



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

PDR

May 22, 1984

AEOD/E411

MEMORANDUM FOR: Karl V. Seyfrid, Chief
Reactor Operations Analysis Branch
Office for Analysis and Evaluation
of Operational Data

THRU: Earl J. Brown, Lead Engineer
Engineering Systems
Reactor Operations Analysis Branch, AEOD

FROM: Chuck Hsu, Engineer
Engineering Systems
Reactor Operations Analysis Branch, AEOD

SUBJECT: FAILURE OF ANTI-CAVITATION DEVICE IN RESIDUAL HEAT REMOVAL
SERVICE WATER (RHRSW) HEAT EXCHANGER OUTLET VALVE

The attached Engineering Evaluation Report is forwarded for your information and further consideration. This evaluation concludes that the damage to the anti-cavitation devices could be related to inadequate specification of plant operational conditions. It appears that the tube erosion by sand suspended in high velocity cooling water has not been fully considered in the design of these devices. This also implies that the qualification program for the devices may be inadequate. The damaged device could cause the control valve to be stuck and result in either complete loss or degraded RHR system function. As the stuck control valve would not regulate properly to maintain a positive differential pressure between the RHRSW system and the RHR system in the RHR heat exchanger, a leak in the RHR heat exchanger could result in leakage of primary coolant into the service water system and then into the environment. The anti-cavitation device is installed inside the control valve and is not accessible for direct visual inspection for damage or wear to detect an early degradation.

This information appears to represent a potential generic problem. It would be appropriate to suggest NRR consider the following actions:

1. Review the compatibility of the anti-cavitation device for use in raw water application.
2. Address inservice inspection and maintenance requirements for anti-cavitation devices in plant technical specifications.

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3. Clarify the conditions in which an anti-cavitation device should be included in the active valve operability assurance program for the control valve to which the device is attached.



Chuck Hsu, Engineer
Engineering Systems
Reactor Operations Analysis Branch, AEOD

Attachment:
As stated



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Chuck Hsu, Engineer
 Engineering Systems
 Reactor Operations Analysis Branch, AEOD

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 As stated

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PDR

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DATE	5/8/84	5/17/84	5/21/84			