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# **Nuclear Material Stabilization Project**

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# Mission

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- Nuclear Material Program
  - Safe storage, stabilization, and disposition of plutonium, uranium, and other heavy isotopes
  - Safe storage and disposition of heavy water
- Spent Nuclear Fuel (SNF) Program
  - Receipt, safe storage, stabilization, and disposition of both legacy and non-legacy SNF



# Background

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- **Nuclear Material Program**
  - F-Area
  - H-Area
    - Receiving Basin for Off-site Fuels (RBOF)
  - K-Area
    - Container Surveillance and Storage Capability (CSSC) Project
    - Plutonium Disposition Project
  - Heavy Water Program
    - In C, K, and L-Areas



# Background

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## F-Area

**F-Canyon Complex**



**Central Laboratory**



**F-Area Material Storage**



**Mock-Up Shop**





# Background

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H-Area

**H-Canyon Complex**





# Background

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K-Area

## K-Area Material Storage





# Background

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## Spent Nuclear Fuel Program

– L-Area





# End State

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- Upon completion of their respective missions, all EM nuclear material and spent nuclear fuel areas at SRS will be deactivated and maintained in a minimum surveillance and maintenance condition until decommissioning
  - The last two major areas, H and L, will be deactivated by 2023



# Assumptions

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- F-Canyon will be transitioned to D&D by October 1, 2010
- H-Canyon Complex will operate through September 30, 2019
- Proposed Plutonium Disposition Project will be approved and fully funded
- Aluminum-clad SNF will be dispositioned through H-Canyon through September 30, 2019
- Foreign and Domestic research reactor fuel receipts will continue through September 30, 2019
- All heavy water will be dispositioned at no net cost prior to start of L-Area deactivation (2019)



# End of Current Contract F-Area

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- The F-Canyon Complex is deactivated
- Central Laboratory (CLAB) is operational supporting the H-Canyon Complex and the Liquid Waste System
- Area Shops, the “Mock-Up Shop”, is operational supporting the H-Canyon Complex and the Liquid Waste System
- Depleted Uranium Oxide (DUO; ~25,000 drums) is safely stored in F-Area, N-Area, and R-Area
  - DUO drums are being prepared to be shipped by rail to Utah for disposition
- The F-Area Material Storage (FAMS) building is deinventoried of Special Nuclear Material and ready for Deactivation and Decommissioning



# End of Current Contract H-Area

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- The H-Canyon Complex remains operational stabilizing and dispositioning nuclear material and spent nuclear fuel as required
- EM will be responsible for HEU Blend Down operations at SRS effective October 1, 2007

## **Receiving Basin for Off-Site Fuels:**

- Facility deinventoried and deactivated in 2004; will remain in minimum surveillance and maintenance condition until decommissioning begins in 2012



# End of Current Contract K-Area

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- K-Area is operational, providing storage and surveillance of Special Nuclear Material.
- K-Interim Surveillance Project:
  - Temporary 3013 container opening capability complete and digital radiography operating to support non-destructive examination of 3013 cans
- CSSC construction ongoing
- Design for the proposed Plutonium Disposition Project is ongoing



# End of Current Contract L-Area

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- L-Area is operational, supporting receipt, storage and shipping of legacy, foreign, and domestic SNF

## **Heavy Water:**

- Approximately 1,600 metric tons of heavy water is safely stored in C, K, and L-Areas



# Scope of Work

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- F-Area:
  - Maintain Mock-up Shop and the Central Laboratory operational
  - Maintain the deactivated F-Canyon Complex in safe storage until decommissioning
  - Disposition the remaining Depleted Uranium Oxide from SRS by October 2009



# Scope of Work

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- H-Area:
  - Operate the H-Canyon Complex to stabilize and/or disposition DOE legacy nuclear materials and aluminum-clad spent nuclear fuel
  - Disposition all items stored on the RBOF cask pad and clean/decontaminate remaining pad (located in L-Area).



# Scope of Work

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- K-Area:
  - Operate to provide safe and secure storage of Special Nuclear Material
  - Continue design and construction of Plutonium Disposition Project
  - Complete construction and start operations of the Container Surveillance and Storage Capability Project by December 30, 2010



# Scope of Work

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- L-Area:
  - Operate to receive, store, and ship SNF, including receipt of approximately 4,500 items of both foreign and domestic SNF through 2019
  - Continue to prepare aluminum-clad SNF for disposition via H-Canyon
  - Continue to exchange fuel with Idaho per existing Records of Decision



# Scope of Work

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- Heavy Water
  - Disposition heavy water through beneficial use alternatives.
  - At a minimum, de-inventory K-Reactor Building of heavy water (~50,000 gallons in two tanks and ~2900 drums) prior to construction of the proposed Plutonium Disposition Project



# Program Challenges/Risks

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## **H-Area:**

- Additional processing needs may be identified, resulting in extending H-Canyon Complex operation beyond current plans of 2019

## **K-Area:**

- The K-Area 3013 Container Surveillance and Storage Capability and Plutonium Disposition Projects may not be completed on schedule

## **L-Area:**

- Additional foreign and domestic fuel may be received, potentially requiring extension of H-Canyon Complex operations and additional storage racks in L-Area basin
- Exchange of fuel between SRS and Idaho may be impacted by availability of shipping casks and transportation