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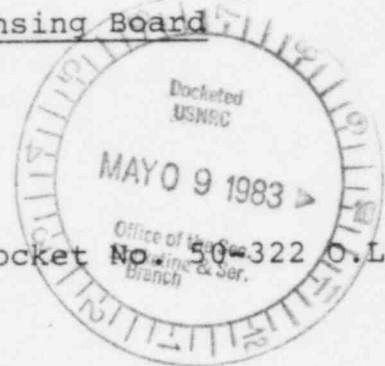
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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

Before the Atomic Safety and Licensing Board

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

Docket No. 50-322 O.L.



SUFFOLK COUNTY SUBMITTAL OF SUPPLEMENTAL
SC CONTENTION 11 OPINION AND FINDINGS
AND RESPONSE TO LICENSING BOARD'S REQUEST
FOR A REPLY TO POINTS RAISED BY LILCO
AND THE STAFF

This filing responds to the Board's April 28, 1983 Memorandum and Order Providing for Further Filings on Suffolk County's Motion to Reopen the Record on Contention 11. Attached as Exhibits 1 and 2 hereto, the County submits additions to the County's Proposed SC Contention 11 Opinion and Findings, which take into account the data contained in IE Bulletin 83-03.

Set forth below are the County's responses to the matters on which the Board requested a County reply.

Item 1. [The Staff and LILCO allege] the motion to reopen is untimely because the information with respect to check valve failures raised in IE Bulletin 83-03 was substantially available at the time Contention 11 was litigated in June 1982, and in any event well in advance of the March 10, 1983 Bulletin and the County's subsequent motion

DS03

Response. The focus of IE Bulletin 83-03 is on the adequacy of normal testing and surveillance programs to detect failures involving the disassembly or partial disassembly of check valve internals. Thus, the Bulletin states: "[O]ur analysis of operating experience with check valves has shown that disassembly and partial disassembly of check valve internals is not effectively found by Section XI testing as it is implemented at this time." IE Bulletin 83-03, at 1. The Bulletin, both in its subsequent analysis (pp. 1-2) and in its list of required actions (p. 4) thus focuses on the concern for internal valve failures which may go undetected under the normal IST program.

LILCO and the Staff suggest that Suffolk County, prior to issuance of 83-03, should have known of the data contained in 83-03 and, thus, that the motion to reopen was untimely. The Staff and LILCO rely upon the list of events set forth in Table 1 of IE Bulletin 83-03. LILCO Response at 3-6; Staff Response at 3-4. The County disagrees.

IE Bulletin 83-03, as noted by the Staff (Staff Response at 3), focuses on the Dresden and Quad-Cities events. The Dresden event had been reported in IE Information Notice 83-08, dated March 26, 1982. However, the Quad-Cities event is not mentioned in any of the documents referenced in Table 1 to IE Bulletin 83-03.

LILCO suggests that the Quad-Cities failures were "merely cumulative of information reported in previous documents." LILCO Response at 3, n. 1. The County strongly disagrees. The Quad-Cities data were developed because the Staff, after learning of the Dresden failures, requested Commonwealth Edison to inspect the Quad-Cities valves because of similarities between the plants. IE Bulletin 83-03, at 2. It was only after it was revealed that Quad-Cities had the same type of failures (although no flow blockage) as experienced at Dresden, that the Staff issued IE Bulletin 83-03 and highlighted its concern for the adequacy of normal IST programs. Thus, to call the Quad-Cities failures "cumulative" is to ignore the fact that they clearly were crucial to the Staff determination that IST deficiencies existed.

Further, when the IE Bulletin 83-03 Table 1 documents are reviewed, it is clear that they did not put the County [or apparently the Staff] on notice to the IST deficiencies which are the focus of concern in 83-03. Briefly, the Table 1 documents may be summarized insofar as immediately relevant:

IE Circular 78-15	Focus on valve installation problems; adequacy of testing not mentioned.
IE Bulletin 79-04	Focus on concern that valve weights which were incorrect could affect stress analysis; adequacy of IST not mentioned.

IE Bulletin 80-01

Focus on operability of ADS pneumatic supply. Check valves involved to extent of whether hard-seat check valves installed to isolate ADS accumulator system from pneumatic supply system. Concern over whether leak testing of ADS accumulator systems had been performed. No focus on adequacy of IST.

IE Information Notice
80-41

Valve failures identified during leak tests; adequacy of IST not mentioned; matter described as preliminary and still under NRC review.

IE Information Notice
81-30

One valve failure involved undetected internal disk problem; other failures found during leak testing; adequacy of IST not mentioned.

IE Information Notice
81-35

Focus on problems due to poor retaining device design and bad QC; no focus on testing.

IE Information Notice
82-08

Dresden failures described; did raise concern over testing, but not nearly in the detail of 83-03. No requirements imposed.

IE Information Notice
82-20

Focus on wear of check valves; no focus on detection of failures.

IE Information Notice
82-35

Focus on causes of failures (over torquing, etc.); no focus on IST detection.

As the Board is aware, the focus of IE Bulletin 83-03 is squarely on the concern that normal surveillance and testing programs have failed to detect certain valve failures. The previously issued IE documents described above, with the partial exception of IE Information Notice 82-08, do not focus on this concern. Indeed, IE Bulletin 83-03 was the first document which focused explicitly on this concern, and that Staff concern was based not only on Dresden but also, significantly, on the data from Quad-Cities. Accordingly, just as the Staff was not fully sensitive to the IST undetected failure implications of the check valve data until it prepared 83-03, the County cannot be expected to have been aware of the same matters until 83-03 was issued.

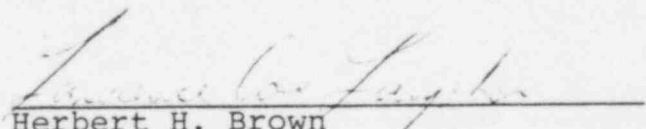
Finally, LILCO suggests that the County could have raised valve problems in the QA/QC context during the testimony of Mr. Alexander. LILCO Response at 5-6. The County disagrees that detailed examination of Mr. Alexander on valve failure events would have been proper in the QA/QC context. Further, it bears noting that different counsel and experts handled that portion of the QA/QC hearing for the County (Messrs. Lanpher, Bridenbaugh and Minor, who were involved in the SC Contention 11 matter, were not involved in the ISEG examination).

Item 2. Consistent with the views of the County's affiant, Mr. Bridenbaugh, the Bulletin is in fact being applied to LILCO by the Staff, and LILCO's affiant, Mr. Rigert, states that LILCO has or will comply with the substantive and reporting requirements of the Bulletin.

Response. This matter is addressed in the County's proposed Opinion and Findings. The reason LILCO's response is insufficient is that it is limited to six service water system diesel generator cooling water check valves. As pointed out in Exhibits 1 and 2 hereto, the type of valve failures reported in IE Bulletin 83-03 could involve a far larger number of valves. Thus, LILCO's response is not sufficient to address the full scope of the concern.

Respectfully submitted,

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May 5, 1983

SUFFOLK COUNTY
INSERT TO OPINION ON
SUFFOLK COUNTY CONTENTION 11
PASSIVE MECHANICAL VALVE FAILURE

NOTE: The following supplemental paragraphs, provided in response to the Board's Memorandum and Order dated April 28, 1983, should be inserted at the end of the first partial paragraph on page 14 of Suffolk County's January 31, 1983 filing, Volume 2 of 2, as part of the Proposed Opinion on SC Contention 11.

The need for careful reliability analysis of valves in Shoreham's safety-related systems was recently emphasized by data contained in IE Bulletin 83-03. (Finding 11:2(a)). In that Bulletin, the NRC Staff reported a series of diesel generator cooling water check valve failures which occurred at the Dresden and Quad Cities plants and at other locations. The failures at Dresden and Quad Cities had not been detected during normal surveillance testing and ultimately resulted in two of the three diesels at Dresden being rendered inoperable at the same time but the exact cause of the resulting flow blockage at Dresden was not determined until almost one month later. The Board finds that the failures reported in IE Bulletin 83-03 document the consequences of failure to perform adequate valve reliability assessments in support of defining the IST program. Further, these failures also reflect deficiencies of the standard valve position indication systems and the inadequacies of the surveillance testing which is commonly performed. (Findings 11:3(a), 11:11(a & b), 11:25(a), 11:40(a), 11:43(a)).

LILCO has committed for diesel generator check valves to carry out the six remedial actions listed in IE Bulletin 83-03. However, there is no evidence that the deficiencies documented in IE Bulletin 83-03 are limited to check valves in the diesel generator system. Indeed, the Bulletin itself expresses concern for check valve reliability beyond the diesel system. Thus, failures which have been reported provide strong evidence that the failures are relevant to all safety-related valves throughout the plant. Until LILCO commits to actions sufficient to assess the impact of these failures on all plant systems, this Board cannot conclude that LILCO has taken appropriate action. (Findings 11:24(a), 11:25(a), 11:56(a)).

SUFFOLK COUNTY
INSERTS TO PROPOSED FINDINGS
OF FACT ON SC CONTENTION 11
PASSIVE MECHANICAL VALVE FAILURE

NOTE: The following supplemental proposed findings of fact should be inserted as part of the findings submitted by Suffolk County on January 31, 1983.

11:2(a). Subsequent to the close of the record, Suffolk County filed a Motion to Reopen Record on Suffolk County Contention 11 (April 7, 1983). Responses were submitted by LILCO (April 22, 1983) and the Staff (April 27, 1983). In a Memorandum and Order Providing for Further Filings on Suffolk County's Motion to Reopen the Record on Contention 11, issued by the Board on April 28, 1983, the Board directed that the following documents would be assumed to be admitted to the reopened record:

1. IE Bulletin 83-03, "Check Valve Failures in Raw Water Cooling Systems of Diesel Generators" (March 10, 1983).
2. Letter, R. W. Starostecki, NRC Staff, to M. S. Pollock, LILCO, "Subject: IE Bulletin No. 83-03 [etc.]" (April 1, 1983).
3. Affidavit of Dale G. Bridenbaugh (March 25, 1983).
4. Affidavit of John A. Rigert (April 21, 1983).

The Board indicated that it would rule whether to grant the motion to reopen the SC Contention 11 record as part of its Partial Initial Decision on the merits of this contention. That motion is hereby granted.

11:3(a). The examples of failures reported in the LERs cited by Messrs. Bridenbaugh and Minor in their initial testimony on SC Contention 11 have recently been highlighted by the series of failures of diesel generator cooling system check valves reported in IE Bulletin No. 83-03. These failures, which are described more fully in Findings 11:11(a) and 11:11(b), show clearly that such failures are relatively common, that they can occur simultaneously in redundant systems, that they are not detectable by the normal testing program, that they can result in non-availability of essential safety systems, and that the standard level of valve position indication instrumentation is not capable of providing warning of such failures. Bulletin 83-03, pp. 2-3.

11:11(a). Such relevant failures are clearly identified in IE Bulletin 83-03. These failures as reported in the Bulletin were as follows:

The specific requirements of this bulletin stem from analysis of check valve failures in the raw cooling water supply to the diesel generators at the Dresden and Quad-Cities nuclear power stations and other events which are described in Table 2. At Dresden and Quad-Cities, it was found that six of six check valves in the raw cooling water systems for the diesel generators had failed with the disc becoming detached from the pivot arm. Many of the failures described in the

generic communications listed in Table 1 also involved detached discs. The Dresden event is described in detail in IE Information Notice No. 82-08. In summary, the event involved failure of the check valves in the raw water cooling systems for the diesel generators which resulted in interruption of cooling water flow to the diesel generator heat exchangers and subsequent inoperability of the diesel generators. The Dresden check valve failures rendered two diesels inoperable at the same time when the valve discs moved to the valve outlets and blocked flow. However, the true cause of flow blockage was not determined until almost one month later. All three Diesel Generator Cooling Water Pump (DGCWP) systems at Dresden Units 2 and 3 involved check valve failures which were discovered during a short period of time. These failures were not identified by operator observations and instrument readings during diesel generator surveillance tests, but were discovered by direct inspection of the internals of the valves. It is not known how long these check valves were broken before their condition was detected. The broken valve discs were found to be free to move within the valve bodies and may have been that way for some time before coming to rest in a position which restricted flow enough to cause the diesels to trip on high engine temperature.

Bulletin 83-03, p. 2.

11:11(b). At Quad-Cities, the check valve failures remained latent. The valve discs were lying free in the valve body but had not moved to the outlet or blocked flow. All three diesel generator cooling water pump check valves at Quad-Cities were found with the discs separated from the pivot arms. Bulletin 83-03, p. 2.

11:24(a). The experience cited in Bulletin 83-03 illustrates the need for making assumptions concerning undetected valve failures. While the specific failures reported in the Bulletin were of check valves in diesel generator cooling water systems, the Bulletin clearly shows the relevance of these failures to check valves in other safety-related systems. The Bulletin states, for example, that:

A review of available operating experience, data and licensee event reports (LERs) shows that numerous check valve failures have occurred in systems important to safety in nuclear power plants.

and:

[O]ur analysis of operating experience with check valves has shown that disassembly and partial disassembly of check valve internals is not effectively found by Section XI testing as it is implemented at this time. Tests performed for Section XI or Technical Specifications usually require only forward flow through check valves. These tests may not detect internal check valve failures unless the disassembled parts move to block flow during the test.

IE Bulletin 83-03, p. 1.

This bulletin is expected to be part of a generic response to check valve failures which will result in improved testing to ensure operability and to improve reliability of check valves. In addition to the communications issued by IE, the NRC Office of Nuclear Reactor Regulation requires that licensees consider all check valves in systems important to safety for inclusion in ASME Section XI Pump and Valve Inservice Testing Programs. Although most check valves

in systems important to safety are included in current IST program reviews, most are not required to be reverse flow tested or disassembled to detect gross internal failure because licensees have identified each of these valves as having a single safety function: the open position. However, forward flow tests to verify the open position are inadequate for detecting internal disassembly. Effective check valve testing techniques are necessary to the development of a more meaningful and productive IST program.

Bulletin 83-03, pp. 1-2.

11:25(a). The need for the failure-reliability analysis described in Finding 11:25 is further emphasized by NRC statements contained in Bulletin 83-03. It states:

It should be noted that the popular use of swing check valves in safety related plant fluid systems considerably expands the scope of concern for check valve maintenance and testing beyond diesel cooling systems. Licensee event reports indicate that other systems important to safety have experienced failure of check valves which are not included in the IST program and have not been discovered during testing. Other licensee event reports indicate that for those valves which are not leak tested, both the type and frequency of testing may not be adequate to detect valve failure. Maintenance and IST programs should be reconsidered in light of detecting and preventing gross and multiple check valve failures that can defeat functions of systems important to safety. This includes concerns both for check valve opening and closure.

Bulletin 83-03, pp. 4 and 5.

11:40(a). The failed check valves reported in Bulletin 83-03 illustrate the fact that normally provided position indication information is inadequate to detect certain valve failures. Check valves do not normally have direct position indicators and the adequacy of multi-directional flow function is difficult to verify through the standard IST program testing. Bridenbaugh March 25, 1983 Affidavit, p. 3.

11:43(a). The disassembly of the swing check valve discs from the pivot arms reported in Bulletin 83-03 provide evidence of position indicator deficiencies. The Bulletin reports that the failures were not identified by operator observations and instrument readings. Bulletin 83-03, p. 2.

11:56(a). IE Bulletin 83-03 calls for actions with respect to diesel generator cooling water check valves. LILCO has committed to take these actions. Bulletin 83-03, p. 4; April 21, 1983 Affidavit of John A. Rigert. The action committed to by LILCO in response to Bulletin 83-03 does not assure the Board that aggressive action will be taken in response to industry experience. Even though the Bulletin clearly states that the reported failures are potentially relevant to safety-related systems other than the diesel generator cooling water systems (Bulletin 83-03, pp. 3 and 4), LILCO has only committed to review the six diesel generator valves specifically identified for required action by the Bulletin and by the April 1, 1983

letter from Starostecki to Pollock. April 21, 1983 Affidavit of John A. Rigert, p. 2. Thus, there is no evidence that LILCO is assessing the implications of IE Bulletin 83-03 on valves outside the diesel system.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

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

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



CERTIFICATE OF SERVICE

I hereby certify that copies of SUFFOLK COUNTY SUBMITTAL OF SUPPLEMENTAL SC CONTENTION 11 OPINION AND FINDINGS AND RESPONSE TO LICENSING BOARD'S REQUEST FOR A REPLY TO POINTS RAISED BY LILCO AND THE STAFF have been served to the following by first-class mail, postage prepaid, this 5th day of May, 1983, except as otherwise indicated.

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