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ILLINOIS POWER COMPANY



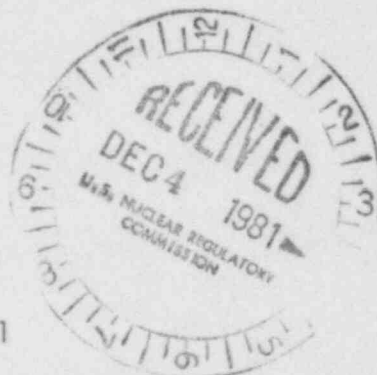
U-0379

L30-81 (12-03)-6

500 SOUTH 27TH STREET, DECATUR, ILLINOIS 62525

December 3, 1981

Mr. James R. Miller, Chief
Standardization & Special Projects Branch
Division of Licensing
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555



Dear Mr. Miller:

Clinton Power Station Unit 1
Docket No. 50-461

In response to Mr. B. Jagannath's, HGEB reviewer, questions on settlement of Unit 1 due to Unit 2 construction, we are submitting the enclosed material.

Sincerely,

J.D. Geier
Manager, Nuclear Station Engineering

Attachments

cc: J.H. Williams, NRC Clinton Project Manager
H.H. Livermore, NRC Resident Inspector
B. Jagannath, NRC HGEB

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Add:
B. Jagannath

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CLINTON STATION

CLARIFICATION ON PLANT SETTLEMENT

1. What are the elastic settlements of the structural fill under Unit 1 due to loads from Unit 2 when constructed at a later date?

Response

The maximum elastic settlement of the structural fill under Unit 1 due to Unit 2 construction at a later date is estimated to be 0.02 inches.

2. Provide a time-dependent settlement plot of the till layer under Unit 1 due to loads from Unit 2 when constructed at a later date.

Response

The attached Figure 1 shows the settlement vs. time plot for the till layer under the radwaste building, which will be most affected by the loads from Unit 2. The final settlement is estimated to be 0.72 inches.

3. Provide a quantitative assessment of the short-term (initial) settlement of the till layer under Unit 1 due to the load from Unit 2 when constructed at a later date.

Response

The initial settlement of a saturated cohesive material may be defined as the settlement during undrained condition, which is generally very small compared to the total settlement which accounts for the drained condition (consolidation settlement). It is not possible to separate out the initial settlement and consolidation settlement in cases where the loading is also a time variant. However, a quantitative assessment has been made using elastic theory and the elastic modulus corresponding to the compression wave velocity in water (undrained condition). Based on this approach, the maximum initial settlement in the till layer under Unit 1 is computed as 0.03 inch.

4. What is the incremental increase in settlement between Unit 1 and the buried pipes under Unit 1 due to loads from Unit 2 when constructed at a later date; evaluate its effect on the design of the buried pipes.

Response

The maximum incremental settlement between Unit 1 and the buried pipes under Unit 1 due to loads from Unit 2 when constructed at a later date is estimated to be 0.5 inches. It may be noted that the buried pipes under Unit 1 are designed for a differential settlement of 1 inch between buildings and the pipes (see response to Question 241.8), which includes this 0.5 inch settlement.

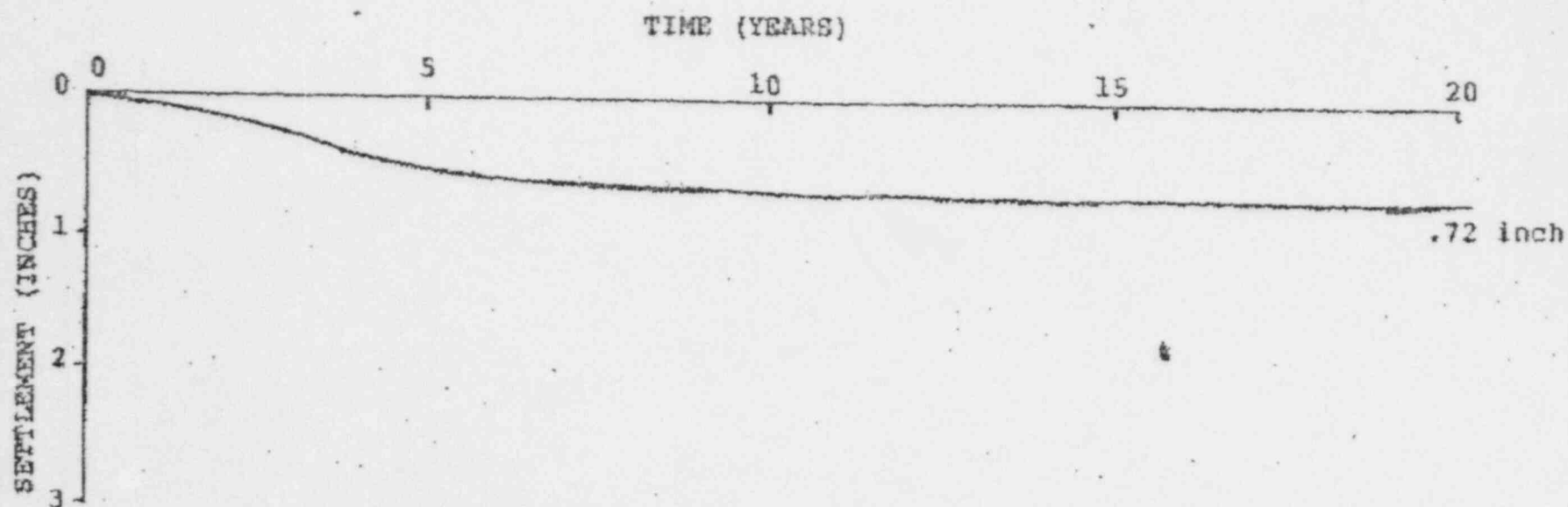


Figure 1 Time vs. Settlement for Till Layer under Radwaste Building
(at a Location Close to Unit 2) due to Construction of
Unit 2 at a Later Date