

**IEEE Power and Energy Society
PSRC Annual Report 2018**

Power System Relaying and Control Committee

Chair: Pratap Mysore

Vice-Chair: Russ Patterson

Secretary: Murty Yalla

I. Significant Accomplishments in 2018

A. Standards, Guides & Reports Approved and Published in 2018

- 1. IEC/IEEE 60255-118-1 International Standard: “Measuring Relays and Protection Equipment-Part 118-1: Synchrophasor for Power System Measurements.”**
- 2. C37.112 IEEE Standard Inverse-Time Characteristic Equations for Overcurrent Relays.**
- 3. C37.116 IEEE Guide for Protective Relay Applications to Transmission-Line Series Capacitor Banks.**
- 4. C37.237 IEEE Standard Requirements for Time Tags Created by Intelligent Electronic Devices-COMTAG (TM).**
- 5. C37.245 IEEE Guide for the Application of Protective Relaying for Phase Shifting Transformers.**

B. New Standards for Smart Grid Initiative:

C37.118.1 and C37.118.2; C37.232; C37.236, C37.237 (Published in 2018, title: “Recommended Practice for Time Tagging of Power System Protection Events”), C37.238; C37.239, C37.242, C37.243, C37.244 all Published.

C. Presentations made at PES General Meeting; JTCM; CIGRE; Western, Georgia Tech, and Texas A & M Protective Relay Conferences:

- ✓ **“Summary of Revision IEEE Standard C37.119-2016, Guide for Breaker Failure Protection of Power Circuit Breakers.”**
- ✓ **“IEEE Standard C37.113-2015 Guide for Protective Relay Application to Transmission Lines”.**
- ✓ **“Revision of IEEE Standard C37.238 Power Profile for IEEE 1588. Why the Big Changes”.**

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- ✓ “IEC 61850 R-GOOSE Applications to Load-Shedding Under System Emergency Conditions”
- ✓ “Developing a Unified Protection Systems: Philosophy, Short Circuit Software, and Wide Area Protection Coordination Study”
- ✓ “Functional Testing of Digital Substations Based on IEC 61850 Process Bus”

D. PSRC Publications completed & posted on the PSRC website:

- ✓ Summary Paper, “Summary of Revision IEEE 37.119-2016, Guide for Breaker Failure Protection of Power Circuit Breakers.”
- ✓ Report on “Application of Ethernet Networking Devices Used for Protection and Control Applications in Electric Power Substations”.

E. Supported PES meetings:

1. PES General Meeting: 21 conference and 15 transaction papers presented.

F. Cathy Dalton generated four articles for Pac World magazine.

II. Benefits to Industry and PES Members:

- A. These activities keep our industry up to date with technology, improve power system reliability, and help solve the most common protective relaying problems.
- B. We are working on cybersecurity and synchrophasor standards with NERC, PES and IEC. We are finished generating standards for a more consistent Smart Grid performance and dependability. We are addressing grid stability with guides and standards in protection, control and communication.
- C. Our meetings allow significant interaction between the PSRC, NERC, CIGRE, IEC and PES to share our interest, knowledge, and accomplishments.

III. Benefits to Volunteer Participants:

72 Working Groups and Task Forces provide fertile ground for participants to increase their personal knowledge. Their companies enjoy more personal productivity from their employees, and contribute to the standards and practices of our industry.

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- IV. Outstanding Performance Recognition:**
- A. IEEE Fellows: Sherman Chan, Phillip Winston.**
 - B. 2017 PSRC Young Professional Award to Michael J. Higginson.**
 - C. IEEE-SA Award for revision of C57.13.1, “Guide for Field Testing of Relaying Current Transformers”; Bruce Magruder, Chair and Will Knapek, Vice Chair.**
 - D. PES and PSRC Working Group Recognition Award for Outstanding Standard to Roger Whittaker, Chair and Vice Chair Adi Mulawarman, for C37.119-2016, “Guide for Breaker Failure Protection of Power Circuit Breakers.”**
 - E. IEEE SA Standards Medallion Awards to Mark Adamiak and Jeffrey A. Burnworth.**
 - F. PSRC Prize Paper Award to Mukesh Nagpal, “Nontraditional Protection Solutions Permit TAP Transmission Connections of Nonutility Generators.”**
 - G. PSRC Outstanding Technical Report to Mike Reichard, chair and Steve Conrad, vice chair, “Avoiding Unwanted Reclosing on Rotation Apparatus (AURORA).”**
 - H. PSRC Recognition Award for Outgoing Subcommittee Chairs to Mike Reichard and Eric Allen.**
 - I. PSRC Certificates of Appreciation to Chairs of Completed Working Groups: Bruce Magruder.**
 - J. PSRC Career Service Award to Roger Hedding.**
- V. Coordination with Other entities:**
- A. IEEE Standards Association Board of Governors: Phil Winston serving.**
 - B. IEC TC 95: Murty Yalla serving as chair.**
 - C. IEC TC 95, IEC standard 60255-187-1 supported by PSRC WG K19, Gustavo Brunello, chair.**
 - D. IEC TC 95, IEC standard 60255-187-3 supported by PSRC WG D34, Norman Fischer, chair.**
 - E. IEC TC 95 Joint WG 1, developing IEC Standard 60255-188-1, Synchrophasor Standard, chaired by Ken Martin.**
 - F. IEC TC 57: WG 10 continues to develop IEC 61850 Edition 2.1. Convenor is Christoph Brunner.**
 - G. IEC TC 95: Eric Udren is Technical Advisor to USNC.**

- H. CIGRE B5.66 Work in progress. Convenor is Dennis Holstein.
- I. CIGRE B5.53 Work in progress. Chairman is Alex Apostolov.
- J. PSRC regularly met during 2018 with several subcommittees of the Substation and Power Systems Communications committees.
- K. PSRC participated in the PES JTCM for the eleventh year.
- L. PSRC is in consistent liaison with NERC, IEC, EPRI, CIGRE and IAS.
- M. Through PES Technical Council, a Task Force on Inverter Based Generation Low Short-Circuit Impact has been created in conjunction with NERC. It was led by Kevin Jones and Gary Kobet from PSRC, and Pouyan Pourbeik from PSDP. The purpose is to create a guidance document concerning gaps in standards and reports. The document has been published and is available here: <http://resourcecenter.ieee-pes.org/pes/product/technical-publications/PES TR 7-18 0068>.

VI. New Technologies of Interest:

- A. Cybersecurity.
- B. Wide range grid data collection with Synchrophasors.
- C. Smart Grid Initiatives.
- D. Grid stability under stressed conditions.
- E. Inverter based resources.

VII. Significant Plans for 2019:

- A. January 13-17: JTCM in Garden Grove, CA.
- B. Other PSRC meetings: May in Cincinnati, OH; September in Denver, CO.
- C. Joint meetings with subcommittees of Substations and Power System Communications and Cybersecurity Committees.
- D. PSRC will continue to support the new Power System Communications and Cybersecurity Committee, and meet with them jointly.
- E. Incoming Secretary starting in January, 2019, Michael Thompson.
- F. PSRC will participate in paper sessions and session sponsorships at PES meetings in 2019.

Submitted by: Pratap Mysore

January 21, 2019