

S

ENGINEERING CHANGE NOTICE

H

Page 1 of 5

1. ECN 710037


Proj. ECN

2. ECN Category (mark one) Supplemental <input type="checkbox"/> Direct Revision <input checked="" type="checkbox"/> Change ECN <input type="checkbox"/> Temporary <input type="checkbox"/> Standby <input type="checkbox"/> Supersedure <input type="checkbox"/> Cancel/Void <input type="checkbox"/>	3. Originator's Name, Organization, MSIN, and Telephone No. E. P. BONADIE / VAULT OPS / T5-55 373-2545		4. USQ Required? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5. Date 12/6/99
	6. Project Title/No./Work Order No. NUCLEAR MATERIALS STABILIZATION		7. Bldg./Sys./Fac. No. 234-5Z/74/2Z	8. Approval Designator SQ
	9. Document Numbers Changed by this ECN (includes sheet no. and rev.) HNF-5460, rev. 0		10. Related ECN No(s). EDT #702565	11. Related PO No. N/A
	12a. Modification Work <input type="checkbox"/> Yes (fill out Blk. 12b) <input checked="" type="checkbox"/> No (NA Blks. 12b, 12c, 12d)		12b. Work Package No. N/A	12c. Modification Work Completed N/A

13a. Description of Change 1. Changed tin plate from 0.5#/base box to 0.2#/base box. 2. Added calculated volumes on Table #1.	13b. Design Baseline Document? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
---	--

14a. Justification (mark one) Criteria Change <input checked="" type="checkbox"/> Design Improvement <input type="checkbox"/> Environmental <input type="checkbox"/> Facility Deactivation <input type="checkbox"/> As-Found <input type="checkbox"/> Facilitate Const. <input type="checkbox"/> Const. Error/Omission <input type="checkbox"/> Design Error/Omission <input type="checkbox"/>	14b. Justification Details 0.2#/base box has been purchased previously and is the tin plate weight currently on 7-inch outer food pack cans. 0.2#/base box provides substantial corrosion resistance.
--	--

15. Distribution (include name, MSIN, and no. of copies)	
R. R. ALLEN T5-11 E. P. BONADIE T5-55 D. A. CONNERS T5-11 T. M. DICKEN T5-15 R. E. GREGORY T5-08 D. R. GROTH T4-15	B. D. SKEELS T5-09 R. W. SZEMPRUCH T5-55 R. G. WILBANKS T5-08

RELEASE STAMP	
DEC 07 1999 DATE: STA: 5	 HANFORD RELEASE ID:

ENGINEERING CHANGE NOTICE

Page 2 of 5

1. ECN (use no. from pg. 1)

710037

16. Design Verification Required

Yes
 No

17. Cost Impact

ENGINEERING

Additional \$ N/A
Savings \$ _____

CONSTRUCTION

Additional \$ N/A
Savings \$ _____

18. Schedule Impact (days)

Improvement _____
Delay _____

19. Change Impact Review: Indicate the related documents (other than the engineering documents identified on Side 1) that will be affected by the change described in Block 13. Enter the affected document number in Block 20.

<p>SDD/DD <input type="checkbox"/></p> <p>Functional Design Criteria <input type="checkbox"/></p> <p>Operating Specification <input type="checkbox"/></p> <p>Criticality Specification <input type="checkbox"/></p> <p>Conceptual Design Report <input type="checkbox"/></p> <p>Equipment Spec. <input type="checkbox"/></p> <p>Const. Spec. <input type="checkbox"/></p> <p>Procurement Spec. <input type="checkbox"/></p> <p>Vendor Information <input type="checkbox"/></p> <p>OM Manual <input type="checkbox"/></p> <p>FSAR/SAR <input type="checkbox"/></p> <p>Safety Equipment List <input type="checkbox"/></p> <p>Radiation Work Permit <input type="checkbox"/></p> <p>Environmental Impact Statement <input type="checkbox"/></p> <p>Environmental Report <input type="checkbox"/></p> <p>Environmental Permit <input type="checkbox"/></p>	<p>Seismic/Stress Analysis <input type="checkbox"/></p> <p>Stress/Design Report <input type="checkbox"/></p> <p>Interface Control Drawing <input type="checkbox"/></p> <p>Calibration Procedure <input type="checkbox"/></p> <p>Installation Procedure <input type="checkbox"/></p> <p>Maintenance Procedure <input type="checkbox"/></p> <p>Engineering Procedure <input type="checkbox"/></p> <p>Operating Instruction <input type="checkbox"/></p> <p>Operating Procedure <input type="checkbox"/></p> <p>Operational Safety Requirement <input type="checkbox"/></p> <p>IEFD Drawing <input type="checkbox"/></p> <p>Cell Arrangement Drawing <input type="checkbox"/></p> <p>Essential Material Specification <input type="checkbox"/></p> <p>Fac. Proc. Samp. Schedule <input type="checkbox"/></p> <p>Inspection Plan <input type="checkbox"/></p> <p>Inventory Adjustment Request <input type="checkbox"/></p>	<p>Tank Calibration Manual <input type="checkbox"/></p> <p>Health Physics Procedure <input type="checkbox"/></p> <p>Spares Multiple Unit Listing <input type="checkbox"/></p> <p>Test Procedures/Specification <input type="checkbox"/></p> <p>Component Index <input type="checkbox"/></p> <p>ASME Coded Item <input type="checkbox"/></p> <p>Human Factor Consideration <input type="checkbox"/></p> <p>Computer Software <input type="checkbox"/></p> <p>Electric Circuit Schedule <input type="checkbox"/></p> <p>ICRS Procedure <input type="checkbox"/></p> <p>Process Control Manual/Plan <input type="checkbox"/></p> <p>Process Flow Chart <input type="checkbox"/></p> <p>Purchase Requisition <input type="checkbox"/></p> <p>Tickler File <input type="checkbox"/></p> <p style="text-align: center;"><u>NONE</u></p>
--	--	---

20. Other Affected Documents: (NOTE: Documents listed below will not be revised by this ECN.) Signatures below indicate that the signing organization has been notified of other affected documents listed below.

Document Number/Revision	Document Number/Revision	Document Number/Revision
<u>NONE</u>	_____	_____
_____	_____	_____
_____	_____	_____

21. Approvals

	Signature	Date
Design Authority	<u>[Signature]</u>	<u>12/6/99</u>
Cog. Eng.	<u>[Signature]</u>	<u>12/6/99</u>
Cog. Mgr.	<u>[Signature]</u>	<u>12/6/99</u>
QA	<u>[Signature]</u>	<u>12-06-99</u>
Safety	<u>[Signature]</u>	<u>12/6/99</u>
Environ.	_____	_____
Other	_____	_____

	Signature	Date
Design Agent	<u>[Signature]</u>	<u>12/6/99</u>
PE	_____	_____
QA	_____	_____
Safety	_____	_____
Design	_____	_____
Environ.	_____	_____
Other	_____	_____

DEPARTMENT OF ENERGY
Signature or a Control Number that tracks the Approval Signature

ADDITIONAL

UNREVIEWED SAFETY QUESTION (USQ)
SCREENING AND EVALUATION

ECN-710037

Page 3 of 5

Identification Number: HNF-5460, Rev 1

USQ SCREENING

Page 1 of 3

Title: PFP COMMERCIAL GRADE FOOD PACK CANS FOR PLUTONIUM HANDLING AND STORAGE -
CRITICAL CHARACTERISTIC/ELECTRIC CANNING MACHINES FOR Pu CANNING

INSTRUCTIONS: Respond to each question and provide justification for each response. A restatement of the question does not constitute a satisfactory justification or basis. An adequate justification provides sufficient explanation such that an independent reviewer could reach the same conclusion based on the information provided [DOE 5480.21, 10.e.1].

DESCRIPTION: This screening addresses the critical characteristics document for food industry type cans. The cans currently used and that have been tested have a listed tin plate of 0.20 lb./base box. A minimum of 0.5 lb./base box was specified in HNF-5460, Rev. 0. The specified 0.5 lb./base box, while desirable for greater corrosion resistance, is unnecessarily restrictive for our purposes

INTRODUCTION: This screening addresses the correction of the published description, location and set-up specifications for two canners used in the Stabilization Process.

AFFECTED SSC:

This procedural change affects Systems 74 and 73T. These food pack cans are typically loaded with SNM by Thermal Stabilization and stored by Vault Operations.

AUTHORIZATION BASIS:

The authorization basis reviewed included those listed in FSP-PFP-5-8, section 2.23, Appendix A. These are:

HNF-SD-CP-SAR-021 Revision 1
WHC-SD-CP-OSR-010, Revision 0-K

CONCLUSION:

The changes in these specifications have no detrimental effect on the descriptions and parameters related to handling plutonium solids in the authorization basis. Because no parameters or sequences exceed the limits described in the authorization bases, no accident or abnormal conditions are affected. The specifications prescribed in this critical characteristics document do not represent an unreviewed safety question.

REFERENCES:

1. Federal Specification PPP-C-96E, Cans, Metal, 28 Gage and Lighter, 31-Dec-1992, Defense Supply Center.
2. ARH-CD-635, *Evaluation of Food Pack Cans as Plutonium Storage Containers*, J.E. Hammond, March, 1976.
3. HNF-SD-TP-TRP-002, Rev. 0, *Test Report for Hanford Convenience Can*, S. R. Crow, January, 1997.

UNREVIEWED SAFETY QUESTION (USQ)
SCREENING AND EVALUATION

ECN-710037
Page 4 of 5

Identification Number: HNF-5460, Rev 1

USQ SCREENING

Page 2 of 3

Title: PFP COMMERCIAL GRADE FOOD PACK CANS FOR PLUTONIUM HANDLING AND STORAGE -
CRITICAL CHARACTERISTIC/ELECTRIC CANNING MACHINES FOR Pu CANNING

QUESTIONS

1. Does the proposed change or occurrence represent a change to the facility or procedures as described in the Authorization Basis?

N/A No Yes/Maybe

BASIS: This change does not represent a change to the facility, as described in HNF-SD-CP-SAR-021, Rev. 1, Section 5.2, "Process and Support Building"; specifically Sections 5.2.1, "234-5Z Building" and 5.2.8, "2736-Z Support/Storage Complex". This change does not represent a change to procedures described in Section 6.2, "Plutonium Material Shipping/Receiving"; Section 6.3, "Plutonium Material Storage" or Section 6.4, Remote Mechanical A and Remote Mechanical C Line Processes".

2. Does the proposed change or occurrence represent conditions that have not been analyzed in the Authorization Basis?

N/A No Yes/Maybe

BASIS: These changes do not represent conditions that need new analysis in HNF-SD-CP-SAR-021. No new analyses are required because of this change. Results of the performance tests and full accident analyses of the double sealed food industry container can be found in Drop Tests and Leak Tests (References 2&3) performed at the PFP over the past two decades. Spills from radioisotope-bearing powder containers are addressed in chapter 9 of HNF-SD-CP-SAR-021, Rev. 1, specifically chapter 9.1.3, "Radioisotope-Bearing Powder Spills" and 9.1.4, "Radioisotope-Bearing Pressurized Powder Containers". No changes are proposed that impact analyses performed in the safety basis or require new analyses.

3. Does the proposed change represent a test or experiment NOT described in the Authorization Basis that may affect the safe operation of the facility?

N/A No Yes/Maybe

BASIS: This is neither a test nor an experiment.

4. Does the proposed change or occurrence represent a change to the Technical Safety Requirements or a reduction in the margin of safety defined in the Technical Safety Requirements?

N/A No Yes/Maybe

BASIS: No Technical Safety Requirements (TSR) are affected by this procedure, nor are any new TSRs needed. There are no safety limits defined in the PFP Operational Safety Requirements (OSRs/TSRs). Therefore, no defined margin of safety exists and changes to this procedure have no effect on the non-existent.

UNREVIEWED SAFETY QUESTION (USQ) SCREENING AND EVALUATION

Identification Number: HNF-5460, Rev 1 USQ SCREENING Page 3 of 3

Title: PFP COMMERCIAL GRADE FOOD PACK CANS FOR PLUTONIUM HANDLING AND STORAGE - CRITICAL CHARACTERISTIC ELECTRIC CANNING MACHINES FOR Pu CANNING

USQE #1 Errol P. Bonadie

USQE #2 R. W. Szempruch

(Print Name)

(Print Name)

Signature of Errol P. Bonadie

Date: 12/6/99

Signature of R. W. Szempruch

Date: 12/6/99

If there is a YES/MAYBE response to questions 1, 2, 3, or 4, then a USQ Evaluation must be completed.

The following guidance should be considered when completing this screening. This guidance should not be considered all-inclusive; additional factors may need to be considered depending on the nature of the proposed change.

Does the proposed change:

- 1) Modify, add, or delete a safety class function of a structure, system or component stated in the authorization basis?
2) authorization basis?
3) Alter the design of a structure, system or component as described in the authorization basis?
4) component described in the authorization basis?
5) Modify, add, delete or conflict with any of the design bases stated in the authorization basis?
6) Conflict with the principle or general design criteria stated in the authorization basis?
7) Modify, add, or delete any plant design features described in the authorization basis?
8) Modify, add, or delete a flow diagram or facility drawing provided in the authorization basis?
Create the potential for new system or component interactions (e.g., seismic, electrical breaker coordination)?

PFP COMMERCIAL GRADE FOOD PACK CANS FOR PLUTONIUM HANDLING AND STORAGE CRITICAL CHARACTERISTICS

E. P. Bonadle & R. W. Szempruch
Flour Daniel Hanford Company, Richland, WA 99352
U.S. Department of Energy Contract DE-AC06-96RL13200

EDT/ECN: 710037 UC:
Org Code: 15V00 Charge Code: 110743
B&R Code: EW04J1050 Total Pages: 8/10
apw 12/7/99

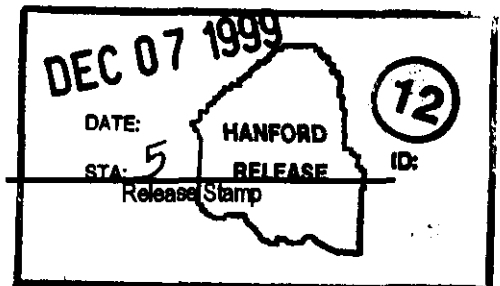
Key Words: PFP, Plate weight, Tin Plate, Commercial Steel, Critical Characteristics

Abstract: This document defines the critical characteristics of Commercial Grade Items procured for use in PFP's Vault Operations.

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: Document Control Services, P.O. Box 950, Mailstop H6-08, Richland WA 99352, Phone (509) 372-2420; Fax (509) 376-4989.


Release Approval _____ Date 12/7/99



Approved for Public Release

RECORD OF REVISION

(1) Document Number
HNF-5460

Page 1

(2) Title
PFP COMMERCIAL GRADE FOOD PACK CANS FOR PLUTONIUM HANDLING AND STORAGE CRITICAL CHARACTERISTICS

Change Control Record

(3) Revision	(4) Description of Change - Replace, Add, and Delete Pages	Authorized for Release		
		(5) Cog. Engr.	(6) Cog. Mgr.	Date
0	(7) Initial Release on EDT-702565, dated 11/30/99	<i>[Signature]</i>		
RS 1	Revised per ECN-710037	<i>[Signature]</i>	<i>[Signature]</i>	12/1/99

1.0 PURPOSE

This document specifies the critical characteristics for Commercial Grade Items (CGI) procured for PFP's Vault Operations system as required by HNF-PRO-268 and HNF-PRO-1819. These are the minimum specifications that the equipment must meet in order to perform its safety function.

2.0 BACKGROUND

PFP's Product Handling and Storage System includes primarily storage containers of the type used in the food industry. These include slip-lid, open top for crimp sealing and various other containers. There are numerous container configurations utilized at the PFP that involve the nesting of several containers, one inside another. Each container in a particular configuration provides one or more safety related functions but typically no two cans provide the same functions. For example, some cans are required to be hermetically sealed while others are not.

Decades of operational experience in storing plutonium at the PFP (Szempruch 1984, Wittman and Bonadie 1996) have demonstrated the acceptability of the use of food industry tin plated steel cans for plutonium storage. Operational requirements for storage of plutonium are controlled by OSD-Z-184-00013. Containers used for plutonium handling and storage are designated Safety Significant in HNF-SD-CP-SAR-021. This Critical Characteristics Document provides a means to document detailed characteristics of food pack containers used at the PFP which previously were specified in individual purchase orders and specifications. The characteristics contained herein are intended to capture documented and undocumented operational experiences, container pressure and drop test results, physical constraints (e.g. storage position size), container monitoring methods, and safety related (e.g. Criticality Prevention Limits on size) requirements of cans used at the PFP. Reference D addresses can pressurization, while references F and G (Section 6.0), describe results of container drop tests. Federal Specification PPP-C-96E, Cans, Metal, 28 Gage and Lighter is used by agencies of the U.S. Government for the procurement of such cans. Typically, the requirements of PPP-C-96E are easily met by commercial suppliers of tin cans. The Federal Specification is a good source of information to gain an understanding of some of the terminology used within this document.

The procurement requirements associated with containers necessitates procurement of some containers as Commercial Grade Items (CGI) in accordance with HNF-PRO-268, "Control of Purchased Items and Services."

3.0 SCOPE

The following list of critical characteristics details specifications for the container configurations currently specified in OSD-Z-184-00013 used for plutonium handling and storage. Material (i.e., metal and electrolytic tin plate thickness) used in the manufacture of the cans should be documented in the vendor catalog or in a letter or Certificate of Conformance. The other listed characteristics can be measured at FDH receiving.

4.0 CRITICAL CHARACTERISTIC LISTING

1. 307 X 510 (PUREX Slip-Lid Cans)

Critical Characteristics

- Diameter: 3-7/16 (-1/16) inches
- Height: 5-5/8 (+1/32) inches
- "Fold-Lock" (double seam) or welded side body seam
- Double seam sealed bottom w/gasket
- 70 lb. Plate (minimum): >0.0077 (+0.072/-0.0005) inches
- No. 20 tinned commercial steel or heavier (0.000012 inch on each surface)
- Lid: Slip-top

2. 310 X 510 Cans (PFP Slip-Lid)

Critical Characteristics

- Diameter: 3-5/8 (-3/16)
- Height: 5-5/8 (+1/32) inches
- "Fold-Lock" (double seam) or welded side seam
- Double seam sealed bottom w/gasket
- 70 lb. Plate (minimum): >0.0077 (+0.072/-0.0005) inches
- No. 20 tinned commercial steel or heavier (0.000012 inch on each surface)
- Lid: Slip-top

3. 401 X 604 (PUREX Secondary Open Top Can)

Critical Characteristics

- Diameter: 4-1/16 ± 1/32 inches
- Height: 6-1/4 (+ 1/32 inches)
- Double seam sealed bottom & lid with gasket
- Welded side seam
- 85 lb. Plate (minimum): 0.0094 (+0.064/-0.0015) inches
- No. 20 tinned commercial steel or heavier (0.000012 inch on each surface)

4. 401 X 608 (PFP Secondary Open Top Can)

Critical Characteristics

- Diameter: $4\text{-}1/16 \pm 1/32$ inches
- Height: $6\text{-}1/2 (+1/32)$ inches
- Double seam sealed bottom & lid with gasket
- Welded side seam
- 85 lb. Plate (minimum): $0.0094 (+0.064/-0.0015)$ inches
- No. 20 tinned commercial steel or heavier (0.000012 inch on each surface)

5. 404 X 700 (7-inch Can)

Critical Characteristics

- Diameter: $4\text{-}1/4 \pm 1/32$ inches
- Height: $7 (+1/32)$ inches
- Beaded or paneled wall
- Double seam sealed bottom & beaded lid with gasket
- 85 lb. Plate weight (minimum) $0.0094 (+0.064/-0.0015)$
- No. 20 tinned commercial steel or heavier w/lacquered inside surface

6. 306 X 800 (Innermost Hanford Convenience Can)

Critical Characteristics

- No organic material allowed
- Diameter: $3\text{-}3/8 \pm 1/32$ inches
- Height: $8\text{-}inch (+ 1/32)$ inches
- Double seam sealed bottom without gasket
- Welded side seam (no lining stripe)
- 85 lb. Plate (minimum): $0.0094 (+0.064/-0.0015)$ inches
- No. 20 tinned commercial steel or heavier (0.000012 inch on each surface)
- Lid: $0.0094 (+0.064/-0.0015)$ inches without gasket

7. 310 X 804 (Second Inner Hanford Convenience Can)

Critical Characteristics

- Diameter: $3\text{-}5/8 \pm 1/32$ inches
- Height: $8\text{-}1/4 (+1/32)$ inches
- Double seam sealed bottom & lid with gasket
- Welded side seam
- 85 lb. Plate (minimum): $0.0094 (+0.064/-0.0015)$ inches
- No. 20 tinned commercial steel or heavier (0.000012 inch on each surface)

8. 401 X 900 (Third Hanford Convenience Can)

Critical Characteristics

- Diameter: $4\text{-}1/16 \pm 1/32$ inches
- Height: 9-inch (+1/32 inches)
- Double seam sealed bottom & lid with gasket
- Welded side seam
- 85 lb. Plate (minimum): 0.0094 (+0.064/-0.0015) inches
- No. 20 tinned commercial steel or heavier (0.000012 inch on each surface)

9. 404 X 908 (Outermost Hanford Convenience Can)

Critical Characteristics

- Diameter: $4\text{-}1/4 \pm 1/32$ inches
- Height: 9-1/2 (+1/32 inches)
- Double seam sealed bottom & lid with gasket
- Welded side seam
- 85 lb. Plate (minimum): 0.0094 (+0.064/-0.0015) inches
- No. 20 tinned commercial steel or heavier (inside may be lacquered)

5.0 APPENDIX

Container configurations utilized at the PFM involve the nesting of several containers, one inside another. Each container in a particular configuration provides one or more safety related functions, but typically no two cans provide the same functions. For example, some cans are required to be hermetically sealed while others are not. The configurations described below are approved for storing oxides produced from thermal stabilization process. Table 1 describes the packaging configuration using nominal dimensions of each can. Table 2 describes the packaging configuration using the Hanford Convenience Can Packaging dimensions.

Table 1. Thermal Stabilization Product Container Configuration

Configuration Element	"Names" of Configuration Element	Description	Nominal Dimensions (inches)	Nominal Volume (liters)
Can holding oxide	PUREX or PFM Slip Lid Can (307 X 510) or (310 X 510)	Tin plated can with slip lid top	3-7/16 D x 5-5/8 H or 5-5/8 D x 5-5/8H	0.8 or 0.9
Plastic Bag	Bagout Bag	Heat sealed plastic bag	.006 polyethylene or .012 PVC	N/A
Secondary Can	PUREX or PFM Secondary Can (401 X 604) or (401 X 608)	Tin plated can with crimp sealed ends	4-1/16 D x 6-1/4 H or 4-1/16 D x 6-1/2 H	1.27 or 1.33
Outer Can	7 inch or Juice Can (404 X 700)	Tin plated can with crimp sealed ends	4-1/4 D x 7 H	1.5

Table 2. Hanford Convenience Container (HCC) Package Configuration

Configuration Element	"Names" of Configuration Element	Description	Nominal Dimensions (inches)	Nominal Volume (liters)
Material (oxide) Can	Organic-free Open Top HCC (306 X 800)	Tin plated can with non-gasketed lids top & bottom	3-3/8 D x 8 H	1.05
Can to hold Material Can	HCC Secondary Can (310 X 804)	Tin plated can with elastomeric gaskets on lids	3-5/8 D x 8-1/4 H	1.35
Plastic Bag	Bagout Bag	Heat sealed plastic bag	.006 polyethylene	N/A
First Contamination-free Can	HCC Tertiary Can (401 X 900)	Tin plated can with crimp sealed ends	4-1/16 D x 9 H	1.86
Outermost Can	HCC Outer Can (404 X 908)	Tin plated can with crimp sealed ends	4-1/4 D x 9-1/2 H	2.15

5.1 CRITICAL CHARACTERISTIC BASES

5.1.1 Slip-Lid Cans

Can Dimensions: Various and as designated in section 4.0, above.

Basis: required for nesting into next larger can as shown on Table 1.

Can Wall Thickness: >70# plate (>.0077 inches).

Basis: pressure and drop test of "bare" cans. (ref. G).

Can Lid Thickness: >70# plate (>.0077 inches).

Basis: pressure and drop test of "bare" cans. (ref. G).

Tin Plating Thickness: >0.20# (>.000012 inch) both sides.

Basis: PFP experience in storage, observations in (Wittman and Bonadie 1996). Corrosion resistance.

Inner surface can lining: None.

Note: lining stripe over welded seal is not permitted for cans that will be placed into DOE-STD-3013-96 compliant containers.

Basis: Storage experience at PFP (Past versions of OSD-Z-184-00013 specified cans intended for storage of wet or damp foods)

Can Closure: Slip-top lid to provide friction surface seal. Can bottom (closed end) either double seam sealed or drawn or spin formed.

Basis: Hermetic sealing not required since this can is nested in other hermetically sealed containers.

Can Side Seams: Welded (preferred) or crimped (folded) seam sealed.

Basis: Certain storage/shipping configurations can result in can temperatures that approach melting point of temperature solders.

Can Wall and Lid Design: Straight wall or beaded design as specified in purchase specification.

Basis: Beaded can walls and lids are desirable from a mechanical strength standpoint.

5.1.2 Open Top Cans

Can Type: Type I, Class 3 Packer's Can as defined in PPP-C-96E. Can shall be round, open-top style, with compound-lined, double seamed ends. The material can in the HCC packaging shall not contain any organic compound lining or gaskets.

Can Dimensions: Various and as designated in section 4.0, above.

Basis: required for nesting into next larger can as shown on Table 1 and Table 2.

Can Material: Electrolytic tinplate. **Basis:** Corrosion resistance.

Can Wall Thickness: >85# plate (>.0094 inches).

Basis: pressure and drop test of "bare" cans and DOT-6M contents testing

Can Lid Thickness: >85# plate (>.0094 inches).

Basis: pressure and drop test of "bare" cans (refs. D, F& G). Compatibility with pressure monitoring via VSIS and visual inspections. Provides adequate deflection for monitoring while providing adequate margins before failure due to overpressurization.

Tin Plating Thickness: >0.20 lbs./base box (>.000012 inch) both sides. Outermost can may contain lacquer on its inside surface.

Basis: PFP experience in storage, observations in (Wittman and Bonadie 1996). Corrosion resistance.

Inner surface can lining: None, except lining stripe over welded seal is permitted. However, the material can in the HCC packaging shall not contain any organic compound lining.

Basis: Storage experience at PFP (Past versions of OSD-Z-184-00013 specified cans intended for storage of wet or damp foods). Radiolytic reactions are to be avoided in the HCC.

Can Closure: Hermetic seal by use of industry standard double crimp seal method. Elastomeric gasket on lids and closed end seams (unless closed end has no seam such as drawn or spin formed cans or material can in the HCC packaging).

Basis: Hermetic sealing needed to exclude air/moisture to preserve stabilized oxide product integrity. Provides contamination barrier.

Can Closure Gaskets: Gaskets shall not be broken, cut, torn, chipped or cracked. Gaskets shall not be improperly applied. The material can in the HCC packaging shall not contain organic gaskets.

Basis: Hermetic sealing needed to exclude air/moisture to preserve stabilized oxide product integrity. Provides contamination barrier.

Can Side Seams: Welded in a continuous and uniform way throughout the length of the seam.

Basis: Welding assures hermetic seal along seal. Welded seams provide of better lid seam seals at the side seam than crimped seam joints, enhancing ability to obtain hermetic seal. Welding is specified because certain storage/shipping configurations can result in can temperatures that approach melting points of solders.

Can Wall and Lid Design: Straight or beaded wall.

Basis: Nested can arrangement usually requires straight wall cans because of close clearances between cans.

Workmanship: Cans shall be free of lamination, blisters, slivers, rolled-in scales, tears, cracks, cuts, splits, fractures, buckling, dents, wrinkles, or die marks. Plating shall be free of porosity and pits. **Basis:** PFP experience in storage, observations in (Wittman and Bonadie 1996).

6.0 REFERENCES

- A. HNF-PRO-268, "Control of Purchased Items and Services," Rev. 3.
- B. HNF-PRO-1819, "PHMC Engineering Requirements," Rev. 3.
- C. Federal Specification PPP-C-96E, Cans, Metal, 28 Gage and Lighter, 31-Dec-1992, Defense Supply Center.
- D. RHO-HS-SA-59P, *The Effectiveness of Corrective Actions Taken to Preclude Events Involving Tin Cans and Plutonium*, R. W. Szempruch, May 1984.
- E. WHC-SD-CD-TRP-068, Rev 0, *Plutonium Inventory Characterization Report 2*, G. R. Wittman and E. P. Bonadie, September, 1996.
- F. HNF-SD-TP-TRP-002, Rev. 0, *Test Report for Hanford Convenience Can*, S. R. Crow, January, 1997.
- G. ARH-CD-635, *Evaluation of Food Pack Cans as Plutonium Storage Containers*, J.E. Hammond, March, 1976.