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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

Before the Atomic Safety and Licensing Board

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In the Matter of)

LONG ISLAND LIGHTING COMPANY)

(Shoreham Nuclear Power Station,)
Unit 1))

Docket No. 50-322-OL

SUFFOLK COUNTY'S MOTION FOR RECONSIDERATION
OF PORTIONS OF BOARD'S JULY 5 EDG ORDER

I. INTRODUCTION

Suffolk County hereby requests this Board to reconsider and modify its July 5, 1984 bench order concerning emergency diesel generators ("EDGs"), as follows:^{1/}

1. Item 3 of the EDG Contention, dealing with replacement cylinder heads, should be revised to read as follows:

The replacement cylinder heads on the Shoreham EDGs are of inadequate design and manufacturing quality to withstand satisfactorily thermal and mechanical loads during EDG operation, in that

(a) the techniques under which the replacement cylinder heads were produced have not solved the problems which caused the cracking of the original cylinder heads on the Shoreham EDGs;

1/ In the alternative and if the Board believes it appropriate, this Motion may be treated as the County's objections to the July 5 bench order pursuant to 10 C.F.R. §§ 2.751a or 2.752, notwithstanding that the order was not served on the County.

(b) the "barring over" surveillance procedure to which LILCO has committed will not identify all cracks then existing in the replacement cylinder heads (due to symptomatic water leakage);

(c) the nature of the cracking problem and stresses exacerbating the cracks are such that there can be no assurance that no new cracks will be formed during cold shutdown of the EDGs;

(d) there can be no assurance that cracks in the replacement cylinder heads and concomitant water leakage occurring during cold shutdown of the EDGs (which would not be detected by the barring-over procedure) would not sufficiently impair rapid start-up and operation of the EDGs such that they would not perform their required function;

(e) there can be no assurance that cracks in the replacement cylinder heads occurring during operation of the EDGs would not prevent the EDGs from performing their required function;

(f) variations in the dimensions of the firedeck and water deck of the replacement cylinder heads create inadequate cooling, where too thick, and inadequate resistance to mechanical loads, where too thin, and create stress risers at their boundaries;

(g) the design of the replacement cylinder head is such that stresses are induced due to non-uniform bolt spacing and the different lengths of the bolts;

(h) the replacement cylinder head design does not provide for adequate cooling of the exhaust valves;

(i) at least one replacement cylinder head at Shoreham has an indication;

(j) the design of the replacement cylinder heads provides inadequate cooling water in critical areas; and

(k) the replacement cylinder heads at Shoreham were inadequately inspected after operation, because

(1) a liquid penetrant test was done on the exhaust and intake valve seats and firedeck area between the exhaust valves on only 9 of the 24 cylinder heads, and such tests were done after only 100 hours of full power operation;

(2) ultrasonic testing was done on the firedeck areas of only 12 cylinder heads;

(3) visual inspections were performed on the valve seat areas of only 32 of the 98 valves, and on only 7 firedecks of the 24 cylinder heads for indications of surface damage.

2. Item 4 of the EDG Contention, dealing with replacement model AE pistons, should be revised to add the following:

The model AE pistons were not tested by TDI in the DSR-48 diesel engine before being supplied to LILCO; only 2 model AE pistons were tested by TDI in its R-5 V configuration diesel engine; the model AE pistons at Shoreham have run only several hundred hours; and model AE pistons have operated in a TDI V-16 configuration diesel engine owned by Kodiak Electric Association at a firing pressure of only about 1,200 psi. The foregoing testing and operating history is insufficient to provide adequate assurance that the model AE pistons at Shoreham will not crack, or fail due to excessive side thrust, under full load operating conditions (3500 kW) or overload conditions.

II. DISCUSSION

A. Replacement Cylinder Heads. At the July 5, 1984 conference of the parties, the Board drastically limited the County's EDG contention as to replacement cylinder heads, to provide:

The replacement cylinder heads for Shoreham are of inadequate design and manufacturing quality to withstand satisfactorily thermal and mechanical loads during EDG operation because they have not been tested above 1680 psi.

Tr. 21,883-84 (emphasis added).

Suffolk County believes the emphasized limitation was required by the Board due to several errors. First, the County does not contend that the replacement cylinder heads have not been tested at above 1680 psi, and at the July 5 conference counsel for the County expressly denied this was the County's contention. Tr. 21,789-90.

Second, the County urged at the July 5 conference that the original bases for the cylinder head contention had been specified and were still valid (Tr. 21,759-62), and the Board disagreed, apparently believing that such issues went only to the possibility of LILCO operating the EDGs after fuel load before replacing the original cylinder heads. Tr. 21,762.

In fact, litigation was about to proceed on the cylinder head contention, and the Board denied LILCO's motion for summary disposition, after LILCO had committed to install replacement cylinder heads prior to fuel load. Memorandum and Order Confirming Denial of LILCO's Motion for Partial Summary Disposition of

Diesel Generator Contention, July 28, 1983 at 4.^{2/} In its July 28, 1983 Order the Board listed five issues of material fact for litigation. These issues remain pertinent;^{3/} nothing in the intervening time has mooted any of them.^{4/} Accordingly, the County has further particularized Item 3 of the EDG Contention to encompass those five existing issues (sub-paragraphs (a) through (e) of paragraph 1 of Part I above).

In response to questions from the Board at the July 5 conference, counsel for Suffolk County further explained the details of the County's concern with the replacement cylinder heads. These included problems with cooling of the heads (Tr. 21,764; 21,790-91), variations in thickness of the firedecks (Tr. 21,764; 21,783-84; 21,791), the adequacy of inspection of the replacement cylinder heads (Tr. 21,775), the dimensions of the firedeck and waterdeck varying (Tr. 21,784), and the creation of stress risers from the geometry of the head design (Ibid.). Counsel stated that there were additional views of the County's consultants and evidence (Tr. 21,793).

^{2/} For convenience, a copy of the July 28, 1983 Order is attached hereto as Exhibit 1.

^{3/} For a discussion of these issues, see Suffolk County's Answer and Opposition to LILCO's Motion for Partial Summary Disposition of SC's Diesel Generator Contention Regarding Cylinder Head Cracking, July 22, 1983, and the four affidavits attached thereto.

^{4/} The July 28, 1983 Order (at 5) discusses the possibility of LILCO litigating only some issues as a pre-requisite to a low power license for Shoreham. Since LILCO now seeks to use the TDI EDGs during full power operation, this discussion appears to be inapplicable. LILCO is committed to the barring over procedure, referenced in SP 27.307.02 (Ref. 1).

There was no basis for the Board to disregard the further particularization of replacement cylinder head concerns given at the July 5 conference.^{5/} Perhaps the Board was influenced by the arguments of counsel for LILCO, who asserted that LILCO had not been able to learn the County's detailed views on the replacement cylinder heads. See Tr. 21,778-83 (Stroupe). These arguments are refuted by the facts. LILCO took depositions of the County's consultants over ten days. Those deposition transcripts comprise over 1,450 pages. In significant portions of LILCO's deposition of Professor Stanley Christensen, LILCO discovered the County's detailed views on the replacement cylinder heads, and had the full opportunity to explore this subject matter at will.

The pages of the transcripts of Professor Christensen's depositions dealing with the replacement cylinder heads are attached as Exhibit 2. In his May 9, 1984 deposition, Professor Christensen discussed the County's concerns with firedeck thickness variations (pp. 175, 183, 186-88, 197-98), cooling water velocity and inadequate cooling of exhaust valves (pp. 175-80), stresses due to bolt-spacing (p. 188), thermal loading (189-94), and an indication on an existing Shoreham replacement head (pp. 206-07). LILCO had the opportunity to follow-up on these issues after reviewing the results of the May 8 and 9 depositions of

^{5/} The Board accepted the County's further particularization at the conference regarding the model AE piston, a situation exactly analagous insofar as the Board's requirement for additional detail.

Professor Christensen, because LILCO deposed him again on May 23, 1984. There Professor Christensen discussed his views on the barring over procedure and crack propagation in cylinder heads (pp. 67-73).

Sub-paragraphs (f)-(k) of paragraph 1 of Part I above particularize the foregoing details regarding the County's case concerning the replacement cylinder heads. We respectfully request that they be admitted as part of the revised EDG contention because those concerns were made known to the parties and, to the extent noted above, specified by the County's counsel at the July 5 conference. Moreover, because the Board has required the County to file its written testimony two weeks before LILCO's and three weeks before the Staff's, the other parties will have significant additional time to review all details of replacement cylinder head issues. Finally, because the County does not contend that the replacement cylinder heads were not tested at above 1,680 psi,^{6/} failure to accept the County's proposed revised cylinder head contention will preclude any litigation of this major component.^{7/}

6/ Part of the confusion over the 1,680 psi test issue resulted from the County's counsel's mistaken reference to the purported use by FaAA of a 1,680 psi maximum firing pressure in its report on cylinder heads. Review of that report does not show on its face that FaAA referred to that particular, or any other, maximum firing pressure. The 1,680 psi maximum firing pressure figure was relied on by FaAA in its reports on the replacement crankshafts and on the AF and AE piston skirts. The loads on the replacement cylinder heads to which the contention refers are at full load (3,500 kW) and overload (up to 3,900 kW), as stated at the conference. Tr. 21,783-84; 21,788 (Dyner).

7/ Even LILCO agreed that the replacement cylinder heads should be litigated. Tr. 21,778; 21,781 (Stroupe).

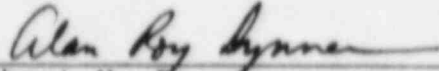
B. AE Pistons. The Board rejected the item in the County's June 11 filing which stated "The model AE piston has been inadequately tested and is unproven." The Board concluded that this sentence lacked specificity and bases (Tr. 21,889), and in so doing overlooked the detailed particularization of that sentence given by the County at the July 5 conference.

Specifically, the County detailed evidence that: the AE model piston was never tested by TDI in the DSR-48 engine; only 2 model AE pistons were tested by TDI in an R-5 engine; the AE pistons have run only several hundred hours in the Shoreham EDGs, and have shown evidence of excessive side thrust; and the only operating history of the model AE piston is in a TDI engine in Kodiak, Alaska, where the peak firing pressure was only 1,200 psi. Tr. 21,828-29. For these reasons, the County's experts concluded that the AE model piston has been insufficiently tested and is unproven.

The details given by the County at the conference provide all of the necessary specificity and basis to support the sentence. There is no reason for the Board to ignore the proffered particularization. Paragraph 2 of Part I above is an additional proposed portion of the contention concerning the AE model pistons, which is confined to the matters particularized by the County at the conference. It is a significant issue, since the operating history referred to is relied upon by FaAA to support its conclusions concerning the adequacy of the model AE piston skirt. See Investigation of Types AF and AE Piston Skirts, FaAA, May 23, 1984, at 7-1 and 8-1.

Respectfully submitted,

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July 10, 1984

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

Lawrence Brenner, Chairman
Dr. George A. Ferguson
Dr. Peter A. Morris

In the Matter of

LONG ISLAND LIGHTING COMPANY

(Shoreham Nuclear Power Station,
Unit 1)

Docket No. 50-322-OL

July 28, 1983

MEMORANDUM AND ORDER CONFIRMING DENIAL OF LILCO'S
MOTION FOR PARTIAL SUMMARY DISPOSITION
OF DIESEL GENERATOR CONTENTION

Introduction

Our order of June 22, 1983, LBP-83-20, 17 NRC ____, inter alia, reopened the record in this proceeding to admit Suffolk County's new contention alleging in effect that recent cracking of cylinder heads of the Shoreham emergency diesel generators is a deficiency which must be resolved in order for there to be reasonable assurance that the diesels would perform their necessary function of rapid startup and reliable operation. Slip op. at 35-39. As invited by that order, on July 7, 1983, LILCO filed a "Motion for Partial Summary Disposition of SC's

83-48-01-0209

Diesel Generator Contention," ^{*}/ supported by affidavits of two of its experts. On July 22, 1983, Suffolk County filed its opposition to LILCO's motion, supported by affidavits of four of its experts. The Staff also filed a very brief answer and affidavit supporting LILCO's motion.

The Board carefully considered the motions and affidavits before us. Due to the exigency of timing considerations in this proceeding, particularly the usefulness to the parties of having our ruling before they take depositions and prepare their testimony for a hearing in August (if one were necessary), we ruled on LILCO's motion for summary disposition during a conference call on July 25, 1983, among the Board and the three parties participating in this issue (Suffolk County, LILCO and the NRC Staff). This order confirms that ruling which denied LILCO's motion in total. We also confirm the schedule for hearing established during the conference call, as set forth at the end of this order.

We will not rehearse the factual context of this issue, or the scope of the possible distinction between aspects of this issue which would have to be resolved before versus after a low-power license could

^{*}/ The motion is styled "partial" because a second separate subpart of the admitted contention, involving long-term vibration, is not the subject of the motion.

be issued, set forth in our order of June 22, 1983. Nor will we go into all of the factual details which we have considered in denying LILCO's motion. Suffice it to say, we believe our denial of summary disposition was clearly mandated by the affidavits before us and was grounded on the salient issues outlined by us during the conference call and confirmed below.

It is black letter law that the movant for summary disposition has the burden of establishing that, as a matter of law, there is no genuine issue of material fact to be litigated. In ruling on the motion, the record is viewed in the light most favorable to the party opposing the motion. Further, the opposing party need not show that it would prevail on the merits upon litigation of the factual issues, but only that there are such issues to be tried. See, e.g., Pacific Gas and Electric Co. (Stanislaus, Unit 1), LBP-77-45, 6 NRC 159, 163 (1977), and cases cited therein. On the other hand, depending on the movant's evidentiary support, it may not suffice for the opponent to rest upon "mere allegations or denials" as distinguished from an answer which sets forth "specific facts showing that there is a genuine issue of fact." 10 C.F.R. § 2.749(b); Virginia Electric and Power Co. (North Anna, Units 1 and 2), ALAB-584, 11 NRC 451, 453 (1980); Cleveland Electric Illuminating Co. (Perry, Units 1 and 2), ALAB-443, 6 NRC 741, 753-54 (1977), relying on Adickes v. Kress & Co., 398 U.S. 144, 157 and 159 (1970) and 6 J. MOORE, FEDERAL PRACTICE ¶ 56.22[2] (2d ed. 1976).

On July 22, 1983, LILCO announced that, prior to fue' load, it would replace all of the original cylinder heads with ones produced under new manufacturing procedures. As outlined below, this acceleration of the replacement schedule commitment does not entitle LILCO to summary disposition of the contention.

The Salient Issues

On the basis of the County's affidavits of its four experts, there are genuine issues of material fact as to whether:

1. Based on either analysis or operating experience, or both, the new Delaval production techniques have solved the problems which caused the cracking of the original type cylinder heads.
2. The "barring-over" surveillance procedure for up to twelve hours after shutdown of the diesels will identify any cracks then existing in the cylinder heads (due to symptomatic water leakage).
3. The nature of the cracking problem and stresses exacerbating the cracks are such that no new cracks will be formed during cold shutdown of the diesels.

4. Any cracks in the cylinder heads and concomitant water leakage occurring during cold shutdown of the diesels which would not be detected by the barring-over procedure would sufficiently impair rapid start-up and operation of the diesels such that they would not perform their required function.
5. Any cracks in the cylinder heads occurring during operation of the diesels would prevent the diesels from performing their required function.

As pointed out by the Board during the conference call, the parties by agreement or LILCO unilaterally may make a strategic decision to litigate only some of the above issues. For example, if LILCO were successful on the merits of issue 1, issues 2 through 5 would become moot. On the other hand, if LILCO were successful on the merits of sufficient portions of issues 2 through 5 (or as stated as issues 1, 2 and 3 at page 38 of the June 22, 1983 order), then this would be sufficient to remove the cylinder head cracking issue as a bar to issuance of a low-power license, permitting the deferral of litigation of issue 1. Of course, the litigative risk to LILCO is that if it only litigates some of the issues, it might lose on those issues and have delayed the time for litigation of the issues set aside.

LILCO shall inform the Board and the parties at the time it files its testimony as to whether LILCO seeks to litigate initially only some of the issues regarding the diesel generator cylinder head cracking issue.

On a separate subject, by the first day of the hearing, the parties in writing shall report on the proposed testing and surveillance program for the new diesel generator rocker arm bolts, pursuant to our order of June 22, 1983, at pages 34-35.

Schedule

During the conference call, the following schedule was directed by the Board:

July 25 - August 8, 1983

Depositions taken by LILCO and Suffolk County. LILCO shall be permitted to take up to four days of depositions; the remainder of the time may be used by the County. Depositions may be taken in whatever sequence the parties agree on. They shall be taken during normal business hours on normal business days, unless the parties agree otherwise. The party taking the deposition may depose witnesses individually or as a panel or panels. Separate depositions will not be conducted simultaneously unless the parties agree otherwise. Documentary discovery will be essentially complete by August 8, 1983, with perhaps some limited documents for which production is delayed by a day or two due to unsolvable logistical problems.

August 17, 1983

Testimony received. In addition, the parties' report on the status of the long-term diesel vibration issue, previously scheduled for July 27, 1983, shall be received.

August 22, 1983

Motions to strike testimony, if any, received.

August 25, 1983

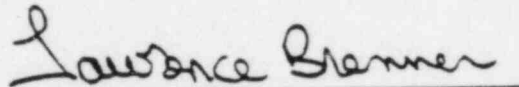
Answers to any motions to strike testimony, and cross-examination plans received.

Week of August 29, 1983

Evidentiary hearing commences. The exact date, time and location will be announced.

IT IS SO ORDERED.

FOR THE ATOMIC SAFETY
AND LICENSING BOARD


Lawrence Brenner, Chairman
ADMINISTRATIVE JUDGE

Bethesda, Maryland
July 28, 1983