

## **Biographies of the Panelists for the Panel on High Burnup Fuel**

### **Dr. Robert Einziger**

Dr. Einziger is a Senior Materials Scientist in the Structural, Mechanics, and Materials Branch of the Spent Fuel Storage and Transportation Division. He is responsible for evaluation and guidance on fuels performance during storage and transportation. He is the author of ISG-22 and ISG-1 Rev 2 on damaged fuel. Currently he is the technical manager for the extended storage and transportation project. In addition, he has chaired or participated on a number of IAEA Consultancies.

Prior to joining the NRC, he was manager of the Materials Performance Department in the Chemical Technology Division at Argonne, and manager of the Materials Application Section at the Pacific Northwest National Laboratory. In these positions, he guided work in fracture and fatigue, actinide separations, waste form performance and spent fuel behavior. He managed hot cell facilities at both the ANL and PNNL. Dr. Einziger has worked on fuel and cladding issues related to spent fuel storage and transportation since 1979. His research interests are spent fuel oxidation, whole rod behavior and source term development. He is a Fellow of the ANS, and recipient of the ANS Mishma Award for contributions to nuclear fuels development.

Dr. Einziger has a B.S. in Physics from Georgia Tech and a Ph.D. in Solid-State Physics from Rensselaer.

### **Dr. Albert Machiels**

Albert Machiels is a senior Technical Executive at EPRI. In this role, he is responsible for providing technical expertise on topics related to used nuclear fuel management and advanced nuclear fuel cycles. Prior to his current assignment, Dr. Machiels was responsible for several EPRI programs dealing with materials performance, instrumentation and control, severe accident technology, and advanced nuclear technology. Before joining EPRI, he was an Associate Professor at the University of Illinois, Urbana-Champaign. Prior to moving to the U.S.A., Dr. Machiels spent four years at the University of Liège (Belgium) teaching and working on issues related to nuclear fuel reprocessing. He holds MS and PhD degrees from Belgium and from the University of California, Berkeley.

### **Dr. John Vera**

Dr. John Vera joined the NRC in January, 2008, as a Structural reviewer in the Division of Spent Fuel Storage and Transportation. He has previously worked with the ARMY Corps of Engineers at Waterways Experiment Station in Vicksburg, MS, and in private practice as a civil engineer. Some of his past experiences include nonlinear incremental thermal/structural finite elements analyses and developing procedures for calibration of finite element material properties models. He holds a PhD in Civil Engineering from the University of Puerto Rico.

### **Charles Pennington**

Mr. Pennington serves as an executive consultant in the areas of spent fuel storage, transportation, packaging systems, and comparative technology radiological safety at NAC International. He has served in a number of senior management and corporate positions responsible for engineering and licensing, product development, project management, and marketing/business development. He has successfully directed efforts in these functional areas for several major spent fuel storage and transport system technologies, including the development and design of packaging systems and the performance of safety analyses.

For almost three decades, he has served in technology and management leadership positions for the U.S. spent fuel storage and transport industry. With 45 years of nuclear experience, he holds several patents for nuclear applications and has provided expert witness services across the nuclear issue spectrum. He has also directed NAC's Nuclear Spent Fuel Academy, an educational colloquium, as well as NAC's Nuclear Technology Users Group. Finally, he has been active in writing and public outreach efforts on the comparative radiological safety of nuclear technology, having published more than 10 research articles and provided testimony and input at the request of the BRC.

### **Dana K. Morton**

Mr. D. Keith Morton is a Senior Engineering Consultant at the Idaho National Laboratory. He has worked at the INL for over 35 years, gaining a wide variety of structural engineering experience. Mr. Morton is a member of eight ASME Boiler and Pressure Vessel Code, Section III committees including the Working Group on the Design of Division 3 Containments, Subgroup on Containment Systems for Spent Fuel and High-Level Waste Transport Packagings (Subgroup NUPACK), and a member of the ASME BPV III Standards Committee. He has authored or co-authored numerous conference papers and articles and is a co-author for two chapters in the upcoming fourth edition of the Companion Guide to the ASME Boiler & Pressure Vessel Code.

Mr. Morton received a Bachelor and a Master Degree in Mechanical Engineering. He is a Registered Professional Engineer in the State of Idaho in both Mechanical and Structural Engineering.

### **Dr. David Tang**

David Tang got his Ph.D. at the University of California, Berkeley, majoring in Structural Engineering and Structural Mechanics. He taught Structural Analysis, Structural Dynamics, and performed earthquake engineering research for four years at the State University of New York, Buffalo. For the next 12 years, he worked at the Westinghouse Water Reactors Division.

He joined NRC in 1990 and worked on License Renewal Industry Reports review and later on design certification of GE's ABWR and Combustion Engineering's System 80+ designs.

Since 1995, he has been with the then Spent Fuel Project Office and now the Division of Spent Fuel Storage and Transportation. In addition to numerous radioactive materials transportation

packages, he has been the lead structural reviewer for many spent fuel transportation casks and storage systems by all major cask vendors.

**Dr. Zhian Li**

Zhian has a PhD in Nuclear Engineering from Penn State University, MS in Nuclear Engineering from Institute of Atomic Energy in Beijing, China, and Bachelors from Tsinghua University in Beijing, China. He is a Senior Criticality and Shielding Engineer in the Division of Spent Fuel Storage and Transportation. He reviews criticality and shielding designs of both storage and transportation cask designs. He has More than 25 years of experience in criticality calculations and reactor physics. Prior to joining NRC, Zhian worked at Argonne National Laboratory in the areas of Safety Analysis Reports for Packaging (SARP) for Department of Energy's radioactive materials transportation certification program and other research programs.