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OG-10-26

ATTN: Rulemakings and Adjudications Staff
Secretary, U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Subject: Pressurized Water Reactor Owners Group
**Comments to the NRC Draft Final Rule Language, "Risk-Informed
Changes to Loss-of-Coolant Accident Technical Requirements", (PA-
LSC-0419, Revision 0)**

References:

1. NRC Federal Register Notice of 10 CFR Parts 50 and 52, "Risk-Informed Changes to Loss-of-Coolant Accident Technical Requirements", [NRC-2004-0006], ML091060581, August 10, 2009.

The Pressurized Water Reactor Owners Group (PWROG) appreciates the opportunity to review the draft 10 CFR Part 50.46a rulemaking language change as published in the Federal Register on August 10, 2009 (Vol. 74, No. 152, pgs 40006 to 40052). The attachment to this letter provides detailed comments in the each of the following areas:

- Excessive Burden on the Industry
- Added Costs to the 10 CFR 50.59 Process
- Risk Criteria should not be More Restrictive than Regulatory Guide 1.174
- Excessive Operating Restrictions
- Demonstration of Plant-Specific Applicability of Transition Break Size (TBS)
- Nuclear Regulatory Commission (NRC) Approval of Beyond-TBS Evaluation Model
- Consideration of Loss of Offsite Power (LOOP) Coincident with Beyond-TBS Loss of Coolant Accident (LOCA)
- Consideration of Shutdown Modes
- Retaining Coolable Geometry Criterion
- Applicability of the Backfit Rule
- TBS for New Plants
- Requirements for Breaks Smaller than the TBS
- Requirements for Changes to the Facility, Technical Specifications and Procedures

The PWROG continues to believe that 10 CFR 50.46a is an important part of risk-informed regulation. We believe that there has been a great deal of thought and effort

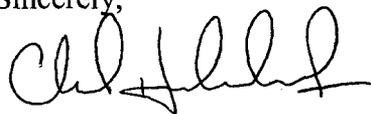
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expended to ensure the rulemaking language is useful and can be implemented, and we look forward to a final rulemaking language in 2010.

If you have any questions or require additional information, please contact Wayne Harrison at (361) 972-7298, Bob Jaquith at (860) 731-6447 or Chad Holderbaum at (412) 374-6230.

Sincerely,

 APPROVING FOR DENNIS E. BUSCHBAUM

Dennis E. Buschbaum, Chairman
Pressurized Water Reactor Owners Group

DEB:CMH:rfn

Enclosures: (1)

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Enclosure 1 to OG-10-26

The Pressurized Water Reactor Owners Group (PWROG) offers the following comments on the draft 10 CFR Part 50.46a rulemaking language change as published in the Federal Register on August 10, 2009 (Vol. 74, No. 152, pgs 40006 to 40052).

1. Excessive Burden on the Industry

The rulemaking language change was expected to reduce regulatory burden associated with this low risk-significance event. Instead, it seems to have increased the licensee's burden to the extent that the viability of implementation is uncertain. Elimination of large break loss of coolant accident (LOCA) from the design basis, based on its insignificant contribution to plant risk, should be easy to justify, even easier than Hydrogen Recombiner elimination (in 10 CFR 50.44). Instead, achieving this risk-informed benefit has turned into a very complex and expensive undertaking.

The August 2009 version of the rulemaking language is very complicated – the wording itself is complex, but even more complicated is the cost/benefit evaluation that a licensee would need to perform to decide whether or not to implement this Rule. Examples of added burden include:

- For configurations (e.g., equipment out of service) that do not meet the acceptance criteria for breaks larger than the transition break size (TBS), the proposed "allowed outage time" in paragraph (d)(5) is not to exceed a total of 14 days in any 12-month period.
- In paragraph (d)(2), the August 2009 rulemaking language requires licensee to "have leak detection systems available ... and implement actions as necessary to identify, monitor and quantify leakage to ensure that adverse safety consequences do not result from primary pressure-boundary leakage from piping and components that are larger than the transition break size." This new rule language referring to components that are larger than the transition break size introduces uncertainty as to the actions that would need to be implemented, beyond current practice. The Technical Specifications already require reactor coolant system (RCS) leakage detection that is independent of the leakage source. Leakage detection methods are not capable of determining if the source of the leakage is from a component that is larger than the TBS. Because there are already adequate requirements, the PWROG recommends this proposed part of the rule be deleted.
- Implementation costs demonstrating plant-specific applicability of NUREG-1829 and NUREG-1903 (in paragraph (c)(1)(i)) and associated reporting requirements may prevent wide implementation of 50.46a.

2. Added Costs to the 10 CFR 50.59 Process

The proposed rule language will add significant cost to the 10 CFR 50.59 process. The requirement in paragraph (f)(1) is to “allow changes without prior approval if the changes involve *minimal* increase in risk, which also has no significant impact upon defense in depth.” This evaluation is currently being done at a level of rigor consistent with the needs for ASME/ANS PRA Standard PRA configuration control. Placing this into a regulatory framework would require a licensee to establish a process or program to perform these risk evaluations for all changes, including those performed in accordance with 10 CFR 50.59. The specific concern is the added labor hours required for the licensee staff to support the risk evaluation process consistent with the regulatory environment. Additionally, this will require additional licensee labor hours to support the NRC inspections of the risk evaluations of plant changes. The estimated added licensee labor is expected to be 0.5 to 1.0 person-years per year, per site.

3. Risk Criteria should not be More Restrictive than RG 1.174

It is not a desirable precedent to depart from Regulatory Guide (RG) 1.174 [1] guidance for the acceptability changes in risk associated with risk-informed, performance-based regulatory changes. In paragraph (f)(2)(ii), there is an explicit magnitude of the change in core damage frequency (CDF) and large early release frequency (LERF) – “very small,” which is assumed to be defined per RG 1.174. This establishment of acceptable risk increase is invoked without any consideration of the magnitude of the base CDF, which does not comport with the process accepted in RG 1.174. Further, the NRC is requesting comments on whether any increase in risk should be allowed. That is, the total change in risk from all facility changes made under the Rule must be evaluated and compared to the “very small” acceptance criterion before each change requiring a risk-informed evaluation and after the periodic PRA maintenance and upgrading.

Paragraph (f)(1) would permit licensees to make changes under this provision without prior review and approval if the changes involve *minimal* increases in risk which also have no significant impact upon defense-in-depth capabilities. However, the term “minimal” in paragraph (f)(1)(ii) is not defined. It is implied in other portions of the rulemaking language that “minimal” is “very small” as defined by RG 1.174. This is contrary to the philosophy of RG 1.174, which suggests delta-CDFs should be a function of the base CDF.

In addition, for new plants, paragraph (f)(2)(iii) states that new reactors will need to show that a risk change is “very small” by computing the risk metrics CDF and large release frequency (LRF). The risk metric LRF is contained in the 50.46a rule language even though the staff has not yet decided what risk metrics will be required of new reactors for risk-informed applications. For LRF, that would be less than 10^{-8} /year. The rulemaking language may be in conflict with the staff’s final disposition on risk metrics for applications for new plants.

4. Excessive Operating Restrictions

In paragraph (d)(5), for LOCAs greater than the TBS, there was a requirement that the plant could not be operated for more than seven days if the operating configuration could not be demonstrated to meet the acceptance criteria. The operational period has been changed to "... not exceed a total of fourteen days in any 12 month period."

Insufficient credit has been given to the existing risk-management infrastructure, including the Maintenance Rule (10 CFR 50.65). There should be no need to apply special operating restrictions, such as the 14-day per year limitation. This new requirement places an unwarranted limitation on the licensee in the form of a pseudo-Technical Specification. Further, such a requirement is contrary to how Technical Specifications are currently defined by requiring a specific time-frame in which to limit unavailability. This is a deterministic requirement embedded in a risk-informed application. The time such equipment is unavailable should be evaluated from a risk perspective, backstopped by the Maintenance Rule requirements.

The PWROG believes that a prescriptive 14-day limit in the regulation is apt to unnecessarily complicate what should be a well-established and understood Technical Specification compliance process, particularly with respect to the Risk-Management Technical Specification (RMTS) initiatives. For example, there is a potential for the time limit contained in the regulation to conflict with the Risk-Informed Completion Time (RICT) that would be calculated for the emergency core cooling system (ECCS) in the application of RMTS Initiative 4b. If a licensee implementing both the 50.46a Rule and RMTS Initiative 4b were to choose to credit two (out of two) trains of low pressure safety injection (LPSI) to mitigate a beyond TBS LOCA, and subsequently, one train of LPSI became unavailable, the RICT calculated for this configuration would probably be greater than the time limit contained in the Rule, even though the risk from breaks larger than the TBS would have almost no contribution to the overall risk that determined the RICT. RMTS Initiative 4b establishes a backstop of 30 days for the RICT, after which the plant must take the Technical Specification Action for "the Required Action and associated Completion Time not met" (typically a shutdown requirement). If the 50.46a rulemaking language includes a prescriptive limit, then the rule limit would prevail, thus defeating the purpose of the risk-informed Technical Specifications, with no commensurate safety benefit.

Additionally, the operational restriction would lead to poor risk management under Maintenance Rule (a)(4). The artificial emphasis on mitigation of a low frequency initiator would not comport with the intent of (a)(4) to focus plant resources on more risk significant activities. As resources are finite, this would essentially mean less focus on the more risk significant activities.

To prevent a conflict between the Technical Specifications and the regulations, the PWROG recommends that the NRC consider replacing the prescriptive time limit with either of the following two approaches:

- To ensure that operation in a configuration not demonstrated to meet the acceptance criteria in paragraph (e)(4) is appropriately limited for LOCAs larger than the TBS, the licensee will propose appropriate controls, commensurate with the application of 50.65(a)(4).
- Apply the provisions of RMTS Initiative 4b to calculate a risk-informed completion time that may not exceed 30 days. This would also require use of risk-management actions above a 1E-06 Incremental Core Damage Probability (ICDP) threshold.

The PWROG believes that first approach is most appropriate given the low risk associated with beyond-TBS breaks and the potential conflict of specifying a CT in the regulations that is different than one that is contained in the Technical Specifications. However, recognizing the value of simple rule language, the second approach would also be acceptable. Whichever approach is chosen, the configuration risk management required by 50.65(a)(4) of the Maintenance Rule will ensure that the overall risk is appropriately assessed and managed.

Finally, if there is to be a 14-day restriction, then it should be treated like other CT, and not annualized.

5. Demonstration of Plant-Specific Applicability of TBS

NRC has included a requirement that licensees wishing to implement 50.46a conduct an evaluation to demonstrate that the results in NUREG-1829 [2] and NUREG-1903 [3] are applicable in their plants. Expectation for re-evaluation of applicability of NUREG-1829 and NUREG-1903 after plant changes embeds a continuous process in the Rule. Implementation costs (demonstrating plant-specific applicability of NUREG-1829 and NUREG-1903) and associated reporting requirements will have the potential to limit industry-wide implementation of 50.46a.

A simplified method to ensure the applicability of NUREG-1829 and NUREG-1903 needs to be developed for use by licensees adopting 50.46a. Some limitation on continuously ensuring applicability also needs to be developed.

6. NRC Approval of Beyond-TBS Evaluation Model

The proposed rulemaking language in paragraph (e) has been changed to require NRC review and approval of analysis methods used to evaluate plant thermal-hydraulic response to LOCAs larger than the TBS. The PWROG recommends that such models should be available for inspection, but that prior NRC review and approval of these models for beyond design basis events should not be required. The PWROG believes this is consistent with the classification of breaks larger than the TBS as being beyond design-basis accidents. In addition, fewer NRC resources would be required if prior

approval is not required. Therefore, it is recommended that prior approval be included as an option at the discretion of the vendor or licensee.

7. Consideration of Loss of Offsite Power (LOOP) Coincident with Beyond-TBS LOCA

The new draft rulemaking language introduces a new requirement in paragraph (e)(2) that non-safety-related equipment can only be credited if “onsite power can be readily provided through simple manual actions to equipment that is credited in the analysis.”

The requirement that all equipment credited to mitigate pipe breaks larger than TBS must be designed so that onsite power can be provided automatically or as the result of simple manual actions, is contrary to the notion that the beyond-design basis LOCAs can be analyzed without assuming a coincident LOOP.

This adds additional burden on the licensee if non-safety-related equipment is to be credited for the mitigation of the LOCA greater than the TBS. This will likely require additional analysis and modification of existing equipment and procedures to comply with this new requirement.

8. Consideration of Shutdown Modes

Paragraph (f)(4)(i) states that the PRA must address initiating events “... for all modes of operation including low power and shutdown ...” Beyond-TBS LOCA should not be required to be considered for shutdown below MODE 3 (Hot Standby) for PWRs because of the exceedingly low frequency of a large LOCA occurring in shutdown modes. LOCA analysis is not currently performed from a shutdown initial condition (with less than two trains of ECCS / ECCS bypassed / conflict with LTOP, etc.). The proposed rule language would introduce substantial regulatory uncertainty regarding which plant changes might require the large effort to develop a rigorous evaluation of large LOCA at shutdown conditions.

9. Retaining Coolable Geometry Criterion

In paragraph VI.3, of the August 10, 2009 FRN, the NRC requested stakeholder comment on whether the final 50.46a rule should retain the coolable geometry criterion for beyond-TBS breaks. The PWROG recommends that the option to use the coolable geometry criterion be retained. This provides flexibility and may hold down the analysis scope and cost for beyond TBS compliance.

10. Applicability of the Backfit Rule

The August 2009 rulemaking language requires in paragraph (d)(4) that any changes to the PRA, facility, technical specifications or procedures as a result of PRA maintenance and update “shall not be deemed to be backfitting under any provision of this chapter.”

This part of the language change appears to be very broad including not just changes to the PRA, but changes to the facility, Technical Specifications and operating procedures. By not considering any of these changes to be a “back-fit,” a licensee would be denied any protection afforded by the Backfit Rule that requires that the NRC staff to justify the cost effectiveness of the changes.

In addition, the new rulemaking language continues to exclude future TBS changes from the Backfit Rule.

11. TBS for New Plants

In paragraph (a)(5), the definition for TBS is valid for reactors licensed prior to the effective date of the Rule. For reactors licensed after the Rule, the TBS will “be determined on a plant-specific basis.” This would create some uncertainty for the licensee of any new plants that plan to implement 50.46a, as there would be a question about what an acceptable TBS would be.

12. Requirements for Breaks Smaller than the TBS

Paragraph (e) of the proposed 50.46a includes the requirements for < TBS breaks as well as >TBS. If the thought is that an applicant who uses 50.46a needs the < TBS requirements as well, it seems that it would be administratively cleaner for 50.46a to refer to the new 50.46b for < TBS, assuming the requirements for <TBS are the same in both places.

13. Requirements for Changes to the Facility, Technical Specifications and Procedures

Paragraphs (f) and (f)(1) for changes are confusing in that they appear to say that changes to the Technical Specifications can be made if it meets 50.59 and the risk evaluation is acceptable. However, 10 CFR 50.59 specifically says it cannot be applied for changes to the TSs. The proposed wording is legally correct, but it should be made clearer.

Paragraph (f)(1) would read better as: "The licensee may make changes other than changes to the Technical Specifications without prior NRC approval if..."

And (f)(2) would have a complementary change: "For implementing changes to the Technical Specifications or changes that are not permitted under paragraph (f)(1) of this section..."

References

1. Regulatory Guide 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis," U.S. Nuclear Regulatory Commission, Washington, DC, November 2002.
2. R. L. Tregoning, L. A. Abramson, and P. Scott, "Estimating Loss-of-Coolant Accident (LOCA) Frequencies Through the Elicitation Process," NUREG-1829, Vols. 1 and 2, U.S. Nuclear Regulatory Commission, Washington, D.C., April 2008.
3. N. C. Chokshi, S. K. Shaukat, A. L. Hiser, G. DeGrassi, G. Wilkowski, R. Olson, and J. J. Johnson, "Seismic Considerations for the Transition Break Size," NUREG-1903, U.S. Nuclear Regulatory Commission, Washington, D.C., February 2008.