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GEORGIA POWER COMPANY
ALVIN W. VOGTLE NUCLEAR PLANT - UNITS 1 & 2
DOCKET: 50-425

DEFICIENCY EVALUATION FROM
EROSION UNDER UNIT 2 ELECTRICAL TUNNEL
April 30, 1980

INITIAL REPORT TO NRC: On March 10, 1980, Mr. Ed Groover, Site QA Supervisor for Georgia Power Company at Vogtle Nuclear Plant, notified Mr. J. R. Harris of the NRC Region II concerning a potential significant deficiency on erosion under the Unit 2 electrical tunnel.

Description of Occurrence

Heavy rain on March 8, 1980 caused erosion of the soil under the southwest corner of the control building which washed out a portion of the Category I backfill beneath the existing Unit 2 electrical tunnel foundation slab.

Analysis of Safety Implications

The cable tunnel runs from the control building, underneath the fuel handling building to the auxiliary building. This tunnel is used to protect and to provide a means for running cable from the control building to the auxiliary building. Inside the cable tunnel are cables for various systems including the Train A electrical equipment as well as various other control and instrumentation cables.

The cable tunnel was designed for a seismic event assuming it would be fully supported by Category I backfill. Since it was obvious that the backfill would be replaced, no completed structural analysis was made that could prove or disprove the ability of the cable tunnel to withstand a seismic event assuming that the existing voids under the cable tunnel were to remain uncorrected. It

could be postulated that a seismic event would worsen the backfill problem to such an extent that the cable tunnel could be structurally damaged due to the loss of a stable foundation. Based on the above, the safety of operations of the nuclear plant could be adversely affected at any time throughout the expected lifetime of the plant were it to have remained uncorrected.

It could also be assumed that this represented a significant deficiency which required extensive repair to establish the adequacy of the structure foundation to perform its intended safety function.

Corrective Action

The following corrective action was taken to repair erosion damage to the west side of electrical tunnel Unit 2:

1) All disturbed soil was cut back to an undisturbed profile. The slope was cut to a 4V:1H and approved by the Bechtel Geotechnical Engineer.
2) Testing
   a) Proving ring penetrometer tests were performed to ensure that all disturbed soil had been removed.
   b) Three sand cone density tests were run adjacent to the mudmat at approximately elevation 150'-6".
   c) Sand Cone tests proved impractical; therefore, nuclear density tests (ASTM D-2922) were run. They were calibrated with ASTM D-1556.
3) The exposed slope was gunited and, after drying, loose material was removed from the underside of the mudslab.
4) The earth embankment was used to form the west side of the placement.
5) Lean concrete fill was placed to within 3 inches of the bottom of the mudslab. Concrete was 2000 psi concrete in accordance with Spec. X2AP01, Section C.3.

6) Low pressure grout at pressures less than 10 psi was placed with adequate ventilation. Grout was pumped to slightly above the bottom of the mudmat, approximately elevation 153.7'. Grouting was started at the southernmost location and worked north. The grout was non-shrink per Spec. X2AP01, Section C.3. The structure was monitored for vertical movement during grouting.

This repair work has been completed and additional erosion control measures have been implemented to prevent erosion under the baseslabs in the future.

Summary and Conclusions

1) This deficiency, were it to have remained uncorrected, could possibly have affected adversely the safety of operations of the nuclear plant at some time during the expected lifetime of the plant.
2) It also represented a deficiency which required extensive repair to establish the adequacy of the structure foundation to perform its intended safety function.

Additionally, since the postulated structure damage to the cable tunnel could affect Train A electrical equipment, then an assumed single failure in Train B could present an unsafe situation. Therefore, under the requirements of Part 10CFR21, this is also reportable as a substantial safety hazard since this could represent a major degradation of essential safety related equipment.