

What is the U.S. Nuclear Waste Technical Review Board?

Yucca Mountain

In 1987, Congress selected a site at Yucca Mountain in Nevada as the only site to be characterized as a potential underground repository for permanent disposal of the nation's commercial spent nuclear fuel and defense high-level radioactive waste. Yucca Mountain is in Nye County, about 100 miles northwest of Las Vegas .

Characterization of Yucca Mountain continued until 2002, when President George W. Bush recommended the site for repository development. The President's recommendation was approved by Congress later that year. Since that time, the DOE has been conducting work that would support an application to be submitted to the Nuclear Regulatory Commission for authorization to construct a repository at Yucca Mountain.

Congress created the U.S. Nuclear Waste Technical Review Board (the Board) in the 1987 amendments to the Nuclear Waste Policy Act to review the technical and scientific validity of Department of Energy (DOE) activities related to disposing of the nation's commercial spent nuclear fuel and defense high-level radioactive waste. These activities include evaluating the Yucca Mountain site, as well as packaging and transporting the waste. The Board is an independent federal agency.

How Does the Board Implement its Congressional Mandate?

The Board performs a continuous independent and expert technical review of the DOE program and reports its conclusions and recommendations to Congress and the Secretary of Energy at least two times a year. In conducting its ongoing review, the Board

- Makes every effort to ensure that its scientific and technical recommendations are communicated to the DOE before decisions are made, not after the fact.
- Evaluates how components of the repository and waste management act together as "systems."
- Fosters discussion and understanding of scientific and technical issues related to disposing of, transporting, and packaging spent nuclear fuel and high-level radioactive waste.

Who serves on the Board?

The Nuclear Waste Policy Amendments Act authorizes a board of 11 part-time members who are eminent in a field of science or engineering and who are selected solely on the basis of expertise and distinguished service. The National Academy of Sciences recommends a slate of candidates from which the President makes appointments to the Board.

How does the Board contribute to the process?

By performing ongoing and independent technical and scientific review, the Board enhances the credibility of the scientific effort and understanding of critical technical and scientific issues.

Board Panels & Technical Issue Evaluation

To facilitate and enhance its review of DOE activities, the Board has reorganized its panels around three broad areas of technical activity: Preclosure Operations, Postclosure Repository Performance, and, System Integration. In addition to the realignment of the panels, the Board has identified several key technical issues and designated Board members to lead the Board's review of DOE activities in those areas. The issues and the technical-issue leads are: Transportation, Mark Abkowitz; Natural System, Thure Cerling; Corrosion, David Duquette; Dose Assessment, John Garrick; Thermal Management, Andy Kadak; Source Term, Bill Murphy; Performance Assessment, Ali Mosleh; and Surface Facilities, Henry Petroski.

Board Members

B. John Garrick, Ph.D., P.E., was appointed to the Board as Chairman on September 10, 2004, by President George W. Bush. Dr. Garrick is an executive consultant. His areas of expertise include the application of the risk sciences to complex technological systems in the space, defense, chemical, marine, and nuclear fields.

Mark D. Abkowitz, Ph.D., is professor of civil and environmental engineering at Vanderbilt University. Dr. Abkowitz's areas of expertise include the technology of transportation, risk management and risk assessment, and emergency preparedness.

William Howard Arnold, Ph.D., P.E., was appointed to the Board on September 10, 2004, by President George W. Bush. Dr. Arnold is a private consultant. His areas of expertise include nuclear project management, organization, and operations.

Thure E. Cerling, Ph.D., is Distinguished Professor of Geology and Geophysics and professor of biology at the University of Utah. Dr. Cerling's areas of expertise include terrestrial geochemistry and geochemistry processes.

David J. Duquette, Ph.D., is department head and professor of materials engineering at Rensselaer Polytechnic Institute. Dr. Duquette's areas of expertise include physical, chemical, and mechanical properties of metals and alloys.

George M. Hornberger, Ph.D., was appointed to the Board on September 10, 2004, by President George W. Bush. He is Ernest H. Ern Professor of Environmental Sciences in the Department of Environmental Sciences at the University of Virginia. Dr. Hornberger's areas of expertise include catchment hydrology and hydrochemistry centered on the coupling of field observations with mathematical modeling.

Andrew C. Kadak, Ph.D., was appointed to the Board on September 10, 2004, by President George W. Bush. Dr. Kadak is Professor of the Practice in the Nuclear Engineering Department at the Massachusetts Institute of Technology. His areas of expertise include nuclear management and the development of advanced nuclear reactors.

Ronald M. Latanision, Ph.D., was appointed to the Board by President George W. Bush on June 26, 2002. Dr. Latanision is emeritus professor of materials science and engineering at the Massachusetts Institute of Technology and a principal in Exponent, a science and engineering firm. His areas of expertise include materials processing and corrosion of metals and other materials in aqueous environments.

Ali Mosleh, Jr., Ph.D., was appointed to the Board on September 10, 2004, by President George W. Bush. Dr. Mosley is a professor and director of the Reliability Engineering Program and director of the Center for Risk and Reliability at the University of Maryland. His areas of expertise include methods for probabilistic risk analysis and reliability of complex systems.

William M. Murphy, Ph.D., was appointed to the Board by President George W. Bush on March 20, 2006. Dr. Murphy is professor in the Department of Geological and Environmental Sciences at California State University, Chico. He has expertise in geochemistry, including the interactions of nuclear wastes and geologic media.

Henry Petroski, Ph.D., P.E., was appointed to the Board on September 10, 2004, by President George W. Bush. Dr. Petroski is Aleksandar S. Vesic Professor of Civil Engineering and a professor of history at Duke University. His areas of expertise include failure analysis and design theory.
