

facts

A B O U T T H E S A V A N N A H R I V E R S I T E

HB Line

HB Line is located on top of H Canyon and is the only chemical processing facility of its kind in the 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 is the Scrap Recovery processing line. Phase II is the production line for plutonium and neptunium oxides. Phase III was originally the Plutonium-238 Oxide Production Line, but is now used to prepare excess plutonium and uranium materials for disposition. As required by law, disposition paths are identified for all nuclear materials brought to H Canyon.

Phase I, also called the Scrap Recovery Line, became operational in the late 1980s and is used to dissolve and dispose of legacy plutonium materials. It is also used to dissolve legacy uranium for blending into low enriched uranium to be shipped to the Tennessee Valley Authority for fabrication into commercial power reactor fuel. The Phase I process converts solid nuclear materials into nitrate solutions and transfers those solutions to H Canyon for disposition. With the DOE approval of the Enriched Uranium and Plutonium Disposition Projects, additional excess plutonium and uranium will be dissolved and transferred to H Canyon. HB Line has successfully dispositioned materials from Lawrence Livermore and Y-12 through Phase I.

Phase II, which is the Neptunium-237/Plutonium-239 Oxide Line, can produce oxide (powder) material from neptunium-237 or plutonium-239 nitrate solutions. Phase II started operations for the first time in November 2001. The plutonium material was shipped to FB Line for packaging in 3013 containers for long-term storage,



An operator works in the HB Line control room.

and then to K Area for interim storage. The neptunium material has been shipped to the Idaho National Laboratory for further processing and conversion to reactor targets for future Pu-238 production and space exploration. Since startup, approximately 325 kgs of neptunium oxide have been shipped. All neptunium materials have now been completed.

Pu-238 has a unique combination of high heat output and long life, allowing designers to keep weight at a minimum and still have a power supply that is effective for many years. Where solar power is not practical, NASA uses Pu-238 as a heat source in Radioisotopic Thermoelectric Generators. These convert heat to electrical power to operate various deep space vehicles, such as the Galileo, Ulysses, Cassini, and more recently the New Horizons mission to Pluto. Small heat generators have also been used to keep the axle lubricant of the Martian Rovers from freezing.

Phase III has been converted into a processing facility to open storage containers when necessary, and oxidize metals to allow for dissolution in the Phase I process area 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 and packaged in various containers and configurations.

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