

**IEEE NPEC Subcommittee SC-3**  
***Operations, Maintenance, Aging, Testing, & Reliability***  
**Meeting 19-2 Minutes**



**Thursday Morning, 25 Jul 2019**  
**Williamsburg, VA**

Members Present:	John Beatty Suresh Channarasappa Tom Crawford (Chair) Jacob Kulangara Kirk Melson	Clint Pierce Rebecca Steinman (VC) Phil Ward Yvonne Williams (PC) Kiang Zee
Members Absent:	Gopal Aravapalli (C) George Ballassi Hamid Heidarisaafa (C) Sharon Honecker (C) Jim Liming (C) Ed Mohtashemi	Joe Napper (C) James Parello (C) Ted Riccio Craig Sellers (C) John Stevens John Taylor (C)
Guests:	Tania Martinez Navedo Khoi Nguyen	Jorge A. Cintron Rivera Malia Zaman

\* Although available, no one joined the meeting via the web-based Join Me interface.

## **1.0 Introduction**

### **• Opening Remarks and Meeting Agenda**

Meeting was called to order at 8:08 am July 25, 2019, by Tom Crawford, Chair. Rebecca Steinman, Secretary performed roll call. The meeting has met the quorum requirements to conduct business.

Since the attendees were essentially the same as those attending the Working Group meetings on July 24, 2019, introductions were limited to name and affiliation. No one joined the call via the Join Me interface.

Tom presented the IEEE patent slides (provided in Attachment 9). There were no comments or questions on the patent slides. Tom presented the draft agenda. Rebecca Steinman made a motion to accept the agenda, seconded by Yvonne Williams, and the agenda was approved by voice vote. The approved agenda is provided in Attachment 1. Attachment 2 provides member attendance status for the last five meetings.

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## **2.0 Secretary's Report**

- **SC-3 Approval of S19-1 Meeting Minutes**

The SC3 19-1 draft meeting minutes were reviewed. Tom Crawford had provided two comments: 1) correction of George Ballassi 19-1 attendance in Attachment 2; and 2) replace duplicate Attachment 8 with the correct version of Attachment 4. After discussion concluded, Yvonne Williams made motion to accept the minutes as amended, Kirk Melson seconded, and the revised meeting minutes were approved by voice vote.

- **File structure for SC3 iMeet folders**

Yvonne created a folder "Presentations" for uploading presentations that are reviewed during subcommittee meetings. Files should be organized into folders using the meeting naming convention, for example "19-2" for presentations to NPEC 19-2. Rebecca noted that any SC-3 member can create new folders in the SC-3 space, but SC-3 members may only have read rights in the WG folders. Write permissions for WG folders are restricted to WG members only.

- **Action Item Status**

17-2-B – Kiang Zee suggested generating a list of training topics based on the Q&A of the 19-02 NPEC presentation on integrating IEEE 1819 into other NPEC standards. Item will remain open. Tom reminded members to be thinking about other future training topics.

18-1-B – Remove Sharon Honecker and John Taylor from the active member list. Rebecca updated list during meeting. This action is CLOSED.

19-1-A – The standards schedule was updated and placed in folder Standards Development on iMeet Central after the 19-1 meeting. This action is CLOSED.

19-1-C – Khoi Nguyen spoke with management and some feedback trickled down to individual NRC NPEC participants. Tania Martinez Navedo clarified that the message to NRC NPEC members is that the NRC intends to be active participants on standards development activities. One reason to participate is to ensure that industry standards support risk-informed decision making that follows NRC policy. This action is CLOSED.

The updated action item list is provided in Attachment 4.

- **SC-3 Membership**

Barry Sloane has requested removal from Corresponding Member status. John Stevens has resigned after the 19-1 meeting. As a result, we need a new chair for WG 3.3. Khoi

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Nguyen and Jorge Cintron Rivera are new members of SC-3 effective as of the 19-2 meeting.

**ACTION:** Clean up corresponding membership list to remove anyone who has not directly corresponded with the SC in the last 2 years. [ACTION 19-2-A]

Tom encouraged members to bring in younger engineers to introduce to the subcommittee as well as other potential members. It was suggested that we push for more web-based meetings allowing for more participants.

- **Alligator Fund**

Yvonne explained the need and status of the alligator fund, and it was noted that the fund balance has not changed since the last meeting. NPEC has decreed there will be a \$5 meeting fee collection from both members and guests. The Alligator Fund status is contained in Attachment 3.

### **3.0 Chair's Report**

- **Leadership Review / Membership**

The current officers are: Tom Crawford, Chair; and Rebecca Steinman, Vice Chair. A volunteer to fill the Secretary position is needed. Tom, Yvonne, and Rebecca reiterated that new people need to step into the leadership roles, and that each committee member needs to push hard to bring in at least one potential new member. Various approaches for resoliciting NRC, industry and student participants were discussed.

- **Leadership Telecons**

There were no Leadership telecons since the previous meeting.

- **NPEC Preparations**

SC-3 will preview P336 at this meeting and provide a technical presentation on integrating IEEE 1819 into other NPEC standards. The fee for the meeting is \$100, which covers room costs and required meal fees from the hotel. The draft agenda was shown; there is no breakfast associated with the NPEC meeting.

NPEC members can pay the NPEC meeting fee online, but not the SC/WG fee. ADCOM is working to update the form so that SC/WG fees can also be paid online.

Yvonne Williams previewed the 1819 presentation. The presentation was revised to replace P1819 with 1819 throughout the presentation since it is a published standard. Other revisions were suggested and incorporated into the working file. Tom presented a motion to approve the revised 1819 presentation. The motion was seconded by John

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Beatty. Approval of the final version of the presentation, provided as Attachment 11, was unanimous.

Phil Ward went through the P336 preview presentation with the SC. Slide 7 was updated to include NRC members and Slide 9 was revised to add reference to IEEE 1819. Yvonne Williams presented a motion to approve the revised P336 presentation. The motion was seconded by Jacob Kulangara. Approval of the final version of the presentation, provided as Attachment 10, and permission to request NPEC approval to proceed to ballot was unanimous.

The meeting was suspended for lunch at 11:58 am and resumed at 1:53 pm.

#### **4.0 Working Group Reports**

- **WG-3.1**

The WG met on Wednesday and addressed NPEC preview comments on P336 and finalized the preview slides. P336 is being presented for preview at NPEC 19-2 on Friday. The P336 PAR expires December 2020. IEEE 338 expires in 2022. The WG will start looking at 338 during the 20-1 meeting. IEEE 1819 expires in 2026. A presentation will be made during NPEC 19-2 to inform other subcommittees about 1819 and suggest options for adopting risk-informed options in other NPEC standards.

- **WG-3.2**

The WG is working independent of the SC face-to-face meetings. IEEE 692 expires in 2023. A progress report will be requested from the WG chair for the 20-1 meeting.

- **WG-3.3**

The only standard in work is IEEE 577. A working copy of IEEE 577 is on the iMeet workspace. This WG needs a chair to champion the completion of the P577 revision effort.

**ACTION:** Tom Crawford to find a new P577 chair. [ACTION 19-2-B]

**ACTION:** WG to review bibliography. Consider breaking it into two parts – one for historical and one for current documents. [ACTION 19-2-C]

IEEE 577 expires in 2022; IEEE 933 expires in 2023; and IEEE 352 expires in 2026.

- **WG-3.4**

WG 3.4 is dormant. IEEE 1205 expires in 2024. The chair will reconstitute the WG in the fall of 2020.

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## **5.0 Liaison Reports**

Liaison reports were provided as follows:

- NRC – Khoi provided highlights of his report; the full report is in Attachment 7.
- ASME – The report from Craig Sellars was posted to iMeet Central by Tom Crawford and is provided in Attachment 6.
- SCoRA – Kiang Zee attended the last committee meeting in February 2019. NPEC's desire to add "risk-informed" concepts to their standards was discussed. Kiang will inform SCoRA at the September meeting that NPEC is working to identify candidate standards. NOTE: SCoRA is the ASME/ANS Joint Committee on Nuclear Risk Management's (JCNRM) SubCommittee on Risk Application.

## **6.0 Old Business**

Yvonne reviewed the SC-3 Master Schedule since Tom was attending the ADCOM meeting. A copy of the updated schedule is provided in Attachment 8. The current NPEC SC-3 Standards Schedule is provided in Attachment 5.

Rebecca provided an interactive mini-tutorial on using iMeet Central. She explained the importance of using a discussion thread to capture comments on a document and how to upload versions, as well as providing an overview of the folder structure.

**ACTION:** Rebecca to create a mini-tutorial on iMeet Central usage. Include both her contact as well as IEEE iMeet contact information should members need additional help. [ACTION 19-2-D].

## **7.0 New Business**

- The question of how to incorporate or integrate IEEE 1819 with other standards was discussed at ADCOM. ADCOM has action to create a PAR checklist, which will include an item about IEEE 1819 applicability.
- Since Rebecca is no longer the Secretary, it was suggested that the SC-3 website and iMeet Central discussion be removed from the Secretary's Report. The item can be retained on the agenda as new or old business, as needed.
- Alternative ways to increase membership were discussed. Items suggested: advertise on LinkedIn; Chair to write letters to company/manager of WG participants thanking them for participating in standards development; reconsider getting students involved or maybe starting a visiting lecturer type of activity by SC-3 members to bring standards development to the attention of students; or create a mentoring type of program (suggested based on NRC succession planning model).

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**ACTION:** Rebecca Steinman to contact IEEE about developing social media content to solicit standards development volunteers. [ACTION 19-2-E]

## **8.0 Action Items**

Rebecca reviewed the new action items from this meeting. The revised AI List is provided in Attachment 4.

## **9.0 Next Meeting**

Yvonne reported that the next NPEC meeting (N20-1) will be in Anaheim, CA. Subsequently, ADCOM moved the meeting to Charlotte, NC for January 26-29,2020 after Anaheim, CA and San Antonio, TX arrangements could not be finalized.

Kirk Melson moved to adjourn, Khoi Nguyen seconded. The motion was unanimously accepted, and the meeting adjourned at 3:05 PM.

Prepared by Rebecca Steinman.

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iMeet Central SC-3 Workspace:

<https://ieee-sa.imeetcentral.com/npecsc3/>

SC-3 Website information:

<http://sites.ieee.org/npec-sc3/>

NPEC Standards Website information:

<http://sites.ieee.org/pes-npec/npec-standards/>

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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 SC-3 Standards Schedule	Attachment 9 IEEE Patent Slides
Attachment 10 P336 NPEC Preview Presentation	Attachment 11 IEEE 1819 Integration Presentation to NPEC	

**Agenda – Meeting 19-2 – Williamsburg, VA****NPEC Subcommittee SC-3, Operations, Maintenance, Aging, Testing, and Reliability**

<b>Meeting Date/Time:</b>	Thursday, 07/25/2019 0800-1200	<b>Chairman :</b>	Tom Crawford
		<b>Vice Chair:</b>	Rebecca Steinman
		<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. Review status of membership and officers succession</li> <li>3. Prepare for presentation to NPEC on the application of IEEE 1819</li> <li>4. Update SC3 standards master schedule</li> </ol>
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<b>WHAT</b>	<b>WHO</b>	<b>WHEN</b>
Welcome, Review Desired Outcomes <ul style="list-style-type: none"> <li>• Meeting logistics</li> <li>• Patent Slides</li> <li>• Introductions</li> </ul>	T. Crawford All	0800 - 0810
Chairman's Introduction <ul style="list-style-type: none"> <li>• Opening remarks</li> <li>• Review/approve agenda</li> </ul>	T. Crawford	0810 - 0820
Secretary's Report <ul style="list-style-type: none"> <li>• Approval of SC3 19-1 Meeting Minutes</li> <li>• Action Item review/status</li> <li>• SC3 membership review</li> <li>• Alligator fund report</li> <li>• iMeet &amp; Website update</li> </ul>	R. Steinman	0820 - 0845
Chairman's Report <ul style="list-style-type: none"> <li>• SC3 Leadership – Officers and succession planning</li> <li>• Leadership telecons – <b>none held</b></li> <li>• NPEC meeting preparations &amp; agenda for Friday meeting</li> </ul>	T. Crawford	0845 - 0855
Review / Approve Presentation for NPEC on Application of IEEE 1819	Y. Williams	0855 - 0920
BREAK	All	0920 - 0940
Review/Approve Preview Presentation for IEEE 336	P. Ward	0940 - 1000
Working Group Reports <ul style="list-style-type: none"> <li>• WG-3.1 (Testing) – <b>336 expires in 2020, 338 in 2022, 1819 in 2026</b></li> <li>• WG-3.2 (Security) – <b>692 expires in 2023</b></li> <li>• WG-3.3 (Reliability) – <b>577 expires in 2022, 933 in 2023, 352 in 2026</b></li> <li>• WG-3.4 (Aging) – <b>1205 expires in 2024</b></li> </ul>	P. Ward T. Worrell J. Stevens R. Steinman	1000 - 1005 1005 - 1010 1010 - 1015 1015 - 1020
Liaison Reports <ul style="list-style-type: none"> <li>• NRC Report</li> <li>• ASME Report</li> <li>• Other Risk-Informed Activities</li> </ul>	K. Nguyen C. Sellers / T. Ricchio K. Zee	1020 - 1025 1025 - 1030 1030 - 1035
Old Business <ul style="list-style-type: none"> <li>• Master schedule for Std review/updates</li> <li>• SC-3 website and iMeet Central accounts</li> </ul>	T. Crawford R. Steinman	1035 - 1050 1050 - 1100
New Business/Rumor Mill/Drumbeats <ul style="list-style-type: none"> <li>• (TBD)</li> </ul>	T. Crawford	1100 - 1115
Review of Action Items	R. Steinman	1115 - 1125
Next meeting	T. Crawford	1125 - 1130
Meeting closeout/adjournment	T. Crawford	1130



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

Last	First	SC-3 Member	2017-2	2018-1	2018-2	2019-1	2019-2
<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	X
<b>Crawford</b>	<b>Tom</b>	X	T	X	X	X	X
Heidarisafa	Hamid	C		T			
Honecker	Sharon	C					Dropped
<b>Kulangara</b>	<b>Jacob</b>	X			T	X	X
Liming	Jim	C	X	Correspond	T		
<b>Melson</b>	<b>Kirk</b>	X			X	X	X
<b>Muhtashemi</b>	<b>Ed</b>	X	X				
Napper	Joe	C					
<b>Otto</b>	<b>Ngola</b>		Appointed	X	X	Resigned	
<b>Nguyen</b>	<b>Khoi</b>	X				O	Appointed
Parello	Jim	C					
<b>Pierce</b>	<b>Clint</b>	X		X	X	X	X
<b>Riccio</b>	<b>Ted</b>	X		X	X	X	
Sellers	Craig	C					
<b>Rivera</b>	<b>Jorge A. Cintron</b>	X				O	Appointed
<b>Steinman</b>	<b>Rebecca</b>	X	X		X		X
<b>Stevens</b>	<b>John</b>			X	T	X	Resigned
Taylor	John	C					Dropped
<b>Ward</b>	<b>Phil</b>	X	X			X	X
<b>Williams</b>	<b>Yvonne</b>	X	X		X	X	X
<b>Zee</b>	<b>Kiang</b>	X	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			8	9	10	12	12
TOTAL NON-PAYING ATTENDEES			0	0	0	2	0
TOTAL TELECON PARTICIPANTS			1	2	3	0	0
TOTAL ATTENDEES			9	11	13	14	12
TOTAL SC-3 MEMBERS		15					

### Attachment 3

## NPEC Subcommittee SC-3

*Operations, 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
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
S16-1	\$906.36	\$0.00	\$0.00	\$906.36
S16-2	\$906.36	\$0.00	\$0.00	\$906.36
S17-1	\$906.36	\$0.00	\$65.19	\$841.17
S17-2	\$841.17	\$0.00	\$51.08	\$790.09
S18-1	\$790.09	\$0.00	\$52.16	\$737.93
S18-2	\$737.93	\$0.00	\$0.00	\$737.93
S19-1	\$737.93	\$0.00	\$0.00	\$737.93
S19-2	\$737.93	\$60.00	\$60.00	\$737.93

**Attachment 4**

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**Action Items List**

<b>Item No.</b>	<b>Subcommittee 3.0 Actions</b>	<b>Owner</b>	<b>Due Date</b>	<b>Closure Comments</b>
17-2-B	Submit at least one topic to the SC-3 chair that you as a SC member would like to see presented as a 1-hr SC-3 training/technical session at a future mtg.	All Members	11/30/17	S18-2: Keep this item open and reminder all members to contribute ideas. S19-2: Kiang Zee suggested generating a list of training topics based on the Q&A of the 19-02 NPEC presentation on integrating IEEE 1819 into other NPEC standards. All members encouraged to submit technical presentation topics. Hold item open.
19-2-A	Clean up corresponding membership list to remove anyone who has not directly corresponded with the SC in the last 2 years.	Crawford	20-1 mtg	
19-2-B	Find a new P577 chair.	Crawford	Dec 2020	
19-2-C	Working Group 3.3 to review P577 bibliography. Consider breaking it into two parts – one for historical and one for current documents.	TBD	20-2 mtg	
19-2-D	Create a mini-tutorial/wikki on iMeet Central usage.	Steinman	Dec 2020	
19-2-E	Contact IEEE about developing social media content to solicit standards development volunteers.	Steinman	Oct 2020	

**SC-3 "Operations, Maintenance, Aging, Testing & Reliability"**  
**Chair: Tom Crawford**

PROJECT	Year	Standard Expiration	Re-Affirmation	PAR Expiration	TITLE	Regulatory Guide	Working Group	Chair	Cycle Year	19-02	20-01	20-02	21-01	Status/Comments
336	2010	2020		Dec-2020	IEEE Standard Installation, Inspection, and Testing Requirements for Power, Instrumentation, and Control Equipment at Nuclear Facilities	1.30 - 1972	1	Y. Williams	9	Preview				PAR approved by ADCOM at 16-02 and submitted to RevCom. PAR approved by SB 9/22/16
338	2012	2022		Dec-2022	IEEE Standard Criteria for the Periodic Surveillance Testing of Nuclear Power Generating Station Safety Systems	1.118 - 1995	1	Y. Williams	7					Published on 23 March 2012 PAR Approved 9/27/2018
577	2012	2022		Dec-2022	IEEE Standard Requirements for Reliability Analysis in the Design and Operation of Safety Systems for Nuclear Power Generating Stations		3	J. Stevens	7		Preview			Approved by SASB Aug. 30, 2012 Published on Oct. 19, 2012 PAR approved by Std Brd 3/8/2018
692	2013	2023		Dec-2022	IEEE Standard Criteria for Security Systems for Nuclear Power Generating Stations		2	R. Flowers	6					Issued by Sd bd Aug. 2013. Published on 30 Sept 2013 PAR approved 9/27/2018
933	2013	2023		N/A	IEEE Guide for Definition of Reliability Program Plans for Nuclear Generating Stations and Other Nuclear Facilities		3	J. Stevens	6					Approved by SA BD on Dec. 11, 2013 Published 10 Jan 2014
1205	2014	2024		N/A	IEEE Guide for Assessing, Monitoring, and Mitigating Aging Effects on Class 1E Equipment used in Nuclear Power Generating Stations	1.218 - 2012	4	R. Steinman	5					Approved by SB March 27, 2014 Published 16 May 2014
352	2016	2026		N/A	IEEE Guide for General Principles of Reliability Analysis of Nuclear Power Generating Stations and Other Nuclear Facilities		3	J. Stevens	3					Standard revision approved by SB Dec. 7, 2016 Standard revision approved by SB Sept. 2016
1819	2016	2026		N/A	Standard for Risk-Informed Categorization and Treatment of Electrical Equipment in Nuclear Facilities		1	Y. Williams	3					Standard revision approved by SB Sept. 2016

Attachment 6

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

**ASME Liaison Report**  
**July 2019**

From: sellerscraigd@gmail.com [mailto:sellerscraigd@gmail.com]  
Sent: Tuesday, June 25, 2019 6:12 AM  
To: 'Ted Riccio'  
Subject: RE: IEEE 1819

July 2019 Liaison report:

The revised Subsection ISTE that is expected to receive unconditional acceptance by NRC is scheduled to be published in the 2020 edition of the OM Code.

A ballot proposal to withdraw OM Part 29, 'Alternative Treatment Requirements for RISC-3 Pumps and Valves', was submitted in May, 2019. The ballot closed in June, 2019 with 21 approvals and 4 negatives. All negative ballots have been addressed and the ballot was recirculated in late June and is expected to close and be approved in early July, 2019. The reason for withdrawal of Part 29 is it very narrowly focused on a single special treatment (in-service testing) of a limited scope of components (pumps & valves). More recent industry guidance from NEI, EPRI, and the BWR & PWR Owner's Groups provides more comprehensive guidance addressing additional special treatments and a wider spectrum of components. Also, some of the guidance in OM-29 could be interpreted as conflicting with this other guidance and ASME wants to avoid any potential confusion.

| U.S. Nuclear Regulatory Commission (NRC) Liaison Report – IEEE NPEC Meeting – July 2019

1. Operating Reactors

- a. Open Phase Condition (OPC) – The NRC held a public meeting with the Nuclear Energy Institute (NEI) on February 20, 2019, to discuss NEI's proposal described in a white paper (ADAMS Accession No. ML19050A355). NEI proposed a comparison of the change in risk between operating with automatic functions to isolate a power supply affected by an OPC versus reliance on operator manual action and how this comparison could provide a basis for not enabling the open phase indication system (OPIS) automatic trip function. The NRC staff reviewed the white paper and provided preliminary feedback to NEI at a public meeting on March 20, 2019 (ML19078A231). NEI plans to revise the voluntary industry initiative (VII) to allow, as an option, the use of the risk-informed option described in the white paper and as discussed in the public meeting. NEI plans to present the revised VII to the NRC in May 2019.
- b. Environmental Qualification (EQ) - Inspections are ongoing. NRC Inspection Procedure 71111.21N was revised in February 2019 to incorporate a new attachment, Attachment 2, that provides a detailed discussion on select topics in the EQ process (e.g., Arrhenius Methodology, validation of information in EQ reports, replacement requirements, and EQ files).
- c. The NRC is continuing its review of the Peach Bottom, Turkey Point, and Surry subsequent license renewal applications.
- d. In March 2019, the Commission renewed the operating license of the Seabrook Station for an additional 20 years. Seabrook's license will now expire March 15, 2050.

2. New Reactors

- a. For APR1400 Design Certification Review, the final Safety Evaluation Report (SER) was issued in October 2018 and the final rule certifying the design was issued April 30, 2019.
- b. NuScale Design Certification Review is ongoing. The NRC staff will meet with the Advisory Committee on Reactor Safeguards (ACRS) to discuss its review of Chapter 3 (EQ), Chapter 14 (Initial Test Program and Inspection, Tests, Analyses, and Acceptance Criteria (ITAAC)), and Chapter 21 (multi-module considerations) this Spring/Summer.

3. Advanced Reactors

- a. The NRC is evaluating technical reports from multiple advanced reactor designs (i.e., pre-application stage).

4. Rulemaking

- a. On January 24, 2019, the NRC approved the Mitigation of Beyond Design Basis Events rule. The new rule should be published this Spring.

5. Research

- a. NRC's Office of Research is in the process of developing a Draft Regulatory Guide (RG) to endorse IEEE 741 (Appendix A related to Degraded Voltage and

Loss-of-Voltage Relays). The Draft RG should be released for public comment sometime this year.

- b. RG 1.89 – ongoing periodic review was published December 2018. According to the periodic review, a revised Draft Guide (DG) was supposed to be issued for internal review by the end of the second quarter of FY2019 (April 2019). However, there has been an internal delay due to unexpected circumstances involving Office of Research staff.
- c. A proposed revision to RG 1.9, Application and Testing of Safety-Related Diesel Generators in Nuclear Power Plants, is under staff review. The NRC staff is considering endorsement of IEEE 387 in this revision. The revised RG should be out for public comment later this year.
- d. DG 1328 was published in February 2019 (Proposed Revision 4 of RG 1.100, 'Seismic Qualification of Electrical Active Mechanical Equipment and Functional Qualification of Active Mechanical Equipment for Nuclear Power Plants').
- e. DG-1333 was published in April of 2018 (Proposed Revision 2 of RG 1.180, 'Evaluating Electromagnetic and Radio-Frequency Interference in Safety-Related Instrumentation and Control Systems'). This DG is currently in the concurrence process and nearing issuance.
- f. RG 1.97, 'Criteria for Accident Monitoring Instrumentation for Nuclear Power Plants,' Revision 5, was issued April 23, 2019.

#### 6. Part 21 Reports

- a. The following Part 21 Reports were issued in the past 6 months (more information available on the NRC website under the Part 21 Reports webpage):
  - i. 2019-16-00 - Notification of Potential Defect Applicable to Hytork XL 1126 Pneumatic Actuator
  - ii. 2019-15-00 - Overheating and failure of transformers installed in inverters with 0.7 power factor load requirements
  - iii. 2019-14-00 - Notification of Defect - Pressure Breakdown Sleeve, Part Number 09125139 installed in in Charging Pump Model
  - iv. 2019-13-00 - Interim Report of Potential 10 CFR Part 21, EATON Size 1 and 2 A200 Series Starters/Contactors
  - v. 2019-11-00 - Overheating and failure of transformers installed in inverters with 0.7 power factor load requirements
  - vi. 2019-08-00 - Target Rock Solenoid Valve 810000-X Positioner Circuit Failure May Cause Undesired Position
  - vii. 2019-05-01 - Updated Part 21 Notification of Potential 10 CFR Part 21, EATON A200 Series Starters/Contactors
  - viii. 2019-05-00 - Initial Notification of Potential 10 CFR Part 21, EATON A200 Series Starters/Contactors
  - ix. 2019-04-00 - Part 21 Notification of Deviation SOR R-Series Housing with Terminal Block
  - x. 2019-03-01 - Excitation Transformers for Vickers Voltage Regulator System
  - xi. 2019-03-00 - Saturable Reactor (Magnetic Amplifier) for Vickers Voltage Regulator System, P/N 8408218-ESI

- xii. 2019-02-00 - Notification of a Potential Defect in Weschler KX-241 axial, VX-252 and VC-252 Instrument Models
- xiii. 2019-01-00 - Dedication Testing not performed on Safety-Related Operational Spare Parts Kits

#### 7. Generic Communications

- a. Information Notice (IN)-19-01- Inadequate Evaluation of Temporary Alterations
- b. IN-19-02 - Emergency Diesel Generator Excitation System Diode Failures
- c. IN-19-02 - Inadequate Implementation of Clearance Processes Results in Configuration Control Issues
  
- d. Regulatory Issue Summary (RIS)-19-01 - Clarification of Export Reporting Requirements for Nuclear Facilities, Equipment, and Non-Nuclear Materials
- e. RIS-19-01 - Preparation and Scheduling Of Operator Licensing Examinations



**Attachment 8**

**NPEC Subcommittee SC-3**

*Operations, Maintenance, Aging, Testing, and Reliability*

**SC-3 Standards Schedule**

	WG 3.1	WG 3.2	WG 3.3	WG 3.4
2017-1	336		352	
2017-2	336		577	
2018-1	336		577	
2018-2	336		577	
2019-1	336		577	
2019-2	338		577	
2020-1	338	692	577	
2020-2	338	692	577	
2021-1	338	692	933	1205
2021-2	338	692	933	1205
2022-1	338	692	933	1205
2022-2	338	692	933	1205
2023-1	1819	692	933	1205
2023-2	1819		352	
2024-1	1819		352	
2024-2	1819		352	
2025-1	1819		352	
2025-2	1819		352	
2026-1	336		352	
2026-2	336		352	
2027-1	336			
2027-2	336			
2028-1	336			
2028-2	336		577	
2028-1	338		577	
2028-2	338		577	
2028-1	338		577	
2028-2	338		577	
2029-1	338		577	
2029-2	338		577	

STD	Standard		Age as of: 07/31/2019	Time left (yrs)	PAR Expires
	Approved	Expires			
336	06/17/2010	06/17/2020	9.1	0.9	12/2020
338	02/06/2012	02/06/2022	7.5	2.5	12/2022
352	12/07/2016	12/07/2026	2.7	7.4	-
577	08/30/2012	08/30/2022	6.9	3.1	12/2022
692	08/23/2013	08/23/2023	5.9	4.1	12/2022
933	12/11/2013	12/11/2023	5.6	4.4	-
1205	03/27/2014	03/27/2024	5.3	4.7	-
1819	09/22/2016	09/22/2026	2.9	7.1	-

Balloting  
and  
Approval

Includes:

- 1 Preview, ballot pool, ballot, receive comments
- 2 Resolve comments, recirc
- 3 Submit to/ revcom approval/publish

# 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:**
  - 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 IEEE is not aware. Additionally, neither 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 14 and 15 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 have a duty to inform the IEEE

- Participants 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
- Participants should inform the IEEE (or cause the IEEE to be informed) of the identity of any other holders of potential Essential Patent Claims

**Early identification of holders of potential  
Essential Patent Claims is encouraged**

# Ways to inform IEEE

- **Cause an LOA to be submitted to the IEEE-SA (patcom@ieee.org); 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**
- **Speak up now and respond to this 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, please respond at this time by providing relevant information to the WG Chair

# 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 of different technical approaches that include relative costs of patent licensing terms may be discussed in standards development meetings.
      - **Technical considerations remain the 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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For more details, see *IEEE-SA Standards Board Operations Manual*, clause 5.3.10 and *Antitrust and Competition Policy: What You Need to Know* at <http://standards.ieee.org/develop/policies/antitrust.pdf>

# Patent-related information

The patent policy and the procedures used to execute that policy are documented in the:

- ***IEEE-SA Standards Board 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)**

# Ballot Preview

## Presentation – P336

July 26, 2019 (NPEC Mtg 19-2)

By Phil Ward (WG-3.1 Chair)

“Recommended Practice for Installation, Inspection, and Testing for Class 1E Power, Instrumentation, and Control Equipment at Nuclear Facilities”

# NPEC Preview – P336

## Presentation Contents

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1. History
2. P336 PAR Summary
3. Working Group Membership
4. P336 Table of Contents
5. Summary of Changes
6. Schedule
7. Conclusion



# NPEC Preview – P336

## 1. History

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- Originally issued in 1969 - Developed for construction of new plants of the 70s & 80s.
- Updated in 1977, 1979, revised to nuclear facilities in 1985.
- Revised to add content for modification of existing plants considering no new plants were being built.
- Changed to a Guide in 2003 to allow more flexibility as some facilities / plants already have their own practices.
- Revised in 2010 as a Recommended Practice to elevate the importance of the subject matter for an industry that anticipates significant new construction.
- New PAR was approved in September 2016. PAR will expire in December 2020.

# NPEC Preview – P336

## 2. PAR Summary

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

This recommended practice provides considerations for the pre-installation, installation, inspection, and testing of Class 1E power, instrumentation, and control equipment and systems of a nuclear facility while in the process of installing, inspecting, and testing during new construction, modification, or maintenance. This recommended practice does not apply to periodic **surveillance** testing.

# NPEC Preview – P336

## 2. PAR Summary (Continued)

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

The purpose of this recommended practice is to identify the activities, instructions, and attributes that should be considered in the process of installing, inspecting, and testing during new construction, modification, and maintenance for Class 1E power, instrumentation, and control equipment at nuclear facilities.

Wording of the “Purpose” is not changed.

# NPEC Preview – P336

## 2. PAR Summary (Continued)

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### **Need for the Revision Project:**

- ↪ a. Normal 10 year cycle,
- ↪ b. Review document for updated references,
- ↪ c. Review for updated technology considerations.

# NPEC Preview – P336

## 3. Working Group Membership

Now 24 members - Academic (0), General Interest (5), Govt/Military (3), Producer (12), User (4)

Phil Ward – Chair (User)

George Ballassi (Govt/Military)	Khoi Nguyen (Govt/Military)
John Beatty (Producer)	Patrick O'Regan (General Interest)
Ralph Chackal (General Interest)	Jorge Cintron Rivera (Govt/Military)
Suresh Channarasappa (Producer)	James Parello (General Interest)
Tom Crawford (General Interest)	Clint Pierce (Producer)
Alireza Daneshpooy (Producer)	Ted Riccio (General Interest)
Hamid Heidarisaafa (User)	Craig Sellers (Producer)
Jacob Kulangara (User)	Barry Sloane (Producer)
James Liming (Producer)	John Stevens (Producer)
Kirkland Melson (Producer)	Yvonne Williams (Producer)
Ed Mohtashemi (Producer)	Phil Ward (User)
Joesph Napper (User)	Kiang Zee (Producer)

# NPEC Preview – P336

## 4. P336 Table of Contents

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Major clauses remain the same:

- ❖ Overview: Scope, Purpose, Applicability, Responsibility
- ❖ Normative references
- ❖ Definitions
- ❖ General considerations
- ❖ Pre-installation constructability review
- ❖ Installation / construction
- ❖ Testing
- ❖ Supplementary provisions for multi-unit facilities
- ❖ Annex A - Bibliography

# NPEC Preview – P336

## 5. Summary of Changes

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This revision incorporates the following improvements to reflect current practices and user needs:

- ↪ Added reference to IEEE 1819.
- ↪ Provided additional clarifications and editorial corrections to resolve comments.
- ↪ Expanded the bibliography.
- ↪ Updated to current IEEE MS Word template.

# NPEC Preview – P336

## 6. Schedule

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- ↪ 1 / 2019: Complete Preview Draft at 19-1 meeting and confirm permission to preview to NPEC.
- ↪ 7 / 2019: Resolve NPEC Review Comments
- ↪ 7 / 2019: Preview at NPEC 19-2; request permission to ballot.
- ↪ 11/ 2019: Complete initial ballot.
- ↪ 1 / 2020: Resolve ballot comments.
- ↪ 2 / 2020: Recirc ballot, if needed.
- ↪ 5 / 2020: Submit to RevCom.
- ↪ Late 2020: Publish!



# NPEC Preview – P336

## 7. Conclusion

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- WG-3.1 has developed a draft revision to IEEE 336-2010, which meets the requirements of the approved PAR.
- IEEE P336 draft has been approved by Subcommittee 3.
- WG-3.1, with approval of Subcommittee 3, requests permission to ballot P336 current draft.

# Application of IEEE 1819

Jul. 26, 2019 (NPEC Mtg 19-2)

By Yvonne Williams

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

# Application – IEEE 1819

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## Summary of Presentation

- Explain what 1819 does
- Explain the conditions where it can be used with other NPEC standards
- Integrate 1819 into other NPEC standards as per NPEC goals

# Application – IEEE 1819

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## History of IEEE 1819

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.

Supports use of 10CFR50.69

## Application – IEEE 1819

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- IEEE 1819 does not change classification of components (Class 1E and non-Class 1E).
- Not all SSCs that are Class 1E (or non-Class 1E) need to be treated the same.
- Treatment of components is based on the safety significance of the component in risk-informed approach.

## Application – IEEE 1819

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- IEEE 1819 provides methods to categorize electrical and electronic components using a risk-informed process and identifies how the categorization results relate to Class 1E / non-Class 1E classifications.
- Application of these methods has been shown to be safety- and cost-beneficial for existing Nuclear Power Generating Stations.

# Application – IEEE 1819

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IEEE 1819 applies  
**ONLY**

to those facilities that have adopted a risk informed program for equipment categorization and treatment in accordance with regulatory approval.

# Application – IEEE 1819

	Safety Related (CLASS 1E)	Non-Safety Related (NON-CLASS 1E)
Safety Significant	<p><b>RISC-1</b></p> <p>Safety-Related Class 1E Safety Significant (Current IEEE standards already apply)</p>	<p><b>RISC-2</b></p> <p>Non Safety-Related Safety Significant (Increased requirements may utilize current IEEE standards )</p>
Low Safety Significant	<p><b>RISC-3</b></p> <p>Safety-Related Class 1E Low Safety Significant (Current IEEE standard requirements can be adjusted)</p>	<p><b>RISC-4</b></p> <p>Non Safety-Related Low Safety Significant (No special requirements)</p>



## Application – IEEE 1819

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The standard describes how components with different risk factors can be treated according to risk.

- No changes for RISC-1 and RISC-4.
- Consideration of **increased requirements for higher risk equipment** (RISC-2), which are classified as non-Class 1E components.
- Consideration of **reduced requirements for lower risk equipment** (RISC-3), which are classified as Class 1E components.

# Application – IEEE 1819

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## RISC-3

- Class 1E components that are RISC-3 have been shown to have low safety significance, so the Class 1E requirements for those components can be relaxed.
- IEEE 1819 provides a means to determine those treatments that can safely be adjusted.

# Application – IEEE 1819

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## RISC-3 Examples

- Radiation monitoring system
- Containment Spray in PWRs
- Core Spray in BWRs
- Some HVAC systems
- Portions of CCW and CVCS and Standby Liquid Control are other possibilities

# Application – IEEE 1819

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## RISC-2

- RISC-2 components are not Class 1E but have safety significance.
- IEEE 1819 provides a means to establish those enhanced treatments.
- An example: Main Feedwater startup control valves (backup to AFW)

# Application – IEEE 1819

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The challenge is to establish a method that integrates IEEE 1819 into other standards, in order to complete the NPEC goals of the 2004-02 meeting.

## Application – IEEE 1819

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Suggestion from Subcommittee 3 is to incorporate a statement similar to:  
(for standards)

Nuclear facilities implementing risk informed methodologies for equipment categorization and treatment shall implement this standard in conjunction with IEEE 1819.

## Application – IEEE 1819

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Suggestion from Subcommittee 3 is to incorporate a statement similar to:  
(for recommended practices)

Nuclear facilities implementing risk informed methodologies for equipment categorization and treatment should implement this recommended practice in conjunction with IEEE 1819.

# Application – IEEE 1819

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The placement of this (or similar) statement may vary according to the layout of each standard but should be in the body of the standard.



# Application – IEEE 1819

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Simply referencing IEEE 1819 in the bibliography will not meet the NPEC goals of 2004-02.

# Application – IEEE 1819

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## Questions

