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## Work Scope

- > Description of scope of work
- > X-326 Overview
- > Waste Management
- > Challenges and Successes

# Scope of Work *Site Overview*



**Portsmouth**

## Scope of Work *Site Overview*



## Scope of Work

- ❖ D&D
- ❖ Nuclear Operations and Waste Management
- ❖ Environmental Restoration
- ❖ OSWDF
- ❖ Barter Operations
- ❖ Surveillance and Maintenance/Infrastructure Services



## Scope of Work - Decontamination & Decommissioning *Physical Conditions at PORTS*

**X-326: 2,340 Stages, U to 100%**



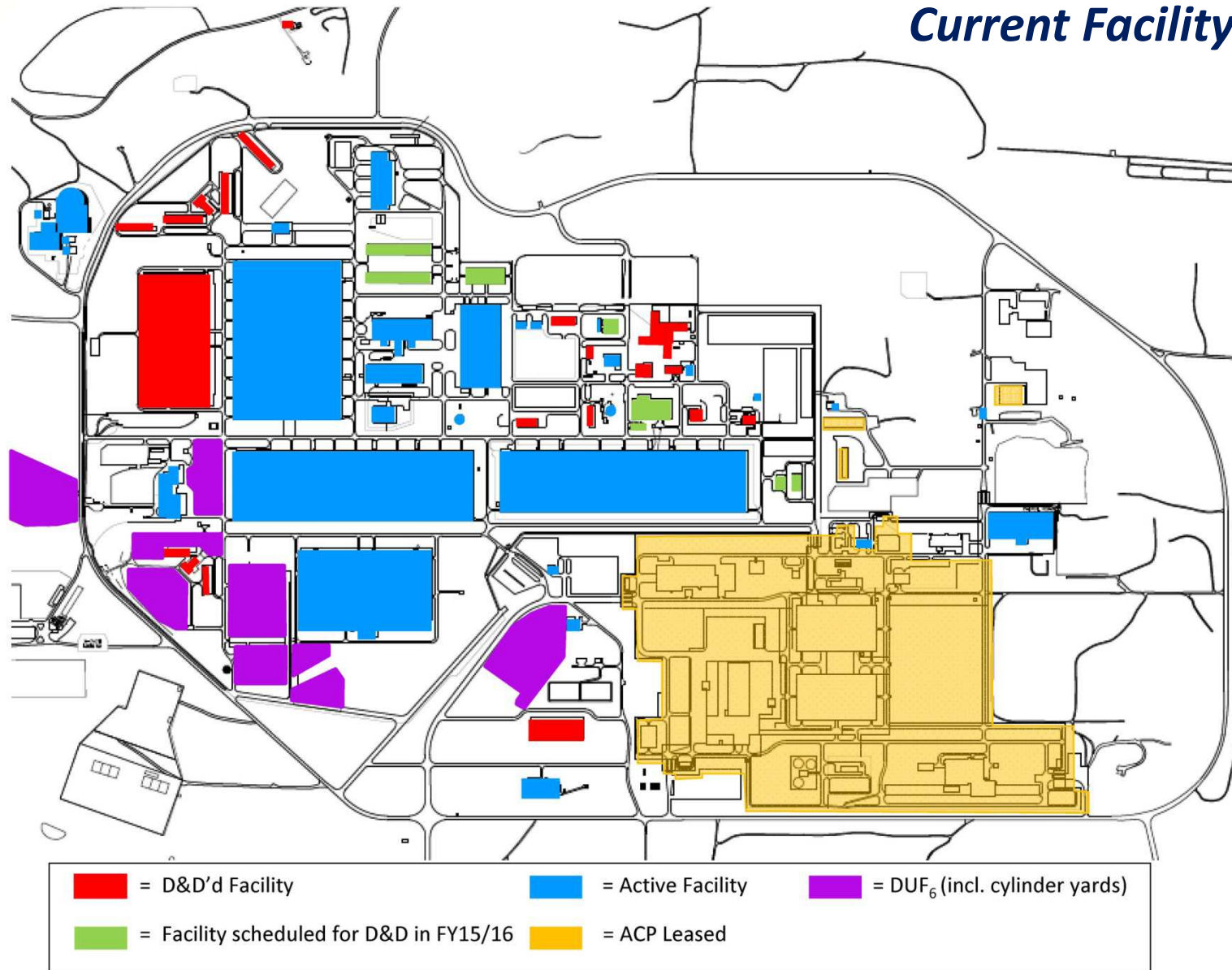
**X-333: 640 Stages, U to 3%**

**X-330: 1,100 Stages, U to 10%**

- 3,777 acres total
- 415 structures / facilities
- 3 main process buildings
- 14,700 process components

- 145 acres (10.2M ft<sup>2</sup> under roof)
- 22 HazCat 2 Facilities
- 1,000 acre Limited Area
- 1.4M Cubic yards of debris

# Scope of Work - Decontamination & Decommissioning *Current Facility Status*





# Scope of Work - Decontamination & Decommissioning

D&D since 2012	D&D Planned for FY 15/16	Deactivation Underway	Facilities in S&M	Active Operational Facilities
X-100 – 132,112 ft <sup>2</sup>	X-104 (Guard HQ)	X-710 (Laboratory)	X-330	X-342 / 344 (Autoclaves / Barter Ops)
X-100B – 800 ft <sup>2</sup>	X-626 (Cooling Tower)	X-326	X-333	X-705 (Decon Building – High Assay Blenddown/Component Dissassembly)
X-101 – 10,135 ft <sup>2</sup>	X-710B (Lab Storage)	X-104	X-700 (Converter Shop)	X-744G Uranium Mgmt Center – Overpacking and Shipping of Nuclear Material
X-102 – 18,895 ft <sup>2</sup>	X-114A (Firing Range)		X-345 (SNM Storage)	X-847 – Waste Operations
X-106 – 6,214 ft <sup>2</sup>	X-744H (Warehouse)			X-300 – Plant Control Facility
X-624-1 – 3,500 ft <sup>2</sup>	X-744J (Warehouse)			X-530 Switchyard Controls
X-744S – 50,000 ft <sup>2</sup>	X-744L (Warehouse)			Utility Facilities – X-611, X-690, X-670, X-6619 & 4- GWP&T's
X-600 – 22,206 ft <sup>2</sup>				X-720 Maintenance Shops
X-109C – 720 ft <sup>2</sup>				X-750 Garage





# Scope of Work - Nuclear Material and Waste Inventory

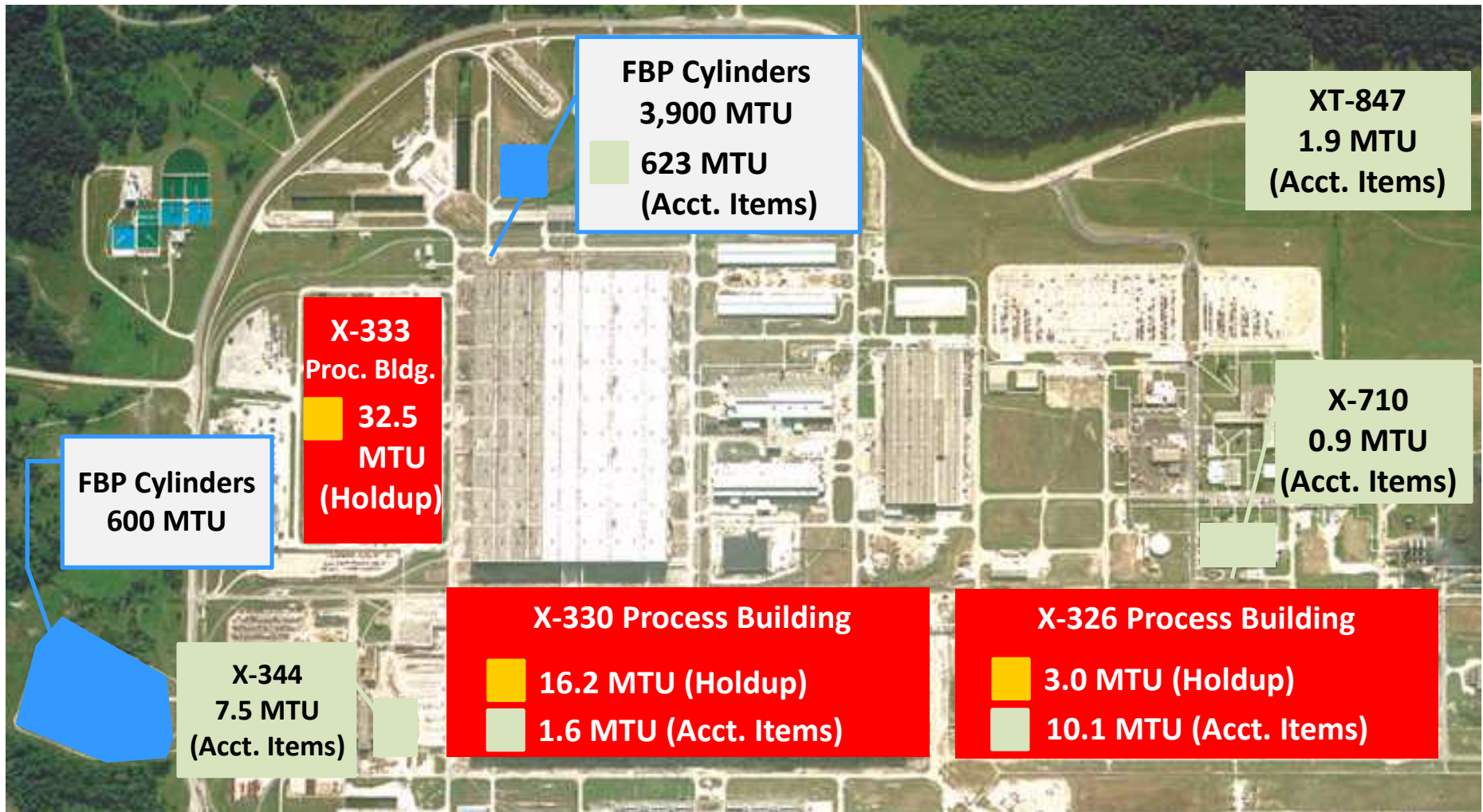
## *Impacting D&D of Process Gas Facilities*

INVENTORY					
	<20% Enrichment		>20% Enrichment		Comment
	Containers	Grams U <sup>235</sup>	Containers	Grams U <sup>235</sup>	
<b>X-326 Inventory</b>					
Holdup (Items)	3,256	170,000	5,620	296,000	Crit Incredible Declaration/ S&S limitations on man portable quantities
Accountable Oxides	1,728	224,000	N/A	N/A	S&S limitations on man portable quantities
Fissile RCRA Waste	160	6,000	165	11,100	Gram limitations at TSDF / New RCRA Storage Permit to move inventory

## Scope of Work - Nuclear Material and Waste Inventory *Impacting D&D of Process Gas Facilities*

INVENTORY (Continued)					
	<20% Enrichment		>20% Enrichment		Comments
	Containers	Grams U <sup>235</sup>	Containers	Grams U <sup>235</sup>	
<b>Other Facilities</b>					
333/330 Holdup	3,480	576,000	-	-	
Enriched Cylinders	267	7,458,000	N/A	N/A	
Normal Cylinders	1,567	24,228,000	N/A		
Cylinders (Heels)	2,995	224,000	N/A		
X-744G Uranium Management Ctr.	7,756	3,664,000	N/A	N/A	Diverse population / considerations for use / addressed U <sup>233</sup>
X-710, X-847, X-344, X-330, Roof Items	3,413	177			

# Nuclear Material & Waste Inventory



HoldUp
  Accountable Items
  Cylinders
 Waste = 1,800 Waste Containers

# PORTS Cascade



# Cascade Facilities Scope

- **Remove equipment necessary to achieve Criticality Incredibility (CI)**
  - PGE
- **Characterize remaining PG piping & PG auxiliaries to confirm CI**
  - Perform Deposit Removal (DR) as necessary
- **Hazardous and universal wastes removal**
- **RCRA wastes relocated or disposed (as applicable)**
- **Accountable materials processed or relocated (as applicable)**
- **Characterization necessary to support waste placement**
- **Remove items of historical significance**
- **Criticality incredible (CI) declared; downgrade to a Radiological facility**
- **Downgrade Security status of building**
- **Utility disconnections; cold and dark**
- **Demolition; Open Air**

# Deactivation Approach Summary

Facility Criteria	X-333	X-330	X-326	Notes
DOT	No	No	Yes	Fissile excepted Ratio: converters & compressors 2000:1 Coolers <15 grams U <sup>235</sup>
<u>WAC</u> Tc-99 pCi/gm U <sup>235</sup> pCi/gm  U Mass g/item Pipe/Valve	<u>PORTS OSWDF</u> Note  850 gU <sup>235</sup> /item gU <sup>235</sup> /ft or item*	<u>PORTS OSWDF</u> Note  400 gU <sup>235</sup> /item gU <sup>235</sup> /ft or item*	<u>NNSS</u> PGE 5.1E+4 PGE 1.7 E+6 <u>OSWDF</u>  gU <sup>235</sup> /ft or item*	OSWDF WAC supports disposal of all 330/333 PG systems and all 326 PG systems <i>except</i> PGE  * CI limit = WAC limit
<u>CI Limits</u> PGE Component	N/A; Remove gU <sup>235</sup> /ft or item*	N/A; Remove gU <sup>235</sup> /ft or item*	N/A; Remove gU <sup>235</sup> /ft or item*	* CI limit = WAC limit Ex: piping 6" - <10" 11gU <sup>235</sup> /ft
Deactivation Method	PGE removed Haz Mat'l removed CI → C&D	PGE removed Haz Mat'l removed CI → C&D	PGE removed (NNSS) Haz Mat'l removed CI → C&D	PGE removed by bridge cranes  DR as needed to meet CI
Demolition	Open air, w/CI systems left in building; size reduce to OSWDF limits	Open air, w/CI systems left in building; size reduce to OSWDF limits	Open air, w/CI systems left in building; size reduce to OSWDF limits	Dedicated haul road Proven H <sub>2</sub> O treatment

Note: Measured Values Are Within WAC, Projected Overall Average In OSWDF Is ~100 pCi/g, WAC Allows Sum Of Fractions

## X-326 Current Deactivation Status

- Project is managed as discreet scope with easily measurable EVM Techniques
- Baseline is aligned with contract and under configuration control
- To date focus had been PGE; recent unilateral mod brought in remaining scope such as PG auxiliaries and utility isolation
  - Shifting emphasis toward auxiliaries
  - REA activities ongoing for unilateral modification
- Though using operating funds; managed as a capital asset project
- To date SPI 1.0 CPI 1.08
- Cumulative (CY 13/14) Safety Performance; most hazardous work on site
  - TRC – 0.5
  - DART – 0.14

# X-326 Deactivation

- **PGE shipped to NNSS for disposal; fast start without OSWDF**
  - Some components not shippable
  - Deposit Removal (DR)
- **Characterization/sampling; activities performed IAW RI/FS sampling plan**
- **NDA remaining PG/auxiliary systems; compare to CI criteria**
  - DR of components > CI
  - Components meeting CI criteria remain in building for demolition
- **Hazardous & Universal waste removed/shipped for disposal**
- **RCRA wastes relocated to X-330 & X-345**
  - New permitted RCRA storage areas required
  - X-326 RCRA storage area closure
- **Accountable materials relocated to X-330 & X-345 (DSA revisions)**
- **Historically significant items removal**
- **Remove any remaining containerized low level waste**
- **CI declared; Facility downgrade to a Radiological facility**
- **Downgrade Security status of building**
- **Utility disconnections completed, e.g. CAAS, power, fire protection, etc.**

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# Deactivation; PGE Removal

- **PG Equipment Removal Assigned to USW in CBA negotiation consistent with Labor Relations requirements of prime contract**
- **PG MM was a historical USW competence**
- **Created “Deactivation Worker” training using this foundation**
- **Inadequate number of MM to staff FBP needs for deactivation**
- **Built capability to “grow our own” to staff**
  - Used contractual “Project Worker” language to our advantage
  - Leveraged workers targeted for WFR with clearances (skill mix adjustment) ; SPO, admins, escorts, all USW classifications
  - Hired additional staff; mechanics & laborers many of whom were Trades Union members
  - Built capability for routine decontamination, welder, cutter, crane operator W/I project
  - Contract language allows some movement in/out of project; manageable
- **Improved performance as collective experience increased**
  - Peak USW staffing 189; currently at 115; accomplished 38% of PGE in FY 14 <140 USW
- **Best approach given USW contract & FBP’s contract**

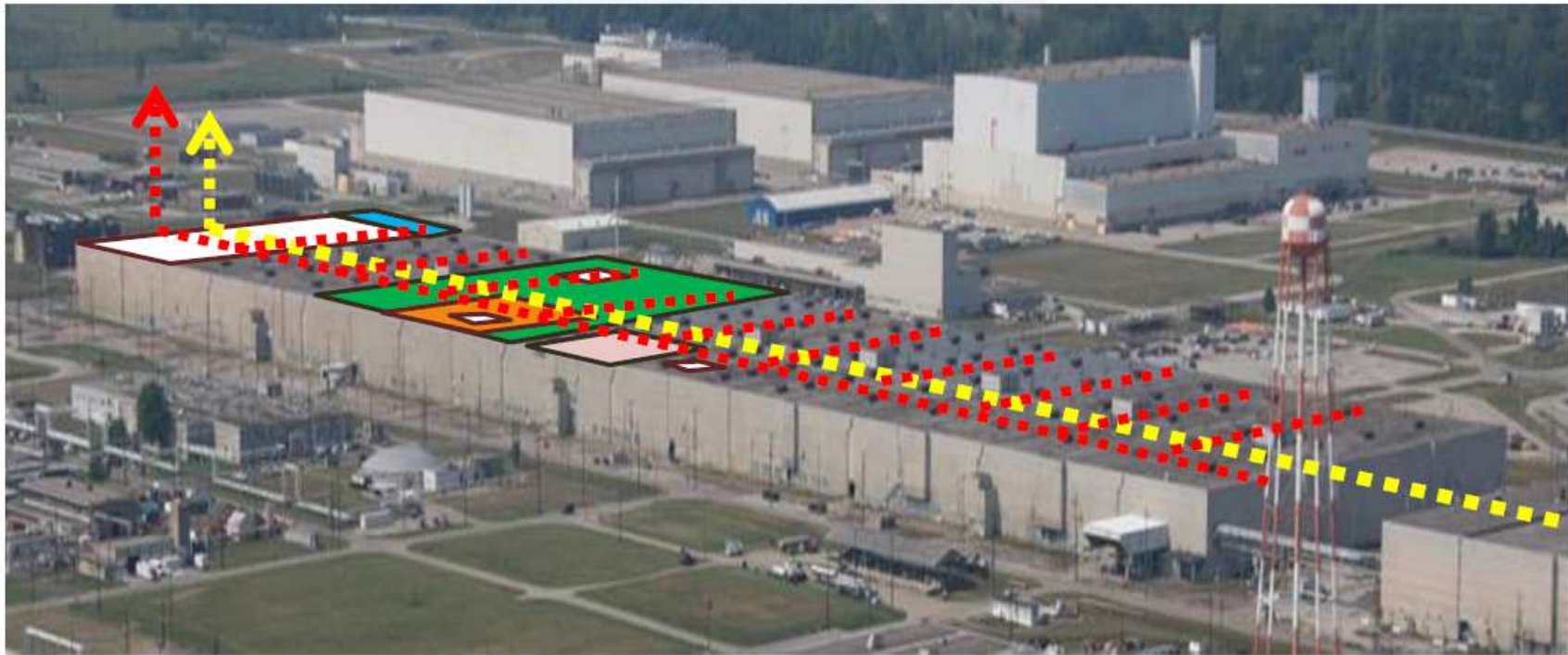
# X-326 Waste

- **Waste Generator Management Plan**
  - Comprehensive Matrix developed with integrated team
    - FSD Deactivation plan (detailed systems, component, location, type)
    - ER OSWDF planning inputs
    - WM/Transportation characteristics for classification
- **PGE spares (73 converters, compressor, coolers)**
  - Characterization samples to obtain assay
  - NDA; DR if necessary, ship to NNSS
- **DOE Material Storage Area's (DMSA) - Legacy/HEU parts**
  - Large (two units 2nd floor) security fenced area created difficulty for deactivation
  - Characterize, containerize and ship to NNSS
  - Remaining items to smaller properly controlled areas for processing, DR and disposal
  - DMSA now cleared of legacy/HEU parts
- **HEU/Accountable nuclear material areas (~1900 items)**
  - Four separate areas on first floor
  - Adds to challenge of site man portable limits
  - Characterize (NDA, sample as necessary)

# X-326 Waste

- **Legacy wastes (RCRA)**
  - 38K ft<sup>2</sup> area on first floor
  - Active area for processing currently generated RCRA wastes (80 m<sup>3</sup> /year)
  - Legacy wastes → STP
  - New Part B RCRA permit to relocate to 330/345; aligns with DSA and security needs
    - Reduces total area to < 20K ft<sup>2</sup>
  - Closure of 326 RCRA area
- **Universal wastes; Continue to process as generated**
  - Remove prior to demolition
- **Trash sort area (LLW - PPE)**
  - West side first floor unit 25-7
  - Disposal based on characterization – Commercial TSDF
  - Relocate
- **Hazardous wastes (LO, mercury, etc.)**
  - All LOST drained, inspected, absorbent added; residual draining continues
  - Characterized and shipped to Commercial TSDF
  - Mercury switches removed for recovery/recycle (confirm); >50% complete
- **Characterization info; NDA, RI/FS – Radiological & Chemical**

# X-326 Building Current Activities



- Cylinder "Burp"— from X-330/X-342
- Purge & Evacuation
- Surge Drums

- RCRA
- Accountable Material
- Trash Sorting Area
- DOE Material Storage Area

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# Process Gas Equipment

## **Total Number of Components Shipped: Project to date and a percentage of the overall**

- ❖ Converters: 1,928 (82%)
- ❖ Compressors: 1,132 (48%)
- ❖ Coolers: 904 (39%)

## **Total Number of Components Shipped:**

- ❖ Converters: 1,640
- ❖ Compressors: 1,012
- ❖ Coolers: 238

## **Total Number of Components Shipped (Fiscal Year through March 6, 2015):**

- ❖ Converters: 288
- ❖ Compressors: 120
- ❖ Coolers: 666



# The Fissile Exception Challenge

## Approached each component separately:

- ❖ Converters using 1:2000 for LTLT and non-LTLT
  - ❖ Compressors were demonstrated to align with 1:2000 criteria through a campaign of dismantling, examination and sampling to provide a basis for use of ex-situ NDA measurements.
  - ❖ Neutron Slab Counter Array System designed to attain the capability to detect below 15 grams (aka The Blue Box) capable of detected less than 15 grams in coolers.
- 
- Continue to expand population of PGE components meeting fissile excepted criteria based on sampling and analysis.
  - Recently confirmed that Gamma scans are not effective for identifying hot spots.



# Other PG System Waste Challenges and Successes

## Other PG Systems Wastes:

Instrument Lines – HF concerns, potential high grams and low weight, under evaluation.

High Tc99 wastes – exceed Class C, options limits if mixed

PC legacy waste challenges:

- ❖ Gram limitations at treatment facilities
- ❖ Compressors were demonstrated to align with 1:2000 criteria through a campaign of dismantling, examination and sampling to provide a basis for use of ex-situ NDA measurements.
- ❖ Neutron Slab Counter Array System designed to attain the capability to detect below 15 grams (aka The Blue Box) capable of detected less than 15 grams in coolers.

PG legacy waste successes and opportunities

- ❖ Use of X-705 downblend used to take advantage of fissile exception for liquid uranyl nitrate solutions.
- ❖ Working with WCS on in-cell macro options for higher gram materials.

## Secondary System Waste Issues and Successes

### Miscellaneous Containerized Waste

- ❖ Verifying traceability of data and classification – major challenge very time consuming.
- ❖ Packaging traceability of suitability to waste – repackaging or overpacking required for many legacy containers.
- ❖ Insufficient process knowledge – utilized RTR to avoid Open and Inspect of high gram wastes.

### Asbestos:

- ❖ Issues of identification of ACM and understanding full life cycle of waste, non-friable okay for disposal but certain recycle activities may render friable.
- ❖ Current harmonized system to avoid duplicate data collection between Health and Safety and Waste Management.





## Secondary System Waste Issues and Successes

### Dry Activated Wastes

- ❖ Large volumes dependent on NDA resources which are critical resources to site.
- ❖ Formed multi-disciplined team to utilize alternate data sources for release as LLW.
- ❖ Exploring options with Waste Control Specialists for high volume, low activity waste to minimize costs and replace former BSFR outlets.

### Lube Oil Systems:

- ❖ Work with PPPO and Texas Department of Environmental Quality on the acceptance of residual lube oil with trace Tc99 at the Clean Harbors facility, high cost reduction.



**QUESTIONS?**