



**UNITED STATES
NUCLEAR WASTE TECHNICAL REVIEW BOARD**

2300 Clarendon Boulevard, Suite 1300
Arlington, VA 22201-3367

November 7, 2017

Mr. Edward McGinnis
Acting Assistant Secretary for Nuclear Energy
U.S. Department of Energy
1000 Independence Ave., SW
Washington, DC 20585

Dear Mr. McGinnis:

Thank you for the opportunity to review the latest draft of the sister rod test plan, "EPRI/DOE High-Burnup Fuel Sister Rod Test Plan Simplification and Visualization" (SAND2017-10310 R, September 15, 2017). Due to the limited time between receipt of the draft report (October 10, 2017) and your preferred comment deadline (November 2, 2017)¹, the Board reviewed only the main body of the draft.

We believe the report would be improved if the following points were clarified:

1. The draft plan lays out the destructive examination tests to be completed, but it also refers to the attached Oak Ridge National Laboratory (ORNL) and Pacific Northwest National Laboratory (PNNL) test plans. If there are differences in the tests to be performed between the new test plan and the attached individual laboratory test plans, is it correct that the tests defined in the new plan take precedence?
2. Step 1, page 4 indicated that all 25 rods will be punctured at ORNL. Will the rods being sent to PNNL be resealed? If not, how will the internal atmosphere in the rods be controlled?
3. Step 3, page 4 states, "pressurized to End-of-Life Rod-Internal-Pressures representative of pressures at 400°C." Should this be interpreted as the maximum pressure in the current fleet of spent nuclear fuel expected to be stored, as this would likely imply pressurizing to the end of life pressure associated with Integral Fuel Burnable Absorber ² rods that have not been included in the testing program?

In the Board's recent review of the test plan, "EPRI/DOE High Burnup Fuel Sister Pin Test Plan Simplification and Visualization" (SAND2017-7597, July 2017), the Board raised the following issues that do not appear to be addressed in this version of the plan. We believe the usefulness of the plan would be enhanced if these issues, quoted below from our August 25, 2017 letter regarding this subject, could be addressed before it is released.

¹ In a recent meeting, Mr. Ned Larson indicated that the Board could have extra time to comment on the report.

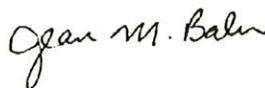
² Fuel rods containing a burnable poison used to control the reactivity level in the reactor.

1. Based on previous discussions and report reviews, the Board notes that one of the purposes of the heat treatment tests is to provide data to support modeling efforts that will allow the test results to be extended to other types of HBF (high burnup fuel). However, the plan does not address how test results will be used in the modeling efforts. It would be useful to identify the models and the test data that the models will use.
2. The HDRP (High Burnup Dry Storage Cask Research Project) sister rods constitute a valuable resource for research and development to meet presently unforeseen needs related to spent nuclear fuel management and disposal. The Board is pleased that the plan recognizes this and says that "After the high priority testing, if there is time and budget, more data can be obtained from the 25 high burnup sister rods." How the rods will be stored so that their characteristics do not appreciably change during storage and how documentation on these rods will be preserved for future use need to be considered in the near term.

Since any follow-up work will be based on the outcome of the testing outlined in this test plan, members of the Board would like to observe future meetings held to evaluate the test results and discuss how to proceed with further testing.

Once again, the Board thanks you for the opportunity to review this and previous sister rod characterization and testing plans. We look forward to reviewing the evolving technical results and details of how testing will be accomplished, and how the results will be linked to modeling efforts.

Sincerely,



Jean M. Bahr
Chair

cc: Mr. Ned Larsen (DOE, Office of Nuclear Energy)
Ms. Nancy Buschman (DOE, Office of Nuclear Energy)
Ms. Sylvia Saltzstein (SNL)