

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

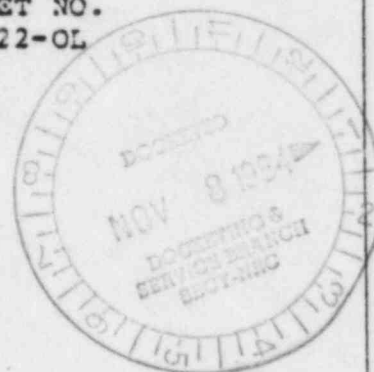
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In the matter of

LONG ISLAND LIGHTING COMPANY,

(Shoreham Nuclear Power Station,
Unit 1)

COPY

DOCKET NO.
50-322-OL

DEPOSITION OF ROBERT TAYLOR, P.E.

May 10, 1984

REPORTED BY:

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TRANSCRIPT

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1 MR. DREIFUS: I object to that question.

2 Wait.

3 I object to that question on the grounds that
4 it requires the witness to speculate, but he can answer
5 if he's able to.

6 THE WITNESS: A. It is not my practice to base
7 opinions upon somebody else's written report, so I would
8 not render an opinion based on someone else's report.

9 MR. MILLER: Q. If that's the case, Mr. Taylor,
10 could you tell me why it is that there's presently no
11 intention to look at any cracks in engine blocks other
12 than the blocks at the Shoreham Plant?

13 A. I said presently it's not planned to go look at
14 any. We're working on the analysis, and from what I have
15 seen in the report, their cracks are similar to the
16 Shoreham engines, so what I plan to do is to determine
17 why the cracks occur in the Shoreham engine and get a
18 very good handle on what the phenomena are, what's
19 happening there.

20 I believe in the future we'll have an
21 opportunity to look at other plants -- other nuclear
22 plants and the possibility to look perhaps at some of the
23 other engines, but it's not planned right now, and I
24 don't believe it's critical at this moment to continue
25 with the analysis. There are a number of reasons for
26 that.

27 Q. Maybe you could tell me your reasons.

28 A. Well, the engines in the Marine service see a

1 different service than shore-based engines. Their load
2 profiles are different. They're operated differently,
3 and just looking at the block for a COLUMBIA without
4 knowing the size of the liners, how much the liners
5 protruded, exact load history, even if I were to go look
6 at that block, I would -- there's a wealth of other data
7 that would be pertinent that I don't have yet and
8 probably would not be able to reconstruct.

9 Q. If you were able to obtain that data such as
10 the load factors, Mr. Taylor, then I gather from what
11 you're telling me that an analysis which would include
12 inspection of cracks on other engine blocks could prove
13 useful to you; is that correct?

14 A. That's correct.

15 Q. Mr. Taylor, if you will, look at the third
16 paragraph of what has been marked as Taylor's Exhibit 1.
17 It states, "Cracks have been found in the block top, on
18 the M/V COLUMBIA, and cracks have been found in the block
19 top and cam bearing supports on the SNPS engines."

20 Do you see that statement?

21 A. Yes, I do.

22 Q. Have the cracks that you have discovered in the
23 Shoreham blocks in the case of each of the three diesel
24 engines been both in the block top and in the cam bearing
25 supports?

26 A. That's true.

27 Q. Is it still your opinion, Mr. Taylor, that thus
28 far only radial cracks have been found in the Shoreham

1 ~~not be addressed in such an interim report?~~

2 A. We would not address the circumferential cracks
3 that may occur at the counter bore landing and the
4 between stud cracks. It probably won't be complete for
5 that.

6 Q. Are you through?

7 A. Yes.

8 Q. Can you tell why, Mr. Taylor, an entire rim
9 report would not address those latter cracks?

10 A. Yes, because I am receiving pressure from
11 management and LILCO to put a report out so that they can
12 start a dialogue with the NRC. It's my understanding
13 there have been promises made to NLCA a block report will
14 go out in the very near future. And I just can't -- it
15 just won't be a complete analysis, but it will start
16 things moving.

17 Q. Is it fair to say that an interim report such
18 as we have discussed would provide LILCO with a means to
19 begin discussions with the NRC, but certainly would not
20 tell the full story with respect to the cracking on the
21 engine blocks at the Shoreham plant?

22 A. If it happens, that will be correct.

23 Q. That would be a fair statement?

24 A. That's correct.

25 Q. Do you expect, Mr. Taylor, that some of the
26 radial cracks you have detected are going to become
27 circumferential cracks?

28 A. No. They are two separate cracks. They don't

1 revealed?

2 A. That summary of our computation is stated in
3 the next sentence which says, "Crack growth rates are
4 small at full load and are negligible below 2625 kw."

5 Q. What about at overload or 3900 kw?

6 A. It's a good question. I am not sure that we
7 have computed the crack growth rates at 3900.

8 Q. Do you intend to do that?

9 A. Yes. However, I don't want to speculate, but I
10 believe the answer would still be the same.

11 Q. When you say that the crack growth rates
12 computed at full load have been small, can you define
13 what "small" is?

14 A. Not without bringing a specific figure
15 calculation with me, but it was in the order of a
16 three-eighths inch deep crack that was four inches long
17 at the surface that would after 200 hours grow
18 approximately another sixteenth's of an inch in depth.

19 At that point in the block the thickness is 1.1
20 which would therefore make the statement that given the
21 intended load profile for the next two years, these
22 cracks are not a concern for interim operation.

23 Q. Let me ask you about that statement, Mr. Taylor,
24 the intended load profile for the next two years. What
25 is your understanding of that load profile for the next
26 two years?

27 A. That it's approximately 260 hours of engine
28 operation with approximately 80 hours at full load, and

1 the remainder at less load, and a very small number of
2 hours, it wasn't even a complete hour, of 3900 kw.

3 Q. Now, what would happen to your analysis, Mr.
4 Taylor, if that load profile was changed?

5 A. The estimated crack growth rate is based on the
6 expected number of cycles in the operation that you
7 expect. A greater number of hours, greater number of
8 cycles, would mean increased crack growth.

9 Q. If instead of less than one hour over the next
10 two years on the overload, there were 40 hours over the
11 next two years at overload conditions, that would affect
12 your crack growth rate; is that correct?

13 A. I can't deny that.

14 Q. Would it change it significantly do you think?

15 A. Well, that would be the computation that you
16 would be interested in.

17 Q. You haven't made those computations; is that
18 correct?

19 A. No, I haven't. The estimated crack growth rate
20 is based on the load profile.

21 Q. Repeat that?

22 A. I haven't -- I agree with you. I have not made
23 the computations.

24 Q. When you say for interim operations, Mr.
25 Taylor, what do you mean by interim operation?

26 A. For the two year period.

27 Q. Is there any reason why your calculations were
28 based on the two year period?