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CP3-WM-2110 **FRev. 1A**	**TITLE**: Waste Container Handling, Overpacking, and Transportation	Page 1 of 26

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REVISION/CHANGE LOG

Revision/Change Letter	Description of Changes	Pages Affected	Date of Revision/Change
FR0	Procedure bluesheet.	All	10/19/17
FR1	Initial Release.	All	1/8/18
A	Add requirements for waste-pigtail containers, including Section 6.11.Add CP2-WM-0661 and NCSE 042 as Source References. Add Commitment NCSA GEN-038. Add Steps 4.2.4 & 5.19. Change “truck” to “conveyance” in the Note prior to Step 6.9.10 and multiple times in Step 6.10.2. Change Note Prior to 6.10.1. Made minor grammatical changes and template requirement changes. Add definition for “Waste Pigtail.”	3-6, 14, & 18-20, 24	3/26/18

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1.0 PURPOSE AND SCOPE

1.1 Purpose

To specify the requirements for inspection, handling, overpacking, repackaging and transportation of containerized waste materials, including waste-pigtail containers. Chg A

1.2 Scope

The requirements of this procedure apply to all Paducah Gaseous Diffusion Plant (PGDP) Deactivation and Remediation (D&R) contractor employees and subcontractors (if included in their contract) performing waste generating activities. This procedure applies the handling, overpacking, and transportation of containerized waste materials.

2.0 REFERENCES

2.1 Use References

- CP1-NS-3000, *Documented Safety Analysis for the Department of Energy Paducah Site Deactivation Project*
- CP3-NS-1031, *Nuclear Criticality Safety Program*
- CP3-NS-1033, *Enrichment and Exempt Waste Verification*
- CP3-RP-1108, *Posting and Labeling*
- CP3-SM-0020, *Administrative Controls for Powered Industrial Trucks*
- CP3-SM-0054, *Mobile Construction Equipment*
- CP3-WM-0015, *Management of Fissile Waste Materials*
- CP3-WM-1036, *Nuclear Criticality Safety Implementation Requirements for Handling and Storage of Fissile and Potentially Fissile Waste*
- CP3-WM-1037, *Generation and Temporary Storage of Waste Materials*
- CP3-WM-2100, *Operation of Temporary Fissile Storage Areas*
- JHA-8692, *Waste Container Handling, Overpacking, and Transportation*

2.2 Source References

- 29 CFR 1910.120, *Hazardous Waste Operations and Emergency Response*
- CP3-EP-1007, *Oil and Hazardous Materials Spills and Releases*
- CP3-HS-2008, *Accident Prevention/Equipment Control Tags*
- CP3-RP-1109, *Radioactive Contamination Control and Monitoring*
- CP3-SM-0051, *Hoisting and Rigging*
- CP3-SM-0053, *On-Site Transportation of Fissile Material*

- CP2-WM-0661, *Four Rivers Nuclear Partnership, LLC., Transportation Safety Document for On-Site Transport* Chg A
- NCSA GEN-015, *The On-Site Generation, Handling, and Storage of Fissile/Potentially Fissile Material*
- NCSA WMO-001, *Operation of Temporary Fissile Storage Areas at PGDP NCSA 331-001, C-331 Instrument Maintenance*
- NCSE 042, *Operation and Maintenance of the C-360, C-333A, and C-337A Autoclaves* Chg A

3.0 COMMITMENTS

- Nuclear Criticality Safety Approval (NCSA) 331-001, *C-331 Instrument Maintenance*
- NCSA GEN-001, *General Plant Limits for Activities Performed at PGDP*
- NCSA GEN-015, *The On-Site Generation, Handling, And Storage Of Fissile/Potentially Fissile Material*
- NCSA WMO-001, *Operation of Temporary Fissile Storage Areas at PGDP*
- NCSA GEN-038, *Operation and Maintenance of the C-360, C-333A, and C-337 A Autoclaves* Chg A

4.0 PRECAUTIONS AND LIMITATIONS

4.1 Precautions

4.1.1 Personal injury may result from dropping heavy waste containers. Use of lifting devices is recommended for handling heavy waste containers.

4.1.2 When pulled, a lodged winch strap may cause the pallet of containers to fall upon workers.

4.1.3 Clearance from waste containers while suspended by a lifting device should be maintained by operators. Personal injury may occur if waste container slips or falls from lifting device. Drum falling into overpack may act as a cutting edge.

4.1.4 Caution must be used when transporting liquid wastes as these materials may shift in tanks or containers. Additional securement may be warranted.

4.1.5 A minimum 2-foot edge-to-edge spacing is required for waste generated according to CP3-WM-1036, *Nuclear Criticality Safety Implementation Requirements for Handling and Storage of Fissile and Potentially Fissile Waste*.

4.1.6 Special care shall be exercised when handling waste containers stored in direct sunlight, as well as waste containers subjected to extreme ambient temperature changes, due to the potential of overpressurization.

4.1.7 All drums removed from storage may be under pressure. Obvious signs of over-pressurization such as bulged lids or escaping gases should be reported to the front-line manager (FLS) and the plant shift superintendent (PSS).

4.1.8 Spotters are mandatory during handling and/or transportation of waste containers where visibility of overhead installations, threshold clearances, and other hazardous travel conditions are encountered.

4.1.9 Capacity rating of forklift and length of tines shall be confirmed to be sufficient for anticipated load weight and configuration.

4.1.10 **When** opening waste containers, operators should work in pairs.

4.1.11 Operators should position themselves to the side of the drum, away from the lid or bung that could separate under rapid pressure release.

4.1.12 **When** opening bung on waste containers, a nonsparking tool shall be used, and bung unscrewed slowly, breaking the seal. **If** signs of venting gas or vapor are observed, contact FLS; otherwise, remove bung completely.

4.1.13 **When** opening waste containers with open-top lids, the locking ring shall be loosened slightly to break the drum seal with a flat tool before the ring is removed or repositioned.

4.2 Limitations

NCSA 331-001

4.2.1 Do **NOT** move U.S. Department of Transportation (DOT) shipping container containing fissile small vacuum pump(s) for off-site shipment until it is compliant with DOT shipping regulations (i.e., closed according to closing instructions and labeled).

4.2.2 There are two procedures governing the handling and storage of fissile or potentially fissile waste depending on the applicable Nuclear Criticality Safety Evaluation (NCSE). The handling requirements of CP3-WM-0015, *Management of Fissile Waste Material*, apply to waste controlled by NCSE-RM-FISSMAT-0015. CP3-WM-1036 applies to all other fissile or potentially fissile waste, except for waste-pigtail containers. Chg A

4.2.3 The appropriate NCS requirements shall be met prior to transferring fissile or potentially fissile waste from one NCSE to another.

NCSE 091

4.2.4 Do NOT move Non QL-2/NCS approved 55-gallon container containing fissile waste pigtails into the Temporary Fissile Storage Area. Chg A

5.0 PREREQUISITES

5.1 Refer to JHA-8692, *Waste Container Handling, Overpacking, and Transportation*, before performance of procedure.

5.2 Personnel assigned to handle or transport waste drums shall have successfully completed approved training for assigned task according to Training Position Description.

5.3 A waste movement involving special hazards or unique conditions will be captured in the STA/pre-job briefing.

5.4 Inspect handling and lifting devices before each use according to CP3-SM-0054, *Mobile Construction Equipment.*

5.5 Visually inspect winch and ratchet straps for abrasions, tears, and ratchet malfunctions before each use and ensure the load capacity is identified on the strap.

5.6 Waste containers should be in good condition before handling and/or transporting.

5.7 **If** waste containers are damaged or defective, **then** determination for suitability of handling and/or transporting containers will be made by FLS.

5.8 **When** transporting non-fissile container(s) from building to building or over uneven surfaces within a building **all** waste container(s) shall be secured with a ratchet strap of suitable load strength or other approved securing/transport device.

5.9 Unless dumping drum for packaging reasons, ensure drum lid is secure before moving drum with a drum grabber or other forklift attachment.

5.10 Multiple non-fissile waste containers shall be palletized, secured to each other and the transport vehicle by using ratchet straps of suitable load strength.

5.11 **When** handling bulky, uncontainerized waste items (such as motors, lockers, large metal parts, etc.), load shall be centered on lifting device and strapped appropriately.

5.12 **When** handling waste bags containing radiologically- or nonradiologically-contaminated waste materials, bag shall be sealed with tape, free of holes and tears, **and** properly identified.

5.13 Pallets, physical restraint systems, and/or transport devices shall be checked to ensure they are in good condition and suitable for their intended use.

5.14 Metal or wood pallets require bottom support braces to prevent loads from tipping during transport.

5.15 Wood pallets must **NOT** be rotted, damaged, or missing slats if used for securing and/or transporting waste containers.

5.16 Hazardous, mixed, polychlorinated biphenyl (PCB) or low-level radioactive waste (LLRW) shall **NOT** be left unattended unless in appropriate storage location or facility and under stable conditions.

5.17 Non-fissile waste shall be packaged and stored according to CP3-WM-1037, *Generation and Temporary Storage of Waste Materials.*

Chg A

5.18 **When** handling and/or transporting NCSA GEN-015 or NCSA WMO-001, fissile/potentially fissile (PF) waste containers, requirements of CP3-WM-1036 shall be followed. However, multiple NCS-Spacing Exempt containers may be transported at a time.

5.19 When handling and/or transporting containers of fissile waste-pigtails, the requirements of NCSA GEN-038 shall be followed.

5.20 Industrial motorized equipment shall be inspected and operated according to Procedure CP3-SM-0020, *Administrative Controls for Powered Industrial Trucks.*

5.21 **If** problems, such as loss of payload or a spill occur during handling and/or transportation of waste containers, **then** FLS and PSS shall be notified immediately.

5.22 In the event of an accident or spill inside plant facilities, the FLS and PSS shall be notified.

5.23 **Before** moving accountable levels of radionuclides into a facility, ensure the addition does **NOT** adversely impact the Material at Risk assumptions in CP1-NS-3000, *Documented Safety Analysis for the Department of Energy Paducah Site Deactivation Project.*

6.0 INSTRUCTIONS

6.1 Inspection and Handling of Waste Containers (Poly Bags, Drums, Metal Boxes, Sealands, etc.)

Operator

> **CAUTION:**
>
> Special care shall be exercised when handling waste containers stored in direct sunlight, as well as waste containers subjected to extreme ambient temperature changes, due to the potential of overpressurization.
>
> All drums removed from storage may be under pressure. Obvious signs of over-pressurization, such as bulged lids or escaping gases, should be reported to the FLS and the plant shift superintendent (PSS).

6.1.1 Inspect all waste containers before removing from generator staging areas (GSAs), satellite accumulation areas (SAAs), or other locations according to the following criteria:

A. **When** applicable, ensure description, labeling and identification number on waste container match information on CP3-WM-1037-F01, "Container Logsheet/Request for Disposal" (RFD), or alternate form as directed by Waste and Materials.

> NOTE:
>
> Bung shall be tight and should provide a good seal. Lids shall have rings secured with nut and bolt combination tightened.

B. Ensure waste container lid, rings, and/or bungs are properly secured.

C. Ensure waste container is reasonably clean with **no** liquids or debris on top and sides.

D. Ensure waste container is free of tears, dents, bulges, holes, or rust severe enough to cause leakage, rupture or compromise its integrity.

E. **If** a container is being removed from a radiological controlled area, **then** ensure it is labeled and handled according to CP3-RP-1108, *Posting and Labeling*.

F. Read attached tag and confirm waste container is approved for transport within the plant.

6.1.2 Inspect loaded pallets and/or physical restraint systems to ensure they support the weight of the waste containers.

6.1.3 **If** nonconforming items are identified while handling waste bags/containers, **then** notify FLS.

6.1.4 Notify FLS and PSS of problems associated with handling of waste containers.

6.2 Transportation of Waste Containers

Operator

6.2.1 Transport all waste containers according to the following criteria:

A. **When** using a flatbed truck for transporting waste containers, ensure vehicle is parked in a location suitable for loading and free of obstructions/obstacles.
B. Apply parking brake before loading waste containers.
C. Ensure transport vehicle is clear of debris such as gravel, dirt, and wood before loading or transporting waste containers.

NOTE:

Multiple GEN-015 containers ARE **NOT** to be moved at the same time.

Waste containers moved throughout the facilities with level surfaces do **NOT** require strapping.

Smaller straps of suitable load strengths may be used for empty containers (i.e., palletized empty drums), provided the total weight of the containers is within the strap's load capacity.

CAUTION:

Caution must be used when transporting liquid wastes, as these materials may shift in tanks or containers. Additional securement may be warranted.

Capacity rating of forklift and length of tines shall be confirmed to be sufficient for anticipated load weight and configuration.

D. Ensure all waste containers such as drums, being transported are strapped together and secured to the transport vehicle using a ratchet strap of suitable load strength (minimum of 2,000 lbs. for a 2-inch strap and 4,000 lbs. for a 4-inch strap).

WARNING:

Personal injury may result from being hit by thrown winch strap fasteners.

E. **Before** throwing winch straps over loaded vehicles, ensure personnel on opposite side of vehicle are clear of area where winch strap will fall.
F. Ensure positive control of waste containers by using winch/ratchet straps to secure load to transport vehicle.

NOTE:

Approved containment devices may be used in lieu of additional pallets, when applicable.

Waste containers of varying sizes require segregation when placed on pallets to allow securing to transport vehicle.

G. **If** necessary, secure pallets of waste containers and overpacks to the transport vehicle by placing an additional pallet/plywood on top of the load and then securing with the transport vehicle winch straps.

WARNING:

When pulled, a lodged winch strap may cause the pallet of containers to fall upon workers.

H. Ensure side straps and support posts are in good condition and in place **before** transporting waste containers.

WARNING:

Spotters are mandatory during handling and/or transportation of waste containers where visibility of overhead installations, threshold clearances, and other hazardous travel conditions are encountered.

I. Weigh loaded vehicle or waste container and obtain a weight ticket when applicable.

J. Mark the known gross weight of each container on the exterior surface of the container, if applicable.

K. **If** unsatisfactory conditions are encountered during waste container handling and/or transportation, **then** contact FLS for assistance. FLS may contact Waste and Materials Transportation Specialist (WMTS) for technical assistance as necessary.

NOTE:

Empty containers transported by truck are **NOT** required to be placed on pallets, but are secured with straps or other approved methods to the transport vehicle to prevent shifting.

6.2.2 Transport solid waste containers according to the following criteria:

A. Ensure waste container is properly identified/marked with waste container labels or other description of contents and radiological status before transport.

B. Deliver LLRW to the appropriate LLRW Storage Facility for disposition.

C. **When** transporting bulk containers (Sealands, intermodals, poly-tanks, etc.) of LLRW, obtain a spotter to assist during movement.

D. Do **NOT** leave LLRW unattended unless in the appropriate storage location or facility and in a stable condition. Contact FLS or Radiation Protection for assistance.

6.2.3 Transport hazardous/mixed waste containers according to the following criteria:

A. Ensure waste container is properly labeled or marked with the words "Hazardous Waste."

NOTE:

An accumulation date is **NOT** required on hazardous waste being transported from a satellite accumulation area (SAA) to a 90-Day Hazardous Waste Accumulation Area (90-DAA).

B. Deliver hazardous/mixed waste to the appropriate facility as directed by Waste and Materials for disposition.

C. Do **NOT** leave hazardous/mixed waste unattended unless in pre-designated areas (SAAs), appropriate storage locations or facilities, and in a stable condition.

6.2.4 Transport polychlorinated biphenyl (PCB) waste containers according to the following criteria:

A. Ensure waste container is properly identified and labeled with a PCB M_L label before transport.

B. **If** marking and labeling on containers is not visible, **then e**nsure on-site vehicles used to transport PCB containers are labeled with a PCB M_L label on each end and sides. Remove labels **when** transport is complete.

6.2.5 Do **NOT** leave PCB waste unattended unless in the appropriate storage location or facility and in a stable condition.

NCSA
GEN-001
WMO-001

6.3 Bulk Packaging of Nuclear Criticality Safety Spacing-Exempt Waste Containers

Operator

NOTE:

Multiple Nuclear Criticality Safety (NCS) Spacing Exempt containers may be transported at a time. NCS Spacing Exempt waste containers do **NOT** require spacing from other NCS Spacing Exempt and NCS Exempt containers to ensure subcriticality.

6.3.1 Handle and transport NCS Spacing Exempt waste containers according to CP3-WM-1036.

6.3.2 Ensure bulk container (metal box, B-25, etc.) used for packaging of NCS Spacing Exempt waste is identified with the following posting:

Fissile/Potentially Fissile Material **NCS Spacing Exempt Waste** Maintain the minimum spacing required between this item and all other fissile/potentially fissile material. (CP3-WM-1036)

6.3.3 Each time bulk container is opened, examine interior of container to ensure no leakage of contents or intrusion of liquids has occurred.

6.3.4 **When** waste drums are **NOT** being added to the container, ensure bulk containers remain closed and lids fastened in place.

6.3.5 **When** bulk container is full, transport container to the appropriate LLRW storage facility according to CP3-WM-1036.

NCSA WMO-001

6.4 Removing NCS Spacing Exempt Waste Containers from Bulk Packaging

Operator

6.4.1 Remove NCS spacing exempt waste container from bulk packaging.

6.4.2 Apply "NCS Spacing Exempt Label," CP-19934.

6.4.3 Handle NCS Spacing Exempt waste containers as potentially fissile (PF) or fissile material at all times in relation to other fissile/PF material.

6.5 NCS Spacing Exempt Waste Container Overpacking

Operator

6.5.1 **If** necessary, use lifting devices for the specific type of container being overpacked.

A. Use a nylon strap lifting device with sufficient load strength for overpacking open-top drums.

B. Use a mechanical apparatus designed for use with closed-top drums.

6.5.2 Transfer all markings and labeling from the container to the overpack container.

6.5.3 **If** free-standing liquids are present, **then** add absorbent material to overpack.

6.5.4 Communicate between the spotter and driver through the use of proper hand signals or other approved method.

6.5.5 Connect lifting device to container.

6.5.6 Raise container slowly until suspended approximately 2 to 3 inches above the floor area, allow to stabilize (use remote handling device(s) as necessary).

6.5.7 Ensure load and lifting device are secure.

6.5.8 Raise drum to required height. Stabilize container with remote handling device, as necessary.

> **WARNING:**
>
> Clearance from waste containers while suspended by a lifting device should be maintained by operators. Personal injury may occur if waste container slips or falls from lifting device. Drum falling into overpack may act as a cutting edge.

6.5.9 Place container used for overpacking directly under waste container being overpacked. Use remote handling device as applicable.

6.5.10 Lower container slowly into overpack. Use extreme caution while lowering to ensure waste container clears the opening of the overpack.

6.5.11 Unhook lifting device from waste container.

6.5.12 **If** free standing liquids are present, **then** add more absorbent material.

6.5.13 Install overpack lid and close according to manufactures specifications.

6.5.14 Confirm integrity of overpack.

6.5.15 Ensure waste identification and/or labeling is correct.

NCSA WMO-001

6.6 Overpacking 2.1-Gallon and 5.5-Gallon NCS Spacing Exempt Drums

Operator

6.6.1 Perform overpacking operation under the Criticality Accident Alarm System (CAAS) coverage, unless directed to perform task outside of CAAS by NCS.

6.6.2 When overpacking a 2.1-gallon or 5.5-gallon NCS Spacing Exempt drum, use a 7.7-gallon plastic open head drum with screw lid (UN 1H2/Y41/S) as the overpack.

6.6.3 Do **NOT** overpack more than one 2.1-gallon or 5.5-gallon NCS Spacing Exempt drum at a time.

6.6.4 Place only one drum in an overpack.

6.6.5 Place an NCS Spacing Exempt Label, CP-19934, on the overpack.

6.6.6 Transfer number to overpack.

6.6.7 Place 2.1-gallon or 5.5-gallon NCS Spacing exempt drum into the labeled overpack.

6.6.8 **If** spillage results from the overpacking operation, **then** place spillage in a separate augmented quality QL-2 (AQ/NCS) container according to CP3-WM-1036.

6.6.9 Install overpack lid and close according to manufactures specification**s.**

6.7 Treating Free Liquid in 5.5-Gallon NCS Spacing Exempt Drums

Operator

NCSA
WMO-001
GEN-015

6.7.1 Treat spacing exempt waste for free liquids under CAAS coverage, and outside of any Fissile Control Area (FCA).

6.7.2 Ensure that no fissile or potentially fissile material is added to the spacing exempt drum while treating for free liquids.

6.7.3 **If** spillage results from the treatment operation, **then** place spillage in a separate QL-2 (AQ/NCS) container according to CP3-WM-1036.

6.7.4 Open drum to be treated for free liquids.

NOTE:

New unused absorbent material is considered to be NCS exempt.

6.7.5 Add appropriate amount of NCS exempt absorbent material to drum.

NCSA
GEN-001
GEN-015

6.7.6 Record addition of absorbent material on CP3-WM-1037-F01, “Container Logsheet/Request for Disposal,” or alternate form as directed by Waste and Materials.

6.7.7 Install container lid and close according to manufacturer’s specifications.

6.7.8 Mark drum with “absorbents added” to indicate that absorbents have been added to drum.

NCSA WM0-001

6.8 Repackaging/Splitting NCS Spacing Exempt Waste for Off-Site Shipment

FLS/Field Engineer/Designee

NOTE:

NCS Spacing Exempt drums are labeled, "DO NOT REPACKAGE THE CONTENTS OF THIS DRUM WITHOUT NCS APPROVAL." Repackaging or splitting of NCS spacing exempt drums, according to this section, is approved by NCS.

This operation is **NOT** to be used for combining or consolidating drums.

Additional work control may be necessary for this activity.

NCSA GEN-015

6.8.1 Establish repackaging/splitting area according to the following criteria:

- **A.** Ensure repackaging/splitting area is under CAAS coverage and outside of any FCA.
- **B.** Ensure repackaging/splitting area is identified using rope and posting.
- **C.** Ensure repackaging/splitting area is maintained separate from other waste handling operations.
- **D.** Post area with NCSA WMO-001, "Spacing Exempt Drum Repackaging/Splitting Area," signs according to CP3-NS-1031, *Nuclear Criticality Safety Program* and NCSA WM-001. Chg A
- **E.** Post signs on each side of the repackaging/splitting area visible to persons entering the repackaging/splitting area, and to delineate the repackaging/splitting area from other storage or process areas.
- **F.** Ensure signs are positively fastened in a manner that will withstand day-to-day operations.

Operator

6.8.2 **If** spillage of fissile material occurs during the repackaging or splitting operation, **then** place spillage in a separate QL-2 (AQ/NCS) container according to CP3-WM-1036.

6.8.3 Ensure calibrated scale is acceptable for use according to CP3-WM-2100, *Operation of Temporary Fissile Storage Areas* (TFSA).

6.8.4 Ensure only one at a time NCS Spacing Exempt drum is taken into the repackaging/splitting area, opened, and repackaged/split.

6.8.5 Ensure the container(s) used during repackaging or splitting are empty before allowing into the repackaging/splitting area.

6.8.6 Ensure the container(s) used for repackaging or splitting are QL-2 (AQ/NCS).

NOTE:

Confirmed empty waste containers are allowed in the repackaging/splitting area along with one NCS Spacing Exempt drum.

FLS/Field Engineer/Designee

6.8.7 Ensure no other fissile/potentially fissile material or fissile waste drums are allowed into the repackaging/splitting area during the repackaging/splitting operation.

CAUTION:

When opening waste containers with open-top lids, the locking ring shall be loosened slightly to break the drum seal with a flat tool before the ring is removed or repositioned.

WARNING:

When opening waste containers, operators should work in pairs.

Operators should position themselves to the side of the drum, away from the lid or bung that could separate under rapid pressure release.

When opening bung on waste containers, a nonsparking tool shall be used and bung unscrewed slowly, breaking the seal. If signs of venting gas or vapor are observed, contact FLS; otherwise, remove bung completely.

6.8.8 **If** repackaging NCS Spacing Exempt drum into QL-2 (AQ/NCS) Approved 32- and 58-gallon drum, **then**:

A. Apply the following labels to container to be used for repackaging:

1. Waste Container Label, CP-16387, CP-23073, or alternate label as directed by Waste and Materials.

2. NCS Spacing Exempt Label, CP-19934.

3. Radioactive Material Label, CP-18602, or UCN-18602.

4. Mark drum with “NCS Spacing Exempt Drum Repackaged for Shipping, NCS exempt materials have been added,” to indicate that absorbents and/or sand has been added to drum.

B. Initiate generator section of CP3-WM-1037-F01, or alternate form as directed by Waste and Materials, noting the original container number in the comments section.

Operator

C. Open NCS Spacing Exempt drum to be repackaged.

D. Add absorbent (radiologically clean non-fissile) to container, if needed.

E. Repackage the NCS Spacing Exempt waste with sand/absorbent to meet DOT fissile exemption(s) and applicable waste acceptance criteria requirements.

F. Fill drum leaving room for material expansion at top of drum.

G. If possible, place entire contents of NCS spacing exempt drum including liner into the repackaged drum.

H. If possible, place gloves, rags, scoop, and any other items contaminated by the drum's contents in repackaged drum.

> **CAUTION:**
>
> A minimum 2-foot edge-to-edge spacing is required for waste generated according to CP3-WM-1036.

I. Dispose of empty NCS Spacing Exempt waste container using one of the following methods:

1. Exempt empty container according to CP3-NS-1033, *Enrichment and Exempt Waste Verification*, and dispose of drum as contaminated metal, or

2. Place the empty container into the repackage drum, or

> **CAUTION:**
>
> A minimum 2-foot edge-to-edge spacing is required for waste generated according to CP3-WM-1036.

3. Dispose according to CP3-WM-1036.

J. **If** some material remains in original NCS Spacing Exempt drum or items used for repackaging require disposal, **and** there is **NOT** sufficient space in the repackage drum for disposal of this material, **then** dispose according to CP3-WM-1036.

K. Install drum lid and close according to manufacturer's specifications.

L. Record materials added and new container weight on CP3-WM-1037-F01, "Container Logsheet/Request for Disposal" according to CP3-WM-1037 or alternate form as directed by Waste and Materials.

<u>FLS/Field Engineer/Designee</u>

6.8.9 **If** splitting NCS Spacing Exempt drum into like QL-2 (AQ/NCS) Approved 2.1- or 5.5-gallon drum, **then**:

A. Select appropriate QL-2 (AQ/NCS) Approved drum for the waste according to CP3-WM-1036.

B. Apply the following labels to container to be used for splitting:

1. Waste Container Label, CP-16387, CP-23073, or alternate label as directed by Waste and Materials.

2. NCS Spacing Exempt Label, CP-19934.

3. Radioactive Material Label, CP-18602, or UCN-18602.

Operator

C. Add absorbent (radiologically clean non-fissile) to container if needed.

D. Transfer appropriate amount of material to split drum to meet DOT fissile exemption(s) and applicable waste acceptance criteria requirements.

E. Place gloves, rags, scoop, and any other items contaminated by the drums contents in split drum(s).

F. Install drum lid and close according to manufacturer's specifications.

G. Record the original container number, materials added, and new container weight on CP3-WM-1037-F01 according to CP3-WM-1037 or alternate form as directed by Waste and Materials.

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6.9 Processing Small Vacuum Pumps for Off-Shite Shipment

FLS/Field Engineer/Designee

NOTE:

Additional work control may be necessary for this activity.

Small vacuum pumps that are entirely filled with slugged oil and have no free volume meet Step **6.9.1**.

6.9.1 Ensure small vacuum pumps being prepared for shipment off-site are drained of essentially all free-flowing oil and filled with an oil-absorbent material before placing vacuum pump into shipping container.

6.9.2 Ensure DOT shipping container is identified as containing fissile material with the following posting:

Fissile Small Vacuum Pumps

- A minimum 2-foot edge-to-edge spacing is required between this container and all other fissile/potentially fissile material.
- There shall be no stacking of containers of fissile small vacuum pumps.
- Containers of fissile small vacuum pumps may be stored, in contact, in a one-layer planar array. (CP3-WM-2110)

6.9.3 Ensure DOT shipping container is loaded and stored under CAAS coverage.

6.9.4 Determine the oil reservoir volume of fissile small vacuum pumps using one of the following methods (in order of preference):

- Refer to the oil capacities in Appendix B.
- Refer to the oil capacities in manufacturer's specifications.

- Calculate the oil capacities by measuring the outside dimensions of the oil reservoir.
- Assume 1.089 gallons.

6.9.5 Ensure total number of fissile small vacuum pump(s) placed into a DOT shipping container for off-site shipment is controlled to ensure the combined oil reservoir volume is limited to **no more than** 7.2 gallons.

6.9.6 Ensure calculations to determine total volume of oil reservoirs contained within shipping container do **NOT** exceed the limit are completed before addition of pump to container.

NOTE:

Loose parts (for example, belts, belt covers) that become detached during storage from the small vacuum pumps may be added to the DOT shipping container.

6.9.7 Ensure calculations are documented (Refer to Appendix C, *Small Vacuum Pump Package*) and any manufacturer's specifications used are attached to CP3-WM-1037-F01 or alternate form as directed by Waste and Materials.

6.9.8 Ensure small vacuum pumps being prepared for shipment off-site are stored in a planar array inside DOT shipping container.

Operator

6.9.9 After DOT shipping container has been loaded with all of its intended pumps, add oil absorbent material to a depth of at least 6 inches.

NOTE:

Once a container is compliant with DOT shipping regulations, container is approved for transport outside of CAAS coverage (CAAS exemption). Once container has been loaded onto conveyance for off-site shipment, fissile identification may be removed and NCS controls exited.

Chg A

6.9.10 Do **NOT** move DOT shipping container containing fissile small vacuum pump(s) for off-site shipment until it is compliant with DOT shipping regulations (i.e., closed according to closing instructions and labeled).

NOTE:

This requirement helps ensure shipping container is **NOT** dropped. The intent is to maintain strapping until such time forklift has moved container to physical location of conveyance and is positioned to begin the lift to actually place container onto conveyance. At this time, it is acceptable to remove strapping. **If** it is determined the container needs to be loaded and placed in another position on the conveyance, the container will need to be re-strapped before moving. Moving container a few inches while it is on the conveyance does **NOT** require strapping. Chg A

6.9.11 Securely strap container to forklift when lifting/moving the loaded DOT shipping container, except when placing loaded container onto shipping conveyance.

6.9.12 Do **NOT** exit paved surfaces when lifting/moving a loaded DOT shipping container.

6.9.13 Utilize a spotter when lifting/moving a loaded DOT shipping container.

6.9.14 **If** a loaded DOT shipping container is dropped, **then** complete the following:

- Contact FLS and NCS.
- Inspect contents to ensure planar array storage configuration of the pumps is maintained.
- Contact WMTS to inspect container to ensure container has not been compromised and complies with the DOT requirements.
- Complete inspection before placing container into storage or onto conveyance. Chg A

6.10 Transition of NCS Controlled Waste Containers and Items to DOT Requirements

FLS/Field Engineer

NOTE:
The intent of the process outlined in this section is to load and ship the waste containers/items in compliance with DOT requirements. Packaged material and/or the loaded conveyance meeting DOT requirements may be staged in the appropriate area prior to off-site shipment. Chg A

6.10.1 Post, space, **and** control fissile item/waste drum according to approved NCS requirements and procedures.

6.10.2 Ensure a transition area is established by using the following: Chg A

NOTE:

The conveyance itself may be controlled as the transition area.

All activities associated with Step **6.10.2** must be coordinated with WM Transportation before the commencement of work.

A. Rope, flag, **and/or** post the transition area as necessary to demarcate the boundaries.

B. Control this transition such that only a single fissile item/container is physically within the area at a time, to be loaded into the shipping container. The shipping container may contain more than one fissile/item while it is being loaded.

C. Contact WM Transportation Specialist for loading and shipping support.

Operator

D. If necessary, stage empty DOT shipping container within transition area, remove lid and prepare for receiving fissile item(s)/container(s) to be loaded into container.

E. Relocate a single fissile item/container/waste drum to the transition area.

F. Remove all NCS related labelling and posting from the fissile item/container/waste drum. (At this point, the item/container is considered to have left the PGDP NCS program.)

G. Load fissile item/container into staged DOT shipping container. **If** more than one fissile item/container/waste drum is being packaged into the DOT container, then repeat steps **6.10.2 F** through **G** of this subsection until DOT container is completely loaded with applicable items.

H. Close DOT shipping container according to Manufacturer's Closure Instructions.

Waste and Materials Transportation Specialist

I. Mark, label, placard and prepare the DOT container for shipment.

Operator

J. **When** the DOT container is prepared for shipment by WMTS, physically load DOT container onto the conveyance.

K. Repeat Steps **6.10.2.C** through **6.10.2.J** until all containers are loaded onto the conveyance. Chg A

L. **When** the truck is completely loaded with the DOT containers associated with the shipment, secure load according to the DOT requirements.

FLS/Field Engineer/Designee

6.10.3 Contact WM Transportation to ship offsite.

6.10.4 **If** the process is interrupted or stopped at any point, up to the point where it is fully compliant with DOT regulations, **then** ensure the item/container meets the following: Chg A

- Is compliant with PGDP NCS requirements (e.g., posted and labelled according to applicable NCSA requirements).

- Spacing controls are maintained.
- Is returned to storage within CAAS coverage, relocating a single item at a time.

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6.11 Management of Fissile Waste-Pigtails

Chg A

FLS/Field Engineer/Designee

6.11.1 Ensure container is managed in an area with the following posting:

> **NUCLEAR CRITICALITY SAFETY REQUIREMENTS**
> **ACCUMULATION OF WASTE PIGTAILS IN A CONTAINER**
>
> - A minimum of 2 feet edge-to-edge spacing shall be maintained except for waste pigtails being added.
> - A maximum of 15 waste pigtails shall be accumulated in the container.
> - Only waste pigtails and waste pigtail attachments shall be placed in the container.
> - Fully plugged pigtails shall not be placed in this container.
> - The container lid shall be in place except for loading and inspection.
>
> **NCSA GEN-038**

6.11.2 Ensure container is stored under CAAS coverage.

6.11.3 Handle and move containers or material with the following NCSA GEN-038 requirements unless transitioning to DOT controls under Section **6.10** of this procedure:

- A minimum of 2 feet edge-to-edge spacing shall be maintained except for waste pigtails being added.
- A maximum of 15 waste pigtails shall be accumulated in the container.
- Only waste pigtails and waste pigtail attachments shall be placed in the container.
- Fully plugged pigtails shall not be placed in this container.
- The container lid shall be in place except for loading and inspection.

7.0 ACCEPTANCE CRITERIA

None

8.0 POST PERFORMANCE WORK ACTIVITIES

None

9.0 RECORDS

None

Appendix A – Acronyms/Definitions

ACRONYMS

90-DAA - 90-Day Hazardous Waste Accumulation Area

AQ – Augmented Quality

CAAS - Criticality Accident Alarm System

D&R – Deactivation and Remediation

DAW – Dry Active Waste

DOT – U.S. Department of Transportation

FCA - Fissile Control Area

FLS – Front Line Manager

GSA - generator staging areas

LLRW – low-level radioactive waste

NCS - Nuclear Criticality Safety

NCSA - Nuclear Criticality Safety Approvals

PCB – polychlorinated biphenyl

PF - potentially fissile

PGDP – Paducah Gaseous Diffusion Plant

PSS - plant shift superintendent

RFD – Request for Disposal

SAA - satellite accumulation area

STA – Safety Task Analysis

TFSA - Temporary Fissile Storage Areas

WM – Waste and Materials Group

WMTS – Waste and Materials Transportation Specialist

Appendix A – Acronyms/Definitions (Continued)

DEFINITIONS

90-Day Hazardous Waste Accumulation Area (90-DAA) — Temporary storage area used to collect hazardous/mixed waste for 90 days or less before transfer to a permitted hazardous waste storage facility or shipment to a permitted hazardous waste treatment/disposal facility.

Dry Active Waste (DAW) — Dry waste primarily made up of cloth, plastic, rubber, and paper products. These articles are considered incinerable and suitable for land burial.

Fissile Material — In strict terms, fissile or fissionable materials are radionuclides capable of sustaining a neutron-induced fission chain reaction (for example, uranium-233, uranium-235, plutonium-239, plutonium-241, americium-242m, curium-245). As applied to plant operations and for the purposes of the PGDP NCS Program, fissile material is:

1) Material enriched to greater than or equal to 1.0 wt. % ^{235}U isotope and in quantities greater than or equal to 15 grams of ^{235}U and/or,

2) Materials containing other fissionable radionuclides capable of sustaining a chain reaction in quantities greater than or equal to 1.6% of their maximum subcritical mass.

Generator Staging Area (GSA) — An area used for the accumulation and temporary storage of all waste (excluding hazardous and fissile/PF wastes) produced in a building or facility.

Hazardous Waste — Any solid, liquid, or contained gaseous material (for example, compressed gas cylinders) which is characteristically hazardous or an EPA-listed hazardous waste as defined by 40 CFR 261, and/or any waste which has come in contact with a listed hazardous waste, including spill cleanup residue.

Low-Level Radioactive Waste (LLRW) — Waste not classified as high-level radioactive waste, transuranic waste, spent nuclear fuel, or by-product material. Any waste with surface contamination exceeding the limits specified in CP1-RP-0004, *Unrestricted Radiological Release of Excess Property, Equipment, and Materials*, or which is known to be radioactive or suspected to have added volumetric radioactivity.

Metal Box — Commonly referred to as B-25 or ST-90 container and sized according to application. Made of reinforced steel and used to transport radioactive contaminated metal, wood, DAW, and other wastestreams. Lid is usually secured with nut/screw attachments. This also includes IP-1 DOT-approved shipping containers.

Mixed Waste — Any LLRW or transuranic waste also classified as a hazardous waste. Mixed waste must be managed as a hazardous waste as well as radioactive waste.

Polychlorinated Biphenyl (PCB) Waste — Those PCBs and PCB items that are subject to the disposal requirements of the PCB regulations (40 CFR 761). These are any liquids or solids designated for disposal which contain PCBs in concentration of 50 ppm or greater or have been in contact with PCBs from sources of 50 ppm or greater in concentration.

Appendix A – Acronyms/Definitions (Continued)

Potentially Fissile (PF) Material — A term given to materials which have the potential to contain fissile material as defined above. Until the actual fissile material content or enrichment is known, the material is required to be treated as if it were fissile material and must be handled in compliance with an approved NCSA. Reference CP3-NS-1033, *Enrichment and Exempt Waste Verification*, for examples of waste streams which are considered PF.

Ratchet Strap — Portable, hand-held strap used for securing pallets or containers to the forklift/trucks.

Satellite Accumulation Area (SAA) — A designated area for the temporary accumulation of hazardous waste which is at or near the point of generation and under the control of the operator of the process generating the waste. The SAA may be a designated collection point or an entire shop.

Spotter — A designated person that is utilized to direct industrial motorized equipment operator under or near overhead installations or other hazardous travel areas to see that a required clearance is maintained.

Waste Container — The drum, box, or other portable device in which a material is stored, transported, treated, disposed of, or otherwise handled.

Waste Pigtail — Either 3/8-in. diameter or 7/8-in diameter copper tubing of various lengths used to connect UF6 cylinders to manifolds for feed, transfer, or sampling operations and have been declared waste. Chg A

Winch Strap — Strap attached to transport vehicle used for securing pallets or containers to the vehicle.

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Appendix B – C-331 Instrument Maintenance

Pump Type and Manufacturers Oil Capacities			
Pump Type	**Oil Capacity (gallons)**	**Pump Type**	**Oil Capacity (gallons)**
Balzers TPH/TPU 060	0.7	Welch Directorr 8905	0.12
Edwards Model E1M5	0.1585	Welch Directorr 8910	0.12
Edwards Model E1M8	0.1585	Welch Directorr 8912	0.225
Edwards Model E2M1	0.074	Welch Directorr 8920	0.35
Edwards Model E2M12	0.2034	Welch Directorr 8920S	0.35
Edwards Model E2M2	0.1453	Welch Directorr 8925	0.3125
Edwards Model E2M5	0.1453	Welch Duo-Seal 1373	0.625
Edwards Model E2M8	0.1453	Welch Duo-Seal 1374	0.3125
Precision Model D-25	0.248	Welch Duo-Seal 1375	0.25
Welch Directorr 8803	0.075	Welch Duo-Seal 1376	0.625
Welch Directorr 8804	0.0325	Welch Duo-Seal 1376N	0.625
Welch Directorr 8805	0.3125	Welch Duo-Seal 1380	0.925
Welch Directorr 8806	0.595	Welch Duo-Seal 1392	0.0275
Welch Directorr 8810	0.25	Welch Duo-Seal 1396	0.625
Welch Directorr 8811	0.5275	Welch Duo-Seal 1397	0.3125
Welch Directorr 8815	0.3125	Welch Duo-Seal 1398	0.625
Welch Directorr 8816	0.435	Welch Duo-Seal 1399	0.125
Welch Directorr 8821	0.5275	Welch Duo-Seal 1399N	0.125
Welch Directorr 8830	0.3125	Welch Duo-Seal 1400	0.155
Welch Directorr 8831	0.3825	Welch Duo-Seal 1400N	0.155
Welch Directorr 8834	0.25	Welch Duo-Seal 1402	0.5625
Welch Directorr 8851	0.225	Welch Duo-Seal 1402N	0.5625
Welch Directorr 8890	0.12	Welch Duo-Seal 1405	0.5625

Appendix C - Small Vacuum Pump Package

SVP ID	Model	Model Number	Oil Capacity (gallons)	Total Capacity (gallons)

EXAMPLE