



Department of Energy
Washington, DC 20585

April 7, 2022

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

Dear Dr. Bahr,

We appreciate your letter dated August 12, 2021, which presented observations, comments, and recommendations on the Board's Spring 2021 Meeting held on May 12-13, 2021. The Department of Energy (DOE) understands the Board's position in the letter where five recommendations were made. Enclosed is the Department's response to the five recommendations that were presented in the letter.

DOE appreciates the Board's input to our program and looks forward to continued input and insight from the Board on this topic as the testing progresses. If you have any questions, please feel free to contact Dr. Kimberly Petry, Acting Deputy Assistant Secretary for Spent Fuel and Waste Disposition, Office of Nuclear Energy at Kimberly.Petry@nuclear.energy.gov.

Sincerely,

A handwritten signature in black ink, which appears to read "Andrew Griffith", is written over a horizontal line.

Andrew Griffith
Acting Assistant Secretary
for Nuclear Energy

Enclosure



**Department of Energy, Office of Nuclear Energy (DOE-NE) Response to Nuclear Waste
Technical Review Board (NWTRB) Comments and Recommendations on Advanced
Nuclear Fuels (ANF) and Accident Tolerant Fuels (ATF)
Spring 2021 NWTRB Meeting**

Recommendation #1:

The Board recommends that the DOE Office of Spent Fuel and Waste Disposition coordinate and integrate in an ongoing fashion with the Office of Nuclear Fuel Cycle and Supply Chain on preparing for storage, transportation, and disposal of SNF resulting from deploying ANF/ATF in existing LWRs. Steps that can be taken include but are not limited to forming collaborative working groups, sharing laboratory facilities and equipment, and sharing irradiated fuel specimens and fuel characterization data.

DOE-NE Office of Nuclear Fuel Cycle and Supply Chain and DOE-NE Office of Spent Fuel and Waste Disposition will continue to cooperate and collaborate in sharing data, plans, laboratories, equipment, and ANF/ATF samples. In addition, DOE-NE has working relationships with the Electric Power Research Institute (EPRI), the Nuclear Regulatory Commission (NRC), the Extended Storage Collaboration Program (ESCP), international programs and industry. The relationships, sharing, integration and cooperation between all the groups and organizations are similar to those that were established for the High Burnup Demonstration and have proved to be very effective over the years. DOE-NE will continue to effectively use that model and processes for ANF/ATF issues now and in the future. In light of the Board's recommendation, however, DOE-NE will look for opportunities to further enhance coordination and integration between the Office of Nuclear Fuel Cycle and Supply Chain and the Office of Spent Fuel and Waste Disposition.

Recommendation #2:

The Board recommends that the next update to DOE's gap analysis report for SNF management be expanded in scope beyond storage and transportation to include disposal of SNF resulting from the use of ANF/ATF.

The national labs have begun work on a report that will continue the analysis of the evolving ANF/ATF technologies and potential waste streams from ANF/ATF reactor fuel cycles which includes disposal analyses. This report will pull from work on the disposal, storage, and transportation gap analyses and should address the substance of the Board's recommendation. R&D work on spent ANF/ATF is continuing for disposal, storage, and transportation, but because the test plans for these activities are changing and adapting at different schedules, the documents for disposal are better left separate from the documents for storage and transportation, for now. As more data and information become available in the future, DOE-NE may consider greater integration among those documents.

Recommendation #3:

The Board recommends that DOE-NE work to improve its access to fuel characterization data obtained during DOE-sponsored ANF/ATF development programs. Some of these data are important for assessing and closing the knowledge gaps related to ANF/ATF storage, transportation, and disposal.

The two DOE-NE offices are working closely on ANF/ATF issues, and they currently collaborate and share data that are available. The current non-disclosure agreements (NDAs) with private industry on proprietary data must be maintained. All data allowed by the NDAs that are currently available and needed for assessing and closing the knowledge gaps are shared. Once there is access to ANF/ATF at relevant burnups, DOE-NE will be able to test and model the behavior of the fuel in storage, transportation, and disposal conditions. This will allow DOE-NE to close any knowledge gaps that exist which should address the substance of the Board's recommendation.

Recommendation #4

The Board recommends that DOE evaluate the approaches used and experiences gained in other countries regarding early consideration of the potential impacts of new ANF/ATF designs on SNF storage, transportation, and disposal. Based on the lessons learned in other countries, DOE should implement mechanisms to provide feedback to ANF/ATF development work that accounts for the impact of these fuels on SNF management and disposal. The feedback process can also be used to prioritize SNF management research and development.

DOE-NE is involved in multiple international collaborations for storage, transportation, and disposal through the International Atomic Energy Agency, the Nuclear Energy Agency, the European Commission, EPRI's Extended Storage Collaboration Program (ESCP), the International Nuclear Energy Research Initiative (I-NERI), and other multi-national cooperation initiatives. Other countries also participate and share in these organizations. The purpose of each of these collaborations is to share data, information, and knowledge for the purpose of enabling more informed decisions. In line with the Board's recommendation, DOE-NE will continue to proactively and holistically evaluate modifications to the ANF/ATF with consideration given to international approaches and experiences.

Recommendation #5:

The Board recommends that DOE increase the accessibility of ATF information to the general public in the interest of clearly demonstrating openness, facilitating public engagement, factoring in public concerns in planned R&D, and avoiding the perception that there may be unexplored or unresolved issues (including issues affecting SNF management and disposal) related to the introduction of the new fuel designs.

DOE-NE Office of Spent Fuel and Waste Disposition plans, data, and reports are publicly available via the Office of Scientific and Technical Information (OSTI) and the DOE-NE website. Reports are sent to the NRC, EPRI, NWTRB, fuel vendors, utilities, and cask vendors prior to release so they can review them. The work is also presented in public conferences and papers published in peer-reviewed journals where anyone from the public can review and understand what has been and is being done. DOE-NE believes that segments of the public with interest in nuclear issues have full access to all relevant data. In light of the Board's recommendation, DOE-NE will look for opportunities to further enhance this access.