NORTH ANNA E. IVIRONMENTAL COALITION

Dr. David Okrent, Chairman North Anna Subcommittee Advisory Committee on Reactor Safeguards U. S. Nuclear Regulatory Commission 1717 H Street Room 1046 Washington, D. C. P.O. BOX 3951 CHARLOTTESVILLE, VIRGINIA 22903 June 8, 1977 (804)293-6039

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Dear Dr. Okrent:

As you doubtless recall, the North Anna Environmental Coalition (NAEC) wrote to you on May 5, suggesting that in the light of continuing serious problems at the North Anna site that the Advisory Committee on Reactor Safeguards (ACRS) withdraw its letter giving Operating License approval.

On May 5, NAEC enclosed its April 20 letter to NRC Inspection and Enforcement Director Ernst Volgenau so that the ACRS might also consider the problem areas listed therein: remedial drainage for excessive groundwater, abnormal and differential settling, micro-earthquake indications, earthquake design deficiencies, and severe leakage problems in Westinghouse steam generators.

On May 22, NAEC mailed to ACRS its May 20 letter to ASLB Chairman Frederic J. Coufal so that the ACRS might also question the "Design Deficiency" which necessitated rock anchors for Reactor 3 because of water under the structure although Reactors 1 and 2 on the same wet fault have no rock anchors.

Since all of the correspondence described above, NAEC has continued to study the North Anna situation and to listen carefully to testimony offerred at the May 31 through June 2 Operating License Hearing here in Charlottesville.

As an outgrowth of the foregoing, the Coalition would like to submit the following <u>additional</u> information to the Advisory Committee on Reactor Safeguards:

1. Regarding saprolite-halloysite

In response to the Volgenau letter described above, Dr. Antonio V. Segovia, Associate Professor of Structural Geology, Engineering Geology, and Environmental Geology at the University of Maryland, wrote NAEC on the "unsuitability of halloysite as a foundation material for any structure expected to last for a while."

The relevant parts of Dr. Segovia's letter are enclosed as Attachment A.

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Regarding saprolite-halloysite (cont.)

Another geologist has expressed concern to NAEC that "halloysite and other clays are thixotropic, and under any serious shaking may well turn liquid and flow."

We are told that certain government geologists stress how little is known about the behavior of saprolite and halloysite. Its tendency to "creep, sag, and move about" leads them to consider it a "mistake" as a foundation for a nuclear power station.

The Coalition would urge the ACRS to consult with the U.S. Geological Survey on the foundation safety significance for North Anna of the saprolite reports of the Army Corps of Engineers, Dr. R. Torrence Martin, and Geotechnical Engineering, Inc.

NAEC would question whether "expansion couplings" and "remedial drainage" can provide adequate stability for the life of a plant on such unpredictable foundations.

2. Regarding remedial drainage for excessive groundwater

Testimony by the NRC Staff on June 2 gave a very confused impression as to what would be the <u>effects</u> of dewatering efforts upon pumphouse settlement.

There seemed to be little awareness of the contradiction between the 1976 SER entry which said that groundwater control would prevent rapid settlement, and the 1977 FSAR entry which predicted that "such a dewatering system would <u>cause</u> additional settlement of the service water pumphouse." (P3.8-3, 5-6-77)

Evidently additional settlement will be a problem whether the dewatering method is that of well-points or that of horizontal drains. If well-points were abandoned because of difficulty with clay particles, as well as difficulties with drawdown, how will the particle problem be avoided in the drains?

"Loss of fines through the system would indicate that internal erosion or 'piping' is occurring," according to the FSAR, which also says that "no rational basis exists for establishing acceptable limits" in regard to suspended solids or turbidity.

Regarding remedial drainage ... (cont.)

The FSAR also notes that "piping is a common cause of failure of earth dams."

Is optimistic monitoring sufficient protection?

"Daily measurement taken following drain installation should decline steadily and serve to confirm that piping is not occurring. Inspection guidelines will include baseline values for each drain, established after a period of initial observation." (S2.21-1, 12-22-76)

It was NRC testimony on June 1 that "excessive loss of fines could result in unsafe conditions." It was also NRC testimony on that date that Unit #1 at North Anna must shut down if the remedial groundwater drainage system was not completed by December 31, 1977.

Surely so experimental a system, one with "no rational basis" for turbidity limits, one which influences pumphouse stability, should be totally installed <u>and</u> <u>tested</u> <u>before</u> reactor operation. The Coalition would expect that to be the safeguards position. We would question the relation of the NRC December 31 deadline to the September 1 completion date in VEPCO's letter of April 15.

Since predictions regarding the North Anna station have been so multiply in error in the past, the Coalition would urge the ACRS to require a demonstration that the experimental drains can maintain foundation equilibrium at the North Anna site before any fuel-loading is permitted.

The Coalition would also urge the ACRS to review the groundwater questions raised by Dr. Robert Mueller and Dr. John Funkhouser in testimony prepared for the Show Cause fault hearing of 1974.

3. Regarding abnormal settlement and prediction errors

A groundwater level prediction error of 14 feet at North Anna is now a matter of record.

A foundations material and settlement prediction error was also made by Dames & Moore.

Regarding settlement and errors...(cont.)

On May 8, 1969, after a cover letter describing "foundation conditions at the site" as "generally excellent," Dames and Moore's Foundation Studies made the following erroneous statements on the materials beneath the pumphouse, now known to be "erratic and anisotropic" soils:

"The results of our investigation indicate that relatively fresh rock will be encountered beneath the pumphouse..fresh rock will provide suitable support...residual settlements will be negligible."

Given Dames and Moore's <u>consistent record of diag</u>nostic failure at North Anna, from the faulting beneath reactors #1 and 2 to the saprolite beneath the pumphouse, the Coalition believes the ACRS should question VEPCO's continued reliance upon this unfortunate company.

In particular, the Coalition would question the validity of the April 15, 1977 Dames & Moore report on <u>Neuschel's Lineament and the Stafford</u> <u>Fault Zone</u>. Dames and Moore's original handling of Neuschel's Lineament -- failure to submit the map with this regional structure marked -- became the basis for a "material false statement" in 1975.

The Coalition, in keeping with the June 2, 1977 GAO Report on North Anna, would urge the ACRS to require an independent audit of the relation between Neuschel's Lineament and the Stafford Fault Zone, as well as the relation between Neuschel's Lineament and clustered seismic activity at Lake Anna.

(The ACRS and the ASLE may wish to inquire into the reason for the <u>1973</u> submission of the 1969 Dames & Moore Foundation Studies.)

4. Regarding steam generator leakage and corrosion

Question 3-e in the Coalition's April 20 letter to Mr. Volgenau inquired about the <u>effects of con-</u> <u>tamination in Lake Anna water</u> upon steam generator tubing. Testimony at the Operating License hearing implied that fresh water might circumvent Surry's problems with brackish water. Regarding steam generator leakage and corrosion (cont.)

Nevertheless, an April 29, 1977 letter from VEPCO to the NRC describes

"...a fouling and corrosion problem due to the high iron content, the presence of sulfate-reducing bacteria, and the general corrosive nature of the lake water..."

The Coalition would urge the ACRS to explore the implications of the foregoing in regard to the integrity of steam generator tubes, and also to explore the effects of the proposed cooling tower solution.

(The VEPCO April 29 letter is enclosed as Attachment B. NAEC's February 16 steam generator summary is enclosed as Attachment C.)

In August of 1976, the Coalition suggested that there might be geological parallels and construction parallels (grouting, leaks) between the North Anna dam and the Teton dam.

Today we would suggest a regulatory parallel between the North Anna situation and the Teton situation: public agencies whose staff and documents express doubts about an "exception or worst case" situation fail to protect the public from an admitted risk.

Fortunately, protection is still possible against the defectively sited and constructed North Anna Power Station. It is the profound hope of the Coalition that the Advisory Committee on Reactor Safeguards will exercise the powers given it by Congress, warn the public of the risk involved, and actively move against it.

We look to your responsible action.

Sincerely.

June Allen (Mrs. P. M.) President, NAEC

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