

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

May 14, 1979

NRC PUBLIC DOCUMENT ROOM



Richard Foster, Esq.
1908 A Lewis Mountain Road
Charlottesville, Virginia 22903

In the Matter of Virginia Electric and Power Company
(North Anna Nuclear Power Station, Units 1 and 2)
Docket Nos. 50-338 OL and 50-339 OL

Dear Mr. Foster:

The following constitutes the NRC Staff's responses to Mrs. Arnold's discovery requests in this proceeding regarding the pumphouse settlement issue. As we discussed during our phone conversation, and pursuant to the Appeal Board's most recent Order, I am keeping the response informal. The numbered responses correspond with the interrogatories in the specified document. The primary contributor for each of the responses is listed at the end of the responses in parentheses.

Responses to first request (undated, but received on April 10, 1979).

1. VEPCO authored the original Technical Specifications (tech specs) relating to Category I structure settlement at North Anna 1 and 2). K. Desai, L. Heller, J. Wermiel, as well as Staff management, reviewed and approved the proposed tech specs. K. Desai, L. Heller, and J. Greeves authored and approved the revised draft tech specs dated 12/78 and 1/79.

The settlement limits included in these tech specs are based on allowable pipe stresses, and not on concerns about soil structure.

No quantitative settlement predictions of the effect of the horizontal drains on settlement of the pumphouse were made by the Staff, although the Staff realized that some amount of settlement could result from their installation. (L. Heller)

2. L. Heller of the Staff called Dr. Pavich on June 29, 1977 regarding work that was done by Dr. Pavich, but did not actually utilize any of his work in conducting the Staff's review of North Anna. (Heller)

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3. The Staff has not taken a position regarding the use by S&W of Terzaghi's work. (Heller)
4. The Staff did not oversee the installation of horizontal drains under the service water pumphouse. However, C. R. McFarland of Region II of the Office of Inspection and Enforcement did perform an inspection in November, 1977 for the purpose, among other things, of determining whether VEPCO had installed the drains as they had committed to do. He concluded that VEPCO had implemented its commitments to the NRC regarding their installation. (IE Report Nos. 50-333/77-56 and 50-339/35) (Heller; J. Lenehan; and J. Bryant)
5. The Staff has neither agreed nor disagreed with VEPCO's May 31, 1978 statement. However, current information indicates that the pumphouse elevation has not remained unchanged, but has undergone slow settlement since the drain was installed. (Heller)
6. The IE Report (Appendix C of the Staff testimony on pumphouse settlement) confirms that the monitoring program that was implemented by VEPCO to determine compliance with the tech specs on pumphouse settlement was performed by Moore, Hardee, and Carrouf Associates, and that this firm's data did not indicate that the allowable settlement (75% of 0.15 ft) was exceeded until March 15, 1978. (J. Lenehan)
7. As we indicate in our response to question #2, the Staff did not make a quantitative prediction of the amount of settlement that would be caused by the installation of the drains. The Staff was aware, however, that some amount of settlement would occur. (Heller)
8. The NRC Staff is not currently considering any remedial action to correct the settlement of the North Anna 1 and 2 pumphouse. We are, however, proposing to change the tech specs to require more frequent monitoring of the settlement. (Heller)
9. The most recent settlement measurements for the pumphouse that have been transmitted to the NRC are included in VEPCO's testimony and are also in the IE Report included in Appendix C to the Staff testimony on pumphouse settlement. However, IE inspectors have seen settlement data for the pumphouse and

expansion joints which were taken from readings on April 6, 1979. This April reading indicated that 0.138 feet average settlement of the pumphouse had occurred, or approximately 92% of the allowable 0.15 ft. Differential settlement of the pumphouse had not changed from the March reading contained in the IE Report. (Lenehan)

Settlement for other Class 1 structures at North Anna is not being provided as it is not the subject of this proceeding.

10. Reworking an expansion joint constitutes measures such as the realignment of the ends of the joints to relieve the stresses or strains induced in them by prior settlement effects. (Heller)
11. The NRC considers that the problems and questions raised in its July 24, 1975 letter to VEPCO have now been adequately resolved. (Heller)
12. The Staff assumes that you are referring to the cracked flow splitter plate located in the elbow on the suction side of the reactor coolant pumps for Unit 2. The crack is not the result of settlement. (A. Dromerick)
13. Dr. Heller has searched his files, and does not possess a written record of the referenced phone conversation. However, the Army Corps followed up the conversation with a written report containing the results of its tests. (Heller)

I understand that you have access to a copy of that 1977 report. If you do not, and wish a copy, please call me.

14. Attached is a copy of a letter from H. Shapar of the NRC to P. Taft of the Justice Dept. dated April 14, 1976. The original answers to questions 30 and 33 have been edited to protect the name of a confidential informant. However, that individual's information concerned only the settlement at Surry, and not North Anna, and is therefore not relevant to this proceeding.

The exhibits that were attached to the original letter to DOJ are not enclosed as they are numerous, and all of the documents that are relevant to the issue of pumphouse settlement at North Anna (i.e., excluding documents related to Surry) are available at the local public document room for North Anna 1 and 2 in

Charlottesville. If you decide that you want any of them, and have difficulty finding them at the LPDR, give me a call and I will obtain a copy for you.

15. The only memo that was written related to the April 13, 1978 site visit of L. Heller and D. Gillen to North Anna is a trip report dated April 26, 1978. Although this document was sent to the LPDR, a copy is being forwarded for your convenience. Your request contained the implication that the visit was for the purpose of inspecting settlement. However, the trip was primarily for the purpose of inspecting the settlement of the reactor mat, not the pumphouse. (Heller did document search)
16. Enclosed is a copy of a note dated May 1, 1975 from R. Ferguson to A. Schwencer. In the note, Mr. Ferguson recommended, in order to resolve the matter of pumphouse settlement expeditiously, that consideration be given to issuing an order to request VEPCO to show cause why the construction of the service water reservoir should not have been suspended until VEPCO's analysis of the safety implications of this settlement had been evaluated by the NRC Staff.
17. The following documents were authored by R. Wright and L. Beratan in 1975 regarding settlement at North Anna: note from L. Beratan to H. Thornburg (telefaxed) dated May 5, 1975; a letter from L. Beratan to H. Thornburg dated July 29, 1975; and IE Report Nos. 50-338/75-5 and 50-339/75-5 dated May 20, 1975, for which L. Beratan and R. Wright were contributing inspectors. A copy of each of these documents is enclosed. (J. Bryant did document search)
18. No documents have been requested or obtained from the USGS or other consultants on the subjects of saprolite/hallosite behavior other than the Army Corps report referred to in response to question no. 13. As we indicate in response to question no. 2, the Staff did contact Dr. Pavich of the USGS on June 29, 1977, but all that time no documents were available on the subjects. (Heller)

Responses to second request dated April 10, 1979.

1. This question refers to rock anchors beneath the foundation for the reactors for Units 3 and 4, and is not related to settlement or foundation conditions beneath the service water pump-house. Accordingly, the Staff objects to the information requested as not relevant to the subject matter involved in the proceeding nor reasonably calculated to lead to the discovery of admissible evidence and therefore, shall not provide the information. (Heller and D. Swanson)
2. The results of the Army Corp's tests of saprolite are in reasonable agreement with those done for VEPCO by Geological Engineers, Inc. (Heller)
3. The Staff has adopted all of Dr. Rizzo's recommendations contained in his letter to Mr. Muller dated July 19, 1978. The first recommendation, regarding settlement monitoring for safety purposes, is now included in the technical specifications for Unit 1. The second recommendation, regarding continuation of the surveillance requirement to the nearest 0.01 feet at least once per six months, is also required in the tech specs. In our testimony for this proceeding, we recommend increasing the frequency of this monitoring to once a month for five years.

The first part of the third recommendation, a Staff evaluation of the performance of the horizontal drains, is also contained in the tech specs. The second part of the recommendation, that the Staff state in its position as to what should be done if the groundwater levels rise significantly above present levels, is also implemented in the proposed revised tech specs for Unit 1. (Heller)

4. The Staff has no notes regarding the referenced meeting of June 14, 1976 other than the meeting summary referred to in your question. A copy of that summary, written by W. Pike, is enclosed. (M. Rushbrook did document search)

Sincerely,
Daniel T. Swanson
Daniel T. Swanson
Counsel for NRC Staff

Enclosures: As stated

cc w/encl: A. Gambardella
M. Maupin

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