

HWMA/RCRA STORAGE and TREATMENT PERMIT
for the
MATERIALS AND FUELS COMPLEX (MFC)

ATTACHMENT 4

Section F-2 – Inspection Plan

Attachment F-3

Attachment F-4

Attachment F-5

Attachment F-6

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CONTENTS

F-2 Inspection Schedule [IDAPA 58.01.05.012 and 58.01.05.008; 40 CFR 270.14(b)(5) and 264.15] 1

F-2(a) General Inspection Requirements [IDAPA 58.01.05.012 and 58.01.05.008; 40 CFR 270.14(b)(5), 264.15(a), (b), (c), (d), and 264.33] 2

F-2(a)(1) Types of Problems [IDAPA 58.01.05.008; 40 CFR 264.15(b)(3)] 3

F-2(a)(2) Frequency of Inspections [IDAPA 58.01.05.008; 40 CFR 264.15(b)(4) and 264.195] 4

F-2(b) Specific Process Inspection Requirements 4

F-2(b)(1) Container Inspection (IDAPA 58.01.05.008; 40 CFR 264.174) 4

F-2(b)(1)(a) High Radiation Area Container Inspection 4

F-2(b)(1)(b) Hot Fuel Examination Facility Decontamination Cell Inspections 5

F-2(b)(2) Tank System Inspections (IDAPA 58.01.05.008; 40 CFR 264.195) 6

F-2(b)(2)(a) Certification for Major Tank Repairs [IDAPA 58.01.05.008; 40 CFR 264.196(f)] 6

F-2(b)(2)(b) Tank System External Corrosion and Releases [IDAPA 58.01.05.008; 40 CFR 264.195(c)(1)] 6

F-2(b)(2)(c) Tank System Construction Materials and Surrounding Area [IDAPA 58.01.05.008; 40 CFR 264.195(c)(2)] 6

F-2(b)(2)(d) Tank System Overfilling Control Equipment [IDAPA 58.01.05.008; 40 CFR 264.195(a)] 6

F-2(b)(2)(e) Tank System Monitoring and Leak Detection Equipment [IDAPA 58.01.05.008; 40 CFR 264.195(b)] 8

F-2(b)(3) Miscellaneous Unit Inspections (IDAPA 58.01.05.008; 40 CFR 264.602) ... 8

ATTACHMENTS

ATTACHMENT 4

- F-3. HWMA Unit Inspection Schedule
- F-4. Examples of HWMA Unit Inspection Forms and Preventative Maintenance Data Sheets
- F-5. Examples of RSWF Corrosion Surveillance Liner Assessment Statement-of-work and Inspection Report
- F-6. Example of RSWF Annual Grading and Landscaping Preventative Maintenance Model Work Order

F-2 Inspection Schedule [IDAPA 58.01.05.012 and 58.01.05.008; 40 CFR 270.14(b)(5) and 264.15]

The objective of performing regular MFC HWMA unit inspections, as required by IDAPA 58.01.05.008 and 40 CFR 264.15(a), is to detect and correct the malfunction or damage of safety and emergency equipment, the deterioration of containers, tanks, and miscellaneous units where HW/MW is stored, repackaged and/or treated, before there is any threat to human health or the environment. The HWMA unit inspection program, as described in the following subsections, provides the written documentation to meet this objective.

The overall HWMA unit inspection and preventative maintenance program consists of the following:

- Weekly container storage area inspections (when waste is present)
- Daily container process area inspections when processing containers
- Daily container transfer/receipt area inspections when transferring or receiving containers
- Weekly container storage RWSF staging/storage area and NFA inspections (when waste is present)
- Daily tank and tank storage/process area inspections (when waste is present or when processing)
- Weekly/quarterly/annual or multi-year miscellaneous unit inspections (when waste is present)
- Monthly/annual/safety and emergency equipment inspections (when waste is present)
- Quarterly/annual/safety and emergency equipment preventative maintenance (when waste is present)
- Monthly/annual miscellaneous unit preventative maintenance (when waste is present).

The HWMA unit inspection program is implemented by employees possessing the appropriate training.

Implementation of the HWMA unit inspection programs helps ensure the early detection of problems and also ensures corrective actions are immediately implemented. Attachment F-3 provides a detailed summary matrix of the HWMA unit inspection program, including details on the items to inspect, types of problems that may occur, the frequency of the inspections, MFC personnel responsible to conduct the inspections, the title of the document that outlines the inspection programs, and how the results of each inspection are recorded.

F-2(a) General Inspection Requirements [IDAPA 58.01.05.012 and 58.01.05.008; 40 CFR 270.14(b)(5), 264.15(a), (b), (c), (d), and 264.33]

Results of HWMA unit inspections conducted by HWMA unit personnel and/or support personnel are recorded on HWMA unit inspection logs. Examples of the various HWMA unit inspection logs are provided in Attachment F-4. The HWMA unit inspection logs are maintained at the facility as part of the HWMA unit operating record. The logs are designed to:

- Define the HWMA/RCRA-required inspection requirements for containers, tanks, and miscellaneous units to prevent, detect, or respond to human health or environmental hazards.
- Identify the various elements and types of problems anticipated, including equipment malfunctions, deterioration, damage, and accessibility.
- Specifically include the containers and tanks systems, associated containment and control systems, and other factors that, if failing or deficient, could result in the release of HW/MW.
- Document any deficiencies identified during an inspection and the remedial actions taken.

The HWMA unit inspection logs are maintained as a part of the HWMA unit operating record for at least three years.

Results of HWMA unit inspections conducted by HWMA unit personnel and/or support personnel are recorded as specified in the HWMA Unit Inspection Schedule provided in Attachment F-3.

In addition to the inspections, operational checks and preventative maintenance (PM) of equipment are conducted on a regular basis to ensure operability. PM work orders are developed, reviewed, scheduled and issued to qualified personnel responsible for maintaining and testing of the equipment. Typical PM activities performed include:

- Site emergency signals/alarms,
- Fire control equipment (e.g., fire extinguishers, fire alarm pullboxes),
- Universal spill control equipment
- Emergency shower/eyewash stations.

Any discrepancies or problems are noted in the PM work orders and corrective action is initiated and completed in accordance with the work control process. These facility communications or alarm systems, fire control equipment, spill control equipment and decontamination equipment (e.g., emergency shower/eyewash stations) are tested and maintained at regular frequencies as specified in the HWMA Unit Inspection Schedule provided in Attachment F-3.

The following subsections describe the structure of the inspection program, inspection schedule, and log sheets used to document results of HWMA unit inspections, and the corrective action process.

F-2(a)(1) Types of Problems [IDAPA 58.01.05.008; 40 CFR 264.15(b)(3)]

The types of container, tank, and miscellaneous storage and/or process unit problems that may be identified during a HWMA unit inspection are specified in the HWMA unit inspection schedule provided in Attachment F-3, and identified on the HWMA unit inspection logs provided in Attachment F-4. During any inspection, all items inspected that are noted as “unsatisfactory” on the inspection logs are identified as deficiencies. The HWMA unit manager, or designee, as part of the overall inspection process, is notified of any deficiencies, and verifies that they are satisfactorily corrected or are scheduled to be corrected. Corrective actions are described on the inspection log, as well as the date the corrective action was completed. Following resolution of the deficiency, the HWMA unit manager, or designee, reviews, signs, and dates the inspection log. The inspection log is maintained in the HWMA unit operating record.

F-2(a)(2) Frequency of Inspections [IDAPA 58.01.05.008; 40 CFR 264.15(b)(4) and 264.195]

HWMA unit inspections are performed by MFC HWMA unit and support personnel at the frequencies specified in Attachment F-3.

F-2(b) Specific Process Inspection Requirements

F-2(b)(1) Container Inspection (IDAPA 58.01.05.008; 40 CFR 264.174)

HWMA unit containers and container storage areas are inspected weekly when waste is present. Containers in process and container process areas (when processing) are inspected daily. Container transfer areas are inspected daily when containers are transferred into or out of the HWMA unit. Inspection results are documented on the HWMA unit inspection logs shown in Attachment F-4. All completed HWMA unit inspection logs are maintained as a part of the HWMA unit operating record for a minimum of three years.

F-2(b)(1)(a) High Radiation Area Container Inspection

There may be MW containers in the HWMA units that have radiation levels that exceed 100 mRem/hr at 1.0 ft. These containers are required to be stored in a high radiation area. Shielding may also be provided to maintain radiation levels in adjacent areas to acceptable levels. High radiation containers are seldom handled after placement in storage and are not likely to incur damage or deterioration. The containers are placed in the storage area in such a way that there is adequate spacing for inspections. Additional requirements must be met in order to enter a high radiation area, including an approved Job Specific Radiation Work Permit. In addition, MFC is required by 10 CFR 835, DOE Occupational Radiation Protection, to develop and maintain an effective Exposure Control Program implementing the as-low-as-reasonably-achievable (ALARA) principle for personnel radiation exposure. The key element of the Radiation Protection Guidance for Federal Agencies for Occupational Exposure is the following:

There should not be any occupational exposure of workers to ionizing radiation without the expectation of an overall benefit from the activity causing the exposure.

The high radiation area inspection protocol described in this section reduces personnel exposure to ionizing radiation compared to the exposure anticipated using the standard weekly inspection protocol. If high radiation levels on the waste in

storage prohibit MFC personnel from performing the standard inspection protocol, containers in the area will be set up and inspections will be performed as follows:

High Radiation Area *Setup*. Any new container placed into a high radiation area receives an inspection prior to placement, and the storage area is entered and inspected after the transfer. The containers are positioned in the storage area so that there is adequate spacing for inspections from the boundary of the high radiation area. If the configuration or size of a high radiation area does not allow for standard inspection from the boundary of the high radiation area, it will be noted in the operating record, so future inspections using the monthly inspection protocol may be instituted.

Weekly Inspections. Inspections of containers in high radiation areas are conducted from outside the high radiation area boundary from a vantage point(s) that allows visible surfaces to be checked for leaks, spills, and corrosion, and to ensure that the containers are closed and properly labeled.

The vantage point for cargo containers is from the open double doors, visually inspecting the containers and storage area from the door.

Monthly Inspections. If the configuration or size of the high radiation area does not allow for the standard inspection protocol, the area will be entered at least once each month by completing the required radiation work permits and entering the high radiation area to perform the container inspection in accordance with the standard inspection requirements. The inspector notes on the HWMA unit inspection log that the high radiation area was entered for inspection.

F-2(b)(1)(b) Hot Fuel Examination Facility Decontamination Cell Inspections

Due to severe radiological hazards present, remote-handled waste stored in the Hot Fuel Examination Facility (HFEF) shielded Decontamination Cell (DC) is not routinely accessible to personnel. Therefore, inspections must be performed through shielded cell windows. Containers used in the cell have been designed to ensure durability and compatibility with the waste and compatibility with in-cell waste handling equipment, while maintaining criticality safety controls. In addition, the waste in the container is free of liquids. Remote-handled MW containers are elevated above the floor to facilitate inspection and/or placed in racks/ports to support the containers in the cell, which prevents inspection of all surfaces of each container. Weekly inspections are performed to check container position and

condition. Inspections focus on visible surfaces to check for leaks, damage, and corrosion.

F-2(b)(2) Tank System Inspections (IDAPA 58.01.05.008; 40 CFR 264.195)

There is one HWMA unit addressed by the MFC HWMA/RCRA Permit Application that has tank storage and process areas: the Sodium Components Maintenance Shop (SCMS). The tanks and tank process areas in this unit are inspected daily when processing, or when waste is present, as identified in Attachment F-3. Inspection results are documented on the inspection logs shown in Attachment F-4. All completed HWMA unit inspection logs are maintained as a part of the HWMA unit operating record for a minimum of three years.

F-2(b)(2)(a) Certification for Major Tank Repairs [IDAPA 58.01.05.008; 40 CFR 264.196(f)]

Information regarding certification of major tank repairs is addressed in Attachment 7, Section G, Contingency Plan.

F-2(b)(2)(b) Tank System External Corrosion and Releases [IDAPA 58.01.05.008; 40 CFR 264.195(c)(1)]

The SCMS tank storage/process areas are inspected daily when processing, or when waste is present, to detect corrosion or release of HW/MW. Inspections are documented on the HWMA unit inspection logs provided in Attachment F-4.

F-2(b)(2)(c) Tank System Construction Materials and Surrounding Area [IDAPA 58.01.05.008; 40 CFR 264.195(c)(2)]

The SCMS tank storage/process areas are inspected daily when processing, or when waste is present, to detect material failure and release of HW/MW. Inspections are documented on the HWMA unit inspection logs provided in Attachment F-4.

F-2(b)(2)(d) Tank System Overfilling Control Equipment [IDAPA 58.01.05.008; 40 CFR 264.195(a)]

Controls and practices to prevent spills and overflows include process equipment design controls, operational administrative limits for tank filling, systems/component lockout/tagout, instrumentation that monitors for overfilling, monitoring performed by facility personnel on duty during operations, and daily

inspection of the tank's systems. Overfilling controls for the tank systems in SCMS are described below.

Water Wash System. When the water wash system is in operation, ignitable and reactive HW/MW is placed in a burn pan inside the water wash vessel (WWV), or is transferred through stainless-steel tubing from the melt, drain, and transfer system feed container into the burn pan inside the WWV. The WWV burn pan is administratively controlled to contain a maximum amount of ignitable and reactive HW/MW at any one time, but never to exceed 156 gallons/day. A detailed engineering evaluation is maintained in the facility operating record to document the maximum amount of ignitable and reactive HW/MW that can be treated in the WWV at any one time, and to determine safety and administrative limits. These limits are implemented through operating procedures to prevent over-pressurization of the WWV.

The feed container sits on a load cell, which allows the weight of the HW/MW transferred to the WWV to be monitored. Water and/or hydroxide solutions used or resulting from the deactivation of the ignitable and reactive HW/MW are gravity-drained to the scrubber water tank through a 2-inch drain line from the center bottom head of the vessel. The maximum operating water volume in the WWV is administratively controlled at 90 gallons. Operating procedures and manual valve controls ensure this limit is not exceeded. The WWV is emptied after each use or at the end of each operating day.

Scrubber Water System. When the scrubber water system is in operation, make-up to the scrubber water tank (service water or hydroxide solution from the WWV) is monitored and controlled by three separate level probes for level control, indication, and high-level alarm. The level control probe has two setpoints that feed a level control switch. At the low setpoint, the switch opens a solenoid valve in the service water supply line to the tank. When water reaches the high level setpoint, the switch closes the solenoid valve, shutting off makeup flow to the tank. The level indicator probe generates a linear signal to feed a meter (calibrated from 0–100%) on the High Bay instrumentation and control (I&C) panel. The alarm probe closes a switch on tank high level to actuate an alarm on the High Bay I&C alarm panel. A reading on the local level indicator for the scrubber water tank is required every half-hour during HW/MW processing.

Carbonation System. When the carbonation system is in operation, hydroxide solution from the scrubber water tank flows into the conical bottom of the carbonation vessel, filling the carbonation vessel. The vessel level is maintained at the outlet line location on the side of the vessel as the solution flows back to the scrubber water tank. Level indication is provided by the sight tube connected to the vessel outlet on the side of the vessel. A freeboard area is maintained in the vessel above the outlet line. This freeboard area is vented to the water wash venturi scrubber, so any vessel overflow would flow through the vent line and return to the scrubber water tank.

F-2(b)(2)(e) Tank System Monitoring and Leak Detection Equipment [IDAPA 58.01.05.008; 40 CFR 264.195(b)]

When in operation, daily inspection of the SCMS tank systems is performed by HWMA unit personnel as described in Attachment F-3. Monitor readings are recorded during processing operations as part of the operating requirements for SCMS treatment systems and are documented in the SCMS operating record.

F-2(b)(3) Miscellaneous Unit Inspections (IDAPA 58.01.05.008; 40 CFR 264.602)

The proper operation of the RSWF cathodic protection system is assured through a combination of inspections and a monitoring or preventative maintenance program. The inspections ensure that the cathodic protection system is operating, and the monitoring or preventative maintenance program evaluates the effectiveness of the system. The inspection and preventative maintenance schedule and methods were developed based on the recommendations of the National Association of Corrosion Engineers (NACE) Standard, IDAPA 58.01.05.08, 40 CFR 264 tank regulations, and the recommendations of the system designers. The monitoring program was devised to detect any potential inadequacies in the facility design that could lead to a loss of waste containment.

Inspections. The miscellaneous HWMA unit, RSWF, is inspected as identified in Attachment F-3. Inspection results are documented on the inspection logs as shown in Attachment F-4. All completed HWMA unit inspection logs are maintained as a part of the HWMA unit operating record for at least three years.

The inspection items for the RSWF unit represent “sat/unsat” inspection criteria and are as follows:

- Fence and Gates – damage is an “unsat” condition
- Cathodic protection rectifier lights – lights off is an “unsat” condition
- Radiation monitoring tubes – elevated radiation reading is an “unsat” condition
- Exposed portion of liners – visible cracks, corrosion is an “unsat” condition
- Empty pulled liner – corrosion is an “unsat” condition.

To perform the empty pulled liner inspection, one corrosion surveillance liner (i.e., one of the designated empty standard 16-in. surrogate liners in Row Z, PP, QQ, RR, or SS) is pulled and inspected at least every six years to monitor the effectiveness of the cathodic protection system. The inspection, performed by an independent corrosion engineer, includes a visual surface inspection and contact ultrasonic thickness measurements every one inch of the entire liner length at 45-degree intervals. Depth measurements are performed at areas of localized corrosion, as required. The evaluation also includes a review of relevant facility documents and monthly and annual surveillance reports. The corrosion assessment report, provided to the Idaho Department of Environmental Quality (DEQ), summarizes the results of the inspection, the overall effectiveness of the cathodic protection system, and a revised liner pull inspection schedule, if warranted. Examples of the statement-of-work document and the most recent corrosion surveillance liner assessment report are included in Attachment F-5.

Operational Checks and Preventative Maintenance. Monthly and annual operational checks and preventative maintenance of the cathodic protection system are performed. Rectifier efficiency is evaluated monthly, and the liner-to-soil potentials of all liners and rectifier wiring integrity are assessed annually. Rectifier efficiency is an indication of operability that is calculated from field readings typically obtained from a watt-hour meter. Engineering assesses the resulting efficiencies and recommends adjustments or maintenance for those rectifiers, as necessary, to maintain adequate impressed current on each liner.

For the annual operational and preventative maintenance testing, qualified electricians collect liner-to-soil potential readings for each liner over a period of several days/weeks. Liners that do not meet the cathodic protection action level liner-to-soil potential of at least -0.85 volts-direct-current are evaluated further by Engineering to determine whether each liner is adequately protected from corrosion [e.g., a liner-to-soil potential greater (i.e., less negative) than -0.85

volts-direct-current does not mean that the cathodic protection system is not operating, but does indicate that operational adjustments or preventative maintenance is required]. Maintenance activities that restore or increase cathodic protection levels to the action level include rectifier adjustments, repair of anode bed wiring, and replacement of depleted anodes. The annual maintenance also includes a check of rectifier wiring integrity, during which warm connections within the rectifier cabinets are tightened, or dismantled, cleaned, and retightened. All adjustments and repairs made during and as a result of operations and preventative maintenance are conducted in accordance with the current work control process.

Surface maintenance requirements are performed to prevent and correct soil erosion and allow drainage from RSWF. A visual site inspection is performed in the spring (following the winter thaw) to determine that water is adequately drained from the facility (additional inspections are performed following periods of inclement weather). In accordance with standing directive SD-57.1.1, *RSWF Administrative Requirements*, culverts are visually inspected weekly for sediment accumulation in the culvert and adequate drainage for water runoff. Culverts are cleaned when necessary. The cleaning of the drainage ditches and culverts is also performed no less than semi-annually to allow proper drainage, per a scheduled maintenance activity as identified in Attachment F-3. This includes:

- Cleaning the ditches and culverts in RSWF of weeds, debris, and soil buildup as directed by Operations personnel.
- Using a water truck to flush water into each drain basin located between the concrete rows inside RSWF. When all drains flow freely, flush water through the large drain basins at the East and West ends of RSWF to ensure sediment/debris has been rinsed from the culverts.

In accordance with standing directive SD-57.1.1, *RSWF Administrative Requirements*, soil erosion is identified by routine visual inspections of the berm and perimeter fence line performed weekly (or after periods of inclement weather), looking for eroded banks or cracks in the soil. A service request is submitted for any needed grading or ground maintenance. Material Services personnel will perform grading and landscaping activities as required, but no less than annually, per a scheduled maintenance activity as noted in Attachment F-3. The grading and landscaping is conducted using heavy equipment and laborers to correct erosion and ensure adequate draining from the facility. An example of the preventative

maintenance model work order used to perform the annual grading and landscaping work is included in Attachment F-6.

Vegetation growth is controlled by regularly scheduled maintenance for weed control and ground sterilization.

If any deficiencies are noted, facility management is informed immediately to remedy drainage and erosion concerns to berms, grading, fencing or culverts. A standing work order process ensures resources are scheduled to correct noted deficiencies in a timely manner.

Attachment F-3

HWMA Unit Inspection Schedule

Materials and Fuels Complex Hazardous Waste Management Area (HWMA) Unit Inspection Schedule

Item to Inspect	Types of Problems	Inspection Frequency	Inspection Responsibility	Implementing Document	Record Method
Weekly Container Storage and Daily Container Process Area and Transfer Area Inspections					
Telephones	Malfunctioning, damaged	Weekly ¹	Inspector	HWMA Unit Procedure	HWMA Inspection Log
Labels-hazardous/barcode/indication of the hazards	Missing, damaged, not legible	Weekly ¹	Inspector	HWMA Unit Procedure	HWMA Inspection Log
Container condition	Deterioration, leaking	Weekly ¹	Inspector	HWMA Unit Procedure	HWMA Inspection Log
Container position	Tipped, lid not secure, not elevated	Weekly ¹	Inspector	HWMA Unit Procedure	HWMA Inspection Log
Secondary containment-spill pallets	Cracked, leaking, liquid present	Weekly ¹	Inspector	HWMA Unit Procedure	HWMA Inspection Log
Floor coating-secondary containment	Cracked, chipped, lifting	Weekly ¹	Inspector	HWMA Unit Procedure	HWMA Inspection Log
Aisle space	< 3ft for ingress/egress	Weekly ¹	Inspector	HWMA Unit Procedure	HWMA Inspection Log
Transfer/staging areas	Evidence of releases	Per transfer	Inspector	HWMA Unit Procedure	HWMA Inspection Log
Weekly Container Storage RSWF Staging/Storage Area and North Fenced Area Inspections					
Radios or cell phones ³	Malfunctioning	Weekly ¹	Inspector	HWMA Unit Procedure	HWMA Inspection Log
Labels-hazardous/barcode/indication of the hazards	Missing, damaged, not legible	Weekly ¹	Inspector	HWMA Unit Procedure	HWMA Inspection Log
Container condition	Deterioration	Weekly ¹	Inspector	HWMA Unit Procedure	HWMA Inspection Log
Container position	Lid not secure, not elevated, stacking of containers	Weekly ¹	Inspector	HWMA Unit Procedure	HWMA Inspection Log
Aisle space	< 3ft for ingress/egress, < 3 ft aisle space down rows of containers	Weekly ¹	Inspector	HWMA Unit Procedure	HWMA Inspection Log
Aisle space within cargo container	Containers not centered along the long axis of the cargo container	Weekly ¹	Inspector	HWMA Unit Procedure	HWMA Inspection Log
Fence and gates, signage	Damaged, unlocked, missing signage	Weekly ¹	Inspector	HWMA Unit Procedure	HWMA Inspection Log

Materials and Fuels Complex Hazardous Waste Management Area (HWMA) Unit Inspection Schedule

Item to Inspect	Types of Problems	Inspection Frequency	Inspection Responsibility	Implementing Document	Record Method
Loading/Unloading Operations	Evidence of releases	Daily when in use	Inspector	HWMA Unit Procedure	HWMA Inspection Log
Daily Tank/Tank Area Inspections					
Tank/tank system piping	Leaking, deterioration	Daily ¹	Inspector	HWMA Unit Procedure	HWMA Inspection Log
Tank/tank system containment	Gaps, cracks, leaks, liquids	Daily ¹	Inspector	HWMA Unit Procedure	HWMA Inspection Log
Tank monitoring equipment	Off-normal readings	Daily ¹	Inspector	HWMA Unit Procedure	HWMA Inspection Log
Floor coating-secondary containment	Cracks, chips, lifting	Daily ¹	Inspector	HWMA Unit Procedure	HWMA Inspection Log
Miscellaneous Unit Inspection					
Fence and gates	Damaged	Weekly	Inspector	HWMA Unit Procedure	HWMA Inspection Log
Cathodic protection rectifier lights	Lights off	Weekly	Inspector	HWMA Unit Procedure	HWMA Inspection Log
Radiation monitoring tubes	Elevated radiation readings	Annually	Inspector	HWMA Unit Procedure	HWMA Inspection Log
Exposed portion of liners	Cracks, corrosion ² , deterioration	Quarterly	Inspector	HWMA Unit Procedure	HWMA Inspection Log
Radiation readings	Elevated radiation readings	Annually	Inspector	HWMA Unit Procedure	HWMA Inspection Log
Empty pulled liner	Corrosion	6 year basis	Inspector	HWMA Unit Procedure	HWMA Operating Record

MFC HWMA Unit Inspection Schedule (continued)

Item to Inspect	Types of Problems	Inspection Frequency	Inspection Responsibility	Implementing Document	Record Method
Monthly Hazard and Emergency Equipment Inspections					
Danger Unauthorized Personnel Keep Out sign(s) on access door(s)/gates	Missing, damaged, not legible	Monthly	Inspector	HWMA Unit Procedure	HWMA Inspection Log
Fire extinguishers	Missing, inaccessible	Monthly	Inspector	HWMA Unit Procedure	HWMA Inspection Log
Fire alarm pullboxes	Inaccessible	Monthly	Inspector	HWMA Unit Procedure	HWMA Inspection Log
Emergency showers/eye wash stations (facility specific)	Missing, inaccessible, inoperable	Monthly	Inspector	HWMA Unit Procedure	HWMA Inspection Logs
Spill control equipment (facility specific)	Missing, inaccessible	Monthly	Inspector	HWMA Unit Procedure	HWMA Inspection Log

1. For containers when waste is present and for tank systems when waste is present or every day the tank is in operation (i.e., storing or treating hazardous waste). If the tank and all associated ancillary equipment are completely emptied by gravity draining, the tank system is considered not in operation, and daily inspections will not be required.
2. Corrosion is defined as visual signs of pitting and/or flaking.
3. Emergency equipment will not be kept on-site at the container storage areas and the emergency responders will be called who will have the proper equipment for response.

HWMA Unit Operational Checks and Preventative Maintenance Activities

Item to Test	Types of Problems	Frequency	Responsibility	Implementing Document	Record Method
Fire extinguishers ¹	Unsatisfactory per LSS Personnel	Quarterly	LSS Personnel	LSS Procedure	LSS Data Management
Fire alarm pullboxes	Malfunctioning	Annually	LSS Personnel	LSS Procedure	LSS Data Management
Emergency showers/eye wash stations	Malfunctioning	Annually	Maintenance and Ops Personnel	PM Schedule/HWMA Unit Procedure	Operating record
Site emergency signals/alarms/notifications	Malfunctioning	Annually	Maintenance or Ops Personnel	PM Schedule/HWMA Unit Procedure	Operating record
RSWF Cathodic protection system — Rectifier efficiency	Unsatisfactory per Engineering	Monthly	Maintenance personnel	PM Schedule	Operating record
RSWF Cathodic protection system — Liner-to-soil potentials — Rectifier wiring integrity	Unsatisfactory per Engineering	Annually	Maintenance personnel	PM Schedule	Operating record
Universal Spill control equipment (HFEF, SCMS)	Verify contents have not degraded and are useable	Annually	Ops personnel	HWMA Unit Procedure	Operating record
RSWF Culvert Cleaning	Unsatisfactory per Operations	Semi-Annual	Maintenance personnel	PM Schedule/HWMA Unit Procedure	Operating record
RSWF Erosion Repair	Unsatisfactory per Operations	Annually	Maintenance personnel	PM Schedule/HWMA Unit Procedure	Operating record

1) Inspection of fire extinguishers is conducted by Life Safety Systems (LSS) in accordance with the National Fire Protection Standards (NFPA) and the Authority Having Jurisdiction (AHJ) approved fire protection equivalency.

Attachment F-4

Examples of HWMA Unit Inspection Forms
and Preventative Maintenance Data Sheets

PERMIT RELATED
RADIOACTIVE SCRAP AND WASTE FACILITY (RSWF) STAGING/STORAGE AREA
WEEKLY INSPECTION FORM
(Instructions on Page 3)

COMPLETION			
TSD Technician: (Please Print Full Name)		Date:	
		Time:	
INSPECTION			
<input type="checkbox"/> Mixed waste not present, inspection for items 1-12 not required.			
<input type="checkbox"/> Weekly (during normal container - storage operations).			
<input type="checkbox"/> Weekly (during storage of containers in HRA, inspection from outside the HRA).			
<input type="checkbox"/> Monthly HRA inspection from within the HRA (if all items listed below are not visible for inspection).			
Item	Results		
1. Cell phone or radio is working.	<input type="checkbox"/> Sat	<input type="checkbox"/> Unsat	<input type="checkbox"/> N/A
2. "Danger-Unauthorized Personnel Keep Out" and "No Smoking" signs on gates are present and legible.	<input type="checkbox"/> Sat	<input type="checkbox"/> Unsat	<input type="checkbox"/> N/A
3. Barrier fence in good condition.	<input type="checkbox"/> Sat	<input type="checkbox"/> Unsat	<input type="checkbox"/> N/A
4. Gates are in good condition and locked.	<input type="checkbox"/> Sat	<input type="checkbox"/> Unsat	<input type="checkbox"/> N/A
5. Hazardous waste, including hazard content and barcode labels are in place, legible, and not damaged	<input type="checkbox"/> Sat	<input type="checkbox"/> Unsat	<input type="checkbox"/> N/A
6. Container Position: elevated (except for ISCs), securely closed and no stacking of containers. ¹	<input type="checkbox"/> Sat	<input type="checkbox"/> Unsat	<input type="checkbox"/> N/A
7. Container condition is good, no evidence of deterioration caused by corrosion pitting, rusting, dents, or swelling.	<input type="checkbox"/> Sat	<input type="checkbox"/> Unsat	<input type="checkbox"/> N/A
8. An aisle space of at least 3 ft for ingress and egress for emergency response.	<input type="checkbox"/> Sat	<input type="checkbox"/> Unsat	<input type="checkbox"/> N/A
9. An aisle space of at least 3 ft down rows of containers located on the pad.	<input type="checkbox"/> Sat	<input type="checkbox"/> Unsat	<input type="checkbox"/> N/A
10. Adequate spacing is maintained for visual inspection between containers stored on the pad.	<input type="checkbox"/> Sat	<input type="checkbox"/> Unsat	<input type="checkbox"/> N/A
11. Containers are centered along the long axis within cargo containers.	<input type="checkbox"/> Sat	<input type="checkbox"/> Unsat	<input type="checkbox"/> N/A
12. Adequate spacing is maintained for visual inspection between containers within cargo containers.	<input type="checkbox"/> Sat	<input type="checkbox"/> Unsat	<input type="checkbox"/> N/A
DEFICIENCIES AND CORRECTIVE ACTIONS			
Deficiency Description	Corrective Action		
	Description	Completion Date	
Previously Identified <input type="checkbox"/> Yes <input type="checkbox"/> No	Scheduled <input type="checkbox"/> Yes <input type="checkbox"/> No		

PERMIT RELATED
RADIOACTIVE SCRAP AND WASTE FACILITY (RSWF) STAGING/STORAGE AREA
WEEKLY INSPECTION FORM
(Instructions on Page 3)

REVIEW			
TSD Shift Supervisor (TSD SS)/Designee:		Date:	
1. If pooling/puddling is identified around container(s), container(s) will be relocated.			

Comments _____

**PERMIT RELATED
RADIOACTIVE SCRAP AND WASTE FACILITY (RSWF) STAGING/STORAGE AREA
WEEKLY INSPECTION FORM**

INSTRUCTIONS

- [1] **TSD Technician**—Perform the following:
- [a] Prior to performing the inspection, review the RCRA Remedial Description Log (located in the TSD Shift Supervisor’s Office).
 - [b] If open deficiencies are identified on the RCRA Remedial Description Log, record the associated tracking number on this and subsequent inspection logs until the corrective action has been completed.
 - [c] Prior to performing inspection verify cell phone or radio works. Document operability on Item No. 1.
 - [d] Print your name and record the date and the time.
 - [e] Perform inspections of the general area weekly. If an area is designated as a High Radiation Area (HRA) perform inspection from a vantage point outside the HRA. For cargo containers the vantage point is from the open double doors. Perform an inspection of the HRA monthly if a thorough inspection cannot be performed from outside the HRA.
 - [f] Complete the “Inspection Requirements” checklist for each requirement by marking ✓
Sat=satisfactory, **Unsat**=unsatisfactory or **N/A**=Not Applicable.
 - [g] If you are able to take immediate corrective action; record the deficiency, correct the deficiency, mark **Sat**; and describe the corrective action taken (e.g., replaced sign).
 - [h] If you are not able to take immediate action, mark **Unsat**, describe the deficiency, and immediately contact the TSD SS/Designee or TSD Manager.
 - [i] Place the completed log in the designated location for the TSD SS/Designee to review.
- [2] **TSD SS/Designee**—Perform the following:
- [a] Record that the inspection was performed on the RCRA Inspection Tracking Index.
 - [b] Review the log, and facility, if necessary, to ensure that the inspection and any immediate corrective actions have been satisfactorily completed. Sign and date the log and file it in the designated area.
 - [c] Record on the RCRA Inspection Tracking Index if the deficiency was satisfactorily corrected immediately or is still outstanding. Assign a tracking number (for example, TSD-06-001) to the unresolved deficiency and record a detailed description of the deficiency on the RCRA Remedial Description Log.
 - [d] When deficiencies have been corrected, enter the corrective action taken and completion date on the original inspection form(s) and complete the entries for the deficiencies on the RCRA Inspection Tracking Index and the RCRA Remedial Description Log.

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**PERMIT RELATED
NORTH FENCED AREA (NFA) WEEKLY INSPECTION FORM**
(Instructions on Page 3)

COMPLETION					
TSD Technician: (Please Print Full Name)		Date:		Time:	
INSPECTION					
<input type="checkbox"/> Mixed waste not present, inspection for items 1-12 not required.					
<input type="checkbox"/> Weekly (during normal container - storage operations).					
<input type="checkbox"/> Weekly (during storage of containers in HRA, inspection from outside the HRA).					
<input type="checkbox"/> Monthly HRA inspection from within the HRA (if all items listed below are not visible for inspection).					
Item			Results		
1. Cell phones or radio is working.			<input type="checkbox"/> Sat	<input type="checkbox"/> Unsat	<input type="checkbox"/> N/A
2. "Danger-Unauthorized Personnel Keep Out" and "No Smoking" signs on gates are present and legible.			<input type="checkbox"/> Sat	<input type="checkbox"/> Unsat	<input type="checkbox"/> N/A
3. Barrier fence in good condition.			<input type="checkbox"/> Sat	<input type="checkbox"/> Unsat	<input type="checkbox"/> N/A
4. Gates are in good condition and locked.			<input type="checkbox"/> Sat	<input type="checkbox"/> Unsat	<input type="checkbox"/> N/A
5. Hazardous waste, including hazard content and barcode labels are in place, legible, and not damaged			<input type="checkbox"/> Sat	<input type="checkbox"/> Unsat	<input type="checkbox"/> N/A
6. Container Position: elevated (except for ISCs), securely closed and no stacking of containers. ⁽¹⁾			<input type="checkbox"/> Sat	<input type="checkbox"/> Unsat	<input type="checkbox"/> N/A
7. Container condition is good, no evidence of deterioration caused by corrosion pitting, rusting, dents, or swelling.			<input type="checkbox"/> Sat	<input type="checkbox"/> Unsat	<input type="checkbox"/> N/A
8. An aisle space of at least 3 ft for ingress and egress for emergency response.			<input type="checkbox"/> Sat	<input type="checkbox"/> Unsat	<input type="checkbox"/> N/A
9. An aisle space of at least 3 ft down rows of containers located on the pad.			<input type="checkbox"/> Sat	<input type="checkbox"/> Unsat	<input type="checkbox"/> N/A
10. Adequate spacing is maintained for visual inspection between containers stored on the pad.			<input type="checkbox"/> Sat	<input type="checkbox"/> Unsat	<input type="checkbox"/> N/A
11. Containers are centered along the long axes within cargo containers.			<input type="checkbox"/> Sat	<input type="checkbox"/> Unsat	<input type="checkbox"/> N/A
12. Adequate spacing is maintained for visual inspection between containers within cargo containers.			<input type="checkbox"/> Sat	<input type="checkbox"/> Unsat	<input type="checkbox"/> N/A
DEFICIENCIES AND CORRECTIVE ACTIONS					
Deficiency Description	Corrective Action				
	Description				Completion Date
Previously Identified <input type="checkbox"/> Yes <input type="checkbox"/> No	Scheduled <input type="checkbox"/> Yes <input type="checkbox"/> No				

**PERMIT RELATED
NORTH FENCED AREA (NFA) WEEKLY INSPECTION FORM**

INSTRUCTIONS

- [1] **TSD Technician**—Perform the following:
- [a] Prior to performing the inspection, review the RCRA Remedial Description Log (located in the TSD Shift Supervisor’s Office).
 - [b] If open deficiencies are identified on the RCRA Remedial Description Log, record the associated tracking number on this and subsequent inspection logs until the corrective action has been completed.
 - [c] Prior to performing inspection verify cell phone or radio works. Document operability on Item #1.
 - [d] Print your name and record the date and the time.
 - [e] Perform inspections of the general area weekly. If an area is designated as a High Radiation Area (HRA) perform inspection from a vantage point outside the HRA. For cargo containers the vantage point is from the open double doors. Perform an inspection of the HRA monthly if a thorough inspection cannot be performed from outside the HRA.
 - [f] Complete the “Inspection Requirements” checklist for each requirement by marking ✓
Sat=satisfactory, Unsat=unsatisfactory or N/A=Not Applicable.
 - [g] If you are able to take immediate corrective action; record the deficiency, correct the deficiency, mark Sat; and describe the corrective action taken (e.g., replaced sign).
 - [h] If you are not able to take immediate action, mark Unsat, describe the deficiency, and immediately contact the TSD SS/Designee or TSD Manager.
 - [i] Place the completed log in the designated location for the TSD SS/Designee to review.
- [2] **TSD SS/Designee**—Perform the following:
- [a] Record that the inspection was performed on the RCRA Inspection Tracking Index.
 - [b] Review the log, and facility, if necessary, to ensure that the inspection and any immediate corrective actions have been satisfactorily completed. Sign and date the log and file it in the designated area.
 - [c] Record on the RCRA Inspection Tracking Index if the deficiency was satisfactorily corrected immediately or is still outstanding. Assign a tracking number (for example, TSD-06-001) to the unresolved deficiency and record a detailed description of the deficiency on the RCRA Remedial Description Log.
 - [d] When deficiencies have been corrected, enter the corrective action taken and completion date on the original inspection form(s) and complete the entries for the deficiencies on the RCRA Inspection Tracking Index and the RCRA Remedial Description Log.

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**PERMIT RELATED
ALL CONTAINER STORAGE FACILITIES DAILY CONTAINER TRANSFER
INSPECTION FORM**
(Instructions on Page 2)

Section I: Facility from:		Facility to:			
TSD Inspector: (Please Print Full Name)		Date:		Time:	
CONTAINERS TRANSFERRED					
Bar Code No.	Type		Bar Code No.	Type	
	In	Out		In	Out
INSPECTION/DOCUMENTATION					
Item		Acceptance Criteria		Results	
Section II: INSPECTION/DOCUMENTATION – PRE-TRANSFER					
1. Container(s) structural integrity		No leaks, spills, and/or deterioration caused by corrosion or other factors; no missing or improperly sealed lids or other openings		<input type="checkbox"/> Sat <input type="checkbox"/> Unsat	
2. Container labeling (i.e., hazardous waste label including hazard content ¹ and barcode)		Affixed and legible		<input type="checkbox"/> Sat <input type="checkbox"/> Unsat	
Section III: ITEM DESCRIPTION/DOCUMENTATION – POST-TRANSFER					
1. Transfer area		Area cleared; no indication of leaks.		<input type="checkbox"/> Sat <input type="checkbox"/> Unsat <input type="checkbox"/> N/A	
2. Container(s) structural integrity		No leaks, spills, and/or deterioration caused by the transfer.		<input type="checkbox"/> Sat <input type="checkbox"/> Unsat <input type="checkbox"/> N/A	
3. Container position		Elevated and on/in secondary containment if there is liquid in the container.		<input type="checkbox"/> Sat <input type="checkbox"/> Unsat <input type="checkbox"/> N/A	
4. Aisle width		Three feet for ingress and egress maintained.		<input type="checkbox"/> Sat <input type="checkbox"/> Unsat <input type="checkbox"/> N/A	
5. Container labeling (i.e., hazardous waste label, including hazard content ¹ and barcode)		Affixed and legible.		<input type="checkbox"/> Sat <input type="checkbox"/> Unsat <input type="checkbox"/> N/A	
DEFICIENCIES					
Deficiency Description		Corrective Action			
		Description		Completion Date	
<input type="checkbox"/> N/A		<input type="checkbox"/> N/A			
REVIEW					
TSD Shift Supervisor (TSD SS)/Designee:		Date:			

¹ Hazard content classification (i.e., ignitable, reactive, corrosive and toxic) label is identified on container.

**HOT FUELS EXAMINATION FACILITY (HFEF) (785) DAILY/WEEKLY INSPECTION FORM
HWMA UNIT INSPECTION OF CONTAINERS & CONTAINER STORAGE/PROCESS AREAS
PERMIT RELATED
(Instructions on page 4)**

Record Tracking No. from RCRA Remedial Log if open deficiency, otherwise mark none.									
TSD Inspector: (Please Print First and Last Name)					Date:		Time:		
INSPECTION TYPE									
<input type="checkbox"/> Daily ¹ (prior to container processing/treatment operations).									
<input type="checkbox"/> Weekly (during normal container – storage operations or cask staging area when in use).									
INSPECTION									
Item	Results								
	Decon Cell	Spray Chamber	Decon Cell Storage Pits	Hot Repair Area	High Bay Area and Mezzanine	Waste Charac. Chamber	Transfer Room	Prep Room	Cask Staging Area ²
Mixed waste not present, mark N/A. No inspection is required for items 1-7.	<input type="checkbox"/> N/A	<input type="checkbox"/> N/A	<input type="checkbox"/> N/A	<input type="checkbox"/> N/A	<input type="checkbox"/> N/A	<input type="checkbox"/> N/A	<input type="checkbox"/> N/A	<input type="checkbox"/> N/A	<input type="checkbox"/> N/A
1. Hazardous waste, including hazard content and barcode labels or other unique identifier are in place, legible, and not damaged. ³	Window 5D <input type="checkbox"/> Sat <input type="checkbox"/> Unsat	Window 6D <input type="checkbox"/> Sat <input type="checkbox"/> Unsat	Window 3D <input type="checkbox"/> Sat <input type="checkbox"/> Unsat	<input type="checkbox"/> Sat <input type="checkbox"/> Unsat	<input type="checkbox"/> Sat <input type="checkbox"/> Unsat	<input type="checkbox"/> Sat <input type="checkbox"/> Unsat <input type="checkbox"/> N/A	<input type="checkbox"/> Sat <input type="checkbox"/> Unsat	<input type="checkbox"/> Sat <input type="checkbox"/> Unsat	<input type="checkbox"/> Sat <input type="checkbox"/> Unsat
2. Container position: upright, elevated ⁴ , and lids/covers secured (unless in process). ^{5,6}	<input type="checkbox"/> Sat <input type="checkbox"/> Unsat	<input type="checkbox"/> Sat <input type="checkbox"/> Unsat	<input type="checkbox"/> Sat <input type="checkbox"/> Unsat <input type="checkbox"/> N/A	<input type="checkbox"/> Sat <input type="checkbox"/> Unsat	<input type="checkbox"/> Sat <input type="checkbox"/> Unsat				
3. Containers /cask condition: intact with no evidence of leaks or deterioration caused by corrosion, pitting, rusting, dents, or swelling. ⁷	<input type="checkbox"/> Sat <input type="checkbox"/> Unsat	<input type="checkbox"/> Sat <input type="checkbox"/> Unsat	<input type="checkbox"/> Sat <input type="checkbox"/> Unsat <input type="checkbox"/> N/A	<input type="checkbox"/> Sat <input type="checkbox"/> Unsat	<input type="checkbox"/> Sat <input type="checkbox"/> Unsat	<input type="checkbox"/> Sat <input type="checkbox"/> Unsat			
4. Visually verify drain cover (for SC)/plug (for PR)/plug for shielded container is installed. ⁸		<input type="checkbox"/> Sat <input type="checkbox"/> Unsat		<input type="checkbox"/> Sat <input type="checkbox"/> Unsat <input type="checkbox"/> N/A				<input type="checkbox"/> Sat <input type="checkbox"/> Unsat	
5. Visually verify drain isolation valve (DD-HOV-341) is shut. Located on 2 nd floor N. corridor, overhead and across from Rm 209.								<input type="checkbox"/> Sat <input type="checkbox"/> Unsat	
6. Secondary containment (includes portable when used): no gaps, cracks, leaks, or liquids. ⁹				<input type="checkbox"/> Sat <input type="checkbox"/> Unsat <input type="checkbox"/> N/A	<input type="checkbox"/> Sat <input type="checkbox"/> Unsat <input type="checkbox"/> N/A	<input type="checkbox"/> Sat <input type="checkbox"/> Unsat	<input type="checkbox"/> Sat <input type="checkbox"/> Unsat <input type="checkbox"/> N/A	<input type="checkbox"/> Sat <input type="checkbox"/> Unsat <input type="checkbox"/> N/A	
7. An aisle maintained at least 3 ft for ingress and egress.				<input type="checkbox"/> Sat <input type="checkbox"/> Unsat	<input type="checkbox"/> Sat <input type="checkbox"/> Unsat		<input type="checkbox"/> Sat <input type="checkbox"/> Unsat	<input type="checkbox"/> Sat <input type="checkbox"/> Unsat	

HOT FUELS EXAMINATION FACILITY (HFEF) (785) DAILY/WEEKLY INSPECTION FORM
HWMA UNIT INSPECTION OF CONTAINERS & CONTAINER STORAGE/PROCESS AREAS
PERMIT RELATED
 (Instructions on page 4)

EMERGENCY EQUIPMENT INSPECTION										
Item	Results									
	Decon Cell	Spray Chamber	Decon Cell Storage Pits	Hot Repair Area	High Bay Area and Mezzanine	Waste Charac. Chamber	Transfer Room	Prep Room	Truck Transfer Area ¹⁰	Cask Staging Area ²
8. Telephone is working and accessible.	Window 1D: <input type="checkbox"/> Sat <input type="checkbox"/> Unsat		Window 3D: <input type="checkbox"/> Sat <input type="checkbox"/> Unsat	Room 304: <input type="checkbox"/> Sat <input type="checkbox"/> Unsat	HRA Window <input type="checkbox"/> Sat <input type="checkbox"/> Unsat	<input type="checkbox"/> Sat <input type="checkbox"/> Unsat				
DEFICIENCIES AND CORRECTIVE ACTIONS										
Deficiency Description				Corrective Action						
				Description				Completion Date		
Previously Identified <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A				Scheduled <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A						

**HOT FUELS EXAMINATION FACILITY (HFEF) (785) DAILY/WEEKLY INSPECTION FORM
HWMA UNIT INSPECTION OF CONTAINERS & CONTAINER STORAGE/PROCESS AREAS
PERMIT RELATED
(Instructions on page 4)**

REVIEW	
Facility Manager or Designee:	Date:
<ol style="list-style-type: none"> 1. Daily inspections are required prior to mixed waste container processing/treatment operations in the Decon Cell (DC), Spray Chamber (SC), Hot Repair Area (HRA), Waste Characterization Chamber (WCC), and the Transfer Room (TR). Processing is defined as opening and removing waste from primary container. Treatment activities at HFEF are considered to be: verification, repackaging, absorption of free liquids, neutralization, and solidification. 2. The cask or transporter staging area is located north of HFEF facility and south of the access road. Casks may be staged up to 60 days prior to either unloading or shipment. The cask area is inspected weekly when in use. 3. Remote handled mixed waste containers stored in DC, SC, or DC storage pits are tracked using ID numbers and log entry. Hazard content includes labeling (i.e., ignitable, reactive, corrosive, and toxic) on containers. 4. Containers with or without liquids are required to be elevated to prevent contact with accumulated liquid, except for containers in DC storage pits. 5. Containers containing solids only, such as the remote-handled mixed waste (RHMW) container stored in the decontamination cell, are considered closed (secured) as long as there is complete contact between the lid and rim all around the top of the container. This is per Environmental Protection Agency (EPA) guidance. Containers with open top lids containing liquids are considered closed if the lid cover is secured with a ring and bolts to prevent the release of organics or to prevent a spill if container is tipped over. Containers with bungholes should have bungholes securely fastened. 6. In process is defined as, performing verification, repackaging, and absorption of free liquids, neutralization, and solidification. Containers can be opened and placed on the floor when in process. 7. Aisle space shall be maintained around containers to perform inspection. Only visible surfaces of containers are required to be inspected in DC, SC, DC storage pits, or container(s) located on mezzanine in high rad area with shielding walls. 8. Moveable shield plug, located at the west wall of the HRA, must be in place when shielded container is not connected to the port to provide shielding. 9. Secondary containment is required for containers with free liquids. Secondary containment consists of portable spill pallets in the HRA, High Bay Area (HBA), mezzanine, and truck transfer area. Secondary containment consists of seal-welded (lined) floors in the TR, Preparation Room (PR), or waste characterization chamber (WCC), but may consist of spill pallets in the TR or PR. 10. The truck transfer area at HFEF is used for receiving and/or shipment of waste. This area is only allowed for staging of HWMA/RCRA hazardous waste (HW)/mixed waste (MW) for up to 10 days. When waste is present, inspections are performed in accordance with FRM-378, "All Container Storage Facilities Daily Container Transfer Inspection Form." <p>NOTE: <i>The location of the WCC, TR, and PR are located on the third floor of HFEF on the north side located in the Miscellaneous Equipment and Storage Area (MESA).</i></p>	

Comments: _____

**HOT FUELS EXAMINATION FACILITY (HFEF) (785) DAILY/WEEKLY INSPECTION FORM
HWMA UNIT INSPECTION OF CONTAINERS & CONTAINER STORAGE/PROCESS AREAS
PERMIT RELATED**
(Instructions on page 4)

INSTRUCTIONS

- [1] TSD Inspector: Perform the following:
- [a] Prior to performing the inspection, review the RCRA Remedial Description Log (located in the Record Storage Area).
 - [b] If open deficiencies are identified on the RCRA Remedial Description Log, record the associated tracking number on this, and subsequent inspection logs, until the corrective action has been completed. If no open deficiencies, mark none.
 - [c] Print your first and last name and record the date and time.
 - [d] Perform inspections weekly during normal on-going container-storage operations or when cask staging area is in use.
 - [e] If no HW/MW was present in a container storage area, upon receipt of HW/MW into the container storage area, perform inspection of the container storage area.
 - [f] Complete the "Inspection Requirements" checklist for each requirement by marking ✓ Sat=satisfactory, Unsat=unsatisfactory, or N/A=not applicable.
 - [g] If you are able to take immediate corrective action; record the deficiency in the deficiency section, correct the deficiency, mark Sat; and describe the corrective action taken in the corrective action section (e.g., replaced label).
 - [h] If you are not able to take immediate action mark Unsat, describe the deficiency in the deficiency section, and immediately contact one of the following: Staff Specialist, the SS, and/or Facility Manager/Designee.
 - [i] Place the completed log in the designated location for the Facility Manager/Designee to review.
- [2] Facility Manager/Designee: Perform the following:
- [a] Record that the inspection was performed on the RCRA Inspection Tracking Index.
 - [b] Review the log, and facility, if necessary, to ensure that the inspection and any immediate corrective actions have been satisfactorily completed. Sign and date the log and file it in the designated area.
 - [c] Record on the RCRA Inspection Tracking Index if the deficiency was satisfactorily corrected immediately or is still outstanding. Assign a tracking number (for example, TSD-06-001) to the unresolved deficiency and record a detailed description of the deficiency on the RCRA Remedial Description Log.
 - [d] When deficiencies have been corrected, enter the corrective action taken and completion date on the original inspection form(s) in the corrective action section and complete the entries for the deficiencies on the RCRA Inspection Tracking Index and the RCRA Remedial Description Log.

HOT FUEL EXAMINATION FACILITY (HFEF) (785) MONTHLY INSPECTION FORM
HWMA UNIT INSPECTION OF CONTAINERS & CONTAINER STORAGE/PROCESS AREAS
(Instructions on the reverse side)

COMPLETION			
TSD Inspector: (Please Print Full Name)		Date:	
MAIN FLOOR	3RD FLOOR		
Signage – The following access doors are posted with a legible sign that states: “DANGER – UNAUTHORIZED PERSONNEL KEEP OUT”		Signage – The following access doors are posted with a legible sign that states: “DANGER – UNAUTHORIZED PERSONNEL KEEP OUT”	
1. Decon cell entry door: <input type="checkbox"/> Sat <input type="checkbox"/> Unsat		1. Northwest door: <input type="checkbox"/> Sat <input type="checkbox"/> Unsat	
Signage – The following area is posted with a legible sign that states: “No Smoking”		2. Southeast door: <input type="checkbox"/> Sat <input type="checkbox"/> Unsat	
1. Main access to HFEF <input type="checkbox"/> Sat <input type="checkbox"/> Unsat			
FIRE ALARM PULLBOXES ARE PRESENT AT THE FOLLOWING LOCATIONS AND ARE ACCESSIBLE.		FIRE ALARM PULLBOXES ARE PRESENT AT THE FOLLOWING LOCATIONS AND ARE ACCESSIBLE.	
1. Northwest exit: <input type="checkbox"/> Sat <input type="checkbox"/> Unsat		1. Northwest exit: <input type="checkbox"/> Sat <input type="checkbox"/> Unsat	
2. Southeast exit: <input type="checkbox"/> Sat <input type="checkbox"/> Unsat		2. Southeast exit: <input type="checkbox"/> Sat <input type="checkbox"/> Unsat	
FIRE EXTINGUISHERS ARE PRESENT, ACCESSIBLE, AND OPERABLE AT THE FOLLOWING LOCATIONS (see Note).		FIRE EXTINGUISHERS ARE PRESENT, ACCESSIBLE, AND OPERABLE AT THE FOLLOWING LOCATIONS (see Note).	
Northwest corner – ABC: <input type="checkbox"/> Sat <input type="checkbox"/> Unsat		HRA WALL – CO2: <input type="checkbox"/> Sat <input type="checkbox"/> Unsat	
West wall – CO2: <input type="checkbox"/> Sat <input type="checkbox"/> Unsat		Room 304 – ABC: <input type="checkbox"/> Sat <input type="checkbox"/> Unsat	
Southeast corner – ABC: <input type="checkbox"/> Sat <input type="checkbox"/> Unsat		Northeast Corner, Outside Prep Room - ABC: <input type="checkbox"/> Sat <input type="checkbox"/> Unsat	
Truck Trans. Eastwall–2 ABC’s: <input type="checkbox"/> Sat <input type="checkbox"/> Unsat		WCC – ABC: <input type="checkbox"/> Sat <input type="checkbox"/> Unsat	
		WCC – MLX: <input type="checkbox"/> Sat <input type="checkbox"/> Unsat	
		EYE WASH STATION IS PRESENT, ACCESSIBLE, AND OPERABLE AT THE FOLLOWING LOCATION (see Note).	
		1. Eyewash – Southside: <input type="checkbox"/> Sat <input type="checkbox"/> Unsat	
Portable Spill Control Cabinet Seal is Intact and Cabinet is Accessible		Portable Spill Control Cabinet Seal is Intact and Cabinet is Accessible	
1. Truck Transfer Area: <input type="checkbox"/> Sat <input type="checkbox"/> Unsat		Northeast Corner Prep Room Door <input type="checkbox"/> Sat <input type="checkbox"/> Unsat	
DEFICIENCIES AND CORRECTIVE ACTIONS			
Deficiency Description	Corrective Action		Completion Date
		Description	
Previously Identified <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A		Scheduled <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
REVIEW			
Facility Manager or Designee:			Date:

INSTRUCTIONS

- [1] **TSD Inspector:** Perform the following:
 - [a] Prior to performing the inspection, review the RCRA Remedial Description Log (located in Record Storage Area).
 - [b] If open deficiencies are identified on the RCRA Remedial Description Log, record the associated tracking number on this inspection log in the Deficiencies Description section or Comments section until the corrective action has been completed.
 - [c] Print your name and record the date and time.
 - [d] Perform inspections monthly (once every 30 days or calendar month) in all container storage/treatment areas.
 - [e] Complete the "Inspection Requirements" checklist for each requirement by marking ✓ Sat=satisfactory or Unsat=unsatisfactory.
 - [f] If you are able to take immediate corrective action; record the deficiency, correct the deficiency, mark Sat; and describe the corrective action taken (e.g., replace sign).
 - [g] If you are not able to take immediate action mark Unsat, describe the deficiency, and immediately contact one of the following: Staff Specialist, SS, and/or Facility Manager/Designee. On backshift, notify the appropriate contacts on the TSDF call-down list (as applicable).
 - [h] Place the completed log in the designated location for the Facility Manager/Designee to review.
- [2] **Facility Manager or Designee:** Perform the following:
 - [a] Record that the inspection was performed on the RCRA Inspection Tracking Index.
 - [b] Review the log, and facility, if necessary, to ensure that the inspection and any immediate corrective actions have been satisfactorily completed. Sign and date the log and file it in the designated area.
 - [c] Record on the RCRA Inspection Tracking Index if the deficiency was satisfactorily corrected immediately or is still outstanding. Assign a tracking number (for example, TSD-06-001) to the unresolved deficiency and record a detailed description of the deficiency on the RCRA Remedial Description Log.
 - [d] When deficiencies have been corrected, enter the corrective action taken and completion date on the original inspection form(s) and complete the entries for the deficiencies on the RCRA Inspection Tracking Index and the RCRA Remedial Description Log.

NOTE: Present, accessible, and operable are satisfactorily met when the following criteria have been met:

Present: means that the emergency shower, eye wash, or fire extinguisher is physically present.

Accessible: means there is a clear path to the emergency shower, eyewash, or fire extinguisher.

Operable: means the emergency eyewash, or fire extinguisher is maintained so personnel handling hazardous waste have emergency equipment available that operates to minimize harm to those individuals during an emergency. For the inspector checking the emergency eye wash unit, the following must be met to identify the unit is operable: (1) The emergency unit has a supply of water (available as part of the self-contained unit) and is not tagged "out-of-service."

Note: No discharge of water is required for these monthly inspections. (2) The unit has a current annual inspection tag.

(3) The unit is not tagged "out-of-service." For fire extinguishers, the following must be met to identify the unit as operable: (1) safety seals and tamper indicators are intact, and/or indicated pressure is "normal," (2) assembly is intact, (3) there is no evidence of damage, corrosion, or leakage, and (4) if equipped with a pressure gauge, the indicator is in the "green zone," or the "pop-up" indicator in the fill cap is not in the up position.

Comments

PERMIT REQUIRED
SODIUM COMPONENTS MAINTENANCE SHOP (SCMS) (793) DAILY TANK
INSPECTION FORM HWMA UNIT INSPECTION OF TANKS AND TANK
STORAGE/PROCESS AREAS

(Instructions on the reverse side)

COMPLETION			
TSD Technician: (Please Print Full Name)		Date:	
		Time:	
INSPECTION REQUIREMENTS			
LOW BAY		HIGH BAY	
<input type="checkbox"/> Daily (during normal storage operations).		Mixed waste not present in the Water Wash System. NOTE: <i>SCMS-OI-7 verifies no standing water remains in the water wash system after completion of water wash. No inspection is required for Items 1 thru 3 below Mark N/A.</i>	
		<input type="checkbox"/> Daily (during processing/treatment operations).	
Item	Results	Item	Results
1. Inspect tank and visible piping are intact; no leaking or deterioration.	<input type="checkbox"/> Sat <input type="checkbox"/> Unsat	1. Inspect tank and visible piping are intact; no leaking or deterioration.	<input type="checkbox"/> Sat <input type="checkbox"/> Unsat <input type="checkbox"/> N/A
2. Tank secondary containment (i.e., pit floor) has no gaps or cracks.	<input type="checkbox"/> Sat <input type="checkbox"/> Unsat	2. Area floor coating has no cracks, chips, or lifting. (Use colored tape to cover any defects.)	<input type="checkbox"/> Sat <input type="checkbox"/> Unsat <input type="checkbox"/> N/A
3. Pit floor has no liquids.	<input type="checkbox"/> Sat <input type="checkbox"/> Unsat	3. Area floor coating has no liquid or leaks accumulated on floor.	<input type="checkbox"/> Sat <input type="checkbox"/> Unsat <input type="checkbox"/> N/A
DEFICIENCIES AND CORRECTIVE ACTIONS			
Deficiency Description		Corrective Action	
		Description	Completion Date
Previously Identified <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A		Scheduled <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
REVIEW			
TSD Shift Supervisor (TSD SS)/Designee:		Date:	

PERMIT REQUIRED
SODIUM COMPONENTS MAINTENANCE SHOP (SCMS) (793) DAILY TANK
INSPECTION FORM HWMA UNIT INSPECTION OF TANKS AND TANK
STORAGE/PROCESS AREAS

INSTRUCTIONS

1. **TSD Technician** — Perform the following:
 1. Prior to performing the inspection, review the RCRA Remedial Description Log (located in the TSD Shift Supervisor's Office).
 2. If open deficiencies are identified on the RCRA Remedial Description Log, record the associated tracking number on this and subsequent inspection logs until the corrective action has been completed.
 3. Print your name and record the date and the time.
 4. Perform inspections daily.
 5. Complete the "Inspection Requirements" checklist for each requirement by marking ✓ Sat=satisfactory or Unsat=unsatisfactory.
 6. If you are able to take immediate corrective action; record the deficiency, correct the deficiency, mark Sat; and describe the corrective action taken (e.g., labels). On backshift, ensure that the call down list has been informed of any off-normal condition identified during rounds of SCMS.
 7. If you are not able to take immediate action; mark Unsat, describe the deficiency, and immediately contact the TSD SS/Designee, Facility Manager, or on backshift the call down list.
 8. Place the completed log in the designated location for the TSD SS/Designee to review.

2. **TSD SS/Designee** — Perform the following:
 1. Record that the inspection was performed on the RCRA Inspection Tracking Index.
 2. Review the log, and facility, if necessary, to ensure that the inspection and any immediate corrective actions have been satisfactorily completed. Sign and date the log and file it in the designated area.
 3. Record on the RCRA Inspection Tracking Index if the deficiency was satisfactorily corrected immediately or is still outstanding. Assign a tracking number (for example, TSD-06-001) to the unresolved deficiency and record a detailed description of the deficiency on the RCRA Remedial Description Log.
 4. When deficiencies have been corrected, enter the corrective action taken and completion date on the original inspection form(s) and complete the entries for the deficiencies on the RCRA Inspection Tracking Index and the RCRA Remedial Description Log.

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**PERMIT REQUIRED
SODIUM COMPONENTS MAINTENANCE SHOP (SCMS) (793) DAILY TANK
INSPECTION FORM HWMA UNIT INSPECTION OF TANKS AND TANK
STORAGE/PROCESS AREAS**

Page 3 of 3

COMMENTS

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PERMIT RELATED
SODIUM COMPONENTS MAINTENANCE SHOP (SCMS) (793) DAILY/WEEKLY
INSPECTION FORM
HWMA UNIT INSPECTION OF CONTAINERS & CONTAINER STORAGE/PROCESS AREAS
(Instructions on the reverse side)

COMPLETION				
TSD Technician: (Please Print Full Name)		Date:		Time:
INSPECTION TYPE				
<input type="checkbox"/> Waste not present, inspection for items 1-4 not required.				
<input type="checkbox"/> Daily (during container processing/treatment operations).				
<input type="checkbox"/> Weekly (during normal container - storage operations).				
INSPECTION				
Item	Results			
	793 Hi-Bay	793 Low Bay	793 C	793 G
1. Hazardous waste, including hazard content and barcode labels are in place, legible, and not damaged.	<input type="checkbox"/> Sat <input type="checkbox"/> Unsat <input type="checkbox"/> N/A	<input type="checkbox"/> Sat <input type="checkbox"/> Unsat <input type="checkbox"/> N/A	<input type="checkbox"/> Sat <input type="checkbox"/> Unsat <input type="checkbox"/> N/A	<input type="checkbox"/> Sat <input type="checkbox"/> Unsat <input type="checkbox"/> N/A
2. Containers position: upright, elevated, and securely closed (unless in process).	<input type="checkbox"/> Sat <input type="checkbox"/> Unsat <input type="checkbox"/> N/A	<input type="checkbox"/> Sat <input type="checkbox"/> Unsat <input type="checkbox"/> N/A	<input type="checkbox"/> Sat <input type="checkbox"/> Unsat <input type="checkbox"/> N/A	<input type="checkbox"/> Sat <input type="checkbox"/> Unsat <input type="checkbox"/> N/A
3. Containers condition: intact with no evidence of leaks or deterioration caused by corrosion, pitting, rusting, dents, or swelling.	<input type="checkbox"/> Sat <input type="checkbox"/> Unsat <input type="checkbox"/> N/A	<input type="checkbox"/> Sat <input type="checkbox"/> Unsat <input type="checkbox"/> N/A	<input type="checkbox"/> Sat <input type="checkbox"/> Unsat <input type="checkbox"/> N/A	<input type="checkbox"/> Sat <input type="checkbox"/> Unsat <input type="checkbox"/> N/A
4. Secondary containment: (includes portable when used) no gaps, cracks, leaks, or liquids. ¹	<input type="checkbox"/> Sat <input type="checkbox"/> Unsat <input type="checkbox"/> N/A	<input type="checkbox"/> Sat <input type="checkbox"/> Unsat <input type="checkbox"/> N/A	<input type="checkbox"/> Sat <input type="checkbox"/> Unsat <input type="checkbox"/> N/A	<input type="checkbox"/> Sat <input type="checkbox"/> Unsat <input type="checkbox"/> N/A
5. An aisle maintained of at least 3 ft for ingress and egress.	<input type="checkbox"/> Sat <input type="checkbox"/> Unsat	<input type="checkbox"/> Sat <input type="checkbox"/> Unsat	<input type="checkbox"/> Sat <input type="checkbox"/> Unsat	<input type="checkbox"/> Sat <input type="checkbox"/> Unsat
6. Telephone is working and accessible.		<input type="checkbox"/> Sat <input type="checkbox"/> Unsat		
7. Spill control materials are in place and accessible. <ul style="list-style-type: none"> • Portable 30-gal can of dry soda, ash, or sand with non-sparking shovel • One 85-gallon salvage drum • Corrosive spill locker including three 5-gal buckets of SPILL-X-C; three 5-gal buckets (empty); two face shields; two pairs of rubber gloves; two rubber aprons; two universal chemical spill kits. 			<input type="checkbox"/> Sat <input type="checkbox"/> Unsat <input type="checkbox"/> Sat <input type="checkbox"/> Unsat <input type="checkbox"/> Sat <input type="checkbox"/> Unsat	
DEFICIENCIES AND CORRECTIVE ACTIONS				
Deficiency Description	Corrective Action			
	Description	Completion Date		
Previously Identified <input type="checkbox"/> Yes <input type="checkbox"/> No	Scheduled <input type="checkbox"/> Yes <input type="checkbox"/> No			
REVIEW				
TSD Shift Supervisor (TSD SS)/Designee:		Date:		
1. Secondary containment is required for containers with liquids. Secondary containment consists of spill pallets. Secondary containment also consists of epoxy coated floor in the high bay that slopes to two floor drains that are routed to the low bay pit. Containers need to be elevated when the epoxy coated floor in the high bay is used for secondary containment.				

**PERMIT RELATED
SODIUM COMPONENTS MAINTENANCE SHOP (SCMS) (793) DAILY/WEEKLY
INSPECTION FORM
HWMA UNIT INSPECTION OF CONTAINERS & CONTAINER STORAGE/PROCESS AREAS**

INSTRUCTIONS

- [1] **TSD Technician**—Perform the following:
- [a] Prior to performing the inspection, review the RCRA Remedial Description Log (located in the TSD Shift Supervisor’s Office).
 - [b] If open deficiencies are identified on the RCRA Remedial Description Log, record the associated tracking number on this and subsequent inspection logs until the corrective action has been completed.
 - [c] Print your name and record the date and the time.
 - [d] Perform inspections weekly during normal on-going container storage operations and daily during container processing/treatment operations.
 - [e] Complete the “Inspection Requirements” checklist for each requirement by marking ✓
Sat=satisfactory, Unsat=unsatisfactory, or N/A=not applicable.
 - [f] If you are able to take immediate corrective action; record the deficiency, correct the deficiency, mark Sat; and describe the corrective action taken (e.g., replaced label).
 - [g] If you are not able to take immediate action mark Unsat, describe the deficiency, and immediately contact the TSD SS/Designee or TSD Manager.
 - [h] Place the completed log in the designated location for the TSD SS/Designee to review.
- [2] **TSD SS/Designee**—Perform the following:
- [a] Record that the inspection was performed on the RCRA Inspection Tracking Index.
 - [b] Review the log, and facility, if necessary, to ensure that the inspection and any immediate corrective actions have been satisfactorily completed. Sign and date the log and file it in the designated area.
 - [c] Record on the RCRA Inspection Tracking Index if the deficiency was satisfactorily corrected immediately or is still outstanding. Assign a tracking number (for example, TSD-06-001) to the unresolved deficiency and record a detailed description of the deficiency on the RCRA Remedial Description Log.
 - [d] When deficiencies have been corrected, enter the corrective action taken and completion date on the original inspection form(s) and complete the entries for the deficiencies on the RCRA Inspection Tracking Index and the RCRA Remedial Description Log.

Comments _____

PERMIT RELATED
SODIUM COMPONENTS MAINTENANCE SHOP (SCMS) (793) MONTHLY INSPECTION FORM
HWMA UNIT INSPECTION OF CONTAINER AND TANK STORAGE AREA

(Instructions on the reverse side)

TSD Technician: (Please Print)		Date:		Time:
SIGNS				
THE FOLLOWING ACCESS DOORS ARE POSTED WITH A LEGIBLE SIGN THAT STATES: "DANGER - UNAUTHORIZED PERSONNEL KEEP OUT" AND "NO SMOKING"				
Item	793 Hi-Bay	793 Low Bay	793 C	793 G
1. East door	<input type="checkbox"/> Sat <input type="checkbox"/> Unsat	<input type="checkbox"/> Sat <input type="checkbox"/> Unsat	<input type="checkbox"/> Sat <input type="checkbox"/> Unsat	
2. West door		<input type="checkbox"/> Sat <input type="checkbox"/> Unsat	<input type="checkbox"/> Sat <input type="checkbox"/> Unsat	<input type="checkbox"/> Sat <input type="checkbox"/> Unsat
FIRE ALARM PULLBOXES AT THE FOLLOWING LOCATIONS ARE ACCESSIBLE:				
1. East door	<input type="checkbox"/> Sat <input type="checkbox"/> Unsat	<input type="checkbox"/> Sat <input type="checkbox"/> Unsat	<input type="checkbox"/> Sat <input type="checkbox"/> Unsat	
2. West door		<input type="checkbox"/> Sat <input type="checkbox"/> Unsat	<input type="checkbox"/> Sat <input type="checkbox"/> Unsat	
SODIUM BURN KIT IS PRESENT AND ACCESSIBLE. EYEWASH STATION AND EMERGENCY SHOWER ARE PRESENT, ACCESSIBLE, AND OPERABLE (see Note)				
1. Southeast corner	<input type="checkbox"/> Sat <input type="checkbox"/> Unsat			
FIRE EXTINGUISHERS ARE PRESENT, ACCESSIBLE, AND OPERABLE (see Note)				
1. Two MLX, south wall	<input type="checkbox"/> Sat <input type="checkbox"/> Unsat			
2. ABC, south wall	<input type="checkbox"/> Sat <input type="checkbox"/> Unsat			
3. Portable MLX-350	<input type="checkbox"/> Sat <input type="checkbox"/> Unsat			
4. ABC, northeast corner	<input type="checkbox"/> Sat <input type="checkbox"/> Unsat			
5. ABC, near east door		<input type="checkbox"/> Sat <input type="checkbox"/> Unsat	<input type="checkbox"/> Sat <input type="checkbox"/> Unsat	
6. ABC, solidification area		<input type="checkbox"/> Sat <input type="checkbox"/> Unsat		
7. MLX, near east door			<input type="checkbox"/> Sat <input type="checkbox"/> Unsat	
DEFICIENCIES AND CORRECTIVE ACTIONS				
Deficiency Description	Previously Identified	Corrective Action		
		Description	Scheduled	Completion Date
	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Yes <input type="checkbox"/> No	
REVIEW				
TSD Shift Supervisor (TSD SS)/Designee:		Date:		

PERMIT RELATED
SODIUM COMPONENTS MAINTENANCE SHOP (SCMS) (793) MONTHLY INSPECTION FORM
HWMA UNIT INSPECTION OF CONTAINER AND TANK STORAGE AREA

INSTRUCTIONS	
[1]	<p>TSD Technician—Perform the following:</p> <ul style="list-style-type: none">[a] Prior to performing the inspection, review the RCRA Remedial Description Log (located in the TSD Shift Supervisor’s Office).[b] If open deficiencies are identified on the RCRA Remedial Description Log, record the associated tracking number on the subsequent inspection log until the corrective action has been completed.[c] Print your name and record the date and the time.[d] Perform inspections <u>monthly</u> (once every 30 days) in all container and tank storage/treatment areas.[e] Complete the “Inspection Requirements” checklist for each requirement by marking ✓ Sat=satisfactory or Unsat=unsatisfactory.[f] If you are able to take immediate corrective action; record the deficiency, correct the deficiency, mark <input checked="" type="checkbox"/> Sat; and describe the corrective action taken (e.g., replace sign).[g] If you are not able to take immediate action mark <input checked="" type="checkbox"/> Unsat, describe the deficiency, and immediately contact the TSD SS/Designee or TSD Manager. On backshift, notify the appropriate contacts on the TSDF call-down list (as applicable).[h] Place the completed log in the designated location for the TSD SS/Designee to review.
[2]	<p>TSD SS/Designee—Perform the following:</p> <ul style="list-style-type: none">[a] Record that the inspection was performed on the RCRA Inspection Tracking Index.[b] Review the log, and facility, if necessary, to ensure that the inspection and any immediate corrective actions have been satisfactorily completed. Sign and date the log and file it in the designated area.[c] Record on the RCRA Inspection Tracking Index if the deficiency was satisfactorily corrected immediately or is still outstanding. Assign a tracking number (i.e., TSD-06-001) to the unresolved deficiency and record a detailed description of the deficiency on the RCRA Remedial Description Log.[d] When deficiencies have been corrected, enter the corrective action taken and completion date on the original inspection form(s) and complete the entries for the deficiencies on the RCRA Inspection Tracking Index and the RCRA Remedial Description Log.

NOTE: *Present, accessible, and operable are satisfactorily met when the following criteria have been met:*
Present: Means that the emergency shower, eyewash, or fire extinguisher is physically present.
Accessible: Means there is a clear path to the emergency shower, eyewash, or fire extinguisher.
Operable: Means the emergency shower, eyewash, or fire extinguisher is maintained so personnel handling hazardous waste have emergency equipment available that operates to minimize harm to those individuals during an emergency. For the inspector checking emergency shower and eyewash units, the following must be met to identify the unit is operable: (1) These emergency units have a supply of water (hard-piped or available as part of the self-contained unit), are not tagged “out-of-service.” Note: No discharge of water is required for these monthly inspections. (2) These units have a current annual inspection tag. For fire extinguishers, the following must be met to identify the unit as operable: (1) safety seals and tamper indicators are intact, (2) assembly is intact, (3) there is no evidence of damage, corrosion, or leakage, and (4) if equipped with a pressure gauge, the indicator is in the “green zone,” or the “pop-up” indicator in the fill cap is not in the up position.

Comments _____

PERMIT RELATED
SODIUM STORAGE BUILDING (SSB) (703) WEEKLY INSPECTION FORM
HWMA UNIT INSPECTION OF CONTAINERS & CONTAINER STORAGE AREAS
(Instructions on the reverse side)

COMPLETION					
TSD Technician: (Please Print Full Name)		Date:		Time:	
INSPECTION TYPE					
<input type="checkbox"/> Waste not present, inspection for items 1-4 not required, mark N/A					
<input type="checkbox"/> Weekly (during normal container - storage operations).					
<input type="checkbox"/> Weekly HRA inspection from outside the HRA.					
<input type="checkbox"/> Monthly HRA inspection from within the HRA (if all items listed below are not visible for inspection).					
INSPECTION					
Item	Results				
	General Area			High Rad Area	
1. Hazardous waste, including hazard content and barcode labels are in place, legible, and not damaged.	<input type="checkbox"/> Sat	<input type="checkbox"/> Unsat	<input type="checkbox"/> N/A	<input type="checkbox"/> Sat	<input type="checkbox"/> Unsat <input type="checkbox"/> N/A
2. Containers position: upright, elevated, and securely closed (unless in process).	<input type="checkbox"/> Sat	<input type="checkbox"/> Unsat	<input type="checkbox"/> N/A	<input type="checkbox"/> Sat	<input type="checkbox"/> Unsat <input type="checkbox"/> N/A
3. Containers condition: intact with no evidence of leaks or deterioration caused by corrosion, pitting, rusting, dents, or swelling.	<input type="checkbox"/> Sat	<input type="checkbox"/> Unsat	<input type="checkbox"/> N/A	<input type="checkbox"/> Sat	<input type="checkbox"/> Unsat <input type="checkbox"/> N/A
4. Portable secondary containment: no gaps, cracks, leaks, or liquids	<input type="checkbox"/> Sat	<input type="checkbox"/> Unsat	<input type="checkbox"/> N/A	<input type="checkbox"/> Sat	<input type="checkbox"/> Unsat <input type="checkbox"/> N/A
5. An aisle maintained of at least 3 ft for ingress and egress.	<input type="checkbox"/> Sat	<input type="checkbox"/> Unsat			
6. Radio working.	<input type="checkbox"/> Sat	<input type="checkbox"/> Unsat			
7. Spill control material is in place and accessible. • Portable 30-gal can of dry soda, ash, or sand with nonsparking shovel.	<input type="checkbox"/> Sat	<input type="checkbox"/> Unsat			
DEFICIENCIES AND CORRECTIVE ACTIONS					
Deficiency Description	Corrective Action				
	Description				Completion Date
Previously Identified <input type="checkbox"/> Yes <input type="checkbox"/> No	Scheduled	<input type="checkbox"/> Yes	<input type="checkbox"/> No		
REVIEW					
TSD Shift Supervisor (TSD SS)/ Designee:			Date:		

PERMIT RELATED
SODIUM STORAGE BUILDING (SSB) (703) WEEKLY INSPECTION FORM
HWMA UNIT INSPECTION OF CONTAINERS & CONTAINER STORAGE AREAS

INSTRUCTIONS

- [1] **TSD Technician**—Perform the following:
- [a] Prior to performing the inspection, review the RCRA Remedial Description Log (located in the TSD Shift Supervisor’s Office).
 - [b] If open deficiencies are identified on the RCRA Remedial Description Log, record the associated tracking number on this and subsequent inspection logs until the corrective action has been completed.
 - [c] Prior to performing inspection obtain radio and verify radio works. Document operability on Item #6.
 - [d] Print your name and record the date and the time.
 - [e] Perform inspections of the general area and Hot Repair Area (HRA) from outside the HRA weekly during normal on-going container storage operations. Perform an inspection of the HRA monthly if a thorough inspection can not be performed from outside the HRA.
 - [f] Complete the “Inspection Requirements” checklist for each requirement by marking ✓
Sat=satisfactory, Unsat=unsatisfactory, or N/A=not applicable.
 - [g] If you are able to take immediate corrective action; record the deficiency, correct the deficiency, mark Sat; and describe the corrective action taken (e.g., replaced label).
 - [h] If you are not able to take immediate action, mark Unsat, describe the deficiency, and immediately contact the TSD SS/Designee or TSD Manager.
 - [i] Place the completed log in the designated location for the TSD SS/Designee to review.
- [2] **TSD SS/Designee**—Perform the following:
- [a] Record that the inspection was performed on the RCRA Inspection Tracking Index.
 - [b] Review the log, and facility, if necessary, to ensure that the inspection and any immediate corrective actions have been satisfactorily completed. Sign and date the log and file it in the designated area.
 - [c] Record on the RCRA Inspection Tracking Index if the deficiency was satisfactorily corrected immediately or is still outstanding. Assign a tracking number (for example, TSD-06-001) to the unresolved deficiency and record a detailed description of the deficiency on the RCRA Remedial Description Log.
 - [d] When deficiencies have been corrected, enter the corrective action taken and completion date on the original inspection form(s) and complete the entries for the deficiencies on the RCRA Inspection Tracking Index and the RCRA Remedial Description Log.

Comments _____

**PERMIT RELATED
SODIUM STORAGE BUILDING (SSB) (703) MONTHLY INSPECTION FORM
HWMA UNIT INSPECTION OF CONTAINER STORAGE AREAS**

(Instructions on the reverse side)

COMPLETION				
TSD Technician: (Please Print)		Date:		Time:
SIGNS				
THE FOLLOWING ACCESS DOOR IS POSTED WITH A LEGIBLE SIGN THAT STATES: "DANGER - UNAUTHORIZED PERSONNEL KEEP OUT" AND "NO SMOKING"				
1. East Door		<input type="checkbox"/> Sat	<input type="checkbox"/> Unsat	
2. South west door		<input type="checkbox"/> Sat	<input type="checkbox"/> Unsat	
FIRE ALARM PULLBOXES AT THE FOLLOWING LOCATIONS ARE ACCESSIBLE:				
1. Outside east door		<input type="checkbox"/> Sat	<input type="checkbox"/> Unsat	
2. Inside east door		<input type="checkbox"/> Sat	<input type="checkbox"/> Unsat	
3. Near south door		<input type="checkbox"/> Sat	<input type="checkbox"/> Unsat	
FIRE EXTINGUISHERS ARE PRESENT, ACCESSIBLE, AND OPERABLE (see Note)				
1. Portable MLX-350		<input type="checkbox"/> Sat	<input type="checkbox"/> Unsat	
2. MLX, near east door		<input type="checkbox"/> Sat	<input type="checkbox"/> Unsat	
3. ABC, near east door		<input type="checkbox"/> Sat	<input type="checkbox"/> Unsat	
4. ABC, near south door		<input type="checkbox"/> Sat	<input type="checkbox"/> Unsat	
5. MLX, near south door		<input type="checkbox"/> Sat	<input type="checkbox"/> Unsat	
DEFICIENCIES AND CORRECTIVE ACTIONS				
Deficiency Description	Previously Identified	Corrective Action		
		Description	Scheduled	Completion Date
	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Yes <input type="checkbox"/> No	
	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Yes <input type="checkbox"/> No	
REVIEW				
TSD Shift Supervisor (TSD/SS)/Designee:		Date:		

PERMIT RELATED
SODIUM STORAGE BUILDING (SSB) (703) MONTHLY INSPECTION FORM
HWMA UNIT INSPECTION OF CONTAINER STORAGE AREAS

INSTRUCTIONS

- [1] **TSD Technician**—Perform the following:
- [a] Prior to performing the inspection, review the RCRA Remedial Description Log (located in the TSD Shift Supervisor’s Office).
 - [b] If open deficiencies are identified on the RCRA Remedial Description Log, record the associated tracking number on the subsequent inspection log until the corrective action has been completed.
 - [c] Print your name and record the date and the time.
 - [d] Perform inspections monthly.
 - [e] Complete the “Inspection Requirements” checklist for each requirement by marking ✓ Sat=satisfactory or Unsat=unsatisfactory.
 - [f] If you are able to take immediate corrective action; record the deficiency, correct the deficiency, mark Sat; and describe the corrective action taken (e.g., replaced label).
 - [g] If you are not able to take immediate action mark Unsat, describe the deficiency, and immediately contact the TSD SS/Designee or TSD Manager. On backshift, notify the appropriate contacts on the TSDF call-down list (as applicable).
 - [h] Place the completed log in the designated location for the TSD SS/Designee to review.
- [2] **TSD SS/Designee**—Perform the following:
- [a] Record that the inspection was performed on the RCRA Inspection Tracking Index.
 - [b] Review the log, and facility, if necessary, to ensure that the inspection and any immediate corrective actions have been satisfactorily completed. Sign and date the log and file it in the designated area.
 - [c] Record on the RCRA Inspection Tracking Index if the deficiency was satisfactorily corrected immediately or is still outstanding. Assign a tracking number (i.e., TSD-06-001) to the unresolved deficiency and record a detailed description of the deficiency on the RCRA Remedial Description Log.
 - [d] When deficiencies have been corrected, enter the corrective action taken and completion date on the original inspection form(s) and complete the entries for the deficiencies on the RCRA Inspection Tracking Index and the RCRA Remedial Description Log.

NOTE: *Present, accessible, and operable are satisfactorily met when the following criteria have been met:*
Present: Means that the fire extinguisher is physically present.
Accessible: Means there is a clear path to the fire extinguisher.
Operable: Means the fire extinguisher is maintained so personnel handling hazardous waste have emergency equipment available that operates to minimize harm to those individuals during an emergency. For the inspector checking fire extinguishers, the following must be met to identify the unit as operable: (1) safety seals and tamper indicators are intact, (2) assembly is intact, (3) there is no evidence of damage, corrosion, or leakage, and (4) if equipped with a pressure gauge, the indicator is in the “green zone,” or the “pop-up” indicator in the fill cap is not in the up position.

Comments _____

**PERMIT RELATED
RADIOACTIVE SCRAP AND WASTE FACILITY (RSWF) (771) WEEKLY INSPECTION FORM
HWMA UNIT INSPECTION OF MISCELLANEOUS UNIT**
(Instructions on the reverse side)

COMPLETION					
TSD Technician: (Please Print Full Name)		Date:		Time:	
INSPECTION					
Item				Results	
1. Telephone is working.				<input type="checkbox"/> Sat <input type="checkbox"/> Unsat	
2. "Danger-Unauthorized Personnel Keep Out" and "No Smoking" signs on gates are present and legible.				<input type="checkbox"/> Sat <input type="checkbox"/> Unsat	
3. Barrier fence in good condition.				<input type="checkbox"/> Sat <input type="checkbox"/> Unsat	
4. Gates are in good condition and locked.				<input type="checkbox"/> Sat <input type="checkbox"/> Unsat	
5. Cathodic protection rectifier lights are on.				<input type="checkbox"/> Sat <input type="checkbox"/> Unsat	
6. Culverts are not obstructed with soil and debris. If covered by snow mark N/A.				<input type="checkbox"/> Sat <input type="checkbox"/> Unsat <input type="checkbox"/> N/A	
7. Outer facility berm is in good condition (No eroded banks). If covered by snow mark N/A.				<input type="checkbox"/> Sat <input type="checkbox"/> Unsat <input type="checkbox"/> N/A	
8. Temporary seal is installed on liner - verify seal is intact.				<input type="checkbox"/> Sat <input type="checkbox"/> Unsat <input type="checkbox"/> N/A	
DEFICIENCIES AND CORRECTIVE ACTIONS					
Deficiency Description			Corrective Action		
			Description		Completion Date
Previously Identified <input type="checkbox"/> Yes <input type="checkbox"/> No			Scheduled <input type="checkbox"/> Yes <input type="checkbox"/> No		
REVIEW					
TSD Shift Supervisor (TSD SS)/Designee:			Date:		

**PERMIT RELATED
RADIOACTIVE SCRAP AND WASTE FACILITY (RSWF) (771) WEEKLY INSPECTION FORM
HWMA UNIT INSPECTION OF MISCELLANEOUS UNIT**

INSTRUCTIONS

- [1] **TSD Technician**—Perform the following:
- [a] Prior to performing the inspection, review the RCRA Remedial Description Log (located in the TSD Shift Supervisor’s Office).
 - [b] If open deficiencies are identified on the RCRA Remedial Description Log, record the associated tracking number on this and subsequent inspection logs until the corrective action has been completed.
 - [c] Print your name and record the date and the time.
 - [d] Perform inspections weekly.
 - [e] Complete the “Inspection Requirements” checklist for each requirement by marking ✓
Sat=satisfactory, **Unsat**=unsatisfactory or **N/A**=Not Applicable.
 - [f] If you are able to take immediate corrective action; record the deficiency, correct the deficiency, mark **Sat**; and describe the corrective action taken (e.g., replaced sign).
 - [g] If you are not able to take immediate action, mark **Unsat**, describe the deficiency, and immediately contact the TSD SS/Designee or TSD Manager.
 - [h] Place the completed log in the designated location for the TSD SS/Designee to review.
- [2] **TSD SS/Designee**—Perform the following:
- [a] Record that the inspection was performed on the RCRA Inspection Tracking Index.
 - [b] Review the log, and facility, if necessary, to ensure that the inspection and any immediate corrective actions have been satisfactorily completed. Sign and date the log and file it in the designated area.
 - [c] Record on the RCRA Inspection Tracking Index if the deficiency was satisfactorily corrected immediately or is still outstanding. Assign a tracking number (for example, TSD-06-001) to the unresolved deficiency and record a detailed description of the deficiency on the RCRA Remedial Description Log.
 - [d] When deficiencies have been corrected, enter the corrective action taken and completion date on the original inspection form(s) and complete the entries for the deficiencies on the RCRA Inspection Tracking Index and the RCRA Remedial Description Log.

Comments _____

**PERMIT RELATED
RADIOACTIVE SCRAP AND WASTE FACILITY (RSWF) (771) LINER
INSPECTION AND RADIATION READING FORM
(HWMA UNIT INSPECTION OF MISCELLANEOUS UNIT)
(Instructions on the reverse side)**

COMPLETION			
TSD Technician: (Please Print Full Name)		Date:	Time:
INSPECTION			
<input type="checkbox"/> Quarterly visual inspection of all HW/MW liners (see FRM-1592)			
<input type="checkbox"/> Quarterly visual inspection of HW/MW liners not performed (all liners covered by snow)			
<input type="checkbox"/> Quarterly visual inspection of some HW/MW liners (see FRM-1592)			
<input type="checkbox"/> Annual radiation readings – 3 ft above each HW/MW liner (see FRM-1592)			
Item	Results	Comments Row/Liner No. (if unsatisfactory)	
1. Exposed portion of liners: no cracks and no severe corrosion or deterioration.	<input type="checkbox"/> Sat <input type="checkbox"/> Unsat		
2. Radiation readings above MW liners are less than 5mr/hr increase from previous year.	<input type="checkbox"/> Sat <input type="checkbox"/> Unsat		
DEFICIENCIES AND CORRECTIVE ACTIONS			
Deficiency Description	Corrective Action		
	Description	Completion Date	
Previously Identified <input type="checkbox"/> Yes <input type="checkbox"/> No	Scheduled <input type="checkbox"/> Yes <input type="checkbox"/> No		
REVIEW			
TSD Shift Supervisor (TSD SS)/Designee:		Date:	

**PERMIT RELATED
RADIOACTIVE SCRAP AND WASTE FACILITY (RSWF) (771) LINER
INSPECTION AND RADIATION READING FORM
(HWMA UNIT INSPECTION OF MISCELLANEOUS UNIT)**

INSTRUCTIONS	
[1]	TSD Technician —Perform the following: <ul style="list-style-type: none">[a] Prior to performing the inspection, review the Resource Conservation and Recovery Act (RCRA) Remedial Description Log (located in the TSD Shift Supervisor’s Office).[b] If open deficiencies are identified on the RCRA Remedial Description Log, record the associated tracking number on this and subsequent inspection logs until the corrective action has been completed.[c] Print your name and record the date and the time.[d] Perform <u>quarterly</u> visual inspections of liners and arrange for <u>annual</u> HPT radiation readings.[e] Complete the “Inspection Requirements” checklist for each requirement by marking <input type="checkbox"/> Sat=Satisfactory, or <input type="checkbox"/> Unsat=Unsatisfactory.[f] If you are able to take immediate corrective action; record the deficiency, correct the deficiency, mark <input checked="" type="checkbox"/> Sat; and describe the corrective action taken (for example, replaced sign).[g] If you are not able to take immediate action mark <input checked="" type="checkbox"/> Unsat, describe the deficiency, and immediately contact the TSD SS/Designee or TSD Manager.[h] Place the completed log in the designated location for the TSD SS/Designee to review.
[2]	TSD SS/Designee —Perform the following: <ul style="list-style-type: none">[a] Record that the inspection was performed on the RCRA Inspection Tracking Index.[b] Review the log, and facility, if necessary, to ensure that the inspection and any immediate corrective actions have been satisfactorily completed. Sign and date the log and file it in the designated area.[c] Record on the RCRA Inspection Tracking Index if the deficiency was satisfactorily corrected immediately or is still outstanding. Assign a tracking number (for example, TSD-06-001) to the unresolved deficiency and record a detailed description of the deficiency on the RCRA Remedial Description Log.[d] When deficiencies have been corrected, enter the corrective action taken and completion date on the original inspection form(s) and complete the entries for the deficiencies on the RCRA Inspection Tracking Index and the RCRA Remedial Description Log.

Comments _____

**PERMIT RELATED
RADIOACTIVE SCRAP AND WASTE FACILITY (RSWF) (771)
ANNUAL RADIATION MONITORING TUBE INSPECTION FORM**
(Instructions on the reverse side)

COMPLETION					
TSD Technician: (Please Print Full Name)				Date:	Time:
INSPECTION					
Item	Location	Readings	Instrument Used	Cal Due Date	Results
1. Radiation readings are less than 5mR/hr increase from previous year. NOTE: Probe shall be lowered to the bottom of the tube where the reading must be taken.	B 26				<input type="checkbox"/> Sat <input type="checkbox"/> Unsat
	V 3.5				
	V 4.5				
	T 32.5				
	T 36.5				
	HH 51				
	LL 47.5				
	PP 8.5				
	PP 10.5				
	PP 12.5				
	PP 26.5				
	PP 37.5				
PP 49.5					
DEFICIENCIES AND CORRECTIVE ACTIONS					
Deficiency Description		Corrective Action			Completion Date
		Description			
Previously Identified: <input type="checkbox"/> Yes <input type="checkbox"/> No		Scheduled: <input type="checkbox"/> Yes <input type="checkbox"/> No			
REVIEW					
TSD Shift Supervisor (TSD SS)/Designee:				Date:	

	Aug	2013	Field Copy									
	Cells in yellow to be completed in field					By:	Date:					
ROW	DVM Vdc	DVM Vdc Shunt	DC Current	Time	DC Power Out	AC power In	EFF %	Oprtnng	Rectifier	Rectifier	Tap	Comment
			DVM Shunt * 2.4		DVM * DC Current	51840 / Time	(DC Pwr Out Pair / AC Pwr In) * 100	Light Y/N	Meter V	Meter A	Adj/Date	
R1	18.9	24.2	58.08	22.5	1097.7	2304		Y	18	50		Data from previous month
R2	13.9	24	57.6	22.5	800.64	2304	82	Y	14	46		Data from previous month
R3	12.93	19.9	29.85	56.3	386.0	920		Y	13.5	28		Data from previous month
R4	12.9	15.4	23.1	56.3	298.0	920	74	Y	13	24		Data from previous month
R5	7.05	33.3	53.28	46.3	375.6	1119		Y	7	49		Data from previous month
R6	7.05	31.6	50.56	46.3	356.448	1119	65	Y	8	48		Data from previous month
R7	16.81	21.3	34.08	35.6	572.9	1456		Y	17	31		Data from previous month
R8	16.7	21.5	34.4	35.6	574.5	1456	78	Y	17	34		Data from previous month
R9	5.32	24.2	36.3	70.1	193.1	739		Y	9	35		Data from previous month
R10	5.42	22.9	34.35	70.1	186.177	739	51	Y	5.5	32		Data from previous month
R11	14.26	13.9	22.24	56.7	317.1	914		Y	15	20		Data from previous month
R12	14.5	15	24	56.7	348.0	914	72	Y	16	20		Data from previous month
	Attach page with any additional comments as necessary.											

Example RSWF Monthly Cathodic Protection Data Sheet

Example RSWF Annual Cathodic Protection Data Sheets (select sheets of entire set provided)

2013 Rectifier Units Data Information Sheets

List below the following information for the MT&E used to perform this PM.

TYPE OF TEST EQUIPMENT USED: _____	
SERIAL NUMBER _____	CALIBRATION DUE DATE: _____

TYPE OF TEST EQUIPMENT USED: _____	
SERIAL NUMBER _____	CALIBRATION DUE DATE: _____

TYPE OF TEST EQUIPMENT USED: _____	
SERIAL NUMBER _____	CALIBRATION DUE DATE: _____

TYPE OF TEST EQUIPMENT USED: _____	
SERIAL NUMBER _____	CALIBRATION DUE DATE: _____

TYPE OF TEST EQUIPMENT USED: _____	
SERIAL NUMBER _____	CALIBRATION DUE DATE: _____

TYPE OF TEST EQUIPMENT USED: _____	
SERIAL NUMBER _____	CALIBRATION DUE DATE: _____

TYPE OF TEST EQUIPMENT USED: _____	
SERIAL NUMBER _____	CALIBRATION DUE DATE: _____

TYPE OF TEST EQUIPMENT USED: _____	
SERIAL NUMBER _____	CALIBRATION DUE DATE: _____

TYPE OF TEST EQUIPMENT USED: _____	
SERIAL NUMBER _____	CALIBRATION DUE DATE: _____

2013 Rectifier Units Data Information Sheets
RSWF CATHODIC PROTECTION SYSTEM
ANNUAL INSPECTION AND TEST

WORK TO BE PERFORMED:

NOTE 1: *The steps of these Data Sheets may be worked out of sequence within the prescribed work scope and environmental, safety, health and quality requirements for this work order as instructed by the Job Supervisor. Bullet steps within each step may be performed in the most logical sequence. Checkbox steps within each step are to be worked in order. The portion of each step for a given component, i.e. Rectifier # 1, may be performed and completed before moving on to the next component. Signatures at the end of each step indicated total completion of the step.*

NOTE 2: *Any abnormal, unexpected or questionable readings, images, deficiencies, etc. identified during the performance of these steps will be marked/circled in "RED" so it is easily identifiable by the SSC Engineer who will identify the corrective actions required to correct the abnormal, unexpected or questionable readings/ images, deficiencies, etc.*

Performers (Print Name)

2013 Rectifier Units Data Information Sheets

1. ELECTRICIAN:

Date: _____

1.1. Perform thermo graphic imaging of the components listed in the table below:

Rectifier No.	Comments	Satisfactory (Yes/ No)
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		

1.2. Provide the information collected to the SSC Engineer for analysis.

Signature:		Date:		S No.:	
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2013 Rectifier Units Data Information Sheets

2. ELECTRICIAN: Date ___/___/___ Time (am/pm) _____

- 2.1. Visually inspect the rectifier units for evidence of any loose connections, burned places or arc tracks.
- 2.2. Record by rectifier unit below (if none are found indicate by the word “none” in comments section).

Rectifier No.	Comments	Satisfactory (Yes/No)
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		

Signature:		Date:		S No.:	
-------------------	--	--------------	--	---------------	--

3. ELECTRICIAN: Date ___/___/___ Time (am/pm) _____

- 3.1. From the outside, ensure all openings are clear of any material that will reduce ventilation of components on all twelve of the rectifier units.

Rectifier No.	Comments	Satisfactory (Yes/No)
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		

Signature:		Date:		S No.:	
-------------------	--	--------------	--	---------------	--

2013 Rectifier Units Data Information Sheets

Rectifier Data Information is correct for each rectifier listed by placing Yes or NO in the column provided. Line through any errors and write in correct information.

Rectifier Unit Number	Rectifier Serial Number	Rectifier Mfg:	Rectifier Rated AC Input:	Rectifier Rated DC Output:	Installation Date	Rectifier Data Information Correct (Yes/NO)
<u>R1</u>	93C1973	Good-All	Volts:480 AC, Amps: 8.0 Phase: 3	Volts 50 DC Amps: 100	2/94	
<u>R2</u>	C090886	Corpro	Volts:480 AC, Amps: 8.0 Phase: 3	Volts 50 DC Amps: 100	2/94	
<u>R3</u>	89C2101	Good-All	Volts:480 AC, Amps: 2.08 Phase: 3	Volts 20 DC Amps: 60	4/90	
<u>R4</u>	89C2100	Good-All	Volts:480 AC, Amps: 2.08 Phase: 3	Volts 20 DC Amps: 60	4/90	
<u>R5</u>	91C2276	Good-All	Volts:480 AC, Amps: 2.1 Phase: 3	Volts 20 DC Amps: 60	1/92	
<u>R6</u>	91C2280	Good-All	Volts:480 AC, Amps: 2.1 Phase: 3	Volts 20 DC Amps: 60	1/92	

2013 Rectifier Units Data Information Sheets

Rectifier Unit Number	Rectifier Serial Number	Rectifier Mfg:	Rectifier Rated AC Input:	Rectifier Rated DC Output:	Installation Date	Rectifier Data Information Correct (Yes/NO)
<u>R7</u>	91C2277	Good-All	Volts:480 AC, Amps: 2.1 Phase: 3	Volts 20 DC Amps: 60	1/92	
<u>R8</u>	91C2279	Good-All	Volts:480 AC, Amps: 2.1 Phase: 3	Volts 20 DC Amps: 60	1/92	
<u>R9</u>	C091461	Corrpro	Volts:480 AC, Amps: 2.8 Phase: 3	Volts 24 DC Amps: 60	8/20/10	
<u>R10</u>	C090885	Corrpro	Volts:480 AC, Amps: 2.8 Phase: 3	Volts 24 DC Amps: 60	1/92 7/09	
<u>R11</u>	95C2927	Good-All	Volts:480 AC, Amps: 2.3 Phase: 3	Volts 20 DC Amps: 60	10/95	
<u>R12</u>	95C2928	Good-All	Volts:480 AC, Amps: 2.3 Phase: 3	Volts 20 DC Amps: 60	10/95	

2013 Rectifier Units Data Information Sheets

With both rectifier pairs operating, perform the following inspection and tests on each liner.

Highlight all LINER-TO-SOIL readings greater than -0.85 Vdc. Example: -0.84 Vdc is greater than -0.85 Vdc.

Rectifier Unit Numbers R1 R2

Rectifier Serial Numbers 93C1973 C090886

Start Date: _____ Time: _____

2013 Readings taken by: _____

LINER NUMBER	LINER-TO-SOIL POTENTIAL (Volts)				REMARKS*
	2010 Date Taken	2011 Date Taken	2012 Date Taken	2013 Date Taken / /	
MM3	-1.75	-1.93	-2.44		
MM4	-2.10	-2.11	-3.20		
MM5	-2.28	-2.14	-3.66		
MM6	-2.94	-2.83	-4.29		
MM7	-3.27	-3.18	-4.52		
MM8	-2.49	-2.66	-4.26		
MM9	-2.03	-1.80	-2.55		
MM10	-2.15	-1.98	-3.01		
MM11	-1.88	-1.75	-2.55		
MM12	-1.80	-1.60	-2.38		
MM13	-1.68	-1.54	-2.07		
MM14	-1.78	-1.68	-2.36		
MM15	-1.55	-1.52	-2.39		
MM16	-1.62	-1.49	-2.22		
MM17	-1.66	-1.41	-2.15		
MM18	-1.84	-1.75	-2.61		
MM19	-2.18	-2.01	-3.03		
MM20	-2.28	-2.23	-3.18		
MM21	-2.56	-2.50	-3.60		
MM22	-2.82	-2.53	-3.64		
MM23	-2.27	-2.23	-3.11		
MM24	-2.15	-2.07	-2.88		
MM25	-2.16	-2.13	-2.88		
MM26	-2.36	-2.31	-3.46		
MM27	-2.87	-2.48	-3.87		
MM28	-2.94	-2.61	-3.86		

*Remarks reflect remedial actions and date completed

2013 Rectifier Units Data Information Sheets

With both rectifier pairs operating, perform the following inspection and tests on each liner.

Highlight all LINER-TO-SOIL readings greater than -0.85 Vdc. Example: -0.84 Vdc is greater than -0.85 Vdc.

Rectifier Unit Numbers R1 R2

Rectifier Serial Numbers 93C1973 C090886

Start Date: _____ Time: _____

2013 Readings taken by: _____

LINER NUMBER	LINER-TO-SOIL POTENTIAL (Volts)				REMARKS*
	2010 Date Taken <u>4/15/10</u>	2011 Date Taken <u>5/12/11</u>	2012 Date Taken <u>6/25/12</u>	2013 Date Taken <u> / / </u>	
MM29	-2.85	-2.29	-2.89		
MM30	-2.59	-2.37	-3.15		
MM31	-2.39	-2.30	-3.24		
MM32	-2.10	-2.14	-3.08		
MM33	-2.26	-2.35	-3.44		
MM34	-1.86	-2.08	-3.17		
MM35	-1.48	-1.58	-1.99		
MM36	-1.79	-1.75	-2.58		
MM37	-1.98	-1.98	-2.89		
MM38	-2.18	-2.08	-3.08		
MM39	-1.98	-1.87	-2.77		
MM40	-2.33	-1.89	-2.85		
MM41	-2.55	-1.85	-2.85		
MM42	-2.48	-2.08	-3.01		
MM43	-2.43	-2.14	-3.05		
MM44	-2.49	-2.36	-3.41		
MM45	-2.15	-1.89	-2.54		
MM46	-1.96	-1.83	-2.40		
MM47	-2.03	-2.00	-2.44		
MM48	-1.77	-1.85	-2.36		
MM49	-1.52	-1.70	-1.90		
MM50	-1.34	-1.57	-1.62		
MM51	-1.11	-1.44	-1.36		
MM52	-1.04	-1.62	-1.33		

*Remarks reflect remedial actions and date completed

2013 Rectifier Units Data Information Sheets

2010

Start Date/Time: 04/19/10 Time: _____

ANODE SHUNT NUMBER	ANODE SHUNT VOLTAGE	LINER SHUNT NUMBER	LINER SHUNT Voltage	DATE	BY	REMARKS*
R1 (LL/MM&MM/NN)	11.2	R1 (PP)	24.0	4/19/10	MB	
R1 (NN/OO)	36.7	R1 (NN/OO)	17.6	4/19/10	MB	
R1 (OO/PP&PP/QQ)	2.0	R1 (LL/MM)	8.1	4/19/10	MB	

2011

Start Date/Time: 05/12/11 Time: 1300

ANODE SHUNT NUMBER	ANODE SHUNT VOLTAGE	LINER SHUNT NUMBER	LINER SHUNT Voltage	DATE	BY	REMARKS*
R1 (LL/MM&MM/NN)	12.0 mv	R1 (PP)	7.3 mv	5/12/11	MB	
R1 (NN/OO)	36.3 mv	R1 (NN/OO)	17.3 mv	5/12/11	MB	
R1 (OO/PP&PP/QQ)	.1 mv	R1 (LL/MM)	23.8 mv	5/12/11	MB	

2012

Start Date/Time: 6/27/12 Time: 0930

ANODE SHUNT NUMBER	ANODE SHUNT VOLTAGE	LINER SHUNT NUMBER	LINER SHUNT Voltage	DATE	BY	REMARKS*
R1 (LL/MM&MM/NN)	14.58mv	R1 (PP)	26.47mv	6/27/12	CAJ	
R1 (NN/OO)	40.45mv	R1 (NN/OO)	21.0mv	6/27/12	CAJ	
R1 (OO/PP&PP/QQ)	.014mv	R1 (LL/MM)	8.30mv	6/27/12	CAJ	

2013

Start Date/Time: _____ Time: _____

ANODE SHUNT NUMBER	ANODE SHUNT VOLTAGE	LINER SHUNT NUMBER	LINER SHUNT Voltage	DATE	BY	REMARKS*
R1 (LL/MM&MM/NN)		R1 (PP)				
R1 (NN/OO)		R1 (NN/OO)				
R1 (OO/PP&PP/QQ)		R1 (LL/MM)				

2014

Start Date/Time: _____ Time: _____

ANODE SHUNT NUMBER	ANODE SHUNT VOLTAGE	LINER SHUNT NUMBER	LINER SHUNT Voltage	DATE	BY	REMARKS*
R1 (LL/MM&MM/NN)		R1 (PP)				
R1 (NN/OO)		R1 (NN/OO)				
R1 (OO/PP&PP/QQ)		R1 (LL/MM)				

2015

Start Date/Time: _____ Time: _____

ANODE SHUNT NUMBER	ANODE SHUNT VOLTAGE	LINER SHUNT NUMBER	LINER SHUNT Voltage	DATE	BY	REMARKS*
R1 (LL/MM&MM/NN)		R1 (PP)				
R1 (NN/OO)		R1 (NN/OO)				
R1 (OO/PP&PP/QQ)		R1 (LL/MM)				

*Remarks reflect remedial actions and date completed

2013 Rectifier Units Data Information Sheets

2010

Start Date/Time: 04/19/10 Time: _____

ANODE SHUNT NUMBER	ANODE SHUNT VOLTAGE	LINER SHUNT NUMBER	LINER SHUNT Voltage	DATE	BY	REMARKS*
R2 (OO/PP&PP/QQ)	21.2	R2 (PP)	5.2	4/19/10	MB	
R2 (NN/OO)	33.1	R2 (NN/OO)	15.5	4/19/10	MB	
R2 (LL/MM&MM/NN)	49.6	R2 (LL/MM)	16.7	4/19/10	MB	

2011

Start Date/Time: 05/12/11 Time: 1300

ANODE SHUNT NUMBER	ANODE SHUNT VOLTAGE	LINER SHUNT NUMBER	LINER SHUNT Voltage	DATE	BY	REMARKS*
R2 (OO/PP&PP/QQ)	32.8 mv	R2 (PP)	4.9 mv	5/12/11	MB	
R2 (NN/OO)	21.3 mv	R2 (NN/OO)	15.4 mv	5/12/11	MB	
R2 (LL/MM&MM/NN)	49.2 mv	R2 (LL/MM)	16.7 mv	5/12/11	MB	

2012

Start Date/Time: 6/27/12 Time: 1030

ANODE SHUNT NUMBER	ANODE SHUNT VOLTAGE	LINER SHUNT NUMBER	LINER SHUNT Voltage	DATE	BY	REMARKS*
R2 (OO/PP&PP/QQ)	35.60mv	R2 (PP)	8.69mv	6/27/12	MB	
R2 (NN/OO)	26.95mv	R2 (NN/OO)	22.24mv	6/27/12	MB	
R2 (LL/MM&MM/NN)	31.12mv	R2 (LL/MM)	21.57mv	6/27/12	MB	

2013

Start Date/Time: _____

ANODE SHUNT NUMBER	ANODE SHUNT VOLTAGE	LINER SHUNT NUMBER	LINER SHUNT Voltage	DATE	BY	REMARKS*
R2 (OO/PP&PP/QQ)		R2 (PP)				
R2 (NN/OO)		R2 (NN/OO)				
R2 (LL/MM&MM/NN)		R2 (LL/MM)				

2014

Start Date/Time: _____

ANODE SHUNT NUMBER	ANODE SHUNT VOLTAGE	LINER SHUNT NUMBER	LINER SHUNT Voltage	DATE	BY	REMARKS*
R2 (OO/PP&PP/QQ)		R2 (PP)				
R2 (NN/OO)		R2 (NN/OO)				
R2 (LL/MM&MM/NN)		R2 (LL/MM)				

2015

Start Date/Time: _____

ANODE SHUNT NUMBER	ANODE SHUNT VOLTAGE	LINER SHUNT NUMBER	LINER SHUNT Voltage	DATE	BY	REMARKS*
R2 (OO/PP&PP/QQ)		R2 (PP)				
R2 (NN/OO)		R2 (NN/OO)				
R2 (LL/MM&MM/NN)		R2 (LL/MM)				

*Remarks reflect remedial actions and date completed

Rectifier Units Data Information Sheets

2009

LINER NUMBER	STATIONARY REFERENCE ELECTRODE NUMBER	LINER-TO- STATIONARY REFERENCE ELECTRODE POTENTIAL	DATE	BY	REMARKS*
LL26	E2	-.84 VDC	04/21/09	NL	

2010

Start Date/Time: 04/19/10 Time: _____

LINER NUMBER	STATIONARY REFERENCE ELECTRODE NUMBER	LINER-TO- STATIONARY REFERENCE ELECTRODE POTENTIAL	DATE	BY	REMARKS*
LL26	E2	-.73.	4/19/10	MB	

2011

Start Date/Time: 05/12/11 Time: 1300 _____

LINER NUMBER	STATIONARY REFERENCE ELECTRODE NUMBER	LINER-TO- STATIONARY REFERENCE ELECTRODE POTENTIAL	DATE	BY	REMARKS*
LL26	E2	-.73 VOC	5/12/11	MB	

2012

Start Date/Time: _____

LINER NUMBER	STATIONARY REFERENCE ELECTRODE NUMBER	LINER-TO- STATIONARY REFERENCE ELECTRODE POTENTIAL	DATE	BY	REMARKS*
LL26	E2	-1.4	6/27/12	MB	

2013

Start Date/Time: _____

LINER NUMBER	STATIONARY REFERENCE ELECTRODE NUMBER	LINER-TO- STATIONARY REFERENCE ELECTRODE POTENTIAL	DATE	BY	REMARKS*
LL26	E2				

2014

Start Date/Time: _____

LINER NUMBER	STATIONARY REFERENCE ELECTRODE NUMBER	LINER-TO- STATIONARY REFERENCE ELECTRODE POTENTIAL	DATE	BY	REMARKS*
LL26	E2				

2015

Start Date/Time: _____

LINER NUMBER	STATIONARY REFERENCE ELECTRODE NUMBER	LINER-TO- STATIONARY REFERENCE ELECTRODE POTENTIAL	DATE	BY	REMARKS*
LL26	E2				

*Remarks reflect remedial actions and date completed

Attachment F-5

Examples of RSWF Corrosion Surveillance Liner Assessment

Statement-of-work and Inspection Report

October 16, 2013

CCN 231483

Mr. Brian R. Monson, Manager
Hazardous Waste Program
Idaho Department of Environmental Quality
1410 North Hilton
Boise, ID 83706

SUBJECT: Materials and Fuels Complex- Radioactive Scrap and Waste Facility 2013 Four-year Corrosion Surveillance Liner Assessment Report

Reference: Materials and Fuels Complex Hazardous Waste Management Act/Resource Conservation and Recovery Act Partial Permit #ID4890008952, Module V, Condition V.M., Corrosion Surveillance Liners, Effective Date, August 16, 2004

Dear Mr. Monson:

Enclosed please find three (3) copies of the certified 2013 Corrosion Assessment Report- Radioactive Scrap and Waste Facility Impressed Current Cathodic Protection System, written by Northwest Corrosion Engineering, fulfilling the permit conditions in V.M. and the permittee's certification required by permit condition I.W. Permit condition V.M.1 states: "One of the liners installed to monitor the effectiveness of the impressed current Cathodic Protection System shall be pulled every four (4) years, and inspected in accordance with Attachment 4 of this permit." Permit conditions V.M.1 (a and b) add: "(a) the inspection shall be performed by a corrosion expert, and shall be the basis of a report evaluating the effectiveness of the Cathodic Protection System, and (b) the permittee shall evaluate and propose a revised liner pull inspection schedule, as appropriate, based on the findings of this report and data from the corrosion surveillance tubes." Submittal of this report fulfills permit condition V.M.2 requiring submittal of the inspection report and proposed liner pull schedule, if applicable, within forty-five days of receipt of the report from the corrosion expert.

The Northwest Corrosion Engineering report, mailed to Battelle Energy Alliance on September 11, 2013, concludes that the Radioactive Scrap and Waste Facility (RSWF) Cathodic Protection System continues to be effective in protecting the liners of the RSWF for general external corrosion. Further, based upon the results of the recently completed evaluation as well as inspections performed 1997, 2001, 2005 and 2009, the time between liner removals could be lengthened so as to allow for inspections of the remaining six (6) surrogate liners to extend further into the future. The Idaho National Laboratory is currently evaluating whether or not we will submit a permit modification request for a specific increase in time frame between liner pulls as recommended in the report.

Mr. Brian R. Monson
October 16, 2013
CCN 231483
Page 2

Please contact Alan Carvo at (208) 533-7363 if you have questions regarding this information.

Sincerely,



Carolyn S. Mascareñas, Director
Environmental Support and Services

MJH:MR

Enclosure

cc: J. Alvarez, INL, MS 3695
M. Ayers, DOE-ID, MS 1222
P. K. Bowers, DOE-ID, MS 1226
T.D. Butler, DOE-ID, MS 1216
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R. W. Denning, DOE-ID, MS 7135
S. D. Dossett, INL, MS 3405
J. J. Grossenbacher, INL, MS 3695
L. Guinn Montgomery, INL, MS 3899
N. K. Hernandez, DOE-ID, MS 1216
D. P. Johnson, INL, MS 6144
C. D. Natoni, DOE-ID, MS 6142
S. M. Olson, DOE-ID, MS 1240
T. L. Perkins, DOE-ID, MS 1216
R. Richardson, DOE-ID, MS 1240
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Mr. Brian R. Monson
October 16, 2013
CCN 231483
Page 3

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J. T. Hartley, MS 6116
T. M. Hipp, MS 6112
M. J. Holzemer, MS 6134 *per telecon S.L.*
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Carolyn S. Mascareñas Letter File (CSM-024-13)

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BATTELLE ENERGY ALLIANCE
AS
OPERATOR**

**REGULATORY CERTIFICATION
[IDAPA 58.01.05.012; 40 CFR 270.11(d) and 270.30(k)]**

Materials and Fuels Complex- Radioactive Scrap and Waste Facility 2013 Four-Year Corrosion Surveillance Liner Assessment Report for the Idaho National Laboratory Materials and Fuels Complex HWMA/RCRA Final Permit, EPA No. ID4890008952

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision according to a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Operator Signature



Sharon D. Dossett, Director of ES&H,
Battelle Energy Alliance, LLC



Date

CERTIFICATION STATEMENT
DEPARTMENT OF ENERGY – IDAHO OPERATIONS OFFICE
AS
OWNER

REGULATORY CERTIFICATION
[IDAPA 58.01.05.012; 40 CFR 270.11(d) and 270.30(k)]

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Owner Signature



10/4/2013

Robert D. Boston, Deputy Manager Operations Support
Department of Energy Idaho Operations Office

Date

2013 Corrosion Assessment Report

-

**Radioactive Scrap and Waste Facility
Impressed Current Cathodic Protection System**

Submitted To:

**Battelle Energy Alliance
Idaho National Laboratory
Materials and Fuels Complex**

Prepared By:

**Jeremy A. Hailey, P.E.
Northwest Corrosion Engineering
Sedro-Woolley Washington
August 26, 2013**

INTRODUCTION

The Materials and Fuels Complex (MFC) of the Idaho National Laboratory (INL) includes a Radioactive Scrap and Waste Facility (RSWF) that provides interim storage for spent fuel and remote-handled mixed and radioactive waste. The waste materials are housed in steel containers that are placed into individual carbon steel liners. The steel liners are inserted vertically into the ground at varying depths. All liners are connected to an impressed current cathodic protection system that provides corrosion protection current to the liners external surfaces.

The RSWF is permitted as a Miscellaneous Storage Area under the INL's HWMA RCRA Storage and Treatment Permit¹. Permit Condition V.M.1 requires INL to remove an empty liner from the RSWF and employ an independent corrosion engineer to supervise the inspections and measurements of the liner to assess if corrosion of the liner has occurred. Results of the evaluation are to be used to determine the effectiveness of the corrosion control system and to assess the adequacy of the liner pull/inspection schedule. The initial liner pull and evaluation was completed in 1997 and then every four subsequent years. To date, five of the ten original liners installed in 1993 for the purposes of removal and inspection remain buried and available for future evaluation. The purpose of this report is to document the fifth evaluation conducted in compliance with the RCRA Permit requirements.

QUALIFICATIONS

The work completed under this project was conducted by Jeremy A. Hailey, P.E. Mr. Hailey is a registered Professional Engineer in the State of Idaho and is certified by the National Association of Corrosion Engineers (NACE) as a Corrosion Specialist P, a Cathodic Protection Specialist, and certified Coating Inspector with over 19 years experience in the corrosion industry. Mr. Hailey also serves as an instructor for NACE International Cathodic Protection Certification and Training Program, providing instruction for the associations Cathodic Protection Tester (CP Level 1), Cathodic Protection Technician (CP Level 2), and Coatings in Conjunction with Cathodic Protection certification programs.

Mr. Hailey has worked in numerous facilities similar to the INL conducting corrosion control assessments, testing, and system troubleshooting. Examples of facilities include: oil refineries, crude oil storage facilities (Valdez Marine Terminal Valdez, Alaska), and the radioactive material Waste Treatment Plant on the Hanford site. A copy of Mr. Hailey's current resume is included in Appendix B.

SYSTEM DESCRIPTION

Liners

As described in Table 1 in the System Design Description (SDD-225), there are a total of 1304 liners, of which five remain for corrosion surveillance and the rest are for storage. A majority of the liners are 16, 24, or 26 inches in diameter and range in length from 120 to 164 inches. The remaining liners (8 total) are 30, 48, and 60 inches in diameter. Liner wall thickness is based upon diameter and ranges between 0.25 – 0.5 inches thick. Due to the effects of the varying

¹ HWMA RCRA Storage and Treatment Permit for the Materials and Fuels Complex, EPA ID No: 4890008952, INL Document No. PER-116, Rev. 4, October 2008 (Effective Date: August 16, 2004)

levels of radioactivity on the life and effectiveness of coating materials, most liners were installed without an external protective coating. It is reported in the System Design Description the earlier liner designs included coatings. However, additional steel life afforded to these coated liners has not been taken into account in the cathodic protection system design. The liners were placed in an oversized hole in the earth and surrounded with non-corrosive sand slurry (consisting of washed sand, water, and air entraining solution) during the backfilling process.

Cathodic Protection System

External corrosion control is provided to the steel liners through the use of an impressed current cathodic protection system (CPS). The CPS consists of a series of linseed oil-impregnated graphite anodes installed throughout the RSWF. Individual anodes are spliced into a varying number of anode header cables that are routed to anode junction boxes for output monitoring purposes. Power is supplied to the anode array by twelve transformer rectifiers located along the northwestern and southeastern side of the RSWF perimeter fencing. The typical design life of individual anodes installed at this facility is 15 – 20 years. There are approximately 528 anodes installed at the RSWF facility for an average of about one anode for every 2.5 liners.

A total of six stationary zinc reference electrodes were installed throughout the site. The reference electrodes are located at the bottom of, and 6-inches lineal from, their associated liner.

Each liner is made electrically continuous with the CPS through the connection of a negative lead wire exothermically welded to the top of the liner. Each negative lead is then spliced into a common negative header cable and routed back to its corresponding rectifier pair.

Rectifier output (DC voltage and DC amperage) is measured and recorded each month. The collected data is reviewed for trends that may indicate deficiencies within the CPS. Liner-to-soil potential measurements are recorded at each liner using a portable reference electrode on an annual basis. Monitoring of the individual stationary reference electrodes is also completed during the annual liner-to-soil electrical potential survey.

Currently, cathodic protection of the external liner surfaces is being established by ensuring that each tested location measures a minimum of -850 millivolts relative to a saturated copper-copper sulfate reference electrode. The recorded readings are measured with all current sources (rectifiers) turned on.

DOCUMENT REVIEW

The following documents were reviewed as part of this investigation.

1. MFC771 Cathodic Protection 12M Test (RCRA Permit Required) 2013

This binder tabulates cathodic protection system test data collected in May 2013, June 2012, and May 2011. Data includes: liner-to-soil potentials, rectifier power consumption and output, shunt box current measurements, potential data using the installed stationary zinc reference electrodes, and conductor impedance measurements.

A review of the provided data shows that all liner-to-soil electrical potential measurements were a minimum of -850 mV referenced to a portable copper-copper sulfate reference electrode and all transformer rectifiers are discharging DC electrical current as designed.

2. 2009 Corrosion Assessment Report - Radioactive Scrap and Waste Facility Impressed Current Cathodic Protection System

The report issued by Northwest Corrosion Engineering in 2009 details the results of the fourth quadrennial liner pull. This report concludes that the facilities cathodic protection systems are providing adequate corrosion protection current to the installed liners in accordance with industry standards.

3. System Design Description: Radioactive Scrap and Waste Facility Storage Liner System (06/16/08)

The System Design Description provides a thorough accounting of the design, installation, and operating parameters of the corrosion control systems installed at the RSWF. Included in the appendix of this document is a System History describing the major changes and work completed at the RSWF as it pertains to the cathodic protection systems.

4. 2005 Corrosion Assessment Report for the Cathodic Protection System of the Radioactive Scrap and Waste Facility, prepared by Jetseal, November 7, 2005

The 2005 quadrennial liner pull and subsequent corrosion investigation is presented in this document. In general, the report finds that wall loss due to corrosion had not occurred on the extracted liner and that the cathodic protection system has been operating properly for the previous four years.

ON-SITE TESTING

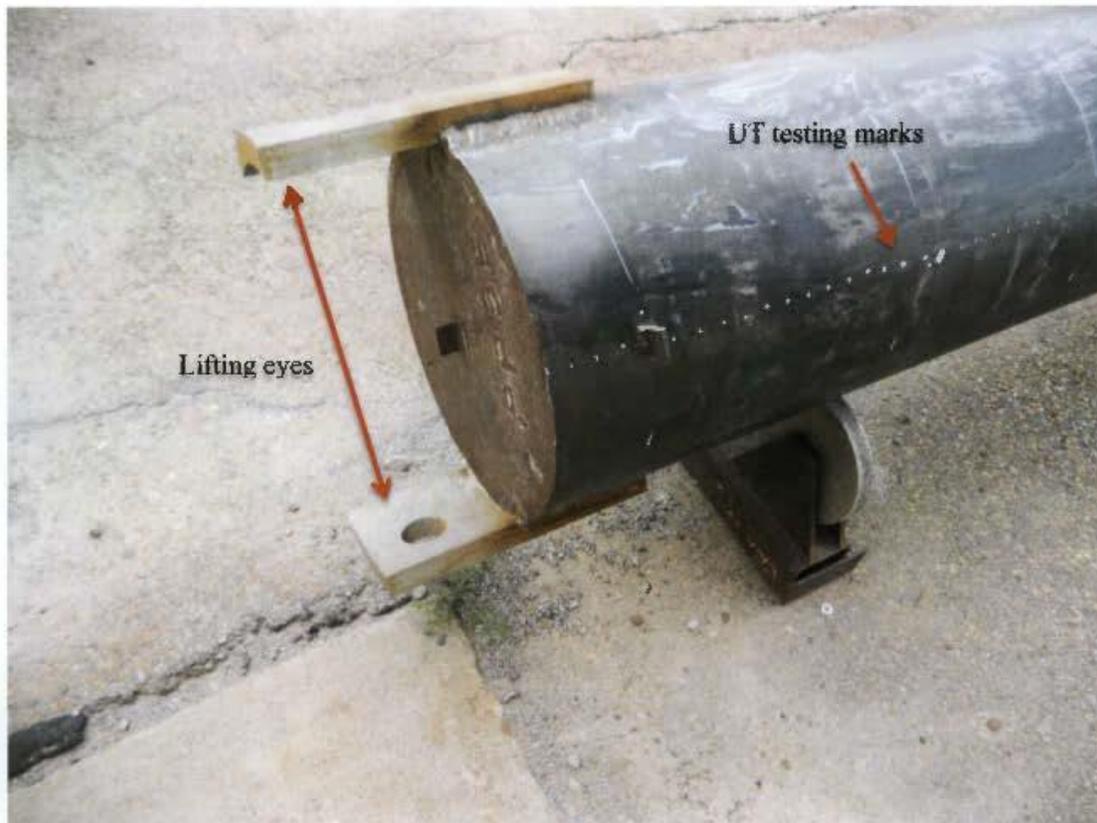
Liner Removal

Prior to our site visit, one of the remaining six steel liners was removed from the ground such that a visual and ultrasonic thickness conditional assessment could be performed. In general, removal of an empty liner involves the following steps: cutting the negative return cable to the liner, drilling multiple small diameter holes around the liner in order to loosen the soil, welding two lifting eyes to the top of the liner, and pulling the liner out of the ground using a crane.

The manner in which the liner is removed is completed so that minimal damage will occur to its external surfaces such that a thorough corrosion investigation can be conducted.

Ultra-Sonic Thickness Testing

Ultra-sonic thickness (UT) testing of the pulled liner was completed after the liner had been inspected upon removal from the ground and cleaned of all foreign debris. UT data was collected along the length of the liner at one-inch intervals at eight separate radial positions (45° separations). A total of 1184 locations were measured on the removed liner. The minimum thickness recorded on the nominal 0.250-inch thick pipe wall was 0.256-inches indicating that there was no measured wall loss. Results of the UT testing are provided in Appendix A.



Photograph 1: Liner PP-35

Analysis of On-Site Visual Inspection

Conditional Assessment of Removed Liner

A visual inspection of the exterior surfaces of the removed liner did not reveal any noted instances of corrosion related damage. An estimated 75% of the original coating was still present on the surface of the liner and was still in good condition. The coating is of unknown type and appears to have been applied to a thickness of approximately 4 – 8 mils (about the thickness of 1 - 2 sheets of standard paper).

The portions of the liner where the coating had either deteriorated or was damaged during the liner retrieval/cleaning process did show exposed steel. However there was no loss of steel wall and only slight surface rust staining was noted. It is likely that these instances of rust bloom are a result of moisture being left on the surface after the cleaning process and are not attributable to corrosion as a result of being buried.

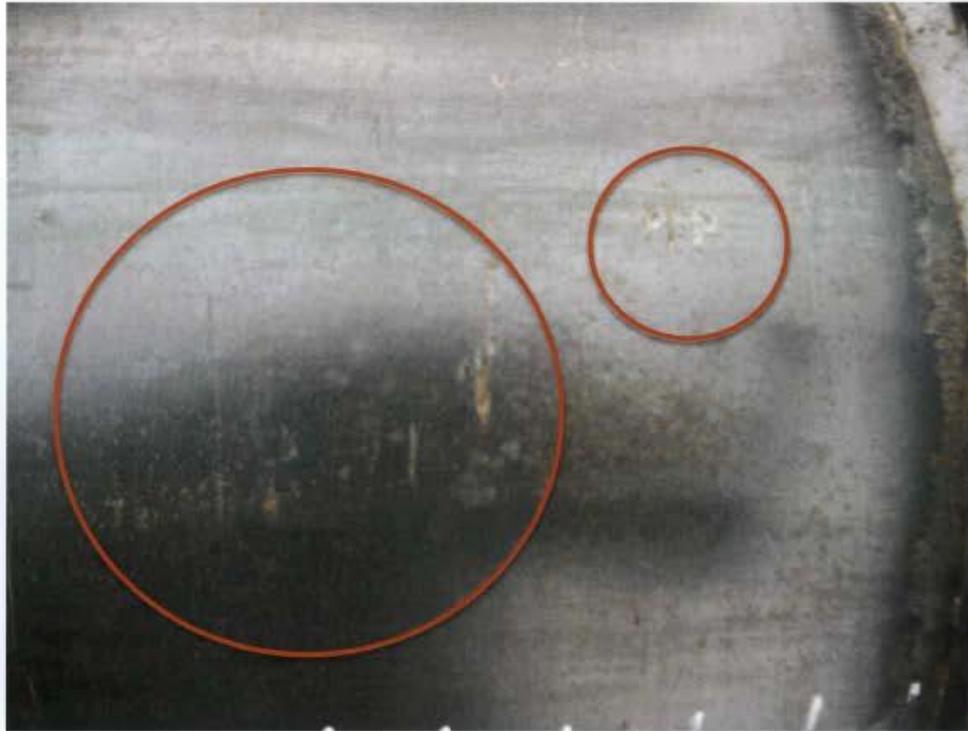
A steel plate is welded to the bottom of the liner and is used to discourage frost heaving. The weld bead was in very good condition and did not show any signs of corrosion related damage.

Minor pitting was detected on the surface of the weld bead, however this occurred during the welding process and does not indicate a lack of effective corrosion control.



Photograph 2: Liner PP-35 baseplate, no corrosion damage, weld is in good condition

Limited mechanical damage experienced during the installation and/or retrieval process was evident on the side-wall of the liner (Photograph 3). These minor surface disruptions resulted in damage to the coating and exposure of the underlying steel to the environment. Once exposed, the provided cathodic protection current resulted in no visible pitting or other corrosion related metal deterioration.



Photograph 3: Possible mechanical damage



Photograph 4: Close-up of bottom of liner, no observed corrosion damage

Evaluation of Effectiveness of the Cathodic Protection System

Based upon the visual examination of the removed liner, results of previous liner removal evaluations, UT testing data, and field data collected as part of the routine cathodic protection system monitoring, it is evident that the corrosion control systems located in the RSWF are providing adequate corrosion protection to the buried portions of the steel liners. The cathodic protection current distribution along the entire liner length is resulting in complete protection of the steel surfaces. In addition, all groundbed resistances are less than 1.0 ohms. This results in very low voltage gradients surrounding the anodes and no concern for stray current interference between adjacent liner sets.

Evaluation of 4-Year Liner Removal Schedule

Removal and subsequent examination of a liner every four years is a conservative time interval for assessing the effectiveness of the RSWF cathodic protection systems. Based upon the results of the recently completed evaluation as well as past inspections, the time interval between liner removals could be lengthened so as to allow for inspections to extend further into the future.

SUMMARY

1. There are a total of 1304 carbon steel liners used to store radioactive waste installed at the Radioactive Scrap and Waste Facility. The RSWF employs a series of impressed current cathodic protection systems to provide external corrosion control to the liner surfaces.
2. A total of ten liners were installed in 1993 with the purpose of removing a single liner every four years in order to conduct a visual inspection of its external surfaces.
3. To date, five of the ten liners have been removed. Inspections completed on these liners have not revealed any instances of corrosion related damage.
4. Ultra-Sonic thickness testing completed on the liner removed in July 2013 did not show instances of external or internal pitting damage at the tested locations.
5. The operation, data collection and analysis, and maintenance of the corrosion control systems installed at the RSWF are being overseen by an individual who is trained by the National Association of Corrosion Engineers as a Cathodic Protection Tester and is a current registered Professional Engineer.

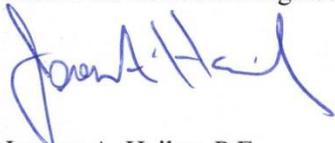
CONCLUSIONS

1. The impressed current cathodic protection systems utilized by the RSWF are providing adequate external corrosion control to the installed liners. This conclusion is based upon a visual examination of the recently removed liner in conjunction with an evaluation of the associated ultrasonic thickness test data. The corrosion control system testing methods, routine monitoring intervals, and quadrennial visual inspection and steel wall thickness testing completed on removed liners meet or exceed current industry standards for level of care as described in NACE SP1069-2007 Control of External Corrosion on Underground or Submerged Metallic Piping Systems.
2. As part of the annual system checkout, procedures include negative header cable impedance testing. This test is used to confirm that individual liners are electrically continuous with the

cathodic protection system. However, liner continuity is confirmed when potential measurements show a shift in the negative direction with the cathodic protection system in operation. Past testing has confirmed that all negative liner connections are sound and operating effectively. Once continuity is established on the negative (protected) side of the circuit, additional verification on an annual basis is not warranted.

3. Because all liners removed to date have been in like-new condition, it would be acceptable from a liner corrosion monitoring standpoint to extend the retrieval interval from four years to six years without jeopardizing the integrity of the inspection program.

Submitted By:
Northwest Corrosion Engineering



Jeremy A. Hailey, P.E.
NACE Corrosion Specialist, P No 5401

APPENDIX A

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ULTRASONIC THICKNESS TESTING DATA

Ultrasonic Thickness Measurement Record

Date: 7/9/2013

Procedure: TPR-13445 Rev 1

Component: Liner PP35

Material: Carbon Steel

Pipe Schedule: 10 (nominal wall thickness - .250")

Instrument Brand: Panametrics

Model: 27DL Plus

Serial No.: 91766412

Transducer Brand: Panametrics

Model: D790 SM

Serial No.: 1092107

Transducer Size: 3/8

Frequency: 5 Mhz

Calibration Block: 727369

Reference Thickness used: .100", .500"

Cal Due: 6/19/2014

Material Temp: Ambient (within 25 Degrees)

Couplant: Ultragel II

A001	0.259	8001	0.262	C001	0.263	0001	0.262	E001	0.260	F001	0.262	G001	0.261	H001	0.257
A002	0.259	8002	0.262	C002	0.264	0002	0.262	E002	0.260	F002	0.262	G002	0.261	H002	0.260
A003	0.260	8003	0.262	C003	0.26S	0003	0.261	E003	0.260	F003	0.261	G003	0.258	H003	0.258
A004	0.260	8004	0.263	C004	0.263	0004	0.261	E004	0.259	F004	0.261	G004	0.261	H004	0.258
AD0S	0.259	B00S	0.262	C00S	0.263	000S	0.262	EDDS	0.259	F00S	0.261	GOOS	0.260	HOOS	0.259
AD0S	0.259	B00S	0.261	C00S	0.263	000S	0.264	E006	0.259	F00S	0.260	GOOS	0.260	HOOS	0.258
A007	0.262	8007	0.262	C007	0.263	0007	0.264	E007	0.259	F007	0.259	G007	0.259	H007	0.259
AO0B	0.259	B00B	0.262	C00B	0.263	0008	0.263	E00B	0.259	F00B	0.260	G00B	0.260	HO0B	0.258
A00S	0.258	B00S	0.261	C00S	0.262	000S	0.263	E00S	0.260	F00S	0.260	GO0S	0.260	HO0S	0.259
A010	0.259	8010	0.261	C010	0.263	0010	0.263	E010	0.259	F010	0.259	G010	0.259	H010	0.259
A011	0.258	8011	0.270	C011	0.263	0011	0.267	E011	0.258	F011	0.260	G011	0.260	H011	0.259
A012	0.258	8012	0.263	C012	0.261	0012	0.268	E012	0.258	F012	0.260	G012	0.260	H012	0.258
A013	0.25S	8013	0.261	C013	0.262	0013	0.262	E013	0.259	F013	0.261	G013	0.260	H013	0.259
A014	0.259	8014	0.261	C014	0.263	0014	0.264	E014	0.260	F014	0.260	G014	0.258	H014	0.258
A01S	0.257	B01S	0.260	C01S	0.262	001S	0.263	E01S	0.259	F01S	0.261	G01S	0.259	H01S	0.258
A01S	0.258	B01S	0.262	C01S	0.262	001S	0.262	E01S	0.258	F01S	0.260	G01S	0.259	H01S	0.258
A017	0.257	8017	0.261	C017	0.262	0017	0.262	E017	0.259	F017	0.260	G017	0.260	H017	0.259
A018	0.257	8018	0.260	C01B	0.263	0018	0.261	E01B	0.25S	F01B	0.261	G01B	0.259	H018	0.258
A01S	0.258	801S	0.260	C019	0.262	001S	0.262	E01S	0.258	F01S	0.261	G01S	0.260	H01S	0.259
A020	0.258	8020	0.262	C020	0.264	0020	0.262	E020	0.258	F020	0.260	G020	0.260	H020	0.259
A021	0.258	8021	0.261	C021	0.263	0021	0.262	E021	0.258	F021	0.262	G021	0.260	H021	0.259
A022	0.258	8022	0.261	C022	0.264	0022	0.262	E022	0.259	F022	0.259	G022	0.260	H022	0.259
A023	0.257	8023	0.262	C023	0.268	0023	0.262	E023	0.258	F023	0.259	G023	0.260	H023	0.259
A024	0.258	8024	0.260	C024	0.263	0024	0.262	E024	0.256	F024	0.262	G024	0.259	H024	0.259
A02S	0.257	B02S	0.261	C02S	0.264	002S	0.263	E02S	0.258	F02S	0.262	G02S	0.261	H02S	0.260
A026	0.257	B02S	0.261	C026	0.264	002S	0.262	E02S	0.260	F02S	0.261	G02S	0.261	H02S	0.258
A027	0.258	8027	0.260	C027	0.264	0027	0.263	E027	0.258	F027	0.261	G027	0.260	H027	0.259
A028	0.258	8028	0.261	C02B	0.263	0028	0.263	E028	0.259	F02B	0.260	G02B	0.261	H028	0.260
A02S	0.257	8029	0.261	C02S	0.264	002S	0.263	E02S	0.261	F02S	0.263	G02S	0.262	H02S	0.259
A030	0.260	8030	0.259	C030	0.263	0030	0.262	E030	0.259	F030	0.262	G030	0.261	H030	0.259
A031	0.258	8031	0.262	C031	0.263	0031	0.264	E031	0.261	F031	0.262	G031	0.260	H031	0.259
A032	0.257	8032	0.262	C032	0.263	0032	0.264	E032	0.259	F032	0.260	G032	0.259	H032	0.259
A033	0.259	8033	0.261	C033	0.262	0033	0.264	E033	0.259	F033	0.259	G033	0.260	H033	0.260
A034	0.258	8034	0.262	C034	0.263	0034	0.263	E034	0.259	F034	0.263	G034	0.257	H034	0.260

A03S	0.2S9	B03S	0.260	C03S	0.266	D03S	0.263	E03S	0.261	F03S	0.264	G03S	0.260	HD3S	0.260
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A037	0.2S9	8037	0.262	C037	0.267	D037	0.264	E037	0.2SB	F037	0.259	G037	0.260	H037	0.260
A03B	0.260	803B	0.261	C03B	0.265	D03B	0.26S	E03B	0.261	F03B	0.260	G03B	0.261	H03B	0.261
A039	0.260	8039	0.261	C039	0.270	D039	0.263	E039	0.261	F039	0.261	G039	0.259	H039	0.260
A040	0.260	8040	0.263	C040	0.276	D040	0.264	E040	0.263	F040	0.262	G040	0.260	H04D	0.260
A041	0.259	8041	0.263	C041	0.270	D041	0.264	E041	0.262	F041	0.260	G041	0.260	H041	0.260
A042	0.257	8042	0.261	C042	0.266	D042	0.262	E042	0.260	F042	0.260	G042	0.260	H042	0.259
A043	0.260	8043	0.262	C043	0.26B	D043	0.26S	E043	0.2S9	F043	0.262	G043	0.262	HD43	0.261
A044	0.260	8044	0.262	C044	0.271	D044	0.264	E044	0.260	F044	0.261	G044	0.262	H044	0.261
A04S	0.259	8045	0.263	C04S	0.264	D04S	0.262	E04S	0.261	F04S	0.261	G04S	0.262	H04S	0.260
A04G	0.260	8046	0.264	C046	0.263	D046	0.263	E046	0.259	F046	0.262	G046	0.262	H046	0.260
A047	0.259	8047	0.264	C047	0.264	D047	0.264	E047	0.259	F047	0.261	G047	0.262	H047	0.260
A04B	0.260	804B	0.261	C04B	0.264	D04B	0.263	E04B	0.260	F04B	0.262	G04B	0.262	H04B	0.261
A049	0.260	8049	0.262	C049	0.263	D049	0.263	E049	0.261	F049	0.262	G049	0.261	HD49	0.260
A0S0	0.260	8050	0.261	C050	0.260	D0S0	0.263	E0S0	0.262	F0S0	0.262	G0S0	0.261	H0S0	0.260
A0S1	0.260	8051	0.263	C0S1	0.261	D0S1	0.262	E0S1	0.261	F0S1	0.261	G0S1	0.261	H0S1	0.260
A0S2	0.260	80S2	0.262	C0S2	0.263	D0S2	0.26S	E0S2	0.260	F0S2	0.261	G0S2	0.259	H0S2	0.260
A0S3	0.260	80S3	0.260	C0S3	0.265	D0S3	0.263	E0S3	0.261	F0S3	0.261	G0S3	0.260	H0S3	0.259
A0S4	0.260	80S4	0.263	C0S4	0.263	D0S4	0.263	E0S4	0.259	F0S4	0.260	G0S4	0.260	H0S4	0.259
A0SS	0.2S6	80SS	0.261	C0SS	0.26S	D0SS	0.265	E0SS	0.258	F0SS	0.261	G0SS	0.262	H0SS	0.259
A0S6	0.260	80S6	0.261	C0SS	0.265	D0SS	0.264	E0S6	0.260	F0SS	0.261	G0SS	0.264	H0SS	0.2S9
A0S7	0.259	80S7	0.261	C0S7	0.263	D0S7	0.267	E0S7	0.2SB	F0S7	0.260	G0S7	0.266	H0S7	0.259
A0SB	0.259	80SB	0.262	C0SB	0.264	D0SB	0.264	E0SB	0.2SB	F0SB	0.261	G0SB	0.267	H0SB	0.2S9
A0S9	0.261	80S9	0.266	C0S9	0.263	D0SS	0.266	E0S9	0.2SB	F0S9	0.260	G0S9	0.260	H0S9	0.259
A060	0.260	8060	0.261	C060	0.263	D0G0	0.261	E060	0.2SB	F0G0	0.259	G060	0.260	H0B0	0.2SB
A061	0.259	8061	0.260	C061	0.263	D0G1	0.265	E0G1	0.259	F061	0.260	G061	0.260	HD61	0.259
A062	0.261	8062	0.261	C062	0.261	D0G2	0.260	E0G2	0.2SB	F0G2	0.260	G062	0.259	H062	0.259
A063	0.2S8	8063	0.260	C063	0.262	D0G3	0.261	E063	0.260	F063	0.261	G063	0.2S9	H063	0.2S9
A064	0.284	8064	0.260	C064	0.262	D0G4	0.261	E064	0.259	F064	0.261	G064	0.260	H064	0.259
A06S	0.259	806S	0.261	C0GS	0.262	D0GS	0.263	E0GS	0.261	F0GS	0.261	G0SS	0.259	H0GS	0.259
A066	0.261	8066	0.261	C066	0.262	D0GG	0.264	E0GG	0.260	F0GG	0.261	G066	0.260	H066	0.259
A067	0.261	8067	0.261	C067	0.262	D0G7	0.262	E067	0.260	F067	0.260	G0G7	0.259	H067	0.260
A06B	0.260	806B	0.261	C0BB	0.263	D0GB	0.263	E06B	0.260	F06B	0.259	G0GB	0.261	H0BB	0.259
A069	0.259	8069	0.261	C0GS	0.262	D069	0.263	E069	0.260	F069	0.260	G069	0.262	H069	0.259
A070	0.259	8070	0.262	C070	0.263	D070	0.262	E070	0.261	F070	0.261	G070	0.261	HD70	0.259
A071	0.259	8071	0.263	C071	0.264	D071	0.262	E071	0.260	F071	0.261	G071	0.261	H071	0.260
A072	0.259	8072	0.261	C072	0.263	D072	0.262	E072	0.261	F072	0.261	G072	0.262	H072	0.260
A073	0.260	8073	0.262	C073	0.261	D073	0.262	E073	0.262	F073	0.262	G073	0.263	H073	0.259
A074	0.259	8074	0.262	C074	0.264	D074	0.262	E074	0.262	F074	0.262	G074	0.262	H074	0.259
A07S	0.260	807S	0.261	C07S	0.263	D07S	0.262	E07S	0.262	F07S	0.262	G07S	0.260	HD7S	0.260
A076	0.261	8076	0.262	C076	0.263	D07G	0.262	E076	0.261	F076	0.262	G076	0.262	H076	0.259
A077	0.260	8077	0.262	C077	0.264	D077	0.263	E077	0.262	F077	0.262	G077	0.261	H077	0.259
A07B	0.259	807B	0.262	C07B	0.262	D07B	0.262	E07B	0.2S9	F07B	0.262	G07B	0.260	H07B	0.2S9
A079	0.2S9	8079	0.262	C079	0.265	D079	0.263	E079	0.260	F079	0.262	G079	0.261	H079	0.260
A0B0	0.259	80B0	0.263	C0B0	0.262	D0B0	0.264	E0B0	0.261	F0B0	0.262	G0B0	0.260	H0B0	0.260
A0B1	0.259	80B1	0.263	C0B1	0.262	D0B1	0.264	E0B1	0.263	F0B1	0.261	G0B1	0.260	H0B1	0.260
A0B2	0.2SB	80B2	0.262	C0B2	0.263	D0B2	0.2B7	E0B2	0.261	F0B2	0.262	G0B2	0.261	H0B2	0.2S9
A0B3	0.2S9	80B3	0.262	C0B3	0.262	D0B3	0.264	E0B3	0.262	F0B3	0.261	G0B3	0.262	HDB3	0.260
A0B4	0.260	80B4	0.263	C0B4	0.262	D0B4	0.262	E0B4	0.261	F0B4	0.261	G0B4	0.261	HDB4	0.259
A0BS	0.260	80BS	0.263	C0BS	0.263	D0BS	0.265	E0BS	0.264	F0BS	0.262	G0BS	0.261	H0BS	0.261
A0B6	0.260	80B6	0.261	C0BS	0.264	D0BB	0.266	E0B6	0.260	F0B6	0.262	G0BS	0.263	H0BS	0.260
A0B7	0.259	80B7	0.261	C0B7	0.265	D0B7	0.264	E0B7	0.263	F0B7	0.262	G0B7	0.262	H0B7	0.260

A0BB	0.261	BOBB	0.261	COBB	0.265	DOBB	0.264	EOBB	0.260	FOBB	0.261	GOBB	0.262	HOBB	0.260
A0B9	0.259	BOB9	0.261	COB9	0.264	DOB9	0.264	EOB9	0.260	FOB9	0.261	GOB9	0.262	HOB9	0.260
A090	0.260	8090	0.264	C090	0.264	0090	0.263	E090	0.261	F090	0.261	G090	0.263	H090	0.260
A091	0.259	8091	0.262	C091	0.262	0091	0.264	E091	0.260	F091	0.260	G091	0.262	H091	0.260
A092	0.261	8092	0.263	C092	0.264	0092	0.266	E092	0.261	F092	0.261	G092	0.262	H092	0.260
A093	0.260	8093	0.262	C093	0.264	D093	0.262	E093	0.261	F093	0.261	G093	0.261	H093	0.260
A094	0.261	8094	0.261	C094	0.263	D094	0.266	E094	0.260	F094	0.261	G094	0.256	H094	0.263
A095	0.259	8095	0.262	C095	0.263	D095	0.267	E095	0.260	F095	0.261	G095	0.261	H095	0.261
A096	0.260	8096	0.261	C096	0.262	0096	0.265	E096	0.260	F096	0.261	G096	0.262	H096	0.260
A097	0.260	8097	0.262	C097	0.263	0097	0.263	E097	0.260	F097	0.258	G097	0.261	H097	0.260
A098	0.260	809B	0.261	C09B	0.266	D09B	0.262	E09B	0.261	F09B	0.260	G09B	0.261	H098	0.259
A099	0.259	8099	0.261	C099	0.265	D099	0.261	E099	0.260	F099	0.261	G099	0.262	H099	0.259
A100	0.260	8100	0.261	C100	0.264	0100	0.261	E100	0.258	F100	0.261	G100	0.262	H100	0.260
A101	0.260	8101	0.262	C101	0.263	D101	0.261	E101	0.260	F101	0.262	G101	0.264	H101	0.260
A102	0.259	8102	0.261	C102	0.263	0102	0.261	E102	0.261	F102	0.261	G102	0.262	H102	0.260
A103	0.261	8103	0.262	C103	0.263	0103	0.263	E103	0.260	F103	0.261	G103	0.262	H103	0.260
A104	0.259	8104	0.263	C104	0.260	D104	0.262	E104	0.259	F104	0.272	G104	0.262	H104	0.256
A105	0.259	8105	0.263	C105	0.263	D105	0.263	E105	0.260	F105	0.259	G105	0.263	H105	0.260
A106	0.258	8106	0.261	C106	0.262	0106	0.261	E106	0.260	F106	0.266	G106	0.261	H106	0.259
A107	0.259	8107	0.262	C107	0.262	D107	0.262	E107	0.260	F107	0.261	G107	0.261	H107	0.260
A10B	0.259	B10B	0.261	C108	0.263	D10B	0.262	E10B	0.260	F10B	0.261	G10B	0.264	H10B	0.259
A109	0.259	8109	0.261	C109	0.263	0109	0.264	E109	0.261	F109	0.261	G109	0.263	H109	0.259
A110	0.261	8110	0.261	C110	0.262	D110	0.261	E110	0.261	F110	0.261	G110	0.272	H110	0.259
A111	0.261	8111	0.261	C111	0.263	D111	0.265	E111	0.260	F111	0.261	G111	0.265	H111	0.260
A112	0.260	8112	0.261	C112	0.264	D112	0.265	E112	0.263	F112	0.262	G112	0.273	H112	0.260
A113	0.260	8113	0.261	C113	0.265	D113	0.262	E113	0.262	F113	0.263	G113	0.267	H113	0.261
A114	0.261	8114	0.262	C114	0.265	D114	0.263	E114	0.263	F114	0.262	G114	0.276	H114	0.262
A115	0.259	8115	0.261	C115	0.266	0115	0.263	E115	0.260	F115	0.262	G115	0.272	H115	0.258
A116	0.260	8116	0.261	C116	0.264	D116	0.263	E116	0.260	F116	0.262	G116	0.275	H116	0.260
A117	0.260	8117	0.262	C117	0.265	D117	0.263	E117	0.260	F117	0.263	G117	0.271	H117	0.261
A11B	0.262	8118	0.260	C118	0.264	D11B	0.265	E11B	0.260	F11B	0.261	G11B	0.273	H11B	0.260
A119	0.261	8119	0.263	C119	0.263	D119	0.264	E119	0.260	F119	0.261	G119	0.275	H119	0.260
A120	0.260	8120	0.260	C120	0.264	D120	0.263	E120	0.261	F120	0.262	G120	0.276	H120	0.260
A121	0.261	8121	0.261	C121	0.266	D121	0.265	E121	0.261	F121	0.261	G121	0.278	H121	0.260
A122	0.261	8122	0.262	C122	0.266	0122	0.264	E122	0.262	F122	0.261	G122	0.279	H122	0.260
A123	0.260	8123	0.263	C123	0.266	D123	0.265	E123	0.261	F123	0.261	G123	0.276	H123	0.261
A124	0.261	8124	0.262	C124	0.266	D124	0.263	E124	0.261	F124	0.264	G124	0.277	H124	0.260
A125	0.262	8125	0.262	C125	0.265	0125	0.265	E125	0.261	F125	0.260	G125	0.271	H125	0.260
A126	0.259	8126	0.266	C126	0.266	D126	0.264	E126	0.266	F126	0.262	G126	0.274	H126	0.260
A127	0.260	8127	0.269	C127	0.266	D127	0.265	E127	0.263	F127	0.263	G127	0.277	H127	0.260
A12B	0.260	8128	0.263	C128	0.267	D12B	0.266	E12B	0.263	F12B	0.261	G12B	0.266	H12B	0.259
A129	0.262	8129	0.263	C129	0.267	D129	0.264	E129	0.260	F129	0.260	G129	0.276	H129	0.260
A130	0.261	8130	0.263	C130	0.266	D130	0.269	E130	0.261	F130	0.260	G130	0.276	H130	0.260
A131	0.260	8131	0.262	C131	0.271	0131	0.266	E131	0.263	F131	0.261	G131	0.265	H131	0.260
A132	0.260	8132	0.263	C132	0.271	0132	0.266	E132	0.261	F132	0.261	G132	0.260	H132	0.260
A133	0.260	8133	0.264	C133	0.268	D133	0.266	E133	0.264	F133	0.259	G133	0.274	H133	0.261
A134	0.260	8134	0.263	C134	0.266	D134	0.265	E134	0.259	F134	0.261	G134	0.272	H134	0.260
A135	0.260	8135	0.263	C135	0.266	D135	0.264	E135	0.260	F135	0.260	G135	0.275	H135	0.259
A136	0.260	8136	0.262	C136	0.266	0136	0.265	E136	0.260	F136	0.261	G136	0.272	H136	0.261
A137	0.260	8137	0.263	C137	0.266	0137	0.267	E137	0.260	F137	0.261	G137	0.270	H137	0.260
A13B	0.261	B13B	0.263	C13B	0.265	D13B	0.266	E13B	0.261	F13B	0.262	G13B	0.271	H13B	0.260
A139	0.261	8139	0.262	C139	0.265	D139	0.266	E139	0.262	F139	0.264	G139	0.260	H139	0.261
A140	0.260	8140	0.262	C140	0.264	D140	0.265	E140	0.261	F140	0.262	G140	0.274	H140	0.259

A141	0.260	8141	0.262	C141	0.263	0141	0.265	E141	0.260	F141	0.261	G141	0.266	H141	0.259
A142	0.259	8142	0.262	C142	0.263	0142	0.263	E142	0.260	F142	0.260	G142	0.260	H142	0.259
A143	0.260	8143	0.262	C143	0.266	0143	0.261	E143	0.262	F143	0.261	G143	0.260	H143	0.258
A144	0.260	8144	0.263	C144	0.262	0144	0.263	E144	0.260	F144	0.261	G144	0.261	H144	0.259
A145	0.260	8145	0.262	C145	0.262	0145	0.263	E145	0.260	F145	0.261	G145	0.260	H145	0.259
A146	0.258	8146	0.261	C146	0.261	0146	0.263	E146	0.260	F146	0.262	G146	0.260	H146	0.259
A147	0.259	8147	0.259	C147	0.262	0147	0.260	E147	0.261	F147	0.259	G147	0.260	H147	0.257
A148	0.260	8148	0.266	C148	0.263	0148	0.262	E148	0.260	F148	0.260	G148	0.262	H148	0.257
Average	0.260		0.262		0.264		0.264		0.260		0.261		0.264		0.259
Max	0.284		0.270		0.276		0.287		0.266		0.272		0.286		0.263
Min	0.256		0.259		0.260		0.260		0.256		0.258		0.257		0.257
Standard Deviatio	0.002		0.001		0.002		0.003		0.001		0.001		0.006		0.001

Examiner: Blaine R. Ward UT-UTD Date: 7/1/13

QE Review: [Signature] Date: 7/1/13

APPENDIX B

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RESUME JEREMY A. HAILEY, P.E.



Northwest Corrosion Engineering



CONSULTING RESUME JEREMY A. HAILEY, P.E.

10995 Warfield Road, Sedro-Woolley, WA 98284

Phone: (360) 826-4570 Fax: (360) 826-6321

Education

Bachelor of Science, Agricultural Engineering - Washington State University

Minor Mathematics - Washington State University

Professional Licenses/Certifications

Registered Professional Civil Engineer: Washington, Oregon, Alaska, Idaho, Colorado

Licensed Electrical Administrator, Washington State

Certified by the National Association of Corrosion Engineers in the following categories:

- NACE International Corrosion Specialist, P
- NACE International Cathodic Protection Specialist
- NACE International Certified Coating Inspector

Experience

Mr. Hailey is the President and Owner of Northwest Corrosion Engineering, a consulting firm providing specialized engineering services in the field of corrosion control. Mr. Hailey has over nineteen years experience providing Professional Corrosion Engineering services. Specific areas of expertise include: corrosion control engineering, cathodic protection system design, specification development, design review, corrosion surveys, soil and water analysis, coating evaluation/inspection, material selection, failure analysis, data interpretation, installation supervision, and system troubleshooting.

Mr. Hailey has been involved with the development of comprehensive corrosion control programs for several clients including petroleum refineries, natural gas companies, and sewer and water districts. Additional clients include consulting engineering firms, local, state, and federal agencies, and municipal utilities.

Mr. Hailey has several years of experience providing corrosion engineering services to operators and owners of Underground Storage Tanks (UST's). Northwest Corrosion Engineering provides corrosion control system checkouts, impressed current cathodic protection system commissioning, detailed cathodic protection system design, and system installation support/inspection.

Prior to establishing Northwest Corrosion Engineering, Mr. Hailey provided corrosion engineering consulting services to Alyeska, stewards of the trans-Alaska pipeline system.

His responsibilities included providing corrosion engineering design for both impressed current and galvanic anode cathodic protection systems for the buried portions of the pipeline from the north slope of Alaska to the Valdez Marine Terminal. Additional responsibilities included corrosion control system design and design oversight for

numerous other Alyeska facilities including aboveground/belowground petroleum storage tanks, natural gas piping, and marine berth loading structures.

Mr. Hailey currently serves as a lead instructor for the National Association of Corrosion Engineers Cathodic Protection Certification and Training Program, providing instruction for the associations Cathodic Protection Tester (CP Level 1), Cathodic Protection Technician (CP Level 2), and Coatings in Conjunction With Cathodic Protection certification programs. In addition, Mr. Hailey serves as the Past-Chairman for the Puget Sound Section of the National Association of Corrosion Engineers, is the Past-Chairman of the American Water Works Association Pacific Northwest Engineering Committee, and is currently a director of the American Water Works Association Northwest subsection.

Professional Affiliations

NACE – National Association of Corrosion Engineers

SSPC – Society for Protective Coatings

AWWA – American Water Works Association

Statement of Work

2013 CONTRACT INDEPENDENT CORROSION ENGINEER TO IMPLEMENT RSWF PERMIT CONDITION V.M.1



The INL is a U.S. Department of Energy National Laboratory
operated by Battelle Energy Alliance.

Idaho National Laboratory

2013 CONTRACT INDEPENDENT CORROSION ENGINEER TO IMPLEMENT RSWF PERMIT CONDITION V.M.1	Identifier: SOW-10887	
	Revision: 0	
	Effective Date: 04/03/13	Page: 3 of 7

CONTENTS

1.	INTRODUCTION	4
1.1	Background	4
1.2	Purpose / Objectives	4
1.3	Anticipated Benefits.....	4
2.	APPLICABLE CODES AND REFERENCES	4
3.	SCOPE	4
3.1	Work to be Performed.....	4
3.2	Work Excluded	6
3.3	Requirements	6
3.4	Place of Performance	6
3.5	Interfaces.....	6
3.6	Qualifications	6
4.	DELIVERABLES	6
5.	SCHEDULE AND MILESTONES	7
6.	COMPLETION CRITERIA AND FINAL ACCEPTANCE.....	7
7.	APPENDICES	7
8.	ATTACHMENTS.....	7

Idaho National Laboratory

2013 CONTRACT INDEPENDENT CORROSION ENGINEER TO IMPLEMENT RSWF PERMIT CONDITION V.M.1	Identifier: SOW-10887	
	Revision: 0	
	Effective Date: 04/03/13	Page: 4 of 7

1. INTRODUCTION**1.1 Background**

The Materials and Fuels Complex (MFC) Resource Conservation and Recovery Act Permit, Condition V.M.1, requires the Idaho National Laboratory (INL) to remove an empty liner from the Radioactive Scrap and Waste Facility (RSWF) every four years and employ an independent corrosion engineer (called “inspector” or “subcontractor” below) to supervise the inspections and measurements of the liner to assess if corrosion of the liner has occurred. The results of the assessment will be used as the basis for a report evaluating the effectiveness of the cathodic protection system and the present schedule (i.e., every 4 years) of future liner evaluations. Since the last assessment was in 2009, an assessment is due in 2013.

1.2 Purpose / Objectives

Perform independent inspection of a surrogate liner to ensure that the RSWF cathodic protection system is maintaining adequate exterior protection to the liners.

1.3 Anticipated Benefits

This inspection by a qualified Corrosion Engineer provides an independent assessment of the effectiveness of the RSWF cathodic protection system by pulling a surrogate liner for close inspection and measurement.

2. APPLICABLE CODES AND REFERENCES

NACE SP0169-2007, Standard Practice, Control of External Corrosion on Underground or Submerged Metallic Piping Systems, National Association of Corrosion Engineers

3. SCOPE**3.1 Work to be Performed**

- 3.1.1 Subcontractor shall provide any specific instructions (in writing) for the retrieval, cleaning, and measurements of the liner. The INL will make a good faith effort to follow these instructions. These instructions shall be provided to the INL within two weeks after the award of the contract.
- 3.1.2 Subcontractor’s attendance at a meeting to discuss the methods (i.e., ultrasonic measurements versus micrometer measurements) that the INL will use to perform the wall thickness measurements. This meeting may be conducted by telephone.

Idaho National Laboratory

2013 CONTRACT INDEPENDENT CORROSION ENGINEER TO IMPLEMENT RSWF PERMIT CONDITION V.M.1	Identifier: SOW-10887	
	Revision: 0	
	Effective Date: 04/03/13	Page: 5 of 7

- 3.1.3 Subcontractor's review of cathodic protection system test results, liner installation procedures, and soil characteristics of the soil in the area where the liner was located.
- 3.1.4 Subcontractor may be present at RSWF and MFC while the liner is being pulled and the measurements are being performed.
- 3.1.5 Subcontractor review of measurement data and documentation of personal visual inspection results, measurement data, etc. in a written report that shall evaluate the effectiveness of the cathodic protection system and validate the present (every 4 years) empty liner removal schedule. The report shall be provided to INL within one month after the subcontractor receives the measurement data from INL. The report shall be an attachment to a transmittal letter that shall also include the qualifications of the corrosion engineer.
- 3.1.6 A separate report shall be submitted to:
- Estimate the expected life of the existing cathodic protection system
 - Provide a recommendation on the practicality of a routine/planned replacement of anodes
 - Provide recommendations on adding/replacing anodes other than locating anodes in the same existing locations
 - Provide recommendations on alternate methods to provide cathodic protection of liners
 - Provide recommendations on enhancing the maintenance of the existing cathodic protection system.
- NOTE:** *The above estimates and recommendations should be addressed in general terms. The INL does not expect detailed narrative. One to two paragraphs per bullet would be adequate.*
- 3.1.7 Subcontractor shall participate in a four hour review of their findings and recommendations at the end of their site visit.

Idaho National Laboratory

2013 CONTRACT INDEPENDENT CORROSION ENGINEER TO IMPLEMENT RSWF PERMIT CONDITION V.M.1	Identifier: SOW-10887	Page: 6 of 7
	Revision: 0	
	Effective Date: 04/03/13	

3.2 Work Excluded

All hands-on work will be performed by INL crafts. Actual thickness measurements will be performed by an INL Quality Engineer. Pictures will be taken at the request of the inspector but must be cleared for release by the INL Security authority.

3.3 Requirements

The inspector will be escorted within the fenced area of MFC at all times.

3.4 Place of Performance

MFC at the INL

3.5 Interfaces

The RSWF Electrical Facility Engineer will work with the inspector to accomplish this inspection. The inspector and Facility Engineer will coordinate work with the craft foreman.

3.6 Qualifications

- 3.6.1 The inspector shall be a licensed Professional Engineer in the state of Idaho.
- 3.6.2 The inspector shall be licensed by the National Association of Corrosion Engineers as an International Cathodic Protection Specialist.
- 3.6.3 The inspector must have a minimum of ten years of experience in the field of corrosion engineering.

4. DELIVERABLES

The reports shall be provided to the INL within one month after the subcontractor visits MFC and receives the measurement data from INL. The reports shall be an attachment to a transmittal letter that shall also include the qualifications of the corrosion engineer.

Provide an agenda and lead a meeting to review conclusion and recommendations given in the report (no more than four hours). The Facility Engineer will assist the inspector in preparing the agenda and setting up the meeting. Note: A formal presentation with handouts and visual aids/slides is not required.

Idaho National Laboratory

2013 CONTRACT INDEPENDENT CORROSION ENGINEER TO IMPLEMENT RSWF PERMIT CONDITION V.M.1	Identifier: SOW-10887 Revision: 0 Effective Date: 04/03/13	Page: 7 of 7
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5. SCHEDULE AND MILESTONES

It is expected that the surrogate liner will be pulled sometime in the April to June 2013 time frame. Factors such as weather, soil conditions, and availability of crafts and equipment may, and likely will, impact the exact date of liner removal. It is not necessary that the inspector be present during the removal. He or she may be present at their choosing. However, only a one week notice may be provided for the liner pull. Once the liner has been pulled and measured, the inspector should plan to visit the INL within two weeks. If the on-site visit extends beyond two weeks, the inspector shall provide written instructions to maintain the liner for the delayed inspection.

6. COMPLETION CRITERIA AND FINAL ACCEPTANCE

The contract shall be complete upon receipt of signed and stamped copies of the reports.

7. APPENDICES

NA

8. ATTACHMENTS

NA

Attachment F-6

Example of RSWF Annual Grading and Landscaping

Preventative Maintenance Model Work Order

Planned Work Order	771 Drainage And Erosion 12m Repair (RCRA)	WO Number: 125409 Page 1 of 7
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Laboratory-wide	Laboratory Instruction	USE TYPE 1/2	Planned Work Order
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RECURRING MAINTENANCE: PREVIOUS WO# 127059

WORK ORDER ATTACHMENT COVER SHEET

Section	Title
I	CMMS Work Order
II	SME and Additional Concurrence Reviewers
III	Hazards/Hazard Control Set (HCS)
IV	List of Personal Protective Equipment
V	Training/Special Skills
VI	Special Tools and Equipment (such as M&TE)
VII	Waste Stream Disposition
VIII	Initial Conditions and Prerequisites
IX	Work Instructions
X	Post Maintenance Testing Instructions (PMT)
XI	Return to Service
XII	Closeout

Attachments:

- Table of Contents
- Actual Labor Resources
- INL Briefing(to be attached if documented pre-job is preformed)
- Task Evaluation Feedback Form
- Supplemental Material List

SCOPE STATEMENT: This WO performs grading and landscaping (using heavy equipment and laborers) to correct erosion and ensure adequate draining from the facility

Planned Work Order	771 Drainage And Erosion 12m Repair (RCRA)	WO Number: 125409
		Page 2 of 7

II. SME AND ADDITIONAL CONCURRENCE REVIEWERS

Review and approval signatures can be found electronically in Asset Suite.

III. LIST OF HAZARDS AND THEIR CONTROLS

Activity(s)	Hazard	Mitigation
All Work	Working in Permitted Facility	Training as TSDF Support Worker per PDD-162, "MFC HWMA/RCRA TSDF Personnel Training Program" (see Table 1 MFC HWMA Unit Training Requirements, PDD-162) as follows: <ul style="list-style-type: none"> • General Employee Training • HWMA Facility Specific Training • Rad Worker Training • Pre-Job Brief required per LWP-9201
Grading Ground in RSWF	Operation of Heavy Equipment	Qualified Heavy Equipment Operator
Cleaning coverts and ditches	Snakes	Contained in LI-295

IV. LIST OF PERSONNEL PROTECTIVE EQUIPMENT

PPE	Craft(s)
Safety glasses, Leather Gloves, Sturdy leather boots	All

V. LIST OF TRAINING/SPECIAL SKILLS

Training/Special Skills	Craft(s)
QLU13000: Heavy Equipment Operator	Equipment Operator
TSDF Support Worker per PDD-162 (see Section III above)	Equipment Operator/ Laborer

Planned Work Order	771 Drainage And Erosion 12m Repair (RCRA)	WO Number: 125409
		Page 3 of 7

VI. LIST OF SPECIAL TOOLS AND EQUIPMENT

Required Special Tools and Equipment	Location
Shovels	753

VII. WASTE STREAM DISPOSITION

- No waste is anticipated

VIII. INITIAL CONDITIONS AND PREREQUISITES

8.1 Briefing

Perform a briefing with all personnel that will be involved with this WO per LWP-9201. Discuss the work scope, topics as specified on Form 434.14, "Briefing Checklist," and the specific topics listed below. The radiological controls department is to be contacted to cover the RWP to be used and radiological hazard information prior to entry into the radiological area or prior to performing radiological work.

- Documented briefing with briefing checklist completed, OR
- Non-documented briefing:

Signature:		Date:		S No.:	
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8.2 Workability Walkdown

Perform a workability walk down **PRIOR** to commencing work to ensure that the plant conditions and hazard identified/mitigation in work order are valid.

Signature:		Date:		S No.:	
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8.3 Prerequisites

The following prerequisites must be completed or verified complete, or conditions met prior to starting work:

- None

Planned Work Order	771 Drainage And Erosion 12m Repair (RCRA)	WO Number: 125409 Page 4 of 7
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IX. WORK INSTRUCTIONS

SCOPE STATEMENT: This WO performs grading and landscaping (using heavy equipment and laborers) to correct erosion and ensure adequate draining from the facility



NOTE: *Steps 9.1 and 9.2 may be performed in any order or simultaneously.*

9.1 EQUIPMENT OPERATOR-Perform grading and landscaping as necessary to correct erosion and ensure adequate draining from the facility as directed by Operations personnel.

- Inform facility management immediately, of any damage to liners, fencing, culverts, etc.

Signature _____ Date __/__/__ S # _____

9.2 LABORER-Clean culverts as directed by Operations personnel.

- Inform facility management immediately, of any damage to liners, fencing, culverts, etc.

Signature _____ Date __/__/__ S # _____

X. POST-MAINTENANCE TESTING (PMT)

- None

Planned Work Order	771 Drainage And Erosion 12m Repair (RCRA)	WO Number: 125409 Page 5 of 7
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XI. RETURN TO SERVICE

11.1 Noting Deficiencies

Maintenance/Operations: Record equipment or system deficiencies in the table below being sure to note at which step the deficiency occurred and actions (RFS#, etc.) taken to correct the deficiency.

Step No.	Deficiencies and Comments	*RFS Number

11.2 Work Representative/Craftsman

Review the work site for cleanliness and the WO for completeness according to the instructions. Ensure any ISMS Feedback has been identified on the Task Evolution/Feedback Form. Sign and date below for completion of work.

Work Rep/Craftsman Signature:		Date:		S No.:	
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Planned Work Order	771 Drainage And Erosion 12m Repair (RCRA)	WO Number: 125409 Page 6 of 7
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11.3 System Engineer

NOTE: *Operations Management may mark Engineering Signature as N/A if no deficiencies are identified.*

Review and evaluate the deficiencies and provide a recommendation as follows (mark one):

- The equipment or system will perform its intended function and is acceptable for continued service or return to service.
- The equipment/system is acceptable for continued service or return to service with the following temporary compensatory measure(s) in place until permanent repairs are completed. (Ensure the condition has been dispositioned per LWP-13830, Control of Nonconforming Items, for Safety Class and Safety Significant components).

- The equipment or system is not acceptable for continued service or return to service until repaired or replaced.

System Engineer Signature:		Date:		S No.:
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Planned Work Order	771 Drainage And Erosion 12m Repair (RCRA)	WO Number: 125409 Page 7 of 7
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11.4 Facility/Operations

Based on review and evaluation of the work performed and input from maintenance and engineering, determine the following (mark one):

- The equipment or system is acceptable for continued service or return to service.
- The equipment or system is acceptable for continued service or return to service with the following temporary compensatory measure(s) in place until permanent repairs are completed.

- The equipment or system is not acceptable for continued service or return to service and requires maintenance and/or repair.

Facility/Operations Signature:		Date:		S No.:	
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XII. CLOSEOUT

12.1 Maintenance Foreman

Review the work order for completeness and technical content. Determine if additional actions are required and notify Operations if necessary. Sign for acceptance in one of the Asset Suite "Work Completion Signature" blocks.

12.2 Quality Engineer (Optional)

QA concurrence and closeout review is required for all Quality Level 1 work. QA concurrence and closeout review is required for Quality Level 2 work involving QA performed test or inspection steps. Sign for acceptance in one of the Asset Suite "Work Completion Signature" blocks.

12.3 Work Control Administrative Center (WCAC)

Verify that all required closeout signatures have been obtained, and that the WO status has been updated in Asset Suite.

