50-498

Brown & Root, Inc. Post Office Box Three, Houston, Texas 77001
A Halliburton Company

William M. Rice
Group Vice President
Power Group (713) 676-3521

September 4, 1981

Mr. Victor Stello, Director
Office of Inspection and Enforcement
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Dear Mr. Stello:

Based on an extensive testing program conducted at the South Texas Project (STP) to determine capacity values of wedge-type expansion anchors, a concern was identified that these anchors when installed in grout may not develop ultimate capacities consistent with the manufacturer's published values. This concern was presented to the Nuclear Regulatory Commission (NRC) in our letter of June 1, 1981, submitted pursuant to 10CFR21. A supplemental status report was provided to the NRC by Brown & Root on July 17, 1981. The expansion anchors (Kwik-Bolts) involved are supplied by Hilti Industries, Inc. of Tulsa, Oklahoma.

Brown & Root has evaluated the test data and has confirmed and/or established the average ultimate tensile and shear load capacities relative to those published in the manufacturer's catalogue. As the result of our evaluation, new design criteria has been established and is being incorporated in the project documents.

Brown & Root's review and analysis of the test data has established the following criteria for the ultimate tensile and shear capacities for Hilti Kwik-Bolts installed in grout:

The ultimate tensile capacity of Hilti Kwik-Bolts installed in grout is 75 percent of the capacity of the Bolts when installed in concrete.

The ultimate shear capacity of Hilti Kwik-Bolts installed in grout is the same as the ultimate shear capacity of the Bolts installed in concrete except that for embedment lengths less than 6 diameters the shear capacities shall be 85 percent of the ultimate capacities in concrete.

Brown & Root has completed a construction survey which identified all installations of Hilti Kwik-Bolts in grout placements. The survey has identified only nine (9) safety-related pipe support locations where Hilti expansion anchors are installed in grout which are on the secondary shield wall in the STP Unit 1 reactor containment building. The installations involve expansion anchor sizes of 1/2 inch and 5/8 inch. We are presently performing an evaluation of these installations considering the actual design loads and our new capacity criteria in order to assess safety significance. Specific corrective actions which may be required are dependent upon the results of our safety evaluation.

IE19
S110

IE-19

We are continuing to keep Hilti Industries informed of our activities and provided Hilti with a copy of the independent agency's report on the STP testing program. We shall provide a status of our activities by November 20, 1981.

Very truly yours,

BROWN & ROOT, INC.

W. M. Rice
Group Vice President

WMR/KRC/SMD/GRM/PSO/vm

cc: Karl V. Seyfrit, Director
Office of Inspection and Enforcement - Region IV
U. S. Nuclear Regulatory Commission
611 Ryan Plaza Drive, Suite 1000
Arlington, Texas 76102

D. G. Barker, Manager
South Texas Project Electric Generating Station
Houston Lighting & Power Company
P. O. Box 1700
Houston, Texas 77001

D. F. Fox, Contractor Inspector
Program Evaluation Section - Vendor Inspection Branch
Office of Inspection and Enforcement - Region IV
611 Ryan Plaza Drive, Suite 1000
Arlington, Texas 76102

Herbert L. Henkel, Director - Technical Services
Hilti, Inc.
P. O. Box 45400
Tulsa, Oklahoma 74145