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Docket Nos. 50-440
and 50-441

Mr. Dalwyn K. Davidson
Vice President - Engineering
Cleveland Electric Illuminating Company
P. O. Box 5000
Cleveland, Ohio 44101

Dear Mr. Davidson:

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION - GEOTECHNICAL ENGINEERING

In the performance of the Perry licensing review, the staff has identified concerns in regard to geotechnical engineering. The information that we require is identified in the enclosure.

We request that you provide the information not later than August 15, 1981. After the responses have been received, the geotechnical reviewer plans to visit the Perry site to discuss these responses with your staff and observe some specific geotechnical features. If you require any clarification of this request, please contact M. D. Houston, Project Manager, (301-492-8593).

Sincerely,

Original signed by:

Robert L. Tedesco, Assistant Director
for Licensing
Division of Licensing

Enclosure:
Request for Additional
Information

cc w/enclosure:
See next page

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Request for Additional Information - Geotechnical Engineering
Perry Nuclear Power Plant, Units 1 and 2
Docket Number: 50-440

241.1
(2.4.5.5.1.4)
(2.5.5.2)
(RSP)

In Section 2.4.5.5.1.4, you have stated that widespread slumping of the upper bluff materials (which includes the lacustrine deposits) is caused by groundwater seepage and frost action. Demonstrate how this fact has been incorporated in the stability analysis (Section 2.5.5.2) conducted to determine the amount of bluff recession which can occur before the emergency service water pump house becomes endangered. In this connection, indicate, in Figure 2.5-174, the location of the groundwater table used in the analysis. The staff requires that the stability of sliding wedges, for both the static and seismic case, within the lacustrine deposits, be investigated, utilizing methods such as the Morgenstern-Price method of analysis.

241.2
(2.4.13.5.3.d)

Figure 2.4-72 is purported to show piezometric devices installed through each of the building mats of the auxiliary buildings, the control complex, the intermediate building and the radwaste building, to measure the hydrostatic uplift pressure acting under these structures. However, the tip of the only piezometer shown on the figure is founded in relatively impermeable Class B fill. Is this an error in the figure? If not, discuss the function of the piezometer in the context of measuring the hydrostatic uplift pressures acting under the structures during the life of the plant, or otherwise define its purpose.

241.3
(2.4.13.5.5.C
.4.b)
(2.5.4.5.2)

Provide single grain size distribution plots for each of the following materials, showing the lower and upper bounds (range) of the distribution.

- a) Class A fill during construction (one plot each for construction materials from the Bestone and R. W. Sidly Quarries).
- b) Class B fill during construction.
- c) Upper till
- d) Lower till

241.4
(2.4.13.5.5
c.7.d)

You state in section 2.4.13.5.5.c.7.d that "Falling head permeability testing conducted at the Perry Site reported in Section 2.5.4, further shows that the velocity and transport capability of groundwater to erode either the Chagrin shale or lower till are negligible." However, you have not addressed this aspect in the mentioned section, please do so in quantitative detail. The Staff is concerned that possible erosion of the till and shale by flowing water could contaminate and/or clog the Class A filter. This phenomenon could seriously impair the intended use of the filter.

241.5
(2.5.4.5.2)

Provide a summary of field density and moisture tests obtained for quality control during construction of Class A and Class B fill. The results may be presented as a statistical distribution plot showing low, high and average values. This would help the staff to conclude that suitable compaction has been attained.

241.6
(2.5.4.10.4.1)

In Section 2.5.4.10.4.1, justify the use of 0.54 as the value of the coefficient of earth pressure at rest. Provide a plot of maximum earth pressure vs. depth used to design subsurface walls under static and dynamic loads. Include and distinguish the added lateral pressures due to compaction of the backfill and the effect of compaction equipment.

241.7
(2.5.4.13.4)

Provide construction details of the settlement monitoring points. Update the time vs. settlement plots for all Category 1 structures where settlements are being monitored. Discuss any deviations from anticipated settlements assumed in the analysis and design of these structures and components. Evaluate all deviations for their impact on the design and construction of these structures and components.

241.8

The Staff requires construction details of the remedial work done in connection with the installation of 15 double Class B fill waterstops, inadvertently omitted by the contractor (refer to letter from D. R. Davidson, Vice President, System Engineering and Construction, Cleveland Electric Illuminating Co., to Mr. James Keppler, Director, Region III, Office of I&E, USNRC, Glen Ellyn, Illinois, dated February 29, 1980). Were there other similar omissions? If so, discuss any corrective measures undertaken to resolve the situation.