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September 9, 1994
ND3MNO:3610

Beaver Valley Power Station, Unit No. 2
Docket No. 50-412, Licensee No. NPF-73
LER 94-009-00

United States Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555

Gentlemen:

In accordance with Appendix A, Beaver Valley Technical Specifications, the following Licensee Event Report is submitted:

LER 94-009-00, 10 CFR 50.73.a.2.i.B, "Condition Prohibited by Technical Specifications - Inoperable Recirculation Spray System Pump".

L. R. Freeland
General Manager
Nuclear Operations

JWM:clp

Attachment

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LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MINBB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

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Beaver Valley Power Station Unit 2		05000412		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	2 OF 3
				94	009	00	

TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

DESCRIPTION OF EVENT

On August 12, 1994, at 1515 hours, with the Unit at 100 percent power, the "A" Recirculation Spray System (RSS) Pump (2RSS-P21A) was declared inoperable when it was determined that the pump could not meet its Technical Specification (TS) surveillance requirement of developing a differential pressure of greater than or equal to 112 psid at a recirculation flow of greater than or equal to 3500 gpm. The inability of 2RSS-P21A to meet its TS surveillance requirement was discovered during an engineering evaluation which had been in progress to investigate degraded performance of 2RSS-P21A since the Third Refueling Outage. One area being investigated was the certified flow data of the RSS flow elements. Upon review of this data package, it was observed that the calibration curves for the flow elements indicated that 100 inches of water-pressure drop provided a flowrate of 3860 gpm; however, the flow transmitters are calibrated to read 4000 gpm for 100 inches water-pressure drop across the flow element. This calibration scaling discrepancy was not accounted for in the test loop analysis for the flow transmitters. Therefore the indicated flowrate, provided by the flow transmitters and used during surveillance testing, was higher than the actual flowrate measured by the venturi flow elements, producing non-conservative results. The Fourth Refueling Outage pump performance data was recalculated with the indicated flow data being scaled down to compensate for actual flow-element flow. This correction resulted in a revised predicted flow of approximately 3388 gpm for 2RSS-P21A. Projecting the corrected data along the pump performance curve produced a differential pressure less than the TS required differential pressure, at the TS required flow of 3500 gpm. The same principles were applied to 2RSS-P21B, C, & D. These pumps were found to follow the original pump curve and would be capable of delivering TS required differential pressure and flow. Unit 2 entered the TS 3.6.2.2 Action Statement requiring restoration of 2RSS-P21A in 72 hours or placing the plant in Hot Standby within the next six hours. 2RSS-P21A was considered operable at 1506 hours on August 15, 1994, after receiving discretionary enforcement approval from the Nuclear Regulatory Commission (see Corrective Actions Section).

CAUSE OF EVENT

It is believed that during initial start-up calibration, the scaling of the flow transmitters/indicators were not matched to the characteristics of the flow elements.

CORRECTIVE ACTIONS

Applicable calibration procedures were revised. Flow transmitters and elements have been recalibrated to provide accurate flow indication for each pump, as sensed by the flow elements. An operability evaluation was prepared by station personnel and approved, confirming operability of 2RSS-P21B, C, & D until the next Refueling outage when all four RSS pumps will be retested.

An engineering analysis of the reduction in the required performance of 2RSS-P21A was performed and discretionary enforcement, followed by a TS Amendment, was approved by the Nuclear Regulatory Commission. The TS Amendment permits continued operation until the beginning of the Fifth Refueling outage (Mode 5) or until an outage of 30 days or greater, whichever occurs first. 2RSS-P21A is now temporarily required to develop a differential pressure of greater than or equal to 100 psid at a flow of greater than or equal to 3275 gpm. The analysis for the reduced pump performance was approved based on a maximum Service Water temperature of 86 degrees F (see Safety Implications).

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TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

REPORTABILITY

This written report is being submitted in accordance with 10 CFR 50.73(2)(i)(B) as a condition prohibited by plant Technical Specifications. Due to a calibration scaling error, suspected to have occurred during initial plant start-up, and prior to receiving the TS Amendment, 2RSS-P21A did not perform in accordance with the differential pressure and flow as specified in the applicable TS Surveillance requirement.

SAFETY IMPLICATIONS

Following the results of an engineering analysis, it has been determined that minimal safety implications would occur as a result of this event. The proposed reduction in the required performance for 2RSS-P21A and its effect on the Recirculation Spray System (RSS) were evaluated using a computer model. This analysis was performed using the proposed performance recirculation flow as an input. The results of the analysis demonstrated that the Design Basis requirement for the Containment Depressurization System continues to be met with a maximum Service Water (i.e. River Water) temperature of 87 degrees F. The site maximum Service Water temperature was 86 degrees F, recorded in 1988. The maximum value reached in 1994 was 83 degrees F. The Service Water temperature is currently verified less than 87 degrees F once per 24 hours by plant operators (previous maximum limit was 89 degrees F). In accordance with the engineering analysis, 2RSS-P21A must be declared inoperable, and the TS Action applied, if the Service Water temperature increases to 87 degrees F. With Service Water temperature at or above 86 degrees, and less than 87 degrees, 2RSS-P21A may only be considered operable if Containment temperature is maintained greater than or equal to 100 degrees F.

The analysis also assumed the current plugging level of 28 tubes in the "A" RSS Heat Exchanger. No additional tube plugging will occur until the Fifth Refueling outage. The Containment Depressurization System continues to be capable of reducing the containment pressure to a subatmospheric condition within one hour following a Loss of Coolant Accident (LOCA), and maintaining the containment pressure subatmospheric for the long term.

PREVIOUS SIMILAR EVENTS

There have been no previous similar reportable events involving calibration scaling discrepancies between flow elements and flow transmitters.