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November 17, 2016

The Honorable Stephen G. Burns  
Chairman  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555-0001

**Subject:** Supplemental Comments on SECY-16-033 "Draft Final Rule - Performance-Based Emergency Core Cooling Systems Cladding Requirements and Related Fuel Cladding Acceptance Criteria" (Docket ID NRC-2008-0332) (RIN 3150-AH42)

**Project Number: 689**

Dear Chairman Burns:

We are writing to express our continued concerns with the draft final rule "Performance-Based Emergency Core Cooling Systems Cladding Requirements and Related Fuel Cladding Acceptance Criteria" ("Draft Final Rule") which was provided for Commission consideration under SECY-16-0033. The Nuclear Energy Institute (NEI),<sup>1</sup> on behalf of the industry, provided comments on the proposed rule on August 21, 2014 and followed up on February 25, 2016 with a letter requesting consideration of a conditional compliance schedule as an alternative to a fixed compliance date. We remain appreciative of the substantial stakeholder interaction by the NRC staff during the rulemaking process and commend the staff's efforts to resolve the industry's comments on many of the technical aspects of the proposed rule.

As discussed in greater detail in the attachment to this letter, we continue to have concerns regarding the adequate protection justification and analysis of alternatives that support issuance of the Final Rule. In SECY-16-0033, the staff categorized the proposed revisions to 10 CFR 50.46 into three groups of requirements: (1) the portion of the final rule addressing cladding embrittlement analytical limits, testing, and reporting protocols ("Group 1"); (2) the portion of the rule establishing technology-neutral, performance-based and risk-informed requirements for ECCS and the fuel system, which replaces the

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<sup>1</sup> The Nuclear Energy Institute (NEI) is the organization responsible for establishing unified industry policy on matters affecting the nuclear energy industry, including the regulatory aspects of generic operational and technical issues. NEI's members include all entities licensed to operate commercial nuclear power plants in the United States, nuclear plant designers, major architect/engineering firms, fuel cycle facilities, nuclear materials licensees, and other organizations and entities involved in the nuclear energy industry.

current deterministic requirements ("Group 2"); and (3) the portion of the final rule that sets forth a voluntary alternative for risk-informed consideration of debris during long-term cooling ("Group 3"). The staff concluded in the SECY that all three categories of requirements are necessary to maintain adequate protection of public health and safety.<sup>2</sup>

We disagree with this conclusion particularly with respect to the Group 2 and 3 requirements.

More specifically, we do not believe that the discussion provided in the Draft Final Rule supports the conclusion that the Group 2 and 3 requirements are necessary to maintain adequate protection of public health and safety. Further, we believe that the regulatory analysis supporting the Draft Final Rule is skewed by the staff's conclusion that the entire rulemaking is necessary to maintain adequate protection and does not consider additional viable alternatives to the approach put forward in the Draft Final Rule.

An example of additional alternatives that we believe should be considered is the industry's recommendation provided in our February 25, 2016 letter that the final rule allow for a conditional compliance schedule, rather than imposing a fixed compliance date. This alternative would ensure that adequate protection is maintained in a more cost-effective manner than the approach provided in the Draft Final Rule. In support of this approach, the 2009 NRC safety assessment<sup>3</sup> documented reasonable assurance that plant operations and public health are not challenged, with reports submitted by the BWROG<sup>4</sup> and PWROG<sup>5</sup> documenting that no safety issue existed and that the plants have sufficient margin of safety to the proposed oxidation criterion.

Given the concerns outlined in this letter and the attachment, we respectfully request that the Commission return the Draft Final Rule package to the staff for reconsideration of the adequate protection justification and the appropriate evaluation of additional viable alternatives to achieve the objectives of the rule.

We appreciate your consideration of the industry's perspectives and we would welcome the opportunity for further interactions with the NRC staff on this matter. Please feel free to contact me if you have any questions.

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<sup>2</sup> "Draft Final Rule – Performance-Based Emergency Core Cooling System Requirements and Related Fuel Cladding Acceptance Criteria," SECY-16-0033 (March 16, 2016) ("SECY-16-0033"), at pg. 2.

<sup>3</sup> NRC safety assessment that considered the information provided in Research Information Letter (RIL) 0801, "Technical Basis for Revision of Embrittlement Criteria in 10CFR50.46", February 23, 2009

<sup>4</sup> BWROG-TP-11-010 (Rev.1), Evaluation of BWR LOCA Analyses and Margins Against High Burnup Fuel Research Findings, June 2011; ML111950139

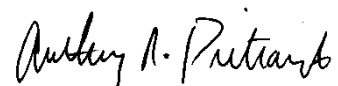
<sup>5</sup> PWROG Letter Report OG-11-143, 10CFR50.46(b) Margin Assessment Report, April 29, 2011; ML11139A309

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Sincerely,

A handwritten signature in black ink, reading "Anthony R. Pietrangelo". The signature is written in a cursive style with a large, stylized 'A' and 'P'.

Anthony R. Pietrangelo

c:      The Honorable Kristine L. Svinicki, Commissioner, NRC  
         The Honorable Jeff M. Baran, Commissioner, NRC  
         NRC Document Control Desk

NEI provides the following additional details supporting our concerns with the Draft Final Rule. Specifically, we remain concerned that: (1) the adequate protection justification for the two of the three groups of requirements described in the Draft Final Rule is inappropriate, and (2) the regulatory analysis supporting the Draft Final Rule is skewed by the staff's conclusion that the entire rulemaking is necessary to maintain adequate protection, and does not consider viable alternatives to the approach put forward in the Draft Final Rule.<sup>1</sup>

## **I. Adequate Protection**

### **A. Background**

The backfitting rule at 10 CFR § 50.109 states:

[T]he Commission shall require the backfitting of a facility only when it determines...that there is a substantial increase in the overall protection of the public health and safety or the common defense and security to be derived from the backfit and that the direct and indirect costs of implementation for that facility are justified in view of this increased protection."<sup>2</sup>

There are three exceptions to this general requirement, which are provided in 10 CFR § 50.109(a)(4). The exception relevant to the Draft Final Rule provides that the cost-justified, substantial-increase analysis described above is not required when "a regulatory action is necessary to ensure that the facility provides adequate protection to the health and safety of the public and is in accord with the common defense and security[.]"<sup>3</sup> This exception, along with the exception provided in 50.109(a)(iii), implement *Union of Concerned Scientists, et. al., v. U.S. NRC*, in which the U.S. Court of Appeals for the District of Columbia Circuit concluded that the Atomic Energy Act "precludes the NRC from [taking] costs into account in establishing or enforcing the level of adequate protection, but allows the NRC to consider costs in devising or administering requirements that offer protection beyond that level."<sup>4</sup>

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<sup>1</sup> NEI also has concerns regarding the clarity of the adequate protection justification provided for the Group 1 requirements. These concerns are discussed below in section I.C.

<sup>2</sup> 10 CFR § 50.109(a)(3).

<sup>3</sup> 10 CFR § 50.109(a)(4)(ii).

<sup>4</sup> 824 F.2d 108, 114 (D.C. Cir. 1987). The iteration of § 50.109 reviewed by the Court of Appeals in *Union of Concerned Scientists* excepted the NRC from the requirement to perform a backfitting analysis in situations where "an immediately effective regulatory action is necessary to ensure that the facility poses no undue risk to the public health and safety." "Revision of Backfitting Process for Power Reactors: Final Rule," 50 Fed. Reg. 38,097, 38,112 (Sept. 20, 1985). This exception contained a footnote indicating modifications undertaken to ensure that a facility poses no undue risk to public health and safety, but which *are not* deemed to require immediately effective regulatory action, would require a backfitting analysis. In such situations, however, the consideration of costs would be limited to an examination of how cost contributes to "selecting the solution among various acceptable alternatives to ensuring no undue risk..." *Id.* at FN 3.

The Commission provided additional context regarding the necessity of the adequate protection exception in its 1988 final rule revising § 50.109 in response to the *Union of Concerned Scientists* decision:

[T]he exception for backfits necessary to secure adequate protection, § 50.109(a)(4)(ii), must be retained, because it must be made clear that Commission action is not to be obstructed by cost considerations in a situation where compliance has indeed proved to be insufficient to secure the level of protection presumed in the rule, order, or commitment in question.<sup>5</sup>

The Commission went on to explain that retaining the exception would not jeopardize the stability of the existing regulatory framework, stating:

Retaining § 50.109(a)(4)(ii) will not give the Commission the power to proclaim at will that compliance is not enough. As we said in the statement of considerations accompanying the 1985 rule...the regulations, though they do not define "adequate protection", are presumed to ensure it, and, in the absence of a redefinition of "adequate protection", that presumption can be overcome only by significant new information or some showing that the regulations do not address some significant safety issue.<sup>6</sup>

As reflected in the above-quoted passages, from a regulatory standpoint the question of whether a new or amended provision of the Commission's regulations is required to ensure that nuclear power facilities provide adequate protection of public health and safety primarily arises when such a new or amended provision constitutes backfitting. In other words, because § 50.109 requires the consideration of costs in determining whether to impose certain new or amended regulations, the Commission must consider whether the new or amended regulations are necessary to either ensure<sup>7</sup> or redefine<sup>8</sup> adequate protection. If so, costs may not come into play when deciding whether to impose a backfit that is necessary to ensure adequate protection, but may be considered when deciding between alternative approaches to achieve that end.<sup>9</sup>

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<sup>5</sup> "Revision of Backfitting Process for Power Reactors," 53 Fed. Reg. 20,603, 20,608 (June 8, 1988).

<sup>6</sup> *Id.*

<sup>7</sup> See § 50.109(a)(4)(ii).

<sup>8</sup> See § 50.109(a)(4)(iii).

<sup>9</sup> 10 CFR 50.109(a)(7) states: "If there are two or more ways to achieve compliance with a license or the rules or orders of the Commission, or with written licensee commitments, or there are two or more ways to reach a level of protection which is adequate, then ordinarily the applicant or licensee is free to choose the way which best suits its purposes. However, should it be necessary or appropriate for the Commission to prescribe a specific way to comply with its requirements or to achieve adequate protection, then cost may be a factor in selecting the way, provided that the objective of compliance or adequate protection is met."

In SECY-16-0033, the staff categorizes the proposed revisions to § 50.46 into three groups of requirements: (1) the portion of the final rule addressing cladding embrittlement analytical limits, testing, and reporting protocols ("Group 1"); (2) the portion of the rule establishing technology-neutral, performance-based and risk-informed requirements for ECCS and the fuel system, which replaces the current deterministic requirements ("Group 2"); and (3) the portion of the final rule that sets forth a voluntary alternative for risk-informed consideration of debris during long-term cooling ("Group 3").<sup>10</sup> In essence, the staff asserts that the entire rulemaking is required to maintain adequate protection of public health and safety.<sup>11</sup> We disagree with this conclusion, particularly with respect to the Group 2 and 3 requirements.

**B. The Draft Final Rule inappropriately characterizes the proposed technology-neutral alternative to the existing deterministic requirements (i.e., Group 2 requirements); as well as the proposed voluntary alternative for risk-informed consideration of debris during long-term cooling (i.e., Group 3 requirements) as necessary to maintain adequate protection.**

In describing the rationale for imposing the Group 2 requirements, SECY-16-0033 states:

The current deterministic requirements are considered to be necessary for adequate protection. Therefore, the new 10 CFR 50.46c requirements, which replace the older deterministic requirements and establish the risk-informed alternative are intended to be regarded as adequate protection, in as much as they are intended to provide the same level of protection to public health and safety albeit in a different manner (technology-neutral/performance-based, and risk-informed, respectively).<sup>12</sup>

We do not agree with the staff's conclusion that imposition of this new requirement is necessary to maintain adequate protection. First, it is worth reiterating that the exception included in § 50.109(a)(4)(ii) states that the analytical requirements of the

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<sup>10</sup> See SECY-16-0033, at pg. 2. The Regulatory Analysis provided with the Draft Final Rule also categorizes the amendments to 50.46 into these groupings, although in a different order. "The rule encompasses provisions that fall into three groups: (1) technology-neutral changes to the cladding alloys allowed in light-water reactors (LWRs) without licensee exemption to include all zirconium based materials, (2) cladding embrittlement analytical limits, testing, and reporting protocols designed to verify cladding performance, and (3) risk-informed alternatives for dealing with the safety issue of fibrous materials entering the reactor coolant. The NRC has deemed this rulemaking meets the adequate protection exception to the backfit rule." "Regulatory Analysis for Emergency Core Cooling System Performance during Loss-of-Coolant Accidents Final Rule (10 CFR 50.46c)," at pg. 9 ("Regulatory Analysis").

<sup>11</sup> "Draft Final Rule – Performance-Based Emergency Core Cooling System Requirements and Related Fuel Cladding Acceptance Criteria," SECY-16-0033 (March 16, 2016)("SECY-16-0033"), at pg. 2.

<sup>12</sup> SECY-16-0033, at pg. 2 (footnotes omitted).

backfitting rule do not apply when “a regulatory action *is necessary to ensure* that the facility provides adequate protection to the health and safety of the public....” (emphasis added). Accepting the staff’s conclusion that there is a “strong inference” that the existing deterministic requirements are necessary for adequate protection,<sup>13</sup> it does not follow that an amended requirement intended to include additional cladding types and avoid the need for exemptions from the current rule is *necessary to ensure* adequate protection. Specifically, although the current regulations require exemptions for cladding types not currently addressed in § 50.46, there is no indication in the rulemaking record that compliance with the existing deterministic approach fails to provide adequate protection and that the amended requirements in Group 2 are necessary to maintain adequate protection of public health and safety.

The proposed Group 2 requirements may improve efficiency (which is a valid regulatory objective) by reducing the need for exemptions to use fuel types not currently addressed in 10 CFR § 50.46, but they are not necessary to ensure that adequate protection of public health and safety is maintained. This conclusion is also supported by the backfitting discussion included in the Federal Register Notice attached to SECY16-0033, which states (in part):

A portion of the final § 50.46c rule, that replaces the existing deterministic ECCS requirements in 10 CFR 50.46 with technology neutral and more performance-based regulatory requirements, *does not constitute backfitting*. ... [T]he NRC believes that no current 10 CFR part 50 licensee will be required to perform any additional analysis or make any change to its design or operating procedures which are attributable to the final rule’s replacement of the deterministic ECCS requirements in 10 CFR 50.46 with technology neutral and more performance-based requirements in the final rule. The NRC has expressly stated that the final rule’s technology neutral and more performance-based provisions – representing the equivalent of the existing 50.46 deterministic requirements – will not require the development, preparation or implementation of any new analyses, tests or demonstrations, or changes to design of the ECCS and fuel systems for existing licensees. Therefore, the NRC believes it is reasonable to conclude that this portion of the final rule, in reality, does not result in changes to the systems, structures or components (SSCs), design, procedures or organization needed to operate a nuclear power plant as compared with the existing deterministic requirements in § 50.46. Instead, this portion of the § 50.46 provision represents a different way of expressing NRC’s underlying regulatory expectations but with no consequent changes in plants’ SSCs, design, procedures or organization needed to operate a nuclear power plant.<sup>14</sup>

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<sup>13</sup> See SECY-16-0033, at FN 2 (concluding that there is a strong inference that the ECCS requirements in 10 CFR § 50.46 were regarded as an adequate protection measure when promulgated by the Atomic Energy Commission) .

<sup>14</sup> SECY-16-0033, Enclosure 1, at pg. 99-100 (emphasis added).

In this analysis, the agency seems to be concluding that the Group 2 requirements are not backfits at all, in part<sup>15</sup> because they “will not require the development, preparation or implementation of any new analyses, tests or demonstrations.” If the Group 2 requirements are not backfits for the reason stated above (*i.e.*, because they offer an alternative and do not, in fact, require any changes at existing facilities), then they are not *necessary* to ensure adequate protection of public health and safety.

In describing the rationale for imposing the Group 3 requirements, SECY-16-0033 states “the portion of the final rule that sets forth a voluntary alternative for risk-informed consideration of debris during long-term cooling *addresses a matter of adequate protection*. For these reasons, the final rule is described as addressing adequate protection to the health and safety of the public; accordingly, a backfit analysis need not be prepared under the adequate protection exception in 10 CFR 50.109(a)(4)(ii).”<sup>16</sup>

As with the justification for the Group 2 requirements, this explanation is insufficient. The test for application of the exception in 50.109(a)(4)(ii) is not whether a new or amended regulatory requirement “addresses a matter of adequate protection.” Rather, the test is whether the new or amended regulation “is *necessary* to ensure that the facility provides adequate protection to the health and safety of the public.”<sup>17</sup> A voluntary alternative to requirements that already ensure adequate protection would certainly need to provide a level of protection that is at least equivalent to the existing requirement. But imposition of such an alternative is not *necessary* to ensure adequate protection. As described above, the Commission explained that the exception in 50.109(a)(4)(ii) was intended to ensure that Commission action is not to be obstructed by cost in “situation[s] where compliance has indeed proved to be insufficient to secure the level of protection presumed in the rule, order, or commitment in question.”<sup>18</sup> The staff has not explained how the alternative provided in the Group 3 requirements is necessary to address a situation where compliance with the existing rules do not ensure adequate protection. In our view, a “voluntary alternative” could not satisfy this criterion.

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<sup>15</sup> The staff also includes an argument that the Group 2 requirements are not backfits because they were requested by the industry. “In as much as the final rule’s replacement of the deterministic ECCS requirements with technology neutral and more performance-based regulatory requirements was requested by the affected entities, the NRC believes that it is reasonable to conclude that the portion of the final rule accomplishing the requested action are [sic] not being ‘imposed’ on the affected 10 CFR part 50 entities.” . SECY-16-0033, Enclosure 1, at pg. 99-100. This justification is invalid on its face. Applicability of the backfitting rule does not hinge on whether the “affected entities” requested the new or amended regulations. Once effective, new or amended regulations that compel or prohibit certain actions by regulated entities carry the force and effect of law and, thus, are “imposed” on such entities under any reasonable definition of that term.

<sup>16</sup> SECY-16-0033, at pg. 2 (emphasis added).

<sup>17</sup> 10 CFR 50.109(a)(4)(ii)(emphasis added).

<sup>18</sup> 53 Fed.Reg. 20,608.



Again, as with the justification for the Group 2 requirements, this conclusion is supported by the backfitting discussion included in the Federal Register Notice attached to SECY16-0033, which states (in part):

The final rule includes the option of allowing any of the entities to whom this rule is applicable (as identified in paragraph (a) of § 50.46c) to address the effects of debris on long-term cooling with respect to ECCS performance requirements in § 50.46c and GDC-35 using a risk-informed approach. *In as much as paragraph (e) provides a voluntary alternative to requirements on ECCS, its inclusion in the final rule does not represent an imposition of a new or changed requirement constituting backfitting under the definition of backfitting in 10 CFR 50.109(a)(1).* Moreover, the inclusion of this provision is not inconsistent with any applicable issue finality provision in 10 CFR part 52.<sup>19</sup>

In this analysis, the NRC seems to be concluding that the Group 3 requirements are not backfits at all, because they are “voluntary alternatives” to other requirements applicable to the ECCS. Therefore, the argument goes, they are not being “imposed” on licensees. Under this rationale the Group 3 requirements are not backfits because licensees are not, in fact, required to comply with them. If a licensee is not required to comply with a new requirement, then it seems that the requirement cannot concurrently be necessary to maintain adequate protection of public health and safety. In other words, if a requirement is not a backfit at all, then it cannot simultaneously be an “adequate protection backfit.” Thus, the Group 3 requirements should not be characterized as a change to the existing requirements that are necessary to maintain adequate protection.

**C. The adequate protection rationale used to justify imposition of amended requirements dealing with cladding embrittlement analytical limits, testing, and reporting protocols (i.e., Group 1 requirements) should be clarified.**

Unlike the Group 2 and 3 requirements, SECY-16-0033 and the associated Federal Register notice provide an extensive discussion regarding why, in the NRC staff’s view, the amended requirements regarding cladding embrittlement analytical limits, testing, and reporting protocols are necessary to maintain adequate protection.<sup>20</sup> This is an admittedly closer call than the Group 2 or 3 requirements described above. We understand the importance of amending the Commission’s regulations to address the embrittlement research, however it remains difficult to reconcile the staff’s conclusion that the current regulatory requirements do not ensure adequate protection will be maintained, with its conclusion that operation of the fleet pursuant to those same requirements continues to provide adequate protection of public health and safety.

<sup>19</sup> SECY-16-0033, Enclosure 1, at pg. 99 (emphasis added).

<sup>20</sup> See e.g., SECY-16-0033, Enclosure 1, at § I. “Background,” II. “Operating Plant Safety,” III.C. “Fuel-Specific Performance and Analytical Requirements.”

Thus, we request that the Commission or staff clarify of how the current rules are insufficient to ensure that adequate protection is maintained, while – at the same time – plants operating in compliance with those rules are, in fact, providing reasonable assurance of adequate protection.

## **II. The insufficient adequate protection rationale skewed the evaluation of alternatives provided in the regulatory analysis, which does not evaluate all of the viable alternative approaches to achieving the objectives of the rule.**

Because the staff characterized the entire rulemaking as necessary to ensure adequate protection, the regulatory analysis focused on determining the most cost-effective way to achieve this goal. Specifically, the regulatory analysis attempted to identify the most cost-effective alternative to achieve adequate protection by focusing on “the marginal difference in benefits and costs for each alternative relative to the ‘no action’ baseline alternative.”<sup>21</sup> The staff identified two alternative approaches to achieving adequate protection. In Alternative 2, the NRC forgoes a rulemaking altogether and, instead, addresses the cladding embrittlement analytical limits, testing, and reporting protocols (i.e., the Group 1 requirements) on a case-by-case basis.<sup>22</sup> Alternative 3 is the approach described in the Draft Final Rule.

A summary of the cost-effectiveness comparison between alternatives is provided in Table 5 of the regulatory analysis, which is included below.<sup>23</sup>

**Table 5 Cost/Benefit Comparison of Alternatives**

| <b>Objective</b>   | <b>Alternative 2 – Case-by-Case (7% NPV)</b> | <b>Alternative 3 – The Rule Alternative (7% NPV)</b> | <b>Preferred Alternative</b> |
|--------------------|--|--|------------------------------|
| Technology Neutral | \$0  | \$2.8 million  | Alternative 3                |
| Research Findings  | (\$34.2 million)                             | (\$34.9 million)                                     | Either <sup>1</sup>          |
| Crud Effects       | \$0  | \$0  | Either                       |
| Risk-Informed      | \$0  | \$325 million  | Alternative 3                |
| Net Benefit        | (\$34.2 million)                             | \$293 million  | Alternative 3                |

As is evident from the Table 5, nearly all of the net benefit associated with Alternative 3 (the Draft Final Rule) is derived from the Group 3 requirements (*i.e.*, the portion of the final rule that sets forth a voluntary alternative for risk-informed consideration of debris during long-term cooling). But, as described above, we do not believe that the Group 3 requirements are necessary to maintain adequate protection. Thus, while the benefits

<sup>21</sup> SECY-16-0033, at pg. 6.

<sup>22</sup> We note that Alternative 2 is described as a viable alternative to maintain adequate protection, but does not seem to include the Group 2 or 3 requirements in any form. This seems to indicate that the staff does not believe that the Group 2 and 3 requirements are necessary to maintain adequate protection, despite statements to the contrary in SECY-16-0033 and elsewhere in the regulatory analysis.

<sup>23</sup> “Regulatory Analysis for Emergency Core Cooling System Performance during Loss-of-Coolant Accidents Final Rule (10 CFR 50.46c)” (“Regulatory Analysis”), at pg. 11.

associated with these requirements may be appropriately considered elsewhere in the regulatory analysis, they should not be included in an analysis of alternative approaches that are necessary to maintain adequate protection.

In NEI's view, the only proposed requirements that are arguably necessary to maintain adequate protection are the Group 1 requirements, which are labeled "Research Findings" in Table 5. When alternative approaches to achieving the "Research Findings" objective are compared, it becomes clear that there is no clear preferred alternative for purposes of maintaining adequate protection. Indeed, in footnote 1 from the "Preferred Alternative" column in Table 5, the staff concludes: "Alternative 2 and 3 are within the sensitivity of the uncertainty analysis and are therefore effectively equal in cost for this objective."<sup>24</sup>

Further, it is unclear why the only alternative to the Draft Final Rule is a "no rulemaking" alternative in which the benefits of the Group 2 and 3 requirements are completely lost. For example, the conditional compliance schedule suggestion we proposed in our February 25, 2016 letter could be established as a viable alternative that would achieve the same level of protection as Alternatives 2 or 3, reduce costs associated with implementation, and maintain the benefits associated with codification of the Group 2 and 3 requirements.<sup>25</sup>

Thus, we disagree with the staff's conclusion that "because the rulemaking alternative for providing adequate protection is more cost-effective than the alternatives, the rulemaking approach is recommended."<sup>26</sup>

### **III. Conclusion**

As explained above, while the Group 2 and 3 requirements may serve valid regulatory objectives, they are not necessary to maintain adequate protection of public health and safety. Assuming the agency maintains its position that the Group 1 requirements are necessary to maintain adequate protection, a meaningful evaluation of the cost-effectiveness of different approaches to achieve this objective – including the conditional compliance approach suggested in NEI's February 25, 2016 letter – should be undertaken and provided for consideration by the Commission.

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<sup>24</sup> Regulatory Analysis, at FN1.

<sup>25</sup> While general information on anticipated costs to implement the rule was provided during the comment period, more detailed and recent cost estimates examining the impacts of rule implementation (*i.e.*, implementation of Alternative 3) on licensees have concluded that, for many stations, costs will significantly exceed the cost estimate contained in the regulatory analysis. We appreciate that, while general information on anticipated costs to implement the rule was provided by the industry during the comment period, a more detailed and specific examination of cost impacts developed by the industry would have been helpful to staff in the development of the regulatory analysis. We are working on improved processes to ensure that such estimates are provided earlier in the rulemaking process in the future.

<sup>26</sup> SECY-16-0033, Enclosure 1, at pg. 7.

## CHAIRMAN Resource

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**From:** PIETRANGELO, Tony <arp@nei.org>  
**Sent:** Thursday, November 17, 2016 2:42 PM  
**Subject:** [External\_Sender] Supplemental Comments on SECY-16-033 "Draft Final Rule - Performance-Based Emergency Core Cooling Systems Cladding Requirements and Related Fuel Cladding Acceptance Criteria" (Docket ID NRC-2008-0332) (RIN 3150-AH42)  
**Attachments:** 11-17-16\_NRC\_NEI Comments on 50.46c Rulemaking Draft.pdf; 11-17-16\_NRC\_NEI Comments on 50.46c Rulemaking Draft\_Attachment.pdf

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As discussed in greater detail in the attachment to this letter, we continue to have concerns regarding the adequate protection justification and analysis of alternatives that support issuance of the Final Rule. In SECY-16-0033, the staff categorized the proposed revisions to 10 CFR 50.46 into three groups of requirements: (1) the portion of the final rule addressing cladding embrittlement analytical limits, testing, and reporting protocols ("Group 1"); (2) the portion of the rule establishing technology-neutral, performance-based and risk-informed requirements for ECCS and the fuel system, which replaces the current deterministic requirements ("Group 2"); and (3) the portion of the final rule that sets forth a voluntary alternative for risk-informed consideration of debris during long-term cooling ("Group 3"). The staff concluded in the SECY that all three categories of requirements are necessary to maintain adequate protection of public health and safety.<sup>[2]</sup>

We disagree with this conclusion particularly with respect to the Group 2 and 3 requirements.

More specifically, we do not believe that the discussion provided in the Draft Final Rule supports the conclusion that the Group 2 and 3 requirements are necessary to maintain adequate protection of public health and safety. Further, we

believe that the regulatory analysis supporting the Draft Final Rule is skewed by the staff's conclusion that the entire rulemaking is necessary to maintain adequate protection and does not consider additional viable alternatives to the approach put forward in the Draft Final Rule.

An example of additional alternatives that we believe should be considered is the industry's recommendation provided in our February 25, 2016 letter that the final rule allow for a conditional compliance schedule, rather than imposing a fixed compliance date. This alternative would ensure that adequate protection is maintained in a more cost-effective manner than the approach provided in the Draft Final Rule. In support of this approach, the 2009 NRC safety assessment<sup>[3]</sup> documented reasonable assurance that plant operations and public health are not challenged, with reports submitted by the BWROG<sup>[4]</sup> and PWROG<sup>[5]</sup> documenting that no safety issue existed and that the plants have sufficient margin of safety to the proposed oxidation criterion.

Given the concerns outlined in this letter and the attachment, we respectfully request that the Commission return the Draft Final Rule package to the staff for reconsideration of the adequate protection justification and the appropriate evaluation of additional viable alternatives to achieve the objectives of the rule.

We appreciate your consideration of the industry's perspectives and we would welcome the opportunity for further interactions with the NRC staff on this matter. Please feel free to contact me if you have any questions.

Sincerely,

Anthony Pietrangelo  
Senior Vice President and Chief Nuclear Officer

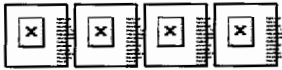
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<sup>[2]</sup> "Draft Final Rule – Performance-Based Emergency Core Cooling System Requirements and Related Fuel Cladding Acceptance Criteria," SECY-16-0033 (March 16, 2016)("SECY-16-0033"), at pg. 2.

<sup>[3]</sup> NRC safety assessment that considered the information provided in Research Information Letter (RIL) 0801, "Technical Basis for Revision of Embrittlement Criteria in 10CFR50.46", February 23, 2009

<sup>[4]</sup> BWROG-TP-11-010 (Rev.1), Evaluation of BWR LOCA Analyses and Margins Against High Burnup Fuel Research Findings, June 2011; ML111950139

<sup>[5]</sup> PWROG Letter Report OG-11-143, 10CFR50.46(b) Margin Assessment Report, April 29, 2011; ML11139A309