

# IEEE Power and Energy Society Entity Annual Report 2019

**Entity: Nuclear Power Engineering Committee**

**Website: <https://site.ieee.org/pes-npec>**

**Chair: Daryl Harmon**

**Vice-Chair: John White**

**Secretary: Mark Bowman**

**Immediate Past Chair: Tom Koshy**

## **1. Significant Accomplishments:**

The following Nuclear Power Engineering Committee (NPEC) standards were approved during 2019:

IEEE Std 572 IEEE Standard for Qualification of Class 1E Connection Assemblies for Nuclear Power Generating Stations

IEEE Std 627 IEEE Standard for Qualification of Equipment Used in Nuclear Facilities

IEEE Std 382 IEEE Standard for Qualification of Safety-related Actuators for Nuclear Power

IEEE Std 2420 Standard Criteria for Combustion Turbine Generator Units Applied as Standby Power Supplies for Nuclear Power Generating Stations

IEEE Std 62582-6 Instrumentation and control important to safety -- Electrical Equipment Condition Monitoring Methods. Part 6: Insulation Resistance

The following NPEC PARs were approved by NPEC ADCOM during 2019:

IEEE P334 Standard for Qualifying Alternating Current Class 1E Motors for Nuclear Power Generating Stations

IEEE P1289 Guide for the Application of Human Factors Engineering in the Design of Computer-Based Monitoring and Control Displays for Nuclear Power Generating Stations

IEEE P833 IEEE Recommended Practice for the Protection of Electric Equipment in Nuclear Power Generating Stations from Water Hazards

IEEE P2809 Nuclear Power Plants - Instrumentation, Control and Electrical Power Systems Important to Safety - Common Cause Failure Systems Analysis and Diversity

IEEE P317 IEEE Standard for Electric Penetration Assemblies in Containment Structures for Nuclear Power Generating Stations

IEEE P62582-3 Nuclear Power Plants - Instrumentation and control important to safety - Electrical equipment condition monitoring methods - Part 3: Elongation at break

IEEE P1682 Standard for Qualifying Fiber Optic Cables, Connections, and Optical Fiber Splices for Use in Safety Systems in Nuclear Power Generating Stations and other Nuclear Facilities

IEEE P387 Standard for Criteria for Diesel Generator Units Applied as Standby Power Supplies for Nuclear Power Generating Stations

IEEE P383 Standard for Qualifying Electric Cables and Splices for Nuclear Facilities



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## IEEE P379 IEEE Standard Application of the Single-Failure Criterion to Nuclear Power Generating Station Safety Systems

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

NPEC is responsible for developing and maintaining nuclear power plant standards in the electrical and electronic area within PES. These standards are used by the nuclear industry around the world to design and maintain nuclear power plants and other nuclear facilities. Many NPEC standards are endorsed by the US Nuclear Regulatory Commission in Regulatory Guides. During 2019 NPEC submitted a letter to the NRC with a list of eight NPEC standards that NPEC requested NRC give priority to for endorsement. NRC responded with their individual endorsement plan for each of the requested standards.

NPEC has continued to be proactive in developing joint logo standards with IEC, which will benefit the nuclear industry by providing a common set of standards that will be used around the world. For example, in response to lessons learned from the Fukushima event in Japan NPEC and IEC are nearing the completion of a new standard related to Spent Fuel Pool Monitoring Instrumentation. This joint logo standard was balloted in both organizations in early 2019 and is expected to be published in early 2020.

It is noted that NPEC was highlighted as the Committee of the Month in the PEC e-bulletin of October 2019.

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

The committee is comprised of an international group of technical experts from nuclear utilities and plant owners, vendors, architecture engineers, and regulators representing a wide cross-section of the nuclear industry. The committee currently has 43 active members. NPEC, subcommittee and working group meetings provide the opportunity for this diverse set of volunteers to work together and learn from each other's perspectives regarding standards development.

NPEC and its subcommittees held two meetings during 2019. The January meeting was held in Charlotte, North Carolina and the July meeting was held in Williamsburg, Virginia. In addition to the standards work, as evidenced in item 1, a diverse set of technical presentations, as made at each of the two 2019 NPEC meetings were provided as follows:

- US Armed Forces Shore Based Nuclear Program
- Duke Energy Nuclear Plans
- MSPI - Emergency Performance Update
- AP1000 PAT and Commercial Operation in China
- Introduction to NRC 's IEC Endorsement Project
- NPEC Terminology Class 1E Usage
- Control Room Modernization - DOE LWR Sustainability Program
- Dominion SLR Digital I&C Approach
- Application of IEEE 1819
- Recent Digital Applications in Japanese PWRs

**4. Recognition of Outstanding Performance:**

A past Chair of NPEC award was presented to Tom Koshy.

Past subcommittee chair awards were presented to Ed Mohtashemi (SC 2), Yvonne Williams (SC 3), Mark Bowman (SC 4), Bob Fuld (SC 5) and Greg Hostetter (SC 6)

WG 3.1 received the Working Group of the Year award for work on IEEE Std 1819 Standard for Risk-Informed Categorization and Treatment of Electrical Equipment in Nuclear Facilities. The Chair – Yvonne Williams and the Working Group members were recognized.

The 2018 NPEC Outstanding Standard Award was presented to WG 6.3 for IEEE 603-2018 IEEE Standard Criteria for Safety Systems for Nuclear Power Generating Stations.

The NPEC Distinguished Service award was given to Paul Yanosy for his long service as the NPEC standards coordinator.

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

NPEC maintains liaison between IEEE and ANSI, ASME, ANS, ASTM and ISA, as well international organizations IEC and IAEA regarding all nuclear power plant matters.

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

Assuring that NPEC standards are applicable to reactor types other than light water reactors and applicable to advanced reactor development.

**7. 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 43	Officers from regions 8,9 and 10 0	Subcommittee officers from regions 8, 9 and 10 0	Subcommittee members from regions 8,9, and 10 0
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**8. Significant Plans for the Next Period:**

NPEC will continue its standards development activities through its subcommittees and working groups. NPEC meetings will be held in Charlotte, North Carolina in January and Mystic, Connecticut in July.

**Submitted by: Daryl Harmon**

**Date: 1/28/20**