

2017

**Entity: Substations Committee**

**Chair: Diane Watkins**

**Vice-Chair: Joe Gravelle**

**Secretary: Patrick Fitzgerald**

**1. Significant Accomplishments:**

- a. Standards – Substations Committee currently manages 48 standards, of these, 24 were in active development in 2017, with the following deliverables:
  - i. Publishing:
    - P1818 - Guide for the Design of Low Voltage Auxiliary Systems for Electric Power Substations
  - ii. Balloting:
    - P693 - Recommended Practice for Seismic Design of Substations
    - P1267 - Guide for Development of Specification for Turnkey Substation Projects
    - P2030.101 - Guide for Designing a Time Synchronization System for Power Substations
- b. Tutorials and Panels Summary
  - i. Annual Meeting Richmond VA
    - GIL Tutorial on IEEE C37.122.4
  - ii. GM 2017 Chicago, IL
    - Panel Session on Challenge on Operations and Control of AC-DC Hybrid Power Systems
    - Panel Session on Operation Reliability of FACTS & HVDC
    - Paper forum session on various substation related topics
    - 4 papers hosted in the Poster Session
      - a. Control Strategy for Multi0infeed MMC0Based HVDC System Connected to Weal Grid
      - b. Automated Low Voltage Intelligent Network
      - c. A Practical Preset Position Calibration Technique for Unattended Smart Substation Security Improvement
      - d. Modeling Power System Buses Using Performance Based Earthquake Engineering Methods
    - A member of the Substations Committee serves as Editor of the Transaction of Power Delivery. His work included the review of more than 60 papers; many of which were selected for publication

- iii. Computer Society Meeting December 2017, Atlanta Georgia
  - Presentation on IEEE 1402, Physical & Electronic Security
- c. Other Committee and Subcommittee Activities
  - i. The Annual Meeting of the Substations Committee was held in Richmond Virginia. The meeting was hosted by Dominion Virginia Power. The administrative subcommittee (B0) also met at the PES General Meeting in Chicago, Illinois in July.
  - ii. Other Subcommittee meetings were held at the JTCM in New Orleans, Louisiana in January, and the General Meeting in July.

## **2. Benefits to Industry and PES Members from the Committee Work:**

The most notable activity of the Substations Committee is the revision and updating of standards and guides, and initiating work on new standards. These standards are widely utilized and provide the most direct benefit to the industry

The Substations Committee also started a program to help support young professionals and experienced contributors by starting an assistance program that will allow members from these groups to get financial assistance for meeting registration and hotel accommodations to attend working group meetings.

## **3. Benefits to Volunteer Participants from the Committee Work:**

Participants have benefited from their collaboration on technical problems with industry leaders and experts, discussing contemporary industry problems and concerns, and the satisfaction of creating standards and guides that are useful to the industry. Committee meetings have included presentations of experts in specific fields and debating of ideas and industry practices, including CIGRE member input. Substations Committee members have also benefited from their exposure to technical paper reviews and technical paper presentations.

Active participants also have opportunities to take on leadership roles and improving their leadership skills as well as mentoring skills working with teams with a variety of experience in technical and organizational activities.

Substations are considered strategic assets, and a number of their components are now reaching the end of their original design life. Valuable information is exchanged on the modern design approaches and explaining new technologies, as well as the issues specific to new technology and suggested improvements for the electric power industry market; for example, Voltage-Source Converters (VSC), IEC 61850 protocols, and looking into alternative gas for gas insulated equipment.

## **4. Recognition of Outstanding Performance:**

- a. IEEE PES Technical Committee Working Group Recognition Award: D2-IEEE Guide for the Design and Installation of Cable Systems in Substations Chair DJ Moreau
- b. IEEE PES Technical Committee Working Group Recognition Award: E4-IEEE Guide for Safety in the Installation of Mobile Substation Equipment Chair Jesse Rorabaugh
- c. IEEE PES Technical Committee Working Group Recognition Award: K4- IEEE Guide for Application and User Guide for Gas-Insulated Transmission Lines, Rated 72.5 kV and Above Chair Patrick Fitzgerald
- d. IEEE PES Technical Committee Working Group Recognition Award: K12 IEEE Guide for Specifications for High-Voltage Gas-Insulated Substations Rated 52 kV and Above Chair George Becker

## **5. Coordination with Other Entities (PES Committees, CIGRE, standards, etc.):**

- a. IEC – IEEE liaison Herman Koch presented activities with IEC including: Status Reports SC 17C, and SC17A.
- b. CIGRE – US national committee supports Grid of the Future, Chicago in November 11 – 13. Next year Grid of the Future will be in Philadelphia, October 30th. Two extra days to hold a colloquium with C1 on Grid codes.
- c. PSRC –Ongoing Joint work with the following standards:
  - i. Time synchronization standard PC37.238.
  - ii. I9: Guide for Protecting Transmission Static VAR Compensators
- d. T&D – Joint work on 1613.1
- e. Switchgear Committee Joint Work :
  - i. Joint Standards C37.20.9 Standard for Metal-Enclosed Switchgear Rated 1 kV to 52 kV Incorporating Gas Insulating Systems – George Becker WG Vice Chair and Liaison from K0 – Published
  - ii. Joint Standard C37.122 Standard for High Voltage Gas-Insulated Substations Rated Above 52 kV –Ryan Stone Chair and Liaison from K0 – Revision started
  - iii. Task Force on Alternative Gases-George Becker, Arnaud Ficheux, and Peter Grossman, Liaison form K0
- f. NESC – Bruce Dietzman represented the Substations Committee at the NESC - Subcommittee 3 – Electric Supply Stations meeting

**6. New Technologies of Interest to the Committee:**

- a. HEMP – High-altitude electromagnetic pulse, and IEMI- Intentional Electromagnetic Interference
- b. Voltage-Source Converters (VSC)
- c. Alternative Gases for SF6 Equipment

**7. Significant Plans for the Next Period:**

- a. JTCM meeting in Jacksonville Florida in January 2018.
- b. Annual meeting in Scottsdale AZ in May 2018, including numerous Tutorials
- c. Further engage with Intelligent Grid CC and any key standards development
- d. Nominate Fellow candidates
- e. Nominate members for IEEE achievement awards
- f. Publish 10 standards that are due in balloting
- g. Ballot 3 standards that are planned for 2017.
- h. Technical Paper Panel Session at T&D Expo in Denver CO
- i. Tutorials at 2018 T&D Expo in Denver CO
- j. Panel Sessions at 2018 T&D Expo in Denver CO
- k. Technical Paper Panel Session at PES General Meeting in Portland OR
- l. Tutorials at 2018 GM in Portland OR

**8. Global Involvement**

PES is looking to increase involvement with members from Regions 8, 9 and 10 (Africa, Europe, Middle East, Latin America, Asia and Pacific). Please provide the following information

Total Number of committee members	Officers from regions 8,9 and 10	Subcommittee officers from regions 8, 9 and 10	Subcommittee members from regions 8,9, and 10
413	1	2	17

Submitted by: Diane Watkins Date: 1/31/18