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D. O. Foster
Vice President and General Manager
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June 13, 1984

Director of Nuclear Reactor Regulation
Attention: Ms. Elinor G. Adensam, Chief
Licensing Branch 4
Division of Licensing
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

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VOGTLE ELECTRIC GENERATING PLANT - UNITS 1 AND 2
TESTING PROGRAM FOR CATEGORY 1 BACKFILL

Dear Mr. Denton:

Pursuant to our telecon with Ms. Miller and Mr. Kane of the NRC staff on June 6, 1984, Georgia Power Company is transmitting the attached description of the Confirmatory Laboratory Testing Program For Category 1 Backfill.

We will keep Ms. Miller informed of the testing schedule.

Yours truly,

D. O. Foster

D. O. Foster

DOF/JAB/sw
Attachment
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VOGTLE ELECTRICAL GENERATING PLANT
UNITS 1 & 2

CONFIRMATORY LABORATORY TESTING PROGRAM FOR CATEGORY 1 BACKFILL

INTRODUCTION

As part of their evaluation of the backfill compaction data, the Nuclear Regulatory Commission (NRC) has requested confirmatory laboratory testing to be performed by an independent laboratory using standard procedures on representative samples of Category 1 backfill material. The purpose of the testing is to verify maximum dry density values used by Georgia Power Company (GPC) to determine the degree of compaction achieved in the field. A total of fourteen samples, representative of the Category 1 backfill material, will be tested. The testing will be performed by an independent testing laboratory acceptable to the NRC, GPC and Bechtel. A brief description of the testing program is given below.

GPC and Bechtel submitted the names of three laboratories and NRC selected:

Law Engineering Testing Company
396 Plasters Ave. N.E.
P.O. Box 13260
Atlanta, Georgia 30324
Telephone: (404) 873-4761

GPC shall enter into an agreement with Law Engineering Testing Company to carry out the testing and determine the dates when the work will be done. A conference call between SCS, GPC, Bechtel, NRC and Law Engineering Testing Company on June 6 reviewed the scope of the testing and this document includes the agreed to revisions discussed in that telephone call.

The testing laboratory shall perform the required testing and submit copies of the test data to Southern Company Services (Attn. J. Bailey). Copies of parallel test data developed by GPC shall be forwarded by GPC to Southern Company Services (SCS). The complete set of test data received by SCS will then be transmitted to the NRC and Bechtel so that a comparison of the data received from the two sources can be made. The entire testing program from the time of receipt of the samples by the testing laboratory is not expected to exceed 2 weeks.

SCOPE OF LABORATORY TESTING

The following laboratory tests shall be performed on representative samples of the backfill material.

No.	Type of Test	ASTM Designation
1	Particle Size Analysis of Soils	D 422
2	Moisture - Density Relations of Soils and Soil-Aggregate Mixtures using 10 lb (4.54 KG) Rammer and 18-in (457-mm) Drop	D 1557 (Method A)
3	Relative Density of Cohesionless Soils	D 2049
4	Permeability of Soils	(See below)

The following laboratory tests shall be performed on representative samples of the backfill material exhibiting any indication of plasticity:

No.	Type of Test	ASTM Designation
5	Liquid Limit of Soils	D 423
6	Plastic Limit and Plasticity of Soils	D 424

The laboratory tests shall be performed on the following three types of Category 1 backfill.

1. Sand with less than 5% passing the US No. 200 sieve size.

2. Silty sand with 5 to 9% passing the US No. 200 sieve size.

3. Silty sand with 9 to 12% passing the US No. 200 sieve size.

The sieve analysis portion of the ASTM D 422 test procedure shall be performed on all three soil types identified above. The hydrometer section of the test procedure shall be performed only on soils with 9 to 12 percent passing the No. 200 sieve. No hydrometer analyses are required for soils with less than 5% or between 5 to 9% passing the No. 200 sieve size.

The ASTM D 1557 (Method A) test shall be performed on all three soil types. The moisture content of each density specimen shall be obtained both during placement of material prior to compaction and after compaction in the mold. Material that has already been densified in the compaction mold shall not be reused for the compaction test.

The ASTM D 2049 test shall also be performed on all three soil types. Maximum densities shall be determined by both the wet and the dry method.

The permeability tests shall be performed in accordance with the procedure described in Appendix V11 of the laboratory testing manual (EM 1110-2-1906) published by the US Army Corps of Engineers. A description of the testing procedure is given in Section 7 (Permeability Tests with Back Pressure) of the manual. Test densities shall be measured before and after saturation with back pressure. The permeability tests shall only be done on soils with 5 to 9% passing the No. 200 sieve and with 9 to 12% passing the No. 200 sieve. Curves of log of permeability coefficient versus dry density shall be developed for each of these two groups of materials. Each curve shall be developed from at least four data points. The tests in each group shall be carried out on material from only one of the samples in that group.

A total of 6 series of tests (ASTM D 422, D 1557 Method A, D2049 and D423 and D424 when appropriate) shall be performed on material with 5 percent or less fines, by the testing laboratory. A total of 4 series of tests each shall be performed on soil types 2 and 3 described above by the testing laboratory (this will include permeability). Georgia Power Company shall perform the ASTM D 422 and 1557 tests on parallel samples of all three soil types.

SAMPLING

Sampling of the backfill material shall be done by GPC. For each series of tests a minimum of 100 lbs of sample will be required. In order to obtain 100 lbs of sample for the testing laboratory, GPC shall sample approximately 400 lbs of material of each soil type from the borrow or stockpile area. The large sample shall be thoroughly mixed in the field laboratory and then subdivided into 4-100 lb test samples. One sample shall be shipped to Law Engineering Testing Company and the other three shall be retained by GPC. Of the retained samples, one shall be used for testing by GPC and the others shall be stored for record purposes.

Six additional 400 lb samples shall be taken by GPC in a manner that is consistent with the normal handling of the fill in the field. Two of these samples shall have less than 5% passing the No. 200 sieve, two shall have between 5 and 9% and two shall have between 9 and 12%. Each of these samples shall be quartered without mixing and one 100 pound sample of each shall be sent to Law Engineering Testing Company, or shall be tested by GPC and the remaining samples shall be stored for record purposes.

The additional record samples will be retained for use at a later date if NRC determines that they wish a consultant of their choice to do additional testing.

Samples conforming to the above gradation ranges should, if possible, be taken in the fill, but if the required gradation cannot be obtained in that manner they shall be obtained in the borrow area or stockpile.

The samples shall be numbered S-1 through S-14 with an indication such as S-1 Bag 1 to indicate that it is a part of the 400 pound sample. This is important in the case of the six unmixed samples as the individual bags may have somewhat different gradation.

Prior to shipping, testing and storing samples, GPC shall perform a minimum of one gradation test in accordance with ASTM D 1140 on material obtained from each 100-lb sample. The purpose of the ASTM D 1140 test is to determine percent passing the US No. 200 sieve size. This will help GPC establish whether the samples selected for testing will meet the criteria with respect to soil types defined earlier in the program. The above procedure of obtaining and selecting samples shall be followed for all fourteen test samples.

All samples for shipping shall be placed in double plastic-lined bags to decrease the probability of bag breakage. These bags shall then be placed in strong wooden boxes and shipped to the testing laboratory. Storage samples shall also be placed in plastic-lined bags. Samples that are shipped and stored shall have duplicate identification tags, one on the outside of the plastic-lined bags and the other with the soil inside the bag.