

50-322-0L

I-SC-24

11/1/84

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

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DOCKETED
USNRC

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

DOCKET NO. 50-322-0L

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May 10, 1984

NUCLEAR REGULATORY COMMISSION

Docket No. 50-322-0L Official Ex. No. 24 (Revised)
In the matter of LILCO
Staff _____ IDENTIFIED _____
Applicant _____ RECEIVED ☒
Intervenor _____ REJECTED _____
Cont'g Off'r _____
Contractor _____ DATE 11-1-84
Other County Witness Panel
Reporter WAB

REPORTED BY:
JOAN MARIE COLUMBINI, CSR NO. 5435

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PDR ADOCK 05000322
G PDR



1 A. We had experience, if you will, with deep stud
2 cylinder head bosses in the R5 V-12 engine. The
3 experience was positive, and thus, we applied it for
4 commonality of design, if you will, to the R4 series of
5 engines.

6 Q. What was the effect of that design change?

7 A. In my judgment, the effect is to remove the
8 stress field caused by the torquing of the cylinder head
9 stud nuts farther away from the landing upon which the
10 cylinder liner rests.

11 Q. Would that effect be to make the cylinder block
12 stronger?

13 A. Not stronger as such, less sensitive to fatigue
14 effects, in my opinion.

15 Q. What fatigue effects are you speaking of?

16 A. I speak of the effect on the block top caused
17 by the relatively low cyclic forces applied by combustion
18 pressure.

19 Q. Is that what is normally referred to as
20 mechanical stress?

21 A. Yes.

22 Q. Approximately when was this design change in
23 the block made?

24 A. To the best of my recollection, the last two
25 months of 1983.

26 Q. Were any other changes made in the design of
27 the cylinder block potentially applicable to the R46
28 engine in the last four years?

1 A. Not that I can recall.

2 Q. Did the lengthening of the cylinder head bosses
3 involve a thickening of the material of the cylinder
4 block?

5 A. Not to my knowledge, except in that area where
6 the boss lengthening occurred.

7 Q. In that particular area, what was the extent of
8 the thickening, approximately?

9 A. Again, if memory serves me correctly,
10 approximately five and a half inches.

11 Q. Did the thickening of the cylinder block in
12 that area increase the weight of the block?

13 A. Yes, sir.

14 Q. By approximately how much?

15 A. I don't really know.

16 Q. Was the change in the design of the cylinder
17 block that you have just referred to made in response to
18 any problems experienced with the prior design block?

19 MR. SMITH: I believe the question has already
20 been asked and answered. I think this witness testified
21 that as a result of the experience with the RV5.

22 MR. DYNNER: Q. Can you answer the question?

23 A. Would you say again please, sir?

24 Q. Yes.

25 Was the change in the design of the cylinder
26 block made at all in response to any problems experienced
27 with the prior designed block?

28 A. It was my judgment that the deepening, if you

1 will, or lengthening of the head stud bosses would reduce
2 the possibility of cracking noticed around the head stud
3 bosses of the previous block.

4 Q. To what extent was cracking in the area of the
5 head stud bosses in the prior design cylinder block
6 experienced?

7 A. You will have to give me your meaning of
8 "experience," please.

9 Q. Certainly.

10 Were you aware of problems in cracking in that
11 area experienced by Delaval R4 engines in the field?

12 A. Yes, I was.

13 Q. Was that problem of cracking recorded in
14 documents that you saw?

15 A. In documents that I prepared.

16 Q. How did you come to prepare those documents?

17 A. As a result of various field trips that I had
18 made and records that I had made during those field trips
19 and in the normal course of recording those field trips.

20 Q. In approximately how many engines in the field
21 did you note cracking in that portion of the cylinder
22 block?

23 MR. SMITH: What time period are we talking
24 about?

25 MR. DYNNER: Whatever time period he is
26 referring to with respect to the reports that he prepared.
27 Do you understand the question?

28 THE WITNESS: Would you repeat?