

MAY 05 1998

ENGINEERING DATA TRANSMITTAL

2. To: (Receiving Organization) BWHC 327 Projects		3. From: (Originating Organization) BWHC 327 Projects		4. Related EDT No.: N/A	
5. Proj./Prog./Dept./Div.: 327 Legacy Waste Project		6. Design Authority/ Design Agent/Cog. Engr.: J. F. Henderson		7. Purchase Order No.: N/A	
8. Originator Remarks: None				9. Equip./Component No.: N/A	
11. Receiver Remarks: None				10. System/Bldg./Facility: 327 Building	
				12. Major Assm. Dwg. No.: N/A	
				13. Permit/Permit Application No.: N/A	
				14. Required Response Date: N/A	

15. DATA TRANSMITTED					(F)	(G)	(H)	(I)
(A) Item No.	(B) Document/Drawing No.	(C) Sheet No.	(D) Rev. No.	(E) Title or Description of Data Transmitted	Approval Designator	Reason for Transmittal	Originator Disposition	Receiver Disposition
1	HNF-2223	N/A	0	Waste Processing Plan	Q,S	1	1	1

16. KEY

Approval Designator (F)	Reason for Transmittal (G)	Disposition (H) & (I)
E, S, Q, D or N/A (see WHC-CM-3-5, Sec. 12.7)	1. Approval 2. Release 3. Information 4. Review 5. Post-Review 6. Dist. (Receipt Acknow. Required)	1. Approved 2. Approved w/comment 3. Disapproved w/comment 4. Reviewed no/comment 5. Reviewed w/comment 6. Receipt acknowledged

17. SIGNATURE/DISTRIBUTION  
(See Approval Designator for required signatures)

(G) Reason	(H) Disp.	(J) Name	(K) Signature	(L) Date	(M) MSIN	(G) Reason	(H) Disp.	(J) Name	(K) Signature	(L) Date	(M) MSIN
1	1	Design Authority	J.F. Henderson	2/10/98	LI-03	3		Central Files			B1-07
		Design Agent	N/A								
1	1	Cog. Eng. RD BROWN	V.D. Brown	2/9/98	LI-03						
		Cog. Mgr. N/A									
1	1	QA: DH Sandoz	D.H. Sandoz	2/10/98	LI-06						
1	1	Safety	M.H.D.	2/9/98	LI-57						
		Env. N/A	A.M. Horner								

18. Signature of EDT Originator <i>J.F. Henderson</i> 2/9/98	19. Authorized Representative for Receiving Organization <i>J.F. Henderson</i> 2/9/98	20. Design Authority/ Cognizant Manager <i>J.F. Henderson</i> 2/9/98	21. DOE APPROVAL (if required) Ctrl. No. <input type="checkbox"/> Approved <input type="checkbox"/> Approved w/comments <input type="checkbox"/> Disapproved w/comments
-----------------------------------------------------------------	------------------------------------------------------------------------------------------	-------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

## 327 Legacy Waste Processing Plan

J. F. Henderson

B&W Hanford Company, Richland, WA 99352

U.S. Department of Energy Contract DE-AC06-96RL13200

EDT/ECN: 623053

UC: 2000

Org Code: 19340

Charge Code: K7MLW (HAN98400)

B&R Code: EW7002010


Total Pages: 7

**Key Words:** 327 Legacy Waste Project, Waste Processing Plan, 327 Facility, Postirradiation Testing Laboratory, PTL, Hot Cells, Performance Agreement (PA) Milestone, Central Waste Complex, CWC

**Abstract:** The B&W Hanford Company's (BWHC) 327 Facility [Postirradiation Testing Laboratory (PTL)] houses 10 hot cells in which a variety of postirradiation examinations have been performed since its construction in the mid 1950s. Over the years, the waste that was generated in these cells has been collected in one gallon buckets. These buckets are essentially one gallon cylindrical cans made of thin wall stainless steel with welded bottoms and slip fit lids. They contain assorted compactable waste (i.e., Wipe-Alls, Q-tips, towels etc.) as well as non-compactable waste (i.e., small tools, pieces of metal tubing, etc.). There is a FY-98 BWHC Performance Agreement (PA) milestone in place to package 200 of these buckets in drums and ship them from the 327 facility to the Central Waste Complex (CWC) by September 30, 1998.

**TRADEMARK DISCLAIMER.** Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof or its contractors or subcontractors.

Printed in the United States of America. To obtain copies of this document, contact: WHC/BCS Document Control Services, P.O. Box 1970, Mailstop H6-08, Richland WA 99352, Phone (509) 372-2420; Fax (509) 376-4989.

MAY 05 1998	
DATE:	HANFORD
STA: 37	RELEASE
ID:	
Release Stamp	

Release Approval

Date

**Approved for Public Release**

**327 LEGACY WASTE PROCESSING PLAN**

**HNF-2223**  
Revision 0

by

J. F. Henderson  
Manager  
327 Projects  
B&W Hanford Company

R.D. Brown  
Engineering  
B&W Hanford Company

February 09, 1998

## 327 LEGACY WASTE PROCESSING PLAN

### HNF-2223 Rev. 0

The B&W Hanford Company's (BWHC) 327 Facility [Postirradiation Testing Laboratory (PTL)] houses 10 hot cells in which a variety of postirradiation examinations have been performed since its construction in the mid 1950's. Over the years, the waste that was generated in these cells has been collected in one gallon buckets. These buckets are essentially one gallon cylindrical cans made of thin wall stainless steel with welded bottoms and slip fit lids. They contain assorted compactable waste (i.e. Wipe-Alls, Q-tips, towels, etc.) as well as non-compactable waste (i.e. small tools, pieces of metal tubing, etc.) There is a FY98 BWHC Performance Agreement (PA) milestone in place to package 200 of these buckets in drums and ship them from the 327 facility to the Central Waste Complex (CWC) by September 30, 1998.

The buckets will be removed by performing 10 campaigns of 20 buckets each. Buckets for each campaign will be selected at the discretion of the Person-in-Charge (PIC). The bucket selection process may be based on whether or not a particular cell needs to be cleaned out; the availability of waste containers (concrete-lined drum or lead-lined drum); or whether a certain level of bucket characteristic (rad level reading) is desired to finish filling a waste container.

Unreviewed Safety Question (USQ) reviews of the operating procedures controlling the project activities have concluded that these activities fall within the 327 Building authorization basis (HNF-SD-SPJ-SAR-002, 327 Building Safety Analysis Report). The operating procedures have also been reviewed and approved by BWHC Safety and Industrial Hygiene. All packaging of radioactive materials is performed within either hot cells or packages having approved ventilation controls in place to prevent unauthorized release to the environment, which is consistent with facility environmental permits.

The following steps describe the overall process. See Table 1 (Quality Control Matrix) for specific details and controls.

#### 1. INVENTORY AND TRANSFER BUCKETS TO C-CELL

After the buckets have been identified, they shall be transferred to C-cell for radiation characterization. The transfer of buckets shall be conducted using procedures 3M-SOP-PTL-118, *Sample Material Transfers and Inventory Postings*, 3M-SOP-PTL-143, *Removal and Reinstallation of Solid Access Plugs and Slide Plugs*, and 3M-SOP-PTL-167, *Receiving, Loading/Unloading, and Shipping SERF Casks*. As an option to the use of the SERF cask, the Waste Cask may be used per procedure 3M-SOP-PTL-168, *Receiving, Loading/Unloading, and Shipping Waste Casks*, for the transfer of buckets from cell to cell.

#### 2. CHARACTERIZE BUCKETS AND MARK ENDS

Once the buckets are in C-cell, they will be characterized by radiation readings using an RO7A probe. Prior to taking readings on the buckets, the bucket number shall be written with an indelible marker on the top and bottom of the bucket to ensure the bucket can be

tracked (once the bucket is compacted the number on the side of the bucket may no longer be discernible). Also prior to characterization, the probe's calibration shall be verified (calibration is annual). If the probe needs to be calibrated, it shall be sent to Pacific Northwest National Laboratory (PNNL) for calibration. The radiation readings will be taken by placing the buckets in front of the RO7A probe that is currently installed in C-cell. Buckets that have readings up to and including 7 R/hr will be packaged into the concrete-lined drum. Buckets with readings exceeding 7 R/hr will be packaged in a lead-lined drum. The 7 R/hr trigger level may change depending on the actual radiation measurements made of the first few drums. Shipping requirements state that the radiation level on the exterior of the drums shall be not greater than 100 mrem/hr on contact.

### 3. TRANSFER BUCKETS TO A-CELL & PACKAGE

Following characterization, the buckets shall be transferred to A-cell for compacting and packaging into the sleeves. The transfer of buckets shall be conducted using procedures 3M-SOP-PTL-143 and either 3M-SOP-PTL-167 or 3M-SOP-PTL-168. The compacting and packaging shall be performed per procedures 3M-SOP-PTL-129, *In-Cell Compacting & Packaging of TRU Waste for Disposal (A-Cell)* and the welding of the lead-lined drum sleeve per 3M-SOP-PTL-159, *A-Cell RHTRU Waste Package Welding Procedure*. Upon completion of all steps in these procedures, the loaded drums will be staged for shipment.

### 4. ASSAY DRUMS AND CONFIRM "READY TO SHIP"

Once the drums are staged for shipment, they shall be assayed by PNNL's NDA group (Dosimetry Research & Technology). The purpose of the NDA is to determine whether any TRU material is present in the packaged waste and, if so, how much of it exists per drum. The shipping criteria states that the maximum allowable amount of fissile material that may be present in a lead-lined drum is 100 grams. The shipping criteria for the concrete-lined drum is currently under revision to increase the maximum allowable amount of fissile material from 15 to 100 grams. Two lead-lined drums or six concrete-lined drums will constitute one shipment and it is at the discretion of the PIC as to how many drums need to be ready for shipment prior to contacting PNNL for NDA services. PNNL's NDA services shall be responsible for ensuring that the assay equipment is calibrated to current standards.

### 5. SHIP DRUMS

After the drums are assayed, the assay results will be included in the transfer documentation (portfolio) required by WMH for shipping. When the portfolio is accepted by WMH, the drums will be shipped at the discretion of the CWC.

The 327 Legacy Waste Processing Plan Quality Control Matrix, is attached. This matrix identifies the order in which activities take place, applicable procedures and instructions, the responsible (lead) individual(s), and those activities requiring QC verification.

Table 1

**1K7F0A 327 LEGACY WASTE PROJECT  
QUALITY CONTROL MATRIX**

Activity	Product	Work Control Number (JCS No.)	Applicable Procedures and Instructions	Responsible (Lead) Individual	QA/QC Requirements
Identify buckets for each campaign by number and verify contents.	Verified Waste Bucket Inventory Sheet (3M-SOP-PTL-129) or 327 Waste Characterization (WC) Sheet	N/A	3M-SOP-PTL-129	BWHC PIC/WMH Facility Waste Coordinator	QA approve 3M-SOP-PTL-129  HCT peer verification of Waste Inventory or WC Sheet
Check for duplicate bucket numbers	Signed Hold Point in 3M-SOP-PTL-129	N/A	3M-SOP-PTL-129	BWHC PIC/WMH Facility Waste Coordinator	Project Engineer approval on Hold Point form
Transfer identified buckets for given campaign to C-cell	Sample Transfer Record Sheet (3M-SOP-PTL-118)	N/A	3M-SOP-PTL-118, 129, 167, 168	BWHC PIC	QA approve 3M-SOP-PTL-118
Verify RO-7A probe instrument cal.	Up-to-date calibration	N/A	Applicable step in 3M-SOP-PTL-129	BWHC PIC	None
Characterize buckets (RO7A) for packaging & identify pathway	Waste Bucket Inventory or WC sheet	N/A	3M-SOP-PTL-129	BWHC PIC/BWHC 327 RadCon Supv.	None
Label Top & Bottom	Signed Inventory or WC Sheet	N/A	3M-SOP-PTL-129	BWHC PIC	Peer verification by procedure step only
Transfer buckets to A-cell for packaging	Sample Transfer Record Sheet (3M-SOP-PTL-118)	N/A	3M-SOP-PTL-118, 129, 167, 168	BWHC PIC	None

**1K7FOA 327 LEGACY WASTE PROJECT  
 QUALITY CONTROL MATRIX**

Activity	Product	Work Control Number (JCS No.)	Applicable Procedures and Instructions	Responsible (Lead) Individual	QA/QC Requirements
Operations Assemble and Review Records; Determine Waste Pathway	Completed Inventory or WC Sheet	N/A	3M-SOP-PTL-129	BWHC PIC/PROJ. MGR.	None
For Lead-Lined Drum Liners  Compact buckets as applicable, load liner & weld lid	Waste drum loading inventory sheet  Signed hold point (3M-SOP-PTL-159)	Burn Permit	3M-SOP-PTL-129, 159	BWHC PIC	QA approve 3M-SOP-PTL-159  HCT peer verification of bucket ID as placed in liner  HCT inspect welds
OR					
For Concrete-Lined Drum Liners  Compact buckets as applicable, load liner & crimp tabs lids	Waste drum loading inventory sheet	N/A	3M-SOP-PTL-129	BWHC PIC	HCT peer verification of bucket ID as placed in liner
Operations assemble and review records for loaded liner	Completed & approved waste drum loading inventory Sheet	N/A	3M-SOP-PTL-129	BWHC PIC	Proj. Eng'r approve drum loading inventory Sheets
Load liners into waste drums	Waste drum loading inventory sheet	N/A	3M-SOP-PTL-129	BWHC PIC	Proj. Eng'r verify liner & drum ID numbers match

**1K7FOA 327 LEGACY WASTE PROJECT  
 QUALITY CONTROL MATRIX**

Activity	Product	Work Control Number (JCS No.)	Applicable Procedures and Instructions	Responsible (Lead) Individual	QA/QC Requirements
RadCon perform dose rate survey of each loaded drum	Completed survey form	N/A	3M-SOP-PTL-129	BWHC 327 RadCon Supv.	None
Verify torque wrench calibration	Up-to-date calibration	N/A	Applicable step in 3M-SOP-PTL-129	BWHC PIC	None
Torque seal plate bolts and lid locking ring out	Signed hold points (3M-SOP-PTL-129)	N/A	3M-SOP-PTL-129	BWHC PIC	HCT document torque values
Verify NDA instrument cal	Up-to-date calibration	N/A	3M-SOP-PTL-129	BWHC PIC	Proj. Eng'r verify cal
NDA (PNNL) loaded waste drums	PNNL NDA Report	N/A	PNNL Procs. NDA-506, 509	BWHC PIC/PNNL NDA Tech.	None
Operations Assemble, Review, & Approve Records	Completed Records	N/A	3M-SOP-PTL-129	BWHC PIC/PROJ MGR./WMH Facility Waste Coord'r	Proj. Mgr. & WMH Facility Waste Coord'r approve records
QC Approve Shipping	Completed Pack. & Trans. Records	3M-SOP-PTL-129	QC Inspection Plan No. 98-001	N/A	QC Approval

**NOTES:**

- Shaded areas indicate in-house "check points" and bold borders indicate QA/QC hold points.
- BWHC Operating Procedure titles are as follows:  
 3M-SOP-PTL-118 "Sample Material Transfers and Inventory Postings"  
 3M-SOP-PTL-129 "In-Cell Compacting and Packaging of TRU Waste for Disposal (A-Cell)"  
 3M-SOP-PTL-143 "Removal/Reinstallation of Solid Access Plugs and Slide Plugs"  
 3M-SOP-PTL-159 "A-Cell RHTRU Waste Package Welding Procedure"  
 3M-SOP-PTL-167 "Receiving, Loading/Unloading, and Shipping SERF Cask"  
 3M-SOP-PTL-168 "Receiving, Loading/Unloading, and Shipping Waste Cask"
- QA Inspection Plan No. 98-001
- PNNL Procedures for NDA services:  
 NDA-506 "Segmented Gamma Scan Neutron Assay System"  
 NDA-509 "Radioactive Materials Holdup Measurements"