



Savannah River Site Watch

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2017 Nuclear Materials Management Plan for DOE's Savannah River Site Reveals Plutonium Oxide Production in HB-Line Halting – Setback for MOX as Main Source of Plutonium “Feedstock” Eliminated

Defense Nuclear Facilities Safety Board: Nuclear Material Shipment to H-Canyon and HB-Line Halted

Columbia, SC – A plan for management of a variety of nuclear materials at the Savannah River Site reveals that preparation of plutonium oxide for the plutonium fuel (MOX) project is ceasing.

The facility being taken out of production is called the HB-Line. A permanent halt of oxide production in the HB-Line would negatively impact start-up preparations of the Mixed Oxide Fuel Fabrication Facility (MFFF) if that troubled project were to somehow continue. HB-Line production of plutonium oxide is being reviewed, according to the document.

HB-Line, which sits atop the 62-year-old H-Canyon reprocessing plant, had been tasked with the mission of purifying contaminated plutonium and processing it into an oxide which could then be fabricated into MOX fuel pellets. The plutonium which has been processed in HB-Line came from containers being stored in the K-Area, where about 13 metric tons of surplus weapon-grade plutonium are stored.

The *Nuclear Materials Management Plan FY 2017-2031* for SRS - [linked here](#) - was prepared for the Department of Energy by contractor Savannah River Nuclear Solutions. The document is dated June 30, 2017. The cursory plan serves as a basis for receipt and management of a host of nuclear materials.

Also on June 30, the Defense Nuclear Facilities Board reported in a weekly report that “H-Canyon and HB-Line have halted all receipts of nuclear material in order to limit the material at risk.” The halt in shipments is due to the degraded H-Canyon Exhaust Tunnel and its ability to perform its safety role in case of a “design basis earthquake.” The DNFSB stated that the ability of the exhaust tunnel to perform its “safety function is indeterminate” and that the Savannah River National Lab was investigating, with a report “scheduled to be issued in September.”

The status of the H-Canyon Exhaust Tunnel is a safety matter related to H-Canyon operation that concerns SRS Watch and it should be fully discussed at the upcoming SRS Citizens Advisory Board meeting (July 24-25, 2017).

“It has been clear for a long time that production of plutonium oxide for the troubled MOX project was not well suited to H-Canyon facilities, so it’s no surprise that such production is being halted,” said Tom Clements, director of Savannah River Site Watch. “Production of plutonium oxide in a reprocessing plant is inefficient and costly and this mission, now to support the effort to dispose of plutonium as waste, is best suited to use of furnaces that could be installed in K-Area or in the mothballed MOX facility,” added Clements.

SRS Watch submitted an inquiry to SRS on July 19 for a comment about the status of HB-Line but has not yet received a response.

Concerning the HB-Line, a “planning roadmap” in the document indicates that a “layup plan” for HB-Line is to be developed in Fiscal Year 2017. The document goes on to say:

The transfer and dissolving of excess Pu from K-Area through H-Canyon has ceased. The dissolver used for this activity will be replaced and H-Canyon will begin processing SNF in two canyon dissolvers. Two SNF dissolver operations are scheduled to begin in FY 2018 and complete in FY 2024.

HB Line is continuing to process existing Pu solutions within the facility producing oxides in FY 2017. The resultant Pu oxide material will be returned to K-Area for continued interim storage until final disposition. Due to equipment and operational issues, the facility has not yielded the planned rates of production therefore the planned future production is under review.

HB Line is a glovebox processing facility. HB Line continues plutonium processing in FY 2017. Due to equipment and operational issues, the facility has not yielded the planned rates of production therefore the planned future production is under review.

SRS Watch has been observing the problems with plutonium oxide since 2015, as documented in the report *H-Canyon Folly, Plutonium Failure* (linked below). Likewise, recent DOE budget requests to Congress, including the most recent one (for Fiscal Year 2018), have also documented that plutonium oxide production in HB-Line has fallen far short of production goals. (See “notes” for link to FY 2018 request and HB-Line citation.)

The plan goes on to confirm that shipments of plutonium oxide Los Alamos National Lab (LANL) to SRS have been placed on hold. The plan states that the “Department has suspended shipments of LANL Pu Oxide to SRS” and that “ARIES shipments from LANL to SRS for interim storage remain suspended.” ARIES is a processing system at Los Alamos that is preparing up to 2 metric tons of plutonium oxide from the plutonium pits removed from nuclear weapons.

The plan affirms that SRS has space to store incoming shipments of plutonium – known as “gap material” – and that both foreign and domestic imports of spent research reactor fuel are planned. Such imports are controversial as they come into SRS with no clear exit strategy.

Additionally, the plan reveals that SRS is planning to receive “11 drums of uranium mixed oxide material from Y-12 in FY 2020” and that the material “will be dispositioned to WIPP after down blending.”

Concerning import of liquid high-level nuclear waste from the Chalk River Labs in Canada, the plan affirms that “H-Canyon is scheduled to receive liquid Canadian HEU target residue material (TRM) in approximately 100 Legal Weight Truck (LWT) casks between the FY 2017 and FY 2020.” SRS watch still believes that this import of liquid HLW needs to be reviewed in an Environmental Impact Statement and that options of managing the waste in Canada must be analyzed.

The mission for H-Canyon’s two dissolvers is shifting from processing both uranium and plutonium to processing uranium only. The dissolver used for plutonium processing is being replaced and will be used for processing MTR type SNF, while the current uranium dissolver will be configured for processing HFIR spent fuels.

The plan also affirms a role of SRS in nuclear weapons-related activities, including tritium processing, and on other weapons-related programs:

Completed an estimate and schedule to transfer fourteen Pu 3013s in 9975s (Phase 1) to LANL for use in the Defense Programs mission. The Phase 2 estimate and schedule for the transfer of up to 1 MT of Pu is working.

Provided critical support to the design agencies for the B61-12 Life Extension Program (LEP) and W87 Alt 360 through early execution of W87-Alt 360 EC and increased scope for the W87 Alt 360 hydrogen deuterium (HD) System Integration Testing.

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Notes:

Savannah River Site “Nuclear Materials Management Plan FY 2017-2031, June 2017,” SRNL-RP-2017-00234, linked here: <http://sti.srs.gov/fulltext/SRNL-RP-2017-00234.pdf>

Defense Nuclear Facilities Safety Board, weekly report, June 30, 2017:

<https://www.dnfsb.gov/sites/default/files/document/12291/Savannah%20River%20Week%20Ending%200June%2030%202017.pdf>

DOE budget request for Fiscal Year 2018, volume 1, for National Nuclear Security Administration - see page 502, U.S. Plutonium Disposition (H-Canyon), for information about failed plutonium oxide

production goals. See page 503 for 2 metric ton plutonium oxide production goal by 2029 at Los Alamos (via the ARIES process): https://energy.gov/sites/prod/files/2017/05/f34/FY2018BudgetVolume1_1.pdf

SRS Watch report “H-Canyon Folly, Plutonium Failure,” November 2015, on the failure of HB-Line/H-Canyon to meet plutonium oxide production goals:
http://www.srswatch.org/uploads/2/7/5/8/27584045/srs_mox_plutonium_oxide_folly_nov_12_2015.pdf