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Beaver Valley Power Station
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February 6, 1991

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U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

Reference: Beaver Valley Power Station, Unit No. 1 and No. 2
BV-1 Docket No. 50-334, License No. DPR-66
BV-2 Docket No. 50-412, License No. NPF-73

Subject: Supplemental Response to Generic Letter 88-17,
Program Enhancements

The purpose of this letter is to provide additional specific details on RCS level and RCS temperature instrumentation as requested by NRC staff reviewers as a result of a recent site inspection of activities associated with Generic Letter 88-17. Supplemental information to Programmed Enhancement No. 1 "Instrumentation" is provided in Enclosure I of this correspondence.

In addition to the above, we have experienced difficulty in meeting the implementation schedule of Generic Letter 88-17; Loss of Decay Heat Removal. Our letters dated February 23, 1989 and March 19, 1989, provided a response to the Generic Letter programmed enhancements. The schedule requested by the NRC was to complete programmed enhancements consisting of hardware installation and/or modification by the end of the second refueling outage following receipt of the Generic Letter. By letter dated December 26, 1990, we advised the NRC that the implementation of modifications on Unit No. 2 would be delayed until the third refueling outage unless a need to enter a reduced inventory condition occurred earlier. In that case, we would complete the modifications at that time.

Our original Unit No. 1 programmed enhancement commitments include completing modifications by the end of the eighth refueling outage scheduled to begin April 12, 1991. We will not be able to meet that schedule due to encountering the following difficulties and delays throughout the course of design detail development.

- We still lack complete engineering details for the vendor supplied ultrasonic instrumentation. (ref: December 26, 1990, submittal).
- The support details for upgrading the RCS level transmitter instrumentation tubing from temporary to permanent are not ready for issue to the field for fabrication. (We will obtain field measurements during the eighth refueling outage to allow development of the installation details).

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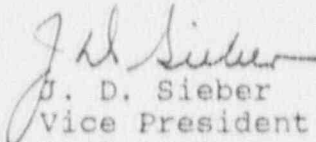
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We will continue to work on these modifications to assure completion prior to need (i.e., operation at reduced inventory) or the end of the next refueling outage scheduled to begin December 10, 1992.

If you have any questions, please contact me or members of my staff.

Sincerely,


J. D. Sieber
Vice President
Nuclear Group

cc: Mr. J. Beall, Sr. Resident Inspector
Mr. T. T. Martin, NRC Region I Administrator
Mr. A. W. DeAgazio, Project Manager
Mr. R. Saunders (VEPCO)

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ENCLOSURE I

SUPPLEMENTAL RESPONSE TO GENERIC LETTER 88-17

"PROGRAMMED ENHANCEMENT NO. 1 - INSTRUMENTATION"

Instrumentation Requirements per Generic Letter 88-17

Provide reliable indication of parameters that describe the state of the RCS and the performance of systems normally used to cool the RCS for both normal and accident conditions. At a minimum, provide the following in the Control Room:

- (a) Two independent RCS level indications.
- (b) At least two independent temperature measurements representative of the core exit whenever the RV head is located on top of the RV (We suggest that temperature indications be provided at all times).
- (c) The capability of continuously monitoring DHR system performance whenever a DHR system is being used for cooling the RCS.
- (d) Visible and audible indications of abnormal conditions in temperature, level, and DHR system performance.

I Supplemental Information - BVPS Unit 1

Level Indication (BVPS Unit 1):

Reliable indication of RCS level during operation at a reduced reactor coolant system inventory is currently provided by two (2) temporary level transmitters and temporary tubing on the "A" and "C" loops. The temporary equipment will be permanently installed and will provide two independent RCS level indications to satisfy the guidelines of this Generic Letter.

In addition, an ultrasonic level transmitter will be added to the "A" hot leg as supplemental, independent RCS level indication during mid-loop operations. This instrument may be substituted for one of the above level transmitters when in a reduced inventory condition. These instruments will be provided with visual and audible indications of abnormal conditions in the Control Room.

Table IA provides specific details of the level instruments including type, accuracies, range, and alarm capabilities for Unit 1. Table IB identifies the tap connections, respective elevations and locations for the RCS level instruments utilized during mid-loop operations.

Mid-loop operation also requires the operations personnel to closely monitor various equipment parameters utilizing the station logs (L5-45, 46 and 47). Parameters monitored are:

- RHR pump flow and temperatures
- RHR pump amps
- RCS temperatures
- RCS level

Anytime the level indications disagree by more than 5 inches or the remote level transmitters are out of service, continuous monitoring of a local standpipe is initiated and called into the Control Room every 15 minutes or immediately if significant rapid level changes occur (> 1 inch).

Anytime RCS level, RHR flow, or RHR pump amps are unstable, the following actions are taken:

- Vent RHR pumps once an hour.
- Log vent time, RHR pump amps and core thermocouple readings each hour on the Reactor Operator Log. (Two incore thermocouples per core quadrant).
- Continue hourly venting until there is no evidence of air and the local standpipe and the remote level transmitters agree with ± 5 inches.

Temperature Indication (BVPS Unit 1):

Core exit thermocouples (CETCs) will be utilized to monitor the RCS during mid-loop operation. The operating surveillance logs will require the operators to record thermocouple readings twice per shift. The need for providing alarm capability of the thermocouple temperatures has been evaluated and determined to be unnecessary. There is sufficient monitoring of RHR system performance to provide an early warning of a potential loss of core cooling. The operator is responsible for acknowledging and responding to all Control Room alarms. An alarm associated with the CETC's could become a deterrent to the operators in lieu of the various alarm/annunciation capabilities in the Control Room or for detecting the onset of any abnormal conditions or malfunctions. The monitoring of the operating parameters discussed previously in combination with operator awareness through training provide assurances that the loss of RHR capability is significantly reduced.

II Supplemental Information - BVPS Unit 2

Level Indication (BVPS Unit 2):

Reliable indication of RCS level during operation at a reduced reactor coolant system inventory is currently provided by a permanently installed level transmitter [2RCS-LT102] on the "C" loop. There also exists a Magnicator level gage (site glass) which is permanently installed and monitors the RCS between the pressurizer and the RCS piping centerline.

In order to satisfy the need for two independent level indications defined in the generic letter, an ultrasonic level transmitter will be added to the "A" hot leg. The ultrasonic level transmitter will monitor narrow range mid-loop level and have the capability for Control Room indication and alarm.

Table IIA provides specific details of the level instruments including type, accuracies, range, and alarm capabilities for Unit 2. Table IIB identifies the tap connections, respective elevations and location for the RCS level instruments utilized during mid-loop operations.

Mid-loop operation also requires the operations personnel to closely monitor various equipment parameters utilizing the Station Logs (L5-51, 52 and 53). Parameters monitored are:

- RHR pump flow
- RHR pump amps
- RCS temperatures
- RCS level

When draining the RCS while in a reduced inventory condition, the change in level is monitored by the level transmitter indicator in the Control Room and continuous monitoring of the local gauge glass whose readings are called into the Control Room every 15 minutes.

Anytime RCS level, RHR flow or RHR pump amps are unstable, the following actions are taken:

- Vent RHR pumps once an hour.
- Log vent time, RHR pump amps and core thermocouple readings each hour on the Reactor Operator Log. (Two incore thermocouples per core quadrant).
- Continue hourly venting until there is no evidence of air and the local standpipe and remote level indicator agrees within ± 5 inches.

With the one (1) wide range remote level transmitter and the addition of the ultrasonic level transmitter, we believe adequate, reliable, and independent RCS level indication is provided for satisfying Generic Letter 88-17.

Temperature Indication (BVPS Unit 2):

Core exit thermocouples (CETCs) will be utilized in a manner similar to Unit 1 to monitor the RCS during mid-loop operation. The operating surveillance logs will require the operators to record thermocouple readings twice per shift. The need for providing alarm capability of the thermocouple temperatures has been evaluated and determined to be unnecessary. There is sufficient monitoring of RHR system performance to provide an early warning of a potential loss of core cooling. The operator is responsible for acknowledging and responding to all Control Room alarms. An alarm associated with the CETC's could become a

Enclosure I, continued

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deterrent to the operators in lieu of the various alarm/annunciation capabilities in the Control Room or for detecting the onset of any abnormal conditions or malfunctions. The monitoring of the operating parameters discussed previously in combination with operator awareness through training should provide assurances that the loss of RHR capability is significantly reduced.

TABLE IA - RCS Level Instrumentation, BVPS Unit 1

<u>Level Instrumentation</u>	<u>Type</u>	<u>Range</u>	<u>Accuracy</u>	<u>Alarms</u>
BV-1 Two (2) Level Transmitters (WR) ("A" Loop and "C" Loop)	Rosemount	0-750" (Calibrated over 0-200" Range)	.25% of Full Range (0-750")	Hi/Lo Alarms to C.R. (SG level outputs) Two-pen Recorder in Control Room
Ultrasonic Level Transmitter (NR) ["A" Hot Leg"]	Ultrasonic Probe	0-30" (Hot Leg I.D. = 29") 100-40% of full pipe ($\approx 11.6"$ @ 40% level)	$\pm 1"$	Will be alarmed to C.R. (XR-TB 202 to be used for monitoring and annuncia- tion).

TABLE IB-RCS Level Instrument Taps/Location

<u>Level Instrument (BV-1)</u>	<u>Taps/Location (Draindown)</u>	<u>Taps/Location (Mid-loop)</u>
LT-TEMP-1A-3I (WR)	RC-27 ("A" Cold Leg Vent) EL = 732'3 15/16" (8700 - RP-8F Iso. Drwg.)	*RC-216, 217 or 218 Root stop valves (for FT-RC 415, 416, 417) EL ≈ 726'6" (8700 - RP-8F Iso. Drwg.)
LT-TEMP-1C-3I (WR)	RC-54 ("C" Cold Leg Vent) EL = 732'3 15/16"	*RC-224 (FT-RC-434 Isol. Valve) EL - 726'6"
LT-RC-480 (Ultrasonic transmitter) "A" Hot Leg	Hot Leg piping (Centerline = EL 732' 3 15/16") Range 0-30" Piping ID = 29"	

*NOTE

When level gets down to mid-loop indication, the tap connections for 1 of the 2 loops are changed from WR to a narrower range for reading lower levels and recalibrated for loop level indication.

TABLE IIA - RCS Level Instrumentation, BVPS Unit 1

<u>Level Instrumentation</u>	<u>Type</u>	<u>Range</u>	<u>Accuracy</u>	<u>Alarms</u>
BV-2 1RCS Level Transmitters (WR) [2RCS-LIT-102]	Rosemount	0-180"	.25% of Full Range (0-180")	Hi/Lo Alarms to C.R. (Recorder in C.R.)
Ultrasonic Level Transmitter (NR) [2RC-LIT-103]	Ultrasonic Probe	0-30" (Hot Leg I.D. = 29") 100-40% of full pipe ($\approx 11.6"$ @ 40% level)	$\pm 1"$	Will be alarmed to C.R. [Existing box 2SIS-LI920 and recorder 2IMS-PR950 to be used for CR indication and annunciation].

TABLE IIB-RCS Level Instrument Taps/Location

<u>Level Instrument (BV-1)</u>	<u>Taps/Location</u>
2RCS-LT-102 (WR)	to 2RCS-750-272-2 2RCS-750-273-4 EL \approx 730'8" (off Hot Leg "C" Piping) [Drwg. # 280 6263920-817 and # 280 6258920-700G]
2RCS-LT-103 (Ultrasonic Transmitter) "A" Hot Leg	Hot Leg Piping (Centerline - 732'3 15/16") Range 0-30" Piping ID-29"