Facts from the Savannah River Site

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H Canyon

H Canyon is the only operating, production-scale, radiologically-shielded chemical separations facility in the United States. H Canyon began operations in the early 1950s. The facility's operations historically recovered uranium and neptunium from fuel tubes used in nuclear reactors at the Savannah River Site, to produce radioactive materials used in making nuclear weapons. After the end of the Cold War, the facility's mission changed to one of nonproliferation and environmental cleanup.

The interior of the facility resembles a canyon, giving the facility its name. Most canyon operations are done from a control room using remote control cranes. One side of the canyon is considered "hot" because it has higher radiation levels, while the other side of the canyon is "warm" because it has lower radiation levels. No one has been inside the "hot" side of the canyon since it began operations.

Employees who work in the building are protected from radiation by the thick, steel-reinforced concrete walls. Irradiated spent fuel rods are transported to H Canyon in shielded cask cars from L Area storage. Uranium is recovered from the spent fuel rods through a complex chemical process, in which fuels are dissolved and run through solvent extraction cycles. The cycles remove leftover waste that occurs during nuclear fission from the uranium. The waste is then transferred to our waste management facilities.

The uranium is mixed with natural uranium in a process called "blend down" and is loaded in shipping containers for shipment off-site. Blending down uranium not only makes it undesirable for use in nuclear weapons, but can also be converted to fuel rods, and used in commercial nuclear reactors operated by the Tennessee Valley Authority to make electricity.

Plutonium stored in K Area is also dissolved in H Canyon. The plutonium solution is transferred to HB Line, a facility located on top of the canyon, where it is purified, concentrated, precipitated and converted an oxide powder form. The purified plutonium oxide is then sent back to K Area for storage. In contrast to the Canyon where all work is done remotely, work in HB Line is mainly hands-on, glove box work in which workers stand outside of a glass box. Using thick rubber gloves that are a part of the box, they perform work inside.

H Canyon is also being used as a "test bed" for new technologies, allowing outside parties to test in a real life operating facility.

Although it is over 55 years old, H Canyon has maintained and proven the flexibility originally intended for it, by adapting to the needs of its customers. Both H Canyon and HB Line are one-of-a-kind national assets that are serving the state, the nation and the world by processing weapon-grade nuclear materials for final disposition out of South Carolina.

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 1,028 feet long, 122 feet wide and 71 feet tall, 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. To minimize worker radiation exposure, work in the canyon, including maintenance, is remotely performed by overhead bridge cranes.

H Canyon control room

The Savannah River Site is owned by the U.S. Department of Energy.
Savannah River Nuclear Solutions is the management and operations contractor at the Savannah River Site.

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