



VIRGINIA ELECTRIC AND POWER COMPANY, RICHMOND, VIRGINIA 23161

June 29, 1979

Mr. James F. O'Reilly, Director
Office of Inspection & Enforcement
U. S. Nuclear Regulatory Commission
Region II
101 Marietta Street, Suite 3100
Atlanta, Georgia 30303

Serial No. 149A
PSE&C/CES/adw:mc

Docket Nos. 50-404
50-405

Dear Mr. O'Reilly:

On February 22, 1978, NRC Region II was notified under the provisions of 10CFR50.55(e) of a potential deficiency in the east wing wall of the circulating water intake structure for North Anna Power Station Units 3 and 4. This notification was followed by a 30 day interim report dated March 21, 1978.

The interim report stated that all parts of the circulating water intake structure supporting and protecting the service water pumps were designated Category I in the original design and layout since the service water pumps are QA Category I equipment which must maintain operation during and after a seismic event. The east wing wall was not designated Category I and a portion of the east slope of the circulating water intake channel was established at a slope of 2H:1V but was not analyzed for seismic stability. The wall is constructed up to elevation 231'6". The effect of the possible failure of the wing wall and the earth slope upon the operation of the service water pumps was not evaluated.

A subsequent design relocation of the water treatment building toward the intake channel initiated a re-evaluation of the wing wall design. On re-evaluation, it was determined that the possible failure of the wing wall and earth slope could have the possibility of adversely affecting the service water pumps either by creating excessive turbidity that may affect pump operation or by restricting the flow to the service water pump bays.

At the time the interim report was submitted, alternatives for correcting the possible design deficiency had been outlined but not evaluated. Due to budget restrictions, the study to determine the optimum alternative was not undertaken until early 1979 and a decision on the most favorable alternative has resulted in the design modifications outlined in subsequent paragraphs.

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Designating the east wing wall and the intake channel slopes Category I requires modifications to strengthen the existing wing wall and to adjust the portion of the channel east slope that was established at 2H:1V.

The analysis of the intake channel slopes indicates that soil slopes of 3H:1V are seismically stable with respect to deep-seated failure. Therefore, the portion of the channel slopes initially established at 2H:1V will be adjusted to 3H:1V. The analysis also indicates that a potential for shallow surficial movement exists at a portion of the east slope directly north of the east wing wall. This potential for surficial sloughing will be corrected by increasing the amount of riprap on this portion of the slope.

The design strength of the existing wing wall is inadequate to support the loading requirements imposed by designating the wall Category I. Additionally, the new flatter soil slopes require that the wing wall be lengthened to maintain grading at the intake structure and the water treatment building. A new wing wall will be designed to replace the existing wing wall. The new wing wall will be designed to Category I requirements and will be constructed around the existing wall. In the design of the new wing wall, the existing wall will not be considered for strength design but the dead weight of that wall will be considered for stability.

As the final design modifications outlined herein will result in a system capable of accommodating all loading combinations required for seismic stability, we anticipate no further correspondence on this subject. Therefore, this letter is considered to be a final report and completes all reporting requirements under provisions of 10CFR50.55(e).

Very truly yours,


Sam C. Brown, Jr.
Senior Vice President

cc: Mr. John G. Davis, Acting Director
Office of Inspection & Enforcement
✓ Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation