H Canyon

H Canyon at SRS is the last production-size chemical separations plant still operational in the United States, and as such is a valuable asset. The facility's operations historically recovered uranium-235 (U-235) and neptunium-237 (Np-237) from aluminum-based 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. Pu-238 was produced by irradiating recovered Np-237 in SRS nuclear reactors, and is used in power systems for the NASA deep space exploration programs, such as the Cassini spacecraft.

H Canyon was constructed in the early 1950s and began operations in 1955. The building is called a "canyon" because of its long rectangular shape. 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. All work is remotely controlled, and employees are further protected from radiation by thick concrete walls.

Nuclear material (fuel tubes, oxides, etc.) is transferred from the designated storage areas from across SRS to H Canyon, where it is converted to solution and transferred through various process stages in which uranium, neptunium and plutonium are separated. Contaminants are removed, and the product is purified.

H Canyon, through early 1990, processed spent nuclear fuel (SNF) to produce strategic nuclear materials. After the end of Cold War, the Department decided in 1992 to phase out chemical processing for defense purposes. The mission of H Canyon transitioned to stabilization of nuclear materials that were in an unstable, high-risk state.

Between 1998 and 2006, H Canyon dispositioned over 16 metric tons of legacy U-235 materials and recovered the highly enriched uranium (HEU) U-235 product. DOE established an agreement with the Tennessee Valley Authority (TVA) to blend the HEU U-235 product with natural uranium to form low-enriched uranium (LEU), and then ship it off-site. This is significant to the states of South Carolina and Tennessee. This provided an exit strategy for the uranium stored in South Carolina and significantly reduced the amount of curies within the state; a TVA reactor in Tennessee converted the LEU into a mixed oxide for subsequent production of commercial nuclear fuel. Commercial fuel manufactured from this LEU is currently fueling two Browns Ferry Nuclear Station reactors for electricity generation for their customers.

The Department of Energy recently decided to extend operation of H Canyon to disposition an additional 26 metric tons (approximately) of SNF and other nuclear materials. H Canyon provides a path for recycling the uranium into commercial nuclear power plant fuel in lieu of planned disposal at a federal geologic repository.

The inventory of nuclear materials in the project scope will require H Canyon operations to last through 2019, followed with deactivation activities through 2023.

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