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

October 10, 2019

INDUSTRY GROUP: Nuclear Energy Institute (NEI)

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SUBJECT: SUMMARY OF SEPTEMBER 10, 2019 PUBLIC MEETING WITH NEI TO DISCUSS RESOLUTION OF TORNADO MISSILE PROTECTION NON-CONFORMING CONDITIONS (EPID: L-2019-LRL-0000)

On September 10, 2019, the U.S. Nuclear Regulatory Commission (NRC) staff conducted a Category 2 public meeting with the Nuclear Energy Institute (NEI) at NRC Headquarters, 11555 Rockville Pike, One White Flint North, Rockville, Maryland. The purpose of the meeting was to discuss generic recommendations for addressing tornado missile protection at nuclear power plants. The meeting notice and agenda are available in the Agencywide Documents Access and Management System (ADAMS) under Accession No. ML19252A128. NEI's presentation is available in ADAMS under Accession No. ML19252A148.

NEI presented its evaluation of potential responses to the criteria in Title 10 of the *Code of Federal Regulations* (CFR) 50.59 "Changes, Tests and Experiments," to determine if prior NRC approval would be required for resolution of tornado missile non-conformances where a licensee determined that plant modifications would not be necessary.

The NRC staff stated at the onset of the meeting that no regulatory decisions would be made during the meeting. The NRC also stated that the determination that a licensee appropriately applied the requirements of 10 CFR 50.59 is subject to NRC oversight and that the absence of a comment during the meeting should not be interpreted as NRC approval of the approach for assessing the 10 CFR 50.59 criteria (e.g., the approach for assessing criterion (ii) regarding conformance with General Design Criterion 2).

The NRC staff noted that there was enforcement discretion issued by the NRC to those licensees that had a tornado missile protection non-conformance. The NRC staff requested the status of resolution of those non-conformances. NEI responded that they would provide the response after requesting the information from licensees and provide it to the NRC staff at a later date.

The NEI presentation states that the Tornado Missile Risk Evaluator (TMRE) that has been approved for use by multiple licensees would not be considered a method-of-evaluation as defined in NEI 96-07, Revision 1, and therefore the criterion at 10 CFR 50.59(c)(2)(viii) would not apply. The NRC staff stated that NEI should consider the assumption that TMRE is not a method of evaluation. NEI stated they would discuss this assumption internally after the meeting.

The industry representatives indicated (as shown on page 16 of NEI presentation) that NEI 17-02 does not demonstrate intended design functions will be accomplished. The staff noted that the TMRE methodology is a risk-informed approach that considers defense-in-depth in

combination with other principles of integrated decision making. Therefore, the TMRE methodology evaluates whether the proposed changes continue to meet the intent of the plant's design criteria as part of one of the defense-in-depth considerations.

The industry representatives stated (as shown on slides 25 and 27) that their proposed approach requires compliance with codes, standards, and regulatory guides as described in a facilities Updated Final Safety Analysis Report. The NRC staff questioned the need for the entire 50.59 process if the licensees determine that regulatory guides are met (i.e., if there are no conformance issues in the first place).

The industry representatives stated (as shown on slides 25 and 29) that General Design Criteria (GDC) 2 does not mandate the protection of individual components in a manner similar to a single failure-proof design and that it can be reasonably concluded that the intent of GDC 2 is not to require protection of individual components. The staff questioned the basis and validity of this interpretation and indicated that such interpretation may have much broader regulatory and safety implications as GDC 2 requires protection against a range of other external hazards such earthquakes and flooding events.

To address the likelihood of malfunction, industry representatives concluded that (as shown on slides 30-34) the failure probability from a tornado missile is very small when compared to the uncertainties and/or variations inherent in current calculated failure probability and it reasonable to conclude that the increase in failure probability can be considered negligible. Staff noted that the exposed equipment failure probabilities (EEFPs) were approved for pilot TMRE applications in the context of the overall TMRE methodology and their use in broader contexts has not been reviewed by the staff; the overall failure probabilities presented on slide 32 (on the order of 1E-8/yr) combines tornado frequencies and EEFPs where failure probabilities in NUREG/CR-6928 (on slide 33 of NEI presentation) do not include the frequency of the demand. Therefore, it is unclear whether the comparison is valid, because TMRE methodology, consistent with PRA practices, compares failure probabilities from tornadoes against other failure probabilities and the methodology would have screened out failures from tornadoes if there were significantly smaller than other failure rates. However, if they were comparable, the slides indicate a "qualitative" assessment and it is unclear whether the industry's proposed approach would use the quantitative insights from TMRE or other approaches, and comparison against other passive failures may provide better insights.

The NRC staff also noted that because the proposed approach seems to reach conclusions regarding the screening questions on a generic basis, it is unclear whether and how any plant-specific evaluation under 50.59 will be performed.

The NEI presentation on slide 32 presents some example failure probabilities generated by the TMRE to support the assessment that allowing the non-conformance to remain in service results in a condition whereby there is a minimal increase in the likelihood of a malfunction. The NRC staff noted that the use of TMRE, as approved for other facilities, should ensure that the use at the subject facility is consistent with the approval of the other use of the methodology, and should not use portions of the analysis.

The NRC staff questioned NEI on if the guidance would consider the use of the 10 CFR 50.59 process proposed to allow other non-conformances to remain in service (i.e., would the cumulative risk of multiple non-conformances be considered or would they be considered individually). NEI responded that the guidance would not consider the cumulative effects of multiple non-conformances if they were not being considered for the particular 10 CFR 50.59

analysis being performed. The NRC staff responded that risk-informed approaches consider the cumulative effect of conditions and expressed reservations with not considering the cumulative effects of all non-conformances remaining in service.

Sincerely,

/RA/

Robert F. Kuntz, Senior Project Manager
Plant Licensing Branch III
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Enclosure: List of Attendees

cc w/encl: Listserv

Attendees
Nuclear Regulatory Commission
Public Meeting Concerning Tornado Missile Protection
September 10, 2019

U. S. Nuclear Regulatory Commission
Robert Kuntz
Mike Franovich
Robert Krsek
Ed Miller
David Beaulieu
Mehdi Reisi Fard
Shilp Vasavada
Gordon Curran
Steve Jones

External Stakeholders
Steve Vaugh, Nuclear Energy Institute
Ryan Joyce, Southern Nuclear Company (SNC)
Ken Lowery, SNC
Brady Miller, Dominion Energy
Christian Williams, Exelon
Jordan Vanghan, Duke Energy
Jim Lechner, Hughes
Brian Thomas, PSEG
Tim Sande, Enercon
Cecil Mahan, Entergy
Glenn Stewart, Exelon Generation
Scott Brinkman, Enercon Services, Inc.

Enclosure

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ADAMS Accession No.: ML19274C199

OFFICE	NRR/DORL/LPL3/PM	NRR/DORL/LPL3/LA	NRR/DORL/LPL3/BC(A)
NAME	RKuntz	SRohrer	LRegner(KGreen for)
DATE	10/01/19	10/01/19	10/10/19

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