

# Preparing for Safe and Compliant Demolition at Hanford's Plutonium Finishing Plant

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**CH2MHILL**  
Plateau Remediation Company



# Plutonium Finishing Plant



- Mission: Safely and compliantly demolish PFP to slab-on-grade by September 20, 2016

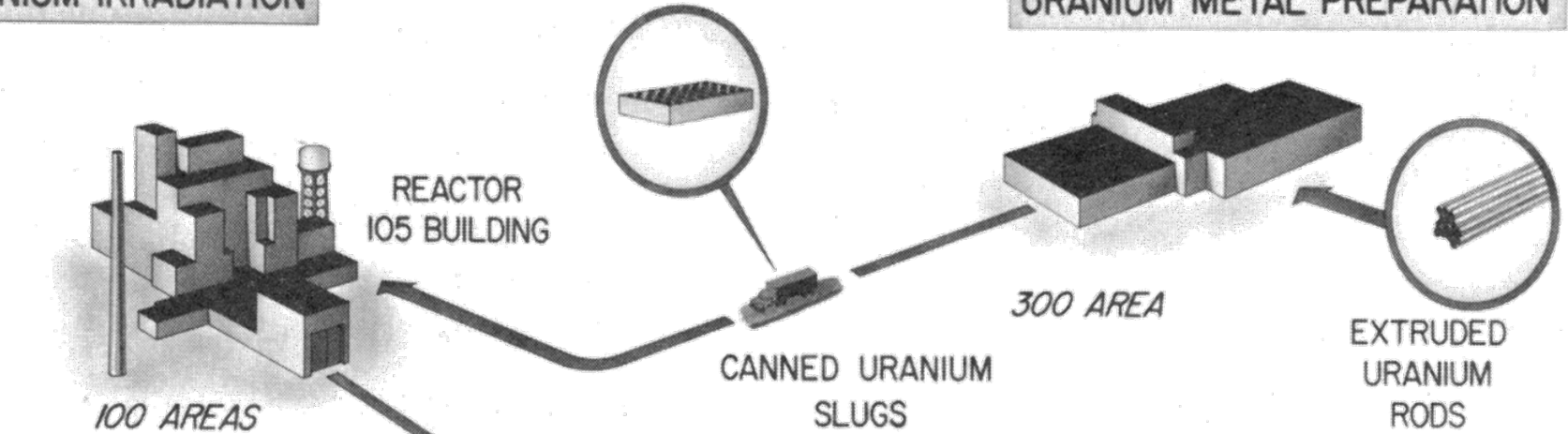


*PFP: plutonium processing facility decades past its design life*

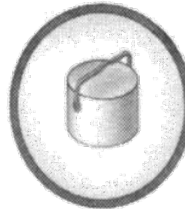
# HANFORD ATOMIC PRODUCTS OPERATION-PRODUCT FLOW

## URANIUM IRRADIATION

## URANIUM METAL PREPARATION

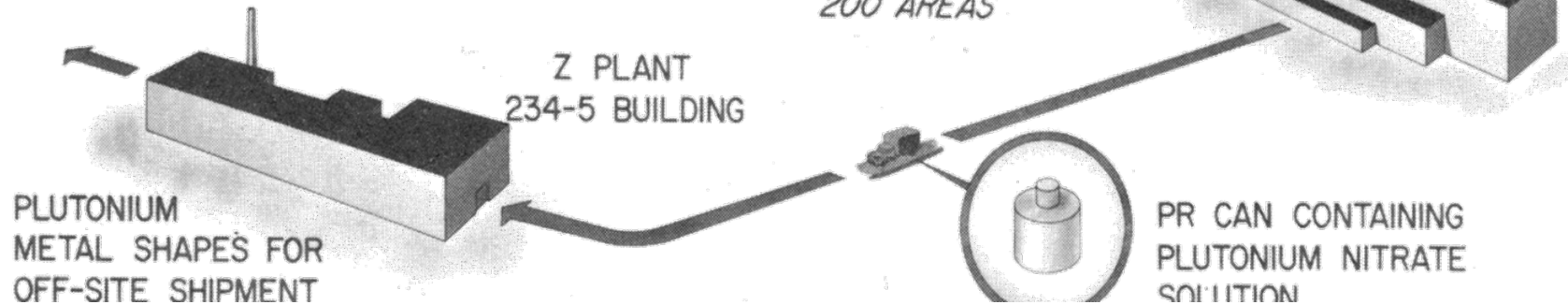


CASKS CONTAINING IRRADIATED URANIUM SLUGS



## PLUTONIUM SEPARATION

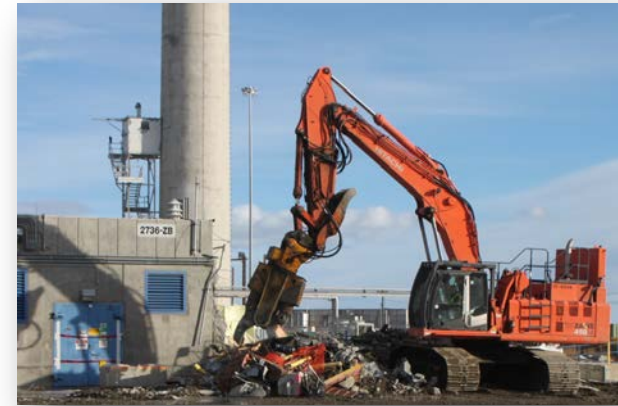
## PLUTONIUM METAL FABRICATION



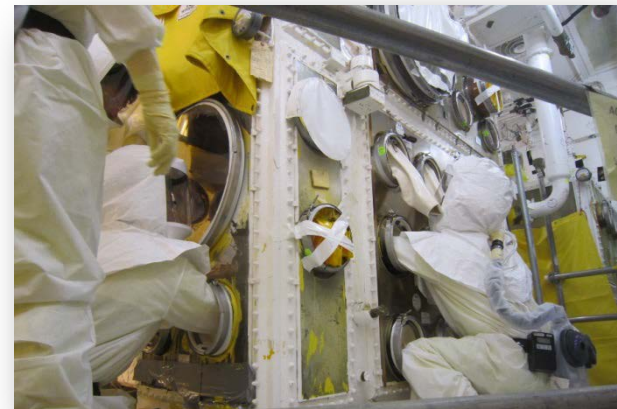
# Facility History



- 1949: Began operations
  - Mission: Produce weapons-grade plutonium
- 1990: Weapons mission ended
  - Stabilization, cleanup and deactivation and demolition mission began
- 2009: Completed mission for storage of stabilized plutonium
- 2012: Ancillary building demolition begins



*Removal of plutonium vaults in 2012*



*Workers preparing glove box for removal*

# PFP: Pre 2012



# PFP: December 2013



# PFP: Today



# Progress: Removing Hazards



	Original	Remaining
Glove Boxes Removed	232	13
Pencil Tank Units Sealed Out	196	25

- Progress to-date:
  - 94% glove boxes removed
  - 87% pencil tanks sealed out
  - 78% ancillary buildings demolished/removed from the PFP complex







# Preparing for Open Air Demo



## Demolition of a HazCat II Facility by:

- Modifying controls to match declining risk
- Making the complicated “simple”
- Progression planning through demolition phases
- Maintaining regulatory compliance



*Workers packaging glove box for shipment*

# Modifying Controls to Match Declining Risk



## Removing Hazards Reduces Risk

- Currently operating under outdated Documented Safety Analysis (DSA)
- Developing step-out criteria for ventilation, fire suppression and criticality alarms
- Defining in-situ demolition



*One of two column glove boxes that will be prepared to remove during demolition*

# Making the Complicated “Simple”



## Defining Activities that Govern Demolition Sequence

- Determine facility condition  
demolition hazards during each phase
- Revise Fire Hazards Analysis  
specific facility
- “Area” vs. “system” approach
- Define allowable hold-up in  
pipe and duct during each phase



*Crews removing ventilation ductwork, heavily contaminated after years of plutonium production*

# Progression Through Phases



Removal of source term where possible

- Immobilization
- Creation of waste packages for removal during demolition
- Protection of source term for removal during demolition

# Maintaining Regulatory Compliance



Techniques selected to:

- Minimize risk to project personnel
- Minimize radiological emissions outside work area boundary
- Eliminate potential emissions to environment and public
- Provide real-time assurance
- Identify items requiring special handling during demolition



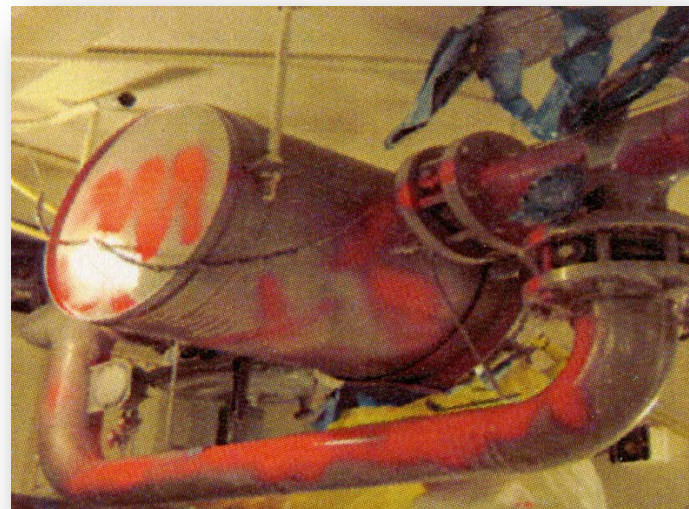
# Open Air Demolition at Hanford



## Past success: 209E Critical Mass Laboratory



Applying fixatives to contaminated items



Identify items to remain in place



Expose contaminated items containing source term



Surgical removal of contaminated items containing source term

# Path Forward



- ✓ December 2014: Last glove box in 234-5Z stabilized
  - Spring 2015: Demolition of 243-Z begins
  - Spring 2016: Demolition begins
    - March: 234-5Z begins
    - May: 242-Z begins
    - June: 236-Z begins
    - July: 291-Z begins

