



Department of Energy

Washington, DC 20585

April 22, 2011

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DNF SAFETY BOARD

The Honorable Peter S. Winokur
Chairman
Defense Nuclear Facilities Safety Board
625 Indiana Avenue, NW, Suite 700
Washington, DC 20004-2901

Dear Mr. Chairman:

This is in response to your February 28, 2011, letter to the Secretary of Energy expressing concerns about the lack of viable disposition paths for fissile materials and other Department of Energy (DOE) excess nuclear materials.

Your letter states that DOE's Nuclear Material Inventory Assessment (NMIA) suggests that approximately 40,000 items are to be processed through H-Canyon. That number consists only of the surplus Highly Enriched Uranium (HEU), including the HEU from the aluminum-clad used nuclear fuel (UNF) and surplus non-pit plutonium that were within the planned and proposed scope of the old Enriched Uranium (EU) Disposition Project. Enclosed is a summary of the 41,484 entries from the NMIA database showing the original proposed disposition paths using H-Canyon in the old EU Disposition Project and the current proposed disposition paths for the materials, subject to completion of appropriate National Environmental Policy Act and supporting analyses.

In your letter, you also state that the Defense Nuclear Facilities Safety Board strongly supports the ongoing disposition of such materials at the H-Canyon facility until DOE identifies credible alternative disposition paths. H-Canyon is currently operating to complete blend down of the enriched uranium recovered from dissolution of 5.6 metric tons of National Nuclear Security Administration surplus unirradiated HEU materials. This effort has been ongoing for approximately the last three years. We intend to complete the current HEU blend down in 2011 and H-Canyon will then continue in modified operational condition as described below.

H-Canyon will continue to receive sample returns from Savannah River National Laboratory and F-Area Laboratory and disposition the samples to the liquid waste system. H-Canyon will also remediate large boxes of legacy transuranic waste, and is proposed to be utilized to evaluate research and development activities in key areas to support the development of UNF processing. HB-Line is being considered to blend surplus non-pit plutonium material with an additive to make the material difficult to recover. The blended material would be packaged into cans containing less than 175 fissile grams and then placed into pipe overpack containers. The containers would be shipped to the Savannah River Site (SRS) solid waste management area to be staged and subsequently placed in TRUPACT IIs and shipped to the Waste Isolation Pilot Plant Site for disposal. HB-Line will also complete research and development work on the vacuum

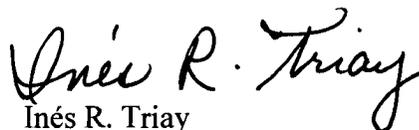


distillation process to determine whether certain plutonium can be processed to meet the Mixed Oxide Fuel Fabrication Facility acceptance specification. This will ensure that H-Canyon could be used in the future to process aluminum-clad UNF or any other appropriate nuclear materials.

The Secretary of Energy has determined that no processing of aluminum-clad UNF will occur until the recommendations of the President's Blue Ribbon Commission (BRC) on America's Nuclear Future are issued and evaluated by the Department. The proposed use of H-Canyon will still allow the flexibility to process aluminum-clad UNF or any other appropriate nuclear materials, in the future, should that decision be made. In the interim, the aluminum-clad UNF will remain in safe wet storage in L-Basin at the SRS. Any future decision will consider alternatives, such as processing in H-Canyon, placing it in dry storage, or implementing a potential future BRC recommendation regarding what to do with UNF. Additionally, there are currently no surplus nuclear materials in a storage condition that pose safety risks to facility workers, the public, or the environment and that need to be stabilized or processed in H-Canyon.

If you have any further questions, please contact me or Mr. Kenneth G. Picha, Jr., Acting Deputy Assistant Secretary for Safety and Security Program, at (202) 586-5151.

Sincerely,



Inés R. Triay
Assistant Secretary for
Environmental Management

Enclosure

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Enclosure

Material	Description	Number of Entries in the NMIA Database	Original Proposed Disposition Plans	Currently Proposed Disposition Plans
Used nuclear fuel	The aluminum-clad used nuclear fuel is in various configurations ranging from rods to plates to rings. The rods range in sizes from 3 feet in length to 10 feet in length. The enrichment of the fuel ranges from 25% to 93% with an average of approximately 50%.	23,703	Process in H-Canyon, recover enriched uranium, blend down to low enriched (4.9%) uranium, and ship LEU solution to TVA. Send plutonium and fission products to High Level Waste for vitrification and ship glass logs to geological repository.	TBD; awaiting Blue Ribbon Commission's recommendations concerning disposition.
Unirradiated Fast Flux Test Facility fuel	Mixed oxide fuel that is 30% plutonium and 70% depleted uranium clad in stainless steel. There are approximately 17,000 pins.	11,376	De-clad fuel, dissolve in H-Canyon, transfer Pu/U solution to the High Level Waste System for vitrification, and ship glass logs to geological repository.	Disposition directly to Waste Isolation Pilot Plant in the "as-is" condition.
Non-MOXable plutonium	Material consists of metals, oxide, and scrap materials and does not meet the MOX specification primarily due to plutonium isotopics, high uranium content, or high impurity content.	3,683	Dissolve in H-Canyon, transfer Pu/U solution to the High Level Waste System for vitrification, and ship glass logs to geological repository.	Blend with additive to make material difficult to dissolve, and package and ship to WIPP.
Potential MOXable fuels grade plutonium	Metal and oxide material that is very pure and with a high Pu-240 content that can possibly be used as MOX feed by processing in the Pit Disassembly and Conversion Facility (or potential alternative facility.)	929	Dissolve in H-Canyon, transfer Pu/U solution to the High Level Waste System for vitrification, and ship glass logs to geological repository.	Blend with additive to make material difficult to dissolve, and package and ship to WIPP. Or utilize as feed for MOX Fuel Fabrication Facility after processing in PDCF (or potential alternative facility) over life of program.

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Unirradiated HEU materials	Oxide and metal that is predominately enriched uranium with uranium-233.	36	Dissolve in H-Canyon, transfer solution to the High Level Waste System for vitrification, and ship glass logs to geological repository.	Package and ship as Low Level Waste to Nevada. Or blend and package as TRU waste and ship to WIPP if contaminated with actinides.
Unirradiated HEU materials	Oxide and metal that is predominately enriched uranium with plutonium, neptunium, and thorium.	1,716	Process in H-Canyon, recover enriched uranium, blend down to low enriched (4.9%) uranium, and ship LEU solution to TVA. Send plutonium, neptunium, and thorium to High Level Waste for vitrification and ship glass logs to geological repository.	Package and ship as Low Level Waste to Nevada. Or blend and package as TRU waste and ship to WIPP if contaminated with actinides.
In-process HEU blend down material and Pu solution to be transferred to sludge batch	Solutions from unirradiated HEU materials and surplus non-pit plutonium previously dissolved in H-Canyon and HB-Line.	41	Blend HEU down to low enriched (4.9%) uranium, and ship LEU solution to TVA. Send plutonium to High Level Waste for vitrification and ship glass logs to geological repository.	Ongoing disposition activity to be completed no later than July 2011.