Savannah River Site
Citizens Advisory Board

Recommendation # 291

Development of Defense Waste Processing Facility Canisters and Research Reactor Spent Nuclear Fuel Shipping Facility and Shipping Cask

Background

For approximately 40 years, from the early 1950s to the early 1990s, SRS was involved in nuclear reactor production activities for the nation's nuclear weapons program. The production activity created a massive legacy of nuclear waste which has been the subject of major cleanup activity at SRS since the mid 1990s. That program remains ongoing and is projected to extend into the mid-to-late 2030s. The most significant waste to be addressed in cleanup is the liquid radioactive waste, a byproduct of the reactor production. Chemical separations of the reactor products led to the radioactive liquid inventory, which is now being processed for disposition with the most hazardous radioactive materials being placed in a glass form (in the Defense Waste Processing Facility) in stainless steel canisters for ultimate disposition at a federal repository. This activity has been ongoing with over 3500 canisters produced to date out a total of approximately 7500 canisters needed for total cleanup.

Central to cleanup planning for the Site was the manner in which the canisters were to be dispositioned. With the designation of Yucca Mountain in Nevada in the mid 1980s as a federal repository it was assumed throughout the process that the SRS canisters would be shipped to Yucca Mountain, perhaps as early as the 2020s. The planning basis radically changed in 2010 when the president decided Yucca Mountain was no longer a viable option as a federal repository. The DOE recounted to the Government Accountability Office (GAO) in their report the Site was pressured to close down quickly. In fact, the haste with which the program shutdown could hinder efforts to resurrect Yucca Mountain in the future, should the Nuclear Regulatory Commission desire. Development of a second potential repository is likely to take in excess of 40 years and leaves the SRS community and political leaders somewhat concerned and in a cumbersome position for realistic nuclear waste disposition planning.

The Site's history and operations have enjoyed support from the surrounding communities. This support has been based on the premise that nuclear materials would be brought to the Site for processing and at the end of processing the waste would be sent off site for final disposition or in cases such as plutonium in MOX disposition in some other manner. With the president's decision regarding Yucca Mountain, it seems now that removing nuclear waste could result in a very long storage time in excess of 50 years at SRS. Local political leaders and citizens are now concerned that SRS will be a storage site for waste much longer than they anticipated or planned. This has created a negative impression in the local area, as there is strong opposition to SRS becoming a "de facto" waste storage site.

Discussion

As a result of Yucca Mountain's cancellation as a federal repository, the Site (along with the encouragement of the CAB) has become more aggressive in looking into another approach for disposition of the canisters. A promising and likely approach seems to be disposition of the canisters at the Waste Isolation Pilot Plant (WIPP) in New Mexico. Bedded salt is absent of fresh flowing water, impermeable, easily mined and geologically stable, all which create hospitable environment for long-term waste. In the 1960s, scientists found a remote desert area of southeastern New Mexico where 250 million years ago, evaporation cycles of an ancient sea left behind a 2,000-foot-thick salt bed (Energy 2007). In 1979, Congress authorized the DOE's WIPP plan and the facility opened to allow the disposal of defense-generated TRU waste. The CAB has made a recommendation for disposition of the SRS waste canisters in the WIPP. Initial indications are that this approach is feasible from a technical standpoint, but a number of institutional problems still need to be resolved to make the option truly viable. Serious consideration of this concept would be well-received by local political leaders and the public at large.

In addition to the continued long-term storage of waste canisters at SRS, the "waste issue" at SRS is compounded by the fact that spent nuclear fuel (SNF) is continually being brought into SRS with no approved disposition path. The continued receipt of such spent nuclear fuel at SRS creates concerns for local citizens that this will de facto make SRS a long-term storage site for nuclear waste.

The indefinite storage of these completed and "ready for shipment" canisters and the indefinite nature of SNF disposition has not been accepted well by the surrounding communities. The entire planning basis has been undermined and the credibility of DOE to handle this matter has been brought into question.

With the existing situation of stored waste on-Site there is absolutely no provision or realistic way for SRS to get the DWPF canisters off site in the next few years. This can be done only if a shipping container for the canisters is designed and developed and a facility is constructed to handle the loading of the canisters into the shipping containers. Early action on designing, approving funding, and constructing both the shipping facility and the shipping container would provide some assurance that DOE is serious about removing waste from SRS. One further issue is worth noting. If spent nuclear fuel is not processed through H-canyon, it may be useful to consider if such a shipping facility should also appropriately handle the casks and loading capability for spent fuel, since spent fuel in some cases may have to be shipped from SRS.

At any rate if early action were taken on the shipping containers and the shipping facility it would permit removal of waste from SRS on a "sooner rather than later" basis. While the CAB would agree that there is no imminent safety hazard with the storage of the canisters, this action would go a long way to restoring the confidence of the local communities that DOE is acting in good faith in removing waste from SRS.

It is the view of the CAB that SRS should take bold and aggressive measures to assure the citizens and local political leaders that DOE is serious about SRS not being a long-term nuclear

waste storage site. One such positive measure for the Site is to commence actions for removing DWPF canisters to an alternative location rather than waiting another 40-50 years for a federal repository.

Recommendations:

The Savannah Rivers Site Citizens Advisory Board recommends that DOE commence plans and actions to remove the DWPF canisters and research reactor spent nuclear fuel from SRS to include:

1. Development of shipping containers for the DWPF canisters and research reactor spent nuclear fuel for off-site shipment to a repository.
2. Construction of a facility for handling and preparing both the DWPF canisters and spent nuclear fuel for shipment off-site for disposition.
3. Advising the CAB when such actions can be budgeted for and funded.
4. Explain the process for the DWPF canisters and research reactor spent nuclear fuel to be accepted and moved to the WIPP facility.

Works Cited

Energy, WIPP Information Center - U.S. Department of. "Why WIPP?" *U.S. Department of Energy Waste Isolation Pilot Plant.* February 5, 2007. http://www.wipp.energy.gov/fctshts/Why_WIPP.pdf (accessed July 2012).

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