facts

ABOUT THE SAVANNAH RIVER SITE

F Canyon, located in F Area, is one of two chemical separations plants at the Savannah River Site.

F Canyon and FB Line

F Canyon and FB Line are located in F Area, one of two chemical separations areas at the U.S. Department of Energy's (DOE) Savannah River Site (SRS). Both facilities have been deactivated and are in a cold, dark and dry state. A final end state will be determined by DOE after a period of evaluation and public involvement.

FB Line has been deactivated.

F Canyon was constructed in the early 1950s and began operation in 1954. The interior of the building resembles a canyon because the processing areas resemble a gorge in a deep valley between steeply vertical cliffs. The canyon facility is 835 feet long, 122 feet wide and 66 feet high. So that worker exposure to radiation was minimized, work in the canyon, including maintenance, was remotely performed by shielded overhead bridge cranes. The thick, dense concrete walls that separated workers from the actual processing areas provided added protection.

F Canyon chemically dissolved aluminum-clad materials that were irradiated at SRS's nuclear reactors and other test and research reactors so that plutonium-239 and uranium-238 could be recovered. During separations operations, nuclear materials were directly fed to chemical dissolvers. Plutonium and uranium were then separated from each

other and from fission products. Waste was transferred to the site's high-level waste storage tanks for eventual vitrification in the SRS Defense Waste Processing Facility.

In FB Line, which was constructed in the early 1960s to receive plutonium-239 nitrate solution produced in F Canyon and convert it to a solid form, the Pu-239 was recovered. Solutions were transferred from the canyon and concentrated in FB Line. Then, in subsequent operations, the plutonium was precipitated, filtered, dried and finally reduced to metal form, called a button, about the size of a hockey puck. Employees performed processing activities using equipment enclosed in gloveboxes, to protect them and operating areas from the radioactive material. Depleted U-238, in an oxide (powder) form, was recovered as a by-product; a large portion remains stored at SRS. No new production of Pu-239 is needed because of the reduction in the nation's nuclear weapons stockpile.

Both facilities were shut down after the Cold War. Then, in February 1995, the DOE decided to resume chemical separation operations in F Canyon to stabilize and manage most of the remaining inventory of plutonium-bearing materials at SRS. Most of the stabilization actions utilized the same chemical dissolving process. However, the DOE has committed that Pu-239 from stabilization actions will not be used for nuclear weapons purposes.

F Canyon and FB Line completed stabilization operations in March 2002. For nearly two years after, FB Line stabilized and packaged legacy nuclear materials for safe, long-term storage. This process involved packaging materials using a process in which stabilized plutonium is placed in rugged, welded stainless steel cans. The technology was developed at SRS. FB Line was the first facility in the DOE complex to successfully use this new method of packaging.

After materials were stabilized and packaged, they were shipped to other site locations until the Mixed Oxide Fuel Fabrication Facility is ready. In February 2005, those operations were also completed safely, successfully and ahead of schedule.

December 2008