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OG-10-372

U.S. Nuclear Regulatory Commission  
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To: Mr. Richard Dudley, Rulemaking Project Manager

Subject: PWR Owners Group  
**PWROG Comments on Draft Regulatory Guide DG-1216, "Plant-Specific Applicability of Transition Break Size Specified in 10 CFR 50.46a" (PA-LSC-0419)**

Reference: US Nuclear Regulatory Commission Draft Regulatory Guide DG-1216, Federal Register June, 28, 2010 (Vol. 75, No. 123, pages 36698 to 36700).

The Pressurized Water Reactor Owners Group (PWROG) appreciates the opportunity to review the draft Regulatory Guide DG-1216, as published in the Federal Register on June 28, 2010 (Vol. 75, No. 123, pages 36698 to 36700).

Our general comment is that the methodology embodied in DG-1216 is excessively burdensome and is likely to prevent wide implementation of 10 CFR 50.46a. The overwhelming evidence from operating experience and risk assessments performed by industry and regulators is that the frequency of very large loss of coolant accidents (LOCAs) is exceedingly low. In recognition of this very low frequency, General Design Criterion 4 (GDC 4) was modified to remove these large pipe breaks from the design basis for the purpose of designing the fuel and reactor internals for blowdown loading.

We recognize that the Nuclear Regulatory Commission (NRC) staff has been directed by the Commission to require applicants "to justify that the generic results in the revised NUREG-1829 are applicable to their individual plants" and to "develop regulatory guidance that will provide a method for establishing this justification." The NRC staff has interpreted this direction to include justification of NUREG-1903 applicability as well.

We believe the transition break size (TBS) should be applicable for the vast majority of licensees. The goal of DG-1216 should be to identify those very few plants that might be outliers. Only the potential outlier plants should be required to rigorously follow an applicability

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process as currently specified in DG-1216. The method embodied in the current draft of DG-1216 should be reserved for only those plants that have had significant events in the past that could lead to appreciable degradation of large piping and pressure boundary components. We believe that a much simpler methodology is appropriate for the vast majority of operating plants.

We believe that the first step to justify plant-specific applicability of NUREG-1829 (and NUREG-1903) should be to use a simple checklist to determine if a plant is clearly justified in adopting the TBS, or if the plant is an outlier that should follow the method(s) in the current draft of DG-1216. The checklist might include questions, such as the following:

- Is the plant located in a high seismic zone?
- Has the plant, or the region where the plant is located, experienced a seismic event in excess of the "Safe Shutdown Earthquake?"
- Has the reactor coolant system (RCS) experienced any unusually high mechanical stress events, such as severe water hammer?
- Does the plant have any known unresolved significant RCS material degradation, such as stress corrosion cracking?
- Does the plant have any compliance issues with Codes and Standards or Technical Specifications relating to plant piping and piping supports?

The requirements relating to NUREG-1903 deserves a special mention. If it is determined that the plant is located in low seismic zone, the requirements relating to NUREG-1903 can essentially be eliminated, as the likelihood of a seismic-induced LBLOCA can be ruled out. The more rigorous requirements can be reserved for the plants located in the high seismic zones.

The industry appreciates that the NRC has reduced some of the complexity of the process to demonstrate applicability of the technical basis for the risk-informed alternative to 50.46 for those plants that have completed license renewal. However, we remain concerned that DG-1216 conveys that numerous analyses and verifications are needed to demonstrate applicability, and that this overwhelms the benefit of adopting this voluntary risk-informed approach. Additionally, the exceptionally burdensome process for plants that have yet to complete license renewal virtually ensures that no such licensees will pursue implementation.

The PWROG continues to believe that 10 CFR 50.46a has the potential to become an important part of risk-informed regulation. There has been a great deal of dialogue, effort, and resources expended to ensure the rulemaking language is useful and can be implemented, and we look forward to a final rule.

Correspondence related to this transmittal should be addressed to:

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If you have any questions, please do not hesitate to contact me at (704) 382-8619 or Mr. Wayne Harrison at (361) 972-7298 or Mr. Bob Jaquith at (860) 731-6447.

Sincerely yours,

*Chad Halberstam approving for Melvin L. Arey, Jr.,*

Melvin L. Arey, Jr., Chairman  
PWR Owners Group

MLA:CMH:rfn

Attachment: (1)

cc: PWROG Management Committee  
PWROG Steering Committee  
PWROG Licensing Subcommittee  
PWROG Risk Management Subcommittee  
PWROG Analysis Subcommittee  
PWROG PMO  
PWROG LBLOCA Working Group  
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## Attachment to OG-10-372

### **General Comments to Draft Regulatory Guide DG-1216, Federal Register June, 28, 2010 (Vol. 75, No. 123, pages 36698 to 36700)**

1. The requirements listed in DG-1216 to show conformance with the assumptions in NUREG-1829 and NUREG-1903 are onerous even for the licensees that have implemented license renewal. It will be difficult for licensees make a cost-effective business case to implement the voluntary rule of 10 CFR 50.46a.
2. For any licensee that has not implemented license renewal, the requirements are more onerous, making it unlikely that such a licensee will consider taking advantage of the rule change (prior to receiving a license renewal).
3. NUREG-1829 contains pipe break frequencies based on expert elicitation. DG-1216 is written as though these frequencies were derived using a mathematical formula factoring multiple parameters that reflect items that cannot be modeled. We believe that the inspections and examinations that are currently required provide adequate protection to prevent a large loss of coolant accident (LOCA) and should be adequate even after implementation of the voluntary rule.
4. The transition break size (TBS) was developed with a substantial margin (approximately 13 inch diameter for pressurized water reactors (PWRs), up from the best estimate of about four-inch diameter break that corresponds to a frequency of  $1 \times 10^{-5}$  per year). The Nuclear Regulatory Commission (NRC) staff has said that the purpose of this margin was to ensure regulatory stability. We believe this margin is sufficient to provide confidence that the TBS applies to all plants in the US.
5. The requirements for re-evaluation of the applicability of NUREG-1829 and NUREG-1903 after plant changes, embeds a continuous process for licensee adopting the voluntary 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 10 CFR 50.46a. During the NRC's public meeting on September 30, 2010, it was clarified that "plant changes" refer to all changes to the plant, not just changes that following directly from 10 CFR 50.46a. (See also items 6, 7, 8 and 9.)
6. While DG-1216 implies that the applicability demonstration process is intended to be a one-time exercise, with the exception of supplementary evaluations of the impact of future plant changes, this should be stated more explicitly. Currently, the introduction states that "The proposed rule would require a licensee to conduct the evaluation described herein either before, or as part of, the initial application to modify a nuclear power plant under the proposed rule." It would be beneficial to state this more clearly, and it is suggested that this intent be stated in the Regulatory Position, specifically in Sections C.1 and C.2.

7. DG-1216 requirement for continuous review of proposed plant changes to ensure they do not invalidate operating experience, fails to give appropriate credit to the 10 CFR 50.59 process.
8. As noted in item 5, the plant changes for which a re-evaluation of NUREG-1829 and NUREG-1903 applicability is required, is not limited to plant changes governed by the 50.59 process. For example, for a licensee adopting Risk-Informed Technical Specification Task Force (RITSTF) Initiative 5b (Relocation of Surveillance Intervals), a change to surveillance test interval would trigger a need to reconfirm the NUREG applicability. What are the NRC staff's expectation for a licensee to test and document applicability for a large number of potential plant changes?
9. At the NRC September 30, 2010 public meeting, a process was introduced to account for seismically-induced indirect piping failures. The flow chart, presented on page 16 of the slide presentation, indicated in Step 2 that the licensee will need to "select critical components/supports." These critical components/supports are apparently not limited to beyond TBS primary system piping or pressure boundary structural components; it was suggested that cranes might be included in the scope. The NRC staff needs to clarify the components/supports to be considered in this part of the process.
10. The TBS should be applicable for the vast majority of licensees. The goal of DG-1216 should be to identify those very few plants that might be outliers. Only the potential outlier plants should have to rigorously follow an applicability process as specified in DG-1216. The method embodied in the current draft of DG-1216 should be reserved for only those plants that have had significant events in the past that could lead to appreciable degradation of large piping and pressure boundary components.
11. A simpler screening methodology is appropriate for the vast majority of operating plants. The first step to justify plant-specific applicability of NUREG-1829 (and NUREG-1903) should be to use a simple checklist to determine if a plant is clearly justified in adopting the TBS, or if the plant is an outlier that should follow the method(s) in the current draft of DG-1216. The checklist might include questions, such as the following:
  - Is the plant located in a high seismic zone?
  - Has the plant, or the region where the plant is located, experienced a seismic event in excess of the "Safe Shutdown Earthquake?"
  - Has the reactor coolant system (RCS) experienced any unusually high mechanical stress events, such as severe water hammer?
  - Does the plant have any known unresolved significant RCS material degradation, such as stress corrosion cracking?
  - Does the plant have any compliance issues with Codes and Standards or Technical Specifications relating to plant piping and piping supports?

If it is determined that the plant is located in low seismic zone, the requirements relating to NUREG-1903 can essentially be eliminated, as the likelihood of a seismic-induced LBLOCA can be ruled out. The more rigorous requirements can be reserved for the plants located in the high seismic zones.

12. The recent change to the proposed rule language to require licensees to demonstrate acceptable frequencies for seismically-induced piping failures will be very costly and is not needed because there is more than sufficient margin in the TBS definition.
13. The NRC staff needs to clarify requirements regarding the initiation of aging management programs (AMPs). It was suggested that upon the adaptation of 10 CFR 50.46a, the licensee will be required to initiate any AMPs identified in the license renewal process, regardless whether the AMP was identified as a future commitment (e.g., start at the beginning of the licensee renewal period).
14. Prior to issuance of the final RG on the applicability demonstration process, the process should be piloted at one or more plants to determine if any adjustments are needed.

#### **Comments on Regulatory Position**

15. Section C.1.1.1.1, Primary Water Stress Corrosion Cracking Location and Mitigation: The requirements consist of a mixture of request for information and compliance requirements. For instance, "Describe the ISI plans and mitigation strategies for all applicable DMWs" is a request for information, whereas "Complete mitigation of PLP and PBSC DMWs before enacting any plant changes allowed under the risk-informed revision to 10CFR50.46 or demonstrate that the failure risk of unmitigated DMWs is insignificant" is a compliance requirement. It is not clear what the NRC will do with the information provided; nor is it clear what the acceptance criteria for the compliance requirement are. The rest of the Sections consist of additional requests for information and compliance requirements without any acceptance criteria.
16. Section C.1.2, Plant-Specific Attributes: This section has many requirements relating to materials, loading history, water hammer, fatigue, seismic snubber failures, and other non-seismic transients, etc. It is not clear that collecting this information and carrying out assessments will make the assumptions of the NUREGs more applicable to the plant. It is not clear that there is a direct correlation between snubber failures/water hammer events and LOCA frequency. Is there an acceptance criterion for each of the items for which studies are required?
17. Section C.1.3, Plant Changes that may Affect Direct Failure Frequencies: As long as the changes are made in conformance to the plant's licensing bases and in conformance to the applicable Codes and Standards, it is not clear why any additional analyses would be required.

18. Section C.1.3.1.3.2 directs the licensee to assess the effects of thermal embrittlement for susceptible materials. This is generally not done for pressure-temperature (P-T) curves and is not done separately for the reactor vessel (RV); current embrittlement projections take thermal aging into account. Therefore, what is the rationale to perform this assessment?
19. Section C.1.3.1.3 and its subsections (Pressure-Temperature Limits, Leak-Before-Break, and Pressurized Thermal Shock (PTS)): In general, these appear to be consistent with what licensees would have to consider while pursuing an extended power uprate (EPU). However, the discussion and guidance in this Section appears to be quite vague; it would be helpful if the content was discussed in the context of current regulations for a given topic (e.g., for P-T limits reference to 10CFR 50, Appendix G). Some topics that are not discussed in this Section that should also be considered are Equivalent Margins Analyses and Under Clad Cracking. In particular, the PTS Section (Section C.1.3.1.3.4) should be written with more clarity. It needs to acknowledge 10CFR 50.61 and the PTS screening criteria. If there is sufficient margin per the PTS screening criteria, deterministic analyses involving consideration of "loading transients that occur during a PTS event" should not have to be performed.
20. Section C.2, NUREG-1903 Applicability: Based on a review of site hazard curves, if the probability of a high seismic event that can result in a LOCA, factoring the seismic capacity of the RCS pipes is very low, then the applicability of NUREG-1903 should be automatic. In other words, if the plant is located in a low seismic hazard area, then that licensee should be excluded from any requirements related to NUREG-1903.