



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

June 8, 2017

Ms. Pamela B. Cowan
Nuclear Energy Institute
1201 F Street, NW, Suite 1100
Washington, DC 20004

SUBJECT: RESPONSE TO INDUSTRY RECOMMENDED SCREENING CRITERIA FOR
NRC PHASE 2 CLOSE-OUT FOR FLOODING ASSESSMENTS

Dear Ms. Cowan:

This letter provides the U.S. Nuclear Regulatory Commission (NRC) staff's response to the Nuclear Energy Institute (NEI) letter dated April 5, 2017 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML17109A049), regarding post-Fukushima integrated flooding assessments. NEI's letter recommends that the NRC adopt specific numerical criteria for screening plants for the Phase 2 regulatory decision making process for Near Term Task Force (NTTF) Recommendation 2.1 for flooding.

BACKGROUND

By letter dated March 12, 2012, the NRC issued a request for information under Title 10 of the *Code of Federal Regulations*, Section 50.54(f) (ADAMS Accession No. ML12053A340) (hereafter referred to as the 50.54(f) letter), to all nuclear power reactor licensees and construction permit holders in response to lessons learned from the March 2011 accident at Japan's Fukushima Dai-ichi nuclear power plant. Enclosures 1 and 2 of the 50.54(f) letter requested that licensees perform seismic and flooding hazard reevaluations using present-day methodologies and guidance, and then assess the impact of the reevaluated hazards on the plant (i.e., through a flooding integrated assessment or a seismic probabilistic risk assessment). The NRC staff would review completed responses to these assessments to determine if any additional regulatory actions are warranted including a plant-specific backfit.

Concurrent with the reevaluation of flooding and seismic hazards, licensees were required to develop and implement mitigating strategies under NRC Order EA-12-049, "Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events" (ADAMS Accession No. ML12054A735). In order to proceed with the implementation of Order EA-12-049, licensees used the current design basis flood and seismic hazard or the most recent flood and seismic hazard information, which may not be based on present-day methodologies and guidance, in developing their mitigation strategies.

The Commission affirmed in the staff requirements memorandum (SRM) dated March 30, 2015, "Staff Requirements - COMSECY-14-0037 - Integration of Mitigating Strategies for Beyond-Design-Basis External Events and the Reevaluation of Flooding Hazards," (ADAMS Accession No. ML15089A236) that licensees for operating nuclear power plants need to address the reevaluated flooding hazards within their mitigating strategies for beyond-design-basis external events. The draft final Mitigation of Beyond-Design-Basis Events rule, which the

NRC staff provided to the Commission in SECY-16-0142 (ADAMS Accession No. ML16301A005), includes a proposed requirement to address the Commission's direction. If approved by the Commission, power reactor licensees would have either 2 or 3 years (for a pressurized water reactor or boiling water reactor, respectively) from the effective date of the rule to implement this requirement, unless a licensee requests and receives a flexible schedule in accordance with the rule. The nuclear power industry has established guidance, which the NRC has endorsed, for the performance of mitigating strategies assessments to identify what adjustments, if any, are necessary to the strategies and guidelines developed under Order EA-12-049 for compliance with the proposed Mitigation of Beyond-Design-Basis Events rule found in SECY-16-0142.

The Commission approved the staff's plan for closing the NTTF Recommendation 2.1, reevaluation of flooding hazards, in its SRM dated July 28, 2015, "Staff Requirements - COMSECY-15-0019 - Closure Plan for the Reevaluation of Flooding Hazards for Operating Nuclear Power Plants" (ADAMS Accession No. ML15209A682). In this SRM, the Commission directed that the quantitative risk criteria discussed in the COMSECY, which paralleled the frequency NEI recommended the NRC staff establish as a numerical screening criterion, should be considered preliminary, and that the staff should continue to look for additional opportunities to address any over conservatism in the flood hazard evaluations and to streamline the process as additional lessons are learned.

To support the regulatory decision making process for closing out NTTF Recommendation 2.1, the NRC staff is establishing a Senior Management Review Panel. The Senior Management Review Panel is expected to reach a screening decision for each plant submitting an integrated assessment as part of the Phase 2 process. This process will place each of these plants into one of three groups: Group 1 will include plants for which available information clearly indicates that further regulatory action is not warranted; Group 2 will include plants for which it is clear that further regulatory action should be considered under the NRC's backfit provisions; and Group 3 will include plants for which further regulatory action may be needed, but for which more thorough consideration of both qualitative and quantitative risk insights is needed before determining whether a formal backfit analysis is warranted. The Phase 2 decisionmaking process is described in detail in the September 21, 2016, memo, "Regulatory Decisionmaking for Reevaluated Flooding and Seismic Hazards for Operating Nuclear Power Plants," and its enclosure (ADAMS Accession No. ML16237A103).

NEI REQUEST

NEI recommends that the Senior Management Review Panel process for closing out NTTF Recommendation 2.1 for flooding be revised to include a screening threshold described below. Plants meeting the screening threshold would be categorized as Group 1 plants, and the Senior Management Review Panel could close out NTTF Recommendation 2.1 review for flooding based on the acceptance of the integrated assessments for those sites. The screening threshold that NEI recommended for categorizing plants into Group 1 is:

- The plant would have demonstrated effective protective measures for flooding scenarios determined to be more frequent than 1 in 10 thousand years; and
- The plant would have demonstrated feasible mitigation for flood scenarios less frequent than 1 in 10 thousand years.

In NEI's view, a plant that meets the above criteria has appropriately addressed plant vulnerabilities. Additionally, NEI indicated that this approach would allow for more efficient use of industry and NRC resources by limiting the full Phase 2 decision making process to only those sites with the greatest potential need for additional safety enhancements.

EVALUATION OF REQUEST

The NRC staff evaluated this recommendation. While the staff agrees that the use of the screening threshold described above would support a streamlined review, the staff notes that uncertainties in the flood frequency estimates have to be considered, as documented in COMSECY-15-0019, "Closure Plan for the Reevaluation of Flooding Hazards for Operating Nuclear Power Plants" (ADAMS Accession No. ML15153A104):

Although large uncertainties associated with low frequency flooding events (e.g., 10⁻⁴ or 10⁻⁵ per year) hamper a purely quantitative assessment, a combination of quantitative analyses and qualitative factors will provide useful insights. Where possible, licensees and the staff will use estimates of return periods for flooding hazards to provide some quantitative estimates for core damage frequencies.

Because of the inherent uncertainties associated with evaluation of natural hazards, it is not appropriate to apply strict numerical screening values as part of the initial assessment performed by the Senior Management Review Panel. If a submittal includes quantitative information, the panel will ensure that such uncertainties are considered and will also ensure the Commission's direction on the use of qualitative factors in regulatory decisionmaking is implemented.

There is merit for considering the screening threshold NEI proposed in conjunction with a review of the additional specific actions taken by the licensee and the qualitative factors listed in the NRC's Phase 2 guidance. The consideration of quantitative insights, qualitative insights, and actions taken by licensees will enable the staff to have greater assurance whether any backfitting thresholds are achievable and will support full documentation of the NRC's decision that supports issuance of a closeout letter to the licensee. The NRC staff has consistently applied this approach of balancing quantitative and qualitative information in implementing the post-Fukushima lessons learned. Specifically, the staff used a combination of qualitative and quantitative information to effectively evaluate the risk posed by natural hazards other than flooding and seismic and recommended no further regulatory action, as documented in SECY-16-0144, "Proposed Plan for Closing Remaining Fukushima Tier 2 and 3 Recommendations" (ADAMS Accession No. ML16286A586).

Consistent with our values and Principles of Good Regulation, the NRC staff shares the industry's objective to complete the remaining flooding hazard reevaluation activities in an efficient and effective manner. In executing the Phase 2 activities, staff's consideration of the need for additional regulatory actions under the NRC's backfit regulation, 10 CFR 50.109(a)(3), will account for the safety enhancements already achieved as a result of post-Fukushima regulatory activities along with other key factors important to determine whether a cost-beneficial substantial safety enhancement backfit is achievable. As this process progresses, in cases when it becomes clear that justification of new requirements under 10 CFR 50.109 are not reasonable, the staff will expedite closure of the Phase 2 process and discontinue further requests for information or analyses from licensees.

If you have any questions, please contact Timothy Reed, Senior Project Manager, at (301) 415-1462 or via e-mail at Timothy.Reed@nrc.gov.

Sincerely,

A handwritten signature in black ink, appearing to read 'W. M. Dean', with a long horizontal line extending to the right.

William M. Dean, Director
Office of Nuclear Reactor Regulation

SUBJECT: RESPONSE TO INDUSTRY RECOMMENDED SCREENING CRITERIA FOR NRC
 PHASE 2 CLOSE-OUT FOR FLOODING ASSESSMENTS DATED JUNE 8, 2017

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ADAMS Accession No. ML17123A391

*** via e-mail**

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NAME	TReed	NSanfilippo	MShams	BHarris
DATE	5 /15 /17	5 /23 /17	5 /25 /17	5 /31 /17
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NAME	JMarshall (A)	WDean		
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