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Recommendation 363  
Preferred H-Canyon Future Operations Options

Work Plan Topic

<b>Topic 1</b>	<b>Work Plan Item:</b>	<b>H-Canyon and L-Basin Alternatives</b>
	Description:	<p>Current law (Title 50 USC section 2633) requires that H-Canyon be maintained in a high state of readiness. There are several options, all dependent on appropriations, that might be pursued in the future to process or store the L-Basin SNF Inventory. SRS DOE EM will provide a briefing on these options.</p> <p>From a community perspective, provide a recommendation to EM SRS as to the option, from those presented or an alternate developed by the CAB, that would best serve the environmental concerns of the community.</p>
	Recommendation Deadline:	May 2019 <sup>1</sup>

Background

The March 2019 Full CAB meeting dedicated an entire afternoon with briefings<sup>2</sup> on H-Canyon and L-Basin operations as well as Dry Storage options. A variety of scenarios were presented that contained a range of dates for H-Canyon shutdown, L-Basin de-inventory and Dry Storage implementation, with high-level estimated costs. It is noted that the Nuclear Waste Technology Review Board (NWTRB) briefed the Full CAB<sup>3</sup> in March of 2018 on technical aspects of Dry Storage, including findings and recommendations, although no preferred end state was described.

The H-Canyon is a versatile, multi-use facility that can process a variety of nuclear materials (primarily actinides historically) by selectively separating desirable contents and discarding the remaining waste fraction for Tank Farm processing and disposition. The current H-Canyon campaigns include: 1) aluminum-clad (Al-clad) Spent Nuclear Fuel (SNF) dissolution, Highly Enriched Uranium (HEU) recovery and down-blend to Low Enriched Uranium (LEU) specifications and 2) Canadian liquid residues processing for down-blending. The Canadian residues is a one-time recovery effort (i.e., until complete) whereas the SNF campaign is an ongoing operation presently described in the Amended Record of Decision (AROD)<sup>4</sup> that

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<sup>1</sup> *Savannah River Site Citizens Advisory Board 2019 Annual Work Plan*, approved February 2019 by DDFO M. Mikolanis, available at [cab.srs.gov](http://cab.srs.gov)

<sup>2</sup> *H-Canyon and L-Basin Alternatives, H-Canyon Facility Alternatives, Overview of Options for Operating HCAN, Aluminum Spent Nuclear Fuel (ASNF) Dry Storage Technology Challenges*, SRS DOE and SRNS, presented by Maxcine Maxted et al, 25 March 2019, available at [cab.srs.gov](http://cab.srs.gov)

<sup>3</sup> *Management and Disposal of U.S. Department of Energy Spent Nuclear Fuel*, Nuclear Waste Technology Review Board, presented by Bret Leslie, Senior Professional Staff, 20 March 2018, available at [cab.srs.gov](http://cab.srs.gov)

<sup>4</sup> *Amended Record of Decision based on Supplemental Analysis for DOE-EIS-0279, Spent Nuclear Fuel Management*, August 2013

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includes 1000 Al-clad bundles and 200 High Flux Isotope Reactor (HFIR) cores. The H-Canyon capability is a recognized national asset that is so vital that Federal Law<sup>5</sup> demands that *'The Secretary of Energy shall continue operations and maintain a high state of readiness at the H-Canyon facility at the Savannah River Site, Aiken, South Carolina, and shall provide technical staff necessary to operate and so maintain such facility'*.

Dry Storage, although fraught with technical uncertainties (lack of consensus standards as to storage, surveillance, packaging and shipping requirements), is considered a viable alternative to wet-storage and processing. This method has been offered as an economical alternative, yet it is unclear how those economies are achieved when a defined life-cycle cannot be specified. Therein lies the real difficulty with this alternative – no National Repository for SNF exists and the experience of the Yucca Mountain shutdown highlights the lack of national will to address this problem. It is also worth noting that HEU fuels are presently bound by proliferation security requirements – an expensive consideration.

#### Conclusions

In support of recommendations the SRS CAB concludes the following:

1. Nuclear material dissolution and processing in large quantities is a vital national asset.
2. As the only facility in the national inventory with this capability, H-Canyon is clearly a necessary component in the disposition of legacy materials. This is of particular importance to the communities in the Southeast region as SRS is a major repository of government owned SNF.
3. Dry Storage is not a disposition path. With no National Repository identified, storage time is indeterminate. Dry Storage has a very real possibility of becoming a de facto disposition strategy by having no viable route to exit the SRS.

#### Recommendation

The SRS CAB recommends that DOE-SR

1. Operate the H-Canyon at full capability and capacity until all SNF in the SRS inventory is dissolved and properly disposed of.
2. Pursue new technologies to dissolve non-Al-clad SNF in anticipation that such material has no other reliable disposition path.

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<sup>5</sup> *Continuation of processing, treatment, and disposal of legacy nuclear materials*, Title 50 USC section 2633, current law.