Y-12 NATIONAL SECURITY COMPLEX ACTIVITIES IN SUPPORT OF MO99: FY18 UPDATE

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The Y-12 National Security Complex
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- Located in Oak Ridge, Tennessee
- Operating production facility specializing in uranium material safeguards, technologies, and manufacturing:
  - Uranium Metal Production
  - Uranium Oxide Production
  - Uranium Alloy Production
  - Technology Development Facilities
  - On-Site Source Material Availability

- This presentation will focus on the capabilities that may support the Mo\textsuperscript{99} community
Uranium Processing at Y-12 - Simplified

Metal Operations

Use/Storage

Dis-assembly

Casting Dross & Scrap

Machining & Forming

Metal Casting & Blending

Logs, Cast Shapes

Other Sites

Chemical Operations

Dissolution

Solvent Extraction

Evaporation

Purified Uranyl Nitrate Solution

Molten Uranyl Nitrate

Denitrification

Fluidized Bed Reduction

Fluidized Bed Hydrofluorination

UO₃

UO₂

UF₄

UF₄

U Metal Buttons

Blended UF₄

CaF₂ Reduction to Metal Buttons

U Metal Buttons

Original Input
LEU-Foil Target Development & Manufacturing

Rolling Mill

Heat Treatment Furnace Development
Target as Manufactured
Additional Capabilities

- Swaging
- Annealing (Heat Treatment or In-Mold)
- Precision Machining
- Dimensional Inspection (CMM)
- Analytical Chemistry
- Metallography
Recent Activities

- Supporting multiple customers with research and development activities
- Upgrading infrastructure to support additional research and prototyping activities
- Independent research to examine coating technologies
  - Physical Vapor Deposition
  - Electroplating