



Department of Energy
Washington, DC 20585

February 2, 2018

Dr. Jean M. Bahr
Chair
Nuclear Waste Technical Review Board
2300 Clarendon Boulevard
Suite 1300
Arlington, VA 22201-3367

Dear Dr. Bahr,

We appreciate your review of the latest draft of the “EPRI/DOE High-Burnup Fuel Sister Rod Test Plan Simplification and Visualization.” The Board raised five points that are addressed below.

NWTRB suggestions to improve clarity of the report:

1. The Board’s first question asks if the *High-Burnup Fuel Sister Rod Test Plan Simplification and Visualization* tests take precedence over the attached PNNL and ORNL plans. For Phase 1 testing, the NWTRB is correct. Tests defined in the *Simplified and Visual Plan* take precedence over those discussed in the ORNL and PNNL plans located in the Appendices. During Phase 2 testing, the community will draw from the tests described in the PNNL and ORNL plan for potential future testing to target the quantification of more specific mechanical attributes.
2. The Board’s second question asks how the 25 sister rods will be resealed to maintain the internal atmosphere. Care will be taken to ensure the seals are not made in a way that could affect the cladding or fuel. The rods will be punctured at ORNL and then placed in tubes and sealed with Swagelok® (or similar) fittings. The tubes will be filled with an inert gas to remove moisture and oxygen from the environment. Each lab will document their method for storage.
3. The Board’s third question asks if the rods heat treated to 400°C could be interpreted to mean that we would pressurize to the highest pressures in the current fleet. The answer to this question is no. The 400°C rods will be pressurized to a pressure close to the pressure that is realistically representative of the internal pressure the rod in the High-Burnup Spent Fuel Data Project would experience at 400°C. We are aware there are different types of rods in the fleet that have higher pressures and those conditions may be addressed in Phase 2, we may try to obtain some Integral Fuel Burnable Absorber (IFBA) rods, or we may take a more analytical path to address these rods.



NWTRB suggestions to improve the usefulness of the report:

1. The Board's first suggestion for improvement requests an identification of the specific models that will be used in the future. Identification of specific models is out of the scope of this test plan, but we intend for all the data in the Phase 1 testing to be used in models and we will share the data with interested modelers.
2. The Board's second suggestion for improvement asks how PNNL and ORNL will store the rods for future testing. The rods will be punctured at ORNL and then placed in tubes sealed with Swagelok fittings. The tubes will be filled with an inert gas to remove moisture and oxygen from the environment and stored in a hot cell.

DOE appreciates the Board's review of this and previous versions of this document and looks forward to continued input and insight from the Board on this topic as the testing progresses.

Sincerely,



Raymond V. Furstenau
Associate Principal Deputy Assistant Secretary
for Nuclear Energy