



FACTS

ABOUT THE SAVANNAH RIVER SITE

H Canyon

H Canyon, which is located at the U.S. Department of Energy's (DOE) Savannah River Site (SRS), is the only hardened nuclear chemical separations plant still in operation in the United States. The facility's operations historically recovered uranium-235 (U-235) and neptunium-237 (Np-237) from aluminum-clad enriched-uranium fuel tubes from site nuclear reactors and other domestic and foreign research reactors using a chemical separations process.

In addition, H Canyon was equipped with capabilities to recover Np-237 and plutonium-238 (Pu-238) from special irradiated targets. Plutonium-238 was produced by irradiating recovered Np-237 in SRS nuclear reactors. Plutonium-238 was then recovered and used in power systems for the National Aeronautics and Space Administration's deep space exploration programs, such as the Cassini spacecraft, which is currently exploring the planet Saturn.

Nuclear material (fuel tubes, oxides, etc.) is transferred from designated storage areas from across SRS to H Canyon, converted to solution and transferred through various process stages where uranium, neptunium and plutonium are separated. Contaminants are removed, and the product is purified. Waste is transferred to the site's high-level waste storage tanks for eventual vitrification in the Defense Waste Processing Facility at SRS.

In 1992, the DOE concluded that recovery of enriched uranium for reuse in weapons programs was no longer necessary because of the reduction in the nation's nuclear weapons stockpile. However, there was an inventory of highly enriched uranium fuels and solutions in various stages of the SRS process.

Between December 1995 and October 1997, DOE issued a series of decisions to resume chemical separation operations to stabilize and manage most of the remaining inventory of highly enriched uranium (HEU) materials at SRS. The DOE also concluded that H Canyon was also to be used to support stabilization of Np-237 stored in H Canyon and a number of plutonium solids currently stored in F Area vaults.

In October 1997, H Canyon began the recovery of U-235. The resulting solution, which is also HEU, is being blended with natural uranium (NU) to form low-enriched uranium (LEU). The final LEU solution is transported to an off-site facility where it is used to make fuel for commercial nuclear power reactors. In July 2003, the first LEU shipment was sent to the Tennessee Valley Authority (TVA), which converts the LEU to fuel for their power reactors to generate electricity. Material from SRS is being used to generate electricity at the Browns Ferry Nuclear Station.

Because of its large size and the radiation protection offered by the facility, areas within H Canyon were used for other purposes. The truck well, for example, was used to repackage large "Black Boxes" of radioactive transuranic (TRU) waste. Inside these Black Boxes were smaller plywood boxes, which held the TRU waste. In the truck well, TRU waste was repackaged into another type of box that is certified for use at the Waste

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Isolation Pilot Plant (WIPP) in Nevada, which is the DOE's final disposal facility for TRU waste. This work allows waste to leave South Carolina for final disposition.

H Canyon was constructed in the early 1950s and began operations in 1955. The interior of the building resembles a canyon because the processing areas resemble a gorge in a deep valley between steeply vertical cliffs. It is 835 feet long with several levels to accommodate the various stages of material stabilization, including control rooms to monitor overall equipment and operating processes, equipment and piping gallery for solution transport, storage, and disposition, and unique overhead bridge cranes to support overall process operations. So that worker exposure to radiation is minimized, work in the canyon, including maintenance, is remotely performed by overhead bridge cranes. The thick, dense concrete walls that separate workers from the actual processing areas provided added protection.

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