

External Technical Review Summary

United States Department of Energy Office of Environmental Management (DOE-EM)

External Technical Review of the Plutonium Preparation Project at the Savannah River Site

Why DOE-EM Did This Review

The purpose of the Plutonium Preparation Project (PuPP) is to prepare for disposition of plutonium materials; for examination, re-stabilization, and disassembly of the Fast Flux Test Facility (FFTF) unirradiated fuel; and for repackaging of Pu stored in 3013 containers. Of ~12.8 MT of plutonium, ~4.1 MT will be directly transferred to the MOX Fuel Fabrication Facility (MFFF); ~3.7 MT will require processing prior to transfer to the MFFF; and ~5 MT was proposed to be processed in H-Canyon with the associated waste ultimately being vitrified. The proposed preferred alternative includes installing equipment in the K-Area Complex (KAC) in order to prepare the materials for disposition in the MFFF and H-Canyon. Processing in H-Canyon should be completed by 2019, consistent with planned closure of H-Canyon. *The objective of this review was to verify that the process, cost, and programmatic assumptions used for the PuPP approval decision-- revised critical decision (CD- IA), June 27, 2008-- were appropriate and reasonable.*



What the ETR Team Recommended

1. Due to the number of process, program, and security interfaces, DOE oversight plus the project cost and schedule planning for construction and operation should be increased. Periodic verification of planning input versus current and projected reality should be added. The time and motion study

should be revisited.

2. As the design matures, conservative safety assumptions should be revisited for cost improvement opportunities.
3. An alternate waste disposition path that is in compliance with the current Yucca Mountain plutonium license requirements should be developed for the ~5MT proposed to be processed in H-Canyon.

What the ETR Team Found

A detailed review of the PuPP primary assumptions was performed with the following findings:

1. The PuPP has a sound technical basis with a limited set of technology challenges. Most of the operations are based on demonstrated technologies with recent experience within the DOE complex, except:
 - a. The design and operation of the Pu metal furnace will require development and demonstration with a long lead time. Suitable test facilities must be identified.
 - b. A certified Pu storage container and crimping station for transfer of in-process materials between facilities should be considered.
 - c. Gadolinium as a poison and that maximum Pu concentrations within sludge batches are consistent with Yucca Mountain acceptance requirements must be validated.
2. The planning and scheduling process was not detailed enough to address the complexity of internal and external process, program, and facility interfaces. Since the FFTF fuel operation is likely to be the rate-limiting process and multiple secure material transfers are required, the time and motion studies should be upgraded.
3. During construction, the availability and scheduling of a sufficient number of appropriately skilled and cleared craft workers will be a significant challenge.

To view the full ETR reports, please visit this web site:
<http://www.em.doe.gov/Pages/ExternalTechReviews.aspx>

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The purpose of an External Technical Review (ETR) is to reduce technical risk and uncertainty. ETRs provide pertinent information for DOE-EM to assess technical risk associated with projects and develop strategies for reducing the technical risk and to provide technical information needed to support critical project decisions. Technical risk reduction increases the probability of successful implementation of technical scope. In general, ETRs assesses technical bases, technology development, and technical risk identification and handling strategies.



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