



BEFORE THE ATOMIC SAFETY AND AND LICENSING BOARD

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

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DEPOSITION OF GERALD EDGAR RUSSELL

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VOLUME II, Afternoon Session

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TRANSCRIPT

1 A. Yes.

2 Q. And what is that name?

3 A. Shot peening.

4 Q. Did Delaval recommend that the replacement  
5 crank shaft be shot peened?

6 A. No.

7 Q. Did Delaval recommend that the replacement  
8 crank shaft not be shot peened?

9 A. I don't recall.

10 Q. Who was responsible in your organization for  
11 supplying the replacement crank shaft to LILCO?

12 A. Supply -- can you give me the question one more  
13 time?

14 Q. Who was responsible in your organization for  
15 the supplying of the replacement crank shaft for LILCO?  
16 And it may be more than one person. I am asking who.

17 A. As to the supplies, the parts manager.

18 Q. Yes. Who was responsible for giving the  
19 recommendation as to whether or not the replacement crank  
20 shaft should be shot peened?

21 A. I was.

22 Q. And do you now recall what your recommendation  
23 was in that regard?

24 A. My recollection is that I recommended against  
25 shot peening.

26 Q. Why did you recommend against shot peening?

27 A. The detailed drawing for that part did not call  
28 for shot peening.

2

1 Q. Who prepared the detailed drawing for that part?

2 A. I don't know.

3 Q. Was it Delaval who supplied the detailed  
4 drawing for that part?

5 A. Yes.

6 Q. Was there any discussion within the Delaval  
7 organization concerning whether or not the detailed  
8 drawing should or should not provide for shot peening of  
9 the replacement crank shaft?

10 A. Yes.

11 Q. What was the basis for the conclusion that it  
12 should not contain the requirements for shot peening?

13 A. The basis for that conclusion lay in an opinion  
14 that mechanical improvement by shot peening did not  
15 substantially improve the fatigue strength of the crank  
16 shaft.

17 Q. Did it improve the strength of the crank shaft  
18 at all?

19 A. Yes.

20 Q. Are there disadvantages to shot peening the  
21 crank shaft?

22 MR. SMITH: You are talking about the specific  
23 shaft in question here, I assume?

24 MR. DYNNER: Yes, right.

25 THE WITNESS: No.

26 MR. DYNNER: Q. So as I understand your  
27 testimony -- please correct me if I'm wrong -- there are  
28 no disadvantages to the shot peening in this crank shaft,

3

1       there was an advantage in that it somewhat increased the  
2       strength of the crank shaft, and yet you recommended  
3       against shot peening; is that correct?

4           A.     That's correct.

5           Q.     On what was that recommendation based?

6           MS. TARLETZ: Asked and answered.

7           MR. SMITH: I will join in that objection.

8           MR. DYNNER: Q. Aside from the fact that the  
9       detailed drawings did not call for the shot peening.

10          MR. SMITH: The question has been asked and  
11       answered.

12          MR. DYNNER: I don't think so.

13          THE WITNESS: What is the question?

14          MR. DYNNER: Q. The question is: On what was  
15       your recommendation against shot peening based aside from  
16       your prior testimony that -- when I asked the question  
17       previously -- that it was based upon the fact that the  
18       design drawings did not call for shot peening?

19          MR. SMITH: Well, note my objection to the form  
20       because I don't think that was -- I think the record will  
21       show that that was not the only basis against the  
22       recommendation that the witness has already testified to.

23          THE WITNESS: The recommendation against shot  
24       peening was based in part on, A, the experience that shot  
25       peening did not provide a substantial improvement in the  
26       fatigue strength of the shaft, and in part on a  
27       discussion with, I believe it was, Professor Wallace.

28          Q.     Well, what did Professor Wallace have to say

1 about the shot peening?

2 A. I'm going to have to paraphrase the thing, but  
3 I believe Jack indicated to us that the shot peening  
4 technique is section sensitive and since we were involved  
5 here with a heavy section, the improvement would not be  
6 substantial.

7 Q. What does "section sensitive" mean?

8 A. I would like to give an example that would  
9 provide a comparison.

10 Shot peening a thin piece of steel of the same  
11 specifications of the crank shaft would substantially  
12 improve its fatigue strength while applying the same  
13 surface improvement technique to a thick section, like a  
14 crank shaft, would not provide a substantial improvement  
15 in the fatigue strength of the piece.

16 MS. TARLETZ: Could I have that answer read  
17 back, please.

18 (Question and answer read.)

19 MS. TARLETZ: Thank you.

20 MR. DYNNER: Q. Mr. Trussell, what do you mean  
21 by a substantial improvement?

22 A. Something more than five percent.

23 Q. Did anyone disagree with your recommendation  
24 against shot peening the replacement crank shaft?

25 A. Are you asking for a specific name?

26 Q. Anyone.

27 A. Someone did.

28 Q. Who?

5

1 Q. Overheating means where the temperature exceeds  
2 that which is normal for operation at that power level.

3 A. I don't know.

4 Q. With respect to the AE piston, what is the  
5 Delaval design figure for the side load on the piston  
6 skirt?

7 A. I don't remember.

8 Q. Do you know approximately?

9 A. No.

10 Q. Is that number documented anywhere?

11 A. I believe it is.

12 Q. Where?

13 A. Design department.

14 Q. By design department, you mean the design group  
15 in the engineering department?

16 A. Yes, I do.

17 Q. Is that one of the design parameters for the AE  
18 piston?

19 A. I don't know.

20 Q. Who do you think would know the answer to that  
21 question, Mr. Trussell?

22 A. Mr. Lowry might know.

23 Q. Did Delaval test the AE piston before supplying  
24 it to customers in the field?

25 A. No.

26 Q. To what customers did Delaval supply the AE  
27 model piston?

28 A. Kodiak Electric Corporation. LILCO. I believe

6

1 say it in his own words -- my understanding is that the  
2 witness, Mr. Trussell, will not be available for  
3 deposition past 5:30; is that correct?

4 MR. SMITH: That's correct.

5 MR. DYNNER: I have asked that the witness be  
6 available to go on this evening and that request is  
7 denied; is that correct, Mr. Smith?

8 MR. SMITH: Well, I wish you wouldn't put it in  
9 question and answer form, but you are accurate.

10 MR. DYNNER: All right. And I further  
11 requested that since we started late, that is, 10:00  
12 o'clock rather than 9:30, we go at least for another half  
13 hour until 6:00 o'clock and, that was denied.

14 MR. SMITH: I think it is one statement. I am  
15 not willing to go past 5:30 tonight. The record will  
16 show we began at ten o'clock this morning.

17 MR. DYNNER: Thank you.

18 Q. Trussell, does Delaval have a expected life for  
19 the AE piston?

20 A. No.

21 Q. Do you know what the expected life of a  
22 component of a diesel engine means?

23 A. Yes.

24 Q. Have you established expected life for any  
25 other components in the R4 series engine?

26 A. We have some.

27 Q. What does expected life mean?

28 A. In my opinion that is -- the expected life of



1 the component is that life that component gives before it  
2 has to be replaced.

3 Q. And as far as you know, that is Delaval's use  
4 of that term also; is that correct?

5 A. Yes, I believe so.

6 Q. What components does Delaval have an expected  
7 life for in the R4 engine?

8 A. I don't know that I can name them all. To give  
9 some examples, I believe we have expected life on valves,  
10 piston rings, bearings, fuel injection nozzle tips,  
11 possibly cylinder liners.

12 Q. Is there an expected life for cylinder heads in  
13 the R4 engine?

14 A. To the best of my knowledge, no.

15 Q. Well, you have not established an expected life?  
16 Does that mean that the component is expected to last for  
17 the full life of the engine itself?

18 A. Yes.

19 Q. Is there an expected life for the cylinder  
20 block of the R4 engine?

21 A. No.

22 Q. Is there an expected life for the engine base  
23 of the R4 engine?

24 A. No.

25 Q. Is there an expected life for the replacement  
26 crankshaft model for the DSR 48 engine?

27 A. No.

28 Q. What is the expected life of the DSR 48 engines

8



1 at Shoreham?

2 A. 40 years, I believe.

3 Q. Does that 40 years postulate any level of  
4 operation per year?

5 A. I don't know.

6 Q. Is the life of the engine expected to be the  
7 same whether it operates not at all or operates  
8 continuously for 40 years?

9 A. Say that again, please?

10 Q. I said, does it make any difference in the  
11 expected life of the engine whether it doesn't operate at  
12 all during 40 years or whether it operates continuously  
13 for 40 years?

14 A. Yes.

15 Q. Does Delaval have some standard expectations  
16 for the life of the engine at all aside from the 40 years,  
17 that is to say, in terms of its operation during those 40  
18 years?

19 MR. SMITH: I don't think I understand your  
20 question. I object to the form of question. See if you  
21 can rephrase it. I am not objecting to your inquiry into  
22 this line, but see if you can rephrase the question.

23 MR. DYNNER: All right, I can see.

24 MR. SMITH: The objection is it's  
25 incomprehensible.

26 MR. DYNNER: To Counsel.

27 MR. SMITH: At least at a minimum.

28 MR. DYNNER: We haven't heard from the witness