Savannah River Site
Citizens Advisory Board

Recommendation 218
Hanford Limited Plutonium Disposition Mission

Background

Twelve drums of plutonium (Pu) oxide matrix (known as Hanford Pu238 material), produced in the old HB-Line at the Savannah River Site (SRS), were transferred to Hanford in 1966 for critical mass experiments. The critical mass experiments were never performed as a sufficient amount of material could not be made available and the material remained untouched in storage until 1980 when the 12 drums were placed in retrievable storage at Hanford. The 12 drums contain approximately 5.3 kilograms of nuclear material (Pu238 and Pu239; Ref. 1).

Several disposition paths for this material were evaluated. One path provided for the shipment of the drums to SRS to purify and convert for programmatic need or transfer to a sludge batch for immobilization in DWPF. Recently, the alternative to dissolve and process the material through the SRS H-Canyon was determined to be the best path forward. This alternative will result in the least radiation exposure to workers, is cost effective and an efficient use of SRS resources. It uses existing processes, will be performed by personnel familiar with handling Pu, requires little to no changes to existing regulatory documentation, and has the fewest and most manageable uncertainties.

The proposal calls for one or two drums of material to be retrieved at a time. Hanford would verify the drum integrity, survey, and repackage the drums in over-pack containers. Once this was done, the containers would be loaded into a Radioisotope Thermoelectric Generator (RTG) Transportation System. The RTG Transportation System would be sent directly to SRS where it would be unpacked inside the HB-line contamination control containment and the Pu dissolved in the HB-line recovery dissolver. After unloading is complete, the RTG transportation system would be returned to Hanford for the next shipment. The entire process is anticipated to take place over a period of several months in FY 06 and incremental costs will be paid for through Hanford funds. The Pu would not be stored at SRS but would be processed in H-Canyon upon arrival.

Comments

The SRS Citizens Advisory Board (CAB) has voiced its opinion that SRS not take any plutonium until a viable disposition path is available (Ref. 2, 3, 4, & 5). Very recently, the CAB has also asked that DOE stop all shipments of weapons grade plutonium to SRS until five percent of the existing quantities of stored plutonium at SRS had been disposition successfully (Ref. 6). The SRS CAB understands that there could be a need to ship small quantities of excess plutonium from samples, standards, and research-related materials to SRS. By using the term "DOE excess weapons grade plutonium," the SRS CAB meant to exclude these small quantities from the recommendation.

In that same recommendation, the SRS CAB stated that H Area should be considered for processing plutonium until the planned plutonium vitrification facility is operational. The SRS CAB has long recognized the Pu processing capabilities of SRS and the benefits of such to the DOE complex (Ref. 7). The SRS CAB has been and continues to be supportive of processing small amounts of Pu at SRS, especially when existing SRS facilities can be used, it provides national benefit, and does not negatively impact the SRS budget.

As long as equity issues are addressed, the SRS CAB encourages SRS to be a good corporate

citizen to other sites across DOE's complex. The CAB has encouraged SRS to take Mound TRU wastes and completed the Hanford treatability samples. In this motion, there are no substantive reasons to address stakeholder equity.

Recommendation

The SRS CAB supports the limited Hanford Pu disposition mission; however, this position does not provide DOE with an unconditional endorsement to ship small quantities of plutonium to SRS without prior notification and recommends that DOE:

1. Utilize the SRS HB-Line to dissolve and process the Hanford Pu and report the status to the SRS CAB as soon as it's known, whether the material will be purified and converted for programmatic need or transferred to a sludge batch for immobilization in DWPF.

2. Notify the SRS CAB before shipping any other quantities of plutonium to SRS from other DOE sites, except samples, standards and research related materials.

References

1. Proposal for Limited Pu Mission, presentation to the NM Committee by Phil Breidenbach, WSRC, July 11, 2005.
2. Citizens Advisory Board Recommendation No. 170 (adopted September 23, 2003), "EM Owned Plutonium Storage and Disposition at SRS."
3. Citizens Advisory Board Recommendation No. 171 (adopted September 23, 2003), "NEPA Implementation."
4. Citizens Advisory Board Recommendation No. 188 (adopted March 24, 2004), "Plutonium Disposition".
5. Citizens Advisory Board Recommendation No. 196 (adopted July 27, 2004), "Plutonium Shipments and Disposition".
6. Citizens Advisory Board Recommendation No. 214 (adopted May 24, 2005), "Plutonium Disposition Options".
7. Citizens Advisory Board Recommendation No. 47 (adopted November 18, 1997), "Environmental Management Integration and some SRS Specific Recommendation".

Agency Responses

Department of Energy-SR