

LILCO, February 19, 1985

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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) Docket No. 50-322-1(OL)
)
(Shoreham Nuclear Power Station,))
Unit 1))

LILCO'S RESPONSE TO
SUFFOLK COUNTY'S AND NEW YORK STATE'S
MOTIONS TO STRIKE STAFF TESTIMONY

I. Motion to Strike Crankshaft Testimony

By Motion dated February 8, 1985, Suffolk County and New York State (hereinafter jointly referred to as "Suffolk County" or the "County") moved to strike various portions of the joint testimony of Spencer Bush, Adam J. Henriksen and Professor Arthur Sarsten. Without exception, the testimony sought to be stricken relates to the ability of the crankshafts to sustain loads above 3300 KW.^{1/} Suffolk County contends that

^{1/} Suffolk County states on page 2 of its motion that the testimony is "on the ability of the crankshafts to operate safely at or above an instrument indicated load of 3500 KW and higher." This characterization is incorrect. For example, the testimony of Dr. Bush, from question 10 on page 14 through the end of answer 11 on page 21, all of which Suffolk County has moved to strike, concerns Dr. Bush's view that the crankshafts will operate reliably at loads of 3300 to 3400 KW. The same is true with respect to the testimony at page 5, first sentence, relating to loads up to 3430 KW for up to one hour, which Suffolk County has also moved to strike.

this testimony, which is authored principally by Dr. Bush, is beyond the scope of the reopening order; is based upon data available to the Staff before the record closed on the previous crankshaft litigation; and is an attempt to relitigate the ability of the crankshafts to survive operation at indicated loads above 3500 KW.

Suffolk County is correct that the portion of Dr. Bush's testimony which relies on the operation of EDG 103 for 220 hours at indicated loads at or about 3500 KW was available to the Staff before the record closed on the crankshaft litigation. However, Suffolk County ignores the fact that the analysis based on 220 hours of operation at or about 3500 KW is meaningless standing alone. Dr. Bush couples the operation for 220 hours at or about 3500 KW with the completion of the 10⁷ loading cycle qualification test to postulate a probable high cycle fatigue limit at or above 3430 KW. In layman's terms, Dr. Bush's opinion is that, if any cracks had initiated in the crankshaft at or above 3500 KW, operation of EDG 103 for the hours necessary to complete the 740-hour confirmatory test would have caused the cracks to propagate sufficiently to be detected. Since the inspection reports indicate that no cracks were detected, the high cycle fatigue limit of the crankshafts is at or above 3500 KW, or a conservative 3430 KW with assumed meter error.

Clearly, Dr. Bush's analysis could not have been performed without the results of the 525-hour endurance run. This testimony is therefore a result of "testing and inspections" of the crankshaft such as was contemplated by the Board's reopening order.^{2/}

Furthermore, Dr. Bush's testimony would be admissible even if it was not the result of testing and inspections on the crankshaft since it relates to subparagraph (a)(i) of the qualified load contention pertaining to intermittent and cyclic loads. The testimony concerning the 220 hours of testing at or about 3500 KW, the 525 hours of testing at or about 3300 KW, and the results of the inspections all collectively form the basis for Dr. Bush's opinion that the postulated intermittent and cyclic loads are of no concern with regard to the crankshafts. See Bush, et al. at p. 21, lines 1-4. On this ground alone the testimony is clearly admissible.

The remainder of Dr. Bush's testimony, which in general relates to the ability of the crankshaft to survive load spikes due to sequenced starting of large cooling pumps and the loads that may result from operator error during the first hour of a LOOP/LOCA, is also relevant and material to the issues in this

^{2/} Testimony on loads between 3300 KW and 3500 KW appears to have been expressly contemplated by the Board. See Tr. 26924 and 26927.

litigation. In the previous proceeding, the testimony focused on sustained operation of the crankshafts at loads of 3500 KW and 3900 KW. The Staff's testimony specifically addressed the ability of the crankshafts to sustain unlimited operation at 3500 KW and 3900 KW under DEMA and ABS. The present Staff testimony addresses the ability of the crankshafts to sustain so-called load spikes for 30-60 seconds at or about 3900 KW, and to sustain loads due to operator error during the first hour of a postulated LOOP/LOCA between 3800 KW and 3900 KW for 40 to 60 minutes.^{3/}

The County's argument that Dr. Bush could have included these analyses in his earlier testimony is irrelevant to the issue of whether the testimony is admissible in this proceeding. Dr. Bush had no reason to perform these calculations in the prior hearing because they are only pertinent to short-term operation of the crankshafts at loads over 3300 KW. Such short term operation was not in issue in the previous proceeding. Moreover, Dr. Bush's testimony regarding the ability of the crankshafts to operate for brief periods of time over 3300 KW

^{3/} It should be noted that although LILCO believes this testimony is relevant and material, LILCO disputes Dr. Bush's postulation of the loads and their duration. The correct loads, in LILCO's view, are stated on pages 32 to 34 of LILCO's testimony. Moreover, LILCO's testimony at page 33 explains why these errors are unlikely, and why if they were to occur they would be corrected in a matter of minutes.

relates directly to subparagraphs (a)(i) and (a)(iv) of the EDG load contention. Accordingly, it is clearly within the scope of the reopened hearings and should be admitted.

In summary, much of Dr. Bush's testimony relates to analyses he has been able to perform as a result of the endurance test data. Further, those portions of the analysis that could have been performed earlier should not be excluded since they relate directly to subparagraphs (a)(i) and (a)(iv) of the load contention. The testimony is clearly relevant and material to the issues at hand. Accordingly, Suffolk County's motion to strike should be denied.

II. Motion to Strike Cylinder Block Testimony

By motion dated February 11, 1985, Suffolk County moved to strike the second to the last sentence on page 32 of the Joint Testimony of Bush, Henriksen and Sarsten pertaining to FaAA's three-dimensional finite element analysis of the stresses in the block top. Suffolk County erroneously contends that this testimony is new, that it is outside the scope of the reopened hearings and that it constitutes testimony on the adequacy of the EDCs at 3500 KW and 3900 KW rather than at 3300 KW.

The County's suggestion that Dr. Bush's testimony is new, or that it is somehow surprised because FaAA made only

"fleeting references" to its three-dimensional finite element analysis in the previous hearings simply misrepresents the record. In fact, FaAA's three-dimensional finite element analysis was discussed at pages 42-44 of LILCO's August 1984 prefiled testimony. Further, the model for FaAA's three-dimensional finite element analysis is depicted in Exhibit B-46, which is precisely the same model depicted in Figure 4-10 of the December block report.^{4/} Finally, FaAA's three-dimensional finite element analysis was discussed extensively during the cross-examination both of LILCO's witnesses and the Staff's witnesses at the prior hearing. See, e.g., Tr. 24542, 24546-48, 25336-42, 25843, 25845 and 25880. Thus, Dr. Bush's reference to FaAA's analysis in no way prejudices or surprises the County.

Dr. Bush's reference to FaAA's three-dimensional finite element analysis is simply another example where analysis from the prior hearing forms part of the basis for reaching the opinion that the EDGs are adequate at 3300 KW.^{5/}

^{4/} LILCO's August 1984 prefiled testimony also discusses some of the evaluations and conclusions drawn from FaAA's three-dimensional finite element analysis on pages 44-46, and uses data developed from the three-dimensional finite element analysis in Exhibits B-48 through B-50.

^{5/} The Board's Order of January 18, 1985 specifically directed the parties to make full use of the prior record,

(Continued)

The Board's Order of February 11, 1985 denying the County's motion to strike LILCO's testimony implicitly recognized that calculations and analyses referenced in the prior hearing (and included and discussed in the December block report) are not outside the scope of the reopened hearing when they are applicable, at least in part, to the question of whether the blocks will perform their intended function at the qualified load of 3300 KW. Thus, Dr. Bush's reliance on the analyses performed by FaAA is entirely appropriate because it forms part of the basis for his opinion that the blocks are qualified at 3300 KW.

Further, as LILCO also noted in its response to the County's motion to strike, the County's testimony addresses alleged inadequacies in LILCO's analyses at 3500 KW and 3900 KW, and asserts that the same alleged inadequacies apply at 3300 KW. It would be manifestly unfair to permit the County to argue that FaAA's analyses are inappropriate while at the same time striking testimony by the Staff which finds that these analyses demonstrate the adequacy of the blocks to perform their intended function.

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stating:

As is generally the case, any necessary further testimony on reopened and supplemental issues shall make use of the existing record to the extent possible.

In summary, Dr. Bush's testimony regarding FaAA's three-dimensional finite element analysis presents no new or surprising information, and is both relevant and probative on the issue of whether the EDGs are qualified at 3300 KW. Accordingly, Suffolk County's supplemental motion to strike should be denied in full.

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CERTIFICATE OF SERVICE

In the Matter of
LONG ISLAND LIGHTING COMPANY
(Shoreham Nuclear Power Station, Unit 1)
Docket No. 50-322 (OL)

I hereby certify that copies of LILCO's Response To Suffolk County's and New York State's Motions to Strike Staff Testimony were served this date upon the following by first-class mail, postage prepaid, or by hand as indicated by asterisk.

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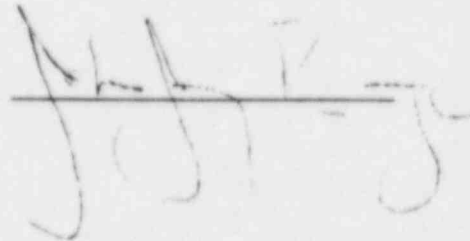
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