



### **3.2.1 Radiological Sampling**

Isotopic analysis for radioactivity will be performed utilizing on-site gamma spectroscopy facilities (HPGe detector) for the determination of plutonium content. The results of the analysis of each sample will be assumed to be representative of the material in the package and extrapolated to estimate the total activity of the material type for material shipment purposes.

### **3.2.2 Chemical Sampling**

Material samples will be collected to identify RCRA hazardous materials. Total analyses will be performed as a replacement for the Toxic Characteristic Leaching Procedure (TCLP) in an effort to minimize analytical costs.

Samples will be analyzed for 8 RCRA metals in addition to Cu, Zn, Sb, Ni, Ti, and V by EPA's Test Methods for Evaluation of Soil Waste Physical/Chemical Methods (SW-846) Method 6010A with the exception of Hg which will be performed utilizing Method 7470. Volatiles analysis shall be performed according to Methods 8240B/8260A. Semivolatiles analysis will be performed according to Method 8270B.

### **3.2.3 Sampling Strategy**

Samples will be collected from the package received by Starmet at the SIP. New disposable sampling spoon/scoops, or decontaminated stainless steel spoons or scoops will be used. The following sections describe the strategy planned for sampling of intact or nominally intact drums (DU received in overpack containers) and for completely degraded drums (DU received in B-12 boxes).

#### **3.2.3.1 Sampling Strategy for Intact or Nominally Intact Drums**

Intact or nominally intact drums will be placed into an overpack drum and transferred to Starmet. The overpack drums will be inspected and sampled when received at the SIP. Samples will be obtained prior to inerting, and after draining of CimCool (if present), unless safety issues preclude this sequence of events. Sampling prior to inerting is preferred to preserve sample integrity and ensure the lowest possible analytical laboratory detection limits. If necessary due to safety issues, the overpack drums will be inerted prior to sampling. A sample of the mineral oil used to inert the overpack drums may be analyzed to quantify the effects of the oil on laboratory detection limits. Drum lids may be removed or sufficiently opened prior to transfer of the material, so that the sample technician can reach into the drum to obtain a sample. The sample technician will collect a scoop- or spoonful of material from the package. To the extent practical, the scoop- or spoonful will be obtained from beneath the top surface of the exposed material. Care will be taken not to use excess force when obtaining samples in order to minimize the potential for ignition of any pyrophoric material.

#### **3.2.3.2 Sampling Strategy for Completely Degraded Drums**

Completely degraded drums will be placed into a B-12 box prior to transfer of the material to Starmet. Boxes will likely contain DU, graphite, soil, as well as some small drum fragments. The B-12 boxes maybe inspected and sampled trench side or when received at the SIP. Samples will be obtained prior to inerting, unless safety issues preclude this sequence of events. Sampling prior to inerting is preferred to preserve sample integrity and ensure the samples represent the waste material and not the inerting material. The preferred method of sampling will be to sample directly from each degraded drum placed in the B-12. A member of the sample team will sample each drum for the highest DU levels. The sample will be collected with a new scoop, spoon or other device to maintain sample integrity. The sampling device may be attached to a handle if required. The sample material will be placed in a plastic bag and brought to the SIP for sample bottle filling. All sampling paperwork will be completed by SIP personnel.

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Soil for inerting the sample material will be kept on hand at the SIP. The B-12 boxes may be inerted prior to sampling and sampled at the SIP, if necessary due to safety issues. When sampling at the SIP a composite sample will be created by filling the required sample containers with material from four or five different locations in the box using the scoops or spoons. If the packages are interred prior to sampling, the sample technician will note the location of visually identifiable DU material prior to adding soil to the package, and all of the subsamples will be collected from beneath the layer of soil that is used to inert the material. At least one of the subsamples will be collected from near the bottom of the package and will be obtained using a shovel to expose the material near the bottom of the package. All of the subsamples will be collected on a biased basis, maximizing the amount of DU and minimizing the amount of soil in the subsample. No homogenization of material will be performed due to the pyrophoric nature of the material. Care will be taken not to use excess force when obtaining samples in order to minimize the potential for introducing sufficient energy to ignite the potentially pyrophoric material.

### ***3.3 Sampling to Support On-Site Treatment of Drained Lathe Coolant (CimCool)***

There is a possibility that intact drums of uranium material will be discovered during the excavation of T-1. If these drums still contain CimCool, this liquid will be pumped into a tank, or other appropriate container, located inside the structure. Prior to pumping the CimCool into the tank or other package, a field pH test will be performed to ensure that incompatible materials are not mixed together. The liquid will be sampled for waste characterization analysis. Analysis will be conducted to determine if treatment of the waste at the on-site, Building 374 Evaporator is possible. Because the properties of CimCool are known, and the material is largely composed of water, it is assumed that the CimCool is a likely candidate for treatment at the Building 374 Evaporator. Data requirements for the drained CimCool include determination of treatment parameters for the Evaporator. These parameters have been identified as radionuclides including Pu 239/240, Am-241, and uranium isotopes, PCBs, total metals, and total cyanide.

***The analyses specified in Table 3.2 are required by the Building 374 personnel to assist in the effective treatment of the liquids. Samples will be collected using the most convenient method available such as with a bailer, peristaltic pump or similar device. The sampling device will be lowered to specified depth, raised to the surface and emptied, either into an intermediate container, or directly into the sample container. The depth from which the sample was obtained will be recorded on the sample logsheet, along with physical appearance and any other observations. If a bailer is used, a bottom decanting control device may be used to fill the VOC sample vials. The actual sampling method will be described in the field logbook. Quality control samples (e.g., trip blanks, duplicates) are not required by the Building 374 personnel for this activity.***

### 3.8 Quality Control Sampling

This section states the general approach for QC sample collection for this project. Additional details regarding these samples are given in the tables of the respective sections of this document.

The following types of QC samples are being collected to support the objectives of this SAP:

**Duplicates:** Duplicate (collocated) samples may be required to support some of the sampling objectives of this SAP. Duplicates are independent samples collected as close as possible to the same point in time and space. These samples are two separate samples taken from the same source, placed in separate containers, and analyzed independently. The Waste and Residue Identification and Characterization (WSRIC) Program requires duplicate samples at a frequency of one in every 20 samples. This frequency will apply to each type of sampling event (e.g., one duplicate for every 20 HPGe samples, one duplicate for every 20 VOC samples, etc.).

**Equipment rinsate blanks:** These samples will be prepared by collecting distilled water, poured over decontaminated sampling equipment, between the collection of regular VOC samples. Equipment rinsate blanks will only be collected between collection of regular VOC samples because cross-contamination of other contaminants is considered highly unlikely. These blanks will be submitted with the regular samples. These samples will be preserved to a pH<2 with hydrochloric acid (HCl), and will be analyzed for VOCs, as appropriate. Equipment rinsate blanks will be collected at a frequency of one in every 20 VOC samples.

**Trip blanks:** Trip blank samples will be packaged into coolers containing samples being analyzed for VOCs offsite. Trip blank samples will be pre-prepared (not in the field) with minimal headspace and preserved to a pH<2 with Hcl.

All VOC samples sent to a laboratory for analysis will be analyzed according to the U.S. EPA SW-846 method 8260A (EPA, 1992).

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