

West Valley Demonstration Project



1980 – 2011

Bryan Bower, DOE Project Director

NWTRB Meeting in Buffalo, NY
April 27, 2011

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EM *Environmental Management*

safety ❖ performance ❖ cleanup ❖ closure

- Solidify the high-level radioactive waste at the Center *Completed*
- Develop containers suitable for permanent disposal of the waste *Completed*
- Transport the solidified waste to a federal repository for permanent disposal *Pending Repository*
- Dispose of low-level radioactive waste and transuranic waste *In Progress*
- Decontaminate and decommission the underground high-level waste tanks, facilities and any material and hardware used in connection with the Project *In Progress*



Spent Nuclear Fuel Shipping

1980s

625 SNF assemblies shipped
by truck in the 1980s



125 SNF assemblies shipped
by rail to Idaho in 2003

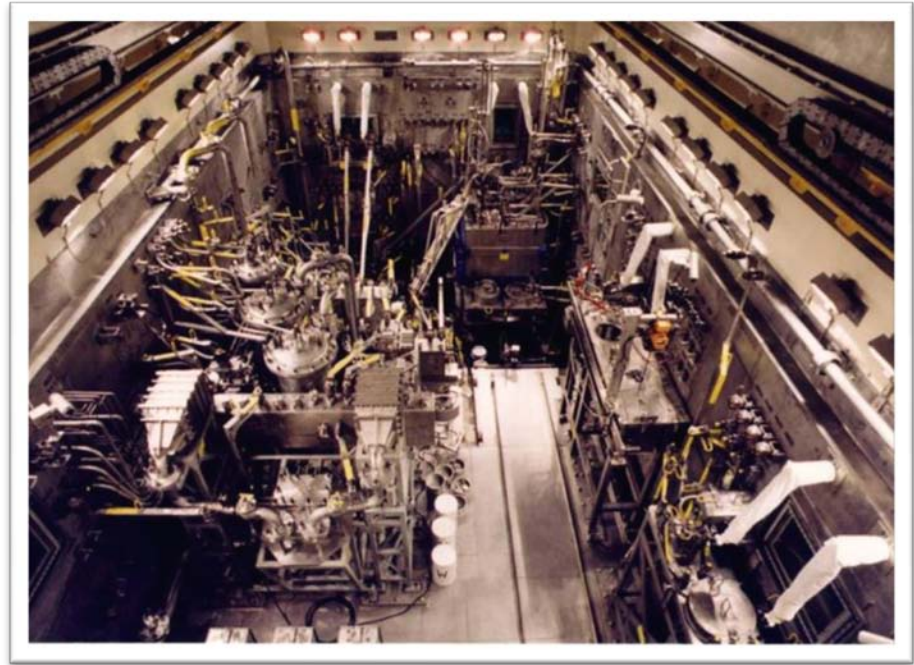


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- 24M curies vitrified
- 275 HLW filled canisters produced
 - Average contact dose rate 3,100 R/hr
 - Canisters stored in the Main Plant awaiting final disposition
- Operated 1996-2002
- Residuals remain in tanks (~348,000 curies)



- Assembled team of experienced D&D personnel from different sites
 - High radiation D&D experience
 - Waste management expertise
 - Contact and remote handled TRU packaging and disposition
- Developed a comprehensive plan, schedule and cost estimate
 - Low cost disposition of LLW a key element
 - Focus on Risk Management
 - Innovative use of off-the-shelf hardware
- Transition from operations to D&D required time for planning, purchasing D&D equipment, training, and getting regulatory approvals
 - Workforce restructuring
 - Project Management tools utilized extensively
- D&D of Vit Facility starts after successful Readiness Review



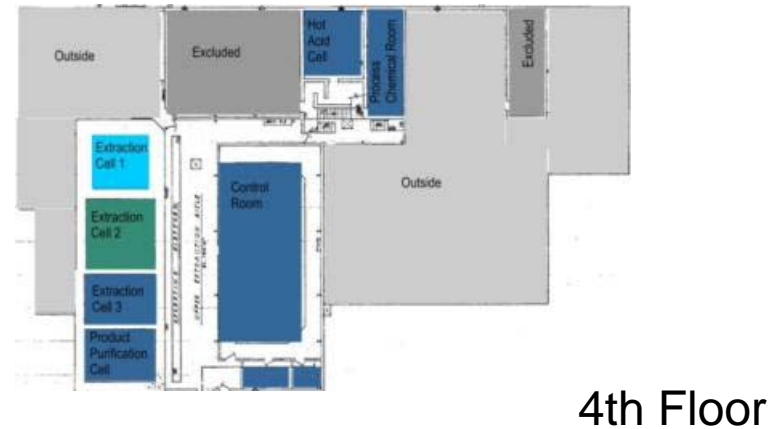
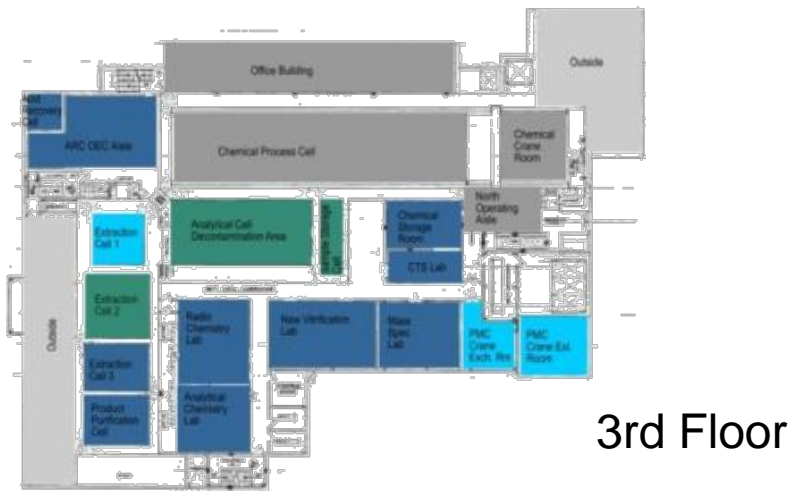
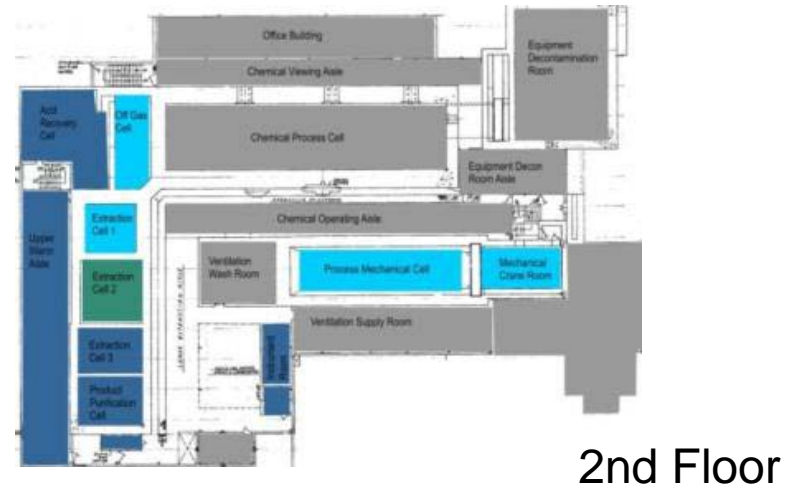
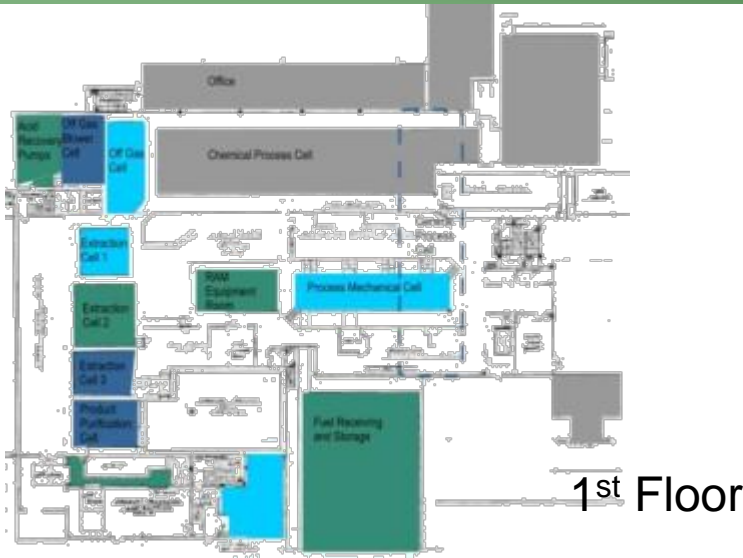
Main Plant Process Building

- Only commercial spent fuel reprocessing facility to operate in the U.S.
 - Five-story reinforced concrete structure
 - 280,000 ft²; 28,000 square feet stainless steel-lined
 - Over 70 contaminated rooms/areas
 - Dose rate in 10% exceed 1 R/hr
 - Two rooms have doses over 50 R/hr
 - Over 115,000' of process piping systems, one-third of which transferred reprocessing solutions



Main Plant Process Building

2007-2011



Completed by WVNSCO
 To Be Done by WVES
 Completed by WVES
 Exempt

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Main Plant Decontamination

2007-2011

- Decontamination Completed
 - Upper Warm Aisle pump niche
 - Hot Acid Cell
 - Acid Recovery Cell
 - Extraction Cell-3



Top-down view of empty XC-3



Acid Recovery Cell



Hot Acid Cell vessel removal



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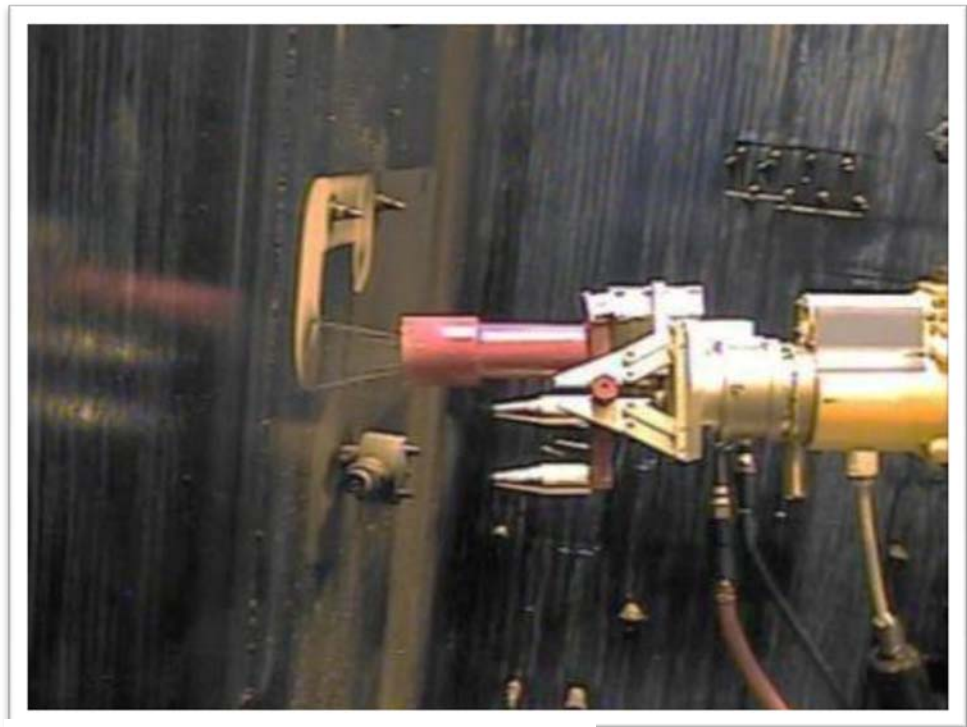
- Extraction Cell-1
 - First of three Extraction Cells
 - Highly radioactive, all work performed remotely



Above: Arm being installed in cell

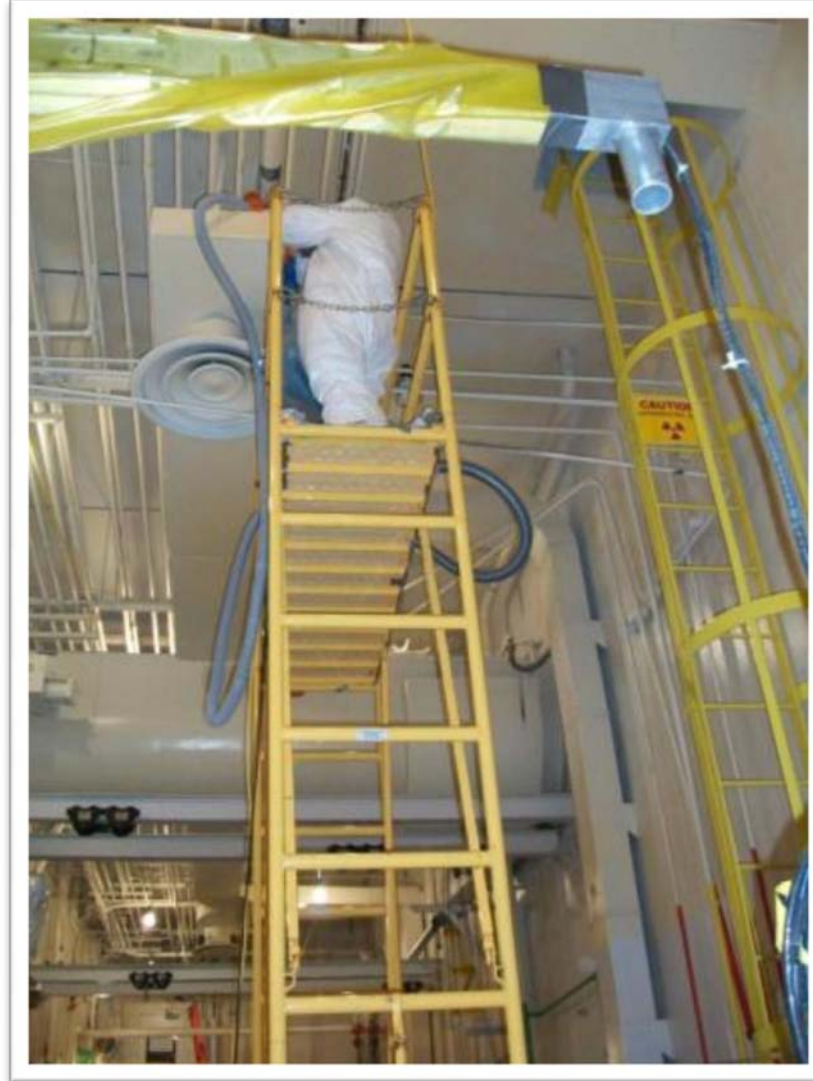
Left: Arm cutting pipe in cell

- Using Nitrocision[®] technology to remotely decontaminate cell walls and floors of Process Mechanical Cell (PMC) and the General Purpose Cell (GPC)
- Nitrocision[®] technology
 - Spray nozzles deliver -250°F liquefied nitrogen at ~50K psi to remove paint and contamination from cell surfaces
 - Vacuum collection
 - Met aggressive performance testing criteria



Nitrocision[®] at work in the PMC

- Asbestos removal activities are ongoing in multiple areas of the Main Plant to prepare facility for demolition
 - Removal of asbestos conducted under strict OSHA guidelines



Asbestos contamination removal completed in the General Operating Aisle

Radioactive Waste Processing 2007-2011

- Addressing remote processing challenges with additional equipment and adjustments in processing
- Contact Size Reduction Facility operational
 - Primary size reduction of equipment and debris before materials are packaged in Waste Packaging Area



Using plasma cutting to process the first plutonium contaminated TRU waste box in the CSRF



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- System installed to dry the underground waste tanks and their associated vaults



Removal of 16" underground vent pipe header



Workers monitor removal of a pump from Tank 8D-4



- Installed Permeable Treatment Wall to mitigate migration of Sr-90 contaminated groundwater



"One-pass trencher"

Bags of Zeolite



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Questions?



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