

IEEE NPEC Subcommittee SC-3
Operations, Maintenance, Aging, Testing, & Reliability
Meeting 24-1

Wednesday Morning, 10 Jan 2024
New Orleans, LA

Members Present:	Suresh Channarasappa Tom Crawford (PC) (T) Jacob Kulangara Khoi Nguyen Clint Pierce	Jim Reddy Rebecca Steinman (Chair) Khadijah West (S) Yvonne Williams (PC)
Members Absent:	George Ballassi (PC) Hamid Heidarisa (C) Jim Liming (PC) (H) Ed Mohtashemi Joe Napper (C)	Jim Parello Jigar Patel Ted Riccio (H) Phil Ward (C) Kiang Zee (C)
Guests:	David Gennardo Jodi Haasz	Frank Hope Robert Paprocki

Key:
C – Corresponding Member
H – Honorary Member
PC – Past Chair
S – Secretary
T – participating by Webex or telephone

1.0 Introduction

- **Opening Remarks and Meeting Agenda**

Rebecca called the meeting to order at 8:04 AM CST. The meeting met the quorum requirements to conduct business with 9 of 13 members present, as shown in Attachment 2.

Rebecca welcomed everyone, and thanked those who were able to travel. She presented the draft agenda. Tom moved to approve the agenda; Jim seconded. The agenda was unanimously approved by voice vote. The approved agenda is included in Attachment 1.

Khadijah reviewed the Patent Slides and the Copyright slides. They are also included as Attachments 9 & 10.

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2.0 Secretary's Report

- **SC-3 Approval of S23-1 Meeting Minutes**

The SC-3 23-2 draft meeting minutes were reviewed, and a few minor changes were identified. Yvonne moved to approve as amended; and Jim seconded. The minutes were approved unanimously by voice vote.

- **Action Item Status**

Khadijah reviewed and updated the Action Item list.

The updated action item list is provided in Attachment 4.

- **Alligator Fund**

There were no expenses, and no meeting fee was collected for this meeting. Tom is the custodian of the Alligator Fund, which has a current balance of \$407.36. Status is contained in Attachment 3.

3.0 Chair's Report

- **Leadership Review / Membership**

Rebecca is the Chair and Khadijah is Secretary. Call for participation in SC-3 for new members and to fill the Vice Chair position. Rebecca will change to corresponding member after P1205 is published. Rebecca encouraged WGs to elevate their participants to member status and to grow the membership of SC-3. Request for volunteers to become officers of SC-3.

Rebecca stated that NEI was invited to join meetings for harmonization between ANS, IEEE, ASME, IEC, etc. NEI has the ability to move faster than the industry consensus standards. Alan Campbell is the single point of contact for NPEC meetings.

Due to lack of participation, a motion was raised to move Joe Napper from Corresponding Member to Past Member. Yvonne moved to remove Joe from active membership; and Tom seconded. The motion passed unanimously by voice vote.

NRC sent a letter confirming Jigar's participation and membership. It is Attachment 11.

- **Leadership Telecons**

No Leadership telecons were held.

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- **NPEC Preparations**

There are no activities planned for SC-3 in the NPEC 24-1 meeting. The NPEC meetings are co-located with the PES meetings. The NPEC meeting will remain the same. The NPEC meeting is scheduled from 8:00 am until 5:00 pm CST. Currently there is no option to attend NPEC meetings virtually. The meeting fee (payable online) ranges from \$175 to \$270, depending on an individual's date of registration, IEEE membership status, and virtual/in-person attendance. This fee applies to all attending NPEC meetings in person, as well as those who attend only SC or WG meetings.

In the coming July meeting, NPEC 24-2 participants can pay the \$100 NPEC conference fee by cash or credit card to Keith Bush. This fee applies to all attending NPEC meetings in person, as well as those who attend only SC or WG meetings.

4.0 Old Business

A copy of the updated SC-3 standards schedule is provided in Attachment 8, which tracks regulatory guide endorsements by the NRC. It was noted that the formatting of column D in the SC-3 standards schedule should be corrected to reflect the expiration date is 12/31 for every standard (or indicate only the year.)

The working group chairs should be aware of the corresponding regulatory guides and consider the exceptions taken by NRC when performing revisions of standards. The current NPEC SC-3 standards schedule is provided in Attachment 5. NRC draft regulatory guide, DG 1419, is in progress to become Revision 1 to RG 1.30, which endorses IEEE 336.

Rebecca reminded everyone that all NPEC standards are on iMeet Central. The main location, "NPEC Standards Library" folder, avails current standards to all SCs and WGs. Each SC is responsible to update its standards in the main folder. The previous revision should be moved to the subfolder "Old". If necessary, WG chairs should contact Rebecca to assist with updates.

Yvonne asked about access to IEC standards in iMeet. Rebecca will ask Christian about this. Rebecca said that SC-3 does not have any joint standards plans either due to no interest from the international community or existing standards that share the SC-3 topics. WG members may have access to IHS and thereby access to IEC standards.

5.0 New Business

Jodi Haasz (IEEE SA) attended the SC-3 meeting to discuss a few topics. On the afternoon of Monday, January 8, 2024, she held a meeting with the WG chairs regarding governance. She reminded SC-3 participants that everyone should verify their myProject email/phone/address information is up to date. Group awards will be sent based on this information. (The SC-3 member roster was circulated during the meeting for attendees to

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update their contact information.) Jodi also discussed that balloting is open to Standards Association members.

Rebecca mentioned that NPEC Policies and Procedures (P&P) update went out for a vote. However, the vote will be finalized at NPEC 24-1. There are questions regarding new P&P rules for membership. After NPEC P&P update, WG P&Ps should be updated accordingly.

The SC-3 agenda is in iMeet and publicly available. The public meeting information should include the topic (standard discussed) not the agenda. The announcements for all meetings are publicly searchable. WG chairs can set up a recurring Webex link on the public site or add contact information.

- **Feedback for NPEC/PES Joint Technical Committee Meeting**

A potential benefit is the networking opportunity across the various subcommittees. Tom stated that if PES wanted to foster collaboration, then the meeting agenda information should be better coordinated. There were time conflicts and the agenda lacked information about the topics in the meetings.

- **Request for IEEE 1819 Public Discussion**

Rebecca stated that an IEEE 1819 panel discussion chaired by WG 3.1 is requested at the PES conference in Seattle, WA scheduled July 21-25, 2024. It is an invitation to industry at a public forum. Yvonne discussed the feasibility of supporting the panel discussion and who would be available to chair the session. Yvonne requested input of what people are looking for. Rebecca stated that Mark Bowman is interested in expanding the discussion to a public audience outside of the WG. Yvonne agreed that she wanted to make 1819 as useful as possible. Jacob stated that the PES conference is a general meeting, not a technical meeting. Yvonne stated that July 2024 is too soon but will be more useful discussion in the future. Jacob suggested that the moderator should be an NPEC member with WG 3.1 chair as panel leader, and NRC, NEI, etc., attending. Rebecca stated that the participants usually have a research focus, not necessarily the nuclear industry. Tom agreed that having the panel discussion at a later time would be better.

6.0 Working Group Reports

- **WG-3.1**

IEEE 336 was published in September 2020. It will expire in 2030.

IEEE 338 was approved in December 2022. It will expire in 2032.

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IEEE 1819 was published in 2016 and will expire in 2026.

WG 3.1 is currently working on P1819 with monthly meetings. Yvonne said she is limiting the scope to light water reactors. Rebecca recognized that there is a lot of participation in the review of P1819.

WG meetings were held yesterday, 1/9, and will continue this afternoon, 1/10.

- **WG-3.2**

No report. IEEE 692 will be allowed to expire.

- **WG-3.3**

IEEE 577 was approved in February 2022. It will expire in 2032.

IEEE 933 was approved November 2023. It is in final edits and will be published soon. Khoi expects that it will be in January or February 2024.

IEEE 352 expires in 2026. P352 development is in progress. It is a large standard with monthly meetings. Khoi said that the WG is half done with the review and it is on track to be completed timely.

WG meetings were held yesterday, 1/9, and will continue this afternoon, 1/10.

- **WG-3.4**

WG 3.4 met Monday 1/8 and is 90% finished reviewing P1205. The WG meets monthly but will move to biweekly meetings to get it finished. Rebecca said the goal is to get P1205 into SC-3 preview 30 days ahead of the July 24-02 conference and preview at N24-02. As long as it is in balloting in 2024 it is okay. The PAR for P1205 expires 2026.

7.0 Action Items

Khadijah reviewed the Action Items from today's meeting:

- 24-1-A Send iMeet membership list to C. Orlando to update myProject roster
- 24-1-B WG chairs to review the public website and meet with Webmaster (Rebecca)
- 24-1-C Set up email for WG 3.1, 3.3, 3.4, SC-3 Chair, etc. (IEEE email)
- 24-1-D SC-3 officers – leadership telecon 2 months after 24-01 meeting and 1.5 months before 24-2

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8.0 Liaison Reports

- NRC – Khoi discussed the notable items in the liaison report. The full report is in Attachment 7 and on iMeet Central. Khoi recommends SC-3 (either individually or under NPEC) review and provide comments for NRC’s document, Branch Technical Position (BTP) 7-19, “Guidance for Evaluation of Defense in Depth and Diversity to Address Common-Cause Failure Due to Latent Design Defects in Digital Safety Systems.”
- ASME – No new report was available; Attachment 6 is not used. Rebecca stated that there is no liaison for ASME contacts and asked what ASME topics would be relevant to SC-3. Tom said that SC-3 used to have a participant that was also an ASME representative. Rebecca confirmed that the ASME report can be removed.
- SCoRA – No new report was available.
- ANS – Rebecca stated that she will provide NPEC updates to ANS. As of now, there were not any topics from the 11/2023 meeting that are relevant to SC-3. If anyone is aware of an ANS standard relevant to an SC-3 WG, Rebecca can coordinate it. In the future, Rebecca will provide an ANS liaison report.

9.0 Next Meeting

Upcoming meetings:

- NPEC 24-02 is scheduled for July 14-18, 2024, in San Luis Obispo, CA.

10.0 Adjournment

Yvonne made a motion for adjournment and Khoi seconded. The motion was approved by voice vote and the meeting was adjourned at 11:33 AM CST.

Prepared by Khadijah West

iMeet Central SC-3 Workspace:

<https://ieeesa.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 (None)
Attachment 7 NRC Liaison Report	Attachment 8 SC-3 Standards Schedule	Attachment 9 IEEE Patent Slides
Attachment 10 IEEE Copyright Slides	Attachment 11 NRC Nomination Letter for Jigar Patel	

Agenda – Meeting 24-1 – New Orleans, LA w/ WebEx Option

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

Meeting Date/Time:	Wednesday, 01/10/2024 0800-1130 CST	Chairman:	Rebecca Steinman
	Meeting Room: Armstrong (8 th floor)	Vice Chair:	TBD
		Secretary:	Khadijah West

Desired Outcomes:	<ol style="list-style-type: none"> 1. Review status/activities of each SC Working Group 2. Review status of membership and officer succession 3. Update SC3 standards master schedule
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WHAT	WHO	WHEN
Welcome, Review Desired Outcomes <ul style="list-style-type: none"> • Meeting logistics • Patent and Copyright Slides • Introductions 	K. West All	0800 - 0810
Chairman's Introduction <ul style="list-style-type: none"> • Opening remarks • Review/approve agenda 	R. Steinman	0810 - 0815
Secretary's Report <ul style="list-style-type: none"> • Approval of SC3 23-2 Meeting Minutes • Action Item review/status • Alligator fund report 	K. West	0815 - 0830
Chairman's Report <ul style="list-style-type: none"> • Membership Status & Future Leadership • NPEC meeting preparations (tomorrow's meeting and future meetings) 	R. Steinman	0830 - 0845
BREAK	All	0845 - 0900
Working Group Reports <ul style="list-style-type: none"> • WG-3.1 (Testing) – 336 expires in 2030, 338 expires in 2032, 1819 expires in 2026 • WG-3.2 (Security) – 692 expired in 2023; this WG is disbanded • WG-3.3 (Reliability) – 577 expires in 2032, 933 final editing, 352 expires in 2026 • WG-3.4 (Aging) – 1205 expires in 2024 	Y. Williams N/A K. Nguyen R. Steinman	0900 - 0915 N/A 0915 - 0930 0930 - 0945
Old Business <ul style="list-style-type: none"> • Master schedule for Std review/updates • NPEC Standards on iMeet 	WG Chairs	0945 - 1015
New Business/Rumor Mill/Drumbeats <ul style="list-style-type: none"> • NPEC P&P Update • Requirements for public notification of WG meetings • 1819 Panel Session at PES Conference in Seattle, WA on July 21-25, 2024 	R. Steinman	1015 - 1045
Liaison Reports <ul style="list-style-type: none"> • NRC report • ASME report • ANS report 	K. Nguyen TBD R. Steinman	1045 - 1110
Review of Action Items	K. West	1110 - 1115
Wrap-up & Next Meeting Schedule	R. Steinman	1115 - 1125
Meeting Closeout/Adjournment	R. Steinman	1130

NPEC Subcommittee SC-3
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Attendance

Last	First	SC-3 Member	2022-1	2022-2	2023-1	2023-2	2024-1
Ballassi	George	X		X		T	
Channarasappa	Suresh	X	X	X	X	X	X
Crawford	Tom	X	T	X	X	T	T
Heidarisaifa	Hamid	C					
Kulangara	Jacob	X	X	X	T	X	X
Liming	Jim	H					
Mohtashemi	Ed	X	T	T	T	T	
Napper	Joe	C			X		Past Member
Nguyen	Khoi	X	X	X	X	X	X
Parello	Jim	X	N	Appointed	N		
Patel	Jigar	X			Appointed	X	
Pierce	Clint	X	X	X		X	X
Reddy	Jim	X			Appointed	X	X
Riccio	Ted	H					
Sellers	Craig	C					
Steinman	Rebecca	X	X	X	X	T	X
Ward	Phil	C	X	x			
West	Khadijah	X		T	X	X	X
Williams	Yvonne	X	X	T	X	X	X
Zee	Kiang	C				Corres.	

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

Corresponding and Alternate members are shown in green.

TOTAL VOTING ATTENDEES	X		7	9	9	8	8
TOTAL NON-VOTING ATTENDEES	0		0	0	0	0	0
TOTAL VOTING TELECON PARTICIPANTS	T		2	4	4	4	1
TOTAL NON-VOTING TELECON PARTICIPANTS	N		1	0	1	0	0
TOTAL ATTENDEES			10	13	14	12	9
TOTAL VOTING MEMBERS PARTICIPATING			9	13	13	12	9
TOTAL VOTING MEMBERS		13					13

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
S20-1	\$737.93	\$50.00	\$107.21	\$680.72
S20-2	\$680.72	\$0.00	\$0.00	\$680.72
S21-1	\$680.72	\$0.00	\$0.00	\$680.72
S21-2	\$680.72	\$0.00	\$0.00	\$680.72
S22-1	\$680.72	\$0.00	\$0.00	\$680.72
S22-2	\$680.72	\$0.00	\$171.00	\$509.72
S23-1	\$509.72	\$0.00	\$102.36	\$407.36
S23-2	\$407.36	\$0.00	\$0.00	\$407.36
S24-1	\$407.36	\$0.00	\$0.00	\$407.36

Attachment 4

NPEC Subcommittee SC-3
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Action Items List

Item No.	Subcommittee 3.0 Actions	Owner	Due Date	Closure Comments
23-1-A	Ask C. Orlando whether IEEE can notify local IEEE organizations to offer participation in SC-3 WGs.	Steinman	24-2 Mtg	Rebecca will contact Christian after SC-3 S24-1 meeting to ask.
23-1-B	Suggest to AdCom/NPEC that we advertise upcoming NPEC meetings in ANS Nuclear News and ANS News (email).	Steinman	23-2 Mtg	We advertised in ANS News in 2-3 issues and can continue. Complete: 23-2 meeting
23-2-A	Follow up with Joe Napper to get him to update iMeet Central account.	Steinman	24-1 Mtg	Joe was contacted but he did not complete the action. Complete: 24-1 meeting
23-2-B	Each WG provides desired input into standards forum presentation.	Nguyen/Williams/Steinman	8/21/23	Complete: 8/21/23
23-2-C	Add Member Planet link to iMeet Central	Steinman	24-1 Mtg	Rebecca will complete today after SC3 24-1 meeting.
24-1-A	Send member roster for each WG C. Orlando for updates to myProject (use template)	Nguyen/Williams/Steinman	1/31/2024	
24-1-B	WG chairs talk to webmaster (Steinman) regarding content for their WG webpages.	Nguyen/Williams/Steinman	1/31/24	
24-1-C	Obtain ieee.org email for WG 3.1, WG 3.3, WG 3.4, SC-3	Nguyen/Williams/Steinman	24-2 Mtg	
24-1-D	Schedule Leadership telecons: 2 months from 24-1Mtg (March) and 1.5 months before 24-2 Mtg (May/June).	West/Steinman	1/31/2024	

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

Chair: Rebecca Steinman

PROJECT	Year	Standard Expiration	PAR Expiration	TITLE	Regulatory Guide Ref/Endorsment	Working Group	Chair	Vice Chair	Cycle Year	24-01	24-02	25-01	Status/Comments
336	2020	2030	N/A	Recommended Practice for Installation, Inspection, and Testing for Class 1E Power, Instrumentation, and Control Equipment at Nuclear Facilities	1.30R0 - 1972 IEEE-336_1971 1.128R2	1	Y. Williams		4				
338	2022	2032	N/A	Standard for Criteria for the Periodic Surveillance Testing of Nuclear Power Generating Station Safety Systems	1.118R3 - 1995 IEEE-338_1987	1	Y. Williams		2				Published
352	2016	2026	Dec-2027	Guide for General Principles of Reliability Analysis of Nuclear Power Generating Station Systems and Other Nuclear Facilities		3	K. Nguyen		8				Draft Development
577	2022	2032	N/A	Standard Requirements for Reliability Analysis in the Design and Operation of Safety Systems for Nuclear Power Generating Stations and Other Nuclear Facilities		3	K. Nguyen		2				Standard Published
692	2013	2023	Dec-2022	Standard Criteria for Security Systems for Nuclear Power Generating Stations		2	Vacant		11				WG is not active-Std will be moved to Inactive reserve
933	2023	2033	Dec-2025	Guide for the Definition of Reliability Program Plans for Nuclear Generating Stations and Other Nuclear Facilities		3	K. Nguyen		1				Published
1205	2014	2024	Dec-2026	Guide for Assessing, Monitoring, and Mitigating Aging Effects on Electrical Equipment Used in Nuclear Power Generating Stations and Other Nuclear Facilities	1.248R0 - 2022 IEEE-1205_2014	4	R. Steinman	S. Channarasappa	10				Draft Development
1819	2016	2026	Dec-2026	Standard for Risk-Informed Categorization and Treatment of Electrical and Electronic Equipment at Nuclear Power Generating Stations and Other Nuclear Facilities		1	Y. Williams		8				Draft Development

U.S. Nuclear Regulatory Commission (NRC) Liaison Report
IEEE NPEC, SC2, ESSB, ICC, PSRC, & EQTM – JANUARY 2024

1. General

- a. Vogtle 3 has generated electricity for the first time, and the unit has successfully synchronized and connected to the electric grid.

Vogtle 4 has started the process for loading fuel. Commercial operations expected in the first quarter of 2024. Start date pushed back due to a fault in the motor of a reactor coolant pump.

- b. NRC Standards Forum occurred September 13, 2023. This meeting was at NRC Headquarters in Rockville with virtual participation as an option. (Meeting Summary and slides at <https://www.nrc.gov/about-nrc/regulatory/standards-dev/standards-forum/2023.html>)
- The objective of this meeting was to facilitate strategic discussions on codes and standards needs and priorities.

2. Operating Reactors

- a. Open Phase Condition – All inspections are completed (bulletin closure letters issued for individual plants); Bulletin 2012-01 was closed on March 06, 2023 (See Federal Register Notice <https://www.federalregister.gov/documents/2023/03/06/2023-04501/nrc-bulletin-2012-01-design-vulnerability-in-electric-power-system>).
- b. The Power Operated Valve (POV) inspections started at the beginning of 2020 and no major EQ issues have been identified to date. There was a public meeting on December 8, 2020, to share with Industry and the Public the findings and lessons learned while implementing IP 71111.21N.02, "Design-Basis Capability of Power-Operated Valves Under 10 CFR 50.55a Requirements," inspections in 2020. The inspectors will continue to look at EQ as part of the design basis and licensing conditions of components they inspect. NRC Information Notice 2021-01 (May 6, 2021) discusses lessons learned from initial POV inspections. The inspections have been completed.
- c. Commercial Grade Dedication inspections began in January 2023.
- d. Subsequent License Renewal (North Anna, Point Beach, Oconee, St. Lucie, Monticello, and VC Summer) and initial License Renewal (Comanche Peak and Perry) reviews currently underway.
- e. A proposed revision to GALL-SLR was issued for public comment in July 2023. The comment period has expired. The staff is currently reviewing the comments.
- f. Vendor Inspections – Inspection reports for various vendor inspections that have been performed over the past year can be found on the NRC website - <https://www.nrc.gov/reactors/new-reactors/how-we-regulate/oversight/quality-assurance/vendor-insp/insp-reports.html>

Attachment 7

3. New Reactors

- a. NuScale submitted their standard design approval (SDA) application for a US460 Small Modular Reactor in December 2022. The NRC has accepted the application and continuing its review. The status of the review can be found at <https://www.nrc.gov/reactors/new-reactors/smr/licensing-activities/current-licensing-reviews/nuscale-us460.html>

4. Advanced Reactors

- a. The NRC is evaluating technical reports from multiple advanced reactor designs (i.e., pre-application stage). <https://www.nrc.gov/reactors/new-reactors/advanced/licensing-activities/pre-application-activities.html>
- b. Under an MOU with DOE that was signed in early 2021, the NRC has provided 2 staff members on rotation to Idaho National Labs to support the National Reactor Innovation Center. The staff is working on different projects related to Advance reactors, including the Advance Construction Technology Initiative, to assess ways of reducing cost and schedule for new nuclear power plant builds (e.g., SMRs and Advanced Reactors).

5. Research Reactors

- a. The NRC completed the safety evaluation of the Hermes construction permit application in June 2023. Kairos Power LLC is a U.S. based company developing a fluoride salt cooled high temperature reactor (KP-FHR) using TRISO fuel in pebble form. The Commission hearing was held in October 2023. <https://www.nrc.gov/reactors/non-power/hermes-kairos.html>
- b. The NRC is currently engaged in review activities of the Hermes 2 construction permit application of two low-power test reactors to support development of Kairos Power's fluoride salt-cooled, high-temperature reactor technology. The application was accepted in July 2023 and the review is ongoing.
- c. The NRC accepted for review a construction permit application from Abilene Christian University, which requests permission to build its Molten Salt Research Reactor facility on the university's campus in Abilene, Texas.
- d. The NRC has concluded the National Institute of Standards and Technology has satisfied the requirements to safely restart the NIST research reactor in Gaithersburg, Maryland.

6. Rulemaking

- a. The NRC staff is developing 10 CFR Part 53, "Risk Informed, Technology-Inclusive Regulatory Framework for Advanced Reactors" rulemaking, which will establish a new framework for licensing and regulating advanced nuclear reactors. On September 30, 2022, the NRC staff released the draft proposed Part 53 rulemaking package.

Attachment 7

The NRC staff has provided the draft proposed Part 53 rulemaking package, SECY-23-0021: Proposed Rule: Risk-Informed, Technology-Inclusive Regulatory Framework for Advanced Reactors, dated March 1, 2023, to the Commission requesting approval to publish the draft proposed rule in the Federal Register.

Pending Commission approval, the NRC staff would provide the final rule package, including key guidance, to the Commission by December 2024, and would expect to issue the Final Rule by July 2025.

Additional Part 53 info can be found at: <https://www.nrc.gov/reactors/new-reactors/advanced/rulemaking-and-guidance/part-53.html>

7. Regulatory Guide (RG) Status

- Environmental Qualification: RG 1.89, Rev 2
 - Endorsement of IEC/IEEE Std. 60780-323-2016
 - Issued April 2023
- Environmental Qualification of Connection Assemblies: RG 1.156
 - Endorsement of IEEE Std. 572-2019
 - Issued in Feb 2023
- Environmental Qualification of Safety-Related Battery Chargers, Inverters, and UPSs: RG 1.210
 - Endorsement of IEEE Std. 650-2017
 - Draft Guide published for public comment in Feb 2023
- Risk-Informed Categorization of Electrical and Electronic Equipment
 - Endorsement of IEEE Std. 1819-2016
 - Staff is deferring this work and will consider endorsement of the next revision of IEEE Std. 1819
- Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications: RG 1.129
 - Endorsement of IEEE Std. 450-2020
 - Issued in March 2023
- Criteria for the Protection of Class 1E Power Systems and Equipment: new RG
 - Endorsement of IEEE Std. 741-2022
 - Draft in development
- Sizing lead-acid batteries: RG 1.212
 - Endorsement of IEEE Std. 485-2020
 - Issued June 2023
- Installation Design & Installation of Vented Lead-Acid Batteries: RG 1.128
 - Endorsement of IEEE Std. 484-2019
 - Periodic Review issued May 2023 – ML23102A032
 - Draft Guide expected to be published in January 2024
- Guidelines for Lightning Protection: RG 1.204
 - Endorsement of various IEEE, UL, and NFPA standards
 - Draft Guide 1409 issued May 2023 (public comments were due 6/2)
- Environmental Qualification of Safety-Related Actuators: RG 1.73
 - Endorsement of IEEE Std. 382-2019
 - Draft Guide published in May 2023; Final publication expected in Jan/Feb 2024
- Criteria for Class 1E Power Systems: RG 1.32 and incorporate RG 1.41

Attachment 7

- Endorsement of IEEE Std. 308-2020
- Draft in development
- Installation, Inspection and Testing of Instrumentation and Electric Equipment: RG 1.30
 - Endorsement of IEEE Std. 336-2020
 - DG1419 published in December 2023; Comments due Jan 19
- Motor-Operated Valve Motor Application, Protection, Control, and Testing: new RG
 - Endorsement of IEEE Std. 1290-2015
 - Draft in development
- Criteria for Programmable Digital Devices in Safety-Related Systems of Nuclear Power Plants: RG 1.152
 - Endorsement of IEEE Std. 7-4.3.2-2016
 - Issued July 2023
- Seismic Qualification of Electrical and Active Mechanical Equipment: RG 1.100
 - Endorsement of IEC/IEEE 60980-344, Edition 1.0, 2020-10, IEEE Std C37.98-2023, and reformatted ASME QME-1
 - Draft RG for public comment in 2024

8. Research

- a. NRR submitted user need requests (UNR 2011-014 and UNR 2016-012) to RES to perform research on aging cables and methods of condition monitoring.
 - A research project contract was awarded to NIST to perform the following tasks: confirm the adequacy of the condition-monitoring methods, including: (a) mechanical conditions of tensile test (elongation at break), and compressive modulus (indenter method); (b) dielectric condition indicators (insulation resistance, and frequency domain reflectometry) (c) chemical indicators (oxidation time/temperature, Fourier transform infrared spectroscopy, mass loss Thermogravimetric analysis).
 - The objective of the research project was to confirm the adequacy of commonly used condition monitoring methods to track the aging of cables.

The NIST Project contract was completed, and final report (ML22298A160) was issued in September 2021.

- A research project contract was awarded to Kinectrics to perform the following tasks: 1) perform a Loss-of-Coolant Accident (LOCA) Test on the cables aged during the NIST Project to simulate 50, 60, and 80 years of operation, 2) Determine if the condition monitoring techniques evaluated during the NIST Project are suitable to perform Condition Based Equipment Qualification.
 - Kinectrics conducted the 150Mrads (plus 10% margin) Radiation Accident Dose at the Southwest Research Institute (SWRI).
 - Once the Radiation Accident Dose and Post-Radiation Accident Dose Functionality Tests were completed, the LOCA and Post-LOCA Tests were completed by Kinectrics.

Attachment 7

The final NUREG report (NUREG/CR-7300, “Radiation Accident Dose and Simulated Loss-of-Coolant Accident Test of Low Voltage Cables”) (ML23237B247) for the Kinectrics project was published in August 2023.

- The EPRI tan delta approach to management of submerged cable confirmatory research was completed, and the final Research Information Letter (RIL 2021-11) (ML22019A007) was published in Jan 2022.
- b. NRR submitted a research assistance request (RAR-NRR-2022-003) to RES to conduct a literature search on the Assessment of the Harmonics Effects on Voltage Relays in Nuclear Power Plants (NPPs). The final Technical Letter Report (ML23173A019) was published July 2023.

9. Part 21 Reports

a. The following Part 21 Reports were issued in the past year (more information is available on the NRC website under the Part 21 Reports webpage - <https://www.nrc.gov/reading-rm/doc-collections/event-status/part21/index.html>):

- 2023-01-00/01 - Interim Report Notification Pursuant to 10 CFR Part 21.21, Regarding Deviation or Failure to Comply Associated with a Limitorque Actuator
- 2023-02-00 - Interim Report Notification Pursuant to 10 CFR Part 21.21, Regarding Siemens Medium Voltage Circuit Breakers
- 2023-03-00/01 - Report Notification Pursuant to 10 CFR Part 21.21 Defect identified in Automatic Transfer Switch PN: NLI-ATS480A400X1
- 2023-04-00 - Initial Report Notification Pursuant to 10 CFR Part 21.21 Defect identified in Automatic Transfer Switch PN: NLI-ATS480A400X1
- 2023-05-00 - Initial Report Notification Pursuant to 10 CFR Part 21.21, Regarding DS-206DC/416/632/II-516 Breakers – Erroneous Change of State (Eaton Corporation Breakers)
- 2023-06-00 - Interim Report Notification Pursuant to 10 CFR Part 21.21, Regarding Deviation or Failure to Comply Associated with a GE HFA Relay
- 2023-07-00 - Interim Report Notification Pursuant to 10 CFR Part 21.21, Regarding Limitorque Actuator Motor Pinion Installation
- 2023-08-00 - Interim Report Notification Pursuant to 10 CFR Part 21.21, Regarding Woodward EGB-35P Governor
- 2023-09-00/01 - Interim Report Notification Pursuant to 10 CFR Part 21.21, Regarding Mechanical Draft Cooling Tower Fan Brakes Design Flaw
- 2023-10-00/01 - Interim Report Notification Pursuant to 10 CFR Part 21.21, Regarding Potential Defect with Trane External Auto/Stop and Emergency Stop Relay Card PN: X13650728-06
- 2023-11-00 - Initial Report Notification Pursuant to 10 CFR Part 21.21, Regarding Voltage Regulator Chassis – Bus Bar Installation
- 2023-13-00/01 - Interim Report Notification Pursuant to 10 CFR Part 21.21, Regarding Motor Driven Relay Failed Testing
- 2023-15-00/01 - Interim Report Notification Pursuant to 10 CFR Part 21.21, Regarding Defect with Eaton/Cutler Hammer Size 4 and 5 Freedom Series Contactors
- 2023-16-00/01 - Interim Report Notification Pursuant to 10 CFR Part 21.21, Regarding Certain GE-Hitachi HGA Relays

Attachment 7

- 2023-17-00/01 - Interim Report Notification Pursuant to 10 CFR Part 21.21, Regarding Tyco (Agastat) Relay Failures
- 2023-18-00/01 - Interim Report Notification Pursuant to 10 CFR Part 21.21, Regarding Potential Defect with Eaton JD and HJD Series Molded Case Circuit Breakers
- 2023-19-00 - Interim Report Notification Pursuant to 10 CFR Part 21.21, Regarding a Deviation Associated With a SMB-1 Geared Limit Switch Assembly
- 2023-21-00 - Interim Report Notification Pursuant to 10 CFR Part 21.21, Regarding an issue with an Emergency Diesel Generator (EDG) Digital Reference Unit (DRU) supplied by Engine Systems Incorporated
- 2023-22-00 - Interim Report Notification Pursuant to 10 CFR Part 21.21, Regarding a Deviation in the Calibration Certificates for an Acoustic Emission Instrument

10. Generic Communications

- Information Notice (IN) 23-01, "Risk Insights from High Energy Arcing Fault Operating Experience and Analyses"
- IN 21-01, Supplement 1, "Lessons Learned from U.S. Nuclear Regulatory Commission Inspections of Design-Basis Capability of Power-Operated Valves at Nuclear Power Plants," July 24, 2023

NPEC Subcommittee SC-3

Operations, Maintenance, Aging, Testing, and Reliability

SC-3 Standards Schedule

NPEC Subcommittee SC-3

Operations, Maintenance, Aging, Testing, and Reliability

SC-3 Standards Schedule

Attachment 8

Based on previous NPEC spreadsheet, G. Johnson xref of stds, and nrc.gov

STD	Standard		Age as of: 1/10/2024	Time left (yrs)
	Approved	Expires		
336	9/24/2020	12/31/2030	3.3	6.7
338	12/3/2022	12/31/2032	1.1	8.9
352	12/7/2016	12/31/2026	7.1	2.9
577	2/9/2022	12/31/2032	1.9	8.1
692	8/23/2013	12/31/2023	10.4	-0.4
933	11/8/2023	12/31/2033	0.2	9.8
1205	3/27/2014	12/31/2024	9.8	0.2
1819	9/22/2016	12/31/2026	7.3	2.7

PAR
Expires
-
-
12/2027
-
-
-
12/2026
12/2026

Status notes

Allow to go inactive

Endorsing Reg Guide Information				
RG number	Rev	Date	Date of Std	Staff review
1.30	0	Aug-72	1971	DG 1419 in progress
1.118	3	Apr-95	1987	2023 - Pending revision
1.248	0	Oct-22	2014	

	WG 3.1	WG 3.3	WG 3.4
2024-1	1819	352	1205
2024-2	1819	352	1205
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	
2029-1	338	577	
2029-2	338	577	
2030-1	338	577	
2030-2	338	577	
2031-1	338	577	
2031-2	338	577	

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 WORKING GROUP 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. Formally object to the discussion immediately.**

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**

IEEE SA
STANDARDS
ASSOCIATION



IEEE SA COPYRIGHT POLICY

NOVEMBER 2019

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At the beginning of each standards development meeting the chair or a designee is to:

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<https://standards.ieee.org/about/policies/bylaws/sect6-7.html#7>
 - Clause 6.1 of the IEEE SA Standards Board Operations Manual
<https://standards.ieee.org/about/policies/opman/sect6.html>
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- IEEE SA Copyright FAQs
 - <http://standards.ieee.org/faqs/copyrights.html/>
- IEEE SA Best Practices for IEEE Standards Development
 - http://standards.ieee.org/develop/policies/best_practices_for_ieee_standards_development_051215.pdf
- Distribution of Draft Standards (see 6.1.3 of the SASB Operations Manual)
 - <https://standards.ieee.org/about/policies/opman/sect6.html>



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

January 5, 2024

Rebecca Steinman, Chair
Nuclear Power Engineering Committee Subcommittee 3
Institute of Electrical and Electronics Engineers
3 Park Avenue, 17th Floor
New York, NY 10016-5997

SUBJECT: LETTER NOMINATING NUCLEAR REGULATORY COMMISSION STAFF TO
NUCLEAR POWER ENGINEERING COMMITTEE SUBCOMMITTEE 3 FOR
INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS

Dear Ms. Steinman:

I would like to nominate Mr. Jigar Patel as an authorized Nuclear Regulatory Commission (NRC) alternate representative on the Institute of Electrical and Electronics Engineers (IEEE) Nuclear Power Engineering Committee (NPEC), Subcommittee (SC) 3 on Operations, Maintenance, Aging, Testing, and Reliability. Mr. Patel, is a Reliability and Risk Analyst, and is responsible for NRC activities related to probabilistic risk assessment and risk-informed activities of electrical equipment in nuclear power plants and brings necessary experience and education to support the development and maintenance of standards in SC 3. Mr. Patel participates in SC 3, along with Mr. Khoi Nguyen and Ms. Khadijah West.

In accordance with the Office of Management and Budget Circular No. A-119, "Federal Participation in the Development and Use of Voluntary Consensus Standards and in Conformity Assessment Activities," January 27, 2016, the participation on a committee of an NRC-authorized representative does not connote agency agreement with, or endorsement of, decisions reached by the committee, or of standards approved and published as a result of the committee's efforts. Agency representatives participating on consensus standards developing groups will, to the extent possible, ascertain the views of the agency on matters of interest and will express views that are consistent with established agency views.

However, the NRC's endorsement of these standards, if desired by the NRC, would be part of a separate activity, such as incorporation by reference into rulemaking or endorsement in an NRC regulatory guide.

Correspondence should be addressed to:

U.S. Nuclear Regulatory Commission
ATTN: Mr. Jigar Patel
M/S: O10C15
Washington, D.C. 20555

Telephone: 301-415-2832
E-mail: jigar.patel@nrc.gov

Attachment 11

Thank you very much for providing NRC with the opportunity to participate in the work of your committee. If you have any questions, please contact Mr. Patel, at 301-415-2832 (jigar.patel@nrc.gov).

Sincerely,



Signed by Sampson, Michele
on 01/05/24

Michele Sampson, NRC Standards Executive
Office of Nuclear Regulatory Research

Cc:

Mark Bowman, Chair
IEEE NPEC