

Duquesne Light Company

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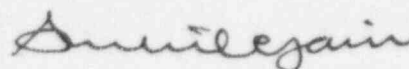
U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555-0001

**Subject: 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
Response to Request for Information on
Cement Erosion Under Containment Foundation**

NRC letter dated October 18, 1996, requested information concerning the porous concrete sub-foundation of the Beaver Valley Power Station (BVPS) Unit 1 and Unit 2 containment structures. Attached is the Duquesne Light Company response to this request.

If you have any questions on this submittal, please contact Mr. Roy K. Brosi, Manager, Nuclear Safety Department, at (412) 393-5210.

Sincerely,



Sushil C. Jain

Attachment

- c: Mr. H. J. Miller, NRC Region I Administrator
Mr. D. M. Kern, Sr. Resident Inspector
Mr. D. S. Brinkman, Sr. Project Manager

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ATTACHMENT

NRC Request For Information Cement Erosion Under Containment Foundation

A summary of design and elevation information is provided below for an overall understanding of the Beaver Valley Power Station (BVPS) containment design features relative to the porous concrete concern. Additional details can be found in the Updated Final Safety Analysis Reports (UFSARs) for BVPS Unit 1 and Unit 2, Section 5.2 and 3.8, respectively.

Ground Water And Porous Concrete Layer Elevations

<u>DESCRIPTION OF BVPS LEVELS</u>	<u>APPROXIMATE ELEVATION</u>
Maximum Flood	730 feet
Standard Project Flood	705 feet
Lowest Boundary of the Porous Concrete Layer	679 feet 11 inches
Ordinary High Water	675 feet
Normal Ground Water Table	665 feet

At BVPS Unit 1 and Unit 2, the bottom of the containment mat foundations is at an approximate elevation of 680 feet 11 inches. Immediately below the mat foundations are the porous concrete layers. The thickness of the porous layers varies from the center to the edge of the containment mat. The bottom surface of the porous layer varies between the approximate elevations of 679 feet 11 inches to 680 feet 7 inches.

A waterproof membrane envelopes the porous concrete layer, the containment mat foundation, and the exterior wall to finish grade at BVPS Unit 1 and Unit 2. Finish grade elevations at the containment buildings for Unit 1 and Unit 2 are 730 feet and 735 feet, respectively. Prior to entering the porous concrete layer, the ground water would have to pass through the membrane.

Based on the above, it is unlikely that BVPS will experience drainage through the porous concrete layer located below the containment mat foundation.

The following responses are provided which address the questions identified in the subject letter.

Request For Information 1:

Have you found slurry in the drainage from these layers?

Response 1:

BVPS Unit 1 and Unit 2 have not experienced, and are not expected to experience, drainage from the porous concrete layers based on the BVPS containment design features and the waterproof membrane with respect to the probable maximum flood level for BVPS.

At BVPS Unit 1, water infiltration at the instrument pits in the yard adjacent to the containment structure wall has occurred. A Maintenance Work Request (MWR) history inquiry determined that, from 1983 to 1996, four MWRs were written related to high water alarms for the instrument pits. Duquesne Light Company initiated seal repair work at the instrument pit which was completed during the week of October 14, 1996. Heavy rainfall during the weekend of October 19, 1996, did not cause any alarms due to high water levels in the instrument pits. It was concluded that the water removed from the instrument pits was surface water runoff from the yard area that infiltrated the top portions of the pits.

A water sample was taken from the BVPS Unit 1 instrument pits on October 14, 1996. The sample, a relatively clear liquid that had a small amount of particles detectable to the human eye, was analyzed before and after being filtered. The solid material filtered from the sample was analyzed and found to contain no detectable levels of aluminum, calcium, or magnesium. The results provide no evidence that concrete leaching has occurred. The liquid and solids found in the sample are indicative of typical ground water.

The BVPS Unit 2 instrument pits, which are not located in a yard area as are the BVPS Unit 1 pits, are located inside the Engineering Safeguards Building. The instrument pits are not pumped out unless there is water from leaking valves in the cubicles where the pits are located. Based on discussions with maintenance personnel and a review of the maintenance history, no slurry has been reported at the Unit 2 instrument pits.

Request For Information 2:

Has there been any settlement of the containment basemats?

Response 2:

The total observed settlement of the BVPS Unit 1 and Unit 2 containment structures compares favorably with the total predicted settlement. Plots of the settlement data for the containment structures indicate that the structures are in the secondary consolidation phase of a typical settlement versus time curve.

Request For Information 3:

Have you noticed any unusual conditions which may be related to the porous concrete sub-foundation layers?

Response 3:

Duquesne Light Company has not noted any unusual conditions that were related to the porous concrete sub-foundation layers at BVPS Unit 1 and Unit 2.

Request For Information 4:

Are you monitoring anything related to the drainage from the porous concrete sub-foundation layers below the containment basemats?

Response 4:

BVPS monitors the water removed from the BVPS Unit 1 instrument pits for radiological contamination only. The sampling is done when there is an instrument pit high level annunciator alarm in the control room. As noted in response to Item 1 above, the results of the analysis showed that the presence of liquids and solids found in the sample were indicative of typical ground water. There is no evidence of concrete leaching through the porous concrete layer at BVPS.