



LONG ISLAND LIGHTING COMPANY

SHOREHAM NUCLEAR POWER STATION

P.O. BOX 618, NORTH COUNTRY ROAD • WADING RIVER, N. Y. 11792

October 29, 1982

SNRC-785

Mr. Ronald C. Haynes
Office of Inspection & Enforcement
Region I
U.S. Nuclear Regulatory Commission
631 Park Avenue
King of Prussia, PA 19406

LONG ISLAND LIGHTING COMPANY

Shoreham Nuclear Power Station - Unit 1

Docket No. 50-322

Dear Mr. Haynes:

On September 27, 1982 we notified Region I verbally of an apparent discrepancy in the GHOSH computer program used to develop Shoreham Mark II response spectra which could be potentially reportable in accordance with 10CFR50.55(e). We were informed of this situation by Stone & Webster Engineering Corporation on September 24, 1982. This letter serves as our 30 day written report on this potentially reportable condition.

Description of the Potential Deficiency

The GHOSH program is a commercially available finite element program used at Shoreham in the development of the response spectra for Mark II loadings. It should be noted that the GHOSH methodology was not used in developing seismic response spectra for our facility. The problem was first reported to the NRC by Gulf States Utilities who have used GHOSH in calculating Mark II and seismic response spectra.

The discrepancy occurs in an internal subroutine which calculates stiffness matrices for triangular finite elements. The program internally breaks each triangular element into three triangular subsections in order to determine the centroid of the element and thus its stiffness matrix. In performing this function, it has incorrectly ignored the stiffness of two subsections, assigning

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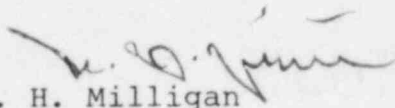
the stiffness matrix of one subsection to the entire triangular element. This tends to present a lower relative stiffness than actually exists. These triangular elements were used in combination with rectangular elements in modeling of the soil beneath the Reactor Building. No triangular elements were used in the superstructure, thereby reducing the effects of the error.

Corrective Action

The problem subroutine has been corrected to include the stiffness matrices of all triangular subsections. We are presently performing study runs to determine the extent of original inaccuracies. Due to the limited use of triangular elements in our model, we do not anticipate a significant impact of this error. Our investigation is scheduled to be completed by December 30, 1982 at which time we will inform your office of its outcome.

If you have any questions concerning this matter, please contact us.

Very truly yours,


M. H. Milligan
Project Engineer
Shoreham Nuclear Power Station

DJH/cmw

cc: Mr. Richard DeYoung, Director
NRC Office of Inspection & Enforcement
Division of Reactor Operators Inspection
Washington, DC 20555

Mr. J. Higgins, Site NRC
All Parties