Entity Name
BWX Technologies NOG-Lynchburg
Contact Person
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Business Address
1570 Mount Athos Road Lynchburg, VA 24504
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P.O. Box 785 Lynchburg, VA 24505
Applicant is
Generator
Generator Type
Industrial
Is waste from a "small quantity generator"?
No

Import applications generally will be granted only in single fiscal-year increments. If you are seeking a term that would extend beyond the end of a current fiscal year, please explain the unusual experiences that would justify a deviation from this general rule?
N/A
Waste Volume (Cubic Feet)
26000
Waste Radioactivity (Curies)
1
Waste Classification
Class A
Waste Form
Unstable
Does the proposed waste consist solely of sealed sources?
No
Compact and/or unaffiliated state, territory, possession, or district of the United States where the waste was generated (please list)
Virginia
Waste Description
BWXT generates five main waste streams, DAW, Debris, Lead/E-waste, TP Solids, and Contaminated Soil. In addition, BWXT generates a small amount of depleted uranium. The following is a description of each stream. A. Dry Active Waste (DAW) is a low-level radioactive waste generated at BWXT. The waste is comprised of paper, plastic, glass, gloves, dry filters, light metal, soot, cleaning cloths, and other miscellaneous materials used within the radiological control areas at this facility. As necessary, an absorbent is added to the waste to address the potential for entrained liquids. A specific example of absorbent addition is the cleaning cloth waste. Additional absorbent used can be either vermiculite and absorbent pads or a combination of these materials. The DAW would be shipped for disposal in a 55-gallon drum or other approved, compliant container. The waste, as packaged, is a dry uniform solid. The uranium is in the form of oxides. Any beryllium quantity in these wastes is normally at

trace levels (PPM levels or zero). The DAW has been analyzed and determined not to be a RCRA listed or characteristic hazardous waste.

Uranium-235 measurement for BWXT's waste generated in a 55-gallon drum is determined using a qualified measurement control and accountability method. One hundred percent of these BWXT wastes are measured using these systems. The U-235 value, along with the enrichment, is then used to determine the activity for each shipment.

BWXT generates soot (carbon) waste from a processing operation. The carbon is contaminated with enriched uranium oxide. The carbon soot waste is not graphite, based on its method of generation and low density. The carbon soot waste form does not contain any listed or characteristic hazardous wastes.

Previously, BWXT generated the special case, Uranium/Beryllium (U/Be) waste, where the beryllium was at greater than trace levels of beryllium contamination. The U/Be wastes were unique, and were generated in a limited scope. BWXT has committed to using specially marked drums for the U/Be waste forms. In the future, if this waste is generated again, specially marked waste drums will be utilized.

The beryllium levels in the waste are less than 1 weight % of the waste and the waste form does not contain any listed or characteristic hazardous wastes.

B. Debris is a mixture of wastes that is generated during plant renovation and/or decommissioning operations. Debris may include asphalt, concrete, non-asbestos floor and ceiling tile, wallboard, conduit, duct, pipe, equipment, etc. as well as incidental quantities of dirt. The precise composition of any debris shipment will vary depending on the activity that generated the debris. Generator knowledge is usually used to determine that the debris is not a RCRA listed or characteristic hazardous waste. In some instances, analysis is performed to verify that the waste is not a listed or characteristic hazardous waste. This waste form does not contain beryllium or magnesium oxide. The debris may be packaged in 55-gallon drums or in larger containers (intermodal, B-25 boxes, soft-sided bags etc.). Uranium-235 content and activity is determined based on the way the debris is packaged.

For wastes packaged in 55-gallon drums, U-235 gram value is determined using qualified measurement control and accountability method. One hundred percent of the BWXT wastes in drums are measured using these systems. This U-235 value, along with the enrichment, is then used to determine the activity for each shipment.

For wastes packaged in bulk containers, total contamination measurements are taken on the surfaces of the debris and used to calculate the total U-235 in the container. The levels of U-235 are typically very low. The uranium is in the form of an oxide and is a surface contaminant on the debris.

Uranium/Beryllium waste, where the beryllium was at trace levels of contamination. The U/Be wastes were unique and were associated with a limited scope BWXT operation. In the future should

this type of waste be generated, BWXT would review the U/Be waste shipments with disposal site personnel prior to disposal to ensure they are uniquely identified.

BWXT has an inventory of used Thoriated Tungsten welding rods. These materials are not normally managed as a radioactive waste. Thorium is a naturally occurring radioactive element, which is very mildly radioactive and therefore the radiation hazards associated with the disposal of Thoriated Tungsten Electrodes (TTE) are low. BWXT added the TTE to its Debris Waste Profile. The TTE waste is not a listed or characteristic hazardous waste.

C. Lead bricks are used for shielding in controlled area around inline monitoring to block background to assure accurate counts. Some lead has direct contact with leaks in the area, most contamination from general area exposure. The drums will consist of lead bricks, sheets and or other lead configuration pieces with minimal stainless attached on a few pieces. There also are a couple of drums with more DAW type materials with potential lead dust, contact contamination, these will have rags, PPE, plastic, etc. Rad con surveys and or drum count values are basis for gram calculations. The drums with PPE, plastic, rags, Heraclite, etc. are counted on a drum counter. The lead bricks, sheeting, solids drums have the materials surveyed in batches. The highest survey value is then applied to the whole area surface of the items in that batch. Values for each batch are added together to account for total drum value. Wiping cloths and pads could be in drums, but would be minimal.

Drums (or possibly boxes) of computer monitors, keyboards, CPUs and E-waste periphery will also be collected. This media is used in the controlled areas and cannot be free released. Exposure would be to U, U235 and items wiped down before drummed. Drums are sent through a drum counter for total U-235 value. If boxes are used, surveys of the equipment would be taken and gram values assigned.

D. TP Solids are a low-level radioactive (LLR) waste generated from the neutralization of spent nitric and hydrofluoric acid solutions from the dissolution of Zircaloy components. Waste uranium bearing solutions are mixed and equalized in 30,000-gallon tanks. The waste acid is treated with lime ($Ca(OH)_2$) to remove fluoride and then Sodium Hydroxide to adjust pH and precipitate metals. The calcium fluoride and metal hydroxide sludge is processed through a filter press and dried and then packaged in 55-gallon waste drums. The waste may also contain up to 10% by volume Zircaloy or Aluminum “pucks” per 55-gallon drum. The pucks are compressed from Zircaloy or Aluminum solids. The pucks are not a listed or characteristic hazardous waste per 40 CFR 261. The waste, as packaged, is a dry uniform solid. The distribution of the uranium-235 is uniform based on the nature of the precipitation and subsequent drying and management of the material continues to support the generation of a homogenous waste. The uranium is in the form of oxides. Uranium-235 measurement for the waste generated at BWXT in 55-gallon or 2-liter bottles is determined using a qualified measurement control and accountability method. One hundred percent of these BWXT wastes are measured using these systems. This U-235, reported as grams of U-235, is then used to determine the activity for each shipment. A detailed description of BWXT’s Special Nuclear Material (U-235) Accountability Measurement System has been provided in a separate document.

Discard solids are generated from operations conducted in the BWXT uranium recovery operations area are included in profile 0712-01. The discard solids are placed in 2.5-liter polyethylene bottles and mixed with lime to neutralize them. BWXT will place the bottled discard solids in the TP drum as the waste is chemically similar to the TP solids with the difference being uranium content, certain radioisotopes are not typically present (Sr-90, Co-57, Co-60, Ni-59, Th-230, etc.), and packaging. BWXT may also package the bottled discard solid bottles that meet a fissile exception on their own in 55 gallon drums to be shipped with TP drums. The discard solids can have up to 50 percent higher activity from uranium isotopes. The waste has been analyzed and it is not a RCRA listed or characteristic hazardous waste per 40 CFR 261. The waste, as packaged, is a dry uniform solid. Any beryllium quantity in these wastes is normally at trace levels (PPM levels or zero). The uranium is in the form of oxides.

Periodically BWXT generates a composite compound using natural uranium. The chemical formula for the compound is UO2-UCOx.The uranium oxide/carbide compound is generated from operations conducted in a BWXT laboratory. The natural uranium material will be managed in 2.5-liter polyethylene bottles similar to the discard solids. Additionally, natural uranium oxide material can be managed in the 55-gallon drums. The waste has been analyzed and it is not a RCRA listed or characteristic hazardous waste per 40 CFR 261.

The small quantities of bottled graphite material generated at BWXT will periodically be placed in the TP Solids drums as well, while ensuring that the 1% by weight volume requirement is met.

E. Contaminated soil is generated from various construction and decommissioning activities conducted at the Mt Athos Facility. The contamination is the result of various processing, releases, and other occurrences at the facility. When a project will involve the generation of contaminated soil, the soil is segregated from other potentially radioactive waste (concrete, asphalt, debris, etc.). The soil is then representatively sampled and characterized for uranium isotopes using alpha spec analysis and RCRA hazardous waste characteristics using the TCLP. All contaminated soil is analyzed in this manner to determine radionuclide concentration and verify that the soil is not a RACRA listed or characteristic hazardous waste prior to shipment. The one-sigma uncertainty associated with the alpha spec measurement of activity is generally 3-8%, with the percent uncertainty increasing with decreasing activity. All uranium in contaminated soil generated at this facility is in an insoluble form.

Periodically contaminated soil and soil like material waste is generated from activities and the soil may be contaminated with natural uranium and other radionuclides. The soil is sampled and characterized for uranium isotopes using alpha spec analysis and gamma scan for the other radionuclides.

F. Depleted U - The uranium is in the form of oxides. The chemical formula for the compound is UO2-UCOx.The uranium oxide/carbide compound is generated from operations conducted in a BWXT laboratory. The depleted uranium material will be managed in 2.5-liter polyethylene bottles similar to the discard solids. Additionally, depleted uranium oxide material can be managed in the

55-gallon drums. The waste has been analyzed and it is not a RCRA listed or characteristic hazardous waste per 40 CFR 261.

Does Applicant have any unresolved violation(s), complaint(s), unpaid fee(s), or past due report(s) with the Texas Low-Level Radioactive Waste Disposal Compact Committee?

No.

Does Applicant have any unresolved violation(s), complaint(s), unpaid fee(s), or past due reports associated with radioactive waste receipt, storage, handling, management, processing, or transportation pending with any other regulatory agency with jurisdiction to regulate radioactive material including, without limitation, the Texas Commission on Environmental Quality (TCEQ)?

No.

Applicant hereby certifies* the following:

The information provided herein is complete, accurate, and correct.

The waste proposed for importation is not waste of international origin.

The low-level radioactive waste for which this Import Application is submitted will be packaged and shipped in accordance with applicable state and federal regulations and is acceptable for disposal at the Compact Facility.

The person submitting this Import Application is authorized by the Applicant to commit Applicant to each and every obligation and condition set forth herein and in the Agreement for Importation of Non-Party Compact Waste. A copy of a written document containing such authorization must be attached to this Import Application.

Applicant has delivered to the specified disposal facility and TCEQ a copy of this Application for Importation of Compact Waste (along with any supplement or amendment thereto).

Name

Richard Tate

Title

Sr. Transportation Administrator

Date

10/11/2021

Other Applicable Documents

Authorization-Approval-Texas-Disposal-Compact-Commission.pdf

ID
ID will be automatically assigned in the next 24 hours