

UNITED STATES
NUCLEAR REGULATORY COMMISSION
OFFICE OF NUCLEAR REACTOR REGULATION
WASHINGTON, D.C. 20555

October 25, 1990

NRC INFORMATION NOTICE NO. 90-66: INCOMPLETE DRAINING AND DRYING OF SHIPPING CASKS

Addressees:

All holders of operating licenses for nuclear power reactors and all registered users of NRC approved waste shipping packages.

Purpose:

This information notice is intended to alert addressees to a possible safety problem resulting from incomplete draining and drying of shipping casks. It is expected that recipients will review the information for applicability to their facilities and consider actions, as appropriate, to avoid similar problems. However, suggestions contained in this information notice do not constitute NRC requirements; therefore, no specific action or written response is required.

Description of Circumstances:

On May 9, 1990, a Chem-Nuclear System (CNSI) operator opened a Transnuclear, TN-RAM shipping cask (USA/9233/B(U)) containing approximately 16,000 curies of waste-irradiated hardware (sheared control rod blades and local power range monitors) at the Low-Level Radioactive Waste Disposal Site operated by CNSI at Barnwell, South Carolina. The irradiated hardware was to be placed in the Class C waste trench. When the CNSI operator opened the shipping cask, approximately 75 gallons of water, having a near contact dose rate of 5 mr/hr, spilled from the cask, contaminating the off-loading equipment and the surrounding ground area. CNSI personnel immediately closed the cask, removed it from the trench area, and placed it in a secure parking area within the burial site. Subsequently, when the cask was completely dewatered at the waste facility, an additional 121 gallons of contaminated water was removed from the cask. The total volume of water found in this event was approximately 40 percent of the total cask volume.

Discussion:

The shipment originated at Millstone Nuclear Power Station, Unit 1. The irradiated hardware was in a waste liner which was stored in the spent fuel pool. The waste liner and cask were to be drained and dried before shipment.

The main cause of this event was an inadequate procedure used for draining and drying the cask and liner. This procedure failed to incorporate any method for quantifying the amount of water drained from the cask. Additionally, this procedure failed to specify an accurate reference value for the pressure of the

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cask cavity with which to conduct the "dryness verification" test. The procedure specified that the test be conducted at any pressure above a "minimum" pressure of 10 mbar, while the safety analysis report (SAR) called for the test to be conducted at a pressure of 10 mbar (+2, -0 mbar). As a result, the test was actually conducted at 27 mbar, which was the vapor pressure for water at the ambient temperature. Because the pressure in the cask cavity was not sufficiently below the vapor pressure of water, the test results were incorrectly interpreted, which allowed water to remain undetected in the cask.

Since this event the license holder has corrected these deficiencies in the test procedure. The revised test procedure requires that the water drained from the cask be quantified and compared to the volume of the container and that the dryness test be consistent with the SAR by specifying that the dryness test be performed at 10 mbar (+2, -0 mbar).

This information notice requires no specific action or written response. If you have any questions about the information in this notice, please contact one of the technical contacts listed below or the appropriate NRC project manager.

Charles E. Rossi

Charles E. Rossi, Director
Division of Operational Events Assessment
Office of Nuclear Reactor Regulation

Technical Contacts: George H. Gardes, NMSS
(301) 492-0495

Joseph T. Furia, RI
(215) 337-5373

Attachment: List of Recently Issued NRC Information Notices

LIST OF RECENTLY ISSUED
 NRC INFORMATION NOTICES

Information Notice No.	Subject	Date of Issuance	Issued to
IN 88-63, Supp. 1	High Radiation Hazards From Irradiated Incore Detectors and Cables	10/5/90	All holders of OLs or CPs for nuclear power reactors.
90-65	Recent Orifice Plate Problems	10/5/90	All holders of OLs or CPs for nuclear power reactors.
90-64	Potential for Common-Mode Failure Of High Pressure Safety Injection Pumps or Release of Reactor Coolant Outside Containment During A Loss-Of-Coolant Accident	10/4/90	All holders of OLs or CPs for pressurized-water reactors.
90-63	Management Attention to the Establishment and Maintenance of A Nuclear Criticality Safety Program	10/3/90	All fuel cycle licensees possessing more than critical mass quantities of special nuclear material.
90-62	Requirements for Import and Distribution of Neutron-Irradiated Gems	9/25/90	All irradiated gemstone importers and distributors, and all non-power reactor licensees.
90-61	Potential for Residual Heat Removal Pump Damage Caused By Parallel Pump Interaction	9/20/90	All holders of OLs or CPs for nuclear power reactors.
90-60	Availability of Failure Data In the Government-Industry Data Exchange Program	9/20/90	All holders of OLs or CPs for nuclear power reactors.
90-59	Errors In the Use of Radioactive Iodine-131	9/17/90	All medical licensees.

OL = Operating License
 CP = Construction Permit

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*SEE PREVIOUS CONCURRENCES

Changes to final draft were discussed with PCW on 10/18/90
D/DOEA:NRR
CERossi
10/19/90

C/OGCB:DOEA:NRR
CHBerlinger
10/12/90

*RPB:ADM
TechEd
10/10/90

*OGCB:DOEA:NRR*RI

PCWen
10/10/90

JTFuria
10/10/90

*SGTB:SGTR:NMSS

GHGardes
10/10/90

*C/SGTB:SGTR:NMSS

CEMacDonald
10/10/90

*D/SGTR:NMSS

RFBurnett
10/10/90

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Document Name: TRANSFER CASK CONTAINING WATER

*SEE PREVIOUS CONCURRENCES

	D/DOEA:NRR CERossi <i>CR</i> 10/ /90	C/OGCB:DOEA:NRR CHBerlinger 10/12/90	*RPB:ADM TechEd 10/10/90
*OGCB:DOEA:NRR*RI PCWen 10/10/90	JTFuria 10/10/90	*SGTB:SGTR:NMSS GHGardes 10/10/90	*D/SGTR:NMSS RFBurnett 10/10/90
		*C/SGTB:SGTR:NMSS CEMacDonald 10/10/90	

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Document Name: TRANSFER CASK CONTAINING WATER

<i>PCW</i> OGCB:DOEA:NRR PCWen 10/10/90	<i>PCW</i> RI for JTFuria 10/10/90	D/DOEA:NRR CERossi 10/ /90 SGTB:SGTR:NMSS GHGardes 10/10/90	C/OGCB:DOEA:NRR CHBerlinger 10/ /90 C/SGTB:SGTR:NMSS MacDonald 10/ /90	RPB:ADM TechEd 10/10/90 D/SGTR:NMSS RFBurnett 10/10/90
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