

YANKEE ATOMIC ELECTRIC COMPANY

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January 30, 1986

United States Nuclear Regulatory Commission
Region I
631 Park Avenue
King of Prussia, PA 19406

Attention: Dr. Thomas E. Murley, Regional Administrator

References: (a) License No. DPR-3 (Docket No. 50-29)
(b) USNRC Letter to YAEK, dated October 29, 1985

Subject: Response to IE Bulletin 85-01 (Steam Binding of Auxiliary
Feedwater Pumps)

Dear Sir:

In response to Reference (b), we have reviewed our procedures and practices for operation of the emergency feedwater pumps at the Yankee Nuclear Power Station, and found them adequate. Below are the results of our review:

DISCUSSION

Unlike many other power plants, Yankee's system is an emergency feedwater system and is not used in start-up or shutdown conditions. Operation and surveillance of the pumps are covered by the following plant procedures, OP-3201, "Loss of Feedwater," OP-4211, "Emergency Feedwater System Operability Test," and the Primary and Secondary Auxiliary Operator Log Sheets. With the exception of emergency operations, the pump operation for all pumps is monitored locally.

Steam binding of the emergency feed pumps is unlikely and would not disable all emergency feedwater capability. This is due to the Yankee system configuration as well as the operator training and procedures.

The system configuration provides:

1. Separate sources of water and suction piping for the steam driven emergency feedwater pump (TK-1) and the two electric driven emergency feedwater pumps (TK-39) prevents disabling all pumps due to back leakage through one pump or train.

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2. A minimum of two check valves in series between the pumps and high temperature water provide redundancy in preventing back leakage from occurring.
3. Uninsulated discharge piping for the emergency feedwater pumps aids in early detection of back leakage.
4. A positive suction head from tanks TK-1 and TK-39 means a higher suction temperature is allowable before the pump is disabled.

The plant has not experienced problems with steam binding of any of the emergency feedwater pumps.

IEB 85-01 ITEMS

1. Develop procedures for monitoring fluid conditions within the AFW system on a regular basis during times when the system is required to be operable. This monitoring should ensure that fluid temperature at the AFW pump discharge is maintained at about ambient temperature. Monitoring of fluid conditions, if used as the primary basis for precluding steam binding, is recommended each shift.

This item is not intended to require elaborate instrumentation. A simple means of monitoring temperature, such as touching the pipe, is a satisfactory approach.

RESPONSE

The Primary and Secondary Auxiliary Operator log sheets require a check (by touch) of the emergency feedwater pump discharge piping each shift (every 8 hours) to insure the piping is at ambient temperature. The emergency feedwater system operability surveillance procedure, OP-4211, requires that the pump discharge piping be checked following operation of these pumps.

These requirements were in place prior to issuance of the bulletin. We consider this item adequately addressed.

2. Develop procedures for recognizing steam binding and for restoring the AFW system to operable status, should steam binding occur.

RESPONSE

Operator training covers steam binding and restoration of pumps in lessons on thermodynamics and fluid flow and pumps. Training and procedures are not specific for the emergency feedwater pumps.

The emergency procedure, OP-3203, includes reminders to the operators to check proper pump operation, and what steps to take in the event the pumps are not operating properly. These steps are not limited to pump failure due to steam binding.

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This approach, instead of specific steam binding procedures for the emergency feedwater pumps, is taken for the following reasons:

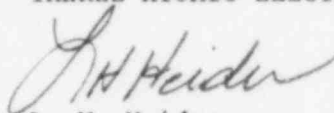
1. Most pumps are susceptible to steam binding or vapor lock. Training covers actions taken for most pumps in power plant service.
2. Our system configuration, coupled with operator surveillance, makes steam binding of the emergency feedwater pumps a highly unlikely event.

As indicated in the discussion, steam binding of the emergency feedwater pumps is unlikely and would not disable all emergency feed capability. Because the event is unlikely and training covers the concern on a generic basis additional procedure steps are not necessary. This training program was in place prior to issuance of the bulletin. We consider this item addressed satisfactorily.

We trust this information is satisfactory; however, if you have any questions, please contact us.

Very truly yours,

YANKEE ATOMIC ELECTRIC COMPANY



L. H. Heider
Vice President/Manager of Operations

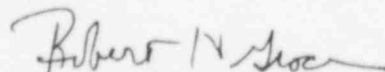
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COMMONWEALTH OF MASSACHUSETTS)

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Then personally appeared before me, L. H. Heider, who, being duly sworn, did state that he is a Vice President of Yankee Atomic Electric Company, that he is duly authorized to execute and file the foregoing document in the name and on the behalf of Yankee Atomic Electric Company and that the statements therein are true to the best of his knowledge and belief.



Robert H. Groce
My Commission Expires

Notary Public
August 29, 1991