



Status of Heavy Water Disposition

Nuclear Materials Committee Meeting

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5/4/10

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Purpose

- **Provide the current status of disposition plans for Heavy Water stored at SRS. Information to be provided includes:**
 - Heavy Water Background
 - Interim Storage of Heavy Water
 - Disposition Path Options / Status
 - Common Scope for Reuse or Disposal



Heavy Water Background

- **Light water properties**
 - Composed of 2 atoms of hydrogen & 1 atom of oxygen (H_2O)
- **Heavy water properties**
 - Looks, feels & smells no differently than light water
 - Composed of 2 atoms of deuterium instead of hydrogen (D_2O)
 - Heavy water is not considered radioactive
 - Found naturally in small quantities
 - 1 pound of heavy water can be found in every 3 tons of light water
 - Neutrons slow down in heavy water, which promotes fission
- **Majority of U.S. heavy water supply was made at SRS**
 - Needed for operation of 5 SRS production reactors
 - Used as primary coolant to remove fission heat from fuel elements & to assist in fission
 - Tritium in heavy water was a by-product from reactor operations
 - Today, no current need or production capability exist at SRS





Interim Storage of Heavy Water

Storage Location	Total # of Drums	Total # of Tanks	Total # of Gallons	Total # of Curies
K Area	1914	3	~162,000	1,405,000
L Area	4859	3	~331,000	1,500,000
C Area	0	2	~43,000	640,000





Disposition Path Options

- **Beneficial reuse option**
 - CANDU reactors
- **Treatment and Disposal option**
 - Ship to offsite treatment & disposal vendor
 - Ultimate disposal location to be determined





Common Scope for Reuse or Disposal

- **Regardless of disposition option chosen, technical preparations are required for heavy water removal**
 - Pumping Station
 - Drum Procurement
 - Sampling Plan
 - Security Plan
 - Drum Removal
 - Shipment
- **Estimate in Progress - expected end of May 2010**

Summary

- **Over 500,000 gallons of heavy water is stored at SRS without a DOE programmatic purpose**
- **Removal of heavy water will result in a significant curie reduction**
- **Disposition paths are under evaluation but no decision has been made at this time**



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