

IEEE NPEC Subcommittee SC-3
Operations, Maintenance, Aging, Testing, & Reliability
Meeting 23 – 1

Wednesday Morning, 25 Jan 2023
Orlando, FL

Members Present:	Suresh Channarasappa Tom Crawford (PC) Jacob Kulangara (T) Ed Mohtashemi (T) Khoi Nguyen Jim Parello (T)	Jigar Patel Clint Pierce Jim Reddy Rebecca Steinman (Chair) Khadijah West (S) Yvonne Williams (PC)
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T – participating by WebEx or telephone

Members Absent:	George Ballassi (PC) John Beatty Hamid Heidarisaifa (C) Jim Liming (H) Joe Napper (C)	Ted Riccio (H) Phil Ward (C) Kiang Zee
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Guests: None

1.0 Introduction

- **Opening Remarks and Meeting Agenda**

Rebecca called the meeting to order at 8:39 AM EST. The meeting has met the quorum requirements to conduct business with 12 of 15 members present, as shown in Attachment 2.

Rebecca welcomed everyone, including those participating by Webex. She then presented the draft agenda. Suresh moved to approve the agenda as corrected; Tom seconded. The agenda was unanimously approved by voice vote. The approved agenda is included in Attachment 1.

Rebecca reviewed the Patent Slides and the Copyright slides; noting that these are available in iMeet Central. They are also included as Attachments 9 & 10. Yvonne mentioned that Alan Campbell of NEI will be at the NPEC 23-1 meeting on Thursday. Jigar stated that regarding the Regulatory Guide for IEEE 1819, NRC management wants to see consensus between NEI and industry.

IEEE NPEC Subcommittee SC-3
Operations, Maintenance, Aging, Testing, & Reliability
Meeting 23 – 1

2.0 Secretary's Report

- **SC-3 Approval of S22-2 Meeting Minutes**

The SC3 22-2 draft meeting minutes were reviewed, and a few minor changes were identified. Tom moved to approve and Khoi seconded. The minutes were approved unanimously by voice vote.

- **Action Item Status**

Khadijah reviewed and updated the Action Item list.

- 22-2-A Purchase a long HDMI cable for \$102.36. Closed effective S23-1.
- 22-2-B AdCom took an action to develop brochure and they are tracking it. Closed effective S23-1.
- 22-2-C IEEE 692 will go into inactive-reserve at end of the year; not formally withdrawn. Closed effective S23-1.
- 22-2-D NPEC letter to NRC was located on 9-6-22. Closed effective S23-1.
- 22-2-E Cross-reference table of NPEC standards and RGs was created. Closed effective S23-1.

The updated action item list is provided in Attachment 4.

- **Alligator Fund**

Tom purchased an HDMI cable for \$102.36 using the Alligator Fund. Tom is the custodian of the Alligator Fund, which has a current balance of \$407.36. No meeting fee was collected. Status is contained in Attachment 3. Tom reminded everyone that for all in-person conference attendees (of any meeting), NPEC requires fees be paid to support the cost of the hotel.

3.0 Chair's Report

- **Leadership Review / Membership**

Rebecca Steinman is the Chair and Khadijah West is Secretary for 2023. Call for participation in SC-3 for new members and to fill the Vice Chair position.

Tom formally nominated Jigar Patel and Jim Reddy to become SC-3 members. Khoi seconded the nomination. Jigar and Jim were unanimously approved to become members of SC-3. They are already members of WG 3.1 and WG 3.3.

IEEE NPEC Subcommittee SC-3
Operations, Maintenance, Aging, Testing, & Reliability
Meeting 23 – 1

WG 3.4 currently has a large membership following the successful call for participation. WG 3.1 and WG 3.3 need new members. Khoi stated that he made Richard Wood and Gary Johnson aware that we are seeking international participation. LinkedIn, Twitter, or Facebook could be used to reach out to others active in social media.

Craig Sellers retired in August 2021. SC-3 needs a new ASME liaison. Craig has been moved to inactive status.

Clint said he will talk with Kiang Zee to confirm if he will continue to participate. Tom will attempt to contact John Beatty on his status as well.

- **Leadership Telecons**

We held one Leadership telecon in December to discuss plans and organization for the coming year.

- **NPEC Preparations**

The NPEC meeting is scheduled from 9:00 am until 4:00 pm EST. Currently there is no option to attend virtually. There is a \$100 meeting fee, payable in cash or by credit card. This fee applies to all attending NPEC meetings in person, as well as those who attend only SC or WG meetings.

Khoi will present on a preview of P933.

P933 Preview

Khoi reviewed the Preview presentation for the NPEC meeting on Thursday. He added some clarifications since the WG presentation on Tuesday, and those were discussed. Jim suggested to add a backup slide for the P933 preview presentation to show which definitions changed, which are new, and which have been the same for years (as needed). Yvonne moved to approve the presentation and Tom seconded. The vote was approved unanimously. The motion was passed unanimously by voice vote. The presentation slides are provided in Attachment 11.

4.0 Old Business

- **Standards Status**

A copy of the updated SC-3 standards schedule is provided in Attachment 8, which tracks regulatory guide endorsements by the NRC. 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.

IEEE NPEC Subcommittee SC-3
Operations, Maintenance, Aging, Testing, & Reliability
Meeting 23 – 1

5.0 New Business

Maintenance of NPEC standards on iMeet Central are the responsibility of the WG Chairs, who have access to add the current revision “NPEC Standards Library” folder. Also, the previous revision should be moved to the subfolder “Old”.

Regarding the use of inactive/reserve footnote: IEEE SA has descriptions of all standard statuses. The footnote should be placed in active standards.

Yvonne stated that no public comments were received for IEEE 1819 or IEEE 338. Question for AdCom: How can we promote balloting awareness to encourage public comments?

SC6 is working on a glossary of definitions for NPEC to be consistent with IAEA. Yvonne mentioned the IAEA glossary in the “IAEA and IEC resources” folder on NPEC SC3’s iMeet Central.

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.

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

Yvonne crafted a draft call for participation for WG 3.1, in hopes to also gain members from organizations that oppose IEEE 1819. If no participation, we may need to consider IEEE-1819 go to inactive-reserve status.

Yvonne wants to simplify the process by bypassing myProject and having interested parties contact her directly. Jim Parello suggested we seek international involvement. Bob Konnik and Richard Wood may be able to help with contacts.

- **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 expires in 2023. The P933 draft is completed and will preview at N23-1. The PAR expires in 2025, but that is moot, since the standard expires sooner.

IEEE NPEC Subcommittee SC-3
Operations, Maintenance, Aging, Testing, & Reliability
Meeting 23 – 1

IEEE 352 expires in 2026. The PAR was submitted in December 2022. Khoi said that monthly virtual working meetings will start in March 2023.

- **WG-3.4**

WG 3.4 was 2 members short of a quorum at Tuesday's meeting. There are 14 active members with only 6 attending. Rebecca said that she will schedule monthly working meetings for P1205 on the last Thursday of each month starting February 23, 2023, at 10:00 am EST. They have been working on the P1205 draft for a year and finished 6 of 8 sections. Ed asked to be added to WG 3.4. The Preview is planned for NPEC 24-1. The standard is expected to be published by the end of 2024.

7.0 Action Items

Khadijah reviewed the Action Items from today's meeting:

- 23-1-A Ask C. Orlando whether IEEE can notify local IEEE organizations to offer participation in SC-3 WGs.
- 23-1-B Suggest to AdCom/NPEC that we advertise upcoming NPEC meetings in ANS Nuclear News and ANS News (email).

The revised AI List is provided in Attachment 4.

8.0 Liaison Reports

Liaison reports were provided as follows:

- NRC – The report was displayed for awareness. The full report is in Attachment 7 and on iMeet Central.
- ASME – No new report was available; Attachment 6 is not used.
- SCoRA – No new report was available.

9.0 Next Meeting

Upcoming meetings:

- NPEC 23-2 is scheduled for 7/23 – 7/27/2023 in Buffalo, NY.
- NPEC 24-1 is scheduled for 1/7 – 1/11/2024 in New Orleans, LA. It will be a joint meeting with NPEC and PES JTCM.
- NPEC 24-2 is expected to take place on the West Coast, USA.

IEEE NPEC Subcommittee SC-3
Operations, Maintenance, Aging, Testing, & Reliability
Meeting 23 – 1

10.0 Adjournment

Khoi made motion for adjournment and Yvonne seconded. The motion was approved by voice vote and the meeting was adjourned at 11:57 AM EST.

Prepared by Khadijah West / Rebecca Steinman / Tom Crawford

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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 (None)
Attachment 7 NRC Liaison Report	Attachment 8 SC-3 Standards Schedule	Attachment 9 IEEE Patent Slides
Attachment 10 IEEE Copyright Slides	Attachment 11 N23-1 P933 Preview Slides	

Agenda – Meeting 23-1 – Orlando, FL w/ WebEx Option

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

Meeting Date/Time:	Wednesday, 01/25/2023 0830-1130 EST	Chairman:	Rebecca Steinman
	Hotel Meeting Room: Sable	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 	R. Steinman All	0830 - 0840
Chairman's Introduction <ul style="list-style-type: none"> • Opening remarks • Review/approve agenda 	R. Steinman	0840 - 0845
Secretary's Report <ul style="list-style-type: none"> • Approval of SC3 22-2 Meeting Minutes • Action Item review/status • Alligator fund report 	K. West	0845 - 0905
Chairman's Report <ul style="list-style-type: none"> • Membership Status & Future Leadership • NPEC meeting preparations (tomorrow's meeting and future meetings) 	R. Steinman	0905 - 0930
BREAK	All	0930 - 0945
Working Group Reports <ul style="list-style-type: none"> • WG-3.1 (Testing) – 336 expires in 2030, 338 in publication, 1819 in 2026 • WG-3.2 (Security) – 692 expires in 2023 • WG-3.3 (Reliability) – 577 expires in 2032, 933 preview at N23-01, 352 in 2026 • WG-3.4 (Aging) – 1205 expires in 2024 	Y. Williams N/A K. Nguyen R. Steinman	0945 - 1000 N/A 1000 - 1025 1025 - 1035
Old Business <ul style="list-style-type: none"> • Master schedule for Std review/updates 	WG Chairs	1035 - 1155
New Business/Rumor Mill/Drumbeats <ul style="list-style-type: none"> • NPEC Standards on iMeet (SC/WG chair responsibilities going forward) • Use of inactive-reserve standards footnote 	R. Steinman	1155 - 1105
Liaison Reports <ul style="list-style-type: none"> • NRC report 	K. Nguyen	1105 - 1120
Review of Action Items	K. West	1120 - 1125
Wrap-up & Next Meeting Schedule <ul style="list-style-type: none"> • July 23-27, 2023 in Buffalo, NY (Marriott) 	R. Steinman	1125 - 1130
Meeting Closeout/Adjournment	R. Steinman	1130

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

Last	First	SC-3 Member	2021-2	2022-1	2022-2	2023-1
Ballassi	George	X	X		X	
Beatty	John	X	T			
Channarasappa	Suresh	X		X	X	X
Crawford	Tom	X	X	T	X	X
Heidarisafa	Hamid	C				
Kulangara	Jacob	X	X	X	X	T
Liming	Jim	H	Resigned/Honorary			
Mohtashemi	Ed	X		T	T	T
Napper	Joe	C				
Nguyen	Khoi	X	T	X	X	X
Parello	Jim	X		N	Appointed	T
Patel	Jigar	X				Appointed
Pierce	Clint	X		X	X	X
Reddy	Jim	X				Appointed
Riccio	Ted	H				
Steinman	Rebecca	X	T	X	X	X
Ward	Phil	C		X	X	
West	Khadijah	X	T		T	X
Williams	Yvonne	X	T	X	T	X
Zee	Kiang	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 VOTING ATTENDEES	X		3	7	9	9
TOTAL NON-VOTING ATTENDEES	O		0	0	0	0
TOTAL VOTING TELECON PARTICIPANTS	T		5	2	4	3
TOTAL NON-VOTING TELECON PARTICIPANTS	N		1	1	0	0
TOTAL ATTENDEES	X + O		9	10	13	12
TOTAL VOTING MEMBERS PARTICIPATING	X + T		8	9	13	12
TOTAL VOTING MEMBERS		15				
Legend						
X	Voting Attendees					
O	Non-Voting Attendees					
T	Voting Telecon Participants					
N	Non-Voting Telecon Participants					

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
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	\$50.00	\$50.00	\$737.93
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

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

Action Items List

Item No.	Subcommittee 3.0 Actions	Owner	Due Date	Closure Comments
22-2-A	Purchase a long HDMI cable with adaptor for SC3 from the Alligator Fund	Crawford	23-1 Mtg	S23-1: COMPLETE.
22-2-B	Suggest that AdCom/NPEC should write a letter to Universities requestion support for standards development. Letter should include updated NPEC brochure.	Steinman	22-2 Mtg	S23-1: Addressed at AdCom. AdCom took an action to develop brochure and they are tracking it. COMPLETE.
22-2-C	Attempt to find volunteers to support revision of IEEE 692. Investigate whether a corresponding IEC physical security standard exists.	Kulangara / Parello	23-1 Mtg	S23-1: Parello/Kulangara sought participation. Need was not identified for standard update. Will consider if raised later. 692 will go into inactive-reserve at end of the year; not formally withdrawn. COMPLETE.
22-2-D	Locate April 2022 NPEC letter regarding IEEE 1819 to NRC in ADAMS and post to iMeet.	Steinman	23-1 Mtg	S23-1: COMPLETE 9-6-2022.
22-2-E	Create a cross-reference table of each NPEC standard and the RG that endorses it. Add this table to the Standards Status Spreadsheet.	Williams / Steinman	23-1 Mtg	S23-1: COMPLETE.
23-1-A	Ask C. Orlando whether IEEE can notify local IEEE organizations to offer participation in SC-3 WGs.	Steinman	23-2 Mtg	
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	

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

Chair: Rebecca Steinman

Document 0 to 2 years old	2
Document 3 - 4 years old	1
Document 5 - 6 Years old	0
Document 7 - 8 years old	2
Document 9 or more years old	3
Total	8

PROJECT	Year	Standard Expiration	PAR Expiration	TITLE	Regulatory Guide Ref/Endorsment	Working Group	Chair	Vice Chair	Cycle Year	23-01	23-02	24-01	Status/Comments
336	2020	2030	N/A	IEEE Standard Installation, Inspection, and Testing Requirements for Power, Instrumentation, and Control Equipment at Nuclear Facilities	1.30R0 - 1972 IEEE-336_1971 1.128R2	1	Y. Williams		3				
338	2023	2033	Dec-2022	IEEE Standard Criteria for the Periodic Surveillance Testing of Nuclear Power Generating Station Safety Systems	1.118R3 - 1995 IEEE-338_1987	1	Y. Williams		0				SA Comment Resolution Complete. IEEE Editorial issues are being addressed. Formal issue be in 2023
352	2016	2026	N/A	IEEE Guide for General Principles of Reliability Analysis of Nuclear Power Generating Stations and Other Nuclear Facilities		3	K. Nguyen		7				New PAR Submitted-NesCom Jan23
577	2022	2032	Dec-2022	IEEE Standard Requirements for Reliability Analysis in the Design and Operation of Safety Systems for Nuclear Power Generating Stations		3	K. Nguyen		1				Standard Published
692	2013	2023	Dec-2022	IEEE Standard Criteria for Security Systems for Nuclear Power Generating Stations		2	Vacant		10				WG is not active-Std will be moved to Inactive reserve
933	2013	2023	Dec-2025	IEEE Guide for Definition of Reliability Program Plans for Nuclear Generating Stations and Other Nuclear Facilities		3	K. Nguyen		10	Pre view			Development Complete. Preview planned in N23-01
1205	2014	2024	Dec-2026	IEEE Guide for Assessing, Monitoring, and Mitigating Aging Effects on Class 1E Equipment used in Nuclear Power Generating Stations	1.248R0 - 2022 IEEE-1205_2014	4	R. Steinman	S. Channarasappa	9				Draft Development
1819	2016	2026	Dec-2026	Standard for Risk-Informed Categorization and Treatment of Electrical Equipment in Nuclear Facilities		1	Y. Williams		7				Draft Development

U.S. Nuclear Regulatory Commission (NRC) Liaison Report
IEEE NPEC, ESSB, ICC, & PSRC – January 2023

1. General

- a. Annie Caputo and Bradley Cromwell are the new commissioners.
- b. Vogtle 3 authorized for fuel load.

2. Operating Reactors

- a. Open Phase Condition (OPC) – On June 6, 2019, Nuclear Energy Institute (NEI) submitted Revision 3 to the voluntary industry initiative (VII) (ADAMS Accession No. ML19163A176), and subsequently submitted the accompanying guidance document, 19-02 “Guidance for Assessing Open Phase Condition Implementation Using Risk Insights,” (ADAMS Accession No. ML19172A086) on June 20, 2019. Revision 3 of VII includes an option for not enabling the Open Phase Isolation System (OPIS) automatic functions based on assessing the change in risk between operating with automatic functions versus reliance on operator manual action to isolate a power supply affected by an OPC. The staff revised Temporary Instruction (TI) 2515/194 to verify adequacy of licensees' implementation of VII Rev. 3. The staff currently working on issuing the Bulletin 2012-01 closure letters to licensees who had the TI 2515/194 inspection completed. The NRC staff is making progress with closing out NRC Bulletin 2012-01 for the sites it inspected as bulletin closure letters have been issued for all operating plants except Comanche Peak. The NRC had completed revising the Reactor Oversight Process Inspection Procedures and Inspection Manual Chapter to provide periodic oversight of licensee's implementation of the voluntary industry initiative to address the open phase vulnerabilities. When all inspections are completed (bulletin closure letters issued for individual plants), the staff will prepare an overall report to close the bulletin or for any additional action for consideration of the Commission.
- 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 are scheduled to begin in January 2023.
- d. Subsequent License Renewal (North Anna, Point Beach, Oconee, and St. Lucie) and initial License Renewal (Comanche Peak) reviews currently underway. Monticello submitted subsequent license renewal application on January 09, 2023.

Attachment 7

- e. 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>

3. New Reactors

- a. On January 19, 2023, the U.S. Nuclear Regulatory Commission completed rulemaking to certify the NuScale standard design for a small modular reactor. <https://www.govinfo.gov/content/pkg/FR-2023-01-19/pdf/2023-00729.pdf>
- b. The NRC is currently engaged in review activities of the Hermes construction permit application. 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. <https://www.nrc.gov/reactors/non-power/hermes-kairos.html>

4. Advanced Reactors

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

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

7. Regulatory Guide (RG) Status

- Environmental Qualification: RG 1.89
 - Endorsement of IEC/IEEE Std. 60780-323-2016
 - Received public comments
 - Final Publication expected by 2nd quarter 2023
- Environmental Qualification of Connection Assemblies: RG 1.156
 - Endorsement of IEEE Std. 572-2019
 - DG-1400 Issued for public comment April 2022
 - Final publication expected by 2nd quarter 2023

Attachment 7

- Environmental Qualification of Safety-Related Battery Chargers, Inverters, and UPSs: RG 1.210
 - Endorsement of IEEE Std. 650-2017
 - Expected to be published for public comment (DG-1412) by 2nd quarter 2023
- Assessing, Monitoring, and Mitigating Aging Effects: new RG 1.248
 - Endorsement of IEEE Std. 1205-2014
 - RG 1.248 published Oct 2022
- Risk-Informed Categorization of Electrical and Electronic Equipment
 - Endorsement of IEEE Std. 1819-2016
 - Determining path forward of endorsing in a new RG or an existing RG 1.201 on categorization of SSCs
 - The NRC held a public meeting in February 2022 to further discuss the staff's consideration of the potential endorsement for IEEE Std. 1819-2016.
- Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications: RG 1.129
 - Endorsement of IEEE Std. 450-2020
 - Final publication expected in by 2nd quarter 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
 - Draft in development
- Installation Design & Installation of Vented Lead-Acid Batteries: RG 1.128
 - Endorsement of IEEE Std. 484-2019
 - Draft in development
- Guidelines for Lightning Protection: RG 1.204
 - Endorsement of various IEEE, UL, and NFPA standards
 - Draft in development
- Environmental Qualification of Safety-Related Actuators: RG 1.73
 - Endorsement of IEEE Std. 382-2019
 - 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
 - Final publication expected by 1st quarter 2023
- Dedication of Commercial-Grade Digital I&C Items for Use in Nuclear power Plants: RG 1.250 (New)
 - Endorsement of NEI 17-06, "Guidance on Using IEC 61508 SIL Certification to Support the Acceptance of Commercial Grade Digital equipment for Nuclear Safety Related Applications," Revision 1
 - Published October 2022

8. Research

- a. In 2014, 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.

Attachment 7

- On September 24, 2012, 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.
- On December 10, 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. Below is an update on the project's major milestones:
 - On May 9th, 2022, Kinectrics begun the 150Mrads (plus 10% margin) Radiation Accident Dose at the Southwest Research Institute (SWRI). The Radiation Accident Dose is scheduled to be completed by June 17th, 2022.
 - Once the Radiation Accident Dose and Post-Radiation Accident Dose Functionality Tests are complete, The LOCA Test will commence on July 25th, 2022, and conclude on August 29th, 2022.
 - Immediately after the LOCA Test, the Post-LOCA Tests will begin on August 29th, 2022, and will last until September 2nd, 2022.
 - The final report is expected to be issued by the 2nd quarter of 2023.
- b. The NIST project was completed on September 15, 2021. The period of performance for the Kinectrics research project is from 12/10/2021 – 11/15/2022.
- c. The submerged cable tan delta test criteria research has been completed. The Research Information Letter should be published by the end of 2022.

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>):

- 2022-01-00 - Report Under 10 CFR 21 of Noncompliances to Specification for N7030 Temperature Transmitter
- 2022-02-00 - Engine Systems, Inc. Part 21 Reportable Notification on a Pressure Regulator Valve
- 2022-05-00 - 10 CFR Part 21 Notification for a Curtiss-Wright Supplied RCS/Dresser Actuator, P/N SURE-24-10-4
- 2022-07-00 – Notification of the Potential Existence of Defects Pursuant to 10 CFR Part 21
- 2022-08-00 - 10 CFR Part 21 Notification – Arnold Magnetics Power Supply Part Number PBM-24-106
- 2022-09-00/01/02 - Potential Defect in Configuration of Quick Disconnect Connector Cable Assemblies (P/N: 913602-111)

Attachment 7

- 2022-10-00 - Solenoid Coil Failure of Model 38878-8 Solenoid Valve at Catawba Nuclear Station for use on FWIV Actuator
- 2022-11-00 - Notification of 10 CFR Part 21 Defect and Failure to Comply: Relay - Failure to Change State
- 2022-12-00/01 - Part 21 Interim Report Notification – Premature Failures of Valcor Coil Shell Assemblies
- 2022-13-00 –16-AAT907B Power Supply 10 CFR Part 21 Notification
- 2022-14-00 - Interim Potential Part 21 on Siemens Medium Voltage Circuit Breakers with 3AF Operators Sold to Wolf Creek Nuclear Generating Station
- 2022-15-00 - Interim 10 CFR 21.21(a)(2) Report Regarding Framatome Supplied Siemens Medium Voltage Circuit Breakers
- 2022-19-00 - Notification under 10 CFR Part 21 for Rosemount 3153N Series Pressure Transmitter with Rosemount 3159 Remote Seals with the LG1 option
- 2022-21-00 - NRC 10 CFR Part 21 Notification, Nutherm, written notification of potential defect found in Nutherm/Sola Hevi-Duty Uninterruptible Power Supply (UPS), S4K2U1000-NM 191
- 2022-22-00 - Basic Component Which Fails to Comply or Contains a Defect (Woodward 2301A Emergency Diesel Generator Electronic Speed Control Module)
- 2022-23-00/01 - Notification under 10 CFR Part 21 for Schneider Electric P/N: ASP840-000 Modicon Primary/Secondary Power Supply
- 2022-24-00 - 10 CFR Part 21 Report 38878-8 Solenoid Valve at Duke, Catawba Flowserve Evaluation #105
- 2022-25-00 - Interim Report Notification Pursuant to 10 CFR Part 21.21, Regarding QualTech NP Supplied Eaton TRM5 Timing Relays
- 2022-26-00 - Interim Report Notification Pursuant to 10 CFR Part 21.21, Regarding Peerless 56 Frame DC Motors

10. Generic Communications - None

NPEC Subcommittee SC-3

Operations, Maintenance, Aging, Testing, and Reliability

SC-3 Standards Schedule

STD	Standard		Age as of:	Time left
	Approved	Expires	1/31/2023	(yrs)
336	9/24/2020	9/24/2030	2.4	7.6
338	12/3/2022	12/3/2032	0.2	9.8
352	12/7/2016	12/7/2026	6.2	3.9
577	2/9/2022	2/9/2032	1.0	9.0
692	8/23/2013	8/23/2023	9.4	0.6
933	12/11/2013	12/11/2023	9.1	0.9
1205	3/27/2014	3/27/2024	8.8	1.2
1819	9/22/2016	9/22/2026	6.4	3.6

PAR	Status notes
Expires	
-	
12/2022	
-	PAR to RevCom 9/2022
12/2022	
12/2022	Allow to go inactive
12/2025	
12/2026	
-	PAR to RevCom 9/2022

Endorsing Reg Guide Information				
RG number	Rev	Date	Date of Std	Staff review
1.30	0	Aug-72	1971	2022 - Revise
1.118	3	Apr-95	1987	2023 - Revise
1.248	0	Oct-22	2014	
				evaluating how to cover

	WG 3.1	WG 3.2	WG 3.3	WG 3.4
2021-1	338		933	
2021-2	338		933	
2022-1	338		933	1205
2022-2	338		933	1205
2023-1	1819		933	1205
2023-2	1819		933	1205
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	
2028-1	338		577	
2028-2	338		577	
2028-1	338		577	
2028-2	338		577	
2029-1	338		577	
2029-2	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 COPYRIGHT POLICY

NOVEMBER 2019



INSTRUCTIONS FOR CHAIRS OF STANDARDS DEVELOPMENT ACTIVITIES

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- Advise the standards development group participants that:
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 - Any material submitted during standards development, whether verbal, recorded, or in written form, is a Contribution and shall comply with the IEEE SA Copyright Policy;
- Instruct the Secretary to record in the minutes of the relevant meeting:
 - That the foregoing information was provided and that the copyright slides were shown (or provided beforehand).

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IEEE SA COPYRIGHT POLICY

- The IEEE SA Copyright Policy is described in the IEEE SA Standards Board Bylaws and IEEE SA Standards Board Operations Manual
 - IEEE SA Copyright Policy, see
 - Clause 7 of the IEEE SA Standards Board Bylaws
<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>
- IEEE SA Copyright Permission
 - <https://standards.ieee.org/content/dam/ieee-standards/standards/web/documents/other/permissionltrs.zip>
- 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>

Ballot Preview P933

*“Draft Guide for the Definition of Reliability
Program Plans for Nuclear Generating Stations
and Other Nuclear Facilities”*

January 26, 2023 (NPEC Meeting 23-01)
By Khoi Nguyen (WG-3.3 Chair)

Ballot Preview - P933

Presentation Contents

1. Introduction
2. Working Group Membership
3. Summary of Changes
4. Schedule
5. NPEC Comments
6. Conclusion

1. Introduction

History of IEEE Std 933

- First issued in 1975
- Last updated (revised) in 2013
- New PAR approved March 2021

1. Introduction (Continued)

Scope:

This document provides guidelines for the definition of a reliability program at nuclear generating stations and other nuclear facilities. The document emphasizes reliability programs during the operating phase of such facilities; however, the general approach applies to all phases (e.g., design, construction, start-up, operating, and decommissioning) of the facility.

1. Introduction (Continued)

Purpose:

The purpose of this guide is to describe a basic framework (i.e., the program elements, guidelines on implementation, element interaction, and their scope of application) directed at improving nuclear generating station and other nuclear facility performance through the effective implementation of reliability programs. It is oriented toward facility availability, encompassing balance-of-plant and safety equipment. Effective implementation of these guidelines should also improve facility safety by reducing challenges to safety systems in addition to enhancing reliable operation of the components of those safety systems.

1. Introduction (Continued)

Need for the Revision Project

The objective of this project is to:

- comply with the IEEE 10-year review plan,
- conform to the revised style manual and formatting for standards,
- update the standard to current references and practices within the nuclear industry, and
- clarify definitions.

2. Working Group Membership

14 members

Khoi Nguyen (Gov) - Chair

George Ballassi (Manufacturer) - Vice Chair

Clint Pierce (Producer) - Secretary

John Beatty (Producer)	Jigar Patel (Gov)
Suresh Channarasappa (Producer)	James Reddy (Producer)
Tom Crawford (Retired)	Khadijah West (Gov)
Jacob Kulangara (Consultant)	Yvonne Williams (Retired)
Ed Mohtashemi (Producer)	Kiang Zee (Retired)
James Parello (Retired)	

3. Summary of Changes

This revision includes the following:

- Definition revisions to align with other IEEE standards.
- Normative reference updates to reflect the current titles.
- Figure and table updates.
- Updates on Clauses 4 and 5.
- Minor editorial changes for clarity.

4. Schedule

- 01/2023: Preview at NPEC; request permission to ballot.
- 03/2023: Complete ballot pool, submit to MEC.
- 04/2023: Complete ballot.
- 07/2023: Resolve ballot comments.
- 08/2023: Implement recirculation ballot, if needed.
- 10/2023: Submit to RevCom.
- 12/2023: Publish.

5. NPEC Comments

1. Section 4.3.5.1 identifies two categories of plant performance goals or targets related to implementing performance evaluations: Safety/environmental/regulatory and economic. Section 4.3.5.4 subsequently addresses the impact of operations on equipment reliability. It appears to me that this section focusses solely (perhaps just primary) on the former performance goal (e.g., collecting data for operator times, post-transient interviews) but has little guidance regarding normal, everyday operations that may relate more closely to the economic goal. I suggest the working group consider what might be added to enhance this section for the economic performance goal. Otherwise, nice job on this revision.

Response: Details of daily plant operation economic guidance are beyond the scope of this standard. The draft P933 will be revised to include “However, the detailed guidance for addressing economic goals is outside the scope of this standard.”

Subclause 4.3.5 provides guidance for implementation of performance evaluation. Subclauses 4.3.5.4 and 4.3.5.6 further provide specific guidance for optimizing operations and maintenance performance, respectively, to improve overall equipment reliability and availability. Improving equipment reliability and availability would, in part, assist the achievement of safety and economic goals/target.

5. NPEC Comments (Cont.)

2. In Subchapter 3.1 there are plenty of definitions stretching over 3-1/2 pages which just serve this particular standard. Working Group 6.2 compiled a "white book" of those definitions which are used in SC6 and tried to investigate their heritage, general applicability or potential replacement with the target to "standardize" them as IEC does which adopts the definitions of IAEA. Did you also consider such aspects for harmonization (at least inside SC3) or even to utilize IAEA definitions?

Response: Subcommittee 3 has considered the definitions used in other IEEE standards in an effort of making the definitions consistent across the board within IEEE.

6. Conclusion

- WG-3.3 has developed a draft revision to IEEE Std 933-2013, which meets the requirements of the approved PAR.
- WG-3.3 and SC-3 have approved Draft P933.
- SC-3/WG-3.3 requests permission to Ballot.

QUESTIONS?