

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

DOCKETED
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Before the Atomic Safety and Licensing Board

'83 JAN 21 AUC 44

In the Matter of)
LONG ISLAND LIGHTING COMPANY)
(Shoreham Nuclear Power Station,)
Unit 1))
_____)

Docket No. 50-322 O.L.

DIRECT TESTIMONY OF GREGORY C. MINOR
ON BEHALF OF SUFFOLK COUNTY REGARDING
SC CONTENTION 8 AND SOC CONTENTION
19(h) - ENVIRONMENTAL QUALIFICATION

Q1: Please state your name, address and business affiliation.

A1: My name is Gregory C. Minor and I am employed by MHB Technical Associates whose business address is 1723 Hamilton Avenue, San Jose, California.

Q2: Please describe your professional qualifications.

A2: I have 23 years of experience in the nuclear industry. Of this time, 16 years were spent with General Electric Company in the design, development and testing of nuclear systems and components, and 7 years were spent as a nuclear consultant dealing with various issues relating to nuclear safety. During the time I was employed by General Electric, I was manager of an organization responsible for the environmental and seismic qualification of new systems and components being designed for application in nuclear power plants. A copy of my professional qualifications has previously been submitted.

(See ff.Tr.1113).

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Q3: What is the purpose of this testimony?

A3: The purpose of this testimony is to address Suffolk County Contention 8 + Environmental Qualification, particularly parts (c) and (e). The Contention reads as follows:

Suffolk County contends that the TMI-2 accident demonstrated that the severity of the environment in which equipment important to safety must operate was underestimated and that equipment previously deemed to be environmentally qualified had failed. Shoreham's safety-related equipment has not been demonstrated to be capable of maintaining functional operability under all service conditions throughout its installed life, and during the time in which it is actually required to operate, thereby violating 10 C.F.R. 50, Appendix A, GDC 1, 2, 4 and 23 and 10 C.F.R. 50, Appendix B, Sections II, III and XI.

Deficiencies in the qualification of Shoreham's safety-related equipment must be eliminated before operation can be authorized.

- (a) The limited test conditions posed in the Shoreham environmental qualification program are not sufficiently conservative;
- (b) Equipment has been qualified by grandfathering to older, less stringent standards;
- (c) The list of emergency equipment to be environmentally qualified is inadequate;
- (d) There has been an inadequate demonstration that all safety-related equipment has been properly qualified to meet aging and other life requirements; and
- (e) There is insufficient information to evaluate the overall adequacy of Shoreham's satisfaction of environmental qualification requirements for safety-related equipment.

Q4: Please briefly state your concerns regarding environmental qualification of equipment at Shoreham.

A4: I have two basic concerns. First, there is inadequate documentation of how LILCO determined what safety-related electrical equipment would be included in its environmental qualification ("EQ") program. Therefore, there is no assurance that all safety-related equipment required by GDC 4 to be qualified (as this GDC has been interpreted and as such equipment has been identified in 10 C.F.R. Part 50, Section 50.49(b)(1)) has been qualified. This concern relates primarily to subparts (c) and (e) of the Contention.

Second, there is no evidence that the Shoreham EQ program includes all non-safety-related electrical equipment whose failure could mislead the operator or prevent satisfactory accomplishment of Part 100 safety functions by safety-related equipment, as required by Section 50.49(b)(2). Without documentation that LILCO has reviewed non-safety-related electrical equipment to determine if it is within the definitions set forth in Sections 50.49(b)(2), and 50.49(i), and without justification for the exclusion from the EQ program of any such equipment required during emergency or accident conditions, there can be no assurance that LILCO's list of emergency equipment included in its EQ program is adequate and meets the requirements of GDC 4, as interpreted in Section 50.49. This concern relates primarily to subpart (c) of the Contention.

Q5: Please explain your first concern in more detail.

A5: The EQ program at Shoreham is documented in the

"Environmental Qualification Report for Class 1E Equipment" ("EQ Report"). The actual list of equipment which is included in the EQ program is in Appendix F of the EQ Report, entitled, "Environmental Qualification Status Report" ("EQSR").

It is clear from a review of the EQ Report and the EQSR, that several entire systems, and much safety-related equipment, were excluded from the Shoreham EQSR. (For example, in the EQ Report, at page 2 - 12, the Standby Liquid Control System and the Remote Shutdown Panel were among several systems excluded for one of two general reasons.) However, neither the basis for such exclusion, nor an identification of the specific safety-related components which were actually excluded, can be gleaned from the EQ Report or the EQSR.

The inscrutability of these documents makes it impossible to determine how or on what basis LILCO excluded some safety-related equipment from its EQ program. In the absence of adequate and scrutable justification for the exclusion of particular safety-related components, there can be no finding that LILCO's EQ program is adequate with respect to safety-related equipment.

Q6: Please explain in more detail your second concern.

A6: Section 50.49, interpreting the requirements of GDC 4, directs the establishment of a program for qualifying certain electrical equipment important to safety. It provides, in pertinent part:

(b) Electrical equipment important to safety covered by this section is:

- (1) Safety-related electric equipment: This equipment is that relied upon to remain functional during and following design basis events to ensure (i) the integrity of the reactor coolant pressure boundary, (ii) the capability to shut down the reactor and maintain it in a safe shutdown condition, and (iii) the capability to prevent or mitigate the consequences of accidents that could result in potential offsite exposures comparable to the 10 C.F.R. Part 100 guidelines
- (2) Non-safety-related electric equipment whose failure under postulated environmental conditions could prevent satisfactory accomplishment of safety functions specified in (i) through (iii) of paragraph (b) (1) of this section by the safety-related equipment.

As noted above, LILCO's method and criteria for defining what equipment is excluded from its EQ program are not adequately documented. In addition, there is no indication, either in the EQ Report or in the EQSR, that LILCO included in its EQ program any non-safety-related equipment. Indeed, based upon conversations I have had with LILCO personnel, I have been led to believe that one criterion for excluding equipment from the EQ program is the fact that it is non-safety-related. Thus, to my knowledge, LILCO has engaged in no systematic effort to identify and qualify all non-safety-related equipment whose failure could adversely impact safety-related equipment.

Both Section 50.49 and GDC 4 require the environmental qualification of equipment important to safety. Equipment that is important to safety includes both safety-related and non-safety-related structures, systems, and components. However,

there is no evidence that LILCO has even considered for inclusion in its EQ program any equipment other than that classified as safety-related.

In order to comply with Section 50.49 and GDC 4, LILCO must identify all electrical equipment important to safety, and then determine if it needs to be qualified under the terms of GDC 4 and Section 50.49. In addition, LILCO must document that its EQ program has taken into account all equipment the failure of which could mislead an operator.^{*/} Because LILCO has not analyzed in its EQ program any equipment other than safety-related equipment, there is no assurance that it has qualified all emergency equipment that is covered by Section 50.49 and GDC 4.

^{*/} See Section 50.49(i)(4) and (5).

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) Docket No. 50-322 (O.L.)

CERTIFICATE OF SERVICE

I hereby certify that copies of the Direct Testimony of Gregory C. Minor on Behalf of Suffolk County Regarding SC Contention 8 and SOC Contention 19(h) - Environmental Qualification, were served on the following on January 18, 1983, by first class mail, postage prepaid, or, where denoted by an asterisk (*), by hand-delivery.

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

Dr. James L. Carpenter (*)
Administrative Judge
Atomic Safety and Licensing Board
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

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

Edward M. Barrett, Esq.
General Counsel
Long Island Lighting Company
250 Old Country Road
Mineola, New York 11501

Mr. Brian McCaffrey
Long Island Lighting Company
175 East Old Country Road
Hicksville, New York 11801

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

Howard L. Blau, Esq.
217 Newbridge Road
Hicksville, New York 11801

W. Taylor Reveley III, Esq. (*)
Hunton & Williams
P.O. Box 1535
707 East Main St.
Richmond, Virginia 23212

Mr. Jay Dunkleberger
New York State Energy Office
Agency Building 2
Empire State Plaza
Albany, New York 12223

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

Marc W. Goldsmith
Energy Research Group, Inc.
400-1 Totten Pond Road
Waltham, Massachusetts 02154

Joel Blau, Esq.
New York Public Service Commission
The Governor Nelson A. Rockefeller
Building
Empire State Plaza
Albany, New York 12223

David J. Gilmartin, Esq.
Suffolk County Attorney
County Executive/Legislative Bldg.
Veterans Memorial Highway
Hauppauge, New York 11788

Atomic Safety and Licensing
Board Panel
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Docketing and Service Section
Office of the Secretary
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

Stuart Diamond
Environment/Energy Writer
NEWSDAY
Long Island, New York 11747

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

Mr. Jeff Smith
Shoreham Nuclear Power Station
P.O. Box 618
North Country Road
Wading River, New York 11792

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

Hon. Peter Cohalan
Suffolk County Executive
County Executive/Legislative
Building
Veterans Memorial Highway
Hauppauge, New York 11788

Ezra I. Bialik, Esq.
Assistant Attorney General
Environmental Protection Bureau
New York State Department of
Law
2 World Trade Center
New York, New York 10047

Atomic Safety and Licensing
Appeal Board
U.S. Nuclear Regulatory
Commission
Washington, D.C. 20555

Matthew J. Kelly, Esq.
Staff Counsel, New York
State Public Service Comm.
3 Rockefeller Plaza
Albany, New York 12223



Karla J. Letsche
KIRKPATRICK, LOCKHART, HILL,
CHRISTOPHER & PHILLIPS
1900 M Street, N.W., 8th Floor
Washington, D.C. 20036

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