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**From:** Charlie Arnott  
**Sent:** Monday, May 23, 2016 9:24 AM  
**To:** Poy, Stephen  
**Cc:** Debra Shults; Johnny Graves; Janda, Donna  
**Subject:** SNM request

Stephen,

Attached is the request for SNM in VI.B. submitted by EnergySolutions Services in Oak Ridge for their Bear Creek Operations (BCO) as part of their past license renewal. They have two licenses at this site with a shared limit for SNM.

I thought I had sent this to NRC previously, but must have forgot.



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received in the laboratory. All leak test samples containing activity in excess of established removable contamination limits for unrestricted release will be disposed as radioactive waste after counting is complete. Any sample received at the Lab exhibiting radioactivity is waste and must comply with our existing license conditions.

## **VI. WASTE ACCEPTANCE GUIDELINE (WAG)**

ES has an established guide for waste acceptance that can be utilized by clients to determine if their waste meets the criteria for acceptance at the MMO facilities. Prior to shipping waste to ES the client will characterize the waste physically, chemically, and radiologically. Knowledge of how the waste was produced may be used to determine characteristics.

Upon staging at MMO facilities, waste packages are opened and sorted/inspected to remove any undesirable materials and to direct the waste to the appropriate process area. If the stated physical, radiological, or chemical composition of a waste becomes doubtful during sorting/inspection, appropriate analyses and determinations are done. Any unacceptable material may be removed for alternate processing, disposal, or return to the client. This direct inspection and sorting of wastes before processing provides major assurance that improper material will not be processed or disposed. Our experience has shown that this practice can be done safely with minimal exposure and is both practical and effective.

As appropriate, laboratory analyses may also be required when anomalies are identified with the characterization. If the waste meets the WAG the client may ship the material to the facility. When the approved waste is received, ES will review the shipment documentation for acceptability, physically inspect the container for compliance with shipping regulations, and perform a radiological survey on the shipment. The WAG is developed in accordance with the RSG, Section 11 and is based on conservative criteria that assure readily acceptable waste is shipped to ES.

### **A. OUT OF WAG**

For clients that have waste that does not meet the WAG the "Out of WAG" committee has to review and approve the shipment of the waste. The Out of WAG committee is composed of individuals that have specialized knowledge of license requirements, process limitations, RCRA requirements, State Regulations for Protection Against Radiation, and health physics.

### **B. SPECIAL NUCLEAR MATERIAL (SNM)**

Prior to this submittal, ES operated BCO under a combined SNM limit for TRML R-73008 and R-73016 for the possession of SNM. However, with the use of Enterprise Waste Tracking (EWT, aka Accutrak), ES has the ability to electronically track our waste inventory, to include SNM, in real time so that we know where each SNM container is upon receipt, during storage, during processing, and upon packaging and shipment for disposal. This unique ability to electronically track SNM allows ES to operate both TRMLs (R-73008 and R-73016) with their own SNM limits rather than a combined possession limit. Appendix A was modified to remove the combined limit for both TRMLs. The MMO radioactive material license will be held independently to a maximum unity (sum-of-fractions) calculation of one (1) given the isotope specific limits of 350 grams (g) U-235, 200 g U-233, and 200 g plutonium.

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ES will maintain SNM inventories for each TRML for BCO by virtually separating the bonded storage areas for SNM at the Guard House (main entrance), with MMO SNM being maintained in the bonded areas on the West side of the facility and DALW SNM being maintained in the bonded areas on the East side of the facility. This virtual tracking meets the intent of the mitigating criticality concerns as well as removing the need for non-contiguous licenses for the possession of SNM.

## **VII. LICENSED FACILITIES**

The MMO facility occupies the western end of EnergySolutions operations on Bear Creek Road, approximately one mile due south of the East Tennessee Technology Park (the former Oak Ridge Gaseous Diffusion Plant), approximately two miles northeast of the former Breeder Reactor Site, four miles from Oak Ridge National Laboratory, and approximately 11 miles from downtown Oak Ridge. It is bounded on the north by Watts Bar Reservation Boundary and Bear Creek Road and on the south by Grassy Creek, which joins the Clinch River. The facility is on a 45-acre tract located in the Clinch River Industrial Park. The park was developed and zoned by the City of Oak Ridge for businesses that handle radioactive or hazardous materials. The Clinch River Industrial Park is surrounded on all sides by the DOE Reservation. The Industrial Park is located south and west of the City of Oak Ridge in Roane County and is northwest of the City of Knoxville. The Metal Melt Operations (MMO) processing complex includes interior waste storage and houses the following processing activities: Metal Melt Facility (MMF), Parcel 4 (P4), and Radioactive Material Solutions (RMS) facility. Although on the DALW license, the High Radiation Storage Facility is a shared building with the DALW license and houses the majority of radioactive waste to be processed that requires High Radiation Area controls. In addition, the High Radiation Storage Facility is used to control Radioactive Material Quantities of Concern (RAMQC).

The general philosophy for building process ventilation is to create an airflow pattern such that the air flows from areas of lower or no contamination into areas of higher contamination. That is areas of greater potential for contamination will be at a negative pressure to areas of lesser potential. The areas of more or less negative pressure may change as the work being performed changes but the working concept is to minimize the potential for spread of radioactive material by appropriate use of airflow. Pressurization tests (air balances) for each process ventilation system in operation shall be performed semi-annually to verify proper operation and airflow. Pressurization tests are conducted in accordance with approved engineering procedures. Pressurization tests shall also be performed whenever a modification has been made to a ventilation system or to the doors of a process building which could potentially alter the effectiveness of the system.

Common process building items are metal siding structures built on concrete slab with curbed areas, and a nominal 6-inch dike. The buildings have fire detection and protection systems. The system consists of fire, smoke and water flow detection devices with automatic local alarming and offsite notification to the alarm company with subsequent notification to the Oak Ridge Fire Department. Due to the incompatibility of water and molten metal at MMF, several dry chemical fire extinguishers and fire blankets are installed in these areas. In addition to the aforementioned, personnel entering these areas are equipped with protective clothing such as protective gloves and shoe covers as well as fire retardant coveralls that minimize potential hazards to personnel from heat or fire. For the P4 Decontamination Facility fire protection is provided by a sprinkler system. In addition, portable fire extinguishers are located throughout the MMO according to fire

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**From:** Charlie Arnott  
**Sent:** Monday, May 23, 2016 11:06 AM  
**To:** Poy, Stephen  
**Cc:** Johnny Graves; Debra Shults; Janda, Donna; Anthony Hogan  
**Subject:** EnergySolutions SNM question

Stephen,

The license renewal applicable section for Tennessee Radioactive Material License (TRML) for R-73016-G25, Metal Melt Operations (MMO) is attached. The license was renewed maintaining joint SNM possession limits instead of separate limits for R-73016-G25 and R-73008-D24 operations of which are both conducted at the same location, the EnergySolutions Bear Creek Operations (BCO).

To address your questions:

They do want separate SNM limits for the two licenses rather than combined limits at the same site (BCO).

The proposal was submitted in the license renewal request cited above.

We have made no decision, but are seeking guidance from NRC whether this would be acceptable.



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