



Recommendation No. 112 (Amended)

May 23, 2000

Selection of HLW Salt Processing Alternative

Background

As part of the Waste Management (WM) Committee, a public stakeholder Focus Group (FG) was formed on April 27, 1998 to evaluate the process used by DOE to select alternatives for salt waste processing and to examine in more detail the final four alternatives. A FG report was presented to the WM Committee in October 1998. Subsequently, the SRS CAB supported the process used by DOE for evaluating the alternatives (Ref. 1). The FG has been meeting monthly on the WM Committee's behalf to review technical details of the four alternatives and associated HLW Tank Space Management, understand the progress made to resolve outstanding technology issues, evaluate the management approach utilized to select a preferred alternative, and ensure an adequate budget and schedule for decisions and implementation.

On January 11, 2000, the FG briefed the WM Committee on their concerns about the risks to public safety and the environment, costs, regulatory commitments, and schedule impacts if a timely and cost effective solution is not made expeditiously. These concerns and recommendations lead to SRS CAB Recommendation #112 which addressed these issues. Since the January 11, 2000 briefing, there have been modifications to the Salt Waste Processing Program Management Concept. These modifications include more involvement from DOE-HQ in the Salt Processing Technology decision process through their involvement in the Technical Working Group and two support groups, a Tank Focus Area and a Technical Advisory Team (Ref. 2). The FG is concerned that the additional management overlay may cause unanticipated delays in the project schedule (Ref. 3). In addition, the current Salt Processing Project schedule has no contingencies for schedule slippage and is considered to be very optimistic. The FG review indicated two significant dates must be met by the salt processing to prevent significant additional risk, cost, and regulatory commitment changes.

- The first and earlier date is 2010, the date the HLW Tank Space Management Plan projects there will be insufficient space in the HLW tanks to support additional canyon or DWPF operations. This date is derived from the most recent reviews of High Level Waste Tank space management and is important because if this date is missed either new tanks will have to be built, reuse of old tanks initiated, or curtailment of SRS DWPF and material stabilization operations implemented. This assumes that the six actions identified in "High Level Waste Tank Space Management Team" Final Report (8/26/99) are all implemented. The most recent HLW System Plan Rev. 10 called "updated" discusses incorporation of these actions and states they will be included in the next revision of the System Plan. (Rev. 11 of this System Plan is currently in the final approval and should be issued soon.)
- If salt processing is not started by 2012 or the process begins by then but the salt processing rate falls below an average of 5 to 6 million gallons per year, the design rate for salt processing, HLW regulatory commitments will not be met. The closure schedule for all Type I, II and IV tanks is 2022. This commitment was made by SRS on 5/21/96 and is incorporated in the approved Federal Facilities Agreement (FFA). The present schedule (System Plan Rev 10) projects emptying and closing all Type III tanks by 2028. The System Plan shows that it requires 10 years to empty and close Type I, II, & IV tanks and requires 16 years to empty and 2 additional years to close the Type III tanks. Salt processing must be started by 2012 to meet these commitments.

In addition to the previous recommendations of SRS CAB Recommendation #112, the FG believes an amendment is needed to address this contingency issue.

Comments

The CAB continues to be concerned that slippage of this project may require construction of new HLW Tanks or delay closing existing HLW Tanks.

The SRS CAB supports the conclusion of the FG that the schedule for selecting, designing, and implementing a salt processing alternative must not impact other HLW management issues at SRS and that it is overly optimistic and will slip. The CAB considers it prudent for DOE to consider contingencies that will be required as a result of schedule delays. However, the SRS CAB believes that an exhaustive effort to develop an all-encompassing contingency plan by DOE is not required at this time to meet the objectives of the FG. The SRS CAB feels that the main focus must be to select a Salt Processing Alternative technology as quickly as possible. However, it is imperative that at the same time, potential impacts from delays be addressed as real possibilities and contingencies identified and discussed now. Therefore, the SRS CAB proposes to modify item 3 in Recommendation #112 to include a fifth stipulation.

Recommendation

The SRS CAB recommends in the amendment below that DOE (see SRS CAB Recommendation #112):

3. Provide information to the CAB on a continuous basis on the following topics:

- e. Develop a decision tree that outlines how and when schedule slippage will be addressed. A discussion of how schedule slippage can be accommodated and when contingency initiatives need to be implemented should be presented to the Focus Group by 7/30/00. The goal would be to ensure that any schedule slippage would not affect HLW tank space needs, regulatory commitments, or other SRS activities (e.g. Materials Stabilization).

Related Recommendations

SRS CAB Recommendation 112, Selection of HLW Salt Processing Alternative, January 25, 2000

References

1. SRS CAB Recommendation 69, Selection of HLW Salt Disposition Alternatives, November 17, 1998
2. Presentation by John Reynolds of DOE-SR on High Level Waste Salt Processing Project Path Forward to WM Committee, April 25, 2000
3. Presentation by Lee Poe of Salt Processing Focus Group on Salt Processing Status and Focus Group's Conclusions and Recommendations to WM Committee, April 25, 2000

*Adopted January 25, 2000
Amended May 23, 2000*

Agency Responses

[Department of Energy-SR](#)

Recommendation No. 112

January 25, 2000

Selection of HLW Salt Processing Alternative

Background

There are about 34 million gallons of highly radioactive High-Level Waste (HLW) material in tanks that hold about one million gallons each. HLW consists of separate sludge and salt materials. Most of the radionuclides are in the sludge but some, primarily Cesium-137, are in the salt. Sludge materials are currently being vitrified in the Defense Waste Processing Facility (DWPF). The salt material was planned for separation into a high-activity fraction that would be vitrified in the DWPF and a low-activity portion that would be disposed of as saltstone in the Z-Area vaults. The separation process had originally been planned to be done in existing one million gallon HLW tanks using a process called In-Tank Precipitation (ITP) where cesium was precipitated by Sodium Tetrphenylborate and separated by filtration.

The ITP commenced operation in 1995 but was shut down in 1996 because of the production of larger volumes of flammable benzene than expected. A chemistry research program was conducted to establish a comprehensive understanding of the problem. In January 1998, SRS decided that the

current ITP process could not cost effectively meet both the safety and production requirements and initiated a systematic search for alternatives. Since then, DOE has identified and evaluated 140 alternatives for salt waste processing. Finally, four alternatives were selected for development and evaluation: Small Tank Tetraphenylborate Precipitation, Crystalline Silicotitanate non-elutable Ion Exchange, Caustic-Side Solvent Extraction and Direct Disposal in Grout.

At the April 27, 1998, Environmental Remediation and Waste Management (ER&WM) Subcommittee meeting of the SRS Citizen Advisory Board (CAB), a public stakeholder Focus Group was formed to evaluate the process used by DOE to select alternatives for salt waste processing and to examine in more detail the final four alternatives. A final report was presented to the Subcommittee in October 1998. Subsequently, the Board supported the process used by DOE (Recommendation #69; November 17, 1998).

In June 1999, the National Research Council of the National Academy of Science (NAS) was asked by DOE to review the alternative options for salt processing being pursued to replace ITP. Since then, NAS has held two public meetings and has published an interim report. In October 1999, responding to emerging issues regarding the process to select alternatives as well as consideration about the contractor who would develop, implement, and operate the new process; the ER&WM subcommittee requested that the Focus Group continue to follow the replacement technologies for salt waste processing and the Supplemental EIS being developed.

Comments

Determining a timely and cost effective solution to disposal of cesium-bearing salt solutions is of critical importance to DOE, the CAB, and the communities surrounding the Savannah River Site because:

1. HLW salt solutions have a large potential for contaminating the off-site environment and affecting public safety.
2. Developing and implementing an effective alternative may divert over \$1 billion from DOE activities, causing a significant impact on other SRS operations.
3. Delay in identifying and implementing the replacement technology may cause the following:
 - o radioactive salt wastes to remain in forty plus-year old underground waste tanks
 - o another \$500 million to be spent on interim HLW management
 - o the continued use of waste tanks that do not meet secondary containment FFA requirements and are scheduled to be emptied; thus jeopardizing regulatory commitments to the EPA and SCDHEC
 - o require construction of new waste tanks
4. There is no certainty that SCDHEC will permit the construction of new HLW tanks at SRS. Additionally, the SRS CAB may not support construction of new HLW tanks.

Recommendation

The SRS CAB recommends that DOE:

1. Commit to a salt waste processing alternative technology selection schedule which assures that regulatory commitments to EPA and SCDHEC (Federal Facilities Agreement and Federal Facilities Compliance Agreement/Site Treatment Plan) and National Environmental Policy Act (NEPA) are met.
2. Select a preferred salt waste processing technology at the earliest possible date, but no later than September 2001 (this may entail that DOE establish a technology management process that includes and balances at a minimum the incremental cost of delay, incremental risk to public safety resulting from delay, technical uncertainty and achievement of regulatory commitments).
3. Provide information to the CAB on a continuous basis on the following topics:
 - a. An overall schedule for implementing the salt processing alternative technology to include the schedule in item 1; for item 2, highlight the scheduled technology selection date, the implementing facility operational date, the date for removing HL liquid waste from all old tanks, and the date for removing HL liquid waste from all tanks with the first update by 3/15/00.
 - b. A schedule for preparation of the Supplemental EIS with the first update by 3/15/00.

c. An assessment of the incremental risks and benefits associated with an early technology decision based on one acceptable technology versus a late technology decision potentially based on multiple acceptable technologies that cause significant delays in the removal of the HL waste from the underground tanks at SRS with the first update by 3/15/00.

d. An Interim HLW management activity plan, including the need to build new HLW tanks or reuse old tanks. If additional tanks are required, discuss the rationale for new versus reuse of old tanks and the likelihood of receiving regulatory approval to build new HLW tanks.

RVM 01/24/00

Agency Responses

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