

## **Presented at First Session (Dawn Wellman)**

Good evening. I am Dr. Dawn Wellman, Manager of the Environmental Health and Remediation Market Sector for Pacific Northwest National Laboratory. I am pleased to be able to share insights on PNNL's experience supporting the mission to process Hanford tank waste and the ORP/WTP safety culture.

PNNL has provided continuous support to the Hanford site mission for over 50 years. Throughout this time PNNL has maintained the necessary core competencies to serve as the enduring technical entity and provide the scientific and technical leadership necessary to address complex systems-based challenges that have limited progress in waste processing, environmental remediation, and increased life-cycle costs for long-term stewardship. However throughout this history, we as the Hanford site National Lab, have experienced varying degrees of engagement in resolving the technical problems that challenge the progress of the Hanford mission.

During the early 90s, PNNL was the primary partner in the development of long-term solutions to reduce the risks and costs of the EM mission. In the late 90s and early 2000s, DOE EM transitioned from using the National Laboratories as strategic partners of long-term research and development to a role of limited engagement for resolution of challenges to enable the baseline. In the late 2000s a further change was realized wherein the National Laboratories were nearly removed completely from supporting the DOE EM mission.

Over the past several years we have experienced a re-engagement of the National Labs by the Hanford site offices and site contractors as a strategic partner across all elements of technology development and maturation - from resolving critical technical issues limiting the baseline, to conducting analyses and maturation of technologies to provide alternatives to the baseline, to conducting long-term research and development to provide solutions that can reduce the lifecycle costs and risks cleanup.

For example, on December 17, 2010, the Defense Nuclear Facilities Safety Board issued Recommendation 2010-2 Pulse Jet Mixing at the Waste Treatment and Immobilization Plant. In response, ORP engaged a team made up of the Waste Treatment Plant contractor, National Laboratories, industrial experts and academic scholars to develop technical solutions through large scale testing with simulants representative of the complete range of Hanford Waste properties and establish risk management strategies for technical and safety-related risks that remained unresolved in 2010.

Throughout this process, ORP leadership has exhibited a strong commitment by management and staff to resolve the technical issues and has been intimately engaged with the technical team. ORP and BNI leadership has not only been accepting but encouraging of differing technical opinions and have pursued alternative engineering studies to evaluate possible performance improvements that could be realized by through changes in the WTP design. An example is an alternatives engineering study that is evaluating the performance improvements possible by using a standard design for all the vessels that will be handling high solids content wastes in the Pretreatment Facility. The testing and design efforts evaluated pulse jet mixer design elements including the number and radial position of PJMs, the drive velocities and volume of liquid to exchange in each pulse, and many other factors.

In our role as the Hanford site National Lab, PNNL has observed first hand a strong commitment by the ORP management and staff to resolve technical issues and ensure that design efforts on the WTP pretreatment facility can proceed in a manner that is safe and functional for the long-term vitrification of Hanford Wastes. We greatly appreciate the current approach by DOE EM, and specifically leadership at the Hanford site offices and contractors, to utilize PNNL and the enduring, historic knowledge of the scientific and technical experts that is essential to the success of the Hanford mission.