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## Hanford Waste Treatment Plant completes critical system design for High-Level Waste Vitrification Facility

### **MEDIA CONTACTS:**

Suzanne Heaston, Bechtel, (509) 371-2329

Erik Olds, Department of Energy -- Office of River Protection, (509) 372-8656

**Richland, Wash.** -- Waste Treatment Plant (WTP) engineers recently completed the design for the High-Level Waste (HLW) Vitrification Facility's heating, ventilation and air-conditioning (HVAC) system. Critical to facility operations, the HVAC system will ensure contamination boundaries are maintained by directing the flow of contaminated air through the appropriate channels. It will also regulate the temperature of the facility, which will house two 90-ton melters that emit extreme amounts of heat.

"The HVAC system is crucial to the safety, functionality and operability of the HLW Facility," Steve Cruz, area engineering manager for the facility, said. "It is a nuclear-quality system that will ensure contaminated air does not leave the facility and helps protect the workers, the environment and the public."

The HVAC system will also help cool the facility, which is particularly critical in the area that houses the melters. The melters will heat the molten-glass mixture to 2,100 degrees Fahrenheit, but this area must be kept at approximately 150 degrees Fahrenheit. This temperature allows the containers to cool enough to be transported out of the facility and maintains the integrity of both the equipment and surrounding concrete.

The facility's HVAC system is composed of more than 600 tons of nuclear-grade materials and nearly 150 major pieces of equipment. The equipment includes air-handling units, exhaust fans, and HEPA filters and design specifications to allow for remote operation. The system design comprises approximately 70 drawings, which are supported by more than 80 detailed calculations and 600 mechanical data sheets. The calculations provide information such as heat loads, duct pressures, cascade air flow rates and air temperatures.

The HLW Facility is currently 85 percent designed. The facility is scheduled to be completely constructed in 2016.

"By finishing the engineering work for the HVAC system, designs for equipment surrounding the HVAC system can be completed," Ray Patterson, area project manager for the facility, said. "And procurement and construction of the HVAC system itself can steadily proceed as scheduled. All of this brings us another step closer toward startup and operations."

(continued)

*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 55 percent complete. The plant will be operational in 2019.*

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The High-Level Waste Vitrification Facility's HVAC design includes more than 600 tons of nuclear-grade materials, including some of the duct that is pictured above.