

## Idaho National Laboratory

<b>REMOTE-HANDLED WASTE TRANSFER</b>	Identifier: RSWF-OI-007
	Revision: 7
	Effective Date: 10/18/12 <span style="float: right;">Page: 1 of 27</span>

Materials and Fuels Complex	Laboratory Instruction	<b>USE TYPE 2</b>	eCR Number: 607707, 607993
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Manual: MFC RSWF Operating Instructions (OI)

# TSR RELATED PERMIT RELATED

PROCEDURE REVIEW REQUIREMENTS PER SP-20.1.4					
DISCIPLINE	REVISION	CHANGE	DISCIPLINE	REVISION	CHANGE
NUC OPS MAINTENANCE	N/A	N/A	F&SS	N/A	N/A
MFC FACILITY ENGINEERING	N/A	N/A	FCF OPERATIONS	N/A	N/A
TRAINING	N/A	N/A	HFEF OPERATIONS	N/A	N/A
NUCLEAR SAFETY REVIEW	N/A	N/A	EML	N/A	N/A
PROJECTS	N/A	N/A	FASB	N/A	N/A
SSPSF OPERATIONS	N/A	N/A	RCL	N/A	N/A
TREAT OPERATIONS	N/A	N/A	FMF OPERATIONS	N/A	N/A
TREAT WAREHOUSE OPERATIONS	N/A	N/A	ZPPR OPERATIONS	N/A	N/A
HOISTING AND RIGGING	*	*	NRAD OPERATIONS	N/A	N/A
QUALITY	*	*	ANALYTICAL LAB	N/A	N/A
TSD FACILITIES OPERATIONS (CESB and RSWF)	*	*	RADIOLOGICAL CONTROLS	*	*
ENVIRONMENTAL	N/A	N/A	INDUSTRIAL SAFETY	*	*
INTER-FACILITY TRANSFERS	*	*	INDUSTRIAL HYGIENE	*	*
OUTSIDE REVIEW	N/A	N/A	FIRE PROTECTION	N/A	N/A
CUI REVIEW	N/A	N/A	SAFEGUARDS AND SECURITY	N/A	N/A
WASTE GENERATOR SERVICES	N/A	N/A	PACKAGING & TRANS.	N/A	N/A
* QUALIFIED REVIEWER SHALL DETERMINE THE NEED FOR THESE REVIEWS BASED UPON THE SCOPE OF THE CHANGE					

**Idaho National Laboratory**

<b>REMOTE-HANDLED WASTE TRANSFER</b>	Identifier: RSWF-OI-007
	Revision: 7
	Effective Date: 10/18/12 <span style="float: right;">Page: 2 of 27</span>

**REVISION LOG**

Rev.	Date	Affected Pages	Revision Description
0	07/07/09	All	See eCR 570472. New issue.
1	07/14/09	All	See eCRs 571061, 571136, and 571159. PFCs.
2	07/16/09	1-25	See eCRs 571289. Revision.
3	07/18/09	All	See eCR 571312. Revision.
4	11/16/09	All	See eCRs 571361, 571478, 573031, and 573194. PFCs.
5	07/29/10	All	See eCR 582547. Revision. ICAM, NTS.
6	08/23/12	All	See eCR 605384. Revision, ICAMs, and periodic review.
7	10/18/12	All	See eCRs 607707, PFC (bundles PFCs 607300 and 607379) and 607993 PFC.

<b>REMOTE-HANDLED WASTE TRANSFER</b>	Identifier:	RSWF-OI-007	
	Revision:	7	
	Effective Date:	10/18/12	Page: 3 of 27

## 1. PURPOSE/SCOPE/APPLICABILITY

To provide instructions for free-air transferring a Hot Fuels Examination Facility-5 (HFEF-5) waste can from a Radioactive Scrap and Waste Facility (RSWF) liner to an Interim Shipping Container (ISC) and preparing the loaded ISCs for transport from RSWF to Idaho Nuclear Technology and Engineering Center (INTEC). The ISCs will be transferred from RSWF to an approved staging area and then on to the receiving facility.

Retrievals involving mixed waste must be transferred in compliance with the Resource Conservation and Recovery Act (RCRA) Permit (PER-116, "HWMA RCRA Partial Permit Materials and Fuels Complex").

Each working copy of this procedure can only be used to perform one retrieval and transfer.

The activities directed by this procedure have been designated Quality Level 2 per Quality Level Determination MFC-000914.

This procedure implements requirements as identified in SAR-407, "Safety Analysis Report for the Radioactive Scrap and Waste Facility (MFC 771)" and TSR-407, "Technical Safety Requirements for the Radioactive Scrap and Waste Facility (MFC 771)."

## Idaho National Laboratory

<b>REMOTE-HANDLED WASTE TRANSFER</b>	Identifier: RSWF-OI-007
	Revision: 7
	Effective Date: 10/18/12 <span style="float: right;">Page: 4 of 27</span>

**2. RISK AND CONTROLS**

Sequence of Basic Activities	Potential Hazard	Hazard Control
1. Retrieval of storage cans.	1. Radiation/contamination	1. 1) Radiological Work Permit. 2) Temporary/ALARA shielding when necessary. 3) Extended boom to minimize exposure to crane operator. 4) The liner will be posted as a CA prior to removing the shield plug and PPE will be per the RWP.
2. Heavy equipment operation.	2a. Damage to equipment	2a. Equipment operations must be performed by MS personnel.
	2b. Transfer path disturbed or unstable	2b. Test drive heavy equipment over the suspect area to determine that soil compaction is sufficient to support the load.
	2c. Personnel injury	2c. 1) Restrict the fieldwork area to limit access to authorized personnel and identify proper PPE to enter the work area. 2) Where overhead hazards exist, hardhats are to be used to protect workers. 3) High visibility garments must be worn by persons in proximity to operating equipment.
3. Hoisting and rigging.	3. Personnel injury and equipment damage	3. 1) Rigging tackle inspected for defects by a qualified rigger prior to use. 2) Hoisting and Rigging (H&R) equipment annual inspection certification verified prior to use.

## Idaho National Laboratory

**REMOTE-HANDLED WASTE TRANSFER**

Identifier: RSWF-OI-007

Revision: 7

Effective Date: 10/18/12

Page: 5 of 27

Sequence of Basic Activities	Potential Hazard	Hazard Control
		3) Personnel must wear safety shoes, hardhats, and leather gloves; keep hands clear of pinch points. 4) Make sure the load is attached securely and that the correct lifting equipment is used. 5) Never travel suspended loads over personnel. 6) Keep the container as low as practical while over the liners ensuring a height of six (6) ft is not exceeded. 7) A load indication device shall be used to prevent inadvertent equipment overload. 8) The load indication device shall be in current calibration.
4. Elevated work/ladders.	4. Slips and falls	4. 1) Platform ladders/ladder/extension ladders stands are to be used for the performance of this procedure. 2) Only one person on the platform ladder/ladder stand at any time.
5. Working near open liner.	5. Falls	5. Cover open liners when left unattended, with a temporary cover or protect the open hole with standard removable railing.

## Idaho National Laboratory

**REMOTE-HANDLED WASTE TRANSFER**

Identifier: RSWF-OI-007

Revision: 7

Effective Date: 10/18/12

Page: 6 of 27

Sequence of Basic Activities	Potential Hazard	Hazard Control
6. Hazardous/uneven walkways.	6. Falls, slips, and trips	6. 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) Remove excess snow in work area and wear proper footwear for slick surfaces.
7. Weather conditions.	7a. Personnel injury/ equipment damage	7a. 1) Discontinue work and seek shelter per LWP-16108, "Response to Severe Weather Conditions" or at the direction of the Shift Supervisor (SS). 2) Crane operations must be suspended when sustained winds are >25 mph.
	7b. Heat and cold stress	7b. Supervisor shall establish heat/cold stress stay times per LWP-14606, "Heat and Cold Stress."
8. Working in RSWF.	8. Snake bites/insect bites or stings	8. 1) Visually inspect area for snakes/stinging insects prior to work. 2) Contact the TSD Facilities Manager to have any snakes found removed from the work area. 3) If bitten or stung, notify supervisor and seek immediate medical attention. 4) There is a potential for snakes to take shelter under material lying on the ground; use caution when moving material lying on the ground undisturbed. Do not reach under material until you know there are no snakes under it.

<b>REMOTE-HANDLED WASTE TRANSFER</b>	Identifier: RSWF-OI-007	
	Revision: 7	
	Effective Date: 10/18/12	Page: 7 of 27

## 2.1 Training

### 2.1.1 All Personnel

- 00INL288, Personal Protective Equipment  
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 Radworker I  
OR  
QN00RAD2, INL Radworker 2, for unescorted access (with exception of Health Physics Technician [HPT])
- 0INL1041, Compressed Gas Safety Training
- 00TRN606, Heat Stress
- SMTT0010, Cold Stress
- 0INL1140, INL Ladder and Roof Safety
- QNFPARWK, INL At-Risk Worker Fall Protection
- TSD Support Personnel Qualification.

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

- QNHSWING, Swing Cab Tel Boom Crane Operator
- QNRIGGER, Rigger
- QNRICERT, Certified Rigger
- QNFKL002, Forklift Operator
- QNTSDFEO, EO TSDF Support Personnel
- QNMFHEEO, Heavy Equipment Operator.

### 2.1.3 Health Physics Technicians

- QNMFCHPT, Health Physics Qualification.

## Idaho National Laboratory

<b>REMOTE-HANDLED WASTE TRANSFER</b>	Identifier: RSWF-OI-007	
	Revision: 7	
	Effective Date: 10/18/12	Page: 8 of 27

**2.1.4 Shift Supervisor (SS)**

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

**2.1.5 RH Waste Retrieval-Specific Qualifications**

- RSWF SS, RHTRUFAS
- Heavy Equipment Operator, RHTRUHEO
- Equipment Operator, RHTRUEO
- Health Physics Technician, RHTRUHPT (minimum of one)
- Nuclear Facility Operator, RHTRUNFO.

**2.2 Precautions and Limitations**

**NOTE:** *Specific container designs have changed over the years and the generic description of “HFEF-5 container” has been generically applied to containers stored in 16-in liners. For purposes of this procedure, the description of HFEF-5 container covers all containers stored in 16 in. liners including cans that originated from Argonne National Laboratory-East (ANL-E).*

- 2.2.1 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 RadCon Supervisor.
- 2.2.2 Heavy equipment operations must be in accordance with LWP-14104, “Heavy Industrial Equipment.”
- 2.2.3 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.

## Idaho National Laboratory

<b>REMOTE-HANDLED WASTE TRANSFER</b>	Identifier:	RSWF-OI-007	
	Revision:	7	
	Effective Date:	10/18/12	Page: 9 of 27

- 2.2.4 Wire-rope slings are attached directly to the lids of the storage containers that are contained in the liners and are located between 2 and 6.5 ft below ground surface. These containers contain remote-handled material (very high radiation readings). Because of the hostile environment, the wire-rope slings cannot be load tested or inspected annually and may not be marked with the rated capacity and inspection date. SD-38.1.2, "Treatment, Storage, and Disposal Facilities (TSDF) Hostile Environment Plan," documents any special operating and maintenance requirements for this equipment. Prior to removing a waste container from a liner, the wire-rope sling must be visually inspected by a certified inspector for size and condition. If a wire-rope sling is <1/4 in. in diameter or determined to be unsatisfactory, the wire-rope sling must be replaced prior to retrieval. If a wire-rope sling is 1/4-, 5/16-, or 1/2 in. in diameter and it is in satisfactory condition, the container may be removed.
- 2.2.5 Personnel performing work in RSWF (for example, HPTs, and Operators [OP]) must have completed the current training requirements that comply with the RSWF RCRA Permit.
- 2.2.6 RSWF has limited access and is controlled per the RSWF Security Plan, which is available through the TSD Facilities Manager.
- 2.2.7 All accountable nuclear material transferred to or from RSWF must be accompanied by the appropriate Safeguards documentation.
- 2.2.8 The waste container ID Nos. that are used to determine if a container is listed on LST-594, "RSWF Accelerated Retrieval RH Approved Container List," may be located on the top and/or side of the container. When a container has numbers on both locations, the numbers must match.
- 2.2.9 Only waste containers that are listed on the contractor-approved list (LST-594) shall be retrieved under this procedure.  
**(TSR-407, AC 5.407.6)**

## Idaho National Laboratory

<b>REMOTE-HANDLED WASTE TRANSFER</b>	Identifier: RSWF-OI-007	
	Revision: 7	
	Effective Date: 10/18/12	Page: 10 of 27

- 2.2.10 Any canisters or ISCs reading greater than the desirable radiation levels discussed below should be evaluated on a case by case basis by Radiological Control Management from both MFC and INTEC to determine if adequate controls through the Radiological Protection Program (RPP) can allow the ISC to be utilized.
- 2.2.10.1 To achieve the desirable radiation levels of <100 mR/hr at 30 cm from a loaded ISC, the highest reading containers should be placed in opposite corners of the ISC, if practical.
- 2.2.10.2 When each ISC is loaded with HFEF 5 containers, the containers loaded on one side of the ISC should have a combined dose rate of less than 700 R/hr on contact.  
OR  
When each ISC is loaded with HFEF 5 containers, the containers loaded on one side of the ISC should have a combined dose rate of  $\leq 250$  R/hr at 30 cm.
- 2.2.10.3 The maximum dose rate for a single container should be 825 R/hr on contact  
OR  
300 R/hr at 30 cm.
- 2.2.11 During retrieval operations, RSWF will have radiation levels that warrant classification as a High Radiation Area – Access Controls Required (HRA-ACR). The area will be locked with a crash bar installed on the egress door to facilitate easy exit in case of emergency. If the area is not locked, an Access Point Watch (guard) will be assigned to restrict access to the area to authorized individuals only.
- 2.2.12 During crane operations, avoid “shock loading” when lowering a container (that is, into an ISC, or back into a storage liner or the HFEF-5 cask).
- 2.2.13 As a Best Management Practice, the crane operator should rotate his boom away from personnel working below, as much as practical.
- 2.2.14 Acceptable communication methods, during retrieval operations, include verbal communications, cell phones, and mutually-agreed-upon hand signals.
- 2.2.15 This procedure can be used for training and demonstration purposes using an empty container. The requirement for the container ID to be listed on LST-594 does not apply to training and demonstration exercises.

<b>REMOTE-HANDLED WASTE TRANSFER</b>	Identifier:	RSWF-OI-007	
	Revision:	7	
	Effective Date:	10/18/12	Page: 11 of 27

### SAR-407 Safety Analysis Commitment

- 2.2.16 Keep heavy equipment 6 ft away from 48 in. and 60 in. liners.
- 2.2.17 Heavy equipment that 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.
- 2.2.18 No cans shall be retrieved if contamination is detected on the shield plug or liner.
- 2.2.19 IF contamination is found during radiological surveys, THEN stop work, place the work area in a safe condition, notify the SS, Facility Management, and Radcon Management.

### 2.3 TSR Requirements

- 2.3.1 The following TSR-407 Limiting Conditions for Operation (LCOs) and Administrative Controls (ACs) are applicable to the work scope addressed in RSWF-OI-007.

TSR	
LCO/SAC 3.407.2	Supplemental Radiological Control
AC 5.407.1	Container Handling Limit
AC 5.407.2	RSWF In-facility Movements
AC 5.407.6	Criticality Safety Controls

## 3. PREREQUISITES

### 3.1 General

- 3.1.1 Ensure minimum qualified staff are present to support transfer activities:
- 1 SS
  - 1 Nuclear Facility Operator
  - 1 HEO
  - 1 EO

**Idaho National Laboratory**

<b>REMOTE-HANDLED WASTE TRANSFER</b>	Identifier: RSWF-OI-007	
	Revision: 7	
	Effective Date: 10/18/12	Page: 12 of 27

- 2 HPTs
  - 1 Access Point Watch (as required).
- 3.1.2 Ensure a verification survey of shipping trailer and external of the ISC has been completed.
- 3.1.3 Ensure the mobile crane, H&R lifting tackle, truck/trailer with ISC are staged to be used at RSWF as required. Ensure high visibility garments are worn by persons in proximity to operating equipment.
- 3.1.4 Ensure the applicable RWP is approved.
- 3.1.5 Obtain the most current copy of ECAR-1213, “RSWF Hoisting and Rigging Plans.”
- 3.1.6 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.”
- 3.1.7 MS: Obtain a load-indicating device with current calibration sticker; record the calibration data in the following table:

Manufacturer	Model Number	S&CL No.	Calibration Due Date

It has been verified that the above specified MT&E is available and calibrated.			
<b>Signature:</b>		<b>Date:</b>	
<b>IV Signature/S-Number:</b>		<b>Date:</b>	

**3.2 Special Tools and Equipment; Parts and Supplies**

- 3.2.1 For replacement of storage container wire-rope slings, obtain the following:
- 1/4-in. wire rope (new)
  - Inspection mirror
  - Remote cabling tool
  - Compression sleeves
  - Compression tool

**Idaho National Laboratory**

<b>REMOTE-HANDLED WASTE TRANSFER</b>	Identifier: RSWF-OI-007
	Revision: 7
	Effective Date: 10/18/12 <span style="float: right;">Page: 13 of 27</span>

- Go/No-Go gauge
- Load indication device.

3.2.2 Verify the following equipment is available for retrieval:

- ISC
- Guide device for the ISC
- Remote camera and recording equipment
- Extension cord
- Wind sock.

**4. FACILITY CONDITIONS**

4.1 SS: Perform the following:

**TSR-407, AC 5.407.2**

4.1.1 Ensure the weather conditions (ambient outside temperature >-40°F) are suitable for performing the transfer.

**TSR-407, AC 5.407.1**

4.1.2 Ensure no other container handling activities are in progress.

Facility conditions have been met.			
<b>Shift Supervisor:</b>		<b>Date:</b>	

<b>REMOTE-HANDLED WASTE TRANSFER</b>	Identifier:	RSWF-OI-007	
	Revision:	7	
	Effective Date:	10/18/12	Page: 14 of 27

## 5. INSTRUCTIONS

**NOTE 1:** *The subsections within Section 5 may be performed independently or marked "N/A" directed by the SS.*

**NOTE 2:** *Radiological instrumentation specified in Step 5.1.31 may be installed at any time and in any order, prior to Step 5.1.31, per the direction of the SS.*

**NOTE 3:** *SS may pre-direct the performance of multiple steps of this procedure.*

### CAUTION

**To prevent damage to equipment and the liners, close observation is required to ensure the truck, trailer with ISC, and crane do not contact the liners when entering the area.**

#### 5.1 Container Retrieval

**NOTE 1:** *Movement and staging of the truck, trailer with ISC, outrigger pads, bobcat, and crane may be performed as per SS direction, in any order.*

**NOTE 2:** *Steps in this procedure completed from previous RH waste retrieval activities may be marked N/A, as necessary.*

5.1.1 Stage equipment in RSWF.

5.1.2 Prepare the ISC to receive the container, as follows:

5.1.2.1 MS Rigger: Ensure the ISC lid has Crosby or Chicago shoulder nut eyebolts.

5.1.2.2 MS Rigger/OPS: Remove the ISC tie-downs.

5.1.2.3 HPT: Establish a Radiological Buffer Area (RBA).

5.1.2.4 HPT: IF the ISC contains previously loaded waste containers,  
THEN establish an HRA-ACR.

## Idaho National Laboratory

<b>REMOTE-HANDLED WASTE TRANSFER</b>	Identifier:	RSWF-OI-007	
	Revision:	7	
	Effective Date:	10/18/12	Page: 15 of 27

- 5.1.2.5 HPT: Perform verification radiological surveys of the ISC during the performance of the following step.
- 5.1.2.6 MS Crane Operator: Remove the lid with the crane and place the lid in a storage location that does not interfere with operations. (The ISC tie-down frame may be removed separately, or with the lid, as per ECAR-1213.)
- 5.1.2.7 MS Crane Operator/Equipment Operator: Inspect the ISC internals for any obstructions or abnormalities.
- 5.1.2.8 MS Rigger: Install the guide device on the ISC.
- 5.1.2.9 MS Rigger/OPS: Verify the guide device is aligned to properly center the containers in each of the ISC receiving locations. Shim the guide device, as necessary, to achieve proper centering alignment.
- 5.1.3 MS Crane Operator: Stage the crane to reach both the retrieval location and the ISC.
- 5.1.4 SS: Verify the liner has been prepared for removal of the shield plug in accordance with RSWF-OI-002, "Retrieval of Material From 16-in. and 26-in. Liners."
- 5.1.5 MS Crane Operator/Equipment Operator: Measure the crane boom radius to verify it is within limits for the load being lifted (maximum distance is 80 ft).
- |                    |  |    |
|--------------------|--|----|
| Crane boom radius: |  | ft |
|--------------------|--|----|
- 5.1.6 HPT: IF not previously performed, THEN establish an HRA-ACR area.
- 5.1.7 MS: Attach crane hoisting and rigging equipment (including a load-indicating device) to the shield plug.
- 5.1.8 HPT: Post the liner as a contamination area.
- 5.1.9 MS Crane Operator: Remove the shield plug from the liner, ensuring the lifting force does not exceed 3,200 lb, as indicated on the load-indicating device.
- 5.1.9.1 HPT: As the shield plug is being removed, perform a contamination survey of exposed area.

<b>REMOTE-HANDLED WASTE TRANSFER</b>	Identifier: RSWF-OI-007
	Revision: 7
	Effective Date: 10/18/12 <span style="float: right;">Page: 16 of 27</span>

5.1.10 MS Crane Operator: Rotate the shield plug away from the open liner as far as the retrieval cable allows (approximately 6 ft).

5.1.10.1 HPT: As the shield plug is rotated away from the liner, perform a contamination survey on the retrieval cable.

**TSR-407, LCO/SAC 3.407.2**

5.1.11 HPT: After the shield plug is moved away from the liner, perform a contamination survey over and around the open liner. Ensure area does not exceed the RWP limit or 5 R/hr to the closest worker.

**WARNING**

**To prevent radiation exposure to the HPT, the long-handled tool must be long enough that the HPT is not required to kneel over the open liner to reach the inside of the liner or the waste can.**

5.1.12 HPT: Using a long-handled tool, perform a contamination survey inside of the 16-in. liner and on the outside of the waste storage container, to the extent possible.

5.1.13 MS Rigger: Disconnect the retrieval cable from the shield plug and set the shield plug on the ground.

**TSR-407, AC 5.407.6**

5.1.14 SS and Verifier: Inspect the container from the top (using artificial light, cameras, and a mirror if necessary) to verify that the Container ID No. stenciled or etched on the lid (if present) is identified on LST-594.

5.1.14.1 IF no container ID is present on the lid,  
THEN document on FRM-1004, "RSWF-Interim Storage Container (ISC) Loading Sheet," that there is no number and **GO TO** Step 5.1.15  
**WITHOUT RETURNING TO** this step.

5.1.14.2 IF the container ID No. is not identified on LST-594,  
THEN notify TSD Facilities Manager.

<b>REMOTE-HANDLED WASTE TRANSFER</b>	Identifier: RSWF-OI-007
	Revision: 7
	Effective Date: 10/18/12 <span style="float: right;">Page: 17 of 27</span>

5.1.14.3 SS: Record the Container ID No. below:

Container top ID No.:	
-----------------------	--

5.1.14.4 Record dual verification of the container lid (top) ID No. on FRM-1004.

5.1.15 Certified Hoisting and Rigging Inspector: IF retrieving the container from a liner,  
THEN inspect the wire-rope sling to the extent possible for kinks, bird-caging, crushing, excessive corrosion, or other obvious defects, ensuring the diameter is  $\geq 1/4$  in. (using artificial light, cameras, and a mirror if necessary).

5.1.16 IF the wire-rope sling is not satisfactory,  
THEN GO TO Subsection 5.2 and replace the retrieval cable.

5.1.17 MS Rigger: Ensure the wire-rope sling and the load-indicating device is connected to the crane.

**CAUTION**

**To prevent damage to the wire-rope sling, the lifting force cannot exceed 1,000 lb for 1/4-in. diameter wire rope eye to eye slings or 2,000 lb for 5/16-in. and 1/2-in.-diameter wire rope eye to eye slings and 1/4-in. endless or grommet wire rope slings.**

5.1.18 Take contamination surveys on areas of the container that were not accessible in Step 5.1.12. Document the highest readings obtained. (To facilitate this, the container position may need to be adjusted inside the liner via the crane, and while observing the weight, lifting the container, slightly.)

Highest Radiation Reading	
---------------------------	--

5.1.19 HPT: IF no contamination was detected,  
THEN remove the CA posting.

<b>REMOTE-HANDLED WASTE TRANSFER</b>	Identifier: RSWF-OI-007
	Revision: 7
	Effective Date: 10/18/12 <span style="float: right;">Page: 18 of 27</span>

**NOTE:** *Some ANL-E waste containers have small ID numbers stamped or etched into the side and may not be visible from a distance. The side ID number may be verified using a camera while still in the liner as directed by the SS.*

5.1.20 If necessary, lift the container slightly off the bottom of the liner.

5.1.21 While the container is suspended from the crane, observe the container weight and record it below:

Counter Weight	lb
----------------	----

**TSR-407, AC 5.407.2**

5.1.22 IF the ISC contains previously loaded waste containers, THEN record and total the weight of the current container and previously loaded containers.

ISC position 1	lb
ISC position 2	lb
ISC position 3	lb
ISC position 4	lb
Total	lb

5.1.23 Verify the total weight of the containers  $\leq 6,000$  lb.

5.1.24 Lower the camera into the liner; manipulate the waste container and camera until the ID number on the side of the container is visible (if present).

**TSR-407, AC 5.407.6**

5.1.25 IF the side ID can be identified using the camera, THEN verify that the ID No. is on LST-594 and that it is the same as the top ID No. on the waste container (if present).

5.1.25.1 SS: Record the Container ID No. below:

Container side ID No.:	
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5.1.26 IF the side ID CANNOT be identified using the camera, THEN GO TO Step 5.1.29.

## Idaho National Laboratory

<b>REMOTE-HANDLED WASTE TRANSFER</b>	Identifier: RSWF-OI-007	
	Revision: 7	
	Effective Date: 10/18/12	Page: 19 of 27

- 5.1.27 IF the side ID No. is on LST-594 and is the same as the top ID No. (if present),  
THEN record dual verification of container ID No. on FRM-1004.
- 5.1.28 IF the side ID is not visible,  
OR the top ID and side ID Nos. are different,  
OR the ID Nos. are not on LST-594,  
THEN immediately lower the container and notify TSD Facilities Manager,  
AND DO NOT proceed without concurrence from the TSD Facilities Manager.

**WARNING**

**Any personnel in the vicinity of operating equipment must be properly identified with high visibility garments.**

- 5.1.29 HPT: Position radiological instrumentation as follows:

**NOTE:** *The closest facility worker will generally be the crane operator.*

**TSR-407, LCO/SAC 3.407.2**

- 5.1.29.1 Ensure the closest facility worker will not be in the position where the general radiation field is 5 R/hr or greater.
- 5.1.29.2 Place long cable detectors in holder assemblies positioned at 30 centimeters from the liner opening, 1 meter from the liner opening, and between the crane operator and liner.
- 5.1.29.3 Place the digital readouts for the instruments on a suitable surface and match the digital readouts with the corresponding detectors.
- 5.1.29.4 Establish/verify that telemetry system is operational.
- 5.1.29.5 Verify instrumentation is operational and functioning properly.
- 5.1.30 SS: Ensure all facility workers are positioned away from the travel path of the crane and loaded container.

<b>REMOTE-HANDLED WASTE TRANSFER</b>	Identifier: RSWF-OI-007	
	Revision: 7	
	Effective Date: 10/18/12	Page: 20 of 27

- 5.1.31 HPT: Monitor the worker general radiation level throughout the entire transfer.

### WARNING

**Care must be taken to minimize radiation exposure while verifying the Container ID No.**

### CAUTION

**To prevent damage to the wire-rope sling, the lifting force cannot exceed 1,000 lb for 1/4-in. diameter wire rope eye to eye slings or 2,000 lb for 5/16-in. and 1/2-in.-diameter wire rope eye to eye slings and 1/4-in. endless or grommet wire rope slings.**

- 5.1.32 IF the side number on the container has not been determined previously, THEN perform the following:
- 5.1.32.1 MS Crane Operator: While observing the weight, lift the container from the liner as necessary to verify the Container ID No. stenciled or etched on the side of the container. (At no time shall the bottom of the waste container be lifted higher than the top of the liner.) (TSR-407, AC5.407.6)
- 5.1.32.2 SS and Verifier: Inspect the container from the side, to determine the Container ID No. stenciled or etched on the can (if present).
- 5.1.32.3 SS: IF the container ID No(s) is not identified in LST-594, THEN have the crane operator immediately place the container back in the liner and notify TSD Facilities Manager. (TSR-407, AC5.407.6)
- 5.1.32.4 IF the container ID No(s) is identified in LST-594, THEN document dual verification on FRM-1004.
- 5.1.32.5 SS: Record the Container ID No. below:

Container ID No.:	
-------------------	--

<b>REMOTE-HANDLED WASTE TRANSFER</b>	Identifier:	RSWF-OI-007	
	Revision:	7	
	Effective Date:	10/18/12	Page: 21 of 27

**CAUTION 1**

**To prevent damage to the wire-rope sling, the lifting force cannot exceed 1,000 lb for 1/4-in. diameter wire rope eye to eye slings or 2,000 lb for 5/16-in. and 1/2-in.-diameter wire rope eye to eye slings and 1/4-in. endless or grommet wire rope slings.**

**CAUTION 2**

**The height of the bottom of the container must be kept as low as practical, but must not exceed a height of six (6) feet while over the RSWF storage liners. The container may be raised as high as necessary to allow proper loading into the ISC, once it is at the truck location, not to exceed 14 ft.**

**CAUTION 3**

**Avoid “shock loading” while lowering the container into the ISC.**

- 5.1.33 MS Crane Operator: While observing the weight of the container and ensuring the lifting force does not exceed the applicable limit (as indicated on the load-indicating device), transfer the container from the liner to the ISC.
- 5.1.34 HPT: Survey area above the loaded ISC to ensure radiation levels are within RWP Limit before allowing sling disconnection from the can.
- 5.1.35 MS Rigger: Disconnect wire rope sling from crane hook.
- 5.1.36 SS: Document the container transfer information on FRM-1004.
- 5.1.37 IF not proceeding with additional RH retrievals,  
AND radiological surveys are below levels that constitute HRA-ACR posting,  
THEN HRA-ACR controls may be down-posted.
- 5.1.38 IF this transfer completes loading of an ISC,  
THEN GO TO Subsection 5.3 and close the ISC  
WITHOUT RETURNING TO this step.
- 5.1.39 IF the ISC is not filled,  
THEN close this work document and continue retrieval activities under a new working copy of the procedure.

<b>REMOTE-HANDLED WASTE TRANSFER</b>	Identifier:	RSWF-OI-007	
	Revision:	7	
	Effective Date:	10/18/12	Page: 22 of 27

## 5.2 Wire-Rope Sling Replacement

**NOTE 1:** *Steps may be re-performed as necessary per the direction of the SS.*

**NOTE 2:** *Due to various lifting fixture configurations, it may be necessary to install new cable prior to the removal of the existing cable. Steps 5.2.2 and 5.2.3 may be performed in reverse order as directed by the SS.*

- 5.2.1 HPT: Monitor the workers' general area radiation level concurrently with the performance of Steps 5.2.2 through 5.2.5.6.
- 5.2.2 MS Rigger/OPS: Cut the cable with the remote cable-cutting tool.
- 5.2.3 MS Rigger/OPS: Use the remote re-cabling tool to thread the new 1/4 in. wire rope as follows:
- 5.2.3.1 Extend 4-6 in. of one end of the wire rope beyond the re-cabling tool and secure it in place.
  - 5.2.3.2 Using the re-cabling tool thread the end of the cable through the container lifting fixture.
  - 5.2.3.3 Release the end of the cable.
  - 5.2.3.4 Reattach the re-cabling tool to the loose end of the wire rope that was threaded through the lifting fixture and secure it in place.
  - 5.2.3.5 Using the re-cabling tool, pull the wire rope through the lifting fixture, until both ends of the wire rope are above ground surface.
  - 5.2.3.6 Back away from the open liner as much as possible (to reduce exposure from shine) to splice the ends together.

<b>REMOTE-HANDLED WASTE TRANSFER</b>	Identifier: RSWF-OI-007	
	Revision: 7	
	Effective Date: 10/18/12	Page: 23 of 27

**NOTE:** *The following step must be performed by a Qualified Rigger using materials and equipment (1/4 in. cable and sleeves, compression tool, and go/no-go gauge) specifically purchased for this unique application.*

5.2.4 MS Rigger: Splice the ends of the new cable together as follows:

5.2.4.1 Connect the ends of the wire rope with two compression sleeves. Leave a small amount, approximately the length equal to the rope diameter, protruding past the end sleeve and leave a space approximately the width of a sleeve between the two sleeves.

5.2.4.2 Use the compression tool to crimp the sleeve four times.

5.2.4.3 Check compressed fittings with the 1/4 in. setting on the go/no-go gauge. Fittings **MUST** pass gauge test before being proof tested.

5.2.5 MS Rigger/Crane Operator: Functional test the new cable as follows:

5.2.5.1 Hook the crane with the load-indicating device to the cable.

### CAUTION

**To prevent damage to the wire-rope sling, the lifting force cannot exceed 1,000 lb for 1/4-in. diameter wire rope eye to eye slings or 2,000 lb for 5/16-in. and 1/2-in.-diameter wire rope eye to eye slings and 1/4-in. endless or grommet wire rope slings.**

5.2.5.2 While observing the weight, lift the can approximately 6 in. and suspend it for at least 1 minute.

5.2.5.3 Lower container to bottom of liner.

5.2.5.4 Examine the cable and sleeves to ensure the suspended weight did not affect their assembled geometry. The cable may be unhooked from the crane to perform the examination.

5.2.5.5 IF cable and sleeve integrity is determined to be satisfactory, THEN skip Step 5.2.5.6.

## Idaho National Laboratory

<b>REMOTE-HANDLED WASTE TRANSFER</b>	Identifier:	RSWF-OI-007
	Revision:	7
	Effective Date:	10/18/12
		Page: 24 of 27

5.2.5.6 IF cable integrity and sleeve is determined to be unsatisfactory,  
THEN cut the spliced ends and re-splice the cable by performing steps 5.2.3.6 through 5.2.5.4.

5.2.5.7 Return to Step 5.1.17.

### 5.3 Closing the ISC

5.3.1 HPT: Monitor the workers' general radiation levels throughout the entire closing of the ISC. **(TSR-407, LCO/SAC 3.407.2)**

5.3.2 MS Rigger: Remove the guide device from the ISC.

5.3.3 MS Crane Operator/Rigger: Place the ISC lid and frame on the ISC with the crane.

5.3.4 HPT: Perform shipping survey of the ISC.

5.3.5 HPT: IF no further retrievals are to be performed,  
THEN remove RBA and HRA-ACR area postings and controls.

#### **TSR-407, AC5.407.2**

5.3.6 MS Rigger/OPS: Tie-down the ISC per ECAR-1213.

5.3.7 OPS: IF the proposed transfer involves mixed waste,  
THEN perform the following:

5.3.7.1 Perform a visual inspection, inspect the ISC for container integrity, and document on FRM-1005, "Radioactive Scrap and Waste Facility (RSWF) Interim Storage Container (ISC)/Facility Transfer Container (FTC)/Shipping Container Staging Area Log and Weekly Inspection Form."

5.3.7.2 Inspect the ISC for leaks. No leakage allowed.

5.3.7.3 Verify container hazardous waste labeling is present (such as, a hazardous waste label or a barcode). Place hazardous waste label, if required.

<b>REMOTE-HANDLED WASTE TRANSFER</b>	Identifier:	RSWF-OI-007	
	Revision:	7	
	Effective Date:	10/18/12	Page: 25 of 27

**CAUTION**

**Ensure the truck, trailer with loaded ISC, and crane do not contact the liners when equipment is removed from the area.**

**TSR-407, AC 5.407.2**

5.3.8 MS Equipment Operator: Transfer the truck and trailer with loaded ISC to the staging area designated by the SS, maintain speed < 10 mph.

**6. POST-PERFORMANCE ACTIVITIES**

6.1 OPS: Contact Waste Generator Services (WGS) for disposition of any waste generated.

**7. ABNORMAL OPERATIONS****7.1 High Radiation While Handling Containers**

7.1.1 IF the dose rate exceeds 5R/hr at the location of the closest facility worker,  
THEN immediately place the container in a safe position by returning it to the storage liner.

7.1.2 IF the container **CANNOT** be safely placed back into the storage liner,  
THEN immediately suspend liner unloading/container handling operations,  
AND immediately establish and maintain a safe distance relative to the container.

**7.2 Dropped Container During Handling Operations****7.2.1 Immediate Actions**

7.2.1.1 IF a loaded container is dropped during handling operations,  
THEN immediately evacuate the facility.

7.2.1.2 All non-contaminated personnel not involved in the emergency response assemble at the TREAT Office Building.

## Idaho National Laboratory

<b>REMOTE-HANDLED WASTE TRANSFER</b>	Identifier:	RSWF-OI-007	
	Revision:	7	
	Effective Date:	10/18/12	Page: 26 of 27

7.2.1.3 All contaminated or potentially contaminated personnel assemble as directed by the HPT.

7.2.1.4 SS/Building Emergency Director (BED): Notify the Emergency Action Manager (EAM).

## 7.2.2 Subsequent Action

7.2.2.1 Perform required actions as directed by TSD-EAR-001, "TSD Emergency Response Procedure."

## 8. RECORDS

Executed copies of:

RSWF-OI-007, "Remote-Handled Waste Transfer"

FRM-1004, "RSWF — Interim Storage Container (ISC) Loading Sheet"

FRM-1005, "Radioactive Scrap and Waste Facility (RSWF) Interim Storage Container (ISC)/Facility Transfer Container (FTC)/Shipping Container Staging Area Log and Weekly Inspection Form"

**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.*

## 9. REFERENCES

ECAR-1213, "RSWF Hoisting and Rigging Plans"

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

FRM-1004, "RSWF — Interim Storage Container (ISC) Loading Sheet"

FRM-1005, "Radioactive Scrap and Waste Facility (RSWF) Interim Storage Container (ISC)/Facility Transfer Container (FTC)/Shipping Container Staging Area Log and Weekly Inspection Form"

LST-594, "RSWF Accelerated Retrieval RH Approved Container List"

LWP-1202, "Records Management"

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

LWP-14104, "Heavy Industrial Equipment"

**Idaho National Laboratory**

<b>REMOTE-HANDLED WASTE TRANSFER</b>	Identifier:	RSWF-OI-007	
	Revision:	7	
	Effective Date:	10/18/12	Page: 27 of 27

LWP-14606, "Heat and Cold Stress"

LWP-16108, "Response to Severe Weather Conditions"

PER-116, "HWMA RCRA Storage and Treatment Permit for the MFC"

SAR-407, "Safety Analysis Report for the Radioactive Scrap and Waste Facility (MFC 771)"

SD-38.1.2. "Treatment, Storage, and Disposal Facilities (TSDF) Hostile Environment Plan"

TSD-OI-006, "Emergency Information and Procedures"

TSD-EAR-001, "TSD Emergency Response Procedure."

TSR-407, "Technical Safety Requirements for the Radioactive Scrap and Waste Facility (MFC 771)"

## **10. APPENDIXES**

None.