

NOTATION VOTE

RESPONSE SHEET

TO: Annette Vietti-Cook, Secretary

FROM: Chairman Gregory B. Jaczko

SUBJECT: SECY-12-0034 – PROPOSED RULEMAKING – 10 CFR
50.46c: EMERGENCY CORE COOLING SYSTEM
PERFORMANCE DURING LOSS-OF-COOLANT
ACCIDENTS (RIN 3150-H42)

Approved Disapproved Abstain

Not Participating

COMMENTS: Below Attached None



SIGNATURE

6/8/12

DATE

Entered on "STARS" Yes No

**Chairman Jaczko's comments on SECY-12-0034, "Proposed Rulemaking –
10 CFR 50.46c: Emergency Core Cooling System Performance During Loss-Of-Coolant
Accidents (RIN 3150-AH42)"**

I approve of the staff's recommendation to publish for public comment a proposed rule that would amend the NRC's current requirements governing emergency core cooling systems (ECCS). The staff has appropriately incorporated recent research findings which identified previously unknown cladding embrittlement mechanisms and expanded the NRC's knowledge of previously identified mechanisms. The proposed rule also addresses two petitions that would expand applicability of ECCS acceptance criteria to all light water reactors, regardless of fuel design or cladding materials (as per Commission direction), and require licensees to evaluate the thermal effects of crud and oxide layers which may have developed on the fuel cladding during normal operation. I appreciate the stakeholders' involvement in the agency's petition process which if approved, will result in improving a longstanding regulation vitally important to nuclear safety.

The significance of this proposed rule is not that it imposes new limits on zirconium-based fuel cladding materials which may be subject to embrittlement at a lower combination of temperature and level of oxygen absorption than currently allowed under the current regulations. The proposed rulemaking is necessary to ensure continuing adequate protection to the public health and safety by restoring the level of protection that the Commission intended for the rule to have during the entire term of a licensee's operation of its nuclear reactors. To put this into context, nearly two-thirds of the operating plants already meet the new requirements and would require little effort to ensure their continuing level of adequate protection. The remaining plants will require new analyses, model revisions, and possibly testing to ensure compliance. The staff has done an excellent job in identifying this important safety issue, and in recommending the proper path forward to restoring the level of safety intended during the course of a plant's operation. Appropriately, this regulation places the burden on the licensees and not the staff with ensuring the proper performance of their fuel to maintain the necessary level of protection to the public.

I think it's important to note two challenges that the Commission will face. The first is the length of time it will take for the third track plants that require additional analysis. Five years should be more than sufficient to complete this review. The second issue is fuel fragmentation, relocation, and dispersal. Depending on several variables, fragmented fuel particles may potentially relocate within a fuel rod, and possibly disperse outside of the fuel rod. While the current and proposed rules recognize and accommodate fuel rod burst, the regulations will not prevent ballooning and rupture, and therefore may not guarantee the retention of fragmented fuel. Further research is needed to understand these phenomena and their potential significance. Therefore, the results of planned research for fuel fragmentation, relocation, and dispersion may require additional changes to the proposed rule, as well as extensive reanalysis by licensees of their emergency core cooling systems and fuel. The Commission should remain vigilant and not permit this safety issue to become yet another longstanding generic issue by allowing the industry to hem and haw under the guise of needing additional guidance, testing and resources.

In addition, I have the following specific changes to the rule language:

1. § 50.46c(d)(3)B(iv) should strike the phrase, "to the extent practicable." All models need appropriate verification and validation with applicable experimental information. If such information is unavailable, then the model should not be used.
2. With regard to schedule for new reactors during certification, the rule should not allow for one year of operation for existing COL holders. While I appreciate that a completely fresh core will not present a challenge under the existing rule, it makes no sense for the new COLs, which are at least five years from operating to have two separate ECCS fuel

performance analyses. Given the time needed for construction of Vogtle and Summer, there is sufficient time to develop any new analyses that will be necessary. Moreover, any subsequent COL such as Levy County will need to address this issue before COL issuance, requiring a solution, in all likelihood, well before the fuel load.

In addition, the provision for design certification should be modified to require more timely updates to the design certification for AP1000. The necessity of the COLs addressing the issue will require a new evaluation model for AP1000 design certification. To ensure a stable approach, the design certification should be updated to be consistent with the COL modifications made by Summer, Vogtle, and subsequent COLs.

3. The discussion related to failed fuel rods needs further clarification. The expectation of limited numbers of failed fuel rods does not appear to be a convincing argument. Better analyses should be presented to justify that there are no low numbers for total fuel rods that could have an impact on post LOCA core performance inconsistent with the performance objectives of the rule.
4. Finally, the discussion on oxygen ingress from cladding inside diameter appears unrefined. The oxygen ingress is a new phenomenon identified during the development of this rule. Yet, the rule appears to leave closure of this issue to unknown future NRC reviews of the eventual model. This appears to leave the issue unresolved. Therefore, the rule should provide more definite methods or criteria for determining the likelihood of inner surface oxidation for different fuel types.



Gregory B. Jaczko

6/8/12

Date