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PSE&G

Public Service Electric and Gas Company P.O. Box L Hancocks Bridge, New Jersey 08038

Hope Creek Operations

May 11, 1988

U. S. Nuclear Regulatory Commission
Office of the Analysis and Evaluation of Operational Data
Incident Response Branch
Mail Code MNBB 3302
Washington, D. C. 20555

Dear Sir:

HOPE CREEK GENERATING STATION
DOCKET NO. 50-354
UNIT NO. 1

The PSE&G letter of December 23, 1987 supplemented a telephone report of a suspected loose part in the Hope Creek Reactor Pressure Vessel (RPV). At the time of that report, PSE&G committed to provide a report based on the results of further evaluations of the Vibration and Loose Parts Monitor (VLPM) recordings and on inspections during the first Hope Creek refueling outage. The following report is hereby submitted in fulfillment of that commitment.

INVESTIGATION OF THE SOURCE OF VLPM SIGNALS OBSERVED AT HOPE CREEK GENERATING STATION

On February 26, 1988, the "B" feedwater check valve which had failed LLRT was disassembled and inspected. A damaged disk was found and replaced. The disk was exercised against the valve body while making a VLPM recording and it was observed that the recorded signal resembled the signals observed prior to the refueling outage.

Subsequent to the replacement of the valve disk, the new disk was observed to "wobble" against the valve body in the open position. The extension piece on the hinge arm was built up to prevent the disk from contacting the valve body in the open position.

IE22 1/0 Add: NRR Crutchfield Ltr 1
NRR Varga S. 1
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NRR/DRIS/VIB 1

During the refueling outage, a routine examination of the reactor internals was made with particular attention to the feedwater nozzles. No evidence of loose parts which could be the source of VPLM signals was found.

The tape recording of the "B" feedwater check valve VLPM signals obtained during the exercising of the feedwater valve disk was sent to the Babcock & Wilcox Company for analysis and comparison with the signals recorded during plant operation. Babcock & Wilcox concluded that the impact noises detected during power operation were caused by the feedwater check valves. The impacts were flow-related; during power operation above 75%, the check valve plates appeared to have been impacting the valve body. These findings were confirmed by the following observations:

1. The predominant frequencies ranged from approximately 0.986 KHz to approximately 3.1 KHz. These frequencies are very close and are identical to those recorded prior to the refueling outage, varying only in amplitude.

2. The audio evaluation of the recorded VLPM signals, as judged by the human ear, found them to be nearly identical.

VPLM response signals were monitored during power operation following the refueling outage. The VLPM response for the channel monitoring the "B" feedwater check valve no longer indicates noise, signifying that the source of the noise was the check valve which had been repaired

The VLPM channel monitoring the "A" feedwater check valve also recorded noise signals which were similar to those for the "B" valve. The "A" valve disk was not disturbed during the refueling outage because it passed LLRT and the origin of the VLPM noise in question had not been unequivocally established by the testing performed to date.

Temporary accelerometers were installed near the "A" and "B" feedwater check valves to confirm the source of the noise. The accelerometer traces showed impacts occurring in the channels monitoring the "A" valve. The channels monitoring the "B" valve showed no impacts. These accelerometer traces confirm the source of the impact noise to be a valve disk impacting on the valve body wall.

In conclusion:

The Babcock & Wilcox comparison of the "B" feedwater check valve VLPM signals before and after the valve repair indicated the "B" valve to be a source of the alarm signal.

This assumption was confirmed independently by a comparison of the accelerometer traces of the repaired "B" feedwater check valve and the "A" valve which had not been repaired.

Since it has been determined that repair of the "B" feedwater check valve eliminated the noise signals observed by the VLPM channel monitoring the "B" feedwater train, the "A" feedwater check valve will be inspected at a future outage to determine if similar repair is warranted.

Sincerely,

S. LaBruna
General Manager -
Hope Creek Operations

AME:

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