



U.S. DEPARTMENT OF  
**ENERGY**



# Savannah River Site Nuclear Materials Program

*Delivering Unique Capabilities for the Nation*

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SRNS President & CEO

*National Cleanup Workshop  
September 12, 2018*

# Nuclear Materials Program Facilities

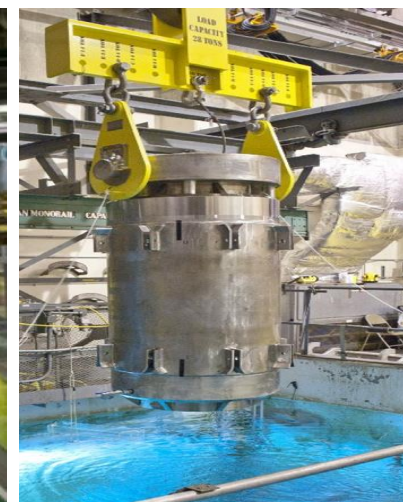
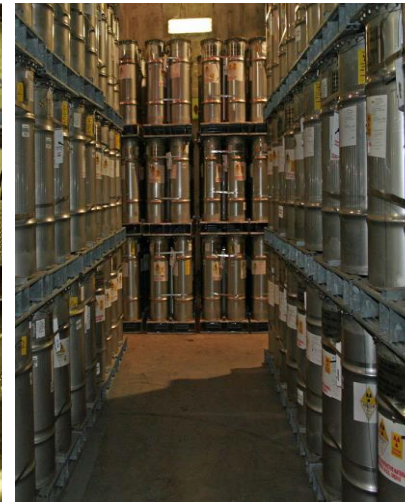
## H Canyon Complex



## K Area Complex



## L Area



# Nuclear Materials Program Capabilities

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- **H Canyon is the only production scale radiochemical processing plant in the US**
  - Unique US capability to disposition certain fuels that enable other DOE program missions
  - At full capacity, it can process 15 batches of Spent Nuclear Fuel (i.e., 360 fuel bundles = 1,080 fuel assemblies) per year
- **K Area is DOE-EM's only Category 1 special nuclear materials storage facility designated for interim safe storage of plutonium and highly enriched uranium**
  - Storage capacity for approximately 8,500 drums of special nuclear materials
  - Conversion of K Reactor for nuclear material storage was an enabler for other sites, e.g., Rocky Flats and Hanford, to terminate programs
  - Capability to down blend and package approximately 6 metric tons of plutonium
- **L Basin has the capacity to receive, bundle, and store Material Test Reactor type fuels (3650 bundle positions) and High Flux Isotope Reactor fuels (120 full cores)**
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  - Surplus Heavy Water is stored in drums and tanks, located at L, K and C Areas with L Area taking the lead for management of the water

# Nuclear Materials Program Challenges

- Operation of 60 year old facilities as designed, constructed and modified
- Missions are dynamic, requiring more flexible and efficient operation of the facilities
- Infrastructure needs have been deferred to maintain critical operations
  - H Canyon exhaust tunnel
  - Roof Leaks
  - Key electrical distribution requires modernization
  - Operational efficiency upgrades
- Aging workforce results in loss of expertise
  - Hiring, training and retaining a skilled workforce to overcome attrition

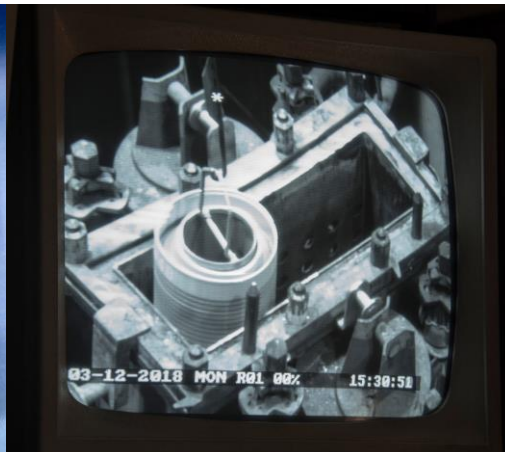
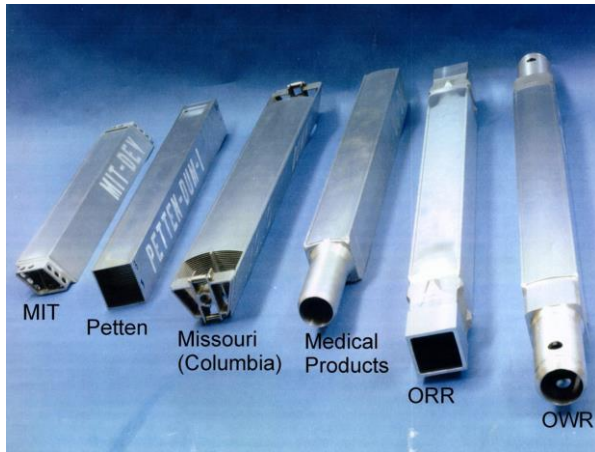




# Renewal of H Canyon Operations

- Spent fuel processing resumed in FY12 with the dissolution of four Material Test Reactor (MTR) bundles
- During FY13 and FY14, 130 low enriched uranium bundles of vulnerable spent fuel were processed
- From FY15 to FY17, 200 MTR bundles were processed
- Target Residue Material processing began in April 2017 with 46% of shipments unloaded to date; \$15M annual campaign
- High Flux Isotope Reactor fuel processing from Oak Ridge resumed in FY18 – 20 cores dissolved in FY18

For the first time ever, H Canyon is processing 3 uranium streams



# Addressing Challenges – Improving H Canyon Production Capability

## Solved Retirement Crisis

- Predictive analysis; planning for attrition
- Ramped up hiring
- Streamlined onboarding
- Knowledge capture and transfer
- Reduced security clearance process delays



Since FY14  
Approximately 450/yr.  
over the next 4 years



during  
past four years



of non-retirement  
eligible employees seeking  
other employment



exceeds Office of Federal  
Contract Compliance  
Programs 6.7% goal



down from  
54 in 2008

## Tackled Aging Infrastructure & Increased Efficiencies

- Installed new dissolver
- Restoring critical spare parts inventory
- Implementing a five year infrastructure plan (\$25M annually)
- Canyon Exhaust Tunnel Life Extension
- Expect 20% reduction in corrective maintenance backlog by end of 2019
- COIN – Collaborative Innovation to increase processing rates
  - Reduces number of analytical sample determinations
  - Installed on-line spectrophotometers to double 2<sup>nd</sup> U Cycle processing rate
- Increased payload of transport casks by 33%
- Increased mass allowed in dissolver by 20%



# Summary

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- **SRS is home to national assets that provide a service in transforming potentially proliferant materials into a reusable product; down-blending HEU fuel for Tennessee Valley Authority's commercial power reactors**
- **SRS has a proven record of safety and completion of missions**
- **Stable infrastructure investment needed to ensure continued performance**
- **An integrated approach for how potential missions become approved work scope for the SRS Nuclear Material Facilities is being developed**
  - Nuclear Materials Technical Forum: September 20, 2018





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