IEEE NPEC Subcommittee SC-3
Operations, Maintenance, Aging, Testing, & Reliability
Meeting 21-2 Minutes

Wednesday Morning, 14 Jul 2021
Mystic, CT

Members Present:	George Ballassi (PC)	Craig Sellers (N)[T]
	John Beatty[T]	Rebecca Steinman (VC)[T]
	Tom Crawford (Chair)	Khadijah West[T]
	Jacob Kulangara	Yvonne Williams (PC)[T]
	Khoi Nguyen[T]	
Members Absent:	Suresh Channarasappa	Jim Parello (C)
	Hamid Heidarisafa (C)	Clint Pierce
	Ed Mohtashemi	Phil Ward
	Gurshan Matharu	Kiang Zee
	Joe Napper (C)	
Guests:	None	

[T] indicates virtual attendance instead of in-person attendance.

1.0 Introduction

- **Opening Remarks and Meeting Agenda**

  Meeting was called to order at 9:07 AM EDT by Tom Crawford, Chair. The meeting has met the quorum requirements to conduct business with 7 of 14 members present, as shown in Attachment 2.

  Tom went through the Patent Slides and the Copyright slides; he noted that the Patent Slides had been updated since our last meeting. Both sets of slides are available in iMeet Central. They are also included as Attachments 9 & 10.

  Tom presented the draft agenda. George moved to approve the agenda; Jacob seconded. The agenda was unanimously approved by voice vote. The approved agenda is included in Attachment 1.

  As there are no changes to the attendees from the WG meetings on 13 July, Tom dispensed with the introductions.

2.0 Secretary's Report

- **SC-3 Approval of S21-1 Meeting Minutes**

  The SC3 21-1 draft meeting minutes were reviewed, and one minor change was identified to add the standard number (692) to the Action 20-2-B description in the body of the minutes.

Jacob moved to approve the minutes as revised; George seconded the motion. The minutes were unanimously approved by voice vote as revised.

- **Action Item Status**

  17-2-B – Action remains open. iMeet discussion thread remains open for members to submit topics for future meeting technical presentations. Only topic suggested so far was transferred to WG 3.1 for action.

  19-2-D – In-progress. Rebecca addressed comments from the S21-1 discussion. Revised files are on iMeet in the Standards Development folder. SC3 members asked to review and provide comments by August 15, 2021.

  21-1-A: George Kyle was the only WG member that indicated interest, but he is retired and has no means to fund travel. Unable to find an Exelon representative. Bechtel not interested in having anyone replace Yvonne. COMPLETE

  21-1-B: No comments received outside of the one's given at S21-1, which Rebecca has addressed. COMPLETE

  21-1-C: No progress, action remains open.

  The updated action item list is provided in Attachment 4.

- **SC-3 Membership**

  The membership roster has been updated and the information has been validated. Jim Liming has requested removal from the corresponding member roster effective this meeting. Jim was elected to Honorary Member status at the WG 3.1 and WG 3.3 meetings on July 13, 2021. Jacob motioned that Jim also receive Honorary SC3 Member status; George seconded. Motion unanimously approved.

- **Alligator Fund**

  There were no expenses to the Alligator Fund. No meeting fee was collected due to the virtual meeting. The Alligator Fund balance is $680.72 and 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/Treasurer position is still needed. Rebecca will become chair when Tom steps down at the end of 2021.

Tom reiterated that we all need to recruit new members and encourage our younger members to step up into leadership positions.

21-2-A: Rebecca to contact Christian Orlando to see about running a call for volunteer ad in other IEEE newsletters such as PEC, Nuclear Science & Plasma Society, etc.

- **Leadership Telecons**

  There were no Leadership telecons since the previous meeting. Rebecca indicated a desire to have a telcon in the fall to discuss recruitment efforts.

- **NPEC Preparations**

  The NPEC meeting is scheduled as a face-to-face meeting with a virtual WebEx component. SC2 is scheduled to start at 9 am and end at 12 pm (EST), with NPEC starting at 1 pm. There is a $100 meeting fee. Both members and guests need to register with 123signup to pay the fee and obtain the WebEx link.

  Tom reported that Christian Orlando provided all the files needed to reform the Standards Library on the NPEC iMeet Central workspace. The intent will be to share the NPEC library location with all NPEC SC and WG workspaces.

4.0 Working Group Reports

- **WG-3.1**

  IEEE 336 was published in September 2020. It will expire in 2030. No actions at this time.

  IEEE 338 PAR expires in 2022. The WG is planning to preview at N22-1. Phil Ward needs to become an SA member so he can take over Chair activities from Yvonne.

  IEEE 1819 was published in 2016 and will expire in 2026. WG will start working on 1819 after 338 work is complete. This standard is being considered for potential NRC endorsement, probably in the next revision of RG 1.201. Current copy of RG is provided as Attachment 11.

- **WG-3.2**

  This standard will be allowed to expire in 2023. The WG will be dissolved when the standard expires.

- **WG-3.3**

  IEEE P577 requires recirculation ballot. Khoi will resolve the final 2 remaining comments with WG 6.4 via email and then initiate the recirculation ballot before the end of August. The P577 PAR expires in 2022.

  IEEE 933 expires in 2023. PAR approved March 25, 2021 and expires December 31, 2025. A PDF of the approved PAR has been uploaded to iMeet. Khoi to contact IEEE liaison to get a Word copy of the published standard.

  IEEE 352 expires in 2026. No actions at this time.

- **WG-3.4**

  IEEE 1205 expires in 2024. Rebecca will reconstitute the WG in September/October and submit a PAR for approval at N22-1.

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 –No ASME report received. Attachment 6 is unused.
- SCoRA – Kiang had nothing to report.

6.0 Old Business

- **Standards Status**

  The current NPEC SC-3 standards schedule is provided in Attachment 5.

- **SC Review of WG Chair Guideline and Action 19-2-D Documents**

  Rebecca addressed comments from the S21-1 review and posted her revision to iMeet under *Files & Discussions/Standards Development/SC3WG Chair Guidance.docx* and asked all SC-3 members to review and provide feedback by August 31, 2021.

7.0 New Business

None.

8.0 Action Items

The revised AI List is provided in Attachment 4.

9.0 Next Meeting

The N22-1 meeting is being planned as a face-to-face meeting with PES JTCM January 9-12, 2022 at the Hyatt Regency Orange County, Garden Grove, CA. N22-2 will most likely be sponsored by TVA and held in Chattanooga or Gatlinburg, TN. More information will be provided when available.

10.0 Adjournment

Yvonne made motion for adjournment and Khadijah seconded. The motion was approved by voice vote and the meeting was adjourned at 11:13 AM EDT.

Prepared by Rebecca Steinman

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/

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 Unused
Attachment 7 NRC Liaison Report	Attachment 8 SC-3 Standards Schedule	Attachment 9 IEEE Patent Slides
Attachment 10 IEEE Copyright Slides	Attachment 11 RG 1.201	

Attachment 1

Agenda – SC-3 Meeting 21-2 – Mystic, CT

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

Meeting Date/Time:	Wednesday, 07/14/2021 0900-1200 EDT	**Chairman:** **Vice Chair:** **Secretary:**	Tom Crawford Rebecca Steinman

Desired Outcomes:	1. Review status/activities of each SC Working Group 2. Review status of membership and officers succession 3. Update SC3 standards master schedule

WHAT	WHO	WHEN
Welcome, Review Desired Outcomes • Meeting logistics • Patent & Copyright Slides • Introductions	T. Crawford All	0900 - 0910
Chairman's Introduction • Opening remarks • Review/approve agenda	T. Crawford	0910 - 0920
Secretary's Report • Approval of SC3 21-1 Meeting Minutes • Action Item review/status • SC3 membership review • Alligator fund report • iMeet & Website update	R. Steinman / T. Crawford	0920 - 0940
Chairman's Report • SC3 Leadership – Officers and succession planning • Membership Status • NPEC meeting preparations & agenda for Thursday's meeting and future meetings	T. Crawford	0940 - 0950
IEEE 577 Prep for Recirc Ballot	K. Nguyen	0950 - 1020
BREAK	All	1020 - 1035
Working Group Reports • WG-3.1 (Testing) – 336 expires in 2030, 338 in 2022, 1819 in 2026 • WG-3.2 (Security) – 692 expires in 2023 [Allow to expire] • WG-3.3 (Reliability) – 577 expires in 2022, 933 in 2023, 352 in 2026 • WG-3.4 (Aging) – 1205 expires in 2024	P. Ward K. Nguyen R. Steinman	1035 - 1040 1040 - 1045 1045 - 1050 1050 - 1055
Liaison Reports • NRC Report • Other Risk-Informed Activities	K. Nguyen K. Zee	1055 - 1105 1105 - 1115
Old Business • Master schedule for Std review/updates	T. Crawford	1115- 1125
New Business/Rumor Mill/Drumbeats • (TBD)	T. Crawford	1125 - 1135
Review of Action Items	R. Steinman	1135 - 1150
Next meeting	T. Crawford	1150 - 1155
Meeting closeout/adjournment	T. Crawford	1200

Attachment 2

NPEC Subcommittee SC-3

Operations, Maintenance, Aging, Testing, and Reliability

Attendance

Last	First	SC-3 Member	2019-2	2020-1	2020-2	2021-1	2021-2
Ballassi	**George**	X			T	T	X
Beatty	**John**	X	X	X	T	T	T
Channarasappa	**Suresh**	X	X	X	T	T	
Crawford	**Tom**	X	X	X	T	T	X
Heidarisafa	Hamid	C					
Kulangara	**Jacob**	X	X	X	T	T	X
Liming	Jim				N	N	Resigned
Matharu	**Gurshan**	X				T	
Melson	**Kirk**		X		T	Resigned	
Mohtashemi	**Ed**	X			T		
Napper	Joe	C					
Nguyen	**Khoi**	X	Appointed	X	T	T	T
Parello	Jim	C		O	N		
Pierce	**Clint**	X	X	X	T	T	
Riccio	Ted	H		Honorary			
Sellers	Craig	C				N	N
Steinman	**Rebecca**	X	X		T	T	T
Ward	**Phil**	X	X	X	T	T	
West	**Khadija**	x		X	Appointed	T	T
Williams	**Yvonne**	X	X	X	T	T	T
Zee	**Kiang**	X	X	X	T	T	

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		12	10	1	0	3
TOTAL NON-VOTING ATTENDEES	0		0	1	0	0	0
TOTAL VOTING TELECON PARTICIPANTS	T		0	0	13	13	5
TOTAL NON-VOTING TELECON PARTICIPANTS	N		0	0	2	2	1
TOTAL ATTENDEES			12	11	16	15	9
TOTAL SC-3 MEMBERS		14					

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
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	$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

Attachment 4

NPEC Subcommittee SC-3

Operations, Maintenance, Aging, Testing, and Reliability

Action Items List

Item No.	Subcommittee 3.0 Actions	Owner	Due Date	Closure Comments
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	Ongoing	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. S20-2: Action remains open. Rebecca suggests starting a discussion thread on iMeet Central to capture training topic suggestions. S21-1: Action remains open. Only suggested topic received to date transferred to WG 3.1 for action. Members are encouraged to submit ideas for future meeting technical presentation topics. S21-2: No updates. Action remains open.
19-2-D	Create a mini-tutorial/wikki on iMeet Central usage.	Steinman	22-1 mtg	S20-2: In-progress. Rebecca to distribute to other NPEC SC when complete. S21-1: Rebecca posted initial draft to iMeet workspace in Jan 2021. SC members asked to review and comment. Due date revised to July 2021. S21-2: Holding item open one more cycle to await SC3 member comments. If no comments received by 12/31/21, item will close in January 2022 with no further action.
21-1-A	Confirm whether any WG 3.4 members are interested in becoming Subcommittee 3 members.	Steinman	21-2 mtg	S21-2: George Kyle is the only person that indictaed interest, but he is retired and has not support to travel to in-person meetings. Rebecca suggests that we 1st focus on recruiting new WG members and then try to get them interested in other activities of the larger subcommittee. Action COMPLETE.
21-1-B	SC-3 members to review the draft SC-3 WG Chair Guideline document on iMeet Central.	All Members	21-2 mtg	S21-2: No comments received by Rebecca. Action CLOSED.
21-1-C	Schedule WebEx for WG chairs to learn how to update iMeet WG membership lists.	Steinman	22-1 mtg	S21-2: Rebecca targetting a phone call in the late fall 2021.

Attachment 5

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

Chair: Tom Crawford

PROJECT	Standard Expiration	PAR Expiration	TITLE	Working Group	Chair	Vice Chair	Cycle Year	21-02	Status/Comments
336	2030	N/A	IEEE Standard Installation, Inspection, and Testing Requirements for Power, Instrumentation, and Control Equipment at Nuclear Facilities	1	P. Ward		1		Standard Published
338	2022	Dec-2022	IEEE Standard Criteria for the Periodic Surveillance Testing of Nuclear Power Generating Station Safety Systems	1	P. Ward		9		PAR Approved 9/27/2018 Preview N22-1
352	2026	N/A	IEEE Guide for General Principles of Reliability Analysis of Nuclear Power Generating Stations and Other Nuclear Facilities	3	K. Nguyen		5		
577	2022	Dec-2022	IEEE Standard Requirements for Reliability Analysis in the Design and Operation of Safety Systems for Nuclear Power Generating Stations	3	K. Nguyen		9		SA Ballot:Comment Resolution 9/2/2021
692	2023	Dec-2022	IEEE Standard Criteria for Security Systems for Nuclear Power Generating Stations	2	Vacant		8		PAR approved 9/27/2018 Allow the std to expire-WG not active
933	2023	Dec-2025	IEEE Guide for Definition of Reliability Program Plans for Nuclear Generating Stations and Other Nuclear Facilities	3	K. Nguyen		8		New PAR approved
1205	2024	N/A	IEEE Guide for Assessing, Monitoring, and Mitigating Aging Effects on Class 1E Equipment used in Nuclear Power Generating Stations	4	R. Steinman	S. Channnarasappa	7		Standard Published 16 May 2014
1819	2026	N/A	Standard for Risk-Informed Categorization and Treatment of Electrical Equipment in Nuclear Facilities	1	P. Ward		5		Standard Published

Attachment 6

Not Used for S21-2 Minutes

Attachment 7

U.S. Nuclear Regulatory Commission (NRC) Liaison Report
IEEE NPEC, ESSB, ICC, & PSRC – July 2021

1. General
   a. The Nuclear Regulatory Commission announced it has awarded 30 grants to 26 academic institutions, in 19 states, totaling nearly $10.7 million.
   b. NRC Names Andrea Veil as Director of the Office of Nuclear Reactor Regulation
   c. Commissioner Caputo leaving the agency June 30.

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, NEI 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) 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 194 inspection completed. When all inspections are completed, the staff will perform technical evaluations to determine the adequacy of VII as implemented by licensees to address the OPC concerns and communicate the results to the Commission.

   b. Environmental Qualification (EQ) Inspections have been completed.
      - The Power Operated Valve (POV) inspections started at the beginning of 2020 and no major or generic 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.

   c. Subsequent License Renewal (Surry SLR issued in May 2021. North Anna, Point Beach, and Oconee reviews currently underway)

   d. Vendor Inspections
      - WEC (ML21064A221)
      - Ametek Solidstate Controls (ML20315A059)
      - C&D Technologies (ML20274A247)
      - EnerSys (ML20280A327)
      - Valcor Engineering (ML20216A590)
      - EnerSys (ML20097F449)

3. New Reactors

   a. none

4. Advanced Reactors

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

5. Rulemaking

   a. The NRC staff is developing 10 CFR Part 53 rulemaking, which will establish a new framework for licensing and regulating advanced nuclear reactors. Public meetings with stakeholders are ongoing.

6. Research

   a. Below is the status of some of the RGs as well as additional updates:

      i. RG 1.89 (60780-323) – the public comment period has closed, and we are currently addressing comments.
      ii. Status of RG to endorse IEEE Std. 741 – expected to have draft out for public comment by the end of FY2021
      iii. RG 1.9 (IEEE Stds. 387 & 2420) – the public comment period has closed, have addressed comments, currently preparing for an ACRS presentation, and continuing towards publication this summer.
      iv. RG to endorse IEEE 1205 – expected to have draft out for public comment by the end of FY2021
      v. RG to endorse IEEE Std. 1819 – draft out for public comment (TBD)
      vi. RG to endorse IEEE 352 & 577 on reliability – draft out for public comment (TBD)

   b. In 2014, NRR submitted user need requests (UNR 2011-014 and UNR 2016-014) 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 objectives of this research are: 1) to confirm the adequacy of condition monitoring methods, 2) confirm the condition-based qualification methodology, 3) confirm acceleration factors for the accelerated aging process, and (4) validate service life prediction.

   c. The NIST project is to be completed by September 2021. A contract is in preparation to be awarded late summer 2021 for LOCA testing of cable samples, post-test analysis and preparation of an overall NUREG that will cover both the NIST results as well as the overall project analysis and conclusions.

   d. The submerged cable tan delta test criteria research has been completed. The Research Information Letter should be published summer 2021.

7. 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. 2021-07-01 - Updated Notification of Potential Defect - 300V, 250A Clamp Diodes

ii. 2021-05-01 - Final Report of Notification of Potential Defect (A070 Controller Boards)

8. Generic Communications

a. Information Notice (IN)-21-01- Lessons Learned from NRC Inspections of Design-Basis Capability of Power-Operated Valves at Nuclear Power Plants

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

IEEE

INSTRUCTIONS FOR CHAIRS OF STANDARDS DEVELOPMENT ACTIVITIES

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

- Show the following slides (or provide them beforehand)
- Advise the standards development group participants that:
- IEEE SA's copyright policy is described in Clause 7 of the IEEE SA Standards Board Bylaws and Clause 6.1 of the IEEE SA Standards Board Operations Manual;
- 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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- For material that is not previously Published, IEEE is automatically granted a license to use any material that is presented or submitted.

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

Attachment 10

NPEC Subcommitee SC-3

Operations, Maintenance, Aging, Testing, and Reliability

SC-3 Standards Schedule

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2017-2	336		577	
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2028-1	338		577	
2028-2	338		577	
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	Standard		Age as of:	Time left	PAR	
STD	Approved	Expires	07/31/2021	(yrs)	Expires	
336	09/24/2020	09/24/2030	0.9	9.1	-	
338	02/06/2012	02/06/2022	9.5	0.5	12/2022	
352	12/07/2016	12/07/2026	4.7	5.4	-	
577	08/30/2012	08/30/2022	8.9	1.1	12/2022	
692	08/23/2013	08/23/2023	7.9	2.1	12/2022	Allow to Expire
933	12/11/2013	12/11/2023	7.6	2.4	12/2025	
1205	03/27/2014	03/27/2024	7.3	2.7	-	
1819	09/22/2016	09/22/2026	4.9	5.1	-	

Balloting and Approval

Includes:

1 Preview, ballot pool, ballot, receive comments

2 Resolve comments, recirc

3 Submit to/ revcom approval/publish

Attachment 11

U.S. NUCLEAR REGULATORY COMMISSION

May 2006
Revision 1

REGULATORY GUIDE

OFFICE OF NUCLEAR REGULATORY RESEARCH

REGULATORY GUIDE 1.201

(For Trial Use)

(Previously issued for trial use, January 2006)

GUIDELINES FOR CATEGORIZING STRUCTURES, SYSTEMS, AND COMPONENTS IN NUCLEAR POWER PLANTS ACCORDING TO THEIR SAFETY SIGNIFICANCE

A. INTRODUCTION

The U.S. Nuclear Regulatory Commission (NRC) has promulgated regulations to permit power reactor licensees and license applicants to implement an alternative regulatory framework with respect to "special treatment," where special treatment refers to those requirements that provide increased assurance beyond normal industrial practices that structures, systems, and components (SSCs) perform their design-basis functions. Under this framework, licensees using a risk-informed process for categorizing SSCs according to their safety significance can remove SSCs of low safety significance from the scope of certain identified special treatment requirements.

The genesis of this framework stems from Option 2 of SECY-98-300, "Options for Risk-Informed Revisions to 10 CFR Part 50, 'Domestic Licensing of Production and Utilization Facilities'," dated December 23, 1998.[1] In that Commission paper, the NRC staff recommended developing risk-informed approaches to the application of special treatment requirements to reduce unnecessary regulatory burden related to SSCs of low safety significance by removing such SSCs from the scope of special treatment requirements. The Commission subsequently approved the NRC staff's rulemaking plan and issuance of an Advanced Notice of Proposed Rulemaking (ANPR) as outlined in SECY-99-256, "Rulemaking Plan for Risk-Informing Special Treatment Requirements," dated October 29, 1999.

[1] Commission papers cited in this trial regulatory guide are available through the NRC's public Web site at http://www.nrc.gov/reading-rm/doc-collections/commission/secys/, and the related *Federal Register* notices are available through the Federal Register Web site sponsored by the Government Printing Office (GPO) at http://www.gpoaccess.gov/fr/index.html.

The Commission published the ANPR in the *Federal Register* (65 FR 11488) on March 3, 2000, and subsequently published a proposed rule for public comment (68 FR 26511) on May 16, 2003. Then, on November 22, 2004, the Commission adopted a new section, referred to as §50.69, within Title 10, Part 50, of the *Code of Federal Regulations*, on risk-informed categorization and treatment of SSCs for nuclear power plants (69 FR 68008).

This trial regulatory guide describes a method that the NRC staff considers acceptable for use in complying with the Commission's requirements in §50.69 with respect to the categorization of SSCs that are considered in risk-informing special treatment requirements. This categorization method uses the process that the Nuclear Energy Institute (NEI) described in Revision 0 of its guidance document NEI 00-04, "10 CFR 50.69 SSC Categorization Guideline," dated July 2005.[2] Specifically, this process determines the safety significance of SSCs and categorizes them into one of four risk-informed safety class (RISC) categories.

The NRC issued a draft of this guide, Draft Regulatory Guide DG-1121, for public review and comment as part of the §50.69 rulemaking package in May 2003. The staff subsequently received and addressed public comments in developing the previous revision of this guide, which the agency published in January 2006, and has since incorporated additional stakeholder comments in preparing the current revision. However, since this is a new regulatory approach to categorizing SSCs, and to ensure that the final guidance adequately addresses lessons learned from the initial applications, the NRC decided to issue this guide for trial use. Therefore, this trial regulatory guide does not establish any final staff positions for purposes of the Backfit Rule, 10 CFR 50.109, and may continue to be revised in response to experience with its use. As such, any changes to this trial guide prior to staff adoption in final form will not be considered to be backfits as defined in 10 CFR 50.109(a)(1). This will ensure that the final regulatory guide adequately addresses lessons learned from regulatory review of pilot and follow-on applications, and that the guidance is sufficient to enhance regulatory stability in the review, approval, and implementation of probabilistic risk assessments (PRAs) and their results in the risk-informed categorization process required by §50.69.

The NRC issues regulatory guides to describe to the public methods that the staff considers acceptable for use in implementing specific parts of the agency's regulations, to explain techniques that the staff uses in evaluating specific problems or postulated accidents, and to provide guidance to applicants. Regulatory guides are not substitutes for regulations, and compliance with regulatory guides is not required.

This regulatory guide contains information collections that are covered by the requirements of 10 CFR Part 50 which the Office of Management and Budget (OMB) approved under OMB control number 3150-0011. The NRC may neither conduct nor sponsor, and a person is not required to respond to, an information collection request or requirement unless the requesting document displays a currently valid OMB control number.

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[2] NEI 00-04, "10 CFR 50.69 SSC Categorization Guideline," is available through the NRC's Agencywide Documents Access and Management System (ADAMS), http://www.nrc.gov/reading-rm/adams/web-based.html, under Accession #ML052910035.

B. DISCUSSION

This trial regulatory guide provides interim guidance for complying with the NRC's requirements in §50.69, by using the process described in Revision 0 of NEI 00-04 to determine the safety significance of SSCs and place them into the appropriate RISC categories. The safety significance of SSCs is determined using an integrated decision-making process, which incorporates both risk and traditional engineering insights. The safety functions of SSCs include both the design-basis functions (derived from the safety-related definition) and functions credited for preventing and/or mitigating severe accidents. Treatment requirements are then commensurately applied for the categorized SSCs to maintain their functionality.

Figure 1 provides a conceptual understanding of the new risk-informed SSC categorization scheme. The figure depicts the current safety-related versus nonsafety-related SSC categorization scheme with an overlay of the new safety-significance categorization. In the traditional deterministic approach, SSCs were generally categorized as either "safety-related" (as defined in 10 CFR 50.2) or "nonsafety-related." This division is shown by the vertical line in the figure. Risk insights, including consideration of severe accidents, can be used to identify SSCs as being either safety-significant[3] or low-safety-significant (LSS) (as shown by the horizontal line in the figure). This results in SSCs being grouped into one of four categories, as represented by the four boxes in Figure 1.

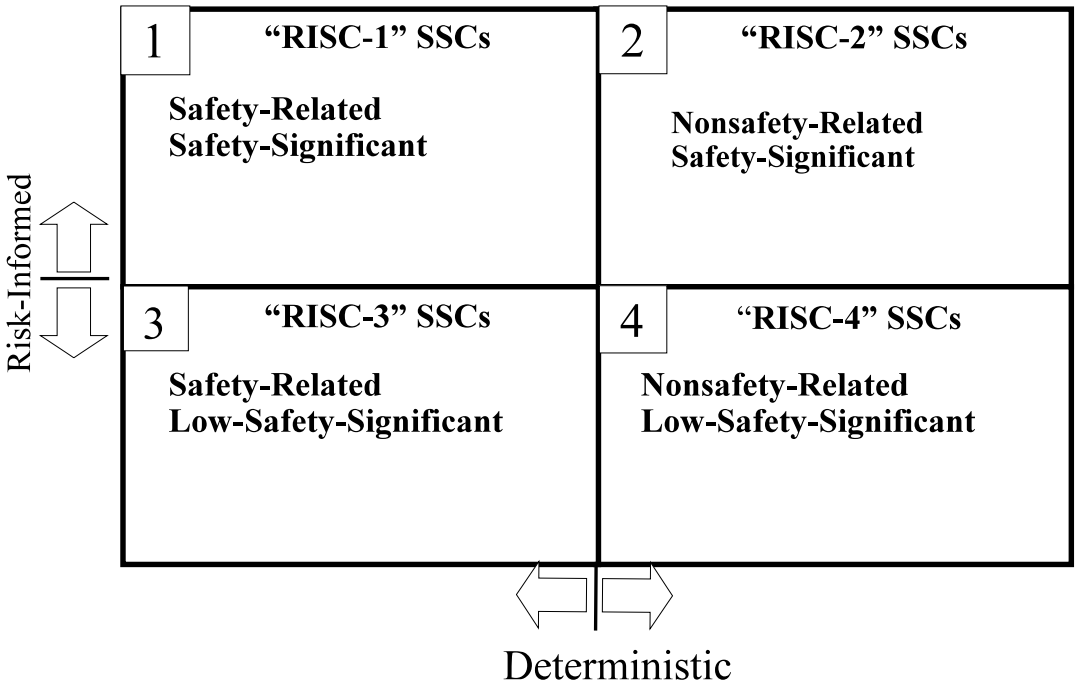

Figure 1. §50.69 RISC Categories

[3] NEI 00-04 uses the term "high-safety-significant (HSS)" to refer to SSCs that perform safety-significant functions. The NRC understands HSS to have the same meaning as "safety-significant" (i.e., SSCs that are categorized as RISC-1 or RISC-2), as used in §50.69.

RISC-1 SSCs are safety-related SSCs that the risk-informed categorization process determines to be significant contributors to plant safety. Licensees must continue to ensure that RISC-1 SSCs perform their safety-significant functions consistent with the categorization process, including those safety-significant functions that go beyond the functions defined as safety-related for which credit is taken in the categorization process.

RISC-2 SSCs are those that are defined as nonsafety-related, although the risk-informed categorization process determines that they are significant contributors to plant safety on an individual basis. The NRC staff recognizes that some RISC-2 SSCs may not have existing special treatment requirements. As a result, the focus for RISC-2 SSCs is on the safety-significant functions for which credit is taken in the categorization process.

RISC-3 SSCs are those that are defined as safety-related, although the risk-informed categorization process determines that they are not significant contributors to plant safety. Special treatment requirements are removed for RISC-3 SSCs and replaced with high-level requirements. These high-level requirements are intended to provide sufficient regulatory treatment, such that these SSCs are still expected to perform their safety-related functions under design-basis conditions, albeit at a reduced level of assurance compared to the current special treatment requirements. However, §50.69 does not allow these RISC-3 SSCs to lose their functional capability or be removed from the facility.

Finally, RISC-4 SSCs are those that are defined as nonsafety-related, and that the risk-informed categorization process determines are not significant contributors to plant safety. Section 50.69 does not impose alternative treatment requirements for these RISC-4 SSCs. However, as with the RISC-3 SSCs, changes to the design bases of RISC-4 SSCs must be made in accordance with current applicable design change control requirements (if any), such as those set forth in 10 CFR 50.59.

The NRC staff believes that the guidance in NEI 00-04 provides an acceptable approach for use in categorizing SSCs to support the implementation of §50.69. Section C of this trial regulatory guide provides the NRC staff's regulatory positions on NEI 00-04.

C. REGULATORY POSITION

This trial regulatory guide provides interim guidance for trial use of the process and criteria for determining the safety significance of SSCs using the categorization process described in Revision 0 of NEI 00-04, "10 CFR 50.69 SSC Categorization Guideline," dated July 2005.

1. Other Documents Referenced in Revision 0 of NEI 00-04

Revision 0 of NEI 00-04 references numerous other documents, but the NRC's endorsement of Revision 0 of NEI 00-04 does not constitute an endorsement of those other referenced documents.

2. Use of Examples in Revision 0 of NEI 00-04

Revision 0 of NEI 00-04 includes examples to supplement the guidance. However, the NRC's endorsement of Revision 0 of NEI 00-04 does not constitute a determination that the examples are applicable for all licensees. A licensee or applicant must ensure that a given example is applicable to its particular circumstances before implementing the guidance as described in that example.

3. Use of Methods Other Than Revision 0 of NEI 00-04

To meet the requirements of §50.69 for categorization of SSCs, licensees may use methods other than those set forth in Revision 0 of NEI 00-04. The NRC staff will determine the acceptability of such other methods by evaluating them against the requirements of §50.69.

4. Limitations of Types of Analyses Used in Implementing Revision 0 of NEI 00-04

In its Final Policy Statement on Use of PRA Methods in Nuclear Regulatory Activities, SP-95-146, dated August 16, 1995, the Commission determined that the use of PRA technology should be increased in all regulatory matters, to the extent supported by state-of-the-art PRA methods and data.[4] Implementation of risk-informed regulation is possible because the development and use of a quantitative PRA requires a systematic and integrated evaluation. Development of a technically defensible quantitative PRA also requires sufficient and structured documentation to allow investigations of all aspects of the evaluation. To meet the requirements of §50.69 for categorization of SSCs, licensees must use risk evaluations and insights that cover the full spectrum of potential events (i.e., internal and external initiating events) and the range of plant operating modes (i.e., full-power, low-power, and shutdown operations).

Revision 0 of NEI 00-04 allows the use of non-PRA-type evaluations (e.g., fire-induced vulnerability evaluation (FIVE), seismic margins analysis (SMA), and NEI guidance in NUMARC 91-06, "Guidelines for Industry Actions to Assess Shutdown Management,"[5] to address shutdown operations), when PRAs have not been performed. Such non-PRA-type evaluations will result in more conservative categorization, in that special treatment requirements will not be allowed to be relaxed for SSCs that are relied upon in such evaluations. The degree of relief that the NRC will accept under §50.69 (i.e., SSCs subject to relaxation of special treatment requirements) will be commensurate with the assurance provided by the evaluation.

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[4] The Commission's Final Policy Statement on Use of PRA Methods in Nuclear Regulatory Activities, SP-95-146, announced in the Federal Register (60 FR 42622) on August 16, 1995, is available through the NRC's public Web site at http://www.nrc.gov/reading-rm/doc-collections/commission/policy/60fr42622.pdf.

[5] Copies of NUMARC 91-06, "Guidelines for Industry Actions to Assess Shutdown Management," dated December 1991, may be obtained from the Nuclear Energy Institute, Attention: Ms. Tonya Cameron, 1776 I Street, NW, Suite 400, Washington, DC 20006-3708 (phone: 202-739-8148).

5. Technical Adequacy Attributes of Analyses Implementing Revision 0 of NEI 00-04

The peer review process described in NEI 00-02, "Probabilistic Risk Assessment Peer Review Process Guidance,"[6] as amended to incorporate NRC comments provided in the NRC's letter to NEI, dated April 2, 2002,[7] and as endorsed in Regulatory Guide (RG) 1.200, "An Approach for Determining the Technical Adequacy of Probabilistic Risk Assessments," provides a mechanism for licensees to determine if their internal events PRA meets the attributes required for this application.[8] An alternative to NEI 00-02 is the American Society for Mechanical Engineers (ASME) Standard ASME RA-S-2002, "Standard for Probabilistic Risk Assessments for Nuclear Power Plant Applications,"[9] as amended to incorporate NRC comments and as endorsed in RG 1.200. Both NEI 00-02 and the ASME Standard are endorsed for trial use by the NRC in RG 1.200, with appropriate clarifications and exceptions. The licensee or applicant is expected to document the technical adequacy of their internal events PRA for this application, in accordance with the documents mentioned above, as endorsed in RG 1.200.

However, the documents mentioned above currently cover only internal events at full power. There is not currently a similarly endorsed standard for the external events, internal fires, and low-power and shutdown PRAs, or for non-PRA-type analyses (e.g., FIVE, SMA, NUMARC 91-06), and Section 3.3 of Revision 0 of NEI 00-04 provides only limited guidance for determining the technical adequacy attributes required for these types of analyses for this specific application. Therefore, for §50.69 submittals that are received before the NRC endorses standards for external events, internal fires, and low-power and shutdown PRAs, as well as non-PRA-type analyses, the NRC staff expects the licensee or applicant to document the bases for why the method employed is technically adequate for this application. Toward that end, as part of the plant-specific application requesting to implement §50.69, the licensee or applicant will provide the bases supporting the technical adequacy of its external events, internal fires, and low-power and shutdown PRAs, and non-PRA-type analyses for this application.

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[6] Copies of NEI 00-02, "Probabilistic Risk Assessment Peer Review Process Guidance," Rev. A3, dated March 20, 2000, may be obtained from the Nuclear Energy Institute, Attention: Mr. Biff Bradley, 1776 I Street, NW, Suite 400, Washington, DC 20006-3708 (phone: 202-739-8083).

[7] The letter from Cynthia A. Carpenter (NRC) to Anthony R. Pietrangelo (NEI), dated April 2, 2002, concerns NRC staff review guidance for PRA results used to support Option 2 based upon NEI 00-04, supported by NEI 00-02. This letter is available electronically through the NRC's public Web site at http://adamswebsearch2.nrc.gov/idmws/doccontent.dll?ID=004066065:&LogonId=b1d7d050903b9714e6861221ea531aab, and through the NRC's Agencywide Documents Access and Management System (ADAMS), http://www.nrc.gov/reading-rm/adams/web-based.html, under Accession #ML020930632.

[8] Single copies of regulatory guides, both active and draft, and draft NUREG documents may be obtained free of charge by writing the Reproduction and Distribution Services Section, OCIO, USNRC, Washington, DC 20555-0001, or by fax to (301)415-2289, or by email to DISTRIBUTION@nrc.gov. Active guides may also be purchased from the National Technical Information Service (NTIS)on a standing order basis. Details on this service may be obtained by contacting NTIS at 5285 Port Royal Road, Springfield, Virginia 22161, online at http://www.ntis.gov, or by telephone at (703) 487-4650. Copies are also available for inspection or copying for a fee from the NRC's Public Document Room (PDR), which is located at 11555 Rockville Pike, Rockville, Maryland; the PDR's mailing address is USNRC PDR, Washington, DC 20555-0001. The PDR can also be reached by telephone at (301) 415-4737 or (800) 397-4205, by fax at (301) 415-3548, and by email to PDR@nrc.gov. Copies of certain guides and many other NRC documents are available electronically through the Public Electronic Reading Room on the NRC's public Web site, http://www.nrc.gov, and through the NRC's Agencywide Documents Access and Management System (ADAMS) at http://www.nrc.gov/reading-rm/adams.html.

[9] ASME RA-S-2002, "Standard for Probabilistic Risk Assessments for Nuclear Power Plant Applications," is available through the Web-based product catalog sponsored by the American Society for Mechanical Engineers at http://catalog.asme.org/Codes/PrintBook/RAS_2002_Probabilistic_Risk.cfm?CATEGORY=CS&StartRow=101.

Industry standards have been or are being prepared for external events, internal fires, and low-power and shutdown PRAs. For §50.69 submittals received after a standard is developed by the industry and endorsed by the NRC via revisions to RG 1.200, the NRC expects the licensee or applicant to use that standard to demonstrate the technical adequacy of the corresponding aspect of the PRA, if it is used to support the categorization. This is consistent with the Commission's phased approach to PRA quality.[10] The licensee or applicant should provide, as part of the plant-specific application requesting to implement §50.69, the bases supporting the technical adequacy of their PRAs for this application per the standards as endorsed by RG 1.200.

6. Uncertainty Considerations in Revision 0 of NEI 00-04

The staff notes that the purpose of the sensitivity studies performed as part of the risk categorization process is to address the impact of parameter and model uncertainties on the categorization. The staff understands the phrase "applicable sensitivity studies identified in the characterization of PRA adequacy" (in Tables 5.2 through 5.5 of Revision 0 of NEI 00-04), as meaning those uncertainties not addressed by the other sensitivity studies in Tables 5.2 through 5.5. These uncertainties are typically identified via PRA peer reviews or self-assessments that are associated with the licensee's choice of specific models and assumptions, as discussed in Section 2.2.5.5 of Regulatory Guide 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis."[11]

7. Common-Cause Failure and Degradation Mechanism Considerations in Revision 0 of NEI 00-04

The NRC staff notes that mechanisms that could lead to large increases in core damage frequency (CDF) and large early release frequency (LERF), which could potentially invalidate the assumptions underlying the categorization process, including the risk sensitivity study, are the emergence of extensive common-cause failures (CCFs) impacting multiple systems and significant unmitigated degradation. However, for these types of impacts to occur, the mechanisms that lead to failure, in the absence or relaxation of treatment, would have to be sufficiently rapidly developing or not self-revealing, such that there would be few opportunities for early detection and corrective action. Section 12.4 of NEI 00-04 describes an acceptable performance-based approach to address these concerns.

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[10] SECY-04-0118, "Plan for the Implementation of the Commission's Phased Approach to Probabilistic Risk Assessment Quality," dated July 13, 2004, is available through the NRC's public Web site at http://www.nrc.gov/reading-rm/doc-collections/commission/secys/2004/secy2004-0118/2004-0118scy.html or http://www.nrc.gov/reading-rm/doc-collections/commission/secys/2004/secy2004-0118/2004-0118scy.pdf#pagemode=bookmarks.

[11] Single copies of regulatory guides, both active and draft, and draft NUREG documents may be obtained free of charge by writing the Reproduction and Distribution Services Section, OCIO, USNRC, Washington, DC 20555-0001, or by fax to (301)415-2289, or by email to DISTRIBUTION@nrc.gov. Active guides may also be purchased from the National Technical Information Service (NTIS)on a standing order basis. Details on this service may be obtained by contacting NTIS at 5285 Port Royal Road, Springfield, Virginia 22161, online at http://www.ntis.gov, or by telephone at (703) 487-4650. Copies are also available for inspection or copying for a fee from the NRC's Public Document Room (PDR), which is located at 11555 Rockville Pike, Rockville, Maryland; the PDR's mailing address is USNRC PDR, Washington, DC 20555-0001. The PDR can also be reached by telephone at (301) 415-4737 or (800) 397-4205, by fax at (301) 415-3548, and by email to PDR@nrc.gov. Copies of certain guides and many other NRC documents are available electronically through the Public Electronic Reading Room on the NRC's public Web site, http://www.nrc.gov, and through the NRC's Agencywide Documents Access and Management System (ADAMS) at http://www.nrc.gov/reading-rm/adams.html.

Alternatively, those aspects of treatment that are necessary to prevent significant SSC degradation or failure from known mechanisms, to the extent that the results of the risk sensitivity study would be invalidated, could be identified by the licensee or applicant, and such aspects of treatment would be retained. This alternative approach would require an understanding of the degradation and common-cause failure mechanisms and the elements of treatment that are sufficient to prevent them. As an example of how this alternative approach might be implemented, the known existence of certain degradation mechanisms affecting pressure boundary SSC integrity could be used to support retaining the current requirements regarding inspections or examinations or use of the risk-informed ASME Code Cases, as accepted by the NRC's regulatory process. As another example, changing levels of treatment on several similar SSCs that might be sensitive to potential CCF would require consideration of whether the planned monitoring and corrective action program, or other aspects of treatment, would be effective to sufficiently minimize the potential for CCFs impacting multiple systems, such that the categorization process (including the risk sensitivity study) remains valid.

8. Importance of, and Interrelationships within, the Processes Described in Revision 0 of NEI 00-04

The NRC staff notes that the implementation of all processes described in NEI 00-04 (i.e., Sections 2 through 12) is integral to providing reasonable confidence in the evaluations required by §50.69(c)(1)(iv). All aspects of the guidance are important and interrelated. Sections 2 through 7 and Section 10 of NEI 00-04 describe the processes used to determine the set of SSCs, for which unreliability is adjusted in the risk sensitivity study described in Section 8, which is used to confirm that the categorization process results in acceptably small increases to CDF and LERF. Section 9 describes the integrated decisionmaking panel (IDP) function of reviewing and ensuring that the system functions and operating experience have been appropriately considered in the process. Finally, Sections 11 and 12 describe the processes that provide reasonable confidence that the validity of the categorization process (including the risk sensitivity study) is maintained. Thus, all aspects of NEI 00-04 must be followed to achieve reasonable confidence in the evaluations required by §50.69(c)(1)(iv).

9. NRC Endorsement of Revision 0 of NEI 00-04; Specific Clarifications

Revision 0 of NEI 00-04 presents an approach that the NRC staff considers acceptable for use in meeting the categorization requirements set forth in §50.69, subject to the above regulatory positions and the following specific clarifications.

Section 1.2

The second paragraph of Section 1.2 discusses a third set of equipment referred to as "important-to-safety" and its relation to safety-related and nonsafety-related equipment. This usage is inconsistent with the NRC's regulatory usage. The NRC staff's general endorsement of NEI 00-04 does not constitute an endorsement of this usage of the term "important-to-safety." In the context of this guidance, the NRC staff understands this term as referring to nonsafety-related SSCs that have been determined to be important. These nonsafety-related SSCs will be categorized as either RISC-2 or RISC-4, as determined by their safety significance, in accordance with the §50.69 categorization process.

The fourth paragraph of Section 1.2 states that the integrated decision-making process "…blends risk insights, new technical information and operational feedback…." The NRC staff understands this phrase, and similar phrases (e.g., the third guiding principle in Section 1.3), as meaning that the integrated decision-making process must systematically consider the quantitative and qualitative information available regarding the various modes of plant operation and initiating events, including PRA quantitative risk results and insights (e.g., CDF, LERF, and importance measures); deterministic, traditional engineering factors and insights (e.g., defense-in-depth, safety margins, and containment integrity);

and any other pertinent information (e.g., industry and plant-specific operational and performance experience, feedback, and corrective actions program) in the categorization of SSCs.

Section 1.3

The second guiding principle in Section 1.3 states that deterministic or qualitative information should be used if no PRA information exists related to a particular hazard or operating mode. This principle is not to be understood to mean that deterministic or qualitative information should be used ***only*** when no PRA information exists. The NRC staff believes that the integrated decision-making process must systematically consider the quantitative and qualitative information available regarding the various modes of operation and initiating events, including PRA, quantitative risk results and insights; deterministic, traditional engineering factors and insights, and any other pertinent information in the categorization of SSCs.

Section 4.0

In Section 4.0 and Section 5.1, NEI 00-04 references ASME Code Case N-660, "Risk-Informed Safety Classification for Use in Risk-Informed Repair/Replacement Activities," as an approach for addressing the pressure-retaining function or passive function of active components.[12] The version of ASME Code Case N-660 that is acceptable to the NRC staff for use in this application is the version identified in RG 1.147, "Inservice Inspection Code Case Acceptability, ASME Section XI, Division 1," subject to any conditions or limitations specified therein. Alternatives to this Code Case may be submitted for NRC review and approval as part of a specific §50.69 application.

Section 6.2

In Section 6.2, the NEI 00-04 guidance contains criteria for confirming that an SSC is LSS (or recategorizing it as safety-significant) based on defense-in-depth considerations, which include criteria related to containment bypass, containment isolation, early hydrogen burns, and long-term containment integrity. The containment isolation criteria listed in this section of NEI 00-04 are applicable to containment penetrations. The NRC staff understands the use of the phrase "containment penetration" as including electrical penetrations, air locks, equipment hatches, and piping penetrations (including containment isolation valves). Further, the staff notes that the containment isolation criteria in this section of NEI 00-04 are separate and distinct from those set forth in §50.69(b)(1)(x). The criteria in §50.69(b)(1)(x) are to be used in determining which containment penetrations and valves may be exempted from the Type B and Type C leakage testing requirements in both Options A and B of Appendix J to 10 CFR Part 50, but the §50.69(b)(1)(x) criteria are not used to determine the proper RISC category for containment isolation valves or penetrations.

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[12] Code Cases associated with the ASME Boiler and Pressure Vessel Code are available through the Web-based ASME Digital Store sponsored by the American Society for Mechanical Engineers at http://store.asme.org/category.asp?catalog%5Fname=Codes+and+Standards&category%5Fname=Boilers+and+Pressure+Vessels&Page=1.

Section 8

The risk sensitivity study addresses the impact of potential increases in the failure rates of all RISC-3 SSCs resulting from the change in treatment. Section 8 of NEI 00-04 includes commentary on the consideration of known degradation mechanisms and common-cause interactions and failures in PRAs, which includes the observation that intersystem common-cause failures are not typically modeled because factors such as design diversity and different service environments ensure they are negligible contributors to risk. The NRC staff notes that because intersystem common-cause failures are typically not included in PRA models and, therefore, are not addressed by the risk sensitivity study. Therefore, the licensee or applicant relies upon the alternative treatment and feedback requirements, including corrective action provisions, established in §50.69 and discussed in Section 12 of NEI 00-04, to ensure that any significant intersystem common-cause failure mechanisms would be identified and corrected so that the assumptions underlying the categorization are not invalidated.

Section 9.2

Section 9.2 of NEI 00-04 limits the IDP review of risk information to active functions and SSCs. The NRC staff believes that this limitation in review scope is attributable to the reliance of NEI 00-04 on ASME Code Case N-660 to address passive functions, which is performed by an expert panel. The expert panel used in performing ASME Code Case N-660 may be the same panel as the IDP used in the §50.69 categorization process; however, it is not required to be the same panel. As such, the IDP review of risk information should address both active and passive functions and SSCs.

Section 11.2

The NEI 00-04 guidance allows licensees to implement different approaches, depending on the scope of their PRA (e.g., the approach if a seismic margins analyses is relied upon is different and more limiting than the approach if a seismic PRA is used). As part of the NRC's review and approval of a licensee's or applicant's application requesting to implement §50.69, the NRC staff intends to impose a license condition that will explicitly address the scope of the PRA and non-PRA methods used in the licensee's categorization approach. If a licensee or applicant wishes to change its categorization approach and the change is outside the bounds of the NRC's license condition (e.g., switch from a seismic margins analysis to a seismic PRA), the licensee or applicant will need to seek NRC approval, via a license amendment, of the implementation of the new approach in their categorization process. The focus of the NRC staff's review and approval will be on the technical adequacy of the methodology and analyses relied upon for this application.

Section 12.1

The guidance in Section 12 of NEI 00-04 refers to the need to update the risk information and categorization process if the categorization results are "…more than minimally affected." The NRC staff understands that being "more than minimally affected" would include a situation in which there is indication that an SSC that is categorized as low safety significant would be changed to safety-significant. The NRC staff also recognizes that the licensee or applicant may change the categorization and/or treatment aspects of SSCs so that there is reasonable confidence that the cumulative risk increase from implementing §50.69 is maintained acceptably small.

Section 12.4

The guidance in Section 12.4 of NEI 00-04 defines CCF as "…the simultaneous failure of more than one SSC to perform its function, due to the same cause…," and Appendix B to NEI 00-04 provides a similar definition, but with "simultaneous" replaced by "during a short period of time." These definitions are derived from their use in a PRA context, where the emphasis is on failure of more than one SSC during a specified mission time. The staff notes that the licensee's or applicant's corrective action program associated with the implementation of §50.69 should address the potential for SSC failures at different times resulting from a common cause, even if they are revealed at different times.

In addition, the staff notes that the guidance in Section 12.4 that potential adverse trends need not be evaluated until the number of expected failures for a group of SSCs doubles may not be practical for SSCs with low failure rates assumed in the PRA.

D. IMPLEMENTATION

The purpose of this section is to provide information to applicants and licensees regarding the NRC staff's plans for using this trial regulatory guide. No backfitting is intended or approved in connection with the issuance of this guide.

Except in those cases in which an applicant or licensee proposes or has previously established an acceptable alternative method for complying with the categorization portion of §50.69, the methods described and/or endorsed in this guide will be used in evaluating licensee compliance with the requirements of §50.69 for the categorization of SSCs.

REGULATORY ANALYSIS

The NRC staff did not prepare a separate regulatory analysis for this trial regulatory guide. The regulatory analysis that was prepared for the rulemaking is still applicable, as is its value/impact statement. The regulatory analysis is available in the NRC's Agencywide Documents Access and Management System (ADAMS) at http://www.nrc.gov/reading-rm/adams.html, under Accession #ML022630028.