



LONG ISLAND LIGHTING COMPANY

SHOREHAM NUCLEAR POWER STATION

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

Direct Dial Number

April 20, 1983

SNRC-875

Mr. James M. Allan, Acting Regional Administrator
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

- References:
- (1) SNRC-785 from M. H. Milligan to R. C. Haynes,
dated 10/29/82, GHOSH Program Potential
Reportable Condition
 - (2) SNRC-862 from M. H. Milligan to R. C. Haynes,
dated 3/18/83, Rocking Acceleration Data
Transmittal Discrepancy

Attachment: Report on the GHOSH Computer Program and Rocking
Acceleration Discrepancy, dated April 1983.

Dear Mr. Allan:

The reference 1 and 2 letters addressed two separate conditions affecting the Mark II Confirmatory Program which were determined to be potentially reportable in accordance with 10CFR50.55(e). This letter transmits the results of the assessments which have been conducted by Stone & Webster Engineering Corporation (SWEC) and General Electric Company (G.E.) in these areas, and will serve as our final report.

DESCRIPTION OF DEFICIENCIES

The two discrepancies affecting Mark II loads are the GHOSH Program error and the mislabeling of rocking acceleration data transmitted to G.E. from SWEC.

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The GHOSH Program is a commercially available finite element program which was used at Shoreham in the development of the building response spectra for Mark II hydrodynamic loads. (This program was not used for seismic response spectra for our facility.) The discrepancy occurs in an internal subroutine which calculates stiffness matrices for triangular finite elements. The program internally breaks each triangular element into three subsections to determine the centroid of the element and the overall stiffness. In doing this, the subroutine incorrectly ignored the stiffness of two subsections, assigning the stiffness 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. The discrepancy has been rectified and an assessment of the effects has been completed.

While the assessment of the GHOSH discrepancy was in progress, SWEC discovered a discrepancy in the labeling of the units for the rocking acceleration data and corresponding response spectra transmitted to G.E. This discrepancy was also found to apply to the confirmatory spectra which were transmitted to G.E. in 1981. In the transmittals to G.E., some of the units were specified in g's (g represents the gravitational acceleration equal to 32.2 ft/sec.²), whereas some of the plots of the rocking data were labeled in radians/sec². The correct units are g/ft. G.E. had utilized the units of radians/sec² in their Mark II confirmatory analyses. This discrepancy only affected the G.E. scope of work because the rocking time history was used only in the evaluation of the Nuclear Steam Supply System (NSSS). G.E. was requested to reassess the NSSS with the revised Mark II loads and the proper rocking acceleration units.

Both SWEC and G.E. have completed evaluations of the revised Mark II confirmatory loads which have been corrected for the GHOSH anomaly. In their evaluation, G.E. also considered the rocking data mislabeling. These evaluations show minor differences between the revised confirmatory Amplified Response Spectra (ARS) and the old confirmatory ARS. However, an assessment of the small deviations concludes that the revised confirmatory ARS do not affect the qualification of the Shoreham plant design. Since no significant

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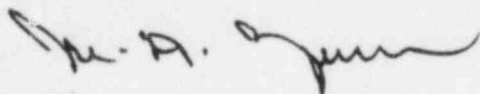
differences in results were found, had both errors remained undetected, there would have been no impact on the plant's capability to operate safely or to achieve safe shutdown. In view of this, we feel that these anomalies do not constitute deficiencies reportable under 10CFR50.55(e).

CORRECTIVE ACTION AND ACTION TO PREVENT RECURRENCE

The attached report presents a detailed assessment of the GHOSH and rocking data anomalies including the procedures used for the evaluation. As stated above and in the report, no changes to the Shoreham plant design have resulted from these discrepancies. Therefore, corrective action to past work completed is not required. Regarding the transmittal discrepancy, no additional data transmittals are expected prior to fuel load. However, to prevent future transmittal discrepancies, SWEC will perform independent review of their QA Category I load transmittals, which are generated from Shoreham building dynamic analyses, for post-fuel load design changes.

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

Very truly yours,



M. H. Milligan
Project Engineer
Shoreham Nuclear Power Station

DJH:mp

cc: Mr. Richard DeYoung, Director
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Mr. J. Higgins, Site Inspector
"All parties listed in Attachment 1"

ATTACHMENT 1

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