

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

March 31, 1992

NRC INFORMATION NOTICE 92-25: POTENTIAL WEAKNESS IN LICENSEE PROCEDURES FOR
A LOSS OF THE REFUELING CAVITY WATER

Addressees

All holders of operating licenses or construction permits for nuclear power reactors.

Purpose

The U.S. Nuclear Regulatory Commission (NRC) is issuing this information notice to alert addressees to a potential weakness in licensee procedures for loss of the refueling cavity water. 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 are not NRC requirements; therefore, no specific action or written response is required.

Description of Circumstances

On October 8, 1991, at the McGuire Nuclear Station, Unit 1, maintenance personnel failed to raise the reactor lower internals sufficiently while removing them from the reactor vessel. As a result, the bottom of the internals was dragged across the reactor vessel flange face and caught the edge of the refueling cavity water seal. Subsequent inspections disclosed minor damage to both the reactor vessel flange and the refueling cavity water seal. If the internals had been even lower during the refueling activities, the impact of the internals on the cavity seal could have more severely damaged the seal, which could have led to the rapid drainage of the refueling cavity.

In its response to NRC Bulletin 84-03, "Refueling Cavity Water Seal," the licensee indicated that if a large seal leak occurred, the refueling cavity could drain rapidly. The procedures and makeup capability for refilling the refueling cavity would be insufficient to prevent drainage. In anticipation of such an event, the licensee developed an abnormal procedure for safely storing a fuel assembly if one was positioned above the vessel flange level during a loss of the refueling cavity water. However, the abnormal procedure did not address actions for repositioning the reactor lower internals, if such an event occurred while the internals were being moved.

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In response to this event, the licensee provided additional training for employees, implemented improvements to the procedures, and developed contingency plans for a loss of canal integrity while moving the reactor lower internals. These contingency plans included the following actions:

- reinsert the lower internals in the reactor vessel
- close the equipment hatch concrete shield
- evacuate the lower containment and annulus
- clear nonessential personnel from the containment and the video control station
- implement management controls for infrequently performed tasks

Further details of the event may be found in NRC Inspection Report 50-369/91-22.

Discussion

This event and the results of NRC inspections have raised concerns regarding the adequacy of procedures for a loss of water in the refueling cavity. At McGuire, the reactor lower internals, especially the neutron absorber panels, result in extreme radiation levels when exposed above water. The licensee estimated that dose rates could reach 3,300 rem/hr at the operating deck and 450 rem/hr at the crane operator cab. The licensee's procedure did not address the consequences of uncovered reactor lower internals and did not provide for timely actions and radiation protection contingencies appropriate to the circumstances.

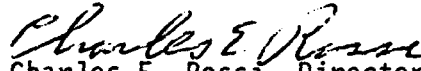
It is important that licensees' procedures provide clear guidance to operating personnel when responding to the draining of the refueling cavity and the possible dose consequences from a fuel assembly or the reactor lower internals. Draining of water from the refueling cavity could result from a number of events besides a seal failure. These include the failure of a nozzle dam in a pressurized-water reactor (PWR) steam generator, inadvertent opening of a loop isolation valve on a PWR so equipped, loss of coolant through the decay heat removal system, failure of a plug in a boiling-water reactor (BWR) main steam line, and inadvertent opening of BWR safety valves.

Related Generic Communications

NRC Bulletin 84-03, "Refueling Cavity Water Seal"

Information Notice 84-93, "Potential for Loss of Water from the Refueling Cavity"

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 Office of Nuclear Reactor Regulation (NRR) project manager.


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

Technical contacts: Peter K. Vandoorn, RII
(704) 875-1681

Lawrence L. Lawyer, RII
(404) 331-4700

Richard D. McWhorter, RII
(615) 842-8001

Attachment: List of Recently Issued NRC Information Notices

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Original Signed by
Charles E. Rossi

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LLLawyer JWroe
02/14/92 02/21/92

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PCWen PKVandoorn
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CERossi	CHBerlinger	MA TechEd JM	GHolahan
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LIST OF RECENTLY ISSUED
NRC INFORMATION NOTICES

Information Notice No.	Subject	Date of Issuance	Issued to
92-24	Distributor Modification to Certain Commercial-Grade Agastat Electrical Relays	03/30/92	All holders of OLs or CPs for nuclear power reactors.
92-23	Results of Validation Test- ing of Motor-Operated Valve Diagnostic Equipment	03/27/92	All holders of OLs or CPs for nuclear power reactors and all vendors of motor- operated valve (MOV) diag- nostic equipment.
92-22	Criminal Prosecution and Conviction of Wrongdoing Committed by A Commercial- Grade Valve Supplier	03/24/92	All holders of OLs or CPs for nuclear power reactors.
92-21	Spent Fuel Pool Reactivity Calculations	03/24/92	All holders of OLs or CPs for nuclear power reactors.
92-20	Inadequate Local Leak Rate Testing	03/03/92	All holders of OLs or CPs for nuclear power reactors.
92-19	Misapplication of Potter & Brumfield MDR Rotary Relays	03/02/92	All holders of OLs or CPs for nuclear power reactors.
92-18	Potential for Loss of Re- mote Shutdown Capability during A Control Room Fire	02/28/92	All holders of OLs or CPs for nuclear power reactors.
92-17	NRC Inspections of Pro- grams being Developed at Nuclear Power Plants in Response to Generic Letter 89-10	02/26/92	All holders of OLs or CPs for nuclear power reactors.
92-16	Loss of Flow from the Residual Heat Removal Pump during Refueling Cavity Draindown	02/25/92	All holders of OLs or CPs for nuclear power reactors.

OL = Operating License
CP = Construction Permit

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