830 Power Building

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401

50-/390

November 16, 1976

Mr. Norman C. Moseley, Director
Office of Inspection and Enforcement
U.S. Nuclear Regulatory Commission
Region II - Suite 818
230 Peachtree Street, NW.
Atlanta, Georgia 30303

Dear Mr. Moseley:

WATTS BAR NUCLEAR PLANT UNITS 1 AND 2 - REPORTABLE DEFICIENCY - UNEXPECTED SOIL CONDITIONS ENCOUNTERED DURING EXCAVATION OF INTAKE CHANNEL

The subject deficiency was initially reported to NRC-OIE Region II office, Inspector V. L. Brownlee, on October 15, 1976, in accordance with 10 CFR 50.55(e).

Enclosed is our first interim report. Our next report will be submitted by March 15, 1977.

Very truly yours,

A. H. Parris, for

J. E. Gilleland
Assistant Manager of Power

Enclosure
CC: Dr. Ernst Volgenau, Director (Enclosure)
Office of Inspection and Enforcement
U.S. Nuclear Regulatory Commission
Washington, DC 20555

An Equal Opportunity Employer

WATTS BAR NUCLEAR PLANT UNITS 1 AND 2

REPORTABLE DEFICIENCY

UNEXPECTED SOIL CONDITIONS ENCOUNTERED

DURING EXCAVATION OF INTAKE CHANNEL

FIRST INTERIM REPORT

The subject deficiency was initially reported to NRC-OIE, Atlanta, Georgia, on October 15, 1976.

The original soils exploration program in the intake channel area defined the general soil profile as a 15 foot layer of lean clay material from elevation 695 to 680, a 15 foot layer of silty sand from elevation 680 to 665, and a 15 foot layer of firm basal gravel from elevation 665 to 650 (top of rock). The layer of silty sand was judged to have a potential for liquefaction during a seismic event, and therefore the design of the intake channel involved removal of this material down to top of firm gravel (elevation 665). A typical cross section of the intake channel is shown in figure 1.

During the excavation of the channel, unexpected soil conditions were encountered in the layer of firm gravel. Therefore, test trenches and pits were excavated into the firm gravel to better define the soil conditions. On the upstream side of the channel, conditions were as expected except from the pumping station to about halfway to the river, top of rock was determined to be at about elevation 663. Therefore, excavation in this area was made to top of rock and about 18 inches of granular fill compacted to 85 percent maximum relative density was placed to provide a dry working base for placement of the compacted fill. The strength characteristics of the granular fill are better than the basal gravel and the compacted earthfill, and no additional design and analysis was required.

On the downstream side of the channel, layers of sand and one layer of clay were found to exist in the firm gravel. From the pumping station to about halfway to the river, top of rock was found to be at about elevation 656. It was decided to excavate down to rock in this area and place the layer of granular fill (if needed to obtain a dry base) and then compacted earthfill as originally planned. Additional stability analyses have been made to verify limits of excavation. In the remainder of the downstream side, difficulties were encountered in excavating the trenches and pits down to top of rock due to the water table. Therefore, additional soil borings are currently in progress to determine top of rock and obtain data on sand and clay in the firm gravel layer. Samples of the sand and clay were obtained from the trenches for possible testing. When the exploration and testing are completed, decisions will be made as to excavation limits.

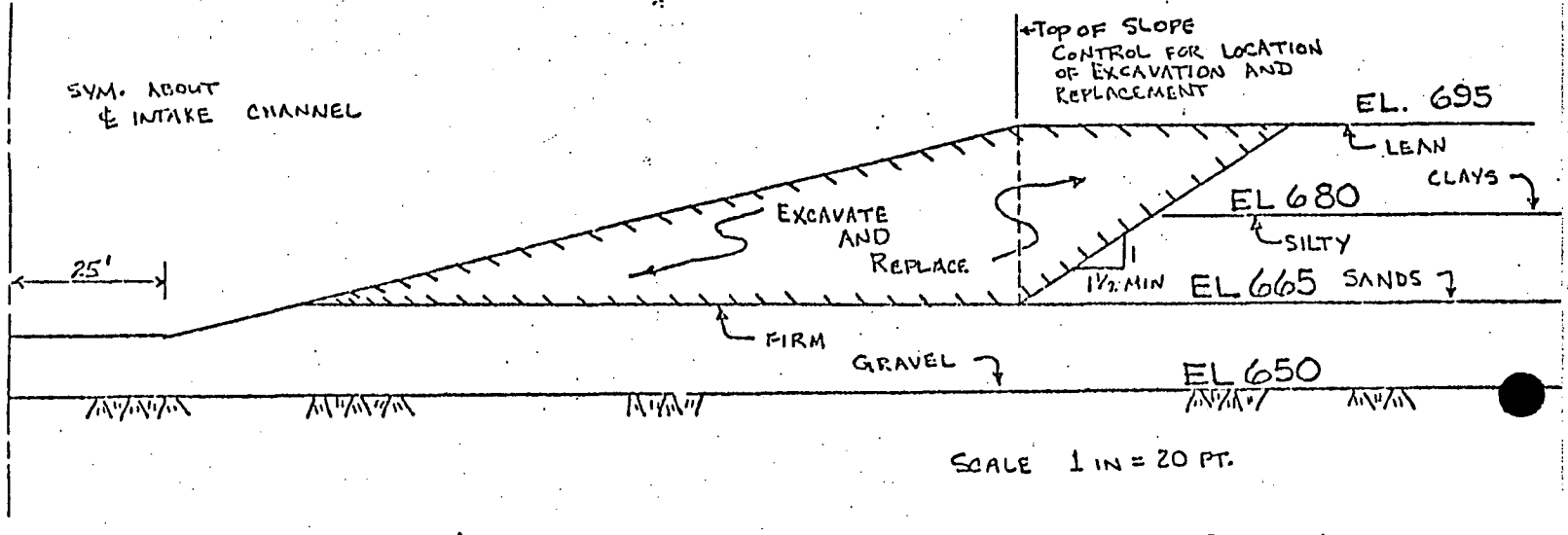

Figure 1 : Intake Channel - Lateral Excavation and Replacement
Typical Cross Section