

**IEEE NPEC Subcommittee SC-3**  
***Operations, Maintenance, Aging, Testing, & Reliability***  
**Meeting 15-2 Minutes**



**Tuesday Morning, July 28, 2015**  
**Salt Lake City, UT**

Members Present:	George Ballassi	Ed Mohtashemi
	John Beatty	Vish Patel
	Tom Crawford (Vice Chair)	Ted Riccio
	Jacob Kulangara	Yvonne Williams (Chair)
	Jim Liming	Kiang Zee
	Kirk Melson	

Members Absent:	Gopal Aravapalli (C)	Sharon Honecker (C)
	Suresh Channarasappa	Joe Napper (C)
	Marie Cuvelier (C)	Sheila Ray
	John Erinc	Craig Sellers (C)
	Edward Eustace	Rebecca Steinman
	Hamid Heidarisaafa (C)	John Stevens
	Steve Hutchins	John Taylor (C)

Guests: Jodi Haasz

## **1.0 Introduction**

- **Opening Remarks and Meeting Agenda**

Yvonne called the meeting to order at 08:13, then reviewed the agenda. George moved to approve the agenda; and Tom seconded. The motion passed by acclamation.

It was noted that we had voted electronically to present P1819 for NPEC Preview.

Tom noted the shortage of power strips during the previous meeting and requested that other members try to bring power strips and /or extension cords in the future. There was some discussion about SC-3 purchasing those and having someone ship to each meeting, but that was felt to place an unneeded burden on whoever had the responsibility to get the equipment to each meeting. It is really a small inconvenience for our members to throw a power strip or extension cord into their bags; and that doesn't burden any one member. Tom suggested that power strips in the \$20 range with an ~6 ft cord would be appropriate, as would ~25 ft extension cords.

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## **2.0 Secretary's Report**

- **SC-3 Approval of S15-1 Meeting Minutes**

Tom reviewed the meeting notes for the S15-1 meeting in Las Vegas. Several minor corrections were noted, then Vish moved to approve the minutes, as amended. Jim seconded, and the motion passed by acclamation.

- **SC-3 Membership**

The most-recent rolling attendance report was reviewed, and the current report is contained in Attachment 2. Tom noted that we need a new Secretary for SC-3.

Marie Cuvelier and Joe Napper have moved to Corresponding Member status.

- **Leadership Telecons**

- No Leadership telecons were held since the previous meeting.

- **Alligator Fund**

The status of the alligator fund was reviewed and it was noted that the fund balance is unchanged. We agreed, once again, that there would be no collection for this meeting. The Alligator Fund status is contained in Attachment 3.

- **Action Item Status**

The status of the action items was reviewed; the action item list is provided in Attachment 4.

*SC-3 Name Change (AI-11-2-C)* – the subcommittee name change to “Operations, Maintenance, Aging, Testing, & Reliability” was discussed. No update was available; Yvonne will bring up at ADCOM again.

*Strawman for gap analysis for SC3 standards (Action 12-2-B)* – Development of a Template / Strawman for gap analysis for the SC3 standards remains open and is assigned to Yvonne. Yvonne will look specifically at the 336 & 338 standards, which are next up to be revised.

*Present conflict to SA for resolution, regarding meeting notice distribution in Section 6.0 of SA WG P&P Manual Template (Action 14-1-B)* – No update was available.

*Check on access to the IEEE Standards Dictionary for (1) WG members and (2) public users (Action 14-1-C(2))* – SC-3 brought the issue to the attention of our SA representatives; it is not our responsibility to track any further action, so this item is Closed.

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### **3.0 IEEE Patent Slides**

Yvonne reviewed the IEEE Patent Slides, which are contained in Attachment 9

### **4.0 Chair's Report**

- **Leadership Review / Membership**

Everyone was asked to look towards recruiting new members. Marie Cuvelier and Joe Napper have dropped to Corresponding status. We need a new Secretary for SC-3.

- **Leadership Telecons**

There were no Leadership telecons since the previous meeting.

- **NPEC Preparations**

Yvonne reviewed the P1819 Preview presentation for the NPEC meeting. After some discussion and a few minor changes, Jim moved to Approve the Preview for NPEC and Vish Seconded. The motion Passed.

Based on the discussion on the P352 Draft and the unknown status of some of the comment resolutions, the Preview presentation for P352 was cancelled.

### **5.0 Working Group Reports**

- **WG-3.1**

Yvonne asked everyone to think about the updates needed for the 336 & 338 standards; we will take that discussion up at the next meeting. Presuming P1819 is Approved to Ballot following the NPEC Preview, ballot comments will be forthcoming and we will need to resolve them.

- **WG-3.2**

WG-3.2 is dormant at present. Randy Flowers is the Chair.

We discussed the general process for reconstituting a WG before a new revision of a standard is due. Yvonne took the Action to review the WG-3.2 CD she received from Marie for any unresolved comments and also to contact Randy concerning WG plans (*Action 15-2-A*).

- **WG-3.3**

John was not present. Concern was raised for things falling through the cracks. Jim is working on cleaning up the Preview presentation. Additional attention and telecon

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meetings are needed to work on comment resolution prior to the S16-1 meeting so that we can Preview then.

- **WG-3.4**

WG 3.4 is also dormant. Rebecca continues as Chair.

## **6.0 Liaison Reports**

Liaison reports were provided as follows:

- NRC – Sheila Ray was not present, but submitted the NRC Liaison Report provided in Attachment 7. (Tom will distribute along with the S15-1 Minutes.)
- ASME – No update was provided by Craig. Ted has the Action to contact Craig and determine his status during the next month (***Action 15-2-B***). (Ted received Craig's report subsequent to the SC-3 meeting, but prior to the NPEC meeting, where it was presented. It will also be distributed with the S15-1 Minutes.)
- NRMCC – George did not have an update, but will forward later. We will continue to track activities for a while, but really haven't been getting much benefit recently.

## **7.0 Old and New Business**

We need to revise the SC-3 OPM to address the NPEC WG P&P. This will be undertaken as a future Action, Tom will prepare the initial draft (***AI-15-2-C***).

There were four new Action Items from this meeting. The revised AI List is provided in Attachment 4.

The next meeting (16-1) was scheduled for Clearwater, FL, but subsequently was to be relocated due to meeting costs there. It should still be in the late January 2016 time frame.

George updated us on the NPEC discussion of CyberSecurity relative to 10CFR73.50 and RG 5.71. The concern that we need to address CyberSecurity within IEEE has been raised and is under discussion. The first question to be addressed is where it fits in the organization? The business portion would seem to fit under the Computer Society, but the Nuclear aspects more-sensibly fall under NPEC.

For our leadership issue, Kirk suggested that we accept commitments for 2yr service in a position without the expectation that the person must move up to the next-higher position. It was noted that the move upward has been general practice, but is not a requirement. It is acceptable for someone to volunteer for a position and express the intent not to accept the next higher position.

Jim agreed to help out as Secretary for WG-3.3.

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Yvonne reviewed and updated the NPEC Standards Status Schedule, as shown in Attachment 11. Ted agreed to update the SC-3 Master Schedule and spread out the workload so we wouldn't have too many revisions due at the same time (*AI-15-2-D*).

A further discussion about members bringing power strips and extension cords was held. Tom agreed to send out a reminder before each meeting.

A motion for adjournment was made by Jacob, seconded by Kirk, and passed by acclamation.

Prepared by Tom Crawford, SC-3 Vice Chair.

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 SC-3 Website information:

<http://grouper.ieee.org/groups/npec/private/sc3/sc-3.html>

Login Name: [REDACTED]

Password: [REDACTED]

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ATTACHMENTS

Attachment 1 Agenda	Attachment 2 Rolling Attendance	Attachment 3 Alligator Fund
Attachment 4 Action Items	Attachment 5 NPEC SC-3 Standards Status Spreadsheet	Attachment 6 ASME Liaison Report
Attachment 7 NRC Liaison Report	Attachment 8 NRMCC Liaison Report (None)	Attachment 9 IEEE Patent Slides
Attachment 10 SC-3 Standards Schedule (No Update Available)	Attachment 11 P1819 Preview Presentation	Attachment 12

# Agenda – Meeting 15-2 – Salt Lake City, UT

## NPEC Subcommittee SC-3, *Operations, Maintenance, Aging, Testing and Reliability*

<b>Meeting Date/Time:</b>	Tuesday, 07/28/2015 0800-1200	<b>Chairman :</b>	Yvonne Williams
		<b>Vice Chair:</b>	Tom Crawford
		<b>Secretary:</b>	

<b>Desired Outcomes:</b>	<ol style="list-style-type: none"> <li>1. Review status/activities of each SC Working Group</li> <li>2. Update SC3 standards master schedule</li> <li>3. Prepare for Previews of P352 and P1819 to NPEC on Wednesday</li> </ol>
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WHAT	WHO	WHEN
Welcome, Review Desired Outcomes <ul style="list-style-type: none"> <li>• Meeting logistics &amp; safety</li> <li>• Introductions</li> </ul>	Y. Williams All	0800-1815
Chairman’s Introduction <ul style="list-style-type: none"> <li>• Opening remarks</li> <li>• Review/approve agenda</li> </ul>	Y. Williams	0815-0825
Secretary’s Report <ul style="list-style-type: none"> <li>• Approval of SC3 15-1 Meeting Minutes</li> <li>• Action Item review/status</li> <li>• SC3 membership review</li> <li>• Alligator fund report</li> </ul>	T. Crawford	0825-0855
Chairman’s Report <ul style="list-style-type: none"> <li>• SC3 Leadership – Secretary and succession planning</li> <li>• Leadership telecons</li> <li>• NPEC meeting preparations</li> </ul>	Y. Williams	0855-0915
Working Group Reports <ul style="list-style-type: none"> <li>• WG-3.1 (Testing)</li> <li>• WG-3.2 (Security)</li> <li>• WG-3.3 (Reliability)</li> <li>• WG-3.4 (Aging)</li> </ul>	Y. Williams M. Cuvelier J. Stevens R. Steinman	0915-0925 0925-0930 0930-0940 0940-0945
<b>BREAK</b>	All	0945-1015
Patent slides	Y. Williams	1015-1020
Liaison Reports <ul style="list-style-type: none"> <li>• NRC Report</li> <li>• ASME Report</li> </ul>	S. Ray T. Riccio / C. Sellers	1020-1050
Old Business <ul style="list-style-type: none"> <li>• SC-3 OPM / WG P&amp;Ps</li> <li>• Master schedule for Std review/updates</li> <li>• Approach for next revisions of stds (gap analysis)</li> </ul>	All	1050-1120
New Business <ul style="list-style-type: none"> <li>• As identified during this meeting</li> </ul>	All	1120-1130
Review of New Action Items	T. Crawford	1130-1145
Next meeting – Clearwater, FL	Y. Williams	
Meeting closeout/adjournment		1200

### Attendance at SC-3 Meetings

Last	First	2013-1	2013-2	2014-1	2014-2	2015-1	2015-2
Aravapalli	Gopal			Correspond			
<b>Ballassi</b>	<b>George</b>	X	X	X	X		X
<b>Beatty</b>	<b>John</b>	X	X	X		X	X
<b>Channarasappa</b>	<b>Suresh</b>	X	X	X		X	
<b>Crawford</b>	<b>Tom</b>	X	X	X	X	X	X
Cuvelier	Marie	X	X	X			Correspond
<b>Erinc</b>	<b>John</b>		X			X	
<b>Eustace</b>	<b>Edward</b>		X	X			
Heidarisaafa	Hamid	Correspond					
Honecker	Sharon	X	X	Correspond			
<b>Hutchins</b>	<b>Steve</b>	X	X				
<b>Kulangara</b>	<b>Jacob</b>	X	X		X		X
Kyle	George		X				
<b>Liming</b>	<b>Jim</b>	X	X	X	X	X	X
<b>Melson</b>	<b>Kirk</b>		X			X	X
<b>Muhtashemi</b>	<b>Ed</b>		X				X
Napper	Joe			X	X		Correspond
Parello	Jim	X	X	X	Correspond		
<b>Patel</b>	<b>Vish</b>	X	X	X	X		X
<b>Ray</b>	<b>Sheila</b>	X	X			X	
<b>Riccio</b>	<b>Ted</b>	X	X	X	X		X
<b>Steinman</b>	<b>Rebecca</b>	X	X	X	X		
<b>Stevens</b>	<b>John</b>	X	X	X	X	X	
Taylor	John						
<b>Williams</b>	<b>Yvonne</b>	X	X	X	X		X
Worrell	Tom	X					
<b>Zee</b>	<b>Kaing</b>			X	X	X	X

Members are shown in **bold** and colored yellow as of end of most recent meeting.  
Corresponding and Alternate members are shown in green.

TOTAL PAYING ATTENDEES	20	21	15	11	9	11
TOTAL NON-PAYING ATTENDEES	0	0	0	0	0	0

### NPEC Subcommittee SC-3

#### *Operating, Maintenance, Aging, Testing and Reliability*

#### Alligator Fund

The Alligator Fund is made up of voluntary contributions from SC-3 members to defray the cost of meeting rooms, refreshments, etc.

Meeting	Beginning Balance	Meeting Contributions	Expenses	Ending Balance
S05-1	\$312.14	\$207.18	\$359.82	\$159.50
S05-2	\$159.50	\$240.00	\$0.00	\$399.50
S06-1	\$399.50	\$220.00	\$178.67	\$440.83
S06-2	\$440.83	\$160.00	\$335.00	\$265.83
S07-1	\$265.83	\$200.00	\$201.70	\$264.13
S07-2	\$264.13	\$600.00	\$340.87	\$523.26
S08-1	\$523.26	\$300.00	\$347.80	\$475.46
S08-2	\$475.46	\$320.00	\$386.26	\$409.20
S09-1	\$409.20	\$180.00	\$12.00	\$577.20
S09-2	\$577.20	\$210.00	\$92.54	\$694.66
S10-1	\$694.66	\$220.00	\$380.90	\$533.76
S10-2	\$533.76	\$425.00	\$474.90	\$483.86
S11-1	\$483.86	\$200.00	\$14.00	\$669.86
S11-2	\$669.86	\$430.00	\$480.50	\$619.36
S12-1	\$619.36	\$340.00	\$203.00	\$756.36
S12-2	\$756.36	\$150.00	\$0.00	\$906.36
S13-1	\$906.36	\$0.00	\$0.00	\$906.36
S13-2	\$906.36	\$0.00	\$0.00	\$906.36
S14-1	\$906.36	\$0.00	\$0.00	\$906.36
S14-2	\$906.36	\$0.00	\$0.00	\$906.36
S15-1	\$906.36	\$0.00	\$0.00	\$906.36
S15-2	\$906.36	\$0.00	\$0.00	\$906.36



**NPEC Subcommittee SC-3**  
*Operating, Maintenance, Aging, Testing and Reliability*  
**Action Items List**

<b>Item No.</b>	<b>Subcommittee 3.0 Actions</b>	<b>Owner</b>	<b>Due Date</b>	<b>Closure Comments</b>
11-2-C	SC-3 name in NPEC needs to reflect reliability	Jim Liming	Next AdCom mtg.	Bring up at AdCom meeting 11-2. 12-1 mtg: more complicated - Jim to bring up at 12-1 AdCom meeting to make sure what is required and then get those actions started. 13-1 mtg: Will affect NPEC P&P and O&P. Malia confirmed that it could be handled as an editorial change. It just will take time to process. Jim to bring up to ADCOM. Preferred name is: "Operations, Maintenance, Aging, Testing, and Reliability". Request Submitted 01/22/13; see S13-1 Meeting Notes, Attachment 5. No NPEC action, as of the close of the N14-1 Meeting. S15-2 Meeting -- Yvonne will bring up at ADCOM again.
12-2-B	Develop a Template / Strawman for gap analysis for SC3 standards	Yvonne	13-2 mtg.	No follow-on as of S14-1 meeting. S15-2 Meeting -- Yvonne will look at this specifically considering 336 & 338.
14-1-B	Present the conflict to SA for resolution relative to meeting notice distribution in section 6.0 of the IEEE SA Working Group Policies & Procedures manual template.	Malia	14-2 mtg.	New item / Action pending. No update as of S15-2 meeting.
14-1-C	Check on access to the IEEE Standards Dictionary for (1) WG members and (2) public users.	Malia	14-2 mtg.	SA subsequently announced the availability of the Standards Dictionary to IEEE SA members, which addresses part (1) of this action. Part (2) remained open as of S15-1 meeting. During the S15-2 meeting, we concluded that we had brought up the issue, but it was not our responsibility to track closeout in SC-3. This item is CLOSED.
15-2-A	Review the CD of files from WG-3.2 for unresolved comments and also contact Randy Flowers concerning WG-3.2 plans.	Yvonne	16-1 mtg.	New item / Action pending.
15-2-B	Contact Craig Sellers to determine his status as ASME Liason	Ted	Sept 2015	New item / Action pending. Note: an ASME report was subsequently received prior to the N15-2 meeting.

### SC-3 "Operations, Maintenance, Aging, Testing & Reliability"

Chair: Yvonne Williams

PROJECT	Year	Standard Expiration	Re-Affirmation	PAR Expiration	TITLE	Sub-Committee	Regulatory Guide	IEEE Revision Section B Discussion	IEEE Revision Section C Guidance	Working Group	Chair	Cycle Year	N14-1	N14-2	N15-1	N15-2	Status/Comments
336	2010	2020			IEEE Standard Installation, Inspection, and Testing Requirements for Power, Instrumentation, and Control Equipment at Nuclear Facilities	3	1.30 - 1972	1971	1971	1	Y. Williams	5					Revision approved by the StdBd on June 17, 2010
338	2012	2022			IEEE Standard Criteria for the Periodic Surveillance Testing of Nuclear Power Generating Station Safety Systems	3	1.118 - 1995	1987	1987	1	Y. Williams	3					Std approved by SB Feb. 6, 2012
352	1987	2020	2010	Dec-2016	IEEE Guide for General Principles of Reliability Analysis of Nuclear Power Generating Stations and Other Nuclear Facilities	3				3	J. Stevens	5				Preview	Submitted to RevCom for reaffirmation at the Sept Meeting PAR approved June 17, 2010 thru Dec 2014. PAR revision to change from recommended practice to standard approved by at NesCom Jan. 18th meeting. Reaffirmation approved by SB March 2010; PAR approved by ADCOM 1/25/2011; PAR approved by NESCOM 3/29/2012.
577	2012	2022			IEEE Standard Requirements for Reliability Analysis in the Design and Operation of Safety Systems for Nuclear Power Generating Stations	3				3	J. Stevens	3					Approved by SASB Aug. 30, 2012 Published on Oct. 19, 2012
692	2013	2023			IEEE Standard Criteria for Security Systems for Nuclear Power Generating Stations	3				2	R. Flowers	2					Issued by Sd bd Aug. 2013 PAR 692A was issued in 2014 to amend the standard. Were these corrections included in the 2013 issuance? If so the PAR needs to be withdrawn.
933	2013	2023			IEEE Guide for Definition of Reliability Program Plans for Nuclear Generating Stations and Other Nuclear Facilities	3				3	J. Stevens	2					Approved by SA BD on Dec. 11, 2013
1205	2014	2024			IEEE Guide for Assessing, Monitoring, and Mitigating Aging Effects on Class 1E Equipment used in Nuclear Power Generating Stations	3	1.218 - 2012	2000	None	4	R. Steinman	1					Approved by SB March 27, 2014
P1819				Dec. 2017	Standard for Risk-Informed Categorization and Treatment of Electrical Equipment in Nuclear Facilities	3				1	Y. Williams	0				Possible Preview	PAR approved by StdBD March 25, 2010. WIP to NPEC 7/31/2013. Request for PAR extension 14-02. PAR extension submitted as of July 2014. PAR extension to 12/31/2017 approved.

ASME Liaison Report  
July 2015

OM Code, Subsection ISTE, "Risk-Informed Inservice Testing" Revision 3 was issued for global review December 2013. 78 comments were received, many from the Joint ASME/ANS Nuclear Risk Management Coordinating Committee and significant comments were received from the NRC. OM Subgroup ISTE came to an impasse with the NRC on their comments. A compromise was reached in which a non-mandatory appendix to the OM code would be prepared containing specific and updated guidance from Regulatory Guide 1.175 that will address most of the NRC comments.

A Need and Scope Statement for this non-mandatory appendix was issued for global review January 2015. Comments were addressed and Revision 1 of the Need and Scope Statement will be issued for first consideration ballot in the next week or two. Once the Need and Scope Statement is approved, the non-mandatory appendix will be submitted for global review.

Subgroup ISTE continues to work to address comments on Subsection ISTE, Rev. 1 and is drafting the first draft of the proposed non-mandatory appendix.

Craig Sellers  
Chair Subgroup ISTE

## NRC Liaison Report – NPEC 15-02

### Nuclear Reactor Regulation (NRR) Activities

- The 10 CFR 50.55a(h) rule making package incorporating by reference IEEE Std 603-2009 is going through the final stages of NRC staff management review prior to sending it to the Commission for a notation vote. NRC staff included in the package an issue paper (SECY) for the Commission describing the proposed draft rulemaking to incorporate by reference IEEE Std 603-2009 on safety systems into 10 CFR 50.55.a(h).

An NRC Category 3 Teleconference and Webinar Public meeting is scheduled for August 4, 2015, from 1:00 pm to 4:00 pm (EDT). The purpose of this meeting is to discuss the draft proposed rule language. This meeting will focus on the significant provisions of the draft proposed rule language in order to ensure stakeholders are aware of the NRC staff's recommendation. There will be an opportunity for informal questions and answers about the staff's presentation. This meeting is not intended to be an opportunity for submission of formal comments on the draft proposed rule, and the NRC will not be providing formal responses.

The NRC staff is preparing to submit the draft proposed rule language to the Commission for approval to publish the proposed rule for public comment. After the proposed rule is published in the Federal Register, there will be a public comment period in which formal comments on the proposed rule may be submitted at that time.

- Public participation is actively sought for this meeting to fully engage the public in a discussion of regulatory issues. No classified, proprietary, or protected information will be discussed.
- The NRC's Policy Statement, "Enhancing Public Participation in NRC Meetings," effective May 28, 2002, applies to this meeting. The policy statement may be found on the NRC Web site, [www.nrc.gov](http://www.nrc.gov), and contains information regarding visitors and security.
- All meeting participants will participate remotely by telephone via a toll-free teleconference number and web-conferencing on the internet. The access information is below.
- The call-in information for the meeting is:

Bridge line	888-469-0647
Passcode	4125454

Link to register for webinar:

<https://attendee.gotowebinar.com/register/7050409773942941185>

Meeting contact: Dan Doyle, 415-3748

Technical contact: Rich Stattel, 415-8472

- NRC staff from the offices of NRR, NRO and RES developed an initial set of problem statements that will be used to develop an NRC agency level Digital I&C “Path Forward Action Plan”. The purpose of this plan is to identify a path forward for achieving greater efficiencies in the licensing process for digital I&C systems and components.
- NRC staff met with Commissioner Ostendorff to discuss industry concerns, challenges, and a path forward for reviewing and licensing digital I&C Safety Related upgrades and modernizations.
- NRR staff conducted a technical briefing on digital I&C platform Topical Report (TR) reviews for the ACRS I&C subcommittee. The briefing covered the NRC’s digital I&C Topical Report (TR) review process and four TR evaluations that have been recently completed or are currently underway. The four I&C TRs referenced are the Lockheed Martin NuPac; Westinghouse SSPS CPLD Upgrade; Rolls-Royce Spinline 3, and Doosan HFC 6000.
- The Final Safety Evaluation related to the HFC-6000 Topical Report amendment addressing generic open items was issued. Updates to that topical report are now being evaluated by the staff. NRC has also accepted the Toshiba FPGA-based controls and the Mitsubishi Electric’s MELTAC Topical Reports for review.
- NRC staff completed the second vendor audit (Westinghouse-ALS) in support of the Diablo Canyon Process Protection System digital replacement licensing amendment request (LAR).
- The NRC I&C staff completed safety evaluations for various LARs. These safety evaluations addressed
  - Plant instrumentation system technical specifications (tech specs),
  - Low and Degraded Voltage relay setpoint tech specs,
  - Installation of a PRNM digital upgrade,
  - Elimination of a main steam line radiation trip and isolation function,
  - BWR plant operation in the MELLA Plus region,
  - SONGS Units 2 & 3 tech specs for cessation of reactor operations

- Crystal River Unit 3 permanent defueled tech specs
- Pressurizer heater function clarifications
- Fermi Unit 2 license renewal
- Fermi Unit 2 DC battery tech specs
- Nine Mile Point Unit 1 degraded voltage relay set point
- Oconee Unit1 and Unit 3 Keowee hydroelectric unit (KHU) frequency tech spec
- Seabrook tech spec voltage limit increase for emergency diesel generator (EDG) load reject surveillance
- Prairie Island Unit 1 and Unit 2 EDG voltage and frequency limits tech specs
- Sequoyah improved tech specs

### **New Reactor Activities**

- The APR 1400 design certification review is underway. The current schedule is to complete Phase 1 of the Chapter 7 review by the end of this year.
- Ongoing activities to support Vogtle and Summer construction, including AP1000 protection and monitoring system (PMS) and component interface module (CIM) design inspections, and several LAR reviews.
- Oconee TIA 2014-05 on cable separation/single failure and Degraded Voltage Protection (DVR SE Issued)
- Cyber Security Design Requirements SECY paper development is ongoing. A second public meeting is planned with the industry in August.
- A Regulatory Information Summary (RIS) on embedded digital devices is nearing completion.
- Watts Bar Unit 2 degraded voltage relays (for closure of Open Item 30)
- Fermi 3 Combined Operating License (COL) issued (first ESBWR COL issued)
- South Texas Project (STP) Unit 3 and Unit 4 hearing is planned for Fall 2015
- Standard Review Plan (NUREG 0800) Branch Technical Position (BTP), “Open Phase Conditions in Electric Power System, Review Responsibilities,” addressing Bulletin 2012-01, “Design Vulnerability in Electric Power System.”

### **Research Activities**

- NRC is considering a second public meeting on DG 1141 (RG 1.105 Rev 4) “Setpoints for Safety Related Instrumentation,” to discuss public comment resolutions. The schedule for the meeting has not been determined.

- NRC is developing regulatory guidance on the use of hardware description language (HDL) – based programmable devices (HPDs). Public comments on the draft are expected to be solicited in 2016.
- Continuing development effort on a safety framework demonstration

## License Renewal Activities

### Applications currently under review:

Plant Name and Unit(s)	Application Received
<a href="#">Indian Point 2 &amp; 3</a>	04/30/07
<a href="#">Diablo Canyon 1 &amp; 2</a>	11/24/09
<a href="#">Seabrook 1</a>	06/01/10
<a href="#">Davis-Besse 1</a>	08/30/10
<a href="#">South Texas Project 1 &amp; 2</a>	10/28/10
<a href="#">Grand Gulf 1</a>	11/01/11
<a href="#">Sequoyah 1 &amp; 2</a>	01/15/13
<a href="#">Byron 1 &amp; 2 / Braidwood 1 &amp; 2</a>	05/29/13
<a href="#">Fermi, Unit 2</a>	04/30/14
<a href="#">LaSalle 1 &amp; 2</a>	12/09/14

### Completed Applications:

(Includes application, review schedule, supplemental environmental impact statement, and safety evaluation report.)

Plant Name and Unit(s)	Application Received	Renewed License Issued	Date Entering Extended Operation
<a href="#">Calvert Cliffs 1 &amp; 2</a>	04/10/98	03/23/00	07/31/14 (Unit 1) 08/13/16 (Unit 2)
<a href="#">Oconee 1, 2 &amp; 3</a>	07/07/98	05/23/00	02/06/13 (Unit 1) 10/06/13 (Unit 2) 07/19/14 (Unit 3)
<a href="#">Arkansas Nuclear One 1</a>	02/01/00	06/20/01	05/20/14
<a href="#">Turkey Point 3 &amp; 4</a>	09/11/00	06/06/02	07/19/12 (Unit 3) 04/10/13 (Unit 4)
<a href="#">Edwin I. Hatch 1 &amp; 2</a>	03/01/00	06/15/02	08/06/14 (Unit 1) 06/13/18 (Unit 2)
<a href="#">North Anna 1 &amp; 2</a>	05/29/01	03/20/03	04/01/18 (Unit 1) 08/21/20 (Unit 2)
<a href="#">Surry 1 &amp; 2</a>	05/29/01	03/20/03	05/25/12 (Unit 1) 01/29/13 (Unit 2)
<a href="#">Peach Bottom 2 &amp; 3</a>	07/02/01	05/07/03	08/08/13 (Unit 2) 07/02/14 (Unit 3)

**Completed Applications:**

(Includes application, review schedule, supplemental environmental impact statement, and safety evaluation report.)

<b>Plant Name and Unit(s)</b>	<b>Application Received</b>	<b>Renewed License Issued</b>	<b>Date Entering Extended Operation</b>
<a href="#"><u>St. Lucie 1 &amp; 2</u></a>	11/30/01	10/02/03	03/01/16 (Unit 1) 04/06/23 (Unit 2)
<a href="#"><u>Fort Calhoun</u></a>	01/11/02	11/04/03	08/09/13
<a href="#"><u>McGuire 1 &amp; 2</u></a>	06/14/01	12/05/03	06/12/21 (Unit 1) 03/03/23 (Unit 2)
<a href="#"><u>Catawba 1 &amp; 2</u></a>	06/14/01	12/05/03	12/05/23 (Unit 1) 12/05/23 (Unit 2)
<a href="#"><u>H.B. Robinson 2</u></a>	06/17/02	04/19/04	07/31/10
<a href="#"><u>V.C. Summer</u></a>	08/06/02	04/23/04	08/06/22
<a href="#"><u>R.E. Ginna</u></a>	08/01/02	05/19/04	09/18/09
<a href="#"><u>Dresden 2 &amp; 3</u></a>	01/03/03	10/28/04	12/22/09 (Unit 2) 01/12/11 (Unit 3)
<a href="#"><u>Quad Cities 1 &amp; 2</u></a>	03/03/03	10/28/04	12/14/12 (Unit 1) 12/14/12 (Unit 2)
<a href="#"><u>Joseph M. Farley 1 &amp; 2</u></a>	09/15/03	05/12/05	06/25/17 (Unit 1) 03/31/21 (Unit 2)
<a href="#"><u>Arkansas Nuclear One 2</u></a>	10/15/03	06/30/05	07/17/18
<a href="#"><u>D.C. Cook 1 &amp; 2</u></a>	10/31/03	08/30/05	10/25/14 (Unit 1) 12/23/17 (Unit 2)
<a href="#"><u>Millstone 2 &amp; 3</u></a>	01/22/04	11/28/05	07/31/15 (Unit 2) 11/25/25 (Unit 3)
<a href="#"><u>Point Beach 1 &amp; 2</u></a>	02/26/04	12/22/05	10/05/10 (Unit 1) 03/08/13 (Unit 2)
<a href="#"><u>Browns Ferry 1, 2 &amp; 3</u></a>	01/02/04	05/04/06	12/20/13 (Unit 1) 06/28/14 (Unit 2) 07/02/16 (Unit 3)
<a href="#"><u>Brunswick 1 &amp; 2</u></a>	10/18/04	06/26/06	09/08/16 (Unit 1) 12/27/14 (Unit 2)
<a href="#"><u>Nine Mile Point 1 &amp; 2</u></a>	05/27/04	10/31/06	08/22/09 (Unit 1) 10/31/26 (Unit 2)
<a href="#"><u>Monticello</u></a>	03/24/05	11/08/06	09/08/10
<a href="#"><u>Palisades</u></a>	03/31/05	01/17/07	03/24/11
<a href="#"><u>FitzPatrick</u></a>	07/01/06	09/08/08	10/17/14
<a href="#"><u>Wolf Creek 1</u></a>	10/04/06	11/20/08	03/11/25
<a href="#"><u>Harris 1</u></a>	11/16/06	12/17/08	10/24/26
<a href="#"><u>Oyster Creek</u></a>	07/22/05	04/08/09	04/09/09



**Completed Applications:**

(Includes application, review schedule, supplemental environmental impact statement, and safety evaluation report.)

<b>Plant Name and Unit(s)</b>	<b>Application Received</b>	<b>Renewed License Issued</b>	<b>Date Entering Extended Operation</b>
<a href="#">Vogtle 1 &amp; 2</a>	06/29/07	06/03/09	01/16/27 (Unit 1) 02/09/29 (Unit 2)
<a href="#">Three Mile Island 1</a>	01/08/08	10/22/09	04/19/14
<a href="#">Beaver Valley 1 &amp; 2</a>	08/28/07	11/05/09	01/29/16 (Unit 1) 05/27/27 (Unit 2)
<a href="#">Susquehanna 1 &amp; 2</a>	09/13/06	11/17/09	07/17/22 (Unit 1) 03/23/24 (Unit 2)
<a href="#">Cooper</a>	09/30/08	11/29/10	01/18/14
<a href="#">Duane Arnold</a>	10/01/08	12/16/10	02/21/14
<a href="#">Kewaunee</a>	08/14/08	02/24/11	*
<a href="#">Vermont Yankee**</a>	01/27/06	03/21/11	03/21/12
<a href="#">Palo Verde 1, 2 &amp; 3</a>	12/15/08	04/22/11	06/01/25 (Unit 1) 04/24/26 (Unit 2) 11/25/27 (Unit 3)
<a href="#">Prairie Island 1 &amp; 2</a>	04/15/08	06/27/11	08/09/13 (Unit 1) 10/29/14 (Unit 2)
<a href="#">Salem 1 &amp; 2</a>	08/18/09	06/30/11	08/13/16 (Unit 1) 04/18/20 (Unit 2)
<a href="#">Hope Creek 1</a>	08/18/09	07/20/11	04/11/26
<a href="#">Columbia Generating Station</a>	01/20/10	05/22/12	12/20/23
<a href="#">Pilgrim 1</a>	01/27/06	05/29/12	06/08/12
<a href="#">Crystal River 3</a>	12/18/08	***	
<a href="#">Limerick 1 &amp; 2</a>	06/22/11	10/20/14	10/26/24 (Unit 1) 06/22/29 (Unit 2)
<a href="#">Callaway 1</a>	12/19/11	03/06/15	10/18/24

**Future Submittals of Applications:**

<b>Fiscal Year</b>	<b>No.</b>	<b>Renewal Application</b>	<b>Applicant</b>	<b>Letter of Intent (ADAMS Accession No.)</b>	<b>Submission Date</b>
2015	1	<a href="#">Perry Nuclear Power Plant, Unit 1</a>	FirstEnergy Nuclear Operating Company	<a href="#">ML12205A001</a>	Sep 2015
2016	1	<a href="#">Waterford Steam Electric</a>	Entergy	<a href="#">ML14065A370</a>	Jan to Mar

		<a href="#">Station, Unit 3</a>	Nuclear, Inc.		2016
2017	1	<a href="#">River Bend Station, Unit 1</a>	Entergy Nuclear, Inc.	<a href="#">ML14055A319</a>	Jan to Mar 2017
2018	1	Strategic Teaming and Resource Sharing (STARS) No. 6	Un-named	<a href="#">ML14167A301</a>	July to Sept 2018
2021	1	<a href="#">Clinton Power Station, Unit 1</a>	Exelon Generation Company, LLC	<a href="#">ML14253A117</a>	Jan to Mar 2021

The status of License Renewal activities may be found at

<http://www.nrc.gov/reactors/operating/licensing/renewal/applications.html>

### Publications Issued Since January 1, 2015 - 114

- Orders - 16
- Regulatory Guides for Power Reactors – 1
- Withdrawn Regulatory Guides for Power Reactors – 1
- Draft Regulatory Guides Issued for Public Comment – 7
- Information Notices – 7
- Regulatory Issue Summaries – 10
- NUREGs – 55
- Vendor Inspection Reports – 17

### List of Publications Issued:

#### Orders

CLI-15-01	DTE ELECTRIC COMPANY, (Fermi Nuclear Power Plant, Unit 3)	01/13/2015 52-033-COL
CLI-15-02	ENTERGY NUCLEAR OPERATIONS, INC. (Indian Point Nuclear Generating Units 2 and 3)	02/18/2015 50-247-LR 50-286-LR
CLI-15-03	ENTERGY NUCLEAR OPERATIONS, INC. (Indian Point Nuclear Generating Units 2 and 3)	02/18/2015 50-247-LR 50-286-LR
CLI-15-04	DTE ELECTRIC CO. (Fermi Nuclear Power Plant, Unit 3) 02/26/2015	52-033-COL
	DTE ELECTRIC CO. (Fermi Nuclear Power Plant, Unit 2)	50-341-LR

### Orders

DUKE ENERGY CAROLINAS, L.L.C. (William States Lee III Nuclear Station, Units 1 and 2)	52-018-COL 52-019-COL
ENTERGY NUCLEAR OPERATIONS, INC. (Indian Point Nuclear Generating Units 2 and 3)	50-247-LR 50-286-LR
FIRSTENERGY NUCLEAR OPERATING CO. (Davis-Besse Nuclear Power Station, Unit 1)	50-346-LR
FLORIDA POWER & LIGHT CO. (Turkey Point, Units 6 and 7)	52-040-COL 52-041-COL
LUMINANT GENERATION CO. L.L.C. (Comanche Peak Nuclear Power Plant, Units 3 and 4)	52-034-COL 52-035-COL
NEXTERA ENERGY SEABROOK, L.L.C. (Seabrook Station, Unit 1)	50-443-LR
NUCLEAR INNOVATION NORTH AMERICA, L.L.C. (South Texas Project, Units 3 and 4)	52-012-COL 52-013-COL
PACIFIC GAS AND ELECTRIC CO. (Diablo Canyon Power Plant, Units 1 and 2)	50-275-LR 50-323-LR
PROGRESS ENERGY FLORIDA, INC. (Levy County Nuclear Power Plant, Units 1 and 2)	52-029-COL 52-030-COL
STP NUCLEAR OPERATING CO. (South Texas Project, Units 1 and 2)	50-498-LR 50-499-LR
TENNESSEE VALLEY AUTHORITY (Bellefonte Nuclear Power Plant, Units 3 and 4)	52-014-COL 52-015-COL
TENNESSEE VALLEY AUTHORITY (Sequoyah Nuclear Plant, Units 1 and 2)	50-327-LR 50-328-LR
TENNESSEE VALLEY AUTHORITY (Watts Bar Nuclear Plant, Unit 2)	50-391-OL
UNION ELECTRIC CO. (Callaway Plant, Unit 1)	50-483-LR
VIRGINIA ELECTRIC AND POWER CO. d/b/a DOMINION VIRGINIA POWER and OLD DOMINION ELECTRIC COOPERATIVE (North Anna Power Station, Unit 3)	52-017-COL

### Orders

CLI-15-05	OMAHA PUBLIC POWER DISTRICT (Fort Calhoun Station, Unit 1)	03/09/2015 50-285
CLI-15-06	ENTERGY NUCLEAR OPERATIONS, INC. (Indian Point Nuclear Generating Units 2 and 3)	03/09/2015 50-247-LR 50-286-LR
CLI-15-07	NUCLEAR INNOVATION NORTH AMERICA, LLC (South Texas Project Units 3 and 4)	04/14/2015 52-012-COL 52-013-COL
CLI-15-08	PPL SUSQUEHANNA, LLC (Susquehanna Steam Electric Station, Units 1 and 2)	04/14/2015 50-387-LT 50-388-LT 72-28-LT
CLI-15-09	SHAW AREVA MOX SERVICES, LLC (Mixed Oxide Fuel Fabrication Facility Possession and Use License)	04/23/2015 70-3098-MLA
CLI-15-10	DTE ELECTRIC COMPANY (Fermi Nuclear Power Plant, Unit 3)	52-033-COL
	DUKE ENERGY CAROLINAS, LLC (William States Lee III Nuclear Station, Units 1 and 2)	52-018-COL 52-019-COL
	LUMINANT GENERATION COMPANY LLC (Comanche Peak Nuclear Power Plant, Units 3 and 4)	52-034-COL 52-035-COL
	NUCLEAR INNOVATION NORTH AMERICA LLC (South Texas Project Units 3 and 4)	52-012-COL 52-013-COL
	PROGRESS ENERGY FLORIDA, INC. (Levy County Nuclear Power Plant, Units 1 and 2)	52-029-COL 52-030-COL
	STP NUCLEAR OPERATING COMPANY (South Texas Project, Units 1 and 2)	50-498-LR 50-499-LR
	TENNESSEE VALLEY AUTHORITY (Watts Bar Nuclear Plant, Unit 2)	50-391-OL
	DOMINION VIRGINIA POWER (North Anna Nuclear Power Station Unit 3)	52-017-COL
	*This Order served on multiple dockets. See the Electronic Hearing Dockets ( <a href="http://adams.nrc.gov/ehd">http://adams.nrc.gov/ehd</a> ) for more details.	04/23/2015

### Orders

CLI-15-11	UNION ELECTRIC COMPANY (Callaway Nuclear Power Plant, Unit 1)	04/23/2015 50-483-LR
CLI-15-12	DTE ELECTRIC COMPANY (Fermi Nuclear Power Plant, Unit 3)	04/23/2015 52-033-COL
CLI-15-13	DTE ELECTRIC COMPANY (Fermi Nuclear Power Plant, Unit 3)	04/30/2015 52-033-COL
CLI-15-14	PACIFIC GAS & ELECTRIC COMPANY (Diablo Canyon Power Plant, Units 1 and 2)	05/21/2015 50-275 50-323
CLI-15-15	DUKE ENERGY CAROLINAS, LLC (William States Lee III Nuclear Station, Units 1 and 2)	52-018-COL 52-019-COL
	FIRSTENERGY NUCLEAR OPERATING COMPANY (Davis-Besse Nuclear Power Station, Unit 1)	50-346-LR
	LUMINANT GENERATION COMPANY LLC (Comanche Peak Nuclear Power Plant, Units 3 and 4)	52-034-COL 52-035-COL
	NUCLEAR INNOVATION NORTH AMERICA LLC (South Texas Project Units 3 and 4)	52-012-COL 52-013-COL
	PROGRESS ENERGY FLORIDA, INC. (Levy County Nuclear Power Plant, Units 1 and 2)	52-029-COL 52-030-COL
	STP NUCLEAR OPERATING COMPANY (South Texas Project, Units 1 and 2)	50-498-LR 50-499-LR
	TENNESSEE VALLEY AUTHORITY (Sequoyah Nuclear Plant, Units 1 and 2)	50-327-LR 50-328-LR
	TENNESSEE VALLEY AUTHORITY (Watts Bar Nuclear Plant, Unit 2)	50-391-OL
	VIRGINIA ELECTRIC AND POWER CO. d/b/a DOMINION VIRGINIA POWER and OLD DOMINION ELECTRIC COOPERATIVE (North Anna Nuclear Power Station Unit 3)	52-017-COL
*This Order served on multiple dockets. See the Electronic Hearing Dockets ( <a href="http://adams.nrc.gov/ehd">http://adams.nrc.gov/ehd</a> ) for more details.		06/09/2015

### Orders

CLI-15-16	EXELON GENERATION COMPANY, LLC (Dresden Nuclear Power Station)	06/11/2015 50-237-EA 50-249-EA
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### Regulatory Guides for Power Reactors

1.1	Net Positive Suction Head for Emergency Core Cooling and Containment Heat Removal System Pumps (Safety Guide 1) <b>(Withdrawn -- See 80 FR 24293, 04/30/2015)</b>	04/2015
1.36	Nonmetallic Thermal Insulation for Austenitic Stainless Steel	05/2015

### Draft Reg Guides Issued for Public Comment

DG-1245	Inspection of Water-Control Structures Associated with Nuclear Power Plants (ML13255A435) (1.127)	01/2015
DG-1299	Regulatory Guidance on the Alternate Pressurized Thermal Shock Rule (ML14056A011) (New Guide)	03/2015
DG-1314	Quality Group Classifications and Standards for Water-Steam-, and Radioactive-Waste-Containing Components of Nuclear Power Plants (ML14356A249) (1.26)	04/2015
DG-1311	Sizing of Large Lead-Acid Storage Batteries (ML14031A265) (1.211)	04/2015
DG-1322	Alternative Risk-Informed Approach for Addressing the Effects of Debris on Post Accident Long-Term Core Cooling (ML15023A025)	04/2015
DG-1305	Acceptance of Commercial-Grade Design and Analysis Computer Programs for Nuclear Power Plants (ML14119A286) (New Guide)	04/2015
DG-1323	Comprehensive Vibration Assessment Program for Reactor Internals During Preoperational and Initial Startup Testing (ML15083A390) (RG 1.20)	07/2015

### Information Notices

IN 2015-01	Degraded Ability to Mitigate Flooding Events	01/09/2015
IN 2015-02	Antifreeze Agents in Fire Water Sprinkler Systems	02/04/2015
IN 2015-03	Improper Operation of Spent Fuel Transfer Cask Neutron Shield Equipment Leading to Elevated Radiation Levels Adjacent to Spent Fuel Transfer Cask	02/09/2015
IN 2015-04	Fatigue in Branch Connection Welds	04/24/2015
IN 2015-05	Inoperability of Auxiliary and Emergency Feedwater Auto-Start Circuits on Loss of Main Feedwater Pumps	05/12/2015
IN 2015-06	ISOO Notice 2015-02: Message from OPM to Security Clearance Holders	06/18/2015
IN 2015-07	Temporary Suspension of E-Qip System to Affect Pending Background Investigations	07/15/2015

### Regulatory Issue Summaries

RIS 15-01	Qualification Requirements for Bolt and Stud Non-Destructive Examinations	01/29/2015
RIS 15-02	Reporting of H-3, C-14, Tc-99, and I-129 on the Uniform Waste Manifest	02/18/2015
RIS 15-03	Identifying and Reporting Security Incidents Under 10CFR Part 37	02/24/2015
RIS 15-04	Withdrawal of Administrative Letter 93-01	04/14/2015
RIS 15-05	Preparation and Scheduling of Operator Licensing Examinations	04/20/2015
RIS 15-06	Tornado Missile Protection	06/10/2015
RIS 15-07	Process for Scheduling and Allocating Resources in FY 2017 for the Review of New Licensing Applications for Large Light-Water Reactors and Small Modular Reactors	05/11/2015
RIS 15-08	Oversight of Counterfeit, Fraudulent and Suspect Items in the Nuclear Industry	06/24/2015
RIS 15-09	Implementation of Fingerprinting Requirements for Non-Power Reactors	07/09/2015
RIS 15-10	Applicability of ASME Code Case N-770-1 As Conditioned in 10 CFR 50.55a, "Code and Standards," to Branch Connection Butt Welds	07/16/2015

### NUREGs

**NUREGs**

NUREG-2169	Nuclear Power Plant Fire Ignition Frequency and Non-Suppression Probability Estimation Using the Updated Fire Events Database: United States Fire Event Experience Through 2009 (ML15016A069)	Jan 2015
NUREG-2155, R1	Implementation Guidance for 10 CFR Part 37, "Physical Protection of Category 1 and Category 2 Quantities of Radioactive Material" (ML15016A172)	Jan 2015
NUREG/IA-0451	The Establishment and Assessment of Kuosheng (BWR/6) NPP Dry-storage System TRACE/SNAP Model (ML15014A156)	Jan 2015
NUREG-1949 Vol 2	Safety Evaluation Report Related to Disposal of High-Level Radioactive Wastes in a Geologic Repository at Yucca Mountain, Nevada: Repository Safety Before Permanent Closure (ML15022A146)	Jan 2015
NUREG/CR-7184	Crack Growth Rate and Fracture Toughness Tests on Irradiated Cast Stainless Steels (ML14356A136)	Jan 2015
NUREG-1949, Vol 5	Safety Evaluation Report Related to Disposal of High-Level Radioactive Wastes in a Geologic Repository at Yucca Mountain, Nevada, Volume 4: Proposed Conditions on the Construction Authorization and Probable Subjects of License Specifications (ML15022A488)	Jan 2015
NUREG-0847, S27	Safety Evaluation Report Related to the Operation of Watts Bar Nuclear Plant, Unit 2 (ML15033A041)	Jan 2015
NUREG-1635, V11	Review and Evaluation of the Nuclear Regulatory Commission Safety Research Program: A Report to the U.S. Nuclear Regulatory Commission (ML15007A146)	Feb 2015
NUREG/BR-0117, N15-01	NMSS News Link WINTER 2015 (ML15042A176)	Feb 2015
NUREG-1542, V20, S1	FY 2014 Summary of Performance and Financial Information – Supplement 1 (ML15049A606)	Feb 2015
NUREG-1830, V11	FY 2014 Office of Investigations Annual Report (ML15034A064)	Feb 2015
NUREG/CR-7168	Regulatory Approaches for Addressing Reprocessing Facility Risks: An Assessment (ML15057A376)	Feb 2015



**NUREGs**

NUREG-2174	Impact of Variation in Environmental Conditions on the Thermal Performance of Dry Storage Casks (ML15054A207)	Feb 2015
NUREG-2176, Vol. 1	Environmental Impact Statement for Combined Licenses (Cols) for Turkey Point Nuclear Plant Units 6 and 7 Draft Report for Comment (ML15055A103)	Feb 2015
NUREG-2176, Vol. 2	Environmental Impact Statement for Combined Licenses (Cols) for Turkey Point Nuclear Plant Units 6 and 7 Draft Report for Comment (ML15055A109)	Feb 2015
NUREG-2163 DFC	Technical Basis for Regulatory Guidance on the Alternate Pressurized Thermal Shock Rule, Draft Report for Comment (ML15058A677)	Feb 2015
NUREG/BR-0476, Volume 4	2014-2015 New Reactor Program (ML15061A403)	March 2015
NUREG/BR-0500, Rev. 3	Safety Culture Policy Statement (ML15062A478)	March 2015
NUREG-2172	Safety Evaluation Report Related to the License Renewal of Callaway Plant, Unit 1 (ML15068A342)	March 2015
NUREG/BR-0098, Rev. 7	Safety and Occupational Health for Managers and Supervisors: What You Should Know (ML15071A032)	March 2015
NUREG-2175 DFC	Guidance for Conducting Technical Analyses for 10 CFR Part 61, Draft Report for Comment (ML15056A516)	March 2015
NUREG-1437 S53	Generic Environmental Impact Statement for License Renewal of Nuclear Plants Supplement 53 Regarding Sequoyah Nuclear Plant, Units 1 and 2, Final Report (ML15075A438)	March 2015
NUREG-1437 Supplement 55, DFC	Generic Environmental Impact Statement for License Renewal of Nuclear Plants Supplement 55 Regarding Braidwood Station, Units 1 and 2, Draft Report for Comment (ML15062A428)	March 2015
NUREG/IA-0452	Spent Fuel Pool Safety Analysis of TRACE in Chinshan NPP (ML15076A245)	March 2015
NUREG/CR-7190	Workload, Situation Awareness, and Teamwork (ML15078A397)	March 2015

### NUREGs

NUREG/CR-7193	Evaluations of NRC Seismic-Structural Regulations and Regulatory Guidance, and Simulation-Evaluation Tools for Applicability to Small Modular Reactors (SMRs) (ML15083A178)	March 2015
NUREG/CR-7194	Technical Basis for Peak Reactivity Burnup Credit for BWR Spent Nuclear Fuel in Storage and Transportation Systems (ML15097A186)	April 2015
NUREG-2179, Vol. 1	Environmental Impact Statement for the Combined License (COL) for the Bell Bend Nuclear Power Plant (Draft Report for Comment) (ML15103A012)	April 2015
NUREG-2179, Vol. 2	Environmental Impact Statement for the Combined License (COL) for the Bell Bend Nuclear Power Plant (Draft Report for Comment) (ML15103A025)	April 2015
NUREG/BR-0523	Mitigating Strategies: Safely Responding to Extreme Events (ML15113A950)	April 2015
NUREG/CR-7197 DFC	Heat Release Rates of Electrical Enclosure Fires (HELEN-FIRE), Draft Report for Comment (ML15113A950)	April 2015
NUREG-2178, Vol. 1 DFC	Refining And Characterizing Heat Release Rates From Electrical Enclosures During Fire (RACHELLE-FIRE) Volume 1: Peak Heat Release Rates and Effect of Obstructed Plume, Draft Report For Comment (ML15111A045)	April 2015
NUREG-1437, S52, V1	Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Regarding the Davis-Besse Nuclear Power Station, Final Report (ML15112A098)	April 2015
NUREG/CR-7189 ANL/EVS/TM-14/2	User's Guide for RESRAD-OFFSITE (ML15124A396)	May 2015
NUREG-2183 DRFC	Environmental Impact Statement for the Construction Permit for the SHINE Medical Radioisotope Production Facility Draft Report for Comment (ML15127A241)	May 2015
NUREG-1940, Supplement 1	RASCAL 4.3: Description of Models and Methods (ML15132A119)	May 2015

### NUREGs

NUREG/CR-7195	Risk-Informed and Performance-Based Oversight of Radiological Emergency Response Programs (ML15134A035)	May 2015
NUREG-0090, Vol. 37	Report to Congress on Abnormal Occurrences Fiscal Year 2014 (ML15140A285)	May 2015
NUREG/CR-7198	Mechanical Fatigue Testing of High-Burnup Fuel for Transportation Applications (ML15139A389)	May 2015
NUREG-CR-7192, V1	Rod Bundle Heat Transfer Facility Steam Cooling with Droplet Injection Experiments Data Report (ML15155B489)	May 2015
NUREG-2164	Consolidation of the 1985 Sandia National Laboratories/Factory Mutual Main Control Room and Electrical Cabinet Fire Test Data (ML15155B463)	May 2015
NUREG-BR-0117 NO. 15-02	NMSS News Link (ML15156A910)	May 2015
NUREG/CR-7188	Testing to Evaluate Extended Battery Operation in Nuclear Power Plants (ML15148A418)	May 2015
NUREG-2180 DRFC	Determining the Effectiveness, Limitations, and Operator Response for Very Early Warning Fire Detection Systems in Nuclear Facilities (DELORES-VIEWFIRE) Draft Report for Comment (ML15162A416)	June 2015
NUREG/CR-7181 BWR	Anticipated Transients Without Scram in the MELLLA+ Expanded Operating Domain, Part 3: Events Leading to Emergency Depressurization (ML15169A268)	June 2015
NUREG/CR-7182 BWR	Anticipated Transients Without Scram in the MELLLA+ Expanded Operating Domain, Part 4: Sensitivity Studies for Events Leading to Emergency Depressurization (ML15169A528)	June 2015
NUREG/CR-7180	BWR Anticipated Transients Without Scram in the MELLLA+ Expanded Operating Domain, Part 2: Sensitivity Studies for Events Leading to Instability (ML15169A168)	June 2015
NUREG/CR-7179	BWR Anticipated Transients Without Scram in the MELLLA+ Expanded Operating Domain, Part 1: Model Development and Events Leading to Instability (ML15169B064)	June 2015

### NUREGs

NUREG-1520, Rev. 2 Final Report	Standard Review Plan for Fuel Cycle Facilities License Applications Final Report (ML15176A258)	June 2015
NUREG-1927, Rev. 1	Draft Standard Review Plan for Renewal of Specific Licenses and Certificates of Compliance for Dry Storage of Spent Nuclear Fuel Draft Report for Comment (ML15180A011)	June 2015
NUREG-2181	Safety Evaluation Report Related to the License Renewal of Sequoyah Nuclear Plant Units 1 and 2 Docket Numbers 50-327 and 50-328 Tennessee Valley Authority (ML15187A206)	July 2015
NUREG/CR-7202	NRC Reviewer Aid for Evaluating the Human- Performance Aspects Related to the Design and Operation of Small Modular Reactors (ML15182A199)	July 2015
NUREG-1930, S2	Safety Evaluation Report Related to the License Renewal of Indian Point Nuclear Generating Plant Units 2 and 3 Docket Nos. 50-247 and 50-286 (ML15188A383)	July 2015
NUREG-0017, R1	Calculation of Releases of Radioactive Materials in Gaseous and Liquid Effluents from Pressurized Water Reactors: PWR-GALE Code (ML112720411)	July 2015
NUREG-1437, Supplement 54	Generic Environmental Impact Statement for License Renewal of Nuclear Plants Supplement 54 Regarding Byron Station, Units 1 and 2 Final Report (ML15196A263)	July 2015

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### Vendor Inspection Reports Issued, Completed, and Planned Inspections

Chicago Bridge & Iron (CB&I), Lake Charles, LA, limited scope inspection to assess CB&I's compliance with selected portions of their quality assurance (QA) and 10 CFR Part 21 programs specifically related to the implementation of quality activities associated with the fabrication and inspection activities of Westinghouse Electric Company's AP1000 reactor design of structural sub-modules for commercial nuclear power.	01/15/15
GE Reuter-Stokes, Twinsburg, OH, limited scope inspection to assess compliance with selected portions of their quality assurance (QA) and 10 CFR Part 21 programs as they pertain to the implementation of safety-related activities for U.S. regulated facilities.	01/16/15

**Vendor Inspection Reports Issued, Completed, and Planned Inspections**

<p>General Cable, Willimantic, CT, limited scope inspection to assess compliance with selected portions of their quality assurance (QA) and 10 CFR Part 21 programs as they pertain to activities conducted at your facility related to the design, fabrication, assembly, and testing activities of components for NRC regulated facilities.</p>	<p align="center">03/23/15</p>
<p>National Testing Services, Huntsville, AL, limited scope inspection to assess compliance with selected portions of their quality assurance (QA) and 10 CFR Part 21 programs, specifically as they pertain to reviewing documentation, and observing testing associated with submergence testing of the squib valve actuators being supplied as part of the Westinghouse AP1000 design.</p>	<p align="center">03/26/15</p>
<p>Pentas Controls, LLC., Phoenix, AZ, limited scope reactive inspection to assess compliance with selected portions of their quality assurance (QA) and 10 CFR Part 21 programs, specifically as they pertain to refurbishing and inspection of electronic components.</p>	<p align="center">04/20/15</p>
<p>Westinghouse Electric Company, Cranberry Township, PA, limited scope inspection to assess compliance with selected portions of their quality assurance (QA) and 10 CFR Part 21 programs as they pertain to the implementation of safety-related activities for U.S. regulated facilities.</p>	<p align="center">04/24/15</p>
<p>ATC Nuclear-TN, Oakridge, TN, limited scope inspection to assess compliance with selected portions of their quality assurance (QA) and 10 CFR Part 21 programs specifically as they pertain to ATC's qualification and dedication activities associated with safety-related components supplied to operating nuclear power plants.</p>	<p align="center">04/30/15</p>
<p>Crane Nuclear, Inc., Bolingbrook, IL, limited scope inspection to assess compliance with selected portions of their quality assurance (QA) and 10 CFR Part 21 programs specifically as they pertain to safety-related components supplied to operating nuclear power plants.</p>	<p align="center">05/01/15</p>
<p>Westinghouse Electric Company, Warrendale, PA, limited scope inspection to assess compliance with selected portions of their quality assurance (QA) and 10 CFR Part 21 programs specifically as they pertain to safety-related activities associated with the development of aspects of the AP1000 PMS system and subsystems.</p>	<p align="center">05/11/15</p>
<p>Chicago Bridge &amp; Iron Power, Laurens, SC, limited scope inspection to assess compliance with selected portions of their quality assurance (QA) and 10 CFR Part 21 programs, specifically as they pertain to activities related to the fabrication of piping spools for the Westinghouse Electric Company AP1000 reactor design.</p>	<p align="center">05/22/15</p>

**Vendor Inspection Reports Issued, Completed, and Planned Inspections**

Fisher Controls International LLC, Marshalltown, IA, limited scope inspection to assess compliance with selected portions of their quality assurance (QA) and 10 CFR Part 21 programs specifically as they pertain to safety-related components supplied to operating nuclear power plants.	05/22/15
Premier Technology, Inc., Blackfoot, ID, limited scope inspection to assess compliance with selected portions of their quality assurance (QA) and 10 CFR Part 21 programs specifically as they pertain to safety-related components supplied to operating nuclear power plants.	06/01/15
Kinectrics, Toronto, ON, limited scope inspection to assess compliance with selected portions of their quality assurance (QA) and 10 CFR Part 21 programs specifically as they pertain to safety-related components supplied to operating nuclear power plants.	06/11/15
National Technical Systems, Huntsville, AL, limited scope inspection to assess compliance with selected portions of their quality assurance (QA) and 10 CFR Part 21 programs specifically as they pertain to the ASME QME-1-2007 functional and flow qualification testing of the 8-inch squib valves for the Westinghouse AP1000 design.	06/25/15
Chicago Bridge & Iron (CB&I), Lake Charles, LA, limited scope inspection to verify proper implementation of the actions identified in NRC Confirmatory Order No. EA-13-196.	07/01/15
Engine Systems Inc. (ESI), Rocky Mount, NC, limited scope inspection to assess compliance with selected portions of their quality assurance (QA) and 10 CFR Part 21 programs specifically as they pertain to ESI's qualification and dedication activities associated with safety-related components supplied to operating nuclear power plants.	07/06/15
ABB, Incorporated, Coral Springs, FL, limited scope inspection to assess compliance with selected portions of their quality assurance (QA) and 10 CFR Part 21 programs as they pertain associated with safety-related components supplied to operating nuclear power plants.	07/09/15

NRC Vendor Inspection Reports can be obtained from:

<http://www.nrc.gov/reactors/new-reactors/oversight/quality-assurance/vendor-insp/insp-reports.html>

# Instructions for the WG Chair

The IEEE-SA strongly recommends that at each WG meeting the chair or a designee:

- Show slides #1 through #4 of this presentation
- Advise the WG attendees that:
  - The IEEE's patent policy is described in Clause 6 of the *IEEE-SA Standards Board Bylaws*;
  - Early identification of patent claims which may be essential for the use of standards under development is strongly encouraged;
  - There may be Essential Patent Claims of which the IEEE is not aware. Additionally, neither the IEEE, the WG, nor the WG chair can ensure the accuracy or completeness of any assurance or whether any such assurance is, in fact, of a Patent Claim that is essential for the use of the standard under development.
- Instruct the WG Secretary to record in the minutes of the relevant WG meeting:
  - That the foregoing information was provided and that slides 1 through 4 (and this slide 0, if applicable) were shown;
  - That the chair or designee provided an opportunity for participants to identify patent claim(s)/patent application claim(s) and/or the holder of patent claim(s)/patent application claim(s) of which the participant is personally aware and that may be essential for the use of that standard
  - Any responses that were given, specifically the patent claim(s)/patent application claim(s) and/or the holder of the patent claim(s)/patent application claim(s) that were identified (if any) and by whom.
- The WG Chair shall ensure that a request is made to any identified holders of potential essential patent claim(s) to complete and submit a Letter of Assurance.
- It is recommended that the WG chair review the guidance in *IEEE-SA Standards Board Operations Manual* 6.3.5 and in FAQs 12 and 12a on inclusion of potential Essential Patent Claims by incorporation or by reference.

Note: **WG** includes Working Groups, Task Groups, and other standards-developing committees with a PAR approved by the IEEE-SA Standards Board.



# Participants, Patents, and Duty to Inform

All participants in this meeting have certain obligations under the IEEE-SA Patent Policy.

- Participants [Note: Quoted text excerpted from IEEE-SA Standards Board Bylaws subclause 6.2]:
  - “Shall inform the IEEE (or cause the IEEE to be informed)” of the identity of each “holder of any potential Essential Patent Claims of which they are personally aware” if the claims are owned or controlled by the participant or the entity the participant is from, employed by, or otherwise represents
    - “Personal awareness” means that the participant “is personally aware that the holder may have a potential Essential Patent Claim,” even if the participant is not personally aware of the specific patents or patent claims
  - “Should inform the IEEE (or cause the IEEE to be informed)” of the identity of “any other holders of such potential Essential Patent Claims” (that is, third parties that are not affiliated with the participant, with the participant’s employer, or with anyone else that the participant is from or otherwise represents)
- The above does not apply if the patent claim is already the subject of an Accepted Letter of Assurance that applies to the proposed standard(s) under consideration by this group
- Early identification of holders of potential Essential Patent Claims is strongly encouraged
- No duty to perform a patent search



# Patent Related Links

All participants should be familiar with their obligations under the IEEE-SA Policies & Procedures for standards development.

Patent Policy is stated in these sources:

IEEE-SA Standards Boards Bylaws

*<http://standards.ieee.org/develop/policies/bylaws/sect6-7.html#6>*

IEEE-SA Standards Board Operations Manual

*<http://standards.ieee.org/develop/policies/opman/sect6.html#6.3>*

Material about the patent policy is available at

*<http://standards.ieee.org/about/sasb/patcom/materials.html>*

If you have questions, contact the IEEE-SA Standards Board Patent Committee Administrator at [patcom@ieee.org](mailto:patcom@ieee.org) or visit <http://standards.ieee.org/about/sasb/patcom/index.html>

This slide set is available at  
<https://development.standards.ieee.org/myproject/Public/mytools/mob/slideset.ppt>



# Call for Potentially Essential Patents

- If anyone in this meeting is personally aware of the holder of any patent claims that are potentially essential to implementation of the proposed standard(s) under consideration by this group and that are not already the subject of an Accepted Letter of Assurance:
  - Either speak up now or
  - Provide the chair of this group with the identity of the holder(s) of any and all such claims as soon as possible or
  - Cause an LOA to be submitted

# Other Guidelines for IEEE WG Meetings

- **All IEEE-SA standards meetings shall be conducted in compliance with all applicable laws, including antitrust and competition laws.**
  - **Don't discuss the interpretation, validity, or essentiality of patents/patent claims.**
  - **Don't discuss specific license rates, terms, or conditions.**
    - Relative costs, including licensing costs of essential patent claims, of different technical approaches may be discussed in standards development meetings.
      - Technical considerations remain primary focus
  - **Don't discuss or engage in the fixing of product prices, allocation of customers, or division of sales markets.**
  - **Don't discuss the status or substance of ongoing or threatened litigation.**
  - **Don't be silent if inappropriate topics are discussed ... do formally object.**

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See *IEEE-SA Standards Board Operations Manual*, clause 5.3.10 and “Promoting Competition and Innovation: What You Need to Know about the IEEE Standards Association's Antitrust and Competition Policy” for more details.

# Ballot Preview

## Presentation – P1819

July 29, 2015 (NPEC Mtg 15-2)

By Yvonne Williams (WG-3.1 Chair)

“Standard for Risk-Informed Categorization and Treatment of Electrical and Electronic Equipment at Nuclear Power Generating Stations and Other Nuclear Facilities”

# **NPEC Ballot Preview– P1819**

## **Presentation Contents**

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1. History and Background
2. P1819 PAR Summary
3. Working Group Membership
4. Table of Contents
5. Risk Informed Safety Classification (RISC)
6. Summary of Content
7. Schedule
8. Conclusion

# NPEC Ballot Preview– P1819

## 1. History

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### History of IEEE P1819

This is a new standard.

At the NPEC 04-2 meeting, the 2005-2006 NPEC Goals were approved. Goal five:

**Incorporate Risk Informed Methodologies into IEEE Standards** - Identify and incorporate Risk Informed Methodologies into applicable IEEE Standards.

# NPEC Ballot Preview– P1819

## 1. History (Continued)

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### History of IEEE P1819

Subcommittee 3 incorporated risk information into IEEE 338 by providing risk informed test intervals. Then NPEC asked the subcommittee to make a recommendation as to how to incorporate risk informed methodology into other standards to meet NPEC Goal 5. A white paper on integration of “Risk Informed Methodology” into IEEE standards was written with 3 options.

# NPEC Ballot Preview– P1819

## 1. History (Continued)

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### History of IEEE P1819

After discussions within the subcommittee and working groups, Option 3 was chosen, and it was presented to AdCom at the 06-2 meeting.

Option 3 recommended a new standard that would complement existing standards.



# NPEC Ballot Preview– P1819

## 1. History (Continued)

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### History of IEEE P1819

During subsequent meetings, a plan was formulated and a proposed PAR developed by Working Group 3.1.

The PAR was approved by AdCom and by the IEEE-SA Standards Board on March 25, 2010.

The PAR expires Dec 31, 2017.

# NPEC Ballot Preview– P1819

## 2. Working Group membership

Now 17 members – User (3), Producer (10),  
General interest (2), Government/Military (2)

George Ballassi (Govt/Military)	Kirk Melson (Producer)
John Beatty (Producer)	Patrick O'Regan (General interest)
Ralph Chackal (General interest)	Vish Patel (User)
Suresh Channarasappa (Producer)	Sheila Ray (Govt/Military)
Tom Crawford (Producer)	Ted Riccio (Producer)
Marie Cuvelier (Producer)	John Stevens (Producer)
Steve Hutchins (User)	Yvonne Williams (Producer)
Jacob Kulangara (User)	Kiang Zee (Producer)
Jim Liming (Producer)	
9 corresponding members 3 User, 3 General interest, 3 Producer	

# NPEC Ballot Preview– P1819

## 3. PAR Summary

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### **Scope of Proposed Standard:**

This standard identifies and discusses criteria for risk-informed categorization and treatment of electrical and electronic components that are designated by the user to be placed into safety significant categories at nuclear power generating stations and other nuclear facilities.

# NPEC Ballot Preview– P1819

## 3. PAR Summary (Continued)

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### **Purpose of Proposed Standard:**

This standard provides methods to categorize electrical and electronic components using a risk-informed process and provides the recommended treatment of categorized components commensurate with their safety significance.

# **NPEC Ballot Preview– P1819**

## **4. Table of Contents**

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### **1. Overview**

#### **1.1 Scope**

#### **1.2 Purpose**

#### **1.3 Applicability**

### **2. Normative references**

### **3. Definitions and acronyms**

### **4. General requirements**

### **5. Categorization**

### **6. Alternate treatment requirements**

### **7. Corrective actions**

### **8. Feedback & alternate treatment adjustments**

### **9. Records**

### **Annex A (Informative) Bibliography**

### **Annex B (Informative) Essential question recommendation**

# NPEC Ballot Preview– P1819

## 5. Risk Informed Safety Classifications

	Safety Related column (CLASS 1E)	Non-Safety Related column (NON CLASS 1E)
Safety Significant row	<b>RISC-1</b> Safety-Related Class 1E Safety Significant Current IEEE standards apply	<b>RISC-2</b> Non Safety-Related Safety Significant Increased requirements may be needed
Low Safety Significant row	<b>RISC-3</b> Safety-Related Class 1E Low Safety Significant Current IEEE standard requirements may be reduced	<b>RISC-4</b> Non Safety-Related Low Safety Significant No special requirements

# NPEC Ballot Preview– P1819

## 6. Summary of Content

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The standard provides a means to categorize electrical and electronic equipment beyond that available in current guidance.

It describes how components can be treated differently according to their safety significance.

The purpose is to allow for:

- Increased requirements for non-safety related components determined to be safety-significant.
- Reduced requirements for safety related components determined to be low safety significant.

# NPEC Ballot Preview– P1819

## 7. Schedule

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- ↪ June-July / 2015: Complete - reviewed Draft “D6” and preview presentation; confirmed permission to preview at NPEC
- ↪ July / 2015: Preview at NPEC; request permission to ballot
- ↪ Aug / 2015: Mandatory editorial coordination
- ↪ Sept / 2015: Complete ballot pool
- ↪ Oct / 2015: Complete ballot
- ↪ Jan / 2016: Resolve ballot comments
- ↪ Feb / 2016: Recirc ballot, if needed
- ↪ Mar / 2016: Submit for RevCom approval
- ↪ Publish by end of 2016
- ↪ PAR expires Dec 2017



# NPEC Ballot Preview– P1819

## 8. Conclusion

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- ☑ WG-3.1 has developed draft IEEE P1819, which meets the requirements of the approved PAR.
- ☑ IEEE P1819 draft has been approved by Subcommittee 3.
- ☑ IEEE P1819 draft was prepared using the Standards template and the Style Manual.
- ☑ WG-3.1, with approval of Subcommittee 3, requests permission to ballot IEEE P1819.

# Fact Sheet for IEEE Nuclear Power Engineering Committee (NPEC)



## Scope of NPEC Subcommittees

### SC-1 – Administrative

Administration, integration and change of the policies, procedures and general affairs of the main committee.

### SC-2 – Qualifications

Treats all matters relating to the qualifications of safety-related systems and equipment in nuclear power generating stations.

### SC-3 – Operations, Maintenance, Aging, Testing & Reliability

Treatment of matters relating to the operation, surveillance, maintenance, and testing of safety-related systems and equipment in nuclear power generating stations, and the treatment of all matters relating to the analysis of the reliability of safety-related systems for nuclear facilities.

### SC-4 – Auxiliary Power

Treatment of all matters relating to the electric systems which provide power to the safety-related equipment and systems in nuclear power generating stations.

### SC-5 – Human Factors, Control Facilities, and Reliability

Concerned with the analysis of the human performance aspects of systems and equipment, the development of control facilities criteria, and the treatment of all matters relating to the analysis of the reliability of safety-related systems for nuclear facilities.

### SC-6 – Safety-Related Systems

Treatment of all matters relating to safety-related systems engineering of the plant protection system, protective action system, reactor trip system, reactor protection system, engineering safety features, auxiliary supporting features, safety systems, post-accident monitoring display instrumentation, safe shutdown systems, and preventative interlocks.

## NPEC Scope

NPEC is one of the Technical Committees of the IEEE Power & Energy Society (PES). NPEC scope covers all nuclear power related technical and standards writing activities within the IEEE. NPEC's principal subcommittees cover Equipment Qualification; Operating, Aging, Maintenance, Testing and Reliability; Auxiliary Power; Human Factors and Control Facilities and Safety Related Systems.

NPEC is generally responsible for:

- a. Participating in and supporting goals and activities of PES.
- b. Sponsorship of IEEE nuclear power plant standards.
- c. Preparation of IEEE coordinated responses to USNRC draft regulatory guides, rule making documents and NUREG documents released for public comment.
- d. Liaison between IEEE and ANSI, ASME, ANS, ASTM and ISA and other International Organizations such as IAEA and IEC in all nuclear power plant matters.
- e. U.S. management responsibility for all equipment qualification standards.
- f. U.S. management responsibility for national consensus on all nuclear power plant standards in the electrical and electronic area.
- g. U.S. responsibility for human factors standards within the nuclear power industry.
- h. U.S. responsibility for nuclear power plant computer standards.
- i. NPEC's established policy is to improve, clarify, update and provide application guidance on the standards already produced and when appropriate, to produce new standards.

Many technical organizations are involved in the issues in which NPEC has an interest. In order to avoid conflicts, overlapping efforts and inefficient use of resources, NPEC has established liaison efforts with these organizations. Outside of IEEE, there are liaisons established with American National Standards Institute (ANSI), International Electrotechnical Commission (IEC), American Society of Mechanical Engineers (ASME), ISA, HFES, Electric Power Research Institute (EPRI), Institute of Nuclear Power Operations (INPO), Nuclear Energy Institute (NEI), Nuclear Information & Records Management Association (NIRMA), Department of Energy (DOE) and US Nuclear Regulatory Commission (NRC). Within IEEE, there are liaisons established with the Computer Society, the Nuclear Plasma Sciences Society, and the Reliability Society. Within PES, there are liaisons established with other Technical Committees.

See <http://grouper.ieee.org/groups/npec/index.html>

# Fact Sheet for IEEE Nuclear Power Engineering Committee (NPEC)

## Joint Work with IEC

### IEC/IEEE Dual Logo Agreement

- Original agreement signed 2002, enabling adoption of approved IEEE standards by IEC
- IEC national members have same rights regarding adoptions as with other IEC standards
- Maintenance procedure established in 2007 allows IEC and IEEE to form joint maintenance teams to revise standards adopted by IEC
- Joint Development amendment to agreement in 2008 enables IEC and IEEE to work collaboratively to jointly develop new standards or revise existing IEC or IEEE standards; joint copyright and distribution rights



### Joint Standards and Projects between IEEE NPEC Equipment Qualifications Subcommittee (SC-2) and IEC SC 45A Instrumentation, Control and Electrical Systems of Nuclear Facilities

#### Approved Standards

62582-1	2011	Nuclear power plants - Instrumentation and control important to safety - Electrical equipment condition monitoring methods – Part 1: General
62582-2	2011	Nuclear power plants - Instrumentation and control important to safety - Electrical equipment condition monitoring methods – Part 2: Indenter modulus
62582-4	2011	Nuclear power plants - Instrumentation and control important to safety - Electrical equipment condition monitoring methods – Part 4: Oxidation induction techniques
62582-3	2012	Nuclear Power Plants - Instrumentation and control important to safety - Electrical equipment condition monitoring methods – Part 3: Elongation at break

#### Projects Under Development

P62582-5	New	Nuclear Power Plants - Instrumentation and control important to safety - Electrical equipment condition monitoring methods Part 5: Optical time domain reflectometry
P60780-323	Revision	Qualification of Electrical Equipment Important to Safety for Nuclear Facilities
P62582-2-am1	Amendment	Nuclear Power Plants - Instrumentation and Control Important to Safety - Electrical Equipment Condition Monitoring Methods - Part 2: Indenter Modulus Amendment 1

# Fact Sheet for IEEE Nuclear Power Engineering Committee (NPEC)

## Geographic Distribution of IEEE NPEC Membership

- Austria
- Canada
- China
- Czech Republic
- Germany
- Japan
- Russia
- Saudi Arabia
- Slovenia
- South Korea
- Sweden
- United States of America

## Activities in China

MOU between IEEE and SNPTC

- SNPTC and IEEE agree to have an educational exchange program on nuclear Equipment Qualification
  - Nuclear Power Equipment Qualification Standards Academic Application Seminar was held by the State Nuclear Power Equipment & Material Qualification and Consultation Center (SNEQC), a subsidiary of SNPTC from 16-17 June 2014. IEEE NPEC experts contributed.
- IEEE will help SNPTC to understand NPEC standards while SNPTC will promote NPEC standard application and development in China



## Activities in Korea

MOU between IEEE and Korea Electric Association (KEA)

- IEEE has participated in KEA's KEPIC conference for 5 years
  - KEPIC 2013: Aug 2013, South Korea. Special Education Session on IEEE NPEC Standards: IEEE 323.
  - KEPIC 2014: Aug 2014, South Korea. Special Education Session on IEEE NPEC Standards: IEEE 383.
- KEA adopts, translates and distributes select IEEE standards to their membership



# Fact Sheet for IEEE Nuclear Power Engineering Committee (NPEC)



## IEEE Standards Adopted by Korea Electric Association

IEEE Standards Adopted by Korea Electric Association		
IEEE 279	1971	IEEE Standard Criteria for Protection Systems for Nuclear Power Generating Stations (inactive)
IEEE 308	2001	IEEE Standard Criteria for Class 1E Power Systems for Nuclear Power Generating Stations (inactive)
IEEE 317	1983	IEEE Standard for Electric Penetration Assemblies in Containment Structures for Nuclear Power Generating Stations
IEEE 323	2003	IEEE Standard for Qualifying Class 1E Equipment for Nuclear Power Generating Stations
IEEE 334	2006	IEEE Standard for Qualifying Continuous Duty Class 1E Motors for Nuclear Power Generating Stations
IEEE 336	2005	IEEE Guide for Installation, Inspection, and Testing for Class 1E Power, Instrumentation, and Control Equipment at Nuclear Facilities (inactive)
IEEE 338	2006	IEEE Standard Criteria for Periodic Surveillance Testing of Nuclear Power Generating Station Safety Systems (inactive)
IEEE 344	2004	IEEE Recommended Practice for Seismic Qualification of Class 1E Equipment for Nuclear Power Generating Stations
IEEE 352	1987	IEEE Guide for General Principles of Reliability Analysis of Nuclear Power Generating Station Safety Systems
IEEE 379	2000	IEEE Standard Application of the Single-Failure Criterion to Nuclear Power Generating Safety Systems
IEEE 381	1977	IEEE Standard Criteria for Type Tests of Class 1E Modules Used in Nuclear Power Generating Stations (inactive)
IEEE 382	2006	IEEE Standard for Qualification of Safety-Related Actuators for Nuclear Power Generating Stations
IEEE 383	2003	IEEE Standard for Qualifying Class 1E Electric Cables and Field Splices for Nuclear Power Generating Stations
IEEE 384	2008	IEEE Standard Criteria for Independence of Class 1E Equipment and Circuits
IEEE 387	1995	IEEE Standard Criteria for Diesel-Generator Units Applied as Standby Power Supplies for Nuclear Power Generating Stations
IEEE 400	2001	IEEE Guide for Field Testing and Evaluation of the Insulation of Shielded Power Cable Systems (inactive)
IEEE 415	1986	IEEE Guide for Planning of Preoperational Testing Programs for Class 1E Power Systems for Nuclear Power Generating Stations (inactive)
IEEE 420	2001	IEEE Standard for the Design and Qualification of Class 1E Control Boards, Panels and Racks Used in Nuclear Power Generating Stations
IEEE 494	1974	IEEE Standard Method for Identification of Documents Related to Class 1E Equipment and Systems for Nuclear Power Generating Stations (inactive)
IEEE 497	2002	IEEE Standard Criteria for Accident Monitoring Instrumentation for Nuclear Generating Stations (inactive)
IEEE 498	1990	IEEE Standard Requirements for the Calibration and Control of Measuring and Test Equipment Used in Nuclear Facilities (inactive)
IEEE 572	2006	IEEE Standard for Qualification of Class 1E Connection Assemblies for Nuclear Power Generating Stations
IEEE 577	2004	IEEE Standard Requirements for Reliability Analysis in the Design and Operation of Safety Systems for Nuclear Facilities (inactive)
IEEE 600	1983	IEEE Trial-Use Standard Requirements for Organizations that Conduct Qualification Testing of Safety Systems Equipment for Use in Nuclear Power Generating Stations (inactive)
IEEE 603	1998	IEEE Standard Criteria for Safety Systems for Nuclear Power Generating Stations (inactive)
IEEE 627	1980	IEEE Standard for Design Qualification of Safety Systems Equipment Used in Nuclear Power Generating Stations (inactive)
IEEE 628	2001	IEEE Standard for the Design, Installation and Qualification of Raceway Systems for Class 1E Circuits for Nuclear Power Generating Stations (inactive)
IEEE 649	2006	IEEE Standard for Qualifying Class 1E Motor Control Centers for Nuclear Power Generating Stations
IEEE 650	2006	IEEE Standard for Qualification of Class 1E Static Battery Chargers and Inverters for Nuclear Power Generating Stations
IEEE 741	2007	IEEE Standard for Criteria for the Protection of Class 1E Power Systems and Equipment in Nuclear Power Generating Stations
IEEE 765	2006	IEEE Standard for Preferred Power Supply (PPS) for Nuclear Power Generating Stations (inactive)
IEEE 833	2005	IEEE Recommended Practice for the Protection of Electric Equipment in Nuclear Power Generating Stations from Water Hazards
IEEE 934	1987	IEEE Standard Requirements for Replacement Parts for Class 1E Equipment in Nuclear Power Generating Stations (inactive)
IEEE 1023	2004	IEEE Recommended Practice for the Application of Human Factors Engineering to Systems, Equipment, and Facilities of Nuclear Power Generation Stations and Other Nuclear Facilities

# Fact Sheet for IEEE Nuclear Power Engineering Committee (NPEC)

## IEEE Working Groups by Subcommittee (SC)

### IEEE NPEC SC-2 Working Groups

IEEE Working Group	IEEE Standard
WG 2.1 – Equipment Qualification	IEEE Std 323
WG 2.2 – Qualification of Motors	IEEE Std 334
WG 2.3 – Qualification of Actuators	IEEE Std 382
WG 2.4 – Cables and Splices	IEEE Std 383
WG 2.5 – Seismic Qualification	IEEE Std 344
WG 2.10 – Qualification of Safety Equipment	IEEE Std 627
WG 2.11 – Connectors	IEEE Std 572
WG 2.13 – Battery Chargers/Inverters	IEEE Std 650
WG 2.14 – Motor Control Centers	IEEE Std 649
WG 2.15 – Qualification of Fiber Optic Cables	IEEE P1682

### IEEE NPEC SC-5 Working Groups

IEEE Working Group	IEEE Standard
WG 5.1 – Human Factors Applications and Methods	IEEE Std 845 IEEE Std 1023 IEEE Std 1289
WG 5.2 – Human Factors International Conference	
WG 5.3 – Nuclear Risk Management and Reliability	IEEE Std 352 IEEE Std 577 IEEE Std 933 IEEE P1586
WG 5.4 – Human Reliability Analysis	IEEE Std 1082 IEEE P1574
WG 5.5 – Lessons Learned	IEEE P1587

### IEEE NPEC SC-4 Working Groups

IEEE Working Group	IEEE Standard
WG 4.1 – Class 1E Power Systems	IEEE Std 308
WG 4.2 – Standby Power Supply	IEEE Std 387
WG 4.3 – Electric Penetration Assemblies	IEEE Std 317
WG 4.4 – Motor Operated Valve (MOV) Motors	IEEE Std 1290
WG 4.5 – Cable Systems	IEEE Std 690
WG 4.6 – Preferred Power Supply	IEEE Std 765 IEEE Std 1792
WG 4.7 – Protection of Class 1E Power Systems	IEEE Std 741 IEEE Std 742

# Fact Sheet for IEEE Nuclear Power Engineering Committee (NPEC)

WG 4.8 – Protection of Electric Equipment from Waste Hazards	IEEE Std 833
WG 4.9 – Raceway Systems	IEEE Std 628

## IEEE NPEC SC-3 Working Groups

IEEE Working Group	IEEE Standard
WG 3.1 – Testing	IEEE Std 336 IEEE Std 338 IEEE P1819
WG 3.2 – Security Systems	IEEE Std 692
WG 3.3 – Reliability	IEEE Std 352 IEEE Std 577 IEEE Std 933
WG 3.4 – Aging Assessment	IEEE Std 1205

## IEEE NPEC SC-6 Working Groups

IEEE Working Group	IEEE Standard
WG 6.1 – Accident Monitoring Instrumentation	IEEE Std 497
WG 6.3 - Safety Systems and Single-Failure Criterion	IEEE Std 379 IEEE Std 603
WG 6.4 – Computer Systems (Hardware and/or Software in Safety Systems)	IEEE Std 7-4.3.2
WG 6.5 - Independence Criteria and Design of Control Boards, Panels, and Racks	IEEE Std 384 IEEE Std 420 IEEE Std 622
WG 6.6 – Intelligent Digital Devices	IEEE Standard in Development

## List of IEEE NPEC Standards/Projects

### Approved Standards of IEEE NPEC

IEEE 690	2004	IEEE Standard for the Design and Installation of Cable Systems for Class 1E Circuits in Nuclear Power Generating Stations
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### Standards and Projects of IEEE NPEC SC-2

IEEE 323	2003	IEEE Standard for Qualifying Class 1E Equipment for Nuclear Power Generating Stations
IEEE 383	2003	IEEE Standard for Qualifying Class 1E Electric Cables and Field Splices for Nuclear Power Generating Stations
IEEE 334	2006	IEEE Standard for Qualifying Continuous Duty Class 1E Motors for Nuclear Power Generating Stations
IEEE 382	2006	IEEE Standard for Qualification of Safety-Related Actuators for Nuclear Power Generating Stations
IEEE 572	2006	IEEE Standard for Qualification of Class 1E Connection Assemblies for Nuclear Power Generating Stations
IEEE 649	2006	IEEE Standard for Qualifying Class 1E Motor Control Centers for Nuclear Power Generating Stations
IEEE 650	2006	IEEE Standard for Qualification of Class 1E Static Battery Chargers and Inverters for Nuclear Power Generating Stations
IEEE 627	2010	IEEE Standard for Qualification of Equipment Used in Nuclear Facilities
IEEE 1682	2011	IEEE Standard for Qualifying Fiber Optic Cables, Connections, and Optical Fiber Splices for Use in Safety Systems in Nuclear Power Generating Stations

# Fact Sheet for IEEE Nuclear Power Engineering Committee (NPEC)

IEEE 344	2013	IEEE Standard for Seismic Qualification of Equipment for Nuclear Power Generating Stations
IEEE P323	Revision	IEEE Standard for Qualifying Class 1E Equipment for Nuclear Power Generating Stations
IEEE P383	Revision	Standard for Qualifying Electric Cables and Splices for Nuclear Facilities
IEEE P650	Revision	Standard for Qualification of Class 1E Static Battery Chargers, Inverters and Uninterruptible Power Supply (UPS) Systems for Nuclear Power Generating Stations

## Standards and Projects of IEEE NPEC SC-3

IEEE 352	1987	IEEE Guide for General Principles of Reliability Analysis of Nuclear Power Generating Station Safety Systems
IEEE 336	2010	IEEE Recommended Practice for Installation, Inspection, and Testing for Class 1E Power, Instrumentation, and Control Equipment at Nuclear Facilities
IEEE 338	2012	IEEE Standard for Criteria for the Periodic Surveillance Testing of Nuclear Power Generating Station Safety
IEEE 577	2012	IEEE Standard Requirements for Reliability Analysis in the Design and Operation of Safety Systems for Nuclear Power Generating Stations
IEEE 692	2013	IEEE Standard for Criteria for Security Systems for Nuclear Power Generating Stations
IEEE 933	2013	IEEE Guide for the Definition of Reliability Program Plans for Nuclear Generating Stations and Other Nuclear Facilities
IEEE 1205	2014	IEEE Guide for Assessing, Monitoring, and Mitigating Aging Effects on Electrical Equipment Used in Nuclear Power Generating Stations and Other Nuclear Facilities
IEEE P1819	New	Standard for Risk-Informed Categorization and Treatment of Electrical and Electronic Equipment at Nuclear Power Generating Stations and Other Nuclear Facilities
IEEE P692a	Amendment	Standard Criteria for Security Systems for Nuclear Power Generating Stations Amendment a: Alignment with Recent Industry Security Approach Changes
IEEE P352	Revision	Guide for General Principles of Reliability Analysis of Nuclear Power Generating Station Systems and Other Nuclear Facilities

## Standards and Projects of IEEE NPEC SC-4

IEEE 387	1995	IEEE Standard Criteria for Diesel-Generator Units Applied as Standby Power Supplies for Nuclear Power Generating Stations
IEEE 1290	1996	IEEE Guide for Motor Operated Valve (MOV) Motor Application, Protection, Control, and Testing in Nuclear Power Generating Stations
IEEE 833	2005	Recommended Practice for the Protection of Electric Equipment in Nuclear Power Generating Stations from Water Hazards
IEEE 741	2007	IEEE Standard Criteria for the Protection of Class 1E Power Systems and Equipment in Nuclear Power Generating Stations
IEEE 628	2011	IEEE Standard Criteria for the Design, Installation, and Qualification of Raceway Systems for Class 1E Circuits for Nuclear Power Generating Stations
IEEE 1792	2011	IEEE Recommended Practice for Nuclear Power Generating Station (NPGS) Preferred Power Supply (PPS) Reliability
IEEE 308	2012	IEEE Standard Criteria for Class 1E Power Systems for Nuclear Power Generating Stations
IEEE 765	2012	IEEE Standard for Preferred Power Supply (PPS) for Nuclear Power Generating Stations
IEEE 317	2013	IEEE Standard for Electric Penetration Assemblies in Containment Structures for Nuclear Power Generating Stations
IEEE P742	New	Standard for Bus Voltage Monitoring of the Class 1E Power Systems in Nuclear Power Generating Stations (NPGS)
IEEE P387	Revision	Standard Criteria for Diesel-Generator Units Applied as Standby Power Supplies for Nuclear Power Generating Stations
IEEE P690	Revision	Standard for the Design and Installation of Cable Systems for Class 1E Circuits in Nuclear Power Generating Stations
IEEE P741	Revision	IEEE Standard Criteria for the Protection of Class 1E Power Systems and Equipment in Nuclear Power Generating Stations
IEEE P1290	Revision	Guide for Motor Operated Valve (MOV) Motor Application, Protection, Control, and Testing in Nuclear Power Generating Stations
IEEE P1792	Revision	Recommended Practice for Nuclear Power Generating Station (NPGS) Preferred Power Supply (PPS) Reliability



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## Standards and Projects of IEEE NPEC SC-5

IEEE 1082	1997	Guide for Incorporating Human Action Reliability Analysis for Nuclear Power Generating Stations
IEEE 1289	1998	IEEE Guide for the Application of Human Factors Engineering in the Design of Computer-Based Monitoring and Control Displays for Nuclear Power Generating Stations
IEEE 845	1999	IEEE Guide for the Evaluation of Human-System Performance in Nuclear Power Generating Stations
IEEE 1023	2004	IEEE Recommended Practice for the Application of Human Factors Engineering to Systems, Equipment, and Facilities of Nuclear Power Generating Stations and Other Nuclear Facilities
IEEE 1786	2011	IEEE Guide for Human Factors Applications of Computerized Operating Procedure Systems (COPS) at Nuclear Power Generating Stations and Other Nuclear Facilities
IEEE P1707	New	Recommended Practice for the Investigation of Events at Nuclear Facilities
IEEE P2411	New	Human Factors Engineering Guide for the Validation of System Designs and Integrated Systems Operations at Nuclear Facilities
IEEE P1082	Revision	Guide for Incorporating Human Reliability Analysis into Probabilistic Risk Assessments for Nuclear Power Generating Stations and other Nuclear Facilities

## Standards and Projects of IEEE NPEC SC-6

IEEE 622	1987	IEEE Recommended Practice for the Design and Installation of Electric Heat Tracing Systems for Nuclear Power Generating Systems
IEEE 384	2008	IEEE Standard Criteria for Independence of Class 1E Equipment and Circuits
IEEE 603	2009	IEEE Standard Criteria for Safety Systems for Nuclear Power Generating Stations
IEEE 7-4.3.2	2010	IEEE Standard Criteria for Digital Computers in Safety Systems of Nuclear Power Generating Stations
IEEE 497	2010	IEEE Standard Criteria for Accident Monitoring Instrumentation for Nuclear Power Generating Stations
IEEE 420	2013	IEEE Standard for the Design and Qualification of Class 1E Control Boards, Panels, and Racks Used in Nuclear Power Generating Stations
IEEE 379	2014	IEEE Standard for Application of the Single-Failure Criterion to Nuclear Power Generating Station Safety Systems
IEEE P1891	New	Standard Criteria for Application of Intelligent Digital Devices to Nuclear Power Generating Stations
IEEE P497	Revision	Standard Criteria for Accident Monitoring Instrumentation for Nuclear Power Generating Stations
IEEE P7-4.3.2	Revision	Standard Criteria for Programmable Digital Devices in Safety Systems of Nuclear Power Generating Stations

## IEEE Standards in IAEA Safety Report Series 3\*

Standard	Edition	Title
IEEE 334	1994	Standard for Qualification of Continuous Duty 1E Motors for Nuclear Power Generating Stations
IEEE 344	1987	Recommended Practice for Seismic Qualification of Class 1E Equipment for Nuclear Power Generating Stations
IEEE 627	1980	Design Qualification of Safety Systems Equipment Used in Nuclear Generating Stations
IEEE 317	1972	Standard for Electrical Penetration Assemblies in Containment Structures for Nuclear Power Generating Stations

\*Equipment Qualification in Operational Nuclear Power Plants: Upgrading Preserving & Reviewing 1998  
[http://www-pub.iaea.org/MTCD/publications/PDF/P052\\_scr.pdf](http://www-pub.iaea.org/MTCD/publications/PDF/P052_scr.pdf)

## IEEE Standards Incorporated by NRC

<https://standards.gov/sibr/query/index.cfm>

Standard	Edition	Title	CFR Location
IEEE 279	NDG	Criteria for Protection Systems for Nuclear Generating Stations	10 CFR 50.55a(h)(2)
IEEE 603	1991	Standard Criteria for Safety Systems for Nuclear Power Generating Stations	10 CFR 50.55a(h)(2)
IEEE 603	1991	Standard Criteria for Safety Systems for Nuclear Power Generating Systems	10 CFR 50.55a(h)(3)
IEEE 803	1983	Recommended Practice for Unique Identification in Power Plants and Related Facilities	10 CFR 50.73(b)(2)(ii)(F)(1)

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## IEEE Standards for Batteries in Nuclear Service Endorsed by NRC through Regulatory Guidelines

Standard	Title
IEEE 485	IEEE Recommended Practice for Sizing Lead-Acid Batteries for Stationary Applications
IEEE 450	IEEE Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications
IEEE 484	IEEE Recommended Practice for Installation Design and Installation of Vented Lead-Acid Batteries for Stationary Applications
IEEE 535	IEEE Standard for Qualification of Class 1E Vented Lead Acid Storage Batteries for Nuclear Power Generating Stations

IEEE Stationary Batteries Committee of IEEE Power & Energy Society

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