

Recommendation 353
Defense Waste Processing Facility Additional Failed Equipment Storage

Background

Savannah River Site is located in Aiken, South Carolina. Its mission is to safely and efficiently operate defense related nuclear facilities and to protect the public health and the environment while supporting the nation's nuclear deterrent and reducing the nuclear contents stored in the High Level Nuclear Storage Tanks.

SRS's mission is recognized as a long-term national asset in the areas of environmental stewardship, innovative technology, national security and energy independence, which acts with an inspired workforce and mature, efficient management processes, while sustaining public confidence in its people and capabilities.¹

"The Defense Waste Processing Facility (DWPF) began radioactive operations in March 1996. The purpose of DWPF is to immobilize approximately 37 million gallons of high level radioactive waste currently stored in underground tanks at the Savannah River Site (SRS). The high level waste is vitrified into a durable borosilicate glass, poured into stainless steel canisters, and stored prior to eventual disposal in a geologic repository. DWPF has produced 1,178 canisters of high level waste glass as of October 1, 2001. This represents 20% of the total canisters required to immobilize all of the SRS high level waste in the underground tanks."²

For vitrification of high-level liquid waste, specially designed melter is used.³

As of 2017, two melters were in use significantly beyond their expected life span. These failed melters are stored in a Failed Equipment Storage Vault at DWPF (3). Melter number three is expected to go into operation by the end of 2017. It is designed to last for three to four years. However, looking at the history of first two melters, which have operated beyond their life expectancy it is possible that with the development of new technologies, the new melter could also last for years to come. Due to its mechanical nature, equipment could fail for any given reason, become redundant, and require replacement.

"The Failed Equipment Storage Vault provides the Defense Waste Processing Facility (DWPF) with the capability to temporarily store high-level solid radioactive waste, including failed radioactively contaminated equipment (classified as solid high level waste) and components that cannot be shipped to an on-site disposal facility or off site for disposal."

Recommendations:

The Savannah River Site Citizens Advisory Board recommends that the Department of Energy:

1. Initiate the budget for the construction of Failed Equipment Storage vault for melter numbers 3 and 4.

2. Develop design of the Failed Equipment Storage, and
3. Start the construction to keep the construction cost low, and it should be completed as soon as possible so that it does not impact HLW disposition schedules.

References:

- (1) WSRC-MS-2002-00145, "Overview - Defense Waste Processing Facility Operating Experience"
- (2) WSRC-MS-2000-00533, "DWPF Vitrification - Characterization of the Radioactive Glass Being Produced During Immobilization of the Second Batch of HLW Sludge"
- (3) G-SYD-S-00019, 1996, "DEFENSE WASTE PROCESSING FACILITY SU-13, Failed Equipment Handling and Storage"