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January 2, 1992
NDJMNO:3233

Beaver Valley Power Station, Unit No. 1
Docket No. 50-334, License No. DPR-66
LER 91-032-00

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 91-032-00, 10 CFR 50.73.a.2.v.A, "Inadequate Ventilation Flow From High Head Safety Injection Pump Cubicles".

Very truly yours,

T. P. Noonan
General Manager
Nuclear Operations

JWM/s1

Attachment

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S PDR

NRC FORM 300A (8-89)		U.S. NUCLEAR REGULATORY COMMISSION		APPROVED OMB NO. 3150-0104 EXPIRES 4/30/97	
LICENSEE EVENT REPORT (LER) TEXT CONTINUATION				ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 900 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (F330) U.S. NUCLEAR REGULATORY COMMISSION WASHINGTON, DC 20545 AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104) OFFICE OF MANAGEMENT AND BUDGET WASHINGTON, DC 20503	
FACILITY NAME (1)		DOCKET NUMBER (2)		LER NUMBER (3)	
Beaver Valley Power Station Unit 1		0500033491		PAGE (3) 032-0002 OF 05	
TEXT 10 more sheets required. Use additional NRC Form 300A (9/17)					

DESCRIPTION OF EVENT

On 12/3/91, with Beaver Valley Unit 1 in Power Operation, Operational Mode 1, 100 percent power, it was conservatively determined that the plant's safe shutdown capability was potentially degraded. It had been discovered that due to a failed damper, VS-D-4-30, (Supplemental Leak Collection and Release System Balance Damper for the High Head Safety Injection/Charging Pump Cubicles) the measured exhaust flow from each High Head Safety Injection (HHSI) pump cubicle, during accident alignment, was less than that required by recently performed ventilation system calculations. These calculations were developed to determine the flow rate necessary to maintain the HHSI pump motor temperatures below the Environmental Qualification (EQ) limit of 120 F, during a Containment Isolation Phase B (CIB).

Prior to the discovery of the failed balance damper, while the unit was in Hot Shutdown, Operational Mode 4 (plant heat-up following an outage due to unrelated reasons), an ongoing engineering evaluation of ventilation flows from the HHSI pump cubicles was in progress. On 11/27/91, following entry into Hot Standby, Mode 3, an evaluation of exhaust flow data determined that HHSI pump cubicle flows were inadequate. At this time the Action Statement of Technical Specification 3.5.2 was entered and mode escalation was placed on hold due to the inoperability of the support systems for two of three HHSI pumps. An investigation determined that balance damper VS-D-4-30 was failed in a partially closed position. The damper was repaired and repositioned, allowing for adequate exhaust flows. Following additional engineering evaluation and management review, the Nuclear Regulatory Commission was notified via the Emergency Notification System (ENS) at 1347 hrs on 12/3/91, in accordance with 10 CFR 50.72.b.2.iii.A. as a condition that potentially could alone have prevented safe reactor shutdown.

In addition to flow being restricted by the failed damper, VS-D-4-30, an engineering review of the original design calculations (performed by the Architect/Engineer for environmentally qualified areas) had revealed that assumptions made in the calculations for accident conditions were not in effect. Specifically, the original calculations assumed that

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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION				ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST 500 HRS FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P 530) U.S. NUCLEAR REGULATORY COMMISSION WASHINGTON DC 20555 AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104) OFFICE OF MANAGEMENT AND BUDGET WASHINGTON DC 20503	
FACILITY NAME (1)		DOCKET NUMBER (2)		LER NUMBER (3)	
Beaver Valley Power Station Unit 1		0500033491		YEAR SEQUENTIAL REVISION NUMBER NUMBER	
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TEXT (if more space is required, use additional NRC Form 365A's) (17)

during an accident, temporary ventilation would be supplied to maintain the ambient temperature of the HHSI pump cubicles below the known EQ limit of 120 F for HHSI pump motors. According to the Architect/Engineer (A/E) calculations, during a CIB when the HHSI pump cubicles are exhausted via the Supplemental Leak Collection and Release System (SLCRS), temperatures in the cubicles could reach 170 F, without temporary ventilation. This temporary ventilation requirement had never been implemented as part of Beaver Valley's Emergency Operating Procedures (EOPs). A preliminary calculation by Beaver Valley's EQ Engineering Group indicated that increasing the flow from 2000 standard cubic feet per minute (scfm) to 3000 scfm would be required to maintain the pump cubicle temperature, expected during a CIB, at or below 120 F. As a result, the station initiated an investigation to determine the possibility of increasing the flow from each HHSI pump cubicle during accident alignment. Initially, it was concluded that increasing the SLCRS flow from the HHSI pump cubicles would be unacceptable, because it would reduce exhaust flow from other areas. A revision to the EOPs, including a requirement for portable temporary ventilation was proposed. This solution, however, was dismissed as it was judged that an unreviewed safety question would exist.

CAUSE OF EVENT

While the unit was shutdown in Mode 5 due to unrelated reasons, actual exhaust flow measurements were obtained at the request of EQ Engineering. Unacceptable results prompted an investigation which revealed the failed damper VS-D-4-30. The failure was determined to be due to a damper blade set screw that had become loose. This disengaged the damper blades from the shaft and allowed the blades to rotate toward a closed position.

CORRECTIVE ACTIONS

1. Balance damper VS-D-4-30 was repaired and repositioned allowing adequate exhaust flow (3000 scfm). Increasing exhaust flow to 3000 scfm was found not to have an adverse effect on other areas as previously believed.

NRC FORM 306A
(6-89)

U.S. NUCLEAR REGULATORY COMMISSION

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATIONAPPROVED OMS NO 3150-0104
EXPIRES 4/30/93ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS
INFORMATION COLLECTION REQUEST 500 HRS. FORWARD
COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS
AND REPORTS MANAGEMENT BRANCH (P-330) U.S. NUCLEAR
REGULATORY COMMISSION WASHINGTON, DC 20555 AND TO
THE PAPERWORK REDUCTION PROJECT (3150-0104) OFFICE
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TEXT (If more space is required, use additional NRC Form 306A (2/1/77))

2. In addition the following long term corrective actions will be implemented:
- The design basis of the SLCRS flow rates will be re-established by reviewing all heat loads in safety related areas and required heat removal capacity. The design drawings will be revised to reflect the new rates.
 - The test program will be revised to have the heat removal flow rates of SLCRS verified on a periodic basis.
 - The development of a ventilation balancing test to identify similar damper failures is being evaluated. In the interim, similar dampers will be periodically inspected.
3. Since the time of the original A/E calculations, Nuclear Engineering Administrative Procedure 2.13 "Technical Evaluation Reports" has been developed. In the event engineering calculations identify the need for a revision to plant operating requirements, this procedure requires the lead engineer to initiate the appropriate changes.

PREVIOUS OCCURRENCES

There has been one previous reportable event in which the SLCRS flow rate was found to be less than required (LER 82-001).

REPORTABILITY

This written report is being submitted in accordance with 10 CFR 50.73.a.2.v.A. as an event or condition which could have prevented safe reactor shutdown capability. In addition, the Mode change is considered to be a condition prohibited by Technical Specifications reportable under 10 CFR 50.73.a.2.i.B.

NRC FORM 305A
(6-89)

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO 3150-0104

EXPIRES 4/30/92

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS
INFORMATION COLLECTION REQUEST 500 HRS. FORWARD
COMMENTS REGARDING BURDEN ESTIMATE TO THE REG-
AND REPORTS MANAGEMENT BRANCH (P 830) U.S. NRC
REGULATORY COMMISSION WASHINGTON DC 20555
THE PAPERWORK REDUCTION PROJECT (3150-0104)
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TEXT IF MORE SPACE IS REQUIRED, USE ADDITIONAL NRC Form 305A (1)

SAFETY IMPLICATIONS

There was no adverse impact to the safety of the public as a result of this event. Although a loss of HHSI capability during a loss of coolant accident is not analyzed in the UFSAR, it was considered as a possible scenario by the Westinghouse Owner's Group during EOP development. Accordingly, this situation is addressed in the station EOPs.