TENNESSEE VALLEY AUTHORITY
CHATTANOOGA, TENNESSEE 37401
400 Chestnut Street Tower II

September 14, 1983

Director Nuclear Reactor Regulation
Attention: Ms. E. Adensam, Chief
Licensing Branch No. 4
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Ms. Adensam:

In the Matter of the Application of) Docket Nos: 50-390
Tennessee Valley Authority 50-391

Enclosed is information concerning geotechnical design features for Watts Bar Nuclear Plant. This information was requested informally by the NRC Hydrologic and Geotechnical Engineering Branch.

If you have any questions concerning this matter, please get in touch with D. P. Ormsby at FTS 858-2682.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

D S Kammer

D. S. Kammer
Nuclear Engineer

Sworn to and subscribed before me
this 14th day of September 1983.

Paulette H. White
Notary Public
My Commission Expires 9-5-84

Enclosure

cc: U.S. Nuclear Regulatory Commission
Region II
Attn: Mr. James P. O'Reilly, Regional Administrator
101 Marietta Street, NW, Suite 2900
Atlanta, Georgia 30303

B001
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ENCLOSURE

WATTS BAR NUCLEAR PLANT UNITS 1 AND 2
GEOTECHNICAL DESIGN INFORMATION

Question

During a telephone conference call, NRC requested clarification on the evaluation of the water table used for the diesel generator building, waste packaging area, and refueling water storage tank.

Response

The actual groundwater for these structures was based on the 24-hour groundwater readings from soil borings in the area of each structure. This information is included on the graphic logs of the soil borings in the FSAR and are tabulated below. The elevation of the groundwater used in the analysis of each of these structures was taken to be 2-feet below the nominal plant grade of 728.

Structure	Groundwater Level from Soil Borings (24HR)	Groundwater Level Used for Analysis
Diesel Generator Bldg	715	726
Waste Packaging Area	715	726
Refueling Water Storage Tank		
unit 1	724	726
unit 2	712	726

Question

NRC requested clarification on the depth to bedrock below the soil-supported structures.

Response

The appropriate sections on FSAR figures 2.5-225, -226, and -226a depict the actual conditions for the diesel generator building (DGB), waste packaging area (WPA), and refueling water storage tank (RWST). The soil depths tabulated in response to item 1 of our January 21, 1983, letter to E. Adensam were used for our analysis. There was a typographic error on the DGB tabulation as the analysis depth of the soil profile was 30 feet and not the 35 feet shown in the response. The depth of 30 feet was used in each analysis, because (1) based on initial drilling at the site, the nominal depth to rock was 30 feet and (2) the initial analysis for each structure was done before the actual depths to rock were known. In conjunction with the conservative approach TVA used in our analysis of soil-supported structures, the use of a 30-foot versus a 27-foot depth to rock was an additional conservatism.

Question

NRC requested clarification on the difference in soil unit weight used in the amplification study (item 1)* and that used in the FLUSH analysis (item 2).

*See letter from L. M. Mills to E. Adensam dated January 1, 1983.

Response

The use of a soil unit weight of 120 pcf was established as a nominal unit weight for the initial analysis. When the soil-structure interaction analysis was made in 1978, the density of the soil profile was taken as 130 pcf. This was based on the results of the required compaction requirements for the granular fill. At the time of this analysis, the properties of the granular fill were taken to be the same as the basel gravel.

Question

NRC requested that TVA confirm that the shear wave velocity of the bedrock was 5900 fps. Also questioned was the use of a shear wave velocity of 1650 fps for the soil layer.

Response

The results of the geophysical testing on the bedrock are provided in section 2.5.12.11 of the FSAR. In section 3.7.2.1.1 of the FSAR, we stated that V_s = 5900 fps was used in our SSI analysis for the bedrock shear wave velocity.

The shear wave velocity of 1650 fps used for the in situ gravel was based on dymanic test results for the DGB presented in Table 2.5-16 of the FSAR. Since the material above the basel gravel was removed during construction and replaced with granular fill, the shear wave velocity of the granular fill was also taken as 1650 fps. Since the shear wave velocity of the material was varied by + 30 percent, it was determined that a V_s = 1650 adequately modeled the material.