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Project Number 694

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Ms. Annette Vietti-Cook
Secretary
Attention: Rulemaking and Adjudications Staff
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Subject: PWR Owners Group
The Pressurized Water Reactor Owners Group (PWROG) Endorsement of Comments Provided by EPRI/NEI comments on Federal Register/Vol. 79, No. 56 / Monday, March 24, 2014 / Proposed Rules, 10 CFR Parts 50 and 52, RIN 3150-AH42, Performance-Based Emergency Core Cooling System Cladding Acceptance Criteria

The Pressurized Water Reactor Owners Group (PWROG) endorses the comments provided by EPRI/NEI comments on Federal Register/Vol. 79, No. 56 / Monday, March 24, 2014 / Proposed Rules, 10 CFR Parts 50 and 52, RIN 3150-AH42, Performance-Based Emergency Core Cooling System Cladding Acceptance Criteria and has additional comments related to the risk-informed approach to address the impact of debris on long term cooling.

The comments are in response to the questions posed in the FRN (Section VII, B) that specifically pertain to using a risk-informed approach to address the impact of debris on long-term cooling.

NRC Question 4 (Acceptance Criteria for Risk-Informed Alternative)

Section 50.46c(e) contains high-level acceptance criteria for the provision that would permit licensees to use a risk-informed approach to address the effects of debris on long-term core cooling. The staff is developing a draft regulatory guide (RG) concurrent with their review of the South Texas Project (STP) risk-informed application to address generic safety issue (GSI) 191. *The NRC seeks comments on whether the detailed acceptance criteria should be set forth in Section 50.46c or in the associated RG.*

PWROG: As an alternative to the NRC developing the draft RG, the industry could create its own guidance document, for which it would seek NRC endorsement through a RG. Guidance is often developed by the industry for NRC endorsement. As stated above, such guidance would be expected to contain the "details," with the rule language containing only high level requirements. The rule language should be limited to high-level requirements and acceptance criteria. Rule language is difficult to change once promulgated and different interpretations, requiring clarification, are often identified during implementation. Details of how to meet the high-level rule language should be included in a RG, which provides an easier venue for revision, if necessary. While high-level rule language does give the staff more leeway towards interpretation (or changes in interpretation), the ability to revise the details outside of a lengthy rulemaking process is more desirable. This process would be more consistent with other rulemaking efforts, such as 10 CFR 50.69 (risk-informed categorization of structures, systems and components (SSCs)) or 10 CFR 50.59 (make changes to the facility and/or procedures, or conduct tests/experiments).

The PWROG also suggests that regardless of the mechanism for preparing and publishing the guidance, there should be an industry/NRC pilot program prior to the final rulemaking. This pilot would help to ensure that the process that is developed would be viable for both the industry (execution) and the NRC (regulatory review). The pilot should be completed in sufficient time to permit changes to be made to the rule language and/or the guidance documents (and endorsement documents), as needed. As the current STP submittal is the basis for the guidance document accompanying the rulemaking language, an independent application, which tests the actual rule language and guidance, should be performed with a pilot plant other than STP.

NRC Question 5 (Regulatory Approach for Risk-Informed Regulation)

The NRC seeks comment on whether the risk-informed option should require meeting numeric risk acceptance criteria as a matter of compliance or whether other risk-informed approaches that use risk importance insights to establish measureable criteria or performance objectives, or approaches using both risk importance and numeric risk acceptance criteria (similar to 10 CFR 50.69), would be preferable.

PWROG: The PWROG members are familiar and comfortable with using either risk important and/or numeric risk acceptance criteria. However, there is no obvious approach for this application. More important than the approach would be any "hard" numbers used, e.g., specific delta-core damage frequency (CDF) or particular importance measures values. This information should be included in the draft RG (and not included specifically in the rule language, see response to Question 4) and subject to industry review and comment. As recommended in Question 4, a pilot program should be used to "test" whatever risk acceptance criteria that are proposed.

NRC Question 6 (Operational Modes Considered in Risk-Informed Alternative)

The NRC seeks comment on whether the risk-informed approach provided could generically exclude some plant operational modes. If so, what is the basis for the exclusion?

> **PWROG:** Since the debris "created" from a pipe break is a function of the area of jet impingement, it seems reasonable that for less-than-full power events (when the impact from the break would be less), less debris would be available to "clog" the sump. In general, at-power events (i.e., at Mode 1 or Mode 2) should be bounding, as a break at high pressure is likely to result in a larger zone of influence that generates greater debris. However, as was discussed at the April 29 public NRC meeting there might be some "special plant configurations" at less-than-full power that might need to be considered on a case-by-case basis. Once again, consideration of other plant operational modes should be considered during the execution of a pilot program. Such a pilot may show that other operational modes should be considered, or may identify the criteria by which such modes can be excluded.

NRC Question 7 (Reporting Criteria for the Risk-Informed Alternative)

Section 50.46c(m)(4) would provide performance-based reporting requirements for the risk-informed alternative similar to those in Section 50.69. The NRC's approval would specify the circumstances under which the licensee (or design certification applicant) would need to notify the NRC of changes or errors in the risk evaluation approach. Further, there would be requirements for licensee review of the analyses, evaluations, and modeling for changes and errors, and for incorporation of changes to the design, plant, operational practices, and operational experience. There would be a requirement to update the debris evaluation model, including the PRA , and evaluations of risk, defense-in-depth, and safety margins to confirm the acceptance criteria continues to be met. *The NRC seeks specific comments on the reporting criteria.*

Further, *the NRC asked if the reporting criteria should be more prescriptive, i.e., establish values for changes in delta-CDF, delta-large early release frequency (LERF), defense-in-depth, and safety margin that would trigger specific reporting actions? If so, what values should be established, and with what bases?*

> **PWROG:** The response to the questions the NRC posed is dependent on how the staff specifies the "circumstances" or the "values for changes." Either method could be used, as long as the parameters defining accidents were not so sensitive that the reporting process becomes burdensome to the licensee. As in the response to Question 5 (regarding the regulatory approach), it is assumed that whatever approach is adopted, the industry will have the opportunity to review and comment on the "circumstances" or the "values for changes." As indicated in the response above, a pilot program should be established that can be used to test whichever method is proposed.

Section 50.46c(m)(4)(vii) would require that the PRA (among other items) needs to be reviewed no later than 48 months after the previous review. The PWROG suggests that instead of using a time-based criterion for triggering a PRA review, PRA reviews should be triggered by changes to the plant facility and/or procedures with criteria that include the aggregate impact of changes since the last PRA model update. This is a more meaningful criterion, and not as arbitrary as a specific calendar periodicity (during which there may be no substantial change to the plant or procedures).

Additional comments (not covered by the NRC questions)
Section (e)(1)(iv) indicates that, at a minimum, the PRA used to support the risk-informed approach must consider internal events at full power and be peer reviewed against a standard or set of acceptance criteria that is endorsed by the NRC. Section (e)(2)(ii) indicates that a "description of the measures taken to assure that the scope, level of detail, and technical adequacy of the systematic processes that evaluate the plant for internal and external events initiated during full power, low power, and shutdown operation … are commensurate with the reliance on risk information."

Implementation guidance needs to address the following issues:

- What is a systematic process with respect to the scope, level of detail, and technical adequacy of the PRA? It is inferred that for internal events at power, the systematic process is a peer-reviewed PRA.
- Is an internal events, at-power PRA sufficient to support the risk-informed alternative? As 10 CFR 50.46c applies to loss of coolant accident (LOCA) issues, and the likelihood of an external hazard inducing a LOCA should be negligible, the licensee should not be required to expend significant resources for other than internal events. If external hazards are required to be considered, the guidance should address the use of a PRA for which there are no endorsed PRA standards, e.g., low power/shutdown PRA?
- The phrase/concept of "commensurate with the reliance on risk information" implies a risk-informed process; implementation guidance should define what metrics can be used to determine the reliance on risk information.

The Pressurized Water Reactor Owner's Group (PWROG) also proposes that the NRC should include an option for a comprehensive risk-informed approach for long-term cooling. The proposed rule language restricts the use of a risk-informed approach to the consideration of debris. This approach was intended for resolution of Generic Safety Issue (GSI) -191; although perhaps adequate for its intended purpose, the proposal is not flexible enough to support risk-informed approaches for debris, chemical effects, and boric acid precipitation, either together or separately, with one being evaluated deterministically and one using a risk-informed approach. A more general risk-informed approach would provide the PWROG with a tool for evaluation of chemical effects and BAP. This approach would likely build on the previously documented break-size probabilities as documented in NUREG-1829. As an example of earlier rulemaking using a risk-informed approach, the NRC staff considered the information in NUREG-1829

during the selection of the BWR and PWR transition break sizes for the proposed 10 CFR50.46a rulemaking. The use of a risk-informed approach for chemical effects and BAP is not expected to affect reasonable assurance of the Health and Safety of the Public. Therefore, the NRC staff is requested to consider inclusion of a comprehensive risk informed approach for long-term cooling.

If you have any questions, please do not hesitate to contact me at (205) 992-7037 or Mr. W. Anthony Nowinowski, Program Manager of the PWR Owners Group, Program Management Office at (412) 374-6855.

Sincerely yours,

Jack Stringfellow, Chief Operating Officer and Chairman
PWR Owners Group

CMH:NJS:rfn

cc: PWROG Management Committee
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