General

RECEIVED

JUL 29 2014

NMED
Hazardous Waste Bureau

ENTERED

Los Alamos
NATIONAL LABORATORY
EST 1943

Waste Management Division
PO Box 1663, K499
Los Alamos, New Mexico 87545
Phone/Fax: 505-665-0493/505-667-1945

National Nuclear Security Administration
Los Alamos Field Office, A316
3747 West Jemez Road
Los Alamos, New Mexico, 87545
Phone/Fax: 505-667-5794/505-667-5948

Date: JUL 29 2014
Symbol: WM-DO-14-050
LAUR: See Attached List
Locates Action No: U1401701

Mr. Ryan Flynn, Secretary
New Mexico Environment Department
2905 Rodeo Park Drive, Building
Santa Fe, NM 87505-6303

Dear Mr. Flynn:

Subject: Second Response to Request for Information on Management of Waste at Los Alamos National Laboratory, EPA ID #NM890010515

The purpose of this letter is to provide the seven procedures, which due to security review, were not included in the July 3, 2014 response to the information request received by letter from the New Mexico Environment Department (NMED) dated June 16, 2014. The U.S. Department of Energy (DOE) and the Los Alamos National Security, LLC (LANS), collectively the Permittees, are providing the enclosure described below as the last of the information requested by the NMED.

Enclosure 1 includes a list of the seven additional current standard operating procedures used for packaging waste, for repacking waste, for absorbing liquids, and for neutralizing waste at Los Alamos National Laboratory (LANL) facilities, as well as copies of the procedures. Individual procedures are separated within the enclosure by title pages.

Please note that Enclosure 1 is divided into two distinct sections. The first section (contained in the document binder) consists of the information to be released to the public. The second section (within the envelope marked "UCNI") contains Unclassified Controlled Nuclear Information (UCNI) as defined pursuant to federal law. The UCNI section, which is submitted as confidential information in compliance with Title 40 of the Code of Federal Regulations (40 CFR) § 270.12 requirements, is for the use of the NMED-HWB only and must be used and stored appropriately according to Atomic Energy Act Section 148 requirements. If there are any questions as to what type of arrangements are required for federally-compliant storage or management of UCNI information, please contact the Permittees. The UCNI information has only been included as a hardcopy to the NMED-HWB.

If you have any questions or comments relating to this submittal please contact Robert L. Dodge, LANS, at (505) 665-0493 or Gene E. Turner, DOE, at (505) 667-5794.

Sincerely,

Robert L. Dodge
Division Leader
Waste Management Division
Los Alamos National Security LLC

Sincerely,

Gene E. Turner
Environmental Permitting Manager
Environmental Projects Office
Los Alamos Field Office
U.S. Department of Energy

RLD/GET:tav

Enclosures: (1) Additional Waste Management Standard Operating Procedures

Cy: Tom Blaine, NMED, Santa Fe, NM, (E-File)
John Kieling, NMED, Santa Fe, NM (E-File)
Steve Pullen, NMED/HWB, Santa Fe, NM, (E-File)
Timothy Hall, NMED/HWB, Santa Fe, NM, (E-File)
Trais Kliphuis, NMED, Santa Fe, NM, (E-File)
Peter Maggiore, NA-LA, (E-File)
Lisa Cummings, NA-LA, (E-File)
Eric L. Trujillo, NA-LA, (E-File)
Carl A. Beard, PADOPS, (E-File to aosburn@lanl.gov)
Michael T. Brandt, ADESH, (E-File to lindasalazar@lanl.gov)
Jeffrey D. Mousseau, ADEP, (E-File)
Daniel R. Cox, ADEP, (E-File)
Victoria A. George, REG-DO, (E-File)
Anthony R. Grieggs, ENV-CP, (E-File)
Deborah K. Woitte, LC-ESH, (E-File)
Mark P. Haagenstad, ENV-CP, (E-File)
lasomailbox@nnsa.doe.gov, (E-File)
locatesteam@lanl.gov, (E-File)
wm-correspondence@lanl.gov, (E-File)

Second Response to Request for Information on Management of Waste at Los Alamos National Laboratory

July 2014

ENCLOSURE 1

LANL Procedures for Packaging, Repackaging, Absorbing Liquids and Neutralizing Waste

WM-DO-14-050

Various LA-UR #s

Date: JUL 29 2014

LANL Procedures for Packaging, Repackaging, Absorbing Liquids and Neutralizing Waste

Additional TA-55 and TA-50 RLWTF Procedures

FFS-DOP-014, Low Level Chemical, Mixed, Hazardous, and Non-Hazardous Waste Operations at TA-55 and RLUOB, R4-IPC1 (LA-UR-14-24947)
PA-DOP-01462, Packing TRU Waste into Pipe Overpack Containers, R1 (LA-UR-14-24973)
PA-DOP-01401, Visual Inspection of TRU Waste, R0 (LA-UR-14-24976)
PA-DOP-01456, Packing TRU Waste into Approved Containers, R1 (LA-UR-14-24975)
PA-DOP-01450, Packing Oversized TRU Waste into Approved Containers, R1 (LA-UR-14-25069)
RLW-DOP-010, Drum Tumbler Operations, R9 (LA-UR-14-24935)

Include Under a Separate Cover

PMT4-DOP-087, Solidification of Liquid TRU/Aqueous/Organic Waste and Liquid Waste Mixtures (U), R2 (LA-CP-14-20051)

FFS-DOP-014, Low Level Chemical, Mixed, Hazardous, and Non-Hazardous Waste Operations at TA-55 and RLUOB, R4-IPC1

LA-UR-14-24947

NPI-7

Document Extension

Document Number: FFS-DOP-014, R4-IPC1

Effective Date: 1/16/2014

Next Review Date: 3/16/2014

Title: Low Level Chemical, Mixed, Hazardous, and Non-Hazardous Waste Operations at TA-55 and RLUOB

(Place extension cover sheet on top of document approval cover sheets)

Extension Justification: *(Type/print justification, including information on document action taken)*

Need more time to develop revision.

Derivative Classification Review			
☒ UNCLASSIFIED ☐ Export Controlled Information ☐ Official Use Only ☐ Unclassified Controlled Nuclear Information Guidance Used:		☐ CONFIDENTIAL ☐ SECRET ☐ Restricted Data ☐ Formerly Restricted Data ☐ National Security Information Guidance Used:	
DC/RO Name/Z Number: Chastity Kolar/ 110522	Organization: NPI-7	Signature: SIGNATURE ON FILE	Date: 1/13/2014

	Organization	Date	Signature
Approval:			
Keith Lacy RLM	NPI-7	1/14/2014	SIGNATURE ON FILE
Charles Tesch FOD *(for technical procedures)*	TA55-OPS	1/14/2014	SIGNATURE ON FILE

☐ Requires AD Approval *(if requesting extension beyond 60 days)*

☐ AD approval signature on file

Approval Date:_____ Tracking Number:_____

UNCLASSIFIED

Resumption Evidence and Approval Traveler

TRACKING #

Process	Procedure #	CSED/CSLA # *(if applicable)*
Low Level Chemical, Mixed, Haz., & Non-Haz. Waste Ops	FFS-DOP-014	N/A

- [x] PA-AP-01000 – Attachment B, Verification Checklist
- [ ] PA-AP-01000 – Attachment C, Validation Checklist
- [ ] PA-NOTICE-01007 – Attachment B, Criticality Evaluation Screening and Review Checklist
- [ ] Independent Verification
  Note: Independent verification, as defined by ADPSM, is required for all operations with metal limits ≥ 2300g, and for all 400 AREA aqueous solution operations.
- [x] Additional Supporting Information Attached

INDEPENDENT VERIFIER SIGNATURE *(if required)*

Name	Z Number	Signature	Date
N/A			

RESPONSIBLE OPERATIONS/ENGINEERING MANAGER(S) SIGNATURES

Name	Z Number	Signature	Date
Filiberto Dominguez	110001	for F. Dominguez	7-30-13
Name	Z Number	Signature	Date
Keith Lacy	149262		7-30-13

DIVISION LEADER(S) SIGNATURES

Name	Z Number	Signature	Date
Stephen Schreiber	094595		7/30/2013
Name	Z Number	Signature	Date

APPROVAL AUTHORITY SIGNATURES

[X] ***(ADPSM only approval required per ADPSM:13-015, Pause of PF-4 Programmatic Operations***

ADPSM *(print name)*	Z Number	Signature	Date
JEFF YARBROUGH	105580		7-31-13
PADWP *(print name)*	Z Number	Signature	Date
DIR *(print name)*	Z Number	Signature	Date

UNCLASSIFIED

Immediate Procedure Change (IPC) Cover (in lieu of DAR)

SECTION 1 - GENERAL PROCEDURE DETAILS *(To be completed by DCC and Originator)*

DAR No.: 3619	**Document No.:** FFS-DOP-014	**Revision:** 4-IPC1
Title: Low Level Chemical, Mixed, Hazardous, and Non-Hazardous Waste Operations at TA-55 and RLUOb		**Effective Date:** 7/16/13
Print Document Control Coordinator Name/Z#: Christine Serrano/102467	**DCC Phone:** 5-6941	**Expiration Date:** 1/16/14
Print Originator Name/Z#: Fil Dominguez/110001	**Originator Phone:** 5-1789	**Date of Request:** 07/15/13
Print RLM Name/Z#: Keith Lacy/149262	**RLM concurrence signature:** for KAL	**Date of Request:** 07/15/13

Functional Organization Area: *(Check and specify owning organization)*

- ☐ Facility _____ *(specify facility)*
- ☒ Organization NPI-7 *(specify org)*
- ☐ Project _____ *(specify project)*

SECTION 2 - DOCUMENT CONTENT INFORMATION *(To be completed by Originator)*

Detailed description of requested change *(Attach additional sheets if needed. Specify number of additional sheets: _____)*

Section 3.1 - Added Step 9
Section 4.0 - Changed Nevada Test Site to Nevada National Security Site (NNSS)
Clarified Process Steps in Section 5.0
Clarified Section 6.5
Section 8.0 - Added Waste Certified Official (WCO) and Waste Package Certfier (WPC)
Section 10.0 Removed Notice 0054 and Notice 0055 and added P409, Waste Management
Attachment D Updated Checklist

Page numbers where content changes occur (do not include pages that only have header or footer changes): 1, 14-18, 20, 21, 23-28, 31-40, 43-44, 46-47, 57,

Contains TSR-related information ☒ Yes ☐ No

SECTION 3 - DERIVATIVE CLASSIFICATION REVIEW *(of document listed in Section 1)* **(DC/RO)**

☒ Unclassified	☐ CONFIDENTIAL ☐ SECRET
☐ Export Controlled Information	☐ Restricted Data
☐ Official Use Only	☐ Formerly Restricted Data
☐ Unclassified Controlled Nuclear Information	☐ National Security Information
☐ Guidance Used: _____	☐ Guidance Used: _____

DC/RO Print Name/Z#:	Organization:	Signature:	Date:
Charity Soper 110582	NPI-7	Charity Soper	7/15/13

SECTION 4 – REQUIRED READING EVALUATION *(To be completed by Originator)*

Required Reading ☒ No ☐ Yes (*If yes, Originator attaches completed Required Reading Assignment Designation Form to IPC cover page*)

SECTION 5- REVIEWS AND APPROVAL FOR PROCESSING

(To be completed by OM or RLM, initially. OM **AND** *RLM signature is required for all IPCs.*
Originator is responsible for ensuring reviews are completed. Reviewers sign and date as the specified reviews are completed.)

Safety Basis Review ☒ TA-55 ☐ RLW ☐ RLUOB

Validation not required. IPCs are driven by field conditions.

DAR No.: 3619	**Document No.:** FFS-DOP-014	**Revision:** 4-IPC1

Required Reviews *(OM and/or RLM check those that apply)*	**Print Name/Z#** *(Reviewer: print name/Z#)*	**Signature** *(Reviewer: sign when review completed. [document updated, if required])*	**Date** *(Reviewer: date when signed)*
☐ Central Training			
☐ Cognizant System Engineer/SME			
☐ Design Authority Technical Review			
☐ Electrical Safety Officer			
☐ Fire Protection Engineer			
☐ Glovebox Safety Program Manager			
☐ Industrial Hygiene			
☐ Material Control and Accountability			
☐ Operating Organization			
☐ OS – Packaging and Transportation			
☐ Radiation Protection			
☐ Safety Basis Criticality Safety *(for fissionable material procedures)*			
☐ Waste Services			

OM *and* **RLM Review of Document is Completed and Approved for Processing** Print RLM Name/Z#: Keith Lacy/149262	RLM Signature: For KAL	Date: 7/15/13
Print OM Name/Z#: Charles Tesch/152599	OM Signature:	Date: 7/15/13

Additional Review and Concurrence: *(document peer review and additional reviews, if needed)*

Organization	**Print Name/Z#**	**Signature**	**Date**

SECTION 6 - SAFETY BASIS EVALUATION

DCC submits for required Safety Basis Review ☒ TA-55 ☐ RLW

(To be completed by Safety Basis Analyst)

Safety Basis Tracking Number	**Print Name/Z#**	**Signature**	**Date**

SECTION 7 - FINAL APPROVALS *(Signature indicates approval of IPC)*

Name and Z#:	**Organization:**	**Signature:**	**Date:**
RLM: Keith Lacy/149262	NPI-7	For KAL	7/16/13
OM: Charles Tesch/152599	TA55-OPS		~~7/16/13~~ 7/16/13
Change Type:	☒ Permanent	☐ Temporary: Expires on	7/16/13

SECTION 8 - RELEASE *(Completed by RLM)*

(Indicate whether the document can be made effective and specify the effective date, if applicable)

☐ Coordinate release with Operations Center ☒ Release Upon Completion of QEV evaluation

☐ Release with Effective Date:_____

Print RLM Name/Z#: Keith Lacy/149262	**RLM Signature:** For KAL	**Date:** 7/16/13

SECTION 9 - DOCUMENT RELEASE *(To be completed by DCC)*

Document released/cancelled per TA55-DI-01000 ☐ Yes ☐ No (If no, explain: _____)

7/15/13

NPI-7

Detailed Operating Procedure

Approval Cover Sheet

Document Number:	FFS-DOP-014, ~~R3~~ R4 -IPC-1
Effective Date:	~~05/01/2013~~ 7/16/13
Next Review Date:	05/01/2016 1/16/14
Supersedes:	

Title: Low Level Chemical, Mixed, Hazardous, and Non-Hazardous Waste Operations at TA-55 and RLUOB

Status:	Hazard:	For Document Control Use Only:
☐ New	☐ Low-hazard	
☒ Major revision	☒ Moderate-hazard	
☐ Minor revision	☐ High-hazard/complex	
	Use Type:	
	☒ Reference ☒ Use every Time (All Attachments)	

	Organization	Date	Signature
Approved for Use By: Document Owner:			
Fil Dominguez *RLM*	NPI-7	04/12/12	Signature on File
Authorized for Use By: FOD:			
Chuck Tesch *Operations Manager*	TA55-OPS	05/08/13	Signature on File
Released: FOD:			
Chuck Tesch *Operations Manager*	TA55-OPS	05/08/13	Signature on File

☒ Unclassified	☐ Restricted Data	**Derivative Classifier:**
☐ Confidential	☐ Formerly Restricted Data	**Name:** Gene Ortega / 109743 (Signature on File)
☐ Secret	☐ National Security Information	**Title:** ES-55 **Date:** 04/11/13
☐ Unclassified Controlled Nuclear Information		
☐ Official Use Only		**Derived from:**

Revision History

Document Number	Effective Date	Action	Description
FFS-DOP-014, R3	05/01/13	Major	• Major changes to entire procedure. • Add references to RLUOB Facility. • Add Performance Section 5.2.3 Packaging Waste and 5.6.4 Macroencpsulation. • Change Title • Remove Appendix A, Waste Acceptance Form. • Updated references. • Change Appendices to Attachments.
FFS-DOP-014, R2	06/08/12	Major Revision	• Revised the TSR controls to comply with the 2011 TSRs. • Removed unnecessary dollar signs ($) from sections that did not implement TSRs.
FFS-DOP-014, R1	1/11/12	Major revision	• Added section 5.14 Decanting Waste Oil • Added NOTE to 5.2.1 Inspecting Empty Containers and Waste Containers
FFS-DOP-014, R0.1	6/3/2011	Minor revision	On page 5 changed both facilities to TA55, on page 12 changed NMT-7 to NPI-7, and on page 31 changed nuclear material to New Mexico.
FFS-DOP-014, R0	Approved but never effective	New	Low Level Radioactive, Mixed Low Level Radioactive, Nonradioactive Chemical, Hazardous and Non Hazardous Waste Management at TA-55

Table of Contents

1.0 INTRODUCTION 5

1.1 Purpose 5
1.2 Scope 5
1.3 Applicability 5
1.4 Technical Safety Requirements (TSRs) only applies to PF-4/480 (PAD) 6

2.0 PRECAUTIONS AND LIMITATIONS 7

2.1 General 7
2.2 Additional Requirements and Conditions 11

3.0 PREREQUISITE ACTION 14

3.1 Planning and Coordination 14
3.2 Performance Documents 14
3.3 Special Tools, Equipment, Parts, and Supplies 15
3.4 Field Preparation 15
3.5 Approvals and Notifications 15

4.0 ACCEPTANCE CRITERIA 15

5.0 PERFORMANCE 16

5.1 Container Inspections 16
5.2 Characterized Waste 17
5.3 Rejected Waste Packages 24
5.4 Removing Waste Packages from Material Management Area 25
5.5 Minor Decontamination Operation 26
5.6 Waste Treatment or Reduction 27
5.7 Assaying Waste Packages 30
5.8 Shipping Waste 31
5.9 Over Packing Waste 33
5.10 Repackaging Mixed Waste or Hazardous Waste Containers 34
5.11 Storage Area Inspections 35
5.12 Material at Risk (MAR) (only applies to PF-4 and 480 (PAD) 41
5.13 Material At Risk (MAR) (RLUOB only) 43
5.14 Decanting Waste Oil 43

6.0 POST-PERFORMANCE ACTIVITIES 44

6.1 Testing 44
6.2 Restoration 44
6.3 Results 44
6.4 Verification/Independent Verification 44
6.5 Records Processing 44

7.0 CONTINGENCIES 44

8.0 DEFINITIONS AND ACRONYMS 45

9.0 RESPONSIBILITIES 46

9.1 PF-4/RLUOB HazChem Operations Team 46
9.2 PF-4/RLUOB Waste Generators 46

9.3 PF-4/RLUOB Responsible Line Manager 46
9.4 PF-4/RLUOB RCT 46
9.5 Quality Assurance Representative 46
9.6 Operations Center Personnel 46
9.7 Person In Charge 46

10.0 REFERENCES 47

11.0 RECORDS 48

12.0 APPENDICES AND ATTACHMENTS 49

Attachment A, Self Inspection Checklist for SAAs (UET) 50
Attachment B, Hazardous Waste Facility Inspection Record Form (UET) 52
Attachment C, Hazardous/Mixed Waste Facility Inspection Record Form for <90 (UET) 55
Attachment D, Waste Package Checklist (UET) 57
Attachment E, Inventory Checklist for LLW MAR Tracking (UET) 58
Attachment F, RLUOB Inventory Checklist for LLW MAR Tracking (UET) 59
Attachment G, Weekly Inventory Form (UET) 60
Attachment H, Macroencapsulation Manufacturer's Instructions (UET) 61

1.0 INTRODUCTION

1.1 Purpose

This Detailed Operating Procedure (DOP) provides instructions for managing, packaging, storing, and shipping Low-Level Mixed Waste (LLMW) and chemical waste at TA-55. This includes inspecting, labeling, preparing, and closing of waste containers to ensure compliance with applicable regulations. This procedure also covers activities related to inspecting waste in Less Than 90 Day (<90 Day), Treatment, Storage, and Disposal Facilities (TSDF), Polychlorinated Biphenyl (PCB), Universal Waste Areas (UWA), New Mexico Special Waste (NMSW) areas, and Satellite Accumulation Areas (SAA) and storage area conditions at TA-55 and RLUOB.

Hazardous waste is described as solid waste that consists of any type of waste that meets the Resource Conservation and Recovery Act (RCRA) guidance for a characteristic property or is listed by RCRA for its potential toxicity. Non-hazardous waste does not meet the characteristics or listing criteria but requires "administrative" management to ensure proper disposal. Hazardous and Non-hazardous wastes include all chemicals used at TA-55, trash-type material contaminated with chemicals, and items containing chemicals or metals (e.g., mercury thermometers, lead sheets).

1.2 Scope

This DOP is specifically written for use by trained Nuclear High Hazard technicians assigned to HazChem Operations at TA-55.

Activities described in this DOP are located throughout TA-55 and RLUOB. Forklift activities are also performed at TA-55 and RLUOB.

Personnel conducting this work are HAZWOPER and RCRA qualified operators.

1.3 Applicability

Regulatory drivers may include but are not limited to New Mexico Administrative Codes, Resource Conservation and Recovery Act, Toxic Substance Control Act, New Mexico Special Waste, Department of Transportation, LANL WAC and DOE Order 435.1 Radioactive Waste Management and Nevada National Security Site Waste Acceptance Criteria (DOE/NV-325-Rev.9, February 2012).

This DOP is independent from FFS-DOP-002, *Low Level Waste Management at TA-55.*

1.0 INTRODUCTION (continued)

1.4 Technical Safety Requirements (TSRs) only applies to PF-4/480 (PAD)

NOTE MAR in containers with a damage ratio of zero (i.e., encapsulated heat sources, certified Type B packages, fire-rated safes, vault water bath containers) does not contribute to offsite dose consequences and is, therefore, excluded from the limits below. In addition, for MAR in containers with a damage ratio greater than zero but less than one (i.e., fire-rated containers), the applicable damage ratio may be applied to the below limits.

LCO: MAR SHALL be limited as follows:

1. in the basement of PF-4, excluding the vault, the Robo Cal room, and the packaging/un-packaging rooms:
   a. a limit of 30 kg of Pu-equivalent of waste

$

AND

2. on the waste pad:
   a. a limit of 45 kg of Pu-equivalent in the Confinement Pressure Vessels

   AND

   b. a total limit of 3.6 kg of Pu-equivalent in all other

$

2.0 PRECAUTIONS AND LIMITATIONS

2.1 General

A. Pause/Stop Work

All workers are responsible for pausing or stopping work when they have a reasonable belief that quality, work risks or hazards are not effectively controlled and workers have the right to do so without fear of reprisal. LANL Policy P101-18 provides more information on the differences between pausing or stopping work and the process for resuming work in either case.

If this procedure cannot be completed as written or abnormal conditions are encountered, PAUSE WORK, place the work in a safe configuration if possible, and notify the Operations Center (OC) and Responsible Line Manager (FLM).

B. Hazards and Controls

Hazard	Controls
Ionizing Radiation and Contamination	• Radiation Protection Requirements are detailed in TA55-RD-555 (for TA-55 ONLY). • Follow radiological postings. • Radiological Control Technicians (RCTs) are notified to perform a radiation survey when transferring radioactive material that could cause a new radiation area or high radiation area to be created. • As Low as Reasonably Achievable (ALARA) principles are to be used (time, distance, and/or shielding) to minimize dose to workers. • Correct personnel protective equipment (PPE) is to be used. • Radiation Work Permits (RWPs) are required when dose rates $\geq$ 75 mrem/hr at 30 cm or $\geq$ 700 mrem/hr on contact. • PA-RD-01006 RLUOB Facility Radiation Protection Requirements.
Incompatible Chemicals	• Ensure that incompatible chemicals are separated by physical barrier (e.g. a separate secondary container in a different cabinet).
Falling Containers	• Open cabinets and storage bins slowly to avoid items that may be at the edge of shelves from falling off the shelves.

2.1 General (continued)

B. Hazards and Controls, (continued)

Hazard	Controls
Chemical	• Characterized based on MSDS or waste generators information. • Do not disturb perchlorate forming or peroxide forming chemicals that have visible crystallization, or that is more than one year old. • Immediately notify the TA-55 or RLUOB Operations Center of the situation, barricade and isolate the area, and notify the LANL Hazardous Materials Team to remove. • If treatment of chemicals is required, contact IH for proper PPE and respiratory requirements. • All chemicals are contained in appropriate containers and may require solidification.
Temperature or humidity extremes	• If indoor temperature is above 85° F for 1 hour, stop work, turn off instruments, and notify management. • If possible perform the work during cooler periods such as early morning or late afternoon/evening. • Thermal Stress Awareness Course 18649 • Wear appropriate warm clothing for cold conditions, if necessary carry extra clothing. • Wear proper shoes in icy/wet conditions. • Drink plenty of fluids. • Proper monitoring based on work load and temperature.
Repetitive Motions	• Take frequent breaks to avoid excessive fatigue or strains.
High noise level (>85DB)	• Obey all posting for noise protection requirements. • Wear appropriate ear protection. • Routine work in high noise areas or with noise generating equipment requires that a worker must be evaluated for enrollment in Hearing Conservation Program. Contact the deployed industrial hygienist for an evaluation.
Construction Sites	• Obey all posting and barricades including posted PPE requirements • Notify the Site Representative upon arrival and departure and what the natures of the activities are. Be constantly alert of your surroundings, especially moving machinery and construction worker warning and direction.
Vehicle Operation	• Follow FFS-DOP-008.

2.1 General (continued)

B. Hazards and Controls, (continued)

Hazard	Controls
Slips, Trips, and Falls	• Wear appropriate footwear such as field boots (no open-toed shoes). • Be aware of the surrounding terrain, paying attention to foot and body placement. • If working on an elevated surface or in proximity to an unprotected edge, contact the deployed safety professional to ensure appropriate fall protection controls are implemented. • Take extra care during winter conditions in regards to snow and ice by wearing yax tracs or equivalent.
Insect bites, snake bites, and wild animal encounters	• Insect awareness training is recommended. • New Mexico snake awareness training is recommended. • Avoid placing hands and feet into areas you cannot see clearly and be constantly aware of your surroundings. • For wild animal encounter guidance see Notice 0055. Black Bear and Mountain Lion Encounters and Notice 0054, Reporting Injured, Trapped, or Abandoned Animals on LANL Property.
Inclement Weather	• If an individual can see lightning and/or hear thunder he/she is at risk. If the time delay between seeing the flash and hearing the bang is less than 30 seconds the individual should seek shelter immediately. Avoid high exposed terrain and tall trees. • Stay out of water courses during rain events due to potential flash flooding. • If weather conditions become extreme, stop or postpone field activities until later date.
High Winds	• Described as level at which prevailing and gusty winds raise dust from surrounding area. • Do not open clamshell storage unit in high wind conditions. • Use caution when opening PF-190 and UWA (North <90 Day Area). • During red flag warnings, consult with management before performing work outdoors.

2.1 General (continued)

B. Hazards and Controls, (continued)

Hazard	Controls
Ergonomic Lifting, moving material	• Avoid awkward positions. • Use proper lifting and moving techniques. • Use 2 people or additional equipment when lifting heavy loads. • Use casters, rollers, pallet jacks, forklifts when feasible. • Course 14898 Non-Office Workers (or equivalent) Recommended.
Cuts, Pinch Points	• Leather or Cut Resistant Gloves
Forklifts Exhaust	• Refer to LANL Forklift Training P101-4, *Forklifts and Powered Industrial Trucks.* Contact IH for approval prior to using gas, propane, or diesel fueled forklifts indoors.
Radioactive Contamination	• Anti-C coveralls, Respiratory protection, RP-1, RWP, hoods.
Nuclear Criticality Accident	• Follow CSLA as applicable.

C. Unique Entry Conditions

Only trained and authorized personnel may enter PF-4 and RLUOB unless escorted. Badge reader serves as access control. For security reasons, at TA-55, the two man rule with HRP is required and all packages must be doubled locked with two different combinations known by different team members.

D. Sequence of Steps

This procedure will be used as a reference document on all routine activities that are performed. The RLM has determined it as a reference procedure because if the process in not performed exactly in the order written it will not increase the risk of personnel and/or create a hazard. The only non-routine activity will be macroencapsulation. All Attachments will be Use-Every-Time.

The sections and steps in the Performance section are to be performed in sequence unless otherwise stated.

E. Criticality Safety Limit Approval (CSLA) Requirements

Follow CSLA as applicable..

F. Required Permits

New Mexico Environment Department – Hazardous Waste Permit, Radiological Work Control Permit.

2.1 General (continued)

G. Training and/or Qualifications

Workers who perform the procedure in Treatment Storage and Disposal Facilities and <90 Day Storage shall be current on the following training:

- Hazardous Waste Operations and Emergency Response (HAZ WOPER)
- RCRA Personnel
- Waste Generation Overview
- TA55-RD-539, *TA-55 Waste Management Requirements*
- TA55-RD-555, *TA-55 Radiation Protection Requirements*
- PA-PLAN-01031, *RLUOB Security Plan*
- CMRR-TA55-PLAN-0244, *RLUOB Emergency Plan*
- PA-RD-01006, *RLUOB Facility Radiation Protection Requirements*

H. Cautions

Not Applicable.

I. Material Control and Accountability

MC&A practices for all nuclear material at TA-55 are performed in accordance with TA55-RD-585, Nuclear Material Control and Accountability Requirements.Covered in Section 5.4, Removing Waste Packages from Material Management Area.

RLUOB Material Balance Area (MBA 600 Operating Procedure), PA-AP-01046.

2.2 Additional Requirements and Conditions

2.2.1 RLUOB MAR Limit

IF the LLW MAR inventory at RLUOB exceeds 10 ST-90 (900 ft3) volume, **THEN** notify the RLUOB Operations Center immediately for resolution. See PA-AP-01045, *RLUOB Material-At-Risk (MAR) Program.*

2.2.2 Storage Area Requirements

2.2.2.1 Satellite Accumulations Areas

NOTE All postings are to be obeyed prior to entering storage areas or lab rooms. Operating Logbooks must be used in all storage areas as a Best Management Practice (BMP). As a BMP, inspections in an SAA should be performed at least once a week.

[1] Ensure that the Satellite Storage Area is at or near the point where the waste was generated.

[2] Ensure that waste in storage does NOT exceed 55 gallons of hazardous waste, OR one quart of acutely hazardous waste.

2.2.2.1 Satellite Accumulations Areas (continued)

[3] IF either limit in step **[2]** is exceeded,
THEN remove the excess volume to a <90 day area or a Treatment Storage and Disposal Facility (TSDF) within 3 calendar days.

[4] Ensure that movement of the excess chemicals in step **[3]** is documented in the Operating Records, and <90 day or TSD inspection is complete on the day items are placed into storage.

[5] Ensure sealed waste containers are completely closed in the manner intended by the manufacturer except when adding or removing waste.

[6] Ensure that the storage area is under the control of the operator of the process that generated the waste.

NOTE: Additional requirements discussed in **Section 5.11**.

2.2.2.2 Less Than 90 Day Storage Areas, Universal Waste Areas (UWA), PCB Storage Area, New Mexico Special Waste Storage Area

NOTE Universal Waste and PCBs are stored in UWA storage sites. New Mexico (NM) Special Waste including Asbestos waste will be stored within designated locations or containers within our <90-Day Storage Areas. As a BMP, inspections should be performed at least once per week. No work, including administrative, is allowed in these areas if the communications system or eyewash/safety shower is not working.

[1] Ensure that containers holding waste are in good condition and compatible with the hazardous waste in the container.

[2] Ensure that non-compatible waste items are segregated from each other by placing them on separate shelves or in separate secondary containments.

[3] Ensure that waste containers are completely closed in the manner intended by the manufacturer except when adding or removing waste.

[4] Ensure that the storage site is inspected at least once per week and/or on any day that waste is added to or removed from the site.

[5] Ensure that all containers in the storage site are labeled as Hazardous or Nonhazardous.

[6] Ensure that the date on every container is the date that material was first declared a waste,
AND entered on Hazard Waste label, if applicable.

[7] Ensure inventory log is current with description of waste, accumulation start date, volume, and date and destination of waste removed.

[8] Ensure the latest Contingency Plan is available at the storage area and is the most current version.

NOTE WAC specifies <45 days to submit disposal request for <90 days storage area waste.

[9] Ensure stored waste does NOT exceed the time limit for the applicable storage area (i.e., 89 days for <90 day storage, 364 days for TSD or UWA).

2.2.2.2 Less Than 90 Day Storage Areas, Universal Waste Areas (UWA), PCB Storage Area, New Mexico Special Waste Storage Area (continued)

[10] Additional requirements discussed in section **5.11**.

2.2.2.3 Satellite Accumulation Area, Less Than 90-Day Storage Area, Universal Waste Area, Polychorinated Biphenyl, New Mexico Special Waste Area, Used Oil Area, and Treatment, Storage, and Disposal Facility Inspections

NOTE 1 UWA and PCB are stored in UWA storage sites (Universal is a UWA and PCB is a PCB storage area). New Mexico (NM) Special Waste including Asbestos waste will be stored within designated locations or containers within our <90-Day Storage Areas.

NOTE 2 As a best management practice, inventory logbooks should be kept at all storage sites.

[1] Use the following table to identify each type of storage area, frequency of inspections, and the type of checklist for each type of inspection:

Type of Storage Area	Frequency of Inspections	Type of Checklist Used
SAA	As a best management practice conduct an inspection once per week **-and-** every time waste is taken into and out of the storage area	Self-Inspection Checklist for SAAs
<90 Day Storage Area	Once per week **-and-** Every time waste is taken into and out of the storage area	Hazardous & Mixed Waste Facility Inspection Record Form (IRF) for <90
Universal Waste Area (UWA)	As a best management practice conduct once a week **-and-** every time waste is taken into and out of the storage area	Will be covered on the IRF used for <90 Day Storage Area inspections
Treatment, Storage, and Disposal Area (TSD)	Once per week **-and-** Every time waste is taken into and out of the storage area. **NOTE** wastes stored in tanks require a daily inspection	Inspection Record Form (IRF) Hazardous & Mixed Waste Facility Inspection Record Form (IRF)
PCB Storage Area	Once every 30 days, but as a best management practice conduct once a week	Will be covered on the IRF used for <90 Day Storage Area inspections
New Mexico Special Waste Area	As a best management practice, conduct once a week.	Will be covered on the IRF used for <90 Day Storage Area Inspections

3.0 PREREQUISITE ACTION

The section and the steps in the Prerequisite Action section are not required to be performed in sequence, unless otherwise stated.

3.1 Planning and Coordination

[1] Ensure that a pre-job brief has been conducted in accordance with PA-AP-01020, *Pre-Job Briefing and Post Job Review*.

[2] Technical Safety Requirement (TSR) performed in this procedure does NOT require Operations Center notification.

[3] Ensure plant conditions are in Mode 1 before commencing work (PF-4 only).

[4] Schedule the work with the Facility Operations Director organization, TA-55/RLUOB, if applicable.

[5] The PIC/Worker is responsible for ensuring that they are working to the most current procedure and complies with document control processes concerning copying, marking, and final disposition.

[6] Verify that tools, equipment, and material numbers in the work area match those specified.

[7] Official copies of Attachments can be found as follows:

- *Waste Acceptance Form (WAF)* can be found in TA55-RD-539.
- Attachments A through D can be found on Documentum.
- Attachment D, *Waste Package Checklist*, Attachment E, *Inventory Checklist for LLW MAR Tracking*, Attachment F, *Checklist for LLW MAR Tracking at RLUOB,* and Attachment G, *Weekly Inventory Checklist*, can be found on NPI-7 Shared Files on 'win\ta55\projects' in the "WES-FFS Procedural Attachments" folder.

[8] Two person rule must be followed when moving waste items (this is a safety requirement, not an MC&A).

IPC-1 JL 7/15/13

[9] COORDINATE WITH WCO/WPC FOR WASTE VISUAL INSPECTION

3.2 Performance Documents

- FFS-DOP-008, *Forklift Operations at TA-55*
- PA-RD-01006, *RLUOB Facility Radiation Protection Requirements*
- PA-PLAN-01040, *RLUOB South Loading Dock Roll Door Access* (applicable to RLUOB)
- TA55-RD-539, *TA-55 Waste Management Requirements*
- TA55-RD-555, *TA-55 Radiation Protection Requirements*
- TA55-DOP-547, *Opening and Closing the External Security Doors and Confinement Doors in PF-4 (applicable at TA-55)*
- TA55-RD-585, *Nuclear Materials Control and Accountability Requirements*
- DOE Order 435.1, *Radioactive Waste Management*
- P930-1, *LANL Waste Acceptance Criteria*
- Nevada Test Site Waste Acceptance Criteria (DOE/NV-325-Rev.9)

3.0 PREREQUISITE ACTION (continued)

3.3 Special Tools, Equipment, Parts, and Supplies

Table 1 Equipment Description and Location

Equipment Number (N/A if no number)	Equipment Name	Manufacturer/ Model	Description	Location
N/A	Forklifts	Various	1 ton-20 ton capacity	TA-55/RLUOB
N/A	Rigging Equipment	Various	0-10K Capacity	TA-55/RLUOB
24412	Gator UTV	John Deere	Utility Vehicle	TA-55/RLUOB
N/A	Cordless Tools	Multiple Manufacturers	Drills, Impact Wrenches, etc.	TA-55/RLUOB
N/A	Hand Tools	Multiple Manufacturers	Screwdrivers, pliers, ratchets, blades, bolt cutters, torque wrenches, and sockets.	TA-55/RLUOB
N/A	Shovel	Multiple Manufacturers	Snow, round, square	TA-55/RLUOB
N/A	Scale	Sauter EGS 6000	Floor Scale for weighing items	PF-4 Bsmt.
N/A	Scale	Multiple Manufacturers	Scale for weighing items	TA-55/RLUOB

Table 2 Process Materials

Process Materials Number	Title/Description	Amount Required (if required)
N/A	Absorbent Material (Various vendors)	As needed
N/A	Containers (Various sizes of drums and pails)	As needed
N/A	Tape, markers, surface cleaner, TID's	As needed

Table3 Software

Software Number	Title/Description
WCATS	Waste Compliance Tracking Database

3.4 Field Preparation

Eyewash/safety shower operation and communication checks are required.

3.5 Approvals and Notifications

Not Applicable.

4.0 ACCEPTANCE CRITERIA

IPC-1
JP
7/15/13

All general waste is subject to the P930-1 LANL Waste Acceptance Criteria Document and Nevada ~~Test Site~~ Waste Acceptance Criteria.

NATIONAL SECURITY SITE (NNSS)

5.0 PERFORMANCE

NOTE 1: Major Sections in Performance Section 5.0 may be preselected for accomplishment, therefore are not required to be performed in sequence. However, steps within each subsection are to be performed in sequence unless otherwise stated.

NOTE 2: Comply with MAR requirements per section **5.12**, *Material at Risk (MAR,)* for PF-*4* and **5.13**, *Material at Risk (MAR) at RLUOB*.

5.1 Container Inspections

WARNING

Hazard: Containers may be pressurized.

Control: Personnel or worker's head and body are to be kept clear when removing lids/covers. Slowly remove bung or rings to de-pressurize container.

IPC-1 7/15/13

NOTE 1: Type A containers storing radiological waste ~~All empty 30 and 55 gallon drums~~ must be vented with a nuclear filter if applicable. ~~or have the ¾" bung plug removed prior to introducing them into PF-4 and RLUOB. Once the containers are used for Hazardous, Mixed, or Low Level Waste, they must be properly labeled and the user(s) must ensure that the ¾" bung is installed as required by the manufacturer's closure instructions.~~ PRIOR TO REMOVING SEALED DRUM FROM MATERIAL MANAGEMENT AREA, REPLACE NUC FILTER WITH 3/4" BUN

NOTE 2: The containers are to be sealed using current manufacturer's closure instructions that coincide with the Purchase Order Number on the container (bolts, torque, etc.).

NOTE 3: Steps in this section do not have to be performed in sequence.

[1] Inspect all sides of container looking for obvious dents, cracks, excessive rust, bulging, or other imperfections.

[2] For waste containers, manually remove container lid/cover using appropriate tools,
AND inspect inner package.

[3] For empty containers, obtain tare weight of empty container,
AND mark the weight on the container.

5.0 PERFORMANCE (continued)

5.2 Characterized Waste

NOTE: Major Sections in Performance Section 5.2 may be preselected for accomplishment, therefore are not required to be performed in sequence. However, steps within each subsection are to be performed in sequence unless otherwise stated.

5.2.1 Items with a Known History

WARNING

Hazard: Peroxides, peroxide forming compounds, perchlorates, and perchlorate forming compounds may develop crystallization over time. If crystals are present, the chemical can undergo a violent reaction as a result of shock, friction, or motion.

Control: If crystals are present:

- **notify the applicable Operation Center**
- **the storage area is to be isolated**
- **others alerted to the hazard**
- **supervisor contacted**

IPC-1 JX 7/15/13

5.2.1 [1] THROUGH 5.2.1 [3] MAY BE PERFORMED IN ANY ORDER.

NOTE: Steps ~~in this section have to be performed in sequence.~~

[1] Inspect containers for signs of crystallization, damage, leakage, or other signs of degradation. **However do not move or contact the waste or waste container.**

[a] IF any of the above are observed,
THEN

1. PAUSE WORK.
2. Secure the area.
3. Notify the applicable Operations Center TA-55 @ 7-3330 or RLUOB @ 7-7333.
4. Notify your supervisor and IH.

[2] Perform waste characterization based upon the generator's operating records or MSDS for the material.

[3] IF characterization is based on information in a logbook, experimental plan, or other generator supplied format,
THEN make copies of the information to include in the WPF documentation paperwork.

[4] Apply appropriate labels and/or markings based on characterization.

5.2.1 Items with a Known History (continued)

[5] IF waste is generated in PF-4,
THEN instruct the waste generator to complete a Waste Acceptance Form (WAF) for each "unique" item or grouping of identical items.

~~**[6]** Instruct the waste generator to confirm that ChemLog has been updated to reflect waste disposal.~~

6 ~~**[7]**~~ IF items need to be taken to a storage area,
THEN use a transport system that prevents accidental damage to containers and can hold contents of containers if spillage occurs.

7 ~~**[8]**~~ Segregate incompatible items during transport.

9 ~~**[9]**~~ Place the item(s) in an appropriate storage area (Satellite Accumulation Area (SAA) or a Less Than 90 Day storage area (<90 Day Storage Area.), UWA, or TSD, PCB Storage, or NM Special Waste Storage Area.

10 ~~**[10]**~~ Place items for which characterization is incomplete or in need of a WPF in an SAA at or near the point of generation or in a < 90 day.

11 ~~**[11]**~~ IF an SAA or <90 Day area needs to be established,
THEN

[a] Contact a facility Waste Management Coordinator (WMC).

[b] Have WMC establish storage area,
THEN place waste in the storage area on same day.

12 ~~**[12]**~~ Ensure that all required information is shown on the ~~HAZARDOUS WASTE~~ APPROPRIATE WASTE label for items placed in ~~<90 Day areas.~~ WASTE STORAGE AREAS

~~**[13]** Determine if an active Waste Profile Form (WPF) for the waste is available.~~

NOTE Items without an active WPF cannot be stored in a <90 day storage area, only in an SAA.

13 ~~**[14]**~~ IF an active Waste Profile Form is NOT available,
THEN

[a] Initiate a Waste Profile Form.

[b] Note that the WPF number is "Pending" on the Hazard Waste label.

14 ~~**[15]**~~ Enter waste information into the Operations Logbook at the storage area.

8 ~~**[16]**~~ Perform any required storage site inspections. See Section **5.12**, *Storage Area Inspections*.

IR-1 7/15/13

5.2 Characterized Waste (continued)

5.2.2 Abandoned Items or Items with Unknown History

WARNING

Hazard: **Peroxides, peroxide forming compounds, perchlorates, and perchlorate forming compounds may develop crystallization over time. If crystals are present, the chemical can undergo a violent reaction as a result of shock, friction, or motion.**

Control: **If crystals are present:**

- **notify the applicable Operation Center**
- **the storage area is to be isolated**
- **others alerted to the hazard**
- **supervisor contacted**

NOTE: Steps in this section have to be performed in sequence.

[1] Inspect containers for signs of crystallization, damage, leakage, or other signs of degradation. **However do not move or contact the waste or waste container.**

[a] IF any of the above are observed,
THEN

1. PAUSE WORK.

2. Secure the area.

3. Notify the applicable Operations Center TA-55 @ 7-3330 or RLUOB @ 7-7333.

4. Notify your supervisor and IH.

5.2.2 Abandoned Items or Items with Unknown History (continued)

[2] Establish a <90 Day Storage Area
AND coordinate with the Waste Management Coordinator (WMC).

IPC-1 JT 7/15/13

4 ~~[3]~~ Place a HAZARDOUS WASTE label and barcode on the item.

5 ~~[4]~~ Write "Pending Analysis" on the HAZARDOUS WASTE label.

6 ~~[5]~~ Have the person who discovered the unknown waste, the Maintenance Coordinator for the area, or the room supervisor complete WAF, if applicable.

7 ~~[6]~~ Submit a Request For Analysis (RFA) to the LANL ~~ENV-RCRA~~ WM-PROG group.

NOTE Your supervisor is to be contacted if analytical data has not been received by the ~~75th~~ 40 day after waste was placed into the <90 day storage area.

8 ~~[7]~~ Attach a copy of the RFA to the waste item,
OR place it in the logbook for the storage area.

3 ~~[8]~~ Perform all storage site inspections.

[9] WHEN analytical results are received,
THEN characterize the waste,
AND re-label waste item appropriately.

[10] IF a WPF is NOT active,
THEN initiate a WPF.

[11] WHEN WPF is active,
THEN submit a WDR.

5.2.3 Packaging Waste Items

NOTE: Steps in this section have to be performed in sequence.

[1] Ensure an active waste profile is approved prior to locating waste into a time sensitive storage area (i.e., TSD, UWA, <90).

[2] Obtain required packaging by reviewing MSDS for proper handling and storage or contact NPI-7 Packaging Engineer for guidance.

[3] Apply required labels to the package.

[4] Package waste into container and use a diametaceous earth (e.g. vermiculite), if necessary, to prevent item from moving in package during transport.

[5] Transfer package to an appropriate storage location (e.g. <90, UWA, TSD) and start shipping process.

5.2 Characterized Waste (continued)

5.2.4 Universal Waste

WARNING

Hazard: Lamps if broken could result in cuts, abrasions or exposure to harmful mercury vapors.

Control: Lamps are to be handled carefully to prevent breakage. As a minimum safety glasses and leather or cut resistant gloves are to be worn when handling potential sharps.

IPC-1 JP 7/15/13

NOTE 1: As a BMP, storage area inspections are performed prior to staging the waste items. No work, including administrative, is allowed in these areas if the communication system or eyewash/safety shower are not working.

NOTE 2: Steps ~~in this section have to be performed in sequence.~~ 5.2.4[3] - 5.2.4[4] AND 5.2.4[8] - 5.2.4[9] MAY BE PERFORMED IN ANY SEQUENCE.

[1] Receive Universal Waste items from the waste generators.

[2] IF not already packaged,
THEN place the waste items in an appropriate rigid-wall container.

[3] Similar lithium batteries should be taped and placed into proper storage.

[4] Accumulate like items (e.g., Ni-Cad batteries or incandescent light bulbs) in a single container. Do not label each individual item.

[5] Label and date container appropriately.

[6] Attach an aggregation sheet to the container,
OR place it inside the container and update as necessary.

- [a] Continue accumulating like items until the container is full or 5 months have passed since the first item entered the container.
- [b] WHEN the container is full or 5 months have lapsed,
  THEN seal the container,
  AND initiate a Waste Disposal Request (WDR).

[7] Ensure containers are closed, sealed, and properly labeled.

[8] Coordinate with electricians to transport fluorescent lamps, or any light bulbs to TA-60 Bulb Crushing Facility as needed.

[9] Batteries (lithium, NiCad, Alkaline, Pb, etc) should be placed in the "Big Green Box" for recycle and transported when full or meets the weight limit of 40 lbs.

5.2 Characterized Waste (continued)

5.4.5 Lead Acid and Gel Cell Batteries

WARNING

Hazard: Exposure to battery electrolytes.

Control: Ensure proper PPE and care is utilized. As a minimum wear safety glasses and chemical resistant gloves.

NOTE: Steps in this section have to be performed in sequence.

[1] Obtain a wooden pallet with narrow gaps between slats,
AND take the pallet to the appropriate recycle staging area.

[2] Place two long (ample to cover batteries placed on the pallet) pieces of heavy plastic sheeting in opposing directions across the pallet.

[3] Arrange to receive batteries from the waste generator.

[4] IF batteries are intact,
THEN manage them as Batteries for Recycle.

[5] IF batteries are cracked/leaking,
THEN manage them as Hazardous Waste in a <90 Day Storage Area.

[6] Ensure that exposed battery posts are covered with nonconductive material.

[7] Segregate lead-acid from gel cell batteries,
AND place batteries on top of the plastic draped pallet.

[8] Place appropriate label on batteries.

5.2 Characterized Waste (continued)

5.2.6 Mixed Low-Level Waste

NOTE 1: Mixed waste must be placed in proper storage immediately. Storage area inspection must be performed when adding or removing waste. No work, including administrative, is allowed in these areas if the communications system or eyewash/safety shower is not working.

NOTE 2: Steps in this section have to be performed in sequence.

NOTE 3: WASTE CONTAINERS CONTAINING LIQUID MUST BE ON SPILL CONTAINMENT PALLET. OR ELEVATED SURFACE

IPC-1 JP 7/15/13

[1] AFTER receiving request from generator,
THEN inspect waste at generator site.

[2] Generator must complete current version of Low-Level Waste Acceptance Form (WAF), if applicable.

[3] Ensure items are safe to handle (contaminated waste items must be wrapped in plastic) and items listed on WAF, if applicable, must match waste items being disposed,
THEN ask generator to take waste to designated location.

[4] AFTER receiving waste at designated location,
THEN obtain and complete Attachment D, *Waste Package Checklist*, if applicable.

[5] Ensure ~~drums greater than 20 gallons~~ ALL CONTAINERS are on casters or elevated (e.g. containment pallets).

[6] Apply required labels to the package.

[7] Contact RCT prior to opening in process containers and packaging waste.

[8] Add waste to container,
AND close the container.

[9] Apply two combination locks to drum known only to hazardous waste team or low-level team. Two combinations should be known by two different team members (TA55-RD-585).

[10] Update waste information on log book.

[11] When container is full,
THEN perform Section **5.4**, *Removing Waste Packages from Material Management Area.*

[12] Ensure Nucfil filters are applied as applicable.

5.2 Characterized Waste (continued)

5.2.7 Oversized Mixed Waste

NOTE: Steps in this section have to be performed in sequence.

IPC-1 JH 7/15/13

~~[1] Generator must contact WM personnel and refer to TA55-RD-539.~~

[2] Ensure generator has appropriate containers for oversize waste.

[3] Obtain tare weight for container prior to packaging oversize waste.

[4] CONDUCT STORAGE AREA INSPECTION

5 ~~[4]~~ Ensure proper labels are applied and marked with all required information on container when waste is properly packaged into container.

6 ~~[5]~~ Follow manufacturer's closure instructions,
AND apply Tamper Indicating Device (TID) to container, if applicable.

7 ~~[6]~~ Obtain gross weight of container,
AND place in proper storage.

~~[7] Complete Inspection Record Form for appropriate storage location~~

[8] ~~AND~~ enter waste information into logbook.

5.3 Rejected Waste Packages

[1] Contact First Line Manager.

[2] Contact waste generator for pick-up.

[3] Contact QA representative for NCR justification.

5.0 PERFORMANCE (continued)

5.4 Removing Waste Packages from Material Management Area

NOTE 1: Ensure all TID requirements and RAD control requirements are met.

NOTE 2: Steps in this section have to be performed in sequence.

[1] Seal container using manufacturer's closure instructions that coincide with the container. This includes ensuring the filter is removed and replaced with a ¾" bung as required.

[2] Weigh container on a certified scale,
AND write the weight on the container.

IPC-1 7/15/13

[3] Have TID users apply TID to container and verify, if applicable.

[4] Coordinate Accountability and Safeguards measurement for container(s). This activity is performed by Nuclear Materials Management ~~(NPI-1)~~. NPI-4

[a] IF any of these items are above the release criteria,
THEN contact First Line Manager,
AND place container in proper storage.

[5] Contact RCT for survey of containers for release from MMA.

[a] Ensure HPRMS tag is appropriately filled out.

[b] IF minor contamination is detected,
THEN follow Section **5.5**, *Minor Decontamination Operation*.

[6] ONCE package is ready for removal from MMA,
THEN

[a] Coordinate door opening at TA-55 (TA55-DOP-547) or RLUOB (PA-PLAN-01040).

[b] Remove package,
AND take to proper storage area.

[7] ONCE item is successfully removed from MMA,
THEN

[a] Log out item from applicable storage area from log book.

~~**[b]** Complete Inspection Record Form (IRF).~~

5.0 PERFORMANCE (continued)

5.5 Minor Decontamination Operation

NOTE: Major Sections in Performance Section 5.5 may be preselected for accomplishment, therefore are not required to be performed in sequence. However, steps within each subsection are to be performed in sequence unless otherwise stated.

5.5.1 Radioactive Decontamination

NOTE 1: Some items or transport containers may need some decontamination to remove low level amount of radioactive contamination. RCT must be present and in some cases may require a RWP.

NOTE 2: Steps in this section have to be performed in sequence.

IPC-1 JP 7/15/13

[1] Contact RCT,
AND schedule decontamination activity.

[2] Moisten decontamination rags with decontamination solution (i.e, fantastic).

[3] Have ~~RP-1~~ RCT survey items.

[4] Wipe-down contaminated area with rag,
AND have ~~RP-1~~ RCT re-survey item, put rag in low level waste can or bag.

[5] Put clean items in designated area and contaminated items in bag,
AND dispose of as low level waste.

[a] Refer to step **5.5.1[2]** and **5.5.2[4]** for deconning transport containers

[6] Dispose of decontamination material as low level waste.

5.5.2 Chemical Decontamination

NOTE: Steps in this section have to be performed in sequence.

[1] WHEN decontaminating hazardous chemicals, contact Industrial Hygiene (IH) for required PPE, AS APPROPRIATE
AND treat clean up material as hazardous waste, if necessary.

[2] Establish a cone of safety.

NOTE: When there is no crystallization present on chemical, the decon should be performed utilizing the two-man rule.

[3] Have IH determine if chemical is safe to handle.

[a] IF the chemical is safe to handle,
THEN decon by waste personnel.

[b] IF the chemical is NOT safe to handle,
THEN contact TA-55 @ 5-5911 or 911 or RLUOB @ 7-7333 .

[4] Use appropriate material to clean and decon chemical.

[5] Place clean-up material and accumulated waste in appropriate container,
AND label properly.

[6] Place waste into proper storage, THEN

[a] Log waste into logbook.

[b] Complete the Inspection Record Form (IRF).

5.0 PERFORMANCE (continued)

5.6 Waste Treatment or Reduction

NOTE: Major Sections in Performance Section 5.6 may be preselected for accomplishment, therefore are not required to be performed in sequence. However, steps within each subsection are to be performed in sequence unless otherwise stated.

5.6.1 Absorbing Liquids

IPC-1 7/15/13

NOTE 1: ~~RP-1~~ RCT, ~~ENV-RCRA~~ WM-PROG, WMC, and Industrial Hygiene are to be consulted. **Only Non-RCRA items may be absorbed under this DOP.** A RWP will be required in a RCA. Hazardous waste will be treated by generator in a < 90 after the RCRA group has authorized treatment or it can be shipped to the Waste Characterization, Reduction, and Repackaging Facility for treatment. Consult IH and ~~RP-1~~ RCT for proper PPE requirements.

NOTE 2: Steps in this section have to be performed in sequence.

3 ~~[1]~~ Ensure proper absorbent material is compatible with liquid being absorbed.

1 ~~[2]~~ Schedule on plan of the day and with appropriate personnel, if required.

2 ~~[3]~~ Conduct pre-job briefing with personnel involved.

[4] Perform task in appropriate area (i.e., hood, cone of safety area, etc.).

[5] Prepare container by adding absorbent material,
THEN add liquid, or vice versa. Be sure to use the proper ratio recommended by manufacturer (e.g., No-Char 1:1).

[6] Stir or agitate waste with appropriate tool and/or in accordance with manufacture instructions,
AND continue until liquid is totally absorbed (no free liquids).

[7] Ask low-level team to inspect and certify, if applicable.

[8] Seal container,
AND fill out WAF.

~~[9] Perform TSD inspection,~~
~~AND~~ fill out inventory log book appropriately.

5.6 Waste Treatment or Reduction (continued)

5.6.2 Aerosol Can Puncturing

NOTE: Steps in this section have to be performed in sequence.

[1] Obtain MSDS for waste item from generator.

[2] Determine if the aerosol can is empty (not pressurized).

[a] IF aerosol can is NOT empty,
THEN do NOT puncture. Refer to Section **5.2.3,** *Universal Waste*.

[3] Place a catch pan under aerosol can.

[4] Place aerosol can puncturing apparatus over catch pan,
AND puncture according to manufacturer's instructions.

[5] Capture any free liquids in catch pan,
AND handle as a hazardous waste, if necessary.

[6] IF liquid is non-hazardous,
THEN follow Section **5.7.1**, *Absorbing Liquids*.

5.6.3 Equipment Reduction

NOTE RCT is not needed if dismantling is done on equipment that is not contaminated.

IPC-1 JM 7/16/13

[1] Coordinate with ~~RP-1~~ RCT for support during dismantling of equipment, if necessary.

[2] Using hand tools (wearing proper PPE) remove screws, nuts, bolts, clips and cut housings (dismantle) as required to remove circuit boards, ballasts, bulbs, batteries, CRT's, or any other equipment from electronic equipment and devices, AND set aside for RCT survey.

[3] Have equipment, circuit boards, bulbs, ballasts, batteries, etc. surveyed and smear by ~~RP-1~~ RCT personnel for "free release"
AND place into appropriate containers and apply locks.

[4] For any excess material that is NOT hazardous but found to be contaminated,

[a] Fill out the Waste Acceptance Form.

[b] Contact LLW team for proper disposition.

5.6 Waste Treatment or Reduction (continued)

5.6.4 Macroencapsulation (ONLY in PF-4)

NOTE: Manufacturer's Instructions must be followed.

[1] Verify the Hazardous Waste Treatment Form and Hazardous Waste Treatment Analysis Plan have been submitted and approved by ENV-RCRA.

[2] Ensure WCO or WPC official is contacted for visual examination prior to packaging drums destined for NNSS.

[3] Ensure waste containers and waste items that are used are free of any moisture.

[4] Ensure that there are no combustible items at or near the designated area.

[5] Ensure a six foot boundary is established around drum and Electronic Control Unit for safety.

[6] Ensure macroencapsulation of waste items is conducted in the basement of PF-4 columns K3 and K4 in a <90 Day Storage Area of PF-4, or appropriate area.

[7] Coordinate with RP-1 prior to opening In process drums.

[8] Use proper tools to open drums to transfer waste from one drum to another, if necessary, for macroencapsulation.

[9] Carefully place waste items to be macroencapsulated into drum as to not damage inner polyethylene liner.

[10] Notify Operations Center prior to starting macroencapsulation process.

[11] When drum is full and verified by WCO and WPC, place polyethylene lid on container and follow manufacturer's instructions for macroencapsulation (See Attachment H).

5.0 PERFORMANCE (continued)

5.7 Assaying Waste Packages

WARNING

Hazard: Opening clamshells during high winds or inclement weather conditions.

Control: Use caution when opening clamshells to retrieve and return drums to storage.

NOTE 1: Most of the following activities are covered under forklift operating procedure (FFS-DOP-008).

NOTE 2: Waste Holding Area: Contamination survey of containers required prior to removing from area.

[1] Choose appropriate location (i.e. PF-185 or RLUOB Room 1124/1125) for performing assaying of package(s) (gamma spectroscopy).

[2] Perform forklift and TSD inspection, if applicable.

[3] Stage assaying equipment and package(s) at designated location for assaying.

[4] Assist assay personnel with instruments and packages, as necessary.

[5] WHEN assay is complete,
THEN return package(s) to appropriate storage location.

5.0 PERFORMANCE (continued)

5.8 Shipping Waste

NOTE 1: Major Sections in Performance Section 5.8 may be preselected for accomplishment, therefore are not required to be performed in sequence. However, steps within each subsection are to be performed in sequence unless otherwise stated.

NOTE 2: Waste items with approved WPF's may be shipped from all storage areas.

5.8.1 Satellite Accumulation Area and Less Than 90 Day Waste

[1] IF any items are from an Satellite Accumulation Area (SAA) or <90 Day area, THEN complete, print and submit a Waste Disposal Request (WDR).

[2] Ensure that a WDR for items in <90 Day storage is submitted before the items have been stored for 45 days.

[3] IF any item in a <90 Day area is 75 days old or older, THEN

IPC-1 JR 7/15/13

[a] Contact the shipping personnel at TA54, AND ensure they are aware that the item is approaching its 90 day limit.

[b] Contact the TA55 ~~ENV-RCRA~~ WM-PROG representative, AND make him/her aware that the item is approaching its 90 day storage time limit.

[4] WHEN items are shipped, update logbooks and electronic databases, AND complete any required inspections.

5.8 Shipping Waste (continued)

5.8.2 Universal Waste

[1] IF any items are from a Universal Waste area,
THEN complete, print and submit a Waste Disposal Request (WDR).

[2] Ensure that a WDR for items in Universal Waste area storage is submitted before the items have been stored for 6 months.

[3] IF any Universal Waste item is 10 months old or older,
THEN

IPC-1
ZP
7/15/13

[a] Contact the shipping personnel at TA54,
AND ensure they are aware that the item is approaching its one year storage time limit.

[b] Contact the ~~TA55 ENV-RCRA~~ WM-PROG representative,
AND make him/her aware that the item is approaching its one year storage time limit.

[4] WHEN items are shipped, update logbooks and electronic databases,
AND complete any required inspections.

5.8 Shipping Waste (continued)

5.8.3 Mixed Waste

[1] IF any items are from a Mixed Waste area,
THEN complete, print and submit a Waste Disposal Request (WDR) once the results for the gamma spec are received.

[2] Ensure that a WDR for items in Mixed Waste storage area is submitted before the items have been stored for 6 months.

[3] IF any Mixed Waste item is 10 months old,
THEN

IPC-1 JH 7/15/13

[a] Contact the shipping personnel at TA54,
AND ensure they are aware that the item is approaching its one year storage time limit.

[b] Contact the ~~TA55 ENV-RCRA~~ WM-PROG representative,
AND make him/her aware that the item is approaching its one year storage time limit.

[4] WHEN items are shipped, update logbooks and electronic databases,
AND complete any required storage area inspections.

5.9 Over Packing Waste

[1] Choose required over packing container per guidance from NPI-7 Packaging Engineer.

[2] Ensure container is a certified container and has passed QA.

[3] Obtain tare weight.

[4] Open top lid,
AND prepare inner contents with absorbent or packing material, if necessary.

NOTE The use of rigging and hoisting equipment may be required.

[5] Carefully place container to be over packed into over pack container using certified equipment and proper procedure, if necessary.
~~AND contact LLW team for assistance~~.

[6] Replace lid, and secure per manufacturer's instructions.

[7] TID over pack, if necessary.

5.0 PERFORMANCE (continued)

5.10 Repackaging Mixed Waste or Hazardous Waste Containers

IPC-1 7/15/13

NOTE An RWP may be required for this operation based on the container or material type. Contact ~~RP-1.~~ RCT

[1] Remove lid from container using appropriate tools, AND place in a safe location.

[2] Have RCT, if necessary, survey items for contamination and pass to coworker for proper storage.

~~[3] Repackage any compromised item, if necessary.~~

[4] Assist RCT with packaged items, ~~AND obtain dose rate on item.~~

[5] Take any suspect item, AND have appropriate personnel conduct a gamma spectroscopy assay to determine radioactivity level, if necessary

[6] After assay, repackage transport container appropriately.

5.0 PERFORMANCE (continued)

5.11 Storage Area Inspections

NOTE: Major Sections in Performance Section 5.11 may be preselected for accomplishment, therefore are not required to be performed in sequence. However, steps within each subsection are to be performed in sequence unless otherwise stated.

5.11.1 Completing the Inspection Record Form (IRF)

IPC-1 JP 7/15/13

[1] CONDUCT INSPECTION AND Ensure that an Action Required (AR) is noted for Inspection Record Form items that do not meet requirements (e.g., a torn or missing windsock, a label missing a date, or a lid not secured on a container.)

[2] Enter in the Form's "Comments" section the date the AR is discovered and actions taken to correct the deficiency.

[3] IF a subsequent inspection is performed and the Action Required has NOT been corrected, THEN continue to note the deficiency in the appropriate block of the form and in the "Comments" section of the form.

[4] IF a subsequent inspection is performed and the Action required has been corrected, THEN note in the "Comments" section the actions taken to correct the deficiency and the date of the correction if known.

[5] Enter the date and time of the inspection in the appropriate blocks.

[6] Sign and print the inspection form in the appropriate block.

[7] Take the completed form to the TA55 WMC office at the end of the week or by the close of business on the first business day of the following week.

5.11 Storage Area Inspections (continued)

5.11.2 Satellite Accumulation Area Inspections

IPC-1 JP 7/15/13

NOTE Steps **5.11.2 [4]** through **5.11.2 [~~12~~ 7]** may be performed in any order.

[1] Observe all postings,
AND comply with all requirements posted on room entrance doors.
[a] IF any questions, concerns, or apparent off- normal conditions,
THEN contact the area AWC, the room controller, and/or RCT.

[2] ~~As a minimum, wear safety glasses, lab coat or coveralls, and chemical resistant gloves.~~ WEAR APPROPRIATE PPE FOR SITE BEING INSPECTED.

[3] Handle items using care as necessary to perform inspections.

[4] Verify that person's using the SAA have had their names entered onto the SAA Access List in the SAA logbook.

[5] Verify that the WMC has signed the Access List.

[6] Ensure that any item in the SAA is labeled as Hazardous or Non Hazardous.
[a] Ensure mixed waste container is also marked "Radioactive Waste".

[7] Ensure that all items in the SAA have a corresponding entry in the Site Logbook.

[8] Ensure that waste in storage does NOT exceed 55 gallons of hazardous waste,
OR one quart of acutely hazardous (P-Listed) waste.

[9] IF the limit in step **[8]** is exceeded the excess volume,
THEN remove to a <90 Day area or a Treatment Storage and Disposal Facility (TSDF) within 3 calendar days.

[10] Ensure that movement of the excess chemicals in step **[9]** is documented in the Operating Records.

[11] Ensure that all containers are tightly closed in the manner intended by the manufacturer.

NOTE ENV-RCRA Tool – 208.2 ~~should~~ may be referenced for further guidance.

[12] In addition to items on the Self Inspection Checklist for SAAs, verify that the following are posted:

- An SAA identification sign,
- an SAA Minimum Requirements sign, suggested,
- the Site ID,
- Owner's Name, and
- Owner's Contact Number are posted and easily visible at the SAA

5.11 Storage Area Inspections (continued)

5.11.3 90-Day Storage Area, Universal Waste Area, Polychlorinated Biphenyl, New Mexico Special Waste Area, Used Oil Area, and Treatment, Storage, and Disposal Facility Inspections

NOTE 1: Inspections of these storage areas are to be documented on an Inspection Record Form (IRF).

NOTE 2: No work, including administrative, is allowed in these areas if the communication system or eyewash/safety is not working. The workers must have RCRA personnel training.

NOTE 3: Steps **5.11.3 [3]** through **5.11.3 [13]** may be performed in any order.

[1] Observe all postings,
AND comply with all requirements posted on room entrance doors.

[a] IF any questions, concerns, or apparent off- normal conditions,
THEN contact the area AWC, the room controller, and/or RCT.

[2] ~~As a minimum, wear safety glasses and chemical resistant gloves.~~
WEAR APPROPRIATE PPE FOR SITE BEING INSPECTED.

IPC-1 7/15/13

[3] Ensure that all <90 Day and Treatment Storage, and Disposal Facility Areas are posted with the following words in English and Spanish:

"DANGER-UNAUTHORIZED PERSONNEL KEEP OUT"

[4] Ensure <90 Day areas are also posted with the following:

"HAZARDOUS WASTE <90 DAY STORAGE AREA"

NOTE 1: Non-hazardous waste items are not subject to this time constraint. Hazardous waste exceeding the 89 days requires permission from the New Mexico Environment Department (NMED) to extend the storage time.

NOTE 2: Contaminated clean-up material should be managed as nonhazardous, hazardous, mixed waste, or New Mexico Special Waste as appropriate.

NOTE 3: ENV-RCRA Tool – 209.0 ~~should~~ may be referenced for further guidance

[5] Ensure that all <90 day and Treatment Storage, and Disposal Facility areas contain the following:

- Current copy of the Laboratory Contingency Plan
- Current copy of the site and LANL Emergency Contact List
- Current copy of the Site-Specific Contingency Plan

5.11.3 90-Day Storage Area, Universal Waste Area, Polychlorinated Biphenyl, New Mexico Special Waste Area, Used Oil Area, and Treatment, Storage, and Disposal Facility Inspections (continued)

IPC-1 ZP 7/15/13

[6] Waste containers shall be labeled appropriately.

Storage Area	Type of Label
SAA	Hazardous Waste
<90	Hazardous Waste
UWA	Universal Waste (e.g. lamps, pesticides)
TSD	Hazardous Waste
Used Oil	Use Oil
PCB	PCB
New Mexico Special	New Mexico Special

[7] Ensure that each <90 day and Treatment Storage, and Disposal Facility area inventory log is current with the following information:

- Description of waste being stored (i.e. hazardous or non-hazardous, associated hazardous codes)
- Original date on which the material was declared a waste (e.g., accumulation start date)
- Volume of waste received
- Date and destination of waste removed from <90 day or Treatment, Storage, and Disposal Facility storage

[8] Handle items using care as necessary to complete inspections.

[9] Ensure that all containers are tightly closed in the manner intended by the manufacturer.

~~**[10]** Complete inspection using guidance provided by the Item Descriptions for Attachment B, *Hazardous Waste Facility Inspection Record Form*.~~

[11] Ensure that hazardous and mixed wastes are not stored ~~in this area for more than 89 days~~ in excess of the alloted time limits for the appropriate storage area.

~~**[12]** IF hazardous or mixed waste has been in storage for 75 days, THEN notify the TA-55 ENVRCRA representative to prepare for notification to NMED, if it becomes necessary.~~ excess of the alloted tim limits WM-PROG

[13] Ensure that all leaks and spills are cleaned up promptly.

[14] Ensure that all waste containers moved into a storage area are closed and remain closed unless waste is being added or removed.

[15] Segregate incompatible waste.

5.11 Storage Area Inspections (continued)

5.11.4 Universal Waste Area (UWA)

IPC-1 JP 7/15/13

NOTE: Steps **5.11.4 [3]** through **5.12.4 [7]** may be performed in any order.

[1] ~~As a minimum, wear safety glasses and gloves.~~ WEAR APPROPRIATE PPE FOR SITE BEING INSPECTED.

[2] Handle items using care as necessary to perform inspections.

[3] In addition to items on the Self Inspection Checklist, verify that the following are posted:

- A UWA identification sign,
- the Site ID,
- Owner's Name, and
- Owner's Contact Number are posted and easily visible at the UWA

[4] Ensure that all items or aggregation containers are labeled and the labels have complete information.

[5] Ensure that all items or aggregation containers in the UWA have a corresponding logbook entry.

[6] Ensure that all containers are closed in the manner intended by the manufacturer.

[7] IF fluorescent lamp boxes are punctured or torn,
THEN cover the opening with tape.

5.11 Storage Area Inspections (continued)

5.11.5 PCB Waste Storage Areas

NOTE 1: At TA55 PCB items are stored within the bounds of existing storage areas such as UWAs and TSDFs and their presence is tracked in the Operating Logbook for that storage area.

NOTE 2: Steps **5.11.5 [3]** through **5.11.6 [5]** may be performed in any order.

IPC-1 7/15/13

[1] WEAR APPROPRIATE PPE FOR SITE BEING INSPECTED. ~~As a minimum, wear safety glasses and chemical resistant gloves, if necessary~~.

[2] Handle items using care as necessary to perform inspections.

[3] In addition to items on the Self Inspection Checklist, verify that the following are posted:

- A PCB ~~identification~~ label,
- A Contact person's name and phone number

[4] Ensure that all items or aggregation containers are labeled and the labels have complete information:

- A PCB ~~identification~~ label,
- A Contact person's name and phone number
- The Accumulation Start Date, and a PCB ID tag

[5] Ensure that all items or aggregation containers in the PCB have a corresponding logbook entry.

5.0 PERFORMANCE (continued)

$ 5.12 Material at Risk (MAR) (only applies to PF-4 and 480 (PAD)

WARNING

Hazard: MAR limit has been compromised.

Control: If at any time during the performance of this procedure it is suspected or known that a MAR limit has been compromised:

- **Pause Work**
- **Supervision and the Operations Center are to be notified**
- **Await further instructions**

NOTE 1 Waste containing MAR is stored in two primary locations: a. basement of PF-4 (MBA 746), and
b. outside waste storage pad west of PF-4 (MBA 774)
Both waste storage locations have MAR limits as detailed in section 1.4 TSR's.

NOTE 2 LLW (including MLLW) and TRU waste can be stored in both waste storage locations. The MAR inventory of all waste types must be tracked to ensure TSR limits are not exceeded. TRU waste and accountable LLW MAR is tracked by MBA on LANMAS. LANMAS also includes an assumed constant unaccountable LLW MAR contribution in the MBA's:

0.10 Kg Pu equivalent in the basement MBA 746, and

0.50 Kg Pu equivalent on the waste storage pad MBA 774.

TRU waste and accountable LLW is managed and MAR tracked in LANMAS per TA55-DOP-016, *TA55 Material Transfer Procedure*. Non-accountable LLW (including MLLW) is inventoried separately (exempt from TA55-DOP-016 requirements) to ensure that the assumed contribution to the TSR MAR limits for LLW is not exceeded.

5.12 Material at Risk (MAR) (only applies to PF-4 and 480 (PAD) (continued)

NOTE 3 LLW MAR will be tracked initially by waste volume. If less than 20 ST90 waste container volume equivalents are in storage in the PF-4 basement (1,920 ft3 or 54 m3), the assumed MAR allocation of 0.10 Kg Pu equivalent (0.33% of total allowable MAR for waste) cannot be exceeded based on maximum package weight and activity limits for LLW. [Ref: LA-UR-10-06688 Assessment of *TA-55 Low-Level Radioactive Waste MAR and Proposed Methodology for Tracking.*] Similarly, if less than 100 ST90 waste container equivalents (9,600 ft3 or 270 m3) are in storage on the waste storage pad, the assumed MAR allocation of 0.50 Kg Pu equivalents cannot be exceeded.

If it is necessary or desired for the above storage volumes "limits" to be exceeded or if volume measurements are not easily obtained, an alternative method to ensure LLW MAR allocations are not exceeded is to weigh all LLW waste containers. If the total weight of all LLW waste containers (including MLLW) in the PF-4 basement is less than 200,000 pounds, the LLW MAR allocation of 0.10 Kg cannot be exceeded. Similarly, if the total weight of all LLW waste containers (including MLLW) on the waste storage pad is less than 1,000,000 pounds, the LLW MAR allocation of 0.50 Kg cannot be exceeded.

NOTE 4 The two-person rule is a requirement to perform this activity and checklists and inventory sheets (Attachment D and E) will be used to inventory LLW or Mixed Waste to ensure that MAR limits are not exceeded.

[1] Complete the *Weekly Inventory Form* tool (Attachment F) each time a LLW waste container (including MLLW) is introduced or removed from the PF-4 basement or outside storage pad.(This form is an operations tool to track residence time of waste containers, not a MAR inventory requirement.).

[2] Complete Attachment D, *Waste Package Checklist* for each container placed in storage.

$ [3] At the end of each month, complete Attachment F, *Inventory Checklist for LLW MAR Tracking* as a simple verification that LLW waste storage MAR is maintained well below the assumed value. (This is not a required MAR inventory but is an operating tool used to validate that MAR inventory is well below MAR limits for LLW storage.)

[4] IF LLW (including MLLW) MAR inventory is below assumed MAR limits of 0.10 Kg Pu equivalent in the PF-4 basement and 0.50 Kg Pu equivalent on the waste storage pad (inventoried by either volume or weight of waste containers), THEN no further action is required.

$ [5] IF the LLW MAR inventory in the PF-4 basement is above the assumed MAR limit of 0.10 Kg Pu equivalent,
THEN notify the MBA 746 custodian immediately so adjustments can be made in LANMAS and compliance with MAR limits are validated.

5.12 Material at Risk (MAR) (only applies to PF-4 and 480 (PAD) (continued)

$ [6] IF the LLW MAR inventory on the waste storage pad is above the assumed MAR limit of 0.50 Kg Pu equivalent,
THEN notify the MBA 774 custodian immediately so adjustments can be made in LANMAS and compliance with MAR limits are validated.

[7] IF it is determined by the MBA custodian(s) that the waste storage MAR limits in either waste storage area is exceeded,
THEN pause work,
AND follow steps in the Warning at the beginning of this section .

[8] Completed Attachment D, *Waste Package Checklist* and Attachment E, *Inventory Checklist for LLW MAR Tracking* will be filed as waste management records.

5.13 Material At Risk (MAR) (RLUOB only)

[1] IF the LLW MAR inventory at RLUOB exceeds 10 ST-90 (900 ft3) volume,

THEN notify the RLUOB Operations Center immediately for resolution.

5.14 Decanting Waste Oil

NOTE 1 Storage area inspections must be performed prior to conducting any work in the areas. No work, including administrative, is allowed in these areas if the communications system or eyewash/safety shower is not operable.

~~**NOTE 2** Any liquid waste oil containing radioactive contamination based on radioactive analysis shall not be decanted without approval and/or guidance from RP-1. All readings must be NDA.~~ RCT

IPC-1 7/15/13

NOTE 3 Steps may be performed in any order.

[1] Ensure radioactive analysis sheets have been reviewed and indicate NDA.

[2] Select required containers to decant waste oil. Consult NPI-7 Packaging Engineer for guidance, if necessary.

[3] As a minimum, wear safety glasses and chemical resistant gloves

[4] Place container on secondary spill containment pallet and place absorbent rags under containers to be decanted so minimal spillage occurs.

[5] Open receiving container and, if necessary, place a funnel to minimize spillage and pour oil contents from ~~secondary~~ transport container until contents are completely empty.

[6] WHEN contents are completely empty from ~~secondary~~ transport container, in PF-4
THEN add absorbent material (e.g. vermiculite, ~~No-Char)~~ so that no free liquids are present.

[7] AFTER a WAF has been filled out ~~appropriately~~, if necessary
THEN any oil contaminated material with no free liquids present maybe transferred to the LLW team for proper disposal.

6.0 POST-PERFORMANCE ACTIVITIES

6.1 Testing

Not Applicable.

6.2 Restoration

Not Applicable.

6.3 Results

Not Applicable.

6.4 Verification/Independent Verification

Not Applicable.

IPC-1 JPL 7/15/13

6.5 Records Processing

All records generated are electronically captured in WCATS. or submitted to document control for archiving.

7.0 CONTINGENCIES

Comply with all TA-55 and RLUOB Emergency Action Procedure or training requirements.

8.0 Definitions and Acronyms (continued)

Term	Definition
TSR	Technical Surveillance Requirements
UWA	Universal Waste Area
WAF	Waste Acceptance Form
WDR	Waste Disposal Request
WMC	Waste Management Coordinator
WPF	Waste Profile Form

IPC-1 JLD 1/15/13

WCO WASTE CERTIFICATION OFFICIAL

WPC WASTE PACKAGE CERTIFYER

9.0 RESPONSIBILITIES

9.1 PF-4/RLUOB HazChem Operations Team

- Inspect, load, and verify waste, storage areas, and equipment, use two-man rule, conduct door openings, maintain training, report injuries, anomalies and unsafe conditions.

9.2 PF-4/RLUOB Waste Generators

- Responsible for ensuring hazardous materials and/or waste are managed according to TA55-RD-539.

9.3 PF-4/RLUOB Responsible Line Manager

- Responsible for ensuring personnel are properly trained, have appropriate equipment and PPE available.

9.4 PF-4/RLUOB RCT

- Responsible for surveys, Health Physics Radioactive Material Survey (HPRMS) tags, supports door openings.

9.5 Quality Assurance Representative

- Responsible for providing torque specifications for containers.
- Responsible for monitoring receipt and inspection of waste containers.

9.6 Operations Center Personnel

- Responsible for daily operations requirements, this includes providing information to personnel regarding mode of plant operations.
- Ensure abnormal events are reports as required to through the established chain of command.

9.7 Person In Charge

- Responsible for overall coordination and final acceptance of this procedure.
- Reviews attachments to ensure that they have been correctly completed.
- Ensures all deficiencies are reported to as required to the operations center and their chain of command.

8.0 DEFINITIONS AND ACRONYMS

Term	Definition
$	Steps that implement TSRs
ALARA	As Low As Reasonably Achievable
BMP	Best Management Practice
CLSA	Criticality Safety Limit Approval
CRT	Cathode ray tube
Detailed Operating Procedure	Operations-level written instructions that describe activities in a systematic format.
DOE	Department of Energy
DOP	Detailed Operating Procedure
ENVRCRA	Water Quality and RCRA groups
HAZWOPER	Hazardous Waste Operation and Emergency Response
HPRMS	Health Physics Radioactive Material Survey
HRP	Human Reliability Program
IH	Industrial Hygiene
IRF	Inspection Record Form
LANL	Los Alamos National Laboratory
LCO	Limiting Conditions for Operation
LLMW	Low Level Mixed Waste
MAR	Material at Risk
MC	Maintenance Coordinator
MMA	Material Management Area
MSDS	Material Safety Data Sheet
NCR	Non-Conformance Report
NM	Nuclear Material
NMED	New Mexico Environment Department
NMSW	New Mexico Special Waste
OC	Operation Center
PCB	Polychlorinated biphenyl
PF	Plutonium Facility
PPE	Personal Protective Equipment
QA	Quality Assurance
RCRA	Resource Conservation and Recovery Act
RCT	Radiation Control Technician
RFA	Request for Analysis
RP-1	Radiation Protection Group
RWP	Radiation Work Permit
SAA	Satellite Accumulation Area
TID	Tamper Indicating Device
TSD	Treatment Storage and Disposal
TSDF	Treatment Storage and Disposal Facility

10.0 REFERENCES

Document Number	Title
DOE/NV-325, R9	*Nevada Test Site Waste Acceptance Criteria*
DOE Order 435.1	*Radioactive Waste Management*
ENV-RCRA-Tool-208.2	*SATELLITE ACCUMULATION AREAS*
ENV-RCRA-Tool-209.0	*REQUIREMENTS FOR LESS-THAN 90-DAY ACCUMULATION AREAS*
FFS-DOP-002	*Low Level and Mixed Waste Operations at TA-55*
LA-UR-10-06688	*Assessment of TA-55 Low-Level Radioactive Waste MAR and Proposed Methodology for Tracking*
~~Notice 0054~~	~~*Reporting Injured, Trapped, or Abandoned Animals on LANL Property*~~
~~Notice 0055~~	~~*Black Bear and Mountain Lion Encounters*~~
P101-18	*Procedure for Pause/Stop Work*
P930-1	*LANL Waste Acceptance Criteria*
PA-AP-01016	*Technical Procedure Use and Development Process*
PA-AP-01020	*Pre-Job Briefing and Post Job Review*
TA55-DOP-001	*Pre-Job Briefing and Post Job Review*
TA55-DOP-016	*TA55 Material Transfer Procedure*
TA55-DOP-547	*Opening and Closing the External Security Doors and Confinement Doors in PF-4*
PA-PLAN-01040	*RLUOB South Loading Dock Roll Door Access*
TA55-RD-539	*TA-55 Waste Management Requirements*
TA55-RD-555	*TA-55 Radiation Protection Requirements*
TA55-RD-585	*Nuclear Materials Control and Accountability Requirements*
P409	WASTE MANAGEMENT

IPC-1
JB
7/15/13

11.0 RECORDS

Record Identification	Record Type Determination	Protection/Storage Methods	Processing Instructions
Attachment A, *Self Inspection Checklist for SAAs*	QA Record	Supervision shall implement a reasonable level of protection to prevent loss and degradation. Records shall be maintained in a metal file cabinet when not in use.	When the records are ready for final disposition, the record is transferred to Records Management in accordance with PA-AP-01040.
Attachment B, *Hazardous Waste Facility Inspection Record Form*			
Attachment C, *Hazardous/Mixed Waste Facility Inspection Record Form for <90*			
Attachment D, *Waste Package Checklist*			
Attachment E, *Inventory Checklist for LLW MAR Tracking*			
Attachment F, *Weekly Inventory FormChecklist for LLW MAR Tracking at RLUOB*			
Attachment G, *Weekly Inventory Form*			
TA55-RD-539-FM1, Appendix A, Waste Acceptance Form (WAF)			

12.0 APPENDICES AND ATTACHMENTS

NOTE For a fill able version of the WAF refer to TA55-RD-539 located in Domino.

Attachments	Title
A	*Self Inspection Checklist for SAAs (UET)*
B	*Hazardous Waste Facility Inspection Record Form (UET)*
C	*Hazardous/Mixed Waste Facility Inspection Record Form for <90 (UET)*
D	*Waste Package Checklist (UET)*
E	*Inventory Checklist for LLW MAR Tracking (UET)*
F	*Inventory Checklist for LLW MAR Tracking at RLUOB (UET)*
G	*Weekly Inventory Form (UET)*
H	*Macroencapsulation Manufacturers Instructions (UET)*

Attachment A, Self Inspection Checklist for SAAs (UET)

Page 1 of 2

Site ID#	TA	Bldg	Room	Group	SAA	WPF#s	Contact person

GENERAL REQUIREMENTS	Monday	Tuesday	Wednesday	Thursday	Friday
Date					
1. Has the generator initiated a hazardous waste determination? Waste types: D F P U	Y N N/A	Y N N/A	Y N N/A	Y N N/A	Y N N/A
2. Are containers in good condition?	Y N N/A	Y N N/A	Y N N/A	Y N N/A	Y N N/A
3. Is waste compatible with containers?	Y N N/A	Y N N/A	Y N N/A	Y N N/A	Y N N/A
4. Are all containers closed?	Y N N/A	Y N N/A	Y N N/A	Y N N/A	Y N N/A
5. Are hazardous waste containers marked with the words "HAZARDOUS WASTE"? Is mixed waste labeled "RADIOACTIVE" and "HAZARDOUS WASTE"?	Y N N/A Y N N/A	Y N N/A Y N N/A	Y N N/A Y N N/A	Y N N/A Y N N/A	Y N N/A Y N N/A
6. Are constituents of waste on container?	Y N N/A	Y N N/A	Y N N/A	Y N N/A	Y N N/A
7. A Have all hazardous waste spills or leaks been cleaned up? B Has the resultant clean up materials been handled as hazardous waste?	Y N N/A Y N N/A	Y N N/A Y N N/A	Y N N/A Y N N/A	Y N N/A Y N N/A	Y N N/A Y N N/A
8. If storage area is outside, is the waste in a dry sheltered area and on pallets or similar devices so they are off the ground?	Y N N/A	Y N N/A	Y N N/A	Y N N/A	Y N N/A
9. Are incompatible wastes segregated properly?	Y N N/A	Y N N/A	Y N N/A	Y N N/A	Y N N/A
10. Are hazardous wastes segregated from nonhazardous wastes?	Y N N/A	Y N N/A	Y N N/A	Y N N/A	Y N N/A
11. Has NMT-7 been notified of the location of the hazardous waste storage areas or any changes in the area?	Y N N/A	Y N N/A	Y N N/A	Y N N/A	Y N N/A
12. Is the storage area free of obstacles and deterioration?	Y N N/A	Y N N/A	Y N N/A	Y N N/A	Y N N/A
SATELLITE ACCUMULATION AREA					
1. Is waste accumulated "at or near the point of generation"?	Y N N/A	Y N N/A	Y N N/A	Y N N/A	Y N N/A
2. Is waste "under the control of the operator of the process generating the waste"	Y N N/A	Y N N/A	Y N N/A	Y N N/A	Y N N/A
3. Do users of the SAA have an inventory system?	Y N N/A	Y N N/A	Y N N/A	Y N N/A	Y N N/A
4. Does the SAA have administrative or physical controls?	Y N N/A	Y N N/A	Y N N/A	Y N N/A	Y N N/A
5. If the SAA is outside, does it have physical controls?	Y N N/A	Y N N/A	Y N N/A	Y N N/A	Y N N/A
6. Has the waste exceeded the 55 gallons of hazardous waste or 1 quart of acutely hazardous waste? A If waste volume has been exceeded, are containers marked with the date the excess began? B Has the excess amount been held for more than 3 days?	Y N N/A Y N N/A Y N N/A	Y N N/A Y N N/A Y N N/A	Y N N/A Y N N/A Y N N/A	Y N N/A Y N N/A Y N N/A	Y N N/A Y N N/A Y N N/A
7. Is the satellite accumulation area sign prominently posted and visible?	Y N N/A	Y N N/A	Y N N/A	Y N N/A	Y N N/A
Inspectors Name (printed) / SAA Contact/Owner Signature / Inspector Initials					
Time					

01/05/2000

Attachment A, Self Inspection Checklist for SAAs (UET)

Page 2 of 2

GENERAL WASTE SEGREGATION SCHEME

Waste should be segregated into the 6 categories as listed below. This is not meant to be a comprehensive list.

Corrosive Acids
- Hydrochloric acid, Sulfuric acid

Corrosive Bases
- Sodium hydroxide, Potassium hydroxide

Flammable Liquids and Solvents
- Acetone, Methanol, Carbon tetrachloride

Oxidizers
- Nitric Acid, Perchloric acid, Hydrogen peroxide

Reactive
- Sodium metal, Potassium metal, explosive chemicals (acetylene, nitrocellulose)

Other
- Inorganic compounds (lead, chromium)

CONTAINER WASTE COMPATIBILITY

Corrosive Acids and Bases
- Glass, weak concentration plastic

Flammable Liquids and Solvents
- Metal can, glass, and alcohol in plastic

Oxidizers Reactive Other
- Glass, weak oxidizer plastic

Reactive
- Glass or metal

Other
- Glass, polypropylene, plastic, metal, other

Attachment B, Hazardous Waste Facility Inspection Record Form (UET)

Page 1 of 2

[1] FACILITY:	[2] Site ID #:	TREATMENT, STORAGE, OR DISPOSAL UNIT (TSD)	[3] START DATE:	[4] END DATE:

[5] **X** Containers ☐Landfill ☐Chemical Treatment ☐Tank ☐Miscellaneous Unit (OB/OD, Cementation)

PART I- Enter condition of the item inspected (*i.e.* **OK**, **NA** [Not Applicable], or **AR** [Action Required]) in column for day inspected.

12.1 ITEM	**INSPECTED FOR:**	**MON**	**TUE**	**WED**	**THU**	**FRI**	**SAT**	
[6] NO UNIT USE	No waste stored							
[7] NO WASTE HANDLING	No waste handled (see instructions)							
All TSDs								
[8] COMMUNICATIONS EQUIPMENT	Availability and proper operating condition							
[9] WARNING SIGNS	Posted, legible, and bilingual							
[10] SECURITY	Good condition of fences, gates, locks, and other access control equipment	SOC	SOC	SOC	SOC	SOC	SOC	SOC
[11] WORK SURFACES/ FLOORS/ROADS	Absence of conditions that could lead to an accident or spill							
[12] SPILL/FIRE EQUIPMENT	Present, appropriate, and in proper operating condition							
[13] EYEWASHES/ SAFETY SHOWERS	Proper operating condition							
[14] WIND SOCK	Proper operating condition and functional	NA	NA	NA	NA	NA	NA	NA
[15] SECONDARY CONTAINMENT	Integrity- No standing water/waste, erosion, or signs of a spill							
[16] (UN)LOADING AREA	No spills or deterioration							
[17] RUN-ON/OFF CONTROL	Integrity- no ponding, erosion, or damage	NA	NA	NA	NA	NA	NA	NA
Container Storage Units and/or Tanks (see instructions)								
[18] COVERS/LIDS OF CONTAINERS	Closed and secured properly							
[19] LABELS	Proper with start date, present & legible							
[20] COMPATIBILITY	Separated according to compatibility							
[21] INTEGRITY	No leakage, corrosion, or damage							

[22]AISLE SPACE/STACKING	Appropriateness and adequacy	NA	NA	NA	NA	NA	NA	NA

Attachment B, Hazardous Waste Facility Inspection Record Form (UET)

Page 2 of 2

FACILITY:	Site ID #:	START DATE:	END DATE:

12.2 ITEM	INSPECTED FOR:	MON	TUE	WED	THU	FRI	SAT	
[23]PALLETS AND RAISED CONTAINERS	Absence of conditions that could result in failure							
[24]TANK SYSTEMS	Discharge controls and fill level and no corrosion or leakage	NA	NA	NA	NA	NA	NA	NA
Other TSDs								
[25]SHAFTS/LANDFILL COVERS	Presence and condition of cover	NA	NA	NA	NA	NA	NA	NA
[26]OPEN BURNING UNITS	Condition of cover, and no erosion, leakage, or damage	NA	NA	NA	NA	NA	NA	NA
[27]OPEN DETONATION UNITS	Unit and vegetation condition and no erosion	NA	NA	NA	NA	NA	NA	NA
[28]CEMENTATION UNITS	Structural integrity and condition of equipment and systems	NA	NA	NA	NA	NA	NA	NA

	MON	TUE	WED	THU	FRI	SAT	SUN
[29] DATE							
[30] TIME							
[31] INSPECTOR(S)							

Part II- For any AR (Action Required) in PART I, describe below: action required, action taken, status, date, and time of action. Attach additional sheets if necessary. If more than one action is required, number each AR.

32

Part III- Comments.

33

Attachment C, Hazardous/Mixed Waste Facility Inspection Record Form for <90 (UET)

Page 1 of 2

[1] FACILITY: TA Bldg: Room: Other Location:	[2] Site ID #:	[3] START DATE	[4] END DATE:

PART I- Enter condition of the item inspected (**OK**, **NA** [Not Applicable], or **AR** [Action Required]) in column for day inspected.

12.3 ITEM	INSPECTED FOR:	MON	TUE	WED	THU	FRI	SAT	
[5] NO USE	No waste stored							
[6] LABELS	Proper labels on all tanks and containers							
[7] ACCUMULATION START DATE	Present and legible							
[8] NOT EXCEEDING 90 DAYS	Waste has not exceeded 90 days							
[9] COVERS/LIDS OF CONTAINERS	Closed and secured properly							
[10] INTEGRITY (containers/structure)	Integrity, leakage, deterioration, corrosion, and damage							
[11] COMPATIBILITY	Separated according to compatibility							
[12] AISLE SPACE/STACKING	Appropriateness and adequacy							
[13] COMMUNICATION EQUIPMENT	Availability and proper operating condition							
[14] SPILL/FIRE EQUIPMENT	Present, appropriate, and in proper operating condition							
[15] EYEWASHES/SAFETY SHOWERS	Proper operating condition							
[16] TANK SYSTEMS (Aboveground portions)	Discharge controls, leakage, fill level, and corrosion	NA	NA	NA	NA	NA	NA	NA
[17] **DATE**								
[18] **TIME**								
[19] **NAME OF INSPECTOR(S)**								

Comments:

Attachment C, Hazardous/Mixed Waste Facility Inspection Record Form for <90 (UET)

Page 2 of 2

[1] FACILITY: TA Bldg: Room: Other Location:	[2] Site ID #:	[3] START DATE:	[4] END DATE:

Part II- For any AR (Action Required) in PART I, describe below: action required, action taken, date, and time of action. Attach additional sheets if necessary. If more than one action is required, number each AR.

20

Attachment D, Waste Package Checklist (UET)

IPC-1
JP
7/15/13

CONTAINER TYPE:

Container ID: ~~Burial Box~~ ~~Transport Container~~ ~~GIC~~

This checklist is to facilitate the assembly of the data package and ensure that all required information is collected. If and step(s) do not apply, indicate with **N/A** in the initials column.

Step	Activity	Initials/Date	
1	Visual inspection and container integrity has been performed.		
2	Tare weight has been applied to the container _____ Kg		
3	Appropriate (for example: Hazardous, Non-Hazardous, GIC, Barcode and/or Radioactive) labels have been applied to the container and two locks for drums or four locks for container (with different combinations) applied when not in use.		
4	Sealed container using current manufacturer's closure instructions that coincide with the Purchase Order Number on the container (bolts torque etc.).		
5	NNSS ~~NTS~~ Packaging Certification Signature _____ Date: _____		
6	Sealed date is marked on the container and TID applied TID No. _____ / _____ (*see note below* **)		
7	The HPRMS tag has been filled out and attached to the package.		
8	THE GROSS WEIGHT HAS BEEN APPLIED TO THE CONTAINER. ~~The container has been weighted and the Gross weight and Sealed date marked on the container.~~ _____ Kg		
~~9~~	~~Waste Weight Gross Weight _____ Kg Tare Weight _____ Kg Net Weight _____ Kg~~		
10	The container has been assayed by accountability group and has been reviewed for accountable material (NPI-1)		
11	Door opening scheduled and container moved to appropriate storage area. Date of DO _____		
12	~~TID Verification complete (QA or S-Div).~~ TID AND MC&A VERIFICATION COMPLETE (S-DIV)		
13	Collect data (MC&A results, Red Tag, Inventory sheets, WAF's) Enter Waste Information in Database		
14	Gamma Spectroscopy Data Analyses ~~(NPI-1)~~		
15	WAF's assay results, red tags, and related documentation has been collected and checked for accuracy. An original WDR generated and is attached to the data package. Completed package given to Operation Supervisor		
16	Operation Supervisor checks for completeness then gives to QA		
17	QA reviews, and returns data package back to ~~Operations Supervisor or Shipper~~ TASS HAZMAT PERSONNEL		
18	TASS HAZMAT ~~Shipper~~ reviews and approve package then gives to WMC		
19	WMC final review and electronic WDR submitted, package given to TASS HAZMAT ~~Shipper~~ by WMC Date Submitted _____		

Comments

**After application of TIDs email custodian to terminate TID Numbers.

Attachment E, Inventory Checklist for LLW MAR Tracking (UET)

Inventory Checklist for LLW MAR Tracking

PF-4 Basement MAR Limit for ALL Waste (including TRU, LLW, and MLLW):	30 Kg Pu equivalent
PF-4 Basement Assumed MAR for LLW (including MLLW):	0.10 Kg Pu equivalent
[Does not include containers of Green is Clean waste as this waste is considered non-radioactive]	
Maximum allowable volume of LLW (including MLLW) in PF-4 basement:	**20 ST90 Waste Container Equivalents (1920 ft^3 or 54 m^3)**
OR	
Maximum allowable weight of low-level waste (including MLLW) in PF-4 basement:	**200,000 lbs (91,000 Kg)**
Waste Storage Pad Limit for ALL Waste (including TRU, LLW, and MLLW):	3.6 Kg Pu equivalent
Waste Storage Pad Assumed MAR for LLW (including MLLW):	0.50 Kg Pu equivalent
Maximum allowable volume of LLW (including MLLW) on pad:	**100 ST90 Waste Container Equivalents (9600 ft^3 or 270 m^3)**
OR	
Maximum allowable weight of low-level waste (including MLLW) on pad:	**1,000,000 lbs (455,000 Kg)**

Inventory Date: mm / dd / yy	Name: _____	Signatures: _____

- [ ] PF-4 Basement
  - [ ] Volume
  - [ ] Weight
- [ ] Storage Pad
  - [x] Volume
  - [x] Weight

Container Type	No. In Storage	Maximum Container Volume (ft^3)	Maximum Container Weight (lbs)	Max Total Volume in Storage (ft^3)	Max Calculated Total Weight in Storage (lbs)	Measured Total Weight in Storage (lbs)
ST90		96	10,000	0	0	0
ST45		48	5,000	0	0	0
85-gal Drum		13.2	900	0	0	0
55-gal Drum		8.6	900	0	0	0
30-gal Drum		4.7	750	0	0	0
Other				0	0	
			Total LLW In Storage	0	0	0
				PF-4 Must be <1920 ft^3	PF-4 Must be <200,000 lbs	PF-4 Must be <200,000 lbs
				Pad Must be <9600 ft^3	Pad Must be <1,000,000 lbs	Pad Must be <1,000,000 lbs

WARNING: If volume or weight exceed allowable limits, pause work, contact supervisor and operations center, wait for instructions.

Attachment F, RLUOB Inventory Checklist for LLW MAR Tracking (UET)

RLUOB Inventory Checklist for LLW MAR Tracking

RLUOB Assumed MAR for GIC and LLW (including MLLW): 0.5 g Pu equivalent

Maximum allowable volume of LLW (including MLLW) in RLUOB (RM 1124/1125) **10 ST90 Waste Container Equivalents (900 ft^3 or 25.48 m^3)**

OR

Maximum allowable weight of low-level waste (including MLLW) in RLUOB (RM 1124/1125): **100,000 lbs (45,359 Kg)**

Inventory
Date: ___/___/___ Name: _____ Signature: _____

☐ RLUOB RM 1124/1125
☐ Volume
☐ Weight

Container Type	No. In Storage	Maximum Container Volume (ft^3)	Maximum Container Weight (lbs)	Max Total Volume in Storage (ft^3)	Max Calculated Total Weight in Storage (lbs)	Measured Total Weight in Storage (lbs)
ST90		96	10,000	0	0	
ST45		48	5,000	0	0	
85-gal Drum		13.2	900	0	0	
55-gal Drum		8.6	900	0	0	
30-gal Drum		4.7	750	0	0	
Other				0	0	
			Total LLW In Storage	0	0	0
				RLUOB Must be <900 ft^3	RLUOB Must be <100,000 lbs	RLUOB Must be <100,000 lbs

WARNING: If volume or weight exceed allowable limits, pause work, contact supervisor and operations center, wait for instructions.

Attachment G, Weekly Inventory Form (UET)

Page 1 of 1

Weekly Inventory Form

NPI-7 LLW									Date:_____	
Container ID	Container Volume (ft^3)	Waste Description	LOC	Closed/ Sealed Date	PAD Storage Date	Residence Time	Shipment Destination	Ship Date	WDR Status	Container Wt. (KG) (Gross)

Attachment H, Macroencapsulation Manufacturer's Instructions (UET)

Quality Assurance Procedure
Level 2 Rev. 9 Page 1 of 31
UT-OMMPKG-01 Copy: UC
Effective Date: 3/04/2013
Approved
By:

UltraTech International, Inc.

11542 Davis Creek Court
Jacksonville, Florida 32256
800-353-1611 * Fax 904-292-1325
MShaw@SpillContainment.com
http://www.RadWasteProducts.com

UltraTech Ultra-MacroPack Encapsulation System Packaging Operation and Maintenance Manual

Controlled Copy No.: UNCONTROLLED

Attachment H, Macroencapsulation Manufacturer's Instructions (UET)
(continued)

Quality Assurance Procedure
Level 2 Rev. 9 Page 2 of 31
UT-OMMPKG-01 Copy: UC
Effective Date: 3/04/2013
Approved
By:

1.0 Introduction

The Ultra-MacroPack Encapsulation Systems consist of the following elements at a minimum:

- Polyethylene MacroPack and Polyethylene Lid.
- Weight Distribution Device (preferred) and Weight

Refer to Appendix I. Table I for the different size systems available and pertinent data relating to each system. As with most UltraTech items, custom sizes are available upon request. Part Drawings for current systems are available upon request.

The Ultra-MacroPack and Lid are sealed using a low temperature melt sealing process resulting in an Ultra-MacroPack Encapsulation System. If the Ultra-MacroPack Encapsulation System is to be transported on a public roadway or if there is a requirement to meet DOT regulations, an appropriately rated/certified metal container must be added to the system. The qualified metal container may be placed inside of the MacroPack prior to sealing, or may surround the exterior of the Ultra-MacroPack Encapsulation System

This Operations and Maintenance Manual describes the operation and maintenance procedures for packaging using the Ultra-MacroPack Encapsulation System.

2.0 Contractor Information

UltraTech International, Inc.
11542 Davis Creek Court
Jacksonville, FL 32256
Key Contact: Mark Shaw
800-353-1611 x 205
904-292-1325 Fax
mshaw@spillcontainment.com

UltraTech International shall ensure quality requirements are met by any Subcontractors that may be used in the manufacture of the Ultra-MacroPack Encapsulation System through the UltraTech Quality Assurance Program.

Attachment H, Macroencapsulation Manufacturer's Instructions (UET)
(continued)

Quality Assurance Procedure
Level 2 Rev. 9 Page 3 of 31
UT-OMMPKG-01 Copy: UC
Effective Date: 3/04/2013
Approved
By:

3.0 Personnel Training Requirements

Operators should be familiar with the safety precautions, environmental conditions and equipment operations as described in this manual.

UltraTech International, Inc. will make technical personnel available for on-site training.

Ultra-MacroPacks and Lids are low maintenance. If service is ever needed contact UltraTech International, Inc.

4.0 Environmental Conditions and Safety Precautions

Ultra-MacroPacks and Lids should be stored out of direct sunlight, preferably indoors in a climate controlled or well ventilated area. The storage environment should be maintained at 0° F to 120° F. Lids should be stored on a flat surface and the wires protected from heavy or sharp objects and moisture. If Ultra-MacroPacks are to be sealed in an area away from the storage location, they should be moved to the sealing environment and allowed to equilibrate prior to beginning the sealing process.

Operators should wear work gloves, steel toe shoes and eye protection.
Personal injuries can occur from the following:

- Dropping a lid, weight or container onto a foot, toe, hand, or finger.
- Pinch hazard due to a lid pinching a misplaced hand or finger or when executing closure procedures.

Attachment H, Macroencapsulation Manufacturer's Instructions (UET)
(continued)

Quality Assurance Procedure
Level 2 Rev. 9 Page 4 of 31
UT-OMMPKG-01 Copy: UC
Effective Date: 3/04/2013
Approved
By:

5.0 Operational Considerations for Using Ultra-MacroPack Packages

1. Place the protective covering over the top edge of the MacroPack to protect the sealing surface of the flange while it is being loaded with a drum, a box, waste, debris, or filler material. This protective paper or plastic sheeting shall be supplied by the end user. Do not fill the container above the bottom edge of the MacroPack sealing flange.

2. Once the MacroPack is full and no further waste is to be placed inside, remove the protective covering and inspect the MacroPack sealing flange to make sure it has not been contaminated during the filling process. If it has, clean as described in Step 3 below.

3. Wipe the sealing area of the MacroPack clean with a damp (water) cloth to remove any dust or dirt. Allow surface to air dry before use or wipe dry with a clean cloth.

4. Wipe the MacroPack Lid sealing surface and the sealing wires clean with a damp (water) cloth. Allow surface to air dry before use or wipe dry with a clean cloth.

5. Inspect the MacroPack Lid sealing wires for any visual damage that indicates a break in the wire(s). Do not put a Lid with a broken wire into service.

6. Place the cleaned Lid on the cleaned MacroPack and center the Lid. CAUTION: do not allow the lid to flex more than 10% of its longest dimension during this process as extreme flexing may cause a wire to break.

7. Place the MacroPack System in the sealing area. Refer to the UltraTech BITW ECU Operations and Maintenance Manual for guidance on the sealing process.

Please call UltraTech International, Inc. at 800-353-1611 ext. 0 with any questions you may have regarding these procedures.

6.0 Warranty

UltraTech warrants that its products are free of defects upon delivery, notwithstanding damage from shipment. Upon acceptance of the product, if the product is not in working order or does not exhibit good workmanship, UltraTech will replace or repair the product at no charge.

Attachment H, Macroencapsulation Manufacturer's Instructions (UET)
(continued)

Quality Assurance Procedure
Level 2 Rev. 9 Page 5 of 31
UT-OMMPKG-01 Copy: UC
Effective Date: 3/04/2013
Approved
By:

APPENDIX I
TABLE I

MacroPack Encapsulation System Model	Components	Approx Tare Weight	Capacity in Pounds	Weight Distribution Device to Use	Weight to be Applied
55 Gallon Drum Part No. 9530	Non-Bonded Polyethylene Liner Polyethylene Lid 110 Gallon Steel Drum Steel Closure Lid Closure Bolts Weight Distribution Device Weight	117 lbs.	882 lbs.	Round 55-Gallon Part No. 9531	Part No. 9532 (288 lbs.)
110 Gallon Drum Part No. 9542	Non-Bonded Polyethylene Liner Polyethylene Lid 110 Gallon Steel Drum Steel Closure Lid Closure Bolts Weight Distribution Device Weight	191 lbs.	882 lbs.	Round 110-Gallon Part No. 9545	Part No. 9547 (400 lbs.)
MacroPack 6-Pack 7A type A Non-Fissile 7A-127	Polyethylene MacroPack Polyethylene Lid Steel Box Steel Closure Lid Closure Bolts Weight Distribution Device Weight	1450 lbs.	8,300 lbs.	Rectangular Drawing No. LP-WDD-MKII	Drawing No. WDD WEIGHT-6PK Rev 1 (1140 lbs.)
MacroPack 6-Pack 7A Type A Fissile 7AF-136-IS	Polyethylene MacroPack Polyethylene Lid Steel Box Steel Closure Lid Closure Bolts Weight Dist Device and Weight Protective Ring	1650 lbs.	12,000 lbs.	Rectangular Drawing No. LP-WDD-MKII	Drawing No. WDD WEIGHT-6PK Rev 1 (1140 lbs.)
MacroPack Overpack Part No. 9520	Polyethylene MacroPack Polyethylene Lid Weight Dist Device and Weight Protective Ring	130 lbs.	1000 lbs.	Round Part No. 9521	Part No. 9522 (526 lbs.)

Attachment H, Macroencapsulation Manufacturer's Instructions (UET)
(continued)

UltraTech International, Inc.

11542 Davis Creek Court
Jacksonville, Florida 32256
800-353-1611 * Fax 904-292-1325
Mark.Shaw@SpillContainment.com
http://www.RadWasteProducts.com

UltraTech Ultra-MacroPack Electronic Control Unit (BITW BRAND)

(Serial # 003)

Operation and Maintenance Manual For Use With Ultra-MacroPack System Packages

Controlled Copy No.: **Uncontrolled**

Version 7, 11 Sept 2012
Changes since the last revision are in italics.

Attachment H, Macroencapsulation Manufacturer's Instructions (UET) (continued)

1.0 Introduction

The Ultra-MacroPack Electronic Control Unit, serial number 003, consists of the following elements:

- NEMA 4 Electronic Control Unit, *Main Power Switch, Transformer, Supply Switch.*
- Power *Cord* 75 feet long.
- *1* Output Cord 15 feet long.
- *2* Output cables 15 feet long.
- *4 Terminal Pigtails*
- *4 Terminals*
- *4 Terminal Guards*
- *1 Inter-Cable*
- Wagon style stand and wagon for portability.

Refer to UltraTech International, Inc. for additional options available that may make use of this unit more convenient in your particular operation. Additional options become available as "End-Users" make special requests for their operation.

The Ultra-MacroPack Encapsulation Liner and Lid are sealed using a low temperature electrically heated thermal-sealing process. The device that controls and monitors the sealing process is the Ultra-MacroPack Electronic Control Unit. There is NO radio frequency used in this process.

This Operations and Maintenance Manual describes the operation and maintenance procedures for the Ultra-MacroPack Electronic Control Unit as it is used to perform thermal sealing of UltraTech International, Inc. Ultra-MacroPack System Packages.

1.1 Features of the Ultra-MacroPack Electronic Control Unit

- The Ultra-MacroPack Electronic Control Unit will self-adjust to follow most utility power sags and surges without going into error mode.
- The Ultra-MacroPack Electronic Control Unit will self-adjust for the loss of up to 3 heating wires without going into error mode.
- The Ultra-MacroPack Electronic Control Unit can be operated from generator-supplied power. The generator must be of adequate capacity to supply sine wave power.
- The Ultra-MacroPack Electronic Control Unit has battery backup to maintain last state information long enough for the operator to record it in the event of utility power loss.
- The Ultra-MacroPack Electronic Control Unit has NO connection to the output leads until the key-switch is "UNLOCKED" and the "PROCESS START" button is pushed.

Attachment H, Macroencapsulation Manufacturer's Instructions (UET)
(continued)

- The Ultra-MacroPack Electronic Control Unit at process start will test at 5 volts for the existence of a lid connection and less than 10ohm resistance (less than human resistance which is typically over 200Kohm).
- The Ultra-MacroPack Electronic Control Unit has GFCI protection on the output circuitry that both shuts down the process and disconnects the output leads.
- In TEST mode the Ultra-MacroPack Electronic Control Unit will run for 60 seconds then report on the display the ending Seconds, Volts, and Amps.
- In SEAL mode the Ultra-MacroPack Electronic Control Unit will run for 1200 seconds then report on the display the ending Seconds, Volts, and Amps.
- If the voltage for sealing moves beyond the acceptable range (See Appendix I) during the timing (test or seal) cycle, the Ultra-MacroPack Electronic Control Unit will stop the process and the amber FAULT lamp will illuminate. The display will show the time to shutdown and the last state parameters. One of the following statements "CONTROLLER ERROR OC", indicating Over Current, or "CONTROLLER ERROR UC", indicating Under Current, will also show.
- The Ultra-MacroPack Electronic Control Unit has overcurrent protection through the PLC program, Current limiting on the SCR controller and an independent overcurrent shutdown relay.
- *There is NO radio frequency used in the sealing process.*

2.0 Contractor Information

UltraTech International, Inc.
11542 Davis Creek Court
Jacksonville, FL 32256
Key Contact: Mark Shaw
800-353-1611 x 205
904-292-1325 Fax
mark.shaw@spillcontainment.com

UltraTech International, Inc. shall ensure quality requirements are met by any Subcontractors that may be used in the manufacture of the Ultra-MacroPack Electronic Control Unit through the UltraTech Quality Assurance Program.

Attachment H, Macroencapsulation Manufacturer's Instructions (UET) (continued)

3.0 Personnel Training Requirements

Operators should be familiar with the safety precautions, environmental conditions and equipment operations as described in this manual.

UltraTech International, Inc. will make technical personnel available for on-site training.

The Ultra-MacroPack Electronic Control Unit is designed to require little maintenance. Periodic maintenance requirements for the Ultra-MacroPack Electronic Control Unit are detailed in section 5.2 of this manual. If service beyond periodic maintenance is needed contact UltraTech International, Inc. (1-800-353-1611)

4.0 Environmental Conditions and Safety Precautions

4.1 Storing and Cleaning

The Ultra-MacroPack Electronic Control Unit, serial numbers greater than 001, should be stored and used at temperatures between 140°F and –40°F. The Ultra-MacroPack Electronic Control Unit, Main Power Switch, Transformer, *and Supply Power Switch* are in NEMA 4 housings. Washing down for decontamination will not harm these components, however the plugs and connectors must be allowed to dry completely before use.

4.2 Warm-up

The Ultra-MacroPack Electronic Control Unit has no special warm-up requirements at temperatures above 20° F. If the ECU has cooled to below 20° F, then it is recommended that the ECU be connected to an appropriate power source, turned on and allowed to stabilize for 30 minutes prior to use.

4.3 Extended Shutdown

If the Ultra-MacroPack Electronic Control Unit is not used for extended periods, it should be connected to an appropriate power source, the SUPPLY and MAIN POWER switches turned on, the UPS button pushed to ON, and the ECU batteries allowed to recharge for a total of 8 hours at least once every 3 months. *(This 8 hour recharge time does not have to occur in one session.)*

4.4 Generator Power

The Ultra-MacroPack Electronic Control Unit may be operated from generator-supplied power. The generator must have adequate capacity to supply true sine wave power.

4.5 Specific Safety

Although the Ultra-MacroPack Electronic Control Unit is designed for maximum operator safety (including NO electrical connection to the output leads while the unit is not IN PROCESS [green lamp is not illuminated]), operators should observe the following electrical safety precautions:

Attachment H, Macroencapsulation Manufacturer's Instructions (UET)
(continued)

- Do NOT touch the exposed portion of the output leads.
- Take care that the output leads when connected to the lid cannot touch the metal outer container.
- Take care that the connected leads will not apply tilting forces to the connection terminals when the lid is heated.

4.6 General Safety

Operators should wear work gloves, steel toe shoes and eye protection.

Personnel injuries can occur from the following:

- Tipping an Ultra-MacroPack Electronic Control Unit over onto one's body or any part thereof.
- Running over ones foot with the portable Ultra-MacroPack Electronic Control Unit.
- Contacting the output leads while the unit is IN PROCESS and the GFCI breaker malfunctions.

5.0 Operation of the Ultra-MacroPack Electronic Control Unit

5.1 Testing or Sealing Lids

1. Connect the Ultra-MacroPack Electronic Control Unit to an appropriate power source.

2. Move the SUPPLY and MAIN POWER switches to the on position (the white CABINET POWER lamp will illuminate).

3. Start the UPS by pressing the UPS POWER pushbutton one time. The white UPS POWER lamp will illuminate. (A second press will switch the UPS off).

4. Assure that the Emergency Stop button is released (extended position).

5. Assure that the key-switch is in the "LOCKED" position. (In this position the output contactor is "locked" in the open position and there is NO connection to the output leads and the START button will not function, even to reset).

6. IF your containers (such as a lined MacroPack or an Ultra-MacroPack 6Pack II) have a metal shell, connect the output *cord* grounding clamp to the metal shell of the container.

7. Connect the output *cables* of the Ultra-MacroPack Electronic Control Unit to the Ultra-MacroPack lid terminal *pigtails*.

8. If your process involves sealing 2 (two) containers at the same time install the *inter-cable* between the two lids.

Attachment H, Macroencapsulation Manufacturer's Instructions (UET)
(continued)

9. Assure that the *terminal pigtails* are supported/anchored so the *terminal pigtails and attached cables* will not apply tipping forces to the *terminals* as the lid is heated and so the terminals cannot touch the metal outer container. (A stack of 2 or 3 fender-washers [3/8 x 1 ½ or *1 ¾* or ¼ x 1 ¼] under the aluminum terminal will provide extra stability when the terminal comes to full temperature).

10. Install the Terminal Guards over the Terminals to assure contact cannot be made with the energized terminals.

11. Connect the output cables to the output cord.

12. Plug the output cord (big red plug) into the receptacle on the side of the ECU (big red receptacle).

13. Select "TEST" or "SEAL" with the mode switch as appropriate.

14. Clear personnel from the immediate area of the lid terminals and connections and alert others in the area that the *output circuit is* going to be energized.

15. Move the key-switch to the "UNLOCKED" position. (There is still no connection to the output leads. Connection is only made while the IN PROCESS (Green) lamp is illuminated).

    NOTE: The display should indicate "READY TO TEST" or "READY TO SEAL". If the display indicates something else, press the START button once to reset the program. (The START button is a two (2) function button. Depending on the state of the program it will either reset to "READY TO TEST/SEAL" or start the process).

16. Press the START button on the Ultra-MacroPack Electronic Control Unit once. The green IN PROCESS lamp will illuminate. (The IN PROCESS lamp is also the indicator that the output leads are connected. When that lamp is extinguished there is NO connection to the output leads). The display screen will describe what is happening.
    - The **operator must compare** the initial voltage shown when the Ultra-MacroPack Electronic Control Unit begins its timing cycle with the "**Acceptable Sealing Range of Voltage**" (as documented in **APPENDIX I**) for the lid being used. **IF** this voltage is outside of the listed range for that size lid, STOP the process with the STOP button. The out of tolerance lid should be reported to UltraTech International, Inc.

17. When the Ultra-MacroPack Electronic Control Unit determines the lid resistance and starts Timing (30 Amps [+/- 1] shows as the current and Seconds begin counting) record the applied voltage. IF this voltage is outside of the "**Acceptable Sealing Range of Voltage**" (as documented in

Attachment H, Macroencapsulation Manufacturer's Instructions (UET) (continued)

APPENDIX I) for that size lid, STOP the process with the STOP button (the amber FAULT lamp will illuminate) and replace the lid. The out of tolerance lid should be reported to UltraTech International, Inc. (One press of the START button will reset the program).

NOTE on cycle times:

- In TEST mode the Ultra-MacroPack Electronic Control Unit will run for 60 seconds. For this test the lid may be placed on any non-conductive surface because the sealing plastic will not soften significantly during this test. Alternatively the lid may be placed on a supporting structure with the sealing wires upward and the terminals downward to conduct this test.
- It is not necessary to "pretest" the lids. The "TEST" cycle runs at the beginning of the "SEAL" cycle. The voltage for acceptance as indicated in steps 14 and 15 can be confirmed at this time and the process stopped for an Out-of-Range voltage.
- In SEAL mode the Ultra-MacroPack Electronic Control Unit will run for 1200 seconds.

18. At the end of the timing cycle the display will show last state parameters and will indicate either "SUCCESSFUL TEST" or "SUCCESSFUL SEAL" and the green IN PROCESS lamp will go out.
    - **If** the voltage exceeds the "**Acceptable Sealing Range of Voltage**" during the timing (test or seal) cycle, and either the operator or the Ultra-MacroPack Electronic Control Unit stops the process and the amber FAULT lamp illuminates, the display will show the time to shutdown and the last state parameters. One of the following statements "CONTROLLER ERROR OC", indicating Over Current, or "CONTROLLER ERROR UC", indicating Under Current, will also show. Record all of this information for reporting to QA. Refer to **Appendix II** for detailed FAULT procedures.

19. After a successful seal, the Container, the Lid, the Weight Distribution Device, and the Aluminum Terminal Connectors must not be disturbed for one (1) hour. The output cable connectors may be separated immediately from the terminal pigtails as long as the Aluminum Terminal Connectors are not disturbed during the separation. *Unplug the big red plug first.*

20. After recording the ending conditions for a "SUCCESSFUL TEST/SEAL", reset the program with one push of the START button.

21. Repeat steps 5 through *20* for the next test or seal operation.

22. If the Ultra-MacroPack Electronic Control Unit is to be **shut down**, press the UPS button once (the white UPS POWER lamp will go dark), move the MAIN

Attachment H, Macroencapsulation Manufacturer's Instructions (UET) (continued)

POWER and the SUPPLY power switches to their **off** positions (the white CABINET POWER lamp will go dark).

5.2 Restart After Shut-Down or Power Loss

The Ultra-MacroPack Electronic Control Unit has no special startup requirements after shutdown if temperatures are above 20° F. If the temperature is below 20° F, it is recommended that the ECU be turned on and allowed to stabilize for 30 minutes prior to use for test or seal.

5.3 Periodic Maintenance Requirements

1. The **internal UPS** should be tested **every 6 months** to be sure it will maintain the display for your company's minimum required time in the event of a power failure. The recommended hold time is a minimum of 5 minutes.

To test the UPS function:

A. Select a time when the Ultra-MacroPack Electronic Control Unit will NOT be in active use for about 2 hours.

B. Assure that the Ultra-MacroPack Electronic Control Unit has been connected to an appropriate power source and the *SUPPLY power switch and MAIN POWER switch* on for at least *8* hours of the previous 72. (This charges the UPS battery).

C. Connect the Ultra-MacroPack Electronic Control Unit to an appropriate power source.

D. Move the SUPPLY and MAIN POWER switches to their on positions (the white CABINET POWER lamp will illuminate).

E. Start the UPS by pressing the UPS POWER pushbutton one time. The white UPS POWER lamp will illuminate. (A second press will switch the UPS off).

F. Assure that the Emergency Stop button is released *(extended position)*, and allow the Ultra-MacroPack Electronic Control Unit to stabilize for 30 minutes prior to starting the test.

G. The key-switch may be in either position.

H. Move the *MAIN POWER* Switch to the "OFF" position (the white CABINET POWER lamp will go dark). Record the time the main power switch is moved to the "OFF" position as the start time of this test.

I. Monitor the time until the display screen goes dark and the UPS POWER lamp goes dark. Record this time as the end-time for this test.

J. Determine the difference between these two times. Record this difference as the "hold" time.

K. If this "hold" time is less than your company's required minimum or 5 minutes (whichever is *greater*), contact

Attachment H, Macroencapsulation Manufacturer's Instructions (UET)
(continued)

UltraTech International, Inc. to establish a date and cost for servicing the ECU/UPS.

2. The manufacturer of the **GFCI** breaker recommends that it be tested **monthly**. The test is a very simple procedure where one can press the test button on the device to ensure that it does trip, breaking the circuit.

3. It is recommended the Ultra-MacroPack Electronic Control Unit be tested and adjusted by a qualified provider once every 2 years.

6.0 Warranty Information

UltraTech warrants that its products are free of defects upon delivery, notwithstanding damage from shipment. Upon acceptance of the product, if the product is not in working order or does not exhibit good workmanship, UltraTech will replace or repair the product at no charge.

Please call UltraTech International, Inc. at 800-353-1611 ext. 0 with any questions you may have regarding these procedures.

7.0 Index To Appendices

Appendix Number	Description	Page Number
I	Standard Output Voltages	*14* of *21*
II	Fault Recovery	*14* of *21*
III	Series Lid Fault Isolation	*15* of *21*
IV	Electrical Schematic	*16* of *21*
V	*Replacement Parts*	*17 – 18 of 21*
VI	Photographs of Unit	*19 – 21 of 21*

Attachment H, Macroencapsulation Manufacturer's Instructions (UET)
(continued)

APPENDIX I
STANDARD OUTPUT VOLTAGES

LID DESIGNATION	Acceptable Sealing Range of Voltage
Ultra-MacroPack 6 Pack II	73.0 to 104
Ultra-MacroPack. 110-Gallon Drum	24.1 to 45.7
Ultra-MacroPack. 55-Gallon Drum	17.7 to 33.6
Ultra-Macro Pack. AMWTP Overpack Model*.One	30.3 to 37.2
Ultra-Macro Pack. AMWTP Overpack Model*.Two	60.6 to 74.37

NOTE: The current (as of 18 Feb. 2011) Ultra-MacroPack Electronic Control Units are not capable of supplying more than 104-105 Volts as a continuous output. If the Output Voltage gets to this range the process must be STOPPED and the appropriate fault procedure followed based on the SEALING Time displayed on the ECU.

*When a FAULT occurs during the sealing of 2 (two) overpacks in series, follow the procedure of Appendix III

APPENDIX II
FAULT RECOVERY

TIME IN PROCESS	TYPE OF FAULT	RESPONSE TO FAULT
450 seconds or less	Above Acceptable Range	Remove and replace the lid with a good lid. Report the bad lid to QA and to UltraTech.
	Utility Power Failure	Allow lid to cool 20 minutes then reset ECU and START a full length sealing process.
More than 450 but less than 840 seconds	Above Acceptable Range	Immediately press the STOP button and report the times and current and volt parameters to QA and to UltraTech for further instructions.
	Utility Power Failure of less than 20 minutes	Reset ECU. Restart process for balance of 20 minutes.
	Utility Power Failure of more than 20 minutes	Allow lid to cool for 1.5 hours. Reset ECU. Restart process for full 20 minutes.
840 seconds or more	Any FAULT	Seal is acceptable. Continue normal disposition of sealed MacroPack. Report process time and type of fault to QA and to UltraTech.

If 2 (two) containers are being sealed at the same time by a single Ultra-MacroPack Electronic Control Unit, the times above still hold.

Attachment H, Macroencapsulation Manufacturer's Instructions (UET)
(continued)

Appendix III
Isolation Procedure

Procedure for Isolating Faulty Lid

1) Disconnect the ECU from the Faulting Lid Pair

2) Disconnect the *Inter-Cable* from between the lids.

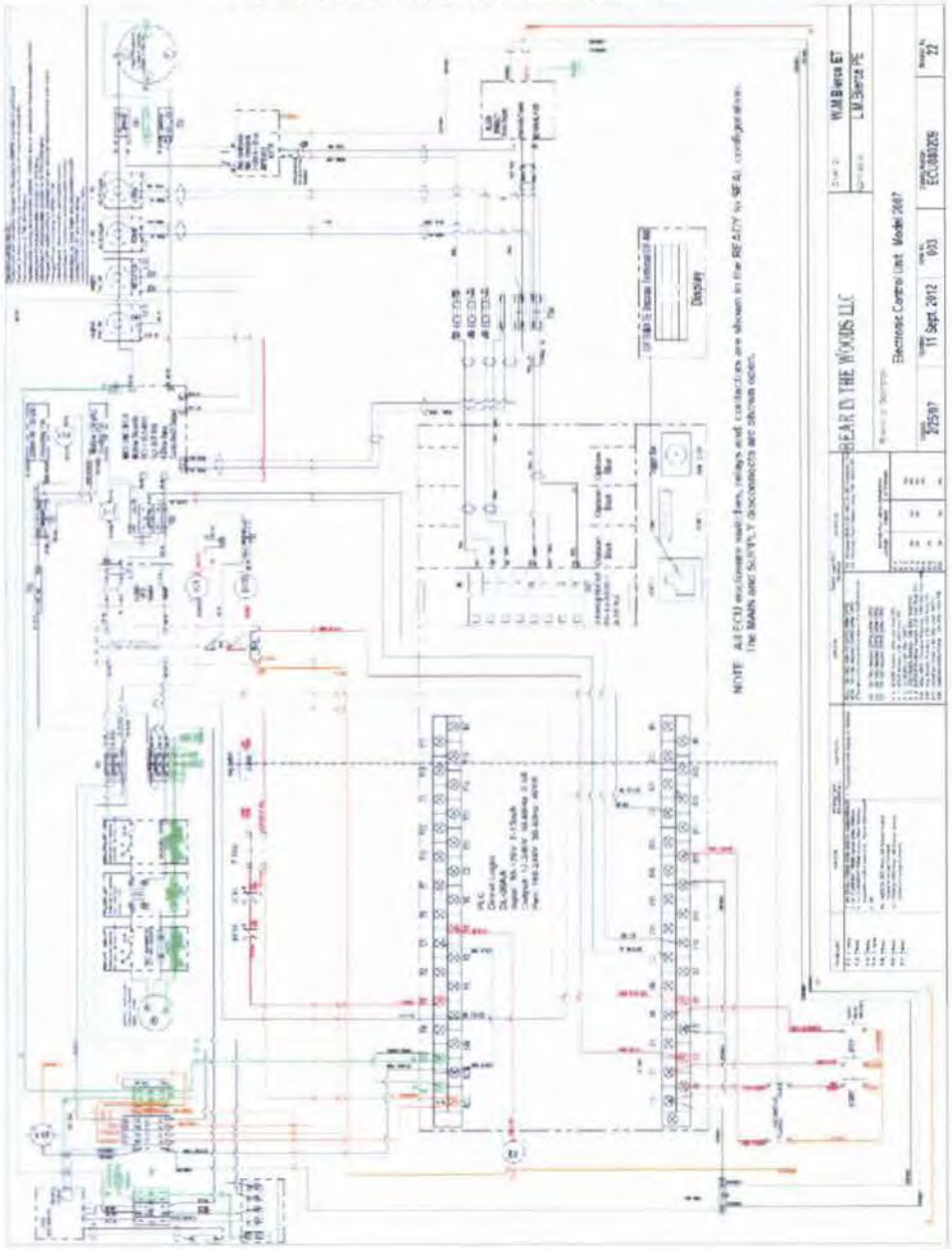
3) Connect the ECU to each lid individually and TEST for appropriate voltage as indicated for single lids in Appendix I.

4) For the Faulty lid: follow the appropriate response as listed in Appendix II. Or, if the lid is outside of the acceptable voltage range of Appendix I, stop processing that container and contact UltraTech QA

5) For the Good lid: Follow the appropriate response as listed in Appendix II. (This good lid, if the proper response is a full time seal, may again be sealed as one of a pair or may be sealed individually).

Attachment H, Macroencapsulation Manufacturer's Instructions (UET)
(continued)

APPENDIX IV: ***ELECTRICAL SCHEMATIC***



Attachment H, Macroencapsulation Manufacturer's Instructions (UET)
(continued)

Appendix V
Replacement Parts

Terminal Guards BITW-2034

Lid Terminals BITW-4005

Output Cord BITW-4023

Terminal Pigtails BITW-4004

Output Cable BITW-4024

Inter-Cable BITW-4025

Description		Part#
Big Red Plug	BITW-430P	RPH -ITG
Big Red Receptacle.	BITW-430R	RRH -ITG
Power Cord Plug.	BITW-L730P	PCPH-ITG
Welding Cable Connector - Male		WCCM-ITG
Welding Cable Connector – Female		WCCF-ITG
UPS Battery		UPSB-ITG

Attachment H, Macroencapsulation Manufacturer's Instructions (UET)
(continued)

Fuses used in the BITW-ECU should **NOT** normally be replaced by the end user without consultation with BITW. The fuses are carefully selected so they will not have nusiance failures. If a fuse "blows," the cabinet components need to be tested by a competent/trained technician before replacing the fuse.

MAIN	**JDL40**	MAIN POWER	CDF40 -ITG
SUPPLY	**JDL25**	SUPPLY	TDF25 -ITG
F1	**2 Amp AGC**	PLC	CCF200-ITG
F2	**¼ Amp AGC**	CTRL SWITCHING	CCF25 -ITG
F3	**¼ Amp AGC**	AVTR VXDCR	CCF25 -ITG
F4	**2 Amp AGC**	LT XFMR. OCR COIL	CCF200-ITG
F6	**½ Amp AGC**	CAB P.FAN.WFAN	CCF50 -ITG
F7	**¼ Amp AGC**	UPS LAMP	CCF25 -ITG

Attachment H, Macroencapsulation Manufacturer's Instructions (UET)
(continued)

APPENDIX 17
PHOTOGRAPHS

Side view of the Ultra-MacroPack Electronic Control Unit showing power switches and red receptacle (gray cap is closed): SN003.

Attachment H, Macroencapsulation Manufacturer's Instructions (UET)
(continued)

POWER SWITCHS
Ultra-MacroPack Electronic Control Unit SN003

Attachment H, Macroencapsulation Manufacturer's Instructions (UET)
(continued)

FRONT (OPERATION) PANEL
Ultra-MacroPack Electronic Control Unit SN003

ANY MNGRS From IA SO here?

PA-DOP-01462, Packing TRU Waste into Pipe Overpack Containers, R1

LA-UR-14-24973

Attachment A, Resumption Evidence and Approval Traveler

(Page 1 of 1)

TRACKING # ROE-29

Process	Procedure #	CSED/CSLA # *(if applicable)*
Packing TRU Waste into Pipe Overpack Containers	PA-DOP-01462	08-172, -173, -174, -175, -176

- ☑ PA-NOTICE-01007-FM2 – Attachment B, Technical Procedure Verification Checklist
- ☑ PA-NOTICE-01007-FM3 – Attachment C, Technical Procedure Validation Checklist
- ☑ PA-NOTICE-01007-FM4 – Attachment D, Criticality Evaluation Screening and Review Checklist
- ☑ PA-NOTICE-01007-FM5 – Attachment E, Seven Points Compliance Validation Memo
- ☑ Independent Verification evaluation complete
- NA for 10/10/13 **NOTE**: Independent verification, as defined by ADPSM, is required for all operations with *"Pu in metal"* Operational limits > 2300g, and for all 400 AREA aqueous solution operations.
- ☑ Additional Supporting Information Attached

INDEPENDENT VERIFIER SIGNATURE ***(if required)***

Name	Z Number	Signature	Date
Not applicable			

RESPONSIBLE OPERATIONS/ENGINEERING MANAGER(S) SIGNATURES

Name	Z Number	Signature	Date
Peter Carson	203878	KA Lacy for Pete Carson	10-10-13
Keith Lacy	149262	KA Lacy	10-10-13

DIVISION LEADER(S) SIGNATURES

Name	Z Number	Signature	Date
Stephen Schreiber	094595	S Schreiber	10/10/2013
Tom Nelson	108813	Tom Nelson	10/10/13

APPROVAL AUTHORITY SIGNATURES

☑ ***(ADPSM only approval required)***

ADPSM *(print name)* Jeffrey Yarbrough	Z Number 105580	Signature	Date 10/10/13
PADWP *(print name)* Bret Knapp	Z Number 142723	Signature	Date
DIR *(print name)* Charles McMillan	Z Number 125229	Signature	Date

NPI-7

Detailed Operating Procedure

Approval Cover Sheet

Document Number: PA-DOP-01462, R1

Effective Date: 10/15/2103

Next Review Date: 10/15/2016

Supersedes:

Title: Packing TRU Waste into Pipe Overpack Containers

Status:	Hazard:	For Document Control Use Only:
☐ New	☐ Low-hazard	
☒ Major revision	☒ Moderate-hazard	
☐ Minor revision	☐ High-hazard/complex	
	Use Type:	
	☒ Reference ☒ Use every Time (Attachments A, B, & D)	

	Organization	Date	Signature
Approved for Use By: Document Owner:			
Keith Lacy *Group Leader*	NPI-7	10/10/13	Signature on File
Authorized for Use By: FOD:			
Chuck Tesch *OM*	TA55-DO	10/10/13	Signature on File
Released: FOD:			
Chuck Tesch *OM*	TA55-DO	10/10/13	Signature on File

☒ Unclassified ☐ Restricted Data	**Derivative Classifier:**
☐ Confidential ☐ Formerly Restricted Data	**Name:** Chastity Kolar
☐ Secret ☐ National Security Information	**Title:** NM Specialist **Date:** 10/10/2013
☐ Unclassified Controlled Nuclear Information	
☐ Official Use Only	**Derived from: CG-LANL-COMP-1**

Revision History

Document Number	Effective Date	Action	Description
PA-DOP-01462, R1	10/15/13	Major Revision	• Revised Sections 2.1, B, E, Criticality Safety comments • Revised Section 3.2, Performance Documents • Revised Section 5.1 • Revised Section 5.8 • Updated Section 8.0, Definitions & Acronyms
PA-DOP-01462, R0	Not Made Effective	New	• New Document • Supersedes FFS-DOP-012

Table of Contents

1.0 INTRODUCTION 5
1.1 Purpose 5
1.2 Scope 5
1.3 Applicability 6
1.4 Technical Safety Requirements (TSRs) 6
2.0 PRECAUTIONS AND LIMITATIONS 7
2.1 General 7
3.0 PREREQUISITE ACTION 11
3.1 Planning and Coordination 11
3.2 Performance Documents 12
3.3 Special Tools, Equipment, Parts, and Supplies 12
3.4 Field Preparation 14
3.5 Approvals and Notifications 14
4.0 ACCEPTANCE CRITERIA 14
5.0 PERFORMANCE 15
5.1 Criteria for Packing POCs 15
5.2 Preliminary Inspection and Preparation of Waste Containers for Entry into Protected Area 17
5.3 Inspecting Waste Containers 18
5.4 Preparing a POC Container 18
5.5 Packing TRU Waste into a POC Container 20
5.6 Sealing a Filled Pipe Overpack Component 24
5.7 Installing Lid, Ring, and Ring Bolt for Final Container Closure 25
5.8 Re-Opening Waste Containers for Remediation 27
5.9 Acceptance/Transfer Checks of Off-Site Containers 29
5.10 In-Service Inspections of TRU Waste Containers 29
5.11 Completing Room 432 Logbook Entries for Waste Containers 31
5.12 Packing Classified TRU Waste 31
5.13 Controlling Classified TRU Waste Outside of a Protected Area 32
6.0 POST-PERFORMANCE ACTIVITIES 34
6.1 Testing 34
6.2 Restoration 34
6.3 Results 34
6.4 Verification/Independent Verification 34
6.5 Records Processing 34
7.0 CONTINGENCIES 34
8.0 DEFINITIONS AND ACRONYMS 35
9.0 RESPONSIBILITIES 38
9.1 NPI-7 Personnel 38
9.2 Quality Assurance Representative 38
9.3 Central Characterization Project (CCP) 38
9.4 Operations Center Personnel 38
9.5 Person-In-Charge (PIC) 38
9.6 Radiation Control Technician (RCT) 38
9.7 First Line Manager (FLM) 38
10.0 REFERENCES 39
11.0 RECORDS 40
12.0 APPENDICES AND ATTACHMENTS 40
Appendix 1, Transuranic Waste Matrix Mixing 41

Appendix 2, Pictures/Drawings 42
Appendix 3, WIPP Approval Filters 46
Appendix 4, Example of ISI Label 49
Attachment A, TSR 6.2.5, ISI 5., TRU Waste Shipping Container Inspection Form [UET] 50
Attachment B, Quality Assurance Inspection Form [UET] 53
Attachment C, Container Preparation Data Form 54
Attachment D, Classified TRU Waste Escort Logbook Form [UET] 55

1.0 INTRODUCTION

1.1 Purpose

This Detailed Operating Procedure (DOP) provides instructions for inspecting, packaging, and remediating Transuranic (TRU) waste packed in Pipe Overpack Containers (POC) filled with POC components with items and destined for the Waste Isolation Pilot Program (WIPP) and for TA-54. This includes the inspecting, labeling, and preparing of waste POCs for packing.

The procedure also includes packing and sealing of the POC. Process documentation is captured on the electronic Waste Compliance and Tracking System (WCATS). The procedure includes packing new POCs, as well as opening previously closed POCs to ensure compliance with WIPP and TA-54 requirements.

Waste Generator Instructions (WGIs) are supplemental instructions for the waste to be acceptable for TA-54. WGIs are controlled documents in the Waste Disposition Program (WDP) system and are shown in section 10.0, *References*.

Justification Memos are used to authorize the discard of items and are attached electronically to the waste items on the WCATS. Other memos are issued and acknowledged by TRU Waste personnel to further clarify waste operations and compliance issues until they can be entered in the procedure. Some memos are Discard Memos or Deviation from Safeguards Memos. When these memos are electronically attached in WCATS to an item that is over the safeguards-termination limit (STL), WCATS then allows personnel to proceed to pack the item. The Non-Waste section of the WCATS is available for use on a case by case basis. Consult the person-in-charge (PIC) for proper guidance.

1.2 Scope

This work is performed at TA-55, predominately in PF-4. TRU operations and qualified personnel may be used at other Los Alamos National Laboratory (LANL) sites as determined by NPI-7 group management. This includes inspecting, labeling, and preparing waste POCs for packing. If the work to be performed is outside the scope of this DOP, and the work is not covered by another approved LANL TRU operations procedure(s), then implement an Integrated Work Document (IWD) to perform that work.

1.3 Applicability

- The regulatory drivers for this procedure are based on criteria set forth in the WIPP and TA-54 acceptance criteria. Waste must be characterized through Acceptable Knowledge (AK) that is documented in NMT7-AP-020, *Documenting Acceptable Knowledge for Legacy Waste Items*
- The PIC/FLM directs UET Attachment use.

1.4 Technical Safety Requirements (TSRs)

TA55-TSR-2011, *TA-55 Technical Safety Requirements (TSRs)*, Section 3.7.2 Material-at Risk (i.e., MAR) shall be limited as follows:

3.7.2.4. In the basement of PF-4, excluding the vault, the RoboCal room, and the packaging/unpackaging rooms:

a. a limit of 30 kg of Pu-equivalent of waste

6.2.5 Containers for NUCLEAR MATERIAL Outside of Gloveboxes
The DF performance criteria, ISI actions, and ISI FREQUENCIES are presented as follows:

4. Packed TRU waste shipping containers:

- are DOT Type A containers (e.g., 55-gallon drums, standard waste boxes, and overpack containers) or equivalent
- have WIPP-approved filter-vents, or equivalent

TSR 6.2.5 ISI

5. An individual packaged TRU waste shipping container is to be visually inspected for presence of vents and signs of wear or degradation.

Frequency: Upon final container packaging

2.0 PRECAUTIONS AND LIMITATIONS

2.1 General

A. Pause/Stop Work

All workers are responsible for pausing or stopping work when they have a reasonable belief that quality, work risks or hazards are not effectively controlled and workers have the right to do so without fear of reprisal. LANL Policy P101-18 provides more information on the differences between pausing or stopping work and the process for resuming work in either case.

If this procedure cannot be completed as written or abnormal conditions are encountered, PAUSE WORK, place the work in a safe configuration if possible, and notify the Operations Center (OC) and First Line Manager (FLM).

B. Hazards and Controls

The following table documents Hazards and Controls that apply to this procedure.

Hazard	• Controls
Built-Up Gases	• Inspect bags and waste containers and ensure filtering device is installed. • Either install a filtering device or remove the ¾-inch plug prior to bringing waste containers into PF-4
High Noise Levels	• Wear hearing protection in posted areas. • Limit time spent and maximize distance from operating equipment. • Enrollment in Hearing Conservation Program.
Nuclear Criticality Accident	• See CSLA for each location for specific criticality safety controls
Pinch Points	• Use HexArmor overglove or equivalent such as North leather overglove, both available from TA-55 warehouse, as needed when handling potential pinch point items.

2.1 General, (continued)

Hazard	• Controls
Pushing, Pulling, and Lifting Waste Items and Containers	• Use proper lifting techniques and equipment • Lift it right: Get close to the article and center your body over your feet; bend at the knees, keeping your spine straight and grasp the object • Use your stronger thigh muscles to push yourself up. As you start the lift, raise your eyes and look ahead. This will help keep your spine in the correct alignment • Use two people for heavy lifts or large bulky items • Avoid awkward and forceful positions during lifts • Back care training is recommended • Wear safety Shoes when removing/replacing container lids on large heavy containers such as metal drums, ST-90s, metal casks, etc. • Use proper lifting techniques, slings, or lifting straps • Use forklift or crane • Use dolly as appropriate
Radiological Contamination/Ionizing Radiation	• Follow TA55-RD-555, *TA-55 Radiation Protection Requirements*. • Practice ALARA by minimizing time, maximizing distance, and using temporary shielding as necessary. • RWP required - If dose rates are ≥75 mrem/hr at 30 cm and/or ≥700 mrem/hr on contact. - Packing waste in drums, POC drums, SWB, or waste containers • Notify the radiological control technician (RCT) to perform dose rate survey when transferring radioactive material from one location to another that may change radiological conditions.
Trips, falls, crushing	• Wear appropriate foot wear • Clean all spills immediately • Use postings to warn workers of hazard • Remove clutter/obstructions and make sure you have good lighting • Close file or storage drawers and pick up after yourself • Mark or post areas that you identify that may cause a slip or fall and contact an IH/Safety rep. to evaluate immediately

2.1 General, (continued)

C. Basis for Use and Categorization/ Sequence of Steps

This procedure is designated as a reference procedure with Attachments A, B, C, and D designated as Use Every Time (UET), as determined by the FLM, because of the following:

- It relies on the training and expertise of the performers for successful performance.
- The consequences for error are not high.
- The procedure is routinely performed.
- The data collection and sign-offs are performed using the Waste Compliance and Tracking System (WCATS) computer database and computer-based logic, which diminishes the likelihood of data collection errors.
- The major Sections and Steps in the Performance section are performed in sequence unless otherwise stated.

D. Criticality Safety Limit Approval (CSLA) Requirements

CRITICALITY SAFETY REQUIREMENTS MC&A LOCATION: X415	
Operational Process Requirements	
Pu in waste	≤ 520 FGE*
CRITICALITY SAFETY REQUIREMENTS MC&A LOCATION: F432	
Operational Process Requirements	
Pu in Waste	≤ 200 FGE* per 55-gallon drum[1]
AND	
Pu in Waste	≤ 100 FGE* per 30-gallon drum[1]
AND	
Pu in Waste	≤ 200 FGE* per Denoted Area[2]

[1] 30-, and 55-gallon drums define their own location and must not be stacked.
[2] Denoted Area is defined as a marked off area that is 2-foot by 2-foot or larger in size.

2.1 General, (continued)

CRITICALITY SAFETY REQUIREMENTS MC&A LOCATION: B40, B45, BLLM		
Operational Process Requirements		
The following can be stored in any combination within an infinite by infinite by three unit high array. **Pu in waste** ≤ 200 FGE* per 55-gallon drum ≤ 100 FGE* per 30-gallon drum **Pu in oversized waste items** ≤ 100 FGE* per Flatbed Cart or Wagon ≤ 350 FGE* per Pallet, SWB, or larger by volume container	**OR**	The following can be stored in a five by five by three unit high array, with a 10-foot separation from other fissile materials. **Pu in waste** ≤ 300 FGE* per 55-gallon drum
Restrictions/Notes • All quantities of ^{233}U, ^{235}U, ^{237}Np, Am , and Cm shall be counted as a gram-for-gram equivalent to ^{239}Pu in complying with the limits • Am must be ≤ 10 wt.% of ^{242}Am and Cm must be ≤ 5 wt.% of ^{245}Cm • 30-, 55-gallon drums, SWB, and larger by volume containers, define their own location • Flatbed Carts and Wagons define their own location • The FGE limit for drums on a pallet is based on the FGE limit for drums and not the pallet FGE limit • Flatbed Carts or Wagons are not stackable • Isotopes of Th, Pa, and ^{238}Pu, and Cf do not count toward the criticality safety administrative requirements • Natural and depleted uranium do not count toward the criticality safety administrative requirements		
*FGE = Fissile Gram Equivalent		

E. Required Permits

Radiation Work Permits (RWPs) are required when dose rates ≥ 75 mrem/hr at 30 cm or ≥ 700 mrem/hr on contact.

F. Training and/or Qualification

- This procedure can be performed by a qualified PF-4 TRU Waste Operator (WQAS #2312).
- Conditional authorization is allowed and must be documented in WQAS.
- TSR surveillances can be performed by a qualified TSR Surveillance Performer (curriculum #10067).
- Workers in training must be under the supervision of a qualified mentor.

2.1 General, (continued)

G. Cautions

*Not Applicabl*e

H. Material Control and Accountability

Prior to movement of material, refer to TA55-DOP-016, *TA55 Material Transfer Procedure,* to ensure that the MAR is in accordance with TA55-TSR-2011, *TA-55 Technical Safety Requirements* (TSR 3.7.2.4.a, in the basement of PF-4, excluding the vault, the RoboCal room, and the packing/unpacking rooms a limit of 30 kg of Pu-equivalent of waste).

I. Additional Requirements and Conditions (WR Use)

Not Applicable

3.0 PREREQUISITE ACTION

The sections and the steps in the Prerequisite Action section are not required to be performed in sequence, unless otherwise directed by the PIC/FLM.

3.1 Planning and Coordination

[1] Ensure that a pre-job brief has been conducted in accordance with PA-AP-01020, *Pre-Job Briefing and Post Job Review*.

[2] Schedule the work with the Facility Operations Director organization.

[3] The PIC/Worker is responsible for ensuring (e.g., referencing Documentum) that work is performed to the most current procedure and complies with document control processes concerning copying, marking, and final disposition.

[4] Verify that tools, equipment, and material numbers in the work area match those specified by the PIC.

[5] Only store TRU Waste in areas with approved CSLAs.

[6] Ensure compliance with all appropriate steps according to TA55-DOP-016, *TA-55 Material Transfer Procedure.*

[7] The PIC/Worker is responsible for ensuring that the planned process evolution can be executed in compliance with relevant criticality safety limits and requirements prior to releasing the work.

3.2 Performance Documents

- Radiological Work Permits, when required
- Applicable Manufacturers' Operating Manuals
- TA55-DOP-016, *TA-55 Material Transfer Procedure*
- NMT7-AP-020, *Documenting Acceptable Knowledge for Legacy Waste items*
- EP-WGI-0206, *Waste Generator Instructions (WGI) for the Disposition of MT-83 Waste*
- FFS-DOP-004, *Visual Inspection of TRU Waste*
- CCP-TP-113, *Standard Contact-Handled Visual Examination by personnel Holding a DOE "Q" Security Clearance*

3.3 Special Tools, Equipment, Parts, and Supplies

<u>Personal Protective Equipment</u>

- Booties
- Coveralls
- Cut resistant gloves (i.e. nitrile, Kevlar etc.)
- Ear protection
- Hard hats
- Heavy-duty Gloves (Hex Armor or equivalent)
- Latex Gloves
- Leather Gloves (North or equivalent)
- Respirator
- Safety Glasses
- Safety Shoes
- Tyvek hoods and coveralls
- Paper hoods and coveralls
- Tyvek or paper sleeves

NOTE Not all tools/equipment/supplies listed are used for each task. Follow direction of the PIC, ensuring current stickers for required inspections/calibrations.

3.3 Special Tools, Equipment, Parts and Supplies, (continued)

Equipment and Supplies

- 4-wheel flat-bed , assorted carts
- Pipe Overpack Container assembly in a 55-gallon DOT 7A container
- Bar Code labels
- Blue NON-RCRA REGULATED labels
- Bung lids and crimper tool
- C-722 Wrench Type Header tool
- Calibrated scales
- Bolt Cutter
- Calibrated torque wrenches
- Fantastik®, 409®, or equivalent
- Forklift
- Guide pins (if applicable)
- Hand tools (knife, socket, low torque driver, hammer, screw driver, open-end crescent wrenches, measuring device, assorted other tools).
- Handheld WCATS Data Entry Device
- Ladder
- LocTite® or equivalent
- Non-locking, liquid, anaerobic, thread sealant
- WIPP approved carbon filters (or equivalent)
- Pallet jack
- Permanent marker
- Push-type container handler, container roller, or mechanized container handler, box roller, rolo-lift, lift table
- Mallet
- Tamper indicating devices (TID)
- Vinyl tape
- Wagon, cart, flat beds, dollies, hand dollies, container rollers
- White cotton gloves
- WM Padlocks
- Yellow HAZARDOUS WASTE labels
- Yellow RADIOACTIVE WASTE labels

Table 1 Equipment Description and Location

Equipment Number (N/A if no number)	**Equipment Name**	**Manufacturer/ Model**	**Description**	**Location**
N/A	Scale 432	N/A	Platform, other	Rm 432
N/A	Scale Basement	N/A	Platform, other	Basement

3.3 Special Tools, Equipment, Parts and Supplies, (continued)

Table 2 Tools and Fixtures

Tool Number	Title/Description
N/A	Assorted Length Straps
N/A	Forklift Attachment
N/A	D-Rings

Table 3 Measuring and Test Equipment

Description	Range	Accuracy	Calibration Category
Test weight	N/A	N/A	Annual
0-100 Foot pound Torque Wrench	20-100%	±3%	Annual
0-200 Inch pound Torque Wrench	20-100%	±3%	Annual

Table 4 Software

Software Number	Title/Description
N/A	Waste Compliance and Tracking System

3.4 Field Preparation

Field preparations include sorting and segregating of waste items, verifying open front hood vacuum, contacting RCT support, and verifying red light is lit prior hot job.

3.5 Approvals and Notifications

Not Applicable

4.0 ACCEPTANCE CRITERIA

TSR 6.2.5 ISI 5: An individual packaged TRU waste shipping container is to be visually inspected for presence of vents and signs of wear or degradation, upon final container packing. Acceptance criteria are specified in Attachment A..

5.0 PERFORMANCE

NOTE 1 Subsections within this Performance section may be performed independently, concurrently, and/or repeated as many times as necessary, as the PIC/FLM directs.

NOTE 2 Prior to movement of material, use TA55-DOP-016, *TA55 Material Transfer Procedure,* to ensure that the MAR is in accordance with TA55-TSR-2011, *TA-55 Technical Safety Requirements* (TSR 3.7.2.4.a, in the basement of PF-4, excluding the vault, the RoboCal room, and the packaging/un-packaging rooms a limit of 30 kg of Pu-equivalent of waste).

5.1 Criteria for Packing POCs

NOTE 1 This DOP makes use of Pipe Overpack Components (POCs) manufactured by WIPP. The recommended torque specifications for these WCs may vary from purchase order to purchase order. An example of the torque specifications for a 55-gallon container are a minimum of 60 ft-lbs for the ring bolt, 30 ft-lbs for the bung, and 10 ft-lbs for the filter. However, follow the manufacturer's current torque specifications which coincide with the appropriate purchase order number.

NOTE 2 The POC containers must be in compliance with TA55-TSR-2011, TSR 6.2.5 *Containers for NUCLEAR MATERIAL Outside of Gloveboxes* (reference Section 1.4).

NOTE 3 The calibration date of all applicable tools and scales must be verified before using them.

[1] IF the calibration of any tool or scale is not current,
THEN perform the following:

[a] Place a "hold" tag on the item

[b] Remove it from PF-4

[c] Submit it for recalibration

5.1 Criteria for Packing POCs, (continued)

NOTE 1 Place any item with dose rate measurement of ≥ 200 mrem/hr on contact into an approved transport container with its tin alloy shielding on the sides and bottom.

NOTE 2 A "Deviation from Termination of Safeguards" memo states the legacy items from vault work-off do not have to meet the STLs that newly generated items must meet.

NOTE 3 The memo will be attached electronically to each individual vault item requiring it on the WCATS.

[2] Attach memo "Deviation for Termination of Safeguards," if applicable.

NOTE The 10% rule must be met before the waste leaves the Generator's custody.

[3] Ensure nuclear material does not exceed, by weight, 10% of the net weight of the item's content.

[4] Make certain any container containing items which do not meet the STL and are covered by the memo "Deviation for Termination of Safeguards," are loaded to a maximum of 150 g plutonium-239 Fissile Gram Equivalent (FGE) (uncertainty not included).

[5] Ensure POC and contents are clearly identifiable by real-time radiography (RTR) or visual examination as either debris or homogeneous waste.

NOTE It is permissible to add minor volumes of homogeneous waste items (e.g., absorbed organic liquids, spent resins, salts, or ash) with predominantly debris (e.g., combustibles, metals, graphite, glass, and filters) (i.e., heterogeneous) container. Therefore, small volumes of homogeneous waste can be discarded in a container which contains significantly more volume of heterogeneous waste items, provided the Nondestructive Assay (NDA) Lab measurements for waste items are similar and would not have any issue with confirmation of the container. Reference Appendix 1 for the different waste matrices.

[a] Contact PIC for special approvals if you need to add minor volumes of homogeneous waste.

[6] Ensure items ≥170 mrem/h on contact have an assay for 241 Americium (Am).

[a] Confirm these assay results are entered in the WCATS by the NDA lab.

5.2 Preliminary Inspection and Preparation of Waste Containers for Entry into Protected Area

NOTE 1 When the container supply is low, order DOT-certified Type 7A WCs (POCs) through the group procurement representative.

NOTE 2 Department of Transportation (DOT) certified Type 7A POCs are used to package some types of TRU waste. The following is a general inspection to ensure the containers are acceptable for use before bringing them into PF-4 or other locations where container packing occurs. This inspection is not documented.

[1] Perform a preliminary inspection of the POCs outside of PF-4 for any obvious damage (e.g., dents, bulges, deep scratches, shape distortion, and rust) to determine which POC can be used for waste disposal.

[2] IF POC fails inspection,
THEN mark rejected POC with a black, 4-inch "X" using a permanent marker.

[3] Remove container ring, lid, and any items that need removal to access undamaged pipe.

[4] Ensure pipe and lid serial numbers match and all components are in good working condition.

[5] Install WIPP approved filter, add filter on pipe lid.

- **[a]** Apply LocTite®
- **[b]** Install the filter
- **[c]** Using a certified torque wrench, torque to manufacturer's specification

[6] Record carbon filter year of manufacture and serial number on outside of container.

[7] Replace any removed-inner components and pipe lid.

[8] Place containers ring and lid on container.

[9] Tighten bolt enough to apply TID.

[10] Install TID on container.

[11] Document data collected above in Logbook.

[12] Acquire two HRP signatures in Logbook.

[13] IF container prepared outside of PA,
THEN maintain custody with HRP personnel.

[14] Before entry into PF-4, contact security personnel to verify TID integrity and logbook entries.

5.3 Inspecting Waste Containers

NOTE The following inspection ensures that all POCs are acceptable for use. This inspection is documented in WCATS. All POCs must be inspected and labeled according to the following steps.

[1] Inspect the POCs for damage.

[2] IF damaged,
THEN mark any damaged POCs with a black permanent marker, at a minimum 4-inch "X" using a permanent marker.

[3] Notify NPI-7 low-level radioactive waste (Low Level Waste [LLW]) personnel to dispose of the POC.

[4] Confirm that the outer container is a UN1A2 container and has label outside or stamped into bottom.

5.4 Preparing a POC Container

NOTE This section may be performed concurrently on multiple containers as directed by the PIC.

[1] Clean the POC

[a] Always clean the surfaces with an appropriate cleaner (such as Fantastik® or equivalent) to ensure they are free from dust and oil.

NOTE POCs stored in PF-4 and PF-185 assume room temperature allowing the adhesive to adhere properly. After the adhesive has set, the labels can tolerate winter and summer outdoor temperatures and reasonable wetting. Container seams must not be covered with markings or labels of any type. Do not overlap one label on top of another label or stenciling.

[2] Obtain a sheet of barcode labels for each POC assembly that passes the inspection and label (i.e., barcode labels on a single sheet have the same number) as follows:

[a] Place three (3) large barcode labels evenly spaced around the circumference, no more than six (6) inches above the bottom of the container, with the first label to the left of the container seam.

[b] Place one large barcode label on the center of container lid facing carbon filter.

[c] Place the last large barcode label to the right of the container seam between the top and first rolling hoop (Appendix 1).

[3] Make certain that a label with the purchase order (P.O.) number is on the container.

5.4 Preparing a POC Container, (continued)

[4] IF label with P.O. number is missing,
THEN contact QA.

[5] Record P.O. number on Attachment C, Container Preparation Data.

[6] Apply a label to the lid of the container that contains the torque specifications for the following (i.e., Appendix 4 shows an example for this label):

- Container closure ring
- 2-inch bung
- Container filter

[7] When needed, install a WIPP approved or equivalent filter on the container lid and on the lid of pipe component.

[a] Make certain that the proper gasket is in place on the filter.

[8] Use LocTite® 262 (or equivalent) all around the filter threads.

[9] Hand install the filter into the ¾ inch thread flange opening until the gasket is seated onto the flange opening

NOTE Always reset torque wrench to zero setting after use.

[10] Torque WIPP approved filter (or equivalent) to manufacturer's current specifications. (e.g., 10 ft/lbs ±5 ft/lbs).

[11] IF carbon filter on pipe lid is not already installed,
THEN perform Steps [3] through [10] in Section 5.2.

NOTE The ring bolt will not be torqued at this time to the manufacturer's current torque specifications. Only during the sealing of the container will the torque procedure be accomplished.

[12] Now, tare weigh the fully assembled POC using a calibrated scale.

[a] Record the assembled container tare weight (pounds) on the lid of the container using a permanent marker.

[13] Enter data into Attachment C until entered into WCATS at a later time.

[14] A padlock or TID may be placed on ringbolt to prevent any unauthorized use of container.

NOTE Empty containers may be stored in waste storage area (e.g., TSD area, < 90 day storage area) if they are labeled as "EMPTY"

[15] Label empty container "EMPTY" until loaded.

5.5 Packing TRU Waste into a POC Container

NOTE 1 POC can be loaded with a maximum of 200 FGE of plutonium-239 including two (2) times the uncertainty. For plutonium-238 loading limits, see EP-WGI-0206, *Waste Generator Instructions (WGI) for the Disposition of MT-83 Waste*, and consult with your PIC for further guidance.

NOTE 2 POC containers are used for packing TRU waste with an at-contact dose rate of ≥200 mrem/hr. TRU waste item containers shall have no Pb shielding on the sides of the container. The maximum surface dose rate of the waste item is determined by verifying that after it is packed into a POC, the surface dose of the POC is less than 200 mrem/hr.

[1] Follow RWP requirements.

NOTE When there is an one-item ID assay, then this assay serves as a confirmation of a previous assay, as long as the TID remains intact.

[2] IF more than one item ID and TID is intact,
THEN another assay for confirmation is required.

[3] IF TID is removed,
THEN SAFE-4 must be present for confirmation to be valid.

[4] Receive waste items from generator.

[a] Conduct LANMAS transactions.

[5] Record the TID information on the TID log sheet located in work area, if TID to be removed.

[6] Determine if waste item has shielding.

[a] IF it has shielding and dose rate ≥200 mrem/hr at contact,
THEN record on Attachment C the dose rate of the item at contact readings so can enter into WCATS.

[7] Check with your PIC for further guidance, if necessary.

[8] Determine the waste-item disposition as follows:

[a] By sorting transfer containers containing waste items by matrix code, measurement code, and material type (MT)

[b] By using the WCATS to determine how POC containers will be packed

5.5 Packing TRU Waste into a POC Container, (continued)

NOTE Electronically presorting waste items is simulated in this method to minimize physical handling of the waste, thus reducing radiation exposure, in accordance with the "as low as reasonably achievable" (ALARA) techniques.

[9] Select a POC container for packing.

[a] Partially filled containers may be used if the following occur:

- The waste in the container is compatible with the waste to be packed.
- There is sufficient room in the container for the new waste.

[b] A container is full if the following occur:

- It is physically full.
- The container contains ≤200 FGE of fissile material, including 2 x uncertainty.
- The container has a gross weight of ≤ 547 lbs. This is the tare of the container plus the contents.

[10] IF container is full,
THEN perform Section 5.6, Sealing a Filled Pipe Overpack Component.

[11] Prepare to pack.

[a] Ensure an RCT is present and turn on the red light in accordance to the RWP.

NOTE Utilize open-front hood when appropriate to control possible contamination.

[12] Make sure that the ventilation system for the open hood is turned on, if applicable.

[13] Remove any TID or other approved devices to prevent any unauthorized access, if required.

WARNING	
Hazard:	**When waste items are moved or compressed in a waste container contamination may exist.**
Control:	**Respirator is worn until the work is finished and the RCT (or other personnel certified for monitoring) has determined that no contamination exists**.

[14] Don proper PPE, per Task/RWP/RCT.

[a] Wear full-face respirators when opening a loaded container.

[15] Remove the bagged-out waste from the transfer container, if the transfer container is not intended to be disposed as part of the waste.

5.5 Packing TRU Waste into a POC Container, (continued)

[16] Ensure the RCT surveys each item as it is removed to ensure there is no external contamination.

[17] IF contamination is detected,
THEN follow RCT instructions.

[18] Confirm that the waste item contains only those contents originally characterized during the initial inspection as documented on WCATS.

[19] Place the waste item into the container as follows:

[a] Weigh each item on a calibrated scale.

[20] Write the weight of the item and note if bag is filtered, on the LANMAS printout.

[21] Transfer the tape that indicates the Item ID from the outside of the transfer container to the outside of the bagout bag.

[22] IF there is more than one bagout bag in the transfer container,
THEN make additional tape labels.

[23] Confirm the following:

[a] The measured weight of the item corresponds to the estimated weight listed on WCATS.

[b] The Waste Item ID on the item corresponds to the Waste Item ID on WCATS.

[24] IF these cannot be confirmed,
THEN consult with the PIC to determine the necessary action.

[25] Ensure that each item received is in no more than one filtered bagout bag.

[26] IF any item has more than one layer of confinement,
THEN document this condition on WCATS.

[27] Open the POC container as near the open-front hood as possible.

[28] Carefully place the bags or SNMCs into the POC container.

[29] Record the Waste Item ID that is going into the Container on WCATS.

[30] Record the packing configuration on WCATS.

5.5 Packing TRU Waste into a POC Container, (continued)

[31] Perform the following if the POC container is not full:

[a] Place the pipe component lid and lid O-ring on the inner pipe component body.

[b] Align the holes on the lid and pipe component body.

[c] Hand-start the lid bolts.

WARNING	
Hazard:	**Operating low torque driver/cordless drill.**
Control:	**Wear leather or heavy-duty gloves when using the low torque driver or bolts.**

[d] Use low torque wrench to snug the lid bolts.

[e] Replace the fiberboard packing, being careful to match the pipe bolt heads, hoist ring, and filter with cutouts in fiberboard.

[f] Replace the spacer(s), liner lid, and container lid, if applicable.

[g] Apply lock or TID, if a container is not full.

[32] Confirm and/or complete the Hazardous or Nonhazardous Waste label.

[33] Record all appropriate transactions in the accountability system.

NOTE A POC component is full when it reaches nuclear material limit of 200 g plutonium-239 fissile gram equivalent (FGE) including two (2) times the uncertainty its weight limit (547 lbs), or is physically full.

[34] Perform the following once a container is full:

[a] Record all appropriate transactions in the accountability system.

[35] Complete all applicable WCATS transactions.

[36] Adhere either a nonregulated label on the container or a yellow Hazardous Waste label on the container (reference Appendix 2).

[37] Confirm and/or complete the Hazardous Waste label.

5.6 Sealing a Filled Pipe Overpack Component

NOTE The following procedural steps do not need to be followed in sequential order; unless otherwise specified.

[1] Ensure that the pipe component assembly contains no more than 200 g plutonium-239 FGE including two (2) times the uncertainty and the external radiation dose rates on the outside surface of the assembly container are less than 200 mrem.

NOTE Two people may be needed for this operation. After the lid is in contact with the O-ring and flange face, minimize any lateral movement of the lid across the mating flange face to avoid unseating the O-ring from the groove.

[2] Remove lid and inspect O-ring, O-ring groove, and pipe component lid for the presence of visible debris.

[3] Make certain that the O-ring is properly seated in the flange O-ring groove.

[4] Confirm that the serial numbers on the pipe component lid and the pipe component are the same.

[5] Lift the pipe lid

[a] Carefully align the pipe component lid over the pipe component so that the holes match.

[6] Hand-start all lid bolts and use a low speed or low torque driver to snug bolts.

NOTE Final torqueing of the lid bolts is accomplished using a calibrated, manual torque wrench. Bolt Tightening Pattern Templates are used to assist the packager in identifying the pipe component torqueing sequence. The templates are, circular devices marked with numbers around the circumference to correspond with the bolts of the pipe component and the numerical sequence in which the bolts are to be tightened.

[7] Place a Bolt Tightening Pattern Template onto the pipe component lid using filter and hoist-ring cut-outs to position the template as intended, in accordance with the numbered cross-pattern sequence specified in Appendix 2.

[8] Torque all bolts according to the POC manual, using the numbered cross-pattern sequence specified on the outer rings of the Bolt Tightening Pattern Template and shown in the diagram in Appendix 2.

[9] Ensure all bolts torqued according to the POC manual,, starting with Bolt 1, as specified on the Bolt Tightening Pattern Template and the diagram in Appendix 2.

[10] Proceed clockwise until all bolts are re-torqued, always resetting torque wrench to zero setting after use.

5.6 Sealing a Filled Pipe Overpack Component, (continued)

[11] Replace inner components.

[12] Ensure that the rigid liner lid has a minimum 0.3 inch diameter puncture hole.

[13] Ensure that the container lid rubber seal is free of tears or cracks and that a filter is installed from the exterior of the container lid.

[14] Install the container lid aligning the ring bolt, carbon filter, and seam on the container.

5.7 Installing Lid, Ring, and Ring Bolt for Final Container Closure

NOTE The gasket should not expand beyond the lid or the container chime. Steps [1] and [2] below may be performed in parallel or independently.

[1] Place the lid on the container.

[2] Place the ring with ring bolt onto the container.

[a] Make certain that the ring bolt is placed so that the lugs are positioned below the top surface of the container.

[3] Tap on the ring with a mallet to ensure it is centered on the container chime.

[4] Check to see that the lid and the container are pinched together and within the recess of the ring.

[5] Thread the bolt into the lugs with the jam nut between the lugs.

[6] Tighten to the manufacturer's torque specifications (e.g. 60 ft-lbs [±5 ft-lbs])

NOTE A certified torque wrench is to be used, in its calibration range, which has been entered into WCATS calibrations system. Always reset torque wrench to zero after use.

[7] Continue hammering on the ring circumference and torqueing the bolt until the torque is stabilized at torque specifications.

[8] Record the torque wrench file number and the torque date on the container lid.

[9] Always reset torque wrench to zero setting after use.

NOTE The ring ends must not touch when the ring has been torqued.

[10] <u>IF</u> the ring ends touch during the torque procedure,
<u>THEN</u> contact the PIC and Quality Assurance (QA) representative for guidance.

5.7 Installing Lid, Ring, and Ring Bolt for Final Container Closure, (continued)

NOTE The jam nut must be used on bolts having threads up to the head, and must be placed on the bolt between the container ring lugs.

[11] Tighten the jam nut against the unthreaded lug.

[12] IF both ends touch the nut,
THEN mark the ring with "Reject. Do not use," discard the ring, and replace with a new ring and notify PIC and QA.

NOTE The container ring must come from the same manufacturer as the container.

[13] Using only a calibrated scale, weigh the POC assembly container in pounds.

[a] Confirm the scale is listed in WCATS.

[14] Write the gross weight underneath the tare weight on the top of the container using a permanent marker.

[15] Confirm that the gross weight corresponds within 2 lbs to the sum of the item weights plus the POC assembly container tare weight.

[16] IF the weights do not correspond within 2 lbs,
THEN contact the PIC to resolve the discrepancy.

NOTE 1 Opening POC to retrieve waste items to reweigh requires an RWP.

NOTE 2 TID can be MultiLok, quick seal, or Mylar.

[17] Place a TID on the container.

[18] Request contamination and radiation survey from RCT.

$ **[19]** Perform TSR 6.2.5, ISI, 5. using Attachment A.

NOTE If waste is going to be moved to the PF-4 basement, verify that MAR limit for waste in the basement is no exceeded; when a determination of movement is accomplished, do so according to MAR limits in TA55-DOP-016.

[20] Move waste item or waste container following TA55-DOP-016, *TA55 Material Transfer Procedure*.

[21] Deliver the closed and tagged POC container to nondestructive assay (NDA) lab personnel for a safeguards confirmatory measurement, if required.

5.7 Installing Lid, Ring, and Ring Bolt for Final Container Closure, (continued)

NOTE NDA personnel complete the appropriate LANMAS transactions and WCATS fields and send the POC container back to NPI-7 TRU waste operations personnel for further disposition.

[22] Perform "Accountability Check" to make sure all accountability system entries are correct, and match corresponding entries on WCATS.

- Nuclear Material
- Net weight
- Packed weight
- Start accumulation date, if applicable
- Measurement code

NOTE Nuclear material on the accountability system will be rounded to the nearest whole number from the true measured value shown on WCATS.

[23] Verify the following entries only on the accountability system:

[a] Project "399"

[b] IDES (Item description) "W"

[c] Seal (TID)

[d] Record applicable data on WCATS.

[24] Ensure the NPI-7 technician FLM or designee records approval on WCATS.

[25] Record all applicable data, on WCATS/LANMAS, if appropriate.

[26] Move waste container following TA55-DOP-016, *TA55 Material Transfer Procedure*, AND verify on the accountability system, before moving the container to basement, that they do not exceed 30 kg of Pu equivalent of waste in basement.

5.8 Re-Opening Waste Containers for Remediation

NOTE 1 POC can be loaded with a maximum of 200 g plutonium-239 FGE of plutonium-239 including two (2) times the uncertainty. For plutonium-238 loading limits, (see EP-WGI-0206, *Waste Generator Instructions (WG) for the Disposition of MT-83 Waste)*, Pu^{238} Waste Generator Instructions, and consult with your FLM/PIC for further guidance.

5.8 Re-Opening Waste Containers for Remediation, (continued)

NOTE 2 In certain cases, it may be necessary to re-open a closed waste container to resolve issues such as the following:

- Nuclear material limits are exceeded or nuclear material differences, measurement codes do not match WCATS and the accountability system,
- weights do not match on WCATS and the accountability system, to remove an item, to add an item,
- container does not meet certification,
- surface dose rates on outside of container are exceeded,
- or if items are in question, etc.

NOTE 3 Consult with your PIC if issue(s) cannot be readily resolved or if an NCR (Non Conformance Report) and HOLD tag needs to be applied in accordance with P330-6, *Nonconformance Reporting;* an RWP is required for re-opening POCs.

NOTE 4 An RCT must be present if the waste items are removed from, added to, or viewed in the waste container.

[1] Don the proper protective equipment for the job per RWP requirements.

[2] Loosen the bolt securing the lid of the 55-gallon container.

[3] Remove the drum lid, spacer, and drum liner lids, when appropriate.

[4] Loosen and remove the bolt(s) securing the lid of the POC.

[5] Remove the lid allowing RCT to perform contamination survey of the lid. If contamination is detected follow RCT instructions.

[6] Stage items in staging containers or on scale until the item(s) in question are found.

[7] Resolve issue(s) with item(s) in question.

[8] Return the staged items to the proper waste container.

[9] Follow proper procedural steps for sealing the waste container, Section 5.6.

[10] <u>IF</u> the item is going back to the generator,
<u>THEN</u> place in a proper transfer container; perform appropriate transfer procedures.

5.9 Acceptance/Transfer Checks of Off-Site Containers

NOTE 1 All information that accompanies the container must reconcile to the On-Site information to remove any discrepancy prior to the receiving of a container into the storage area and LANMAS account.

NOTE 2 These procedural steps do not need to be followed in sequential order, unless otherwise specified.

[1] Communicate with the Point of Contact (POC) the reason for transfer of any container.

[2] Ensure the POC remains present until the determination of acceptance and transfer is complete

NOTE The Point of Contact and shipping personnel may possibly have information that will determine the result of acceptance.

[3] NPI-7 personnel investigate any changes to the container, these changes may consist of but are not limited to:

- Unknown labeling
- Hold Tags
- Container's integrity
- Presence of Prohibited Items
- Label discrepancies

5.10 In-Service Inspections of TRU Waste Containers

NOTE Packed TRU waste shipping containers are inspected in accordance with In-Service-Inspection #5 of TA-55-TSR-2011, upon final container packaging. This is to ensure WCs have vents, are DOT 7A Type A containers, and do not have damage that would invalidate the performance criteria; the filter-vents allow the release of hydrogen and other gases out of the containers.

$ **[1]** Inspect the POC when it is being closed or prior to storage in the basement and record the results of this inspection on Attachments A and B.

5.10 In-Service Inspections of TRU Waste Containers, (continued)

$ **[2]** Visually inspect POC to ensure POC is filtered with the appropriate number of WIPP-approved filters in accordance to In-Service-Inspection #5 of TA55-TSR-2011.

[a] IF the filter is Model NucFil 019DS,
THEN the filter is a WIPP-Approved filter.

OR

[b] IF the filter is other than Model NucFil 019DS,
THEN look up the model number on the list of WIPP-approved filters in Appendix 3.

[3] Visually inspect the filter to ensure the appropriate gasket is installed.

$ **[4]** Visually inspect POC to ensure POC is a DOT 7A Type A container in accordance to DF 6.2.5, In-Service-Inspection #5 of TA-55-TSR-2011.

[5] Inspect POC and verify that it is stamped or labeled as an UN 1A2 container.

[6] Review POC certification and QA inspection documentation to ensure that the POC was tested to DOT 7A Type A criteria.

[7] Ensure that POC is closed according to manufacturer's instructions to coincide with Purchase Order #.

[8] Ensure that gross weight of container does not exceed the maximum weight specified in POC certification and QA inspection documentation.

[9] Ensure that waste is packed such that routine handling does not result in the surface dose rate of the POC changing significantly.

$ **[10]** Verify that the integrity of the POC is not compromised so as not to invalidate the performance criteria of the POC in accordance to In-Service-Inspection #5 of TA-55-TSR-2011, using Attachment A.

[11] Turn in completed copies of form Attachment A to the TA-55 Operations Center.

[12] Apply label documenting TSR 6.2.5 ISI 5 inspection to the right of the top bar code label on the side of the container. See Appendix 4 for example label.

5.11 Completing Room 432 Logbook Entries for Waste Containers

[1] Record in the room 432 logbook the following from waste container labels prior to WC movement to the basement:

[a] Record the waste container ID

[b] Record waste container TID number

[c] Record hazardous waste code, if applicable

[d] Record hazardous waste start date, if applicable

[e] Ensure ISI label is on waste container

5.12 Packing Classified TRU Waste

NOTE 1 Perform the steps in this Performance Section in sequence or as directed by the PIC/FLM.

NOTE 2 Classified TRU waste may contain Beryllium (Be) at greater than 1% by weight of the waste matrix. The WIPP limit for waste containing greater than 1% Be is 100 FGE, inclusive of two time the total measurement uncertainty. It is important to know the Be weight percent when packing TRU waste.

NOTE 3 Classified TRU waste CANNOT be characterized by real-time-radiography. Instead, it MUST be characterized and packed using Visual Examination in accordance with FFS-DOP-004, *Visual Inspection of TRU Waste*, and CCP-TP-113, *Standard Contact-Handled Visual Examination by personnel holding a DOE "Q" security clearance.*

[1] Confirm that waste was characterized by visual examination (VE) prior to the waste offered up for packing.

[2] Ensure that appropriate VE personnel are present to record the waste packing information in accordance with CCP-TP-113.

[3] IF the waste contains Be at greater than 1% by weight,
THEN pack the waste so that it is below the administrative FGE packing limit of 75 FGE.

[4] After all waste items are placed in the WC, label the outer-most liner bag with the appropriate classification level (e.g., "SRD") using red marker on yellow tape.

[5] Secure the container lid and apply TID in accordance with instruction in Section 5.7.

5.13 Controlling Classified TRU Waste Outside of a Protected Area

NOTE 1 Perform the steps in this Performance Section in sequence or as directed by the PIC/FLM.

NOTE 2 Classified TRU waste may be characterized by nondestructive assay (NDA) and flammable gas testing at TA-54. TA-54 is a Property Protection Area (PPA). Classified TRU waste must remain in attendance and control by personnel who hold a DOE "Q" security clearance once removed from TA-55, PF-4.

NOTE 3 Personnel who attend and control Classified TRU waste to TA-54 must be trained to the TA-54 site-specific training requirements to have unescorted access to TA-54, Area G.

[1] Make certain that two personnel who hold DOE Q, security clearances attend and control these waste containers while outside of a Protected Area (PA).

[2] Make sure that these two personnel exhibit completed, site-specific training for needed unescorted access to the locations where the waste will reside.

[3] Coordinate with the NPI-7 shipping team, OSPT, TA-55 Security, and the receiving site (e.g., TA-54) to ensure that all are cognizant of the WCs requiring transport, the schedule, and the requirements for maintaining control of these WCs.

[4] Arrange for use of a government-owned vehicle to transport personnel outside of a PA.

[5] Download the current form PA-DOP-01462-FM04-R0, *Classified TRU Waste Escort Logbook Form* (Attachment D) from Documentum and print multiple copies for a notebook or clipboard so that the logbook can be updated while in the field.

5.13 Controlling Classified TRU Waste Outside of a Protected Area, (continued)

[6] Record the following items in the logbook:

- Date
- Waste Container Label Numbers
- Time of notable events, including but not limited to:
- Time WCs leave PF-4
- Time shipment leaves PIDAS
- Time shipment arrived at receiving facility
- Time containers go through characterization
- Times when a cleared individual responsible for attendance and control leaves or returns to the location where the waste containers are located
- Time shipment is loaded for return to TA-55
- Time shipment arrives at TA-55
- Time WCs are returned to PF-4
- Other events that seem noteworthy

[7] Before the shipment leaves PF-4, meet the truck outside the North Door of the PF-4 loading dock and follow the truck to its destination (e.g., TA-54).

[8] Maintain control of the waste containers while they are outside of PF-4 and/or at the destination facility, including the following:

NOTE It is allowed for waste to be out of visual contact while it is undergoing NDA characterization and it is inside the sealed NDA chamber.

[a] Maintain visual control of the waste to the extent practical.

[b] Staggering breaks so that at least one Q-cleared individual is in attendance and control of the waste containers at all times.

[9] Coordinate with TA-55 Security to ensure they are prepared for the shipment to return to TA-55.

[10] After all required activities are complete, observe the waste-container loading onto the truck and follow the truck back to TA-55 and into the PF-4 loading dock.

[a] IF the truck processes through a gate,
THEN one Q-cleared individual processes through the gate before the truck and waits for it on the other side, while the other Q-cleared individual and truck are processed through the gate.

6.0 POST-PERFORMANCE ACTIVITIES

6.1 Testing

Not Applicable

6.2 Restoration

Not Applicable

6.3 Results

Not Applicable

6.4 Verification/Independent Verification

Not Applicable

6.5 Records Processing

All records generated are electronically captured in the Waste Compliance and Tracking System (WCATS) and/or processed per PA-AP-01040, *Records Processing Procedure for ADPSM Organizations.*

7.0 CONTINGENCIES

[1] In the event that manufacturer's specifications are noted to be out of tolerance, reevaluate specifications and apply the necessary manufacture's steps to remedy the problem.

[2] If necessary, document the issue using an NCR (e.g., for example if a torque value is found to be out of tolerance, remove bolt and nut and reapply using calibrated torque wrench and manufacturer's torque values [i.e., specifications]).

[a] IF bolts, filters or bungs cannot be tightened to the correct torque values, THEN remove the bolt, filter, or bung and tap the threads if possible, and attempt to re-tighten.

[b] IF tapping fails,
THEN use another waste container.

7.0 CONTINGENCIES, (continued)

$ **[3]** Follow ISI contingency actions as follows:

[a] If any conditions are identified during the ISI that violate the inspection criteria, then annotate the deficient conditions on the inspection form (Attachment B).

[b] Immediately notify the OC of the deficient condition or conditions and continue the inspection unless otherwise determined by the OC.

[c] The OC, in conjunction with the Operations Manager and Cognizant System Engineer (CSE), will evaluate the deficiency as to its effect on the design function of the SSC and any impact on the authorization basis (operability determination).

[4] If deficiencies are found during the performance of this procedure then the following occur:

[a] The CSE ensures that a Facility Service Request (FSR) is initiated for deficiencies requiring maintenance support.

[b] The CSE ensures that an Engineering Service Request (ESR) is initiated for deficiencies requiring engineering support.

[5] The OC tracks all deficiencies (i.e., with associated FSR/ESR numbers) on the equipment status screen in the OC.

8.0 DEFINITIONS AND ACRONYMS

Term	Definition
$	Indicates step that implements TSRs
AK	Acceptable Knowledge
ALARA	As low as reasonably achievable
Am	Americium
CCP	Central Characterization Project
CH	Contact Handled
CPM	Counts per Minute
CSLA	Criticality Safety Limit Approval
DCC	Document Control Custodian
Design Features	Design features of a nuclear facility specified in the technical safety requirements that, if altered or modified, would have a significant effect on safe operation.
Detailed Operating Procedure	Operations-level written instructions that describe activities in a systematic format.
DOP	Detailed Operating Procedure

8.0 DEFINITIONS AND ACRONYMS, (continued)

Term	Definition
DOT	Department of Transportation
DPM	Disintegrations per minute
EPA	Environmental Protection Agency
FGE	Fissile Gram Equivalent
FLM	First Line Manager
FMH	Fissionable Material Handler
FT/LBS	Foot pounds
G	grams
HPRMS	Health Physics Radioactive Material Survey
HW	Hazardous waste
ID	Identification
IWD	Integrated Work Document
IDES	Item description
ISI	In-Service Inspection
Kg	Kilogram
LAMCAS	Local Area Materials Control and Accountability System
LANMAS	Local Area Network Materials Accountability System
LANL	Los Alamos National Laboratory
LLW	Low Level Waste
MT	Material Type
MAR	Material At Risk
MBA	Material Balance Area
Mode	Any one inclusive combination of facility conditions used for assigning applicability of safety equipment and limits as specified in Table 1.1-1 of the 2011 TSRs.
mrem	millirem
mrem/hr	millirem per hour
N/A	Not Applicable
NCR	Nonconformance Report
NDA	Nondestructive assay
Nominal	Of, being or relating to a designated or theoretical size that may vary from the actual (e.g., nominal 22.5” diameter 55-gallon drum)
Non/Routine	Legacy waste and/or dismantling glove boxes, etc.
OC	Operations Center
P/S	Process Status
Pb	Lead
PCB	Polychlorinated biphenyl
PE-Ci	Plutonium-239 equivalent curies
PNAD	Personal neutron accident dosimeter
POC	Pipe overpack component
Point of Contact	Generator or other personnel working for the generator.
PPE	Personal protective equipment

8.0 DEFINITIONS AND ACRONYMS, (continued)

Term	Definition
Programmatic	Currently processed waste that does not meet STL.
Pu	Plutonium
R	Rem
RBA	Radiological buffer area
RCA	Radiological controlled area
RCRA	Resource Conservation and Recovery Act
RCT	Radiological control technician
RTR	Real time radiography
RWP	Radiological Work Permit
STL	Safeguards termination limit
SWB	Standard Waste Box
SWO	Solid Waste Operations
TID	Tamper indicating device i.e. multi-lok, quick seal, mylar, cup-seal.
TLD	Thermoluminescent dosimeter
TRAMPAC	TRUPACT-II Authorized Methods for Payload Control
TRU	Transuranic, >100nCi/g or >50,000 cpm.
TRUPACT-II	TRU Waste Package Transporter-II
TSR	Technical Safety Requirement
UET	Use Every Time
VE	Visual Examination
VI	Visual Inspection
WAC	Waste Acceptance CRITERIA
WC	Waste Container (55 gal drums, POCs, SWBs, and other approved boxes)
WCATS	Waste Compliance and Tracking System
WE	Waste Exception
WGI	Waste Generator Instructions
WI	Work Instruction
WIPP	Waste Isolation Pilot Plant
WM	Waste Management
WODF	Waste Origination and Disposition Form
WQAS	Worker Qualification and Authorization System

9.0 RESPONSIBILITIES

9.1 NPI-7 Personnel

- Must maintain qualification standards to perform this procedure
- Responsible for quality
- Maintains certifications and qualifications to perform work

9.2 Quality Assurance Representative

- Responsible for providing torque specifications to NPI-7 personnel
- Responsible for monitoring receipt and inspection of waste containers

9.3 Central Characterization Project (CCP)

- Responsible for providing Visual Examination expertise and certification of TRU Waste

9.4 Operations Center Personnel

- Responsible for daily operational requirements, this includes providing information to personnel regarding mode of plant operations
- Ensures abnormal events are reported as required to through the established chain of command

9.5 Person-In-Charge (PIC)

- Reviews attachments to ensure that they are correctly completed
- Ensures all deficiencies are reported as required to the OC center and their chain of command

9.6 Radiation Control Technician (RCT)

- Responsible for surveys, Health Physics Radioactive Material Survey (HPRMS) tags, and supports door openings

9.7 First Line Manager (FLM)

- Responsible for overall coordination and final acceptance of this procedure
- Provides special approvals, if required, to add minor volumes of homogeneous waste into approved containers
- Assists the PIC in determining order of performance sections

10.0 REFERENCES

Document Number	Title
AP-341-516	*Operability Determination and Functionality Assessment*
CCP-TP-069	*Sealed Source Visual Examination and Packaging*
CCP-TP-113	*Standard Contact-Handled Visual Examination by personnel Holding a DOE "Q" Security Clearance*
EP-WGI-0202	*Waste Generator Instructions (WGI) for Pipe Overpack Component (POC) Drum for the Disposition of Transuranic (TRU) Waste*
EP-WGI-0206	*Waste Generator Instructions (WGI) for the Disposition of MT-83 Waste*
NCS-CSLA-08-172	*Inspecting, Packaging, Rejecting and Remediating Transuranic Waste for WIPP and for TA-54 Safe Storage*
NCS-CSLA-08-173	*Staging, Inspecting, Packaging, and Remediating Transuranic Waste for WIPP and for TA-54 Safe Storage*
NCS-CSLA-08-174	*Inspecting, Packaging, and Remediating Transuranic Waste for WIPP and for TA-54 Safe Storage*
NCS-CSLA-08-175	*Inspecting, Packaging, and Remediating Transuranic Waste for WIPP and for TA-54 Safe Storage*
NCS-CSLA-08-176	*Inspecting, Packaging, and Remediating Transuranic Waste for WIPP and for TA-54 Safe Storage*
NMT7-AP-020	*Documenting Acceptable Knowledge for Legacy Waste Items*
P101-1	*Ergonomics*
P101-18	*Procedure for Pause/Stop Work*
P330-6	*Nonconformance Reporting*
PA-AP-011020	*Pre-Job Briefing and Post-Job Review.*
PA-AP-01040	*Records Processing Procedure for ADPSM Organizations*
PA-RD-01009	*TA-55 Criticality Safety Requirements*
TA55-AP-522	*TA-55 Nuclear Criticality Safety Program*
TA55-DOP-016	*TA-55 Material Transfer Procedure*
TA55-FM-01000	*TSR 6.2.5 ISI 5, TRU Waste Shipping Container Inspection Form*
TA55-RD-539	*TA-55 Waste Management Requirements*
TA-55-RD-555	*TA-55 Radiation Protection Requirements*
TA55-TSR-2011	*TA-55 Technical Safety Requirements (TSRs)*
TRUPACT-II Appendix 1.3-1	*Safety Analysis Report*

11.0 RECORDS

Record Identification	Record Type Determination	Protection/Storage Methods	Processing Instructions
Attachment A, *TSR 6.2.5 ISI 5. TRU Waste Shipping Container Inspection Form [UET]*	QA Record (Nonpermanent)	Completed form is turned into Operations Center as required	Processed per PA-AP-01040, *Records Processing Procedure for ADPSM Organizations*
Attachment B, *Waste Container QA Checklist [UET]*	QA Record (Nonpermanent)	Completed form is turned into Operations Center with ISI checklist	Processed per PA-AP-01040, *Records Processing Procedure for ADPSM Organizations*
Attachment C, *Container Preparation Data Form*	Data Sheet (Nonpermanent)	Retained in file cabinet.	Processed per PA-AP-01040, *Records Processing Procedure for ADPSM Organizations*
Attachment D, *Classified TRU Waste Escort Logbook Form [UET]*	QA Record (Nonpermanent)	Completed form is turned into Operations Center as required	Processed per PA-AP-01040, *Records Processing Procedure for ADPSM Organizations*

12.0 APPENDICES AND ATTACHMENTS

Appendix	Title
1	*Transuranic Waste Matrix Mixing*
2	*Pictures/Drawings*
3	*WIPP Approved Filters*
4	*Example ISI Label*

Attachment	Title
A	*TSR 6.2.5, ISI 5, TRU Waste Shipping Container Inspection Form [UET]*
B	*Quality Assurance Inspection Form [UET]*
C	*Container Preparation Data Form*
D	*Classified TRU Waste Escort Logbook Form [UET]*

Appendix 1, Transuranic Waste Matrix Mixing

(Page 1 of 1)

Transuranic waste matrices, types of assays, and recommendation on matrix mixing in a container at TA-55	
Non-combustibles	**Combustibles**
Heterogeneous (Debris)	**Heterogeneous (Debris)**
Neutron instrument assay:	**Gamma instrument assay:**
Metals (IRN, ALM, MET)	Combustibles (COM)
Glass (GLS)	Plastics (PLS)
Graphite (GRS)	Rags (RAG)
Glovebox sweepings (SWP)	Rubber gloves (RUB)
Discard solids (DS)	Rubber (RUB)
Iron based HEPA filters (HEP)	Filters combustibles (PLS, FIL)
Leaded gloves (GLV)	Glass (GLS) (measured on gamma, can be mixed with combustibles so long as combustible volume exceeds the volume of glass)
Homogeneous	**Homogeneous**
Neutron instrument assay:	**Gamma instrument assay:**
Salt (CHL, HYD, SSC, OX, SS, LS)	Absorbed organic liquids (ORG)
Gamma instrument assay:	Spent resin (RES)
Ash (ASH)	
Cans 3 liters or larger must be filtered.	
Liquids in pump cavities must be drained. Liquids which are poured out must not drain back to form a pool of liquid later.	
No more than 10 leaded rubber gloves per container. Exceed this limit only if CCP (Central Characterization Project) performs Visual Examination.	
Do not squash leaded rubber gloves with waste placed on top.	
It is permissible to add **minor volumes of homogeneous** waste items with **large volumes of debris** (heterogeneous) container.	
Therefore, small volumes of absorbed organic liquids, spent resins, salts, or ash can be discarded in a container which contains	
significantly more volume of heterogeneous waste items such as combustibles, metals, graphite, glass, filters	
provided the NDA measurements for waste items are similar and would not have any issue with confirmation of the container.	
For example, it is permissible to have approximately 25% of salt volume in a container which has 75% of metals or glass volume.	
CAUTION: Do not mix minor volume of debris (heterogeneous) waste in major volume of homogeneous waste.	

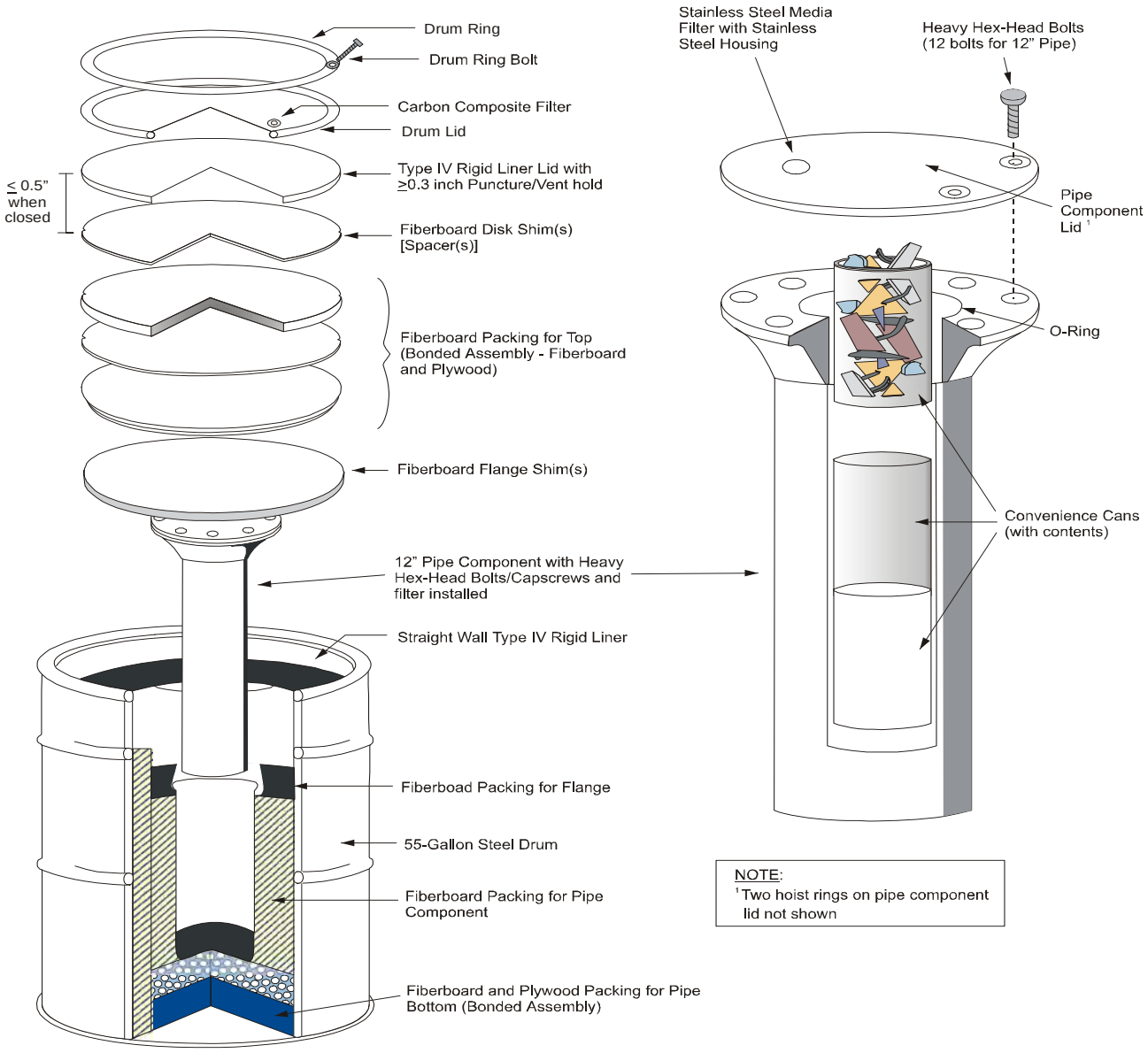
Appendix 2, Pictures/Drawings

(Page 1 of 4)

Appendix 2, Pictures/Drawings

(Page 2 of 4)

Type A POC Assembly Container Packaging Material Arrangement



Supplementary Instructions and Information

[1] Prior to closing the package, measure the distance between the lower (i.e., inner) surface of the rigid liner lid to the upper (i.e., top) surface of the top shim (i.e., spacer). This distance SHALL not exceed 0.5 inches.

Note: The measurement is taken through the vent hole in the rigid liner lid.

[2] IF the distance exceeds 0.5 inches THEN add enough fiberboard disk shims (spacers) to bring the dimension within the specified range.

[3] Do not close the package until the dimension is less than or equal to 0.5 inches.

Appendix 2, Pictures/Drawings

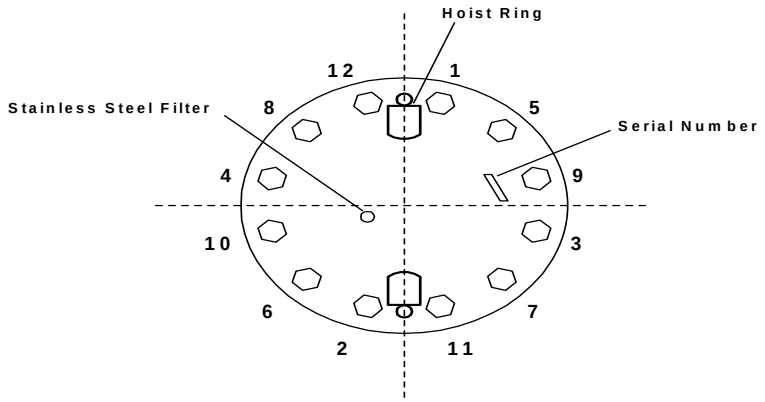
(Page 3 of 4)

POC Inner Lid Alignment (serial #'s)

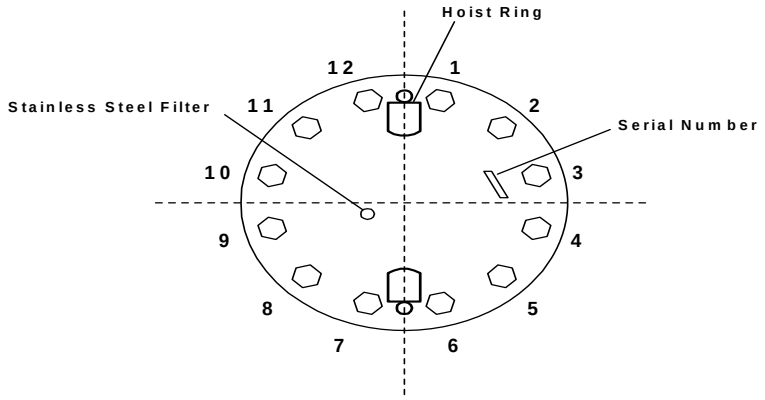
Appendix 2, Pictures/Drawings

(Page 4 of 4)

Pipe Component Bolt Torquing Sequence



NUMBERED CROSS-PATTERN TORQUING SEQUENCE



CLOCKWISE, BOLT TO BOLT TORQUING SEQUENCE

Supplementary Instructions and Information

1) The numbers noted on the two POC lid diagrams above represent the numerical sequences used by waste generators for the initial torquing operation, known as the numbered cross-pattern sequence; and the secondary torquing operation, known as the clockwise, bolt-to-bolt torquing sequence, respectively. The clockwise, bolt-to-bolt torquing sequence is also used by the verifier during the final torque verification step.

2) A Bolt Tightening Pattern Template is placed directly on the POC lid during the numbered cross-pattern torquing sequence to identify the numerical order in which the bolts are to be torqued, as indicated above. The Bolt Tightening Pattern Template is a rigid, circular device marked with numbers around the circumference to correspond with the bolts of the POC.

Appendix 3, WIPP Approval Filters

(Page 1 of 3)

Approved Filter Vents **Effective Date: December 10, 2009**

The following filter vents:

- Meet the minimum specifications of:
  - Table 2.5-1, Section 2.5 of the CH-TRAMPAC, Rev. 2, dated May 2005, **OR**
  - Table 2.4-1, Section 2.4 of the RH-TRAMPAC, Rev 0, dated June 2006
- Comply with the applicable DOT Specification 7A requirements for WIPP payload containers **WHEN** installed in accordance with the Manufacturer's Instructions

Manufacturer's Model Number	WWIS ID Number	Thread Form	Min. H2 Diffusivity (m/s/mf)	Diffusivity Rating
Fairey 98867*	98867	3/4" NPSM	7.40E-06	2X (HDF)
Fairey 99421	99421	3/4" NPSM	1.85E-05	5X (HDF)
NucFil®-007	NF007	9/16-11 ST	3.70E-06	X
NucFil®-007LS	NF007L	9/16-11 ST	3.70E-06	X
NucFil®-007LW	NF07LW	9/16-8 STSL	3.70E-06	X
NucFil®-007S	NF007S	9/16-11 ST	3.70E-06	X
NucFil®-007W	NF007W	9/16-8 STSL	3.70E-06	X
NucFil®-007WS	NF07WS	9/16-8 STSL	3.70E-06	X
NucFil®-012	NF012	3/4" NPSM	1.90E-06	X/2
NucFil®-013	NF013	3/4" NPSM	3.70E-06	X
NucFil®-013 GorTex	NF013G	3/4" NPSM	7.40E-06	2X (HDF)
NucFil®-013 SS	NF013S	3/4" NPSM	3.70E-06	X
NucFil®-015 DS	NF015D	3/4-9 STUR	1.48E-05	2 x 2X (HDF)
NucFil®-016	NF016	2" NPSM	1.85E-05	5X (HDF)
NucFil®-016 SS HP	NF016S	2" NPSM	1.65E-04	SLB2
NucFil®-018	NF018	2-10 UNS	9.34E-05	RH FLC
NucFil®-019	NF019	3/4" NPSM	1.85E-05	5X (HDF)
NucFil®-019DS	NF019D	3/4" NPSM	1.85E-05	5X (HDF)
NucFil®-019-EPD	NF019E	3/4" NPSM	7.40E-06	2X (HDF)
NucFil®-019EPDDS	NF19EP	3/4" NPSM	7.40E-06	2X (HDF)
NucFil®-019-HCR	NF019H	3/4" NPSM	7.40E-06	2X (HDF)
NucFil®-019SDS	NF19SD	3/4" NPSM	1.85E-05	5X (HDF)
NucFil®-020	NF020	7/16-16 UN	1.90E-06	X/2
NucFil®-020DS	NF020D	7/16-16 UN	1.90E-06	X/2
NucFil®-020S	NF020S	1/2-20 UNF	1.90E-06	X/2
NucFil®-049	NF049	11/16-14 ST	3.70E-06	X
NucFil®-049LS	NF049L	11/16-14 ST	3.70E-06	X
NucFil®-049S	NF049S	0.588-14 ST	3.70E-06	X
NucFil®-051	NF051	.260-25 ST	1.90E-06	X/2
NucFil®-051CT	NF051C	.260-25 ST	1.90E-06	X/2

Appendix 3, WIPP Approval Filters

(Page 2 of 3)

Approved Filter Vents **Effective Date: December 10, 2009**

Manufacturer's Model Number	WWIS ID Number	Thread Form	Min. H2 Diffusivity (m/s/mf)	CH-TRAMPAC Diffusivity Rating
NucFil®-072	NF072	7/16-14 UNC	3.70E-06	X
NucFil®-072 SSS	NF072S	7/16-14 UNC	3.70E-06	X
NucFil®-072S	NF72S1	9/16-11 ST	3.70E-06	X
NucFil®-072SLH	NF72SL	9/16-11 ST	3.70E-06	X
NucFil®-073	NF073	7/16-14 UNC	3.70E-06	X
NucFil®-074	NF074	7/16-16 UN	3.70E-06	X
NucFil®-075	NF075	7/16-14 UNC	3.70E-06	X
‡ **NucFil®-08DS**	NF08D	9/16-8 ST	**3.70E-06**	**X**
NucFil®-307DS	NF307D	9/16-11 ST	3.70E-06	X
NucFil®-347DS	NF347D	1/2-8 ST	1.90E-06	X/2
NucFil®-407DS	NF407D	5/8-11 ST	3.70E-06	X
NucFil®-7DS	NF7DS	9/16-11 ST	3.70E-06	X
NucFil®-DVS3	NFDVS3	9/16-14 ST	3.70E-06	X
NucFil®-DVS3 IP	DVS3IP	9/16-11 ST	7.40E-06	2X (HDF)
NucFil®-DVS307	NFD307	9/16-11 ST	3.70E-06	X
NucFil®-DVS3A	NFDV3A	9/16-11 ST	3.70E-06	X
NucFil®-NFS7A	NFS7A	9/16-11 ST	3.70E-06	X
UltraTech 9400	UT9400	3/4" NPSM	3.70E-06	X
UltraTech 9402	UT9402	7/16-16 ST	1.90E-06	X/2
UltraTech 9408	UT9408	3/4" NPSM	1.85E-05	5X (HDF)
UltraTech 9412	UT9412	9/16-11 ST	3.70E-06	X
UltraTech 9413	UT9413	9/16-11 ST	3.70E-06	X
UltraTech 9414	UT9414	9/16 Insert	7.40E-06	2X (HDF)
UltraTech 9415	UT9415	9/16 Insert	1.90E-06	X/2
UltraTech 9416	UT9416	3/4" NPSM	1.90E-06	X/2
UltraTech 9423	UT9423	3/4" NPSM	1.85E-05	5X (HDF)
UltraTech 9423T	U9423T	3/4" NPT	1.85E-05	5X (HDF)
UltraTech 9424	UT9424	3/4" NPSM	1.85E-05	5X (HDF)
UltraTech 9424X	U9424X	3/4" NPSM	1.85E-05	5X (HDF)
UltraTech 9450	UT9450	3/4" NPSM	3.70E-06	X
UltraTech 9460	UT9460	2" NPSM	9.25E-05	25X (HDF)
UltraTech 9500	UT9500	3/4" NPSM	1.85E-05	5X (HDF)
UltraTech 9550	UT9550	3/4" NPSM	1.85E-05	5X (HDF)
West WTM01D	WTM01D	9/16-11 ST	3.70E-06	X

Appendix 3, WIPP Approval Filters

(Page 3 of 3)

Approved Filter Vents **Effective Date: July 28, 2010**

Acronyms/Legend

‡	New, reinstated, or revised
*	Wildcard character assigned by the manufacturer
CH-TRAMPAC	Contact-Handled Transuranic Waste Authorized Methods for Payload Control
DOT	US Department of Transportation
Fairey	Porvair Filtration Group, Ltd., Ashland, VA
HDF	High-Diffusivity Filter (CH-TRAMPAC, Table 2.5.1)
m/s/mf	Moles per second per mole fraction
NucFil®	Nuclear Filter Technology, Inc., Golden, Colorado
NPSM	American National Standard Straight Pipe Thread for Mechanical Joints
NPT	American National Standard Taper Pipe thread
RH FLC	Remote-Handled Fixed Lid Canister
RH-TRAMPAC	Remote-Handled Transuranic Waste Authorized Methods for Payload Control
SLB2	Standard Large Box 2 / TRUPACT-III
ST	Self-Tapping thread
STSL	Self-Tapping Self-Locking thread
STUR	Self-Tapping Un-Retractable thread
UN	Unified National thread
UNC	Unified National Coarse thread
UNF	Unified National Fine thread
UNS	Unified National Selected combination thread
UltraTech	UltraTech International, Inc., Jacksonville, Florida
West	West Tech Machine, LLC, Rexburg, Idaho
WIPP	Waste Isolation Pilot Plant
X/2	1.9E-6 Total Hydrogen Diffusivity (m/s/mf)
X	3.7E-6 Total Hydrogen Diffusivity (m/s/mf)
2X	7.4E-6 Total Hydrogen Diffusivity (m/s/mf)
5X	1.85E-5 Total Hydrogen Diffusivity (m/s/mf)
25X	9.25E-5 Total Hydrogen Diffusivity (m/s/mf)

Appendix 4, Example of ISI Label

Page 1 of 1

TSR 6.2.5, ISI 5.
Inspection

Attachment A, TSR 6.2.5, ISI 5., TRU Waste Shipping Container Inspection Form [UET]

(Page 1 of 3)

6.2.5 Containers for NUCLEAR MATERIAL Outside of Gloveboxes

The DF performance criteria, ISI actions, and ISI FREQUENCIES are presented as follows:

4. Packaged TRU waste shipping containers:

- are DOT Type A containers (e.g., 55-gal drums, standard waste boxes, and overpack containers) or equivalent.
- have WIPP-approved filter-vents, or equivalent

In-Service Inspection (ISI)

5. An individual packaged TRU waste shipping container is to be visually inspected for presence of vents and signs of wear or degradation

FREQUENCY

Upon final container packaging

Packed TRU waste shipping containers are inspected (ISI #5) upon final container packaging (e.g., when the drum is sealed and/or when a tamper indicating device is applied) to ensure they have vents and do not have damage that would invalidate the performance criteria. Return ISI to Operations Center with seven (7) days.

Attachment A, TSR 6.2.5, ISI 5, TRU Waste Shipping Container Inspection Form [UET] (continued)

(Page 2 of 3)

Waste Container	**LA00000**		**LA00000**		**LA00000**	
Container Type (Circle One)	Drum POC SWB		Drum POC SWB		Drum POC SWB	
Inspection Requirement	**Inspection Result**		**Inspection Result**		**Inspection Result**	
	SAT	**UNSAT**	**SAT**	**UNSAT**	**SAT**	**UNSAT**
DOT Type A containers [6.2.5.4]						
WC vented with WIPP-approved filter vents [6.2.5.4]						
WC shows no signs of wear or degradation [6.2.5.5]						
WC shows no bulging or evidence of pressurization [6.2.5.5]						

Attachment A, TSR 6.2.5, ISI 5, TRU Waste Shipping Container Inspection Form [UET] (continued)

(Page 3 of 3)

ISI PERSONNEL			
SHALL • Sign below • Turn completed ISI to Operations Center			
Completed by: (Print Name)	(Signature)	**Z#:**	**Date:**
Completed by: (Print Name)	(Signature)	**Z#:**	**Date:**
OPERATIONS CENTER			
ACCEPT Inspection as Complete			
OC Personnel: (Print Name)	(Signature)	**Z#:**	**Date:**
OC Supervisor: (Print Name)	(Signature)	**Z#:**	**Date:**
Immediate Operability Determination (Circle One)		**Operable**	**Inoperable**
CSE/RLM Notified to Review Results	**Name:**	**Date:**	
CSE/RLM REVIEW			
Disposition of Deficiencies: List deficiencies and recommended actions below. CSE/RLM is responsible to generate FSRs/ESRs for deficiencies listed below. Enter "N/A" in the sections below if no deficiencies identified during ISI performance. Attach additional sheets as necessary. Attach a copy of an Operability Determination Form completed according to AP-341-516-FM01, if performed.			
Deficiency Description	**Disposition**	**Z#**	**Date**
CSE/RLM Name: (Print Name)	(Signature)		
OPERATION CENTER REVIEW			

Attachment B, Quality Assurance Inspection Form [UET]

(Page 1 of 1)

This QA checklist is submitted to the OC, attached to the ISI checklist (Attachment A).

Waste Container	**LA00000**		**LA00000**		**LA00000**	
Container Type **(Circle One)**	**Drum** **POC** **SWB**		**Drum** **POC** **SWB**		**Drum** **POC** **SWB**	
Inspection Requirement	**Inspection Result**		**Inspection Result**		**Inspection Result**	
	SAT	**UNSAT**	**SAT**	**UNSAT**	**SAT**	**UNSAT**
Filter installed with appropriate gasket						
Vents show no signs of wear or degradation						
WC stamped or labeled as an UN 1A2 container (SWB=NA)						
WC gross weight does not exceed maximum weight specified in WC and QA certification documentation						
WC packed so routine handling does not result in surface dose rate changing significantly						

Attachment C, Container Preparation Data Form

(Page 1 of 1)

REQUIRED DATA	DATA
LA000000:	
Tare Weight (lbs):	
Carbon Filter(s) #:	
Purchase Order #:	
Year of Manufacturer:	
Drum Lid-Ring Torque: Wrench #:	
Scale #:	
C.F. Torque Wrench #:	
Bung Torque Wrench #:	
Serial #	
Lot #	

Data Complete:	_____ (Performer Signature)	Date:

Attachment D, Classified TRU Waste Escort Logbook Form [UET]

(Page 1 of 2)

PA-FM-01008,R0 **Classified TRU Waste Escort Logbook Form**		
Date:		
Waste Containers:		
LA00000	LA00000	LA00000
LA00000	LA00000	LA00000
LA00000	LA00000	LA00000
LA00000	LA00000	LA00000
LA00000	LA00000	LA00000

Time	**Log Entry**

Attachment C, Classified TRU Waste Escort Logbook Form (Continued) [UET]

(Page 2 of 2)

PA-FM-01008,R0 **Classified TRU Waste Escort Logbook Form**		
Date:		
Waste Containers:		
LA00000	LA00000	LA00000
LA00000	LA00000	LA00000
LA00000	LA00000	LA00000
LA00000	LA00000	LA00000
LA00000	LA00000	LA00000
Signatures		
I certify that the logbook entries listed above are accurate to the best of my knowledge and that the waste containers shown were under the control and supervision of a person holding a DOE"Q" security clearance while these waste containers were outside of Limited Area. _____ _____ _____ (Signature) (Printed Name) (Z #)		
I certify that the logbook entries listed above are accurate to the best of my knowledge and that the waste containers shown were under the control and supervision of a person holding a DOE "Q" security clearance while these waste containers were outside of Limited Area. _____ _____ _____ (Signature) (Printed Name) (Z #)		
Comments		
Page ___ of ____		

PA-DOP-01401, Visual Inspection of TRU Waste, R0

LA-UR-14-24976

Attachment A, Resumption Evidence and Approval Traveler

(Page 1 of 1)

TRACKING # ROE-28

Process	Procedure #	CSED/CSLA # *(if applicable)*
Visual Inspection of TRU Waste	PA-DOP-01401	Not applicable

- ☑ PA-NOTICE-01007-FM2 – Attachment B, Technical Procedure Verification Checklist
- ☑ PA-NOTICE-01007-FM3 – Attachment C, Technical Procedure Validation Checklist
- ☑ PA-NOTICE-01007-FM4 – Attachment D, Criticality Evaluation Screening and Review Checklist
- ☑ PA-NOTICE-01007-FM5 – Attachment E, Seven Points Compliance Validation Memo
- NA ☑ Independent Verification evaluation complete
  10/10/13
  NOTE: Independent verification, as defined by ADPSM, is required for all operations with *"Pu in metal"* Operational limits > 2300g, and for all 400 AREA aqueous solution operations.
- ☑ Additional Supporting Information Attached

INDEPENDENT VERIFIER SIGNATURE *(if required)*

Name	Z Number	Signature	Date
Not applicable			

RESPONSIBLE OPERATIONS/ENGINEERING MANAGER(S) SIGNATURES

Name	Z Number	Signature	Date
Peter Carson	203878		10/8/13
Keith Lacy	149262		10-8-13

DIVISION LEADER(S) SIGNATURES

Name	Z Number	Signature	Date
Stephen Schreiber	094595		10/10/2013
Tom Nelson	108813		10/10/13

APPROVAL AUTHORITY SIGNATURES

☑ ***(ADPSM only approval required)***

ADPSM *(print name)* Jeffrey Yarbrough	Z Number 105580	Signature	Date 10·10·13
PADWP *(print name)*	Z Number	Signature	Date
DIR *(print name)* Charles McMillan	Z Number 125229	Signature	Date

NPI-7

Detailed Operating Procedure

Approval Cover Sheet

Document Number: PA-DOP-01401, R0

Effective Date: 10/15/13

Next Review Date: 10/15/16

Supersedes: FFS-DOP-004, R2

Title: Visual Inspection of TRU Waste

Status:	Hazard:	For Document Control Use Only:
☒ New	☐ Low-hazard	
☐ Major revision	☒ Moderate-hazard	
☐ Minor revision	☐ High-hazard/complex	
	Use Type:	
	☒ Reference ☐ Use every Time	

	Organization	Date	Signature
Approved for Use By: Document Owner:			
Keith Lacy, *Group Leader*	NPI-7	10/10/13	*Signature on File*
Authorized for Use By: FOD:			
Charles Tesch, *Operations Mgr.*	TA55-DO	10/10/13	*Signature on File*
Released: FOD:			
Charles Tesch, *Operations Mgr.*	TA55-DO	10/10/13	*Signature on File*

Derivative Classification Review			
☒ UNCLASSIFIED ☐ Export Controlled Information ☐ Official Use Only ☐ Unclassified Controlled Nuclear Information Guidance Used:		☐ CONFIDENTIAL ☐ SECRET ☐ Restricted Data ☐ Formerly Restricted Data ☐ National Security Information Guidance Used:	
DC/RO Name/Z Number: Chastity Kolar 110522	Organization: NPI-7	Signature: *Signature on File*	Date: 10/10/13

Revision History

Document Number	Effective Date	Action	Description
PA-DOP-01401, R0	*10/15/13*	New	• Converted to new DOP template • Supersedes FFS-DOP-004, R2

Table of Contents

1.0 INTRODUCTION 4
1.1 Purpose 4
1.2 Scope 4
1.3 Applicability 5
1.4 Technical Safety Requirements (TSRs) 5
2.0 PRECAUTIONS AND LIMITATIONS 5
2.1 General 5
2.2 Additional Requirements and Conditions (WR Use) 7
3.0 PREREQUISITE ACTION 8
3.1 Planning and Coordination 8
3.2 Performance Documents 8
3.3 Special Tools, Equipment, Parts, and Supplies 9
3.4 Field Preparation 9
3.5 Approvals and Notifications 9
4.0 ACCEPTANCE CRITERIA 10
5.0 PERFORMANCE 10
5.1 Performing a Pre-Visual Inspection of Items 10
5.2 Performing a Visual Inspection 10
6.0 POST-PERFORMANCE ACTIVITIES 14
6.1 Testing 14
6.2 Restoration 14
6.3 Results 14
6.4 Verification/Independent Verification 14
6.5 Records Processing 15
7.0 CONTINGENCIES 15
8.0 DEFINITIONS AND ACRONYMS 15
9.0 RESPONSIBILITIES 16
9.1 Waste-generator Contact Person 16
9.2 Acceptable Knowledge Person 16
9.3 Low Level Waste Team 16
9.4 NPI-7 Group Management 16
10.0 REFERENCES 17
11.0 RECORDS 17
12.0 APPENDICES AND ATTACHMENTS 17

1.0 INTRODUCTION

1.1 Purpose

This Detailed Operating Procedure (DOP) provides instructions for performing Visual Inspection (VI) of Transuranic (TRU) waste destined for the Waste Isolation Pilot Program (WIPP) and for TA-54 safe storage. The performance documentation is captured in the electronic Waste Compliance and Tracking System (WCATS).

This procedure is written for VI of waste items packed in waste containers and examined through Real Time Radiography (RTR) at TA-54. This procedure is used on select waste items (i.e., until the training and transition takes place for 100% Visual Examination) in coordination with the Central Characterization Project's (CCP) Visual Examination (VE) procedure. The VE procedure is implemented by the CCP organization who works with Hazardous Material Management (NPI-7) personnel in documenting waste items on forms. The electronic WCATS and the VI procedure work in tandem with the VE procedure. The Waste Generator Instructions (WGIs) are supplemental instructions for the waste acceptance at TA-54. WGIs are controlled documents in the Waste Disposition Project (WDP) System and are referenced in Section 10.0, References.

Justification Memos are used to authorize the discard of items and are attached electronically to the waste items in WCATS. Other memos are issued and acknowledged by TRU Waste personnel to further clarify waste operations and compliance issues until they are entered in the procedure. Some memos are Discard Memos or Deviation from Safeguards Memos. When these memos are attached to an item that is over the safeguards termination limit (STL), the electronic system allows personnel to pack the item.

1.2 Scope

This DOP is specifically written for use by trained Nuclear High Hazard Technicians assigned to TA-55 TRU Operations who perform VI of TRU waste. This work is performed at TA-55, predominately in PF-4. Qualified personnel who perform TRU operations may use this procedure at other Los Alamos National Laboratory (LANL) sites as determined by NPI-7 group management. If the work performed is outside the scope of this DOP an Integrated Work Document (IWD) is implemented to perform that work.

1.3 Applicability

The regulatory drivers for this procedure are based upon criteria set forth in the WIPP and TA-54 acceptance criteria. Waste must be characterized through Acceptable Knowledge (AK) that is documented in FFS-AP-020, *Documenting Acceptable Knowledge for Legacy Waste Items.*

1.4 Technical Safety Requirements (TSRs)

Not Applicable

2.0 PRECAUTIONS AND LIMITATIONS

2.1 General

A. Pause/Stop Work

All workers are responsible for pausing or stopping work when they have a reasonable belief that quality, work risks or hazards are not effectively controlled and workers have the right to do so without fear of reprisal. LANL Policy P101-18 provides more information on the differences between pausing or stopping work and the process for resuming work in either case.

If this procedure cannot be completed as written or abnormal conditions are encountered, PAUSE WORK, place the work in a safe configuration if possible, and notify the Operations Center (OC) and First Line Manager (FLM)/ Person-in-Charge (PIC).

B. Hazards and Controls

Listed in this section are Hazards and Controls that apply to the entire procedure.

Hazard	Controls
Build Up Gases	Inspect bags and ensure filtering device is in place.
High Noise Levels	• Wear hearing protection in posted areas. • Limit time spent and maximize distance from operating equipment. • Enrollment in Hearing Conservation Program.
Nuclear Criticality	• See CSLA(s) for each location for specific criticality safety controls.
Pinch Points	Use HexArmor overglove or equivalent such as North leather overglove, both available from TA-55 warehouse, as needed when handling potential pinch point items.

2.1 General, (continued)

B. Hazards and Controls, (continued)

Radiological Contamination/ Ionizing Radiation	• Follow TA55-RD-555, *TA-55 Radiation Protection Requirements*.
	• Practice ALARA by minimizing time, maximizing distance, and using temporary shielding as necessary.
	• RWP required
	  • If dose rates are ≥75 mrem/hr at 30 cm and/or ≥700 mrem/hr on contact.
	  • Packing waste in drums, POC drums, SWB, or waste containers
	• Notify the radiological control technician (RCT) to perform dose rate survey when transferring radioactive material from one location to another that may change radiological conditions.

Trips, falls, crushing	• Wear appropriate foot wear • Clean all spills immediately • Use postings to warn workers of hazard • Remove clutter/obstructions and make sure you have good lighting • Close file or storage drawers and pick up after yourself • Mark or post areas that you identify that may cause a slip or fall and contact an IH/Safety rep. to evaluate immediately

C. Unique Entry Conditions

P-4 access control requirements.

D. Basis for Use Categorization/Sequence of Steps

This procedure is designated as a reference procedure because it relies on the training and expertise of the performers for successful performance, the consequences of error are not high, the procedure is routinely performed and the data collection and sign-offs are performed using the Waste Compliance and Tracking System computer database and computer-logic, which diminishes the likelihood of data collection errors.

The major sections and steps in the Performance section are performed in sequence unless otherwise directed by the PIC/FLM.

2.1 General, (continued)

E. Criticality Safety Limit Approval (CSLA) Requirements

Workers must obtain and use the Criticality Safety Limit Approval (CSLA) for each specific location involved in the planned operation. Follow CSLA requirements for locations where operations will occur. Workers must be briefed on the criticality controls associated with the locations to be accessed prior to being authorized to perform work. These briefings may be conducted as part of the pre-job briefing.

F. Required Permits

Radiological Work Permits are required if the following occur:

- Packing, handling, and storing Radiological material
- Packing Drums, POCs, and SWBs
- Dose rates are ≥ 75 mrem/hr at 30 cm or ≥700 mrem/hr on contact

G. Training and/or Qualification

- This procedure can be performed by workers with successful completion of PF-4 WCATS TRU Waste Operator (curriculum #2312).
- New employees in training must work with a mentor who is certified on this procedure.

H. Cautions

Not Applicable

I. Material Control and Accountability

Not Applicable

2.2 Additional Requirements and Conditions (WR Use)

Not Applicable

3.0 PREREQUISITE ACTION

The sections and steps in the Prerequisite Action Section are not required to be performed in sequence, unless otherwise directed by the FLM/PIC.

3.1 Planning and Coordination

[1] Ensure that a pre-job brief has been conducted in accordance with PA-AP-01020, *Pre-Job Briefing and Post Job Review*.

[2] Schedule the work with the Facility Operations Director organization.

[3] The PIC/Worker is responsible for ensuring that they are working to the most current procedure and complies with document control processes concerning copying, marking, and final disposition.

[4] The PIC/Worker is responsible for ensuring that the planned-process evolution can be executed in compliance with relevant Fissile Material Operation (FMO) limits and requirements prior to releasing the work.

[5] The PIC/Worker is responsible for ensuring that the planned-process evolution is executed in compliance with relevant criticality safety controls prior to releasing the work.

[6] Verify that tools, equipment, and material numbers in the work area match those specified.

[7] FLM or designee determines which performance sections are to be accomplished.

3.2 Performance Documents

- Applicable Radiological Work Permits
- FFS-AP-020, *Documenting Acceptable Knowledge for Legacy Waste Items*.
- CCP-TP-113, *CCP Standard Contact/Handled Wasted Visual Examination*
- CCP-TP-120, *CCP Container Management*

3.3 Special Tools, Equipment, Parts, and Supplies

Personal Protective Equipment

- Booties
- Coveralls
- Cut resistant gloves (i.e. nitrile, HexArmor, Kevlar etc.)
- Ear protection
- Hard hats
- Heavy-duty Gloves
- Latex Gloves
- Leather Gloves (example North)
- Respirator
- Safety Glasses
- Safety Shoes
- Tyvek hoods and coveralls

NOTE Equipment listed in this procedure requires on-the-job training for proper usage.

Equipment and Supplies

- WCATS hand-held data gathering device

Software

- Software in Table 1 is used in this process. All torque values that appear on any screen are only an example of a torque specification.

Table 1 Software

Software Number	Title/Description
N/A	Waste Compliance and Tracking System

3.4 Field Preparation

Field preparations that require completion before performing this procedure include the following:

- Sorting and segregating of waste items

3.5 Approvals and Notifications

Not Applicable

4.0 ACCEPTANCE CRITERIA

The regulatory drivers for this procedure are based upon criteria set forth in the following:

- P930-1, *LANL Waste Acceptance Criteria*
- DOE/WIPP-02-3122. *TRU Waste Acceptance Criteria for the Waste Isolation Pilot Plant*
- FFS-AP-020, *Documenting Acceptable Knowledge for Legacy Waste Items*

5.0 PERFORMANCE

5.1 Performing a Pre-Visual Inspection of Items

This procedure is used in conjunction with the following CCP VE procedures.

- CCP-TP-113, *CCP Standard Contact/Handled Wasted Visual Examination*
- CCP-TP-120, *CCP Container Management*

NOTE The steps in this section are not required to be performed in sequence; unless otherwise specified by the PIC/FLM.

[1] Advise the waste-generator contact person to disassemble the item, if the item can be safely disassembled into pieces that fit into a 55-gallon container, SWB, or other approved containers.

[a] IF an item is TRU and too large to fit in a SWB,
THEN contact NPI-7 Group Management for guidance.

[b] IF item is not TRU, but instead LLW,
THEN contact the NPI-7 LLW team.

5.2 Performing a Visual Inspection

NPI-7 personnel review NPI-7 waste management data and visually inspect TRU waste before the waste is sent for packing into waste containers (WCs). The VI confirms the AK for the waste. VI is conducted at the waste-generation site and documented in the electronic WCATS system using hand-held data devices.

If waste items fail to meet the VI criteria described in the steps below, then the personnel performing the inspection contact the FLM to determine the necessary action. The FLM determines whether or not the discrepancy can be resolved by the contact person, or if the discrepancy must be documented as a nonconformance.

The VI is documented in WCATS using hand-held data devices. The NPI-7 personnel provide a waste item identification (ID) to the generators after the physical VI is completed on the WCATS.

5.2 Performing a Visual Inspection, (continued)

NOTE 1 When performing visual inspections of liquids, consult your FLM for further guidance.

NOTE 2 NPI-7 personnel and waste-generator contact persons perform the following steps at the waste-generation site.

NOTE 3 Waste items that are considered NON/ROUTINE or NON/ROUTINE PROGRAMMATIC waste are reviewed on a case-by-case basis by the AK investigator. The AK investigator completes the Acceptable Knowledge Information Summary form found in FFS-AP-020, *Documenting Acceptable Knowledge for Legacy Waste Items*. NPI-7-personnel use the information on the form to document the Environmental Protection Agency (EPA) hazardous waste codes assigned to the item, if any, on the WCATS.

[1] Verify the following for the waste:

- A process status (P/S) code exists for the process that generated the waste.
- The waste contains only those EPA hazardous waste (HW) codes listed for the assigned P/S code.

[2] Log onto the WCATS system using Z# and password.

NOTE The WCATS creates a unique item ID. NPI-7 personnel are the only authorized delegates to enter all applicable information on WCATS.

[3] Enter all applicable waste information into WCATS.

[4] Enter Hazardous or Nonhazardous based on the results of AK documentation; then WCATS automatically enters the EPA HW codes.

[5] Create a new waste item in WCATS, if necessary, or access an existing waste item, if the waste item ID is already created.

[6] Properly characterize and describe the waste as follows:

- Enter Not Applicable (N/A), if a certain field is not applicable.
- Use the AK Form found in FFS-AP-020, *Documenting Acceptable Knowledge for Legacy Waste Items*, during the VI process of a NON/ROUTINE waste item.
- Use the established PS and AK profiles in WCATS during the VI process of Routine Waste Items. The waste generator provides this information to the NPI-7 personnel for routine waste items.
- Select the waste matrix based on the Discard Matrix Codes in WCATS.
- Verify through VI that the correct waste matrix is recorded.

5.2 Performing a Visual Inspection, (continued)

[7] IF the waste contains any of the following prohibited items,
THEN contact the generator for remediation:

- Hazardous constituents not listed in the Hazardous Waste Constituents Acceptable at WIPP
- Non-TRU hazardous waste (i.e., less than 50 k disintegrations per minute [dpm])
- Nonradioactive pyrophoric materials
- Pyrophoric radioactive materials (e.g., plutonium and uranium metal) are limited to less than 1 wt% of the package and must be generally dispersed
- Sealed Containers ≥4 liters
  - IF the generator has an item in a can ≥ 3 liters,
    THEN ensure the lid being used has a carbon filter installed.

NOTE 1 Filtered lids may be obtained from the warehouse by the generator for the various cans ≥3 liters. The generator is responsible for obtaining filters.

  - IF the waste is characterized by CCP using VE,
    THEN the CCP VE expert can use knowledge of the waste-generating process and the method used to close containers to ensure that sealed containers ≥ 4 L are not present.
  - IF the generator has an item in a can ≥ 4 liters,
    THEN the can must be vented using a carbon filter,

    OR closed using "X" taping so that the can is not sealed,

    OR a hole is punched in the can and observed by the CCP VE expert.
- Compressed gases-containers must be punctured or the valve must be wired open and the wire left in place for the RTR to be able to see.
- DOT Oxidizers or other ignitable materials (i.e., EPA hazardous waste [HW] code D001)
- Corrosive liquids (e.g., pH < 2 or > 12.5) (EPA HW code D002)
- Explosives or reactive chemicals (EPA HW code D003)
- Polychlorinated biphenyls (PCBs) in concentration 50 ppm
- Measurable tritium-contaminated TRU waste

5.2 Performing a Visual Inspection, (continued)

NOTE 2 TA-55 policy prohibits any free liquids in a TRU waste container. All liquids must be absorbed or solidified according to TA55-RD-539, *TA-55 Waste Management*, or disposed down the radioactive liquid waste drain.

[8] IF a container is non-transparent and liquid is detected by shaking, THEN assume the container to be filled with liquid.

[9] Ensure that the following waste types are segregated:

- Combustibles from noncombustibles
- Contact-handled (CH) TRU waste from remote-handled TRU waste
- ^{239}Pu from ^{238}Pu (primary isotope), when possible
- ^{238}Pu noncombustible items from hydrogenous materials (e.g., plastic bags, rags, etc.)
- Asbestos-containing waste from all other waste (i.e., asbestos containers must be marked appropriately)

NOTE Small quantities of SNM may be contained in or found on oversized waste items that do not fit into WCs approved for shipment to WIPP (e.g., 55-gallon containers and SWBs). Those oversized waste items are normally kept in the PF-4 basement storage areas until they can be either size reduced/decontaminated (i.e., by generator) within PF-4 or shipped offsite for storage and size-reduction.

[10] Measure the waste items to determine if it fits into an approved, oversized-waste container or other approved container or if it can be size-reduced to fit into a 55-gallon container.

- Auxiliary equipment, small equipment, loose items, and appliances are disconnected, if possible
- Unnecessary supporting structures are removed
- Liquids are drained from all piping
- Ensure the generator drained and filled the pumps with vermiculite or an approved absorbent.

NOTE All waste items weights must be recorded in kilograms (kg).

[11] Enter the estimated item weight on the appropriate WCATS screen.

5.2 Performing a Visual Inspection, (continued)

[12] Add any comments necessary for clarification or supplemental information in the Comments field of the WCATS.

NOTE The WCATS assigns a waste item identification number (i.e., Item ID). Electronic signatures of NPI-7 personnel indicate the waste was properly characterized.

[13] Notify the generator with the waste item ID and provide labels with the waste item ID.

NOTE Only the waste items identified by the same waste item ID are placed in a transfer container or Waste Container.

[14] Ensure the waste-generator contact person is aware of the following responsibilities:

- marking the waste item with the waste item ID assigned by the WCATS,
- ensuring integrity and proper custody of the item during assay,
- maintaining the integrity and custody of the waste from the point of inspection to the bagout or in-line packaging of the waste, and
- marking the waste item ID on the transfer container.

[15] Ensure waste items are packaged, by generator, properly.

NOTE The applied TID maintains the integrity of the certification driven by this procedure. When a TID is not placed on an item, it must undergo a confirmation assay.

[16] Ensure Tamper Indicating Device (TID) is applied to the waste container.

6.0 POST-PERFORMANCE ACTIVITIES

6.1 Testing

Not Applicable

6.2 Restoration

Not Applicable

6.3 Results

Not Applicable

6.4 Verification/Independent Verification

Not Applicable

6.5 Records Processing

All generated records are electronically captured in the Waste Compliance and Tracking System (WCATS).

7.0 CONTINGENCIES

Not Applicable

8.0 DEFINITIONS AND ACRONYMS

Term	Definition
AK	Acceptable Knowledge
ALARA	As low as reasonably achievable
Am	Americium
CCP	Central Characterization Project
CPM	Counts per Minute
CSLA	Criticality Safety Limit Approval
DOP	Detailed Operating Procedure
DOT	Department of Transportation
DPM	Disintegrations per minute
EPA	Environmental Protection Agency
FLM	First Line Manager
HW	Hazardous waste
ID	Identification
IWD	Integrated Work Document
Kg	Kilogram
LANL	Los Alamos National Laboratory
LLW	Low Level Waste
mrem	millirem
mrem/hr	millirem per hour
N/A	Not Applicable
NON/ROUTINE	Legacy waste and/or dismantling glove boxes, etc.
P/S	Process Status
PCB	Polychlorinated biphenyl
POC	Pipe overpack component
NON/ROUTINE PROGRAMMATIC	Currently processed waste that does not meet STL.
Pu	Plutonium
R	Rem
RTR	Real time radiography
RWP	Radiological Work Permit
SNM	Special nuclear material
STL	Safeguards termination limit
SWB	Standard Waste Box

8.0 DEFINITIONS AND ACRONYMS, (continued)

Term	Definition
TID	Tamper indicating device i.e. multi-lok, quick seal, mylar, cup-seal.
TRU	Transuranic, >100nCi/g or >50,000 cpm.
VE	Visual Examination
VI	Visual Inspection
WC	Waste Container (55 gal container, POCs, SWBs, and other approved boxes)
WCATS	Waste Compliance and Tracking System
NPI-7	Waste and Environmental Services – Facility and Field Services
WGI	Waste Generator Instructions
WI	Work Instruction
WIPP	Waste Isolation Pilot Plant

9.0 RESPONSIBILITIES

9.1 Waste-generator Contact Person

- Responsible for providing Visual Examination expertise and certification of TRU Waste.

9.2 Acceptable Knowledge Person

- Responsible for reviewing legacy waste items and ensuring acceptable knowledge is properly documented.

9.3 Low Level Waste Team

- Responsible for the disposition of all LLW waste.

9.4 NPI-7 Group Management

- Responsible for authorizing all work which will be performed using this DOP.

10.0 REFERENCES

Document Number	Title
CCP-TP-113	*CCP Standard Contact/Handled Waste Visual Examination*
CCP-TP-120	*CCP Container Management*
FFS-AP-020	*Documenting Acceptable Knowledge for Legacy Waste Items*
P 930-1	*LANL Waste Acceptance Criteria*
P101-1	*Ergonomics*
P101-18	*Procedure for Pause/Stop Work*
PA-AP-01020	*Pre-Job Briefing and Post-Job Review*
TA55-DOP-016	*TA55 Material Transfer Procedure*
TA55-DOP-032	*Introducing and Removing Items from Bagout/Drumout Port*
TA55-DOP-091	*Nuclear Material Packaging for Storage*
TA55-RD-539	*TA-55 Waste Management*
TA-55-RD-555	*Radiation Protection Requirements*
TA55-RD-585	*Nuclear Materials Control and Accountability Implementation Plan*

11.0 RECORDS

All records are maintained electronically in the WCATS system.

12.0 APPENDICES AND ATTACHMENTS

Not Applicable

PA-DOP-01456, Packing TRU Waste into Approved Containers, R1

LA-UR-14-24975

Attachment A, Resumption Evidence and Approval Traveler

(Page 1 of 1)

TRACKING # ROE-27

Process	Procedure #	CSED/CSLA # *(if applicable)*
Packing TRU Waste into Approved Containers	PA-DOP-01456	08-172, -173, -174, -175, -176

- ☑ PA-NOTICE-01007-FM2 – Attachment B, Technical Procedure Verification Checklist
- ☑ PA-NOTICE-01007-FM3 – Attachment C, Technical Procedure Validation Checklist
- ☑ PA-NOTICE-01007-FM4 – Attachment D, Criticality Evaluation Screening and Review Checklist
- ☑ PA-NOTICE-01007-FM5 – Attachment E, Seven Points Compliance Validation Memo
- ☑ Independent Verification evaluation complete
- **NOTE**: Independent verification, as defined by ADPSM, is required for all operations with *"Pu in metal"* Operational limits > 2300g, and for all 400 AREA aqueous solution operations.
- ☑ Additional Supporting Information Attached

NA TO 10/14/13

INDEPENDENT VERIFIER SIGNATURE *(if required)*

Name	Z Number	Signature	Date
Not applicable			

RESPONSIBLE OPERATIONS/ENGINEERING MANAGER(S) SIGNATURES

Name	Z Number	Signature	Date
Peter Carson	203878	KA Lacy for Pete Carson	10-10-13
Keith Lacy	149262	KA Lacy	10-10-13

DIVISION LEADER(S) SIGNATURES

Name	Z Number	Signature	Date
Stephen Schreiber	094595	S Schreiber	10/10/2013
Tom Nelson	108813	Tom Nelson	10/10/13

APPROVAL AUTHORITY SIGNATURES

☒ ***(ADPSM only approval required)***

ADPSM *(print name)* Jeffrey Yarbrough	Z Number 105580	Signature	Date 10-10-13
PADWP *(print name)* Bret Knapp	Z Number 142723	Signature	Date
DIR *(print name)* Charles McMillan	Z Number 125229	Signature	Date

NPI-7

Detailed Operating Procedure

Approval Cover Sheet

Document Number: PA-DOP-01456, R1

Effective Date: 10/15/13

Next Review Date: 10/15/16

Supersedes:

Title: Packing TRU Waste into Approved Containers

Status:	Hazard:	For Document Control Use Only:
☐ New	☐ Low-hazard	
☒ Major revision	☒ Moderate-hazard	
☐ Minor revision	☐ High-hazard/complex	
	Use Type:	
	☒ Reference ☒ Use every Time (Attachments A-C)	

	Organization	Date	Signature
Approved for Use By: Document Owner:			
Keith Lacy *Group Leader*	NPI-7	10/10/13	*Signature on File*
Authorized for Use By: FOD:			
Chuck Tesch *OM*	TA55-DO	10/10/13	*Signature on File*
Released: FOD:			
Chuck Tesch *OM*	TA55-DO	10/10/13	*Signature on File*

☒ Unclassified ☐ Restricted Data	**Derivative Classifier:**
☐ Confidential ☐ Formerly Restricted Data	**Name:** *Signature on File*
☐ Secret ☐ National Security Information	**Title:** NM Specialist **Date:** 10/10/13
☐ Unclassified Controlled Nuclear Information	
☐ Official Use Only	**Derived from: CG-LANL-COMP-1**

Revision History

Document Number	Effective Date	Action	Description
PA-DOP-01456, R1	10/15/13	Major Revision	• Revised Sections 2.1, B, D, E Criticality Safety comments • Revised Sections 2.1, G, Training • Revised Section 3.2, Performance Documents • Updated Section 8.0, Definitions and Acronyms
PA-DOP-01456, R0	Not Made Effective	New	• New Document • Incorporates FFS-DOP-011, R10-IPC3 • Supersedes FFS-DOP-011, R10-IPC3

Table of Contents

1.0 INTRODUCTION 5
1.1 Purpose 5
1.2 Scope 5
1.3 Applicability 5
1.4 Technical Safety Requirements (TSRs) 6
2.0 PRECAUTIONS AND LIMITATIONS 6
2.1 General 6
2.2 Additional Requirements and Conditions (WR Use) 11
3.0 PREREQUISITE ACTION 11
3.1 Planning and Coordination 12
3.2 Performance Documents 12
3.3 Special Tools, Equipment, Parts, and Supplies 13
3.4 Field Preparation 15
3.5 Approvals and Notifications 15
4.0 ACCEPTANCE CRITERIA 15
5.0 PERFORMANCE 15
5.1 Material Transfer 15
5.2 Criteria for Packing Waste Containers 16
5.3 Preliminary Inspection of Waste Containers 18
5.4 Inspecting and Labeling Waste Containers 18
5.5 Packing In-Line Waste Containers 20
5.6 Packing Out-of-Line Containers 27
5.7 Re-Opening Waste Containers 36
5.8 Acceptance/Transfer Checks of Off-Site Containers 37
5.9 In-Service Inspection of TRU Waste Containers 38
5.10 Quality Assurance Inspection of TRU Waste Containers 38
5.11 Room 432 Logbook Entries from Waste Containers 38
5.12 Packing Classified TRU Waste 39
5.13 Controlling Classified TRU Waste Outside of a Protected Area 40
6.0 POST-PERFORMANCE ACTIVITIES 42
6.1 Testing 42
6.2 Restoration 42
6.3 Results 42
6.4 Verification/Independent Verification 42
6.5 Records Processing 42
7.0 CONTINGENCIES 42
8.0 DEFINITIONS AND ACRONYMS 44
9.0 RESPONSIBILITIES 46
9.1 NPI-7 Personnel 46
9.2 Quality Assurance Representative 46
9.3 Central Characterization Project 46
9.4 Operations Center 46
9.5 First Line Manager 46
9.5 Person-in-Charge 46

9.6 Radiological Control Technician 46
10.0 REFERENCES 47
11.0 RECORDS 48
12.0 ATTACHMENTS AND APPENDICES 49
Appendix 1, Transuranic Waste Matrix Mixing 50
Appendix 2, Normal 55 Gallon Container Labeling 51
Appendix 3, WIPP Approved Filters 52
Appendix 4, Example ISI Label 55
Appendix 5, Manufacturers Torque Specification Label 56
Attachment A, TSR 6.2.5 ISI-5, TRU Waste Shipping Container Inspection Form [UET] 57
Attachment B, Waste Container Quality Assurance Inspection Form [UET] 60
Attachment C, Classified TRU Waste Escort Logbook Form [UET] 61
Attachment D, Container in Process Data 63

1.0 INTRODUCTION

1.1 Purpose

This Detailed Operating Procedure (DOP) provides instructions for inspecting, preparing, packing, sealing, labeling, and remediating Transuranic (TRU) waste packed into approved containers and destined for the Waste Isolation Pilot Program (WIPP) and TA-54. The Waste Compliance and Tracking System (WCATS) captures the documentation of these processes. The instructions also identify opening previously closed containers to ensure compliance for WIPP and TA-54 requirements.

Waste Generator Instructions (WGI) are supplemental instructions for ensuring waste is acceptable for TA-54. WGIs are controlled documents in the Waste Disposition Program (WDP) system and are referenced in Section 10.0, References.

Justifications Memos are used to authorize the discard of items and are attached electronically to the waste items on the WCATS. Other memos are issued and acknowledged by TRU Waste personnel to further clarify waste operations and compliance issues until entered into the procedure. Some memos are Discard Memos or Deviation from Safeguards Memos. When these memos are attached to an item that is over the safeguards termination limit (STL), the electronic system allows the packing of the item.

1.2 Scope

This DOP is specifically for use by trained Nuclear High Hazard Technicians and certified Fissile Material Handlers (FMH) assigned to TRU Operations at TA-55. These technicians inspect, prepare, pack, seal, label, and remediate TRU waste packed into approved containers. This work is performed at TA-55, predominately in PF-4. TRU operations and qualified personnel may use this procedure at other Los Alamos National Laboratory (LANL) sites as determined by NPI-7 group management.

1.3 Applicability

- The regulatory drivers for this procedure are based on criteria set forth in the WIPP and TA-54 acceptance criteria.
- The PIC/FLM directs UET Attachment use.

1.4 Technical Safety Requirements (TSRs)

This procedure verifies the following surveillance requirements for Limiting Conditions for Operation (LCO) and the In-Service Inspection (ISI) from TA55-TSR-2011, *TA-55 Technical Safety Requirements (TSRs)*:

3.7.2 Material-at-Risk (MAR), All Material Types

LCO: MAR SHALL be limited as follows:

4. In the basement of PF-4, excluding the vault, the RoboCal room, and the packaging/unpackaging rooms:

a. a limit of 30 kg of Pu-equivalent of waste

6.2.5 Containers for NUCLEAR MATERIAL Outside of Gloveboxes
The DF performance criteria, ISI actions, and ISI FREQUENCIES are presented as follows:

4. Packaged TRU waste shipping containers:

- are DOT Type A containers (e.g., 55-gallon drums, standard waste boxes, and overpack containers) or equivalent
- have WIPP-approved filter-vents, or equivalent

TSR 6.2.5 ISI
5. An individual packaged TRU waste shipping container is to be visually inspected for presence of vents and signs of wear or degradation.

Frequency: Upon final container packing

2.0 PRECAUTIONS AND LIMITATIONS

2.1 General

A. Stop Work

All workers are responsible for pausing or stopping work when they have a reasonable belief that quality, work risks or hazards are not effectively controlled and workers have the right to do so without fear of reprisal. LANL Policy P101-18 provides more information on the differences between pausing or stopping work and the process for resuming work in either case.

If this procedure cannot be completed as written or abnormal conditions are encountered, PAUSE WORK, place the work in a safe configuration if possible, and notify the Operations Center (OC) and First Line Manager (FLM/PIC).

2.1 General, (continued)

B. Hazards and Controls

Hazard	Controls
Build up gases	• Inspect bags and waste containers and ensure filtering device is installed. • Either install a filtering device or remove the ¾" plug prior to bringing waste containers into PF-4. • Drums must be locked prior to staging in PF-4.
High Noise Levels	• Wear hearing protection in posted areas. • Limit time spent and maximize distance from operating equipment. • Enrollment in Hearing Conservation Program.
Nuclear Criticality	• Only individuals with current Fissionable Material Handler (FMH) certification perform operations involving fissionable material • See Section 10.0, *References,* for a listing of process-specific Criticality Safety Limit Approvals (CSLAs)
Pinch Points	• Use HexArmor overglove or equivalent such as North leather overglove, both available from TA-55 warehouse, as needed when handling potential pinch point items.
Pressure may build up in empty 55-gallon drums due to changes in altitude	• Before removing the drum lid, open any bunghole on the lid of the container very slowly and wait for pressure to equalize before moving the bung completely. • Make sure two people are involved.
Pushing, Pulling, and Lifting Waste Items and Containers	Use proper lifting techniques and equipment • Lift it right: Get close to the article and center your body over your feet; bend at the knees, keeping your spine straight and grasp the object. • Use your stronger thigh muscles to push yourself up. As you start the lift, raise your eyes and look ahead. This will help keep your spine in the correct alignment. Use two people for heavy lifts or large bulky items. • Avoid awkward and forceful positions during lifts • Back care training is recommended • Wear safety Shoes when removing/replacing container lids on large heavy containers such as metal drums, ST-90s, metal casks, etc. • Use proper lifting techniques, slings, or lifting straps • Use forklift or crane • Use dolly as appropriate

2.1 General, (continued)

B. Hazards and Controls, (continued)

Hazard	Controls
Radiological Contamination/ Ionizing Radiation	• Follow TA55-RD-555, *TA-55 Radiation Protection Requirements*. • Practice ALARA by minimizing time, maximizing distance, and using temporary shielding as necessary. • RWP required - If dose rates are ≥75 mrem/hr at 30 cm and/or ≥700 mrem/hr on contact. - Packing waste in drums, POC drums, SWB, or waste containers • Notify the radiological control technician (RCT) to perform dose rate survey when transferring radioactive material from one location to another that may change radiological conditions.
Trips, falls, crushing	• Wear appropriate foot wear • Clean all spills immediately • Use postings to warn workers of hazard • Remove clutter/obstructions and make sure you have good lighting • Close file or storage drawers and pick up after yourself • Mark or post areas that you identify that may cause a slip or fall and contact an IH/Safety rep. to evaluate immediately

C. Unique Entry Conditions

P-4 access control requirements.

2.1 General, (continued)

D. Basis for Use Categorization/Sequence of Steps

- This procedure is designated as a reference procedure because it relies on the training and expertise of the performers for successful performance, the consequences for error are not high, the procedure is routinely performed and the data collection and sign-offs are performed using the Waste Compliance and Tracking System computer database and computer-based logic, which diminishes the likelihood of data collection errors.
- The major sections of this procedure may be preselected for accomplishment independently or in parallel as directed by the PIC/FLM, therefore not required to be performed in sequence. However, the substeps in the Performance subsections are performed in sequence unless otherwise directed by the PIC/FLM.
- Attachments A-C are designated "UET" because of TSR requirements.

E. Criticality Safety Limit Approval (CSLA) Requirements

CRITICALITY SAFETY REQUIREMENTS MC&A LOCATION: X415	
Operational Process Requirements	
Pu in waste	≤ 520 FGE*

CRITICALITY SAFETY REQUIREMENTS MC&A LOCATION: F432	
Operational Process Requirements	
Pu in Waste	≤ 200 FGE* per 55-gallon drum[1]
AND	
Pu in Waste	≤ 100 FGE* per 30-gallon drum[1]
AND	
Pu in Waste	≤ 200 FGE* per Denoted Area[2]

[1] 30-, and 55-gallon drums define their own location and must not be stacked.
[2] Denoted Area is defined as a marked off area that is 2-foot by 2-foot or larger in size.

2.1 General, (continued)

CRITICALITY SAFETY REQUIREMENTS MC&A LOCATION: B40, B45, BLLM		
Operational Process Requirements		
The following can be stored in any combination within an infinite by infinite by three unit high array. **Pu in waste** ≤ 200 FGE* per 55-gallon drum ≤ 100 FGE* per 30-gallon drum **Pu in oversized waste items** ≤ 100 FGE* per Flatbed Cart or Wagon ≤ 350 FGE* per Pallet, SWB, or larger by volume container	**OR**	The following can be stored in a five by five by three unit high array, with a 10-foot separation from other fissile materials. **Pu in waste** ≤ 300 FGE* per 55-gallon drum
Restrictions/Notes • All quantities of ^{233}U, ^{235}U, ^{237}Np, Am , and Cm shall be counted as a gram-for-gram equivalent to ^{239}Pu in complying with the limits • Am must be ≤ 10 wt.% of ^{242}Am and Cm must be ≤ 5 wt.% of ^{245}Cm • 30-, 55-gallon drums, SWB, and larger by volume containers, define their own location • Flatbed Carts and Wagons define their own location • The FGE limit for drums on a pallet is based on the FGE limit for drums and not the pallet FGE limit • Flatbed Carts or Wagons are not stackable • Isotopes of Th, Pa, and ^{238}Pu, and Cf do not count toward the criticality safety administrative requirements • Natural and depleted uranium do not count toward the criticality safety administrative requirements		
CRITICALITY SAFETY REQUIREMENTS MC&A LOCATION: B35		
Operational Process Requirements		
The following may be staged in an infinite by infinite by up to three high array or multiple arrays: **Pu in waste** ≤ 200 FGE* per 55-gallon drum		
CRITICALITY SAFETY REQUIREMENTS Transport of 55-Gallon Waste Containers		
Operational Process Requirements		
Pu in waste • Stack containers no more than two high • Waste containers shall have lids in place		≤ 200 FGE* Pu per container
*FGE = Fissile Gram Equivalent		

2.1 General, (continued)

F. Required Permits

Radiation Work Permits (RWPs) are required when dose rates ≥ 75 mrem/hr at 30 cm or ≥ 700 mrem/hr on contact.

G. Training and/or Qualifications

- This procedure is performed by a qualified PF-4 TRU Waste Operator (WQAS #2312). [Conditional authorization is allowed and must be documented in the Worker Qualification and Authorization System (WQAS)].
- TSR surveillances are performed by a qualified TSR Surveillance Performer (curriculum #10067).
- Workers in training must be under the supervision of a qualified mentor.

H. Cautions

Not Applicable

2.1 General, (continued)

I. Material Control and Accountability

Prior to movement of material, refer to TA55-DOP-016, *TA55 Material Transfer Procedure,* to ensure that the MAR is in accordance with TA55-TSR-2011, *TA-55 Technical Safety Requirements (TSRs)*, 3.7.2.4.a, ". . . in the basement of PF-4, excluding the vault, the RoboCal room, and the packing/unpacking rooms a limit of 30 kg of Pu-equivalent of waste." Personnel also reference TA55-RD-585, *Nuclear Material Controls .and Accountability*.

2.2 Additional Requirements and Conditions (WR Use)

Not Applicable

3.0 PREREQUISITE ACTION

The Sections and the Steps in the Prerequisite Actions section may be performed out of sequence, unless otherwise stated.

3.1 Planning and Coordination

[1] Ensure plant conditions are in Mode 1 before commencing work.

[2] Ensure that a pre-job brief is conducted in accordance with PA-AP-01020, *TA-55 Pre-Job Briefing and Post Job Review*.

[3] The PIC/worker is responsible for ensuring that they are working to the most current procedure and complies with document control processes concerning copying, marking, and final deposition.

[4] Obtain permission from the Operations Center (OC) before conducting a Technical Safety Requirement (TSR) or In-Service Inspection (ISI) surveillance.

[5] Schedule the work with the Facility Operations Director (FOD) organization using the Plan of the Day (POD), when applicable.

[6] Verify that tools, equipment, and material numbers in the work area match those specified.

[7] PIC/FLM determines which performance sections to be accomplished.

[8] Ensure compliance with all appropriate steps according to TA55-DOP-016, *TA-55 Material Transfer Procedure.*

[9] The PIC/Worker is responsible for ensuring that the planned process evolution can be executed in compliance with relevant Fissile Material Operation (FMO) limits and requirements prior to releasing the work.

3.2 Performance Documents

- TA55-DOP-016, *TA55 Material Transfer Procedure*
- FFS-DOP-004, *Visual Inspection of TRU Waste*
- CCP-TP-113, *Standard Contact Handled Waste Visual Examiniation*
- Applicable Radiological Work Permits
- Manufacturer’s Operations Manuals

3.3 Special Tools, Equipment, Parts, and Supplies

- Filtered bag
- 4 or 5-mil polyethylene bags
- 4-wheel flat-bed , assorted carts
- 55-gallon UN/1A2/X 425/S steel containers or equivalent to meet specs provided by the buyer and procurement specialist
- Bar Code labels
- Blue NON-RCRA REGULATED labels
- Bolt Cutters
- Bung lids and crimper tool
- C-722 Wrench Type Header tool
- Calibrated platform scalesCalibrated torque wrenches
- Certified bridge crane
- Certified forklift attachments
- Certified lifting straps
- Fantastik®, 409®, or equivalent
- Forklift
- Guide pins for lid alignment
- Hack Saw
- Hand tools (knife, socket, low torque driver, hammer, screw driver, open-end crescent wrenches, measuring device, assorted other tools).
- Handheld WCATS Data Entry Device
- Handheld grinder
- Hard Hats
- Ladder
- Non-locking, liquid, anaerobic, thread sealant
- NUCFil 019DS carbon filters (or equivalent)
- Pallet jack
- Permanent marker
- Push-type drum handler, drum roller, or mechanized drum handler, box roller, rolo-lift, lift table
- Reciprocating saw

3.3 Special Tools, Equipment, Parts, and Supplies, (continued)

- Styrofoam sheets, wood, or equivalent bracing and shoring
- Tamper indicating devices (TID)
- Vinyl tape
- Wagon, cart, flat beds, dollies, hand dollies, drum rollers
- White cotton gloves
- White polyethylene open rigid drum liner (no lid)
- Padlocks
- Yellow HAZARDOUS WASTE labels
- Yellow RADIOACTIVE WASTE labels
- Mallet
- Labels with specified torque specifications

Table 1 Equipment Description and Location

Equipment Number (N/A if no number)	**Equipment Name**	**Manufacturer/ Model**	**Description**	**Location**
N/A (changed frequently)	Scale 432	Certified Scale	Platform	Rm 432
N/A (changed frequently)	Scale Basement	Certified Scale	Platform	Basement
228034	Crane	Certified Scale	½ ton	Rm 432
N/A (changed frequently)	Mobile Scale	DORAN	Easy Lift Mobile Scale	Mobile

Table 2 Tools and Fixtures

Tool Number	**Title/Description**
N/A (changed frequently)	Assorted Length Straps
N/A (changed frequently)	Forklift Attachment
N/A (changed frequently)	Drum Grabber
N/A (changed frequently)	Drum Lifter

Table 3 Measuring and Test Equipment

Description	**Range**	**Accuracy**	**Calibration Category**
0-100 Foot pound Torque Wrench	20-100%	±5%	Annual
0-200 Inch pound Torque Wrench	20-100%	±5%	Annual

Table 4 Process Materials

Process Materials Number	**Title/Description**	**Amount Required** (if required)
N/A		

3.3 Special Tools, Equipment, Parts, and Supplies, (continued)

Table 5 Floor Stock/Shop Aids

Floor Stock Number	Title/Description	Quantity (if required)
N/A		

Table 6 Software

Software Number	Title/Description
N/A	Waste Compliance and Tracking System (WCATS)

3.4 Field Preparation

Field preparations include sorting and segregating waste items, ensuring open front hood vacuum, contacting RCT support, and verifying red light is lit prior hot job.

3.5 Approvals and Notifications

Not Applicable

4.0 ACCEPTANCE CRITERIA

TSR 6.2.5 ISI 5: An individual packaged TRU waste shipping container is to be visually inspected for presence of vents and signs of wear or degradation, upon final container packing. Acceptance criteria are specified in Attachment A.

5.0 PERFORMANCE

5.1 Material Transfer

[1] Prior to movement of material, refer to TA55-DOP-016, TA55 Material Transfer Procedure, to ensure that the MAR is in accordance with TA55-TSR-2011, TA-55 Technical Safety Requirements (TSRs), 3.7.2.4.a, “. . . in the basement of PF-4, excluding the vault, the RoboCal room, and the packing/unpacking rooms a limit of 30 kg of Pu-equivalent of waste.”

[2] When moving material, ensure compliance with TA-55-DOP-016, TA-55 Material Transfer Procedure, and applicable criticality safety limits and controls.

5.2 Criteria for Packing Waste Containers

NOTE 1 This DOP makes use of 55-gallon containers, which are manufactured by Skolnik Industries, Inc. or by Meyers Containers, LLC. The recommended torque specifications for these waste containers (WCs) may vary from purchase order to purchase order. An example of the torque specifications for a 55-gallon container are a minimum of 60 ft-lbs for the ring bolt, 30 ft-lbs for the bung, and 10 ft-lbs for the filter. Refer to the torque label on the container lid for appropriate torque specifications.

NOTE 2 Utilizing WCs from other manufacturers is permissible but when used to package the waste follow that manufacturer's current torque specifications, which coincide with the appropriate purchase order number, found in their current Operation Manual. Also the WC from another manufacturer will require evaluation by Operations Support – Packaging and Transportation (OS-PT) prior to on-Laboratory Transfer under the Transportation Safety Document and its Technical Safety Requirements.

[1] Prior to use, ensure calibrated equipment is current (i.e., not expired) and appears undamaged.

[2] IF the calibration of any calibrated equipment (e.g., scales, torque wrenches, etc.) has expired
THEN perform the following:

- **[a]** Place an out-of-calibration tag on equipment (i.e., available from the Standards and Calibration Lab) or a temporary tag until obtained
- **[b]** Segregate the item to further ensure unintentional use
- **[c]** Notify the QA representative to submit a Nonconformance Report per P330-6 and P330-2.
- **[d]** Submit for recalibration

[3] Use transport containers to contain items with dose rate measurements > 200 mrem/hr are to be placed in a POC per FFS-DOP-012.

[4] Place any item with dose rate measurement of > 200 mrem/h on contact into a Hagan can with its tin alloy shielding on the sides and bottom.

5.2 Criteria for Packing Waste Containers, (continued)

NOTE Items that do not meet STLs require a deviation memo. This memo states the items do not have to meet the STLs. However, our current generation of items must meet. The memo is attached electronically to each individual vault item requiring it on the WCATS.

[5] Attach memo "Deviation for Termination of Safeguards", if applicable.

NOTE Meeting the 10% rule is required under the custody of the generator.

[6] Ensure nuclear material does not exceed, by weight, 10% of the net weight of the item's content.

[7] Ensure any container containing items, which do not meet the STL and are covered by the memo "Deviation for Termination of Safeguards," is loaded to a maximum of 150 grams Pu^{239} Fissile Gram Equivalent (FGE) (i.e., uncertainty not included).

[8] Ensure container is clearly identifiable by RTR examination as either debris or homogeneous waste.

NOTE It is permissible to add minor volumes of homogeneous waste items with predominantly debris (i.e., heterogeneous) container. Therefore, small volumes of absorbed organic liquids, spent resins, salts, or ash can be discarded in a container which contains significantly more volume of heterogeneous waste items such as combustibles, metals, graphite, glass, and filters provided the Nondestructive Assay (NDA) Lab measurements for waste items are similar and would not have any issue with confirmation of the container. See Appendix 1 for the different waste matrices.

[9] Contact PIC/FLM for special approvals if need to add minor volumes of homogeneous waste.

[10] Ensure items ≥170 mrem/h on contact have an assay for 241 Americium (Am).

[a] Verify these assay results are entered in the WCATS by the NDA lab.

5.3 Preliminary Inspection of Waste Containers

NOTE 1 When the container supply is low, order DOT-certifies Type A WC's through the group procurement representative. Be sure if the vendor supplying containers has changed that we have the container pedigree papers indication any change in torque requirements. Procurements Representative NPI-7 maintains a copy of the procurement record and receipt inspection forms.

NOTE 2 Department of Transportation (DOT) certified Type 7A 55-gallon containers are used to package TRU waste. The following is a general inspection to ensure the containers are acceptable for use before bringing them into PF-4 or other locations where container packing occurs. This inspection is not documented.

[1] Perform a preliminary inspection of the WCs outside of PF-4 for any obvious damage (e.g., dents, bulges, deep scratches, shape distortion, and rust) to determine which WC can be used for waste disposal.

[2] Mark rejected WC with a black, 4-inch "X" using a permanent marker.

[3] Remove ¾ inch bung plug/fitting.

[4] Leave the WC at the outside storage area.

5.4 Inspecting and Labeling Waste Containers

NOTE The following inspection ensures that all WCs are acceptable for use. All WCs must be inspected and labeled according to the following steps.

[1] When moving material, ensure compliance with TA-55-DOP-016, *TA-55 Material Transfer Procedure*, and applicable criticality safety limits and controls.

[2] Move WCs from the basement storage area to Room 432 or other location where packing will occur.

[3] Inspect the WCs for damage.

[a] Verify that container is a UN1A2 container and has label outside or stamped into bottom

[4] Mark any damaged WCs with a black, 4-inch X using a permanent marker.

[a] Notify NPI-7 low-level radioactive waste (Low Level Waste [LLW]) personnel to dispose of the WC.

5.4 Inspecting and Labeling Waste Containers, (continued)

[5] Label the WCs.

[a] Always clean the surfaces with an appropriate cleaner (e.g., Fantastik® or equivalent) to ensure they are free from dust and oil.

NOTE 1 Containers stored in PF-4 assume room temperature allowing the adhesive to adhere properly. After the adhesive has set, the labels can tolerate winter and summer outdoor temperatures and reasonable wetting. Container seams must not be covered with markings or labels of any type. Do not overlap one label on top of another label or stenciling.

NOTE 2 The substeps below are not required to be performed in sequence unless directed by the PIC/FLM.

[6] Obtain a sheet of barcode labels for each WC assembly that passes the inspection; barcode labels on a single sheet have the same number (i.e., personnel can obtain the barcode labels for containers from Waste Services, ask your FLM/PIC.)

[a] Place three large barcode labels evenly spaced around the circumference, no more than six (6) inches above the bottom of the container, with the first label to the left of the container seam.

[b] Place one large barcode label on the container lid.

[c] Place the last large barcode label to the right of the container seam between the top and first rolling hoop (Appendix 2).

[7] Obtain a copy of the manufacturer's closure instruction from the share drive or from a binder containing the information (i.e., closure instructions are valid for all containers procured under a purchase order).

[8] Obtain a copy of the NucFil Torque specifications in the shared drive.

[9] Apply a label to the lid of the container that contains the torque specifications for the following (i.e., Appendix 5 shows an example for this label):

- Container closure ring
- 2-inch bung
- Container filter

5.5 Packing In-Line Waste Containers

NOTE 1 Performance steps of this section are required to be performed in sequence unless directed by the PIC/FLM.

NOTE 2

1. Partially filled WCs may be used if the following occur:
   - The waste in the WC is compatible with the waste to be packed.
   - There is sufficient room in the container for the new waste.
2. A WC is full and ready to be sealed if the following occur:
   - It is physically full
   - The gram loading reaches the maximum amount of nuclear material allowed (200g ^{239}Pu FGE including two (2) times the uncertainty or 80 PE-Ci).
   - If the gross weight for the WC is reached (i.e., the tare of the WC plus the contents).
   - When the time limit of the storage area has been approached.
3. When there is a one-item identification (ID) WC being assayed with a valid TID applied to it, then item assay also serves as the confirmation assay, as long as the original TID is still intact and valid.

NOTE 3 If the item is heavy or has sharp edges or corners the best work practice is to load into an In-Line Container. This prevents a breach of the filter bagout bag. As a precautionary measure, personnel may add a disc of Styrofoam into the rigid liner of the In-Line Container. This cushions the impact of the heavy item to the bottom of the container; preventing a breach to the shipping/transport container.

NOTE 4 Prepared in-line containers are utilized for direct loading TRU waste from a glovebox.

NOTE 5 All torque wrenches used in the following procedural steps must be certified and registered into the WCATS Calibrations Database. The WCATS does not allow the use of any expired torque wrenches while certifying or closing WCs.

NOTE 6 The user of any calibrated torque wrench must ensure that the required torque specifications are within the calibrated torque range of the tool.

5.5 Packing In-Line Waste Containers, (continued)

5.5.1 Preparing an In-Line Container

NOTE 1 Always reset torque wrench to zero setting after use.

NOTE 2 Performance Steps [1-4] of this section are not required to be performed in sequence. All other Steps must be performed in sequence.

[1] Install a WIPP-approved filter or equivalent on the container lid following the steps below in sequential order:

- **[a]** Make certain that the proper gasket is in place on the filter.
- **[b]** Use LocTite® 262 or equivalent all around the filter threads.
- **[c]** Hand install the filter into the ¾-inch thread-flange opening until the gasket is seated onto the flange opening.
- **[d]** Ensure the torque wrench is within the calibrated range for the use.
- **[e]** Use a calibrated torque wrench to install the filter onto the lid of container.
- **[f]** Tighten WIPP-approved filter to manufacturer's current specifications as shown on the label on the container lid. (e.g., 10 ft/lbs ±5 ft/lbs).
- **[g]** Remove all excess sealant from the exterior.

[2] Install a bung in the container lid (follow these steps in sequential order).

- **[a]** Make certain that the gasket is in place on the bung.
- **[b]** Use LocTite® 262 or equivalent all around the bung threads.
- **[c]** Hand install the bung into the 2-inch thread flange opening until the gasket is seated onto the flange opening.
- **[d]** Ensure the torque wrench is within the calibrated range for the use.
- **[e]** Use a calibrated torque wrench to install the bung onto the lid of container.

NOTE Always reset torque wrench to zero setting after use.

- **[f]** Tighten the bung to manufacturer's current specifications as shown on the label on the container lid (e.g., 30 ft/lbs ±5 ft/lbs).
- **[g]** Remove all excess sealant from the exterior.
- **[h]** Install the 2-inch bung cap using the crimping tool.

5.5.1 Preparing an In-Line Container, (continued)

[3] Inspect a rigid container liner for gouges or cracks.

[a] IF the liner is damaged, mark the rejected liner anywhere with a 4-inch "X" using permanent ink,
THEN manage damaged liner as low level waste (LLW).

[b] IF there is no damage to the liner,
THEN place the rigid container liner inside the filtered bagout bag.

[c] Turn the rigid container liner and filtered bagout bag upside-down.

1. Tape the corners of the bagout bag flat to the bottom of the rigid container liner.
2. Circumferentially tape the filtered bag around the base part of the rigid container liner.

[d] Remove the container lid.

[e] Inspect the lid gasket (i.e. cracks, deformation, seated in its proper position).

[f] Ensure the gasket is recessed on the lid.

[g] Place 5 ml bag over filtered bag.

[h] Place the bag assembly into the 55-gallon container.

WARNING

Hazard: **Operating low torque driver.**

Control: **Wear leather or heavy-duty gloves when using low torque driver on bolts.**

[4] Install the Ring Bolt.

[a] Place the lid and ring on the container.

NOTE The ring bolt is not torqued at this time to the manufacturer's current torque specifications, only during the sealing of the container is the torque procedure performed.

[b] Thread the bolt into the lugs with the jam nut between the lugs.

[c] Tighten the ring bolt to allow the use of a lock to maintain custody of the container.

[5] Tare weigh the fully assembled container (i.e., including liners, lid, and bolt ring) using a calibrated scale.

[a] Record the assembled container tare weight in pounds on the lid of the container using a permanent marker.

5.5.1 Preparing an In-Line Container, (continued)

[6] Enter the applicable information into Attachment D.

[a] Record filter month and year of manufacture followed by the serial number

[7] A lock may be placed on ring bolt to prevent any unauthorized use of container.

NOTE Empty containers may be stored in the waste storage area (e.g. TSD or < 90 day areas), if labeled as "EMPTY."

[8] IF a certified container is placed back in the container storage area, THEN ensure the container is labeled "EMPTY."

[9] Enter the applicable information into WCATS.

5.5.2 Packing TRU Waste into an In-Line Container

NOTE 1 In-line containers are used for the direct removal of TRU waste where the container is attached directly to the glovebox. The Generator may pack a 55-gallon in-line container. NPI-7 personnel apply proper labels, markings, and weights when received into room 432.

NOTE 2 When there is a one-item ID WC that is being assayed with a valid TID applied to it, the item assay also serves as the confirmation assay, as long as the original TID is still intact and valid.

NOTE 3 If the item is heavy or has sharp edges or corners, the best work practice is to load into an in-line container. This prevents a breach of the filter bagout bag.

NOTE 4 As a precautionary measure, personnel may add a disc of Styrofoam into the rigid liner of the in-line container to cushion the impact of the heavy item to the bottom of the container, preventing a breach to the shipping/transport container.

[1] Inspect the items at the waste-generation site designated for disposal.

[a] Provide guidance to the contact person, as necessary.

[b] Direct the waste Generator to segregate these items from the accepted items.

[c] Identify any items that cannot be disposed of in the container out.

5.5.2 Packing TRU Waste into an In-Line Container, (continued)

NOTE WCs may be loaded with a maximum of 200g ^{239}Pu FGE including two (2) times the uncertainty. For ^{238} Pu loading limits, see EP-WGI-0206, *Waste Generator Instructions (WGI) for the Disposition of MT-83 Waste*, and consult with your FLM/PIC for further guidance.

[2] Leave the room during the "drum-out" process.

5.5.3 Sealing a Filled In-line Waste Container

NOTE 1 Major steps of this Section (e.g., [1], [2], etc.) are required to be performed in sequence. Substeps (e.g., [a], [b], etc.) may be performed independently. All other substeps are performed in sequence or as directed by the PIC/FLM.

NOTE 2 A container is full when it reaches the maximum amount of nuclear material allowed (200 g ^{239}Pu FGE including two (2) times the uncertainty or 80 PE-Ci), the maximum weight, or when it is physically full.

NOTE 3 All torque wrenches used in the following procedural steps must be certified and registered into the WCATS Calibrations Database. The WCATS does not allow the use of any expired torque wrenches while certifying or closing WCs.

NOTE 4 The user of any calibrated torque wrenches must ensure the torque specifications to be achieved is within the calibrated torque range of the tool.

[1] Ensure the following container-closure processes are completed:

[a] Filtered bagout bag is sealed

[b] Five (5) ml container liner is not sealed

WARNING

Hazard: **Operating low torque driver.**
Control: **Wear leather or heavy-duty gloves when using low torque driver on bolts.**

5.5.3 Sealing a Filled In-line Waste Container, (continued)

NOTE Only during the sealing of the container will the torque procedure be accomplished.

[2] Torque the ring bolt to the manufacturer's current torque specifications.

NOTE 1 The lid is to be positioned so that the bolt ring and filter line up with the seam on the side of the container.

NOTE 2 Steps [a] and [b] below may be performed in parallel or independently. All other substeps are performed in sequence unless directed by the PIC/FLM.

[a] Place the lid on the container.

[b] Place the lid ring bolt onto the container.

1. Make sure that the ring bolt is placed so that the lugs are positioned below the top surface of the container.
2. Tap on the ring with a mallet to make sure it is centered on the container chime.
3. Check to see that the lid and the container are pinched together and within the recess of the ring.

[c] Thread the bolt into the lugs with the jam nut between the lugs

NOTE 1 A certified torque wrench which was entered into WCATS calibration system must be used.

NOTE 2 Always set torque wrench to zero setting after use.

[d] Ensure the torque wrench is within the calibrated range for the use.

[e] Seat ring bolt, using low-impact wrench.

[f] Tighten to the manufacturer's current torque specifications as shown on the label on the container lid (e.g., 60 ft-lbs ± value possibly ±5, ft-lbs for 60 ft-lbs minimum).

[g] Using a mallet, tap around the circumference of the ring, torqueing in order to further seat the head onto the container.

[h] Continue tapping on the ring circumference and torqueing the bolt until the torque is stabilized at torque specifications.

[i] Ensure torque did not loosen after tapping on the ring.

[j] IF the torque is not sustained,

[k] THEN repeat Steps [e].-[h].

5.5.3 Sealing a Filled In-line Waste Container, (continued)

NOTE The ring ends must not touch when the ring is torqued.

[l] IF the ring ends touch during the torque procedure,
THEN contact the Quality Assurance (QA) representative for guidance.

NOTE The jam nut must be used on bolts having threads up to the head and must be placed on the bolt between the container ring lugs.

[m] Tighten the jam nut against the un-threaded lug.

[n] IF the container is weighed at this time,
THEN perform Step [4].

[3] Using only a calibrated scale, weigh the container in pounds.

[a] Write the gross weight on the top of the container using a permanent marker.

NOTE The Generator places a TID on the container and enters the TID serial number into the LANMAS system in the field "TID" for the applicable container. After NDA performed, verify on WCATS that the container contains no more than 200 g ^{239}Pu FGE, including two (2) times the uncertainty.

[4] Ensure TID was applied.

[5] Ensure that the RCT documents survey results on the HPRMS tag and attaches the tag to the WC.

5.6 Packing Out-of-Line Containers

NOTE 1 Perform major steps (e.g., [1], [2], etc.) in this section in sequence and substeps (e.g., [a] and 1.) independently or in parallel as directed by the PIC/FLM. Other substeps are performed in sequence, unless directed by the PIC/FLM

NOTE 2

1. Partially filled WC may be used when the following occurs:
   - The waste in the WC is compatible with the waste to be packaged.
   - There is sufficient room in the container for the new waste.
2. A WC is full and ready to be sealed when the following occur:
   - WC is physically full.
   - The gram loading reaches the maximum amount of nuclear material allowed (200g ^{239}Pu FGE including two (2) times the uncertainty or 80PE-Ci).
   - The gross weight for the WC is reached (i.e., the tare of the WC plus the contents)
   - When the time limit of the storage area is approached.
3. When there is a one-item identification (ID) WC that is being assayed with a valid TID applied to it, then item assay also serves as the confirmation assay, as long as the original TID is still intact and valid.

NOTE 3 If the item is heavy or has sharp edges or corners the best work practice is to load into an In-Line Container. This prevents a breach of the filter bagout bag. As a precautionary measure, personnel may add a disc of Styrofoam into the rigid liner of the In-Line Container. This cushions the impact of the heavy item to the bottom of the container, preventing a breach to the shipping/transport container.

NOTE 4 Prepared out-of-line containers are utilized for loading waste outside of a glovebox-line.

NOTE 5 All torque wrenches used in the following procedural steps must be certified and registered into the WCATS Calibrations Database. The WCATS does not allow the use of any expired torque wrenches while certifying or closing WCs.

NOTE 6 The user of any calibrated torque wrench must ensure the required torque specifications are within the calibrated torque range of the tool.

5.6.1 Preparing Out-of-line Waste Containers

NOTE 1 Containers stored in PF-4 assume room temperature allowing the adhesive to adhere properly. After the adhesive has set, the labels can tolerate winter and summer outdoor temperatures and reasonable wetting. Container seams must not be covered with markings or labels of any type. Do not overlap one label on top of another label or stenciling.

NOTE 2 Performance of substeps [1] and [2] may be preselected for accomplishment independently or in parallel, but all other substeps (e.g., [a], 1., etc.) must be performed in sequence or as directed by the PIC/FLM.

NOTE 3 Always clean surfaces with an appropriate cleaner (e.g., Fantastik® or equivalent) to ensure freedom from dust and oil before applying labels.

[1] Obtain a sheet of barcode labels for each WC assembly that passes the inspection; barcode labels on a single sheet have the same number. (Personnel can obtain the barcode labels for containers from Waste Services, ask your FLM/PIC.)

- **[a]** Place three large barcode labels evenly spaced around the circumference, no more than six (6) inches above the bottom of the container, with the first label to the left of the container seam.
- **[b]** Place one large barcode label on the container lid.
- **[c]** Place the last large barcode label to the right of the container seam between the top and first rolling hoop (reference Appendix 2).

[2] Install a WIPP-approved filter on the container lid

- **[a]** Make certain that the proper gasket is in place on the filter.
- **[b]** Use LocTite® 262 (or equivalent) all around the filter threads.
- **[c]** Hand install the filter into the ¾” thread flange opening until the gasket is seated onto the flange opening.
- **[d]** Ensuring the torque wrench is within the calibrated range for the use.
- **[e]** Tighten the filter to manufacturer’s specification as shown on the container label.

5.6.1 Preparing Out-of-line Waste Containers, (continued)

[3] Install a bung in the container lid.

[a] Make certain that the gasket is in place on the bung.

[b] Use LocTite® 262 or equivalent all around the bung threads.

[c] Hand install the bung into the 2-inch thread flange opening until the gasket is seated onto the flange opening.

[d] Ensure the torque wrench is within the calibrated range for the use.

[e] Tighten the bung to manufacturer's specification as shown on the container label.

[4] Install the 2-inch bung cap using the crimping tool.

[5] Remove the container lid.

[6] Ensure the gasket is recessed on the lid.

[7] Insert two 5 ml container liners.

NOTE 1 Steps [a] and [b] below may be performed independently or in parallel as directed by the PIC/FLM.

[a] Place the lid on the container.

[b] Place the lid ring onto the container.

1. Ensure that the ring bolt is placed so that the lugs are positioned below the top surface of the container.
2. Tap on the ring with a mallet to make sure it is centered on the container chime.
3. Check to see that the lid and the container are pinched together and within the recess of the ring.

NOTE 2 The ring bolt is not be torqued at this time to the manufacturer's current torque specifications. Only during the sealing of the container is the torque procedure performed.

[c] Thread the bolt into the lugs with the jam nut between the lugs.

[d] Tighten the ring bolt to allow the use of a lock to maintain custody of the container.

[8] Tare weigh the container assembly (i.e., including liners, lid, and bolt ring) using a calibrated scale.

[a] Record the assembled container tare weight in pounds on the lid of the container using a permanent marker.

5.6.1 Preparing Out-of-line Waste Containers, (continued)

[9] Enter applicable information into Attachment D, Container in Process Data Form.

[10] A lock may be placed on ring bolt to prevent any unauthorized use of container.

[11] Ensure the container is labeled "EMPTY."

NOTE Empty containers may be stored in RCRA storage area if labeled as "EMPTY."

[12] Enter the applicable information into WCATS.

5.6.2 Packing TRU Waste into an Out-of-Line Container

NOTE 1 Perform the Steps in this section in sequence or as directed by the PIC/FLM.

NOTE 2 WC can be loaded with a maximum of 200g ^{239}Pu FGE of ^{239}Pu, including two (2) times the uncertainty. For ^{238}Pu loading limits, see EP-WGI-0206, *Waste Generator Instructions [WGI] for the Disposition of MT-83 Waste*, and consult with your FLM/PIC for further guidance.

NOTE 3 Out-of-line containers are used for packing TRU waste that was visually inspected, bagged out, and removed from the glovebox. The Generator may pack a 55-gallon, out-of-line container with bagout bags following the appropriate RWP and/or TA55-DOP-032, *Introducing and Removing Items from Bagout/Drumout Ports in PF-4***,** requirements.

NOTE 4 When there is a one-item ID WC that is being assayed with a valid TID applied to it, the item assay may also serve as the confirmation assay, as long as the original TID is still intact and valid.

NOTE 5 If the item is heavy or has sharp edges or corners the best work practice is to load into an In-Line Container. This prevents a breach of the filter bag out bag and shipping container.

[1] Receive waste items from contact person.

[a] Conduct LANMAS transfer checks and transactions.

[b] IF TID removed
THEN record the TID information on the TID log sheet.

[2] Move waste item or waste container following TA-DOP-016, *TA55 Material Transfer Procedure,*
AND ensure on MAR Tracker that before moving containers to basement the container will not exceed 30 kg of Pu-equivalent of waste in the basement.

5.6.2 Packing TRU Waste into an Out-of-Line Container, (continued)

[3] Place a temporary-small Hazardous/Nonhazardous Waste sticker on the container if the item is a hazardous/nonhazardous waste.

[a] Include the Start Accumulation date on the temporary sticker.

[4] Determine waste item disposition by sorting transfer containers containing waste items by matrix code, measurement code, and material type (MT).

[a] IF item has shielding and is over 200 mrem/hr at contact,
THEN record under the Comments field in WCATS the dose rate at the item contact readings. .

[b] IF the item is over 200 mrem/hr at contact,
THEN discard item in a POC container with the tin shielding on the sides of the transport container per FFS-DOP-012.

NOTE Sorting waste items is simulated in this manner to minimize physical handling of the waste, thus reducing radiation exposure, in accordance with the principle of ALARA.

[5] Using WCATS, determine electronically how containers will be packaged.

[6] Select a 55-gallon container for packing waste item.

NOTE Partially filled containers may be used if the following occur:

- The waste in the container is compatible with the waste to be packaged.
- There is sufficient room in the container for the new waste.

A container is full if the following occur:

- It is physically full.
- The gram loading reaches the maximum amount of nuclear material allowed (200g ^{239}Pu FGE including two (2) times the uncertainty or 80 PE-Ci.
- It has a gross weight of ≤ 505 lbs, (i.e., his is the tare of the container plus the contents).

[7] Prepare to Package

[a] Ensure RCT is present per RWP.

[b] Ensure that the ventilation system for the open hood is turned on.

[8] Don proper PPE, per Task/RWP/RCT.

5.6.2 Packing TRU Waste into an Out-of-Line Container, (continued)

WARNING	
Hazard:	**When waste items are moved or compressed in a waste container, alpha contamination may exist.**
Control:	**Respirator is worn until the work is finished and the RCT (or other personnel certified for monitoring) has determined that no alpha contamination exists.**

[9] Ensure Room is red lit per RWP.

[10] Wear full-face respirators when the following occur:

- **[a]** A loaded transfer container is being opened.
- **[b]** The waste item is being removed from the transfer container.
- **[c]** The loaded WC is being opened.
- **[d]** The waste item is being placed in the WC.
- **[e]** RWP required for the following tasks:
  1. Opening small transfer containers inside the open front hood
  2. Opening transfer containers too large to fit in the hood in front of the hood for ventilation purposes

[11] IF waste is removed from transfer container,
THEN physically remove the TID from the waste transfer container.

[12] Complete LANMAS transaction for TID removal.

[13] Log entries as needed.

[14] Remove the bagged out waste from the transfer container.

- **[a]** Have an RCT survey each item as it is removed to ensure there is no external contamination.
- **[b]** IF contamination is detected,
  THEN follow RCT instructions.

[15] Ensure that the waste item contains only those contents originally characterized during the initial inspection as documented on the WCATS.

5.6.2 Packing TRU Waste into an Out-of-Line Container, (continued)

[16] Before placing a waste item into the container perform the following:

[a] Weigh each item on a calibrated scale.

[b] Write the weight of the item and note if bag is filtered on the LANMAS printout.

[c] Relocate from the outside of the transfer container the barcode tape with the Item ID written on it to the outside of the bagout bag.

[d] IF there is more than one bagout bag in the transfer container, THEN make additional Item ID labels.

[17] Confirm the following for each item:

[a] The measured weight of the item corresponds to the estimated weight listed on the WCATS plus the packing weight.

[b] The Item ID on the item corresponds to the Waste Item ID on WCATS.

[c] The waste item corresponds to the description on WCATS.

[d] IF these cannot be confirmed, THEN consult with the PIC/FLM to determine the necessary action.

[18] Ensure that each item received is in no more than one filtered bagout bag.

[a] Any item that has more than one layer of confinement must be documented on WCATS.

NOTE Shoring material is used to stabilize the waste item(s) within the container, if required. The packed weight (i.e., gross, tare, shoring, and waste items) is recorded in WCATS.

[19] Add the waste item to the container while still wearing a respirator.

[a] Open the out-of-line container as near the open front hood as possible.

[b] Carefully place the bags into the container.

[c] Transfer the Waste Item ID to the WC in WCATS, if applicable.

[20] Fold the plastic bag liners.

[a] Do not tape the container liners.

[b] Record the weight of the shoring in WCATS.

NOTE If the manufacturer markings occupy the space where the label would normally go, place the label to the left of the seam between the second and third rolling hoop (see Appendix 2).

[21] Apply original lid and lock or TID, if a container is not full.

5.6.2 Packing TRU Waste into an Out-of-Line Container, (continued)

[22] Place the appropriate waste label to the left of the container seam between the top and first rolling hoop.

[23] Adhere either a Nonregulated label on the container or a yellow Hazardous Waste label on the container and place a start date on the applied label, as applicable.

5.6.3 Sealing a Filled Out-of-Line Waste Container

NOTE 1 The steps in this Performance section are required to be performed in sequence unless otherwise directed by the PIC/FLM.

NOTE 2 A container is full when it reaches the maximum amount of nuclear material allowed (200g ^{239}Pu FGE including two (2) times the uncertainty or 80 PE-Ci), the maximum weight, or when it is physically full.

[1] Ensure the container closure-method is performed as indicated below:

[a] Filtered bagout bags are sealed.

[b] Polyurethane liners are not sealed.

[2] Position the lid so that the bolt ring and filter line up with the seam on the side of the container.

NOTE 1 Wear appropriate gloves when performing the following steps:

NOTE 2 Steps [a] and [b] below may be performed independently or in parallel or as directed by the PIC/FLM.

[a] Place the lid on the container.

[b] Place the lid ring onto the container.

1. Ensure that the ring bolt is placed so that the lugs are positioned below the top surface of the container.
2. Tap on the ring with a mallet to make sure it is centered on the container chime.
3. Check to see that the lid and the container are not pinched together and within the recess of the ring.

[c] Thread the bolt into the lugs with the jam nut between the lugs.

[d] Ensure the torque wrench is within the calibrated range for the use.

5.6.3 Sealing a Filled Out-of-Line Waste Container, (continued)

NOTE A certified torque wrench which was entered into WCATS calibrations system must be used.

[3] Seat ring bolt using a low-impact wrench.

[a] Tighten to the manufacturer's current torque specifications as shown on the label on the container lid (e.g. 60 ft-lbs ±5 ft-lbs, for 60 ft-lbs minimum).

[b] Using a mallet, tap around the circumference of the ring while torqueing in order to further seat the head onto the container.

[c] Continue tapping on the ring circumference and torqueing the bolt until the torque is stabilized at torque specifications.

[d] Ensure torque did not loosen after tapping on the ring.

[e] IF the torque did not sustain,
THEN repeat Steps [b] through [e].

[f] Reset torque wrench to zero setting after use.

[g] Write torque wrench number and torque date on the lid.

NOTE The ring ends must not touch when the ring is torqued.

[h] IF the ring ends touch during the torque procedure,
THEN contact the Quality Assurance (QA) representative for guidance.

NOTE The jam nut must be used on bolts having threads up to the head, and must be placed on the bolt between the container ring lugs.

[i] Tighten the jam nut against the unthreaded lug.

[4] IF the container is weighed at this time,
THEN perform Step [2].

[5] Using only a calibrated scale, weigh the container in pounds.

[a] Write the gross weight on the top of the container using a permanent marker.

[6] Ensure TID applied.

[7] Ensure that the RCT documents survey results on the HPRMS tag and attaches the tag to WC.

[8] Request contamination and radiation survey from RCT.

5.6.3 Sealing a Filled Out-of-Line Waste Container, (continued)

[9] IF the 55-gallon container surface exceeds 20 dpm,
THEN perform a wipe down or repackage the waste in a new 55-gallon container.

5.7 Re-Opening Waste Containers

NOTE 1 The steps and substeps in this Performance section are required to be performed in sequence or as directed by the PIC/FLM.

NOTE 2 In certain cases, it may be necessary to re-open a closed waste container to resolve issues such as the following: nuclear material limits are exceeded or nuclear material differences, measurement codes do not match WCATS and LANMAS, weights do not match on WCATS and LANMAS, to remove an item, to add an item, container does not meet certification, dose rates are exceeded, or if items are in questions, etc. (Consult with your FLM if issue[s] can be readily resolved or if an Non Conformance Report [NCR] and HOLD tag needs to be applied) in accordance with P330-6, *Nonconformance Reporting.* An RWP is required for re-opening WCs.

NOTE 3 An RCT must be present when opening a waste container. Certified lifting straps, or certified D-rings may be used if needed. If an In-Line container is in need of re-opening contact PIC/FLM for further guidance.

[1] Prepare the work area with brown paper or plastic to control contamination.

[2] Don the proper protective equipment for the job per RWP requirements.

[3] Loosen all bolt(s) securing the lid.

[4] Ensure room or work area is red lit or access controlled.

[5] Remove the bolt(s) securing the lid.

[6] Remove the lid allowing RCT to perform contamination survey of the lid.

[7] IF contamination is detected,
THEN follow RCT instructions.

[8] Resolve issue(s) with item(s) in question.

[9] Return the staged items to the proper waste container, including waste item in question.

[10] Ensure RCT tags the transfer container.

[11] IF the item is going back to the generator,
THEN place in a proper transfer container.

5.7 Re-Opening Waste Containers, (continued)

[12] Perform appropriate transfer procedures.

[13] Follow proper procedural steps for sealing the 55-gallon container.

5.8 Acceptance/Transfer Checks of Off-Site Containers

NOTE 1 Perform steps in this section in sequence, unless otherwise directed by the PIC/FLM.

NOTE 2 The Point of Contact (POC) and shipping personnel may possibly have information that determines the result of acceptance.

[1] Communicate with the PIC the reason for transfer of any container.

NOTE All information that accompanies the container must reconcile to the On-Site information to remove any discrepancy prior to the receiving of a container into the storage area and LANMAS account.

[2] Ensure the POC remains present until the determination of acceptance and transfer is complete.

NOTE This investigation may require a visit to the container's storage area, prior to shipping.

[3] Investigate any changes to the container.

[a] These changes may consist of, but are not limited to the following:

- Unknown labeling
- Hold Tags
- Container's integrity
- Presence of Prohibited Items
- Label discrepancies

[b] IF there are discrepancies that conflict with the formality of operations, THEN reject the container and notify the PIC/FLM.

[4] Verify TID in accordance with the certified TID program.

$ 5.9 In-Service Inspection of TRU Waste Containers

[1] Perform ISI according to UET Attachment A, as directed by the PIC/FLM.

5.10 Quality Assurance Inspection of TRU Waste Containers

[1] Perform quality assurance (QA) inspection according to UET Attachment B, as directed by the PIC/FLM.

[2] If any conditions are identified that violate inspection criteria, precede to Section 7.0, Contingency.

[3] Turn in completed copies of Attachment A to the TA-55 Operations Center within 7 days.

[4] Apply label documenting TSR 6.2.5 ISI 5, inspection to the right of the top bar code label on the side of the container (reference Appendix 4 for example label).

5.11 Room 432 Logbook Entries from Waste Containers

[1] Record the following from waste container labels prior to waste container movement to the basement:

- **[a]** Waste container ID
- **[b]** Waste container TID number
- **[c]** Hazardous waste code, if applicable
- **[d]** Hazardous waste start date, if applicable
- **[e]** Closure date, if applicable
- **[f]** Ensure ISI label is on waste container
- **[g]** Ensure waste container data matches paperwork of the waste container

5.12 Packing Classified TRU Waste

NOTE 1 Perform the Steps of this section in sequence or as directed by the PIC/FLM.

NOTE 2 Classified TRU waste may be packed as either an in-line container (Section 5.5) or an out-of-line container (Section 5.6). This section provides additional instructions that apply only to classified TRU waste.

NOTE 3 Classified TRU waste may contain Beryllium (Be) at greater than 1% by weight of the waste matrix. The WIPP limit for waste containing greater than 1% Be is 100 FGE, inclusive of two time the total measurement uncertainty. It is important to know the Be weight percent when packing TRU waste.

NOTE 4 Classified TRU waste CANNOT be characterized by real-time-radiography. Instead, it MUST be characterized and packaged using Visual Examination in accordance with FFS-DOP-004, *Visual Inspection of TRU Waste*, and CCP-TP-113, *Standard Contact-Handled Visual Examination by personnel holding a DOE "Q" security clearance.*

[1] Ensure that waste was characterized by visual examination (VE) prior to the waste offered up for packing.

[2] Ensure that appropriate VE personnel are present to record the waste packing information in accordance with CCP-TP-113.

[3] IF the waste contains Be at greater than 1% by weight,
THEN pack the waste so that it is below the administrative FGE packing limit of 75 FGE.

[4] After all waste items are placed in the WC, label the outer-most liner bag with the appropriate classification level (e.g., "SRD") using red marker on yellow tape.

[5] Secure the container lid and apply TID in accordance with instruction is Section 5.5 or Section 5.6.

5.13 Controlling Classified TRU Waste Outside of a Protected Area

NOTE 1 Perform the Steps of this section in sequence or as directed by the PIC/FLM.

NOTE 2 Classified TRU waste may be characterized by nondestructive assay (NDA) and flammable gas testing at TA-54. TA-54 is a Property Protection Area (PPA). Classified TRU waste must remain in attendance and control by personnel who hold a DOE "Q" security clearance once removed from TA-55, PF-4.

NOTE 3 Personnel who attend and control Classified TRU waste to TA-54 must be trained to the TA-54 site-specific training requirements to have unescorted access to TA-54, Area G.

[1] Ensure that <u>two</u> personnel who hold DOE Q, security clearances attend and control these waste containers while outside of a Protected Area (PA).

[2] Ensure that these two personnel exhibit completed, site-specific training for needed unescorted access to the locations where the waste will reside.

[3] Coordinate with the NPI-7 shipping team, OSPT, TA-55 Security, and the receiving site (e.g., TA-54) to ensure that all are cognizant of the WCs requiring transport, the schedule, and the requirements for maintaining control of these WCs.

[4] Arrange for use of a government-owned vehicle to transport personnel outside of a PA.

[5] Download the current form PA-DOP-01456-FM03-R0, *Classified TRU Waste Escort Logbook Form* (Attachment C) from Documentum and print multiple copies for a notebook or clipboard so that the logbook can be updated while in the field.

5.13 Controlling Classified TRU Waste Outside of a Protected Area, (continued)

[6] Record the following items in the logbook:

- Date
- Waste Container Label Numbers
- Time of notable events, including but not limited to:
- Time WCs leave PF-4
- Time shipment leaves PIDAS
- Time shipment arrived at receiving facility
- Time containers go through characterization
- Times when a cleared individual responsible for attendance and control leaves or returns to the location where the waste containers are located
- Time shipment is loaded for return to TA-55
- Time shipment arrives at TA-55
- Time WCs are returned to PF-4
- Other events that seem noteworthy

[7] Before the shipment leaves PF-4, meet the truck outside the North Door of the PF-4 loading dock and follow the truck to its destination (e.g., TA-54).

[8] Maintain control of the waste containers while they are outside of PF-4 and/or at the destination facility, including the following:

[a] IF the truck processes through a gate,
THEN one Q-cleared individual processes through the gate before the truck and waits for it on the other side, while the other Q-cleared individual and truck are processed through the gate.

NOTE It is allowed for waste to be out of visual contact while it is undergoing NDA characterization and it is inside the sealed NDA chamber.

[b] Maintain visual control of the waste to the extent practical.

[c] Staggering breaks so that at least one Q-cleared individual is in attendance and control of the waste containers at all times.

[9] Coordinate with TA-55 Security to ensure they are prepared for the shipment to return to TA-55.

[10] After all required activities are complete, observe the waste-container loading onto the truck and follow the truck back to TA-55 and into the PF-4 loading dock.

6.0 POST-PERFORMANCE ACTIVITIES

6.1 Testing

Not Applicable

6.2 Restoration

Not Applicable

6.3 Results

Not Applicable

6.4 Verification/Independent Verification

Not Applicable

6.5 Records Processing

Processed per PA-AP-01040, *Records Processing Procedure for ADPSM Organizations*

7.0 CONTINGENCIES

[1] In the event that manufacturer's specifications are out of tolerance, reevaluate specifications and apply the necessary manufacture's steps to remedy the problem.

[2] If necessary, document the issue using an NCR, (e.g., if a torque value is out of tolerance, remove bolt and nut and reapply using calibrated torque wrench and manufacturer's torque values [specifications]).

[3] IF bolts, filters or bungs cannot be tightened to the correct torque values, THEN remove the bolt, filter, or bung and tap the threads if possible, and attempt to re-tighten.

[4] If tapping fails, use another waste container.

7.0 CONTINGENCIES, (continued)

[5] Perform ISI contingency actions as follows:

[a] IF any conditions are identified during the ISI that violate the inspection criteria,
THEN annotate the deficient conditions on the inspection form.

[b] Immediately notify the OC of the deficient condition or conditions.

[c] Continue the inspection at this point unless otherwise determined by the OC.

[d] The OC, in conjunction with the Operations Manager and Cognizant System Engineer, evaluate the deficiency as to the effect on the design function of the SSC and any impact on the authorization basis (i.e., operability determination).

[e] Perform the following for all deficiencies found during the performance of this procedure:

1. The Cognizant System Engineer (CSE) ensures that a Facility Service Request (FSR) is initiated for deficiencies requiring maintenance support.
2. The CSE ensures that an Engineering Service Request (ESR) is initiated for deficiencies requiring engineering support.
3. The OC tracks all deficiencies with associated FSR/ESR numbers on the equipment status screen in the OC.

8.0 DEFINITIONS AND ACRONYMS

Term	Definition
$	Indicates a step that implement TSRs
AK	Acceptable Knowledge
ALARA	As low as reasonably achievable
Am	Americium
CCP	Central Characterization Project
CH	Contact Handled
CPM	Counts per Minute
CSLA	Criticality Safety Limit Approval
DCC	Document Control Custodian
Design Features	Design features of a nuclear facility specified in the technical safety requirements that, if altered or modified, would have a significant effect on safe operation.
Detailed Operating Procedure	Operations-level written instructions that describe activities in a systematic format.
DOP	Detailed Operating Procedure
DOT	Department of Transportation
DPM	Disintegrations per minute
FGE	Fissile Gram Equivalent
FLM	First Line Manager
FMH	Fissionable Material Handler
Ft/Lbs	Foot pounds
g	grams
HPRMS	Health Physics Radioactive Material Survey
ID	Identification
IDES	Item description
ISI	In-Service Inspection
Kg	Kilogram
LANMAS	Local Area Network Materials Accountability System
LANL	Los Alamos National Laboratory
LLW	Low Level Waste
MT	Material Type
MAR	Material At Risk
Mode	Any one inclusive combination of facility conditions used for assigning applicability of safety equipment and limits as specified in Table 1.1-1 of the 2011 TSRs.
Mrem	millirem
mrem/hr	millirem per hour
N/A	Not Applicable
NCR	Nonconformance Report
NDA	Nondestructive assay

8.0 DEFINITIONS AND ACRONYMS, (continued)

Term	Definition
Nominal	Of, being or relating to a designated or theoretical size that may vary from the actual (e.g., nominal 22.5” diameter 55-gallon drum)
OC	Operations Center
Pb	Lead
PE-Ci	Plutonium-239 equivalent curies
POC	Pipe overpack container
Point of Contact	Generator or other personnel working for the generator.
PPE	Personal protective equipment
Programmatic	Currently processed waste that does not meet STL.
Pu	Plutonium
R	Rem
RCRA	Resource Conservation and Recovery Act
RCT	Radiological control technician
RTR	Real time radiography
RWP	Radiological Work Permit
STL	Safeguards termination limit
SWB	Standard Waste Box
TID	Tamper indicating device i.e. MultiLok, quick seal, Mylar, cup-seal.
TLD	Thermoluminescent dosimeter
TRAMPAC	TRUPACT-II Authorized Methods for Payload Control
TRU	Transuranic, >100nCi/g or >50,000 cpm.
TRUPACT-II	TRU Waste Package Transporter-II
TSR	Technical Safety Requirement
UET	Use Every Time
VE	Visual Examination
WC	Waste Container (55 gal containers, POCs, SWBs, and other approved boxes)
WCATS	Waste Compliance and Tracking System
WGI	Waste Generator Instructions
WIPP	Waste Isolation Pilot Plant
WQAS	Worker Qualification and Authorization System

9.0 RESPONSIBILITIES

9.1 NPI-7 Personnel

- Maintain training qualifications and certifications
- Responsible for quality

9.2 Quality Assurance Representative

- Responsible for providing torque specifications to NPI-7 personnel
- Responsible for monitoring receipt and inspection of waste containers

9.3 Central Characterization Project

- Responsible for providing Visual Examination expertise and certification of TRU Waste

9.4 Operations Center

- Responsible for daily operational requirements, this includes providing information to personnel regarding mode of plant operations
- Ensures abnormal events are reported as required to through the established chain of command
- Receives ISI performance forms (Attachment A)

9.5 First Line Manager

- Responsible for overall coordination and final acceptance of this procedure

9.5 Person-in-Charge

- Reviews attachments to ensure that they have been correctly completed.
- Ensures all deficiencies are reported, as required, to the OC and chain of command

9.6 Radiological Control Technician

- Responsible for surveys, Health Physics Radioactive Material Survey (HPRMS) tags, supporting door openings

10.0 REFERENCES

Document Number	Title
AP-341-516	*Operability Determination and Functionality Assessment*
CCP-TP-069	*Sealed Source Visual Examination and Packing*
CCP-TP-113	*Standard Contact Handled Waste Visual Examiniation*
EP-WGI-0203	*Waste Generator Instructions (WGI) for 55-Gallon Steel Drum for the Disposition of Newly Generated Transuranic (TRU) Waste Excluding MT83 Waste at TA-55*
EP-WGI-0206	*Waste Generator Instructions (WGI) for the Disposition of MT-83 Waste*
FFS-DOP-012	*Packaging TRU Waste in POC Drums*
NCS-CSLA-08-172	*Inspecting, Packaging, Rejecting, and Remediating Transuranic Waste for WIPP and for TA-55 Safe Storage*
NCS-CSLA-08-173	*Staging, Inspecting, Packaging, Rejecting, and Remediating Transuranic Waste for WIPP and for TA-54 Safe Storage*
NCS-CSLA-08-174	*Inspecting, Packaging, and Remediating Transuranic Waste for WIPP and for TA-54 Safe Storage*
NCS-CSLA-08-175	*Inspecting, Packaging, and Remediating Transuranic Waste for WIPP and for TA-54 Safe Storage*
NCS-CSLA-08-176	*Inspecting, Packaging and Remediating Transuranic Waste for WIPP and for TA-54 Safe Storage*
NCS-CSLA-10-075	*B35 Material Staging*
NCS-CSLA-12-052	*Transport of 55-Gallon Waste Containers*
P101-1	*Ergonomics*
P101-18	*Procedure for Pause/Stop Work*
P330-2	*Control and Calibration of M&TE*
P330-6	*Nonconformance Reporting*
PA-AP-01020	*Pre-Job Briefing and Post-Job Review*
PA-AP-01040	*Records Processing Procedure for ADPSM Organizations*
PA-RD-01009	*TA-55 Criticality Safety Requirements*
TA55-AP-522	*TA-55 Nuclear Criticality Safety Program*
TA55-DOP-016	*TA55 Material Transfer Procedure*
TA55-DOP-030	*Introducing Items Through a Pencil Drop or Hood into Gloveboxes in PF-4*
TA55-RD-539	*TA-55 Waste Management Requirements*
TA55-RD-555	*TA-55 Radiation Protection Requirements*
TA55-RD-585	*Nuclear Material Controls and Accountability*

10.0 REFERENCES, (continued)

Document Number	Title
FFS-DOP-004	*Visual Inspection of TRU Waste*
TA55-RD-585	*Nuclear Material Controls and Accountability*

11.0 RECORDS

Record Identification	Record Type Determination	Protection/Storage Methods	Processing Instructions
Attachment A, *TSR 6.2.5 ISI 5. TRU Waste Shipping Container Inspection Form*	QA Record (Nonpermanent)	Completed form is turned into Operations Center as required	OC processes this record according to OC requirements
Attachment B, *Waste Container QA Checklist*	QA Record (Nonpermanent)	Completed form is turned into Operations Center with ISI checklist	OC processes this record according to OC requirements
Attachment C, *Classified TRU Waste Escort Logbook Form*	QA Record (Nonpermanent)	Retained in file cabinet.	Processed per PA-AP-01040, *Records Processing Procedure for ADPSM Organizations*
Attachment D, *Container In-Process Data Form*	Data Sheet (Nonpermanent)	Form destroyed after data stored in WCATS	Destroyed as soon as data entered into WCATS

12.0 ATTACHMENTS AND APPENDICES

Appendix	Title
1	*Transuranic Waste Matrix Mixing*
2	*Normal 55 Gallon Drum Labeling*
3	*WIPP Approved Filters*
4	*Example ISI Label*
5	*Example of Manufacturer Torque Specification Label*

Attachment	Title
A	*TSR 6.2.5 ISI 5., TRU Waste Shipping Container Inspection [UET]*
B	*Waste Container Quality Assurance Inspection Form [UET]*
C	*Classified TRU Waste Escort Logbook Form [UET]*
D	*Container in Process Data Form*

Appendix 1, Transuranic Waste Matrix Mixing

Page 1 of 1

Transuranic waste matrices, types of assays, and recommendation on matrix mixing in a drum at TA-55	
Non-combustibles	**Combustibles**
Heterogeneous (Debris)	**Heterogeneous (Debris)**
Neutron instrument assay:	**Gamma instrument assay:**
Metals (IRN, ALM, MET)	Combustibles (COM)
Glass (GLS)	Plastics (PLS)
Graphite (GRS)	Rags (RAG)
Glovebox sweepings (SWP)	Rubber gloves (RUB)
Discard soilds (DS)	Rubber (RUB)
Iron based HEPA filters (HEP)	Filters combustibles (PLS, FIL)
Leaded gloves (GLV)	Glass (GLS) (measured on gamma, can be mixed with combustibles so long as combustible volume exceeds the volume of glass)
Homogeneous	**Homogeneous**
Neutron instrument assay:	**Gamma instrument assay:**
Salt (CHL, HYD, SSC, OX, SS, LS)	Absorbed organic liquids (ORG)
Gamma instrument assay:	Spent resin (RES)
Ash (ASH)	

Cans 3 liters or larger must be filtered.

Liquids in pump cavities must be drained. Liquids which are poured out must not drain back to form a pool of liquid later.

No more than 10 leaded rubber gloves per drum. Exceed this limit only if CCP performs Visual Examination.

Do not squash leaded rubber gloves with waste placed on top.

It is permissible to add **minor volumes of homogeneous** waste items with **large volumes of debris** (heterogeneous) drum. Therefore, small volumes of absorbed organic liquids, spent resins, salts, or ash can be discarded in a drum which contains significantly more volume of heterogeneous waste items such as combustibles, metals, graphite, glass, filters **provided the NDA measurements for waste items are similar** and would not have any issue with confirmation of the drum. For example, it is permissible to have approximately 25% of salt volume in a drum which has 75% of metals or glass volume.

CAUTION:

Do not mix minor volume of debris (heterogeneous) waste in major volume of homogeneous waste.

Appendix 2, Normal 55-Gallon Container Labeling

Page 1 of 1

Appendix 3, WIPP Approved Filters

(Page 1 of 3)

Approved Filter Vents **Effective Date: December 10, 2009**

The following filter vents:

- Meet the minimum specifications of:
  - Table 2.5-1, Section 2.5 of the CH-TRAMPAC, Rev. 2, dated May 2005, **OR**
  - Table 2.4-1, Section 2.4 of the RH-TRAMPAC, Rev 0, dated June 2006
- Comply with the applicable DOT Specification 7A requirements for WIPP payload containers **WHEN** installed in accordance with the Manufacturer's Instructions

Manufacturer's Model Number	WWIS ID Number	Thread Form	Min. H2 Diffusivity (m/s/mf)	Diffusivity Rating
Fairey 98867*	98867	3/4" NPSM	7.40E-06	2X (HDF)
Fairey 99421	99421	3/4" NPSM	1.85E-05	5X (HDF)
NucFil®-007	NF007	9/16-11 ST	3.70E-06	X
NucFil®-007LS	NF007L	9/16-11 ST	3.70E-06	X
NucFil®-007LW	NF07LW	9/16-8 STSL	3.70E-06	X
NucFil®-007S	NF007S	9/16-11 ST	3.70E-06	X
NucFil®-007W	NF007W	9/16-8 STSL	3.70E-06	X
NucFil®-007WS	NF07WS	9/16-8 STSL	3.70E-06	X
NucFil®-012	NF012	3/4" NPSM	1.90E-06	X/2
NucFil®-013	NF013	3/4" NPSM	3.70E-06	X
NucFil®-013 GorTex	NF013G	3/4" NPSM	7.40E-06	2X (HDF)
NucFil®-013 SS	NF013S	3/4" NPSM	3.70E-06	X
NucFil®-015 DS	NF015D	3/4-9 STUR	1.48E-05	2 x 2X (HDF)
NucFil®-016	NF016	2" NPSM	1.85E-05	5X (HDF)
NucFil®-016 SS HP	NF016S	2" NPSM	1.65E-04	SLB2
NucFil®-018	NF018	2-10 UNS	9.34E-05	RH FLC
NucFil®-019	NF019	3/4" NPSM	1.85E-05	5X (HDF)
NucFil®-019DS	NF019D	3/4" NPSM	1.85E-05	5X (HDF)
NucFil®-019-EPD	NF019E	3/4" NPSM	7.40E-06	2X (HDF)
NucFil®-019EPDDS	NF19EP	3/4" NPSM	7.40E-06	2X (HDF)
NucFil®-019-HCR	NF019H	3/4" NPSM	7.40E-06	2X (HDF)
NucFil®-019SDS	NF19SD	3/4" NPSM	1.85E-05	5X (HDF)
NucFil®-020	NF020	7/16-16 UN	1.90E-06	X/2
NucFil®-020DS	NF020D	7/16-16 UN	1.90E-06	X/2
NucFil®-020S	NF020S	1/2-20 UNF	1.90E-06	X/2
NucFil®-049	NF049	11/16-14 ST	3.70E-06	X
NucFil®-049LS	NF049L	11/16-14 ST	3.70E-06	X
NucFil®-049S	NF049S	0.588-14 ST	3.70E-06	X
NucFil®-051	NF051	.260-25 ST	1.90E-06	X/2
NucFil®-051CT	NF051C	.260-25 ST	1.90E-06	X/2

Appendix 3, WIPP Approved Filters (continued)

(Page 2 of 3)

Approved Filter Vents **Effective Date: December 10, 2009**

Manufacturer's Model Number	WWIS ID Number	Thread Form	Min. H2 Diffusivity (m/s/mf)	CH-TRAMPAC Diffusivity Rating
NucFil®-072	NF072	7/16-14 UNC	3.70E-06	X
NucFil®-072 SSS	NF072S	7/16-14 UNC	3.70E-06	X
NucFil®-072S	NF72S1	9/16-11 ST	3.70E-06	X
NucFil®-072SLH	NF72SL	9/16-11 ST	3.70E-06	X
NucFil®-073	NF073	7/16-14 UNC	3.70E-06	X
NucFil®-074	NF074	7/16-16 UN	3.70E-06	X
NucFil®-075	NF075	7/16-14 UNC	3.70E-06	X
NucFil®-08DS	NF08D	9/16-8 ST	**3.70E-06**	**X**
NucFil®-307DS	NF307D	9/16-11 ST	3.70E-06	X
NucFil®-347DS	NF347D	1/2-8 ST	1.90E-06	X/2
NucFil®-407DS	NF407D	5/8-11 ST	3.70E-06	X
NucFil®-7DS	NF7DS	9/16-11 ST	3.70E-06	X
NucFil®-DVS3	NFDVS3	9/16-14 ST	3.70E-06	X
NucFil®-DVS3 IP	DVS3IP	9/16-11 ST	7.40E-06	2X (HDF)
NucFil®-DVS307	NFD307	9/16-11 ST	3.70E-06	X
NucFil®-DVS3A	NFDV3A	9/16-11 ST	3.70E-06	X
NucFil®-NFS7A	NFS7A	9/16-11 ST	3.70E-06	X
UltraTech 9400	UT9400	3/4" NPSM	3.70E-06	X
UltraTech 9402	UT9402	7/16-16 ST	1.90E-06	X/2
UltraTech 9408	UT9408	3/4" NPSM	1.85E-05	5X (HDF)
UltraTech 9412	UT9412	9/16-11 ST	3.70E-06	X
UltraTech 9413	UT9413	9/16-11 ST	3.70E-06	X
UltraTech 9414	UT9414	9/16 Insert	7.40E-06	2X (HDF)
UltraTech 9415	UT9415	9/16 Insert	1.90E-06	X/2
UltraTech 9416	UT9416	3/4" NPSM	1.90E-06	X/2
UltraTech 9423	UT9423	3/4" NPSM	1.85E-05	5X (HDF)
UltraTech 9423T	U9423T	3/4" NPT	1.85E-05	5X (HDF)
UltraTech 9424	UT9424	3/4" NPSM	1.85E-05	5X (HDF)
UltraTech 9424X	U9424X	3/4" NPSM	1.85E-05	5X (HDF)
UltraTech 9450	UT9450	3/4" NPSM	3.70E-06	X
UltraTech 9460	UT9460	2" NPSM	9.25E-05	25X (HDF)
UltraTech 9500	UT9500	3/4" NPSM	1.85E-05	5X (HDF)
UltraTech 9550	UT9550	3/4" NPSM	1.85E-05	5X (HDF)
West WTM01D	WTM01D	9/16-11 ST	3.70E-06	X

Appendix 3, WIPP Approved Filters (continued)

(Page 3 of 3)

Approved Filter Vents **Effective Date: July 28, 2010**

Acronyms/Legend

‡	New, reinstated, or revised
*	Wildcard character assigned by the manufacturer
CH-TRAMPAC	Contact-Handled Transuranic Waste Authorized Methods for Payload Control
DOT	US Department of Transportation
Fairey	Porvair Filtration Group, Ltd., Ashland, VA
HDF	High-Diffusivity Filter (CH-TRAMPAC, Table 2.5.1)
m/s/mf	Moles per second per mole fraction
NucFil®	Nuclear Filter Technology, Inc., Golden, Colorado
NPSM	American National Standard Straight Pipe Thread for Mechanical Joints
NPT	American National Standard Taper Pipe thread
RH FLC	Remote-Handled Fixed Lid Canister
RH-TRAMPAC	Remote-Handled Transuranic Waste Authorized Methods for Payload Control
SLB2	Standard Large Box 2 / TRUPACT-III
ST	Self-Tapping thread
STSL	Self-Tapping Self-Locking thread
STUR	Self-Tapping Un-Retractable thread
UN	Unified National thread
UNC	Unified National Coarse thread
UNF	Unified National Fine thread
UNS	Unified National Selected combination thread
UltraTech	UltraTech International, Inc., Jacksonville, Florida
West	West Tech Machine, LLC, Rexburg, Idaho
WIPP	Waste Isolation Pilot Plant
X/2	1.9E-6 Total Hydrogen Diffusivity (m/s/mf)
X	3.7E-6 Total Hydrogen Diffusivity (m/s/mf)
2X	7.4E-6 Total Hydrogen Diffusivity (m/s/mf)
5X	1.85E-5 Total Hydrogen Diffusivity (m/s/mf)
25X	9.25E-5 Total Hydrogen Diffusivity (m/s/mf)

Appendix 4, Example ISI Label

TSR 6.2.5 ISI 5
Inspection

Appendix 5, Manufacturers Torque Specification Label

Page 1 of 1

Manufacturers Torque Specifications
Ring Bolt: 60 ft. lbs.
2” Bung 40ft. lbs ± ft.lbs.
Nucfil Filter 10 ft. lbs ± 2ft lbs.

Attachment A, TSR 6.2.5 ISI-5, TRU Waste Shipping Container Inspection Form [UET]

(Page 1 of 3)

6.2.5 Containers for NUCLEAR MATERIAL Outside of Gloveboxes

The DF performance criteria, ISI actions, and ISI FREQUENCIES are presented as follows:

4. Packaged TRU waste shipping containers:

- are DOT Type A containers (e.g., 55-gal drums, standard waste boxes, and overpack containers) or equivalent.
- have WIPP-approved filter-vents, or equivalent

In-Service Inspection (ISI)

5. An individual packaged TRU waste shipping container is to be visually inspected for presence of vents and signs of wear or degradation

FREQUENCY

Upon final container packaging

Packaged TRU waste shipping containers are inspected (ISI #5) upon final container packaging (e.g., when the drum is sealed and/or when a tamper indicating device is applied) to ensure they have vents and do not have damage that would invalidate the performance criteria. Return ISI to Operations Center within seven (7) days.

Attachment A, TSR 6.2.5, ISI 5, TRU Waste Shipping Container Inspection Form [UET] (Continued)

(Page 2 of 3)

Waste Container	**LA00000**		**LA00000**		**LA00000**	
Container Type (Circle One)	Drum POC SWB		Drum POC SWB		Drum POC SWB	
Inspection Requirement	**Inspection Result**		**Inspection Result**		**Inspection Result**	
	SAT	**UNSAT**	**SAT**	**UNSAT**	**SAT**	**UNSAT**
DOT Type A containers [6.2.5.4]						
WC vented with WIPP-approved filter vents [6.2.5.4]						
WC shows no signs of wear or degradation [6.2.5.5]						
WC shows no bulging or evidence of pressurization [6.2.5.5]						

Attachment A, TSR 6.2.5, ISI 5, TRU Waste Shipping Container Inspection Form [UET] (Continued)

(Page 3 of 3)

ISI PERSONNEL			
SHALL • Sign below • Turn completed ISI to Operations Center			
Completed by: (Print Name)	(Signature)	**Z#:**	**Date:**
Completed by: (Print Name)	(Signature)	**Z#:**	**Date:**
OPERATIONS CENTER			
ACCEPT Inspection as Complete			
OC Personnel: (Print Name)	(Signature)	**Z#:**	**Date:**
OC Supervisor: (Print Name)	(Signature)	**Z#:**	**Date:**
Immediate Operability Determination (Circle One)		**Operable**	**Inoperable**
CSE/RLM Notified to Review Results	**Name:**	**Date:**	
CSE/RLM REVIEW			
Disposition of Deficiencies: List deficiencies and recommended actions below. CSE/RLM is responsible to generate FSRs/ESRs for deficiencies listed below. Enter "N/A" in the sections below if no deficiencies identified during ISI performance. Attach additional sheets as necessary. Attach a copy of an Operability Determination Form completed according to AP-341-516-FM01, if performed.			
Deficiency Description	**Disposition**	**Z#**	**Date**
CSE/RLM Name: (Print Name)	(Signature)		
OPERATION CENTER REVIEW			

Attachment B, Waste Container Quality Assurance Inspection Form [UET]

(Page 1 of 1)

This QA checklist is submitted to the OC, attached to the ISI checklist (Attachment A).

Waste Container	**LA00000**		**LA00000**		**LA00000**	
Container Type **(Circle One)**	**Drum** **POC** **SWB**		**Drum** **POC** **SWB**		**Drum** **POC** **SWB**	
Inspection Requirement	**Inspection Result**		**Inspection Result**		**Inspection Result**	
	SAT	**UNSAT**	**SAT**	**UNSAT**	**SAT**	**UNSAT**
Filter installed with appropriate gasket						
Vents show no signs of wear or degradation						
WC stamped or labeled as an UN 1A2 container (SWB=NA)						
WC gross weight does not exceed maximum weight specified in WC and QA certification documentation						
WC packed so routine handling does not result in surface dose rate changing significantly						

Attachment C, Classified TRU Waste Escort Logbook Form [UET]

(Page 1 of 2)

PA-FM-01008,R0 **Classified TRU Waste Escort Logbook Form**		
Date:		
Waste Containers:		
LA00000	LA00000	LA00000
LA00000	LA00000	LA00000
LA00000	LA00000	LA00000
LA00000	LA00000	LA00000
LA00000	LA00000	LA00000

Time	**Log Entry**

Attachment C, Classified TRU Waste Escort Logbook Form (Continued) [UET]

(Page 2 of 2)

PA-FM-01008,R0 Classified TRU Waste Escort Logbook Form		
Date:		
Waste Containers:		
LA00000	LA00000	LA00000
LA00000	LA00000	LA00000
LA00000	LA00000	LA00000
LA00000	LA00000	LA00000
LA00000	LA00000	LA00000
Signatures		
I certify that the logbook entries listed above are accurate to the best of my knowledge and that the waste containers shown were under the control and supervision of a person holding a DOE"Q" security clearance while these waste containers were outside of Limited Area. _____ _____ _____ (Signature) (Printed Name) (Z #)		
I certify that the logbook entries listed above are accurate to the best of my knowledge and that the waste containers shown were under the control and supervision of a person holding a DOE"Q" security clearance while these waste containers were outside of Limited Area. _____ _____ _____ (Signature) (Printed Name) (Z #)		
Comments		
Page ___ of ____		

Attachment D, Container Preparation Data Form

Page 1 of 1

The data-collection form is not a permanent record. Destroy as soon as data entered into WCATS. WCATS serves as the permanent record for this information.

REQUIRED DATA	DATA
LA000000:	
Tare Weight (lbs):	
Carbon Filter(s) #:	
Purchase Order #:	
Year of Manufacturer:	
Drum Lid-Ring Torque: Wrench #:	
Scale #:	
C.F. Torque Wrench #:	
Bung Torque Wrench #:	
Serial #	
Lot #	

Data Complete:	_____ (Performer Signature)	Date:

PA-DOP-01450, Packing Oversized TRU Waste into Approved Containers, R1

LA-UR-14-25069

Attachment A, Resumption Evidence and Approval Traveler

(Page 1 of 1)

TRACKING # ROE-26

Process	Procedure #	CSED/CSLA # *(if applicable)*
Packing Oversized TRU Waste into Approved Containers	PA-DOP-01450	08-174, -175, -176

- ☑ PA-NOTICE-01007-FM2 – Attachment B, Technical Procedure Verification Checklist
- ☑ PA-NOTICE-01007-FM3 – Attachment C, Technical Procedure Validation Checklist
- ☑ PA-NOTICE-01007-FM4 – Attachment D, Criticality Evaluation Screening and Review Checklist
- ☑ PA-NOTICE-01007-FM5 – Attachment E, Seven Points Compliance Validation Memo
- ☑ Independent Verification evaluation complete

  NA TOM 10/10/13 **NOTE**: Independent verification, as defined by ADPSM, is required for all operations with *"Pu in metal"* Operational limits > 2300g, and for all 400 AREA aqueous solution operations.
- ☑ Additional Supporting Information Attached

INDEPENDENT VERIFIER SIGNATURE *(if required)*

Name	Z Number	Signature	Date
Not applicable			

RESPONSIBLE OPERATIONS/ENGINEERING MANAGER(S) SIGNATURES

Name	Z Number	Signature	Date
Peter Carson	203878		10/8/13
Keith Lacy	149262		10-8-13

DIVISION LEADER(S) SIGNATURES

Name	Z Number	Signature	Date
Stephen Schreiber	094595		10/10/2013
Tom Nelson	108913		10/10/13

APPROVAL AUTHORITY SIGNATURES

☑ ***(ADPSM only approval required)***

ADPSM *(print name)* Jeffrey Yarbrough	Z Number 105580	Signature	Date 10-10-13
PADWP *(print name)*	Z Number	Signature	Date
DIR *(print name)* Charles McMillan	Z Number 125229	Signature	Date

NPI-7

Detailed Operating Procedure

Approval Cover Sheet

Document Number:	PA-DOP-01450, R1
Effective Date:	10/15/2013
Next Review Date:	10/15/2016
Supersedes:	FFS-DOP-013

Title: ***Packing Oversized TRU Waste into Approved Containers***

Status:	**Hazard:**	**For Document Control Use Only:**
☐ New	☐ Low-hazard	
☒ Major revision	☒ Moderate-hazard	
☐ Minor revision	☐ High-hazard/complex	
	Use Type:	
	☒ Reference ☒ Use every Time (Attachments A-C)	

	Organization	**Date**	**Signature**
Approved for Use By: Document Owner:			
Keith Lacy *Group Leader*	NPI-7	10/10/13	Signature on File
Authorized for Use By: FOD:			
Chuck Tesch *OM*	TA55-DO	10/10/13	Signature on File
Released: FOD:			
Chuck Tesch *OM*	TA55-DO	10/10/13	Signature on File

☒ Unclassified ☐ Restricted Data	**Derivative Classifier:**
☐ Confidential ☐ Formerly Restricted Data	**Name:** Chastity Kolar
☐ Secret ☐ National Security Information	**Title:** NM Specialist **Date:** 10/10/2013
☐ Unclassified Controlled Nuclear Information	
☐ Official Use Only	**Derived from: CG-LANL-COMP-1**

Revision History

Document Number	Effective Date	Action	Description
PA-DOP-01450, R1	10/15/13	Major Revision	• Revised Sections 2.1, B, D, E, Criticality Safety comments • Revised Section 2.1, G, Training • Revised Section 3.2, Performance Documents • Updated Section 8.0, Definitions and Acronyms
PA-DOP-01450, R0	Not made effective	New Document	• New procedure • Supersedes FFS-DOP-013

Table of Contents

1.0 INTRODUCTION 5
1.1 Purpose 5
1.2 Scope 5
1.3 Applicability 5
1.4 Technical Safety Requirements (TSRs) 6
2.0 PRECAUTIONS AND LIMITATIONS 6
2.1 General 6
2.2 Additional Requirements and Conditions (WR Use) 10
3.0 PREREQUISITE ACTION 10
3.1 Planning and Coordination 10
3.2 Performance Documents 11
3.3 Special Tools, Equipment, Parts, and Supplies 11
3.4 Field Preparation 13
3.5 Approvals and Notifications 13
4.0 ACCEPTANCE CRITERIA 13
5.0 PERFORMANCE 14
5.1 Material Transfer 14
5.2 Inspecting Waste Containers 14
5.3 Criteria for Packing Waste Containers 15
5.4 Preparing a Container 16
5.5 Loading an Approved Waste Container 17
5.6 Re-Opening Waste Containers 21
5.7 Acceptance/Transfer Checks of Off-Site Containers 22
5.8 In-Service Inspection of TRU Waste Containers 23
5.9 Controlling Classified TRU Waste Outside of a Protected Area 25
6.0 POST-PERFORMANCE ACTIVITIES 27
6.1 Testing 27
6.2 Restoration 27
6.3 Results 27
6.4 Verification/Independent Verification 27
6.5 Records Processing 27
7.0 CONTINGENCIES 27
8.0 DEFINITIONS AND ACRONYMS 28
9.0 RESPONSIBILITIES 31
9.1 NPI-7 Personnel 31
9.2 Quality Assurance Representative 31
9.3 Central Characterization Project (CCP) 31
9.4 Operations Center Personnel 31
9.5 Person-In-Charge (PIC) 31
9.6 Radiation Control Technician (RCT) 31
9.7 First Line Manager (FLM) 32
10.0 REFERENCES 32
11.0 RECORDS 33
12.0 APPENDICES AND ATTACHMENTS 33
Appendix 1, Transuranic Waste Matrix Mixing 34
Appendix 2, Pictures and Drawings 35
Appendix 3, WIPP Approved Filters 38

Appendix 4, Example ISI Label 41
Attachment A, Classified TRU Waste Escort Logbook Form [UET] 42
Attachment B, TSR 6.2.5 ISI 5. TRU Waste Shipping Container Inspection Form [UET] 44
Attachment C, Waste Container QA Checklist [UET] 46
Attachment D, Container Preparation Data Form 47

1.0 INTRODUCTION

1.1 Purpose

This Detailed Operating Procedure (DOP) provides instructions for inspecting, packing, and remediating oversized Transuranic (TRU) waste in approved containers and destined for the Waste Isolation Pilot Program (WIPP) and/or for Technical Area (TA) 54. The process documentation is captured on the electronic Waste Compliance and Tracking System (WCATS). This procedure defines processes for packing new containers, as well as opening previously closed containers to ensure compliance for WIPP and TA-54.

Waste Generator Instructions (WGIs) are supplemental instructional requirements for the waste to be acceptable for TA-54. WGIs are controlled documents in the Waste Disposition Program (WDP) system and are identified in section 10.0, *References*.

Justifications Memos are used to authorize the discard of items and are attached electronically to the waste items on the WCATS. Other memos are issued and acknowledged by TRU Waste personnel to further clarify waste operations and compliance issues until they are entered into the procedure. Some memos are Discard Memos or Deviation from Safeguards Memos. When these memos are attached to an item that is over the safeguards termination limit (STL), the electronic system allows the packing of the item.

1.2 Scope

This DOP is specifically written for use by trained Nuclear High Hazard Technicians assigned to TRU Operations at TA-55. This work is performed at TA-55, predominately in Plutonium Facility (PF) 4. TRU operations and qualified personnel may be used at other Los Alamos National Laboratory (LANL) sites as determined by NPI-7 group management. The qualified technicians inspect, pack, and remediate oversized TRU waste in approved containers. If the work performed is outside the scope of this DOP an Integrated Work Document (IWD) must be implemented to perform that work.

1.3 Applicability

The regulatory drivers for this procedure are based on criteria set forth in the WIPP and TA-54 acceptance criteria. Waste must be characterized through Acceptable Knowledge (AK) that is documented in FFS-AP-020, *Documenting Acceptable Knowledge for Legacy Waste Items*.

1.4 Technical Safety Requirements (TSRs)

TA55-TSR-2011, *TA-55 Technical Safety Requirements (TSRs)*, Section 3.7.2 Material-at Risk (i.e., MAR) shall be limited as follows:

3.7.2.4. In the basement of PF-4, excluding the vault, the RoboCal room, and the packaging/unpackaging rooms:

a. a limit of 30 kg of Pu-equivalent of waste

6.2.5 Containers for NUCLEAR MATERIAL Outside of Gloveboxes
The DF performance criteria, ISI actions, and ISI FREQUENCIES are presented as follows:

4. Packaged TRU waste shipping containers:

- are DOT Type A containers (e.g., 55-gallon drums, standard waste boxes, and overpack containers) or equivalent
- have WIPP-approved filter-vents, or equivalent

TSR 6.2.5 ISI

5. An individual packaged TRU waste shipping container is to be visually inspected for presence of vents and signs of wear or degradation.

Frequency: Upon final container packaging

2.0 PRECAUTIONS AND LIMITATIONS

2.1 General

A. Pause/Stop Work

All workers are responsible for pausing or stopping work when they have a reasonable belief that quality, work risks or hazards are not effectively controlled and workers have the right to do so without fear of reprisal. LANL Policy P101-18 provides more information on the differences between pausing or stopping work and the process for resuming work in either case.

If this procedure cannot be completed as written or abnormal conditions are encountered, PAUSE/STOP, place the work in a safe configuration if possible, and notify the Operations Center (OC) and First Line Manager (FLM).

2.1 General, (continued)

B. Hazards and Controls

Chemicals (e.g., Fantastic, Soft Scrub, etc.)	• No additional PPE required • Fantastic
Ergonomic Controls	Lifting/Lowering, Pushing/Pulling, Carrying: • Do not lift heavy items alone, use mechanical lifting devices, use second person, or reduce the weight • Keep load close to body and try to reduce the distance the object must be moved • If necessary, have an ergo evaluation completed for the work you are performing • Ergo Hazards & Controls Self-Study # 46338 • Back care training is recommended • Wear safety Shoes when removing/replacing container lids on large heavy containers such as metal drums, ST-90s, metal casks, etc.
High Noise Levels	• Wear hearing protection in posted areas • Limit time spent and maximize distance from operating equipment
Hydrogen gas	Hydrogen, which is produced by the radiolytic decomposition of hydrogenous constituents in the waste matrix including moisture, is the primary flammable gas of concern with TRU waste. • Inspect bags and waste containers and ensure filtering device is installed. • Either install a filtering device or remove the ¾-inch plug prior to bringing waste containers into PF-4. • Containers must be locked prior to staging in PF-4.
Nuclear Criticality Accident	• See CSLA for each location for specific criticality safety controls.
Pinch Points	Use HexArmor overglove or equivalent such as North leather overglove, both available from TA-55 warehouse, as needed when handling potential pinch point items.

2.1 General, (continued)

B. Hazards and Controls (continued)

Hazard	Controls
Radiological Contamination/ Ionizing Radiation	• Radiation protection requirements are detailed in TA-RD-555 • Follow radiological postings • Radiological Control Technicians (RCTs) are notified to perform a radiation survey when transferring radioactive material from one location to another • As Los as Reasonably Achievable (ALARA) principles are to be used (e.g., time, distance, and/or shielding) to minimize dose to workers • Correct personnel protective equipment (PPE) is used • Radiation Work Permits (RWPs) are required when dose rates ≥ 75 mrem/hr at 30 cm or ≥ 700 mrem/hr on contact
Slips, Trips, Falls, Control	• Always be aware of surroundings • Wear appropriate footwear • Avoid carrying loads that obstruct vision • Housekeeping (clutter, unused equipment) • Use appropriate ladder or platform • Use stairway railings

C. Unique Entry Conditions

PF-4 Access Control Requirements

D. Basis for Use Categorization/Sequence of Steps

- This procedure is designated as a reference procedure with Attachments A, B, C, and D designated as Use Every Time (UET), when those subsections of the procedure are selected for performance, because it relies on the training and expertise of the performers for successful performance, the consequences for error are not high, the procedure is routinely performed and the data collection and sign-offs are performed using the Waste Compliance and Tracking System (WCATS) computer database and computer-based logic, which diminishes the likelihood of data collection errors.
- The subsections within the Performance section may be performed independently, concurrently, and/or repeated as many times as necessary, per direction of the PIC/FLM.

2.1 General, (continued)

E. Criticality Safety Limit Approval (CSLA) Requirements

CRITICALITY SAFETY REQUIREMENTS MC&A LOCATION: B40, B45, BLLM		
Operational Process Requirements		
The following can be stored in any combination within an infinite by infinite by three unit high array. **Pu in waste** ≤ 200 FGE per 55-gallon drum ≤ 100 FGE per 30-gallon drum **Pu in oversized waste items** ≤ 100 FGE per Flatbed Cart or Wagon ≤ 350 FGE per Pallet, SWB, or larger by volume container	**OR**	The following can be stored in a five by five by three unit high array, with a 10-foot separation from other fissile materials. **Pu in waste** ≤ 300 FGE per 55-gallon drum
Restrictions/Notes • All quantities of ^{233}U, ^{235}U, ^{237}Np, Am , and Cm shall be counted as a gram-for-gram equivalent to ^{239}Pu in complying with the limits • Am must be ≤ 10 wt.% of ^{242}Am and Cm must be ≤ 5 wt.% of ^{245}Cm • 30-, 55-gallon drums, SWB, and larger by volume containers, define their own location • Flatbed Carts and Wagons define their own location • The FGE limit for drums on a pallet is based on the FGE limit for drums and not the pallet FGE limit • Flatbed Carts or Wagons are not stackable • Isotopes of Th, Pa, and ^{238}Pu, and Cf do not count toward the criticality safety administrative requirements • Natural and depleted uranium do not count toward the criticality safety administrative requirements		
*FGE = Fissile Gram Equivalent		

F. Required Permits

Radiation Work Permits (RWPs) are required when dose rates ≥ 75 mrem/hr at 30 cm or ≥ 700 mrem/hr on contact.

G. Training and/or Qualifications

- This procedure can be performed by a qualified PF-4 TRU Waste Operator (WQAS #2312).
- Conditional authorization is allowed and must be documented in WQAS.
- TSR surveillances can be performed by a qualified TSR Surveillance Performer (curriculum #10067).
- Workers in training must be under the supervision of a qualified mentor.

2.1 General, (continued)

H. Cautions

- Use proper lifting techniques and equipment when pushing, pulling, and/or lifting waste items and containers.
- Ensure to observe all controls for radiological contamination/ ionizing radiation hazards.
- Ensure to observe all controls for trips, falls, and crushing hazards.

I. Material Control and Accountability

Prior to movement of material, use TA55-DOP-016, *TA55 Material Transfer Procedure,* to ensure that the MAR is in accordance with TA55-TSR-2011, *TA-55 Technical Safety Requirements* (TSRs), 3.7.2.4.a, ". . . in the basement of PF-4, excluding the vault, the RoboCal room, and the packing/unpacking rooms a limit of 30 kg of Pu-equivalent of waste").

2.2 Additional Requirements and Conditions (WR Use)

Not Applicable

3.0 PREREQUISITE ACTION

NOTE The sections and steps in the Prerequisite Action Section are not required to be performed in sequence, unless otherwise stated.

3.1 Planning and Coordination

[1] Ensure plant conditions are in Mode 1 before commencing work.

[2] Ensure to conduct a pre-job brief in accordance with PA-AP-01020, *Pre-Job Briefing and Post Job Review*.

[3] Obtain permission from the Operations Center (OC) before conducting a Technical Safety Requirement (TSR) or In-Service Inspection (ISI) surveillance, as applicable.

[4] Schedule the work with the Facility Operations Director organization, when applicable.

[5] Confirm that tools, equipment, and material numbers in the work area match those specified.

[6] The PIC/worker is responsible for ensuring that working to the most current procedure and complying with document control processes concerning copying, marking, and final disposition.

[7] Only store TRU Waste in areas with approved CSLAs.

[8] Ensure compliance with all appropriate steps according to TA55-DOP-016, *TA-55 Material Transfer Procedure*.

3.1 Planning and Coordination, (continued)

[9] The PIC/Worker is responsible for ensuring that the planned-process evolution can be executed in compliance with relevant Fissile Material Operation (FMO) limits and requirements prior to releasing the work.

3.2 Performance Documents

- P330-6, *Nonconformance Reporting*
- Applicable Radiological Work Permits
- Manufacturer's Operation Manuals on Sharepoint
- TA55-DOP-016, *TA-55 Material Transfer Procedure*
- NMT7-AP-020, *Documenting Acceptable Knowledge for Legacy Waste Items*
- TA55-RD-539, *TA-55 Waste Management Requirements*
- TA55-RD-555, *TA-55 Radiation Protection Requirements*
- WP 08-PT.01, *Standard Waste Box Handling and Operation Manual*

3.3 Special Tools, Equipment, Parts, and Supplies

NOTE Some equipment listed in this procedure requires on-the-job training for proper usage. Not everything listed is used for each task.

<u>Personal Protective Equipment</u>

- Booties
- Coveralls
- Cut resistant gloves (i.e. nitrile, Kevlar etc.)
- Ear protection
- Hard hats
- Heavy-duty Gloves (Hex Armor or equivalent)
- Latex Gloves
- Leather Gloves (North or equivalent)
- Respirator during hot jobs
- Safety Glasses with side shields
- Safety Shoes
- Tyvek hoods and coveralls
- Paper hoods and coveralls

3.3 Special Tools, Equipment, Parts, and Supplies, (continued)

Equipment and Supplies

- ¼”-20 UNC eye bolt
- ½”-13 UNC thread tap
- 12-mil, 26 Long Bag (26LB or 26XLB) filtered bag,
- 4 or 5-mil polyethylene bags
- 4-wheel flat-bed , assorted carts
- Approved Waste Containers
- Bar Code labels
- Blocking
- Blue NON-RCRA REGULATED labels
- Bolt Cutters
- Bung lids and crimper tool
- Calibrated certified scales (maintain in WCATS)
- Calibrated torque wrenches
- Certified bridge crane
- Certified forklift attachments
- Certified lifting straps
- Fantastik® or equivalent
- Forklift
- Guide pins for lid placement
- Hack Saw
- Hand tools (e.g., knife, socket, low torque driver, hammer, screw driver, open-end crescent wrenches, measuring device, and other tools deemed necessary by the PIC)
- Handheld WCATS Data Entry Device
- Handheld grinder
- Hard Hats
- Ladder
- LocTite® 242
- Magnets to lift lids from approved container/large containers (rigging)
- Mallet
- Metal pallets
- Nonlocking, liquid, anaerobic, thread sealant
- NUCFil 019DS carbon filters or equivalent
- Pallet jack
- Permanent marker
- Push-type drum handler, drum roller, or mechanized drum handler, box roller, rolo-lift, lift table
- Reciprocating saw
- Styrofoam sheets, wood, or equivalent bracing and shoring
- Tamper indicating devices (TID)
- Vinyl tape
- Wagon, cart, flat beds, dollies, hand dollies, drum rollers
- White cotton gloves

3.3 Special Tools, Equipment, Parts, and Supplies, (continued)

- White polyethylene open rigid drum liner (no lid)
- WM Padlocks
- Yellow HAZARDOUS WASTE labels
- Yellow RADIOACTIVE WASTE labels

Table 1 Equipment Description and Location (confirm on WCATS)

Equipment Number (N/A if no number)	**Equipment Name**	**Manufacturer/ Model**	**Description**	**Location**
N/A (changed frequently)	Scale 432	N/A	Platform, other	Rm 432
N/A (changed frequently)	Scale Basement	N/A	Platform, other	Basement

Table 2 Tools and Fixtures

Tool Number	**Title/Description**
N/A (changed frequently)	Assorted Length Straps
N/A (changed frequently)	Forklift Attachment
N/A (changed frequently)	D-Rings

Table 3 Measuring and Test Equipment

Description	**Range**	**Accuracy**	**Calibration Category**
0-100 Foot pound Torque Wrench	20-100%	±3%	Annual
0-200 Inch pound Torque Wrench	20-100%	±3%	Annual

Table 4 Software

Software Number	**Title/Description**
N/A	Waste Compliance and Tracking System

3.4 Field Preparation

Field preparations that must be completed before performing the procedure would include sorting and segregating of waste items, contacting the OC, contacting RCT support, and ensuring red light is lit prior to performing hot job.

3.5 Approvals and Notifications

Not Applicable

4.0 ACCEPTANCE CRITERIA

The drivers for this procedure are based on criteria set forth in the following:

- P930-1, *LANL Waste Acceptance Criteria*
- DOE/WIPP-02-3122, *TRU Waste Acceptance Criteria for the Waste Isolation Pilot Plant*

5.0 PERFORMANCE

WARNING

After receiving items into account 746, only stage in the following MC&A locations: F432, BLLM, B35, B40, and B45. TRU Waste is not allowed to be staged on the TA-55 Waste Storage Pad.

NOTE In this Section 5.0, Performance, personnel may perform the subsections independently, concurrently, and/or repeated as many times as necessary, as directed by the PIC/FLM. However, steps within each subsection are performed in sequence unless otherwise directed

5.1 Material Transfer

$ **[1]** Prior to movement of material, use TA55-DOP-016, TA55 Material Transfer Procedure to ensure that the MAR is in accordance with TA55-TSR-2011, TA-55 Technical Safety Requirements (TSRs 3.7.2.4.a, ". . . in the basement of PF-4, excluding the vault, the RoboCal room, and the packaging/un-packaging rooms a limit of 30 kg of Pu-equivalent of waste").

[2] When moving material, ensure compliance with TA55-DOP-016, *TA-55 Material Transfer Procedure*, and applicable criticality safety limits and controls.

5.2 Inspecting Waste Containers

[1] Inspect the containers for damage.

[2] Mark damaged containers anywhere with a black, 4-inch "X" using a permanent marker.

[3] IF damaged,
THEN notify NPI-7 low-level radioactive waste (Low Level Waste [LLW]) and dispose of the container.

[4] IF not damaged,
THEN clean the surfaces with an appropriate cleaner (i.e., Fantastik® or equivalent) to ensure they are free from dust and oil.

5.3 Criteria for Packing Waste Containers

[1] Confirm the criticality safety limits and controls are not exceeded.

[a] See applicable CSLAs in Section 10.0.

[b] IF there is a violation of these criticality safety limits,
THEN perform the following:

- Pause/stop work and DO NOT attempt to recover from the situation
- Back away at least 15 feet from situation
- Warn others in the area
- Control access to the area (e.g., Red Light room)
- Notify PIC, FLM, and OC
- Await further instructions in safe location

[2] Ensure that waste items, which do not meet the safeguards termination limit (STL), are covered by the memo "Deviation for Termination of Safeguards."

[3] IF not accepted as a waste item,
THEN return to the Generator.

[4] Attach the memo electronically to each individual item requiring it on the WCATS.

NOTE It is permissible to add minor volumes (i.e., less than 10% of the total waste volume) of homogeneous waste items (e.g., absorbed organic liquids, spent resins, salts, or ash) with predominantly debris (e.g., combustibles, metals, graphite, glass, and filters) (i.e. heterogeneous) containers. Therefore, small volumes of homogeneous waste can be discarded in a container, which contains significantly more volume of heterogeneous waste items, provided the Nondestructive Assay (NDA) Lab measurements for waste items are similar and would not have any issue with confirmation of the container. See Appendix 1 for the different waste matrices.

[5] Contact PIC for special approvals if you need to add minor volumes of homogeneous waste.

5.4 Preparing a Container

NOTE Containers stored in PF-4 assume room temperature allowing the adhesive to adhere properly. After the adhesive has set, the labels can tolerate winter and summer outdoor temperatures and reasonable wetting. Container seams must not be covered with markings or labels of any type. Do not overlap one label on top of another label or stenciling.

[1] Clean the surfaces with an appropriate cleaner (such as Fantastik® or equivalent) to ensure they are free from dust and oil.

[2] Obtain a sheet of barcode labels for each WC assembly that passes the inspection; barcode labels on a single sheet have the same number (i.e., personnel can obtain the barcode labels for containers from Waste Services ask your PIC).

[3] Place four labels, one on each side top center.

[4] Place fifth label on the center of the lid (reference Appendix 2).

[5] Inspect the container as follows:

[a] Remove lid using forklift, lifting device, and/or appropriate eyebolt.

NOTE If a rubber gasket is supplied with the filters, it can be removed at the user's discretion. The container relies on the mechanical interface of the pipe threads with a thread sealant to create a leak-tight joint.

[6] Install WIPP-approved filters and plug caps on the container, following the steps below in sequential order:

[a] Use LocTite® 242 (or equivalent) all around the filter and plug cap threads.

[b] Hand install diagonally the filters into the 3/4" thread flange opening until the gasket is seated onto the flange opening.

[c] Hand install diagonally the plug caps into the 3/4" thread flange opening from the outside.

NOTE Always reset torque wrench to zero setting after use.

[d] Using a calibrated torque wrench, torque filters and plug caps to manufacturer's current specifications (e.g., 10 or 15 ft/lbs ±5 ft/lbs).

[e] Remove all excess sealant from the exterior and interior of the container.

[7] Replace lid on the container.

[8] Tare weigh the container with the lid, bolts, and gaskets using a certified scale.

[9] Record the container tare weight (i.e., in pounds) on the lid of the container using a permanent marker.

5.4 Preparing a Container, (continued)

[10] IF a certified container is placed back in the container storage area,
THEN ensure the container or other approved container is labeled "EMPTY."

[11] Enter the applicable information into WCATS.

5.5 Loading an Approved Waste Container

WARNING

The container can be loaded with a maximum of 325 Fissile Gram Equivalent (FGE) including two (2) times the uncertainty for Pu^{239}. For Pu^{238} loading limits, see EP-WGI-0206, *Waste Generator Instructions [WGI] for the Disposition of MT-83 Waste*, and consult with your PIC for further guidance.

5.5.1 Loading into Partially Filled Containers

NOTE Partially filled containers may be used if the following occur:

- The waste in the container is compatible with the waste to be packaged.
- There is sufficient room and unused weight margin in the container for the new waste.

A container is full and ready to be sealed if the following occur:

- It is physically full.
- It contains a maximum of 325 FGE including two (2) times the uncertainty.
- If the gross weight for the container is reached (i.e., this is the tare of the container plus the contents).
- When the time limit of the storage area is approached.

[1] IF the waste container is full,
THEN perform Section 5.5.3, Sealing a Container

5.5.2 Packing TRU Waste into a Container

[1] Using WCATS, presort waste items to minimize physical handling of the waste, thus reducing radiation exposure, in accordance with the principle of ALARA.

[2] Transport the prepared container to the area where it is packed.

[3] Follow the RWP requirements for this task.

5.5.2 Packing TRU Waste into a Container, (continued)

NOTE 1 The two-person rule applies whenever the filled or partially filled container is not secured with a TID.

NOTE 2 An exclusion area is utilized in the PF-4 basement to help expedite the loading process of oversized TRU waste items. These items are placed in approved containers that are greater than a 55-gallon container. A decision is made by the RCT with input from the PIC as to the safety and integrity of the waste item being placed into the new container. The physical exclusion area must have aisle ways adjacent to the area cordoned off and monitored while the loading process is taking place. This will restrict traffic from inadvertently entering the exclusion area.

NOTE 3 When there is a one item ID container with a valid TID applied to it, the item assay will serve as the final container assay, as long as the original TID is still intact and valid.

NOTE 4 When multiple-item IDs are packed in a container, individual assays are recorded for each item and container will require a confirmation assay.

[4] Confirm on the WCATS that the container contains no more than 325 g plutonium-239 FGE including two (2) times the uncertainty.

[5] Remove the lid.

[6] Inspect the container's lid screws, rivnuts, and lid, as applicable.

[7] IF encounter damage after inspection,
THEN follow the manufacturer's instructions.

[8] IF manufacturer's instructions are not adequate,
THEN contact the PIC.

[9] Receive the waste item(s) from the waste generator contact person or storage.

[10] Conduct applicable LANMAS transactions

[11] Ensure that all sharp edges are properly taped or otherwise rendered blunt.

[12] Sort item by matrix code, measurement code, and MT before packing a waste item into the container.

[13] Ensure that an RCT surveys each item for contamination.

[a] Ensure the waste item has a radiological survey tag, or other tag deemed necessary by an RCT.

[14] Weigh each item on a calibrated scale.

[15] Enter the weight of the item on WCATS, when WCATS requires.

[16] Make a note on the comments field if the bag is filtered or wrapped in plastic.

5.5.2 Packing TRU Waste into a Container, (continued)

[17] Confirm the following:

[a] The Item ID and description of the item corresponds to the Waste Item ID on WCATS.

[b] IF item ID and description cannot be confirmed,
THEN consult with the PIC to determine the necessary action.

[18] Inspect the lifting straps for damage and a current certification tag.

[19] Confirm that the lifting straps are properly rated for the estimated load weight.

[20] Use the forklift or a crane to load items, as appropriate.

[21] Wear the proper PPE.

[22] Weigh all shoring materials that are added to the container using a calibrated scale.

NOTE As a precautionary measure, you may add a sheet of Styrofoam in the bottom of the container to cushion the impact of the heavy item, preventing a breach to the shipping/transport container.

[23] Pick up waste item.

[24] Put waste items into container.

[25] IF the container is not considered full or is not closing
THEN perform the following steps:

[a] Place the lid into position without the gasket at this time.

[b] Install the four corner screws.

[c] Install the middle screws of the straight sides.

[d] Install the middle screws of the curved ends.

[e] Place a TID on the container.

[f] Enter the TID serial number into the LANMAS system in the field “TID” for the applicable container.

[26] IF the container is not considered full,
THEN confirm with the RCT if the container is in a safe configuration before any further packing.

[27] IF the container is full,
THEN shore up heavy items with appropriate materials, such as Styrofoam sheets, wooden pallets, or plastic material, to prevent them from shifting.

[28] IF the container is full
THEN follow the Sealing instructions in Section 5.4.3, Sealing a Container.

5.5.2 Packing TRU Waste into a Container, (continued)

[29] Perform the required LANMAS transactions.

[30] Ensure that all packaging information has been recorded on WCATS.

[31] Apply either a Nonregulated label or a yellow Hazardous Waste label on the container (See Appendix 2) for label placement.

5.5.3 Sealing a Container

[1] Follow sealing processes according to the manufacturer's instructions (i.e., reference Shared Drive).

NOTE A lifting attachment point is located in the center of the lid and will accept a ¼-inch–20 UNC lifting eye bolt (i.e., this lifting point is for the lid only).

[2] Place a TID on the container.

[3] Enter the TID serial number into the LANMAS in the "TID" field for the applicable container.

[4] Perform ISI per Section 5.8, using Attachment B.

NOTE Scale must be certified on WCATS.

[5] Ensure the scale is marked with a file number and current calibration date on the calibration label.

[6] Weigh the container on the calibrated scale.

[7] Record gross weight on the lid.

NOTE The calculated gross weight of the closed container or Container should be ±10 lbs. of the measured gross weight.

[8] <u>IF</u> the weight of the closed container exceeds the ±10 lbs. of the measured gross weight,
<u>THEN</u> consult the PIC to determine the necessary action.

[9] Record requested data on Container Preparation Data Form (Attachment D), destroying data form as soon as data entered into WCATS.

[10] Enter weight data into WCATS and LANMAS where appropriate.

[11] Request contamination and radiation survey from RCT.

[12] Transfer the container to NDA personnel or return to one of the waste management storage areas in the basement for confirmatory radiological measurement.

5.5.3 Sealing a Container, (continued)

[13] Ensure NDA personnel validate that the total assay results for the container corresponds to the sum of the assay results for the items placed into the container.

[a] IF the assay results do not correspond and NDA and NPI-7 WM personnel cannot resolve the discrepancy in-process,
THEN follow the instructions in P330-6, *Nonconformance Reporting*.

[b] Any nonconformance container that requires reopening follows Section 5.6 below.

NOTE The technician FLM or designee records approval on WCATS.

5.6 Re-Opening Waste Containers

NOTE 1 Perform the steps in this section in sequence unless otherwise directed by the PIC/FLM.

NOTE 2 In certain cases, it may be necessary to re-open a closed waste container to resolve issues such as the following: nuclear material limits are exceeded or nuclear material differences, measurement codes do not match WCATS and LANMAS, weights do not match on WCATS and LANMAS, to remove an item, to add an item, container does not meet certification, dose rates are exceeded, or if items are in questions, etc. Consult with your PIC if issue(s) can be readily resolved or if a NCR and HOLD tag need to be applied in accordance with P330-6, *Nonconformance Reporting*. An RWP is required for re-opening containers.

NOTE 3 An RCT must be present if the waste items are going to be removed from the waste container. A forklift, certified lifting straps, or certified D-rings may be used if needed.

[1] Prepare the work area with brown paper or plastic on carts, scales, or blocking (i.e., not on floor) to control contamination and to stage items being removed.

[2] Don the proper protective equipment for the job per RWP requirements.

[3] Ensure room or work area is red lit or access controlled.

[1] Remove the TID from container under the two-man rule.

[2] Loosen all bolt(s) securing the lid.

[3] Remove the bolt(s) securing the lid.

[4] Remove the lid allowing RCT to perform contamination survey of the lid.

[a] If contamination is detected follow RCT instructions.

[5] Stage items on pallets, carts, or blocking until the item(s) in question are found.

[6] Resolve issue(s) with item(s) in question.

5.6 Re-Opening Waste Containers, (continued)

[7] Return the staged items to the proper waste container, including waste item in question.

[a] IF the item is going back to the generator,
THEN perform appropriate transfer procedures.

[4] Ensure the RCT tags the item.

[8] Follow proper procedural steps for sealing the container according to manufacturer's specifications.

[9] If applicable, ensure that all WCATS tasks are reworked to reflect new Container contents, packaging configuration, etc.

5.7 Acceptance/Transfer Checks of Off-Site Containers

NOTE 1 Performance steps of this section are not required to be performed in sequence or as directed by the PIC/FLM.

NOTE 2 The Point of Contact (POC) and shipping personnel may possibly have information that will determine the result of acceptance.

[1] Communicate with the POC the reason for transfer of any container.

[a] Ensure the POC remains present until the determination of acceptance and transfer is complete.

[b] IF there are discrepancies that conflict with the formality of operations THEN reject the container and notify the FLM.

NOTE This investigation may require a visit to the container's storage area; prior to shipping.

[2] Personnel investigate any changes to the container.

[a] These changes may consist of but are not limited to the following:

- Unknown labeling
- Hold Tags
- Presence of Prohibited Items
- Label discrepancies

[3] Ensure that any TID, in accordance to the certified TID program.

[a] Incorporate TID data into LANMAS.

5.7 Acceptance/Transfer Checks of Off-Site Containers, (continued)

NOTE All information that accompanies the container must reconcile to the On-Site information to remove any discrepancy prior to the receiving of a container into the storage area and LANMAS account

[4] Ensure all containers used to pack waste or contain any waste are filtered.

5.8 In-Service Inspection of TRU Waste Containers

NOTE 1 Perform steps in this section in sequence, unless otherwise directed by the PIC/FLM.

NOTE 2 Packaged TRU waste shipping containers are inspected in accordance with In-Service-Inspection #5 of TA55-TSR-2011, upon final container packaging. This is to ensure containers have vents and do not have damage that would invalidate the performance criteria; the filter-vents allow the release of hydrogen and other gases out of the containers.

$ **[1]** Inspect the container when closing, and after a TID is applied record the results of this inspection using Attachment B.

[a] Visually inspect container to ensure container is filtered with the appropriate number of WIPP-approved filters in accordance to In-Service-Inspection #5 of TA55-TSR-2011.

[2] IF the filter is Model NucFil 019DS,
THEN the filter is a WIPP-Approved filter.

$ **[3]** IF the filter is other than Model NucFil 019DS,
THEN look up the model number on the list of WIPP-approved filters in Appendix 3 and replace with approved filter.

[a] Visually inspect the filter to ensure the appropriate gasket is installed.

[b] Visually inspect container for signs of wear or degradation in accordance with DF 6.2.5 In-Service-Inspection #5 of TA55-TSR-2011, using Attachment B.

[4] Review container certification and QA inspection documentation (Attachment C) to confirm that the container was tested to DOT 7A Type A criteria.

[5] Ensure that the container is closed according to the WP 08-PT.01 manual.

[6] Ensure that the gross weight of container does not exceed the maximum weight specified in container certification and QA inspection documentation.

[7] Confirm that waste is packaged such that routine handling will not likely result in the surface dose rate of the container changing significantly.

$ **[8]** Ensure that the container is not bulging or showing evidence of being pressurized.

5.8 In-Service Inspection of TRU Waste Containers, (continued)

[9] Verify using Attachment B that the container shows no signs of obvious excessive damage, including the following:

- Dents greater than ¼-inch deep and/or 3-inch long with a width between ½-inch and 6-inch
- Split seams
- Broken Welds
- Cracks
- Creases

$ **[10]** Verify, using Attachment B, that the container shows no signs of excessive degradation, including the following:

- Pitting
- Corrosion
- Wall thinning
- Pin holes
- Rust in caked layers or deep metal flaking

[11] Turn in completed copies of form PA-DOP-01450-FM01, *TSR 6.2.5 ISI 5, TRU Waste Shipping Container Inspection Form,* (Attachment B) to the TA-55 OC by end of shift unless delayed by unforeseen facility conditions, such as red lit room, in which case form shall be submitted whenever practical.

[12] Apply label documenting TSR 6.2.5 ISI 5 inspection next to the bar code label on either side of the container (reference Appendix 4 for example label).

5.9 Controlling Classified TRU Waste Outside of a Protected Area

NOTE 1 Perform steps in this Section in sequence; substeps may be performed independently or in parallel, unless otherwise directed by the PIC/FLM.

NOTE 2 Classified TRU waste may be characterized by nondestructive assay (NDA) and flammable gas testing at TA-54. TA-54 is a Property Protection Area. Classified TRU waste must remain in attendance and control by personnel who hold a DOE "Q" security clearance once removed from TA-55 PF-4.

NOTE 3 Personnel who attend and control Classified TRU waste to TA-54 must be trained to the TA-54 site specific training requirements to have unescorted access to TA-54 Area G.

[1] Identify two personnel who hold a DOE "Q" security clearance to attend and control these waste containers while they are outside of a Protected Area.

[a] Ensure that site specific training for these two personnel, needed for unescorted access to the locations where the waste will reside, is current.

[2] Coordinate with the NPI-7 nuclear material distribution team (NMDT), OSPT, TA-55 Security, and the receiving site (e.g., TA-54) to ensure that all are cognizant of the WCs being transported, the schedule, and the requirements for maintaining control of these WCs.

[3] Arrange for use of a government-owned vehicle to transport personnel outside of a Protected Area.

[4] Download the current form PA-FM-01008, *Classified TRU Waste Escort Logbook Form*, (reference Attachment A), from Documentum and have multiple copies of this form in a notebook or clipboard so that the logbook can be updated while in the field.

5.9 Controlling Classified TRU Waste Outside of a Protected Area, (continued)

[5] Record the following items in the logbook (see Attachment A):

- Date
- Waste Container Label Numbers
- Time of notable events, including but not limited to the following:
- Time WCs leave PF-4
- Time shipment leaves PIDAS
- Time shipment arrived at receiving facility
- Time drums go through characterization
- Times when a cleared individual responsible for attendance and control leaves or returns to the location where the waste containers are located
- Time shipment is loaded for return to TA-55
- Time shipment arrives at TA-55
- Time WCs are returned to PF-4
- Other events that seem noteworthy

[6] Before the shipment leaves PF-4, meet the truck outside the North Door of the PF-4 loading dock and follow the truck to its destination (e.g., TA-54).

[7] Maintain control of the waste containers while they are outside of PF-4 and/or at the destination facility, including the following:

[a] IF the truck proceeds through a gate,
THEN one Q-cleared individual proceeds through the gate before the truck and waits for it on the other side while the other Q-cleared individual and truck are processed through the gate.

[b] Maintain visual control of the waste to the extent practical. It is allowed for waste to be out of visual contact while it is undergoing NDA characterization and it is inside the sealed NDA chamber.

[c] Staggering breaks so that at least one (1) Q-cleared individual is in attendance and control of the waste containers at all times.

[d] Coordinate with TA-55 Security to ensure they are prepared for the shipment to return to TA-55.

[8] After all required activities are complete, observe the waste container being loaded onto the truck.

[9] Follow the truck back to TA-55 and into the PF-4 loading dock.

6.0 POST-PERFORMANCE ACTIVITIES

6.1 Testing

Not Applicable

6.2 Restoration

Not Applicable

6.3 Results

Not Applicable

6.4 Verification/Independent Verification

Not Applicable

6.5 Records Processing

All records generated are electronically captured in the Waste Compliance and Tracking System (WCATS) and/or processed per PA-AP-01040, *Records Processing Procedure for ADPSM Organizations.*

7.0 CONTINGENCIES

[1] In the event that manufacturer's specifications are noted to be out of tolerance, reevaluate specifications and apply the necessary manufacture's steps to remedy the problem.

[2] If necessary, document the issue using an NCR (e.g., for example if a torque value is found to be out of tolerance, remove bolt and nut and reapply using calibrated torque wrench and manufacturer's torque values [i.e., specifications]).

[a] IF bolts, filters or bungs cannot be tightened to the correct torque values, THEN remove the bolt, filter, or bung and tap the threads if possible, and attempt to re-tighten.

[b] IF tapping fails,

THEN use another waste container.

7.0 CONTINGENCIES, (continued)

$ **[3]** Follow ISI contingency actions as follows:

[a] If any conditions are identified during the ISI that violate the inspection criteria, then annotate the deficient conditions on the inspection form (Attachment B).

[b] Immediately notify the OC of the deficient condition or conditions and continue the inspection unless otherwise determined by the OC.

[c] The OC, in conjunction with the Operations Manager and Cognizant System Engineer (CSE), will evaluate the deficiency as to its effect on the design function of the SSC and any impact on the authorization basis (operability determination).

[4] If deficiencies are found during the performance of this procedure then the following occur:

[a] The CSE ensures that a Facility Service Request (FSR) is initiated for deficiencies requiring maintenance support.

[b] The CSE ensures that an Engineering Service Request (ESR) is initiated for deficiencies requiring engineering support.

[c] The OC tracks all deficiencies (i.e., with associated FSR/ESR numbers) on the equipment status screen in the OC.

8.0 DEFINITIONS AND ACRONYMS

Term	Definition
*****	Steps that verify criticality safety limits
$	Steps that implement TSRs
AK	Acceptable Knowledge
ALARA	As low as reasonably achievable
Am	Americium
CCP	Central Characterization Project
CH	Contact Handled
CPM	Counts per Minute
CSE	Cognizant System Engineer
CSLA	Criticality Safety Limit Approval
DCC	Document Control Custodian
ESR	Engineering Service Request
DF	Design Feature
Detailed Operating	Operations-level written instructions that describe activities in

Term	Definition
Procedure	a systematic format.
DOP	Detailed Operating Procedure
DOT	Department of Transportation
DPM	Disintegrations per minute
EPA	Environmental Protection Agency
FGE	Fissile Gram Equivalent
FLM	First Line Manager
FMH	Fissionable Material Handler
FMO	Fissile Material Operation
FSR	Facility Service Request
FT/LBS	Foot pounds
g	Grams
HPRMS	Health Physics Radioactive Material Survey
HW	Hazardous waste
ID	Identification
IWD	Integrated Work Document
IDES	Item description
ISI	In-Service Inspection
Kg	Kilogram
LAMCAS	Local Area Material Control and Accountability System
LANMAS	Local Area Nuclear Material Accountability Software
LANL	Los Alamos National Laboratory
LLW	Low Level Waste
MT	Material Type
MAR	Material At Risk
MBA	Material Balance Area
Mode	Any one inclusive combination of facility conditions used for assigning applicability of safety equipment and limits as specified in Table 1.1-1 of the 2011 TSRs.
Mrem	Millirem
mrem/hr	millirem per hour
N/A	Not Applicable
NCR	Nonconformance Report
NDA	Nondestructive assay
NMDT	Nuclear Material Distribution Team
Nominal	Of, being or relating to a designated or theoretical size that may vary from the actual (e.g., nominal 22.5” diameter 55-

Term	Definition
	gallon drum)
Non-Routine	Legacy waste and/or dismantling glove boxes, etc.
OC	Operations Center
P/S	Process Status
Pb	Lead
PCB	Polychlorinated biphenyl
PE-Ci	Plutonium-239 equivalent curies
PNAD	Personal neutron accident dosimeter
POC	Pipe overpack component
Point of Contact	Generator or other personnel working for the generator.
PPE	Personal protective equipment
Programmatic	Currently processed waste that does not meet STL.
Pu	Plutonium
R	Rem
RBA	Radiological buffer area
RCA	Radiological controlled area
RCRA	Resource Conservation and Recovery Act
RCT	Radiological control technician
RTR	Real time radiography
RWP	Radiological Work Permit
STL	Safeguards termination limit
SWO	Solid Waste Operations
TID	Tamper indicating device i.e. multi-lok, quick seal, mylar, cup-seal.
TLD	Thermoluminescent dosimeter
TRAMPAC	TRUPACT-II Authorized Methods for Payload Control
TRU	Transuranic, >100nCi/g or >50,000 cpm.
TRUPACT-II	TRU Waste Package Transporter-II
TSR	Technical Safety Requirement
UET	Use Every Time
VE	Visual Examination
VI	Visual Inspection
WAC	Waste Acceptance Criteria
WC	Waste Container (55 gal drums, POCs, SWVs, and other approved containers)
WCATS	Waste Compliance and Tracking System
WE	Waste Exception
WGI	Waste Generator Instructions
WI	Work Instruction
WIPP	Waste Isolation Pilot Plant

Term	Definition
WM	Waste Management
WODF	Waste Origination and Disposition Form
WQAS	Worker Qualification and Authorization System

9.0 RESPONSIBILITIES

9.1 NPI-7 Personnel

- Must maintain qualification standards to perform this procedure
- Responsible for quality
- Maintains certifications and qualifications to perform work

9.2 Quality Assurance Representative

- Responsible for providing torque specifications to NPI-7 personnel
- Responsible for monitoring receipt and inspection of waste containers

9.3 Central Characterization Project (CCP)

- Responsible for providing Visual Examination expertise and certification of TRU Waste

9.4 Operations Center Personnel

- Responsible for daily operational requirements, this includes providing information to personnel regarding mode of plant operations
- Ensures abnormal events are reported as required to through the established chain of command

9.5 Person-In-Charge (PIC)

- Reviews attachments to ensure that they are correctly completed
- Ensures all deficiencies are reported as required to the OC center and their chain of command

9.6 Radiation Control Technician (RCT)

- Responsible for surveys, Health Physics Radioactive Material Survey (HPRMS) tags, and supports door openings

9.7 First Line Manager (FLM)

- Responsible for overall coordination and final acceptance of this procedure
- Provides special approvals, if required, to add minor volumes of homogeneous waste into approved containers
- Assists the PIC in determining order of performance sections

10.0 REFERENCES

Document Number	Title
AP-341-516	*Operability Determination and Functionality Assessment*
CCP-TP-069	*Sealed Source Visual Examination and Packaging*
DOE/WIPP-02-3122	*TRU Waste Acceptance Criteria for the Waste Isolation Pilot Plant*
EP-WGI-0201	*Waste Generator Instructions (WGI) for Standard Waste Box (SWB) for the Disposition of Newly Generated Transuranic (TRU) Waste*
EP-WGI-0206	*Waste Generator Instructions (WGI) for the Disposition of MT-83 Waste*
NMT7-AP-020	*Documenting Acceptable Knowledge for Legacy Waste Items*
PA-DOP-01462	*Packing TRU Waste into Pipe Overpack Containers*
NCS-CSLA-08-174	*Inspecting, Packaging, and Remediating Transuranic Waste for WIPP and for TA-54 Safe Storage*
NCS-CSLA-08-175	*Inspecting, Packaging, and Remediating Transuranic Waste for WIPP and for TA-54 Safe Storage*
NCS-CSLA-08-176	*Inspecting, Packaging, and Remediating Transuranic Waste for WIPP and for TA-54 Safe Storage*
P101-18	*Procedure for Pause/Stop Work*
P121	*Radiation Protection*
P330-6	*Nonconformance Reporting*
P930-1	*LANL Waste Acceptance Criteria*
PA-AP-01020	*Pre-Job Briefing and Post Job Review*
PA-AP-01040	*Record Processing for ADPSM Organizations*
PA-RD-01009	*TA-55 Criticality Safety Requirements*
TA55-DOP-016	*TA55 Material Transfer Procedure*
TA55-RD-539	*TA-55 Waste Management Requirements*
TA-55-RD-555	*TA-55 Radiation Protection Requirements*
TA55-TSR-2011	*TA-55 Technical Safety Requirements (TSRs)*
WP 08-PT.01	*Standard Waste Box Handling and Operation Manual*

11.0 RECORDS

Record Identification	Record Type Determination	Protection/Storage Methods	Processing Instructions
Attachment A, PA-FM-01008,R0, *Classified TRU Waste Escort Logbook Form*	QA Record (Nonpermanent)	Information is retained in Log Book	Processed per PA-AP-01040, Records Processing Procedure for ADPSM Organizations
Attachment B, *TSR 6.2.5 ISI 5. TRU Waste Shipping Container Inspection Form*	QA Record (Nonpermanent)	Completed form is turned into Operations Center	OC processes this record according to OC requirements
Attachment C, *Waste Container QA Checklist*	QA Record (Nonpermanent)	Completed form is turned into Operations Center with ISI checklist	OC processes this record according to OC requirements
Attachment D, *Container Preparation Data Form*	QA Record (Nonpermanent)	Data stored in WCATS	Destroyed as soon as data entered into WCATS

12.0 APPENDICES AND ATTACHMENTS

Appendix	Title
1	*Transuranic Waste Matrix Mixing*
2	*Pictures and Drawings*
3	*WIPP Approved Filters*

Attachment	Title
A	*Classified TRU Waste Escort Logbook Form [UET]*
B	*TSR 6.2.5 ISI 5. TRU Waste Shipping Container Inspection Form [UET]*
C	*Waste Container QA Checklist [UET]*
D	*Container Preparation Data Form*

Appendix 1, Transuranic Waste Matrix Mixing

Page 1 of 1

Transuranic waste matrices, types of assays, and recommendation on matrix mixing in a drum at TA-55	
Non-combustibles	**Combustibles**
Heterogeneous (Debris)	**Heterogeneous (Debris)**
Neutron instrument assay:	**Gamma instrument assay:**
Metals (IRN, ALM, MET)	Combustibles (COM)
Glass (GLS)	Plastics (PLS)
Graphite (GRS)	Rags (RAG)
Glovebox sweepings (SWP)	Rubber gloves (RUB)
Discard solids (DS)	Rubber (RUB)
Iron based HEPA filters (HEP)	Filters combustibles (PLS, FIL)
Leaded gloves (GLV)	Glass (GLS) (measured on gamma, can be mixed with combustibles so long as combustible volume exceeds the volume of glass)
Homogeneous	**Homogeneous**
Neutron instrument assay:	**Gamma instrument assay:**
Salt (CHL, HYD, SSC, OX, SS, LS)	Absorbed organic liquids (ORG)
Gamma instrument assay:	Spent resin (RES)
Ash (ASH)	
Cans 3 liters or larger must be filtered.	
Liquids in pump cavities must be drained. Liquids which are poured out must not drain back to form a pool of liquid later.	
No more than 10 leaded rubber gloves per drum. Exceed this limit only if CCP (Central Characterization Project) performs Visual Examination.	
Do not squash leaded rubber gloves with waste placed on top.	
It is permissible to add **minor volumes of homogeneous** waste items with **large volumes of debris** (heterogeneous) drum.	
Therefore, small volumes of absorbed organic liquids, spent resins, salts, or ash can be discarded in a drum which contains	
significantly more volume of heterogeneous waste items such as combustibles, metals, graphite, glass, filters	
provided the NDA measurements for waste items are similar and would not have any issue with confirmation of the drum.	
For example, it is permissible to have approximately 25% of salt volume in a drum which has 75% of metals or glass volume.	
CAUTION: Do not mix minor volume of debris (heterogeneous) waste in major volume of homogeneous waste.	

Appendix 2, Pictures and Drawings

(Page 1 of 3)

SWB Labeling

Appendix 2, Pictures and Drawings, (continued)

(Page 2 of 3)

Gasket Orientation

This appendix shows two views of the gasket orientation:

- the correct way to place the gasket, (tabs fit and lock)
- the incorrect way to place the gasket (tabs do not fit or lock)

Correct Way to Place the Gasket

Tabs fit and lock

Appendix 2, Pictures and Drawings, (continued)

(Page 3 of 3)

Gasket Orientation

Incorrect Way to Place the Gasket

Tabs do not fit and lock

Appendix 3, WIPP Approved Filters

Page 1 of 3

Approved Filter Vents **Effective Date: December 10, 2009**

The following filter vents:

- Meet the minimum specifications of:
  - Table 2.5-1, Section 2.5 of the CH-TRAMPAC, Rev. 2, dated May 2005, **OR**
  - Table 2.4-1, Section 2.4 of the RH-TRAMPAC, Rev 0, dated June 2006
- Comply with the applicable DOT Specification 7A requirements for WIPP payload containers **WHEN** installed in accordance with the Manufacturer's Instructions

Manufacturer's Model Number	WWIS ID Number	Thread Form	Min. H2 Diffusivity (m/s/mf)	Diffusivity Rating
Fairey 98867*	98867	3/4" NPSM	7.40E-06	2X (HDF)
Fairey 99421	99421	3/4" NPSM	1.85E-05	5X (HDF)
NucFil®-007	NF007	9/16-11 ST	3.70E-06	X
NucFil®-007LS	NF007L	9/16-11 ST	3.70E-06	X
NucFil®-007LW	NF07LW	9/16-8 STSL	3.70E-06	X
NucFil®-007S	NF007S	9/16-11 ST	3.70E-06	X
NucFil®-007W	NF007W	9/16-8 STSL	3.70E-06	X
NucFil®-007WS	NF07WS	9/16-8 STSL	3.70E-06	X
NucFil®-012	NF012	3/4" NPSM	1.90E-06	X/2
NucFil®-013	NF013	3/4" NPSM	3.70E-06	X
NucFil®-013 GorTex	NF013G	3/4" NPSM	7.40E-06	2X (HDF)
NucFil®-013 SS	NF013S	3/4" NPSM	3.70E-06	X
NucFil®-015 DS	NF015D	3/4-9 STUR	1.48E-05	2 x 2X (HDF)
NucFil®-016	NF016	2" NPSM	1.85E-05	5X (HDF)
NucFil®-016 SS HP	NF016S	2" NPSM	1.65E-04	SLB2
NucFil®-018	NF018	2-10 UNS	9.34E-05	RH FLC
NucFil®-019	NF019	3/4" NPSM	1.85E-05	5X (HDF)
NucFil®-019DS	NF019D	3/4" NPSM	1.85E-05	5X (HDF)
NucFil®-019-EPD	NF019E	3/4" NPSM	7.40E-06	2X (HDF)
NucFil®-019EPDDS	NF19EP	3/4" NPSM	7.40E-06	2X (HDF)
NucFil®-019-HCR	NF019H	3/4" NPSM	7.40E-06	2X (HDF)
NucFil®-019SDS	NF19SD	3/4" NPSM	1.85E-05	5X (HDF)
NucFil®-020	NF020	7/16-16 UN	1.90E-06	X/2
NucFil®-020DS	NF020D	7/16-16 UN	1.90E-06	X/2
NucFil®-020S	NF020S	1/2-20 UNF	1.90E-06	X/2
NucFil®-049	NF049	11/16-14 ST	3.70E-06	X
NucFil®-049LS	NF049L	11/16-14 ST	3.70E-06	X
NucFil®-049S	NF049S	0.588-14 ST	3.70E-06	X
NucFil®-051	NF051	.260-25 ST	1.90E-06	X/2
NucFil®-051CT	NF051C	.260-25 ST	1.90E-06	X/2

Appendix 3, WIPP Approved Filters, (continued)

Page 2 of 3

Approved Filter Vents **Effective Date: December 10, 2009**

Manufacturer's Model Number	WWIS ID Number	Thread Form	Min. H2 Diffusivity (m/s/mf)	CH-TRAMPAC Diffusivity Rating
NucFil®-072	NF072	7/16-14 UNC	3.70E-06	X
NucFil®-072 SSS	NF072S	7/16-14 UNC	3.70E-06	X
NucFil®-072S	NF72S1	9/16-11 ST	3.70E-06	X
NucFil®-072SLH	NF72SL	9/16-11 ST	3.70E-06	X
NucFil®-073	NF073	7/16-14 UNC	3.70E-06	X
NucFil®-074	NF074	7/16-16 UN	3.70E-06	X
NucFil®-075	NF075	7/16-14 UNC	3.70E-06	X
‡ **NucFil®-08DS**	NF08D	9/16-8 ST	**3.70E-06**	**X**
NucFil®-307DS	NF307D	9/16-11 ST	3.70E-06	X
NucFil®-347DS	NF347D	1/2-8 ST	1.90E-06	X/2
NucFil®-407DS	NF407D	5/8-11 ST	3.70E-06	X
NucFil®-7DS	NF7DS	9/16-11 ST	3.70E-06	X
NucFil®-DVS3	NFDVS3	9/16-14 ST	3.70E-06	X
NucFil®-DVS3 IP	DVS3IP	9/16-11 ST	7.40E-06	2X (HDF)
NucFil®-DVS307	NFD307	9/16-11 ST	3.70E-06	X
NucFil®-DVS3A	NFDV3A	9/16-11 ST	3.70E-06	X
NucFil®-NFS7A	NFS7A	9/16-11 ST	3.70E-06	X
UltraTech 9400	UT9400	3/4" NPSM	3.70E-06	X
UltraTech 9402	UT9402	7/16-16 ST	1.90E-06	X/2
UltraTech 9408	UT9408	3/4" NPSM	1.85E-05	5X (HDF)
UltraTech 9412	UT9412	9/16-11 ST	3.70E-06	X
UltraTech 9413	UT9413	9/16-11 ST	3.70E-06	X
UltraTech 9414	UT9414	9/16 Insert	7.40E-06	2X (HDF)
UltraTech 9415	UT9415	9/16 Insert	1.90E-06	X/2
UltraTech 9416	UT9416	3/4" NPSM	1.90E-06	X/2
UltraTech 9423	UT9423	3/4" NPSM	1.85E-05	5X (HDF)
UltraTech 9423T	U9423T	3/4" NPT	1.85E-05	5X (HDF)
UltraTech 9424	UT9424	3/4" NPSM	1.85E-05	5X (HDF)
UltraTech 9424X	U9424X	3/4" NPSM	1.85E-05	5X (HDF)
UltraTech 9450	UT9450	3/4" NPSM	3.70E-06	X
UltraTech 9460	UT9460	2" NPSM	9.25E-05	25X (HDF)
UltraTech 9500	UT9500	3/4" NPSM	1.85E-05	5X (HDF)
UltraTech 9550	UT9550	3/4" NPSM	1.85E-05	5X (HDF)
West WTM01D	WTM01D	9/16-11 ST	3.70E-06	X

Appendix 3, WIPP Approved Filters, (continued)

Page 3 of 3

Approved Filter Vents **Effective Date: July 28, 2010**

Acronyms/Legend

‡	New, reinstated, or revised
*	Wildcard character assigned by the manufacturer
CH-TRAMPAC	Contact-Handled Transuranic Waste Authorized Methods for Payload Control
DOT	US Department of Transportation
Fairey	Porvair Filtration Group, Ltd., Ashland, VA
HDF	High-Diffusivity Filter (CH-TRAMPAC, Table 2.5.1)
m/s/mf	Moles per second per mole fraction
NucFil®	Nuclear Filter Technology, Inc., Golden, Colorado
NPSM	American National Standard Straight Pipe Thread for Mechanical Joints
NPT	American National Standard Taper Pipe thread
RH FLC	Remote-Handled Fixed Lid Canister
RH-TRAMPAC	Remote-Handled Transuranic Waste Authorized Methods for Payload Control
SLB2	Standard Large Box 2 / TRUPACT-III
ST	Self-Tapping thread
STSL	Self-Tapping Self-Locking thread
STUR	Self-Tapping Un-Retractable thread
UN	Unified National thread
UNC	Unified National Coarse thread
UNF	Unified National Fine thread
UNS	Unified National Selected combination thread
UltraTech	UltraTech International, Inc., Jacksonville, Florida
West	West Tech Machine, LLC, Rexburg, Idaho
WIPP	Waste Isolation Pilot Plant
X/2	1.9E-6 Total Hydrogen Diffusivity (m/s/mf)
X	3.7E-6 Total Hydrogen Diffusivity (m/s/mf)
2X	7.4E-6 Total Hydrogen Diffusivity (m/s/mf)
5X	1.85E-5 Total Hydrogen Diffusivity (m/s/mf)
25X	9.25E-5 Total Hydrogen Diffusivity (m/s/mf)

Appendix 4, Example ISI Label

Page 1 of 1

TSR 6.2.5 ISI 5
Inspection

Attachment A, Classified TRU Waste Escort Logbook Form [UET]

(Page 1 of 2)

PA-FM-01008,R0 Classified TRU Waste Escort Logbook Form		
Date:		
Waste Containers:		
LA00000	LA00000	LA00000
LA00000	LA00000	LA00000
LA00000	LA00000	LA00000
LA00000	LA00000	LA00000
LA00000	LA00000	LA00000

Time	**Log Entry**

Attachment A, Classified TRU Waste Escort Logbook Form [UET]
(continued)
(Page 2 of 2)

PA-FM-01008,R0 **Classified TRU Waste Escort Logbook Form**		
Date:		
Waste Containers:		
LA00000	LA00000	LA00000
LA00000	LA00000	LA00000
LA00000	LA00000	LA00000
LA00000	LA00000	LA00000
LA00000	LA00000	LA00000
Signatures		
I certify that the logbook entries listed above are accurate to the best of my knowledge and that the waste containers shown were under the control and supervision of a person holding a DOE"Q" security clearance while these waste containers were outside of Limited Area. _____ _____ _____ (Signature) (Printed Name) (Z #)		
I certify that the logbook entries listed above are accurate to the best of my knowledge and that the waste containers shown were under the control and supervision of a person holding a DOE"Q" security clearance while these waste containers were outside of Limited Area. _____ _____ _____ (Signature) (Printed Name) (Z #)		
Comments		
Page ___ of ____		

Attachment B, TSR 6.2.5 ISI 5. TRU Waste Shipping Container Inspection Form [UET]

(Page 1 of 2)

6.2.5 Containers for NUCLEAR MATERIAL Outside of Gloveboxes

The DF performance criteria, ISI actions, and ISI FREQUENCIES are presented as follows:

4. Packaged TRU waste shipping containers:

- are DOT Type A containers (e.g., 55-gal drums, standard waste boxes, and overpack containers) or equivalent.
- have WIPP-approved filter-vents, or equivalent

In-Service Inspection

5. An individual packaged TRU waste shipping container is to be visually inspected for presence of vents and signs of wear or degradation

FREQUENCY

Upon final container packaging

Packaged TRU waste shipping containers are inspected (ISI #5) upon final container packaging (e.g., when the drum is sealed and/or when a tamper indicating device is applied) to ensure they have vents and do not have damage that would invalidate the performance criteria. Return ISI to Operations Center with seven (7) days.

Waste Container	**LA00000**		**LA00000**		**LA00000**	
Container Type **(Circle One)**	**55-Gal. Container** **POC** **Oversized Container**		**55-Gal. Container** **POC** **Oversized Container**		**55-Gal. Container** **POC** **Oversized Container**	
Inspection Requirement	**Inspection Result**		**Inspection Result**		**Inspection Result**	
	SAT	**UNSAT**	**SAT**	**UNSAT**	**SAT**	**UNSAT**
WC vented with WIPP-approved filter						
WC shows no signs of wear or degradation						
WC shows no bulging or evidence of pressurization						

Attachment B, TSR 6.2.5 ISI 5, TRU Waste Shipping Container Inspection Form [UET] (Continued)

(Page 2 of 2)

ISI PERSONNEL			
SHALL • Sign below • Turn completed ISI to Operations Center			
Completed by: (Print Name)	(Signature)	**Z#:**	**Date:**
Completed by: (Print Name)	(Signature)	**Z#:**	**Date:**

OPERATIONS CENTER			
ACCEPT Inspection as Complete			
OC Personnel: (Print Name)	(Signature)	**Z#:**	**Date:**
OC Supervisor: (Print Name)	(Signature)	**Z#:**	**Date:**
Immediate Operability Determination (Circle One)		**Operable**	**Inoperable**
CSE/RLM Notified to Review Results	**Name:**	**Date:**	

CSE/RLM REVIEW			
Disposition of Deficiencies: List deficiencies and recommended actions below. CSE/RLM is responsible to generate FSRs/ESRs for deficiencies listed below. Enter "N/A" in the sections below if no deficiencies identified during ISI performance. Attach additional sheets as necessary. Attach a copy of an Operability Determination Form completed according to AP-341-516-FM01, if performed.			
Deficiency Description	**Disposition**	**Z#**	**Date**
CSE/RLM Name: (Print Name)	(Signature)		

OPERATION CENTER REVIEW			

Attachment C, Waste Container QA Checklist [UET]

Page 1 of 1

This QA checklist is submitted to the OC attached to the ISI checklist (Attachment B).

Waste Container	**LA00000**		**LA00000**		**LA00000**	
Container Type **(Circle One)**	**55-Gal. Container** **POC** **Oversized Container**		**55-Gal. Container** **POC** **Oversized Container**		**55-Gal. Container** **POC** **Oversized Container**	
Inspection Requirement	**Inspection Result**		**Inspection Result**		**Inspection Result**	
	SAT	**UNSAT**	**SAT**	**UNSAT**	**SAT**	**UNSAT**
Filter installed with appropriate gasket						
Vents show no signs of wear or degradation						
WC stamped or labeled as an UN 1A2 container (SWB=NA)						
WC gross weight does not exceed maximum weight specified in WC and QA certification documentation						
WC packed so routine handling does not result in surface dose rate changing significantly						

Checklist Complete:	_____ (Performer Signature)	Date:
Verified by:	_____ (Person-in-Charge Signature)	Date:

Attachment D, Container Preparation Data Form

Page 1 of 1

This data collection form is not a permanent record. Destroy as soon as data entered into WCATS. WCATS serves as the permanent record for this information.

REQUIRED DATA	DATA
LA000000:	
Tare Weight (lbs):	
Carbon Filter(s) #:	
Purchase Order #:	
Year of Manufacturer:	
Drum Lid-Ring Torque: Wrench #:	
Scale #:	
C.F. Torque Wrench #:	
Bung Torque Wrench #:	
Serial #	
Lot #	

Data Complete:	_____ (Performer Signature)	Date:

RLW-DOP-010, Drum Tumbler Operations, R9

LA-UR-14-24935

RLWTF

Detailed Operating Procedure

Approval Cover Sheet

Document number:	RLW-DOP-010, R9
Effective date:	AUGUST 8, 2012
Next review date:	AUGUST 8, 2015
Supersedes:	RLW-DOP-010, R8

Title: Drum Tumbler Operations

Status:	Hazard:	For Document Control Use Only:
☐ New	☐ Low-hazard	
☒ Major revision	☒ Moderate-hazard	
☐ Minor revision	☐ High-hazard/complex	
☐ Review, no change	**Use Type:**	
	☐ Reference ☐ Use every Time	
	☐ WR (Use every Time)	

	Organization	Date	Signature
Approved for Use By: Document Owner:			
E.L. Freer	TA55-RLW	08/08/12	SIGNATURE ON FILE
Operations Supervisor			
Authorized for Use By: FOD:			
V.J. Salazar	TA55-RLW	08/08/12	SIGNATURE ON FILE
Operations Manager			

☒ Unclassified	☐ Restricted Data	**Derivative Classifier:**
☐ Confidential	☐ Formerly Restricted Data	
☐ Secret	☐ National Security Information	**Name:** J.C. DEL SIGNORE
		Title: DC **Date:** 08/08/12
☐ Unclassified Controlled Nuclear Information		
☐ Official Use Only		**Derived from:** CG-SS-4

Revision History

Document Number	Effective Date	Action	Description
RLW-DOP-010, R9	08-08-2012	Major Revision	Updated 2" bung torque requirements from 30 ft-lbs to 40 ft-lbs (Sec. 5.4 step 22, Sec. 5.5 step 17, Attachment 1 pages 3 and 4)
RLW-DOP-010, R8	12-07-2010	Major Revision	• Added a prerequisite for both Sections 5.4 and 5.5 to ensure that <90-day storage areas are active. • Added Step 5.5.28 to require update of the inspection form for <90-day storage areas when moving drums of sludge from R59 curing area to R59 storage area.
RLW-DOP-010, R7	11-16-2010	Major Revision	• Added Step 5.4.70 to require update of inspection form for <90 day storage area when moving drums of sludge from R60A into R59. • Modified Section 5.4.20 to sample rinse water from TK6. • Editorial changes.
RLW-DOP-010, R6	05-06-2010	Major Revision	• Allows treatment with two operators. • Eliminated the use of cheese cloth. • Simplified calculations for and prediction of the eventual gross weight of drums of sludge. • Revised the Drum Data Sheet. • Incorporated suggestions from treatment debrief meetings. • Deleted reference to PISA requirements.
RLW-DOP-010, R5, IPC-1	02-18-2010	IPC	• Revised 5.2 to allow emptying tank. • Added a step on page 42 to close 60A-DTL-V97.
RLW-DOP-010, R5	2/8/10	Major Revision	Updated Section 5.4 Step 20 and 21 to clarify drum filling operation to include use of industrial water. This revision supersedes RLW-DOP-010, R4 IPC-1 and IPC-2.
RLW-DOP-010, R4 IPC-2	1/29/10	IPC	Procedure changed to allow drum removal within 5.4 [19]. Steps 5.4 [b] – [i] were added.

Revision History (concluded)

Document Number	Effective Date	Action	Description
RLW-DOP-010, R4 IPC-1	1/27/10	IPC	Changed Step 5.4 [20] [d] from "… until TK-6 is empty …" to "… as directed …" to address partial filled drum.
RLW-DOP-010, R4	1/11/10	Major Revision	Procedure changed to reflect new organization change and included SME technical comments to reflect current operating conditions.
RLW-DOP-010, R3	10/22/09	Major Revision	Changes to this procedure are too numerous to list in this section. This revision constitutes a major rewrite. Technical changes and editorial changes were made to the following Sections: 2.0 Precautions and Limitations 3.0 Prerequisites 5.0 Performance 6.0 Post Performance Activities
RLW-DOP-010, R2	09/16/09	Major Revision	Deleted step [32] on page 26 and changed step [33] to step [32] Changed off to ON step 19 [e], deleted step 20[f] made it part of step [e] and added new step [k] on page 41 Added new steps [e] and [f] on page 49 Changed Portland IV cement to Portland II cement page 16 Changed STL-V32 to STL-V93 IPC1 rollup
RLW-DOP-010, R1	09/13/09	Major Revision	• Editorial changes were made throughout the document • Updated Hazards & Controls in Section 2.1. • Revised steps in Section 5.0. • Attachment 1 was updated • Updated Performance Verification.
RLW-DOP-010, R0	09/01/09	New	• New Document

Table of Contents

1. Introduction 5

2. Precautions and Limitations 6

3. Prerequisite Action 11
   - 3.1 Planning and Coordination 11
   - 3.2 Sections to be Performed and Prerequisites 12
   - 3.3 Performance Documents 15
   - 3.4 Special Tools, Equipment, Parts, and Supplies 15
   - 3.5 Field Preparation 16
   - 3.6 Approvals and Notifications 16

4. Acceptance Criteria 17

5. Performance 19
   - 5.1 Drum Preparation 20
   - 5.2 Re-Circulation of TK-7A 24
   - 5.3 Sampling TK-7A 28
   - 5.4 Drum Tumbling 30
   - 5.5 Drum Completion 40
   - 5.6 Flushing the Drum Tumbling System 43

6. Post-Performance Activities 46

7. Emergency Actions 46

8. Definitions and Acronyms 47
9. Responsibilities 47

10. References 48
11. Records 48
12. Appendices and Attachments 48

1.0 INTRODUCTION

1.1 Purpose

This procedure provides instructions for operations that relate to the production of drums of transuranic sludge that will be transferred to TA-54 for transport to the Waste Isolation Pilot Plant (WIPP).

1.2 Scope

This procedure provides direction for drum inspection, acceptance, and preparation; sludge sampling; re-circulating and transferring sludge from TK-7A to TK-6 and then into the drums; and adding absorbent and then sealing the drums. Directions for flushing TK-6, the sample port, and piping are also provided.

1.3 Applicability

The work will be performed by RLW Operators in Rooms 59, 60, and 60A.

1.4 Technical Safety Requirements

There are five ITSR requirements related to sludge handling operations, transfer of sludge into drums, and cementation:

SR 3.1	The directed administrative control is that sludge shall not be permitted to dry out during the cementation process. The corresponding surveillance requirement (SR) mandates visual inspection, prior to tumbling and solidification, that all drums are closed.
SR 3.2	The directed administrative control is that, during drumming operations, Room 60/60A shall be maintained at a negative pressure relative to the exterior of Room 60/60A. The corresponding surveillance requirement mandates verification that exhaust fans for Room 60/60A are operating prior to starting drumming operations each day.
SR 3.3 and 3.4	The directed administrative control is that HEPA filters shall be provided in the ventilation systems exhausting Room 60/60A and the drum tumbler enclosure. The corresponding surveillance requirements mandate semi-annual testing of the room exhaust alarm system by shutting off the exhaust, and verifying that the alarm in the Control Room sounds (SR 3.3) and quarterly verification that HEPA filters are being maintained in accordance with Laboratory requirements for air filtration for potentially contaminated areas (SR 3.4).
SR 3.5	The directed administrative control is that one CAM shall be functional during Room 60/60A drum tumbling operations. The corresponding surveillance requirement mandates quarterly verification that Room 60/60A CAM(s) are being maintained to Laboratory requirements.

2.0 PRECAUTIONS AND LIMITATIONS

2.1 General

A. Stop Work Authority/Time Out or Pause

If this procedure cannot be completed as written or abnormal conditions are encountered, STOP, place the work in a safe configuration if possible, and notify the Operations Center (OC) and Shift Operations Manager (SOM).

B. Hazards and Controls

A Job Hazard Analysis was performed to determine the hazards and controls associated with the performance of this procedure. Identified hazards and controls are listed below.

Hazard	Controls
1. Chemicals - Chemicals are mixed with the sludge to create the cement drums. The sludge may contain the following: acids, hydroxides, arsenic, barium, cadmium, chromium, lead, mercury, selenium, silver, nickel, zinc, and trace organics. The cement drums will contain sludge, Portland II cement, water, sodium silicate, and vermiculite.	• ACIS or ChemLog barcodes are applied at chemical receiving or by the chemical owner if delivered without a barcode. • The owner shall annually inspect all chemical containers to ensure that there is a need for the chemical, the container is in good condition, the chemical has not expired, and all labels are in good condition • Empty chemical containers shall be marked “disposed.” • Chemicals shall be stored correctly. • Be aware of the location of the safety shower. • Be aware of the location of the eye wash. • Wear PPE including safety glasses, tyvek coveralls, and nitrile or trionic gloves. • Follow the TA55-AP-095, Hazardous Material Protection Program. • Ensure tank and piping systems are closed so that workers are not exposed to contents under normal operational circumstances. • Ensure Material Safety Data Sheets (MSDS) are available. • Provide secondary containment if necessary.
2. Confined Space - Entry into permit-required confined space (drum tumbler) is needed to check the hydraulic fluid per manufacturer’s instructions.	• Confined Space Permit #6268. • Ensure the area is posted as a confined space. • LOTO the drum tumbler prior to breaking the plane of the confined space. • Ensure workers who will be working on the system (breaking the confined space plane) take GET training, Lockout Tagout (Courses 41076 and 41074) and Confined Space Entrant/Attendant (Courses 40439, 40438, 20367). • Wear additional PPE, as required, (e.g., bump caps).

2.0 PRECAUTIONS AND LIMITATIONS (continued)

Hazard	Controls
3. Crane/Hoist - This device is used to raise, lower, and move heavy objects (drum). This is an ordinary lift, unless the load exceeds 750 pounds, which is 75% of the crane rating.	• Estimate the load weight prior to making the lift, and verify that the lifting equipment is rated higher than the weight load. • Ensure a cone of safety is maintained during lifting and moving the load. • Never lift the load higher than necessary • Operators must be qualified: Incidental Classroom Crane Instruction (Course # 20295). • Wear safety shoes. • Ordinary lift plan, Attachment 2, must be followed.
4. Electrical - In case of an abnormal event while the drum tumbler is on, the power may need to be turned off in Room 60.	• Any worker who will turn off the power switch will need to have TP #2559 or #2876 for Energized Electrical Worker assigned to them and completed. • In the room the following PPE will need to be kept and ready for use: Leather Gloves
5. Ergonomic- Operating valves, lifting, and moving material and drums.	• Avoid awkward positions. • Use two people to lift cement bags over 50 lbs. • Use additional equipment when lifting heavy loads. • Recommend personnel take Ergonomics for Non-Office Workers (Course #14898 or equivalent).
6. Falls - Significant obstacles such as curbs, ramps and pipes exist in the work area that can lead to slips, trips and falls and can cause injury.	• Be aware of uneven floors, beams, pipes, and fixed equipment. • Maintain good housekeeping, always use adequate lighting. • Be observant and use caution when moving around the area. • When using a step stool be sure the step stool is level and center your weight.
7. Heat stress - Room 60/60A operators are required to wear multiple layers of anti-contamination (anti-C) clothing while performing strenuous activities.	• Complete Thermal Stress Awareness self-study course (Course #18649) or complete job-specific briefing on heat stress conducted by a qualified person. • IH/Safety will perform Heat Stress evaluations as necessary. • Stay hydrated and take breaks. • Cooling vests and cooling collars are available. • Limit the time work is done while in respirator and impermeable coveralls to 1 hour and have heat stress monitoring.
8. Pinch Points and Sharp edges - Pinch points may cause injury; this could also lead to contamination issues.	• Be aware of pinch point areas. • Keep hands and fingers clear of pinch point areas.

2.0 PRECAUTIONS AND LIMITATIONS (continued)

Hazard	Controls
9. Elevation - Worker may be working on a fixed elevated ladder/platform where it is possible to bump hard surfaces with the head or to drop tools and equipment on workers below. It is also possible to fall from the ladder or platform.	• Be aware of bump hazards when working in areas that contain overhead hazards • Ensure that there are no loose tools or equipment on the mezzanine that can fall through grating on to employees below • Minimize access below elevated workers as much as possible • Ladders are fixed; however, always face the ladder and one person at a time should be on the ladder • Do not over extend on a ladder and maintain 3 point contact • Ensure chain/gate is secure while on mezzanines • Ladder Safety Training (Course # 12985)
10. Leaks - Valves or pipes may be damaged or deteriorated and may lead to system leaks resulting in contamination areas and unsafe working conditions.	• Be observant when first entering a room. • Perform room walk-around to check for any leaks. • Be cautious of your surroundings. • Be cautious when taking a sample. • If an abnormal situation exists, example: leak or spill, leave the area.
11. Materials Handing - This includes moving or transporting materials by hand or by using hand trucks, lift jacks, and other lifting and/or moving equipment, except forklifts and powered industrial trucks.	• Before moving or carrying a heavy or bulky object to another location, check the routes to ensure that obstructions and/or slip and trip hazards are removed. Choose an alternate route if clearance is not adequate. • Evaluate the load location, task repetition, and load weight to determine if the material can be lifted safely. • Inspect materials for slivers, jagged or sharp edges, rough or slippery surfaces. • Use proper lifting technique to safely lift the load: get a good grip on the load; do not twist the back or bend sideways; do not lift or lower awkwardly; do not lift with arms extended. • Wear gloves, hand leathers, or other hand protectors to prevent hand injuries. • Get mechanical help or help from another person if the load is too heavy. • Wear protective foot wear, such as steel toes. • Stay clear of area when heavy loads are being moved.
12. Wastes - Leftover materials such as gloves, paper, and tape.	• Waste generators must complete *Waste Generation Overview* (course # 21464) • Manage spent/used/leftover materials as waste

2.0 PRECAUTIONS AND LIMITATIONS (continued)

Hazard	Controls
13. Mechanical Hazards - The drum tumbler is mechanical equipment used to lift and rotate the cement drums and has moving and hydraulic parts.	• Keep a safe distance from the drum tumbler when it is rotating. • The drum tumbler doors are programmed to stop the rotation of the drum tumbler when they are opened. The unit will not run unless the doors are closed. • The unit will not rotate unless the drum saddle is properly positioned. • The mechanical features of the drum tumbler are inside a custom built metal enclosure with windows. This prevents the worker from being exposed to the mechanical features during operation. • LOTO the drum tumbler prior to each entry to check hydraulic fluid level.
14. Overhead Hazards - There is a potential for head injuries from falling objects or direct contact with a stationary object.	• Be aware of overhead hazards.
15. Pressure - Liquids could leak or spray if a system breach occurs while under pressure. Liquids can be acidic or caustic and may be contaminated. The drum tumbler has hydraulic pressure.	• Complete pressure training course (Course # 769) • Do not perform maintenance or repair while system is pressurized. • Pumps are not capable of pressure that exceeds piping capacity.
16. Tools - Workers will be using tools such as torque and impact wrenches for various tasks related to drum tumbling This also includes sharp tools like knives.	• Disconnect tools from power source before changing accessories or inspecting it. • Inspect tools to ensure they are in good condition and maintain them in good condition. • Loose clothes, jewelry, and long hair should be removed or restrained. • Select the right tool for the job. • Use the tool in accordance with manufacturer's operating rules or safe practices. • Cover and store sharp objects in a safe place. • Cut away from your body. • Wear a cut/puncture resistant glove on the hand that is opposite the cutting instrument if that hand is used to hold the item being cut.

2.0 PRECAUTIONS AND LIMITATIONS (continued)

Hazard	Controls
17. Contamination and Ionizing Radiation - Contamination can occur when operation vessels are breached. Exposure to direct ionizing radiation may occur from drums or tanks.	• Follow RLW-RD-001, *RLWTF Radiation Protection Requirements.* • Follow Radiological Work Permit (RWP) requirements. • Wear the minimum PPE for performing work in Room 60/60A. • Monitor Anti-C's when you are leaving a radiological area. • Follow good ALARA practices. Limit time around drums and tanks. • Follow posted entry and exit requirements. • Items being removed from a radiological area must be surveyed by a Radiological Control Technician (RCT). • Complete Radiation Worker II training.

C. Unique Entry Conditions

- Follow all postings.
- Unique work controls or PPE may be required per RWP when entering the room.
- Unique entry conditions may be required per Confined Space permit to enter the drum tumbler space.

D. Sequence of Steps

Each sub-section in the Performance section, 5.0, may be performed in any sequence necessary. However, the steps in each sub-section must be performed in sequence unless otherwise stated.

E. Criticality Safety Limit Approval (CSLA) Requirements

Not Applicable

F. Required Permits

- Radiological Work Permit (RWP). PPE shall be worn in accordance with the RWP during all Room 60/60A TRU waste treatment operations.
- Confined Space Entry Permit.

G. Cautions

Not Applicable

H. Material Control and Accountability

Not Applicable

2.2 Additional Requirements and Conditions (WR Use)

Not Applicable

3.0 PREREQUISITE ACTIONS

NOTE 1 The following prerequisite actions can be performed in any sequence.

NOTE 2 The prerequisites are to be completed before carrying out any Performance Section (Section 5.0).

Enter the date that this evolution is started *Date:* _____

3.1 Planning and Coordination

- **ENSURE** that a pre-job brief has been conducted in accordance with TA55-DOP-001, TA-55 Facility Pre-Job Brief and Post-Job Review, before every evolution for the procedure and the lift plan when the crane will be used.
  *Initials*_____

- **SCHEDULE** the work on the Plan-of-the-Day.
  Initials _____

- **ENSURE** that this is the latest revision of this procedure and has been marked as "Working Copy."
  Initials _____

- **ENSURE** that the Room 60/60A System Alignment Checklist, RLW-DOP-004, has been performed.
  Date Completed _____ *Initials* _____

- **VERIFY** with the SOM that there are no deficiencies identified in the round sheets (RLWTF Balance of Plant Round Sheet and RLWTF Control Room Operator Round Sheet) that would prevent performance of this procedure.
  *Initials*_____

- **VERIFY** that the Room 60/60A System Alignment Diagram has no deviations from the normal valve lineup that would prevent performance of this procedure.
  *Initials*_____

- **VERIFY** that the required tools, materials and drums are available.
  *Initials*_____

3.1 Planning and Coordination (continued)

- **VERIFY** that RSView is available and working.

Initials _____

$ - **VERIFY** with the SOM that the Room 60/60A exhaust fans are operating. (SR 3.2)

Initials _____

$ - **VERIFY** with the SOM that ITSR Surveillance Requirement SR 3.3 to test the Room 60 Exhaust Alarm System has been satisfactorily completed and is current within its specified periodicity.

Initials _____

$ - **VERIFY** with the SOM that ITSR Surveillance Requirement SR 3.4 to verify that the HEPA filters in the exhaust flows for Room 60/60A and drum tumbler enclosure are operable and have been satisfactorily completed and is current within its specified periodicity.

Initials _____

$ - **VERIFY** with the SOM that ITSR Surveillance Requirements SR 3.5 to verify that the Room 60/60A CAMs are being maintained to laboratory standards have been satisfactorily completed and is current within its specified periodicity.

Initials _____

3.2 Sections to be Performed and Prerequisites

NOTE 1 The appropriate box will be checked to indicate which sections will be performed during this evolution. Only the indicated sections will be placed in the file of record. 5.1 indicates prerequisites for Performance Section 5.1, etc.

NOTE 2 The prerequisites for each sub-section must be completed prior to the start of the performance of the sub-section.

☐ **5.1 Drum Preparation**

- **ENSURE** that the lift plan has been completed, is approved and current.

Initials _____

- **ENSURE** that the preoperational and monthly inspections have been completed for hoisting and rigging materials.

Initials _____

- **ENSURE** the following PPE items are available;
  - Protective coveralls (disposable)
  - Full-face respirator with P100 cartridges
  - Nitrile or Trionic gloves

Initials _____

3.2 Sections to be Performed and Prerequisites (continued)

☐ **5.2 Re-Circulation of TK-7A**: No prerequisites

☐ **5.3 Sampling TK-7A**

- **ENSURE** two (2) clean 250 mL graduated sample bottles are available for use. Label one bottle "Room 60 Sludge" and identify its tare weight on the bottle and that the sample is for analysis.

  *Initials*_____

- **ENSURE** that the analytical chemistry sample number is on the bottle labeled "R60 Sludge".

  *Initials*_____

- **ENSURE** that the sample line flush bottle is labeled "Sludge Sample Line Flush".

  *Initials*_____

- **ENSURE** the following PPE items are available:
  - Tyvek coveralls
  - Full-face respirator with P100 cartridges
  - Nitrile or Trionic gloves

  *Initials*_____

☐ **5.4 Drum Tumbling**

- **ENSURE** that the lift plan is approved and current.

  *Initials*_____

- **ENSURE** that the confined space permit is approved and current, if checking drum tumbler hydraulic fluid level. (Enter "N/A" otherwise.)

  *Initials*_____

- **ENSURE** that the preoperational and monthly inspections have been completed for hoisting and rigging materials.

  *Initials*_____

- **VERIFY** with process engineer that Total Dissolved Solids (TDS) sample from the decant results are within an acceptable level (TDS limit is ≤ 85 grams/liter).

  *Initials*_____

- **ENSURE** the following PPE items are available:
  - Tyvek coveralls
  - Full-face respirator with P100 cartridges
  - Nitrile or Trionic gloves

  *Initials*_____

3.2 Sections to be Performed and Prerequisites (continued)

☐ 5.4 Drum Tumbling (continued)

- **OBTAIN** Magnahelic Readings:
  60A-DT-PDI6002 (Range 0 to 8 inWC) Current Reading: _____
  60A-DT-PDI6003 (Range 0 to 3 inWC) Current Reading: _____

  *Initials*_____

- **ENSURE** RP-1 has surveyed interior of tumbler enclosure prior to entry.

  *Initials*_____

- **ENSURE** that a <90-day storage area is active for Rooms 59 and 60A (tumbling and curing).

  *Initials*_____

- Once at the start of a tumbling campaign, **ENSURE** the drum tumbler is locked out and that the hydraulic reservoir has been filled with 5 gallons of hydraulic fluid. The reservoir will be filled within approximately an inch of the top when there is 5 gallons of fluid. The worker needs to wear a bump cap when entering the drum tumbler to check the fluid. (Enter "N/A" otherwise.)

  Initial _____

☐ 5.5 Drum Completion

- **ENSURE** that the lift plan has been completed is approved and current.

  *Initials*_____

- **ENSURE** that at least three days have passed since the drums began to cure.

  *Initials*_____

- **ENSURE** that the preoperational and monthly inspections have been completed for hoisting and rigging materials.

  *Initials*_____

- **ENSURE** the following PPE items are available:
  - Tyvek coveralls
  - Full-face respirator with P100 cartridges
  - Nitrile or Trionic gloves

  *Initials*_____

- **ENSURE** that a <90-day storage area is active for Room 59 (drum storage).

  *Initials*_____

- **ENSURE** that the MAC-21 and drum hood are available and that the MAC-21 is within its required certification.

  *RCT Initials*_____

3.2 Sections to be Performed and Prerequisites (continued)

☐ 5.6 Flushing the Drum Tumbling System

- **VERIFY** that the indicated tank level in TK-7A is ≤65% and record its level below.

  *Tank Level*_____ *Initials*_____

- **ENSURE** there is one (1) clean 250 mL sample bottle available for use and labeled "Sludge Flush Sample".

  *Initials*_____

- **ENSURE** the following PPE items are available:
  - Tyvek coveralls
  - Full-face respirator with P100 cartridges
  - Nitrile, Trionic, or other chemical gloves determined by IH

  *Initials*_____

3.3 Performance Documents

- TA55-DOP-001, *TA-55 Facility Pre-Job Brief and Post-Job Review*
- RLW-DOP-010, *Drum Tumbler Operations and Preparing Drums for Sludge at RLWTF*
- RLWTF-PD-WO-402, *Room 60/60A System Alignment Diagram*

3.4 Special Tools, Equipment, Parts, and Supplies

Table 1 Process Materials

Title/Description	Amount Required
Portland Cement	~280 lbs per drum
Dry Vermiculite	3 gal per drum
Technical Grade Sodium Silicate (40% Baume)	2.5 gal per drum
Waste Lock	0.5 cup per drum

Table 2 Floor Stock/Shop Aids

Title/Description	Quantity
Protective Over Gloves (Leather, Kevlar, etc.)	1 pair per worker
Protective Coveralls (Tyvek, Saranex, etc.)	1 per worker
Bump caps	1 per worker
Cutting tool (utility knife, cutting hook, etc.)	One
Hose to fill Drum	~5 ft
Drum Dolly	1per drum
3M Scotch-Grip Industrial Adhesive 4799	1per drum
Venting bung	1 per drum
Absorbent cloth	2 boxes
Baggies	One
Funnel	One
Carbon Filter bung	1 per drum

3.4 Special Tools, Equipment, Parts, and Supplies (continued)

Table 2 Floor Stock/Shop Aids (continued)

Type A Drum Assembly (drum, lid, drum ring, and ring bolt)	1 part per assembly
Gallon Volume Containers	5
250 mL Nalgene Bottles	4
Lifting Assist device (for cement bags)	One
Mallet	One
Non-locking, liquid, Anaerobic, thread sealant (Loc-Tite)	One
Socket/Socket Wrench	One
Drum Door Tool	N/A
Secondary containment for samples (bags or buckets as needed)	5
Garden hose with totalizer	one

Table 3 Measuring and Test Equipment

Title/Description	Range	Accuracy
Torque Wrench	0-80 ft-lbs	±1/2%
Torque Wrench	0-200 in-lbs	±1/2%
Platform Scale	0-1000 lbs	± 0.5 lb

Table 4 Software

Software Number	Title/Description
RSVIEW	Used to update room 60/60a equipment status and to validate the real-time status of facility equipment

3.5 Field Preparation

- **ENSURE** availability of support personnel.
- **ESTABLISH** communication with OC and control room.
- **VERIFY** availability of performance documents, including valid work permits.

3.6 Approvals and Notifications

- **OBTAIN** PIC acceptance that all prerequisite actions have been satisfactorily completed.

4.0 ACCEPTANCE CRITERIA

Each drum needs to meet the following criteria in order to be transferred to TA-54 and to WIPP per P930-1 *LANL Waste Acceptance Criteria* and *Waste Generator Instructions for the Disposition of Newly, Generated, Cemented Transuranic (TRU) Waste from TA-50 WGI #7*.

- Waste must be in solid form.
- Total residual free liquid must be less than 1% of the volume of the container or less than (1) inch in depth in any direction.
- To prevent free liquids, a small amount of absorbent will be added to the drum after curing.
- Report any activity for each TRU radionuclide and must include the measurement error with 1-sigma confidence.
- For solidified packaging the Plutonium-239 Equivalent (PE) Curie packaging limit is ≤1,800 PE-Ci, see Table 2-2 in P930-1 for PE-Ci limits for radionuclide isotopes.
- Fissile radionuclide content for a 55-gallon drum must not exceed 200g.
- TRU waste characterization must be provided.
- Mixed wastes must not exhibit the hazardous characteristics of ignitability, corrosivity, and/or reactivity.
- Containers:
    - Must be free from damage and securely closed.
    - Must be Type A.
    - Must be white 55-gal steel drums.
    - Drum lids must be closed and secured with the bolt of the bolt ring placed over the drum seam.
    - Must be vented using WIPP approved filters.
- The package weight must not exceed 387 kg (853 lb).
- Removable contamination must not exceed 20 dpm/100 cm^3 alpha and 200 dpm/100 cm^3 beta-gamma.
- The unshielded total surface dose rate of the package must not exceed 200 mRem/h.

4.0 ACCEPTANCE CRITERIA (continued)

- TRU waste packages must be marked and labeled according to DOT regulations, in addition to:
  - Health Physics Radioactive Material Survey tag completed and signed by a RCT
  - The gross weight of the container (in lbs), written in >1/2-inch high letters in waterproof ink
  - A yellow radioactive waste marking, immediately adjacent to the seam between the top two rolling hoops
  - A blue non-regulated waste or yellow haz-waste marking, immediately adjacent to the seam between the top two rolling hoops
  - A unique package number displayed on five white barcode labels, generated and supplied by WES-WA
    - One barcode must be immediately adjacent to the seam between the top two rolling hoops
    - One barcode placed immediately adjacent to the drum seam 6 in. above the bottom of the drum
    - Two barcodes spaced evenly around the circumference of the drum 6 in. above the bottom of the drum
    - One barcode must be placed near the center of the drum lid

5.0 PERFORMANCE

NOTE 1 The procedure is performed by two or three operators. One operator reads aloud the step-by-step instructions, and also updates the *Room 60/60A System Alignment Diagram.* A second operator is the task performer. (If desired, a third operator can update the *Room 60/60A System Alignment Diagram* instead of the reader.) The reader reads the procedural steps to the other operator(s), and the task performer executes and verifies aloud that the task has been completed. The *Room 60/60A System Alignment Diagram* is updated when the action has been completed.

NOTE 2 The *Room 60/60A System Alignment Diagram* is a visual indication of the process flow paths and normal valve positions. Operating procedures use the normal valve positions indicated on the *Room 60/60A System Alignment Diagram* as a starting valve lineup. The operating procedures also return the system alignment to the normal valve positions. Systems are considered in the normal valve lineup unless an annotation has been made on the *Room 60/60A System Alignment Diagram*.

NOTE 3 When a valve is manipulated to a position other than that shown on the *Room 60/60A System Alignment Diagram*, the diagram is updated to ensure status is maintained as follows:

- For a valve that is shown as NORMALLY OPEN on the *Room 60/60A System Alignment Diagram*, an X is marked over the valve symbol to indicate the valve has been placed in the CLOSED position.
- For a valve that is shown as NORMALLY CLOSED on the Room 60/60A System Alignment Diagram, the valve symbol is circled to indicate the valve has been placed in the OPEN position.
- When a valve has been returned to its normal position, any marks are erased.

NOTE 4 The Drum Data Sheet (Attachment 1) will be filled out for each drum through the Drum Tumbler process. Record any comments that pertain to the generation of the drum in the comment sections of the data sheet.

NOTE 5 Record any comments that pertain to the performance of this procedure legibly on the white space of this document. Initial and date any comments that are recorded.

NOTE 7 Hazards and Controls are detailed in Section 2 of this procedure. They are reviewed and discussed during the pre-job briefing, and need not be repeated aloud in full during the performance of this work. It is sufficient to repeat the hazards as a reminder.

5.1 Drum Preparation

CAUTIONS (Step 5.1)

Hazards and Controls are detailed in Section 2 of this procedure. They were provided during the pre-job briefing, and need not be repeated aloud in full during the performance of this work. It is sufficient to repeat the hazards as a reminder. These include:

1. Chemicals	7. Heat stress	13. Mechanical hazards
3. Crane/ Hoist	8. Pinch points	14. Overhead hazards
5. Ergonomic	11. Materials handling	16. Tools
6. Falls		

NOTE 1 Multiple containers may be verified and prepared at one time. However, one Drum Data Sheet must be prepared for each drum.

NOTE 2 When wearing a respirator, the procedure will still be read aloud. However, the repeat-backs need not be performed.

[1] **ENSURE** that Prerequisite Actions have been satisfactorily completed.

*PIC Initials*_____

[2] Post the entries to Room 59 indicating job activities.

[3] **ENSURE** that WIPP-acceptable drums are available by documenting the following on the Drum Data Sheet:

- Drums have a stenciled purchase order number.
- Drums have a stenciled lot number.
- Drums are barcoded (at least one barcode) with unique drum numbers.
- QA acceptance paperwork has been received from the Waste Management Coordinator.

[4] Identify sludge that will be added to the drum by recording the following on the Drum Data Sheet:

- Sludge sampling date.
- Sludge sample number.
- Analytical result for specific gravity.

[5] Estimate the final gross weight of the drum as follows, where specific gravity is reported by the Analytical Laboratory:

Sludge weight = 183 x Specific Gravity	= _____	lbs
+ Other weight (lid, drum, cement, silicate, etc)	= ___400___	lbs
= Estimated final gross weight	= _____	lbs

Record the estimated final gross weight on the Drum Data Sheet.

5.1 Drum Preparation (continued)

[6] IF the final gross weight is estimated to exceed 750 pounds, then contact the TRU Supervisor because a revised lift plan may be required for Drum Tumbling (Section 5.4) and Drum Completion (Section 5.6) operations.

[7] Remove the drum ring and lid from the drum. Do not mix the ring and lid with other drums unless approved by Waste Management Coordinator AND the RLW Operations Manager.

[8] Check inside of drum for debris; remove any found.

[9] Verify that measurement and test equipment (MT&E) used for drum preparation is still within calibration by recording calibration number and expiration date on the Drum Data Sheet for the following:

- platform scale for weighing the drums
- torque wrench that measures in in-lbs
- torque wrench that measures in ft-lbs

If any of these are not in calibration, **STOP** and do not proceed until calibrated equipment is available.

[10] Visually inspect the lid and drum inside and outside for any defects including the following, and note any issues on the Data Sheet:

- Dents, deterioration, degradation, excessive rust, split seams, discoloration
- Cracked/Missing locking ring
- Missing locking ring bolt
- Cracked or deteriorated gasket
- Scratched or damaged coating inside the drum

[11] IF any defects are found, then the drum fails inspection. Record this on the Drum Data Sheet and notify the supervisor. IF there are no evident defects, the drum passes inspection. Record this on the Drum Data Sheet and continue with the preparation of the drum.

[12] Replace the lid and ring on the drum.

[13] Weigh the drum to get a tare weight. Record the tare weight on the Drum Data Sheet.

[14] Repeat Steps 5.1.3 to 5.1.13 for each drum.

[15] Prepare the drum lid:

[a] **OBTAIN** venting bung(s) and vent valve(s).

[b] Ensure O-ring is installed on the threaded shoulder of the venting bung.

[c] Remove the small bung from the drum lid, and replace it with the venting bung.

5.1 Drum Preparation (continued)

[d] Torque the venting bung to 120 in-lbs, and record the force on the Drum Data Sheet.

[e] Apply liquid, anaerobic, thread sealant (Loc-Tite) to the threads of the vent valve. Then install vent valve into venting bung.

[f] **ENSURE** that the vent valve is closed by turning it in the clockwise direction until hand tight.

[g] Repeat Step 5.1.15.a-g for any other drums.

Caution: Chemical Hazard

Hazard: Inhalation and Irritation. The worker may be exposed to fine particles of cement if inhaled, which could irritate the worker's respiratory system when exposed to it. Material is also a skin irritant.

Control: When adding cement to the drums, wear protective coveralls over normal required PPE, use a full face respirator with P100 cartridges, and nitrile or vinyl gloves. Stay upwind of ventilation, doff outermost layer of clothing (coveralls and gloves) after adding cement. Use good hygiene practices and wash hands after operation.

[16] Don additional required PPE.

[17] Add cement and vermiculite (dry mix) to the drum:

[a] Remove the lid and ring from the drum.
[b] Apply a thick layer of adhesive on the lid gasket.
[c] Place the drum on the scale.
[d] Add approximately 3 gallons of dry vermiculite using a graduated container.
[e] Record the volume of vermiculite added on the Drum Data Sheet.
[f] Zero the scale.
[g] Add 282 ±5 lbs of Portland Cement.
[h] Record the weight of cement added on the Data Sheet.
[i] Install drum lid and ring. Align the drum seam, ring bolt, and lid bungs, with the vent bung at the ring bolt.
[j] Torque the drum ring bolt to 60 ft-lbs and record on data sheet.

NOTE 1 Only licensed operators are allowed to use the crane. Detailed steps will not be included in the procedure for crane operations.

NOTE 2 The accessible areas of the crane and rigging are surveyed by the RCT before it is moved out of the radiological area.

5.1 Drum Preparation (continued)

[18] Lift the drum from the scale using the overhead crane and zero the scale.

[19] Place the drum back on the scale and remove the rigging.

[20] Record this initial gross weight of the drum on the Drum Data Sheet.

[21] Remove the drum from the scale using the overhead crane, place it on the dolly, and move it to the staging area.

[22] Repeat Steps 5.1.17 to 5.1.21 for any additional drums.

[23] Clean up the area.

[24] Remove PPE.

[25] Remove job activity postings from Room 59.

[26] Have performer sign and date each Drum Data Sheet indicating completion of this Section.

[27] Have a second operator **VERIFY** that the performance of this Section is complete by also signing and dating each Drum Data Sheet.

[28] **OBTAIN** PIC review of this section, and document satisfactory completion by the signature below.

Reviewed by:

_____/_____/_____/_____

PIC Print Name Signature Z # Date

5.2 Re-Circulation of TK-7A

CAUTIONS (Step 5.2)

Hazards and Controls are detailed in Section 2 of this procedure. They were provided during the pre-job briefing, and need not be repeated aloud in full during the performance of this work. It is sufficient to repeat the hazards as a reminder. These include:

5. Ergonomic	8. Pinch points	14. Overhead hazards
6. Falls	9. Elevation	15. Pressure
7. Heat stress	10. Leaks	17. Rad contamination

.

NOTE 1 This section can be performed concurrently with the Sections 5.3 and 5.4. Sludge within TK-7A needs to be re-circulated while it is being sampled and while it is being transferred into TK-6.

$ **NOTE 2** Sludge shall be maintained in a liquid form and not permitted to dry out prior to being mixed during the cementation process.

[1] **ENSURE** that Prerequisite Actions have been satisfactorily completed.

*PIC Initial*_____

[2] Record the initial level of TK-7A.

*TK-7A Level*_____%

[3] Start the TK-7A Mixer by pressing the "START" button on 60A-CPL-10 panel.

[4] Align the TK-7A system for re-circulation as follows:
- Close 60-STL-V100.
- Open 60-STL-V40.
- Open 60-STL-V102.
- Open 60A-STL-V10 by placing STL-V10 switch to the "OPEN" position AND observe that the red "OPEN" light goes ON.
- Open 60A-STL-V92.

[5] Re-circulate the material in TK-7A by opening 60A-CA-P09 to start pump 60-STP-P09 AND ensure that 60-REG-P09 is approximately 40 psi (±10).

5.2 Re-Circulation of TK-7A (continued)

NOTE When re-circulation cannot be accomplished it may be caused by the bottom of TK-7A being plugged, the flow through the pump is obstructed, or some other type of obstruction in the piping system.

[6] Determine if re-circulation flow has been established by visually inspecting the fluid in TK-7A via the inspection viewport on the top of TK-7A.

[a] IF recirculation is evident,
THEN continue to step 5.2.7.

[b] IF there is no recirculation flow evident,
THEN stop 60-STP-P09 by closing 60A-CA-P09, AND perform the following:

1. **ENSURE** TK-7A is ≤60%.
2. Close 60A-STL-V10 by placing STL-V10 switch in the "CLOSE" position, and observe the green "CLOSE" light goes ON.
3. Open 60-IWL-V09.
4. Open 60-IWL-V15 by placing IWL-V15 in the "OPEN" position, and observe the red "OPEN" light goes ON.
5. Open 60-STL-V38 by placing switch STL-V38 in the "OPEN" position, and observe the red "OPEN" light goes ON.
6. Check for flow and observe on 60-FQR-002; the flow indicator will move if there is flow or it will not change if there is no flow.
7. Close 60-STL-V38 by placing switch STL-V38 in the "CLOSE" position, and observe the green "CLOSE" light goes ON.
8. IF there was no flow through the bottom of the tank evident,
   THEN stop, notify the supervisor, AND place the system back into normal alignment, go to step 5.2.6.c.
9. IF flow is evident,
   THEN check for re-circulation by:
   - **a.** Open 60A-STL-V10 by placing STL-V10 switch to the "OPEN" position and observe that the red "OPEN" light goes ON.
   - **b.** Re-circulate the material in TK-7A by opening 60A-CA-P09 to start pump 60-STP-P09, AND ensure that 60-REG-P09 is approximately 40 psi (±10).
   - **c.** Check for flow by visually inspecting re-circulation flow through the TK-7A viewport on the top of TK-7A.
   - **d.** IF there is recirculation flow,
     THEN close 60-IWL-V09, close 60-IWL-V15, AND continue to step 5.2.7.

5.2 Re-Circulation of TK-7A (continued)

e. IF there was no recirculation flow evident,
THEN close 60A-CA-P09 to stop pump 60-STP-P09 AND:
i. Close 60-STL-V102.
ii. Open 60-STL-V38 by placing switch STL-V38 in the "OPEN" position, and observe the red "OPEN" light goes ON.
iii. Open 60A-CA-P09 to start pump 60-STP-P09, AND ensure that 60-REG-P09 is approximately 40 psi (±10).
iv. Check for flow by visually inspecting flow through the TK-7A viewport on the top of TK-7A.
v. Close 60-STL-V38 by placing switch STL-V38 in the "CLOSE" position, and observe the green "CLOSE" light goes ON.

f. IF there was no flow,
THEN close 60A-CA-P09 to stop pump 60-STP-P09, notify the supervisor, AND continue to step 5.2.6.c.

g. IF there is flow,
THEN open 60-STL-V102.

h. **VERIFY** re-circulation through the TK-7A viewport.

i. IF there is flow,
THEN continue to step 5.2.7.

[c] Restore the system to normal configuration, if safe to do so by:

1. Close 60-IWL-V15 by placing IWL-V15 in the "CLOSE" position, and observe the green "CLOSE" light goes ON.
2. Close 60-IWL-V09.
3. Close 60A-STL-V92.
4. **ENSURE** 60-STL-V102 is closed.
5. Close 60-STL-V40.
6. Open 60-STL-V100.
7. Stop the TK-7A mixer by pressing the "STOP" button on 60A-CPL-10 panel.
8. **ENSURE** 60A-STL-V10 is closed.

NOTE A sludge sample will be re-taken prior to drumming operations due to the IW addition to induce re-circulation of the system.

[7] Continue re-circulation as needed, and record the time that recirculation was started.

Time _____

5.2 Re-Circulation of TK-7A (continued**)**

[8] WHEN re-circulation is no longer needed,
THEN restore the system as follows:
[a] Stop the 60-STP-P09 pump by turning off 60A-CA-P09.
[b] Close 60A-STL-V10 by placing STL-V10 switch in the "CLOSE" position, AND observe the green "CLOSE" light goes ON.
[c] Close 60-STL-V102.
[d] Close 60A-STL-V92.
[e] Close 60-STL-V40.
[f] Open 60-STL-V100
[g] Stop the TK-7A mixer by pressing the "STOP" button on 60A-CPL-10 panel.
[h] **ENSURE** 60-IWL-V09 is closed.
[i] **ENSURE** 60-IWL-V15 is closed.

[9] **VERIFY** that the Room 60/60A System Alignment Diagram has been updated for those valves operated by this procedure.

[10] Update RSView for TK-7A tank levels and contents (TRU Process Stream Code).

[11] **OBTAIN** PIC review of this section and document satisfactory completion by signature below:

Reviewed by:

_____/_____/_____/_____

PIC Print Name Signature Z # Date

5.3 Sampling TK-7A

CAUTIONS (Step 5.3)

Hazards and Controls are detailed in Section 2 of this procedure. They were provided during the pre-job briefing, and need not be repeated aloud in full during the performance of this work. It is sufficient to repeat the hazards as a reminder. These include:

1. Chemicals	7. Heat stress	14. Overhead hazards
5. Ergonomic	8. Pinch points	15. Pressure
6. Falls	10. Leaks	17. Rad contamination
	12. Wastes	

NOTE 1 A sample of the sludge in TK-7A is required prior to the start of sludge and drumming operations for radioactivity and composition analysis. Subsequent samples of the contents of TK-7A are not required during the drumming process unless material is added to TK-7A which may significantly change the composition of its contents.

NOTE 2 The time when the sample will be submitted for analysis will be at the discretion of the supervisor.

NOTE 3 When wearing a respirator, the procedure will still be read aloud. However, the repeat-backs need not be performed.

[1] **ENSURE** that Prerequisite Actions have been satisfactorily completed.

*PIC Initials*_____

[2] Record the current time, to **VERIFY** that the material has been re-circulating for at least 10 minutes from the time recorded in Step5.2.7.

Time _____

Hazard: Radiological

Hazard: Inhalation and Contamination. The worker may be exposed to radiological hazards due to the system being opened to remove the sample.

Control: When taking a sample wear Tyvek coveralls with attached booties and hood, respirator, 2 pairs of gloves, and extra booties.

[3] Sample TK-7A sludge material as follows:

[a] Don additional PPE.
[b] Place absorbent cloth inside the bottom of the sample station.
[c] Unscrew the sample bottle from the sample port, AND hold the bottle under the sample port.

5.3 Sampling TK-7A (continued)

[d] Slowly open 60-SSV-V09 to fill the 250 mL sample bottle, currently under the sample port, at least one half full to purge the sample line, AND then close 60-SSV-V09.

[e] Remove the sample bottle from the sample station; put a new cap on the bottle.

1. IF the bottle has sludge on the outside, THEN clean the bottle with absorbent cloth and discard the absorbent cloth properly.

[f] Have RCT survey the outside of the sample bottle and place in secondary container.

[g] Position the labeled 250 mL bottle under the sample port and slowly open 60-SSV-V09 to fill the container half full, AND then close 60-SSV-V09.

[h] Remove the sample bottle from the sample station; put the same cap on the bottle. This sample will be sent for analysis.

1. IF the bottle has sludge on the outside, THEN clean the bottle with absorbent cloth and discard the cheesecloth properly per RCT.

[i] Have RCT survey the outside of the sample bottle, and place in secondary container.

[j] Remove the absorbent cloth and discard properly per RCT.

[k] Replace the sample bottle in the sample station with a clean 250 mL bottle.

[l] Have the RCT survey outside of secondary containment.

[4] Doff PPE and exit the room per RCT instruction.

[5] Send the labeled sample bottle for analysis when it has been released by the RCT, AND send the other bottle to the satellite accumulation area (SAA) for storage.

[6] **OBTAIN** PIC review of this section, and document satisfactory completion by signature below.

Reviewed by:

_____/_____/_____/_____

PIC Print Name Signature Z # Date

5.4 Drum Tumbling

CAUTIONS (Step 5.4)

Hazards and Controls are detailed in Section 2 of this procedure. They were provided during the pre-job briefing, and need not be repeated aloud in full during the performance of this work. It is sufficient to repeat the hazards as a reminder. These include:

1. Chemicals	7. Heat stress	13. Mechanical hazards
2. Confined space	8. Pinch points	14. Overhead hazards
3. Crane/ Hoist	9. Elevation	15. Pressure
4. Electrical	10. Leaks	16. Tools
5. Ergonomic	11. Materials handling	17. Rad contamination
6. Falls	12. Wastes	

[1] **ENSURE** that Prerequisite Actions have been satisfactorily completed.
*PIC Initials*_____

[2] Verify that measurement and test equipment (MT&E) used for drum tumbling is still within calibration by recording calibration number and expiration date on the Drum Data Sheet for the following:

- platform scale for weighing the drums
- torque wrench that measures in in-lbs
- torque wrench that measures in ft-lbs

If any of these are not in calibration, **STOP** and do not proceed until calibrated equipment is available.

[3] Prepare the drum tumbler for operation:

[a] **ENSURE** the top and side doors of the drum tumbler enclosure are open.
[b] **ENSURE** that the hose is attached to the sludge delivery pipe.
[c] **ENSURE** that the drum holder is in the lowered position; the bottom loading plate will be slightly above the floor.
[d] Swing the hinged ratchet plate clear of the drum opening.

NOTE 1 Only licensed operators are allowed to use the crane. Detailed steps will not be included in the procedure for crane operations.

NOTE 2 The accessible areas of the crane and rigging must be surveyed by the RCT before the crane is moved out of the radiological area.

[4] Attach the rigging to the drum.

[5] Move drum from Room 59 to Room 60 or Room 60A.

[6] If two drums will be tumbled, then attach rigging to the second drum, and move this second drum from Room 59 to Room 60.

5.4 Drum Tumbling (continued)

[7] Place the drum into the drum tumbler enclosure with the drum seam facing the door opening.

[8] **ENSURE** that the drum is fully seated against the back of the drum holder, and lower into position.

[9] Place the chain around the drum, and use the ratchet to tighten the chain until the ratchet hinge plate is firm against the drum surface to secure it. Remove the rigging from the drum.

[10] **ENSURE** the overhead crane is in a safe location.

[11] Remove 2" Bung from the Drum Lid.

$ **[12]** **VERIFY** with the SOM that the Room 60/60A exhaust fans are operating, and record the time this was performed. (SR 3.2)

*Time*_____ *Initials* _____

Caution: Radiological Hazard

Hazard: Inhalation and Contamination. The worker may be exposed to radiological hazards due to the system being opened.

Control: Wear Tyvek coveralls with attached booties and hood, respirator, 2 pairs of gloves, and extra booties until the tumbler enclosure door has been closed.

NOTE When wearing a respirator, the procedure will still be read aloud. However, the repeat-backs need not be performed.

[13] Don additional PPE.

$ **[14]** Record the time drumming operations started. (SR 3.2)

Time _____

$ **[15]** **VERIFY** that the time recorded above (5.4.14) and the time the ventilation exhaust was checked, Step 5.4.12, are not more than 1 hour apart. (SR 3.2).

*Initials*_____

IF the time between the start of drumming operations and the time that the ventilation exhaust was checked exceed 1 hour,
THEN write "N/A" in the initial line above, AND re-verify that the ventilation exhaust is operable and record it below:

5.4 Drum Tumbling (continued)

$ **[a] VERIFY** with the SOM that the Room 60/60A exhaust fans are operating, AND record the time this was performed. (SR 3.2)

*Time*_____ *Initials* _____

$ **[b]** Record the time drumming operations started. (SR 3.2**)**

Time _____

$ **[c] VERIFY** that the time recorded above (5.4.15.b)and the time the ventilation exhaust was checked, Step 5.4.15.a, are not more than 1 hour apart. (SR 3.2).

*Initials*_____

[16] Add approximately 2.5 gallons of Technical Grade Sodium Silicate solution to the drum. Record the amount of Sodium Silicate added on the Data Sheet.

CAUTION

Hazard: Over filling TK-6 and TK-6A may cause the material in the tanks to spill.

Control: TK-6 may be over filled because the overfill limit is 22 gallons, and additional material will overflow to TK-6A. Stop sludge transfer if TK-6 overflow is observed or suspected. Do not fill TK-6A more than approximately 25% full.

[17] IF transferring the sludge material from TK-7A to TK-6, THEN perform the following steps:

[a] ENSURE that re-circulation is still evident.
[b] IF there is sludge in TK-6A, THEN open 60A-DTL-V95 to drain the sludge back into TK-6.
[c] **ENSURE** 60A-DTL-V95 is closed.
[d] Open 60A-STL-V93 by placing STL-V93 in the "OPEN" position, AND observe the red "OPEN" light goes ON.
[d] Open 60A-STL-V94 slowly until TK-6 reaches approximately 22 gallons, AND then close 60A-STL-V94.
[e] Close 60A-STL-V93 by placing STL-V93 in the "CLOSE" position, AND observe the green "CLOSE" light goes ON.

NOTE If performing Step [18], TK-7A must not be re-circulating (Section 5.2).

[18] IF rinsing TK-6 THEN perform the following steps:

[a] Open 60-IWL-V09.
[b] Open 60-IWL-V15.
[c] Open 60-STL-V38 by placing STL-V38 switch in the "OPEN" position, AND observe the red "OPEN" light goes ON.
[d] Open 60-STL-V40.

5.4 Drum Tumbling (continued)

[e] Close 60-STL-V100.
[f] Open 60A-STL-V93 by placing the STL-V93 switch in the "OPEN" position, AND observe the red "OPEN" light goes ON.
[g] IF there is material in TK-6A, THEN open 60A-DTL-V95 to drain the contents back into TK-6.
[h] **ENSURE** 60A-DTL-V95 is closed.
[i] Open 60A-STL-V94.
[j] WHEN the level in TK-6 is approximately at the 22 gallon mark, THEN close 60A-STL-V94.
[k] Close 60-IWL-V09.
[l] Close 60-IWL-V15.
[m] Close 60A-STL-V93 by placing STL-V93 switch in the "CLOSE" position AND observe the green "CLOSE" light goes ON.
[n] Close 60-STL-V38 by placing STL-V38 switch in the "CLOSE" position, AND observe the green "CLOSE" light goes ON.
[o] Close 60-STL-V40.
[p] Open 60-STL-V100.

[19] **HOLD POINT-** Have the RCT perform an on contact dose rate survey of TK-6.
[a] IF the on contact dose rate is > 100 mRem/hr. Check 30 cm dose rate. THEN pause work and notify the supervisor.

RCT Initials _____

[20] Transfer contents of TK-6 to the drum:
[a] Remove the bag from the end of the fill hose.
[b] IF rinsing TK-6:
(i) Place the end of the fill hose into a one-liter sample bottle
(ii) Open 60A-DTL-V96.
(iii) Slowly open 60A-DTL-V97 to allow contents to flow into the bottle.
(iv) Fill the sample bottle about one-quarter
(v) Close 60A-DTL-V97.
(vi) Close 60A-DTL-V96.
(vii) Cap the sample bottle, and pass it out of the glovebox.
[c] Place end of hose approximately 2 inches into the open bung hole, and place absorbent cloth around hose and 2 inch bung opening.
[d] Open 60A-DTL-V96.
[e] Slowly open 60A-DTL-V97 to allow contents to flow into the drum.
[f] IF draining of sludge into the drum needs assistance, THEN tap on TK-6 drain lines, valves, and/or fill hose using a mallet.
[g] Drain the contents of the hose into the drum.
[h] Close 60A-DTL-V97 after contents have drained.
[i] Remove the hose from the drum while cleaning it with absorbent cloth.
[j] Dispose of the absorbent cloth properly.

5.4 Drum Tumbling (continued)

[k] Place a bag around the end of the hose and secure it

[l] Close 60A-DTL-V96.

[m] Record the amount of material added from TK-6 to the drum on the Data Sheet.

[n] Add in any samples that need to be disposed of. Do Not add more than 2 L of samples.

[o] Record the amount of samples added to the drum on the Data Sheet.

[p] IF the entire contents of TK-6 did NOT drain into the drum, THEN proceed to Step 5.4 [21].

[q] IF the entire contents of TK-6 successfully drained into the drum, THEN proceed to Step 5.4 [22].

NOTE 1: The following procedure step is used if a drum is being prepared using only industrial water or if the entire contents of TK-6 did not drain into a drum.

NOTE 2: If only industrial water is being added to a drum, use zero as the estimated volume of sludge.

[21] Add industrial water to a drum by performing the following:

[a] Estimate the volume of sludge transferred into the drum.

[b] Calculate the volume of industrial water being added to the drum by subtracting the estimated sludge volume from 22 gallons.

22 gal – _____ gal = _____ gal
Estimated Sludge Volume — Industrial Water Addition

[c] Insert AND hold in place a garden hose equipped with a totalizer approximately two inches into the open bung hole of the drum.

[d] Open 60-IWL-V30 to start the flow of industrial water into the drum.

[e] WHEN the desired volume of industrial water has been added to the drum, THEN close 60-IWL-V30.

[f] Record the volume of industrial water on the Drum Data Sheet.

[g] Remove the garden hose equipped with a totalizer from the drum.

[22] Replace 2 inch bung and torque to 40 ft-lbs, and record it on the Data Sheet.

[23] Position the drum clamps and tighten them until they are secure against the drum lid.

[24] **ENSURE** the drum tumbler chain is tight around the drum, and secure any excess chain links with tape.

[25] **ENSURE** that the venting bung valve is closed by turning it clockwise until hand tight.

[26] Remove any foreign objects from inside the drum tumbler, if there are any.

[27] Close and latch the top and side doors to the drum tumbler enclosure.

5.4 Drum Tumbling (continued)

NOTE The drum tumbler has interlocks that will prevent it from rotating while any of the drum tumbler containment doors are open and when the drum holder is not in the elevated upright position.

CAUTION: Weight Limits

Hazard: Maximum tumbler capacities are 800 pounds for a full drum capacity, and 400 pounds for a half-full drum, per manufacturer's recommendations. Equipment damage could result. In addition, an unbalanced, bottom-heavy drum is harder to tilt than a full drum.

Control: Do not exceed these limits.

[28] Rotate the drum as follows:

- **[a]** At the Drum Tumbler Controller place the "MAN/OFF/AUTO" selector switch to "AUTO."
- **[b]** Adjust the reset timer to 20 minutes on the Drum Tumbler Controller.
- **[c]** Have a second operator verify that the timer was set correctly.
- **[d]** Push in the "RUN" button on the Drum Tumbler Controller, AND observe the red "ON" light goes ON and the green "TIMER" light goes ON.
- **[e]** **OBSERVE** the drum tumbler motor is running.
- **[f]** At the Hydraulic Controller push up the "LIFT LEVER" until there is no further upward drum holder movement, AND release the "LIFT LEVER".
- **[g]** At the Hydraulic Controller push up the "ROTATION LEVER" until it is fully engaged.
- **[h]** **VERIFY** the drum tumbler is rotating.
- **[i]** Record the time rotating began on the Data Sheet.

[29] Exit Room 60A and close the doors between Room 60 and 60A.

NOTE While the drum is tumbling, periodic movements are required between Rooms 60 and Room 60A. For these movements, don and doff PPE per RCT instructions.

[30] During drum tumbling visually check for leaks and unusual noise or vibration when rotation begins and periodically throughout the tumbling process.

[31] IF an abnormal situation occurs while at the control panel or during the periodic checks, THEN do the following:

- **[a]** Push the "EMERGENCY STOP" button.
- **[b]** Put the system in a safe configuration, ONLY if it is safe to do so by:
  1. Place the "ROTATION LEVER" in the "STOP" position.
  2. Place the "MAN/OFF/AUTO" switch in the "MAN" position.

5.4 Drum Tumbling (continued)

3. Push the "START" button in and observe the red "ON" light go ON.
4. At the Hydraulic Controller push up the "LIFT LEVER" until there is no further upward drum movement, AND release the "LIFT LEVER."
5. At the Hydraulic Controller use the "ROTATION LEVER" to jog the drum to the upright position.
6. At the Hydraulic Controller push down the "LIFT LEVER" until there is no further downward drum movement, AND release the "LIFT LEVER."
7. Press the "STOP" button on the Drum Tumbler Controller.

[c] Follow the Emergency Actions in Section 7.0.

WARNING

Hazard: Energized Electricity. The main source of power to the drum tumbler is in Room 60 and may need to be shut off in case of an emergency. This creates an electrical hazard that may cause injury to the worker.

Control: Secure the area and don leather gloves before attempting to turn off the power. Only trained energized electrical workers are allowed to shut off the switch on the panel.

[32] IF an abnormal situation occurs while the operators are in Room 60, THEN do the following to turn off the main source of power for the drum tumbler from Room 60:

[a] Everyone exit the area except the two workers (one does need to be a trained energized electrical worker).

[b] Turn the breaker [COMPT. A2 "DRUM TUMBLER RM 60A" on panel 50 1 MCC-2] to the OFF position.

[c] Exit the area and follow the emergency actions in Section 7.0.

[33] After approximately 20 minutes, observe that the timer has timed out and the drum tumbler has stopped.

[34] Record the time the drum tumbler has stopped rotating on the Data Sheet.

[35] Record the amount of time the drum contents were mixed on the Data Sheet.

[36] Place the "ROTATION LEVER" to the "STOP" position.

[37] Place the "MAN/OFF/AUTO" switch in the "MAN" position.

[38] Push the "START" button in and observe the red "ON" light goes ON.

5.4 Drum Tumbling (continued)

[39] At the Hydraulic Controller use the "ROTATION LEVER" to jog the drum to the upright position.

[40] At the Hydraulic Controller push down the "LIFT LEVER" until there is no further downward drum movement, AND release the "LIFT LEVER".

[41] Press the "STOP" button on the Drum Tumbler Controller.

[42] Open the side door of the drum tumbler enclosure.

[43] **HOLD POINT-** Have the RCT survey the drum and the enclosure to make sure there is no contamination. Have the RCT initial that the results are NDA before continuing. IF contamination is detected, then follow RCT instructions.

RCT Initials _____

[44] Open the top door of the drum tumbler enclosure.

CAUTION

Hazard: Drum Lid Damage. The bung may be damaged if it is hit with the rubber mallet.

Control: When using the rubber mallet to dislodge any sludge that may be present in drum lid crevices, avoid hitting the venting bung.

[45] Lightly tap the top of the drum with a rubber mallet to dislodge sludge from the venting bung.

[46] Wrap absorbent cloth around vent opening, and slowly vent the drum by turning the venting bung counter-clockwise.

[47] Remove the venting bung from the drum by:
- Have absorbent cloth available when unscrewing the bung from the drum.
- Unscrew the venting bung, AND when it is about to be removed use the absorbent cloth to remove the bung.
- Dispose of the absorbent cloth and venting bung in a baggie.
- Clean around the bung area with absorbent cloth, and dispose of the absorbent cloth appropriately.

[48] Apply to the threads of the NUCFIL-019DS carbon filter vent bung Non-locking, liquid, Anaerobic, thread sealant (Loc-Tite). Document the application on the Data Sheet.

5.4 Drum Tumbling (continued)

[49] Insert a NUCFIL-019DS carbon filter vent bung with o-ring into the drum bung opening. Document it on the Data Sheet.

[50] Record carbon filter vent bung information on the Data Sheet.

[51] Torque the carbon filter vent bung to 120 in-lbs and record the torque force on the Data Sheet.

[52] **HOLD POINT-** Have the RCT survey the drum prior to removing it from the drum tumbler. Have the RCT initial that the results are NDA before continuing. IF contamination is detected, then follow RCT instructions.

RCT Initials _____

[53] Remove the drum from the drum tumbler as follows:
- Loosen the top clamps on the drum, AND position them away from the drum.
- Move the crane into Room 60A.
- Lower the overhead crane, AND install the rigging on the drum.
- Release the chain/ratchet plate, AND position it away from the drum.
- Move the Drum to RM 60 AND lower the drum onto a drum dolly.
- Remove the rigging from the drum.

[54] Repeat Steps 5.4.7 through 5.4.53 if a second drum is to be tumbled.

[55] Close the top and side doors to the drum tumbler enclosure.

[56] **HOLD POINT-** Have the RCT obtain a survey of the drum.

[a] IF the surface contamination is > 20dpm/100 cm2 alpha and >200 dpm/100 cm2 beta-gamma,
THEN decontaminate the drum until it is <20dpm/100 cm2 alpha and <200 dpm/100 cm2 beta-gamma.

[b] IF the external radiation dose is >100 mRem/hr on contact,
THEN notify the supervisor and follow any further instructions, document any other instruction on the Data Sheet.

[c] Note any comments on the Data Sheet.

*RCT Initials*_____

[57] **HOLD POINT- ENSURE** that the RCT has surveyed the accessible areas of the crane and rigging before it is moved into Room 59.

*RCT Initials*_____

5.4 Drum Tumbling (continued)

[58] Attach the rigging on the drum.

[59] Move the drum to Room 59.

[60] Weigh the drum as follows:
[a] Zero the scale.
[b] Move the drum onto the scale.
[c] Remove the rigging from the drum.
[d] Weigh the drum, AND record its weight on the Data Sheet.

[61] **OBTAIN** a curing dolly in Room 59.

[62] Using the crane place the drum on the curing dolly, AND **ENSURE** that the 2" bung hole is positioned at what will be the highest point during cement curing (the drum will be angled on the dolly).

[63] Remove the rigging from the drum.

[64] Repeat Steps 5.4.57 through 5.4.63 if a second drum is to be tumbled.

[65] **ENSURE** the crane is in a safe configuration.

[66] **ENSURE** that the doors that were opened are closed.

[67] Record the date the drum began curing on the Data Sheet.

[68] Have the performer sign and date each Data Sheet.

[69] Have a second operator **VERIFY** the data, then sign and date each Data Sheet.

[70] **ENSURE** that a qualified person has completed the Hazardous/ Mixed Waste Inspection Record to reflect the movement of drums into Room 59.

[71] **VERIFY** that the Room 60/60A System Alignment Diagram has been updated for those valves operated by this procedure.

[72] **OBTAIN** PIC review of this section, and document satisfactory completion by signature below.

Reviewed by:

_____/_____/_____/_____

PIC Print Name Signature Z # Date

5.5 Drum Completion

CAUTIONS (Step 5.5)

Hazards and Controls are detailed in Section 2 of this procedure. They were provided during the pre-job briefing, and need not be repeated aloud in full during the performance of this work. It is sufficient to repeat the hazards as a reminder. These include:

1. Chemicals	7. Heat stress	13. Mechanical hazards
3. Crane/ Hoist	8. Pinch points	14. Overhead hazards
5. Ergonomic	11. Materials handling	16. Tools
6. Falls	12. Wastes	17. Rad contamination

NOTE When wearing a respirator, the procedure will still be read aloud step-by-step. The repeat-backs need not be performed, however.

[1] **ENSURE** that Prerequisite Actions have been satisfactorily completed.

*PIC Initials*_____

[2] Record the date that curing is stopped on the Data Sheet.

[3] Verify that measurement and test equipment (MT&E) used for drum tumbling is still within calibration by recording calibration number and expiration date on the Drum Data Sheet for the following:

- platform scale for weighing the drums
- torque wrench that measures in ft-lbs

If any of these are not in calibration, **STOP** and do not proceed until calibrate equipment is available.

NOTE 1 Only licensed operators are allowed to use the crane. Detailed steps will not be included in the procedure for crane operations.

NOTE 2 The accessible areas of the crane must be surveyed by the RCT before it is moved out of the radiological area.

[4] **ENSURE** the overhead crane is in Room 59.

[5] Move drum from Room 59 to Room 60:

- Attach rigging to drum.
- Move the drum to Room 60.
- Lower the drum onto a dolly.
- Remove the rigging from the drum.
- Raise the overhead crane.

[6] Repeat Steps 5.5.2 to 5.5.5 for any additional drums.

[7] Close the doors between Room 60 and 59.

5.5 Drum Completion (continued)

Hazard: Radiological

Hazard: Inhalation and Contamination. The worker may be exposed to radiological hazards due to the system being opened to remove the sample.

Control: When taking a sample wear Tyvek coveralls with attached booties and hood, respirator, 2 pairs of gloves, and extra booties.

[8] Don PPE.
[9] Place the drum under the Drum Hood.
[10] Have RCT start MAC-21, and **VERIFY** ventilation flow.

[11] Remove the 2" bung from the drum lid.
[12] Place a funnel in the bung hole.
[13] Add approximately 1/2 cup of Waste Lock to the drum.
[14] Record on the Data Sheet how much Waste Lock was added.

[15] Apply to the threads of 2" bung Non-locking, liquid, Anaerobic, thread sealant (Loc-Tite). Document it on the Data Sheet.

[16] Remove the funnel and discard or reuse per RCT instructions.

[17] Replace the 2" bung, and torque to 40 ft-lbs. Record the torque force used on the Drum Data Sheet.

[18] Repeat Steps 5.5.9-17 for any additional drums.

[19] Have RCT stop MAC-21.

[20] **HOLD POINT-** Have the RCT survey the drum(s) and **ENSURE** that the accessible areas of the crane and rigging have been surveyed as well.

*RCT Initials*_____

[21] Doff PPE and exit the room per RCT instruction.

[22] Move drums to Room 59.

[23] Obtain the final gross weight of the drum:

[a] Zero the scale.

[b] Place the drum on the scale and remove the rigging from the drum.

[c] Record the weight on the Data Sheet. This is the final gross weight.

5.5 Drum Completion (continued)

[24] Place the drum on the dolly.

[25] Move the drum to the staging area.

[26] Repeat Steps 5.5.23-25 for additional drums.

[27] **ENSURE** the crane is in a safe configuration.

[28] **ENSURE** that a qualified person has completed the Hazardous/ Mixed Waste Inspection Record to reflect the movement of drums out of the Room 59 curing area into the Room 59 storage area.

[29] Have the performer sign and date each Data Sheet.

[30] Have a second operator **VERIFY** the data, then sign and date each Data Sheet.

[31] **OBTAIN** PIC review of this section and document satisfactory completion by signature below.

Reviewed by:

_____/_____/_____/_____

RIC Print Name Signature Z # Date

5.6 Flushing the Drum Tumbling System

CAUTIONS (Step 5.6)

Hazards and Controls are detailed in Section 2 of this procedure. They were provided during the pre-job briefing, and need not be repeated aloud in full during the performance of this work. It is sufficient to repeat the hazards as a reminder. These include:

5. Ergonomic	8. Pinch points	14. Overhead hazards
6. Falls	9. Elevation	15. Pressure
7. Heat stress	10. Leaks	17. Rad contamination
	12. Wastes	

CAUTION

Hazard: Over filling the TK-7A tank

Control: Do not fill TK-7A to greater than 80% of maximum volume as indicated on level gauge.

[1] **ENSURE** that Prerequisite Actions have been satisfactorily completed.

*PIC Initials*_____

[2] Flush the sludge lines into the top of TK-7A:

[a] Close 60-STL-V100.

[b] Open 60-STL-V40.

[c] Open 60A-STL-V10 by placing STL-V10 switch in the "OPEN" position, AND observe the red "OPEN" light goes ON.

[d] Open 60-IWL-V09.

[e] Open 60-IWL-V15 by placing switch IWL-V15 in the "OPEN" position, AND observe the red "OPEN" light goes ON.

[f] Open 60-STL-V38 for approximately 2 minutes by placing STL-V38 switch in the "OPEN" position, observe the red "OPEN" light goes ON, AND then close 60-STL-V38 by placing STL-V38 switch in the "CLOSE" position, AND observe the green "CLOSE" light goes ON.

[g] Close 60A-STL-V10 by placing STL-V10 switch in the "CLOSE" position, AND observe the green "CLOSE" light goes ON.

5.6 Flushing the Drum Tumbling System (continued)

[3] IF the sample line does not need to be flushed,
THEN continue to step 5.6.7.

NOTE When wearing a respirator, the procedure will still be read aloud step-by-step. The repeat-backs need not be performed, however.

[4] IF the sample line needs to be flushed,
THEN perform the following:

[a] Label the bottle "Sludge Line Flush Sample."

[b] Don appropriate PPE, as specified by RWP and IH.

[c] Place adsorbent cloth inside the bottom of the sample station.

[d] Open 60-STL-V38 for by placing STL-V38 switch in the "OPEN" position, AND observe the red "OPEN" light goes ON.

[e] Detach the sample bottle in the sample station, AND position the bottle under the sample port.

[f] Slowly open 60-SSV-V09 to fill the 250 mL waste sample bottle currently in the sample station at least one half full (~125 mL), AND then close 60-SSV-V09.

[g] Remove and cap the sample bottle from the sample station.

[h] IF the bottle has sludge on the outside, THEN clean the bottle with absorbent cloth and discard the adsorbent cloth properly per RCT.

[i] Place bottle in secondary containment.

[j] Remove the absorbent cloth from the sample station and discard properly per RCT.

[k] Install a new bottle in the sample station.

[l] Close 60-STL-V38 by placing STL-V38 switch in the "CLOSE" position, AND observe the green "CLOSE" light goes ON.

[m] Have the RCT survey outside of secondary containment.

[5] Send the sample bottle to the Satellite Accumulation Area (SAA) for storage when it has been released by the RCT at the discretion of the supervisor.

[6] Doff PPE and exit Room 60 per RCT instruction.

5.6 Flushing the Drum Tumbling System (continued)

[7] Flush sludge lines into the bottom of TK-7A:

[a] Open 60A-STL-V92.

[b] Open 60-STL-V102.

[c] Open 60-STL-V38 for approximately 2 minutes by placing STL-V38 switch in the "OPEN" position, observe the red "OPEN" light goes ON, AND then close 60-STL-V38 by placing STL-V38 switch in the "CLOSE" position, AND observe the green "CLOSE" light goes ON.

[d] Close 60-STL-V102.

[e] Close 60A-STL-V92.

[8] Restore the system as follows:

[a] Close 60-STL-V40

[b] Open 60-STL-V100.

[c] Close 60-IWL-V09.

[d] Close 60-IWL-V15.

[9] Start the TK-7A Mixer by pressing the "START" button on the 60A-CPL-10 panel and then wait approximately 5 minutes.

[10] Stop the TK-7A Mixer by pressing the "STOP" button on the 60A-CPL-10 panel.

[11] **VERIFY** that the Room 60/60A System Alignment Diagram has been updated for those valves operated by this procedure.

[12] Record the final level of TK-7A below.

TK-7A Tank level _____*%*

[13] Update RSView for TK-7A tank level and content (TRU Process Stream Code).

[14] **OBTAIN** PIC review of this section and document satisfactory completion by signature below.

Reviewed by:

_____/_____/_____/_____

PIC Print Name Signature Z # Date

6.0 POST-PERFORMANCE ACTIVITIES

6.1 Testing

Not Applicable

6.2 Restoration

- Review all valves on the System Alignment Diagram that are marked out of position.
- Have supervisor confirm that alignment is correct or reposition as directed by supervision.
- Update SAD if applicable.

6.3 Results

Results are reported within the body of the DOP, and specific drum generation information is recorded on the Drum Data Sheet.

6.4 Independent Verification

Not Applicable

6.5 Records Processing

The following parts of this procedure are to be kept as records for the process run:

- Section 3.0, Prerequisite Action
- Section 5.0, *Performance*
- Attachment 1, *Drum Data Sheet*

When the record is ready for final disposition, the record is transferred to Records Management in accordance with TA55-AP-055, *Document Control Process.*

7.0 EMERGENCY ACTIONS

IF there is an abnormal event during the evolution,
THEN place the system in a safe condition, if safe to do so, AND:

[a] Notify others in the room and exit the area.

[b] Notify the OC immediately.

[c] Notify SOM.

8.0 DEFINITIONS AND ACRONYMS

Term	Definition
CA	Compressed Air
DOP	Detailed Operating Procedure
FQR	Flow Quantity Recorder
IH	Industrial Hygiene
ITSR	Interim Technical Surveillance Requirement
IW	Industrial Water
IWL	Industrial Water Line
LOTO	Lock out/Tag out
MSDS	Material Safety Data Sheet
NDA	No Detectable Activity
OC	Operations Center
PIC	Person in charge
PPE	Personal Protective Equipment
RCT	Radiological Control Technician
RP	Radiological Protection
REG	Regulator
RLWTF	Radioactive Liquid Waste Treatment Facility
RWP	Radiological Work Permit
SOM	Shift Operations Manager
SR	Surveillance Requirement
SSV	Sludge Sample Valve
STL	Sludge Transfer Line
STP	Sludge Transfer Pump
TDS	Total Dissolved Solids
TRU	Transuranic
V	Valve
WIPP	Waste Isolation Pilot Plant
WMC	Waste Management Coordinator

9.0 RESPONSIBILITIES

9.1 Operations Manager

- Responsible for verifying that the workers are properly trained to perform the steps within this procedure.
- Responsible for verifying all steps have been completed correctly.

9.2 Process Engineer

- Responsible for providing technical support for this procedure.

9.3 Person in Charge

- Responsible for verifying that the workers are properly trained to perform the steps within this procedure.
- Responsible for verifying all steps have been completed correctly

9.4 RLW Operator

- Responsible for complying and completing all training and qualifications assigned to them.
- Responsible for performing RLW operations according to procedure.

10.0 REFERENCES

Document Number	Title
RLWTF-PD-WO-402	*Room 60/60A System Alignment Diagram*
AP-FMU84-02	*Interim Technical Safety Requirements (ITSRs), Radioactive Liquid Waste Treatment Facility TA-50*
P930-1	*LANL Waste Acceptance Criteria*
WGI #7	*Waste Generator Instructions for the Disposition of Newly, Generated, Cemented Transuranic (TRU) Waste from TA-50*
JHA No. 0008534	*JHA - Drum Tumbler*

11.0 RECORDS

Record Identification	Record Type Determination	Protection/Storage Methods	Processing Instructions
RLW-DOP-010, R4	QA Record	Supervision **SHALL** implement a reasonable level of protection to prevent loss and degradation. Records **SHALL** be maintained in a metal file cabinet when not in use.	When the record is ready for final disposition, the record is transferred to Records Management in accordance with TA55-AP-055, *Document Control Process.*

12.0 APPENDICES AND ATTACHMENTS

Attachment 1, *Drum Data Sheet*
Attachment 2, *Ordinary Lift Procedure*

Attachment 1 - Drum Data Sheet
Page 1 of 4: Drum Preparation (Section 5.1)

Ensure WIPP-acceptable Drum:

Drum Number:	
Barcoded (yes/ no):	
QA acceptance paperwork (yes/ no):	
Stenciled purchase order number:	
Stenciled lot number:	

Sludge that will be added to this Drum:

Sludge sample taken:	**Date: _____**	**Sample Number:**
Specific Gravity	_____	
Estimated Drum Gross Weight	**_____ lbs.**	Requirement: <750 lbs

Verification of MT&E:

	Range	Calibration #	Expiration Date
Platform Scale	0-1000 lbs		
Torque Wrench	0-80 ft ft-lbs		
Torque Wrench	0-200 in-lbs		

Requirement: Calibration has not expired.

Attachment 1 - Drum Data Sheet
Page 2 of 4: Drum Preparation (Section 5.1)

Drum Number _____

Drum Inspection:

Possible Defects:	☐	**Dents, Deterioration, Degradation**
	☐	**Excessive Rust, Split Seams, Discoloration**
	☐	**Cracked/Missing locking ring**
	☐	**Missing locking bolt**
	☐	**Cracked/Deteriorated gasket**
	☐	**Scratched or damaged coating inside the drum**
	☐	**Other (describe in the comments section)**
		Pass or Fail Inspection: _____
Comments:		

Preparing the Drum:

ACTION	Requirement	RESULT
Tare weight of the Drum	Record	_____ **lbs**
Torque the venting bung	120 in-lbs	_____ **in-lbs**
Add Vermiculite	~3 gallons	_____ **gals**
Add Portland Cement	282 ± 5 lbs	_____ **lbs**
Torque the drum ring bolt	60 ft-lbs	_____ **lbs**
Initial Gross Drum Weight	none	_____ **lbs**

Performed by:	**Date:**
Verified by:	**Date:**

Attachment 1 - Drum Data Sheet
Page 3 of 4: Drum Tumbling (Section 5.4)

Drum Number _____

Verification of MT&E:

	Range	Calibration #	Expiration Date
Platform Scale	0-1000 lbs		
Torque Wrench	0-80 ft ft-lbs		
Torque Wrench	0-200 in-lbs		

Added:

Sodium Silicate added:	_____**gal**	**Industrial water added to Drum**	_____**gal**
Amount of sludge added from TK-6.	_____**gal**	**Amount of samples added to the drum.**	_____**mL**

Tumbling:

2" Bung Torque Force	_____ **ft-lbs**	Requirement: 40 ft-lbs	
Start Mixing Time (Clock):	_____:_____	**Stop Mixing Time (Clock):**	_____:_____
Total Mixing Time:	_____ **min**	Requirement: 20 minutes	

Filter:

Apply to the threads of the carbon filter bung Non-locking, liquid, anaerobic, thread sealant (Lock-Tite)			☐
Install the NUCFIL-019DS carbon filter bung.			☐
NUCFIL-019DS carbon filter bung ID#			_____
Filter Bung Torque Force:	_____ **in-lbs**	Requirement: 120 in-lbs	

Post-Tumbling Drum Weight:

Drum Gross Weight:	_____ **lbs**	

Performed by:	**Date:**
Verified by:	**Date:**

Attachment 1 - Drum Data Sheet
Page 4 of 4: Drum Completion (Section 5.5)

Drum Number _____

Curing:

Curing Start Date:	**Date:** _____	**Curing Stop Date:**	**Date:** _____

Verification of MT&E:

	Range	Calibration #	Expiration Date
Platform Scale	0-1000 lbs		
Torque Wrench	0-80 ft ft-lbs		

Requirement: Calibration has not expired.

Drum Closure and Weighing:

ACTION	Requirement	RESULT
Addition of waste lock	0.5 cup	_____ **cup**
Sealant for 2" bung	Apply Lock-Tite	☐
Torque the 2" bung	40 ft-lbs	_____ **ft-lbs**
Final Gross Drum Weight	<750 lbs	_____ **lbs**

Comments:

Performed by:	**Date:**
Verified by:	**Date:**

Attachment 2, Ordinary Lift Procedure
(Page 1 of 2)

Ordinary Lift Procedure for drum lift and transport at TA50-1, Rooms 59, 60 and 60A (equivalent to form 1611)
Lift Description: 55 gallon drums will be moved between TA50-1-59 and TA50-1-60A supporting Drum cementation activities. The travel distance between Room 59 and 60A is approximately 50 feet. Prepared drums weighing > 300 lbs. will be moved from Room 59 into Room 60A. Sludge will be added, mixed and moved out of Room 60A at ≤ 750 pounds.

Date of lift: _____ **Supporting Procedure**: _____ **PIC:** _____

Operators/riggers:
Name(s)_____ Exp date of Crane License _____
_____ _____
_____ _____
_____ _____

Pre-lift briefing with all lift team members conducted:

Date _____ Time _____ By _____

Item to be rigged and lifted: 55 gal drum will be lifted approximately 12 inches from floor level, standard 55 gal drum size, maximum weight 750 lbs.

Limitations:
- Vertical height: Approximately 12 inches from the floor
- Horizontal travel: Between Room 59 and Room 60A.
- Attachments drum lifting device- Make Star Machine and Tool, Equip. number M359-119
- Obstruction, travel path to be verified clear by PIC
- Drum weight, max 750 lbs.
- Drum spec DOT 7A Type A containers

Pre-lift verifications:
- Training of PIC, lift team and riggers
- Hoist annual, monthly and pre-operation inspections.
- Hoist annual electrical and mechanical PMs
- Rigging (drum grabber) pre-operational (visual) and annual inspection (tagged)

Attachment 2, Ordinary Lift Procedure
(Page 2 of 2)

Approvals:
*** RLM** _____
Print Name **Signature** **Z#** **Date**

Designated Leader _____
Print Name **Signature** **Z#** **Date**

PIC The PIC is the Crane Person-In-Charge. It may or may not be the PIC for the complete operation. The Crane PIC needs to be a fully licensed crane operator and will be considered the Crane SME.

RLM * The RLM is the Responsible Line Manager who is responsible for the performance of the operation for which the ordinary lift plan will be used.

Designated Leader- Is the Person-In-Charge (PIC) of the complete operation. This may or may not be the Crane PIC.