this experience as the new chair.

Karen Butler-Purry will begin her first term as Awards Committee Chair. Cheri Warren resigned after two years to become Chair of the Distribution Subcommittee in the T&D Committee. We thank Cheri for the excellent work she did as Awards Chair, and look forward to working with Karen. Cheri and Karen met with the PES Executive Office staff that is responsible for awards in Piscataway on December 14 to complete the transition. Karen is

Associate Professor in the Department of Electrical Engineering, Assistant Dean of Engineering, and Assistant Director of the Power Systems Automation Laboratory, at Texas A&M University.

Technical Committee Advisory Board

You can see that many of our new PES Board members have extensive PES Technical Committee experience, including committee leadership positions. In addition, I am forming a Technical Committee Advisory Board, which will report directly to me as PES President, to bring Technical Committee issues to be addressed by the PES Board. I will meet with this Technical Committee Advisory Board prior to every Governing Board meeting, and the members are invited to participate in the Governing Board meetings as non-voting participants. I will provide more information in my next column after the Technical Committee Advisory Board is formed and in operation.

PES Executive Office

I spent the day at the PES Executive Office on December 13 to talk individually with Bob Dent, our Executive Director, and the staff who do an excellent job carrying out daily activities in support of the Society's operations. In addition to Bob, the Executive Office staff includes Susan Sacks, Donna Florek, Shanon Nason, Randi Scholnick, Maria Proetto, and Cheryl Nadeau.

2006 PES Meetings Activities

The IEEE PES Transmission & Distribution Conference and Exposition will be held in Dallas on May 22-24.

The 2006 IEEE PES General Meeting will be held in Montreal, Quebec, Canada on June 18-22.

The 2006 IEEE PES T&D Latin America Conference and Exposition will be held in Caracas, Venezuela on August 14-18.

The 2006 ESMO Conference will be held in Albuquerque, New Mexico on October 15-20.

The 2006 IEEE PES Power System Conference and Exposition (PSCE) will be held in Atlanta, Georgia on October 29 - November 1.

EPRI Report

Hughes

No written report at this meeting

IEC Report

Udren

1. IEC TC 95 Measuring Relays

- The Chairman of TC 95 is resigning, and the replacement will be Dr. Li Yaping of China.
- 60255-6, Electrical relays - Part 6: *General requirements for measuring relays and protection equipment.*
 - ◇ TC 95 has begun to revise 60255-6, last updated in 1988. This is the general relay standard that parallels parts of C37.90.0. At this time we have no volunteers from the US for participation.
 - ◇ The IEC WG had issued its first draft revision that was circulated for comments. Others with interest should contact eric.udren@kema.com for a copy. The IEC WG will issue a new Committee Draft (CD) in mid-February. Manufacturers should view this with the same importance and impact as a revision of IEEE C37.90.
- Ad Hoc WG 1 – Functional Standards
 - ◇ Dr. Murty Yalla is the US delegate and participated actively in recent meetings.
 - ◇ The WG is planning to have TC 95 issue Application Guides! It is news to the PSRC that the IEC can issue these, but there is precedent in certain other Technical Committees. Apparently they are titled as “Technical Report – Application Guide.”
 - ◇ The plan is to begin functional standards development with distance protection and then to move to overcurrent protection, differential protection, and thermal overload protection.
 - ◇ They are interested in C37.118, IEEE Synchrophasor Standard.

- ◇ ANSI device numbers will be included in the report via the inclusion of a table from IEC 61850 that lists protection functions and the corresponding ANSI numbers.
- ◇ It is possible that the WG would be interested in IEEE Guide material, subject to dual logo publication, or some arrangement for sharing of material if additions or changes are needed for IEC use.
- TC 95 will have a plenary meeting in France in April.
- (Carried over from May 2005 - TC 95 needs to revise 60255-22-3 *Electrical disturbance tests for measuring relays and protection equipment - Radiated electromagnetic field disturbance tests*, last updated in 2000, and seeks WG members. The PSRC just finished updating C37.90.2 to get closer to IEC. In January of 2006, there has been no further word and this is probably still alive).

2. IEC TC 57 – Power Systems Management and Associated Information Exchange

- IEC 61850, *Communication Networks and Systems in Substations*
 - ◇ WG 10 is working on additions leading to Edition 2 of 61850:
 - (1) WG 10 is working with comments on CD for additions and updates to Parts 6, 7-3, and 7-4.
 - (2) There are also comments on Part 9-2: *Specific Communication Service Mapping (SCSM) – Sampled values over ISO/IEC 8802-3* (Process Bus Mapping for Ethernet).
- IEC Project 62445 & 62446 – TC 57 members accepted a New Work Item Proposals (NWIPs) for Project 62445 for *Use of IEC 61850 for the communication between substations* and Project 62446 for *Use of IEC 621850 for the communication between control centers and substations*. This is in line with TC 57 strategy to build a full suite of power system communications standards on the 61850 foundation. It will also cover interstation communications applications. The first meeting to launch this project work will be held in Mexico at the end of March. Contact Christoph Brunner at christoph.brunner@utinnovention.com.
- IEC 62351 – Security – Work is underway for 6 sections, and there is a CD for Section 2, Glossary.

Standard Coordinators Report

Gilbert

Substation Committee Report

Evans

Data Acquisition, Processing and Control System Sub Committee

The three Working Groups and one Task Force of the Data Acquisition, Processing and Control Systems Subcommittee met jointly with Power System Relay Committee January 8 through January 11, 2006 in New Orleans, LA. The PSRC has been a gracious host and we have had some good exchanges of culture that has improved our work.

Work on revising C37.1 continues. Nearly eight hours of editing has taken place at this meeting. It is the first opportunity to meet since last spring. The C37.1 work is under the direction of Working Group C3, chaired by John Tengdin.

Working Group C3 is discussing taking the cyber security report produced by the American Gas Association, AGA12, as a source to produce a new standard on cyber security for substation communications for serial devices.

C3 Taskforce 1 has a nearly complete draft of P-1615, Recommended Practice For Substation Networks. This effort, chaired by Mike Thesing, is close to entering the final stages. Mr. Thesing hopes to take the document to ballot by the end of the year.

Working Group C1, chaired by Sam Sciacca, has begun the task of writing a standard for security features needed in IEDs to support the NERC security initiative. The C1 meeting was well attended and included a number of members from PSRC and PSCC. Their help is appreciated. Mr. Sciacca presented this work to PSRC Working Group C1 to enlist their help.

Working Group C2, chaired by Mason Clark, met to discuss future plans for panel sessions and tutorials.

The Subcommittee, C0, met to discuss proposed changes to their organizations. They also discussed future meeting times and locations, complicated by the scheduling of Substations Committee Annual Meeting in April, in conflict with the Western Area Power Delivery Conference.

We wish to thank PSRC for their hospitality and will soon be discussion additional opportunities for joint meetings in the future.

B: ADVISORY COMMITTEE

Chair: P.B. Winston

Vice Chair: C. Henville

B2 Fellows

Chair: Stan Horowitz

The Fellows Awards Working Group met on January 10, 2005 and discussed the recent Fellow elections. Our congratulations to Murthy Yalla on his election. We reviewed the fellow election process and discussed how we can improve the chances of our candidates. Apparently citing too many qualifications or technical committees is not an advantage. It is better to concentrate on one Technical Committee and only refer to a few outstanding qualifications. We also agreed to focus on identifying potential candidates and encourage all members to become senior members.

B3 Membership

Chair: Malcolm Swanson

Attendance during the PSRC meeting was 180-190. This is initially considered low considering the joint meeting with the Communications Subcommittee. However, having our meeting in New Orleans at this time reduced our numbers.

Thirteen new attendees were in our Newcomers Orientation meeting on Tuesday, which is considered a normal figure. I participated in the presentation.

No management support letters were written.

There was at least one new protection engineer from Entergy attending our meeting. No contact was made to the local University.

Several small sections of the "About PSRC" page are placed on our website. Charlie Henville has been coordinating this effort.

We made more progress in identifying PSRC personnel and creating award drafts for secondary awards.

B4. O&P Manual Revision and Working Group Chair Training

Chair: Appleyard/Henville

The O&P Manual and WG Training WG did not meet in New Orleans. However, the O&P manual has been revised to meet some PES requirements. The revisions were approved by the Advisory Committee and the revised manual (Revision Dec. 27, 2005) is now posted on the PSRC Website. The revised manual has been sent to the Chair of the PES O&P Committee who will circulate the document for their review and approval.

B5 Bibliography and Pubicity

Chair: Tarlochan Sidhu

For WG B5, the meeting was cancelled due to low attendance. The 2005 bibliography paper is almost ready and a final draft will be sent for the members' comments before the end of Feb. 2006.

B8 Long Range Planning

Chair: Rick Taylor

The Long Range Planning Committee had an early breakfast meeting in New Orleans. John McDonald, current President of PES, attended our meeting to discuss his vision for the PES. John has initiated some actions to increase the involvement and influence of the technical committees in the administration of PES

and in the planning of the PES meetings. These actions include creating a task force of technical committee representative to provide input to the officers and the governing board.

A second action is focused on replacing the void created by the cancellation of the Winter Power Meeting. This cancellation has proven to have had several negative effects. It removed the meeting support for the 7 or 8 technical committees who met during the winter PES meeting. It reduced the frequency of interaction among the technical committees. It reduced the interaction among the technical committees and the PES leadership. It reduced opportunities to present technical papers, panels, tutorials, etc. to the power industry.

John has appointed Rick Taylor to lead a task force to create a Winter Technical Meeting that would focus primarily on technical committee activities. This meeting is anticipated to be planned by the PES / IEEE meetings staff, but driven by the requirements and input of the technical committees. The PSRC is considering holding its meeting in conjunction with this Winter Technical Meeting in January or February of 2008.

We also discussed altering the format of the current Technical Council meetings to provide greater opportunity for the technical committees to participate and to interact.

C: SYSTEM PROTECTION SUBCOMMITTEE

Chair: T. Seegers

Vice Chair: R. Hunt

The System Protection Subcommittee met on January 11th, 2006 in New Orleans, LA. 37 people attended the meeting, including 13 members.

9 WGs met at this meeting. WG C2 Protective Relaying and Power Quality presented their report at the January 2006 main committee meeting. C2 was thanked for their hard work and contributions

WG C9 Guide for underfrequency and Load Shedding has formed a balloting body. The balloting body is balanced and valid. The balloting process will begin in the next few weeks, and will be set at 40 days. Ballots will be discussed at the May meeting.

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. In addition, the C Subcommittee plans to place the Working Group assignment, Working Group Chair and Vice-Chair information, and the status of the Working Group, on the PSRC website.

WG Reports:

C1: Cyber Security Issues for Relaying

Chair: Solveig Ward

Vice Chair: Jim O'Brien

Output: Paper

Established: 2004

Expected Completion Date:

The C1 working group met on January 10, 2006 with 10 members and 23 guests in attendance. Three (3) guests indicated they would like to be members.

Sam Sciacca, Working Group Chair of Substation C1, gave a presentation of the approved project they had. They are to write a standard (P-1686) for Substation IED Cyber Security. It is to discuss IED cyber security features and functions. It is to apply to RTUs, PLCs, meters, electronic transducers, data concentrators and monitoring systems. It is not to address relays which are the responsibility of the PSRC or encryption devices. They have an aggressive schedule and plan to have the standard to ballot by December 2006.

The product of this working group was discussed in light of the Substation C1 project. It was decided to continue and complete the report this year which will be an input document into the new IED Cyber Security standard.

Draft 1.9 of the paper was discussed and a writing assignment was added for Alex Apostolov. The Chair and Vice Chair will divide the paper and send a section of draft 1.10 to each working group member for editing prior to the May PSRC meeting.

C2: Power Quality Issues in Protective Devices

Chair: T. W. Cease

Vice Chair: Steve Kunsman

Output: Report

Established: 2000

Expected Completion Date: 2006

The C2 Working Group will present their report at the January 2006 Main Committee meeting. The Working Group has completed its work, and will disband.

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 met Tuesday, January 10, 2005 in New Orleans, LA in a single session with 7 members and 5 guests participating. One guest asked to become a member of the WG.

The report is now at Draft 5.1 after the working group session. Reviewed the report and identified sections needing additional content and assigned section editors. Our new goal is to complete the section writing and editorials for April 15th distribution of the report to the WG and C sub-committee for ballot. Next meeting will concentrate on negative ballot resolution.

Due 31-January-2006 *New section content/expansion assignments:*

Gary Kobet 2.0 add definitions

Ken Birt 4.2.2 reword for time varying impedance.

Rick Cornelison 4.7 & 4.8 expand content

Art Buanno 5.3 expand content

Ken Birt 5.8 expand content

Due 15-February-2006 *Section Editorial assignments:*

1.0 Art Buanno

2.0 Gary Kobet

3.0 Steve Kunsman

4.0 Kevin Donahoe

5.0 Rick Corenelison

6.0 George Gresko

7.0 Rick Corenelison

8.0 Art Buanno

9.0 Oscar Bolado

10.0 Bill Strang

References: Gary Kobet

Note to Editors:

1. Make references stand-alone to a document and not just a working group (see comment in Reference section and use Reference #1 as an example)
2. Identify Definitions that are in your section that are missing from section 2.0. Forward these to Gary for inclusion in this section.

Due 28-February-2006 *Consolidation of assignments above and issuance of final draft 5.2*

Steve Kunsman

Due 1-April-2006 *Overall Editorial assignment (review paper for continuity, eliminate overlap and confirm recommendations)*

All Working Group Members

Due 15-April-2006 *Distribution of Final Document for Ballot to WG and C Subcommittee*

Steve Kunsman

The WG requests that the latest draft (version 5.1) be posted to the PSRC website. Next meeting request single-session, computer projector and room for 20 participants.

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

Chair: Vahid Madani

Vice Chair: Miroslav Begovic

Output: Survey

Established: 2004

Expected Completion Date: 2007

WG C-4 met on January 10, in single session with 19 attendees (7 M, 12 G). A brief background was provided for guest attendees. The web based survey will be developed with the help and assistance of EPRI.

The attendees reviewed the survey and discussed the content of questionnaire. Some clarifications were discussed and some WG members commented and made the necessary recommendations. Most of the discussion was concentrated on the portion of the questionnaire dealing with various issues of communications and testing of the SIPS schemes.

It was concluded that, given somewhat complicated structure of the questionnaire, it would be of high importance to present as soon as possible the final version of the document in HTML format to the members for final review and distribution.

Next step is to complete the editing and send the questionnaire and supporting Appendices to the "C" subcommittee and the PSRC and the CIGRE, officers for comments, and in parallel work on the web based development for the May 2006 meeting.

Updated Assignment

Conduct a survey of power systems professionals worldwide to accumulate experiences with the System Integrity Protection Schemes (SIPS). This survey will complement and expand on the previously published IEEE/CIGRE paper "Industry Experience with Special Protection Schemes" by P.M. Anderson and B.K. LeReverend (IEEE Transaction on Power Systems, Vol. II, No. 3, August 1996). The survey will be conducted via an internet-based questionnaire with the assistance of, and be available to, other interested parties; (e.g. IEEE, CIGRE, PES, EPRI, etc.). The survey will be concluded by September 2007 and will be presented in a report to the "C" Subcommittee and a Summary Transactions paper.

Received written contributions will be distributed electronically to the members before the May 2006 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

Our working group met Tuesday afternoon with 7 members and guests attending.

Only a few minor comments had been received from the e-mail circulation of recent drafts. It is believed that this report should be completed as soon as possible in light of the FERC's document progress in this area. However, those in attendance strongly indicated a need to redraft the report, significantly improve the material and its presentation, and recirculate that revised material as quickly as possible. A

sequence of sending and receiving comments and suggested changes/needs, followed by a sequence of changes to address and incorporate those changes, and further round of review, comments, suggestions and revisions was put forward and agreed to. The desired result of this effort is a complete revision of the existing and any new material and format of the report previously circulated. If all of the individual steps and time line objective are met as defined in the meeting, the result will be a new draft in time for review prior to the May meeting.

Room for 20, 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

We had a very productive WG meeting at New Orleans. Eight people were present. We have included the new members/guests in the e-mail list above. The attached post-New Orleans Version includes some of the changes discussed at the meeting.

In summary, the group decided that the primary objective should be on educating future protection engineers at the university level. As a result, the following actions were taken:

Keep the Sections I to IV of the paper as they are. They will need some minor editing and changes discussed at this meeting. The person(s) responsible are:

Section I: Mani Venkata and Arun Phadke

Section II: Peter McLaren

Section III: Horowitz and Novosel

Section IV: Sukumar Brahma, Jaime De Le Ree, and Mani Venkata

Move old Section VII on the design and philosophy of education modules to Section V. The material in this section is written well and it provides proper guidance for the rest of the paper to follow. It may need minor edits by Arun Phadke and Vahid Madani.

The former Sections V, VI, VIII and IX will form new Sections VI to IX respectively. These latter sections will focus on the modules for an undergraduate course, a graduate course which could be also used as a training course by the industry, laboratory modules etc. Juan Gers, Mo Sachdev, Sukumar Brahma and

Adly Girgis have agreed to collectively develop the second half of the paper.

Section X on References need re-numbering to conform to the chronological listing in the main body of the paper. In addition, they need to conform to the IEEE format. Mani Venkata and Jaime De Le Ree will be responsible for this section.

Appendix A on the university listing will need changes to align with the PEEC listing reported in the latest educational resources survey. Jim Thorp, Sukumar Brahma, Jaime De Le Ree, and Mani Venkata will review and revise this list limited to the North American universities.

Appendix B will form detailed outline for utility training modules. Tom Wieds will review this one.

Appendix C will contain detailed Bibliography. This should be checked against the recent listings of B5 WG chaired by Tarlochan Sidhu, who will review and recommend the final list.

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 Tuesday, January 10th, with 5 members and 3 guests present. Chairman Alex Apostolov reported that a valid ballot body has been formed, with balloting to be completed before the May meeting.

C11: Guide for Protection System Testing

Chair: Vahid Madani

Vice Chair: Hyder DoCarmo

Output: Paper

Established: 2005

Expected Completion Date: 2008

WG C-11 met on January 11 in single session with total 23 in attendance (7 M, 16 G). Two attendees joined as new members to WG C-11.

Draft 2 of the Guide was discussed. The WG members reviewed list of pending contributions, and several members volunteered to contribute with writing assignments for the following sections:

- Commissioning Tests
- Periodic Maintenance Tests
- Analysis of Test Results
- Benefits & Justification for Different Types of Tests
- Distribution Protection

Deadline for pending assignments is March 5, 2006.

New topics for extending descriptions on some sections were suggested.

Below is a copy of the Assignment, Scope, Purpose and reason for the Guide as approved by WG members for the PAR:

Assignment: The working group will develop a guide for system application test requirements, scope and level of tests, and benefits for overall protective schemes. This assignment includes SPSs, end-to-end testing, data collection requirements, and the test procedure definitions.

Scope, Purpose, and Reason:

This guide is intended for power system protection professionals. It will include a reference listing of type tests for protective devices as well as overall protection scheme performance tests for various types of protection schemes. The Guide will describe the methods, extent, and types of protection scheme tests. Interlocking and control functions inherent to the protective schemes are included. This assignment encompasses overall system testing procedures, data collection requirements, as well as the test procedure definitions.

Reason:

This document will aid academic, manufacturing, application engineers and industry protection professionals with the overall benefits for protection scheme performance testing. The document will discuss benefits and challenges associated with verification of overall protection performance and will include information such as: a) Listing of type / production tests, b) Product performance tests from user view, c) Commissioning test - d) Relay settings are properly selected and calibrated e) Verify connections and calibration of settings, f) Trip/no trip and troubleshooting test

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

C12: Performance of Relaying During Stressed Conditions

Chair: Damir Novosel
Vice Chair: George Bartok
Output: Paper
Established: 2004
Expected Completion Date: 2007

The WG met on January 10, 2006 in a single session with 9 members and 16 guests present. This was the fourth meeting of the WG. The vice chairman, George Bartok, chaired the meeting in the absence of the WG chairman.

The status of Draft 3 of the WG Report was reviewed and changes from the previous draft were presented. A general discussion of overall content and format followed. Outstanding writing assignments were identified. It was agreed that all outstanding assignments will be submitted by April 1, 2006 so that Draft 4 can be compiled and distributed prior to the May 2006 meeting.

The current draft of the WG Report will be posted on the WG web site.

C13: Undervoltage Load Shed

Chair: Art Buanno
Vice Chair: Imai Sinichi
Output: Report
Established: 2005
Expected Completion Date: 2008

On Wednesday morning January 11, 2006, the UVLS Working Group met for the second time with 25 in attendance in two sessions. This included 13 members (including 1 new) and 12 guests.

The working group assignment was reviewed with no changes as the following:

This working group produces a report on the implementation of undervoltage load shedding (UVLS) in electric power systems. It presents background information, guidance in implementing UVLS schemes and a bibliography. UVLS philosophy and methods, voltage collapse detection, existing practices, settings and coordination between UVLS and UFLS are discussed.

Four presentations were made and discussions followed each. They included those by the following:

1. Charles Henville – Real Consequences Follow Imaginary Power Deficiencies
2. Art Buanno (FirstEnergy) – Undervoltage Load Shedding at FirstEnergy
3. Shinichi Imai (Tokyo Elect. Power) – TEPCO's Practice of UVLS as Wide Area Protection
4. Ken Martin (Bonneville Power Administration) – Under Voltage Based Controls – WACS (Wide Area Control System)

The contents of the outline were then discussed. The initial writing assignments were made as follows.

1. Introduction (Mozina)
2. Background
 - 2.1. Voltage Stability (Begoric)
 - 2.2. Voltage & reactive power management and emergency actions to avoid load shedding (Begoric)
 - 2.2.1. Continuously Controlled Reactive Power Source
 - 2.2.2. Discontinuously Controlled Reactive Power Source
 - 2.2.3. Automatic Voltage Control
 - 2.2.4. Voltage reduction and LTC blocking
 - 2.3. Coordination between UVLS and UFLS
3. Undervoltage load shedding philosophy
 - 3.1. System Studies
 - 3.2. Selection of method
4. Undervoltage load shedding methods (application types)
 - 4.1. Manual/SCADA load shedding (Mozina)
 - 4.2. Automatic load shedding (Buanno, Imai)
 - 4.3. Local (Buanno, Imai)

- 4.3.1. Centralized (Substation/Bus)
 - 4.3.2. Distributed (Feeder)
 - 4.3.3. Adaptive (Begoric)
 - 4.4. Wide area undervoltage load shedding (Buanno, Imai)
5. Voltage collapse detection, measuring principles and characteristics
 - 5.1. U/V (Harley)
 - 5.2. Rate of change of voltage (Imai)
 - 5.3. Impedance locus detection (Begoric, Novosel to be asked)
 - 5.4. Others
6. Scheme design (Buanno, Henville to be asked)
 - 6.1. Dependability and security
 - 6.2. Redundancy
 - 6.3. Voltage measurement accuracy and security
 - 6.4. Other considerations
 - 6.4.1. Time delay
 - 6.4.2. Frequency variation effects
7. Existing UVLS practices (Young, Burger, Madani to be asked, Henville to be asked)
 - 7.1. SCADA Based
 - 7.2. Local (Buanno)
 - 7.3. Wide Area Protection (Imai)
8. Setting and performance criteria
 - 8.1. Performance criteria
 - 8.2. Setting guidelines for undervoltage load shedding
9. Maintenance, testing and reliability
10. Major power system disturbances related to voltage instability
 - 10.1. 1987 France
 - 10.2. 1987 Tokyo (Imai)
 - 10.3. 1989 Quebec
 - 10.4. 2001 Peru
 - 10.5. 2003 Northeastern North America
 - 10.6. 2003 Sweden
 - 10.7. 2003 Italy

The proposed schedule for the working group assignment was established as the following:

- April 17, 2006 – Initial contributions
- January 2007 – Completion of writing assignments
- June 2007 – Complete editing
- July-August 2007 – ballot paper
- September 2007 – complete assignment

Afterwards the meeting was adjourned.

At the C Subcommittee meeting, we requested a projector and a room for 40 people at the next meeting (in Albany, NY, May 15-18). At this time, we requested a time allotment for only a single session. However, we asked for the possibility to expand the meeting to two sessions after confirming in the next two weeks the number of presentations being prepared.

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

No activities to report

NERC by Phil Winston

No activities to report

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 on Wednesday January 11, 2006 at 4:30 p.m. There were 19 members and 30 guests in attendance.

After introductions, the Minutes of the September meeting in Calgary were Approved.

Advisory Committee items of interest:

It was noted that the Hotel staff was performing extremely well while recovering from the effects of Katrina.

There was a general discussion of the IEEE requirements for drawing attention to copyright issues at each meeting.

A sincere 'thank you' was conveyed from Charlie Henville to all those who answered the call and reviewed papers for him recently.

Working Group reports: (see attached document)

The DTF11 will now become WG D11 with the following assignment: 'To prepare a special report to the PSRC that describes the effect of Distribution Automation on relaying.'

Liaison reports: Alex Apostolov volunteered to act as a liaison with TC57.

New Business:

Mark Schroeder, Fred Friend and Alex Apostolov were welcomed as new members of the D Sub Committee.

High Impedance Fault activity:

None reported.

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

The WG met on Wednesday morning, January 11, with 9 members and 5 guests present. Draft 1.4 of the special report was reviewed. John Boyle presented results of cold load pickup tests conducted in Tennessee. The working group is studying results and will work to address items identified during these tests. The work group is developing a method of using load type data to predict potential cold load pickup characteristics for feeders.

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

D4: Application of Overreaching Distance Relays

Chair: Russ Patterson

Vice Chair: Walter McCannon

Output: Report to the PSRC

Working Group D4 met with 15 members and 25 guests. Total in attendance was 40. Shin'ichi Imai of Tokyo Electric Power Company gave a presentation on TEPCO practice with off-set mho and forward zone protection. Michael Thompson of SEL gave a presentation on the loadability of mho element vs. mho element with load encroachment blinder and resistive blinder. Tom Beckwith of Beckwith Electric Company gave a presentation on Distance Element Out-of-Step and High Reactive Load Blocking Using Concentric Mho Circle Characteristics coupled with Load Encroachment Blinders.

The chairman informed the group that plans are to begin quickly wrapping up the document. Stan Horowitz volunteered to help in the document editing process after latest draft is composed.

Next meeting: 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 minutes submitted by Randy Crellin, Vice Chair.

The working group did not meet during these meetings.

Phil Waudby completed the last minute revisions to the document and submitted Draft 3.0 to the IEEE editors during the middle of December.

Invitations to join the balloting group close on Friday, January 13, 2006. We encourage everyone to sign up and help ballot the document.

We are looking forward to and anticipate receiving numerous constructive review comments. Our plan is to organize these comments into technical and editorial issues and forward them to working group members for discussion and resolutions during the May meeting in Albany, NY.

Next meeting: 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 6 guests. We identified a few sections that needed minor clarification and performed grammatical editing.

Assignments for next meeting:

- Ken Behrendt – Write or modify a short section identifying the relay settings normally associated with LOV.
- Elmo Price – Review section 7.3.3 with contributor for clarification.
- Elmo is to send updated version to all members by Jan 31.
- All members are to provide final comments and editing by March 15.
- Elmo will compile final report

The report to the subcommittee will be finalized at the next meeting and be prepared to present the report at the September meeting in Atlanta

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

D8: Justifying Pilot Protection on Transmission Lines

Chair: Gary Kobet

Vice Chair: Bogdan Kasztenny

Output: Report to the PSRC

The Group met in New Orleans on January 11, 2006 with 13 Members and 16 Guests. .

This meeting was entirely dedicated to reviewing and discussing the received material, section on criteria to determine the need for pilot protection, in particular. Major items discussed were:

Sequence of presentation could be improved to indicate the most important items first. One should differentiate between objectives (such as stability or power quality) and means (such as fault clearing times).

Section 3.3 on power quality needs more elaboration on the total fault clearing times to explain better to the stakeholders the impact of breaker, relay and channel selection on voltage sags. A comment on a possible need to coordinate line relay scheme design and ride through scheme design at the supplied facility may be needed. Mark Allen volunteered to revise the section.

Mike McDonald would take a lead to write Section 3.4 on limiting damage from fault currents.

Section 3.5 on high SIR ratios to be expanded to explicitly cover extremely short lines, and to reference the Line Protection Guide recommending pilot protection under SIR of 4 and above. Bogdan Kasztenny to revise.

Section 3.6 will be re-organized to cover coordination and reliability problems with long tap and multi-terminal lines as explicit subsections (Walter McCannon).

A general suggestion was made to make it clear in all subsections covering criteria for pilot application, why a certain objective cannot be achieved without the pilot scheme, and why it can be achieved with a pilot scheme. Section 3.7 on high resistive faults is a good example.

Alla Deronja proposed new sections about justifying the need for pilot protection along the lines of DTT from BF in ring-bus/breaker-and-a-half applications, and for in-line breaker configurations.

Mark Allen brought the issue of satisfying the IEEE 80 substation design requirements in some instances as one of possible reasons/effects of reduced fault clearing time owing to communication assisted/dependent schemes of high availability.

A discussion took place on whether the word "justifying" in the title and assignment means supporting the need of a channel in general, or also selecting the type of a relaying scheme to use (current differential vs. pilot-aided schemes, type of a pilot-aided scheme, etc.) This remains an open item.

New and open assignments are due April 15.

Next meeting: single session, seating for 30, computer projector,

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, met in LaNovelle East Room at The Hotel Monteleone, New Orleans, LA from 8:00 AM to 09:15 AM on Wednesday, January 11, 2006. Sixteen members and seven guests were present. Two guests joined the Working Group.

Mohindar reported that he had received eleven contributions since the September 2005 meeting of the WG. Another twelve contributions are outstanding.

The Chair then distributed copies of comments received when the guide was balloted for reaffirmation. The WG reviewed the comments and identified changes needed in the light of those comments. Three new writing assignments were distributed as a consequence of the discussion. The members agreed that they will provide all assignments on or before April 15, 2006.

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

Next meeting: double session, seating for 30, computer projector.

DTF11: Effect of Distribution Automation on Relaying.

Chair: Fred Friend

Vice Chair: Gerald Johnson

The Task Force met at 8 am on Tuesday, January 11, 2005 with 20 people in attendance.

Presentations were made by Bill Harlow, DTE Energy and Fred Friend, AEP describing some applications of Distribution Automation within their company.

After much discussion, the Task Force voted to request the Line Protection subcommittee forms a working group. Ten attendees (and 2 individuals who did not attend the meeting) agreed to become a member if a working group is formed. Gerald Johnson has agreed to become the Vice-chair if a working group is formed. Volunteers are requested to make a presentation of their Distribution Automation endeavors at the May meeting in Albany.

The following assignment was agreed upon by the Task Force: To prepare a special report to the PSRC that describes the effect of Distribution Automation on relaying.

Next meeting: single session, seating for 30, computer projector.

(avoid conflict with D1 and D5).

Potential Members:

Fred Friend, Chair

Gerald Johnson, Vice-chair

Patrick Carroll

Mike Dood

Juan Gers

Adly Girgis

Roger Hedding

Ljubomir Kojovic

Don Lukach

Raluca Lascu

George Moskos

Karl Zimmerman

H: RELAY COMMUNICATIONS SUBCOMMITTEE

Chair: A. P. Apostolov

Vice Chair: V. Skendzic

H1: A guide for the application of digital teleprotection

Chairman: Marc Benou

Vice Chair: Mark Allen

Output: Application Guide

Established: 2006

HTF1 has been promoted to the working group status, and will be named H1.

Task Force HTF1 met for the third time Tuesday, January 10, 2006 in New Orleans, Louisiana in a single session with 20 in attendance, 16 members and 4 guests. Twenty people have agreed to be members in the first two meetings.

Introductions and a quick review of the September meeting were made. In September the task force voted that a digital teleprotection applications guide would be the most useful.

As a starting point, the chair presented a series of possible subjects to be included in a guide. The group discussed whom this guide should be written for. It was decided that the focus should be for digital teleprotection user to acquaint them with digital teleprotection. It was agreed that the following subjects should be included:

- Digital transport methods
- Types of digital teleprotection equipment
- Communication interface types
- Security, dependability/availability, and speed
- How to implement different digital teleprotection methods over various schemes
- Issues of substation environment on digital teleprotection equipment
- Testing and troubleshooting installed equipment
- Circuits being properly identified

The common request for the subjects was to compare, contrast, and list the limitations of each.

It was agreed that a request would be made to the sub-committee to form a working group.

A name and a scope for the potential application guide were established. The name agreed upon is "**A guide for the application of digital teleprotection**". The agreed upon scope is, "To develop a guide that quantifies, classifies, compares, and describes performance of digital teleprotection methods and schemes. The guide will also describe testing, maintenance, and troubleshooting methods for equipment and schemes.

A CD with potential reference material, existing papers, guide, and specification, was distributed.

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: 2007

Working Group H3 met in a single session on Wednesday, January 11th with 8 members and 3 guests, including Jodi Haasz from the IEEE Standards Group. Working Group H3 is currently working on an open PAR to amend the current C37.94 standard to include operation over single mode fiber.

After much discussion, the consensus of the working group is to withdraw the current PAR for two reasons:

1. After several meetings, we have been unable to identify multiple manufacturers of fiber optic components that would meet the intent of the original specifications. Low cost form factors are no longer available due to low demand for them and 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 could possibly change the line rate of the current specifications.
2. The working group recognized an opportunity to pursue dual logo status (IEEE/IEC) for the existing standard. The group could not seek dual logo status on a specification that has an open PAR for an amendment.

The working group proposes that we withdraw the current PAR, apply for dual logo status and form a task force to perform a technical evaluation on single mode components. The task force would consist of the current working group members with Tom Dahlin as the Chair and Ken Fodero as the Vice Chair. The objective of the task force would be to evaluate the current technologies available and determine a direction for single mode operation. From its findings, a determination would be made to do a separate standard, possible C37.94.1 for single mode fiber.

Members of the working group are:

Ken Behrendt	kbehrendt@selinc.com
Tom Dahlin	tom.dahlin@rfelect.com
John W. Miller	jwmiller@southernco.com
Roger Ray	roger.ray@pulsartech.com
Mal Swanson	mjswanson@mindspring.com
Marc Benou	marcb@iniven.com
Bob Bratton	rebratton@tva.gov
Ken Fodero	ken_fodero@selinc.com
Mark Simon	mark.simon@exeloncorp.com
Dac-Phouc Bui	bui.dac-phouc@hydro.qc.ca
Torbjern Einerssen	Torbjern.einerssen@se.abb.com

Guests at this meeting include:

Floyd Blackwell	Floyd.Blackwell@rfelect.com
Johan Salj	Johan.salj@se.abb.com
Jodi Haasz	j.haasz@ieee.org

The next meeting will consist of a single session in a room for 20

p.s. The proposal to withdraw the PAR was accepted by the H Subcommittee. The H3 Working Group will continue to exist, with its output to be a report to the H Subcommittee regarding the feasibility of a single-mode standard. The IEEE Standards Group will be requested to pursue dual logo status of the existing C37.94 Standard.

H4: Revision of C37.111 (Comtrade standard)

Chairman: R. Das

Vice Chair: A. Makki

Output: Standard

Expected Completion Date: 2005

The group met on time with 9 members and 4 guests present.

The group discussed a number of proposed changes to the format including support for floating point numbers & phasor measurements. The group also discussed the option of adding a single file format for helping deal with storage & exchange of large numbers of files. Two new assignments were issued.

Also, Jodi Haasz (Program Manager, IEEE Standards Activities) lead a 15 minute discussion on the requirements and benefits of having an IEC/IEEE dual logo agreement. The group decided to hold off on applying for the dual logo until the work under H4 is complete and because of the ongoing procedural changes and the fact that IEEE Comtrade already exists.

The group will meet again during the spring meeting. A room for 25 people and projector is requested.

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 Jurgen

Vice Chair:

Output: Recommended Practice

Start: 2003

Expected Completion Date: 2006

H5-B: Common Format for IED Event Data

Chairman: M. Adamiak

Vice Chair:

Output: Recommended Practice

Start: 2003

Expected Completion Date: 2006

WG H5-b met on Wednesday with 26 attendees.

The scope and purpose of the WG were reviewed and agreed with no comment. The updated XML schema was presented and discussed. Some data item definitions were reviewed and fixed. The time stamp format will be based on the ISO 8601 standard and will allow either UTC or local time timestamping. Other elements still need to be specified like the event type, Event identification (EntryId vs EventId) and Payload data. It also was agreed that every value in the log file will be defined using SI units.

The sample XML event file was handed out and discussed. Pierre Martin also presented an example of a stylesheet, showing some of the capabilities of this technology.

Bob Cummings from NERC presented a summary of their work on event templates since the 2003 blackout. NERC has developed an event Access database with several items for transmission and generation events. For example, NERC has defined a unique utility identifier (up to four characters) that could be easily incorporated in the XML schema. An event template from WECC and based on an Excel spreadsheet was also presented. Bob offered to participate in the future H5b meetings and we welcome him. Attendees from SEL, Siemens, Areva and ZIV accepted to look at the schema and test it with their proprietary implementations. Comments on missing information and specifically requirements for the inclusion of payload data and event type categorization are expected. All the material available will be put on the H5 website as soon as possible. Attendees will be notified by email.

H5-c: Common Data Format for IED Sampled Data

Chairman: Benton Vandiver

Vice Chair:

Output: Recommended Practice

Start: 2003

Expected Completion Date: 2006

The working group met on Wednesday, January 11, 2006, with 8 members and 6 guests present following non-concurrent sessions with H5-a and H5-b. The meeting minutes from the September meeting in Calgary were reviewed and approved by the group.

After a review of Draft #3, sections 2.4 and 3.4 were deemed unnecessary and removed from the report outline and report body. The new contributions from Erich Gunther were reviewed, as was the Summary contribution from Stan Thompson. Stan also suggested making a detailed comparison of the Binary format used in COMTRADE against the other two standards and also volunteered to make this contribution. After review of each section of the Draft, it was recommended to include an explanation of the modeling information work ongoing for the power quality logical nodes as they relate to PQDIFF. Alex and Christoph volunteered to prepare this since it would have a bearing on the data conversion examples. For section 5 it was recommended to use the PQDIFF xml example as a basis for the proposed data tags in that section. All updates will now be posted to the website, H subcommittee section for download. All comments and assignments are due by April 15th for inclusion in the next draft.

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.

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

Chairman: J. Burger

Vice Chair:

Output: Special Report

Start: 1999

Expected Completion Date: 2006

Working group report was completed and is published at the PSRC WEB site. Group will get together at the next meeting in order to complete a presentation for the Main Committee Meeting.

H7: Comparison of standards for teleprotection

Chairman: M. Simon

Vice Chair:

Output: Report to H Subcommittee

Start: 2005

Expected Completion Date: 2008

H7 had the first meeting as a working group. It was held on January 10th, 2006 in New Orleans. We were 16 members and guests. The chair, Marc Simon, was not present. 7 people signed as members. After introduction, the minutes of the last task force meeting in Calgary were approved as distributed by Email.

Meeting discussions can be resumed by the followings :

1- The word "telecommunications" in the scope was changed for "teleprotections"

Scope:

Develop a compilation of differences and similarities of IEEE and IEC teleprotections standards, guides and recommended practices. The output will be in the form of a working group report and will be published on the PSRC web site.

2 – We listed some IEC and IEEE standards, guides and recommended practices applicable to teleprotections:

- IEC 61000, 61850, 60834-1/2, 60255-26

- IEEE C37.90.*, C37.94, C93.*

3 – We had many volunteers that agreed to send on a table format to the chair and vice-chair for next April 15th the following :

- Ken Fodero to compile on standards relating to the environmental category (EMI, ESD, HI POT, RFI and Fast transient).

- Roger Ray and Tom Dahlin for IEC standards related to power line carrier.

- Marc Allan for other categories in IEEE standards.

- I, Etienne Fortin, for other categories in IEC standards.

- Eric Udren to provide a listing of IEC standards that are referenced in IEC60255-26.

4- Finally, it was said that Matthew J. Ceglia can possibly help us with copies and listings of IEC standards.

For next meeting we will continue with 20 people and 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 on time with 8 members and 4 guests present.

The group reviewed the current documentation and made a few editorial and content corrections. Rick Cornelison volunteered to modify the current output to meet IEEE standard format. Matthew Ceglia (Program Manager, Technical Program Development, IEEE Standards Activities) briefed the group on the latest tools from IEEE to help adhere to standard IEEE format.

The group agreed to submit the final draft to the subcommittee for their comments and to simultaneously submit for mandatory editorial review by IEEE within 90 days.

The group will meet again during the next spring meeting. A room for 20 people and flip charts is requested.

H9: Understanding comm. Technology for protection systems

Chairman: M. Sachdev

Vice Chair:

Output: Report to the H Subcommittee

Established: 2005

H11: Synchronphasor Standard, PC37.118

Chairman: K. Martin
Vice Chair: D. Hamai
Output: Standard
Established: 2001
Expected Completion Date: 2003

Working group H11 met at 9:30 Tuesday, Jan 10, 2006, in a single session. 6 members and 15 guests attended the meeting.

The standard was approved by RevCom on Sept 21 and the electronic submission was accepted by the IEEE editors in Oct. We are currently awaiting final IEEE editing and publication. This is currently scheduled to begin in late January 2006.

Jodi Haas from IEEE/SA gave a short discussion of the dual logo process, by which an IEEE standard becomes an IEC standard also or the converse. PSRC plans to submit the standard for dual logo as soon as it has been published.

The working group reviewed and revised the transactions paper outline made in Sept. Writing assignments were made for the various sections of the paper. Writing assignments will be submitted to the WG chair by Email attachment by March 22 so there is time to put together a draft before the May meeting.

The implementation concerns regarding signal filtering enumerated by Bogdan Kasztenny were discussed. There are two specified levels of compliance for filtering and accuracy within the standard and the mfg. may meet either or both. As some applications may be negatively affected by heavy filtering, the mfg may take exception to the standard at that point, or may simply offer additional modes of operation beyond what is specified in the standard. It was also pointed out the standard includes a number of other measurements, such as frequency and power flow, that are not specified in terms of timing or accuracy. These issues need to be addressed in a succeeding revision of the standard.

Herb Falk made a presentation of communication implementation issues. He covered many issues including:
Use of TCP or UDP or multicast UDP
PMU/PDC device numbering in a large system
Communication responses in error conditions
Multiple devices in a single physical unit
Interpretation of the digital mask words
Security implementation and expected response of PMU communication devices

The working group agreed to discuss these issues and respond to Herb as to how we will participate in interpretations. The WG will look into forming an interpretation group for making official interpretations of the standard to promote standardized implementations. The WG will also coordinate to provide a representative to discuss the standard and implementation issues at the next EIPP meeting in March.

The working group will meet in May in a single session, need room for 20 people, and need a computer projector.

H14: Telecommunication Terms for Relaying

Chairman: R. Ray
Vice Chair:
Output: Report
Established: 2003

H14 met on Tuesday, January 10, 2006. Introductions were made.

There were 7 members and 4 guests present. One guest volunteered to become a member.

Assignments were reviewed and accepted. We then continued to review the document and we were able to complete the review. We will now put all the changes together into one document to send out to the members for a review of the entire document and make comments. Hopefully we will be able to complete the report in two more meetings.

Need a room for 10 people plus a computer projector.

HTF2: Broadband Communications Over Power Line Carrier

Co-Chairman: Veselin Skendzic, Mark Simon

Established: 2003

Group did not meet in New Orleans.

Liaison Reports

New Orleans, LA

January 2006

E. A. Udren

Liaison Reports

1. Power System Communication Committee – E.A. Udren

The PSCC met in June 2005 in San Francisco with PES. Going forward, the PSCC will meet with the PSRC every January, and at each PES meeting in the summer.

The PLC Subcommittee has published IEEE 643, Carrier Guide.

The Wire-Line Subcommittee is revising IEEE 820-1984 (R1999) *IEEE Standard Telephone Loop Performance Characteristics*; and IEEE 487-2000 *IEEE Recommended Practice for the Protection of Wire-Line Communication Facilities Serving Electric Supply Locations*. They are looking at early revision of IEEE 1590-2003 on optical protection of facilities serving electric supply locations.

The Radio SC has decided to publish their paper on SONET on the PSCC-PES web site rather than seek more formal publication – watch for it.

The Broadband Power Line Carrier (BPL) Standards WG met to discuss status of the standards projects. The PAR was approved for P1675- BPL safety standard – it will deal with hardware and with installation. P1775 will deal with EMC issues of BPL.

The Fiber Optic Subcommittee is developing a standard for methods of bringing fibers into substations.

The PSCC Security Risk Assessment Subcommittee is developing recommendations for dealing with security issues for IEC 61850 and other utility applications.

Quote of the day by a noted person at the meeting: “Everything that needs to be said about radio has been said.”

2. IEC TC 57 – Power Systems Management and Associated Information Exchange

- IEC 61850, *Communication Networks and Systems in Substations*
 - ◊ WG 10 is working on additions leading to Edition 2 of 61850
 - ◊ WG 10 is working with comments on CD for additions and updates to Parts 6, 7-3, and 7-4.
 - ◊ There are also comments on Part 9-2: *Specific Communication Service Mapping (SCSM) – Sampled values over ISO/IEC 8802-3* (Process Bus Mapping for Ethernet).
- IEC Project 62445 – TC 57 members accepted a New Work Item Proposal (NWIP) for *Use of IEC 61850 for the communication between control centers and substations*. This is in line with TC 57 strategy to build a full suite of power system communications standards on the 61850 foundation. It will also cover interstation communications applications. The first meeting to launch this project work will

be held in Mexico at the end of March. Contact Christoph Brunner at christoph.brunner@utinno.com.

- IEC 62351 – Security – Work is underway for 6 sections, and there is a CD for Section 2, Glossary.

I: RELAYING PRACTICES SUBCOMMITTEE

Chair: J. W. Ingleson

Vice-Chair: T. S. Sidhu

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

Past Chair: J.G. Gilbert

1. Introduction: The Relaying Practices Subcommittee (SC) met on January 05, 2006 in New Orleans, 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. 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

The fourth meeting of the Working Group was held at 11:00 AM on January 10, 2006 in Gallier Room, The Hotel Monteleone, LA. One member and sixteen guests were present.

The minutes of the September 2005 meeting held in Calgary, AB, Canada were approved as distributed by Email and posted on the WG web site.

The Chairman reported that Sections 3 and 4 of the report was revised and most of the equations that were in those sections were moved to Appendix A and Appendix B respectively.

The contributions on relay communications and fiber-optic communications were distributed and discussed. Preparation of a Section on communication was assigned. The contribution on Cosine filter was also distributed and discussed. Three additional topics were identified and were assigned.

Sukumar Brahma, Al Darlington and Joe Uchiyama 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 1:30 pm on Tuesday, January 10, 2006 with six members and two guests. Mal Swanson chaired the meeting. Minutes from the last meeting were approved.

The Working Group then reviewed assignments.

Mal Swanson has resolved issues in the definitions section with the Chair of C37.110. Since no new terms need to be defined by I2, work on C37.110 has been completed.

Roger Whittaker has completed the review of C37.92. There were no new terms for the I2 working group to define.

Fred Friend discussed terms in the definitions section of C37.230, some of which are different than those found in the IEEE dictionary. Since the balloting group is being formed for this document, issues will be handled by Fred in comments on his ballot.

Oscar Bolado has been reviewing C37.116 and has received a list of definitions for 11 terms from the document. He will complete his review of these by the May meeting.

Roger Whittaker will review PC37.105 by the May meeting, since this group is in the process of resolving ballots.

Walt Elmore is reviewing C37.91.

Al Darlington will be reviewing C37.111.

Mal Swanson has contacted Randy Dotson, who is the new Chairman of C37.100, Standard Definitions for Power Switchgear. He has asked Randy if our last group of terms were included in C37.100. Hopefully, we can re-establish contact with this group so that we can streamline how our approved terms reach the IEEE dictionary.

Since Jodi Haasz, from IEEE Standard Activities, attended the meeting, the working group discussed the following issues:

Have our terms been included in the latest revision of the IEEE dictionary? Barb Anderson will email her the last four groups of approved terms.

If we forward terms that are not appropriate for the C37.100 dictionary, does that group send these terms to the appropriate committee? If not, how do we handle these so that they will be published in the IEEE dictionary?

Jodi was also asked to find out the status of an electronic version of the latest revision of the IEEE dictionary, since this version is much easier to use when reviewing documents.

The meeting was adjourned at 2:45 pm.

I3: Microprocessor-based Protection Equipment Firmware Control

Chair: R. Beresh

Vice-Chair: R. Whittaker

Output: Recommended Practice

Working group I3, creator of PC37.231D10, Recommended Practice for Microprocessor Based Protection Equipment Firmware Control, met in New Orleans, Tuesday January 10, 2006 with 4 members and 7 guests.

Chairman Bob Beresh called the meeting to order explaining that our document has gone to ballot and there is a 95% approval rating with over 200 comments. Of these, comments to change the scope and or purpose will not be considered as these cannot change under the present PAR. A copy of draft 10 was handed out which has been updated to include many of these comments that did not change intent but provide better language. These changes were reviewed and approved by the group.

Jerry Johnson announced the retirement of I3 vice-chair David Weinbach from Basler Electric and that he may no longer be able to serve on the working group. Roger Whittaker agreed to take on vice-chair duties.

Bob Beresh will send out an Email to members with the new document wording to include each comment resolution. This will be a new draft for re-balloting.

I4: IEC Standards Advisory

Chair: E. A. Udren

Vice-Chair: M. M. Ranieri

Output: IEC Standards Advisory

The Working Group did not meet. There are no TC 95 documents currently out for comment. A Committee Draft (CD) revision for IEC 60255-6 is expected to be available for review in mid February as explained just below. The WG thus expects to meet in May in Albany for this and other business.

The US National Committee is casting a favorable vote on the nomination of Dr. Li Yaping to be the new Chair of TC 95, following the recent resignation of Bertil Svensson of Sweden.

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

This working group did not meet during the January 2006 meeting.

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

Chair: M.M. Ranieri
Vice-Chair: J. Teague
Output: Revision of ANSI/IEEE C37.90-1989 (R1994)

The working group did not meet at the January New Orleans PSRC meeting. The Chairman is currently working with the IEEE editing group to finalize the last of the recommended IEEE editorial changes for C37.90-2005 so that it can be issued in January 2006.

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

Chair: L. Kojovic
Vice-Chair: V. Skendzic
Output: New IEEE Guide

The WG I7 Group met on Tuesday with 18 members and guests.

The Guide Draft 1.0 document was developed and discussion included the entire document.

For the next meeting all comments and contributions will be implemented in the Draft 2.0 document. In addition, presentation on Rogowski coil output signal conditioning and applications for relaying purposes will be presented. the IEEE instructions. Discussion included the draft outline and further contributions.

I8: Application of Optical Current & Voltage Sensor Systems

Chair: H. Gilleland
Vice-Chair: B. Pickett
Output: New IEEE Guide

The WG I08 met on Tuesday January 10, 2006, and was run by Harley Gilleland, Chairman of the Working Group. There were 14 attendees, including members and guests – 5 or 6 members that normally attend were not in New Orleans – and 4 or 5 members had conflicts with other WG commitments meeting at the same time as I08. It was a very productive meeting, and the key issues addressed and discussed included the following:

Harley reviewed the information and material in the emails that had been sent to members as part of the preparation for the New Orleans meeting:

An updated list of PSRC WG member plus Corresponding Members that do not normally attend the PSRC.

There was a strong request for each Team Leader to post on the Website whatever material they had on their assigned Section and Subject.

The Link for the PSRC WG I08 Web Site – for their use in reviewing the posted material.

The Link for the WG P1601 Website. This WG is sponsored by the PES- PSIM - and is developing a Standard that covers all aspects of Optical Sensor Systems – not just a specific application like protective relaying.

WG I08 Website: Jim Ingleson discussed the procedures and format for posting information on the Website – and offered to continue do the task of posting for the Working Group.

Sections / Topics that will be included in the Guide being developed by the WG:

The group reviewed the status and action plans for each of the Sections.

The discussion was led by the individual Team Leaders.

Several Sections need additional support in defining the issues and material that should be included in them – the WG offer suggestion and some action plans were discussed.

Work Assignments:

By the end of February all Team Leaders are to have posted the latest version of the material for their Sections.

By the end of March each WG member is to have reviewed all of the Sections posted on the Website – and send an email to each Team Leader and the WG Chair – with their comments. In some cases the feedback will be “no comment” – but some response is requested from everyone.

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 group did meet with only a few people present. Roy Ball (ABB), Larry Wright (DUKE), Jeff Burnworth (BASLER)

All negative comments from the balloted standard were compiled on a spreadsheet and cataloged by type of comments. The technical comments were divided between Marie Nemier (not present), Mario Rainieri (not present), Jeff Burnworth and Roy Ball. Mario will be looking at harmonization with IEC while other looked at technical issues.

All comments related to table 1 and 3 were discussed and resolved. It was agreed to combine tables 1 and 3 to match C37.98 relay types and to match the format. Negative comments in the definitions area were solved as well.

The remaining unresolved comments are going to be divided up again and assigned. The goal is to have all the negative comments on the list (147 comments) resolved by the end of this year (2006). Editorial comments will be included.

New assignments will be mailed in February, asking for feedback by March 30 to discuss at the next meeting.

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

Chair: M. Nemier

Vice-Chair: M. Bajpai

Output: Revision of IEEE Standard C37.98

No meeting of this WG was held at the January 2006 PSRC in New Orleans due to sudden illness of the Chair.

Draft 4 shall be prepared to send to correspondence members for review.

Prior to issuing draft 4, the definition section shall be compared to IEEE 100 for duplication.

Tif files for the figures and Annex A shall be inserted into the main document file.

The introduction shall be updated to provide details of the changes made from the previous revision.

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

Chair: M. Meisinger

Vice-Chair: D.R. Sevcik

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

Working Group I12 met on the afternoon of January 10, 2006 with 5 members and 2 guests. At this meeting minor editing changes were made to the document. Mohinder Sachdev provided guidance on resolution of comments pertaining to the figures in the document. An email will be sent to the reviewers that had submitted negative ballots notifying them of the resolution and requesting their concurrence. The revised document will be submitted for recirculation ballot as draft 8. The PAR for this working group has been extended to the end of 2006.

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 January 2006 meeting.

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 with 5 members and 3 guests. Draft 8 was distributed and discussed. The CT Saturation Calculator which is on the IEEE PSRC website will be referenced in the Bibliography section of the guide. Al Darlington has agreed to help in the converting of the guide's 26 figures into TIF format. The working group chair worked with Matt Ceglia (IEEE Program Manager) to initiate the formation of a balloting body for WG I15. Those interested in joining the balloting body will have 40 days for 1/101/16 to sign up.

I17: Trends in Relay Performance

Chair: W.M. Carpenter

Vice-Chair: J.D. Wardlow

Output: Special Report

This working group did not meet during the January 2006 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.

ITF2: Event Reconstruction Using Data from Protection and Disturbance Recording IEDs

Chair: J. W. Ingleson

The last meeting of this group was held at the January 2006 PSRC meeting in New Orleans.

- Continuing high attendance at meetings indicates high interest in this area.
- > New assignments were made to:
 - > Ken Berendt - Introduction to distributing time sync. information by network means.
 - > Jim Hackett - Examples of timing considerations in circuits, examples of time reporting of lightning induced faults.
 - > Jack Chadwick - Send an applicable reference paper to the Chair.
 - > Bob Beresh - Short Writing on basic required data for event analysis.
 - > The group has decided to take this effort in the direction of supporting event reconstruction, that is, supporting compilation of sequence of events (SOE), using data from relay and recording IEDs. This is actually somewhat different than the original assignment statement.
 - > GPS clocks are now almost perfect compared to the others variables discussed below. Earlier clocks carried uncertainty ratings of 1 ms. but were probably better.
 - > The connection of GPS clocks to various devices is done by a variety of methods, and we have found no reference that covers all the preferred methods. An NPCC report states that the interconnection network is assumed to contribute an uncertainty of 1 ms and a delay of up to 1 ms. There was a general feeling at meetings of ITF2 most installations are probably better than this, but there in no documentation.
 - > 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 are probably the biggest component of delay, or the order of 4 ms.

- > Jim Ingleson will prepare an overall report on the discussions so far.
- > The name of the WG formed out of this effort will be "Timing Considerations for Event Reconstruction."
- > The assignment statement will be "Prepare a report to the PSRC on Timing Considerations for event reconstruction, including interpretation of time sequence data from synchronized protection and recording IEDs."
- > The working group number will be I11. This is the capitol letter "I" followed by the number eleven.

5. Liaison Force Reports:

Del Weers will help with liason with Instrument Transformers Subcommittee. He said that the C57.13 Instrument Transformer Standard was reaffirmed in 2005. A working group has been named to review it for possible revisions. Also C57.13.6, Standard for High Accuracy Instrument Transformers was balloted and accepted in 3/21/2005. The next meeting of this subcommittee will be in March 2006.

4. New Business:

The Chairman announced that Jim Hackett of Mehta Tech has accepted Membership in this Subcommittee.

J: ROTATING MACHINERY PROTECTION SUBCOMMITTEE

Chair: W. G. Hartmann

Vice Chair: K.A. Stephan

The Subcommittee met on 1/11/06 with 11 members and 8 guests.

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 # 9 - 1/11/2006

The Working Group met for a single session with 11 members and 6 guests on January 11, 2006. The chairman reviewed the activities to date for the group including a status report on the report draft and writing assignments. During the discussion, the chairman reiterated the need to complete the assignment by the end of 2006 to support the revision work of C37.96 that starts this year.

The remainder of the session was used to review the draft and submitted writing assignments. New assignments were given to help complete the unfinished sections. These assignments are due February 28 to the chairman. Additionally supporting documents will be distributed by the chairman to the Working Group.

The Working Group will meet for a double session in May to completely review the complete draft of the report.

J3: Protection of Generators Interconnected with Distribution System

Chair: E. Fennell

Vice Chair: R. Pettigrew

Output: Transaction Paper

The Working Group (WG) did not meet. The WG transactions paper is completed and has been submitted to the PSRC Officers for review. No further meetings are anticipated.

J4: Revision of C37.102 AC Generator Protection Guide

WG J4

M. Yalla, Chair

K. Stephan, Vice-Chair

Established 2000

Output: Guide

Expected Completion Date: 2006

Status: 18th meeting

This meeting of Working Group J4, C37.102 IEEE Guide for AC Generator Protection was held on Tuesday, January 10, 2006, with 13 members and 7 guests in a single session.

The Working group continued the review of Draft 7 of the guide that included changes to accommodate the negative ballots as well as the affirmative ballot comments. By the end of 2005, three of the negative ballots have been resolved and the fourth negative ballot had been contacted with proposed changes for resolution. This draft is now ready for a recirculation ballot that will commence shortly.

Major discussion points at this meeting included use of the “traditional” cylindrical rotor steady state stability plot equations applied to salient-pole machines as being conservative for these types of machines, inclusion of the reference and figure of IEC 34-3 on generator voltage and frequency operation ranges (resolution of a negative ballot), and distance relay (21) zone 2 timing criteria.

Matt Ceglia from the IEEE Standards Association was asked outside of the meeting how the references for C50.13 and C50.12 should be listed since these documents have been approved in 2005 but not yet published. Steve Conrad, working group member, was inadvertently left off of the document and his name shall be added.

J5: Generator Protection Setting Criteria

Chair: C.J. Mozina

Vice Chair: M. Reichard

Output: Paper

Introductions, 11 members, 3 guests

Review of September 2005, Calgary Meeting

Negative ballot resolution was explained.

An Appendix was added to the paper to complete the paper. The Appendix defines terms used in the calculation examples within the paper.

Reference [5] added, “Final Report on the August 14, 2—3 Blackout in the United States and Canada: Causes and Recommendations”, U.S. – Canada Power System Outage Task Force, April 5, 2004

WG discussed the following technical and editorial issues:

Page 1, right column, line 6, revise sentence to read “disturbances, especially the 1996 western area disturbances...”

Page 1, right column, lines 13 through 23, revise to bullets to reflect topics in the order they are discussed in the paper.

Page 7, section V. GENERATOR LOSS OF FIELD COORDINATION, include discussion regarding hydro unit’s unique situation where $X_d \approx 1.0$ per unit, and the dilemma regarding how to set Zones 1 and 2. This was assigned to Subash Patel.

Page 10, right column, line 5, change to “90 to 95 percent of nominal ratings [5], per joint U.S. – Canada paper (reference [5]).

Page 10, right column, line 41, remove item “4.” and replace with paragraph discussing time delay and including recommendation to verify coordination with stability study and/or consideration to block Zone 2 operation for out-of-step conditions.

Page 11, left column, lines 3 and 20, correct X_{TGsec} shown with two different values (2.038 Ω and 2.041). In addition, recommendation was made to show numbers in least significant digit.

Page 14, left column, line 23, remove “that affect the same results” form sentence such that it will read “The Working Group recognizes that other methodologies could also be used”.

Page 14, left column, Fig. 14, remove line without item in legend.

The changes outline above will be made and the paper and it will be forwarded to the PSRC officers for their review. This is the last step in the approval process. The May WG meeting will be devoted to addressing the comment from the PSRC officers.

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

Working Group J7, met on January 10, 2006 in one session with 7 members and

10 guests. The chairman opened the meeting with explaining the status of this project.

The first balloting was completed in September, 2005, with 132 comments. The majority of comments on the first balloting (Draft 9) were editorial in nature, and were reflected into Draft 10 and recirculated.

The working group desired to review the original comments (132) on the first ballot. The rest of the sessions (more were held on Jan 11) were spent for reviewing the [Draft 10] negative comments (37 MBS [must be satisfied] =YES) and finished. The working group had decided to review the rest of the editorial comments (95). Chairman will send Draft 11 and comments list to the working group as soon as possible. The response time will be within two weeks.

JTF2, Protection Considerations for Combustion Gas Turbine Static Starting

Mike Reichard, Chair

Output: Report to the Subcommittee

Second Meeting

Introductions, 8 members, 4 guests

The Task Force reviewed and approved the September meeting minutes.

Zeeky Bukhala gave a presentation on GE's Load Commutating Inverter (LCI) product.

Following his presentation, the working group had several open issues regarding the initial LCI start process that need to be investigated to determine if the generator is vulnerable to undetected faults, these are:

When is excitation applied during the purge (initial) stage?

What is the available fault current during the LCI start phases?

At what frequency does the generator protection come on line during this process?

Wayne Hartmann gave a presentation on CT performance at low frequency based on laboratory testing. His analysis showed that two 60 Hz rated CTs, 500/5 and 50/5, were able to perform accurately down to 7.5 Hz. The next step regarding this topic would be to develop a quantifying statement or document regarding CT operation at low frequency.

A Siemens representative, Andre Smit, will be contacted to give a presentation during the May meeting. Jurgen Holbach of Siemens was asked to contact Andre during the meeting. Wayne Hartmann was assigned to follow-on this request with an email to Jurgen after the meeting.

Liaison Reports

Electric Machinery Committee

C.J. Mozina

The EMC last met in June of 2005 at the PES General Meeting in San Francisco. There is a major effort within the EMC to re-organize its subcommittee structure reducing seven subcommittees into three new subcommittees. The new subcommittees are: Generator (GSC), Motor (MSC) and Material (MaSC). They are seeking Technical Council approve for the reorganization which requires rewriting their O&M manual. The next meeting of EMC will be at the June 2006 PES General Meeting in Montreal.

IAS I&CP Committee

C.J. Mozina

The I&CPS Committee did not meet at the Fall 2005 IAS General Meeting because most members could not attend the meeting which was held in Hong Kong, China. Active did continues on WGs of interest to the PSRC:

Revisions of the Buff Book (IEEE Std. 242) - Chapter Chairman have been selected. Progress has been slow because of the selection of specific Buff Book material to be removed from the Buff Book and incorporated into the new "Rainbow Book" has not been decided. This new book will address basics such as fault current and voltage drop calculation methods. Major addition to the Buff Book will include information on digital relay practices. Upgrading of generator protection chapter to include new protection areas and hybrid grounding. New chapters will be added on Distributed Generation and Telecommunications within industrial facilities.

Bus and Breaker Failure (BF) Protection – Output of this WG will be an IAS transactions paper. A copy of the PSRC WG Report on BF protection was provided to this WG. The WG will address BF within industrial medium voltage facilities.

Grounding & Ground Fault Protection of Medium Voltage Generators - EMPT studies were performed and the results reviewed for hybrid grounding. There were no surprises in the study results. Additional EMPT cases were defined without generator surge capacitors and neutral surge arrestors. The outline of the proposed IAS transaction paper was revived with specifics on the sections on equipment requirement outlined in detail. Two IAS paper on completed hybrid ground projects will be presented at this years IAS Pulp and Paper conference.

The next meeting of the I&CPS committee will be in May 1-4, 2006 in Dearborn, MI.

Coordination Reports

P408-NPEC, Standard Criteria for Class 1E Power Systems for Nuclear Power Generating Stations R.V. Rebbapragada

No report.

Old Business

C37.96 was reaffirmed with 32 negative ballot comments. 139 balloters, 57 comments total. The reaffirmation passed with 97% approved. A Task Force needs to be considered to address the comments received from the reaffirmation and a recirculation. Steve Conrad suggested formation of a Task Force, to review the comments in May 2006. He also suggested we contact the negative balloters of the recirculation to see if they will change their vote. This will allow the reaffirmation to be complete. Otherwise, we have to recirculate with the negative comments for the other balloters to see, whether we choose to pursue a revision to the guide or not. The Task Force was not formed at this meeting.

New Business

New topic – trends, technology and applications for motor-bus transfer. The SC has performed work on this in the past (over 10 years ago), and it was decided that a Task Force will be formed to investigate if there is enough new information to warrant a new paper or report. Jon Gardell will Chair the new JTF-8 at the May 2006 PSRC meeting.

K: SUBSTATION PROTECTION SUBCOMMITTEE

Chair: C. R. Sufana

Vice Chair: F. P. Plumptre

The Subcommittee met Wednesday January 11, 2006, at New Orleans, Louisiana with 16 members and 19 guests attending. The minutes of the previous meeting in Calgary were approved.

ITEMS OF INTEREST FROM THE ADVISORY COMMITTEE MEETING:

Charlie Sufana reported:

1. IEEE HQ will now require a short PowerPoint presentation be given at the beginning of each working group meeting that has a PAR. The presentation is about patents and copyrights and the minutes must reflect that the subject was covered.
2. It was suggested that for standards that are being developed for new and mainly untried equipment that trial use standards should be developed rather than normal standards.
3. Presentations are being sought for the May and September 2006 MAIN committee meetings.

4. Everyone is to be thanked for doing paper reviews.
5. That a representative from NERC would present a short update after all of the Subcommittee meetings on Wednesday.
6. Bill Lowe looking for help in maintaining our PSRC web page.

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 LaNovelle West Room, The Hotel Monteleone, New Orleans, LA at 1:30 PM on Tuesday, January 10, 2006. Ten members and twenty guests were present.

The minutes of the September 2005 meeting of the Working Group distributed via Email and posted on the WG Web site were approved. The Chair reported on the status of the contributions that were outstanding at the September 2005 meeting. He then reported that after completing the outstanding items, Draft 5 of the Guide was distributed among the members for review. A ballot was also included with the distribution; the ballots are due on or before February 15, 2005.

Since the balloting is likely to be successful well before the May meeting of the PSRC, WG agreed that the Chair seek permission from the PSRC for forming the balloting body and starting the Standards balloting process. Subcommittee Chair Charles Sufana requested permission at the MAIN committee meeting and the MAIN committee granted permission to K1.

For the next meeting, the working group requests a single session for 40 people and a computer projector.

K2: BREAKER FAILURE PROTECTION

Chair: Roger Hedding

Vice Chair: Arvind Chaudhary

Established, 2001

Output: ANSI C37.119

Expected Completion Date: 2006

Draft 3

K2 did not meet as it has completed its task.

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

Chair: Bruce Pickett

Vice Chair: Tarlochan Sidhu

Established, 2002

Output: Paper

Draft 7.3

Working Group K3 met with 2 members and 6 guests (through writing/drawing assignments 2 new members will join the group).

After introductions, we reviewed and approved the minutes from the last meeting.

We discussed the subject of incorporating Transmission Substations into the paper, but decided it should remain Distribution as originally intended. A clarification of this will be added in the first section of the paper (Charlie Sufana).

We reviewed the paper in general, noting several typographic errors (I will provide a separate marked up document to Bruce).

We had a group discussion of reclosing philosophies used by different utilities.

George Moskos volunteered to write a paragraph discussing the use of multiple overcurrent setpoints on a feeder relay.

Al Darlington volunteered to recreate the figures in the standard format using standard symbols.

The requirements for the next meeting are a room for 25 and a computer projector.

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

Chair: Simon Chano

Vice Chair: Dean Miller

The WG met on Tuesday morning, January 10, with 11 members and 2 guests present. Dominick Fontana gave a presentation on how Northeast Utilities has been applying multifunction relays for line and breaker control and protection. Alla Deronja from American Transmission discussed how they are designing similar protection functions. She will be writing up a description on their design philosophy to be included in the special report. George Gresko from Exelon Corp also discussed how his company is handling the reclosing, sync-check and breaker failure functions. The importance of including maintenance issues in the design of these ancillary protection functions was discussed. Mark Allen and Damien Tholomier will be giving presentations at the May meeting. The remaining writing assignments are due before the March 15.

For the next meeting, the working group requests a double session for 20 people and a computer projector.

K6: SUDDEN PRESSURE RELAYING

Chair: Randy Crellin

Vice Chair: William Gordon

The working group met on Tuesday morning, January 10, 2006 for the third time in a single session with 9 members and 16 guests. One of the guests requested to join the working group which currently has 14 members.

After introductions and review of the Working Group status, we discussed several of the writing assignments that were received from individuals that accepted writing assignments at the Calgary meeting. Roger Hedding, Don Lukach, Bill Gordon, Barry Jackson, and George Nail provided data. Mark Carpenter provided SPR information that was used at Texas Utilities.

Chuck Mozina submitted a paper titled "Current Supervision of Fault Pressure Relays On Large EHV Transformers" from Cleveland Electric Illuminating Company dated 2/24/1977. Chuck discussed the content of this paper and his efforts in investigating misoperations.

Four members of the working group (Randy Crellin, Bill Gordon, Don Lukach, and Charlie Sufana) volunteered to work on consolidating the information received to date into a document format. Our intent is to complete a preliminary draft and email to the working group members for review prior to the May meeting.

For the next meeting, the working group requests 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 13

The Working Group did not meet this session. A PAR extension was approved in December for one year to complete this project. The working group chair is working on contacting the remaining negative balloters with the proposed resolutions developed by the working group in previous meetings. Draft 13 will be issued as the recirculation draft.

For the next meeting, the working group requests a single session for 20 people and no audiovisual equipment.

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 7 members and 10 guests. Matt Basler, Tony Sleva and Gabriel Benmouyal joined the working group.

After introductions, Karl Zimmerman gave a short presentation on the background of arc-flash.

George Nail commented that it is important we avoid detailed work on areas outside of protective relaying (i.e. Section 4.0 current limiting fuses, etc.)

Writing assignments were made:

1.0 Introduction -- unassigned

2.0 Definition of Arc Flash and Related Terms - Tony Sleva

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

4.0 Summary of Non-Protection Methods of Reducing Arc-Flash - Elmo 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.

5.0 Protection Tools to Reduce the Impact of Arc Flash – Reduce Trip Times – John Boyle

5.1 Coordination Margins -- unassigned

5.2 Faster Bus Protection -- Karl Zimmerman

5.2.1 Overcurrent Relays With Reverse Interlocking Scheme

5.2.2 Bus Differential

5.3 Optical Sensors – Roger Hedding

5.4 Other Approaches -- unassigned

6.0 Summary and Recommendations -- unassigned

7.0 Bibliography -- unassigned

Assignments are due April 15. The Chairman will call non-present WG members to fill the remaining assignment.

Next meeting: single session, projector, room for 25.

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 did not meet as there was no new activity.

For the next meeting, the working group requests a single session for 25 and no computer projector.

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: 2005

Draft 8

K13 met in a double session without the Chair or Vice Chair present. There were approximately 5 WG members and 5 guests in attendance. Charles Sufana chaired the first session and Simon Chano chaired the second.

Attempts were made to resolve negative ballots of Per Lindberg and Jeff Nelson in the absence of the chair and vice chair.

At the second session, the working group chair was conferenced called. Frank Plumptre agreed to address the concerns of Per and will send the revised draft before next Friday to Per and the working group.

It was decided to contact the PSRC officers for advice on how to address Jeff Nelson's comments. Jeff's comments are mainly concerned with the scope of the document itself.

For the next meeting, the working group requests one session for 15 people and a computer projector.

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 1.1

The Group met in New Orleans on January 11, 2006 with 15 Members and 10 Guests. This was the first meeting of the Working Group. Our PAR was approved in late September 2005.

Before becoming a Working Group, the Task Force has developed a relatively mature outline during the course of 2005. The Working Group produced raw versions of approximately 50-60% of the intended content.

This meeting was entirely dedicated to reviewing and discussing the received material (Draft 1.1). Major items discussed were:

Section 4 on bus configuration shall be revised to focus more on location of CTs, CBs and disconnectors as well as on bus switching scenarios, and less on protection zoning or bus protection issues (Damien Tholomier).

Section 6, in its part on CT performance, requires more focus on estimating time to saturation. The CT Guide is not entirely applicable to sub-cycle saturation times. Lubomir Kojovic volunteered new material, to be reviewed between Juergen Holbach, Lubomir and Stan Zocholl, and included as applicable.

Section 7.1.2 on overcurrent differential protection needs to be revised to focus on practical means of providing security: time delay, and stabilizing resistors (so called "medium-impedance" approach). Practical setting application guidelines, if available, to be included. Bogdan Kasztenny is to work with Stan Zocholl on this. John Horak will provide an application note related to this issue.

Section 7.2 on blocking schemes shall be updated to briefly mention time coordination, and natural coordination due to the fault limiting effect of power transformers, as other means to achieve selectivity (Damian Tholomier).

Mike Thompson joined the Group bringing the membership to 29.

Next meeting: single session, computer projector, seating for 30.

Liaison Reports:

None to report

Old Business

None to report

New Business

Moh Sachdev chair of K1 requested that permission be sought from the MAIN committee to proceed with forming a balloting body pending successful Working Group approval of the latest draft. Subcommittee Chair Charles Sufana requested permission at the MAIN committee meeting and the MAIN committee granted permission to K1.

Matthew Ceglia from IEEE HQ gave a short explanation on the need for giving the presentation dealing with patents and copyrights.

As a result of the reaffirmation ballot for C37.99 IEEE Guide for the Protection of Shunt Capacitor Banks, a new task force was created to review the negative ballots and recommendations. The reaffirmation ballot approved the guide but there are several negative ballots to be addressed. Pratap Mysore volunteered to be the chair and Arvind Chaudhary will be the vice chair. The new task force is KTF8 and will meet at the May meeting. The task force requests a single session for 20 people and a computer projector. Matthew Ceglia discussed the reaffirmation process for Guides and suggested what can be done for any negative ballots that are received.

Bill Gordon became a new subcommittee member.

Presentations:

IEEE/IEC Dual logo
Protection Using Spread Spectrum Communications
Power Quality Issues in Protective Devices

Jodi Haasz
Ken Behrendt
T. W. Cease

Future Meetings:

May 15 – 18, 2006 **Albany, NY**
Sept 18 – 21, 2006 **Atlanta, GA**
January 8 – 11, 2007 **Phoenix, AZ**
May 14 – 17, 2007 **Nashville, TN**

The meeting was adjourned by Chairman Winston.