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July 8, 1988

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

Reference: Beaver Valley Power Station, Unit No. 2
Docket No. 50-412, License No. NPF-73
Differential Settlement of Buried Pipes (TAC 62885)

Gentlemen:

DLC has received your request for additional information dated May 3, 1988. The remaining concern on this issue appears to be pipe stress at one location on the service water pipe where "there is very little margin of safety..." This conclusion was based on the fact that calculated stress at this location was 5% less than allowable stress while other locations provided a 60% to 90% margin to the allowable stress. It does not take credit for the margin of safety provided by the conservatism built into the allowable stress value. Regulatory criteria do not specify the need for additional margin between calculated and allowable stress values. As noted previously, all stresses developed in the SWS piping as a result of differential settlement are within allowable limits. Therefore, the margin of safety is maintained at all points along the piping.

The following information is being provided to resolve this issue.

NRC QUESTION:

Provide a summary of the detailed calculations along with a summary of the soil data to substantiate the differential settlement of 5.7 inches at the most critical section of the Service Water System (SWS) pipes running north from the valve pit to the intake structure shown in Reference 4.

DLC RESPONSE:

A brief summary of the calculation predicting settlement along the 30-inch SWS pipes from the intake structure to the valve pit was presented in letter no. 2NRC-7-045 dated March 9, 1987. The calculation of settlement along the SWS piping is quite involved since the history of this area is complicated and had to be extensively researched and explained. Basically, fill placed over the piping alignment caused settlement in the underlying clay to varying degrees depending on the stress history of the soil and the amount of fill placed. In order to fully present the method used in determining the SWS piping settlement, a complete copy of the calculation is enclosed (SWEC calculation 12241-211Y-G(B)-292, Settlement of SWS Piping - Intake Structure to Valve Pit).

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NRC QUESTION:

Is the dynamic seismically induced settlement (including the effects of wave travel and wave reflection) considered in determining the maximum differential settlement of buried pipes? If so, provide the magnitudes of both static and dynamic settlements due to different loadings separately.

DLC RESPONSE:

Dynamic settlement was not included as part of the settlement of the buried SWS pipes. Based on the results of dynamic settlement analyses of plant structures (presented in FSAR Table 2.5.4-3), the dynamic settlement was considered to be negligible.

Please inform us of any need to discuss information related to these responses.

Sincerely,

J. D. Sieber
Vice President
Nuclear Group

Attachment

cc: Mr. J. Beall, Sr. Resident Inspector, (w/o attachment)
Mr. W. T. Russell, NRC Region I Administrator, (w/o attachment)
Mr. P. Tam, Project Manager, (w/attachment)