

Idaho National Laboratory

MAINTENANCE AND SURVEILLANCE REQUIREMENTS	Identifier: RSWF-OI-006
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Materials and Fuels Complex	Laboratory Instruction	USE TYPE 2	eCR Number: 614736
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Manual: MFC RSWF Operating Instructions (OI)

TSR PROCEDURE PERMIT RELATED

PROCEDURE REVIEW REQUIREMENTS PER SP-20.1.4			
DISCIPLINE	REVISION	DISCIPLINE	REVISION
PIE FACILITIES (HFEF, NRAD, TREAT)	N/A	INDUSTRIAL SAFETY	*
RESEARCH LABS (AL, EFF, EML, FASB, IMCL, RCL)	N/A	INTER-FACILITY TRANSFERS	N/A
SECURE FACILITIES (FMF, SSPSF, ZPPR)	N/A	MAINTENANCE	N/A
SPENT FUEL FACILITIES (FCF, MSCC, ORSA, RSWF, SCMS, SSB, TREAT-WH)	X	NUCLEAR SAFETY REVIEW	N/A
BALANCE OF PLANT	N/A	OUTSIDE REVIEW	N/A
CUI REVIEW	N/A	PACKAGING AND TRANSPORTATION	N/A
ENGINEERING	N/A	QUALITY	*
ENVIRONMENTAL	*	RADIOLOGICAL CONTROLS	*
FIRE PROTECTION	N/A	SAFEGUARDS AND SECURITY	N/A
HOISTING AND RIGGING	*	TRAINING	N/A
INDUSTRIAL HYGIENE	*	WASTE GENERATOR SERVICES	*

* QUALIFIED REVIEWER SHALL DETERMINE THE NEED FOR THESE REVIEWS BASED UPON THE SCOPE OF THE CHANGE

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REVISION LOG

Rev.	Date	Affected Pages	Revision Description
0	09/23/05	All	New issue.
1	12/13/07	All	See eCR 556531. LI conversion and periodic review.
2	06/11/09	All	See eCRs 564570, 69438, and 569895. Revision and PFCs.
3	06/30/09	All	See eCR 570666. Revise.
4	07/08/09	All	See eCR 571084. Suspend.
5	08/13/09	All	See eCR 571720. Reactivate.
6	06/24/10	All	See eCRs 579133, 580477, and 581242. PFCs.
7	06/15/11	All	See eCR 590928. Revision.
8	08/23/12	All	See eCR 605948. SAR-407 implementation and periodic review.
9	04/09/13	All	See eCR 607410. PFC.
10	06/18/13	All	See eCR 614736. Revise.

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1. PURPOSE/SCOPE/APPLICABILITY

The purpose of this procedure is to document the various surveillance requirements associated with maintaining the overall integrity of RSWF. These requirements apply to the storage liners, the ground they are buried in, and the cathodic protection system. This procedure also addresses the activities, procedures, and documentation used to satisfy these requirements.

This procedure provides instruction for removing empty 16-in. or 24-in. surrogate liners and transferring the surrogate liners to the assigned area for inspection by the corrosion engineer and quality assurance (possibly Bldg. 782.) Lifts in this procedure are classified as “pre-engineered production lifts”.

RSWF is a facility that provides underground storage locations for:

- Spent fuel from the EBR-II reactor
- Remote-handled, radioactive waste
- Resource-Conservation-Recovery-Act (RCRA) regulated mixed waste.

RSWF is operated under a RCRA permit issued and regulated by the State of Idaho Department of Environmental Quality (IDEQ) and by SAR-407, “Safety Analysis Report for the Radioactive Scrap and Waste Facility,” and TSR-407, “Technical Safety Requirements for the Radioactive Scrap and Waste Facility,” governing the nuclear facility operations. Each of these documents contains a set of assumptions concerning how the facility is maintained and the material conditions that are part of that safety bases.

The performers for this procedure are identified in the individual performance steps.

The activities directed by this procedure have been designated Quality Level 2 per Quality Level Determination MFC-000249.

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2. RISKS AND CONTROLS

Sequence of Basic Activities	Potential Hazard	Hazard Control
1. Heavy equipment operation	1a. Damage to equipment	1a. 1) Equipment operations must be performed by Materials Services (MS) personnel. 2) Maintain loads close to the ground during movement. 3) A spotter is required for equipment operations within RSWF.
	1b. Personnel injury	1b. 1) Maintain contact with the forklift or crane operator during use. 2) Ensure high visibility garments are worn by persons during heavy equipment operation. 3) Wear leather gloves when performing excavation operations.
	1c. Exposure to high noise levels	1c. Hearing protection shall be worn when operating vacuum excavator and other heavy equipment. A perimeter shall be posted with high noise area signs during the vacuum excavator operations.

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Sequence of Basic Activities	Potential Hazard	Hazard Control
	1d. Transfer path disturbed or unstable	1d. Test drive heavy equipment over the suspect area to determine that soil compaction is sufficient to support the load.
2. Hoisting and rigging	2. Personnel injury and equipment damage	2. <ol style="list-style-type: none"> 1) Rigging tackle inspected for defects by a qualified rigger prior to use. 2) Rigging and hoisting equipment annual-inspection certification verified prior to use. 3) Personnel must wear safety shoes, hard hats and leather gloves and keep hands clear of pinch points. 4) Make sure the load is attached securely and that the correct lifting equipment is used. 5) Where overhead hazards exist, hard hats are to be used to protect workers. 6) Never travel suspended loads over personnel. 7) Personnel shall not place any portion of their body under a suspended load. 8) Lifts identified in this procedure are classified as “pre-engineered production lifts” and will be performed per ECAR-938 (see Appendix A). 9) A load indication device shall be used to prevent inadvertent equipment overload. 10) The load indication device shall be in current calibration.

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Sequence of Basic Activities	Potential Hazard	Hazard Control
3. Lifting lug installation (surrogate liner removal)	3. Personnel burns and eye damage	3. 1) Wear required PPE per LRD-14406. 2) Welding operations performed per designated hot work permit. 3) Warning signs, which indicate eye protection from Ultraviolet Radiation (weld arc), shall be posted at designated hot work areas and when determined necessary by the permit authorizing individual (PAI) for non-designated hot work areas.
4. Use of gas cylinders	4. Flying projectile	4. 1) Maintain cylinder caps installed during transport. 2) Ensure cylinders are stored in the upright position and securely restrained above the center of gravity to prevent tipping. Cylinders in use shall be secured in an upright position to protect attached valving. 3) Safety shoes must be worn by personnel handling compressed gas cylinders.

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Sequence of Basic Activities	Potential Hazard	Hazard Control
5. Hazardous/uneven walkways	5. Falls, slips, and trips	5. 1) Watch for uneven ground, above ground liners, and concrete rows. 2) Observe and be aware of potential tripping hazards presented by positioning devices, liners, retrieval cables, concrete rows, and heavy equipment. 3) If digging is to be performed greater than 6 inches (mechanical excavation) or 12 inches (hand excavation), complete Form 432.A47 in accordance with LWP-7202.
6. Weather conditions	6. Personnel injury, slips, and falls	6. 1) Use extra caution when using heavy equipment. 2) Discontinue work and seek shelter per LWP-16108, or shift supervisor direction. 3) Crane operations must be suspended if sustained wind speed is >25 mph. 4) Supervisor shall establish heat/cold stress stay times (when necessary) per LWP-14606.
7. Working in RSWF.	7. Snake bites/insect bites/stings	7. 1) Contact the TSD Facilities Manager to have any rattlesnakes found removed from the work area. 2) Use caution when moving material that has been lying on the ground undisturbed. Don't reach under material until you know what is under it.

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Sequence of Basic Activities	Potential Hazard	Hazard Control
		3) Visually inspect area for snakes/stinging insects prior to work. 4) If bitten or stung, notify supervisor and seek immediate medical attention.
8. Activities requiring soil excavation.	8. Radiation/contamination	8. Radiological Work Permit (RWP).
9. Excavations/liner removals.	9. Personal injury/falls	9. 1) Control access to excavation area by ensuring proper hazard mitigations are defined on the pre job brief per LRD-14102, "Excavation and Surface Penetration." All excavations six feet or more in depth shall be roped and posted as "Danger Open Excavation Fall Hazard." Fall protection or fall restraints are required as defined per LRD-14102. 2) If digging is to be performed greater than 6 in. (mechanical excavation) or 12 in. (hand excavation), complete Form 432.A47, "INL Subsurface Investigation" in accordance with LWP-7202, "Subsurface Investigations." 3) Place a cover over or barriers around the excavated liner.

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Sequence of Basic Activities	Potential Hazard	Hazard Control
10. Drill auger operations.	10a. Unguarded rotating mechanical equipment	<p>10a. Inspect equipment prior to use. Only required personnel allowed in the work area. Communication between driller and helpers is key to maintaining control of equipment and keeping personnel from coming in contact with rotating auger bit. Keep hands and feet clear of pinch points, wear gloves. Keep loose clothing/long hair away from rotating equipment at all times and communicate the following to all personnel:</p> <ul style="list-style-type: none"> • Never reach behind or around a rotating auger for any reason. A minimum of 18 in. clearance shall be maintained between personnel, clothing, footwear, and other personal apparel and rotating augers or other rotating components of the drill. • Use a long-handled shovel to move auger cuttings away from the hole. DO NOT use hand or feet to move cuttings from the auger while auger is rotating. • Keep hands clear of pinch points between auger sections during connection and disconnection operations. Ensure pins or other mechanical devices are properly installed to hold auger flights together as designed by manufacturer. • Auger speed shall be only that speed necessary for penetration and cuttings removal. High-speed auger rotation is not to be used for penetration or cuttings removal.

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Sequence of Basic Activities	Potential Hazard	Hazard Control
	10b. Suspended loads	10b. All personnel shall remain clear of hoisting operations and shall not place any part of their body under a suspended load at any time. The operator shall not swing a suspended load over ground personnel.
11. Setup and movement from each location.	11. Manual material handling	11. <ol style="list-style-type: none"> 1) Use mechanical lifting devices when possible. 2) Use the "two man rule" when lifting heavy objects or if lifting in an awkward position. 3) Personnel shall use proper lifting techniques and not lift greater than 50 lb or 1/3 of their body weight, whichever is less. 4) Maintain feet spread apart at approximate shoulder width and bend at knees to avoid bending back while lifting. 5) Maintain objects close to body and avoid reaching above shoulder height.

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2.1 Certification/Qualification/Training Required

2.1.1 All Personnel

- 00INL288, Personal Protective Equipment (except subcontract personnel)
OR
QLHAZ24T, 24-HR TSD WKR (OSHA HAZWOPER)

NOTE: *Personnel without Rad Worker training may be allowed entry onto the RWP under escort with approval of the facility RadCon Manager.*

- QN00RAD1, INL RAD Worker 1,
OR
QN00RAD2, INL RAD Worker 2 for unescorted access (with exception of Health Physics Technician [HPT])
- 00TRN838, Industrial Ergonomics
- 00TRN606, Heat Stress
- SMTT0010, Cold Stress.

2.1.2 Material Services (MS) (as applicable to task performed)

- QNMFHEEO, Heavy Equipment Operator.

2.1.3 Health Physics Technicians

- QNMFCHPT, MFC Health Physics Technician.

2.1.4 Shift Supervisor (SS)

- QLHAZ24T, 24-HR TSD WKR (OSHA HAZWOPER).

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2.2 Surveillance Requirements

2.2.1 Storage Liner

- 2.2.1.1 Each new liner must pass a preinstallation hydrostatic test.
- 2.2.1.2 Entry of water into empty liners is minimized by the installation of galvanized sheet metal caps over the open liner ends. Each spring each empty liner must be inspected for signs of water inleakage and each sheet metal cap must be verified to be in place. If water is found, a work order will then be issued to pump the water out.
- 2.2.1.3 Quarterly perform visual inspection of exposed area of the Radioactive mixed waste (RMW) liner to identify any cracks, corrosion, or deterioration per FRM-930, "Radioactive Scrap and Waste Facility (RSWF) (771) Liner Inspection and Radiation Ready Form."
- 2.2.1.4 Annually the liners must have the following inspections performed:
- Radioactive mixed waste (RMW) liner radiation survey (reading taken at 3-ft above the center of the liner) per FRM-930.
 - Radiation monitoring tube survey (reading taken with an Elberline R07 or equivalent radiation monitoring instrument, equipped with cable and probe that can be lowered to the bottom of the tube where the reading must be taken). Data sheet provided by environmental staff specialist.
 - Visual inspection of exposed area of the liner to identify any cracks, corrosion, and deterioration per FRM-930.
- 2.2.1.5 One empty 16-in. surrogate liner must be pulled and inspected for signs of degradation every four years. (There are no permit conditions associated with the surrogate 24-in. liners.)

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2.2.2 Cathodic Protection System

2.2.2.1 The cathodic protection system (used to protect the metal storage liners from galvanic corrosion) must be maintained in continuous operation. Operability is determined by performing the surveillance activities listed in the following table:

Surveillance Activity	Frequency	Implementing Document
Visually verify rectifier lights are on	Weekly	FRM-368
Cathodic protection system test	Monthly	RSWF Cathodic Protection Monthly Inspection Sheet
Cathodic protection system test	Annual	RSWF Cathodic Protection Annual Inspection Sheet

2.2.3 General Site Conditions

- 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). Culverts are visually inspected weekly for sediment accumulation in the culvert and adequate drainage for water runoff. Facility and Site Services (F&SS) will perform culvert cleaning when necessary and as per scheduled maintenance.
- Vegetation growth is controlled by removal of vegetation identified by routine visual inspections of the facility. F&SS has regularly scheduled maintenance for weed control and ground sterilization.
- Soil erosion at RSWF is identified by routine visual inspections of the berm and perimeter fence line performed weekly (or after periods of inclement weather). A service request is submitted for any needed grading or ground maintenance. MS personnel will perform grading and landscaping activities as required per scheduled maintenance.

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- The general slope of the facility (from the center to the outer edges) serves to facilitate runoff of precipitation away from the liners
- A facility drainage system, consisting of drainage culverts located on the North, East, and West sides of the facility, and at specific locations within the facility, provides for general runoff and diversion of surface water from the facility to the surrounding desert.

2.2.4 Liner Reuse

- Used liner refurbishment involves surface preparation of the liner top which will allow rewelding a shield plug
- Used liner visual inspection ensures sampling holes have been welded and liner is dry before use.

2.3 Surveillance Methods

2.3.1 Weekly Inspection

The weekly inspection is comprised of the following activities:

- A check to verify the telephone is working
- A visual inspection of the integrity of the perimeter fence and gates
- Verification that the required signs are present and in good condition
- Verification that the cathodic protection system is operable as determined by visual inspection of the rectifier lights.

The inspection is documented on FRM-368, "Radioactive Scrap and Waste Facility (RSWF) (771) Weekly Inspection Form." The original is maintained in the RSWF operating record located in the records storage area. The inspection sheet is maintained for three years and then destroyed.

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2.3.2 Monthly Cathodic Protection System Survey

The monthly cathodic protection system survey is performed by F&SS electricians using a Planned Work Order. The survey consists of the following activities:

- Determining the pair efficiency by taking several voltage/amperage and watt-hr readings
- The readings are reviewed by the responsible systems engineer. The engineer will summarize the data and issue a report to the TSD Facilities Manager. The report is maintained on file for the operating life of RSWF.

2.4 Precautions and Limitations

2.4.1 OPS/MS: IF radiological conditions exceed the limiting conditions that void the RWP at any point in this procedure, THEN stop work, place work area in a safe condition, and notify TSD Facilities Manager and HP Supervisor.

2.4.2 Mobile crane, drill rig with auger attachment, and a forklift (appropriate for surrogate liner lift), are required to perform this procedure. A vacuum excavator may also be used to supplement the excavator with an auger. All heavy equipment operation and hoisting and rigging must be performed by MS personnel. Heavy equipment operations must be in accordance with LWP-14104, "Heavy Industrial Equipment," with the exception of subcontractor (SC) owned equipment

SAR-407 Safety Analysis Commitment

2.4.3 Keep heavy equipment 6 ft away from 48 in. and 60 in. liners.

2.5 TSR Requirements

2.5.1 The following TSR-407 Limiting Conditions for Operation (LCO's) and Administrative Controls (AC's) are applicable to the work scope addressed in RSWF-OI-006.

TSR	
AC 5.407.5	Soil Excavation Control

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3. PREREQUISITES

3.1 Planning and Coordination

3.1.1 Shift Supervisor (SS)/Subsurface Investigation Team Member: Sign the signature box to indicate there is no potential to damage underlying cables or piping during excavation of a surrogate liner.

Excavation of a surrogate liner does not present a potential for damaging underlying cables or piping.			
Subsurface Investigation Team Member/S No.:		Date:	
Shift Supervisor/S No.:		Date:	

3.1.2 MS: Prior to use, inspect all rigging tackle to be used to ensure it is free from defects and is within the periodicity for required inspection per LWP-6500, “Hoisting and Rigging at the INL.”

3.1.3 SS: Attach a copy of a completed Form 429.01, “Idaho National Laboratory-Weld Data Sheet,” to the working copy of this procedure.

3.2 Special Tools and Equipment

3.2.1 MS: For lifting the 16-in. or 24-in. liner, obtain the following:

- Lifting tackle (to attach to 16-in. or 24-in. liner)
- 50-ton (minimum) mobile crane (for surrogate liner inspection)
- Two 16-foot nylon slings (minimum working loading limit [WLL] of at least 25,500 lb) (for surrogate liner inspection)
- Two 2-in. pin diameter shackle minimum (minimum WLL of at least 25,500 lb)
- Lifting tabs (QL 3 per MFC-000249)
- Vacuum excavator with nozzles
- Obtain a load-indicating device with current calibration sticker
- SC: Drilling equipment with auger attached.

3.2.2 Drilling equipment owned/operated by a private contractor may be used to perform excavation activities. Private subcontract personnel must be escorted by an RSWF representative.

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4. FACILITY CONDITIONS

- _____ 4.1 SS: Verify the weather conditions (e.g., wind, snow, rain) are safe for performing the surrogate liner pull. (Sustained winds are not >25 mph, and no severe weather warnings are in effect.)

SAR-407 Safety Analysis Commitment

- _____ 4.2 SS: Inspect the area adjacent to the liner(s) to ensure it is stable to support the equipment. Heavy equipment, which has not been evaluated for load effects on the storage liners at RSWF per ECAR-1827, "RSWF Equipment Loading Adjacent to Liners," must be restricted to the maintained roadway that runs inside the perimeter fence of RSWF.
- _____ 4.3 SS: Verify approved hot work permit for RSWF has not expired.
- _____ 4.4 SS: Verify RWP active to perform soil excavation and liner removal.

TSR AC 5.407.5

- _____ 4.5 SS/HPT: Prior to any soil excavation activities, evaluate and establish required radiation protection controls and monitoring, and verify an RWP is available.

NOTE: *The RSWF representative may document step completion (in lieu of the person completing the step) during the performance of steps that must be performed sequentially without interruption.*

5. INSTRUCTIONS

NOTE 1: *Steps in Subsections 5.1 and 5.2 may be performed out of sequence, as required, at the discretion of the SS.*

NOTE 2: *The SS may pre-direct the performance of multiple steps of this procedure.*

NOTE 3: *The setup for the Drilling Rig will be performed per ECAR-1187, "RSWF GD 40 Drilling Rig Liner Compression."*

5.1 Preparatory Procedures

- _____ 5.1.1 MS/Contractor: Stage the appropriate equipment within RSWF (mobile crane, vacuum excavator, forklift, applicable tackle, etc.) as necessary to perform work activities directed by this procedure. Prior to use, inspect all rigging tackle to ensure that all tackle is free from defects and has current load-test certification stickers.

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5.1.2 SS: Record the number of the surrogate liner to be removed and the date in the following data table:

Surrogate liner number:	
Date:	

_____ 5.1.3 OPS/F&SS Laborers: Hand dig approximately 18-in. depth of dirt around the liner to accommodate the welding of the lifting lugs to the liner.

NOTE: *Prior to welding, notify Quality Assurance Inspector.*

_____ 5.1.4 Welder: Weld on the lifting lugs in accordance with the INL Welding Manual, Specification Number C3.0 or C6.13 and Figure 1, RSWF liner lifting lug installation (see Dwg. 747446, [Alt. ID: W7710-0134-EC], “RSWF Liner Lifting Lug Installation,” and ECAR-938, “RSWF Liner Retrieval Lifting Lugs”).

_____ 5.1.5 Certified Inspector: Perform a visual inspection of the lifting lug welds for items 1-8 of Section 1.1 (statically loaded) in Appendix D of TPR-13442. Initial this step if the visual inspection meets the applicable inspection requirements.

WARNING

Personnel are required to wear hard hats if head bump injuries are possible from overhead hazards or working under or in close proximity to heavy equipment.

5.2 16-In. or 24-In. Surrogate Liner Removal with Excavating Equipment with Auger Attachment

_____ 5.2.1 SS: If available, have the corrosion engineer present to observe the 16-in. or 24-in. surrogate liner removal.

_____ 5.2.2 OPS: Locate and cut the cathodic protection lead wire that is attached to the liner.

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CAUTION

Care must be exercised when using the auger to excavate the soil next to a liner. Contact between the auger and liner may damage the liner. Excavation must be performed incrementally with periodic video inspections to ensure proper auger alignment.

5.2.3 HPT: Perform periodic verification surveys of the soil.

NOTE: *Excavating equipment (drill rig) equipped with an auger and/or the vacuum excavator will be used to excavate the soil around the entire length of the liner.*

5.2.4 Excavate the designated liner as follows:

5.2.4.1 MS/Contractor: Excavate about 2 ft. of soil around the liner.

5.2.4.2 OPS: Use a camera (as required) to determine if the excavating equipment is properly aligned around the liner.

5.2.4.3 Repeat Steps 5.2.4.1 and 5.2.4.2 ensuring the auger is not inserted into the soil beyond the appropriate height indicator.

5.2.4.4 MS/OPS/Contractor: WHEN excavation is complete, THEN move the excavating equipment as directed by the SS.

5.2.4.5 MS: Verify the load-indicating device has a current calibration sticker; record the calibration data in the following table:

Manufacturer	Model Number	S&CL Number	Calibration Due Date

It has been verified that the above specified M&TE is available and calibrated.

Signature/S No.	Date:	
IV Signature/S No.:	Date:	

_____ 5.2.5 MS Rigger: Attach hoisting and rigging equipment as per Figure 1, RSWF liner lifting lug installation.

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- _____ 5.2.6 MS Crane Operator: Begin lift while not allowing the lifting force to exceed 40,000 lb.
- 5.2.6.1 IF the lifting force reaches 40,000 lb during the lift, THEN stop operations and investigate possible cause of restrictions to the liner movement.
- 5.2.6.2 Lay down the surrogate liner, away from the excavated hole.
- _____ 5.2.7 Corrosion Engineer/Photographer: Perform initial inspections and take photographs per direction of corrosion engineer.
- _____ 5.2.8 OPS/Laborers/HPT: With HPT performing periodic verification surveys of the liner, brush/scrape/clean liner in preparation for liner transfer.
- NOTE:** *Steps 5.2.9 through 5.2.11 may be performed at any time prior to Step 6.2.*
- _____ 5.2.9 MS: Backfill the hole.
- _____ 5.2.10 MS: Transfer the liner to the assigned area for inspection by the corrosion engineer and quality assurance (possibly Bldg. 782).
- _____ 5.2.11 Return the liner to RSWF following inspection.
- 5.2.12 SS: Contact Waste Generator Services (WGS) for disposition of any waste generated.

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6. POST-PERFORMANCE ACTIVITIES

6.1 Job Completion

Perform a post-transfer facility walkdown to ensure the integrity of the liners and cathodic protection system.			
Shift Supervisor/S No.:		Date:	

6.2 Data Review

Review the data recorded during performance of this procedure to ensure data is complete and the transfer of the surrogate liner has been satisfactorily completed.			
Shift Supervisor/S No.:		Date:	

Review the data recorded during performance of this procedure has been satisfactorily complete and the transfer has been satisfactorily completed.			
TSD Facilities Manager/S No.:		Date:	

_____ 6.2.1 SS: File a copy of the completed procedure in the RSWF files.

7. ABNORMAL OPERATIONS

None.

8. RECORDS

Executed copies of the following:

Form 429.01, "Idaho National Laboratory-Weld Data Sheet"

Form 432.A47, "INL Subsurface Investigation"

FRM-368, "Radioactive Scrap and Waste Facility (RSWF) (771) Weekly Inspection Form"

RSWF-OI-006, "Maintenance and Surveillance Requirements"

NOTE: [LWP-1202, "Records Management,"](#) the [INL Records Schedule Matrix](#), and associated [record types list\(s\)](#) provide current information on the retention, quality assurance, and/or destruction moratorium requirements for these records. Contact a [Records Coordinator](#) for assistance if needed.

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9. REFERENCES

Dwg. 747446, Rev. 01, "RSWF Liner Lifting Lug Installation," (Alt. ID: W7710-0134-EC)

ECAR-938, "RSWF Liner Retrieval Lifting Lugs"

ECAR-1187, "RSWF GD 40 Drilling Rig Liner Compression"

ECAR-1213, "RSWF Hoisting and Rigging Plans"

ECAR-1827, "RSWF Equipment Loading Adjacent to Liners"

Forms:

429.01, "Idaho National Laboratory-Weld Data Sheet"

432.A47, "INL Subsurface Investigation"

FRM-368, "Radioactive Scrap and Waste Facility (RSWF) (771) Weekly Inspection Form"

FRM-930, "Radioactive Scrap and Waste Facility (RSWF) (771) Liner Inspection and Radiation Ready Form"

LRD-14102, "Excavation and Surface Penetration"

LRD-14406, "Welding, Cutting, and Other Hot Work"

LWP-1202, "Records Management"

LWP-6500, "Hoisting and Rigging at the INL"

LWP-7202, "Subsurface Investigations"

LWP-14104, "Heavy Industrial Equipment"

LWP-14606, "Heat and Cold Stress"

LWP-16108, "Response to Severe Weather Conditions"

SAR-407, "Safety Analysis Report for the Radioactive Scrap and Waste Facility (MFC-711)"

TPR-13442, "Visual Examination"

TSR-407, "Technical Safety Requirements for the Radioactive Scrap and Waste Facility (MFC-711)"

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10. APPENDIXES

Appendix A, Figures

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Appendix A

Figures

NOTES:

1. WELD SYMBOLS PER AWS A2.43.
- ① 2. WELD SHALL BE PERFORMED IN ACCORDANCE WITH AWS D1.1-2008, SECTION 5. ALL WELDS SHALL BE VISUALLY INSPECTED IN ACCORDANCE WITH AWS D1.1-2008, SECTION 6. WELD ACCEPTANCE CRITERIA PER AWS D1.1-2008, SECTION 6, PART C.
- ① 3. LIFTING LUG CAPACITY = 20,000 LBS EACH (40,000 LBS TOTAL).
- ① 4. IF TOP CLOSURE PLATE IS NOT INSTALLED THEN INSTALL SNUG FIT 2" X 4" SUPPORT AT TOP OF LINER BETWEEN LIFTING LUGS. (A SHIELD PLUG MAY BE INSTALLED INSTEAD OF 2" X 4").
- ① 5. REFER TO ECAR-938.

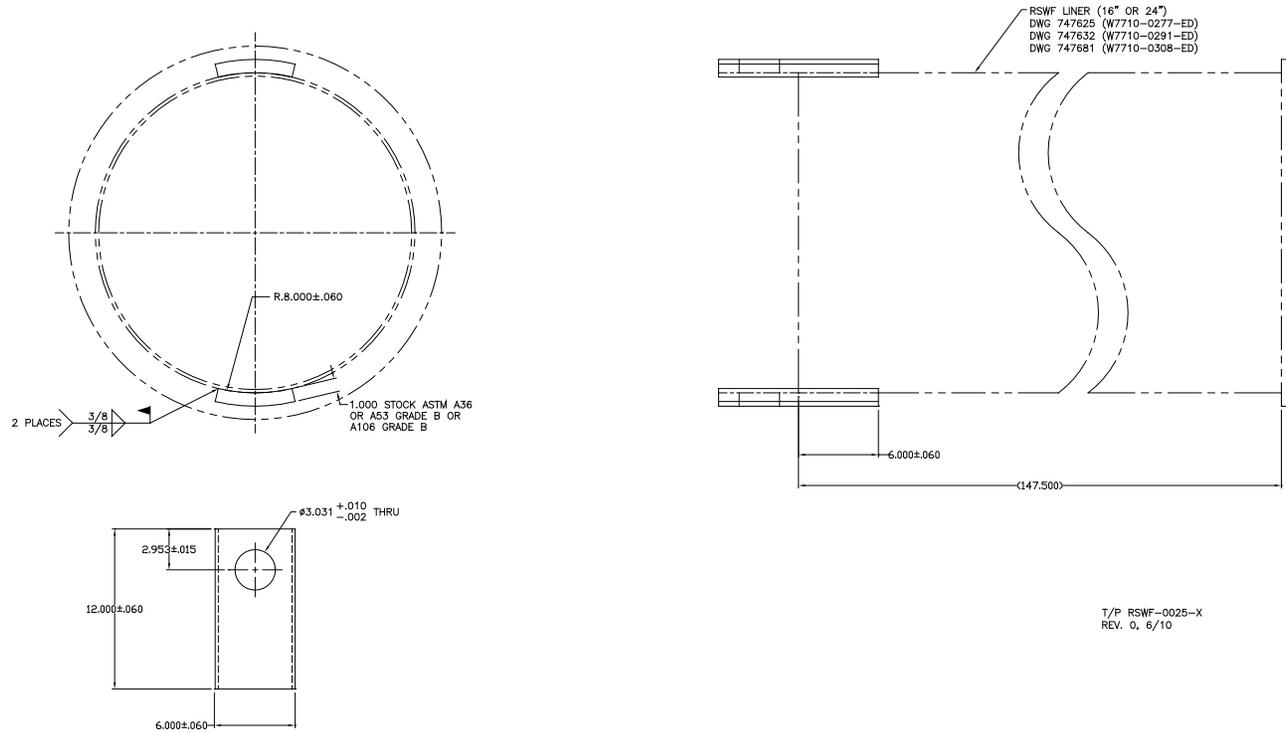


Figure 1. RSWF liner lifting lug installation.

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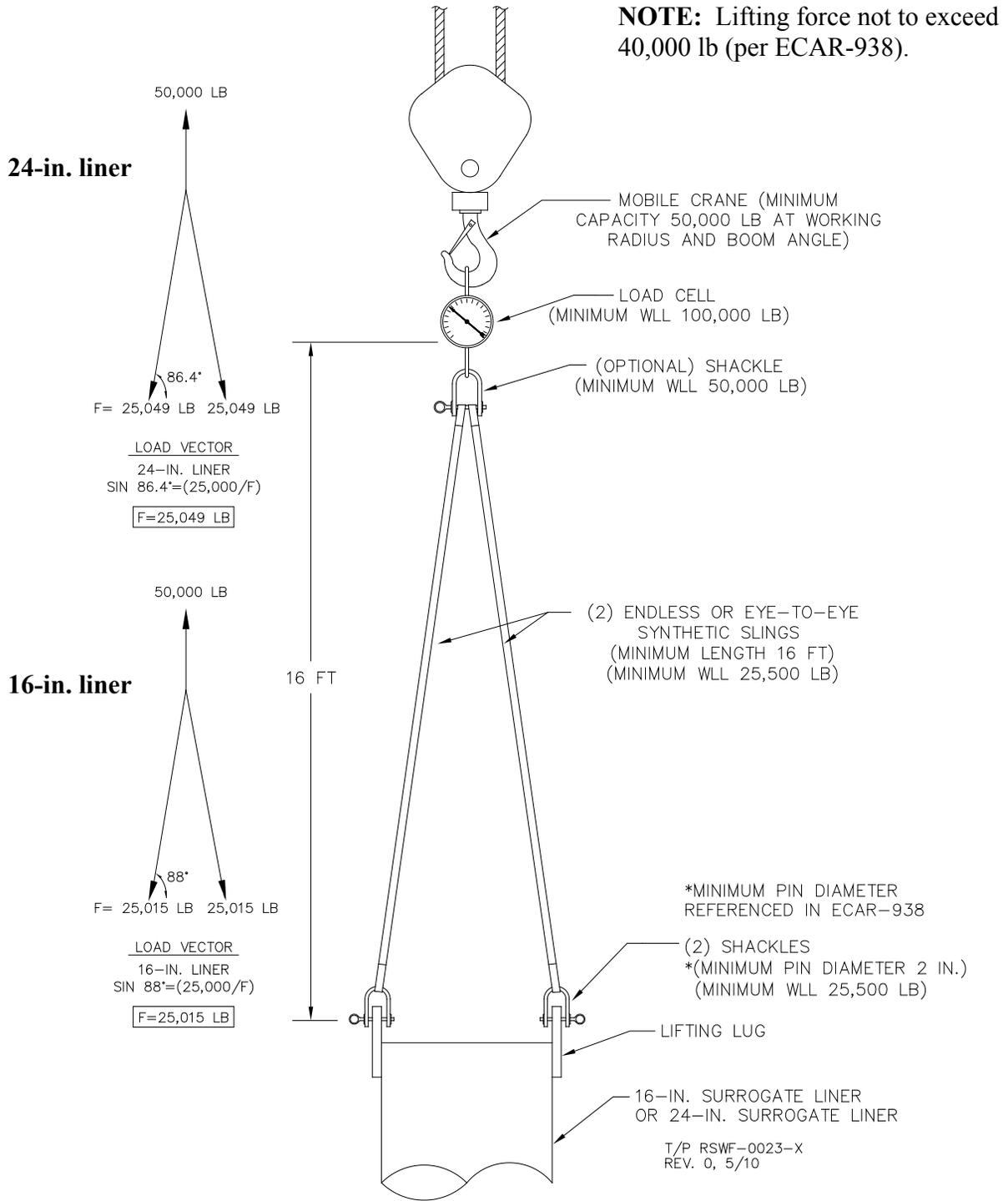


Figure 2. 16-in. and 24-in. surrogate liner removal rigging diagram.