

UNITED STATES
NUCLEAR REGULATORY COMMISSION
OFFICE OF NUCLEAR REACTOR REGULATION
WASHINGTON, D.C. 20555-0001

October 30, 1996

**NRC INFORMATION NOTICE 96-58: RCP SEAL REPLACEMENT WITH PUMP ON
BACKSEAT**

Addressees

All holders of operating licenses or construction permits for pressurized-water reactors (PWRs).

Purpose

The U.S. Nuclear Regulatory Commission (NRC) is issuing this information notice to alert addressees to a potential problem during replacement of reactor coolant pump (RCP) seal packages. 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 March 1, 1996, Sequoyah Unit 1 had a forced outage (Mode 5) to replace an RCP seal package that had been leaking. The licensee elected to perform this maintenance activity with the reactor coolant system (RCS) depressurized and the RCS level within the normal pressurizer (PZR) level band. With RCS level in the PZR, the RCS maintenance boundary for the seal replacement activity was provided by the weight of the pump impeller/shaft assembly (approximately 6000 pounds) which had been placed on its backseat. To achieve backseating, the RCP motor coupling bolts were loosened; this lowered the pump on its backseat above the RCP thermal barrier housing.

Preceding the outage, site Engineering had determined that an upward pressure of approximately 15 psig would lift the pump assembly off its backseat resulting in RCS leakage. This information was never given to the operators. In addition, the operators were not given specific guidance regarding the maximum PZR level or a PZR level operating range which should be maintained to ensure that the static pressure of the RCS was less than the pressure required to lift the impeller/shaft assembly off its backseat. Operators questioned the lack of guidance and were subsequently given specific information regarding acceptable PZR level.

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updated on 11/13/96

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Discussion

The Sequoyah RCPs (Westinghouse model A193S) were designed with a backseat that provides an RCS pressure boundary to permit replacement of the seal package. The weight of the impeller/shaft assembly provides pressure boundary control for this maintenance activity. However, excessive RCS static head (high pressurizer level) could lift the assembly off its backseat, resulting in RCS leakage into the maintenance area.

The staff recognizes that by replacing the RCP seal with level in the pressurizer the licensee avoids risks associated with reduced inventory or midloop operation. However, problems associated with this operation also exist. Therefore, licensees may wish to consider (1) determining a maximum pressurizer level to preclude unseating the pump, (2) providing operators with control data that can be used with available instrumentation (e.g., pressurizer level limits) to ensure that RCS pressure does not cause the impeller/shaft assembly to lift off its seat, and (3) providing operators with cautions to prevent unwarranted safety injection into the RCS which could increase the probability of lifting the pump internals.

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.

for 
Thomas T. Martin, Director
Division of Reactor Program Management
Office of Nuclear Reactor Regulation

Technical contacts: Robert D. Starkey, RII
(423) 842-8001
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Information Notice No.	Subject	Date of Issuance	Issued to
96-57	Incident-Reporting Requirements Involving Intakes, During a 24-Hour Period That May Cause a Total Effective Dose Equivalent in Excess of 0.05 Sv (5 rems)	10/29/96	All U.S. Nuclear Regulatory Commission licensees
96-56	Problems Associated with Testing, Tuning, or Resetting of Digital Control Systems While at Power	10/22/96	All holders of OLs or CPs for nuclear power reactors
96-55	Inadequate Net Positive Suction Head of Emergency Core Cooling and Containment Heat Removal Pumps Under Design Basis Accident Conditions	10/22/96	All holders of OLs or CPs for nuclear power reactors
96-54	Vulnerability of Stainless Steel to Corrosion When Sensitized	10/17/96	All materials licensees
96-53	Retrofit to Amersham 660 Posilock Radiography Camera to Correct Inconsistency in 10 CFR Part 34 Compatibility	10/15/96	All industrial radiography licensees
95-04, Supp. 1	Excessive Cooldown and Depressurization of the Reactor Coolant System Following Loss of Offsite Power	10/11/96	All holders of OLs or CPs and vendors for nuclear power reactors

OL = Operating License
CP = Construction Permit

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original signed by D.B. Matthews



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DATE	10/09/96		10/10/96		10/12/96 <i>[Signature]</i>		10/12/96		10/ /96	

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ROUTING AND TRANSMITTAL SLIP FOR NRR/PECB

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ORIGINATOR: BUTCH BURTON

SUBJECT: RCP SEAL REPLACEMENT WITH PUMP ON BACKSEAT

NAME	CONCURRENCE
1. W. Burton - concurrence	
2. R. Starkey - concurrence	
3. M. Shuaibi - concurrence	10/9/96
4. Tech Editor - concurrence	
5. E. Goodwin - concurrence	
6. A. Chaffee - concurrence	
7. T. Martin - concurrence	
8. J. Delgado/V. Bowden/ M. McMalister - dispatch	

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