# LOGSHEET FOR FIELD CHANGES TO CONTROLLED DOCUMENTS

| Change Number | Date | Document Number | Document Title | Section/Page Modified | Description Of Change(s) | Responsible Manager Approval | ESH&Q Approval | Radiological Engineering Approval | Quality Assurance Approval | Completion Of ADM 2.01 Checklist | Completion Of SES/USQD Checklist |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | 6-11-98 | RF/RMRS-97-010 | Final Site Specific Health and Safety Plan for the Source Removal at Trench 1 IHSS 108 | Section 4.1.1 Page 16 | Added verbage to the third paragraph to indicate how drum contents will be handled, and mixed with soil if necessary, to ensure safe handling in relation to temperature measurements | | | | | | |
| 2 | 6-11-98 | RF/RMRS-97-010 | | Section 7.4 Page 78 Table 7.2 | Revised Radiological Suspension Guidelines table to reflect changes to how Personnel Contamination (radiological) will be handled. The Action(s) to be taken if personnel contamination is detected at levels >MDC of instrument now reads "Notify the Field Supervisor and the RSTS." | | | | | | |
| 2 | 6-10-98 | RF/RMRS-97-010 | | Section 7.7.4 Page 100 | Revised response to Personnel Radiological Contamination | | | | | | |
| 2 | 6-11-98 | RF/RMRS-97-010 | | Section 7.4 Page 83 Table 7.2 | Revised table for Depleted Uranium Temperature Measurements to reference Operations Order No. OO-T1-09 | | | | | | |

[1] Affixed signatures indicate that Operations Review Committee (ORC) and/or Independent Safety Reviews are NOT applicable because Scope and Fundamental Technical Specifications were NOT changed. Also, related documents affected by the change(s) were modified accordingly.

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pierced. Venting will be performed inside the trench prior to removal of the drum from the trench. During the venting of the drums, all personnel in the immediate excavation work area will relocate to predetermined locations away from the trench.

After each intact drum has been vented, individual drums will be carefully removed from the excavation using the excavator bucket, and placed into a shallow plastic containment pan for initial characterization as shown in Table 4.1. If the initial characterization indicates that the drum can be safely handled, the drum will be placed in a overpack drum or other container and transported to the SIP for further evaluation of the drum contents.

If a drum is not intact, the contents will be removed from the drum in the trench. The contents will then be removed from the trench and the material will undergo the same initial characterization as for intact drums and segregated as indicated in Section 4.2.1. If temperature measurements do not exceed the action levels in Operations Order No OO-T1-09, the drum contents will be placed into the appropriate waste container. If temperature measurements exceed the action levels in Operations Order No OO-T1-09, the drum contents will be returned to the trench and mixed with soil. This process will continue until temperature measurement action levels are not exceeded and the drum contents can be safely packaged.

### 4.1.2 Excavation of Soil

Excavated soil will be raised in the excavator bucket and the bucket will be placed on the ground. Soil in the bucket will be initially characterized as shown in Table 4.1 and segregated based on the characterization results (See Section 4.2.2).

### 4.1.3 Excavation of Debris

Miscellaneous debris and trash excavated from the trench is expected to include compatible materials such as waste personal protective equipment, wood, metal, rubber, plastics, paper, and glass. Immediately following removal from the trench and while still in the excavator bucket, these items will be visually inspected for stains or discolorations and initially characterized as shown in Table 4.1.

### 4.1.4 Excavation of Unknown Materials

It is important to note that unknown materials do not necessarily constitute an Unanticipated Hazard or Condition. If, however, unknown material are discovered, they will be evaluated in accordance with RMRS Directive-001 as presented in Section 7.7.

Materials or containers with liquids and/or sludge which cannot be immediately identified will be inspected for labels, markings, or other information and initially characterized as shown in Table 4.1. If it can be

done safely based on the initial characterization and the RMRS Directive-001 evaluation, the material or container will then be appropriately packaged and transferred to the SIP for further evaluation.

### 4.1.5 Excavation of Suspected Classified Items

Items suspected of being "classified" will be initially characterized per Table 4.1. They will then be isolated and the RFETS Classification Office will be contacted to determine if the item is classified. If classified, the item will be secured and the final disposition will be determined by the Classification Office.

## 4.2 TASK 2 - SEGREGATION AND PACKAGING OF DRUMS, SOIL, DEBRIS, UNKNOWN MATERIAL, AND SUSPECTED CLASSIFIED ITEMS

Drums, soil, debris, unidentifiable material, and suspected classified items will be segregated and packaged according to identifiable waste types and the results of initial field characterization. To the extent possible, all material will be segregated and packaged adjacent to the trench using the excavator bucket. If manual handling of material is necessary, remote handling devices will be used when feasible. Waste packaging will be conducted in accordance with Operations Order No. 00-T1-07 *Packaging of Trench T-1 Waste.*

### 4.2.1 Segregation and Packaging of Drums

Intact drums containing depleted uranium, still bottoms, cemented cyanide, or unknown material will be removed from the trench, initially characterized, and if they have sufficient structural integrity for hoisting, placed in an overpack drum. If the intact drums do not have sufficient structural integrity, they will be placed in an approved waste package. Hoisting of intact drums into overpack drums will be done with a hoisting apparatus designed for placing 55-gallon drums into overpacks. A Lifting Plan has been developed for the overpacking of intact drums and a hoisting and rigging checklist will be completed per HSP- 12.02, *Hoisting and Rigging*. The waste package will then be transferred to the SIP where the contents will be further characterized, sampled, and segregated by SIP personnel. Drums containing depleted uranium chips will be stabilized by inerting with mineral oil, appropriately packaged for offsite shipment, and transferred to the Waste Container Staging Area located outside of the temporary structure. Cemented cyanide and still bottom wastes will be sampled, appropriately packaged, and staged in the Waste Container Staging Area. Upon receipt of analytical results, cemented cyanide and still bottom wastes will be managed for appropriate treatment and/or disposal.

Non-intact drums and associated soil will be removed from the trench and segregated based on the initial characterization. The initial characterization will be conducted while the material is still in the excavator bucket so that depleted uranium and non-depleted uranium-containing waste streams are not placed in the same waste package.

As the packages containing depleted uranium material are being filled, personnel may remove drum fragments and rake the soil to minimize voids. Drum fragments will be surveyed and placed in a separate waste container designated for debris. Packages containing or suspected of containing depleted uranium will be transferred to the SIP where they will be sampled, stabilized by inerting with soil, packaged for offsite shipment, and transferred to the Waste Container Staging Area located outside of the temporary structure.

### 4.2.2 Segregation and Packaging of Soil

Depending on the results of the initial characterization as depicted in Table 4.1, soil will be segregated and placed directly into waste packages or transferred to the soil stockpile. With the exception of the soil transferred to the soil stockpile, all soil will be packaged adjacent to the trench. The soil segregation methodology is summarized below in Table 4.2.

**Table 4.2**
**Soil Segregation Methodology**

| FIDLER Readings (cpm)[1] | VOC Readings (ppm)[2] | Contains DU Chips and Turnings | Action |
|---|---|---|---|
| NA | NA | Yes, or suspected to contain | Package and transfer to the SIP. |
| < 5,000 cpm | < 25 ppm | No | Transfer to the soil stockpile. |
| NA | ≥25 ppm | No | Package as mixed/low-level waste. |
| ≥5,000, ≤10,000 cpm | < 25 ppm | No | Package or transfer to the soil stockpile. Segregate from < 5,000 cpm at soil stockpile. |
| > 10,000 cpm | < 25 ppm | No | Packaged as low-level waste. |
| NA | < 25 ppm | No, but contains oxides of DU | Packaged as low-level waste. |

[1] cpm - Counts per minute
[2] ppm - Parts per million above background

### 4.2.3 Segregation and Packaging of Debris

Miscellaneous debris and trash excavated from the trench may include materials such as spent personal protective equipment, wood, metal, rubber, plastic, paper, and glass. Materials removed from the trench

will be visually inspected for stains or discolorations indicating potential contamination and initially characterized per Table 4.1. Debris will be segregated and packaged adjacent to the excavation based on like waste forms and the results of the initial characterization. If the initial characterization of the debris indicates the presence of VOC's or it is suspected to be chemically contaminated based on visual inspection, it will be placed in a waste container designated for mixed/low-level waste. If chemical contamination is not detected or suspected, the debris will be handled as low-level waste and packaged accordingly.

To optimize the volume of a steel waste package, size reduction of debris may be required. Size reduction will be conducted only after the initial characterization and identification of all potential hazards (See Table 4.1) as follows:

- Common debris such as wood, metal, rubber, plastic, and glass may be reduced with the excavator bucket either in the trench or as it is placed into the steel waste package.
- Empty drum carcasses which do not contain liquids or depleted uranium chips or oxide, may be reduced with the excavator bucket in the trench.
- Drums or drum fragments which previously contained liquids and do not contain depleted uranium chips or oxide, may be reduced with the excavator bucket in the trench.

**Note: Drums containing or suspected of containing depleted uranium chips or oxide will not be sized reduced.**

### 4.2.4 Segregation and Packaging of Unknown Material

All materials that cannot be immediately identified will be initially characterized as shown in Table 4.1 and, if safe to do so, will be transferred to the SIP for further analysis, sampling, stabilization if necessary, and packaging.

Containers of unknown liquids or sludges will be inspected for labels, markings, or other identifying information, and repackaged to ensure container contents remain controlled during transport to the SIP.

### 4.2.5 Segregation and Packaging of Suspected Classified Items

Items suspected of being "classified" will be segregated and packaged depending on the results of the initial characterization. The RFETS Classification Office will be contacted to determine if the item is classified and to remove it if necessary.

## 4.3 TASK 3 - TRANSPORTING MATERIAL TO THE SAMPLING AND INERTING PAD (SIP)

Transport of drums, soils containing uranium chips, or unknown materials to the SIP will be done using a overpack drum or sealable steel container and a forklift. Breathing air cylinders will be mounted on the forklift to allow the operator to wear an airline respirator for extended periods of time. To expedite the excavation process, several overpack drums and steel transfer containers will be positioned near or adjacent to the trench where they may be filled, sealed and transported to the SIP. The forklift will travel on established roadways within the temporary structure. Dust suppression on the roadways will be performed to limit the generation of airborne dust.

Task specific activities required to accomplish the transporting of waste packages to the SIP include the following:

- inspecting and operating the forklift;
- establishing roadways to ensure the safe movement of the forklift; and
- spraying water on the roadways to minimize dust, as necessary.

## 4.4 TASK 4 - SAMPLING AND INERTING PAD (SIP) OPERATIONS

### 4.4.1 Characterization of Material Received at the SIP

Materials that may be received at the SIP include depleted uranium, depleted uranium-containing drums and soils, drums containing unknown liquids and solids, and other waste materials. Initial screening of materials will have been performed upon removal of material from the trench and the results will be communicated to SIP personnel via the waste package specific Checklist for Packaging Trench 1 Waste contained in Operations Order No. 00-T1-07, *Packaging of Trench T-1 Waste*. The initial field screening information will be used to determine the sampling, inerting, and packaging methods that will be applied to the materials at the SIP. If necessary, additional measurements will be taken using direct-reading instruments to provide additional information to SIP personnel. It is anticipated that most materials will be identified by the time they reach the SIP. It is also anticipated that most materials will have been placed into containers which meet DOT requirements for shipping. The materials will be sampled, inerted if appropriate, and the containers will be sealed, labeled, and transported out of the temporary structure to the Waste Container Staging Area pending disposition.

Task specific activities required to characterize materials received at the SIP include:

- review of initial screening data conducted as material is removed from the trench;
- visual inspection of materials received; and
- obtaining additional screening measurements as necessary.

### 4.4.2 Sampling and Inerting Depleted Uranium Chips and Intact Drums

This task involves visual inspection of the drum to determine if free liquids, Cimcool®, and depleted uranium chips are present. Depending on the condition of the drum or drums, and the ability of SIP personnel to access the contents, the lid may be removed. If there are liquids in the drum, SIP personnel may first obtain a sample of the liquids for characterization in accordance with the Starmet *Sampling and Analysis Plan (SAP)*. Easily accessible liquids will then be pumped out of the drum into an appropriate package and bulk sampling may be conducted. Although most of the liquids in the drums are anticipated to be Cimcool® and will be packaged together, the following precautions will be taken to determine compatibility of liquids before being mixed together:

- pH - pH will have been determined during initial field screening and communicated to SIP personnel. In general, liquids with a pH of 5 to 9 may be mixed together. If necessary, separate containers will be established for liquids exhibiting pH $<5$ and $>9$;
- VOCs - liquids which exhibit high VOC readings should not be mixed with liquids exhibiting low VOC readings. Although VOC content is not necessarily a compatibility issue, this is a good waste management practice; and
- appearance - SIP personnel shall evaluate compatibility based on appearance including such characteristics as color, and viscosity. Liquids which differs greatly from what is already in the receiving package should be further evaluated to ensure compatibility.

Once the liquids have been removed from the drum, a sample of the drum contents will be taken either before or after inerting and any turnings that are visible may be compressed with a long-handled non-sparking tool. Prior to inerting, temperature measurements of the depleted uranium will be obtained to verify that it is not undergoing rapid thermal oxidation that could ignite the mineral oil during inerting. If the temperature measurements indicate that the depleted uranium is not undergoing a thermal reaction, mineral oil will then be added to the waste package as necessary to cover the drum contents and meet DOT requirements for inerting. The overpack drum will then be sealed with a vented lid, appropriately labeled, and staged for transport from the SIP to the east end of the temporary structure.

Task specific activities required to sample and inert intact drums containing depleted uranium include:

- visual inspection of the container to identify depleted uranium chips and Cimcool® or other liquids;
- removing lids if necessary;
- weighing the waste package;
- obtaining liquid and solid samples per the Starmet SAP;
- removal and packaging of Cimcool® or other liquids;
- compression of depleted uranium using long-handled non-sparking tool;

- obtaining depleted uranium temperature measurements just prior to inerting;
- inerting of depleted uranium with mineral oil; and
- container sealing and labeling.

### 4.4.3 Sampling and Inerting Materials in Non-Intact Drums

This task involves visual inspection of the container to determine if depleted uranium chips are visible, as well as determining if any free liquids remain in the damaged drum which will be in an a box-type waste package when it reaches the SIP. If Cimcool® or other liquids are present and covering the depleted uranium, sampling may be performed in accordance with the SAP. The liquids will then be pumped off and packaged based on the compatibility determination discussed above. Once any liquids have been removed, a sample of the solids will be taken either before or after inerting with clean soil (not containing depleted uranium). The box-type container will then be sealed with a vented lid, labeled appropriately, and staged for transport from the SIP to the east end of the temporary structure.

Task-specific activities required to sample and inert non-intact drums include:

- visual inspection of the package to identify depleted uranium chips and Cimcool® or other liquids;
- weighing the waste package;
- obtaining liquid and solid samples per the SAP;
- removal and packaging of Cimcool® or other liquids;
- compression of depleted uranium using long-handled non-sparking tool;
- inerting of depleted uranium with soil; and
- container sealing and labeling.

### 4.4.4 Sampling and Inerting Commingled Soils/Materials

This task involves inspection of the container to determine if depleted uranium chips are visible. Large pieces of drums, pallets, and other solid wastes that are not contaminated with depleted uranium may be removed from the container and segregated for appropriate disposal. A sample of the container contents will then be obtained in accordance with the SAP. If depleted uranium chips are present or suspected to be in the container, additional clean soil (not containing depleted uranium) will be added to the surface to inert the container. The vented container will then be sealed, labeled, and staged for transport from the SIP to the east end of the temporary structure.

Task specific activities required to sample and inert commingled soil/materials include

- Visual inspection of the container to identify depleted uranium chips;

- visual identification and removal of bulky waste items as appropriate;
- weighing the waste package;
- obtaining samples per the SAP;
- inerting containers with clean soil; and
- container sealing and labeling.

### 4.4.5 Sampling Cemented Cyanide and/or Still Bottom Wastes

Drums containing these materials will be initially screened and packaged upon removal from the trench and transported to the SIP. SIP personnel will manage any liquids present, collect samples per the SAP, seal and label the container, and stage the container for transport from the SIP to the east end of the temporary structure.

Task specific activities required to sample cemented cyanide and/or still bottoms include:

- visual inspection of the container to verify contents;
- obtaining samples per the SAP; and
- container sealing and labeling.

## 4.5 TASK 5 - TRANSPORT OF SOIL TO THE SOIL STOCKPILE

This task involves the use of a front-end loader to transport soil from the excavation to the soil stockpile. The soil stockpile is located in the north leg of the temporary structure. To ensure safe movement of the front-end loader to the soil stockpile, roadways will be established. The front-end loader will dump loads of soil at the soil stockpile in a manner which limits the generation of dust. If necessary, dust suppression with clean water will be performed to limit the generation of airborne dust.

Activities required to accomplish the transport, dumping, and stockpiling of soil include the following:

- inspecting and operating the front-end loader;
- sampling soils with 5,000-10,000 cpm readings on the FIDLER from the front-end loader bucket;
- establishing a roadway to ensure the safe movement of the front-end loader; and
- spraying water when loading, prior to transport, on the roadway, and when dumping to minimize dust;

## 4. 6 TASK 6 - MANAGEMENT OF THE SOIL STOCKPILE

This task involves the management of the stockpiled soil within the temporary structure. To facilitate efficient stockpiling of soil, a front-end loader will be utilized due to its versatile ability to stockpile soil. Management of the soil stockpile also includes ongoing dust suppression with clean water as required.

Activities required to accomplish the loading and management of the soil stockpile include the following:

- operating the front-end loader;
- spraying water for dust suppression as required; and
- sampling the soil stockpile at the completion of excavation activities.

## 4.7 TASK 7 - MANAGEMENT OF WASTE CONTAINER STAGING AREA

Several different waste streams will be generated during this project. With the exception of the soil in the soil stockpile, all waste will be appropriately packaged for treatment or disposal. The waste streams identified may include the following:

- stabilized depleted uranium chips and depleted uranium-containing soil;
- liquid waste such as still bottoms or Cimcool®;
- contaminated soil;
- debris including drum carcasses, wood, paper, filters;
- used PPE;
- decontamination waste water and remediation waste waters;
- miscellaneous hazardous waste such as cemented cyanide; and
- sanitary waste.

After waste packages originating from either the SIP or outside of the SIP have been sealed and labeled, they will be transported via forklift to the east end of the temporary structure where they will be radiologically surveyed for unrestricted release. To ensure that the storage areas outside of the temporary structure are posted correctly in regards to radiation levels, radiation surveys will be conducted on the waste packages prior to or immediately after exiting the temporary structure. Once outside of the temporary structure, containers will be staged according to their contents. Specific waste container staging areas are summarized in Table 4.3.

**Table 4.3**
**Waste Container Staging Area Summary**

| Waste Type | Staging Area Type |
|---|---|
| Low-level waste | Radioactive Material Area (RMA) |
| Mixed/Low-level waste | Temporary Unit with RMA Posting |
| RCRA hazardous waste | Temporary Unit |

Task specific activities required to manage the Waste Container Staging Area include the following:

- conducting formal documented inspections of staging areas at proper intervals;
- inspecting and operating forklifts;
- placing 83 gallon overpack drums into 110 gallon overpack drums in accordance with the Lifting Plan;
- establishing roadways for forklift operations; and
- loading waste containers onto transports.

## 4.8 TASK 8 - EXCAVATION VERIFICATION SAMPLING

At the completion of excavation operations per the PAM, verification soil samples will be collected along the base and sides of the excavation to determine the post-action condition of the subsurface soils. Verification samples will be collected and analyzed according to the procedures and requirements stated in the *Sampling and Analysis Plan to Support the Source Removal at Trench T-1 Site, IHSS 108* (SAP). The sampling will be performed after a nominal six-inch scrape below the drums and debris to clear the trench bottom of any residual waste material. Visible staining which may extend beneath the trench bottom will also be removed prior to collecting samples. If sample analytical results indicate that contamination is present above cleanup target levels, further excavation and sampling will continue until cleanup target levels are achieved, or one of the limiting conditions discussed below are met.

If contamination is encountered below the bottom of the trench, the excavation will be limited to the highly weathered bedrock, one to three feet below the alluvial/bedrock contact, or to the depth of groundwater, if encountered. Unweathered bedrock will not be excavated. A FID and/or PID as well as a FIDLER will be used as field screening tools to guide the excavation activities before collection of the excavation verification samples.

Activities required to accomplish this sampling include the following:

- inspecting and operating the excavator;
- decontaminating the excavator bucket;
- sampling from the excavator bucket;
- decontaminating sampling equipment; and
- packaging the samples for shipment.

## 4.9 TASK 9 - SOIL TREATMENT

If substantial quantities of soil are found to be contaminated with VOCs, treatment may be necessary. Low vacuum low temperature thermal desorption or other equally effective technology may be used to treat the soil. If treatment is required, a separate health and safety plan will be developed by the subcontractor.

## 4.10 TASK 10 - SURVEY/DEPOST TEMPORARY STRUCTURE

At the completion of excavation activities, tent, equipment, and soil surveys will be conducted to evaluate the possibility of downgrading or deposting the High Contamination Area and Contamination Areas.

Activities required to accomplish this surveying include the following:

- operating an aerial lift to access above ground areas of the tent;
- using ladders and/or fall arrest equipment to access above ground areas of heavy equipment; and
- using fall arrest equipment when conducting FIDLER surveys within six feet of the excavation.

## 4. 11 TASK 11 - SOIL TRANSPORT AND BACKFILL

This task involves the use of a front-end loader to transport soil from the soil stockpile back to the excavation. To ensure safe movement of the front-end loader, a roadway will be established. The front-end loader will dump loads of soil at the excavation in a manner which limits the generation of dust. If necessary, dust suppression with clean water will be performed to limit the generation of airborne dust.

Activities required to accomplish the transport, dumping, backfilling, and compaction and of soil include the following:

- operating the front-end loader;
- instituting appropriate radiological controls based on soil stockpile sampling results and

the radiological conditions at the site;
- establishing roadways to ensure the safe movement of the front-end loader; and
- spraying water when loading, prior to transport, on the roadways, and when dumping to minimize dust.

## 4.12 TASK 12 - SITE RECLAMATION

At the completion of the project topsoil will be returned the site. The topsoil will be graded and the site will be revegetated with an appropriate seed mixture in order to return it to an improved natural condition. The seed mixture will be covered to prevent wind dispersal and promote germination.

Activities required to accomplish site reclamation include the following:

- operating heavy equipment on established roadways;
- instituting radiological controls depending on soil stockpile sampling results and the radiological conditions at the site;
- monitoring wind speed;
- applying ConCover as necessary;
- performing FIDLER surveys of the soil stockpile and excavation areas; and
- securing the site at the end of each day.

## 4.13 TASK 13 - DECONTAMINATION OF EQUIPMENT

Materials and equipment may require decontamination prior to release from the temporary structure and prior to unrestricted free release from RFETS to off site locations. Decontamination methods will vary depending on the location and extent of contamination and effectiveness will be determined by visual inspection, radiological monitoring, and volatile organic compound monitoring. At the discretion of the project manager, items may be decontaminated in the field or transferred to the Main Decontamination Facility.

Activities required to decontaminate heavy equipment and materials include the following:

- staging heavy equipment;
- establishing a portable decontamination station with secondary containment;
- transferring items to the Main Decontamination Facility;
- spraying water at low or high pressures and/or wiping or scrubbing; and
- managing decontamination waste such as decontamination fluids.

# Table 7.2
## Monitoring Program Summary

| RADIOLOGICAL SUSPENSION GUIDE LIMITS | | | |
|---|---|---|---|
| **Hazard** | **Suspension Guide Limit/Hold Point** | **Action(s) to be Taken** | **Monitoring/Sampling Frequency** |
| Equipment or material radiological contamination in "HCA" | Alpha contamination: 200,000 dpm/100cm$^2$ removable<br>Beta/gamma contamination: 400,000 dpm/100cm$^2$ removable | Suspend operations, secure area and notify the Field Supervisor and Radiological Safety Technical Supervisor (RSTS) | Daily contamination control surveys within the "High Contamination Area". |
| Equipment and material radiological contamination in "CA" | Alpha contamination: 50,000 dpm/100cm$^2$ removable<br>500,000 dpm/100cm$^2$ total<br>Beta/gamma contamination: 100,000 dpm/100cm$^2$ removable<br>500,000 dpm/100cm$^2$ total[1] | Suspend operations, secure area and notify the Field Supervisor and RSTS. | Daily contamination control surveys within the "Contamination Area". |
| Equipment and material radiological contamination in "RBA" or areas not controlled for radiological purposes | Alpha contamination: 1,000 dpm/100cm$^2$ removable<br>5,000 dpm/100cm$^2$ total<br>Beta/gamma contamination: 1,000 dpm/100cm$^2$ removable<br>5,000 dpm/100cm$^2$ total[1] | Suspend operations, secure area and notify the Field Supervisor and RSTS. | Daily contamination control surveys within the "Radiological Buffer Area". |
| Personnel contamination. | > MDC[2] of instrument | Notify the Field Supervisor and RSTS. | Prior to exiting a "Contamination Area" |
| Airborne radioactivity | 10 DAC[3] ($U^{238}$ Class Y) when supplied air or full-facepiece air- purifying respirators are worn<br>0.10 DAC ($U^{238}$ Class Y) when no respiratory is worn | Remove personnel from effected area, suspend operations, secure area and notify the Field Supervisor and RSTS. | Per the Radiological Work Permit and the ALARA Job Review |
| Beta/Gamma radiation in "HCA" or "CA" | 10 mrad/hr gamma at 30 centimeters<br>300 mrad/hr beta on contact | Suspend operations, secure area and notify the Field Supervisor and RSTS. Performed neutron survey if > 10 mrad/hr gamma at 30 centimeters | Shiftly to characterize excavated material, waste packages, and work areas |
| Presence of total Pu or $U^{235}$ as determined by gamma/alpha spec analysis | 15 grams fissile U per pkgd container<br>3,960 grams enriched U per pkgd container<br>100 nCi/g Pu concentration<br>1 gram total Pu (WG Pu) per pkgd container | Suspend operations, secure area and notify Nuclear Safety and Criticality Safety. | Per the RMRS and Starmet SAPs |

[1] Due to beta/gamma radiation penetrating the walls of waste packages, these limits for direct total beta/gamma may not be applicable.
[2] MDC - Minimum Detectable Counts
[3] DAC - Derived Air Concentration

### 7.7.4 Personnel Radiological Contamination

Personnel will be frisked when exiting the CA/EZ. If levels >500 dpm alpha on the instrument at the outer step-off pad are detected on personnel after the removal of personal protective equipment, or at the discretion of the Radiological Safety Technical Supervisor, the following actions will be taken:

- all activities will be immediately suspended and the Field Operations Deputy Project Manager or designee and the Field Supervisor will be notified;
- the Radiological Safety Technical Supervisor will be notified;
- depending on the location and level of contamination, the appropriate actions will be taken to protect the contaminated individual and personnel in the area;
- all nonessential personnel will exit the temporary structure by normal egress routes and relocate to a safe upwind assembly area (***No personnel will be allowed to leave the assembly area.***);
- all depleted uranium will be placed in a fire-safe configuration via inerting as follows;
  - SIP personnel will immediately inert all depleted uranium waste packages heading to or already at the SIP; and
  - the excavator operator will inert material in the trench with non-uranium containing soil;
- once the temporary structure is secured and the depleted uranium is in a fire-safe configuration, remaining personnel will exit the temporary structure;
- based on the contamination levels, site controls and work practices will be reviewed and modified, if necessary; and
- upon approval from the RMRS Environmental Restoration Director or designee, work activities will resume.

### 7.7.5 Confirmed Presence of Plutonium or Fissile/Enriched Uranium

Should AP-2 portable alpha analyzer, gamma/alpha spectroscopy, or laboratory analysis indicate the presence Plutonium or fissile/enriched Uranium above the action levels stated in Table 7.2, the following actions will be taken:

- all activities will be immediately suspended and the Field Operations Deputy Project Manager or designee and the Field Supervisor will be notified;
- RCT's not wearing respiratory protection in the RBA/CRZ will immediately exit the temporary structure;
- the Radiological Safety Technical Supervisor will be notified;
- Nuclear Safety, Criticality Safety, and Air Quality will be notified as appropriate;

# Table 7.2
## Monitoring Program Summary (cont.)

| WIND SPEED | | | |
|---|---|---|---|
| **Hazard** | **Action Level** | **Action(s) to be Taken** | **Monitoring Frequency** |
| Contamination dispersion | > 15 mph average for two consecutive 15 minute periods. | At the discretion of the Project Manager and the Site Safety Officer. | Continuous during all field activities. |
| Contamination dispersion and personal injury | > 30 mph average for two consecutive 15 minute periods. (Strong Wind Warning) | Terminate dust generating activities. Secure all outdoor material. Evaluate work on roofs and elevated surfaces. Work inside tent may proceed. | Continuous during all field activities. |
| Contamination dispersion and personal injury | > 45 mph average for two consecutive 15 minute periods. (Gale Warning) | Evaluate work outdoors and inside the tent. | Continuous during all field activities. |
| Contamination dispersion and personal injury | > 55 mph average for two consecutive 15 minute periods. (Whole Gale Warning) | Suspend work in the tent and evacuate personnel. Suspend all outdoor work except emergency activities. | Continuous during all field activities. |

| DEPLETED URANIUM TEMPERATURE MEASUREMENTS | | | |
|---|---|---|---|
| **Hazard** | **Action Level** | **Action(s) to be Taken** | **Monitoring Frequency** |
| Ignition of depleted uranium in drums or soil | Refer to Operations Order No. OO-T1-09 Temperature Measurements of Depleted Uranium Using Infrared Heat Gun | Refer to Operations Order No. OO-T1-09 Temperature Measurements of Depleted Uranium Using Infrared Heat Gun | Continuous |
| **NOTE: If the actions described in Operations Order No. OO-T1-09 are ineffective in reducing or stabilizing the temperature of the drum or drum contents, notify the Fire Department immediately.** | | | |