

UNITED STATES
NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT
WASHINGTON, D.C. 20555

February 24, 1987

IE INFORMATION NOTICE NO. 87-13: POTENTIAL FOR HIGH RADIATION FIELDS
FOLLOWING LOSS OF WATER FROM FUEL POOL

Addressees:

All holders of a nuclear power reactor operating license (OL) or a construction permit (CP) except Fort St. Vrain.

Purpose:

This information notice is to alert addressees of the potential for high radiation fields following the inadvertent loss of water from the spent fuel pool or transfer canal. Recipients are expected to review the information for applicability to their facilities and consider actions, if appropriate, to preclude similar problems occurring at their facilities. 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 December 2 and 3, 1986, the Hatch nuclear power plant lost 141,000 gallons of water from the spent fuel pool because of a leak from pneumatic seals in the transfer canal between Units 1 and 2. The redundant pneumatic seals leaked because of a single failure. A valve in the single air supply line to the seals was mistakenly closed. Although water level dropped about 5 feet and low level alarms in the spent fuel pool worked, the leak was not specifically identified for several hours because a leak detection device was valved out and none of the seals were instrumented to alarm on loss of air pressure.

Analysis by the licensee after the event has shown that, if water had been completely lost from the transfer canal, radiation fields would be high enough that remedial measures may be difficult. High radiation fields would be present because irradiated control blades are stored on short hanger rods clipped over the side of the spent fuel pool. A control blade's roller bearing is typically made of cobalt-rich stellite which, when activated, has radiation levels of 8,000 to 10,000 R/hr on contact. Some of the control blades would be completely uncovered if the water level dropped to the bottom of the transfer canal. This drop in water level would result in general area radiation levels of about 100 R/hr at the edge of the spent fuel pool and 1 R/hr 6 feet from the edge of the pool. About 2 feet of water would remain over the top of the spent fuel at the minimum level resulting from draining via the transfer canal; so, there was no likelihood of fuel damage because of fuel uncovering.

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Discussion:

The potential for this general type of event was discussed in IE Information Notice No. 84-93, "Potential for Loss of Water from the Refueling Cavity," issued on December 14, 1984 and IE Bulletin No. 84-03, "Refueling Cavity Water Seal," issued on August 24, 1984. The transfer canal between the Hatch units is an unusual design that illustrates yet another way a single failure resulted in substantial loss of water from the spent fuel pool.

Although recipients of IN 84-93 and IEB 84-03 may have evaluated the potential uncovering of spent fuel, recipients may not have fully evaluated the potential for high radiation fields because of the potential uncovering of short hangers or other short fixtures holding irradiated material such as used control rods or neutron detectors.

Since the event, concern has been raised about the design of the leak detection system for the seals. The leak detection system consists of a level switch that is piped between the first and second pneumatic seals to detect water leakage that gets past the first seal. The NRC is currently evaluating this design to determine whether water would flow past the leak detector if all seals failed and thus fail to detect the leak.

As corrective measures, the licensee has separated the air supply to the transfer canal seals and the air supply to the inner and outer gates between the transfer canal and the spent fuel pools and is studying other changes to assure greater reliability. The licensee also is shipping the used control rods in the spent fuel pool off the site.

No specific action or written response is required by this information notice. If you have questions about this matter, please contact the Regional Administrator of the appropriate NRC regional office or this office.

Edward L. Jordan, Director
Division of Emergency Preparedness
and Engineering Response
Office of Inspection and Enforcement

Technical Contacts: Eric Weiss, IE
(301) 492-9005

Floyd Cantrell, Region II
(404) 331-5534

Attachment: List of Recently Issued IE Information Notices

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*EAB: DEPER: IE	*IE	*EAB: DEPER: IE	*EGCB: DEPER: IE	*DD: DEPER: IE	D: DEPER: IE
EWeiss:ew	DGable	JRosenthal	RLBaer	SASchwartz	ELJordan
01/07/87	01/08/87	01/15/87	01/21/87	01/28/87	02/19/87

by phone
RCroteau for
Region II
FCantrell
01/09/87



LIST OF RECENTLY ISSUED
IE INFORMATION NOTICES

Information Notice No.	Subject	Date of Issue	Issued to
86-106 Sup. 1	Feedwater Line Break	2/13/87	All power reactor facilities holding an OL or CP
87-12	Potential Problems With Metal Clad Circuit Breakers, General Electric Type AKF-2-25	2/13/87	All power reactor facilities holding an OL or CP
87-11	Enclosure of Vital Equipment Within Designated Vital Areas	2/13/87	All power reactor facilities holding an OL or CP
87-10	Potential for Water Hammer During Restart of Residual Heat Removal Pumps	2/11/87	All BWR facilities holding an OL or CP
87-09	Emergency Diesel Generator Room Cooling Design Deficiency	2/5/87	All power reactor facilities holding an OL or CP
87-08	Degraded Motor Leads in Limitorque CD Motor Operators	2/4/87	All power reactor facilities holding an OL or CP
87-07	Quality Control of Onsite Dewatering/Solidification Operations by Outside Contractors	2/3/87	All power reactor facilities holding an OL or CP
87-06	Loss of Suction to Low-Pressure Service Water System Pumps Resulting From Loss of Siphon	1/30/87	All power reactor facilities holding an OL or CP
87-05	Miswiring in a Westinghouse Rod Control System	2/2/87	All Westinghouse power reactor facilities holding an OL or CP
87-04	Diesel Generator Fails Test Because of Degraded Fuel	1/16/87	All power reactor facilities holding an OL or CP

OL = Operating License
CP = Construction Permit

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