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

April 4, 2022

MEMORANDUM TO: Louise Lund, Director
Division of Engineering
Office of Nuclear Regulatory Research

Eric Benner, Director
Division of Engineering and External Hazards
Office of Nuclear Reactor Regulation

Mike Franovich, Director
Division of Risk Assessment
Office of Nuclear Reactor Regulation

FROM: Sheila Ray, Senior Electrical Engineer **/RA/**
Electrical Engineering Branch
Division of Engineering and External Hazards
Office of Nuclear Reactor Regulation

Robert Roche-Rivera, Project Manager **/RA/**
Regulatory Guide and Programs Management Branch
Division of Engineering
Office of Nuclear Regulatory Research

SUBJECT: SUMMARY OF THE MARCH 16, 2022, PUBLIC MEETING WITH INDUSTRY AND THE INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE) TO DISCUSS THE NRC STAFF'S CONSIDERATION OF IEEE STANDARD 1819

On March 16, 2022, the U.S. Nuclear Regulatory Commission (NRC) staff held a public meeting via MS Teams with representatives from the nuclear industry, including the Nuclear Energy Institute (NEI), Boiling Water Reactor Owner's Group (BWROG), Pressurized Water Reactor Owner's Group (PWROG), and the Institute of Electrical and Electronics Engineers (IEEE) – Nuclear Power Engineering Committee (NPEC). The purpose of the meeting was to discuss the NRC staff's consideration of IEEE Std 1819-2016, "Standard for Risk-Informed Categorization and Treatment of Electrical Equipment in Nuclear Facilities" for potential endorsement. The public meeting notice can be found in the Agencywide Documents Access and Management System (ADAMS) under Accession No. ML22046A316. The Meeting Agenda and List of Attendees can be found in Enclosures 1 and 2, respectively.

At the beginning of the meeting Robert Roche-Rivera, Codes and Standards Program Manager in the Division of Engineering (DE), Office of Nuclear Regulatory Research (RES), welcomed everyone to the Observation public meeting and explained the ground rules for the meeting and logistics regarding using MS Teams during the meeting. Subsequently, Louise Lund, NRC Standards Executive and Division Director of RES/DE, provided the NRC opening remarks,

including welcoming the audience and thanking them for participating in the meeting, highlighting that the NRC staff has not taken a position yet on the path forward for IEEE Std. 1819, and encouraged the meeting participants to provide feedback on the staff's consideration of the standard. These remarks were followed by opening remarks by Victoria Anderson, Technical Advisor for Engineering and Risk at NEI. Victoria thanked the NRC for the opportunity to engage in further dialogue on IEEE Std. 1819 and highlighted that NEI performed an extensive survey of potential users of the subject IEEE standard and did not find anyone that would use the standard. Further, Victoria commented that NEI's presentation for the meeting would go over how endorsement of the standard could become detrimental to regulatory stability. Victoria's remarks were followed by John White, Chair of IEEE/NPEC. John described IEEE/NPEC's request to NRC for review and endorsement of IEEE Std. 1819 and described that the working group for IEEE Std. 1819 viewed the standard as filling gaps from existing guidance on how to handle electrical and electronic components and systems that have multiple risk values associated with them. John notes that IEEE is an international standards organization and endorsement of an IEEE standard carries a lot of weight worldwide. Further, John commented that while IEEE/NPEC currently recommends endorsement of the 2016 version of IEEE Std. 1819, there have been recent discussions about proposing that the endorsement could be considered for a later version of the standard rather than the 2016 version. Lastly, John added that the standard is important for future reactors and particularly, would be useful for small modular and advanced reactors.

Following the opening remarks, Sheila Ray, Senior Electrical Engineer in the Electrical Engineering branch, in the Office of Nuclear Reactor Regulation (NRR), Division of Engineering and External Hazards (DEX), provided the NRC's presentation, covering background information on the staff's review of the standard, an overview of stakeholder feedback received, discussion of possible paths forward on the NRC staff's consideration of the standard, and request for additional feedback. The slides for this presentation can be found in ADAMS under Accession No. ML22070B120.

The NRC presentation was followed by a presentation from Victoria Anderson on behalf of NEI, BWROG, and PWROG. The presentation covered scope of industry evaluation of IEEE Std. 1819, discussion of industry concerns with potential NRC endorsement of IEEE Std. 1819, discussion of differences between IEEE Std. 1819 and NEI 00-04, and the proposed path forward. Victoria indicated that NEI performed a comprehensive survey of operating reactors, small modular reactors, and other advanced reactor designers and found no end users of IEEE Std. 1819. The industry stated that endorsing IEEE Std. 1819 would reduce clarity in the implementation of Title 10 Code of Federal Regulations (CFR) 50.69, "Risk-informed categorization and treatment of structures, systems and components for nuclear power reactors," and would be an ineffective use of resources. Further, the industry noted that no license amendment requests for implementation of 10 CFR 50.69 reference IEEE Std. 1819. Amongst the industry concerns, the presentation stated that NRC endorsement of IEEE Std. 1819 would result in endorsement of 2 incompatible categorization processes, namely the NEI 00-04 process and the IEEE Std. 1819 process. Further, with respect to the proposed path forward, the presentation recommended cessation of activities related to NRC endorsement of IEEE Std. 1819 and continue implementation of 10 CFR 50.69 via NEI 00-04 as endorsed in RG 1.201. The slides for this presentation can be found in ADAMS under Accession No. ML22070B121.

The presentation by Victoria Anderson was followed by a presentation from Yvonne Williams, Chair of the IEEE/NPEC Subcommittee 3 Working Group 3.1, which maintains IEEE Std. 1819. Yvonne indicated that IEEE Std. 1819 provides methods to categorize electrical systems,

structures, and components and provides a recommended treatment of categorized components commensurate with the safety significance. Further, Annex B of IEEE Std.1819 provides quantitative methods and provides a bridge between risk-informed categorization and other deterministic methods. The presentation covered an overview of IEEE nuclear standard framework, discussion of options for risk-informing IEEE standards and selected option that led to the development of IEEE Std. 1819, comparison of risk-informed safety classifications in IEEE Std. 1819-2016 and NEI 00-04, Revision 0, discussion of categorization and treatment guidance in IEEE Std. 1819, and proposed path forward, namely endorsement of the IEEE Std. 1819 by the NRC. With respect to the recommendation that NRC endorse the standard, the presentation stated that the current guidance has gaps regarding categorization and "special treatment" requirement, that are provided for by IEEE Std. 1819 and that the endorsement of the IEEE Std. 1819 would not invalidate the current guidance. Yvonne requested insights from other groups and participation in the development of the next revision of IEEE Std. 1819. The slides for this presentation can be found in ADAMS under Accession No. ML22070B123.

Summary of Discussions:

Wendell Morton, Branch Chief in NRC/NRR/DEX, asked a clarification question pertaining to the industry presentation discussion about lack of applicability and specificity of the standard to electrical components. Industry representatives clarified that the standard doesn't contain any specific or unique information particular to electrical equipment and that electrical equipment does not require additional or a different classification relative to the currently endorsed guidance in NEI 00-04. Yvonne Williams, commented on the types of electrical equipment that are addressed by the IEEE Std. 1819, including, power supplying equipment such as motor control centers that may supply different components with varying risk categorizations, amongst others. Yvonne further added that electrical equipment is different than mechanical equipment, which is one of the reasons the standard was created.

Both the Pressurized and Boiling Water Reactor Owners' Groups indicated that they collaborated with NEI to develop the industry feedback. Industry representatives noted that licensees may have challenges when complying with 10 CFR 50.69, such that both the NEI and IEEE documents would be implemented if IEEE Std. 1819 is endorsed. Further, industry representatives noted that the NEI and IEEE methods are different and could result in different outcomes, where both could be acceptable to comply with the regulations. IEEE representatives clarified that they had not seen any differences between the NEI and IEEE documents. Further, IEEE representatives indicated they had not heard specifics on why the IEEE standard is not technically acceptable.

NRC staff inquired about challenges to implementing 10 CFR 50.69. Industry representatives commented that there was no difficulty in implementing the NEI guidance for electrical components and that the industry had not particularly surveyed licensees who applied the NEI guidance for electrical components.

Further discussion ensued with respect to any anticipated use of the IEEE Std. 1819 by industry. Industry representatives indicated that they have performed a survey on whether licensees or applicants would plan on using the IEEE Std. 1819 standard and the results of the survey indicated that there are no plans by licensees or applicants for using the IEEE standard and that there are no indications that NEI 00-04 would be insufficient for electrical components.

It was noted that the South Texas Project pilot served as the framework for the IEEE Standard. Kenn Miller, Senior Electrical Engineer in NRC/RES/DE, remarked that NEI and IEEE use

different processes to approve the documents. Specifically, IEEE Std. 1819 is a consensus standard and NEI 00-04 is an industry document. IEEE representatives indicated that while IEEE views IEEE Std. 1819 to be complementary to NEI 00-04, they are seeking further collaboration to address any differences that may exist between IEEE Std.1819 and NEI 00-04. Furthermore, IEEE indicated that they would provide written feedback in response to the industry slides.

The floor was opened to questions from the public, but no additional questions or comments were received.

After the public comment period, the NRC, Industry, and IEEE provided closing remarks. The closing remarks by NRC, provided by Louise Lund, Eric Benner, and Mike Franovich, expressed their thanks for the information presented and discussions, and commented that additional collaboration and discussions may need to take place with respect to the path forward for the subject standard. Victoria Anderson provided the closing remarks on behalf of industry which reiterated that industry does not plan on using the standard. John White provided closing remarks on behalf of IEEE/NPEC, describing IEEE/NPEC's perspective on the need for the standard given the efforts by and participation from different organizations in its development. The meeting was adjourned at 3:07 p.m.

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DISTRIBUTION:
L. Lund
E. Benner
M. Franovich
J. McKirgan
M. Khanna
R. Pascarelli
C. Cook
M. McConnell
K. Miller
K. Nguyen
T. Scarbrough
A. Pulvirenti

ADAMS Accession No.: ML22091A227

OFFICE	RES/DE/RGPMB	NRR/DEX/EEEB	RES/DE/RGPMB	RES/DE/RGPMB	NRR/DEX/EEEB
NAME	R. Roche-Rivera	S. Ray	B. Curran	M. Rahimi w/comments	W. Morton
DATE	04/04/2022	04/04/2022	04/04/2022	04/05/2022	04/07/2022

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U.S. NUCLEAR REGULATORY COMMISSION

MARCH 16, 2022, OBSERVATION PUBLIC MEETING TO DISCUSS THE STAFF'S CONSIDERATION OF IEEE STD 1819-2016 FOR POTENTIAL ENDORSEMENT

Meeting Agenda

March 16, 2022

1:30 PM to 4:30 PM

Time	Topic	Speaker
1:30 PM	Welcome and Introductions	NRC
1:35 PM	Opening Remarks	NRC/NEI/IEEE
1:45 PM	Discussion	NRC/NEI/BWROG/PWROG/IEEE
4:00 PM	Opportunity for Public Comments	Members of the Public
4:20 PM	Closing Remarks	NRC/NEI/IEEE
4:30 PM	Meeting Adjourn	--

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MARCH 16, 2022, OBSERVATION PUBLIC MEETING TO DISCUSS THE STAFF'S CONSIDERATION OF IEEE STD 1819-2016 FOR POTENTIAL ENDORSEMENT

List of Attendees

March 16, 2022

NRC Attendees	Public
Eric Benner	Victoria Anderson
Mihaela Biro	Denver G. Atwood
Christopher Cook	Jason Bellamy
Jonathan Evans	Mark Bowman
Mike Franovich	Rob Burg
Louise Lund	Suresh Channarasappa
Matthew McConnell	John Conly
John McKirgan	Phil Couture
Kenn Miller	Tom Crawford
Wendell Morton	Gary DeMoss
Khoi Nguyen	Bradley Wicker Dolan
Robert Pascarelli	Daryl L. Harmon
April Pulvirenti	Frank Hope
Meraj Rahimi	Robert Konnik
Sheila Ray	Thomas Koshy
Robert Roche-Rivera	Jacob Kulangara
Khadijah West	Drew Mantey
	Warren R. Odess-Gillett
	Francesco Pellizzari
	Deann Raleigh
	Eric Rasmussen
	Robert I. Rishel
	John White
	Yvonne Williams
	Christian D. Williams
	Tamatha A. Womack