

August 24, 2007

MEMORANDUM TO: Edwin Hackett, Acting Director  
Division of Spent Fuel Storage and Transportation

Doug Coe, Acting Deputy Director  
Technical Review Directorate

THRU: Michael Waters, Chief  
Thermal and Containment Branch

FROM: Christopher S. Bajwa, Senior Mechanical Engineer **/RA/**

SUBJECT: DOMESTIC CONFERENCE TRIP REPORT: ASME PRESSURE  
VESSELS AND PIPING CONFERENCE, JULY 22 - 26, 2007

The attached trip report summarizes my participation in the American Society of Mechanical Engineers (ASME) Pressure Vessels and Piping (PVP) Conference held in San Antonio, Texas from July 22 to 26, 2007. On July 22, I presented a 1 ½ hour special tutorial entitled "Communicating Engineering Ideas and the Concept of Risk to the Public," derived from NUREG/BR-0308 "Effective Risk Communication," to an audience of over 40 people at the PVP Conference. In addition, on July 23, I presented the technical paper "Benchmarking of a Thermal Finite Element Approximation Scheme for Externally Cooled Spent Fuel Storage Casks." The presentation summarized portions of the work that the staff completed on an approximation method for the thermal analysis of spent fuel storage casks. Both presentations were very well received, and I was invited to give the special tutorial again at a future conference. The slides for both of these presentations are attached.

Twenty-six technical presentations were given over eight sessions under the subject of "Transportation, Storage, and Disposal of Radioactive Materials." I served as a Vice-Chair and a Chair, respectively, for two of the eight sessions. I also attended a portion of the PVP Division committee meeting for the Operations, Applications, and Components (OAC) Technical Committee, and the majority of the PVP Division Codes and Standards Technical Committee as the OAC liaison.

At This conference I interacted with experts in the design, fabrication, analysis, testing, and operations aspects of radioactive material packages and, as a result, became more informed on the various issues that the industry and regulatory bodies are facing today. This provided me with a better appreciation of the challenges facing users of packages in the day-to-day storage and transportation activities related to radioactive materials. In addition, further insight was gained into the current issues facing the long-term disposal of radioactive waste at the proposed Yucca Mountain facility.

It is imperative that staff have a thorough technical understanding of the bases used in establishing codes and standards. The ASME PVP conference provided an excellent opportunity to broaden my understanding and knowledge of code development and more specifically, the current practices in the storage, transportation, and disposal of radioactive material, which serves to prepare me for supporting staff positions before the public and various

advisory boards to the NRC. I intend to share the information received at this conference with other staff in SFST, specifically with thermal reviewers as part of a future thermal specialists group meeting. I highly recommend expanded staff participation in the form of presentations of technical papers and involvement in committee activities at future ASME PVP conferences. The 2008 ASME PVP conference is entitled: "Nuclear Power Plant Renaissance; Change in Paradigm," which naturally invites participation by NRC staff.

Attachments: Trip Report  
Presentation Slides

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## TRIP REPORT

### **Subject:**

ASME Pressure Vessels and Piping (PVP) Conference

### **Dates and Location of Travel:**

July 22-26, 2007, San Antonio, TX

### **Author, Title, and Agency Affiliation:**

Christopher S. Bajwa, Senior Mechanical Engineer, Division of Spent Fuel Storage and Transportation

### **Background & Purpose of Trip:**

The staff presented a 1 ½ hour special tutorial entitled “Communicating Engineering Solutions and the Concept of Risk to the Public” to an audience of over 40 people. The staff also made a technical presentation at the session entitled, “Thermal Analysis and Testing-2” (OAC-2-3). The presentation entitled “Benchmarking of a Thermal Finite Element Approximation Scheme for Externally Cooled Spent Fuel Storage Casks,” summarized portions of the work that the staff completed on an approximation method for the thermal analysis of spent fuel storage casks.

### **Discussion:**

Twenty-six technical presentations were given as part of the Transportation, Storage and Disposal of Radioactive Materials sessions for the Operations, Applications, and Components (OAC) Technical Committee. Sessions were held on a wide range of topics including Radioactive Materials (RAM) Packaging Licensing and Operational Issues, Thermal Analysis and Testing, RAM Packaging Materials, Structural Analysis of RAM Packages, and RAM Package Testing. A copy of the final program with the applicable sessions highlighted is attached.

Representatives from private industry, universities, international regulatory agencies, and Department of Energy (DOE) laboratories participated in the conference. Presentations were provided by staff from Argonne National Laboratory, Lawrence Livermore National Laboratory, Idaho National Engineering and Environmental Laboratory, Savannah River National Laboratory, Oak Ridge National Laboratory, and the University of Nevada Reno.

Papers dealing with radioactive waste storage, transportation, and long term disposal, including both structural and thermal issues, were presented. Some of the papers included: “Type B Radioactive Material Package Failure Modes and Contents Compliance,” “CFD Simulations of Natural Convection/Radiation Heat Transfer Within the Fuel Regions of a Truck Cask for Normal Transport,” “Use of Regular Rod Arrays to Model Heat Transfer From BWR Fuel Assemblies Inside Transport Casks,” “Aging performance of Viton GLT O-Rings in Model 9975 Shipping Packages,” “The Long-Term Corrosion Test Facility at the Lawrence Livermore

National Laboratory,” “High Performance Coatings for Spent Fuel Containers and Components,” “Dynamic Analysis of the Bulk Tritium Shipping Package Subjected to Closure Torques and Sequential Impacts,” and “Accidental Drop of a Carbon Steel/Lead Shipping Cask at Low Temperatures.”

This conference was beneficial for the staff as it provides a forum for experts in the fields of design, analysis, fabrication, testing, and operations of radioactive material packages to share their latest work. The conference also serves to enhance the staff’s technical competence on ongoing standards activities, preparing the staff for interacting with concerned citizens and participating in litigation. The full proceedings of this conference have been published and are currently available from ASME, or from the staff that attended.

Attachment: Excerpts from PVP 2007 Final Program