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Mr. William B. Kennedy, Project Manager
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Date: December 17, 2020

As a potential applicant for a construction permit and facility operating license for a non-power liquid-fueled molten salt reactor, we appreciate NRC reaching out to potential users for comment on the NRC endorsement of Appendix A, "Part 1, Guidelines for Preparing and Reviewing Applications for the Licensing of Non-Power MSRs: Format and Content," of the report titled, "Proposed Guidance for Preparing and Reviewing a Molten Salt Non-Power Reactor Application" (ORNL/TM-2020/1478) (ADAMS Accession No. ML20219A771), prepared by Oak Ridge National Laboratory (ORNL), as guidance for use by applicants for non-power liquid fueled molten salt reactors. This new guidance tailors the NUREG-1537 guidance on the format and content of applications to include additional information specific to molten salt reactor technology and removes information related to light water reactors that is not relevant to non-power liquid fueled molten salt reactors. We appreciate the efforts of those at ORNL who developed the new guidance and the efforts at the NRC to endorse it. We carried out a detailed review of the new guidance and overall, we are impressed with the appropriate breadth and depth of the changes to the guidance. We will prepare our license applications using the new guidance, as appropriate, which we believe will result in a more streamlined licensing process for the University Molten Salt Research Reactor (MSRR) we planning to build and operate.

Below are a few comments on some of the adopted contents.

Section 4.5 states "Computer codes that are used should be described in detail as to the name and type of code, the way it is used, and its validity on the basis of experiments." Section 4.6 states "Computer codes that are used should be described in detail as to the name and type of code, the way it is used, and its validity based on experiments." The guidance should provide additional detail on the depth of validation for a molten salt non-power reactor. This would include the comparison to existing reactors. Due to the limited history of operating MSRs, zero power testing should be an acceptable way to satisfy some aspects of validation.

Section 4.5.2 states "The applicant should validate these calculations by comparing them with experimental measurements and other validated calculations." The guidance should clarify what exactly is meant by "other validated calculations"? All comparisons involve unfolding measurements through indirect methods such as fission chambers, neutron detectors, and flux foils. Further clarification is needed on the definition of "validation".

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Non-power reactor 10 CFR Part 50 licenses have authorized the receipt, possession and use of any special nuclear material or byproduct material created by operation of the reactor without limit on quantity or form. Section 9.5 states "Knowing the concentration and quantity of byproduct, source, and special nuclear material in the fuel salt at any time requires a complex calculational or measurement program or a combination of the two." It is not clear what the guidance is requesting with respect to the time resolution and level of material detail, the types of materials tracked, and if it includes all fission and activation products. Clarification is also needed on how often and to what certainty physical measurement is needed.

In closing, I would like to reiterate how pleased we are with the changes in guidance, which we believe will help us develop a quality license application as well as streamline the review process. We will continue to engage with the NRC staff in public meetings prior to submission of our applications to better understand the intent and applicability of some of the changes.

Sincerely,

Rusty Towell

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Abilene Christian University

Enclosers:

none