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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

SRS Transuranic Waste Program

Past and present operations at the Savannah River Site (SRS) produce a variety of waste streams. One of these waste streams is called transuranic, or “TRU” waste. The term transuranic means those elements with an atomic number greater than that of uranium (92). TRU waste is defined as waste contaminated with alpha-emitting TRU radioisotopes that have a half-life of greater than 20 years and a concentration level above 100 nanocuries per gram. At SRS, TRU waste is solid waste, consisting of clothing, tools, rags, residues, debris and other items contaminated with trace amounts of plutonium.

In 1999, the U.S. Department of Energy (DOE) opened the Waste Isolation Pilot Plant (WIPP), a geologic repository near Carlsbad, New Mexico, specifically constructed for the permanent disposal of TRU waste from DOE sites across the nation.

When the SRS TRU Ship-to-WIPP program began, over 30,000 containers of TRU waste were in storage at SRS. SRS made its first shipment in May 2001 and made over 800 shipments through 2007. By optimizing existing SRS facilities and implementing more efficient operations, SRS has been able to accelerate shipments. At the end of 2007, over 24,000 55-gallon drums, or 5,000 cubic meters, of the original TRU waste inventory had been shipped. SRS’s current projections have the site scheduled to ship all of the SRS TRU drummed legacy waste to WIPP by 2010.



A shipment of TRU waste is ready to leave SRS for WIPP.



Waste is loaded into a shipping container.

Non-drummed TRU waste accounts for approximately 3600 cubic meters. This waste is currently being stored in large steel boxes, concrete culverts, and other miscellaneous containers until SRS can repackage the waste into WIPP-shippable containers. SRS expects that the non-drummed TRU waste inventory will be difficult to ship since the waste will require major repackaging and a new WIPP shipping container that is currently not available.

Preparing TRU Waste for Shipment

Preparations for the initial shipments to WIPP included the safe retrieval of almost 9,000 buried drums. These drums were stored in the late 1970s and early 1980s on concrete pads and covered with soil for protection from the environment. SRS began retrieval in 1997 and completed it in 1999, two years ahead of schedule.

A crucial step in preparing the waste for shipment was the venting of hydrogen and other gases that may have accumulated during storage of the drums. The venting system provided a spark free puncture of the drum lid and the installation of a filter vent in the drum lid to prevent the future buildup of gases. The project to vent all of the TRU drummed waste was completed in 2008.

Since the majority of SRS drums were filled prior to the issuance of WIPP Waste Acceptance Criteria (WAC), as many as 30 percent of the drums required repackaging to remove prohibited items.

In order to ship the TRU waste to WIPP, SRS must meet stringent WIPP WAC and Resource Conservation and Recovery Act permit requirements as issued by the state of New Mexico. TRU is characterized by:

- Assay of all TRU drums to determine the amount of radioactivity.
- X-ray of all drums to verify the physical contents meet WIPP WAC.
- Sampling of all drums to detect hydrogen, methane and other volatile organic compounds.

In order to meet an ambitious shipping schedule, SRS teamed with the National TRU Waste Program to host the first large scale deployment of a mobile characterization program. Three mobile characterization instruments were transferred to SRS, making it possible to perform the characterization requirements to meet the accelerated schedule.

Packaging the TRU Waste for Shipment

After completing the characterization and certification requirements, drums are placed in Transuranic Package Transporter Model 2 (TRUPACT II) shipping containers. The TRUPACT II containers are Nuclear Regulatory Commission (NRC) licensed Type-B casks designed specifically for the transport of TRU waste. They have undergone extensive testing in order to demonstrate the ability to provide safe containment of the TRU waste.

Ensuring Safe Shipments

A specifically designed transport truck carries three TRUPACT II containers and travels along approved routes to WIPP. The routes are designated by the U.S Department of Transportation (DOT) and the impacted states. The routes are in compliance with DOT and NRC requirements. Drivers must pass strict traffic safety and



emergency exams, maintain excellent driving records and renew their certifications annually.

As part of the preparation for these shipments, the WIPP States and Tribal Education Program (STEP) initiated training for more than 17,000 emergency response professionals in eighteen states along the approved transportation routes. This DOE training began in 1988 and focused on the response to potential incidents involving waste shipments. Classes addressed the caring for incident victims, guarding the public welfare, protecting the environment and ensuring the safety of responders.

Each year, a shipment schedule is provided to the affected states. South Carolina state transportation agents perform extensive vehicle and container inspections before each shipment leaves SRS. Other states along the routes perform similar inspections at their respective borders. Each truck is tracked by emergency response and law enforcement officials along the route via the satellite Transportation Tracking and Communications System. The system makes the appropriate notifications to officials prior to crossing a state's border.

For more information on WIPP contact the WIPP Information Center, 4021 National Parks Highway, Carlsbad, NM 88220; phone 1-800-336-WIPP (9477); email Infocntr@wipp.ws; web <http://www.wipp.energy.gov/>.

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