Facts from the Savannah River Site
ENVIRONMENTAL STEWARDSHIP • NATIONAL SECURITY • SCIENCE AND ENERGY

HB Line

The Savannah River Site's (SRS) HB Line is located on top of H Canyon and is the only chemical processing facility of its kind in the Department of Energy (DOE) Complex. The facility was built in the early 1980s to support the production of plutonium-238 (Pu-238), which is a power source for the nation's deep space exploration program, and to recover legacy materials stored in H Canyon.

HB Line has three process lines:

Phase I, also called the Scrap Recovery Line, became operational in the late 1980s. Phase I was used to dissolve legacy plutonium and uranium materials for further processing in H Canyon. HB Line has successfully dispositioned materials from SRS, Lawrence Livermore, Los Alamos, Hanford, Rocky Flats and Y-12 through Phase I. In 2011, DOE directed the facility to cease chemical processing in Phase I and utilize the gloveboxes to perform dry down-blend of high impurity plutonium oxide for disposal at the Waste Isolation Pilot Plant in New Mexico. This mission was completed in 2012. Phase 1 has been in standby since that time.

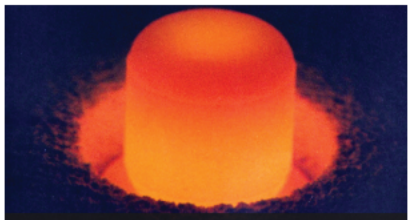
Phase II started operations in November 2001 and is used to create plutonium and neptunium oxides from nitrate solutions. The plutonium oxide is packaged and shipped to interim storage in K Area. The neptunium material was shipped to the Idaho National Laboratory for further processing and conversion to reactor targets for future plutonium-238 production and space exploration. All neptunium materials have now been completed, with approximately 325 kilograms shipped. In 2014, Phase II was used to support plutonium oxide production, which was to be used either for feed facilities to make fuel for commercial power reactors or shipped for final disposal in a repository. Phase II also contains gloveboxes where analytical analyses of high alpha containing process control samples are performed. Flushing and layup of the Phase II process is in progress to reduce long-term surveillance and maintenance requirements.

Phase III was originally constructed to convert plutonium-238 solutions to oxide. Plutonium-238 has a unique combination of high heat output and long life. Where solar power is not practical, the National Aeronautics and Space Administration uses plutonium-238 as a heat source, which is converted into electrical power. Plutonium-238 has been used to power various deep space vehicles, such as Galileo, Ulysses, Cassini, and the New Horizons mission to Pluto. Phase III in HB Line completed the last plutonium-238 mission in 1996. In 2010, it was converted into a processing facility to open storage containers when necessary, and to oxidize metals to allow for them to be dissolved in the Phase I process areas or the H Canyon dissolvers. Phase III is specially equipped to support the preparation and repackaging of excess plutonium and uranium metals and oxides in various forms, which are packaged in various containers and configurations.

The special glovebox capabilities of HB Line are continually being evaluated for future DOE and NNSA missions.

Operators inside HB Line perform work with nuclear materials inside a glovebox.

This cake of neptunium oxalate was the first produced in HB Line. The oxide was shipped to the Idaho National Laboratory for further processing and conversion to reactor targets for future Pu-238 production and space exploration.



Pu-238 is a power source for the nation's deep space exploration program.

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.

Savannah River NUCLEAR SOLUTIONS™
FLUOR • NEWPORT NEWS NUCLEAR • HONEYWELL

16CC00020