

# Plutonium Finishing Plant Closure Project



A plutonium "button" produced at Hanford's Plutonium Finishing Plant during production.

## History

By late 2009, the remaining plutonium stored at the plant had been stabilized, packaged and shipped to the U.S. Department of Energy's Savannah River Site. Iconic security — metal detectors, vehicle inspection stations, armed guards and razor wire — was removed.

This marked the end of the high-security profile long associated with the facility and ushered in a new era of cleaning out, decontaminating and ultimately demolishing the Plutonium Finishing Plant complex.

For more information:

Sonya Johnson, CH2M

(509) 373-5611, [Sonya\\_E\\_Johnson@rl.gov](mailto:Sonya_E_Johnson@rl.gov)

Mark Heeter, U.S. Department of Energy

Richland Operations Office

(509) 373-1970, [Mark.Heeter@rl.doe.gov](mailto:Mark.Heeter@rl.doe.gov)

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**The U.S. Department of Energy and contractor CH2M HILL Plateau Remediation Company are removing the Plutonium Finishing Plant, one of the most complex nuclear decommissioning and demolition projects at the Hanford Site in southeast Washington state.**



Employees cut apart and remove the most hazardous glove box, which is a large, contaminated enclosure once used to handle plutonium.

## Background

The Plutonium Finishing Plant, also known as Z-Plant, consists of several process and support buildings constructed from 1949 to 1993 that were used to process plutonium solutions or oxides into hockey puck-sized plutonium metal "buttons" for shipment to the nation's nuclear weapons production facilities or for the fabrication of mixed-oxide reactor fuel. The plant produced nearly two-thirds of the nation's plutonium stockpile.

## Mission

The plant poses a monumental cleanup challenge – to safely clean out and demolish the facility to protect human health and the environment.

CH2M is responsible for safely and compliantly demolishing the aging facility to its concrete foundation.

The risks and challenges of this task include:

- Several pounds of residual plutonium and americium in the facility
- 238 large, contaminated enclosures called glove boxes
- 52 pencil-shaped tanks once used to prevent an uncontrolled nuclear reaction
- More than a mile of highly contaminated vacuum system piping
- A critical ventilation system years past its design life
- Complex configurations of contaminated glove boxes, systems and equipment
- Dozens of facilities that make up the plant



*The Plutonium Finishing Plant in 2009 (Left) and the projected footprint after demolition (Right).*

## Safety

Our workers are safely removing one of the most hazardous and contaminated facilities in the country. The levels of contamination can require workers to suit up in layers of protective clothing, including full body coverings and face-covering hoods attached to supplied air. This takes robust training, careful management, hazard controls and rigor in work performance.

In 2013, workers at the plant received the Innovation Award from the Voluntary Protection Program Participant's Association for their respiratory protection program to minimize potential exposure when using powered air purifying respirators.



*A worker dressed in multiple layers of protective clothing prepares chemical tanks for removal during demolition.*

## Efficiencies

CH2M partners with the DOE Richland Operations Office and other DOE sites to find the right tools and techniques to safely and efficiently remove the plant's complex hazards. Examples include:

- Using employee-recommended breathing equipment and protective suits to more safely and efficiently work in highly contaminated areas`
- Improving and standardizing operations of respiratory equipment using manufacturer-approved modifications
- Installing temporary safety systems to maintain decontamination and demolition work inside the facility while allowing shutdown of aging and expensive safety systems

## Future

With hazard removal inside the building nearing completion, the complex is moving rapidly toward demolition. Outside, crews are preparing a demolition zone for heavy equipment to operate in during demolition. Employees whose offices and work locations are inside the plant are being relocated, and utilities will be disconnected.

CH2M is in the final stages of preparing the Plutonium Finishing Plant for demolition. Piece by piece, section by section, work will progress in phases guided by structural engineering considerations, with controls in place to monitor and mitigate dust and other demolition debris.

CH2M's fundamental goal is to perform the work safely.