



August 21, 1979

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

Serial No. 657
PSE&C/RKM/CES:adw:mc

Docket Nos. 50-404
50-405
Control No. F20097H1

Dear Sir:

As stated in our letter to the Nuclear Regulatory Commission (NRC), Serial No. 938, dated March 15, 1976, the design groundwater levels used in North Anna Power Station Units 3 and 4 were being reviewed for agreement with the latest predicted groundwater levels. These predicted groundwater levels are based on a water surface profile which varies in the plant area from elevation +250 at Lake Anna to elevation +271 south of the boron recovery tank enclosure. As further discussed in the above referenced letter, this prediction does not include the effects of any subsurface drainage or structures on the groundwater level. Where conditions appear capable of producing locally higher groundwater levels appropriate modifications were made to the general prediction to insure the adequacy of safety related structures and facilities. This review has now been completed and has resulted in the following findings.

The presently predicted maximum groundwater elevations for each safety-related structure are:

<u>Structure</u>	<u>Groundwater Elevation</u>
Reactor containment Unit 3	268
Reactor containment Unit 4	268
Containment auxiliary structures	
Unit 3	
Main steam valve house	266
Quench spray	266
Safeguards	267
Unit 4	
Main steam valve house	266
Quench spray	266
Safeguards	267
Auxiliary building	268
Fuel building	268
Decontamination building	270
Service building	265
Emergency diesel generator building	267
Intake structure	259
Service water pump house	315
Fuel oil tanks and pump house	271

Boo!
SE/10

782 190

7908240452

<u>Structure</u>	<u>Groundwater Elevation</u>
Boron recovery tank enclosure	271
Discharge tunnel sections T3 and T4 supporting Unit 3 RWST and CST	267
Unit 4 RWST	266
Unit 4 CST	267

Structures with a considerable width in the north-south direction, such as the auxiliary building, may have a variation of 3 or 4 feet in groundwater elevation from the south end to the north end. This variation will be utilized for local design and structure stability. With the exception of the containment auxiliary structure, these groundwater elevations have been a part of the structural design criteria since June 17, 1970. The groundwater elevation for the containment auxiliary structure was conservative by 2 feet, and the design criteria will be adjusted for this revision.

The containment auxiliary structure, service water pump house, and discharge tunnel sections T3 and T4 have been utilizing the appropriate groundwater elevations for stability and structural capacity since the start of design.

The decontamination building, auxiliary building, fuel building, and the service building designs are being revised and will continue to utilize the appropriate groundwater elevations.

The reactor containment was designed for a lower groundwater elevation than is now predicted. The structure has been checked for stability and structural capacity of beneath-grade exterior walls and is adequate for the presently predicted groundwater elevation.

The intake structure groundwater level of el 259 ft is applicable for the south face only. The geometry of the intake tunnels and the turbine building creates an area south of the intake structure where groundwater could be ponded. The groundwater level for the east and west walls of the intake structure is el 251 ft. The stability analysis used groundwater el 259 ft. Structural design of the mat and south wall will be updated for a groundwater level of el 259 ft.

The emergency diesel generator building, the fuel oil tanks and pump house, and the boron recovery tank enclosure do not have completed designs. These designs will use the appropriate groundwater elevations.

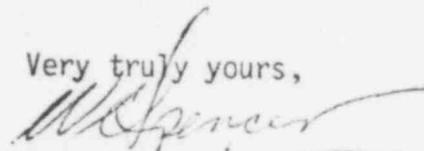
The Unit 4 refueling water storage tank and the Unit 4 condensate storage tank have their foundations above the predicted groundwater level. Therefore, the designs are not affected.

Structural details at constructions joints, expansion joints, and rattle spaces were reviewed to determine whether water stops and waterproof membrane provided were adequate to prevent groundwater seepage. As a result of the review, water stops are being added in portions of the fuel building and in the rattle space between the fuel building and the Unit 3 reactor containment.

Water stops are also being added in areas where waterproof membrane is the only protection from groundwater seepage. These areas are between the reactor containment and the auxiliary building, the reactor containment and the containment auxiliary structures, and the safeguards area and the quench spray area. These areas apply for both Units 3 and 4.

This summarizes the effects of the latest predicted groundwater elevation on the design of Units 3 and 4's structures. This response will thus complete and finalize our commitment to review Unit 3 and 4 structural designs discussed in our letter (Serial No. 938) of March 15, 1976 on this subject.

Very truly yours,



Sam C. Brown, Jr.
Senior Vice President-Power Station
Engineering and Construction

cc: Mr. Victor Stello, Director
Office of Inspection & Enforcement

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation