



U.S. Nuclear Waste Technical Review Board

NWTRB
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U.S. Nuclear Waste Technical Review Board

Presented to:

Spring 2021 Board Meeting

Presented By:

Dr. Paul J. Turinsky, Deputy Chair

Board Members

- ❖ **Jean M. Bahr, Ph.D., Chair** – University of Wisconsin, Madison
- ❖ **Paul J. Turinsky, Ph.D., Deputy Chair** – North Carolina State University
- ❖ **Steven M. Becker, Ph.D.** – Old Dominion University
- ❖ **Allen G. Croff, Graduate Nuc. Engr. Degree, MBA** – Vanderbilt University
- ❖ **Efi Foufoula-Georgiou, Ph.D.** – University of California, Irvine
- ❖ **Tissa H. Illangasekare, Ph.D., P.E.** – Colorado School of Mines
- ❖ **Kenneth Lee Peddicord, Ph.D. , P.E.** – Texas A&M University
- ❖ **Mary Lou Zoback, Ph.D.** – U.S. Geological Survey (retired)
- ❖ **Susan L. Brantley, Ph.D.** – Pennsylvania State University
- ❖ (vacant)
- ❖ (vacant)



About the Board



The U.S. Nuclear Waste Technical Review Board (Board) was established by Congress as an independent federal agency in the 1987 amendments to the Nuclear Waste Policy Act (NWPA).



Board Member Appointment



NATIONAL ACADEMY
OF SCIENCES



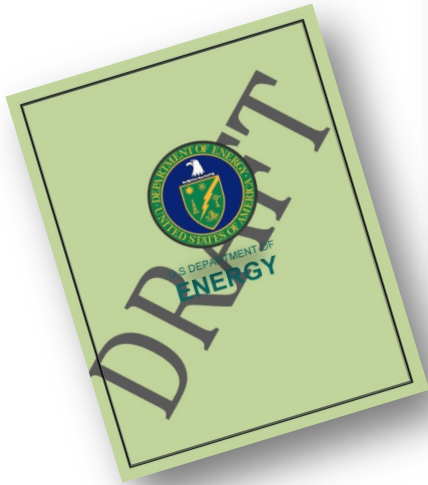
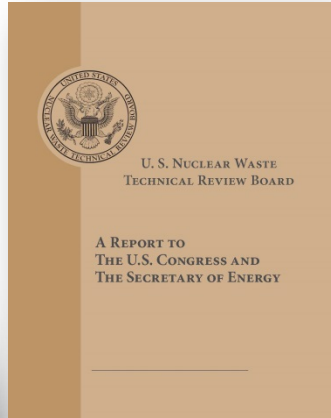
- At full strength, the Board is composed of eleven members
- Board members are nominated by the National Academy of Sciences and appointed by the President to four-year terms
- Terms are staggered, and Board members may continue to serve until they are reappointed or replaced



About the Board

The Board:

- Conducts independent and objective peer review of DOE activities
- Reports its findings, conclusions, and recommendations to the U.S. Congress and the Secretary of Energy
- By law, has access to draft DOE documents—according to the Legislative History of the NWPAA, so that Board recommendations can be made during decision-making, not after the fact
- Provides congressional testimony at the invitation of Congress



About the Board (cont.)



- Holds public meetings each year, normally in different locations in the United States—meetings are webcast
- Provides technical and scientific comments in letters or reports to DOE following public meetings
- Makes all official documents and information (meeting transcripts, archived webcasts, and presentations; reports, correspondence, and congressional testimony) available on its website: www.nwtrb.gov



Meeting Information

- Go to www.nwtrb.gov for meeting materials and Board reports, correspondence, and testimony
- Public comment period (at the end of each day)
 - Comments received by the end of each day's last break period will be read online by Board staff member Bret Leslie
 - Time for each comment may be limited, but the entirety of the comment will be included in the meeting record
- The meeting is being recorded (the transcript and archived recording of the meeting will be available at www.nwtrb.gov)



Nuclear Fuel Designs in Scope

Advanced nuclear fuels including accident tolerant fuels for light water reactors

- New cladding designs
 - Chromium or chromium nitride coated zirconium alloy
 - Iron-based cladding, including iron-chromium-aluminum
 - Silicon carbide composites
- New fuel and new pellet designs
 - Chromia-doped or similar
 - High density fuel pellets, including uranium nitride
 - Metallic fuel
- Fuels with higher enrichments of uranium-235 that are designed to operate to higher burnups
- **Not covered:** Generation IV fuels, research reactor fuels, small modular reactor fuels



Meeting Agenda (May 12)

- 12:15 p.m. EDT** **U.S. Department of Energy (DOE) Introduction to R&D Support for Accident Tolerant Fuels (ATFs); Characteristics of ATFs for Light Water Reactors**
Bill McCaughey, DOE, Office of Nuclear Fuel Cycle and Supply Chain, NE-4; Dan Wachs, Idaho National Laboratory
- 1:30 p.m. EDT** **Characteristics of Lightbridge Fuel for Light Water Reactors**
Aaron Totemeier, Lightbridge
- 2:20 p.m. EDT** **Break**
- 2:40 p.m. EDT** **U.S. Nuclear Regulatory Commission (NRC) Project Plan for ATF; Regulatory Perspectives on the Impact of ATF on Storage and Transport**
Marilyn Diaz and John Wise, NRC
- 3:40 p.m. EDT** **DOE Perspectives on the Impact of Advanced Nuclear Fuels including ATFs on Spent Nuclear Fuel Storage, Transport, and Disposal**
William Boyle, DOE, Office of Spent Fuel and Waste Disposition, NE-8; Sylvia Saltzstein, Sandia National Laboratories
- 4:40 p.m. EDT** **Public Comments**
- 5:00 p.m. EDT** **Adjourn**



Meeting Agenda (May 13)

- 12:05 p.m. EDT** **Plans for Advanced Nuclear Fuels including ATFs in Switzerland and Policies and Procedures for Managing the Resulting Spent Nuclear Fuel**
Stefano Caruso, KKG (Switzerland)
- 12:55 p.m. EDT** **Plans for Advanced Nuclear Fuels including ATFs in Sweden and Policies and Procedures for Managing the Resulting Spent Nuclear Fuel**
Anders Sjöland, SKB (Sweden)
- 1:45 p.m. EDT** **Break**
- 2:05 p.m. EDT** **Plans for Advanced Nuclear Fuels including ATFs in the UK and Policies and Procedures for Managing the Resulting Spent Nuclear Fuel**
Dave Goddard and David Hambley, National Nuclear Laboratory (UK)
- 2:55 p.m. EDT** **Panel: Potential Impacts of Advanced Nuclear Fuels including ATFs on Spent Nuclear Fuel Storage, Transport, and Disposal**
Dan Wachs, Idaho National Laboratory; Aaron Totemeier, Lightbridge; John Wise, NRC; Sylvia Saltzstein, Sandia National Laboratories; Stefano Caruso, KKG (Switzerland); Anders Sjöland, SKB (Sweden); David Hambley, NNL (UK)
- 4:10 p.m. EDT** **Public Comments**
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