September 15, 2010

Hanford Waste Treatment Plant receives key equipment for quality control system

MEDIA CONTACTS:
Suzanne Heaston, Bechtel, (509) 371-2329
Carrie Meyer, Department of Energy -- Office of River Protection, (509) 372-0810

Richland, Wash. -- Recently, the Hanford Waste Treatment Plant, also known as the "Vit Plant," received key equipment for its autosampling system. When operational, the system will be critical to ensuring a high-quality glass product that meets all regulatory requirements and standards.

"The autosampling system is a complicated and highly specialized system that is vital to successful Vit Plant operations," Frank Russo, Vit Plant project director, said. "The system will make sure the waste is accurately characterized and the final glass product is safe and compliant."

The autosampling system will be used to take samples throughout the vitrification process and transport them to the Analytical Laboratory (Lab) for testing and evaluation. Approximately 10,000 samples will be taken and analyzed annually from all three waste-processing facilities -- the Pretreatment (PT) Facility, High-Level Waste (HLW) Vitrification Facility and Low-Activity Waste (LAW) Vitrification Facility.

Waste will be sampled using remotely operated robotic arms inside shielded boxes within the facilities. The samples will be deposited into 15-milliliter bottles, which will be encased in tightly sealed carriers. The specially designed carriers will then be transported to the Lab via a pneumatic transfer system, similar to those used at a bank drive-thru. Stainless steel pipes will run between each facility and the Lab and transport the samples at 25 feet per second; the longest transfer route is traveled in less than one minute.

In August, the autosampling equipment for the Lab and the LAW Facility began arriving at the Vit Plant construction site, and, recently, the Lab's receipt station was delivered. The station will receive filled carriers, and a robotic arm will remove the sample bottle and place it in a drop chute, which transfers the sample bottle to the Lab's high-radiation area for analysis.

"The LAW Facility and Lab are the two facilities that are furthest along in terms of construction and are now steadily receiving key process equipment," Rich Brown, area project manager for plant equipment, said. "This is an exciting step as we advance towards construction complete in 2016 and operations in 2019."

Autosampling system equipment for the Lab and LAW Facility will continue to arrive through the fall. Energy Solutions in Richland, Wash., is designing the system, and Mid-Columbia Engineering in Richland, Wash., is fabricating it.

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Bechtel National, Inc. is designing and building the world's largest radioactive waste treatment plant for the U.S. Department of Energy at the Hanford Site in southeastern Washington state. The $12.2 billion Waste Treatment and Immobilization Plant (WTP), also known as the "Vit Plant," will immobilize the radioactive liquid waste currently stored in 177 underground tanks using a process called "vitrification."

Vitrification involves blending the waste with molten glass and heating it to high temperatures. The mixture is then poured into stainless steel canisters. In this glass form, the waste is stable and impervious to the environment, and its radioactivity will dissipate over hundreds to thousands of years.

The WTP will cover 65 acres with four nuclear facilities -- Pretreatment, Low-Activity Waste Vitrification, High-Level Waste Vitrification and Analytical Laboratory -- as well as operations and maintenance buildings, utilities and office space.

Construction of the WTP began in 2001 and is now 56 percent complete. The plant will be operational in 2019.

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NR10-09