PROGRESS AT THE HANFORD VITRIFICATION PLANT

A publication for the Hanford Waste Treatment Plant Project January 2010

The WTP Project finished 2009 at 52 percent complete and with the best safety record since the project's inception in 2001.

HANFORD WASTE TREATMENT PLANT PROJECT ENDS 2009 WITH STRONG SAFETY RECORD

The Hanford Waste Treatment and Immobilization Plant (WTP) finished the year more than half-way complete and with the best safety record since the project's inception in 2001. With approximately 1,000 craft employees, 2,000 non-manual employees and an extremely active and ever-changing construction site, this is a significant accomplishment. WTP employees achieved the following for 2009:

- 1 million hours worked without a recordable injury for the first time since WTP construction began
- 78 consecutive days without a recordable injury at the construction site, which is the longest period in project history
- 2.9 million hours (and counting) without a days away from work (DAFW) case, which is the second time in 2009 the project exceeded 2 million hours
- 0.93 project total recordable case (TRC) rate, which is 28 percent below the U.S. Department of Energy's rate and 26 percent below the WTP Project's rate in 2008
- 1.86 construction site TRC rate, which is 60 percent below the construction industry level reported by the U.S. Bureau of Labor Statistics and 25 percent below the WTP construction site rate in 2008.

In addition, the project's 2009 performance represents a 46 percent drop in the project-wide TRC rate and a 57 percent drop in the construction site TRC rate since 2006.

OVERVIEW

Starting in the 1940s, the Hanford Site, located in southeastern Washington state, was the largest of three defense production sites in the U.S. Over the span of 40 years, it was used to produce 64 metric tons of plutonium, helping bring an end to World War II and playing a major role in military defense efforts during the Cold War. However, as a result, 53 million gallons of radioactive and chemical wastes are now stored in 177 underground tanks on the Hanford Site.

To address this challenge, the U.S. Department of Energy contracted Bechtel National, Inc. to design and build the world's largest radioactive waste treatment plant. The Hanford Waste Treatment and Immobilization Plant (WTP), also known as the "Vit Plant," will use vitrification to immobilize most of Hanford's dangerous tank waste.

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

WTP spans 65 acres and includes four nuclear facilities -- Pretreatment, Low-Activity Waste Vitrification, High-Level Waste Vitrification and an Analytical Laboratory -- as well as operations and maintenance buildings, utilities and office space.

Approximately 3,000 people are employed by Bechtel National, Inc. and its subcontractors. Construction of the WTP began in 2001. The plant will be operational in 2019.

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PRETREATMENT FACILITY EXPANDS INTERIOR INSTALLATIONS

The HVAC duct is five feet in diameter and, when completely installed, will span the length of the 400-foot hot cell.

This fall, crews began installing a massive HVAC duct inside the Pretreatment (PT) Facility's hot cell. The duct is part of the facility's primary air ventilation system. This began efforts to integrate interior commodity installations; the PT Facility has previously concentrated on exterior structural framework.

The PT Facility is the largest of the four major WTP nuclear facilities. Its footprint is 540 feet long and 215 feet wide, and it will reach an overall height of 120 feet.

The stainless steel HVAC duct is five feet in diameter and, once installed, will span more than 400 feet, the length of the hot cell. The hot cell will be a highly radioactive area that will be accessed only by remote-handling equipment. It will be used to separate the high-level radioactive solid waste from the low-activity liquid waste. Therefore, the HVAC duct must meet stringent nuclear-quality standards.

When WTP is operational, the duct will be essential for proper air filtration and ventilation. It will move air through the hot cell, through the more-radioactive and completely inaccessible black cell areas, up to the filter cave at the 56-foot elevation and through the PT Facility environmental emissions stack. The stack will extend 60 feet above the PT Facility's roof line.

Bechtel subcontractor Intermech began installing the duct in the east end of the hot cell in October. To prepare for the installation, ceiling coatings were applied to structural steel, and piping running above the ductwork was installed. Due to the size of the duct, work is expected to span the next few months.

PRETREATMENT FACILITY BEGINS CONCRETE PLACEMENTS AT 77-FOOT ELEVATION

The Pretreatment (PT) Facility continues to steadily rise and change the skyline of the WTP construction site. Recently, crews installed the last rebar wall curtain to reach 77 feet and placed the first concrete for the floor above it.

The PT Facility will comprise a total of five concrete levels, known as "elevations." Each elevation includes walls, which are reinforced with rebar, and slabs, which compose the floor.

The rebar wall curtain measures 21 feet by 51 feet and weighs more than 36 tons. It is the last rebar curtain for the fourth elevation, bringing the facility from 56 to 77 feet in height.

The first slab for the fifth elevation was placed this fall, and, when complete, the floor will comprise 5,000 cubic yards of concrete. It will also be used as a work platform when crews place the structural steel and concrete walls that reach 98 feet.

The PT Facility finished the year at 42 percent complete.

Top: A concrete pump truck (far right) is used to place the 77-foot elevation concrete. Bottom: The 36-ton rebar curtain is lifted by the Demag crane.

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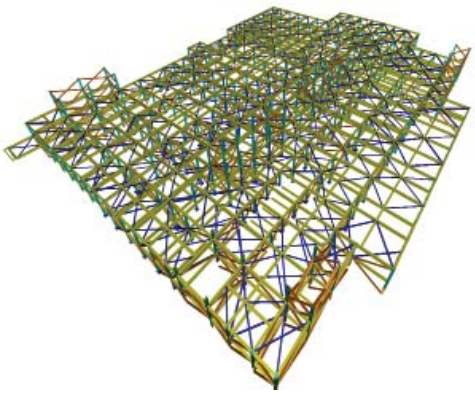
HIGH-LEVEL WASTE VITRIFICATION FACILITY REACHES DESIGN MILESTONE

Engineers working on the High-Level Waste (HLW) Vitrification Facility completed 118 drawings for more than 4,000 tons of structural steel this fall. The drawings compose the last steel elevations -- at 58, 72 and 91 feet -- for the HLW Facility.

Twenty engineers began working on the steel drawings a little more than a year ago. To ensure the designs met the stringent nuclear-quality standards and revised ground-motion criteria, the engineers used an advanced technique known as “dynamic (response spectra) analysis” rather than standard structural analysis techniques.



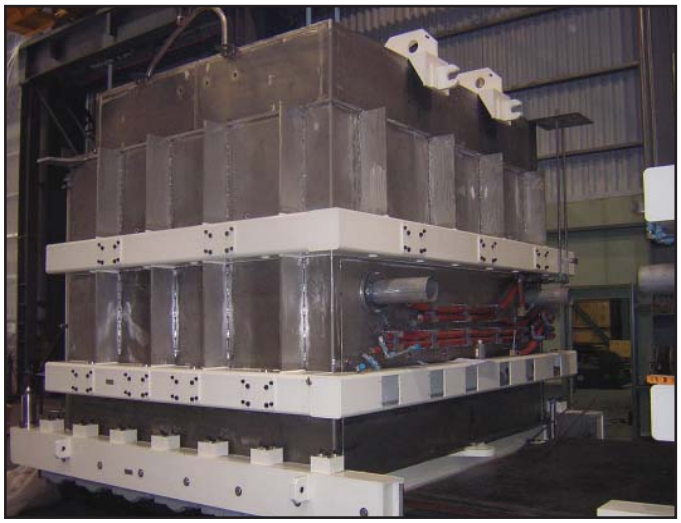
A computer-aided drafting (CAD) rendering depicts the HLW main steel above the 58-foot elevation.

The dynamic analysis provides more precise information because it applies real earthquake motion instead of a simplified estimate of maximum acceleration. Engineers working on the Pretreatment Facility used the same approach. The WTP Project is the first to use dynamic (response spectra) analysis for this type and scale of design in the nuclear industry. While it is a more complex analysis tool than standard structural analysis, it provides more detailed results, which allows the design to be optimized.

The drawings will be released for fabrication over the coming months to Hirschfeld Steel Co., located in San Angelo, Texas.

Engineering for the HLW Facility is 83 percent complete.

KEY PROCESS EQUIPMENT COMPLETED FOR HIGH-LEVEL WASTE VITRIFICATION FACILITY



When operational, the WTP will contain two 90-ton high-level waste melters. The melters, which heat the waste mixture to high temperatures before it is poured into stainless steel canisters for permanent storage, are central to the vitrification process.

The first of two melter assemblies that will be installed in the High-Level Waste (HLW) Vitrification Facility was completed last month by custom-steel fabricator Petersen, Inc., in Ogden, Utah. The melters, central to the vitrification process, will be used to heat the waste mixture to high temperatures before it is poured into stainless steel canisters for permanent storage.

The melters will be integral to the high-level waste treatment process and must meet strict nuclear-quality standards, which means extremely tight tolerances and precision engineering and fabrication.

Each HLW melter measures approximately 14 feet long by 14 feet wide, stands about 12 feet tall and weighs 90 tons. Work has already begun on the second melter assembly, which is expected to be complete this spring.

The HLW Facility finished the year at 44 percent complete.

STRUCTURE OF LOW-ACTIVITY WASTE VITRIFICATION FACILITY SUPPORT BUILDING COMPLETED

The switchgear building equipment will serve as the facility's primary power source.

Crews working on the Low-Activity Waste Vitrification (LAW) Facility achieved a milestone in December, when the LAW Facility's switchgear building structure was signed off as complete. The structure will contain two switchgear units that will serve as the facility's main source of power.

Combined, the two switchgear units will distribute 5.3 megawatts of power. This is enough electricity to power nearly 1,800 standard residential homes, based on the assumption that 1,000 homes can be powered by 2 to 3 megawatts of power.

Subcontractor Cobra Roofing Services, Inc., completed the building's structure and installed some preliminary electrical equipment, such as power panels, conduit and lighting. Extensive lightning protection has also been installed. Equipment installation is expected to be complete this spring.

The LAW Facility finished the year at 61 percent complete.

FRANK RUSSO NAMED NEW WASTE TREATMENT PLANT PROJECT DIRECTOR

The WTP Project announced Frank Russo as its new project director, effective January 18. In this position, Russo will be responsible for managing the $12.2 billion nuclear waste cleanup project.

Russo has 37 years of experience in the nuclear industry, environmental management, procurement and business operations. He joins WTP from Lawrence Livermore National Laboratory, where he served as the principal associate director for operations and business since 2007.

Before his role at the national laboratory, Russo was general manager of the Idaho Completion Project (ICP). He oversaw all operations at the Advanced Mixed Waste Treatment Plant (AMWTP) Project, a category II nuclear facility. His nuclear experience also includes extensive decontamination and decommissioning work at ICP, as well as work on the Susquehanna Steam Electric Plant and the Palo Verde Electric Plant.

Russo brings 37 years of experience to the WTP Project.

WTP QUICK FACTS

- WTP construction is 52 percent complete.
- Engineering is approximately 77 percent complete.
- More than 50 percent of equipment and materials have been purchased.
- It is the largest nuclear construction project in the United States today.
- It is the first nuclear facility to be built in the United States in decades, requiring a re-establishment of the nuclear supply chain.
- It requires a total of 262,000 cubic yards of concrete, 37,000 tons of steel and more than 900,000 feet of piping.

ADDITIONAL INFORMATION

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