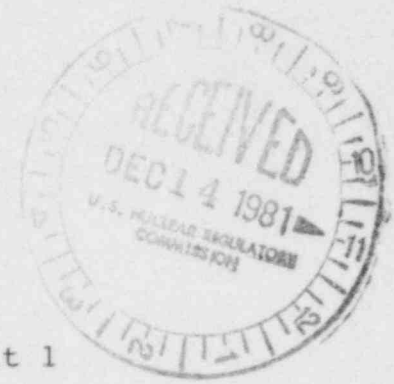
CDR- 81-00-09

LONG ISLAND LIGHTING COMPANY
SHOREHAM NUCLEAR POWER STATION
P.O. BOX 618, NORTH COUNTRY ROAD • WADING RIVER, N.Y. 11792

November 30, 1981

SNRC-639




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 October 19, 1981 we notified Region I verbally of a design condition within the Shoreham Control Rod Drive (CRD) System which could be potentially reportable in accordance with 10CFR50.55(e). We became aware of this situation through a copy of a letter, dated October 14, 1981, from Reactor Controls, Inc. (RCI) to your office entitled, "A Potential Reportable Condition." This letter serves as our 30-day written report on this potentially reportable condition.

Description of the Potential Deficiency

Information from the referenced RCI letter indicates that substantial loads are introduced to the CRD system under certain circumstances when a fast opening scram inlet valve actuates. RCI explained that, while performing stress analysis of the piping and supports for a BWR-6 unit with a "Fast Scram" feature, the opening time for the scram inlet valves was found to be 20 milliseconds. This factor resulted in substantial hydrodynamic (water hammer) loads effecting the design of system pipe supports. The hydrodynamic loads become a design problem during a start up scram event (i.e., the RPV is at essentially "0" pressure, resulting in the highest differential pressure between the RPV and CRD accumulator).

The RCI letter also points out that the CRD System has a history of many years of successful operation at all plants without any reported difficulties from this load. RCI's findings are the result of analysis using computer programs that may not parallel the system closely enough to represent the actual condition.

8112160 303

IE27
S10

Our preliminary review of the Shoreham design indicates that there are several aspects of the CRD System which will serve to decrease the subject hydrodynamic loads for Shoreham. First, the scram inlet valve opening times at Shoreham are considerably slower than the 20 milliseconds noted by RCI at the BWR-6 unit with the "Fast Scram" feature. We anticipate that this factor alone will substantially decrease the magnitude of the subject hydrodynamic loads. Additionally, Shoreham's CRD accumulator operates at a lower pressure resulting in a lower differential pressure during the start up scram event and thus is expected to produce smaller loads. The Shoreham CRD System design more closely approximates designs used in operating BWR facilities rather than the design used in the BWR-6 unit with the "Fast Scram" feature. We, therefore, anticipate that the successful operating history of CRD systems at BWR facilities can be appropriately applied to Shoreham.

Corrective Action

At present, we are actively pursuing an evaluation of the Shoreham CRD System with respect to the analysis performed by RCI. As pointed out by RCI, the ability of the computer program to accurately parallel the physical system represents a substantial engineering effort. We anticipate completing this effort in June, 1982. If, during the course of our evaluation, we determine that the operation of the CRD system would be adversely affected as the result of these hydrodynamic loads, we will notify your office immediately.

Please do not hesitate to contact us if you have any questions on this matter.

Very truly yours,

M. H. Milligan
Project Engineer
Shoreham Nuclear Power Station

CKS/law

cc: Mr. Richard DeYoung, Director
NRC Office of Inspection & Enforcement
Division of Reactor Operations Inspection
Washington, D.C. 20555

Mr. J. Higgins, Site NRC