

ORGANIZATION: CHEM-NUCLEAR SYSTEMS, INC.
BELLEVUE, WASHINGTON

REPORT NO.:	99900776/82-01	INSPECTION DATE(S)	5/17-19/82	INSPECTION ON-SITE HOURS:	20
CORRESPONDENCE ADDRESS: Chem-Nuclear Systems, Inc. ATTN: Mr. B. Johnson, President P. O. Box 1866 Bellevue, Washington 98006					
ORGANIZATIONAL CONTACT: Mr. B. Svinis, Quality Assurance Manager TELEPHONE: (206) 827-0711					
PRINCIPAL PRODUCT: Transportation and storage of nuclear waste materials. NUCLEAR INDUSTRY ACTIVITY: Total activity is devoted to transportation and storage of nuclear waste materials.					
ASSIGNED INSPECTOR:	<u>J. T. Conway</u> W. M. McNeill, Reactive & Components Program Section (R&CPS)			<u>7-30-82</u> Date	
OTHER INSPECTOR(S):					
APPROVED BY:	<u>James T. Conway</u> I. Barnes, Chief, R&CPS			<u>7-30-82</u> Date	
INSPECTION BASES AND SCOPE:					
A. <u>BASES</u> : 10 CFR Part 71, Appendix E and 10 CFR Part 21.					
B. <u>SCOPE</u> : This inspection was made as a result of a Part 21 report issued by Chem-Nuclear Systems on a missing shield ring in the two Vandenburg model spent fuel shipping casks.					
PLANT SITE APPLICABILITY: Not identified.					
DESIGNATED ORIGINAL Certified By <u>Rheanne Joubert</u>					

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INSPECTION

RESULTS:

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A. VIOLATIONS:

None

B. NONCONFORMANCES:

Contrary to Criterion 5 of Appendix E to 10 CFR Part 71 and procedure CN-AD-015, several nonconforming conditions (e.g., (1) missing shield rings on both casks; (2) a missing vent valve on cask Serial Number 2; and (3) the use of Buna N and not silicone rubber O-rings on both casks) were identified on the Vandeburgh model casks without being documented on NCR forms.

C. UNRESOLVED ITEMS:

None

D. OTHER FINDINGS OR COMMENTS:

1. Cask Design

The Vandeburgh model cask is a cylinder with approximate dimensions of 11 feet in height and 4 feet in diameter which contains 6 inches of lead shielding encased in steel. The base plate or lid is fastened to the cask body with 12-1½" bolts and nuts. The cask inside diameter is 3 feet with a height of under 10 feet. The gross weight is 35 tons. The weight of contents shipped is limited to about 4½ tons.

2. Part 21 Report

On March 11, 1982, Chem-Nuclear Systems (CNS) reported to the NRC that two Vandeburgh model casks were missing shield rings. During the consolidation and rewrite of Certificate of Compliance (C of C) 5805, it was discovered that a ring assembly, identified on a supplement (dated October 5, 1975) to the C of C, was missing. This shield ring provides protection from radiation streaming in the event of the 30 foot drop accident condition. The ring is made of ¾-inch steel plate with a lead annulus, and is required to be bolted to the inside of the cask cover, with the fuel basket in turn bolted to it. In addition, it was noted by CNS that the Serial Number 2 cask was missing a vent valve on the drain line, and both casks had Buna N O-rings and not silicone. A new set of shield rings have been made, installed, and the casks are waiting inspection. New liner tanks are being fabricated that will accommodate the required ring assemblies. The O-rings have been replaced and the vent valve added. This corrective action appears satisfactory.

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A generic review program has been established of all C of C's held by CNS to verify that all information on C of C's and Safety Analysis Reports (SAR's) is consistent and on file at CNS. During the inspection it was determined that no specific provisions had been made to verify compliance of the hardware to: (1) the C of C; (2) drawings referenced on the C of C; and (3) the SAR. This item will be reviewed during a subsequent inspection to ascertain how the above verification of the hardware was accomplished. With the exception of the above comment, the preventive action appears satisfactory.

The established Part 21 procedure did not clearly state: (1) that an evaluation of the defect or substantial safety hazard be performed before reporting (Part 21 report was filed with the NRC on March 11, 1982, prior to evaluation); (2) the identity of the designated director or responsible officer; (3) the requirement for notification to the NRC of a reportable defect; and (4) that each procurement document when applicable specifies that the provisions of 10 CFR Part 21 apply. This item will be further reviewed during a subsequent inspection.

3. Cask Fabrication/Design History

There are two Vandenberg model casks. The first cask was made for Yankee Atomic Electric Company in 1962 and acquired by Atcor Company in August 1966. The second cask was made by PX Engineering in June 1969 for Atcor Company. These casks were used for spent fuel shipments of the BONUS, Piqua, Pathfinder, Elk River, and La Cross projects. In 1975, the analysis of lead slump under drop conditions was questioned by the NRC. A reanalysis showed that the lead slump would be 4 inches, and this precipitated the design changes to add a lead shield ring to the La Cross fuel basket assembly used inside the casks. The NRC approved the design change submitted in the October 9, 1975, supplement to the SAR for the cask. In a supplement dated December 2, 1975, the NRC approved the cask's usage for nonfissile waste shipments. Waste shipments were made using a liner tank inside the cask. The design of the liner tanks did not include a shield ring. There is some ambiguous information in the supplements relating to the liner; e.g., the weight of the cask is reported heavier by approximately the weight of the ring assembly, and in another case, there was insufficient axial gap to allow for a ring. It would appear Atcor associated the shield ring with only spent fuel shipments.

In August 1978, CNS acquired the Atcor Company and, thereby, the Vandenberg casks and three other models of casks on C of C's 5026, 6601, and 9108. Although CNS did inspect these five casks at the time acquired, it appears that they did not do a complete review of the documentation i.e., the C of C's and SAR's. Since the acquisition, CNS has used these casks for five waste shipments, but no spent fuel.

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As a result of the apparent failure of the cask designer to incorporate shield rings in the liner design for waste shipments, shield rings have not been used for waste shipments by CNS. The problem was compounded further by CNS, in that not all cask documentation was reviewed for completeness at the time of acquisition. CNS has completed a review of the Vandenberg model's software and established a program review of all its C of C's. In addition, CNS has a 10 CFR Part 71, Appendix E, QA program in place that addresses design control and procurement controls, which, if implemented, should preclude recurrence of this type of a problem in the future.

Inspector

McNeill

Scope/Module

Part 21

DOCUMENTS EXAMINED

Docket No. 99900774⁶
Report No. 82-61

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1	2	TITLE/SUBJECT	3	4
CN-AD-004	3	DEFECT REPORTING PROCEDURE	1/26/79	-
-	6	REGULATORY ADVISORY	MAR. 5 '82	-
-	9	SAFETY REVIEW BOARD	MAR 19 '82	-
-	6	CASK COMPLIANCE WITH CURRENT C of C	MAR 25 '82	-
-	8	SAFETY ANALYSIS REPORT	JULY 25 '74	-
-	8	CONSOLIDATED S.A.R.	APRIL 29 '82	D
-	8	Application Supplements	OCT 9, '75	-
-	8	"	DEC 2, '75	-
-	8	"	APRIL 29, '76	-
-	8	"	MARCH 22, '78	-
-	9	RADIOACTIVE SHIPMENT RECORD FORM	3/18/82	-
-			4/26/81	
-			3/30/80	
-			11/14/80	
-			12/24/80	
-	6	MODEL CNS 3-55 CASK (ATCOR LL-57-65) CASK USAGE	MAY 18, '82	
QA-AD-001	A	QA Program	2/22/82	B

Document Types:

1. Drawing
2. Specification
3. Procedure
4. QA Manual
5. Purchas Order
6. Internal Memo
7. Letter
8. Other (Specify-if necessary)
9. Report

Columns:

1. Sequential Item Number
2. Type of Document
3. Date of Document
4. Revision (if applicable)

Inspector McKeill
 Scope/Module Part 21

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 Docket No. 99900724
 Report No. 82-01

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DOCUMENTS EXAMINED

1	2	TITLE/SUBJECT	3	4
TR-AD 002	3	Transportation Quality Assurance Records	7/6/81	-
-	6	ATCOR CASKS & TRANSPORTATION SYSTEMS MEMO	Sept 6 '78	-
-	6	" EQUIPMENT INSPECTION SUMMARY 7/19/78	Aug 16 '78	-
-	6	QA VANDENBERG CASK INSPECTION	MAY 29 '79	-
-	6	ATCOR MEMO ON UNDB I PURCHASE	Aug 15, '76	-
-	9	MEND. CONTRACT UNDB II PURCHASE	2/12/69	-
-	9	DIMEN. INSPECTION UNDB II	6/16/69	-
-	9	TESTS REPORT UNDB II	APRIL 17, 69	-
-	6	ATCOR CASK INSPECTION AND CONDITION	July 11, '79	-
-	9	SIN MODEL 8-120 FAB. RECORDS	5/72	-

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 - 9. REPORTS

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