LONG ISLAND LIGHTING COMPANY
175 EAST OLD COUNTRY ROAD · HICKSVILLE, NEW YORK 11801

Direct Dial Number

May 4, 1983 SNRC-873

Mr. James M. A an
Acting Regional Administrator
Office of Inspection & Enforcement, Region 1
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. Allan:

On March 30, 1983, in accordance with 10CFR50.55(e), we reported verbally to Region 1 a potential deficiency concerning the failure of a rocker arm assembly holddown capscrew on the Shoreham Emergency Standby Diesel Generators. This letter serves as our 30-day written report on this potential deficiency.

Description of the Potential Deficiency

The three diesel generators which are affected were manufactured by the Transamerica Delaval Company of Oakland, California. These diesel generators, 1R43*G-101, 1R43*G-102, and 1R43*G-103, in the Diesel Emergency Power System are designed to provide standby emergency power for multiple plant safety related systems.

The problem was discovered during testing of Diesel Generator 103 (1R43*G-103) when a sudden change in the sound of the running engine was detected by the operator. The operator shut down the engine and an attempt was made to determine the source of the noise. Upon removing the valve cover of the #1 cylinder, it was discovered that the intermediate-intake rocker arm assembly hold-down capscrew had failed.

Subsequent to the failure, a preliminary field inspection of the failed capscrew was performed by a LILCO metallurgy specialist in conjunction with an onsite engineering representative of

IE 27

Transamerica Delaval. On the basis of the preliminary field inspection, it appeared that the failure was due to fatigue loading with cracking found to be initiated at the bolt thread root. As a result of the findings of this field inspection, magnetic particle inspection was conducted on all rocker arm assembly holddown capscrews and linear indications were noted on 46 of them. The failed capscrew and its associated rocker arm assembly and sub-cover were then returned in their "as found" condition to Transamerica Delaval for a formal failure analysis, as were the 46 capscrews with linear indications. Although the Transamerica Delaval failure analysis report has not yet been received, verbal discussions with Transamerica Delaval have indicated that their examination results to date have not revealed significant indications on the balance of the capscrews which would have been indicative of incipient failures.

Corrective Action & Action to Prevent Reoccurrence

Although Transamerica Delaval has advised, as described above, that the capscrew failure was an isolated instance, LILCO has elected to change out all original capscrews in this application and replace them with a modified Transamerica Delaval, design capscrew with improved fatigue characteristics.

This redesign is based on a rocker shaft bolt developed for Delaval's HV-A series engine. The modified rocker shaft bolts are designed to reduce fatigue sensitivity in the bolt by transferring the regions of highest stress away from the stress concentrations in the root of the threads and reducing the cyclic loading on the bolt. The reduction in cyclic loading is achieved by decreasing the diameter of the shank, thereby increasing the elongation/stress relationship of the bolt. This effectively transfers more of the cyclic load to the stiffer rocker arm shaft, which is loaded in compression.

The rocker arm capscrew changeouts have been completed via E&DCR F-45462, therefore, our corrective action has been completed. Any further replacements for these capscrews will be of the improved design.

If you have any questions relative to this matter, please do not hesitate to contact us.

Very truly yours,

J. L. Smith
Manager, Special Projects
Shoreham Nuclear Power Station

WMJ/lawS3

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

Mr. J. Higgins, Site NRC

All Parties - Attachment 1

ATTACHMENT 1

Lawrence Brenner, Esq.
Administrative Judge
Atomic Safety and Licensing
Board Panel
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dr. Peter A. Morris
Administrative Judge
Atomic Safety and Licensing
Board Panel
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dr. James H. Carpenter
Administrative Judge
Atomic Safety and Licensing
Board Panel
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Daniel F. Brown, Esq
Attorney
Atomic Safety and Licensing
Board Panel
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Bernard M. Bordenick, Esq.
David A. Repka, Esq.
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

James Dougherty
3045 Porter Street
Washington, D.C. 20008

Herbert H. Brown, Esq.
Lawrence Coe Lanpher, Esq.
Karla J. Letsche, Esq.
Kirkpatrick, Lockhart, Hill
Christopher & Phillips
8th Floor
1900 M Street, N.W.
Washington, D.C. 20036

Mr. Marc W. Goldsmith
Energy Research Group
4001 Totten Pond Road
Waltham, Massachusetts 02154

MHB Technical Associates
1723 Hamilton Avenue
Suite K
San Jose, California 95125

Stephen B. Latham, Esq.
Twomey, Latham & Shea
33 West Second Street
P.O. Box 398
Riverhead, New York 11901

Ralph Shapiro, Esq.
Cammer and Shapiro, P.C.
9 East 40th Street
New York, New York 10016

Matthew J. Kelly, Esq.
State of New York
Department of Public Service
Three Empire State Plaza
Albany, New York 12223