

## **BRUCE B. BEVARD**

bevardsbb@ornl.gov

Reactor and Nuclear Systems Division  
Oak Ridge National Laboratory

### **EDUCATION**

UNIVERSITY OF ALABAMA, Huntsville, AL  
Ph.D. coursework completed, Engineering Management

UNIVERSITY OF CONNECTICUT, Storrs, CT  
M.B.A., Marketing

UNITED STATES NAVAL ACADEMY  
B.S., Operations Analysis

### **EXPERIENCE**

2008 – present

**OAK RIDGE NATIONAL LABORATORY (ORNL)**, Oak Ridge, TN  
*Manager, Nuclear Fuels Testing*

Areas of expertise and interest include development of the Post Irradiation Examination (PIE) test plans and procedures, shipment of irradiated MOX fuel to ORNL, and the nondestructive and destructive testing of irradiated MOX fuel. Mr. Bevard is also leading the ORNL program to support the Nuclear Regulatory Commission's (NRC) efforts to license new reactors including small, modular reactors (SMRs). This work has included the update of the Standard Review Plan (NUREG 0800), development of Combined Operating License (COL) Safety Evaluation Report templates for the ABWR, AP-1000, ESBWR and EPR, and support of NRC's review of the nuclear industry's COL (10 CFR Part 52) and reactor design certification (DC) submittals.

- In 2008 and 2010, served as the overall coordinator for the Office of Science National Laboratory Consortium (4LC) consisting of Argonne National Laboratory (ANL), Brookhaven National Laboratory (BNL), ORNL, and Pacific Northwest National Laboratory (PNNL) in support of NRC's new reactor licensing program.
- Currently leading a national laboratory effort by ORNL, BNL, PNNL and Sandia National Laboratories (SNL) to support NRC's update of their regulatory infrastructure to support the eventual licensing reviews of SMRs. This work includes updating much of the NRC documentation to allow design certification reviews of integral pressurized water reactors, gas reactors and liquid metal fast reactors.

1995 – 2003

*U.S. Co-Chairman for the Thermal Reactor Working Group, part of the Joint U.S./Russian Plutonium Disposition Project*

The focus of this international project was to take Russian weapons-grade plutonium withdrawn from nuclear military programs and utilize it as mixed-

oxide (uranium/plutonium - MOX) fuel in Russian VVER-1000 pressurized light-water reactors.

As the U.S. Co-Chairman for the Thermal Reactor Working Group, Mr. Bevard's responsibilities included:

- Development of a long-range R&D plan for reactor options
- Development of overall work programs and areas of cooperation within the scope of the Plutonium Disposition Program
- Research and development of technologies to manufacture MOX fuel
- Reactor plant analysis, evaluation, and implementation of the modification program to support Russian VVER-1000 operation using MOX fuel
- Testing and qualification of various MOX fuels to allow insertion of lead test assemblies (LTAs) into a Russian VVER-1000 reactor
- Project management of the Thermal Reactor Project, which included interfacing with international teams (French, German, Canadian, and Japanese), prioritizing, coordinating, reviewing, and approving cooperative projects, working with DOE to identify and develop funding and task requirements, developing cost and schedule estimates, developing joint program roadmaps for the VVER reactor modifications, and management of a multi-laboratory U.S. effort to conduct R&D to support the Plutonium Disposition Program.

1992 – 2008

*Research and Development Staff Member*

Supported the DOE space reactor R&D program (2004–2005), leading ORNL's work on the NASA Jupiter Icy Moon Orbiter (Project Prometheus) Program for the DOE Office of Nuclear Energy, and subsequently the Office of Naval Reactors. This program focused on developing technologies necessary to design, launch, and operate a 100 MW liquid metal or gas cooled reactor in space.

As Program Manager for Project Prometheus, was responsible for a \$15M R&D program to develop advanced reactor materials, instrumentation and control hardware and software, reactor shielding, QA and launch safety programs in addition to personally developing the Assembly, Test, and Launch Operations (ATLO) procedures.

Served as the U.S. representative to the International Atomic Energy Agency (IAEA) for the 1997 Symposium on "Nuclear Fuel Cycle and Reactor Strategy: Adjusting to New Realities" (1996–1997). Served as the U.S. Delegate to the October 1996, P-8 Experts Meeting on Plutonium Disposition in Paris, France.

## **PUBLICATIONS**

L. J. Ott, B. B. Bevard, D. J. Spellman, and K. McCoy, "Code Analyses Supporting PIE of Weapons-Grade MOX Fuel," *Proceedings of Top Fuel 2010*, Orlando, Florida, September 26-29, 2010.

R. N. Morris, B. B. Bevard, and K. McCoy, "Hot Cell Examination of Weapons-Grade MOX Fuel," *Proceedings of Top Fuel 2010*, Orlando, Florida, September 26-29, 2010.

B. B. Bevard, J. C. Wagner, C. V. Parks, and M. Aissa, *Review of Information for Spent Nuclear Fuel Burnup Confirmation*, NUREG/CR-6998 (ORNL/TM-2007/229), prepared for the U.S. Nuclear Regulatory Commission by Oak Ridge National Laboratory, Oak Ridge, Tenn., December 2009.

B. B. Bevard, T.-L. Sham, J. G. Merkle, L. J. Ott, and D. J. Spellman, "An Expanding Plug Test Method for Determining Hoop Stress-Strain Curves of Irradiated Nuclear Fuel Cladding," *Proceedings of Top Fuel 2009*, Paris, France, September 6-10, 2009.

L. J. Ott, B. B. Bevard, R. N. Morris, and D. J. Spellman, "Mixed Oxide Fuel Prepared with Weapons-Derived Plutonium: Test Irradiations Summary and Preliminary LTA PIE Results," *Proceedings of Top Fuel 2009*, Paris, France, September 6-10, 2009.

L. J. Ott, B. B. Bevard, R. J. Ellis, J. L. McDuffee, and D. J. Spellman, "Advanced Fuel/Cladding Testing Capabilities in the ORNL High Flux Isotope Reactor," *Proceedings of Top Fuel 2009*, Paris, France, September 6-10, 2009.

D. J. Spellman, B. B. Bevard, J. B. Chesser, L. J. Ott, and R. N. Morris, "Development of Commercial-Length Nuclear Fuel Post-Irradiation Examination Capabilities at the Oak Ridge National Laboratory," *Proceedings of Top Fuel 2009*, Paris, France, September 6-10, 2009.

S. B. Ludwig and B. B. Bevard, "Shipment of Irradiated MOX Fuel Rods - Lessons Learned," *Proceedings of INMM 50th Annual Meeting*, Tucson, Arizona, July 12-16, 2009.

A. Chebeskov, A. Kalashnikov, B. Bevard, D. Moses, and A. Pavlovichev, "The U.S.-Russian Joint Studies on Using Power Reactors to Disposition Surplus Weapon Plutonium as Spent Fuel," North Atlantic Treaty

Organization (NATO)/Advanced Study Institute (ASI) Conference, Moscow, Russia, September 1997.

B. B. Bevard et al., *Joint U.S./Russian Plutonium Disposition Study - Water Reactors*, August 1996.

S. R. Greene, B. B. Bevard et al., *FMDP Reactor Alternative Summary Report, Vol.1, Existing LWR Alternative*, ORNL/TM-13275/V1, Oak Ridge National Laboratory, Oak Ridge, Tenn., October 1996.

B. B. Bevard et al., *Water Reactors Report for the Joint U.S./Russian Plutonium Disposition Study, Rev. 1*, ORNL/MD/LTR-46, Oak Ridge National Laboratory, Oak Ridge, Tenn., March 1995.

B. B. Bevard et al., *FMDP Partially Complete LWR Reactor Facility Data Report*, ORNL/MD/LTR-34, Oak Ridge National Laboratory, Oak Ridge, Tenn., August 1995.

B. B. Bevard et al., *Reactor Facility Response to the FMDP Reactor Alternative Team ROD Analysis Data Call for the Evolutionary (Advanced) LWR Alternative and Associated Variants*, ORNL/MD/LTR-32, Oak Ridge National Laboratory, Oak Ridge, Tenn., July 1995.

B. B. Bevard and S. R. Greene, *U.S. Water Reactors Co-Chair Report for the Joint U.S./Russian Plutonium Disposition Study*, ORNL/MD/LTR-31, Oak Ridge National Laboratory, Oak Ridge, Tenn., February 1996.

S. R. Greene, B. B. Bevard et al., *FMDP Reactor Alternative Team ROD Analysis Data Call for the Partially Complete LWR Alternative*, ORNL/MD/LTR-30, Oak Ridge National Laboratory, Oak Ridge, Tenn., July 1995.

S. R. Greene, B. B. Bevard et al., *FMDP Reactor Alternative Team ROD Analysis Data Call for the CANDU Alternative and Associated Variants*, ORNL/MD/LTR-28, Oak Ridge National Laboratory, Oak Ridge, Tenn., July 1995.

B. B. Bevard et al., *Reactor Facility Response to the FMDP LWR Alternative Data Call*, ORNL/MD/LTR-27, Oak Ridge National Laboratory, Oak Ridge, Tenn., July 1995.

S. R. Greene, B. B. Bevard et al., *FMDP Reactor Alternative Team ROD Analysis Data Call for the Evolutionary (Advanced) LWR Alternative and Associated Variants*, ORNL/MD/LTR-26, Oak Ridge National Laboratory, Oak Ridge, Tenn., July 1995.

B. B. Bevard et al., *Comments on the Fissile Materials Disposition Program Performance Requirements Document Rev. 0, Issue D*, ORNL/MD/LTR-16, Oak Ridge National Laboratory, Oak Ridge, Tenn., March 1995.

H. P. Alesso, B. B. Bevard et al., *Long Range Research and Development Plan Reactor-Based Technologies, Rev.1*, ORNL/MD/LTR - 12, Oak Ridge National Laboratory, Oak Ridge, Tenn., March 1996.

DOE-TSL-4, *Directory of DOE and Contractor Personnel Involved in Non-Government Standards Activities*, 1994.