Savannah River Site
Citizens Advisory Board

Recommendation 341
Process All Aluminum-Clad Spent Fuel in H Canyon As Soon As Possible

Background:
Aluminum-clad spent nuclear fuel (SNF) was used in DOE's now-retired production reactors to produce nuclear materials for the nation's nuclear weapons program as well as in research reactors. Unlike stainless steel or zirconium-clad SNF, aluminum-clad SNF was intentionally designed with aluminum cladding to make it easier to be chemically dissolved and processed through the separations facilities known as F- and H- Canyons at SRS. Aluminum-clad SNF is significantly less robust, susceptible to corrosion and was always intended to be processed, not stored for a long time. As SRS' F Canyon has been deactivated, the H Canyon is the only remaining operational hardened nuclear chemical separations facility in the United States capable of large-scale nuclear material processing. Owing to the end of the Cold War and subsequent budget insufficiencies, a large backlog of aluminum-clad SNF remains in aging storage basins at SRS; with some SNF dating back to the 1950's. DOE aluminum-clad SNF is also stored at other DOE sites. Approximately 22 metric tons of heavy metal (MTHM) of SNF are currently stored in SRS' L-Basin. DOE expects to continue to receive SNF from other sites and research reactors through 2035 for storage at SRS. Congress required that the Department continue H Canyon operations, maintain a high state of readiness, and provide the associated necessary technical staff. Currently, H-Canyon is processing 1,000 bundles and up to 200 cores of aluminum-clad SNF (3.3. MTHM) in accordance with an Amended Record of Decision[1]. The recovered enriched uranium is then down blended into low enriched uranium for eventual use in commercial power reactors. This processing campaign is projected to be completed by 2024 and DOE has not decided whether to process the balance of its aluminum-clad SNF inventory, wanting to first see how the current campaign goes before committing to additional processing.

Discussion:
As it is quite similar to decades of previous operations, it is unlikely that the current SNF processing campaign will yield much, if any, new information about H Canyon's capabilities. The reluctance of DOE to commit to a holistic and long-term strategy to work off its existing aluminum-clad SNF inventory is more likely linked to competing budget priorities. Review of previous CAB recommendations concerning H Canyon (see below) demonstrates a keen and continuing interest in exploiting this unique national resource while it is still viable. A recent DOE Inspector General audit[2] is also critical of DOE's lack of a long-term strategy for operation of H-Canyon. In the interim, DOE is investigating the possibility of indefinitely storing the aluminum-clad SNF in dry-

---

[1] Amended Record of Decision based on Supplemental Analysis for DOE-EIS-0279, *Spent Nuclear Fuel Management, Aiken, South Carolina*, August 2013

[2] DOE Office of Inspector General, Audit Report OAI-L-16-14, *H-Canyon Processing at the Savannah River Site*, September 26, 2016.

storage technologies. Long-term storage of aluminum-clad SNF, especially in dry-storage, seems unnecessarily risky in comparison to the intended disposition path of processing. Further, as H Canyon is now well over 50 years old and very expensive to maintain, DOE should take full advantage of this unique processing capability while it still exists and accelerate processing the entire existing inventory of aluminum-clad SNF.

Recommendation:
The SRS Citizens Advisory Board recommends that DOE accelerate plans and decisions to process its entire inventory of aluminum-clad SNF expeditiously through H-Canyon.

Related CAB Recommendations:
#100 in 1999 - *Canyon Utilization and Spent Nuclear Fuel Melt and Dilute Technology*

- The CAB recommended site reprocessing capability be retained in an operational status until a melt and dilute processing facility has been constructed and is operational.
- DOE committed to retaining H-Canyon until the Melt and Dilute Technology was demonstrated.

#266 in 2009 - *Enriched Uranium Disposition*

- The CAB requested a schedule of the activities necessary to complete processing Highly Enriched Uranium in H-Canyon by 2019.
- DOE responded that analyses and plans would be completed by May 2010.

#276 in 2011 - *Concern for the Effective Utilization of H Canyon*

- The CAB provided ten specific recommendations urging DOE take advantage of a planning hiatus to process nuclear materials in H Canyon in need of stabilization or dispositioning.
- DOE responded that it planned to complete an HEU blend-down campaign then flush H-Canyon and remove bulk fissile materials early the next year after which the facility would be maintained in an operable mode. DOE stated that there currently were no nuclear materials in its inventory that needed future stabilization or processing in H-Canyon.

#295 in 2012 - *Implementation of Spent Nuclear Fuel Exchange Program with Idaho*

- The CAB recommended DOE re-examine the advantage of having all SNF processed at SRS and not held for extended storage at SRS.
- DOE responded that a decision had not yet been made.