

POWER SYSTEM RELAYING AND CONTROL COMMITTEE- 2017

Scope: Treatment of all matters Energy Society and associated Groups and Societies of the in which the dominant factors are the application, design, construction, and operation of protective, regulating, monitoring, synchronism-check, synchronizing, reclosing, and auxiliary relays, including all matters necessary to the function of such relays and relaying systems employed in the generation, transmission, distribution, and utilization of electrical energy and including the effects of such relays on system operation. Treatment of techniques and requirements for communications within, between, and among protective relays, to the extent that these communications affect protection functions or performance. Maintenance of liaison and collaboration as required with other committees of the Power & Energy Society of the IEEE. Web Site: <http://www.pes-psrc.org/>

Officers:

P.G. Mysore, *Chair*
Minneapolis, MN 55416

R. W. Patterson, *Vice chair*
Patterson Power Engineers
Chattanooga, TN 37419

Dr. Murty Yalla, *Secretary*
Beckwith Electric Co. Inc.
Largo, FL 33773

A. Mulawarman, *Standards
Coordinator*,
Xcel Energy
Minneapolis, MN 55401

Members

Adamiak, M. G.
Allen, E.
Anderson, B.B.
Antonova, G.S.
Apostolov, A. P.
Bartok, G.J.
Basler, M.
Beckwith, T.R.
Begovic, M.
Benmouyal, G.
Benou, M.R.
Brahma, S.
Brunello, G.A.
Brunner, C.
Bui, D-P
Bukhala, Z.
Burnworth, J.
Carpenter, W. M.
Carroll, P.T.
Cease, T.W.
Chaudhary, A.K.S.
Chelmecki, C.
Conrad, S. P.

Cornelison, J.R.
Crellin, R.
Cunico, R.
Dahlin, T.
Das, R.
Dempsey, R. W.
Deronja, A.
Dickerson, B.
DoCarmo, H.
Donahoe, K.
Dood, M.
Elkin, P.
Fennell, E. C.
Finney, D.
Fischer, N.
Fodero, K.
Fontana, D.
Fredrickson, D.
Friend, F. A.
Garcia, R.
Gers, J.
Giarratano, D.
Gilleland, H.
Hackett, J.
Hamilton, R.
Hartmann, W. G.
Hedding, R. A.
Henneberg, G.
Henville, C. F.
Holbach, J.
Houser, K.
Hu, Y.
Hunt, R.
Huntley, C.
Imai, S.
Jodice, J.A.
Kao, M.
Kim, S.
Kobet, G.
Kojovic, L.
Kumar, P.
Kunsman, S.A.
Lascu, R.
Long, J.
Lukach, D.
Madani, V.
Mackie, B.
Magruder, B.
Makki, A.
Martin, A.
Martin, K.
Martin, P.
McCannon, W.
McDonald, M.
McLaren, P. G.
Meisinger, M.
Midence, R.
Miller, D.H.
Monterrubio, H.
Mooney, J.
Moskos, G.
Mugalian, B.
Mulawarman, A.
Mysore, P.
Nagpal, M.
Nemeir, M.
Niemira, J.
Novosel, D.
O'Brien, J.M.
Patterson, R.
Patti, C.
Pettigrew, R.
Pickett, B.A.

Pond, J.
Rahmatian, F.
Ranieri, M. M.
Ray, R.E.
Reckerd, D.
Reichard, M.L.
Ruckman, C.
Sambasivan, S.N.
Sanders, M.
Schroeder, M. S.
Sciaccia, S.
Seegers, T.
Sufana, C. R.
Swanson, M. J.
Sykes, J.A.
Tengdin, J. T.
Thakur, S.
Thompson, M.
Tualla, I.
Tziouvaras, D. A.
Uchiyama, J. T.
Udren, E. A.
Uribe, A.
Vandiver, B.
Venkata, S.S.
Voloh, I.
Ward, S.
Whittaker, R.L.
Yalla, M.
Young, R.C.
Wang, J.
Winston, P.B.
Zhang, Z.
Zimmerman, K

Honorary Members

Appleyard, J. C.
Beresh, R.
Boyle, J. R.
Bright, J. A.
Brownlee, W. R.
Dawson, D. C.
Dietrich, R. E.
Dingler, J. B.
Esztergalyos, J.
Feero, W. E.
Giuliante, A. T.
Haas, R. W.
Horowitz, S. H.
Ibrahim, M.
Ingleson, J. W.
Jackson, B.
Johnson, G.F.
Koeppinger, J.
Lowe, W. G.
Marieni, G. J.
Mathews, C. A.
May, G. E.
Michelson, E. L.
Mozina, C. J.
Murphy, J. J.
Nail, G. R.
Niessink, T.
Parr, G.
Phadke, A.G.
Pumphrey, O. F.
Rockefeller, G. D.
Sachdev, M. S.
Stephens, J. E.
Taylor, R. P.
Thorp, J. S.
Volzka, D. R.

Zulaski, J. A.

**B: ADVISORY
SUBCOMMITTEE**

Scope: Assist the Chair of the PSRC on all matters that he may request in the functioning, direction, and conduct of the work of the Main Committee. (Main Committee Officers, Subcommittee Chairs and past PSRC Chairs)

P. Mysore, *Chair*
Minneapolis, MN 55416

R. Patterson, *Vice chair*
Chattanooga, TN 37419

Allen, E.
Dempsey, R.W.
Hedding, R. A.
Henville, C. F.
McDonald, M. J.
Mysore, P.
Kobet, G.
Lukach, D.
Mugalian, B.
Pettigrew, R.
Sanders, M.P.
Swanson, M.J.
Reichard, M.
O'Brien, J.
Winston, P.B.

**B1: AWARDS AND TECHNICAL
PAPER RECOGNITION**

Assignment: Nominate PSRC-sponsored papers, standards, and reports for PES Technical Council and IEEE awards. To nominate individual members for award recognition. (Sub Committee Vice Chairs)

Monterrubio, H., *Chair*
Beckwith Electric Co., Inc.
Largo, Florida 33773

Swanson, M. *Vice Chair*.

Benou, M.
Finney, D.
Henneberg, G.
Long, J.
Pickett, B.
Swanson, M.
Zimmerman, K.

B2: FELLOWS AWARDS

Assignment: Assist PSRC sponsors with advice on the Fellow nomination process. To access the background of Fellow nominees and aid the PSRC in preparation of required documents.

C. F. Henville, *Chair*
Henville Consulting Inc.
Delta, BC, V4M 2N5, Canada

B3: MEMBERSHIP

Assignment: Provide assistance in searching for new participants who have qualifications for eventual membership. Assist in maintaining diversity of expertise among active members and participants. Provide assistance, where appropriate, for those needing help gaining support of the organization where they are employed.

M.J. Swanson, *Chair*
MJ Swanson Associates
Windham, NH 03087

C. Dalton, *Co-Chair*

B4: O&P MANUAL REVISION AND WORKING GROUP CHAIR TRAINING

Assignment: Revise and amend PSRC Organization and Procedure Manual when directed to do so by the PSRC Chair. Conduct working group Chair forums on procedures and training.

Winston, P.B.

Hunt, R., *Vice Chair*
GE Multilin
Apex, NC

B5: PUBLICITY WORKING GROUP

Assignment: Preparation of such articles as may be required for the promotion of more general knowledge about the relaying art and the work of the PSRC. Promote the sales of selected IEEE standards, guides, and special publications at technical meetings and conferences. Promotion of PSRC meetings at local Universities and PES chapters.

M.J. Swanson, *Chair*
MJ Swanson Associates
Windham, NH 03087

B8: LONG RANGE PLANNING

Assignment: The primary function of the Long Range Task Force is to act in an advisory capacity to the Chair of the PSRC. They will discuss and analyze developments in various fields of Electric Power Engineering as they affect the activity of the Power System Relaying Committee. They are to advise the Officers of PSRC if any changes in the organization and operation of the PSRC are desirable. The membership of the Long Range Task Force is limited to ex-Chairs of PSRC.

M. McDonald, *Chair*
Ameren
St. Louis, MO 66149

Dempsey, R.W., Washington, DC

Henville, C. F. Delta, BC
Pettigrew, R. D., Asheville, NC
Phadke, A.G., Blacksburg, VA
Sanders, M.P., Asheville, NC
Taylor, R. P., Fletcher, NC
Winston, P. B. Forrest Park, GA

B9: PSRC WEB SITE

Assignment: Provide assistance in setting up Web Sites and maintaining the PSRC Web Site.

R. W. Patterson, *Chair*
Patterson Power Engineers
Chattanooga, TN 37419

C: SYSTEMS PROTECTION SUBCOMMITTEE

SCOPE: Evaluate protection system responses to abnormal power system states. Evaluate and report on special protection schemes, remedial actions schemes, monitoring and control systems and their performance during abnormal power system conditions. Recommend corrective strategies and develop appropriate standards, guides, or special publications. Evaluate and report on new technologies which may have a bearing on protection system performance during abnormal power system conditions.

J. O'Brien, *Chair*
Duke Energy
Charlotte, NC

G. Henneberg, *Vice Chair*
NV Energy
Reno, NV

Antonova, G.
Apostolov, A.

Brahma, S.
Cease, T.W.
Cunico, R.
Deronja, A.
Friend, F.
Garcia, R.
Gharpure, V.
Hackett, J.
Henville, C. F.
Houser, K.
Hu, Yi.
Hunt, R.
Imai, S.
Johnson, A.
Lasclu, R.
Madani, V.
McLaren, P. G.

Meisinger, M.
Miller, D.
Mooney, J.
Myrda, P.
Rahmatian, F.
Seegers, T.
Sykes, J.
Tualla, I.
Tziouvaras, D. A.
Udren, E. A.
Vandiver, B.
Ward, S.
Winston, P. B.

C2: ROLE OF PROTECTIVE RELAYING IN THE SMART GRID

Assignment: Identify the functions and data available in Protective Relaying Devices that are used at different functional levels and different applications and can be used within a Smart Grid. Describe the use of interoperable data formats for protection, control, monitoring, recording, and analysis.

A.P. Apostolov, *Chair*
Omicron
Los Angeles, CA

R. Moxley, *Vice Chair*
Siemens
Colfax, WA

Antonova, G.
Beaumont, P.
Brahma, S.
Bryant, C.
Dalton, C.
Donahoe, K.
Friend, F.
Garcia, R.
Gers, J.
Jenkins, D.
Jester, J.
Jodice, J.
Kockott, M.
Lasclu, R.
Martin, A.
Meisinger, M.
Mulawarman, A.
Myrda, P.
Novosel, D.
Pathirana, V.
Sorensen, D.
Soudi, F.
Vandiver, B.
Venkata, M.
Vezrosa, J.
Villasmil, D.
Ward, S.
Wong, C

C18: TRANSMISSION TO GENERATION INTERCONNECTION PROTECTION CONSIDERATIONS

Assignment: Write an IEEE Guide for Protection Systems of Transmission to Generation Interconnections.

A. Deronja, *Chair*
American Transmission
Waukesha, WI

K. Houser *Vice Chair*
Dominion VA Power, Richmond, VA

Antonova, G*
Bapary, A.
Barsh, J.
Buscot, D.*
Cunico, R.
English, W.
Fontana, D.
Fredrickson, D
Gulczynski, N
Jensen, M.
Johnson, G.*
Liao, Y.
Malson, H.
Midence, R.*
Miller, D.
Miller, J.
Mulawarman, A.*
Nagpal, M.
O'Brien, J.
Patel, Mahendra
Patel, Manish
Torres, N.
Tualla, I.
Uchiyama, J.
Valenzuela, J
Ward, S.
Young, R.

C19: PHASOR DATA CONCENTRATOR STANDARD

Assignment: Develop a Standard for Phasor Data Concentrators for power systems

V. Gharpure, *Chair*
Quanta Technology
Cary, NC

M. Kanabar, *Vice Chair*
General Electric
Markham, ON, Canada

Adamiak, M.*
Agrawal, P.*
Antonova, G.*
Brancaccio, D.*
Carrol, R.*
Chohan, S.*
Dwyer, D.
Goldstein, A.*
Hu, Y.*
Huang, Z.*
Johnson, A.*
Kirkham, H.
Maragai, D.
Martin, K.*
Miller, J.*
Murphy, J.
Otto, J.
Patel, M.
Skendic, V.*
Vandiver, B.*
Weeks, T.*

C20: IMPACT OF VSC HVDC ON AC TRANSMISSION ON AC PROTECTIVE RELAYING

Assignment: Develop a report to the PSRC describing Voltage Source Converter (VSC) HVdc systems and the impact on local AC system protection.

J. Mooney, *Chair*
Power Engineers, Inc
Portland, OR

I. Tualla, *Vice Chair*
Duke Energy
Charlotte, NC

Beaumont, P.
Fischer, N.
Hilaly, M.
Houser, K.
Johnson, B.
Kirkham, H.
Manna, T.
McLaren, P.
Mucha, M.
Samineni, A.
Subramanran, S.
Vo, C.
Ward, S.
Wilson, J.
Zinck, P.

C21: COMMISSION, DESIGN AND OPERATION OF LARGE SCALE SYSTEM INTEGRITY SCHEMES.

Assignment: Develop an IEEE Guide for Engineering, Implementation, and Management of System Integrity Protection Schemes

Y. Hu, *Chair*
Quanta Technology
Raleigh, NC

G. Henneberg, *Vice Chair*
NV Energy
Reno, NV

Allen, E.
Apostolov, A.
Ayudelo, L.
Beaumont, P.
Botero, L.
Brahma, S.
Calero, F.
Castano, J.
Deronja, A.
Diemunsch, V.*
Falk, H.
Gagnon, J.*
Galal, D.*
Henville, C.*
Johjnsn, A.
Kawano, F.*
Malson, H.
Midence, R.*
Miller, D.
Moxley, R.*
Omi, S.
Park, J.
Patel, Manish
Patel, Mahendra

Phillippe, T.
Quintana, A
Ren, Z.
Seegers, T.
Shi, B.
Thorton-Jones, R.*
Wang, A.*
Watare, A.*
Whittaker, R.

C23: Coordination of Synchrophasor Related Activities

Assignment: The ongoing task force will provide three main functions:

- Liason with NASPI (North American Synchrophasor Initiative) (specifically the PRSVTT (Performance Requirements, Standards and Verification Task Team)) to keep the PSRC in sync with the changes and needs in the industry with respect to the development and usage of PMU devices. Formalize transfer process of PRSVTT developed documents to PES PSRC including making recommendations which PRSVTT activities should be transferred to IEEE reports, guides and standards.
- Make recommendations to PSRC for assignments that would require the creation of working groups in PSRC and also recommend what the output of those working groups might be (Guides, reports, etc.) based on the needs of the industry.
- Coordinate related activities with other IEEE PES committees.

Tony Johnson, *Chair*
Southern California Edison

Allen Goldstein, *Vice Chair*
NIST
Gaithersburg, MD

Dwyer, D.
Gharpure, V.
Hackett, J.
Hu, Y.
Kirkham, H.
Madani, Vahid
Martin, K.
Murphy, J.
Myrda, P.
O'Brien, J.
Patel, M.

C24: Modification of Commercial Fault Calculation Programs for Wind Turbine Generators

Assignment:

- 1) To survey WTG manufacturers to determine what parameters they could provide that could be used by steady state short

- circuit program developers in various time frames.
- 2) Use the result of this survey to prepare a report that can be used by steady state program developers to refine their models.

S. Brahma, *Chair*
NMSU
Las Cruces, New Mexico

E. Farantatos, *Vice Chair*
EPRI

Aquiles-Perez, S.
Chan, S.
Guerrero, M.
Henville, C.
Houser, K.
Jalali, M.
Lascu, R.
Liao, Y.
Lien, J.
Miller, D.
Patel, Manish,
Patel, Mahendra
Peng, C.
Qui, J.
Qui, Q.
Uchiyama, J.
Zadeh, M.
Zamani, A.

C25: Protection of Wind Electric Plants

Assignment: Write a report to provide guidance on relay protection and coordination at wind electric plants. This report will cover protection of generator step up transformers, collector system feeders, grounding transformers, collector buses, reactors, capacitors, main station transformers, tie lines and points of interconnection and associated arc flash issues. Although the report will address coordination with wind turbine generator protective devices and static var sources, the protection of the wind turbine generators and static var sources will not be included.

M. Best, *Chair*
UC Synergetic

K. Houser, *Vice Chair*
Dominion VA Power
Richmond, VA

Antonova, G.
Boysen, B.
Brahma, S.
Buchanan, D.
Farantatos, E.
Fredrickson, D.
Gers, J.
Henville, C.
Hunchuk, D.
Kanabar, M.

Lascu, R.
Liao, Y.
Midence, R.
Miller, D.
Niemira, J.
Powers, A.
Vico, J.
Zamani, A.

C26: IEEE Guide for Power System Protection Testing (C37.233 revisions)

Assignment: Revise C37.233 Power System Protection Testing Guide

D. Ware, *Chair*
Power Grid Engineering

M. Black, *Vice Chair*
Sargent & Lundy

Uribe, A.
Beach, D.
Bhat, S.
Bloder, N.
Boyson, B.
Brown, J.
Casilla, N.
Cavalheira, E.
Cooper, S.
Donahoe, K.
Garcia, R.
Gosalia, J.
Henneberg, G.
Jester, J.
Kim, S.
Lee, A.
Liao, Y.
Madani, V.
McHale, E.
Moores, B.
Polanco, L.
Seegers, T.
Siira, M.
Shock, E.
Short, S.
Stojak, M.
Turner, S.
Uribe, A.
Vang, T.
Verzosda, J.
Weyer, G.
Wong, C.
Young, R.

C28: IEEE Guide for Synchronization, Calibration, Testing and Installation of PMUs (C37.242 revisions)

Assignment: Revision of the IEEE guide which provides guidance for synchronization, calibration, testing, and installation of phasor measurement units (PMUs) applied in power system protection and control. The following are addressed in this guide:

- a) Test and calibration procedures for PMUs for laboratory and field

- applications. These procedures have been superseded by another IEEE document and will be revised or deleted as appropriate.
- b) Considerations for the installation of PMU devices based on application requirements and typical bus configurations. New lessons learned since the publication of this guide may be accounted for in a revision to the guide.
- b) Techniques focusing on the overall accuracy and availability of the time synchronization system. New technologies and further information about synchronization may be accounted for in a revision to the guide.
- d) Communications testing for connecting PMUs to other devices including Phasor Data Concentrators (PDCs). Lessons learned from the field may be included in a revision of the guide.
- A. Goldstein, Chair
NIST
Gaithersburg, MD
- H. Kirkham, Vice Chair
PNNL
- Brunello, G.
Dickerson, B.
Dwyer, D.
Friend, F.
Ghapure, V.
Ouillette, D.
- C-29 Power System Testing Methods for Power Swing Blocking and Out of Step Tripping
- Assignment: Create a report on test instructions / parameters to accompany the PSRC documents Application of Out-Of-Step Protection Schemes for Generators and Tutorial on Setting Impedance Based Power Swing Blocking and Out of Step Tripping Functions on Transmission Lines to aid the users in quality testing of their settings and systems when following the working group outputs which recommend testing of complex relay settings and systems.
- Molson, H, Chair
- Kockott, M., Vice Chair,
ABB
- Aquiles-Perez, S.
Carvalhoira, E.
Casilla, N.
- Das, R.
Dempsey, B.
Fowler, R.
Gulczynski, N.
Henneberg, G
Hilaly, M.
Jones, K.
Kobet, G.
Le, V.
Maragal, D.
Omi, S.
Polanco, L.
Ren, Z.
Sykes, J.
Turner, S.
Tziouvaras, D.
Vandeligt, J.
Vandiver, B.
Verzosa, J.
Wilson, J.
Yang, L.
- C-30 Microgrid Protection Systems
- Assignment: Prepare a report that will investigate and assess techniques, approaches, and potential solutions to the challenges of microgrid protection.
- M. Higginson, Chair
S&C Electric
- F. Friend, Vice Chair
American Electric Power
- Apostolov, A.
Ashrafi, A.
Bloder, M.
Brahma, S.
Burnworth, J.
Das, R.
Deaton, J.
Dong, X.
Fowler, R.
Garcia, R.
Haas, D.
Hamilton, R.
Hedding, R.
Jensen, J.
Khan, S.
Kockott, M.
Kojovic, L.
Lascu, R.
Liao, Y.
Mackie, B.
Madani, V.
Narendra, K.
Niemira, J.
Novosel, D.
Omi, S.
Oubidar, M.
Ryan, K.
Song, E.
Sykes, J.
Venkata, M.
Wang, B.
Yang, L.
Zamani, A
- D: LINE PROTECTION SUBCOMMITTEE**
- Scope:* Investigate and report on the relaying techniques and systems used for transmission and distribution (T&D) line protection. Develop statistics and recommend protection practices for improving line relaying performance. Develop and maintain standards for line protection.
- G. Kobet, *Chair*
TVA
Chattanooga, TN 37402
- K. Zimmerman, *Vice Chair*
Schweitzer Engineering Laboratories
Fairview Heights IL
- Baresch, J.
Boyle, J.
Boysen, B.
Brunello, G.
Carpenter, M.
Carroll, P.
Conrad, S.
Crellin, R.
Cunico, R.
Deronja, A.
Fischer, N.
Fontana, D.
Friend, F.
Hedding, R.
Johnson, J.
Kao, M.
Kezunovic, M.
Lascu, R.
Lukach, D.
McCannon, W.
McDonald, M.
Miller, D.
Mooney, J.
Mulawarman, A.
Mysore, P.
Napikoski, T.
O'Brien, J.
Patterson, R.
Patti, C.
Price, E.
Revelle, R.
Sachdev, M.
Sambasivan, S.
Schroeder, M.
Seegers, T.
Sufana, C.
Sykes, J.
Taylor, R.
Udren, E.
Ward, S.
Winston, P.
Zhang, Z.
- D3: CONSIDERATIONS IN CHOOSING DIRECTIONAL POLARIZING METHODS FOR GROUND OVERCURRENT ELEMENTS IN LINE PROTECTION APPLICATIONS
- Assignment:* Prepare a report to the PSRC on identifying different polarizing methods, address issues related to the application of different methods, and make
- recommendations in choosing the polarizing method.
- M. Kao, *Chair*
Patterson Power Engineers
Chattanooga, TN 37419
- E. Price, *Vice Chair*
Dawsonville, GA.
- Appleyard, J.
Barsch, J.
Benmouyal, G.
Buanno, A.
Crellin, R.
Fischer, N.
Frye, R.
Henville, C.
Khan, S.
Kobet, G.
Lee, A.
Lukach, D.
McCannon, W.
Mooney, J.
O'Brien, J.
Paduraru, C.
Patel, S.
Patterson, R.
Plumptre, F.
Revelle, R.
Saygin, S.
Schroeder, M.
Turner, S.
Wilmeth, R.
- D6: TRANSMISSION LINE MODEL PARAMETER VALIDATION
- Assignment:* The WG will prepare a report to the main committee on the processes, issues, problems and methodology of validating software parameters for AC transmission lines used for relaying. The report will not include details of relay curve models or other similar relay modeling. The report will also not include specific EMTP modeling.
- T. Seegers, *Chair*
Ameren
Decatur, IL 62526
- S. Sambasivan, *Vice Chair*
New York, NY.
- Bartok, G.
Behrendt, K.
Cornelison, R.
Crellin, R.
Do Carmo, H.
Fischer, N.
Guillante, A.
Horton, R.
Kao, M.
Lukach, D.
Mackie, B.
Miller, J.
Mysore, P.
Nagpal, M.
Turner, S.
Tziouvaras, D.
Uchiyama, J.

Voloh, I.
Zhang, Z.

D19: REVISION OF PC37.113 -
DRAFT GUIDE FOR PROTECTIVE
RELAY APPLICATIONS TO
TRANSMISSION LINES

Scope: Concepts of transmission line protection are discussed in this guide. Applications of these concepts to various system configurations and line termination arrangements are presented. Many important issues, such as coordination of settings, operating times, characteristics of relays, impact of mutual coupling of lines on the protection systems, automatic reclosing and use of communication channels are examined. Special protection systems, multi-terminal lines and single phase tripping and reclosing are also included. The impact that system parameters and system performance have on the selection of relays and relay schemes is discussed as well.

Purpose: The purpose of this guide is to provide protection engineers with information that helps them to properly apply relays and other devices to protect three-phase high-voltage transmission lines

R. Taylor, *Chair*
Asheville, NC 28803

D. Lukach, *Vice-Chair*
Decatur, IL

Austin, T.
Barsch, J.
Best, M.
Brunello, G.
Cirka, D.
Conrad, S.
Cunico, R.
Deaton, J.
Deronja, A.
Fischer, N.
Fontana, D.
McCannon, W.
Mezco, A.
Miller, D.
Miller, J.
Mooney, J.
Nagpal, M.
O'Brien, J.
Ouellette, D.
Patti, C.
Price, E.
Sachdev, M.
Sambasivan, S.
Tatro, P.
Thompson, M.
Tualla, I.
Tziouvaras, D.
Verzosa, J.
Ward, S.
Whittaker, R.

Zhang, Z.

D27: CREATION OF A LINE
CURRENT DIFFERENTIAL
PROTECTION GUIDE PC37.243

Assignment: Create a Guide for the Application of Digital Line Current Differential Relays using Digital Communications.

S. Ward, *Chair*
Quanta Technology
Raleigh NC 27607

B. Mackie, *Vice Chair*
Nashville, TN

Beaumont, P.
Calero, F.*
Crellin, R.*
Deronja, A.
Higinbotham, B.
Ince, R.
Jankovic, I.
Kojovic, L.
Lee, A.
Lukach, D.
Moxley, R..
Mukesh, N.*
Pathirana, V.
Perez, J.
Purpura, D.
Revelle, R.
Sambasivan, S.
Schroeder, M.
Stojak, M.
Tualla, I.
Tziouvaras, D.*
Uchiyama, J.
Verzosa, J.
Voloh, I.
Ware, D.

*-Corresponding member

D28: REVISION OF C37.230
GUIDE FOR PROTECTIVE RELAY
APPLICATIONS TO DISTRIBUTION
LINES

Assignment: Revise the
C37.230-2007 Guide

B. Boysen, *Chair*
We Energies
Milwaukee WI 53203

C. Patti, *Vice-Chair*
Power Engineers
Portland, OR

Aldrich, D.
Best, M.
Carroll, P.
Das, R.
Friend, F.
Jester, J.
Johnson, G.
Ljubomir, K.
Lascu, R.
Lukach, D.
Mackie, B.
Meisinger, M.
Mulawarman, A.
Taylor, R.

Walker, C.
Xavier, J.
Zimmerman, K.

D29: TUTORIAL ON SETTING
IMPEDANCE-BASED POWER
SWING BLOCKING AND OUT-
OF-STEP TRIPPING
FUNCTIONS ON
TRANSMISSION LINES

Assignment: Write a tutorial on setting impedance-based power swing blocking and out-of-step tripping functions on transmission lines

N. Fischer, *Chair*
Schweitzer Engineering
Laboratories
Pullman, WA

G. Henneberg, *Vice-Chair*
Reno, NV

Anderson, J.
Aquiles-Perez, S.
Blumschein, J.
Bradley, J.
Castano, J.
Gopalakrishnan, A.
Hilaly, M.
Jones, K.
Kao, M.
Kirby, B.
Kobet, G.
Le, V.
Malson, H.
Patel, M.
Perkins, J.
Qiu, Q.
Tatro, P.
Tziouvaras, D.
Velez, J.
Versoza, J.

D30: TUTORIAL ON APPLICATION
AND SETTING OF DISTANCE
ELEMENTS WHEN SUBJECTED TO
DISTORTED WAVEFORMS

Assignment: Write a tutorial on the application and setting of mho and quadrilateral distance elements on transmission lines when subjected to distorted waveforms or other unique applications.

K. Zimmerman, *Chair*
Schweitzer Engineering
Laboratories
Fairview Heights, IL

J.T. Warren, *Vice-Chair*

Alguilar, R.
Bapary, A.
Dadash Zadeh, M.
Hilaly, M.
Kobet, G.
Le, V.
Lindemeier, A.
Martin, A.
Mooney, J

Wilson J.

H: RELAYING COMMUNICATIONS SUBCOMMITTEE

Scope: Evaluate and report on the characteristics and performance of protective relaying communications. Recommend communication requirements and operating and test procedures which assure reliable performance of the overall protective system. Report on new relaying equipment designs tailored to specific communications requirements.

E. Allen, *Chair*
Delanson, NY 12053

Galina Antonova, *Vice Chair*
ABB, Vancouver BC

Adamiak, M.
Apostolov, A.
Bell, T.
Benou, M.
Brunner, C.
Chelmecki, C.
Cornelison, R.
Dahlin, T.
Das, R.
Dickerson, B.
Dood, M.
Fodero, K.
Giarratano, D.
Hackett, J.
Hamilton, R.
Hu, Y.
Huntley, C.
Kunsmann, S.
Makki, A.
Maragal, D.
Martin, A.
Martin, K.
Midence, R.
Murphy, J.
Pickett, B.
Pond, J.
Ray, R.
Reckerd, D.
Sanders, M.
Sciacca, S.
Sufana, C.
Swanson, M.
Tengdin, J.
Udren, E.
Vandiver, B.
Voloh, I.
Young, R.

H1: PC37.236 A GUIDE FOR
APPLICATION OF DIGITAL
TELEPROTECTION

Assignment: Develop a guide for application of digital communications for protective relaying systems and schemes, including transmitting and

receiving equipment, digital channels, application principles, performance, installation, troubleshooting, testing and maintenance.

M. Benou, *Chair*
INIVEN
Somerville, NJ 08876

I. Voloh, *Vice Chair*
Markham, ON, Canada

Dahlin, T.
Ebrecht, J.
Finley, J.
Fodero, K.
Ince, B.
Ray, R.
Simon, M.
Swanson, M.
Ward, S.

H3: PC37.237 TIMETAGGING IN PROTECTION AND DISTURBANCE RECORDING IEDS

Assignment: Develop an IEEE Standard for time tagging for power system IEDs. This will include common requirements for time tags and show how to apply them to various classes of time sequence data. Requirements and methods for stating the resulting time accuracy will be included. Joint with Substations Committee C4.

B. Dickerson, *Chair*
Arbiter Systems
Cranbrook, BC, Canada

M. Lacroix, *Chair for SC C4*
Montreal, Quebec, Canada

J. Hackett, *Vice Chair*
Eldridge, Iowa

Adamiak, M.
Allen, E.
Apostolov, A.
Cenzon, E.
Dood, M.
Goldstein, A.
Huntley, C.
Martin, K.
Makki, A. *
Murphy, J.
Narendra, K. *
Preuss, C.
Sciaccia, S.
Skendzic, V. *
Tibbals, T.
Vandiver, B.

H6: IEC 61850 APPLICATION TESTING

Assignment: Write a report to the H Subcommittee on application testing of IEC 61850 based protection and control systems.

Emphasis will be on the GOOSE functions.

C. Sufana, *Chair*
G.E. Digital Energy
Huntington Beach, CA 92647

B. Vandiver, *Vice Chair*
Houston, TX 77054

Adamiak, M.
Agudo, M.
Aguilar, R.
Anderson, J.
Anderson, S.
Apostolov, A.
Becker, F.
Benmouyal, G.
Bolado, O*Bougie, J.
Brunner, C.
Bui, D-P.
Buneo, J.
Burger, J. *
Chan, M.
Chelmecki, C.
Dood, M.
Duvelson, E.
Easley, K.
Ellis, A.
Falk, H.
Giarratano, D. *
Gosalia, J.
Graf, R.
Gresko, G.
Grimm, J.
Gunther, E.
Holbach, J.
Huntley, C.
Jalali, M.
Kanabar, M.
Kunsman, S.
Lacroix, M.
Lee, A.
Liposchak, R.
Lu, Y.
Mar, J.
Maragal, D.
Martin, A.
Muschlitz, B.
Musunuri, S.
Niemira, J.
Nordell, D.
Oubidar, M. *
Perez, J.
Reckerd, D.
Shanmugasundaram, V.
Short, S.
Simon, M. *
Skendzic, V.
Tengdin, J.
Tessier, D.
Thibodeau, E.
Thompson, S.
Thornton-Jones, R. *
Verzosa, J.
Vo, C.
Ware, D.
Wong, C.
Yuan, T.*
Zubair, M.*

H11: REVISION OF C37.118.1 SYNCHROPHASOR MEASUREMENT STANDARD

Assignments: Develop a joint IEC/IEEE Synchrophasor Measurement Standard 60255-118-1 based on C37.118.1 under PAR approved 14 June 2013.

K. Martin, *Chair*
Electric Power Group
Portland, OR 97213

A. Goldstein, *Vice Chair*
Gaithersburg, MD

Antonova, G.
Brunello, G.
Das, R.
Dickerson, B.
Dwyer, D.
Gosalia, J.
Hu, Y.
Kirby, B.
Kirkham, H.
Lacroix, M.
Luo, S.
Murphy, J.
Narendra, K.
Ouellette, D.
Patel, M.
Shi, B.
Skendzic, V.
Stenbakken, J.
Udren, E.
Zhang, Z.

H12: CONFIGURING ETHERNET COMMUNICATIONS EQUIPMENT FOR SUBSTATION PROTECTION AND CONTROL APPLICATIONS

Assignment: Develop a report to assist protection engineers in configuring Ethernet LANs and networking equipment when the network traffic includes critical protection messaging such as IEC 61850 GOOSE messaging. Topics include switch and router configuration, VLANs, security, priority queuing, traffic monitoring and control, and topology choices and redundancy.

E. Udren, *Chair*
Quanta Technology, LLC
Pittsburgh, PA 15228

B. Vandiver, *Vice Chair*
Houston, TX
Antonova, G.
Anderson, J.
Antonova, G.
Apostolov, A.
Beaumont, P.
Beresh, R.
Brunner, C.
Calero, F.
Chelmecki, C.
Dahlin, T.

Dood, M.
Falk, H.
Giarratano, D.

Huntley, C.
Johnson, T.
Lacroix, M.
Maragal, D.
Martin, A.
Ray, R.
Skendzic, V.
Tengdin, J.

H17: ESTABLISHING LINKS BETWEEN COMTRADE, IEC 61850 AND CIM.

Assignment: Develop a standards approach to link IEC 61850, CIM and COMTRADE so that the COMTRADE channels can be associated to a node in the power network.

C. Brunner, *Chair*
it4power
Switzerland

A. Apostolov, *Vice Chair*
Los Angeles, CA

Adamiak, M.
Allen, E.
Falk, H.
Gauci, A.
Hamilton, R.
Holbach, J.
Hu, Y.
Ingleson, J.
Jalali, M.
Jenkins, D.
Maragal, D.
Murphy, J.
Naisani, P.
Narendra, K.
O'Connell, D.
Richards, S.
Sabin, D.
Shanmugasundaram, V.
Takahiro, K.
Taylor, M.
Tibbals, T.
Tuballa, R.
Udren, E.
Vandiver, B.
Vasudevan, B.
Verzosa, J.

H21: INFORMATION MAPPING BETWEEN C37.118.2 AND IEC 61850-90-5 SYSTEMS

Assignment: Create an IEEE report documenting the mapping between IEEE C37.118 and IEC 61850-90-5 standards.

Y. Hu, *Chair*
Quanta Technology, LLC
Raleigh, NC 27607

A. Goldstein, *Vice Chair*
Gaithersburg, MD

Adamiak, M.
Apostolov, A.
Beaumont, P.
Benmouyal, G.

Brunner, C.
Falk, H.
Graf, R.
Johnson, A.
Kanabar, M.
Kirkham, H.
Leon, R.
Martin, K.
Murphy, J.
Narendra, K.
Patel, M.
Perez, J.
Quellette, D.
Ren, Z.
Song, E.
Vandiver, B.
Wang, A.

H22: GUIDE FOR CATEGORIZING SECURITY NEEDS FOR PROTECTION AND AUTOMATION RELATED DATA FILES

Assignment: Develop an IEEE Guide on security for data files used for configuration, management and analysis of protective relaying systems.

C. Martin, *Chair*
Bonneville Power Administration
Vancouver, WA 98683

D. Jenkins, *Vice Chair*
Stafford, UK

Calix, C.
Cease, T.W.
Chelmecki, C.
Cornelison, R.
Dood, M.
Easley, K.
Fauchon, M.
Giarratano, D.
Holstein, D.
Johnson, T.
Kunsmann, S.
Makki, A.
Madani, V.
Miller, J.
Reckerd, D.
Saia, N.
Sufana, C.
Taylor, M.
Tibbals, T.

H23: GUIDE FOR NAMING INTELLIGENT ELECTRONIC DEVICES (COMDEV)

Assignment: Develop an IEEE Guide for naming Intelligent Electronic Devices (IEDs) based on the report of Working Group H10.

R. Cornelison, *Chair*
Power Grid Engineers
Birmingham, AL

E. Allen, *Vice Chair*
Delanson, NY

Adamiak, M.

Allen, E.
Black, M.
Bougie, J.
Brunner, C..
Das, R.
Dood, M.
Easley, K.
Falk, H.
Frye, R.
Hackett, J.
Landheer-Cieslak, R.
Makki, A.
Preuss, C.
Qui, Q.
Sufana, C.
Thibodeau, E.
Tibbals, T.
Vandiver, B.

H24: REVISION OF C37.238-2011
Assignment: Develop a revision of the IEEE Standard C37.238-2011 "IEEE Standard Profile for Use of IEEE 1588 Precision Time Protocol in Power System Applications" based on the list of issues brought forth in close coordination with IEC TC57 WG10 and other technical committees with similar interests. The goal is to bring it to the IEEE Sponsor Ballot by January 2014. Joint with Substations Committee C7.

G. Antonova, *Chair*
ABB Inc.
Burnaby, BC V5J 5J2
Canada

T. Tibbals, *Chair for SC C7*
Pullman, WA

B. Dickerson, *Vice Chair*
Winlaw, BC, Canada

Adamiak, M.
Apostolov, A. *
Becker, F. *
Brunner, C.
Bougie, J. *
Dood, M.
Falk, H. *
Giarratano, D. *
Graf, R.
Harada, R. *
Huntley, C.
Ingram, D. *
Kirmann, H.
Muschlitz, B. *
Murphy, J.
Renz, M. *
Rzepka, G.
Skendzic, V.
Zimath, S. *

H25: REVISION OF C37.94-2008

Assignment: Revise IEEE Standard C37.94-2008, IEEE Standard for N Times 64 Kilobit Per Second Optical Fiber Interfaces Between

Teleprotection and Multiplexer Equipment.

M. Benou, *Chair*
INIVEN
5 Columbia Road
Somerville, NJ 08876

D. Jenkins, *Vice Chair*
Stafford, UK

Antonova, G.
Dahlin, T.
Finley, J.
Fodero, K.
Huntley, C.
Ince, B.
Phillippe, T.
Ray, R.
Swanson, M.

H27: STANDARD FILE FORMAT FOR IED CONFIGURATION DATA (COMSET)

Assignment: Develop a standard XML based file format for exchange of protection and control configuration data between engineering tools and asset management tools. The modeling and naming conventions should be based on the definitions and extension rules defined in IEC 61850.

C. Chelmecki, *Chair*
Basler Electric Co.
Highland, IL 62249

B. Vasudevan, *Vice Chair*
ABB
Raleigh, North Carolina

Allen, E.
Apostolov, A. P.
Black, M.
Blumschein, J

Casilla, N.
Cornelison, R.
Dood, M.
Landheer-Cieslak, R.
Norman, R.
Oliveira, A.
Perez, J.
Preuss, C.
Qui, Q.
Thibodeau, E.
Vandiver, B.
Verzosa, J.

H30: IEC 61850 User Feedback

Assignment: This forum is to discuss technical issues encountered by North American end-users while implementing IEC-61850 based substation automation system and highlight the key challenges/solutions to manufacturers and IEC TC57 working group-10. These issues

could be in design, maintenance and testing domains.

D. Maragal, *Chair*
New York Power Authority
White Plains, NY

Aaron Martin, *Vice Chair*
Bonneville Power Administration,
Portland, Oregon

Anderson, J.
Apostolov, A.
Becker, F.
Bilimoria, N.
Brunner, C.
Burkart, D.
Cenzon, E.
Falk, H.
Farquharson, R.
Gohari, J.
Holbach, J.
Huntley, C.
Jay, G.
Jenkins, D.
Kanabar, M.
Kunsmann, S.
Liposchak, R.
Myrda, P.
Mulawarman, A.
Narendra, K.

Qui, Q.
Schock, E.
Shah, P.
Udren, E.
Xavier, J.
Wilson, B.
Wong, C.
Xavier, J.

H31: Common Protection & Control parameters for COMSET

Assignment: Develop generic models and parameters of protection functions.

D. Maragal, *Chair*
New York Power Authority
White Plains, NY

A. Apostolov, *Vice Chair*
Los Angeles, CA

Aldrich, D.
Allen, E.
Blumschein, J
Brunner, C.
Burkart, D.
Cenzon, E.
Chelmecki, C.

Gohari, J.
Gosalia, J.
Jenkins, D.
Kanabar, M.
Mohammad Dadash Zadeh
Narendra, K.
Oliveira, A.
Qui, Q.
Tessier, D

Turner, S
Uchiyama, J.

Verzosa, J.
Xavier, J.

H32: Performance requirements for teleprotection over Ethernet

Assignment: To prepare a report on the use of Ethernet transport for teleprotection services and line current differential protection.

K. Fodero, *Chair*
SEL Inc.

W. McCannon, *Vice Chair*

Anderson, J.
Antonova, G.
Apostolov, A.
Beaumont, P.
Benou, M.
Blumschein, J.
Brown, J.

Cooke, R. *
Dahlin, T.
Gresko G.
Huntley, C.
Jenkins, D.
Keating, M. *
Palmer, C.
Pickett, B.
Ray R.
Reckerd, D.
Rodriguez, J.
Shono T.
Tran, T.
Ward S.
Nordell D.
Udren E.

H35: XML Translation for COMTRADE

Assignment: To prepare a report on proposed upgrades to COMTRADE as well as an XML implementation.

M. Adamiak, *Chair*
GE Grid Automation

Dickerson, W.
Leyba, M.
Makki, A.
Muschlitz, B.
Rzepka, G.
Goldstein, A.
Short, S.

I: RELAYING PRACTICES SUBCOMMITTEE

Scope: Develop, recommend and establish standards on protective relaying practices which are compatible with the electrical environment, including but, not limited to; relay withstand capabilities to electromagnetic interference,

characteristics and performance of instrument transformers, testing procedures, applications, performance criteria, and definitions of relays and relay systems. Evaluate and report on pertinent aspects of protective relaying not addressed by other PSRC Subcommittees. Maintain applicable protective relaying standards.

Brian Mugalian, *Chair*
S&C Electric Company
Chicago, IL 60626

Andre Uribe, *Vice-Chair*
Power Grid Engineering

Beckwith, T.
Boyle, J.R.
Burnworth, J.
Carpenter, W.M.
Channarasappa, S.
Dalton, C.
Donahoe, K.
Friend, F.
Garcia, R.
Gilleland, H.
Hackett, J.P.
Jodice, J.
Knapek, W.
Kobet, G.
Kojovic, L.
Lee, A.
Mackie, B.
Magruder, B.
Makki, A.
McLaren, P.G.
Meisinger, M.
Moskos, G.P.
Moxley, R.
Niemira, J.
Pettigrew, R.D.
Pickett, B.A.
Pond, J.
Rahmatian, F.
Ranieri, M.M.
Swanson, M.J.
Tengdin, J.T.
Tziouvaras, D.A.
Uchiyama, J.
Udren, E.A.
Valenzuela, J.
Whittaker, R.
Young, Ray

I2: TERMINOLOGY USAGE REVIEW

Assignment: Review drafts of PSRC publications for proper terminology, abbreviations and symbols; and to recommend additions and changes to the IEEE database as appropriate.

M. J. Swanson, *Chair*
MJ Swanson Associates
Windham, NH 03087

Fred Friend, *Vice Chair*
Columbus, OH 43215

Black, M.
Liao, Y.

Miller, J.
Patti, C.
Schroeder, M.
Seegers, T.
Whittaker, R. L.

I4: IEC STANDARDS ADVISORY

Assignment: Analyze standards development of IEC Technical Committee 95 to foster understanding and rationalization of IEC versus IEEE relaying documents. Develop U.S. position on IEC voting documents. Report on IEC TC 95 and TC 57 standards activities to the subcommittee.

Eric A. Udren, *Chair*
Quanta Technology, LLC
Pittsburgh, PA 15228

M. Yalla, *Vice Chair*
Largo, FL.

Adamiak, M.
Brunello, G.
Burnworth, J.
Huntley, C.
Haasz, J..
Sachdev, M.
Skendzic, V.
Tengdin, J.
Vandiver, B.
Ward, S.

I11: APPLICATION OF OPTICAL SENSOR SYSTEMS

Assignment: Prepare a new IEEE Guide covering the application of optical sensor systems for protective relaying purposes.

F. Rahmatian, *Chair*

Bruce Pickett, *Vice Chair*

Adamiak, M.
Apostolov, A.
Brunner, C.
Bui, D.
Cease, T.W.
Dylan, S.
Henville, C.
Hunt, R.
Kojovic, L.
Madani, V.
McLaren, P.
Mendik, M.
Mugalian, B.
Skendzic, V.
Udren, E. A.

I23: REVISION TO THE GUIDE FOR FIELD TESTING OF RELAYING CURRENT TRANSFORMERS

Assignment: Revision to Guide C57.13.1

B. Magruder, *Chair*
W. Knapek, *Vice Chair*

Aguilar, R.
Bigham, L.
Burnworth, J.
Elkin, P.
Lee, W.
Newton, C.
Pajuelo, E.
Pond, J.
Stojak, M.
Strebe, J.
Uchiyama, J.
Vandenberg, J.
Weers, D.

I24: USE OF HALL EFFECT SENSORS FOR PROTECTION AND MONITORING

J. Niemira, *Chair*

TBD, *Vice Chair*

Assignment: Prepare a PSRC report

Buffington, J.
Burnworth, J.
Makki, A.
Ranieri, M.
Semati, G.
Stanojevic, A.
Strebe, J.
Taylor, M.
Wang, J.
Zinck, P.

I25: COMMISSIONING OF PROTECTION AND CONTROL SCHEMES

R. Garcia, *Chair*

K. Donahoe, *Vice Chair*

Assignment: Prepare a PSRC report

Aguilar, R.
Ariza, J.
Ashrafi, H.
Bryant, C.
Buchanan, D.
Casilla, N.
Knapek, W.
Lee, A.
Mackie, B.
Malson, H.
Moores, B.
Moskos, G.
Polanco, L.
Seegers, T.
Taylor, R.
Verzosa, J.
Ware, D.

I26: MATHEMATICAL MODELS OF INSTRUMENT TRANSFORMERS – EXPAND TRANSACTIONS PAPER

M. Meisinger, *Chair*

S. Turner, *Vice Chair*

Assignment: Revise Mathematical Model of Instrument Transformers and expand IEEE Transaction papers and prepare IEEE Report

Chen, Y.
Higginson, M.
Kojovic, L.
Lee, A.
Liao, Y.
Makki, A.
McLaren, P.
Ouellette, D.,
Taylor, M.
Tziouvaras, D.
Wilson, J.

I27: INVESTIGATION OF
PROTECTIVE RELAY SELF-
MONITORING CAPABILITIES

R. Moxley, *Chair*

C. Dalton, *Vice Chair*

Assignment: Prepare a technical report to the PSRC main committee on the enumeration, performance and efficacy of self-monitoring capabilities within protective relays in order to determine the extent and degree of self-monitoring

Anderson, S.
Benmouyal, G.
Fleck, M.
Galanos, J.
Hamilton, R.
Jester, J.
Kazimier, B.
Midance, R.
Moxley, R.
Oliveira, A.
Pavavicharn, S.
Sambasivan, S.
Seegers, T.
Uchiyama, J.
Wallace, C.
Ward, S.
Xavier, J.
Zimmerman, K.

I29: REVISION OF C37.110 –
GUIDE FOR APPLICATION OF
CURRENT TRANSFORMERS USED
FOR PROTECTIVE RELAYING
PURPOSES

J. Valenzuela, *Chair*

M. Higginson, *Vice Chair*

Assignment: Revision to Guide C37.110

Hilaly, M.
Lindemeier, A.
Pavavicharn, S.

I30: REVISION OF C37.235 –
GUIDE FOR THE APPLICATION OF
ROGOWSKI COILS USED FOR
PROTECTIVE RELAYING PURPOSES

L. Kojovic, *Chair*

R. Frye, *Vice Chair*

Assignment: Revision to Guide C37.235

Das, R.
McLaren, P.

Mugalian, B.
Schroeder, M.

I31: REVISION OF ENVIRONMENTAL
& TESTING REQ. FOR
COMMUNICATIONS NETWORKING
DEVICES IEEE 1613/1613.1
(SUBS C2)

J. Tengdin, *Co-Chair*

B. Mugalian, *Co-Chair*

Clark, L.
Dood, M.
Nordell, D.
Preuss, C.
Ramie, J.
Ranieri, M.
Simon, M.
Sirra, M.
Ward, S.

I32: REVIEW OF SURVEY OF
RELAYING TEST PRACTICES

A. Uribe, *Chair*

N. Torres, *Vice Chair*

Assignment: Review of 2001 Survey and report

Beach, D.
Black, M.
Buchanan, D.
Casilla, N.
Cooper, S.
Knapek, W.
Lee, A.
Monterrubio, H.
Moores, B.
Newman, A.
Schock, E.
Shannon, B.
Siira, M.
Sykes, J.
Tempone, A.
Ware, D.
Weyer, G.

I33: REVIEW OF RELAY TESTING
TERMS

Assignment: Produce formal definitions for terms commonly used to describe relay testing procedures and prepare a report for consideration by the I-Subcommittee and future inclusion in the IEEE Dictionary

J. Gosalia, *Chair*

A. Makki, *Vice Chair*

Apostolov, A.
Black, M.
Bloder, M.
Boysen, B.
Cooper, S.
Jester, J.
Jodice, J.
Knapek, W.
Lee, J.
Moores, B.
Mugalian, B.
Pascal, C.
Pond, J.
Ranieri, M.
Seegers, T.

Taylor, M.
Tessier, D.
Verzosa, J.

I34: DRAFT STANDARD FOR INPUT
AND OUTPUT REQUIREMENTS AND
TESTING METHODOLOGY FOR
INTELLIGENT ELECTRONIC
DEVICES (IEDs) (SUBS C3)

Assignment: Draft Standard PC 37.1.1

M. Dood, *Chair*

TBD, *Vice Chair*

I35: STANDARD FOR ELECTRICAL
POWER SYSTEM DEVICE
FUNCTION NUMBERS, ACRONYMS,
AND CONTACT DESIGNATIONS
(SUBS C5)

Assignment: Standard PC 37.2

M. Dood, *Chair*

TBD, *Vice Chair*

ITF36: REVIEW OF STANDARD FOR
WITHSTAND CAPABILITY OF RELAY
SYSTEMS TO RADIATED
ELECTROMAGNETIC
INTERFERENCE FROM
TRANSCIEVERS

Assignment: DRevision of C37.90.2

J. Pond, *Chair*

TBD, *Vice Chair*

J: ROTATING MACHINERY PROTECTION SUBCOMMITTEE

SCOPE: Evaluate and report on protective relaying concepts and practices applicable to generators, motors, synchronous condensers, associated auxiliary systems, and performance of plant protective systems. Develop and maintain related relaying standards.

M. L. Reichard, *Chair*
GE Energy1 River Road, 2-639
Schenectady, NY 12305

D.S. Finney, *Vice Chair*
Schweitzer Eng Labs Inc..
262 Commercial St.
N.Sydney, NS B2A1B8

Ashrafi, H.
Basler, M.
Beckwith, T.
Benmouyal, G.
Bukhala, Z. A.
Conrad, S. P.
Das, M.
Das, R.
English, W.
Farr, T.
Fennell, E. C.
Fisher, N.

Fredrickson, D.
Gardell, J. D.
Gers, J.
Hartmann, W. G.
Henneberg, G.
Kerrigan, P.
Kim, S.
Klingerman, N.
Kobet, G.
Kumar, P.
Monterrubio, H.
Mozina, C. J.
Nagpal, M.
Patel, S. C.
Patterson, R.
Pettigrew, B.
Ruckman, C.
Shaw, P.
Tatro, P.
Thakur, S.
Thompson, M. J.
Uchiyama, J. T.
Yalla, M.

J5: APPLICATION OF OUT-OF-STEP PROTECTION SCHEMES FOR GENERATORS

Assignment: Produce a summary and full report to the J Subcommittee explaining the various schemes and setting guidelines in use for Out-Of-Step protection for AC generators.

S. Thakur, *Chair*
Exelon Nuclear
Kennett Square, PA 19348

M. Das, *Vice Chair*
GE Energy
Greenville, SC 29615

Ashrafi, H.
Barsch, J.
Benmouyal, G.
Brahma, S.
Bukhala, Z.
Conrad, S.
Finney, D.
Fischer, N.
Fredrickson, D.
Galanos, J.
Gers, J.
Gokaraju, R.
Henneberg, G.
Kanabar, M.
Khalek, M.
Kim, S.
Kumar, P.
Liao, Y.
Mozina, C.
Mysore, P.
Nagpal, M.
Reichard, M.
Rizvi, I.
Ruckman, C.
Sankaran, M.
Shah, P.
Tatro, P.

Thompson, M.
Turner, S.
Tziouvaras, D.
Uchiyama, J.
Verzosa, J.
Yalla, M.

**J7: AVOIDING UNWANTED
RECLOSING ON ROTATING
APPARATUS**

Assignment: To review and provide comment on the protection and control vulnerability known as "Aurora".

Mike Reichard, Chair
GE Energy
Schenectady, NY 12305

Steve Conrad, Vice Chair
Public Service Co of NM
2401 Aztec Rd NE
Albuquerque, NM 87107

Basler, M.
Benmouyal, G.
Bukhala, Z. A.
Finney, D.
Fredrickson, D.
Gardell, J.
Hammond, D.
Hataway, G.
Henneberg, G.
Hoch, N.
Holbach, J.
Johnson, G.
Mozina, C.
Mysore, P.
Paduraru, C.
Patel, D.
Tatro, P.
Thakur, S.
Waudby, P.
Wiedman, T.
Uchiyama, J.
Yang, Y.

**J12: IMPROVED GENERATOR
GROUND FAULT
PROTECTION SCHEME**

Assignment: To review new methods related to generator ground fault protection

Dale Finney, Chair
Schweitzer Engineering Labs
North Sydney, N.S. B2A 1B8,
Canada

*Manish Das, Vice Chair
Greenville, SC*

Ashrafi, H.
Bukhala, Z.
Cooper, M.
Fischer, N.
Fredrickson, D.
Hamilton, R.
Kanabar, M.
Kao, M.
Kobet, G.

Kumar, P.
Mozina, C.
Patterson, R.
Pavavicharn, S.
Pettigrew, R.
Polanco, L.
Reichard, M.
Sankaran, M.
Sawatzky, T.
Shah, P.
Thakur, S.

**J13: MODELING OF
GENERATOR CONTROLS FOR
COORDINATING GENERATOR
RELAYS**

Assignment: Working jointly with Excitation System Control Subcommittee of the EDPG and Power System Dynamic performance committee write a report to the J subcommittee on Improving the modeling of the dynamic response of generators and the characteristics of generator excitation control systems to disturbances and stressed system conditions. Improve the modeling of protective relays in power dynamic stability modeling software.

Juan Gers, Chair
GERS USA
Weston, FL 33331

Phil Tatro, Vice Chair
Atlanta, GA

Ashrafi, H.
Bartok, G.
Basler, M.
Benmouyal, G.
Bukhala, Z.
Conrad, S.
English, W.
Fredrickson, D.
Gala, D.
Gopalakrishnan, A.
Hamilton, R.
Henneberg, G.
Henville, C.
Hoch, N.
Kao, M.
Kumar, P.
Mozina, C.
Patel, D.
Patterson, R.E.
Pavavicharn, S.
Pettigrew, B.
Reichard, M.
Sankaran, M.
Sawatzky, T.
Thakur, S.
Tziouvaras, D.
Uchiyama, J.
Verzosa, J.

**J14: PLANT ISSUES
ASSOCIATED WITH BLACK
STARTING OF GENERATORS**

Assignment: Investigate and report to the J Subcommittee on plant protection issues associated with black start.

Chris Ruckman, Chair
Burns & McDonnell
Kansas City, Missouri 64114

Zeeky Bukhala, Vice Chair
Schenectady, NY

Ashrafi, H.
Basler, M.
Brunello, G.
Finney, D.
Fredrickson, D.
Hoch, N.
Patterson, R.
Pettigrew, B.
Polanco, L.
Reichard, M.
Shah, P.
Siira, M.
Uchiyama, J.

**J15: INVESTIGATION OF THE
CRITERIA FOR THE
TRANSFER OF MOTOR
BUSES**

Assignment: Review, compare and contrast NEMA MG-1 with ANSI C50.41 regarding transfer criteria. Investigate existing open-transition motor bus transfer (MBT) actual data from multiple events at the medium voltage level. Examine for current versus Volts/Hz at transfer periods to see if there is a correlation. Examine v/Hz of composite bus and individual motors. Examine published reports and papers on motor bus transfer criteria to reconcile the conclusions with the field-measured results.

W. Hartmann, Chair
Beckwith Electric Co. Inc.
Largo, FL 33773

J. Valenzuela, Vice Chair
Kansas City, MO

Ashrafi, H.
Basler, M.
Beckwith, T.
Benmouyal, G.
Farr, T.
Finney, D.
Kanabar, M.
Monterrubio, H.
Patterson, R.
Pavavicharn, S.
Pettigrew, B.
Reichard, M.
Ruckman, C.
Shah, P.

Thakur, S.
Yalla, M.

**K: SUBSTATION PROTECTION
SUBCOMMITTEE**

Scope: Evaluate and report on methods used in protective relaying of substations and the consumer or independent power producer, associated equipment and performance of these protective systems. Develop and maintain relaying standards which re-late to this equipment and the utility-consumer interface.

Don Lukach, Chair
Ameren
370S. Main St.
Decatur, IL 62523

Bruce Pickett, Vice-Chair
West Palm Beach, FL

Barsch, J.
Best, M.
Brunello G.
Carroll, P.
Conrad, S.P.
Crellin, R.
Elkin P.
English, W.
Fontana D.
Hamilton, R.
Hedding, R.
Henneberg, G.
Henville, C.
Madani, V.
Miller, D.
Moskos, G.
Muliwarman, A.
Mysore, P.
Nagpal M.
Sevov, L.
Sufana, C.
Thompson, M.
Qui, Q.
Voloh, I.
Whittaker, R

**K1: PC37.245, GUIDE FOR THE
APPLICATION OF PROTECTIVE
RELAYING FOR PHASE
SHIFTING TRANSFORMERS**

Assignment: To write a guide for the application of Protective Relaying for Phase Shifting Transformers (PSTs). The protection methods for different types of PST and operating conditions of PSTs will be reviewed. Representation of PST models to determine short circuit currents for relaying considerations will be considered. Protection CT sizing and location issues will be considered. Relay application and setting examples will be provided.

- L. Sevov, *Chair*
General Electric
650 Markland Ave.,
Markham, ON L6C 0 M1,
Canada
- B. Davies, *Vice Chair*
Augusta, ME
- Bapary, A.
Conrad, S
Crellin, R.
Elkin, P.
Gajic, Z.
Henville, C.
Hilaly, M.
Ibrahim, M.
Khan, U.
Miller, D.
Mooney, J.
Pajuelo, E.
Sambasivan, S.
Soudi, F.
Subramanian, S.
Thompson, M.
Tziouvaras, D
Seegers, T.
Paduraru, C
Wiedman, T.
- K5: REVISION OF C37.119 – IEEE GUIDE FOR BREAKER FAILURE PROTECTION OF POWER CIRCUIT BREAKERS**
- Assignment:* To revise and update C37.119-2005 – IEEE Guide for Breaker Failure Protection of Power Circuit Breakers.
- R. Whittaker, *Chair*
Bonneville Power Admin.
P.O. Box 3621
Portland, OR 97208
- A. Mulawarman, *Vice Chair*
Minneapolis, MN
- Barsch, J.
Beresh, B.
Boysen, B.
Deronja, A.
Fleck M.
Gamble R..
Hiemenz, C.
Lee, A.
Lien, J.
Long, J.
Lukach, D.
Mackie, B.
Malson, H.
Mezco, A.
Miller, D.
Moxley, R.
Mysore, P.
Patti, C.
Reckerd, D.
Sambasivan, S.
Sevov, L.
Sulfana, C.
Tatro, P.
Thompson, M.
Tualla, I.
- Uchiyama, J.
Udren, E.
van den Berg, J.
Verzosa, J.
Wang, J.
Ware, D.
Young, Ray.
Zinck, P.
Young Rich
Henville, C.
Tierney, D.
- K10: SCC21 DISTRIBUTED RESOURCES STANDARD COORDINATION**
- Assignment:* To interface with SCC21/P1547 in order to reduce unnecessary delays by getting PSRC input into the process without having to wait for after-the-fact coordination.
- R. Benjamin Kazimier, *Chair*
Basler Electric
12633 Red Canyon Rd
Knoxville, TN 37934
- Mark Siira
Upper Marlboro, MD
- Bradley, C.
Carroll, P.
Das, R.
Fowler, R.
Friend, F.
Guerrero, M.
Houser, K.
Lascu, R.
McCannon, W.
Siira, M.
Sufana, C.
- K11: OPEN PHASE DETECTION FOR NUCLEAR GENERATING STATIONS**
- Assignment:* Write a report to the K Subcommittee entitled Methods for Analyzing and Detecting an Open Phase Condition of a Power Circuit providing off-site power to a Nuclear Power Generating Plant.
- C. Sufana, *Chair*
General Electric
6581 Abbott Drive,
Huntington Beach, CA 92647
- M. Urbina, *Vice Chair*
Chicago, IL
- Arritt, R.
Ashrafi, H.
Bigham, L.
Black, M.
Bukhala, Z.
Chaudhary, A.
Cleifton, G.*
Colaianne, P.*
Elkin, P.
Finney, D.
Franklin, G.*
Gardell, J.*
- Hamilton, R.
Horton, R.
Jalali, J.
Johnson, W.
Johnson, G. *
Kao, M.
Kobet, G.
Kojovic, L.
Krvavac, J.
Kumar, P.
Lu, Y.
Martin, C.*
Martin, A.
Mezco, A.
Nayak, O.
Oliver, J.
Palaneappan, R.
Patterson, R.
Pettigrew, R.
Pitts, G.*
Schroeder, M.
Sleva, T.
Stewart, D.*
Subramanian, R.
Taylor, R.
Thakur, S.
Uchiyama, J.
Vo, C.
Voloh, I.
Warren, T.
- K12: P1032 Guide for Protecting Static VAR Compensators, Joint with Substation Committee Working Group I9**
- Assignment:* To work jointly with Substations WG I9 to write a guide for protecting transmission static var compensators. PSRC WG K12 will provide guidance and review on topics that are already covered in other IEEE guides to prevent overlap and identify areas where interpretation of existing guides is necessary to meet the specific application challenges unique to transmissions static var compensators.
- Satish Samineni, *Chair*
Schweitzer Engineering Labs
671 Moore Rd, Suite 100
King of Prussia, PA 19406
- Martin Best, *Vice-Chair*
Fort Mill, SC
- Antonova, G.
Brunello, G.
Conrad, S.
Elkin, P.
Lee, A.
Manna, T.
Maragal, D.
Miller, D.
Nestor, C.
Pajuelo, E.
Stojak, M.
Thompson, M.
Wang, A.
Wang, J.
Whittaker, R.
Zamani, A.
- K13: PC37.116, GUIDE FOR PROTECTIVE RELAY APPLICATIONS TO TRANSMISSION LINE SERIES CAPACITOR BANKS.**
- Assignment:* Revise IEEE C37.116 -2007
- Iliia Voloh, *Chair*
General Electric
650 Markland Street
Markham, ON L6C 0M1 Canada
- Luis A. Polanco, *Vice Chair*
Schenectady, NY
- Antonova, G
Marken, P.
McVey, M.
Mulawarman, A
Polanco, L.
Samineni, S.
Zadeh, M.
- K15: CENTRALIZED SUBSTATION PROTECTION AND CONTROL**
- Assignment:* Write a report to the PSRC Main Committee entitled Centralized Protection and Control within a Substation.
- Ratan Das, *Chair*
ABB
255 Broadhead Rd.
Bethlehem, PA 18107
- Mital Kanabar, *Vice Chair*
Markham, ON, CA
- Adamiak, M.
Antonova, G..
Apostolov, A.
Brahma, S.
DadashZadeh, M.
Hunt, R.
Jester, J.
Kezunovic, M.
Kockott, M.
Kojovic, L.
Lascu, R.
Liao, Y.
Luskind, Y.
Madani, V.
Meliopoulos, A.P. (Sakis)
Midence, R.
Myrda, P.
Oliveira, A.
Park, J.
Preuss, C.
Qiu, Q.
Sachdev M.
Voloh, I.
Xavier, J.
- K16: PC37.91, Revision of C37.91 Guide for Protecting Power Transformers.**
- Assignment:* To revise and update C37.91, IEEE Guide for Protecting Power Transformers” to correct

- errors and address additional protection related topics.
- Will English, *Chair*
Consumers Energy
1945 W. Parnall Rd
Jackson, MI 49201
- Steve Conrad, *Vice Chair*
Albuquerque, NM
- Bapary, A.
Boysen, B.
Carroll, P.
Crellin, R.
Davies, B.
Deronja, A.
Elkin, P.
Hamilton, R.
Kao, M.
Lee, A.
Long, J.
Lukach, D.
Mackie, B.
Manna, T.
Mezco, A.
Midence, R.
Patti, C.
Pavavicharn, S.
Pickett, B.
Polanco, L.
Schroeder, M.
Sevov, L.
Thompson, M.
Torres, N.
Uchiyama, J.
Van den Berg, J.
Verzosa, J.
Walker, C.
Ware, D.
Weyer, G.
White, C.
Young, R.
- K17:** GEOMAGNETIC DISTURBANCES (GMD) IMPACT ON PROTECTION SYSTEMS
Assignment: To submit a WG report to the PSRC K Substation Subcommittee evaluating the performance of protection systems during Geomagnetic Disturbances.
- Qun Qiu, *Chair*
American Electric Power
8400 Smith's Mill Rd
New Albany, Ohio 43054
- Luis Polanco, *Vice Chair*
Schenectady, NY
- Bapary, Abu
Campbell, J.
Davies, B.
Fischer, N.
Fontana, D.
Hedding, R.
Henville, C.
Hilaly, M.
Kuretich, P.
Liao, Y.
Paravicharn, S.
Patel, M.
- Schroeder, L.
Sun, R.
Thompson, M.
Van, L
- K18:** IEEE GUIDE FOR THE PROTECTION OF NETWORK TRANSFORMER
Assignment: To give a report to K Subcommittee on the need to revise C37.108 2002 – IEEE Guide for The Protection of Network Transformer.
- Mulawarman, Adi, *Chair*
Xcel Energy,
250 Marquette Ave. MP8,
Minneapolis, MN 55401
- Suparat (Poom) Pavavicharn,
Vice Chair
Nebraska City, NE
- Bertolini, E.
Donahoe, K.
Frye, R.
Kumar, P.
Lascu, R.
Lukach, D.
Mackie, B.
Moskos, G.
Mulawarman, A.
Pavavicharn, S.
Sevov, L.
Sufana, C.
Thompson, M.
Torres, N.
Van de Ligt, J.
Wilson, J.
- K19:** COORDINATION WITH IEC 60255-187 FUNCTIONAL SPEC FOR TRANSFORMERS, GENERATORS AND MOTOR DIFFERENTIAL
Assignment: To provide advisory input to the IEC working groups.
- Gustavo Brunello, *Chair*
General Electric
215 Anderson Ave.
Markham, ON Canada
- Abu Bapary, *Vice Chair*
Tulsa, OK
- Lee, A.
Sevov, L.
Thompson, M.
Yala, M.
- K20:** Review and comment on C57.21 IEEE Standard Requirements, Terminology, and Test Code for Shunt Reactors Rated Over 500 kVA
Assignment: Review and comment from PSRC perspective on equipment standard presently undergoing revision by the
- Transformer Committee: C57.21 [IEEE Standard Requirements, Terminology, and Test Code for Shunt Reactors Rated Over 500 kVA]
- James K. Niemira, PE, *Chair*
S&C Electric Company
6601 North Ridge Boulevard
Chicago, IL 60626
- Brian Boysen, *Vice Chair*
Milwaukee, WI
- Bapary, A.
Barsch, J.
Boysen, B.
Conrad, S.
Crellin, R.
Deronja, A.
Elkin, P.
Farrar, T.
Gosalia, J.
Higginson, M.
Houser, K.
Ladner, H.
Lukach, D.
Pickett, B.
Samineni, S.
Scanlon, P.
van de Ligt, J.
- KTF21:** C37.112 STANDARD INVERSE-TIME CHARACTERISTIC EQUATIONS FOR OVERCURRENT RELAYS
Assignment: To investigate options for the future of IEEE Standard C37.112 which is due to expire in 2018 and make a recommendation to the K subcommittee.
- Randy Crellin, *Chair*
HDR
970 South 29th Street West
Billings, MT 59102
- Michael Thompson, *Vice Chair*
Fairview Heights, IL
- Beach, D.
Bapary, A.
Boysen, B.
Gamble, R.
Hamilton, R.
Lukach, D.
Sufana, C.
Udren, E.
- KTF22:** C37.234 IEEE GUIDE FOR PROTECTIVE RELAY APPLICATIONS TO POWER SYSTEM BUSES
Assignment: To investigate options for the future of IEEE Guide C37.234 which is due to expire in 2018 and make a recommendation to the K subcommittee.
- Abu Bapary, *Chair*
American Electric Power
- 212 E. 6th Street,
Tulsa, OK 74119
- Michael Thompson, *Vice Chair*
Fairview Heights, IL
- Frye, R.
Kumar, P.
Lascu, R.
Lukach, D.
Mackie, B.
Moskos, G.
Mulawarman, A.
Pavavicharn, S.
Sevcik, D.
Sevov, L.
Sufana, C.
Thompson, M.
Torres, N.
Van de Ligt, J.
Wilson, J.
- K19:** COORDINATION WITH IEC 60255-187 FUNCTIONAL SPEC FOR TRANSFORMERS, GENERATORS AND MOTOR DIFFERENTIAL
Assignment: To provide advisory input to the IEC working groups.
- Gustavo Brunello, *Chair*
General Electric
Markham, ON Canada
- Abu Bapary, *Vice Chair*
Columbus, OH
- Lee, A.
Sevov, L.
Thompson, M.
Yala, M.