



# CHEM-NUCLEAR SYSTEMS, INC.

220 Stoneridge Drive • Columbia, South Carolina 29210

71-9094

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August 26, 1985  
RA-0408-5

RETURN TO 396-SS

PRN

Mr. Charles E. MacDonald  
Chief, Transportation Certification Branch  
Division of Fuel Cycle and Material Safety  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Dear Mr. MacDonald:

REFERENCE: Docket No. 71-9094

We respectfully submit our response (Attachment 1) to the questions raised in your June 24, 1985 letter concerning Model CNS 14-195-H shipping package.

Our response is in the form of revised pages to the Safety Analysis Report (Attachment 2). Pursuant to the suggestion in Regulatory Guide 7.9, we have identified revisions by vertical lines in the right margin. We ask that you insert the revised text into the original document sent to you on May 1, 1985.

Please do not hesitate to contact us with any questions regarding this matter.

Very truly yours,

CHEM-NUCLEAR SYSTEMS, INC.

Leslie K. Poppe  
Director, Licensing

LKP:als

Enclosures: Attachment 1 - Response to NRC letter of 6-24-85  
Attachment 2 - Revised SAR for Model CNS 14-195-H



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FREE EXEMPT

add'l info to 5/1/85  
Per apt

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## ATTACHMENT 1

Responses to NRC Request For Information dated June 24, 1985, Docket No. 71-9094.

### Operating Procedures

- |               |      |   |
|---------------|------|---|
| NRC Comment   | C.1. | The operational steps requiring a cask survey should be expanded to specify a radiation survey including a determination of surface contamination to assure compliance with 10 CFR 71.47 and 71.87.   |
| CNSI Response | A.1  | Section 7.1 Step 16 and Section 7.2 Step 11 have been added to require radiation surveys and removable contamination surveys.   |
| NRC Comment   | C.2  | Step 8 under 7.2 Loading Procedures for Liners requires the use of alignment marks to correctly position the secondary lid onto the primary lid. The packaging drawing should be revised to show the required alignment marks. It is noted that Section 8.0, Tests and Maintenance, also discusses lid alignment marks. |
| CNSI Response | A.2  | Revision AG has been issued to CNSI Drawing 1-189-101 which shows the alignment marks. The reference to this drawing throughout the Safety Analysis Report has been changed to identify the current drawing revision.   |
| NRC Comment   | C.3. | Procedures for receiving and unloading the package should include a statement regarding compliance with the requirements of 10 CFR 20.205.  |
| CNSI Response | A.3. | A note has been added at the beginning of Section 7.3 to require performance of receipt surveys.  |

### ACCEPTANCE TESTS

CNSI Response: Additional units of the 14-195-H packaging will not be fabricated, and therefore, no further responses are provided to these comments.

ATTACHMENT 2



INSTRUCTIONS FOR INCORPORATING REVISION CHANGES TO THE CNS 14-195-H SAR

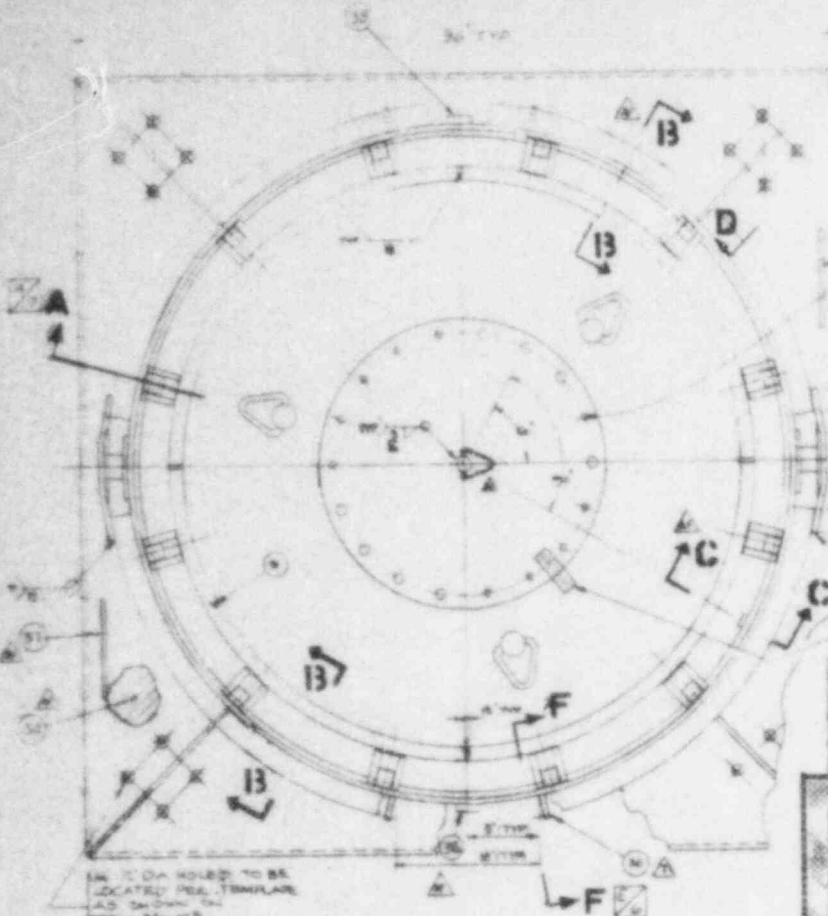
REMOVE	INSERT
Page 1-4	Page 1-4
Drawing 1-189-101, Rev. A-F	Drawing 1-189-101, Rev. AG
Page 2-3	Page 2-3
Page 2-4	Page 2-4
Page 2-13	Page 2-13
Page 2-70	Page 2-70
Page 2-80	Page 2-80
Page 7-2	Page 7-2
Page 7-3	Page 7-3

1.3 APPENDIX

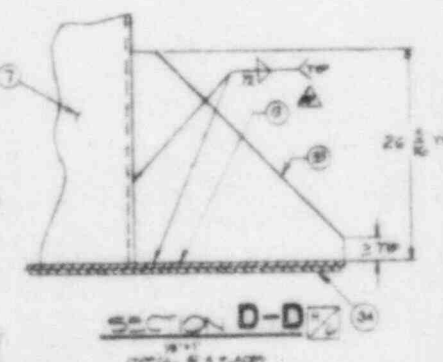
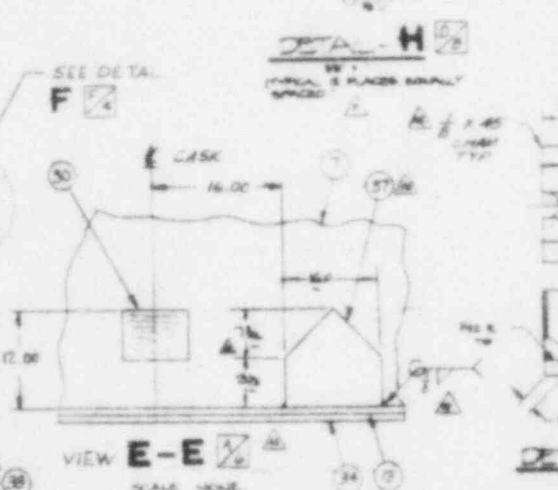
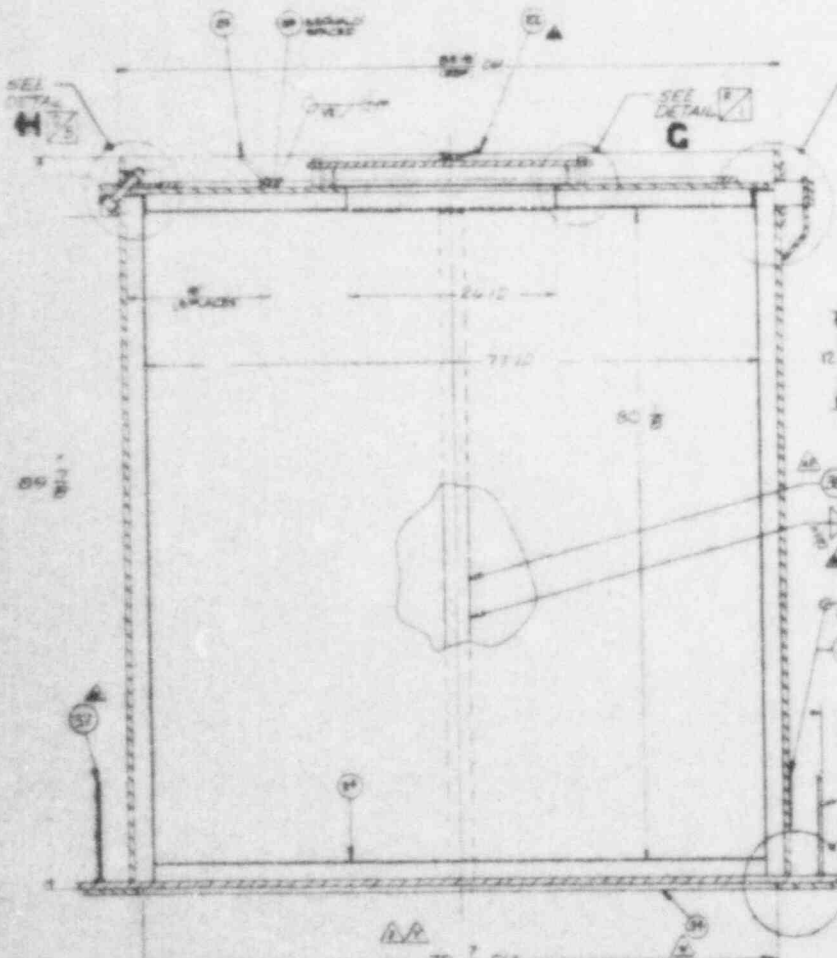
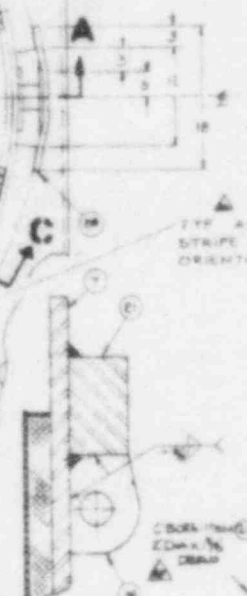
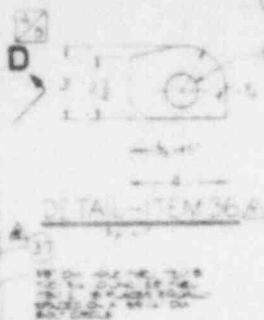
1.3.1 Figure One -Cask Outline

1.3.2 CNSI Drawing 1-189-101, Rev. AG

| ①



**TRANSPORT CASK ASSEMBLY - PLAN**





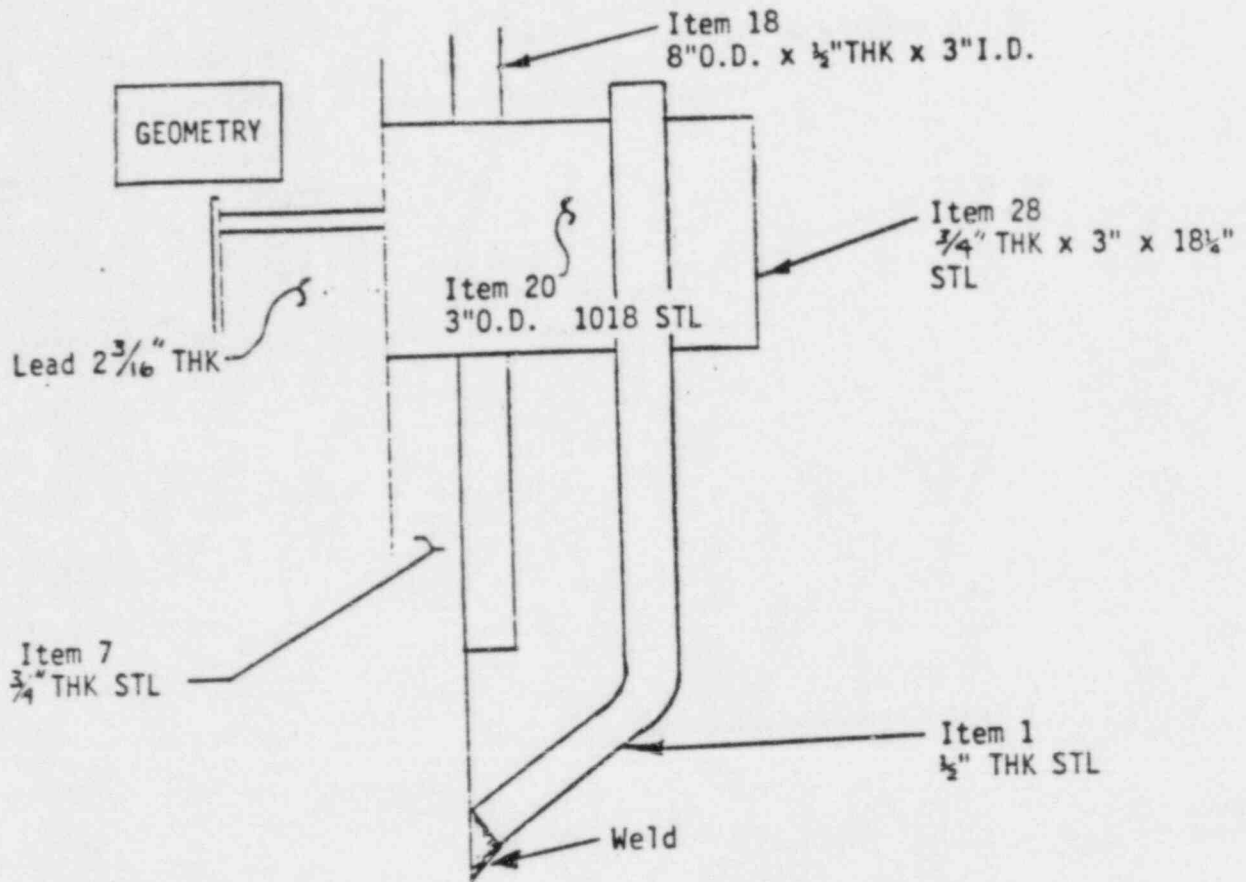
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#### 2.4.3 Lifting Devices

10CFR 71.45 (a) requires that any lift point be designed with a minimum safety factor of three against yielding when used to lift the package in the intended manner. The CNS 14-195 package is equipped with two lifting trunnions as shown on CNS drawing 1-189-101 Rev AG. The following analysis therefore evaluates one trunnion subjected to 3 times one-half of gross package weight, or a total load of 84,750 pounds. This analysis shows that the lifting devices can withstand 3 times the gross package weight without failure.

| ①

Lifting Device Analysis



REFERENCE: DRAWING NUMBER 1-189-101 (Rev. AG)  
DETAIL F AND DETAIL LIFTING LUG

LOADS

The regulatory criterion of three times gross package weight will be shared by two lifting trunnions.

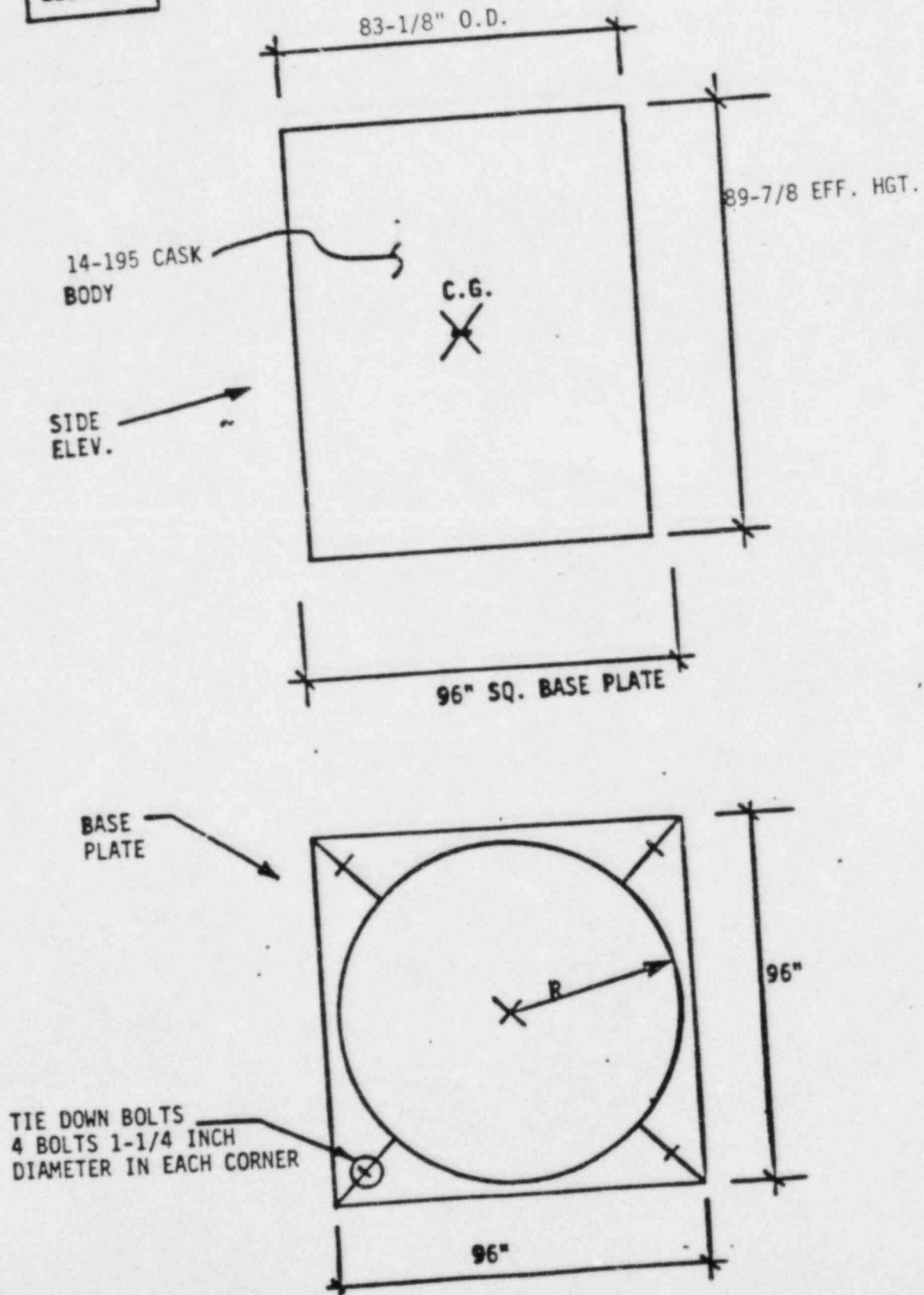


TIE-DOWN ANALYSIS

REFERENCE DRAWING NUMBER 1-189-101 REV. AG

| ①

GEOMETRY

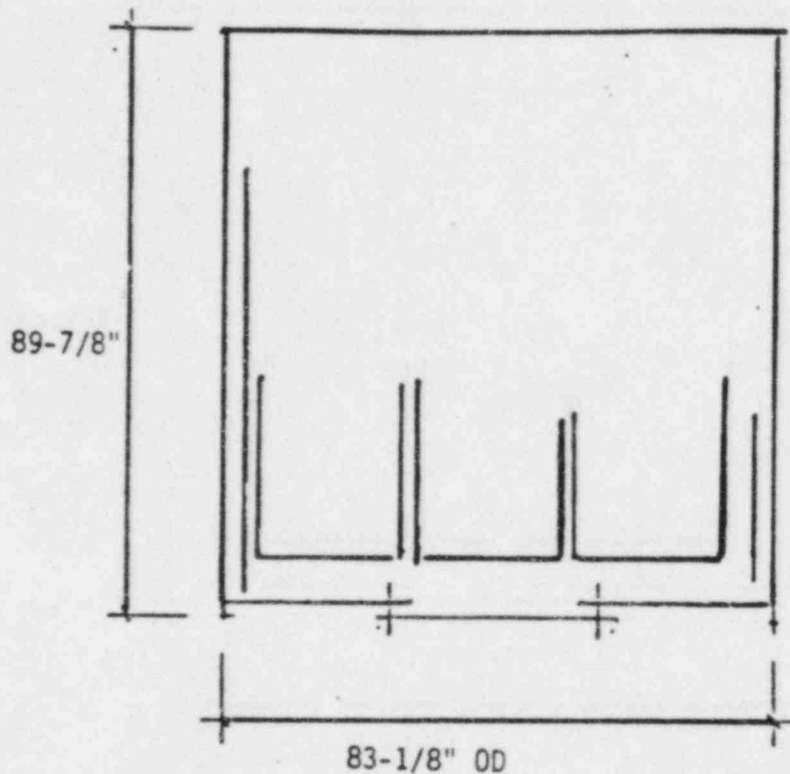


#### 2.6.6.6 EVALUATION OF DROP TEST

##### END DROP TEST - TOP DOWN

##### GEOMETRY

(Drawing 1-189-101 Rev AG) *KT*



CASK LOADED WITH 14 - 55 GALLON DRUMS EACH WEIGHING 750 LBS.

##### WT. SURVEY:

14 - 55 GALLON DRUMS AT 750 LBS EA.	=	10,500 LBS
2 - PALLETS AT 250 LBS EA.	=	500 LBS
1 - BRACING GRID	=	<u>350 LBS</u>
TOTAL PAYLOAD		<u>11,350 LBS</u>

TABLE 2-1  
Summary of Characteristics of Major Cask Components  
(14-195)

<u>Component from Dwg.</u>	<u>Item #(2) Dimensions</u>	<u>Material</u>	
Cask Walls	Outer Shell 3/4" thick	A516 (1)	7
	Shield Region 2-3/16" thick	lead	4
	Inner Shell 1/8" thick	A304	6
Primary Lid	Outer Shell 3/4" thick	A516 (1)	2
	Shield Region 2-3/16" thick	lead	4
	Inner Shell 1/4" thick	A304	5
	Lid OD Approximately 78" Lid ID 26"		
Primary Bolts	12 at 1-1/4" dia. x 6-1/2" long	SAE J 429 A490 Gr. 8	19
Secondary Lid	Outer Shell 3/4" thick	A516 (1)	8
	Shield Region 2-3/16" thick	lead	4
	Inner Shell 1/8" thick	A304	9
	Diameter 36"		
Secondary Bolts	18 at 3/4" dia. x 2" long	SAE J429, A307, Gr. 2	12
Cask Bottom	Outer Shell (baseplate) 3/4" thick	A516 (1)	13
	Shield Region 2-3/16" thick	lead	4
	Inner Shell 1/8" thick	A304	24

(1) A516 replaced A36 for all casks fabricated after March 31, 1980.

(2) CNSI Drawing 1-189-101 Rev. AG

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12. Inspect and clean the gasket seating surfaces.
13. Lift the primary lid onto the cask and position properly using key and keyway.
14. Replace the (twelve) 12 1-1/4 inch bolts and torque to  $200 \pm 10$  ft-lbs using a star pattern.
15. Install anti-tamper seal wires in appropriate bolts.
16. Perform cask survey and verify that the following requirements are satisfied:
  - A. Cask external radiation levels do not exceed 200 mR/hr on contact, 10 mR/hr at 2 meters and 2 mR/hr in the tractor cab in accordance with 10CFR71.47 and 49CFR173.441.
  - B. Cask external removable contamination is ALARA and does not exceed 22 dpm/cm<sup>2</sup> beta-gamma and 2.2 dpm/cm<sup>2</sup> alpha in accordance with 10CFR71.87.

7.2 Loading Procedure for Liners  
(for empty liners pre-installed in cask cavity)

1. Remove and discard the seal wires from the appropriate secondary lid bolts.
2. Loosen and remove the (eighteen) 18 3/4 inch diameter bolts that secure the secondary lid to the primary lid penetration.
3. Attach a lifting sling to the single center-mounted lug on the secondary lid, and lift the secondary lid.
4. Inspect and verify integrity of cover gasket.
5. Lay down lid on a suitable protected surface, treating lid underside as potentially contaminated.
6. Proceed with filling the liner following appropriate personnel precautions and operational procedures.
7. Inspect and clean the gasket seating surfaces.
8. Lift the secondary lid onto the primary lid and position using indicated alignment marks.
9. Replace the (eighteen) 18 3/4 inch bolts and torque to  $50 \pm 5$  ft-lbs using a star pattern.
10. Install anti-tamper seal wires in appropriate bolts.

11. Perform cask survey and verify that the following requirements are satisfied:

- A. Cask external radiation levels do not exceed 200 mR/hr on contact, 10 mR/hr at 2 meters and 2 mR/hr in the tractor cab in accordance with 10CFR71.47 and 49 CFR173.441.
- B. Cask external removable contamination is ALARA and does not exceed 22 dpm/cm<sup>2</sup> beta-gamma and 2.2 dpm/cm<sup>2</sup> alpha in accordance with 10CFR71.87.

### 7.3 Unloading Procedure

NOTE: Upon receipt of cask, perform survey for direct radiation and removable contamination using approved procedures to assure compliance with applicable requirements of 10CFR20.205.

1. Remove and discard the seal wires from the appropriate primary lid bolts.
2. Loosen and remove the (twelve) 12 1-1/4 inch diameter bolts that secure the primary lid to the cask body.
3. Using a lifting sling attached to the three symmetrically located primary lid lifting lugs, lift the primary lid from the cask.
4. Attach crane and rigging to appropriate lift points on liner or drum pallet.
5. Proceed with removal of all contents from cask cavity.
6. Clean cask interior as required and inspect interior surfaces for integrity.
7. Install new liner or drum pallets in cask.
8. Clean and inspect the gasket sealing surfaces.
9. Lift the primary lid onto the cask and position properly using key and keyway.
10. Replace the (twelve) 12 1-1/4 inch bolts and torque to 200  $\pm$  10 ft-lbs.
11. Install anti-tamper seal wires in appropriate bolts.
12. Prior to departure from site, ensure that exterior radiation levels are acceptable, and proper placarding is in place.

DOCKET NO. 71-9094  
CONTROL NO. 25693  
DATE OF DOC. 08/26/85  
DATE RCVD. 08/27/85  
FCUF \_\_\_\_\_ PDR ✓  
FCAF \_\_\_\_\_ LPDR \_\_\_\_\_  
WM \_\_\_\_\_ I&E REF. ✓  
WMUR \_\_\_\_\_ SAFEGUARDS \_\_\_\_\_  
FCTC ✓ OTHER \_\_\_\_\_

DESCRIPTION:

submit their  
response to the  
questions raised  
in your letter of  
06/24/85  
08/27/85 INITIAL CEC