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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	Docket No. 50-367
NORTHERN INDIANA PUBLIC SERVICE COMPANY	)	(Construction Permit Extension)
(Bailly Generating Station, Nuclear-1)	)	August 18, 1981

NORTHERN INDIANA PUBLIC SERVICE COMPANY'S RESPONSE TO THE PEOPLE OF THE STATE OF ILLINOIS' SECOND SET OF INTERROGATORIES TO NIPSCO

For answer to the People of the State of Illinois' (Illinois) Second Set of Interrogatories, Northern Indiana Public Service Company (NIPSCO) states as follows:

1. With respect to the sheet piling at the Bailly N-1 site:

   (a) Describe such sheet piling.

   (b) Why was sheet piling installed?

   (c) Did the NRC Staff require that NIPSCO install the sheet piling?

   (d) Did the NRC Staff request that NIPSCO install the sheet piling?

   (e) When was sheet piling installed?

   (f) By whom was sheet piling installed?

   (g) Was sheet piling installed because the slurry wall was inadequate in some way?

   (h) Why was sheet piling not included in NIPSCO's dewatering plan at the time the Construction Permit was issued?

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(i) When did the concept and/or feasibility of sheet piling as a method of dewatering first become known to NIPSCO?

(j) Why was a slurry wall rather than sheet piling installed around the perimeter of the excavation?

ANSWER:

(a) Sheet piling installed for the construction of Bailly N-1 is described as PZ-27, MZ-27, MZ-32 and MZ-38 steel sheet piling. Each individual sheet pile is 3/8" to 1/2" thick, 18" to 21" wide and as long as required. Individual sheets weigh 27 to 38 lbs/ft^2 and have the configuration of the letter "Z". Interlocking joints on the individual sheet pile allow them to be joined to other sheet piles and form a solid wall of the length and configuration required.

(b) To allow dewatering and/or to retain soil.

(c) No.

(d) No.

(e) (i) The Reactor Building sheet piling was installed in 1977.

(ii) The sheet piling around both the inlet and the outlet for the circulating water piping from the main building complex was installed in 1978.

(iii) The sheet piling adjacent to Unit 8 was installed in 1974.

(f) Thatcher Engineering.

(g) No.

(h) Sheet piling was included in NIPSCO's dewatering plan at the time the Construction Permit was issued.

(i) NIPSCO was aware of the concept and the feasibility of using sheet piling in conjunction with construction dewatering prior to the time that planning for the Bailly Nuclear-1 project began.

(j) A slurry wall was installed because it is much more impervious to leakage and is more economical.

2. (a) Does the slurry wall in any way create, or create additional, hydrostatic pressure in Unit 3?

(b) If so, why?

ANSWER:

(a) No.

(b) Not applicable.

3. (a) What is the present elevation of the bottom of the excavation for Bailly N-1?

(b) What is the lowest elevation that the excavation will reach if construction is resumed and completed?

ANSWER:

(a) Approximately +8 feet station datum.

(b) The lowest elevation that the excavation will reach is approximately -22 feet station datum.

4. What is the lowest depth of the slurry wall?

ANSWER: Approximately -17 feet station datum.

5. What is the lowest depth of the sheet piling?

ANSWER: Approximately -26 feet station datum.

6. What is the depth of Unit 2 at the slurry wall?

ANSWER: In the response to all following Interrogatories, NIPSCO assumes "Unit 2" means the aquitard separating the unconfined and confined aquifers. The depth of Unit 2 at the slurry wall i.e. the distance from ground surface to the top of Unit 2, is approximately 50 feet, or approximately elevation -10 feet station datum.

7. (a) When did NIPSCO first learn that it would be necessary to dewater from Unit 3?

(b) Describe all tests or studies performed prior to the Construction Permit hearing to learn about the location and amount of groundwater at the Bailly N-1 site.

(c) Were studies of materials from Unit 3 conducted at the Bailly N-1 site prior to Construction Permit hearing?

(d) When did NIPSCO first know of the existence of Unit 3?

(e) (1) Are Bailly Generating Units 7 and 8 founded on piles?

(2) If so, to what depth do their piles extend?

(3) Did NIPSCO dewater from Unit 3 when constructing either Bailly Generating Unit 7 or Bailly Generating Unit 8?

(4) Approximately how many gallons of water per day at the maximum were removed from the excavation sites during peak periods of dewatering for the construction of Bailly Generating Units 7 and 8?

(5) What was the approximate total amount, in gallons, of water removed from the excavation sites during dewatering for the construction of Bailly Generating Units 7 and 8?

ANSWER: In the responses to all following Interrogatories, NIPSCO has assumed "Unit 3" refers to the confined aquifer.

(a) It is not necessary to dewater Unit 3; however, on June 9, 1978 NIPSCO learned that depressurization of Unit 3 would be necessary.

(b) All tests and studies performed prior to the Construction Permit hearing to learn about the location and amount of groundwater at the Bailly N-1 site are described in the reports listed below.

(i) "Soil Report - Proposed Indiana Public Service Co., Bailey Generating Station Unit #7, Baileytown, Indiana" dated April 12, 1960 and prepared by Soil Testing Services, Inc., Chicago, Illinois. (Appendix C)

(ii) "Report of Geological and Seismological Environmental Studies, Proposed Nuclear Power Plant, Bailly Generating Station, Baileytown, Indiana, for the Northern Indiana Public Service Company" dated March 8, 1968 and prepared by Dames & Moore, Park Ridge, Illinois. (Pages 2.12, 4.8 and 4.10 and attachments to Part 5)

(iii) "Report - Site Environmental Studies - Geology, Seismology, Foundations: Proposed Nuclear Power Plant, Bailly Generating Station, Baileytown, Indiana, Northern Indiana Public Service Company" prepared by Dames & Moore. (Subsection 2.5.4.6 and attached boring logs)

(iv) "Bailly Generating Station Nuclear 1 Preliminary Safety Analysis Report". (Section 2.4.3, Subsection 2.5.1.2.3, Subsection 2.5.2.4.4 and Subsection 2.5.4.6)

(v) Report 5676-005-07 "Report: Supplementary Foundation Investigation - Proposed Nuclear Power Plant and Cooling Tower, Bailly Generating

Station, Baileytown, Indiana for Northern Indiana Public Service Company" dated March 31, 1972 and prepared by Dames & Moore, Park Ridge, Illinois. (Pages 5, 6, 25 and the Appendix).

All of the above referenced documents were produced in response to PCCI's second request for production of documents, except the PSAR. Illinois participated in PCCI's second document request and therefore has possession of all documents produced in response thereto. NIPSCO also assumes Illinois has access to PCCI's PSAR or has a copy of its own.

(c) Yes.

(d) 1960.

(e) (1) No.

(2) Not applicable.

(3) NIPSCO is not aware of any dewatering of the confined aquifer (Unit 3) during the construction of Units 7 & 8.

(4) NIPSCO does not know how many gallons per day were removed during the construction of Units 7 & 8.

(5) NIPSCO does not know the approximate total amount of groundwater removed during the construction of Units 7 & 8.

8. R. J. Bohn at his deposition on July 28, 1981 referred to an underground tunnel encircling the Bailly N-1 excavation. Please describe this tunnel, its elevation, dimensions, and precise location, its purpose or function, when it was installed, its relation to and effect on, if any, the slurry wall.

ANSWER: In the following response, NIPSCO assumes that the "underground tunnel encircling the Bailly N-1 excavation" is in fact the tendon tunnel described by Mr. R. J. Bohn at his July 28, 1981 deposition. The tendon tunnel is a circular structure with a floor elevation of -13.5 feet station datum. It will be formed within two concentric rings of sheet piling. The inside radius of the tendon tunnel is 33'-9-9/16" and it is 9'-0" wide by 7'-6" high. The center point of the tendon tunnel is at S 74 feet, W 629 feet station coordinates. The tendon tunnel's sole function is to allow prestressing of the containment structure. It has not yet been installed. However, when constructed, the tendon tunnel will be built inside the slurry wall and have no effect on the slurry wall.

9. R. J. Bohn at his deposition on July 28, 1981 referred to NIPSCO's submission to the NRC of NIPSCO's plans with respect to the pumphouse for Bailly N-1.

(a) Describe the plans which have been submitted.

(b) When were such plans submitted?

(c) Did the NRC require that such plans be submitted?

(d) Did the NRC request that such plans be submitted?

(e) Why were such plans submitted?

(f) Will NIPSCO begin construction of the pumphouse prior to completion of the NRC's consideration of such plans?

(g) When does NIPSCO expect the NRC to complete consideration of such plans?

ANSWER:

(a) Plans submitted to the NRC indicated the location of the pumphouse, depth of the excavation for the pumphouse, preliminary foundation design details, projected pile loadings and a discussion of both the seismic analysis and settlement calculations for the pumphouse.

(b) July 20, 1978.

(c) Yes.

(d) No.

(e) See response to Interrogatory 9(c) above.

(f) No.

(g) NIPSCO does not know.

10. Are there gravity drains presently at Bailly Generating Units 7 and 8?

(a) If so, how many gravity drains are there at each of those Units?

(b) What purpose do they serve?

(c) Approximately how much water flows through each such drain per day?

(d) To where is such water diverted?

ANSWER: Yes.

(a) Three.

(b) To prevent seepage of groundwater into Units 7 and 8.

(c) NIPSCO does not know.

(d) Lake Michigan.

11. Are there presently internal pumps at Bailly Generating Units 7 and 8 to deal with groundwater seepage?

(a) If so, how many such internal pumps are there at each of those Units?

(b) Approximately how much water is pumped by each of them per day?

(c) To where is such water diverted?

ANSWER: No.

(a) Not applicable.

(b) Not applicable.

(c) Not applicable.

12. (a) Does NIPSCO expect groundwater seepage into Bailly N-1 after construction is completed?

(b) Describe the basis for the answer to Interrogatory #12(a).

(c) Identify and describe all communications, whether verbal or written, between NIPSCO and its consultants and between NIPSCO and the NRC regarding post-construction groundwater seepage into Bailly N-1.

ANSWER:

(a) No.

(b) Initial Decision in Bailly Construction Permit proceeding. (7 AEC 557, 589).

(c) Objected to.

13. (a) Does NIPSCO plan to seal, in any way, the foundation of Bailly N-1?

(b) If so, describe such plans in detail.

(c) Describe the basis on which NIPSCO believes that such sealing will be adequate to reduce or eliminate groundwater seepage.

ANSWER:

(a) Yes.

(b) Objected to.

(c) Objected to.

14. What effect, if any, will hydrostatic pressure from either Unit 1 or Unit 3 have on:

(a) the Bailly N-1 plant foundation?

(b) the piles?

(c) the plant as a whole?

ANSWER: In the response to all following Interrogatories, NIPSCO considers that the term "Unit 1" means the unconfined aquifer.

(a) The Bailly N-1 plant foundation will experience hydrostatic lateral and uplift loadings. These loadings have been accounted for in the Operating Basis Earthquake and the Safe Shutdown Earthquake load combinations.

(b) As an integral part of the Bailly N-1 plant foundation, the piles will respond to hydrostatic pressures as discussed in (a) above. The difference between hydrostatic pressures present during installation of the piles and hydrostatic pressures during operation of the plant will have a negligible impact on pile load capacity.

(c) The hydrostatic pressure will exert a lateral force against the walls located below the groundwater level. The Bailly N-1 plant has been designed for this loading.

15. Does NIPSCO plan to seal, at any time in the future, any or all of the 49 monitoring wells described in NIPSCO's answer to Interrogatory #18(c) of Illinois' First Set of Interrogatories?

(a) If so, when?

(b) If so, how?

ANSWER: NIPSCO has made no determination as to the final disposition of any of the 49 monitoring wells described in response to Interrogatory 18(c) of Illinois' First Set of Interrogatories.

(a) Not applicable.

(b) Not applicable.

16. At the time the Construction Permit for Bailly N-1 was issued, what was the maximum amount of groundwater, measured in gallons per day, which NIPSCO estimated would be removed from the excavation at peak periods of dewatering?

ANSWER: The estimated rate of dewatering at the time the Construction Permit was issued was approximately 2000 GPM. No maximum or minimum estimates were made. To determine the gallons per day multiply the above figure by 1440.

17. At the time the Construction Permit for Bailly N-1 was issued, what was the overall total amount of groundwater, measured in gallons, which NIPSCO estimated would be removed from the excavation?

ANSWER: No such estimate was made.

18. What is the overall total amount of groundwater, measured in gallons, which NIPSCO now estimates will be removed from the Bailly N-1 excavation?

ANSWER: No such estimate nas been made.

19. With respect to NIPSCO's answer to Interrogatory #18(a) of Illinois's [sic] First Set of Interrogatories:

(a) How many holes were made in the ground during the 9 test programs?

(b) What percentage of such holes were made under the site of Class I structures?

(c) What percentage of such holes penetrated Unit 2?

(d) What percentage of such holes penetrated Unit 3?

ANSWER: For the limited purpose of answering this Interrogatory, NIPSCO assumes that the term "holes" means points at which a pile or casing utilized in a testing program was installed or at which a boring was taken to assist in evaluating the test program results. Thus, the term "hole" does not imply an empty space in the following responses:

(a) 284 "holes" were made in the ground during the nine test programs.

(b) 77% of the "holes" described in (a) above were made within the limits of Category I structures.

(c) 99% of the "holes" described in (a) above penetrated through Unit 2.

(d) 77% of the "holes" described in (a) above penetrated through Unit 3.

20. With respect to NIPSCO's answer to Interrogatory #18(b) of Illinois' First Set of Interrogatories:

(a) Did NIPSCO attempt to install piles more than 25 times by some form of jetting?

(b) If so, how many times in total did NIPSCO attempt to install piles by some form of jetting?

(c) What percentage of such total jetting attempts were made under Class I structures?

(d) What percentage of such total jetting attempts penetrated Unit 2?

(e) What percentage of such total jetting attempts penetrated Unit 3?

ANSWER:

(a) No.

(b) Not applicable.

(c) 100%.

(d) 100%.

(e) 60%.

21. With respect to NIPSCO's answer to Interrogatory #26(a) of Illinois' First Set of Interrogatories, describe in detail the manner in which the proposed method of dewatering is designed to preclude subsidence of subsoil structures at Bailly N-1?

ANSWER: The manner in which the proposed method of dewatering is designed to preclude subsidence of subsoil structures at Bailly N-1 is described in detail in the report "Supplementary Information, Hydrogeologic Evaluation of Construction Dewatering," Sargent & Lundy,

Dames & Moore, Ground/Water Technology. August 27, 1979. Page 21. This document was provided in Response to PCCI's Second Request to NIPSCO for Documents and is therefore in Illinois' possession.

22. With respect to NIPSCO's proposed groundwater recharge system:

(a) Does NIPSCO have any plans to test for differences in water quality between the groundwater in its natural state in the Indiana Dunes National Lakeshore and the water which will be injected into the ground by means of the recharge system?

(b) Does NIPSCO have any plans for dealing with any differences in water quality between the groundwater in its natural state in the Indiana Dunes National Lakeshore and the water which will be injected into the ground by means of the recharge system?

ANSWER:

(a) No.

(b) No.

NORTHERN INDIANA PUBLIC SERVICE COMPANY

By Russell J. Bohn
Russell J. Bohn

STATE OF INDIANA)
) SS:
COUNTY OF LAKE)

The undersigned, Russell J. Bohn, being duly sworn upon his oath states that he is employed by Northern Indiana Public Service Company as Manager, Nuclear Staff, for the Bailly Nuclear Plant; that he is informed on the matters of inquiry of Illinois' interrogatories; that in answering the above and foregoing interrogatories he has personally reviewed or caused others to review the files and records of Northern Indiana Public Service Company and has caused information to be gathered from employees and officers of Northern Indiana Public Service Company, its contractors and consultants; that the answers to the above and foregoing interrogatories are true and correct as he has been informed and verily believes.

Russell J. Bohn

Subscribed and sworn to before me, a Notary Public, this 17 day of August, 1981.

Evelyn A. Helms
Notary Public

My Commission expires:

2-6-83