July 29, 2011

MEMORANDUM TO: Doug Weaver, Deputy Director
Division of Spent Fuel Storage and Transportation

THRU: Michele Sampson, Chief
Thermal and Containment Branch

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

SUBJECT: TRIP REPORT: ASME PRESSURE VESSELS AND PIPING CONFERENCE, JULY 17-21, 2011

On July 19, 2011, at the American Society of Mechanical Engineers (ASME) Pressure Vessels and Piping (PVP) Division Conference in Baltimore, Maryland, I presented the following technical paper:

- **Road Tunnels and Fires: Implications For The Transport of Used Nuclear Fuel**
  - Co-Authors: Earl Easton, Todd Mintz (CNWRA) and Jason Huczek, Kaushik Das, and Keith Axler (SwRI)

This paper was presented in Session OAC 4-3 (2.3Q), entitled "Toxic Substance Packaging – Design and Testing." This session was sponsored by the Operations, Applications, and Components (OAC) Technical Committee of the PVP Division. The session featured presentations from the NRC, Oak Ridge National Laboratory and Savannah River National Laboratory.

I was a co-author on the following papers:

- **Used Nuclear Fuel Transportation Package Seal Performance In Beyond Design Basis Thermal Conditions**
- **Severe Transportation Accidents: Do Used Nuclear Fuel Transportation Packages Survive Real World Accidents?**

Overall, 15 technical papers were presented in 4 sessions, sponsored by OAC, on Toxic Substance Packaging in the areas of Performance Evaluation, Design and Testing, and Regulations and Standards. I served as a Chair for one of the sessions (OAC 4-4). This year's conference had fewer sessions than were held at the PVP2010 conference for this same topic. This was attributed to the fact that the Institute for Nuclear Materials Management (INMM) was having their annual meeting the same week, and many participants in the radioactive material packaging community were attending that conference.

As part of my PVP Division technical committee involvement, I attended the technical committee meeting for OAC serving this year as the Secretary for the OAC committee. I also attended the larger PVP Division General Committee meeting.

This conference enabled me to interact with experts in the design, fabrication, analysis, testing, and operations aspects of radioactive material packaging, as well as become more informed on the various issues that the industry and regulatory bodies are facing today.

The conference also provided an excellent opportunity for me 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 to explain and support staff positions to our various stakeholders.

Participation by NRC staff in this year's PVP conference continued to be strong, with numerous presentations and sessions developed and chaired by NRC staff. Dr. David Rudland (RES) was awarded the position of ASME Fellow during the conference. Continued participation by NRC staff in Code body activities, and direct NRC support of conferences and technical meetings such as the PVP conference, will be vital in establishing the successful future of collaboration between the Regulators in the United States and other countries. It is imperative that staff have a thorough technical understanding of the bases used in establishing codes and standards. As such, NRC should seek to broaden involvement in these bodies to further the mission of ensuring the safe use of nuclear power and radioactive materials and protecting the health and safety of the public.

Next year's conference will be held in Toronto, Ontario, Canada, July 15 – 19, 2012.

Attachments: Trip Report

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The conference also provided an excellent opportunity for me 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.

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TRIP REPORT

Subject:

American Society of Mechanical Engineers Pressure Vessels and Piping (PVP) Division Conference

Dates and Location of Travel:

July 17 - 21, 2011, Baltimore, MD

Author, Title, and Agency Affiliation:

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

Background & Purpose of Trip:

The staff participated in the 48th PVP Division conference and presented the following paper in a technical session sponsored by the Applications, Operations, and Components (OAC) Technical Committee:

- **Road Tunnels And Fires: Implications For The Transport Of Used Nuclear Fuel**
  - Co-Authors: Earl Easton, Todd Mintz (CNWRA) and Jason Huczek, Kaushik Das, and Keith Axler (SwRI)

The slides for the above presentation are attached.

Staff was also co-author on the following papers:

- **Used Nuclear Fuel Transportation Package Seal Performance In Beyond Design Basis Thermal Conditions**
- **Severe Transportation Accidents: Do Used Nuclear Fuel Transportation Packages Survive Real World Accidents?**

Discussion:

In total, 16 technical presentations were given in 4 sessions, sponsored by OAC, on Toxic Substance Packaging in the areas of Performance Evaluation, Design and Testing, and Regulations and Standards." An excerpt 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 Lawrence Livermore National Laboratory, Pacific Northwest National Laboratory, Savannah River National Laboratory, and Oak Ridge National Laboratory.

Papers dealing with radioactive waste storage and transportation, including both structural and thermal issues, were presented. Some of the papers included: "Development of Tritium Transport Package For ITER Supply", "Radioactive Material Packaging Torque Requirements Compliance", "Containment Vessel Temperature for Pu-238 Heat Source Container Under Ambient, Free Convection And Low Emissivity Cooling Conditions", and "Issues Associated With Safe Packaging and Transport Of Nano Particles".

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 recent 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 NRC staff that attended the conference.

Next year's conference will be held in Toronto, Ontario, Canada, July 15 – 19, 2011.

Attachments: Slides from presented paper
Excerpts from PVP 2011 Final Program