

ORIGINAL

UNITED STATES OF AMERICA NUCLEAR REGULATORY COMMISSION

In the matter of:

LONG ISLAND LIGHTING COMPANY

(Shoreham Nuclear Generating
Plant, Unit 1)

Docket No. 50-322-OL-4
Low Power

Location: Hauppauge, New York

Pages: 1028 - 1349

Date: Tuesday, July 31, 1984

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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: :

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LONG ISLAND LIGHTING COMPANY :

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(Shoreham Nuclear Generating : Docket No. 50-322-OL-4

Plant, Unit 1) : (Low Power)

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Court of Claims
State of New York
State Office Building
Veterans Memorial Highway
Hauppauge, New York 11787

Tuesday, July 31, 1984

The hearing in the above-entitled matter
reconvened, pursuant to recess, at 9:00 a.m.

BEFORE:

MARSHALL E. MILLER, ESQ., Chairman
Atomic Safety and Licensing Board
Nuclear Regulatory Commission
Washington, D. C. 20555

GLENN O. BRIGHT, Member
Atomic Safety and Licensing Board
Nuclear Regulatory Commission
Washington, D. C. 20555

ELIZABETH JOHNSON, Member
Atomic Safety and Licensing Board
Nuclear Regulatory Commission
Washington, D. C. 20555

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25APPEARANCES:On Behalf of the Applicant:

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Washington, D. C. 20555

On Behalf of the Intervenor, Suffolk County:

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KARLA J. LETSCHE, ESQ.
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* * * * *

Sim 1-3

C O N T E N T S

| | <u>WITNESSES</u> | <u>DIRECT</u> | <u>CROSS</u> | <u>REDIRECT</u> | <u>RE CROSS</u> | <u>BOARD</u> | <u>VOIR DIRE</u> |
|----|---------------------|---------------|--------------|-----------------|-----------------|--------------|------------------|
| 1 | | | | | | | |
| 2 | THOMAS W. IANNUZZI) | 1040 | 1059 | 1116 | 1133 | 1083 | 1044 |
| 3 | -- and --) | | | | | | |
| 4 | KENNETH A. LEWIS) | | | | | | |
| 5 | | | | | | | |
| 6 | CORNELIUS A. SZABO) | 1216 | 1235 | 1323 | | | |
| 7 | ANTHONY NOZZOLILLO | 1345 | | | | | |
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| | <u>LAY-IN DOCUMENTS</u> | | |
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| 8 | Testimony of Messrs. Iannuzzi and Lewis | | 1159 |
| 9 | Testimony of Cornelius A. Szabo | | 1325 |
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| | <u>EXHIBITS</u> | <u>IDENTIFIED</u> | <u>ADMITTED</u> |
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| 11 | <u>Suffolk County Exhibits</u> | | |
| 12 | LP-4 | 1062 (Denied) | |
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| 16 | LP-8-A thru 8-D | 1076 | |
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| 20 | LP-12 | (Not marked) | 1298 |
| 21 | LP-13-A thru 13-I | 1291 | 1298 |
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| | <u>LILCO Exhibits</u> | | |
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(9:00 a.m.)

P-R-O-C-E-E-D-I-N-G-S

JUDGE MILLER: It is 9:00, and we are ready I think for the next panel of witnesses by LILCO.

MS. LETSCHE: Judge Miller, excuse me. There is at least one preliminary matter, scheduling matter that I would like to take up briefly before we begin the next witness panel, and that is the Board's intended order of witness presentation following the cross examination of the LILCO witnesses.

Based on the Board's procedures thus far, you seem to be going to the staff after LILCO, and the Staff does seem to be aligned with LILCO in terms of their position on this case. In the County's view, it would be appropriate to proceed to the Staff witnesses following the presentation of the LILCO witnesses.

JUDGE MILLER: Well, we seem to be going on a particular set of circumstances. We seem to be going to the County and State following LILCO and then Staff, so far, in the order of cross examination.

MS. LETSCHE: Well, I am not sure that is correct, because we have only been doing cross examination. LILCO hasn't been doing any. These have all been LILCO's witnesses.

1 JUDGE MILLER: No, I say following LILCO's
2 direct, we have been going for cross the County, the State,
3 and Staff.

4 MS. LETSCHE: That is right.

5 JUDGE MILLER: That is for that particular
6 matter. So, it doesn't set any precedent one way or the
7 other.

8 MS. LETSCHE: That is correct. And my question
9 is what the Board's intentions are in terms of which panel
10 of witnesses goes up next, and it is the County's suggestion
11 that given the line up of positions on the substantive
12 issues here where the Staff is supporting LILCO's application,
13 whereas the County and the State are opposing it, that it
14 might be appropriate to have the Staff witnesses follow
15 the LILCO witnesses so that the full case in favor of the
16 application is presented and then follow it with the full
17 case in opposition to the application, and I am just asking
18 what the Board's intentions are so that we can all -- all
19 of the counsel here can notify their witnesses and we can
20 know what you intend in terms of scheduling.

21 JUDGE MILLER: Well, there are two quasi-competing
22 considerations. The second is that the Staff under our
23 regulations is given the opportunity, for example, in
24 responding to motions to follow, to be last. Other parties
25 have ten days, they have fifteen, as an example. Now, that

1 is perhaps indicative of some intent on the Commission to
2 have the Staff have an overview.

3 On the other hand, there is also the consideration
4 that you have pointed out. I don't know we have decided,
5 but I will entertain briefly the views of the other parties.
6 Staff?

7 MR. PERLIS: Well, throughout this proceeding,
8 all phases of the Shoreham licensing proceeding, the Staff
9 has gone last.

10 JUDGE MILLER: Well, that really doesn't say
11 much.

12 MR. PERLIS: The Staff does believe that is
13 the traditional practice.

14 JUDGE MILLER: Well, what is the basis? Tradition
15 means very little as such. What is the basis for it.
16 I can see it is an overwhelming public interest matter.
17 Do you feel more comfortable?

18 MR. PERLIS: I am not quite sure what the
19 traditional basis for it is, but I do believe in part it
20 is so the Staff can review the testimony given by all the
21 parties as part of its role in determining the safety
22 of the facility.

23 JUDGE MILLER: Haven't you ever done that from
24 the prefiled direct testimony? Haven't all parties reviewed
25 the testimony of the others?

1 MR. PERLIS: We have seen prefiled testimony.
2 We haven't seen the cross examination of the parties.

3 JUDGE MILLER: Well, which is the tail and
4 which is the dog? Well, we haven't decided, but we are
5 inclined to unless the Staff can show us that they are
6 challenging in some significant respect the presentation
7 of LILCO, the Applicant, we are inclined to have the
8 Staff's case, which is not totally but significantly
9 supportive of the position.

10 Now, I don't think there is anything more. I
11 don't think there is anything else here. This is normal.
12 If the Staff had some serious questions, they would have
13 raised them long before this, and it would have been something
14 done or not done.

15 But nevertheless, in terms of practice, courts
16 often do realign parties in terms of actual interest,
17 unless there be a showing to the contrary, and in terms of
18 interests, in a legal sense, the position taken by the Staff,
19 the position certainly would be quite similar to those of
20 LILCO.

21 MR. REIS: Mr. Chairman, if I may be heard.

22 JUDGE MILLER: You may be heard.

23 MR. REIS: You talk about tradition, and it
24 is tradition, there is no --

25 JUDGE MILLER: More often than not, we have

1 followed the contrary practice, so I want you to feed that
2 into your own remarks.

3 MR. REIS: This Board may have followed the
4 contrary practice, but it is -- but the Appeal Board and
5 the Commission in presentations to them have looked to the
6 Staff to go last, and that has been the place of the Staff.

7 It is not to -- it is after an evaluation of
8 material submitted to them, that they make a decision and
9 decide on a position.

10 It is true we have to file testimony first, but
11 in cross examination and the possibility that things can
12 be, the Staff although in terms of complying with the
13 rules as another party, and has to meet the other party,
14 it has another interest here, and that is why the tradition
15 grew up of the Staff going last.

16 And I just wanted to point that out. And I
17 don't see -- I think to make an exception here, you would
18 have to show that it is different than other proceedings.

19 JUDGE MILLER: Now wait a minute. Tradition
20 doesn't solidify into some rule. You don't make rules
21 any more than I do. Tradition is what happens in a number
22 of cases where the point often isn't raised. So that
23 part of the tradition, three-fourths of it, you can just
24 toss out the window as far as any precedential significance
25 is concerned.

1 Now, this Board has not infrequently, such as
2 in the Clinch River proceeding, looked at the terms of
3 expressed position, and has lined them up that way.

4 So, therefore, I say there are two competing
5 principles, but I don't see in this case any reason why
6 the alignment of interest rules shouldn't be at least of
7 equal significance, otherwise then you are going to have
8 a situation where you are going to have surrebuttal,
9 and continue going up the baseball bat. If the Staff is
10 last, and its testimony is significantly supportive of
11 LILCO's, which has gone first. We will never end the
12 who does what to whom business. That is in our mind.
13 Expeditious procedure, really.

14 We have always, however, made it a point to
15 tell the Staff if they really differ significantly in
16 position, if you think that a witness put on by LILCO
17 is not one whose position can be supported by the Staff
18 as a matter of law, not a personality matter; upon a showing,
19 we would vary the procedures. In other words, where there
20 is a reason for the Staff to take a different position, then
21 we would accord that right to the Staff.

22 MR. REIS: In that connection, let me say here
23 the Staff -- there is no question the Staff supports the
24 low power license.

25 JUDGE MILLER: We wouldn't be here if you didn't.

1 MR. REIS: That is true, because --

2 JUDGE MILLER: Because the Staff's legal staff
3 and technical staff is such that if you didn't support it
4 there wouldn't be an issue before this Board.

5 MR. REIS: But let me say this. Let me make
6 it clear that we are not clearly aligned with LILCO on
7 some of the issues.

8 JUDGE MILLER: Oh, I understand that.

9 MR. REIS: We are not looking at the seismic
10 thing. We don't think it is necessary and we have not
11 evaluated that. I just wanted to make the record clear
12 on that.

13 JUDGE MILLER: I appreciate your doing that.
14 Now, the seismic, if I understand, and I did ask counsel
15 yesterday if they are going to put on witnesses, I think
16 you take no position, isn't that right, so therefore you
17 wouldn't really have any occasion to want to go after,
18 because you are not taking a position. If you were taking
19 a position, it would be different and then we would look
20 to see how it lined up.

21 Are there any other issues that you think
22 we ought to look at? Because we can do it on an issue
23 basis as well as general practice.

24 MR. PERLIS: Not for any of our witnesses.

25 JUDGE MILLER: If it should occur to you. We

1 don't want you to be prejudiced. We recognize your public
2 interest obligations as Staff, and if at any time the
3 order does seem to vary, call it to our attention. I
4 don't think it will impair your practice. It will keep
5 us from having to get surrebuttal, and sur-sur -- okay.
6 We will start off that way when we get to issues, but it
7 is subject to a showing.

8 Now, are you ready.

9 MR. ROLFE: Judge Miller, one minor logistical
10 matter before we call our first witness panel. In reviewing
11 the transcripts from April 24 and 25, I note that the second
12 portion of Mr. Gunther's testimony, which was admitted by
13 the Board did not get bound into the record.

14 You may recall that Mr. Gunther testified
15 twice, once at the beginning of the hearing, and then
16 in the -- the first part of his testimony was admitted,
17 and then he came up again with Mr. Schiffmacher. In the
18 transcript, Mr. Schiffmacher's testimony got bound into
19 the second day's transcript, but the second portion of
20 Mr. Gunther's testimony, which consisted of pages 14 through
21 22, did not get bound in, and I would just ask that the
22 Board ask that the record be clarified to include that
23 portion of Mr. Gunther's testimony, which it was my
24 understanding has been admitted by the Board. It simply
25 has been omitted from the transcript.

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JUDGE MILLER: Any objection?

MS. LETSCHE: I frankly haven't reviewed that lately. Based on Mr. Rolfe's representation of the facts, I have no objection.

JUDGE MILLER: State?

MR. PALOMINO: I would like to review it, because I know there were Motions to Strike testimony, and until I can look at the pages --

JUDGE MILLER: All right. We will give you an opportunity to review. You can renew your Motion this afternoon at some convenient time, and give opposing counsel a chance to ascertain the state of the record.

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MR. ROLFE: Your Honor, LILCO's first witnesses
this morning are Mr. Thomas W. Iannuzzi and Mr. Kenneth
Lewis.

JUDGE MILLER: Will the witnesses come forward,
please.

Whereupon,

THOMAS W. IANNUZZI

-- and --

KENNETH A. LEWIS

were called as witnesses on behalf of LILCO and, having
first been duly sworn by Judge Miller, were examined and
testified as follows:

DIRECT EXAMINATION

BY MR. ROLFE:

Q Mr. Iannuzzi, will you please state your full
name and business address?

A (Witness Iannuzzi) My name is Thomas
Iannuzzi. My business address is Morrison-Knudsen Company,
101 Gelo Road, Rocky Mount, North Carolina.

Q Mr. Lewis, will you please state your full
name and business address?

A (Witness Lewis) My name is Kenneth Lewis. My
business address is Morrison-Knudsen Company, 101 Gelo Road,
Rocky Mount, North Carolina.

INDEXXXXXX

Sim 2-2

1 Q Gentlemen, do you have before you a document
2 entitled "Testimony of Thomas W. Iannuzzi and Kenneth A. Lewis
3 on Behalf of Long Island Lighting Company," consisting of
4 25 pages and six attachments?

5 A (Witness Iannuzzi) Yes.

6 A (Witness Lewis) Yes.

7 Q Are there any changes which either of you need
8 to make in that prefiled testimony?

9 A (Witness Iannuzzi) No.

10 A (Witness Lewis) No.

11 Q Have you reviewed that testimony and is it true
12 and correct and do you adopt it as your testimony in this
13 proceeding?

14 A (Witness Iannuzzi) Yes, we do.

15 A (Witness Lewis) Yes, we do.

16 Q Mr. Iannuzzi, will you please summarize your
17 professional qualifications?

18 A (Witness Iannuzzi) My present position is as
19 Manager of Engineering with Power Systems Division of
20 Morrison-Knudsen. In that capacity I am responsible for
21 the Engineering Department consisting of engineers, designers
22 and document control personnel engaged in the work of designing
23 and manufacturing diesel generator sets.

24 I have been at Power Systems for approximately two
25 years, and we have provided a number of sets to commercial.

Sim 2-3

1 nuclear and hospital installations.

2 Prior to Power Systems I was with Colt Industries
3 in Wisconsin at the Fairbanks-Morse Engine Division. In
4 a similar capacity I was Supervisor of Engineering and
5 responsible for a staff of engineers engaged in the design
6 and fabrication of diesel generator skids.

7 Prior to that I was with Combustion Engineering
8 for approximately five years in Winsor, Connecticut engaged
9 in the specification and procurement of nuclear components,
10 heavy components, reactor vessels, steam generators,
11 pressurizers and piping.

12 Prior to that I was with General Electric
13 Company in Schenectady, New York engaged in naval nuclear
14 work providing reactor vessels for nuclear submarines.

15 My educational experience is I have an master's
16 of industrial administration from Union College, a bachelor's
17 of mechanical engineering from Penn State University, and
18 I am a registered professional engineer in the State of
19 Connecticut.

20 Q Mr. Iannuzzi, are your professional qualifica-
21 tions and your current employment responsibilities more
22 fully set forth in your testimony and in Attachment 1 to
23 that testimony?

24 A (Witness Iannuzzi) Yes. That is a more complete
25 and comprehensive discussion.

Sim 2-4

1 Q Mr. Lewis, are your professional qualifications
2 set forth in the testimony of Thomas W. Iannuzzi and Kenneth
3 A. Lewis, both in the body of that testimony and in
4 Attachment 2 to that testimony?

5 A (Witness Lewis) Yes, it is.

6 Q Will you please summarize for the Board your
7 professional qualifications?

8 A My professional qualifications is I am Manager
9 of Technical Services for Power Systems Division of
10 Morrison-Knudsen. I manage all field services and parts
11 activities. I go as a liaison between customer, engineering
12 and field service people to coordinate all work to be
13 performed in a timely manner.

14 I have ten field service personnel working under
15 me and a direct supervisor. We do field service work in
16 many nuclear power plants and in non-nuclear plants around
17 the world on a daily basis.

18 I have been with Power Systems since March of
19 1972. Prior to my obtaining Manager of Field Service, I
20 was a test technician on the test end of Power Systems
21 shop. I tested approximately 66 units for nuclear service,
22 diesel generator sets, along with several non-nuclear
23 applications.

24 Before that I was an Electrician-A with Power
25 Systems, or Bruce GM Diesel. At that time I wired control

Sim 2-5

1 panels and engine skids which went into nuclear and non-
2 nuclear applications.

3 Before that I worked as a service mechanic for
4 Pullen Refrigeration doing service work in the field.

5 And that basically summarizes the last ten
6 years.

7 Q Gentlemen, would you please summarize your
8 testimony for the Board?

9 MR. ROLFE: Your Honor, I can either have them
10 summarize their testimony now so the Board will be able to
11 assess the voir dire, or I can render them or proffer them
12 for voir dire now.

13 JUDGE MILLER: I think voir dire might be
14 better.

15 MR. ROLFE: Okay.

16 JUDGE MILLER: The witnesses are available for
17 voir dire examination.

18 MR. ROLFE: Thank you, Judge Miller.

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19 VOIR DIRE

20 BY MR. BIRKENHEIER:

21 Q Mr. Iannuzzi, you state at page 3 of your
22 testimony that PSD over the past 12 years has designed
23 or fabricated 137 diesel generator sets for customers in
24 commercial applications and you describe other work that
25 they have done. How long have you been with Power Systems?

Sim 2-5

1 A (Witness Iannuzzi) I have been with Power
2 Systems for approximately two years.

3 Q So your experience does not include that work
4 that Power Systems did over those 12 years; is that correct?

5 A Correct. I have not been there for the entire
6 number of sets that we have designed. I have been there
7 for a number of them.

8 Q Mr. Iannuzzi, when did you first visit Shoreham
9 and look at the EMDs that are installed there?

10 A I visited Shoreham in I believe it was early
11 July of this year. I am sorry, early June of this year.

12 Q And was that the first time that you had seen
13 the EMDs that are now installed at Shoreham?

14 A That is the first time I have seen those
15 particular EMDs, yes.

16 Q When did you first review the manuals and the
17 maintenance records for these particular EMDs?

18 A For these particular EMDs at approximately the
19 same time frame.

20 Q As your visit to the plant?

21 A As my visit, yes. Just prior to my visit, yes.

22 Q In June of this year?

23 A In June of this year.

24 Q Mr. Iannuzzi, on page 12 of your testimony you
25 state that you have visited the EMD manufacturing facility

Sim 2-6

1 at LaGrange, Illinois and have seen the process by which
2 these engines are made. When have you visited that
3 facility?

4 A I visited there in early 1983. I don't know
5 the exact date.

end Sim
sue follows

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Q Is that the only visit you have made?

2

A (Witness Iannuzzi) No. I made a second visit later in that same year. And again I don't have the exact date.

5

Q Mr. Lewis, have you ever designed a diesel engine?

6

A (Witness Lewis) No, I never have.

7

Q Have you ever designed safety-related systems for a nuclear power plant?

9

A No.

10

Q Have you ever been responsible for the manufacture of diesel engines?

12

A You need to explain yourself. Are you talking about the engine itself or the total system?

14

Q The engine itself?

15

A The engine itself, no.

16

Q Mr. Lewis, you have said that you are responsible for Power Systems field service activities?

18

A Correct.

19

Q Are you responsible for all their field service activities?

21

A Yes.

22

Q In the course of a year, do you visit all of the diesels that Power Systems services?

24

A No.

25

Q Do you visit any of them?

#3-2-SueT

A Yes.

2 Q Do you visit all of those that are in the
3 United States?

A No.

4
5 Q Can you tell me in the course of a typical year
6 how many diesels you will visit?

7 A Well, generally I visit probably anywhere from
8 20 to 30 sites a year.

9 Q And when you say site, are there more than one
10 diesel engine at each of the sites?

A Correct, yes.

11
12 Q Can you give me a rough estimate of how many
13 diesels might be involved?

A It depends on the site.

14
15 JUDGE MILLER: You will have to keep your
16 voices up. I know you are going to look at the person
17 asking the question, but remember you are testifying to the
18 Board. So, if you will kind of swing your head around this
19 way it will help.

20 WITNESS LEWIS: Okay. Some sites have as many as
21 10 diesel engines and some sites have as few as one.

BY MR. BIRKENHEIER: (Continuing)

22
23 Q How many diesels does Power Systems service?

24 A That's a hard number to judge. We service many
25 throughout the industry. To give you an exact number, it's

#3-3-SueT 1

hard to tell because day by day we acquire new customers.

2 Q Can you give me a rough number?

3 A Offhand I would say two or three hundred a year.

4 Q Mr. Lewis, on Page 10 of your testimony in
5 Answer 15, you state that you have kept up a service record
6 with respect to the EMDs that are now at Shoreham while
7 they were installed in Massachusetts and being used by
8 New England Power Company; is that correct?

9 A That's correct.

10 Q Does this service record consist of the reports
11 that Power Systems field service personnel fill out when
12 they perform work or conduct an inspection for the diesels?

13 A Yes.

14 Q I take it that these reports are filled out
15 every time such an inspection or work --

16 A Every time there is a visit to a site.

17 JUDGE MILLER: We are not hearing either one of
18 you. Not even hearing you.

19 WITNESS LEWIS: Every time there is a visit to a
20 site a report is filled out.

21 BY MR. BIRKENHEIER: (Continuing)

22 Q Do you review all of the sites, I mean all of the
23 reports that are filled out?

24 A Yes, sir.

25 Q Mr. Lewis, you also state on Page 10 of your

#3-4-SueT 1

2 testimony that through field service representatives you
3 coordinated all changes during installation of the EMDs
4 that are now at Shoreham?

5 A That's correct.

6 Q I take it that you are not talking about all
7 the changes that have been or will be made to that set of
8 diesel generators before they are turned over to the operat-
9 ing personnel of the plant; is that correct?

10 A Well, what I'm talking about when I'm talking
11 about changes is the ones internal to the engine, generator,
12 switchgear set which apply to the starting, reliability and,
13 of course, carrying the load.

14 Now, coordinating changes such as the fuel line
15 and things of this nature, that would be out of our scope.
16 That's an attachment to the diesel.

17 Q Gentlemen, I would like to ask you both this.
18 I take it that in reaching the opinions that you have ex-
19 pressed in your testimony that you reviewed the maintenance
20 records and operating records for these particular EMD
21 units; is that correct?

22 A (Witness Iannuzzi) That's correct.

23 (Witness Lewis) That's correct.

24 Q Do those records that you have reviewed include
25 the reports that the PSD service personnel filled out while
they -- after they had performed work at the site?

#3-5-SueT 1

A (Witness Iannuzzi) Yes, that's correct.

2

(Witness Lewis) That's true.

3

Q I mean by site, just to clarify, I mean the

4

Lynnway, Massachusetts site.

5

A (Witness Iannuzzi) Yes.

6

(Witness Lewis) Yes.

7

Q Just to make sure I know what documents you are

8

talking about, would you please take a look at these reports

9

and tell me if those are the same reports you have reviewed?

10

(The witnesses are looking at documents handed

11

to them by counsel.)

12

A (Witness Iannuzzi) Based on a quick evaluation

13

of them, they look to be the same set of reports that we

14

have reviewed, yes.

15

Q Do the records that you reviewed also include a

16

set of log books that were maintained for each of these

17

EMD units?

18

A (Witness Lewis) Well, the log books are kept

19

up basically from our personnel's reports, and we were the

20

ones that supplied the log books. The log books were

21

written up by the service reports.

22

Q When you say that you were the ones who supplied

23

the log books, what do you mean by that?

24

A Well, at each station so that the supervisor

25

that we reported to would know what we done, he signed off

#3-6-SueT 1

2 a copy of the daily field service report. Also, he has
3 to send that into his accounting department.

4 We also filled out a log book telling what we
5 done each time there was a repair or each time we done an
6 inspection as to what the inspection consisted of.

7 Q And I take it you reviewed those books in
8 preparing your testimony?

9 A No. I just basically looked through them, not
10 reviewed in detail.

11 Q Would you please take a quick look at this
12 and tell me if that is one of the books that you went
13 through? That is the book for Engine Number 5 at the Lynnway
14 site, Engine Number 1 at the Shoreham site?

15 (The witnesses are looking at a document handed
16 to them by counsel.)

17 A We have -- I have looked through that book.

18 Q Mr. Iannuzzi, have you looked through this
19 book?

20 A (Witness Iannuzzi) I have not looked through
21 that particular book, no. I've only reviewed the field
22 service reports.

23 Q So I take it you have not looked through the
24 books for any of the engines?

25 A No. I've looked at the field service reports
and the synopses that were prepared by, I believe, LILCO

#3-7-SueT 1

2 people who went through the books and made a tabulation of
3 the significant events.

4 Q Could you describe for me the synopses?

5 A There were -- there was one study done of the
6 starting systems and starting occurrences that was used to
7 evaluate start failures. There was a second listing of
8 change-outs of various pieces of equipment.

9 I believe both of those were -- we obtained from
10 LILCO. I believe they were available to all parties.

11 Q Do you know, Mr. Iannuzzi, what the source of
12 the data was on which the people who prepared those two
13 reports relied?

14 A It's my understanding that it was prepared
15 directly from the log books that you just showed us.

16 Q Do you know that?

17 A But I don't know that for a fact. No, I didn't
18 see that performed.

19 JUDGE MILLER: Pardon me. Did that enter into
20 your testimony as proffered one way or the other?

21 WITNESS IANNUZZI: Yes. My conclusions were
22 based on the synopses.

23 JUDGE MILLER: You may proceed. We are going
24 to keep it to the basis for the testimony as well as
25 expert qualifications per se. So far, it appears to be
within that limitation.

end #3
Joe flws

1 MR. BIRKENHEIER: I have no further voir dire
2 questions, Judge Miller.

3 JUDGE MILLER: State of New York?

4 MR. PALOMINO: Yes.

5 VOIR DIRE EXAMINATION

6 BY MR. PALOMINO:

7 Q Mr. Lewis, on page 5 of your testimony, you say
8 you received an A. S. degree in refrigeration from Wilson
9 Technical College, is that correct?

10 A (Witness Lewis) That is correct.

11 Q On Attachment 2, which is your resume, under
12 Education you say it is an A. S. degree in electronics.

13 A Yeah, that was supposed to have been taken
14 out.

15 JUDGE MILLER: Swing that microphone so it
16 is between us and you. No, more. I want the mike between
17 you and us, and that way you are going to be looking at us.
18 And we have to have your voice coming through the mike.

19 WITNESS LEWIS: The A. S. in electronics was
20 supposed to have been taken out of this resume.

21 JUDGE MILLER: All right. Do we regard it as
22 stricken?

23 WITNESS LEWIS: As far as I am concerned, yes.

24 JUDGE MILLER: Well, as far as anybody is
25 concerned, is that correct?

1 MR. ROLFE: That is correct, Your Honor. The
2 accurate information is in the testimony itself.

3 JUDGE MILLER: All right. It will be stricken --
4 the inaccurate portion will be stricken.

5 MR. BIRKENHEIR: Judge Miller, can you tell me
6 exactly where the reference is? Thank you.

7 BY MR. PALOMINO: (Continuing)

8 Q And how long was that training course for that
9 A. S. degree?

10 A (Witness Lewis) Two years.

11 Q And did it relate in any respect to diesel
12 engines?

13 A Only in the physics portion of it. Very little.

14 Q Very little. And electrical generators?

15 A Yeah, just very little in the physics portion
16 of the course.

17 Q So basically your training in that is unexperience,
18 isn't it?

19 A My training is the experience I gained with working
20 with Power Systems Division.

21 MR. PALOMINO: Your Honor, in view of the fact
22 it was brought up that Mr. Iannuzzi only has two years with
23 this Corporation, I think we should strike all of the
24 attachments which referred to -- on page 3 of his testimony,
25 the 137 projects which the Corporation was involved with

1 and he should be limited to the projects he refers to in
2 his testimony in which he was involved.

3 JUDGE MILLER: I think that isn't necessarily
4 true, although it certainly would be a matter that would
5 bear upon the probative value.

6 I think perhaps in cross examination if you
7 wish to delineate significant differences, we would permit
8 you to do so. I don't think that we can do it now in voir
9 dire.

10 MR. PALOMINO: All right. I have no further
11 questions, Your Honor.

12 MR. PERLIS: The Staff has no voir dire.

13 JUDGE MILLER: You may proceed now with the
14 substantive testimony.

15 MR. ROLFE: I understand, Your Honor, that
16 the witnesses have been accepted as qualified experts?

17 JUDGE MILER: Yes. I think they have demon-
18 strated it, and there has been no challenge either. But
19 I think they have demonstrated sufficient background for
20 giving of expert testimony, including opinion testimony
21 within the ambient of their foundation proof and qualifications
22 and experience.

23 Perhaps you should offer an explanation now
24 of what areas of expertise you are tendering them as being
25 expert in, and hence permitted to give opinion testimony.

1 MR. ROLFE: Yes, Your Honor. LILCO tenders Mr.
2 Iannuzzi and Mr. Lewis as experts in the operation of
3 diesel generators, including the engineering of those
4 machines. The industry experience with those machines,
5 the reliability of those machines, and the mode of operations
6 of those machines.

7 JUDGE MILLER: Very well. You may proceed.

8 DIRECT EXAMINATION

9 BY MR. ROLFE:

10 Q Gentlemen, will you please summarize your
11 testimony for the Board?

12 JUDGE MILLER: I take it you are going to speak
13 as one voice?

14 WITNESS IANNUZZI: I will speak to that.

15 JUDGE MILLER: Very well.

16 WITNESS IANNUZZI: In our testimony, we are
17 speaking to the reliability of the diesel generator sets
18 at Shoreham, and --

19 BY MR. ROLFE: (Continuing)

20 Q Mr. Iannuzzi, I hate to interrupt you, but can
21 you please specify which diesel generator sets you are
22 referring to?

23 A (Witness Iannuzzi) The diesel generator sets
24 at Shoreham, the Shoreham plant.

25 Q Are they the EMD diesels?

XXX INDEX

1 A The EMD sets. I am sorry. As background to
2 this, to our conclusions of the reliability, we have gone
3 through the previous usage of EMD diesels in the industry,
4 and our use of them at Power Systems and various locations
5 and applications, including nuclear applications.

6 We have reviewed our own familiarity with those
7 diesels and with their application. Both Mr. Lewis and
8 myself. And we have spoken to the -- our familiarity with
9 the manufacturer of the engines, through visits to the
10 manufacturer. We have addressed the maintenance history
11 of the specific units as we know it, and the --

12 JUDGE MILLER: Pardon me. You say as you
13 know it. You are qualifying a little bit. What do you
14 mean by that?

15 WITNESS IANNUZZI: I am sorry. I should not
16 really have qualified that. I feel we know the maintenance
17 history.

18 JUDGE MILLER : Very well. Go ahead.

19 WITNESS IANUZZI: We have spoken of the -- we
20 have summarized the maintenance history and significant
21 aspects of it, and we have spoken to the operational history
22 of these units, and any significant aspects of that operational
23 history.

24 We have looked at industry experience with diesel
25 EMD diesel engines and generator sets, and we have looked

1 into starting reliability, as evidenced by testing that
2 has been performed both by PSD and by General Motors EMD.
3 We have looked at our experience with starting of these
4 types of diesels, both air starting and electric start.

5 And we have looked at the fire protection
6 requirements for these units, and applied our experience
7 in need for fire protection as evidenced by our not having
8 seen any significant occurrences of fires on these types
9 of units, and have therefore addressed the need or lack
10 of need for a specific fire protection -- automatic fire
11 protection system.

12 Based on our overall review of these units,
13 we feel very comfortable that the units will be extremely
14 reliable and will be available for use and running when and
15 if they might be needed.

16 JUDGE MILLER: You may ask.

17 MR. ROLFE: Your Honor, the witnesses are now
18 ready for cross examination.

19 JUDGE MILLER : Now you may ask.

20 CROSS EXAMINATION

21 BY MR. BIRKENHEIER:

22 Q Gentlemen, I take it that you rely for the
23 opinions you express in your testimony, on both those reports
24 and the books, the maintenance books that between the two of
25 you you have reviewed, is that correct?

1 A (Witness Iannuzzi) Yes, among other things.

2 Q With respect to these particular EMD diesels
3 that are installed at Shoreham, what other things do you
4 rely on?

5 A These particular diesels being virtually the
6 same as other diesels that we have used in the past and
7 that we are familiar with, we rely on our experience and
8 our background with EMD diesels and, therefore, are -- I am
9 sorry. With our background.

10 Q Do you rely on any other sources of specific
11 data about the operating and maintenance histories of these
12 particular units?

13 A (Witness Lewis) None other than we had the
14 contract with NEPCO for a right good while, and we had
15 no complaint from them about the operation or maintenance
16 on these engines.

17 Q Gentlemen, will you please turn to page 16
18 of your testimony. In the last paragraph of Answer 21,
19 -- it is about two-thirds of the way down on page 16 -- you
20 discuss some replacements of turbo chargers in Units 3 and 4.

21 Mr. Iannuzzi, isn't it impossible for an EMD
22 of the type installed at Shoreham to run without an operable
23 turbo charger?

24 A (Witness Iannuzzi) I would not say it would
25 be necessarily impossible to run. Certainly, you would not

1 be capable of carrying full load, but unless there was some
2 structural damage caused by the turbo charger failing or
3 not being there, the engine would be capable of running.

4 A (Witness Lewis) Another thing, it also depends
5 on the mode of failure. If the turbo failed while the
6 engine was up and running, and lets say the turbo clutch
7 failed, and the turbo was disengaged from the gear train and
8 was driven by the exhaust gases, it would be perfectly
9 capable of operating until you came down to low enough load
10 such as a unit shutdown. Then it would possibly give some
11 problems.

12 Q Once the machine had been shut down, could you
13 restart the engine?

14 JUDGE MILLER: He can't get your nod. I think
15 you shook your head affirmatively, but I didn't hear any
16 sound.

17 WITNESS LEWIS: Clarify yourself. Now once
18 you shut down --

19 BY MR. BIRKENHEIER: (Continuing)

20 Q Can you just describe the situation in which
21 a turbo charger had failed, and you said that it would then
22 be able to run until it had reached a low enough load where
23 the turbo charger was no longer being run off the exhaust
24 gases. Did I understand you correctly?

25 A (Witness Lewis) Correct.

1 Q If the machine were then shut down subsequent
2 to that point, could you restart the engine without an
3 operating turbo charger?

4 A That again depends on the mode of failure.
5 I wouldn't recommend starting it if I knew it had failed.

6 Q Gentlemen, would you please turn to page 20
7 of your testimony. In Answer 30, you state that you were
8 aware of no instance in which the unit shut down for repairs
9 during operation as peaking units at NEPCO.

10 Do you see that?

11 A (Witness Iannuzzi) Yes.

12 Q Well, isn't it true that in 1975, at the operating
13 hour level of 10,992 hours, the turbo charger on Unit No. 4
14 failed, and caused the engine to be smoking heavily?

15 A (Witness Lewis) I don't really have the data
16 before me. But if it is in there, it probably did.

17 According to the --

18 Q Excuse me. Let me show you the data.

19 (Counsel shows witness document.)

20 I would like to have this document marked for
21 identification as Suffolk County Exhibit LP-4.

22 JUDGE MILLER: I will be so marked.

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24

25

(Above referred to document is
marked Suffolk County Exhibit LP-4
for identification.)

1 MR. BIRKENHEIER: And I will represent for the
2 record that this is a photocopy of the page that has been
3 extracted from the maintenance log books which Mr. Lewis
4 has testified he reviewed.

5 It was extracted from the log book for Engine
6 -- or Unit No. 4, as denominated at the Shoreham installation.

7 JUDGE MILLER: Very well.

8 BY MR. BIRKENHEIER: (Continuing)

9 Q Mr. Lewis, do you see the sixth entry on this
10 sheet?

11 A (Witness Lewis) Yes.

12 Q Will you read that, please?

13 A Turbo charger failure caused an engine to smoke
14 heavily. Started removing parts for change out.

15 Q Now, you stated before you rely on these books
16 for the statements made in your testimony, is that correct?

17 A That is correct.

18 Q I take it then that you have no reason to doubt
19 the accuracy of this entry, do you?

20 A No.

21 Q Isn't it true that a turbo charger failure
22 could not have caused the engine to start smoking heavily
23 if the engine were not operating at the time?

24 A That is true.

25 Q Isn't it also true that in order for the -- whoever

1 made this entry to begin removing the parts for change out
2 that the engine must have been shut down?

3 A That is true.

End 4.
Mary fols.

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Sim 5-1

1 Q Mr. Lewis, isn't it also true that in 1978 at
2 the hour level of 11,679 that another turbocharger on
3 EMD 404 failed in such a manner that parts of it were thrown
4 outward and pierced the after coolers on that engine?

5 A (Witness Lewis) I would have to review the
6 records, but if they are there I feel they are accurate.

7 MR. BIRKENHEIER: I would like to have marked
8 for identification a document which my colleague is passing
9 around the room which is another page that has been extracted
10 from the Maintenance Log Book for EMD 404.

11 BY MR. BIRKENHEIER:

12 Q Mr. Lewis, do you see the last entry on that
13 page?

14 A (Witness Lewis) "Installed New Fan"?

15 MR. BIRKENHEIER: No. I am sorry. We passed
16 out the wrong document.

17 JUDGE MILLER: Well, do you want to do anything
18 with this one while we are at it?

19 MR. BIRKENHEIER: All right. Well, no. I would
20 rather pass out the right one.

21 JUDGE MILLER: Okay. Are you withdrawing then
22 the one that you just handed up?

23 MR. BIRKENHEIER: I will use it later.

24 JUDGE MILLER: We will hold it in abeyance.

25 MR. BIRKENHEIER: Yes.

Sim 5-2

1 I ask that this second document which is being
2 passed out now be marked Suffolk County Exhibit LP-5.

3 JUDGE MILLER: It may be marked.

4 (The document referred to was
5 marked Suffolk County Exhibit
6 LP-5 for identification.)

7 BY MR. BIRKENHEIER:

8 Q Mr. Lewis, do you see the last entry on this
9 page?

10 A (Witness Lewis) Yes, I do.

11 Q Does the first line read "Unit No. 8," meaning
12 the Unit No. 4 at Shoreham, "at 11,622 replaced turbocharger
13 on account it failed"?

14 A Yes, it does.

15 Q And does the fifth line, or the sentence beginning
16 on the fifth line read "Replaced both after coolers on account
17 of leaking because of impact of turbo compressor parts"?

18 A That is true.

19 Q Isn't it true that a failure of a turbocharger
20 which resulted in parts of it being able to impact the after
21 coolers with a force to cause leaks could not have happened
22 unless the engine was operating at the time?

23 A That is true.

24 Q And isn't it true that in order for that turbo-
25 charger to be replaced the engine had to be shut down?

INDEX XXXXXXXX

Sim 5-3

1 A That is true.

2 Q All right, Mr. Lewis, I would like to direct your
3 attention to the sheet which my colleague passed out first,
4 and I ask that that be marked as Suffolk County Exhibit
5 LP-6.

6 JUDGE MILLER: It may be marked.

7 (The document referred to was
8 marked Suffolk County Exhibit
9 LP-6 for identification.)

INDEXXXXXXXXX

10 BY MR. BIRKENHEIER:

11 Q Mr. Lewis, do you see the fourth entry on that
12 page?

13 A MP8, 9407 hours?

14 Q Yes.

15 A Yes.

16 Q Does that entry read "Dust bin blower failure
17 causing generator failure"?

18 A Yes, it does.

19 Q And does it not say starting in the middle
20 of the third line "Started preparations for generator and
21 dust bin blower removal"?

22 A This is not very clear. It is a little bit
23 hard to understand, but it looks like they started prepara-
24 tions for generator 4 dust bin blower, or it could have
25 been generator 4 and the dust bin blower. I would think

Sim 5-4

1 that this is generator 4 and the dust bin blower according
2 to what is on the bottom line.

3 Q Okay. And isn't it true that that removal could
4 not have been effected unless an engine were shut down?

5 A Sure. The unit had to be shut down.

6 MR. BIRKENHEIER: I would just like to represent
7 for the record that the last two sheets that were passed
8 out were also extracted from the Maintenance Log Books about
9 which the witnesses have previously testified.

10 BY MR. BIRKENHEIER:

11 Q And I would like to ask you, Mr. Lewis, do you
12 have any reason to doubt the accuracy of any of these
13 entries?

14 A (Witness Lewis) No, sir.

15 Q Do you, Mr. Iannuzzi?

16 A (Witness Iannuzzi) No, I don't.

17 (Pause while counsel confer.)

18 Q Mr. Lewis, when were the EMD's that are installed
19 at Shoreham manufactured?

20 A (Witness Lewis) 1967, and I think a couple of
21 them in 1968. You are talking total package. There was
22 two engines, UTEX, in 1972.

23 MR. BIRKENHEIER: I would like to have marked
24 for identification as Suffolk County Exhibit LP-7 the
25 set of documents which my colleague is now distributing.

Sim 5-5

1 JUDGE MILLER: They may be so marked.

2 (The documents referred to were
3 marked Suffolk County Exhibit
4 LP-7 for identification.)

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6 MR. BIRKENHEIER: I would like to represent for
7 the record that these are the maintenance records which
8 the witnesses have previously testified were prepared by
9 Power Systems service personnel after having completed work
10 at the Lynnway, Massachusetts site.

11 They have, however, been separated out into
12 five packets. The first four are arranged by machine.

13 BY MR. BIRKENHEIER:

14 Q There were eight machines at Lynnway,
15 Massachusetts, is that correct, gentlemen?

16 A (Witness Lewis) That is correct.

17 Q And it is not correct that the machines that
18 were numbered at Lynnway, Nos. 5 through 8, are now at
19 Shoreham?

20 A Right. I think that is correct.

21 Q And at Shoreham they are numbered EMD 1 through
22 4.

23 A Right.

24 MR. BIRKENHEIER: I will represent for the
25 record that these reports have been segregated by machines
26 into the first four piles and the fifth packet is a packet

Sim 5-6

1 of sheets that has entries that refer to more than one
2 machine and each packet has been ordered chronologically.

3 BY MR. BIRKENHEIER:

4 Q Gentlemen, would you please refer to Appendix
5 6, or Attachment 6 to your testimony.

6 Is Attachment 6 the maintenance schedule that
7 is part of the service agreement under which these machines
8 were serviced by Power Systems at Lynnway, Massachusetts?

9 A (Witness Lewis) Yes, the service agreement.

10 Q And this is the maintenance schedule to which
11 you have testified that was kept -- I mean in accordance
12 with which they were serviced; is that correct?

13 A That is correct.

14 Q Now this schedule calls for monthly inspections,
15 doesn't it?

16 A Right, it does.

17 Q And doesn't it also call for quarterly inspections?

18 A Yes, it does.

19 Q And semi-annual inspections?

20 A That is correct.

21 Q And annual inspections?

22 A That is correct.

23 Q So how many visits per year is that for each
24 machine?

25 A All right. Up till 1983, you know, we had

Sim 5-7 1 a monthly inspection contract. And what we done was we
2 visited the site each month. In 1983 due to the lack of
3 use of the machines, New England Power went to a bi-monthly
4 contract, every two months.

5 Q So that into 1983 there were 12 visits per year
6 to these machines?

7 A At least, yes.

8 Q And after each time New England Power Systems
9 personnel completed these reports?

10 A That is true.

11 Q Gentlemen, would you look then at the reports
12 for engine No. 5. It is in the first packet of LP No. 7.

13 Now, again, these are ordered chronologically.
14 So I ask you to look at the first page of that packet and
15 tell me do you see a report there that is dated December 6th,
16 1979 in the upper-right-hand corner?

17 A Yes.

18 Q Are there any other reports in this packet
19 dated 1979?

20 A From looking at the packet, what you have here
21 is repair work and not the maintenance inspection.

22 JUDGE MILLER: Pardon me, is what?

23 WITNESS LEWIS: What is in this packet is
24 maintenance repair work which is separate from maintenance
25 inspection. If you will look over at one of these other

Sim 5-8

1 ones where it says monthly inspection report ---

2 MR. BIRKENHEIER: Yes.

3 WITNESS LEWIS: --- each one of these were
4 filled out every month on every unit.

5 MR. BIRKENHEIER: I will represent for the record
6 that this is a complete set of records that we were provided
7 in discovery.

8 BY MR. BIRKENHEIER:

9 Q I just want to ask you right now are there any
10 other reports, regardless of whether they are repair or
11 maintenance, that are dated from 1979 in this packet?

12 A (Witness Lewis) I could go through my files.
13 When these were sent to Long Island they only sent repair
14 reports. The inspection report is a straight form like
15 this with no comments. If it has comments on it, it went
16 under repair. If it was an inspection report, it would be
17 just a blank with checks by what they inspected.

18 Q Will you please tell me whether or not there
19 are any other reports in this packet dated from 1979?

20 A I have to look through it.

21 (Pause.)

22 I didn't see any more dated 1979.

23 Q Would you please look at the second page of
24 that packet. Do you see the document which is dated 12/8
25 through 12/10, 1980?

Sim 5-9

1 A Yes, I do.

2 Q Could you tell me if there are any other reports
3 in this packet dating from 1980?

4 (Pause.)

5 JUDGE MILLER: We are taking a lot of time for
6 a purely mechanical job. Can't we have a representation
7 one way or the other on this? You have arranged them
8 chronologically and you represent that you have. All you
9 have to do is look at the first ---

10 MR. BIRKENHEIER: I can represent that these
11 are arranged chronologically.

12 WITNESS LEWIS: I don't see any.

13 BY MR. BIRKENHEIER:

14 Q Would you look at the second packet of materials
15 then. I am sorry. Let me change my request. Would you
16 please look at the last packet of materials, the ones which
17 refer to all eight machines.

18 Now again I will represent that these have
19 been arranged chronologically. Do you see that the first
20 sheet is dated 11/16/79?

21 A (Witness Lewis) Yes.

22 Q And the second sheet is dated 2/5/80?

23 A Yes.

24 Q So that there are no other sheets in this batch
25 of reports dating from 1979?

Sim 5-10

1 A Not to my knowledge.

2 JUDGE MILLER: I seem to have two copies of
3 something here.

4 MR. BIRKENHEIER: Yes, that is true. Some
5 of the copies that we were given did contain duplicate
6 pages.

7 JUDGE MILLER: Is there any reason for that?

8 MR. BIRKENHEIER: I am not aware of why it was
9 that we were given duplicate pages.

10 JUDGE MILLER: The second one in my set is
11 a little more legible than the first, and it might have
12 been for reproductive defects.

13 MR. BIRKENHEIER: It is possible.

14 JUDGE MILLER: What was the question now?

15 BY MR. BIRKENHEIER:

16 Q I asked whether or not there was more than one
17 sheet covering all four engines dated 1979.

18 A (Witness Lewis) Not in here that I can see.

19 Q Mr. Lewis, would you turn to the 11th sheet
20 in the packet of records for all eight units.

21 (Pause.)

22 Now as I understood you before, you said that
23 this packet of materials does not include the reports for
24 the monthly inspections. Is that correct?

25 A That is correct.

Sim 5-11 1

Q Well, isn't this 11th sheet a monthly inspection report?

2

3

A That is a monthly inspection report. As you can see, we couldn't do any work. We were available for work. So New England Power had to pay us for that trip.

4

5

Q But it, nonetheless, is a monthly inspection report, isn't it?

6

7

A That is correct, but we call it a repair order because it was paid in excess of the contract because the units were running and they weren't available for our service.

8

9

Q Isn't the page preceding that also a monthly inspection report?

10

11

A Yes, sir, it is.

12

13

Q So there are monthly inspection reports in this packet of materials?

14

A Yes. It looks like some have been inserted, yes.

15

16

Q But not all of them are in this packet of materials?

17

A No.

18

19

Q And these are the records that you reviewed in reaching the conclusions which you express in your testimony?

20

21

A Basically, yes.

22

Q Yes or no?

Sim 5-12

1 JUDGE MILLER: Well, he said basically. So
2 you can't squeeze him any further.

3 (Pause while counsel confer.)

4 MR. BIRKENHEIER: I would like to have marked
5 for identification a set of documents which my colleague
6 is now distributing. I would like to have them marked as
7 Suffolk County Exhibit LP-8. And I will represent for the
8 record that these documents consist of the log books that
9 the witnesses have testified to that were maintained by
10 the PSD service personnel while they were working on the
11 Shoreham EMDs while they were owned by NEPCO.

12 JUDGE MILLER: These seem to be in multiple groups.
13 I think you had better designate some sub-numbers if you
14 are going to keep the groupings intact.

15 MR. BIRKENHEIER: Okay. Can we make them
16 Exhibits LP-8A, B, C and D?

17 JUDGE MILLER: Yes.

18 (The documents referred to were
19 marked Suffolk County Exhibit
20 Nos. LP-8A thru LP-8D inclusive
21 for identification.)

22 BY MR. BIRKENHEIER:

23 Q Gentlemen, would you pull out the log books for
24 machines MP7 and MP8, please. Those would be Exhibits
25 LP-8C and 8D.

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Sim 5-13

1 MR. ROLFE: Your Honor, I am not sure of the
2 order that the exhibits have been designated. They were
3 not handed to me in the same order that they are being
4 referred to now. So maybe it would be helpful for counsel
5 to list for the record which exhibit is which number.

6 JUDGE MILLER: We will have the record reflect these.

7 MR. ROLFE: Okay.

8 JUDGE MILLER: I suppose there is some way. I
9 see MP5, 6 and 7. You could describe the A, B, C and D
10 in those terms perhaps.

11 MR. BIRKENHEIER: Okay. The last packet
12 which was passed out consisted of four items, each of which
13 is the log book of the maintenance and repair work for one
14 machine.

15 Accordingly they are denominated on the front
16 cover Log MP-5, for example.

17 JUDGE MILLER: That is "A".

18 MR. BIRKENHEIER: Well, no. The number 5 refers
19 to the number of the machine.

20 JUDGE MILLER: I know, but I am just for the
21 record ---

22 MR. BIRKENHEIER: Okay. No. 5 will be Exhibit
23 LP-8A.

24 JUDGE MILLER: Okay.

25 MR. BIRKENHEIER: The book for machine No. 6

Sim 5-14

1 Exhibit LP-8B. No. 7 will be 8C and No. 8 will be 8D.

2 JUDGE MILLER: Right. Thank you. That I think

3 is the order the record is showing and that we will be

4 end Sim
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referring to them now for convenience sake.

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2 MR. BIRKENHEIER: Judge Miller, if I may, for
3 the sake of convenience, why don't we letter the packets
4 that were contained in Exhibit LP-7 in the same manner?

5 JUDGE MILLER: Yes. I think that would be
6 helpful.

7 MR. BIRKENHEIER: And we could do the exact same
8 system, for example, on the packets for Machine 5, being
9 5-A; 6 being Exhibit B, 7 as Exhibit C, 8 as Exhibit D,
10 and the packet for all units being Exhibit E. All part
11 of Exhibit 7.

12 BY MR. BIRKENHEIER: (Continuing)

13 Q Gentlemen, would you look at the maintenance
14 records for Engine Number 7? That is Suffolk County Exhibit
15 LP-7-C.

16 A (Witnesses complying.)

17 Q Do you see on the first page there after the
18 printed words, corrections made or work performed, that
19 there is an entry that begins: Rebuilt circ pump.

20 A (Witness Lewis) First page, LP-7?

21 Q No, I'm sorry. The record. It's not the book.
22 This one here. This set here for Machine Number 7.

23 (Counsel holding up a document to the witness.)

24 Do you see that, Mr. Lewis?

25 A Yes. I see it.

Q Could you please then turn to the log book for

#6-2-SueT 1 Machine Number 7? That is Suffolk County Exhibit LP-8-C.
2 And leaf through there until you find the pages for 1979.

3 A (The witness is complying.)

4 Q Okay. Can you find for me an entry that is
5 dated December 7th, 1979 in that log book?

6 A (The witness is looking through document.)

7 No, I don't see it.

8 Q So there was work performed according to the
9 reports that is not reflected in the log books; is that
10 correct?

11 A That's correct.

12 Q Mr. Lewis, could you then turn to the reports,
13 not the log book but the reports, for Machine Number 8?
14 That's Suffolk County Exhibit LP-7-D.

15 A (The witness is complying.)

16 Q Could you please turn among those reports to
17 the report that is dated 11/10/1981? In the upper right-
18 hand corner there is a box that has the letters in it,
19 DFSSR, and Number 7910. And the sheet is entitled, Daily
20 Field Service Report.

21 A 7910?

22 Q 7910. Are you looking at that sheet, Mr.
23 Lewis?

24 A Yes, sir.

25 Q Is that sheet dated 11/10/1981?

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A As best I can tell, yes.

JUDGE MILLER: There is another date, too, there, isn't it, counsel? It's not too legible.

MR. BIRKENHEIER: At the bottom.

WITNESS LEWIS: It looks like it goes from 11/10 to 11/13.

JUDGE MILLER: 13.

BY MR. BIRKENHEIER: (Continuing)

Q Do you see in the line that begins with the printed letter, SE:, the entry, oil cooler split its seam, engine, and then something illegible. And the next line begins, overheated prior to cooler failure?

A Right. That's correct.

Q All right. Will you please turn to the log book for Engine Number 3 and look for the entries in the year 1981?

A (The witness is complying.)

Q Are you looking at those pages, Mr. Lewis? Can you find an entry for late in the year -- I'm sorry, November 10th through November 13th, 1981 that reports an oil cooler being split at the seam?

A No, I don't see one.

Q Okay. Could you turn back then to the reports for Engine Number 3?

A (The witness is complying.)

#6-4-SueT 1

2 Q And look at the entry, the DFSR number, which
is 8840, and which is dated at the top, 11/16/1981.

3 JUDGE MILLER: The next page after the one
4 you are talking about, isn't it?

5 MR. BIRKENHEIER: It's a couple of pages.

6 JUDGE MILLER: On my copy, it's the next page
7 exactly.

8 MR. BIRKENHEIER: Okay. The next page.

9 JUDGE MILLER: Is there something taken out,
10 added?

11 MR. BIRKENHEIER: No, I'm sorry. There were
12 two copies of the previous page.

13 BY MR. BIRKENHEIER: (Continuing)

14 Q All right. Do you see a very lengthy entry on
15 that sheet talking about removing rod and carrier assemblies?

16 A Yes, I do.

17 Q Could you turn to the log book for Engine Number
18 8 and tell me if you can find an entry for the dates, 11/16
19 through 11/18, 1981, that reflects that work?

20 A (The witness is looking through documents.)

21 No, I don't.

22 Q Thank you.

23 A One of the sheets in the log books shows on 11/9/81,
24 replaced a lube oil cooler on Unit 8. But it doesn't correspond
25 with the same date as 11/10.

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2 JUDGE JOHNSON: Mr. Lewis, I would ask you a
question.

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BOARD EXAMINATION

4

BY JUDGE JOHNSON:

5

Q If we may go back to counsel's previous comparison
6 of Daily Field Service Report 7910, just one page back?

7

A (The witness is going through documents.)

8

Yes, ma'am.

9

Q The complaint says, if I can read my copy, a
10 little uncertain, water in oil. Is that -- would you
11 agree with that?

12

A Yes, I do.

13

Q If I look at the log book compilation for the
14 latter part of 1981, on this same unit, I find some illegi-
15 ble dates. But I also find under something '81, monthly
16 inspection at 12,773, found water in oil.

17

Is there any correspondence between those
18 entries?

19

A Well, what happens is on the Daily Field Service
20 Report 7910, the lube oil cooler split. What happened was,
21 they found water in the oil. Then, it was a process of
22 finding where the water came from.

23

Q Correct.

24

A Which would be pressure testing the lube oil
25 system and the jacket water system to find it.

#6-6-SueT 1

Q And that's when you found the split?

2

A That's correct.

3

Q You would expect the log book entries to be

4

in order by date?

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A Well, at a nuclear plant they would be much

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better. At a commercial plant, they should be better than

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they are.

8

JUDGE JOHNSON: Thank you.

9

BY MR. BIRKENHEIER: (Continuing)

10

Q Mr. Lewis, I just want to clarify a point. The

11

log book does not reflect this follow-up process that you

12

just described of finding out where -- what the source of

13

the water in the oil was, does it?

14

A No.

15

Q Mr. Iannuzzi, I would like to direct you to

16

Page 21 of your testimony.

17

A (The witness is complying.)

18

Q In Answer 31, you state: In my experience UTEX

19

parts are perfectly reliable.

20

I take it by that statement, you don't mean

21

that UTEX parts are perfect, do you?

22

MR. ROLFE: Your Honor, I object. The answer

23

that Mr. Birkenheier is referring to is that of Mr. Lewis,

24

not Mr. Iannuzzi.

25

MR. BIRKENHEIER: I'm sorry. I will direct it

#6-7-SueT 1

to Mr. Lewis.

2

WITNESS LEWIS: My experience with UTEX parts are, UTEX parts at EMD is first of all unit exchange parts or rebuilt parts.

3

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BY MR. BIRKENHEIER: (Continuing)

6

Q Mr. Lewis, could you just answer my question first. I just want to know, you aren't saying that UTEX parts are perfect, are you?

7

8

9

MR. ROLFE: Objection, Your Honor. I think that perfect is a term that is pretty ambiguous in this context, and I think Mr. Lewis answered the question last time to the best of his ability.

10

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So, if there is any implication in this question that he didn't I object to the question.

14

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JUDGE MILLER: Well, your objection is a little argumentative if not suggestive. On the other hand, I don't see the word "perfect" in there at all. Perfectly reliable is the term used, which to me has a slightly different connotation than perfect.

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So, if your objection is on the ground of misquotation of evidence you might be sustained.

21

22

MR. ROLFE: I object on that ground, then.

23

JUDGE MILLER: I sustain it.

24

BY MR. BIRKENHEIER: (Continuing)

25

Q Mr. Lewis, in your opinion, are UTEX parts

#6-8-SueT 1

perfect?

2

A In my opinion, you know --

3

Q I'm just asking --

4

A -- I don't know how you would say anything is perfect. My experience with UTEX parts has been good.

5

JUDGE MILLER: That wasn't what he asked you.

6

WITNESS LEWIS: Yeah, okay. No, they are not.

7

BY MR. BIRKENHEIER: (Continuing)

8

9 Q Gentlemen, please turn to Pages 22 and 23 of your
10 testimony.

11

A (The witnesses are complying.)

12

13 Q At the bottom of Page 22, you testify that there
14 had been no failures causing the units to shut down; is
15 that correct?

16

17 At the bottom of Page 22. It's the sentence
18 that begins: By this, we mean that there have been no
19 failures causing the units to shut down.

20

A That was to the best of our knowledge.

21

Q To the best of your knowledge?

22

23 I take it also that when you say failures in that
24 sentence, you are referring to the discussion, the preceding
25 discussion, in your testimony about catastrophic failures
of the pressure boundary related to auxiliary equipment;
is that correct?

26

A I would say so.

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(Witness Iannuzzi) Yes, that's correct.

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Q I take it then your statement does not mean there have never been any leaks or failures associated with pressure boundary related to auxiliary equipment that you would not define as catastrophic; is that correct?

A That's correct. Yes.

MR. BIRKENHEIER: Judge Miller, this would be a logical time for me to break my testimony if you want to take the morning break now.

JUDGE MILLER: Well, it's our 10:30 morning break time. So, we will take about fifteen minutes.

(Whereupon, the hearing is recessed at 10:28 a.m., to reconvene at 10:45 a.m., this same day.)

end #6
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(10:45 a.m.)

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JUDGE MILLER: You may proceed.

BY MR. BIRKENHEIER: (Continuing)

Q Mr. Lewis, earlier this morning we discussed some turbo charger failures and a generator failure. Do you recall that?

A (Witness Lewis) Yes, sir.

Q Were any of those three failures scheduled?

A No, they were not scheduled failures, no.

Q Mr. Lewis, can a diesel generator generate electricity without its generator?

A Without a generator, no.

Q Gentlemen, I would like you to turn to page 14 of your testimony. Beginning on the very last line of that page, there is a sentence which reads: In 1981, EMD recommended and then it continues on page 15 ... that the viscous dampers of this model be changed.

Do you see that?

A Yes, sir.

Q Gentlemen, do you know why General Motors recommended that the dampers be changed?

A Yes, sir; I do.

Q And why was that?

A Okay. The original viscous damper on the EMD engine had a viscous material in it, which tend to harden

1 after so many years of life.

2 The new type damper is a hydrolaulic paddle
3 wheel type, which works strictly off engine oil pressure,
4 and you can perform maintenance on it every year.

5 The original type was a completely sealed type.
6 Completely replaced it.

7 Q Further down on page 15, there is a sentence
8 which reads: In our opinion, the unit could run approximately
9 a hundred and fifty hours after such a failure -- meaning
10 a damper failure, correct?

11 A Correct.

12 Q And in the sentence it then continues: before
13 the unit would develop problems causing it to shut down.

14 A That is correct.

15 Q What kind of problems could result from a damper
16 failure that could lead to engine shut down?

17 A The viscous damper is sort of like a harmonic
18 balancer on an automobile. It is there to take the torsional
19 vibrations out of the crankshaft, and stop them from being
20 generated up through the front gear train of the engine, so
21 that you don't have any torsionals and cause any gears to
22 wear excessively.

23 Q But what kind of problems could lead to engine
24 shutdown?

25 A Okay. If you created high torsionals, and your

1 gear teeth started wearing excessively, then you wouldn't
2 pump proper lube oil through the system, or you could even
3 get to a point that you would be -- your water pumps wouldn't
4 work, your governor drive would cause isolations, which would
5 probably stop the fuel going into the engine.

6 Q On page 15, you also -- I am sorry, in that
7 same sentence when you say that you believe the unit can
8 run approximately a hundred and fifty hours after a damper
9 failure, do you know of any EMDs that have run for a hundred
10 and fifty hours after a damper failure before they were
11 forced to shut down?

12 A I don't know of any that has actually had a
13 damper failure.

14 Q Have you performed any studies to arrive at this
15 number of a hundred and fifty hours?

16 A Well, we have seen the gear trains on certain
17 engines, especially in the ships, that have run excessively.
18 And we have seen a tendency to wear, and the units were out
19 of date by approximately three hundred hours, and it hadn't
20 led to a major failure.

21 Q But you say you have not seen any damper failures?

22 A Not a failure. There is a difference in a failure
23 and being out of date.

24 Q Gentlemen, on page 15 you also refer to the
25 one hundred fifty hours as being greater than the number

1 of hours one would expect annually on an emergency diesel
2 generator nuclear power plant.

3 A That is correct.

4 Q On what data do you base that statement?

5 A I base that with my history of experience in
6 servicing nuclear power plants, and emergency diesel
7 generators.

8 There are units in nuclear power plants that
9 are twelve to fifteen years old, and have less than a thousand
10 hours on them.

11 Generally, in a nuclear power plant, a unit is
12 ran one hour per month as surveillance testing.

13 JUDGE MILLER: As what?

14 WITNESS LEWIS: One hour per month surveillance
15 testing.

16 BY MR. BIRKENHEIER: (Continuing)

17 Q Gentlemen, will you please turn to pages 24 and
18 26 of your testimony.

19 JUDGE JOHNSON: Pardon me counsel. If I
20 may pick up on a statement that Mr. Lewis made in response
21 to your previous question.

22 XXX INDEX

BOARD EXAMINATION

23 BY JUDGE JOHNSON:

24 Q You said there is a difference, Mr. Lewis, between
25 being out of date and failure. Could you explain that

1 difference please?

2 WITNESS LEWIS: Right. The recommended
3 replacement schedule is recommended by EMD. The actual
4 failure is when the unit fails itself. When it fails
5 itself it starts creating vibrations. The date limit is
6 estimated based upon their experience and it is real
7 conservative.

8 And what happens is, they will say change it
9 at six years or eight years. Well, the part may be good,
10 but still it is six years or eight years or ten years. It
11 may still be good, and not fail. It just depends on how
12 it is --

13 Q Six, eight, or ten years, it would be considered
14 out of date?

15 A It would be considered out of date, yes.

16 JUDGE JOHNSON: Thank you.

17 JUDGE MILLER: What would happen then if it were
18 out of date? Would it be replaced or what?

19 WITNESS LEWIS: It should be replaced.

20 JUDGE MILLER: Do you know of any instances on
21 these particular diesel generators when they were not
22 replaced when they should have been?

23 WITNESS LEWIS: Yes, sir. It is in the testimony
24 that the three vibration dampers, three out of the four
25 units hadn't been replaced per the maintenance schedule.

1 MR. BIRKENHEIER: Excuse me, Mr. Lewis.
2 Maybe I misunderstood that. Did you say that three out
3 of four had or had not been replaced?

4 WITNESS LEWIS: The three out of four have
5 not. One has.

6 BY MR. BIRKENHEIER: (Continuing)

7 Q Now, would you please turn to page 24 of your
8 testimony -- I am sorry, Question and Answer 24, which
9 begin on page 17.

10 Now gentlemen, do Question and Answers 24 through
11 26 all deal with starting reliability?

12 A (Witness Iannuzzi) Yes, they do.

13 Q And I take it that the conclusion that you
14 state on the top of page 19, in Answer 26, is based on the
15 data that is contained in Answers 24 and 25, is that correct?

16 A It is based on the data and on our experience
17 with diesels -- similar diesels, and reports from the field
18 or lack of reports of start failures.

19 So, it is based on our experience in addition
20 to the data.

21 Q Mr. Lewis, will you please turn to page 18 of
22 your testimony, and in particular paragraph 2 of Answer 25.

23 A (Witness Lewis) Okay.

24 Q Do you know how many start attempts have been
25 made on electric start EMDs?

1 A Are you talking about total?

2 Q Yes, total.

3 A No.

4 Q I take it, then, you don't know how many failures
5 to start have been experienced in total on electric start
6 EMDs either, is that correct?

7 A The only failures that I know about is the ones
8 that is reported to me.

9 Q So you don't know how many there have been
10 throughout the industry?

11 A No.

12 Q Do either of you know how many -- I am sorry,
13 this is Mr. Lewis' question. Do you know how many electric
14 start EMDs there are in service now?

15 A No.

16 Q I take it, then, that what you are stating in
17 Answer 25 is your professional impression about the starting
18 reliability of these machines based on your personal
19 experience, is that correct?

20 A You are talking about -- are you talking about
21 where I say that PSD also shows that electric start units
22 are reliable?

23 Q Yes.

24 A What I am basing that on is my communications
25 with the industry. The units that PSD has sold, and the

1 feedback we get from electromotive division, and sources
2 of that nature.

3 Q But these sources do not include specific
4 numbers about the total starts and total failures to
5 start, is that correct?

6 A The only one we have is the letter that
7 EMD sent us in 1967, which is in the testimony.

8 Q And that letter does not contain current
9 information about the total starts or total failures to
10 start, is that correct?

11 A That is correct.

12 Q Now, gentlemen, on page 17 of your testimony,
13 Mr. Iannuzzi, in the first two paragraphs of Answer 24, you
14 talk about two series of fast start tests. Do you see
15 that?

16 A (Witness Iannuzzi) You are referring to the
17 two separate paragraphs?

18 Q Yes. The first two paragraphs. Now, isn't it
19 correct Mr. Iannuzzi that the diesel generators that were
20 subjected to the test performed by the electromotive
21 division, that is the tests that are described in the first
22 paragraph, isn't it true that those diesels were of the
23 model type that EMD calls the 999?

24 A That is correct. That is the model designation
25 that they gave to those units.

1 Q Were all the diesels that were subjected to the
2 fast starts described in the second paragraph also Model
3 999?

4 A The Model 999 was a --

5 Q Could you just answer my question?

6 A No, they were not designated as Model 999.

7 Q Did they have redundant air start systems?

8 A The ones -- yes. The ones that Power Systems
9 did had redundant air start system.

10 Q Those are the ones that are described in the
11 second paragraph in Answer 24?

12 A That is correct.

13 Q Did those machines -- that is, those described
14 in that second paragraph of Answer 24, also -- were they
15 also equipped with an electric fuel pump?

16 A Yes, that is correct.

17 Q And that was in addition to an engine-driven
18 fuel pump, is that correct?

19 A That is correct.

20 Q Mr. Iannuzzi, isn't it correct that on these
21 diesels that were subjected to these two series of fast
22 start tests, that only one of the air start systems is needed
23 to start the engine?

24 A (Witness Iannuzzi) I am not sure I understand
25 your question.

1 Q Okay. You have testified that each of these
2 machines is fitted with two air start systems.

3 A Correct.

4 Q And isn't it true that on such a machine only
5 one of those air start systems is needed to start the
6 engine?

7 A Only one is needed, although both engage, at
8 the time that you hit the start button.

9 Q And isn't that because the second one is a
10 backup system that has to take over after a very short
11 period of time if the first one doesn't succeed in starting
12 the engine.

13 A No. When you initiate a start sequence, both
14 sets of start motors come in at the same time, and both
15 turn the engine together.

16 Now, in the event that one set does not engage
17 -- correct me if I am wrong on this one, Ken, you know that
18 better than I -- it will -- the second one will recycle.
19 Explain that, please.

20 A (Witness Lewis) With redundant air start systems,
21 when you engage to start push button, all four start motors
22 engage. If for some reason or another one of the pinions
23 failed to engage, it will recycle. Has a cycling switch,
24 and the pinion will snap in and out to try to re-engage.

25 The purpose of the four air start motors is to

7-11-Wal

1 have a redundant air start motor, and also to obtain a ten
2 second start.

3 Q Now, you just mentioned four air start motors.
4 I take it there are only two air starting systems on each
5 machine, and that each have two air start motors, is that
6 correct?

7 A (Witness Iannuzzi) That is correct, yes.

8 Q And the purpose of the two systems is so
9 that if one fails, the other will start the machine, is
10 that correct?

11 A The other is there as an engaged backup,
12 correct.

13 Q Mr. Iannuzzi, isn't it true that the electric
14 fuel pump begins pumping fuel as soon as the start signal
15 is given on these model diesels? And by that, I mean the
16 diesel engines that were the subjects of the tests described
17 in paragraphs 1 and 2 of Answer 24?

18 A Yes, they do.

19 Q And isn't the effect of that pump starting to
20 run as soon as the start signal is given to pressurize
21 the fuel line as the engine starts to turn over in order
22 to make starting faster and more reliable?

23 A That would tend to give you a faster start.
24 You would not have to wait for the engine pump to come
25 up to speed to pressurize the line, so in the event of a ten

7-12-Wal

1 second start, that would help you to achieve that.

2 Q Mr. Iannuzzi, do you know a gentleman employed
3 by Electromotive Division named Art Kornichuk?

4 A Yes, I do.

5 JUDGE MILLER: Who is he?

6 WITNESS IANNUZZI: Mr. Kornichuk is the regional
7 sales manager through whom we deal on new contracts.

8 BY MR. BIRKENHEIER: (Continuing)

9 Q And Mr. Iannuzzi, haven't you spoken with Mr.
10 Kornichuk about the tests that are described in the first
11 paragraph of Answer 24 to your testimony?

12 A (Witness Iannuzzi) Yes, I have.

13 Q And in that conversation, didn't you and Mr.
14 Kornichuk describe the fact that although the Shoreham
15 EMDs have the same engine, they do not have the dual air
16 start system of the Model 999, and that therefore any
17 starting reliability of the Shoreham EMDs can only be based
18 on previous unit history?

19 A I gather you are reading that from my telecon
20 with Mr. Kornichuk. Yes, that was his statement.

21 Q That was his statement.

22 JUDGE MILLER: Well, was his statement correct?

23 WITNESS IANNUZZI: In my opinion, the starting
24 reliability shown by those tests, tested both the starting
25 system and the added fuel system, but in addition it tested

7-13-Wal

1 the engine. The ability of the engine itself to come up
2 to speed to start that number of times.

3 And, therefore, it is partially correct. But
4 I think that those tests show more than strictly the
5 reliability of the starting system.

6 End 7.
7 Mary fols.

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(Pause while counsel confer.)

1
2 Q Mr. Iannuzzi, these tests are testing starting
3 reliabilities; isn't that correct?

4 A (Witness Iannuzzi) I am sorry. Would you repeat
5 that?

6 Q Okay. The tests that were discussed in para-
7 graphs 1 and 2 of Answer 24, those tests tested starting
8 reliability; isn't that correct?

9 A That is correct, yes.

10 (Pause while counsel confer.)

11 JUDGE MILLER: I hate to interrupt, but your
12 conferences are taking an awful lot of time. Could we speed
13 it up a little, please?

14 BY MR. BIRKENHEIER:

15 Q Mr. Iannuzzi, isn't it true that the EMDs at
16 Shoreham are not equipped with the starting features that
17 you have just testified are parts of the diesels that were
18 tested in these two series of fast-start tests?

19 A Those diesels that were tested have additional
20 items on them that were part of that test, that is correct,
21 but the basic engine is the same.

22 Q Well, when you say additional, you don't mean
23 that they had those items plus whatever the Shoreham EMDs have,
24 do you?

25 A No. The Shoreham EMDs do not have the redundant

Sim 8-2

1 air start and do not have the backup electric fuel system.

2 MR. BIRKENHEIER: I would like to have marked
3 for identification a document, or a letter to Mr. Iannuzzi
4 from Art Kornichuk, and I would like to have it marked
5 as a Suffolk County Exhibit, LP-9.

6 JUDGE MILLER: It will be so marked.

7 (The document referred to was
8 marked Suffolk County Exhibit
9 No. LP-9 for identification.)

10 BY MR. BIRKENHEIER:

11 Q Mr. Iannuzzi, do you see the last sentence on
12 that letter?

13 A (Witness Iannuzzi) Yes, I do.

14 Q And doesn't that sentence read "However, writer
15 referring to Mr. Kornichuk of General Motors -- must point
16 out that not only were the starting systems air powered but
17 in addition the 999 units were deliberately equipped with
18 dual starting systems and fuel systems"?

19 A Yes, that does say that.

20 Q So isn't it true then that both telephone
21 conversations and in this letter Mr. Kornichuk expressed
22 the opinion that although the engines were the same on these
23 two units -- I am sorry -- although the engines were the
24 same on the Shoreham EMDs and the Model 999 EMDs, that
25 because of differences in the starting systems between those

INDEXXXXXXXXX

Sim 8-3

1 two engines, the starting reliability of the Shoreham EMDs
2 could not be determined from those tests?

3 A As I stated in response to Judge Miller's
4 question, I think that is not a straightforward question
5 to answer.

6 Q Well, I am not asking for your opinion about this.
7 You have already expressed that. I am asking you isn't it
8 true that on two occasions Mr. Kornichuk from General Motors
9 expressed an opinion in disagreement with you?

10 MR. ROLFE: Your Honor, I object. The letter
11 does not state what Mr. Birkenheier has stated, and if he
12 is asking Mr. Iannuzzi what the letter states, that is one
13 thing. But if he is asking Mr. Iannuzzi to express an
14 opinion as to what Mr. Kornichuk had in his mind as to the
15 intent and the meaning of the letter, then I object. I
16 think it is hearsay and there is no way this witness can
17 answer that question.

18 JUDGE MILLER: Well, I think he is asking insofar
19 as the witness has personal knowledge. The witness can
20 limit his testimony to matters as to which he has personal
21 knowledge and may explain if there are nuances between
22 the question and the letter and the answers or whatever the
23 situation is.

24 You may answer, and answer fully.

25 WITNESS IANNUZZI: Mr. Kornichuk in our

Sim 8-4

1 conversation stated that, as stated in the letter here,
2 that, yes, there were differences in these units in the
3 area of the starting system and the fuel system, and
4 therefore he did not believe that these tests were directly
5 applicable or could the test report be used directly as a
6 qualification document for those units.

7
8 So from that standpoint, yes, he is stating
9 that these reports don't necessarily prove out the same
10 starting reliability as a 999 unit would have.

11 BY MR. BIRKENHEIER:

12 Q Mr. Iannuzzi, have you read the report that is
13 referred to in this July 6th letter from Mr. Kornichuk to
14 you?

15 A Yes I have reviewed the report. It consists
16 of a series of data, a fairly lengthy report, and I have
17 reviewed it.

18 MR. BIRKENHEIER: I would like to have marked
19 for identification three sheets which are stapled together.
20 I would like to have them marked as Suffolk County Exhibit
21 LP-10, and I will represent for the record that these
22 consist of the title page and two additional pages of this
23 report entitled "Starting Reliability of EMD Model 999 Diesel
24 Electric Generator Sets," which is dated November 1, 1971,
25 and which is the report referred to in the July 6th letter
from Mr. Kornichuk to Mr. Iannuzzi, and which Mr. Iannuzzi

Sim 8-5

1 has just testified that he has reviewed.

2 JUDGE MILLER: It will be so marked.

3 (The document referred to was
4 marked Suffolk County Exhibit
5 LP-10 for identification.)

INDEX XXXXXX 6 BY MR. BIRKENHEIER:

7 Q Mr. Iannuzzi, will you please look at the second
8 paragraph of the page immediately following the cover page,
9 that is the page entitled "Introduction."

10 A (Witness Iannuzzi) Yes.

11 Q Starting at the end of the third line does that
12 report not say "To attain a high level of starting reliability,
13 the diesel engines in these generating sets are equipped
14 with certain redundant systems, that is two completely separate
15 air starting motor sets and, in addition, two fuel oil supply
16 pumps"?

17 A That is correct, that states that.

18 Q And the engines that are being referred to are
19 the Model 999 EMD diesels, correct?

20 A That is correct.

21 Q So General Motors' position is, at least as
22 expressed in this report, that those features that you have
23 testified are not included in the Shoreham EMDs were added
24 expressly for the purpose of attaining high starting
25 reliability; is that correct?

Sim 8-6

1 A I am sorry. Are you asking me that that is what
2 the report states?

3 Q Yes. Is that what the report states?

4 A That is what the report states, yes.

5 Q And do you have any reason to doubt the accuracy
6 of that statement?

7 A Not to doubt it, but I would have worded it
8 to state that they were added to enhance the starting
9 reliability.

10 Q Mr. Iannuzzi, will you please direct your
11 attention to page 18 of your testimony, the first paragraph
12 of Answer 25. In that statement you refer to a report
13 by EMD that in 1967 they had a success rate of -- it was
14 29,136 starts and 29,362 attempts on electric start EMDs;
15 is that correct?

16 A That is correct.

17 Q Did all of the electric start EMDs referred to
18 in that report have sequential electric start systems such
19 as the EMDs that Shoreham have?

20 A I don't have any detailed data on how those
21 units were set up.

22 Q So you don't know whether they had the same
23 starting system?

24 A No. I couldn't say that.

25 MR. BIRKENHEIER: Judge Miller, I move to strike

Sim 8-7

1 this first paragraph of Answer 25 on the grounds that the
2 witness does not have any personal knowledge or apparently
3 any secondhand knowledge of whether in fact these units
4 had the same electric start system and that therefore is
5 both unreliable and irrelevant.

6 JUDGE MILLER: Well, I think we will wait until
7 we complete the redirect or re-examination and you may
8 renew your motion then. I don't want to do it piecemeal.

9 BY MR. BIRKENHEIER:

10 Q Mr. Iannuzzi, do you know who collected the data
11 that is reflected in this starting rate that is referred to
12 in Answer 25?

13 A (Witness Iannuzzi) I could not say the
14 individual that collected that data. I obtained the data
15 by copy of a letter which preceded this report that you
16 handed out to us.

17 Q Do you know for a fact that an individual
18 collected this data as opposed to a group of individuals?

19 A No, I couldn't say who did it.

20 Q Do you know the sources of the data?

21 A My only knowledge of the data is what was
22 reported to me by EMD in their letter.

23 Q And what data did they report to you in that
24 letter?

25 A They reported the data as I stated here, that

Sim 8-8

1 there were 29,136 starts and 29,362 attempts I believe they
2 stated on electric start units. I don't have that letter
3 in front of me, but I believe that was their wording.

4 Q Do you know how a successful start was defined
5 in that data?

6 A There was no statement of what successful was
7 taken to be. I assumed it in my opinion and experience knowing
8 how these things are reported that it was intended to reflect
9 a case where the engine came up to at least an idle condition.

10 Q But you don't know that that is what EMD meant
11 by a successful start, do you?

12 A I have nothing in writing or otherwise that would
13 tell me what that was.

14 Q Do you know what time period is covered by
15 these figures?

16 A The report stated that it was records as of
17 1967.

18 Q Do you know what the first date was?

19 A No, I don't.

20 Q Mr. Lewis, would you please direct your
21 attention to the last paragraph of Answer 25 on page 18
22 of your testimony.

23 In that testimony you state that the log books
24 for the four EMD diesels at Shoreham give an indication
25 of their starting reliability; is that correct?

Sim 8-9

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A (Witness Lewis) That is correct.

Q Are the log books that you refer to the books that we have all looked at previously this morning?

A My opinion of this came from LILCO which went up and investigated the log books and went completely through the log books and prepared a report which showed that the unit started 279 times.

Q So this answer is not based on those log books; is that correct? I am sorry, is not based on the log books that have been handed out earlier this morning and that we have all looked at. Is that correct? Can you tell me that?

A I don't know.

Q So you don't know where that data came from?

A I know that LILCO said they got the data from the log books from New England Power. They had it wrote up in a report form, which I think everyone has a copy of, there was 279 starts and the unit started successfully. However, on three occasions it did come back to idle position.

Q Do the log books that were handed out earlier this morning and that we have all looked at record start attempts and start failures?

A I would have to go completely through it and analyze them on a one-to-one basis.

Sim 8-10

1 Q So you can't answer that question?

2 A No.

3 Q So you don't know where this information came
4 from, do you?

5 A I got my information from Long Island Lighting
6 which said in their letter that they got it from the New
7 England Power log books.

8 Q But you have not seen those log books, have you?

9 A I have not gone through log books to look for
10 start by start, no.

11 Q So you have not seen the data on which this
12 answer in your testimony is based?

13 A I saw a log sheet where the unit was attempted
14 to be started 279 times and it showed the three times in
15 there when the unit came back to an idle position. Now
16 I saw that data and it had the dates and the start attempts.

17 Now I have not actually seen or looked for the
18 log books themselves.

19 MR. BIRKENHEIER: Judge Miller, I move to strike
20 this last paragraph of Answer 25 on the grounds that this
21 witness has not reviewed the data on which it is based,
22 that he does not know the source of that data, aside from
23 the fact that LILCO gave him a report that was based on
24 that data, and that therefore this testimony is inherently
25 unreliable.

Sim 8-11

1 JUDGE MILLER: We will defer a ruling.

2 MR. ROLFE: Judge Miller, may I just respond
3 briefly just so the record can be clear?

4 JUDGE MILLER: Well, we deferred ruling so that
5 you will have an opportunity when it is your turn for
6 redirect.

7 MR. ROLFE: But this is a matter that doesn't
8 need redirect. It is already in the testimony.

9 JUDGE MILLER: Well, you are arguing now in
10 another person's case. Wait your turn.

11 Go ahead.

12 MR. BIRKENHEIER: I would like to have marked
13 for identification another page from the log book for EMD
14 404. I would like to have it marked as Suffolk County
15 Exhibit LP-10.

16 JUDGE MILLER: You have a 10.

17 MR. BIRKENHEIER: Eleven.

18 JUDGE MILLER: Whose log book is that?

19 MR. BIRKENHEIER: It is from the log books that
20 were distributed this morning.

21 JUDGE MILLER: Well, I asked whose log books
22 are those?

23 MR. BIRKENHEIER: I believe the witnesses have
24 testified previously that they were maintained by Power
25 Systems personnel.

Sim 8-12

1 JUDGE MILLER: Power Systems personnel with
2 whom?

3 WITNESS LEWIS: Along with New England Power?

4 JUDGE MILLER: Pardon me?

5 WITNESS LEWIS: They were maintained by the
6 New England Power personnel as well as Power Systems. You
7 can look there and you can see the different peoples'
8 signatures.

9 MR. BIRKENHEIER: I will represent for the
10 record that this is a photocopy of a page that has been
11 removed from the log book for Engine 404.

12 JUDGE MILLER: It will be so marked.

13 (The document referred to was
14 marked Suffolk County Exhibit
15 LP-11 for identification.)

16 BY MR. BIRKENHEIER:

17 Q Mr. Lewis, would you please look at the sixth
18 entry in this book?

19 A (Witness Lewis) Yes, sir.

20 Q Does the last line of that entry read "starter
21 not functioning"?

22 A That is what it reads.

23 Q Gentlemen, are you aware of any multiple set
24 diesel peaking packages such as that installed at Shoreham
25 that is being used or has been used to supply emergency

INDEX XXXXXXXX

Sim 8-13

1 on-site AC power to a nuclear power plant?

2 A (Witness Lewis) There are some similar to
3 Shoreham, yes.

4 Q No, I am talking about the package. Are you
5 familiar with any configurations similar to that at Shoreham,
6 meaning engines and auxiliaries?

7 A You are speaking of a four-unit package, or a
8 two-unit package or a one-unit package?

9 Q A four-unit package.

10 A No, there is no four-unit package that I know
11 of.

12 Q Mr. Iannuzzi, is the answer the same for you?

13 A (Witness Iannuzzi) That is correct, no four-
14 unit packages, but there are other setups to unit packages
15 I believe.

16 Q And are those units in the two-unit packages
17 equipped with air-start systems, for example?

18 A (Witness Lewis) No.

19 Q Are they equipped with fast-start capability?

20 A They can fast start in about 14 seconds, yes.

21 Q And aren't all those diesels qualified for
22 nuclear services?

23 A We didn't sell them, and I wouldn't know what
24 they are qualified to. We didn't sell the units ourselves.

25 Q But you don't know of any diesel generators

Sim 8-14

1 being used to supply emergency on-site AC power in nuclear
2 power plants that are not qualified, do you, aside from those
3 at Shoreham?

4 A That depends on what you state as qualified.
5 Are you talking about the engine, the generator or the
6 system, the total package or what?

7 Q The total package.

8 A The only ones that I know of that are qualified
9 are the ones that PSD sold, the Power Systems Division.

10 MR. BIRKENHEIER: I have no further questions,
11 Judge Miller.

12 JUDGE MILLER: The State of New York?

13 MR. PALOMINO: No questions.

14 JUDGE MILLER: The Staff?

15 MR. PERLIS: Just a few brief questions.

16 CROSS-EXAMINATION

17 BY MR. PERLIS:

18 Q Turning your attention to the last exhibit
19 that was handed out, Suffolk County Exhibit 11, and this
20 is directed to either witness, whoever is better qualified
21 to answer this, the 6th item that was pointed out to you
22 where it is indicated "starter not functioning," is this
23 something that normal maintenance would inspect to determine
24 whether the starter was or was not functioning?
25

INDEX

Sim 8-15

1 A (Witness Lewis) I would say according to
2 reading the report that would be something that was found
3 during his routine maintenance. It would probably be the
4 brushes, it could have been the charger or it could have
5 been the battery is low in water.

6 Q Does that indicate that the starter failed to
7 work when called upon?

8 A It didn't say it failed to work. It just said
9 it wasn't functioning.

10 Q So that that does not indicate that an engine
11 failed to start when called upon?

12 A I didn't read it as that. Maybe I should read
13 it over and be sure.

14 MR. PERLIS: Could you do that, please.

(Pause.)

15 end Sim
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#9-1-SueT 1

Q Could you do that, please?

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A (The witness is looking at a document.)

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According to this, on -- I can't say the month but on the 26th day in 1978 during a quarterly inspection, with the unit at 11,617 hours, a left rear cover gasket needs changing. Number 13 and 11 had leaking injectors and the starter wasn't functioning.

8

9

So, it was found during a quarterly inspection, according to the report as best I can interpret it.

10

11

MR. PERLIS: Thank you. I have no further questions.

12

JUDGE MILLER: Redirect?

13

REDIRECT EXAMINATION

14

BY MR. ROLFE:

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Q Mr. Lewis, if you would continue to look at that page of the log book marked for identification as SC, Suffolk County LP Exhibit 11, and look at the entry immediately preceding the sixth entry that we've been speaking about, does that indicate, sir, that the starting motor had been changed on that engine?

21

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23

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A There are two starting motors, you know. And each one has 64 volts apiece. The way this is written, it doesn't say whether it was the one that was changed or the one that was not changed.

25

Q Well, Mr. Lewis, is there an indication there

#9-2-SueT 1

that one had been changed at 11,617 hours?

2 A Yes, sir.

3 Q And the entry immediately below it which is the
4 entry where the notation exists that the starter is not
5 functioning, does that indicate the number of hours at
6 which that entry was made?

7 A Yes, sir.

8 Q And what is the number there?

9 A 11,616 hours.

10 Q And is that the same number of hours as the
11 preceding entry where it indicated that the starting motor
12 had been changed?

13 A Yes, sir.

14 Q Is it possible that the notation, starter not
15 functioning, was as a result of the replacement of the start-
16 ing motor indicated at the same number of hours?

17 A It's possible.

18 Q Now, Mr. Lewis, you will recall this morning that
19 you were asked several questions about entries in the log
20 books and the, I think they were called, Daily Field Service
21 reports.

22 Do you recall that line of questions?

23 A Yes, sir.

24 Q In arriving at your opinions expressed in your
25 testimony concerning the reliability of these machines, did

#9-3-SueT

1 you rely on the Daily Field Service reports or the log
2 books exclusively?

3 A Not totally exclusively. I did review the
4 reports. I knew the equipment at New England Power. And
5 I knew any time they had any type of problem they notified
6 me right away. Also, based on experience with other units
7 in the industry, exact same design, which have very minimum
8 problems.

9 Q Now, you were asked specifically about an entry
10 concerning a turbo-charger which had been smoking heavily,
11 I believe was the indication.

12 Did the record which you were shown indicate
13 whether that condition had caused the diesel generator to
14 shut down?

15 A No, it didn't.

16 Q Mr. Lewis, since you have become personally
17 familiar with the servicing of these EMD units, first at
18 New England Power and now at Shoreham, have there been any
19 failures of the turbo-chargers?

20 A As best I can remember, I don't remember any
21 failures in the last couple of years, no, since I took over
22 this particular --

23 Q Would any such failures come to your attention
24 if there were?

25 A Well, depending on what caused the failure. If.

#9-4-SueT 1

2 the failure was because we had done, you know, lack of
3 maintenance it may not come to my attention. But, generally
4 I would hear about it one way or the other from the field
5 service people.

6 Q Mr. Lewis, there -- again referring to the
7 turbo-chargers, there has been reference in Suffolk County's
8 testimony about a GM document that, according to the Suffolk
9 County's testimony, indicated that there were problems
10 historically with the turbo-chargers.

11 Do you recall the document and the portion of
12 that testimony to which I am referring?

13 MR. BIRKENHEIER: I object to that question, Judge
14 Miller. That's beyond the scope of my cross-examination.

15 JUDGE MILLER: Well, we are not -- that's
16 strictly within the scope of cross.

17 You may continue.

18 MR. BIRKENHEIER: No. I didn't ask any questions
19 about this document, Judge Miller. I'm sorry, Judge Miller,
20 but I did not ask any questions about this turbo-charger
21 document.

22 JUDGE MILLER: Well, that may be, but you asked
23 questions about turbo-chargers. That is a subject. We
24 don't use a microscope when we examine the scope of redirect,
25 although it should be within the fair range of the subject
matter gone into on cross.

#9-5-SueT 1

2 I do recall some turbo-charger testimony. Is
it related to that?

3

MR. ROLFE: Yes, Your Honor. The questions were
4 designed to impune the reliability, as I understood them,
5 of the turbo-chargers on these units. And to the extent --
6 and that's what these questions go to.

7

MR. BIRKENHEIER: Judge Miller, may I make a
8 comment?

9

JUDGE MILLER: Yes.

10

MR. BIRKENHEIER: The questions that I asked
11 about the turbo-charger and generator failures, which all
12 three were tied together, were tied to a statement in the
13 witness' testimony about the absence of outages due to
14 repairs.

15

They did not go to the reliability of turbo-
16 chargers or generators or any other components.

17

JUDGE MILLER: Well, nevertheless, that would be
18 a subject that I think the record should be complete on.
19 So, if necessary we would give leave to ask as though in
20 direct. We don't have to be so technical, since you don't
21 have a jury here.

22

But I think we do want to have a complete record.
23 You will be permitted so far as it goes to matters that you
24 haven't gone into, you will be permitted on recross.

25

You may answer. Do you remember the question?

#9-6-SueT 1

WITNESS LEWIS: Yes, sir.

2

JUDGE MILLER: Go ahead.

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WITNESS MILLER: The document that I saw that EMD had put out is referring to a new style high capacity turbo-charger. The new style high capacity was developed due to the expensive oil costs in the marine and drill industry.

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12

These units were developed because people were running a much lighter load. The design of the EMD turbo-charger is up to approximately fifty percent of its load. It runs off the engine gear train, called the rear gear train. And the Number 1, Number 2 idler gear.

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Until you build up sufficient heat energy, this unit runs directly off the gear train. When it's -- if you run it continuously off the gear train, it causes some excessive wear on the clutch and the turbo-drive gear. Once you get above fifty percent load, this portion disengages from the engine and the turbo runs off exhaust gases only.

19

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25

Now, the new style high capacity turbo, which was referred to, was developed for light loaded machines. Units that are -- I will give an example. The standard EMD turbo, if you are running at loads less than twenty percent, they recommend a change-out period every 200 hours. If you are running between twenty and fifty percent, they recommend a change-out period of every 1,000 hours. If you are running

#9-7-SueT

1 in excess of fifty percent load, the recommended change-out
2 is 8,000 hours. The high capacity turbo, between zero and
3 twenty percent light load, they recommend change-out at
4 3,000 hours compared to 200.

5 From twenty to fifty percent load, this is
6 approximtely 6,000 hours recommended change-out. And above
7 fifty percent load, it is 8,000 hours as the standard turbo
8 is.

9 What they've done to improve this was, they
10 increased the width of the gear teeth so that you had better
11 mesh and the unit would last longer. They changed the clutch
12 and also some other internals.

13 But the standard EMD turbo, you know, if ran and
14 maintained properly, you know, performs as it should.

15 BY MR. ROLFE: (Continuing)

16 Q Mr. Lewis, can you --

17 MR. BIRKENHEIER: Judge Miller, I move to strike
18 that answer on the grounds that it is completely unrelated
19 to the testimony, which is what the witness has given about
20 the turbo-chargers with which the Shoreham EMDs are equipped.

21 JUDGE MILLER: I'm not sure -- we can't make a
22 precise judgment in the middle of a trial. I will let it
23 stand. We will disregard it if it doesn't have any relation-
24 ship.

25 There was something about turbo-chargers. To the

#9-8-SueT

1 extent that the record will be more complete by the expla-
2 nation we will let it stand. And, as I say, if we are
3 going to be technical, as though it were in direct, by
4 leave, and you will be given an opportunity to cross-examine
5 the witness.

6 BY MR. ROLFE: (Continuing)

7 Q Mr. Lewis, can you relate the substance of that
8 turbo-charger report by telling the Board whether the problem
9 with light loaded turbo-chargers will affect the operation
10 of these machines as intended at Shoreham?

11 JUDGE MILLER: What are these machines? What
12 are --

13 MR. ROLFE: The EMD diesel generators.

14 WITNESS LEWIS: Okay. It's my understanding
15 that the --

16 JUDGE MILLER: What's your understanding based
17 on, now? Is it your own knowledge, information or experience,
18 or is it hearsay?

19 WITNESS LEWIS: It's not hearsay. It's the
20 surveillance testing that we performed at Shoreham on the --

21 JUDGE MILLER: Go ahead.

22 WITNESS LEWIS: -- diesel generators. They should
23 be ran at full load approximately one hour a month. If
24 they are surveillance tested properly and in excess of fifty
25 percent load, there should be nothing there that would be

#9-9-SueT

1 detrimental to the turbo-chargers.

2 BY MR. ROLFE: (Continuing)

3 Q Now, Mr. Lewis, in this morning's testimony
4 you were asked whether a turbo-charger, if it had failed --
5 strike that.

6 You were asked whether the diesel generators
7 could be restarted if a turbo-charger had failed. And I
8 believe your response was, it depends on the mode of
9 failure.

10 Can you please explain that answer?

11 A Well, there are several modes of failure in a
12 turbo. If it's a bearing or such as that, of course, the
13 engine will continue to turn it until the turbo totally
14 comes apart. But it can be restarted and operate. But
15 you are subject to a economic cost because of the extra
16 external failures.

17 If you were to lose a clutch on a turbo and your
18 unit was shut down, then when you got ready to start up,
19 depending on how bad the failure was, it would depend on
20 whether the unit would supply air to the engine or not. We
21 don't recommend restarting them, but then again they can be,
22 and they have been done.

23 Q Mr. Lewis, this morning you were also asked
24 about a log book or maintenance record indication concerning
25 a failure of a generator and a dust bin blower. Do you

#9-10-SueT 1

recall that series of questions?

2

A Yes, sir.

3

Q And you were asked whether the units were shut down at the time the generator and the dust bin blower were replaced.

4

5

6

Do the log books or maintenance records indicate whether the units actually shut down as a result of the failures of those components?

7

8

9

A No, it doesn't say whether the unit shut down because of the failure or not.

10

11

(Pause.)

12

JUDGE MILLER: Are you going to leave it there? You don't know, or are you going to follow this up a little bit?

13

14

15

MR. ROLFE: Your Honor, I will follow it up.

16

BY MR. ROLFE: (Continuing)

17

Q Mr. Lewis, do you know whether those failures indeed caused the engine to shut down?

18

19

A No, I don't.

20

Q Mr. Lewis, you were also asked this morning a question as to whether UTEX parts are perfect. First of all, can you explain to the Board what UTEX parts are?

21

22

23

A Okay. UTEX parts is a term that EMD, Electric Motors Division of General Motors uses. They build UTEX parts which are unit exchange. They will take your part

24

25

#9-11-SueT 1 and send you a UTEX part which is a completely remanufactured
2 part. It has been brought up to specifications of like new.

3 The new part, of course, it's brand new and it's
4 never been used before. The UTEX part is one that has been
5 on a machine, has been brought back and brought up to like
6 new standards. Then, it's sold as a UTEX.

7 Q Okay. In your opinion, Mr. Lewis, are the UTEX
8 parts as reliable as new parts?

9 A In my opinion, the UTEX parts we use, and that's
10 strictly what PSD use, I've had absolutely no problems with
11 UTEX parts. We sell UTEX turbos, UTEX power packs. We sell
12 these to some nuclear plants. And we've had no problems,
13 major problems. Let me say that. No major problems.

14 Q How do you define a major problem?

15 A Well, a major problem would be one that you would
16 install on a unit that would cause a serious problem at a
17 plant and cause the unit to fail under its operating condi-
18 tions or during testing.

19 And we haven't had, you know, any of these.

20 JUDGE MILLER: You might as well anticipate the
21 following question. Have you had any kind, significant,
22 or insignificant, or minimal? If so, describe for me.

23 WITNESS LEWIS: Okay. We have had some small
24 problems. One is, just like new parts, you have a QC problem.
25 Our QC Department catches the majority of them. EMDs catches

#9-12-SueT1

2 some. And you do run into problems now and then. Most
3 of them are not very significant.

4 BY MR. ROLFE: (Continuing)

5 Q Mr. Lewis, you were asked this morning also
6 whether you knew how many electric start EMD diesel genera-
7 tor sets were in service, and you responded that you did
8 not know the exact number.

9 Can you estimate how many such EMDs are in
10 service with electric starts? Electric starters?

11 A Well, I could only estimate the number that I
12 know about. And I would, you know, venture to say there
13 is probably a couple hundred.

14 This is in commercial service, you know, standard
15 service.

16 Q And how many are there in nuclear service?

17 A I know of two electric start units.

18 Q Mr. Iannuzzi this morning you were asked about
19 the 999 Model diesels and those used in the starting tests
20 run by General Motors.

21 One of the questions that was put to you was
22 what was the purpose of the immediate pressurization of the
23 fuel line, I believe.

24 Is immediate pressurization of the fuel line
25 necessary for a diesel generator which does not have to
engage in a fast start?

#9-13-SueT1

A (Witness Iannuzzi) No. The immediate pressurization, if the unit has to come up to speed in ten seconds, we need to do everything we can to help it get there. But the units will start without that supplemental fuel pressure.

And that's evidenced by the -- all of the commercial units that do not have such additional fuel system. So, the unit will -- it will start. It just will take a little bit longer possibly.

Q You were also asked this morning about the statement in the excerpt from the GM starting reliability report, that the redundant starters were added to attain a high level of starting reliability.

Do you know what kind of starts were being attempted in the tests reported in that document?

A I'm sorry. I didn't follow the question.

Q Do you know whether the tests reported in the starting reliability report that you were questioned about were fast starts or normal starts, slow starts?

A Yes. These -- the purpose of this series of tests was to qualify these units for nuclear service. And it was intended to start them within ten seconds or less.

So, these starts were all fast starts.

Q Now, let me direct your attention to the November 2, 1971 letter from the Electromotive Division of General Motors Corporation, which reported the electric start tests

#9-14-SueT 1

which Mr. Birkenheier asked about this morning.

2

First of all, Mr. Iannuzzi, were those tests run for the purposes of this licensing proceeding?

3

4

A No. Those -- that was -- we are speaking of the electric starts?

5

6

Q Yes, sir.

7

A Those tests -- those were not really tests. They were -- that was reports from EMD files of normal operation. It was not a specific test that was performed.

8

9

10

Q And do you know why General Motors prepared that letter and disseminated that information?

11

12

MR. BIRKENHEIER: Judge Miller, I just want to clarify that we are not talking now about the letter that has been marked for identification; is that correct? We are talking about --

13

14

15

16

JUDGE MILLER: Which one are we talking about?

17

18

MR. ROLFE: This is a letter -- Mr. Birkenheier asked about the electric start reliability data that Mr. Iannuzzi reported in his testimony. The letter has not actually been offered.

19

20

21

JUDGE MILLER: Should we have it marked if we are going to talk about it for the record?

22

23

MR. ROLFE: My questions don't go to the letter per se. They go to the test. But I will certainly be willing to have it marked if the Board so desires.

24

25

#9-15-SueT 1

JUDGE MILLER: If we are going to talk about
2 a letter, we had better have it marked at least for identi-
3 fication so in the future we will all know what we are
4 talking about.

5 MR. ROLFE: Certainly. I only have one copy at
6 this time, Your Honor.

7 JUDGE MILLER: You are given leave to supply
8 xerox copies.

9 MR. ROLFE: Thank you, Your Honor.

10 JUDGE MILLER: You will have to identify it and
11 give us the number.

12 MR. ROLFE: For the record, let me ask that a
13 letter, dated November 2, 1971, authored by Mr. S. A. Ivey,
14 I-v-e-y, Manager of Reseller Sales for Electromotive Division
15 of General Motors Corporation, to Mr. Frank Jones, be marked
16 as LILCO LP Exhibit 2 for identification.

17 JUDGE MILLER: All right. It will be so marked
18 for identification.

19 (The above-referred to letter
20 is marked LILCO LP Exhibit 2
21 for identification.)

22 JUDGE MILLER: Have you shown it to opposing
23 counsel?

24 (Ms. Letsche and Mr. Birkenheier are looking
25 at document, LILCO LP Exhibit 2 for identification.)

INDEXXXXX

End #9 25
Joe flws

1 Q Mr. Iannuzzi, I apologize for not having another
2 copy of the letter to put before you, but are you familiar
3 with the letter?

4 A Yes, I am familiar with it.

5 Q And where did that letter come from?

6 A The letter came from EMD. I am not sure what
7 Mr. Ivey's position was at the time. That was quite some
8 time ago, but the letter forwarded the copy of the report,
9 of the 999 test report, to us. And that was the cover letter
10 for that report.

11 Q And is the information contained in that letter
12 used by you in carrying on your business in selling and
13 installing diesel generator sets?

14 A Yes. The letter gave us some indication of the
15 types of reliability we could expect from an electric start
16 unit, and we would use that information in talking with a
17 new customer to convince him that these are, indeed, reliable
18 units.

19 Q How does the information reported in that
20 letter relate to your actual experience --

21 JUDGE MILLER: Counsel, if you are going to talk
22 about it so much, and we only have one copy, please read
23 it in its entirety into the record.

24 MR. ROLFE: The entire letter, sir?

25 JUDGE MILLER: The entire letter.

1 MR. ROLFE: It says: Dear Mr. Jones. There
2 is enclosed one copy of Mr. H. A. Williams, EMD Engineering
3 Report, concerned with starting reliability of the EMD
4 Model 999 unit, which unit developed by Electromotive for
5 nuclear power plant emergency standby protection is similar
6 to that equipment provided on subject order with regard to
7 engine and starting motor configuration.

8 This report is prepared in response to Mr. Wain-
9 rib's Stone & Webster request, and is offered as reference
10 data by Electromotive for evaluation and interpretation by
11 Mr. Kaufman of M.I.T., in establishing a level of total
12 system reliability as proposed by Stone & Webster for the
13 PASNY project.

14 We must ask that data included in the attached
15 report be treated as proprietary, and that any reference
16 or use of the report and/or data contained therein be cleared
17 with Electromotive prior to dissemination.

18 It is of interest to note in addition to the
19 enclosed report, Electromotive files on starting reliability
20 of the EMD Model MP-type, equipped with single electric
21 start motor, indicates that information has been obtained
22 as of December 11, 1967, which reveals from a total of
23 29,362 start attempts, 29,136 start attempts had been
24 successful, indicating ninety-nine point two-three percent
25 successes.

1 Electro-Motive is, of course, vitally interested
2 in the interpretation and conclusions reached by Mr.
3 Kaufmann in his evaluation of this report. Very truly
4 yours, S. A. Ivey, Manager - Reseller Sales.

5 BY MR. ROLFE: (Continuing)

6 Q Now, Mr. Iannuzzi, is the information reported
7 in this letter pertaining to the starting data for electric
8 start motors, consistent with your experience with EMD
9 diesel generators?

10 A (Witness Iannuzzi) If I can refer that to Mr.
11 Lewis.

12 A (Witness Lewis) From what we have seen from
13 an operational standpoint, that reflects the reliability
14 of EMD engine.

15 MR. ROLFE: Your Honor, may I have one moment,
16 please? Your Honor, LILCO has no further redirect.

17 JUDGE MILLER: Recross examination?

18 MR. BIRKENHEIER: Yes, Judge Miller, but I would
19 like to ask for a few minutes to look at this letter more
20 carefully.

21 (Pause)

22 Judge Miller, I am ready.

23 RECROSS EXAMINATION

24 BY MR. BIRKENHEIER:

25 Q Mr. Iannuzzi, this November 2, 1971 letter from

1 Mr. Ivey of Electro-Motive Division to Mr. Jones of Bruce
2 G. M. Diesel, was not sent to you, was it?

3 A (Witness Iannuzzi) No, it was not. Mr. Jones
4 was the Vice President and General Manager of our Division.

5 Q Now, in this letter they refer to -- well, first,
6 in this letter they transmit a copy of a test report, or
7 with this letter a test report was transmitted, is that
8 correct?

9 A That is correct.

10 Q That test report is the report of the starting
11 reliability of the EMD fast start diesels, isn't it?

12 A That is correct.

13 Q It was not a test report having to do with
14 electric start, non-fast start diesels, such as those at
15 Shoreham, is that correct?

16 A That is correct.

17 Q Now, Mr. Iannuzzi, let me read to you the
18 first sentence of this letter. It says: There is enclosed
19 one copy of Mr. H. A. Williams's (EMD Engineering) report
20 concerned with starting reliability of the EMD Model 999
21 unit, which unit developed by Electro-Motive for nuclear
22 power plant emergency standby protection is similar to that
23 equipment provided on subject order with regard to engine
24 and starting motor configuration.

25 What is that subject order, Mr. Iannuzzi?

1 A Offhand, I don't know. It may be identified
2 on the letter.

3 Q Okay. Can you take a look at that please?
4 (Counsel hands witness document)

5 A Apparently it refers to the PASNY project,
6 Fitzpatrick plant.

7 Q Is that reflected in the letter?

8 A In the subject it states PASNY.

9 Q So, the Electro-Motive Division was in the
10 process of selling four EMD units to PASNY?

11 A No. Those units are four units that we provided.
12 We, Power Systems Division, provided to PASNY. They are
13 listed in our list of experience, which is Attachment 4
14 to our testimony.

15 Q Well, then, I take it that at the time this
16 letter was written, EMD was in the process of selling
17 Bruce G. M. Diesel, the four units that were going to be
18 supplied to PASNY. Is that true?

19 A They would have been selling us the engines
20 for that contract.

21 Q So this was a piece of sales literature in
22 connection with the sale of the units, is that correct?

23 A It was a report that we had asked for to assist
24 us in justifying those units for the Fitzpatrick plant. I
25 can't speak from personal experience as to how that information

1 was used on that project.

2 Q But the letter was sent by the Manager of
3 Reseller Sales, wasn't it?

4 A Yes. And depending on the stage of an order
5 with EMD, that person in that sales department may be our
6 technical contact, or technical liaison, if you will.

7 Q But I take it that reseller sales is still the
8 sub-group within EMD that -- whose job it is to sell projects
9 to companies such as Bruce G. M. Diesel, which in turn
10 resell it, is that correct?

11 A That is correct, yes.

12 Q Okay. Now, let me read for you the fourth
13 paragraph in this letter. It reads: It is of interest to
14 note, in addition to the enclosed report, Electro-Motive
15 -- and the enclosed report, let me ask you -- does that
16 refer to the report on the fast start nuclear service
17 diesels?

18 A That is correct.

19 Q Okay. In addition to that report, Electri-Motive
20 files on starting reliability of the EMD Model MP type unit,
21 (equipped with single electric start motor) indicates that
22 information has been obtained as of December 11, 1967 which
23 reveals from a total of 29,362 start attempts, 29,136 start
24 attempts had been successful, indicating 99.23 percent
25 successes.

1 Mr. Iannuzzi, let me direct your attention to
2 your statement in Answer 25 of your testimony, on page 18.
3 Is that paragraph in the November 2, 1971 letter the only
4 basis for the data that is included in that first paragraph
5 of Answer 25 on page 18?

6 A That is correct. That is where that data came
7 from.

8 MR. BIRKENHEIER: Judge Miller, I renew my Motion
9 to Strike this first paragraph of Answer 25. The witness has
10 testified that the only basis he has for this data is this
11 one paragraph containing one sentence which simply quotes
12 the final numbers, and the witness has no familiarity with
13 how those numbers were obtained or who they were obtained
14 from. When they were obtained. What particular types of
15 electric start units were involved.

16 This simply is not reliable evidence, and should
17 be stricken.

18 JUDGE MILLER: Well, what you say may be true,
19 but you are overlooking the fact that the witnesses have now
20 testified that the data shown therein and the reliability
21 and conclusions drawn are consistent with their own experience.

22 They just got through testifying to that.
23 Therefore, it is not solely -- it is perhaps in large part
24 it may have whatever defect you point out, but it would not
25 render it inadmissible.

1 MR. BIRKENHEIER: Well, Judge Miller, they
2 refer to specific numbers here. Start attempts, and their
3 successful starts, and a specific rate. And they have
4 testified that the only source for those data, not their
5 general impression based on their experience, but those
6 specific data is this one paragraph, about which they know
7 nothing other than what it says on its face.

8 JUDGE MILLER: They testified further that
9 the data is consistent with their experience. Now, you
10 can't omit that essential element of their testimony. What
11 you say may go to the weight if you wish, but it is not
12 going to cause it to be rendered inadmissible or to strike.

13 I think you have explored pretty thoroughly
14 the basis of it, and the record will reflect what you have
15 done, and in my judgment it does not render it either
16 inadmissible nor cause us to strike it.

17 So, your Motion will be overruled.

18 MR. BIRKENHEIER: I would then like to renew
19 my Motion to Strike the last paragraph of Answer 25. At
20 the time that I made it, you said that we would wait until
21 all cross and redirect had been completed, and no questions
22 had been asked about it. Therefore, I renew my Motion.

23 The witness testified that he has not reviewed
24 the data on which the report he was given was based, and he
25 therefore has no personal knowledge of this data. He has

1 no idea how it was collected. He doesn't know what is
2 contained in the books on which it was based, and I again
3 argue that this is unreliable evidence and should not be
4 admitted?

5 JUDGE MILLER: Counsel?

6 MR. ROLFE: Judge Miller, LILCO opposes the
7 Motion on the ground that the information which is repeated
8 in this answer, and this answer, I might add, forms the
9 predicate for the conclusions of Mr. Iannuzzi and Lewis
10 in the following Question No. 26, the information concerning
11 the starting reliability of these engines has been admitted
12 in the testimony in this proceeding during Mr. Schiffmacher's
13 testimony on April the 25th, at page 463 of the transcript.

14 JUDGE MILLER: Wait a minute. Let's find that
15 now. What page is that of the direct testimony of Mr.
16 -- Messrs. Gunther and Schiffmacher?

17 MR. ROLFE: Your Honor, it was not in his
18 direct testimony. It was in his redirect testimony, and it
19 is found in the transcript -- the question begins on page 462,
20 and the actual portion to which I am referring is contained
21 in the Answer on page 463.

22 It is in the second day's transcript.

23 JUDGE MILLER: All right, we will check it.
24 What does the transcript show?

25 MR. ROLFE: This is April 25th.

1 JUDGE MILLER: Oh.

2 MR. ROLFE: I have it if it would help.

3 JUDGE MILLER: Better hand it up.

4 MR. BIRKENHEIER: Judge Miller, I don't have
5 that transcript in front of me right now, but if Mr. Rolfe
6 is correct that this information, in fact, has already been
7 entered into the record, then this paragraph in Answer 25
8 is cumulative, and should not be admitted in again.

9 JUDGE MILLER: Now, that is putting it pretty
10 fine now. Five minutes ago it wasn't in your memory or
11 mine. I don't want to get down to too fine a point.

12 Once again now, we are developing a record.
13 We want a full and complete record, and we are not with
14 all the exclusionary fineness of tuning that one would have
15 in a court of law with a jury present.

16 So, therefore, without a jury you have a little
17 more scope, and in this case we do want a complete record,
18 both your propositions as well as your opponent. So, we
19 are going to consider the effect of the transcript reference
20 which we haven't yet read, which you without reading made a
21 response to.

22 That is where we are right now, I guess.

23 End 10.
24 Mary fols.

24

25

Sim 11-1 1

MR. BIRKENHEIER: Judge Miller, will I have the
2 opportunity to look at that?

3 JUDGE MILLER: Yes, you are entitled to that.

4 (Laughter.)

5 MR. ROLFE: Judge Miller, the point is that
6 Mr. Lewis did not develop that information himself. He has
7 testified to that.

8 JUDGE MILLER: Wait a minute. He has testified
9 to what now?

10 MR. ROLFE: He testified, he admitted that he
11 did not develop the starting reliability number himself by
12 going through the log books.

13 JUDGE MILLER: Now wait a minute. Let's look
14 at what we are talking about.

15 MR. ROLFE: Okay.

16 JUDGE MILLER: Are we on page 18?

17 MR. ROLFE: Yes, sir, the last paragraph.

18 JUDGE MILLER: In the last paragraph "Also, the
19 log books for the four EMD diesels at Shoreham show that
20 throughout their lifetime there have been no failures to
21 start. This is a reliability of 100 percent which is
22 comparable to," and great and so forth. Is that what we
23 are talking about?

24 MR. ROLFE: Yes, Your Honor.

25 JUDGE MILLER: All right. Now doesn't the

Sim 11-2

1 evidence in this case show that that isn't a completely
2 correct, that there hasn't been 100 percent reliability
3 on matters to which the witness has knowledge?

4 MR. ROLFE: I don't believe so, Your Honor. The
5 evidence in the case shows that there has been a hundred
6 percent starting reliability. The evidence shows that this
7 witness did not personally develop those figures, that that
8 was ---

9 JUDGE MILLER: I thought we had some log books.

10 MR. ROLFE: That is right, and this witness ---

11 JUDGE MILLER: The record shows that the log books
12 themselves do not show nor can a reasonable inference be
13 drawn that there were any failures to start resulting in 100
14 percent reliability. Is that your position?

15 I am going to ask counsel now to give me their
16 present recollection as to the present state of the record.

17 MR. ROLFE: I think that is correct. I am not
18 sure I understood your question, Judge.

19 My understanding is that the pertinent records,
20 if one were to go all the way through them, show that there
21 has been a hundred percent starting reliability, as
22 Mr. Schiffmacher testified in the portion of the transcript
23 to which I alluded a moment ago.

24 This witness testified that he had not personally
25 gone through the log books or whatever other records that

Sim 11-3

1 were maintained to verify that number. Nevertheless, that
2 number is in testimony. It is uncontradicted in
3 Mr. Schiffmacher's testimony, and this witness is merely
4 explaining the basis for his conclusion in the next question
5 of what he concludes about the starting reliability of
6 these machines.

7 JUDGE MILLER: In that testimony though he goes
8 on to say, you know, we start them up and everything was
9 great, but then he goes on if you include as failures to
10 start those where they shut them down or it would shut
11 itself down, you would have 279 attempts and 275 successes.

12 MR. ROLFE: That is correct.

13 JUDGE MILLER: A 98 percent record.

14 MR. ROLFE: That is correct. It depends on ---

15 JUDGE MILLER: Ninety-eight isn't a hundred, is
16 it?

17 MR. ROLFE: Well, it depends on how you define
18 a start.

19 JUDGE MILLER: Pardon me?

20 MR. ROLFE: It depends on how you define a start.
21 They started ---

22 JUDGE MILLER: I know, but I just said we don't
23 want to get to too fine a point on anything, and that goes
24 to your testimony as well as the objections of opposing
25 counsel.

Sim 11-4

1 It would appear to me, and I don't have all the
2 documents before me, and I certainly haven't gone through the
3 log books, that we don't have a hundred percent of anything,
4 at least not in this regard.

5 MR. ROLFE: Well, may I respond briefly?

6 JUDGE MILLER: Yes.

7 MR. ROLFE: I don't want to argue with the Board
8 at this point about what the ---

9 JUDGE MILLER: Go ahead and ---

10 MR. ROLFE: Well, no. What I mean is I don't
11 want to argue about what the figures mean. Mr. Schiffmacher
12 was very clear ---

13 JUDGE MILLER: We are not discussing that. We
14 are looking at proffered testimony.

15 MR. ROLFE: That is right.

16 JUDGE MILLER: And there is a motion to strike
17 it on the basis of the present record, the source of
18 the information and the fact that this witness is testifying
19 under oath to something that he doesn't have direct personal
20 knowledge of.

21 MR. ROLFE: That is right, Your Honor, and my
22 point is that Mr. Schiffmacher has already testified that
23 those units started 279 out of 279 times. Now four times
24 they did have to be annually shut down for things that
25 developed.

Sim 11-5

1 JUDGE MILLER: If I am driving my car to work
2 and I get the motor started and I back out of my driveway and
3 the darn thing conks out. I ain't going to count that as a
4 successful start and neither is my employer.

5 (Laughter.)

6 So let's not quibble about these things. I
7 think the testimony reaches too far, there is a certain
8 element of hyperbole and I am not at all sure about the
9 witness' knowledge in the present instance of the testimony
10 of a prior witness, which itself is in and may be reviewed.

11 So I don't understand the necessity to try to
12 provide a basis for an answer which does not appear to be
13 totally accurate, for one thing.

14 Why are you struggling so hard?

15 MR. ROLFE: Just so his ---

16 JUDGE MILLER: To make a record?

17 MR. ROLFE: Basically, yes.

18 JUDGE MILLER: Okay.

19 Have you read it? Yes, you have read it. What
20 is your comment?

21 MR. BIRKENHEIER: I agree with what you have
22 said, Judge Miller.

23 JUDGE MILLER: I didn't think you would disagree.

24 (Laughter.)

25 MR. PERLIS: Excuse me, Judge Miller ---

Sim 11-6

1 JUDGE MILLER: I am talking about the present
2 state of the record and the logs though, that is what I am
3 not totally clear on, what the log books show and so forth.

4 What do they show? You have analyzed them
5 pretty carefully apparently.

6 MR. BIRKENHEIER: I mean I am obviously,
7 Judge Miller, not here to testify about the content of those
8 log books.

9 JUDGE MILLER: No, but you had a long cross-
10 examination which was detailed and was obviously well
11 prepared. So, therefore, on the basis of whatever information
12 is available, and I am not asking you to testify, but I am
13 asking you to make a representation, if you can, to the
14 Board of what those log books show in this regard, if you can.
15 If you can't, it is all right.

16 MR. BIRKENHEIER: I would represent that it is
17 clear that this particular witness does not know what
18 has happened.

19 JUDGE MILLER: That we know.

20 MR. BIRKENHEIER: And that he is wrong in his
21 numbers.

22 JUDGE MILLER: And that what?

23 MR. BIRKENHEIER: That he is wrong in his
24 numbers.

25 JUDGE MILLER: Well, the latter is what I am

Sim 11-7

1 inquiring about. Why is he wrong in his numbers? Do
2 you have some information? We are still trying to develop
3 a complete record. We are not trying to trap anybody.

4 MR. BIRKENHEIER: I am basing my statement about
5 the numbers on what was in the previous proffered testimony.

6 MR. PERLIS: Excuse me, Your Honor, may I be
7 heard here?

8 JUDGE MILLER: Sure.

9 MR. PERLIS: First of all, Mr. Schiffmacher's
10 earlier testimony indicates that three of the four times
11 a unit was removed because minor difficulties were noticed.
12 I don't believe that is the same thing as failure to start,
13 nor is it necessarily the same thing as a failure to continue
14 in operation.

15 The fact that a unit is removed ---

16 JUDGE MILLER: We are dealing with a nuclear
17 power plant and I don't want to get things so precise
18 that our findings on safety are going to depend on an
19 argument like that.

20 MR. PERLIS: Well, no. The second point is that
21 Mr. Schiffmacher was available for supplemental cross-
22 examination at this proceeding and I believe Suffolk County
23 indicated that they had no further cross-examination for
24 him based on his earlier testimony.

25 JUDGE MILLER: Well, what does that show?

Sim-11-8

1 MR. PERLIS: Well, this witness is relying on
2 information which he got from Long Island Lighting Company,
3 and the basis of that information, which this witness cannot
4 answer to, Mr. Schiffmacher could answer to.

5 JUDGE MILLER: Well, he has, hasn't he?

6 MR. PERLIS: I believe he has.

7 JUDGE MILLER: Mr. Schiffmacher's testimony is
8 in the record, isn't it?

9 MR. PERLIS: As I understand it, the only grounds
10 upon which to strike Mr. Lewis' testimony is that Suffolk
11 County doesn't have the opportunity to cross-examine him
12 on the basis of his answer there in the last paragraph.

13 JUDGE MILLER: Well, in the first place, it is
14 based on the fact that a hundred percent isn't 98 percent
15 and we are not going to quibble how you got that two percent
16 in a nuclear power plant. I thought I made that pretty plain.

17 We are interested in the public safety, we the
18 Board are.

19 MR. PERLIS: I understand.

20 JUDGE MILLER: All right. Then we are not going
21 to quibble about 100 percent is the same as or is as good
22 as 98 percent. So that is about what you come down to.

23 MR. PERLIS: I don't believe that is what I am
24 coming down to, Your Honor.

25 JUDGE MILLER: Well now it says here 100 percent

Sim 11-9

1 of reliability and you are telling me that the testimony
2 on which it is based shows under certain reasoning at
3 any rate 98 percent.

4 MR. PERLIS: It depends on what that certain
5 reasoning is, and that reasoning is not that they failed
6 to start ---

7 JUDGE MILLER: That reasoning is that four times
8 the doggone things were shut down, shut themselves down
9 or something untoward occurred.

10 MR. PERLIS: Your Honor, it could be, for
11 instance, that ---

12 JUDGE MILLER: Sure, it could be. It could be
13 a thousand things. I am not going to argue further and I am
14 not going to take as evidence on safety something that
15 is as equivocal as this record. Now we have ruled and
16 this will be stricken.

17 The testimony, if I understand you correctly,
18 is already in the record from the prior testimony of the
19 man who has the data. Now if you are not satisfied with that,
20 we do want a complete record and we will give the staff
21 leave to bring back whoever it is if you don't think that
22 the record fully reflects and fairly reflects the facts.

23 But on the present record here and before we
24 are not going to allow this testimony to stand. It is stricken.

25 What is your next motion?

Sim 11-9

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MR. ROLFE: Judge Miller?

JUDGE MILLER: Yes.

MR. ROLFE: If that is the Board's ruling and that is the reason for the Board's ruling in order to develop a complete record, may we inquire of this witness whether he knows why those engines shut down those four times?

JUDGE MILLER: Of his own knowledge?

MR. ROLFE: Yes, sir.

JUDGE MILLER: All right. Go ahead.

MR. ROLFE: Mr. Lewis ---

JUDGE MILLER: We will accept anything that he can testify to of his own knowledge. Go ahead.

MR. ROLFE: Mr. Lewis, do you know why those engines shut down those four times?

JUDGE MILLER: First of all, I want to know how he knows it.

WITNESS LEWIS: No, I really don't know.

JUDGE MILLER: You did it.

(Laughter.)

Thank you, sir. We just don't want to have a weak or fuzzy record. We think it is important to the Board and we think it is important to all the parties that if there is any question at all, okay.

Now what is your next question?

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BY MR. BIRKENHEIER:

Q Mr. Lewis, you testified in response to a question by Mr. Rolfe that you know of two electrical start EMDs in nuclear service. Do you recall that?

A (Witness Lewis) Yes, sir.

Q What do you mean by a nuclear service?

A They are installed at a nuclear power plant for means of an on-site power system.

Q You are not saying, I take it, that those two electric start EMDs have the same auxiliary equipment as the Shoreham EMDs, are you?

A Two of these particular units are actually MP-45A units. In other words, in the Shoreham EMDs you have one "A" unit, which is a master unit, and three slave units. At a nuclear power plant they have two "A" units, which are separated and they are individual. One goes to Train A and the other goes to Train B inside the system.

Q Well, let me ask my question again then. I take it that those two electric start EMDs in nuclear service do not have the same auxiliaries as the EMDs at the Shoreham plant; is that correct?

A These units are identical to Shoreham. Both units are "A" units and at Shoreham you have only one "A" unit.

Q Do the two units in nuclear service have the

Sir 11-11 1

same piping valves, pumps, heat exchangers, tanks, supports
2 and electrical equipment as the Shoreham EMDs?

3 A Basically everything there is identical, except
4 what has been modified over the years. The problem of
5 modifications, when they modify a particular system, they
6 bring it up to the new codes and standards.

7 Q Mr. Lewis, would you please look at page 22 of
8 your testimony. Now you say there, don't you, that the
9 difference between the Shoreham units and diesel generators
10 which have been qualified for use at nuclear power plants
11 is in the auxiliary equipment which supports the operation
12 of the engine. That equipment includes such items as piping,
13 valves, pumps, heat exchangers, tanks, supports and electrical
14 equipment. Isn't that what you testify to there?

15 A You say on page ---

16 Q Page 22.

17 A Right.

18 Q So that testimony is correct?

19 A This testimony is correct at the time that the
20 plant and the unit was built.

21 Q And that applies to the Shoreham EMDs and these
22 nuclear service EMDs with electric starts; is that correct?

23 A No. The Shoreham EMDs are not qualified.

24 Q Okay. Mr. Lewis, when did you become personally
25 familiar with the Shoreham EMDs?

Sim 11-12

1 A In 1981 I believe, July of '81. I made my first
2 trip to the NEPCO site.

3 Q Mr. Lewis, previously in response to a question
4 by Mr. Rolfe you spoke about two different types of turbo-
5 chargers. Do you recall that?

6 A Yes, sir.

7 Q And you listed the suggested replacement schedule
8 for both types; is that correct?

9 A Yes, sir.

10 Q Isn't it true that in both those schedules?
11 although the hours differed, there was still a pattern
12 that the lower the load at which the engine was run, the
13 more frequently the turbocharger should be replaced?

14 A Yes. If you listened to what I said, that is
15 what it said.

16 Q Thank you.

17 (Pause while counsel confer.)

18 Mr. Lewis, in the setup that you just described
19 for the two master units in nuclear service, I take it that
20 with that setup, unlike the Shoreham EMDs, there is no need
21 for a control cubicle; is that correct?

22 A Yes, it has a control cubicle.

23 Q Is there one control cubicle for both the
24 machines?

25 A The control cubicles are split.

Sim 11-13

1 Q That means that each of them has their own,
2 correct?

3 A That is correct.

4 MR. BIRKENHEIER: I have no further questions,
5 Judge Miller.

6 JUDGE MILLER: The State of New York?

7 MR. PALOMINO: No questions.

8 JUDGE MILLER: The Staff?

9 MR. PERLIS: No further questions.

10 JUDGE MILLER: I guess that does it.

11 BOARD EXAMINATION

12 BY JUDGE BRIGHT:

13 Q I just had a couple of things that I was
14 curious about. Looking at the County's LP-11 I notice they
15 replaced top and bottom starting motors which would say to
16 me they have two electric motors as a starting system.

17 A (Witness Lewis) Yes, sir.

18 Q Do they have two motors to get the requisite
19 power to start the beast, or is it a redundant system such
20 as the air start setup that you were talking about before?

21 A No, it is not redundant.

22 Q So you need both motors to work for the system
23 to start?

24 A Yes, sir.

25 Q The other thing was a remark you made just

INXEX

Sim 11-14 1 a moment ago in talking about the master/slave setup. How
2 does that operate briefly?

3 A Okay. When you have two or more units going
4 to a common bus to work automatically one unit has to be
5 a lead unit. This is for the parallelling purpose.

6 JUDGE MILLER: For the what?

7 WITNESS LEWIS: For the parallelling purpose.

8 In this particular instance, what you have is a master unit
9 which has the batteries, the fuel transfer system in it,
10 which the other units don't have, along with several other
11 controls. It is all operated out of the master.

12 Once you receive a start signal, the unit is
13 picked by the master unit that starts first, which will go
14 up and close onto the bus and the second unit that is picked
15 by the master unit will be the second unit up, and it goes
16 in sequence. But the master unit really has the extra
17 features that the slave units wouldn't have such as the
18 battery start, all the batteries are in the master unit,
19 and the fuel transfer systems are in the master unit.

20 BY JUDGE BRIGHT:

21 Q You weren't then saying that there is an
22 intimation here that the master unit has to start and come
23 onstream before the slaves can work?

24 A No. Slaves can go first.

25 Q So this is quadrupally redundant; is that correct?

Sim 11-15

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A Yes, you could say that.

JUDGE BRIGHT: Thank you.

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JUDGE MILLER: Judge Johnson.

2

BOARD EXAMINATION

3

BY JUDGE JOHNSON:

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Q I believe this question goes to you, Mr. Lewis.

6

There has been much said today about a smoking turbo-charger. Curiosity.

7

Does the fact that a turbo-charger smokes necessarily cause the unit to shut down?

8

9

A (Witness Lewis) Well, not necessarily, depending on the mode of failure.

10

11

Q Okay.

12

A It's several modes, you know, that it could fail

13

under.

14

Q Does this result in fire?

15

A I see no reason that it should.

16

Q Whichever ones of you feels the urge to answer this next question, please do.

17

18

Many of the numbers we have been looking at this morning have to do with fast-start units. Is there any reason -- and I understand that Shoreham units are not fast-start units; is this correct?

19

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A (Witness Iannuzzi) That's correct. Yes.

21

22

Q Is there any reason to think that there would be a difference in the reliability of fast-start units and not fast-start units?

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(No reply.)

2 Would you expect more failures to start with a
3 fast-start unit or with a, shall I call it, normal unit?

4 A Okay. I wasn't sure if you were referring to
5 starting reliability or overall reliability.

6 Q I'm sorry.

7 A I would have to believe that a unit set up for
8 fast-start would probably be more reliable than a non-
9 fast-start unit because of the enhancements made such as
10 the redundant start system and the backup fuel system.

11 So, from a start reliability standpoint, I
12 would say that a fast-start unit would probably be more
13 reliable.

14 Q Because of the redundancies built in?

15 A Because of the redundancies built in.

16 Q The fact that you've got pressures up in advance,
17 on instigation of the signals?

18 A Well, for two reasons. For the fuel system,
19 not so much that we get pressure earlier but that should we
20 lose pressure from the engine pump for whatever reason we
21 have the backup of the electric pump.

22 And, secondly, from the start system the fact
23 that should one start-train not engage for whatever reason,
24 there is a second one there to engage. So, the reliabilities
25 of those two systems would tend to boost the overall

#12-3-SueT

1 reliabilities of the unit.

2 JUDGE JOHNSON: Thank you. I think that is
3 it.4 JUDGE MILLER: Very well. The witnesses will
5 be excused. Thank you.

6 We will recess for lunch until 2 o'clock.

7 (The witnesses stood aside.)

8 MR. ROLFE: Judge Miller, before we recess,
9 might I move that testimony of Messrs. Iannuzzi and Lewis
10 into evidence subject to Your Honor's ruling on the motion
11 to strike?

12 JUDGE MILLER: Are there any objections?

13 MR. EARLEY: No.

14 JUDGE MILLER: Subject to the rulings that have
15 been made, it will be admitted into evidence and will be
16 physically included in the transcript with its own page
17 numbers in the transcript.

18 (The testimony follows.)

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LILCO, July 16, 1984

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-OL-4 |
| |) | (Low Power) |
| (Shoreham Nuclear Power Station, |) | |
| Unit 1) |) | |

TESTIMONY OF
 THOMAS W. IANNUZZI AND KENNETH A. LEWIS
ON BEHALF OF LONG ISLAND LIGHTING COMPANY

Q.1. Please state your names and business address.

A. (Iannuzzi) My name is Thomas W. Iannuzzi. My business address is Morrison-Knudsen Company, 101 Gelo Road, Rocky Mount, North Carolina 27801.

(Lewis) My name is Kenneth A. Lewis. My business address is Morrison-Knudsen Company, 101 Gelo Road, Rocky Mount, North Carolina 27801.

Q.2. Mr. Iannuzzi, what is your current position with Morrison-Knudsen?

A. (Iannuzzi) Manager of Engineering of Power Systems Division (PSD) of Morrison-Knudsen Company, Inc. (M-K).

-2-

Q.3. Mr. Iannuzzi, does the resume designated as Attachment 1 to this testimony accurately reflect your education and professional experience?

A. (Iannuzzi) Yes it does in summary form.

Q.4. For purposes of convenience, please summarize your responsibilities in your current position as Manager of Engineering.

A. (Iannuzzi) I am responsible for direct supervision of project engineers, designers and document control personnel required to design and build diesel and turbine generator systems for utility, military and emergency applications. These include diesel generator systems used in nuclear plants. I also supervise PSD's engineering staff in the review of test reports, equipment specifications, and vendor quotations and in the provision of production assistance to PSD's shop. I write and certify design specifications for ASME Code components and review and approve design reports for nuclear projects. Additionally, I review nuclear owners' design specifications and implement codes and standards related to safety related equipment for nuclear power generating stations.

-3-

Power Systems, over the past 12 years, has designed and fabricated 137 diesel generator sets for customers in commercial applications, and 65 diesel generator sets for 21 utilities at 26 nuclear plants. In addition to these units we have provided parts, service, modification packages and consulting for 51 engines at 18 nuclear sites for which Power Systems had not provided the original units.

Q5. Please summarize your prior professional and educational experience.

A. (Iannuzzi) As stated in greater detail in my resume, I received a Bachelor of Science in Mechanical Engineering from Pennsylvania State University in 1968 and a Master of Science in Industrial Administration from Union College in 1973. From 1968 to 1973, I worked for the Machinery Apparatus Operation of General Electric Company as engineer for a procurement organization responsible for design, manufacture and refueling of nuclear pressure vessels for Navy applications. From 1973 to 1978, I was lead engineer for the Power Systems Group of Combustion Engineering, Inc. and was responsible for the specification and procurement of primary nuclear steam supply system components. In this capacity, among other things, I acted as liaison with

customers and various in-house groups, provided technical expertise, prepared sections of safety analysis reports and maintained familiarity with shop operations and status of components. From 1978-1982, I was Supervisor/Systems Engineering at Colt Industries, Fairbanks-Morse Engine Division. In that capacity, I supervised a group of eight engineers responsible for the engineering of diesel engines and diesel generator units for application in a variety of government, nuclear and commercial installations. In 1982, I became manager of engineering for PSD as described earlier.

- Q.6. Are you a member of any industry committees involved in nuclear work?
- A. (Iannuzzi) I am a member of a committee working on draft standard ANS 59.53, "Starting Air Systems for Standby Diesel Generators."
- Q.7. Mr. Lewis, what is your current position with Morrison-Knudsen?
- A. (Lewis) Technical Services Manager of PSD.
- Q.8. Does the resume designated as Attachment 2 to this testimony accurately reflect your education and professional experience?

A. (Lewis) It does, though without much detail.

Q.9. For purposes of convenience, what are your responsibilities as Technical Services Manager?

A. (Lewis) As Technical Services Manager, I direct and administer PSD's field service activities. I act as liaison with customers and interface with responsible division departments in the resolution of any technical problems concerning PSD supplied equipment or equipment maintained by PSD under contract.

Q.10. Please summarize your prior professional and educational experience.

A. (Lewis) I received an A.S. Degree in refrigeration from Wilson Technical College in Wilson, North Carolina. Following other jobs involving servicing of electrical and mechanical equipment, in 1972 I joined PSD, which was then a division of Bruce GM Diesel, as an Electrician A. My duties involved the building and wiring of control panels, wiring engine electrical systems and motor controls and general electrical work. From 1974-1981, I was a Senior Test Technician at PSD and was responsible for performing complete testing of PSD-supplied diesel and turbine generator sets. Also, my duties included troubleshooting electrical and

-6-

mechanical systems for gas turbine and diesel powered generator sets. In 1981, I became Technical Services Manager.

Since I have been Technical Services Manager, PSD has engaged in a great deal of service work at nuclear plants, all of which is within my responsibility. A partial listing of such service work for the years 1982 - 1983 is Attachment 3 to this testimony. As is shown there, in those two years, PSD did work on diesel generators at no less than eighteen nuclear plants, such as Nine Mile Point, St. Lucie Units I and II, Watt's Bar, Surry, Robinson, Beaver Valley, LaSalle, Grand Gulf, Turkey Point and others. Attachment 4 lists additional nuclear plants at which PSD has had experience. Attachment 5 lists additional non-nuclear installations at which PSD has had experience.

Q.11. Gentlemen, what is the purpose of your testimony?

A. (Iannuzzi and Lewis) Based on our experience with and knowledge of EMD and other diesel generators in both nuclear and non-nuclear applications, and the EMD diesel generators at Shoreham in particular, we will talk about the reliability of EMD diesel generators, and specifically those at Shoreham.

-7-

Q.12. Please describe your familiarity with the use of diesel generators at nuclear power plants.

A. (Iannuzzi) I have been involved in the application of diesel generators at nuclear power plants since 1978. While at Fairbanks-Morse I was the project engineer for diesel generator sets being fabricated for the Marble Hill, and Hope Creek plants, and as such was involved in all aspects of the design and fabrication of those units. Also as previously stated, I supervised engineers working on units for Limerick, Seabrook, Washington Public Power Supply System (WPPSS), Callaway and Wolf Creek. Since coming to PSD I have been personally involved with diesel generator sets at Sequoya, Watt's Bar, Brown's Ferry, St. Lucie 1 & 2, Zorita and Cofrentes (Spain), and have worked on modifications to units at WPPSS and Davis-Besse. In that involvement, I have become familiar with the application of the various codes and standards used in these installations at nuclear power plants, and with the starting, testing and operational needs in these applications. I am familiar with the safety-related aspects of emergency power in carrying emergency loads to bring the plant to a safe shutdown condition.

(Lewis) My experience is detailed in part in Attachments 3 and 4. I am responsible for overseeing all of the service work performed by PSD on the diesels at the listed nuclear plants. These lists are not complete, since PSD is continuing to engage in a great deal of nuclear diesel generator work, much of which involves retrofitting of older diesel generators.

Q.13. Please describe your familiarity with EMD diesel generators in the industry and, in particular, their application at nuclear plants.

A. (Iannuzzi) EMD diesel engines have been widely used in industry. They are used, for example, in locomotives, ships and drill rigs; however, PSD/M-K has not been involved with those applications. PSD's experience with EMD diesels includes their use in hospitals, military bases, utilities and nuclear plants. These include both skid mounted and housed units, such as those at Shoreham. I personally have been involved, at a minimum, with EMD diesels at the following nuclear plants: Sequoya, Watt's Bar, Brown's Ferry, St. Lucie 1 & 2, Zorita and Cofrentes (Spain). I have also been involved with modifications to EMD diesels at WPPSS, Davis-Besse and the Naval nuclear facilities at Windsor, Connecticut, and West Milton, New York.

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Additionally, I have been involved with commercial units for the Norfolk, Virginia, Naval Station; King's Bay, Georgia, Naval Base; and Kotzebue, Alaska.

(Lewis) PSD has historically specialized in the nuclear application of EMD diesels. Today, it is one of eight jobbing contractors for EMD, which is a division of General Motors, though PSD sells and services other brands of power systems. PSD services many of the diesel generator sets it sells and many that it did not sell. This service, done under my supervision, runs from complete inspections, installations and overhauls to emergency repairs. PSD has recently been involved in the retrofitting and modification of diesel generators in nuclear service to enhance their reliability and to upgrade them. We have performed this service or are in the process of contracting for this service in approximately 37 nuclear plants. Finally, I have been responsible for the installation and preoperational testing of 64 diesel generators at the PSD shop, and 30 units at nuclear plant sites including TVA, Florida Power & Light, Duquesne Light, Zorita, Cofrentes (Spain), MP&L, Duke Power, Toledo Edison, Korea and the Phillipines.

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Q.14. Are you familiar with the EMD diesel generators at Shoreham?

A. (Iannuzzi and Lewis) Yes.

Q.15. How did you acquire that familiarity?

A. (Iannuzzi) I have reviewed the manuals and maintenance records concerning those units, spoken with PSD service personnel responsible for their installation and maintenance, and actually visited the site and looked at the units in detail.

(Lewis) I became familiar with the units now at Shoreham when I became Technical Services Manager for PSD in 1981 when they were still owned by New England Power Company (NEPCO). I had a crew of five men acting as a service organization in the New England area. This crew serviced these machines at NEPCO. I visited the NEPCO site at least twice a year with them. I kept up a service record and made sure that work was performed in accordance with the contract. I was also involved in the engineering to connect these EMDs at Shoreham and supervised their installation. Through field service representatives, I coordinated all changes during installation. In addition, I have visited the Shoreham plant and have viewed the EMD diesels in place.

Q.16. Based on your experience with diesel generators, what are the criteria by which their reliability can be judged?

A. (Iannuzzi and Lewis) The EMD diesel generators do not strictly comply with all technical requirements for qualified nuclear grade diesels. Nevertheless, there are a number of factors to which one would normally look to evaluate the reliability of diesel generators and an assessment of these factors for the EMDs at Shoreham allows us to assess their reliability with some degree of confidence. These factors include the following:

- (a) whether the design has been proven through operating history;
- (b) evidence of proper manufacturing processes;
- (c) whether the application of the unit is consistent with its design and intended purpose;
- (d) the inspection and maintenance history of the specific unit;
- (e) the operating history of the specific unit; and
- (f) whether the manufacturer's recommendations of replacement schedules have been followed.

Q.17. Are you familiar with the operating history of EMD engines?

A. (Iannuzzi) These units are EMD 645E4 engines. EMD 645E4 engines have been in service in applications on locomotives, shipboard and land based sites for many years. They are widely used and well accepted in the industry. In fact, this engine is in use in many nuclear plants.

(Lewis) The engines and generators on the four EMDs at Shoreham are the same as those in nuclear service at several nuclear plants which PSD services. They include Nine Mile Point I, Connecticut Yankee, Beaver Valley, Turkey Point, Surry, and others. Industry experience with this design has been positive and indicates their general reliability.

Q.18. Are you familiar with manufacturing processes for EMD engines?

A. (Iannuzzi) I have visited the EMD manufacturing facility at LaGrange, Illinois, and have seen the process by which these engines are made. EMD engines are produced from standardized parts so that all engines are essentially identical. Parts are not required to be individually hand fitted. The PSD Quality Assurance Department has performed audits of the EMD facility as far back as 1974 and qualified EMD as a supplier of equipment to our nuclear program. In my experience we

-13-

have seen no problem with parts provided by the manufacturer that did not perform properly. Therefore, there is assurance not only that the engines were manufactured properly based on their history of reliability, but that replacement parts are and will be of high quality to maintain the past level of high reliability.

Q.19. Is the application of the EMD diesel generators at Shoreham consistent with the design and intended purpose of the units?

A. (Iannuzzi and Lewis) Yes. These units were designed for emergency duty and for use as peaking units. Originally, these were peaking units with minimum dead load pickup capability. When LILCO purchased them, LILCO installed, through PSD, the maximum dead load pickup capability so that the units can function most effectively in emergency situations. Again, as stated earlier, the same generator and engine is, in fact, in use at a number of nuclear plants as an emergency AC power source.

Q.20. Are you familiar with the inspection and maintenance history of the EMD diesels at Shoreham?

A. (Iannuzzi) Yes. I have reviewed the maintenance records from 1978 through 1983, and reports of work performed back to 1974. PSD has had the service contract for these units since 1978.

(Lewis) Yes. I have been responsible for inspection and maintenance of these units since 1981 and have reviewed the PSD and NEPCO maintenance records before that. From that review, it appears that the machines have been inspected and maintained in accordance with the manufacturer's recommendations.

Q.21. Describe the maintenance history of the EMDs now at Shoreham.

A. (Iannuzzi and Lewis) Since 1978, these units have been maintained in accordance with the PSD maintenance service contract which meets or exceeds the maintenance schedule published by EMD. The maintenance program consisted of monthly service trips to perform the maintenance program according to a set service schedule. The maintenance contract by which this service schedule was established is Attachment 6 to this testimony. All recommended maintenance has been performed and any conditions, which were discovered during these visits and which required additional service, were taken care of. There is but one exception. In 1981, EMD recommended

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that the viscous dampers on this model be changed to a different design which provides a longer service life. The viscous damper is a device which absorbs torsional vibration in crankshafts. The viscous damper has not been changed on three of the four units at Shoreham. If necessary, this change could be accomplished in two to three weeks. Even a failure of the viscous damper would not lead to an immediate catastrophic failure of the unit. In our opinion, the unit could run approximately 150 hours after such a failure before the unit would develop problems causing it to shut down. This is greater than the number of hours one would expect annually on such an emergency diesel generator at a nuclear plant at full power. Importantly, based on PSD's inspection of these units at Shoreham, there is no evidence of any problem with the viscous dampers on the three units still having the original design.

Additionally, the service records for the Shoreham EMD diesels show a number of instances of cracked cylinder heads. It has been our experience that early design heads produced by EMD were prone to cracking. These heads were commonly designated by EMD as "Circle 1 and 2" style heads. Later improved designs, designated as "Circle 3," "Diamond 3," or "Diamond 4," have corrected this problem. All heads on the four EMD units at

-16-

Shoreham are of the new design, that is, Circle 3, Diamond 3, or Diamond 4. From the maintenance records of the EMDs at Shoreham, it is evident that there have been no instances of cracking with the new heads.

Unit 1 (NEPCO's Unit 5) received all new power packs, consisting primarily of a cylinder liner, piston, connecting rod, and head, at 12,932 hours; Unit 3 (NEPCO's Unit 7) at 13,153 hours. Inspection of the other two units shows the power packs to be recommended for continued use and they have approximately 1,000 hours of use remaining before an overhaul is recommended by the manufacturer.

Units 3 and 4 (NEPCO's Units 7 and 8) had new turbo-chargers installed at 13,153 hours for Unit 3 and 10,962 and 11,696 hours for Unit 4. Presently we know of no reason the turbo-chargers on all four units should not continue to function properly.

Q.22. What does their maintenance history tell you about the reliability of the four EMD diesel generators at Shoreham?

A. (Iannuzzi and Lewis) The maintenance records show that these units have been properly maintained, and we therefore believe, based on our experience with EMD

engines, that they should continue to operate reliably for the foreseeable future. This presumes that regular and proper maintenance continues.

Q.23. What should that maintenance consist of?

A. (Iannuzzi and Lewis) A continuation of the schedule referenced earlier and in Attachment 6.

Q.24. Are you familiar with the industry experience concerning starting reliability of EMD diesels?

A. (Iannuzzi) Yes. In the years 1968 through 1970, "fast-start" tests were performed by EMD on 17 diesels of the 645E4 type. A total of 1,720 successful starts in ten seconds or less were completed, and three failures were recorded for a total of 1,723 attempts or 99.9% success.

In the years 1971 through 1973, a total of 632 "fast-starts" were performed on five model 20-645E4 (20 cylinder) EMD engines by Bruce GM Diesel (the predecessor of Power Systems Division of Morrison-Knudsen). All starts were "successful" starts in ten seconds or less.

The engines subjected to the above tests were the same type of engine (645E4) as those at Shoreham, with the exception that the starting motors on the tested units

-18-

consisted of redundant air start motors rather than the single electric motor used on the Shoreham units. Additionally, the engines were fitted with a backup electric fuel pump which would be used in the event of failure of the engine driven pump.

Q.25. Are you familiar with starting reliability of electric start units of the type used on the Shoreham engines?

A. (Iannuzzi) In 1967, EMD reported a success rate of 29,136 starts in 29,362 attempts on electric start units, or 99.23%.

(Lewis) PSD experience also shows that electric start units are reliable. There are many such electric start units in commercial use and a few in nuclear use. PSD services many such units and has experienced very few problems with their starting reliability.

Also, the log books for the four EMD diesels at Shoreham show that throughout their lifetime, there have been no failures to start. This is a reliability of 100% which is comparable to and better than the starting reliability found by EMD in its own tests discussed previously.

Q.26. What does this indicate about the starting reliability of these units?

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- A. (Iannuzzi and Lewis) It is evident that EMD 645E4 diesel engines are extremely reliable in starting, regardless of the type of starting motors used.
- Q.27. Are you familiar with the operating history of the four EMDs now at Shoreham?
- A. (Iannuzzi and Lewis) Yes. We have described above our familiarity with the engines and review of their operational as well as maintenance records.
- Q.28. Describe their operating history and state what, if anything, can be deduced about their reliability from their operating history.
- A. (Lewis) These units have been operated for periods of time between 12,833 and 13,277 hours. For the most part, they have been used as peaking units by NEPCO and were run at 2750 KW which is 110% of rated load. During this time, they operated very reliably. There were few problems and no shutdowns for major repairs because of an operating condition. In contrast, at Shoreham they would only be subject to 100% rated load on an infrequent basis which is a less severe load than the engines have already proven themselves capable of carrying.

Q.29. In assessing a diesel generator's reliability, do you distinguish between its past unavailability because of scheduled maintenance and its past unavailability because of unscheduled outages and, if so, why?

A. (Iannuzzi) Scheduled maintenance for a diesel generator normally implies work which is to be done for the purpose of maintaining the longevity of or improving the unit. Such work is normally planned for a time when the unit is not required to be available for service and can be rescheduled if the unit becomes needed. For this reason, it is my opinion that in assessing reliability, only unavailability due to unscheduled outages should be considered. That would be particularly appropriate here since low power testing presumably could be suspended if the diesel generators were out of service for scheduled maintenance.

Q.30. What is the historical availability of these units eliminating unavailability due to scheduled maintenance outages?

A. (Iannuzzi and Lewis) We are aware of no instance in which the units shutdown for repairs during operation as peaking units at NEPCO. Therefore, the historic availability of these units has been very high.

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Q.31. What about compliance with the manufacturer's suggested replacement schedule?

A. (Lewis) Except for the viscous dampers mentioned earlier, all replacements have been made. It is further assuring to observe that NEPCO always replaced parts with new parts when available. It only used UTEX parts, which are parts rebuilt by EMD, when new ones were not available. In my experience, the UTEX parts are perfectly reliable.

Q.32. Can you compare the features of the EMD diesel generators at Shoreham with EMD diesel generators which have been qualified for use at nuclear power plants?

A. (Iannuzzi and Lewis) The EMD model 645E4 diesel engine is a standardized design which has been in continuous production since 1965. There have been 843 units provided for service worldwide in the configuration similar to the units at Shoreham and a total of 16,230 turbocharged 645E4 engines produced. M-K Power Systems Division has provided 65 generator sets, and 110 engines for service in nuclear power plants; additional units have been provided to nuclear plants by GM-EMD and other packagers. The 645E4 engines are the same regardless of the application. Similarly, the generators on the units at Shoreham are identical to those in service at some nuclear plants.

The difference between the Shoreham units and diesel generators which have been qualified for use at nuclear power plants is in the auxiliary equipment which supports the operation of the engine. That equipment includes such items as piping, valves, pumps, heat exchangers, tanks, supports, and electrical equipment. The equipment qualified for use at a nuclear power plant is usually designed and manufactured to specific codes and standards, with consideration given for environmental and seismic qualification and quality assurance documentation. These requirements for the auxiliary equipment are different from the standard commercial items otherwise used. Despite these different component items, the systems and the design parameters for them remain the same.

For example, the design requirements in ASME Section 3 -- a major design criterion -- are intended to ensure the integrity of the pressure boundary of the components and systems during operation under design conditions. Units of the Shoreham design, though not designed to ASME Section 3, have nevertheless withstood many thousands of hours of operation and we are aware of no catastrophic failures of the pressure boundary related to auxiliary equipment. By this, we mean that there have been no failures causing the units to shut

down. If such failures had occurred, we would expect to know about them either because they would have been incurred by one of PSD's many customers or because it is our business to keep abreast of such problems industry-wide in order to better perform our jobs.

Similarly, the diesels at Shoreham do not have Class I-E wiring and electrical equipment which means that the equipment has not been environmentally qualified for these specific units. Nevertheless, this same grade of equipment is in use in many of the EMDs with which we are familiar and has suffered no major failures of which we are aware. The equipment in the specific units at Shoreham is the original equipment and likewise has suffered no major failures. Similarly, the electrical equipment in LILCO's EMD diesels at Montauk is the same and has functioned with no major failures in an environment similar to Shoreham with respect to temperature, humidity, air quality and the like.

One important factor to note in comparing these diesels to those in nuclear service is that these diesels do not have to "fast start." Unlike qualified nuclear diesels necessary for full power operation which must reach their rated speed in a matter of seconds, the

EMDs at Shoreham can idle for several minutes and still have power supplied in timely fashion. This reduces excessive wear on the engine and reduces stress on the auxiliary package. Additionally, the duration over which these EMDs will be used at Shoreham for emergency AC power is limited especially when compared to the 40 year expected life of qualified diesels.

Q.33. Please address the fire protection available to the EMDs at Shoreham and how that might affect their reliability.

A. (Iannuzzi and Lewis) Fire protection available at the EMD units at Shoreham consists of hand held fire extinguishers. Our experience with stationary diesel units of this type is that fires are very rare occurrences. In fact our servicemen have been called in to service only one stationary unit which had been involved in a fire. That fire was caused by a component in the starting system overheating as a result of repetitive start attempts. The consequences of the fire were confined to limited electrical damage. We have not received any other reports of stationary EMD units which have been involved in fires of any kind.

Q.34. Do you have any overall opinion as to the reliability of the four EMD diesel generators at Shoreham and as to whether one of the four can be expected to start and operate when needed in an emergency situation?

A. (Iannuzzi and Lewis) Given the previous starting history of these units, their overall condition, their maintenance records and our experience with EMD engines, it is our opinion that the reliability of these four units will continue to be good for the foreseeable future. We would expect the likelihood that all four units will start and operate in an emergency situation is very high, and that therefore the likelihood that one of the four will start and operate is virtually assured.

POWER SYSTEMS DIVISION/MANAGER OF ENGINEERING
MORRISON-KNUDSEN COMPANY, INC.

JOB TITLE: MANAGER OF ENGINEERING

NAME: Thomas W. Iannuzzi, P.E.

EDUCATION: Pennsylvania State University, 1968
Bachelor of Science, Mechanical Engineering
Union College, 1973
Master of Science, Industrial Administration

BUSINESS EXPERIENCE:

1982 - Present

POWER SYSTEMS DIVISION OF
MORRISON-KNUDSEN COMPANY, INC.

Manager of Engineering - Responsible for direct supervision of project engineers designers and document control personnel required to design complete diesel and turbine generator systems for utility, military and emergency applications. Participation in meetings with customers/vendors as a technical advisor. Supervision of engineering staff in review of test reports, equipment specifications, review of vendor and Power Systems' quotations and production assistance. Writes and certifies Design Specifications for ASME Code components and reviews and approves design reports for Nuclear Projects. Reviews Nuclear Owner's Design Specifications, and implements Codes and Standards related to safety class equipment for Nuclear power generating stations.

1978 - 1982

COLT INDUSTRIES
FAIRBANKS MORSE ENGINE DIVISION
BELOIT, WISCONSIN

Supervisor/Systems Engineering - Supervisor of a group of eight engineers responsible for the engineering of diesel engines and diesel generator units for application in a variety of Government, nuclear and commercial installations.

Responsible for projects involving the application of diesel generators for standby power in nuclear power plants. Units were designed and built to ASME Section III Class 3, and this position required detailed knowledge and application of Code requirements in all phases. Included working within the guidelines of the Nuclear Quality Assurance program in effect in the department and reviewing available nuclear industry reports for overall applicability to the equipment.

Thomas W. Iannuzzi, P.E.

BUSINESS EXPERIENCE: (Continued)

Earlier position was as a Project Engineer, responsible for projects involving the application of diesel generators for standby power in nuclear power plants, including all phases of the project, from specification review through design, drawing preparation, manufacturing, test and shipment. This included close coordination with the customer and many individuals within the company to assure timely completion of the project.

1973 - 1978

COMBUSTION ENGINEERING, INC.
POWER SYSTEMS GROUP
WINDSOR, CONNECTICUT

Lead Engineer - Responsible for the specification and procurement of major nuclear steam supply system components built to ASME Code Section III requirements. This involved translating contract requirements into technical specifications and providing technical follow of the order, including liaison with the customer and various in-house groups. Specific duties as a Lead Engineer included: providing technical expertise and performing detailed review of all safety related work performed by three engineers in the procurement of the components; preparing sections of the Safety Analysis Reports which are used in obtaining the Operating License for the power plant; obtaining and evaluating quotations for equipment, and preparing cost estimates for changes to existing contracts; and maintaining familiarity with shop operations and status of components.

1968 - 1973

GENERAL ELECTRIC COMPANY
MACHINERY APPARATUS OPERATION
SCHENECTADY, NEW YORK

Cognizant Engineer - Engineer for a procurement organization responsible for design, manufacture and refueling of nuclear pressure vessels for Navy applications. Specific duties included: writing specifications for new procurements; reviewing vendor drawings, procedures and schedules for conformance to contract and military specifications; rendering technical assistance in vendor production problems; evaluating manufacturing discrepancies and proposed changes to design for operational suitability; making and substantiating technical recommendations for design improvements to the government; resolving problems arising during installation, and coordinating activity and planning concerning pressure vessels during refueling; and establishing a computer system for maintaining control of shipping and storage equipment.

PROFESSIONAL REGISTRATION:

Professional Engineer, State of Connecticut

POWER SYSTEMS DIVISION/TECHNICAL SERVICES MANAGER
MORRISON-KNUDSEN CO., INC.

TITLE: Technical Services Manager
NAME: Kenneth A. Lewis
EDUCATION: Wilson Technical College, Wilson, North Carolina
 A. S. - Electronics

BUSINESS EXPERIENCE:

- June 1981 - Power Systems Division/Morrison-Knudsen Company, Inc.
Present Technical Services Manager
- Administers and directs Division field service activities, acts as liaison with customers and interface with responsible Division department in the resolution of any technical problems concerning Power Systems Division supplied equipment or equipment being maintained under contract.
- October 1974 - Power Systems Division/Morrison-Knudsen Company, Inc.
June 1981 Senior Test Technician
- Responsible for performing complete testing of Power Systems Division supplied diesel and turbine generator sets. Additional duties included troubleshooting electrical and mechanical systems on generator sets, design of mechanical and electrical systems for gas turbine and diesel powered generator sets.
- March 1972 - Power Systems Division/Bruce GM Diesel
October 1974 Electrician A
- Job duties required the building and wiring of control panels, wiring engine electrical systems and motor controls, general electrical work.
- February 1970 - Pullen Refrigeration
March 1972 Service Mechanic
- Responsible for job estimates, servicing all types of refrigeration equipment, control wiring and general electrical duties.
- September 1969 - Bedgood Heating and Air Conditioning
February 1970 Installation Mechanic
- Duties were the installation and servicing of residential heating and air conditioning systems.



PARTIAL LISTING OF SERVICE WORK 1982/1983

(A) NUCLEAR
DOMESTIC

| <u>CUSTOMER</u> | <u>LOCATION</u> | <u>WORK PERFORMED</u> |
|--|--------------------|--|
| 1. Niagara Mohawk Corp. 9 Mile Point | Oswego, N.Y. | Supervised Annual Inspection Upgrade EMD Engines |
| 2. Florida P&L Co. St. Lucie I&II | Hutchinson Is., FL | Furnished Material and Supervised Total EMD Retrofit Package. Held 5 day Training School. |
| 3. Tennessee Valley Authority Watts Bar | Spring City, TN | Inspect Retrofits and Installation |
| 4. Sacramento Municipal Utility District Ranch Seco | Sacramento, CA | Performed Annual Inspection and Minor Repairs |
| 5. Virginia Electric Power Co. Surry | Surry, VA | Emergency Repair Speed Sensing and Control Panel |
| 6. Carolina Power & Light Robinson | Hartsville, SC | Supervised Annual Inspection |
| 7. Portland G.E. Co. Trojan | Ranier, Oregon | Supervised Installation of Retrofit Equipment |
| 8. Duquesne Light Co. Beaver Valley | Pittsburgh, PA | (a) Supervise Annual Inspection EMD 999 Units (b) Start-up New PSD-M-K 2500 KW Unit |
| 9. Newport News Ship- building Nuclear Aircraft Carrier | Newport News, VA | Supervise Repair of Four (4) Engines |
| 10. Commonwealth Edison Co. La Salle | Marseilles, Ill. | Performed Turn-Key Modification On 6 Engines |

PARTIAL LISTING-(A) NUCLEAR/DOMESTIC (contd.)

- | | | | |
|-----|---|--------------------|---|
| 11. | Jersey Central Power & Light Oyster Creek | Toms River, NJ | Inspection and maintenance on EMD MP45 Units |
| 12. | Duke Power Co. Oconee | Clemson, S.C. | Training School and startup of PSD-MK Furnishe Gen Set |
| 13. | Ebasco-TVA Phipps Bend | Knoxville, TN | Supervise removal and loading for transfer to another Nuclear Plant |
| 14. | Mississippi Power & Light Grand Gulf | Port Gibson, Miss. | Held three (3) consecutive Training Schools |
| 15. | Northeast Utilities Connecticut Yankee | Hartford, Conn. | Performed Annual Inspectio on TW (2) EMD 999 Units |
| 16. | Florida Power & Light Turkey Point | Miami, FL | Performed Inspection & Services |
| 17. | Wasington Public Power | Washington | Install Engine Modificatio |
| 18. | Main Yankee Atomic Power Co. | Wiscasset, ME | Supervise Installation of Modification To EMD Engine |

(B) COMMERCIAL

- | | | |
|----|---|--|
| 1. | AT&T (Formerly Western Electric) | Work performed all parts of U.S.-Startup Retrofit- Emergency. Schools and Training held semi-annual |
| 2. | Panama Pipeline | Start-up, maintenance and personnel training of 20 M PSD-M-K provides power pla |
| 3. | Abbott Labs Rocky Mount | Check-out and start-up DDAD Unit. |
| 4. | Florida Power & Light Flagler Street Station | Emergency Electrical Repai |
| 5. | Detyens Shipyard Mt. Pleasant, SC | Performed Engine Overhaul on USS Mohawk |



PARTIAL LISTING-(B) COMMERCIAL (contd.)

- | | |
|---|---|
| 6. Military Sealift Command Little Creek, VA | Inspection of Main Propulsion Engine |
| 7. Kotzebue Electric Alaska | Startup on two Diesel Gen Set: |
| 8. New England Telephone Co. Essen Junction, Mass. | Emergency Repair and Modifications |
| 9. West Indies Oil St. Johns, Antiquia | Emergency Repair |
| 10. Horne Bros. | Assist in Sea Trials on LST |
| 11. Cementos Nacionales Dominican Republic | Install and Start up Two 2500 KW Units |
| 12. VA Hospital Vermont | Perform Inspection and Repairs to standby Gen Set |



FOREIGN

| <u>CUSTOMER</u> | <u>LOCATION</u> | <u>WORK PERFORMED</u> |
|-----------------------------|-----------------|---|
| Uniona Electrica Zorita | Spain | Supervise start-up 2000 KW PSD/M-K Diesel Gen Set |
| Almaraz | Spain | Supervise Modifications to Engine Gen Sets |
| Cofrentes | Spain | Supervise Total Retrofit of Engine - Start-up and Commission- ing |
| Westinghouse Philippines | Philippines | Start-up two PSD/M-K Tandem Units |
| Westinghouse Korea | Korea | Start-up two PSD/M-K Tandem Units |
| Taiwan Utility Taiwan | Taiwan | Supervise Start-up 4400 KW Tandem Diesel Gen Sets |



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EXPERIENCE

Nuclear Plants

Sacramento Municipal Utility District
Rancho Seco Nuclear Generating Station
Bechtel Corporation, Vernon, California, Engineers
2 - 2750 KW units Single Engine

Power Authority of the State of New York
James A. Fitzpatrick Nuclear Power Plant
Stone & Webster Engineering Corporation
Engineers 4 - 2500 KW units - Single Engine
Forced Synchronized

Tennessee Valley Authority
Sequoyah Nuclear Plant
TVA - Engineer
4 - 4000 KW units - Tandem Engine

Portland General Electric Company
Trojan Nuclear Plant
Bechtel Corporation, San Francisco, California - Engineers
2 - 4416 KW units - Tandem Engine

General Electric Company
Atomic Power Equipment Division
1 - 2500 KW - Standby for HPCS Pump - Single Engine

Taiwan Power Company
Chin-Shan Nuclear Power
Ebasco Services, Inc. - Engineers
4 - 3650 KW units - Tandem Engine

Toledo Edison Company
Davis Bessee Nuclear Plant
Bechtel Corporation, Gaithersburg, Maryland, Engineers
2 - 2600 KW units - Single Engine

Tennessee Valley Authority
Browns Ferry Nuclear Plant
TVA - Engineer
4 - 2600 KW units - Single Engine

GEAPED - Atomic Power Equipment Division
Laguna Verde - Mexico
2 - 2200 KW - Standby for HPSC Pump - Single Engine



EXPERIENCE CONTINUED

Nuclear Plants Continued

GEAPED - Atomic Power Equipment Division
Grand Gulf Nuclear Plant I & II
Mississippi Power and Light
2 - 3300 KW - Standby for HPSC - Tandem

Empresarios Agrupados - Spain
Central Nuclear de Almaraz
Gibbs & Hill - Engineers
3 - 4406 KW, 50 Hz. units - Tandem

GEANED - General Electric Nuclear Energy Division
Kuo Sheng
Taiwan Power Authority
2 - 2400 KW Units - Standby for HPCS Pump - Single Engine

Tennessee Valley Authority
Watts Bar
TVA Engineer
4 - 4750 KW Units - Tandem

Electric Boat Division
General Dynamics Corporation
West Milton, New York Facility
2 - 1700 KW Units - Single Engine

GENED - General Electric Nuclear Energy Division
COFRENTES - Spain
1 - 2400 KW, 50 Cycle Unit - Tandem Engine

GENED - General Electric Nuclear
Energy Division CNV
Val de Caballeros - Spain
2 - 2500 KW, 50 Cycle Unit - Tandem Engine

HIDRO ELECTRICA ESPANOLA
2 - 4407 KW, 50 Hz. Tandem

FLORIDA POWER & LIGHT
ST. LUCIE II Nuclear Plant
2 - 3800 KW Tandem Units

Westinghouse International
KRSKO Nuclear Plant
Yugoslavia
2 - 3920 KW, 50 Hz. Tandem



EXPERIENCE CONTINUED

Nuclear Plants Continued

GENED

Skagit Nuclear Plant
1 - 3300 KW Tandem Unit

GENED

TVA Hartsville & Phipps Bend
6 - 2500 KW Units

Rental Unit - Housed
Dresden Nuclear (1 Yr.)
1 - Housed 2500 KW

GENED

Black Fox Nuclear 1 ea.
2 - 2500 KW Units 1 ea.

GENED

Allens Creek Nuclear (1)
1 - 2500 KW Unit

Westinghouse International
PHPP - 1 Nuclear Power Plant
2 - 4840 KW Tandem Units

Ebasco Engineers
CFE - Mexico
Laguna Verde Nuclear
2 - 3676 KW Tandem Units

Duke Power
Oconee Nuclear
1 - 3500 KW Tandem Unit

Westinghouse International
Kori Nuclear - Korea
2 - 4840 KW Tandem Units

Tennessee Valley Authority
Sequoyah Nuclear
Watts Bar Nuclear
2 - 4750 KW Tandem

Union Electrica, S.A.
Zorita Nuclear Plant
1 - 2600 KW Unit

Pennsylvania Power & Light
Susquehanna Nuclear
1 - 5000 KW Unit



NON-NUCLEAR INSTALLATIONS

U.S. Health, Education and Welfare Dept.
Research Triangle, Raleigh, NC
1 - 1150 KW Unit

Western Electric Company
Long Line Communication Center - Via Satellite
323 Broadway, New York
4 - 2500 KW Units

Southern Bell Telephone Company
Orlando, Florida
1 - 1200 KW Unit

Southern Bell Telephone Company
Miami, Florida
1 - 1200 KW Unit

Orange Hospital
Orange, New Jersey
1 - 1575 KW Unit

Guam Power Authority
2 - 2500 KW UNITS

Meadowbrook Hospital
East Meadow, Long Island, NY
2 - 1575 KW Units

U.S. Navy
Guantanamo Bay, Cuba
2 - 2100 KW Housed Units

Southern Bell Telephone Company
Jacksonville, Florida
1 - 2500 KW Unit

PANAMER
Departamento del Distrito Federal (City of Mexico)
Mexico
2 - 2100 KW Units, 50 Hz. and 1 - 1750 KW Units, 50 Hz.

Departamento del Distrito Federal (City of Mexico)
Mexico
2 - 1350 KW Units, 50 Hz.

U.S. Navy
12 - 2000 KW Trailer Mounted Gas Turbine Units



NON-NUCLEAR INSTALLATIONS CONTINUED

Kansas City Power & Light
La Cygne Power Station
1 - 2200 KW Housed Unit

Eureka Stone Quarry, Inc.
1 - 2100 KW Unit
1 - 2500 KW Unit

Brooklyn V.A. Hospital
New York
1 - 2000 KW Housed Unit

City of Petersburg, Alaska
1 - 2500 KW Unit

Spanish Air Ministry
Madrid, Spain
8 - 3100 KW, 50 Hz. - Housed Units - Forced Synchronized

Instituto Ecuatoriano de Electrificación
Manta, Ecuador
1 - 2500 KW Unit

National Electric Power Authority
Lagos, Nigeria
3 - 2100 KW, 50 Hz., Housed Units

New York & Honduras Rosario Mining Co.
Honduras, Central America
1 - 2500 KW Unit

Allis Chalmers Corporation
City of Winston Salem, NC
1 - 2350 B.H.P. Pump Unit for Raw Water

International Manufacturing and Equipment Company
Impergilio
Salto Grande, Argentina
1 - 2100 KW, 50 Hz. Unit

Instituto Ecuatoriana de Electrificación
Esmeraldas, Ecuador
2 - 2500 KW Unit

Flintkote Company
Calaveras Cement
Calaveras, California
1 - 750 KW Unit



POWER SYSTEMS DIVISION
CREATORS OF ELECTRICAL
POWER SUPPLY SYSTEMS

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NON-NUCLEAR INSTALLATIONS CONTINUED

Western Electric
A. T. & T. Cambridge, Mass.
2 - 2500 KW Units

INECEL - Ecuador
1 - 1575 KW Unit

Merk Sharpe & Dohme
1 - 2500 KW Unit

Spanish Air Ministry
Madrid, Spain
2 - 2100 KW, 50 Hz., Housed Units - Forced Synchronized

Electricity Board of Isafjordur
Iceland
1 - 2100 KW, 50 Hz. Unit

County of Fairfax
Lower Potomac Pollution Control Plant
Fairfax, Virginia
3 - 2500 KW Housed Units

Power Equipment Company, Inc.
City of Euclid, Ohio
1 - 1575 KW Unit

Rosario Resources Corporation
Puerto Cortez, Honduras
1 - 2500 KW Unit

Western Electric
A. T. & T. Rego Park, New York
2 - 2500 KW Units

City of Norton
Kansas
Housed 2500 KW Unit

U.S. Naval Facilities Command
12 - 2500 KW Housed Portable Sets

Potashnik Contractors
Barge - Operating
Arabian
5 - 2500 Skid Mounted

Pecon
Dept. of Water & Electricity
ABU DHABI
7 - 2100 KW, 50 Hz. Housed Units



NON-NUCLEAR INSTALLATIONS CONTINUED

Deputy Ministry of War
For Armament
Iran
1 - 2500 KW Skid Mounted

Miles Laboratory
Elkhart, Indiana
2 - 2500 KW Skid Mounted

PEMEX
Oil Drill
Gulf of Mexico
3 - 2500 KW Skid Mounted

Sistema Electrica Regional Manabi
City of Manta
Ecuador
1 - 2500 KW Skid Mounted

Jeddah Hospital
Saudi Arabia
2 - 2500 KW Skid Mounted

PEMEX
Oil Drill
Gulf of Mexico
3 - 2500 KW Skid Mounted

Williams Export
Paper Plant - Ecuador
1 - 2500 KW Skid Mounted

City of Malagro
Ecuador
2 - 2500 KW Housed Units

Rosario Resources
Puerto Cortez, Honduras
1 - 2500 KW Skid Mounted

Carolina Power & Light
H.B. Robinson Nuclear Plant
1 - 2500 KW Housed Unit

City of Iola
Kansas
1 - 2500 KW - Housed - MP



POWER SYSTEMS DIVISION
CREATORS OF ELECTRICAL
POWER SUPPLY SYSTEMS

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Page Five

NON-NUCLEAR INSTALLATIONS CONTINUED

City of Russell
Kansas

1 - 2500 KW - Housed - MP

General Electric International
Saudi Arabia

1 - 1600 KW Skid Mounted

American Samoa

1 - 2500 KW Skid Mounted

American Samoa

1 - 2500 KW Skid Mounted

Hankook Tire Company

Pusan, Korea

2 - 2000 KW Skid Mounted

Georgia Power Company

Wansley

1 - 2200 KW Housed

General Public Utilities

Three Mile Island

1 - 2500 KW Housed

General Public Utilities

Three Mile Island

1 - 2500 KW Housed

Cementos Nationale

Dominican Republic

2 - Housed 2500 KW Units

Kansas Power & Light Co.

Hutchinson Energy Center

1 - 2750 KW Peaking Housed Unit - MP

N.Y. State Electric & Gas Corp.

Somerset Station

1 - 2200 KW Skid Mounted

1 - 1600 KW Skid Mounted

Duquesne Light Company

Beaver Valley Nuclear Plant

1 - 2500 KW Skid Mounted



NON-NUCLEAR INSTALLATIONS CONTINUED

Balbina Project
Brazil

1 - 2150 KW Housed Unit

St. John River Project
Jacksonville Electric Co.

1 - Tandem - 1400 KW Housed Unit

Jefferson Parish
New Orleans, LA

3-2305 BHP Pump Drives

Kotzebue, Alaska

1 - 20-645E4 Engine For Existing Gen.

1 - 1750 KW, 720 RPM Unit

U.S. Government - USN
Kings Bay, GA

3-2500 KW Housed Units

U.S. Government - USN
Norfolk, VA

1 - 2000 KW, 11.5 KV Unit

U.S. Government - USN
Norfolk Naval Shipyard

1 - 2500 KW Unit

Martin Marietta Alumina
St. Croix - Virgin Islands

1 - 2600 KW Unit

Perulack Compressor Station

Texas Eastern - Dresser Clark

DC - Turbine (Replaces Obsolete Turbine)

Amtrak New Haven Maintenance

Dresser Clark

1 - DC-990 Gas Turbine Unit, 4580 KW

Service Agreement No. 78914

APPENDIX "B"

Power Systems Division will provide the following services:

PART I

Periods of Inspections:

- (a) Monthly, Every 3 Months, Every 6 Months, Annually, After 3 Years, After 6 Years.
- (b) After First 350 Hours of Operation, Every 350 Hours Thereafter, After 700 Hours, After 1400 Hours, After 2000 Hours, After 4000 Hours, After 8000 Hours, After 12,000 Hours, After 16,000 Hours, After 24,000 Hours, and After 72,000 Hours.

Every Month:

A. VISUALLY INSPECT FOR LEAKS

- 1. Cooling system at following locations:
 - a. Radiators and headers
 - b. Marmon flexible couplings
 - c. Thermostatic valves
 - d. Immersion heaters, pump and piping
 - e. Engine water pumps
 - f. Water expansion tank, gauge glass and piping
 - g. Water connections, valves and plugs on engine
- 2. Fuel System at following locations:
 - a. Fuel transfer pumps and piping
 - b. Filters
 - c. Engine driven pumps and piping
 - d. Day tank connections
 - e. Fuel transfer system and piping
 - f. External fuel manifolds and connections
- 3. Lube Oil System at the following locations:
 - a. Filters and piping
 - b. Circulating pump and strainer
 - c. Auxiliary lube oil tank and piping connections
 - d. Connections to the lube oil cooler
 - e. Main bearing pressure switch and gauge connections
 - f. Piping, valves, and plugs under the deck

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- g. Turbine filters and oil lines
 - h. Engine pressure and scavenging oil pumps, oil separator
 - i. Engine gaskets
 - j. Governor, priming
4. Exhaust system at the following locations:
- a. Exhaust manifold base flanges
 - b. Exhaust manifold to turbocharger
 - c. Turbocharger to outlet piping
 - d. Exhaust manifold section connections
- B. ENGINE AIR INTAKE FILTERS:
1. Check oil level in oil bath type filters
 2. Check indicator of disposable paper elements
- C.. VISUALLY CHECK THE FOLLOWING FLUID LEVELS
1. Governor Oil (running)(use 30 weight oil)
 2. Engine Oil (idling)
 3. Engine Coolant
- D. MAKE THE FOLLOWING VISUAL AND AUDIO INSPECTION WITH THE ENGINE OPERATING AT IDLE SPEED
1. Listen for unusual engine and turbine noises
 2. Fan and fan drive system for normal operation
 3. Check stack damper for proper opening (MP-36 only)
- E. CHECK BATTERY CONDITION
1. Check electrolyte level - Add water if required
 2. Check electrolyte specific gravity of pilot cell
 3. Check cell voltage
 4. Inspect connections for corrosion
 5. Observe charger operation by manually starting charger
 6. Initiate 24-hour equalizing charge
- F. CHECK PERFORMANCE OF STANDBY HEATING SYSTEM
1. Note readings of oil and water temperature gauges
 2. Check stack damper for proper closure with the engine stopped (MP-36 only)
- G. VISUALLY INSPECT ELECTRICAL CABINETS
1. MP Unit generator and engine cabinets for discolored connections and field relay appearance
 2. MP Unit starting and solenoid contactors

1. 1237

POWER SYSTEMS DIVISION

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H. GENERAL UNIT INSPECTION:

1. MC Unit (Control House)
 - a. Check all positions of unit and bus metering
 - b. Check circuit breaker indicator lights for proper indication
 - c. Observe synchronizer of performance during automatic start
 - d. Note that breaker trips open between 300 and 600 KW when stopping unit

2. MP Units (Power Unit)
 - a. Observe exhaust for proper condition
 - b. Note governor rack stop setting (check meter in MC)
 - c. Note engine temperature and pressure gauges for proper indication
 - d. Note that no unusual noise or vibration exists
 - e. Give unit complete operating sequence check by initiating start and stop cycles, using all controls

Every Three Months:

- A. Drain condensate from Fuel Tank
- B. Change auxiliary turbocharger oil filter element or clean metal auxiliary oil filter element as applicable.
- C. Take sample of engine lube oil for customers laboratory analysis
- D. Clean and lubricate starters
- E. Lubricate door hinges and inspect door seals and locks
- F. Lubricate ventilating fan motor bearing on MC unit or outdoor switchgear station
- G. Lubricate cooling fan bearings unless 700 hour lubrication occurred first
- H. Lubricate shutter linkage and motor

Every Six Months:

- A. Check operation of protective devices and annunciators
- B. Check inhibitor and add treatment as required (Spring and Fall) "in cooling system".

POWER SYSTEMS DIVISION

Service Agreement No. 78914

Every Year:

- A. Lube oil system
 - 1. Clean scavenging oil screens
 - 2. Change filters and clean filter housing
 - 3. Remove and clean oil separator
 - 4. Inspect and clean oil filter bypass valve
 - 5. Remove and clean strainer in strainer housing

- b. Engine
 - 1. Retorque engine nuts and bolts
 - a. Head frame to crankcase bolts
 - b. Turbocharger to aftercooler air duct bolts
 - c. Turbocharger compressor scroll flange bolts
 - d. Engine and generator hold down bolts
 - e. Check top deck cover seals
 - 2. Check settings
 - a. Overspeed trip by intentionally overspeeding the engine
 - b. Lash adjusters by observation with engine idling
 - c. Governor rack setting, valve and injector timing
 - 3. Ejector Eductor Tube Assembly
 - a. Inspect for carbon deposits and clean
 - 4. Governor oil - flush and change

- C. Generator
 - 1. Visually inspect and clean

- D. Electrical Cabinets and Compartments
 - 1. Visually inspect and clean
 - a. Voltage regulators
 - b. Synchronizer
 - c. All relays, contactors, and circuit breakers

POWER SYSTEMS DIVISION

Service Agreement No. 78914

Every Year (Cont'd.)

- 2. Remove Circuit Breakers from Compartments
 - a. Clean insulators
 - b. Lubricate linkage bearings
 - c. Check operation manually and electrically in test position

- E. Lube Oil Circulating Pump
 - 1. Remove and clean check valve
 - 2. Replace spider

- F. Engine Air Intake Filters
 - 1. Disposable paper elements
 - a. Check for deterioration
 - 2. Oil Bath Type Filters
 - a. Change oil and clean sump
 - b. Clean filter media

- G. Exhaust System
 - 1. Manifold connections
 - a. Inspect for cracks and leaks
 - b. Torque manifold base bolts

Every Three Years:

- A. Crankcase Pressure Detector
 - 1. Unit exchange *(See Note 1)

Every Six Years:

- A. Cylinder Head Grommets, Outlet and Inlet Seals, Lower Liner Seals
 - 1. Replace if not already changed at 8000 Hours. *(See Note 1)

POWER SYSTEMS DIVISION

Service Agreement No. 78914

After First 350 Hours:

After first 350 hours of operation, on a replacement engine or a newly installed service part:

- A. Engine nut and bolt retorquing
 - 1. Cylinder liner water inlet line nuts and bolts
 - 2. Exhaust manifold flange bolts
 - 3. Cylinder head crab nuts
 - 4. Head frame to crankcase bolts
 - 5. Turbocharger to after cooler air duct bolts

Every 350 Hours of Operation:

- A. General Examination
 - 1. Inspect cooling fan belts for defects
 - 2. Visually inspect cylinder head mechanism with engine at idle speed and at operating temperature
 - 3. Add required amount of lube oil
 - 4. Fill oil cups on engine water pumps
 - 5. Check operation of crankcase pressure detector

Every 700 Hours of Operation:

- A. Engine
 - 1. Inspect by barring over and observing the following:
 - a. Air box drain
 - b. Pistons, piston rings and cylinder liners
 - c. Piston to head clearance
 - d. Engine cooling system for leaks
 - e. Engine fuel system for leaks
- B. MP45 Units, Lube Oil Filters
 - 1. Change the following:
 - a. Engine filter elements
 - b. Engine mounted turbocharger filter element
 - c. Auxiliary turbocharger filter element

POWER SYSTEMS DIVISION

Service Agreement No. 78914

Every 700 Hours (Cont'd.)

- C. MP26, MP27, MP36 Units, Lube Oil Filters
 - 1. Change engine lube oil filters
 - 2. Clean turbo oil supply filter
- D. Cooling System
 - 1. Check fan belt tension
 - 2. Lubricate cooling fan bearings unless the three months lubrication occurred first
- E. Fuel Filters
 - 1. Clean fuel suction strainer
 - 2. Change engine mounted fuel filter elements
 - 3. Change fuel transfer pump filter elements (where used)

Every 1400 Hours of Operation:

- A. Engine
 - 1. Check engine speed
 - 2. Remove and clean oil separator element
 - 3. Inspect ejector tube for carbon deposits and clean if necessary
- B. Engine Air Intake Filter
 - 1. Disposable paper element
 - a. Change elements if required
 - 2. Oil bath type filter
 - a. Change oil, clean sump and filter media
- C. Engine Aftercoolers (Air bath filter equipped engines only)
 - 1. Take manometer reading across aftercoolers
 - 2. Clean air passages if required *(See Note 1)

Every 2000 Hours of Operation:

- A. Lube Oil System
 - 1. Change engine lube oil unless yearly occurred first

Service Agreement No. 78914

Every 2000 Hours (Cont'd)

B. Engine

1. Remove and clean strainers in strainer housing
2. Clean scavenging oil screens
3. Clean oil pan
4. Clean filter housing
5. Check injector timing and injector rack length
6. Check all external bolts - tighten if necessary

C. Generator

1. Inspect slip rings and brushes
2. Check for heat, noise, or grease purging at bearing

D. Fuel System

1. Check operation of fuel transfer system controls, switches, and alarm

Every 4000 Hours of Operation:

A. Engine

1. Inspect top deck cover seal and latches
2. Retorque cylinder head crab nuts
3. Retorque main lube oil and piston cooling oil pump shaft nuts
4. Retorque rocker arm assemblies
5. Inspect harmonic balancer

B. Exhaust System

1. Remove manifold screen. Check for cracks and clean. Clean the trap (if applies)
2. Inspect manifold connectors for liner cracks and replace if necessary

C. Lube Oil System

1. Remove and clean turbo oil filter check valve in the engine mounted turbocharger filter head
2. Clean and inspect lube oil filter bypass valve

POWER SYSTEMS DIVISION

Service Agreement No. 78914

Every 4000 Hours (Cont'd)

D. Cooling System

1. Check operation and setting of engine water temperature controls
2. Check torque on flexible pipe coupling bolts
Check for hardened or damaged gaskets
4. Clean and inspect radiators

E. Inertial Filters (MP-45 units only)

1. Take manometer readings across inertial filters. Engine at full speed, no load

Every 8000 Hours of Operation:

A. Engine

1. Replace cylinder head grommets, outlet and inlet seals and lower liner seals. *(See Note 1)
2. Clean top deck, air box, and oil pan
3. Qualify injectors *(See Note 1)
4. Check lash adjusters
5. Check valve timing, reset injector timing and injector racks
6. Unit exchange engine water pumps *(See Note 1)
7. Inspect engine driven fuel pump
 - a. Replace if needed *(See Note 1)

B. Starting Motors

1. Inspect starting motors and renew parts if necessary *(See Note 1)

C. Lube Oil Soak Back System

1. Remove and clean
 - a. Soak back check valve
 - b. Soak back oil pressure relief valve
 - c. Soak back filter bypass valve in soak back filter head
 - d. Soak back pump motor (clean with dry air)
 - e. Replace coupling spider *(See Note 1)

POWER SYSTEMS DIVISION

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Every 8000 Hours (Cont'd)

D. Cooling System

1. Replace cooling system pressure cap

Every 16000 Hours of Operation:

A. Engine Overhaul *(See Note 1)

1. Install new thrust collars
2. Install new lower main bearings
3. Replace cylinder assemblies (power pack change-out)
4. Inspect and qualify connecting rod bearings
5. Inspect and qualify piston cooling tubes
6. Replace water pump seals and all worn parts

B. Turbocharger (Manufactured prior to 71D serial number)

1. Unit exchange *(See Note 1)

C. Soak Back or Lube Oil Circulating Pump and Motor

1. Unit exchange *(See Note 1)

D. Cooling System *(See Note 1)

1. Replace flexible coupling seals (MP26 and MP36 only). Replace internal parts of temperature regulating valve..

Every 16000 Hours of Operation:

A. Turbocharger (Manufactured with 71D or later serial number)

1. Unit exchange *(See Note 1)

B. Flexible drive couplings

1. Inspect flexible drive couplings for torn or split rubber bushings

Every 24000 Hours of Operation:

A. Lube Oil System *(See Note 1)

1. Rebuild lube oil pumps
2. Clean and test lube oil cooler

Service Agreement No. 78914

Every 24000 Hours (Cont'd)

- B. Fuel System
 - 1. Rebuild or replace engine or motor driven fuel pump *(See Note 1)
- C. Engine *(See Note 1)
 - 1. Replace crankshaft viscous damper
 - 2. Replace oil pumps
 - 3. Replace lower liner inserts
 - 4. Replace injector control linkage links, seals, and bearings
 - 5. Check camshaft bearings
 - 6. Check rocker level and roller bushings
 - 7. Inspect crankcase
 - 8. Replace crankshaft harmonic balancer (3 pack type, where used)
- D. Governor
 - 1. Unit exchange *(See Note 1)
- E. Generator Bearing
 - 1. Relubricate *(See Note 1)
- F. Cooling Fan
 - 1. Replace drive bearings *(See Note 1)

Every 72000 Hours of Operation:

- A. Unit exchange engine *(See Note 1)
- B. Unit exchange generator *(See Note 1)

*NOTE 1: Performance of these items subject to additional billing not part of this Maintenance contract. Items under 4000 Hours of Operation, 8000 Hours of Operation, 12000 Hours of Operation, 16000 Hours of Operation, 24000 Hours of Operation and 72000 Hours of Operation are not included as part of this agreement. They are recommendations only. Performance of any part of the aforementioned recommendations will be additional to the agreement and require prior approval to perform and additional billing to the customer.

#12-4-SueT 1

(Whereupon, the hearing is recessed at

2 12:34 p.m., to reconvene at 2:01 p.m., this same
3 day.)
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A F T E R N O O N S E S S I O N

JUDGE MILLER: All right.

MR. ROLFE: Judge Miller, at this time LILCO would like to renew its motion to have the second portion of Mr. Gunther's testimony bound into the transcript from April 25.

JUDGE MILLER: Okay. Any objections?

MR. PALOMINO: On Mr. Rolfe's representation there is no motions to strike that testimony, I have no objection.

JUDGE MILLER: Staff?

MR. PERLIS: The Staff has no objection.

JUDGE MILLER: Okay. It will be admitted. It may have been previously admitted, I'm not sure. In any event, it may be made a part of the transcript.

It was direct testimony and not exhibits, wasn't it?

MR. ROLFE: That's correct, Your Honor.

JUDGE MILLER: It will be made part of the transcript appropriately numbered.

MR. ROLFE: The other small logistical matter, Your Honor, is that the exhibit, the letter which was marked for identification as LILCO LP-2, copies have been distributed to all of the parties. Since Your Honor suggested

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that we mark it, I didn't know whether Your Honor would also want to admit it into evidence for purposes of making the record complete.

JUDGE MILLER: Is there any objection to it being put into evidence?

MS. LETSCHE: No.

JUDGE MILLER: There being no objection, it will be admitted.

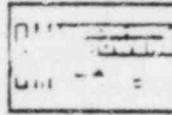
(The document previously marked LILCO Exhibit LP-2 for identification was received in evidence.)

INDEXXXXX

ELECTRO-MOTIVE DIVISION

GENERAL MOTORS CORPORATION

LA GRANGE



ILLINOIS

November 2, 1971

Mr. Frank Jones
 Bruce G.M. Diesel, Inc.
 P.O. Box 1923
 Rocky Mount, North Carolina 27801

Subject: Bruce/Pasny
 EMD Order 2630
 Four (4) EMD Model S20B4W Units
 Starting Reliability Report

Dear Mr. Jones:

There is enclosed one (1) copy of Mr. H. A. William's (EMD Engineering) report concerned with starting reliability of the EMD Model 999 unit, which unit developed by Electro-Motive for nuclear power plant emergency standby protection is similar to that equipment provided on subject order with regard to engine and starting motor configuration.

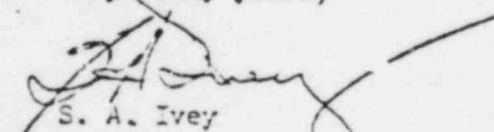
This report is prepared in response to Mr. Wainrib's (Stone & Webster) request and is offered as reference data by Electro-Motive for evaluation and interpretation by Mr. Kaufmann (MIT) in establishing a level of total system reliability as proposed by Stone & Webster for the PASNY project.

We must ask that data included in the attached report be treated as proprietary and that any reference or use of the report and/or data contained therein be cleared with Electro-Motive prior to dissemination.

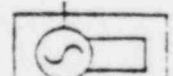
It is of interest to note, in addition to the enclosed report, Electro-Motive files on starting reliability of the EMD Model MP type unit (equipped with single electric start motor) indicates that information has been obtained as of December 11, 1967 which reveals from a total of 29,362 start attempts 29,136 start attempts had been successful, indicating 99.23% successes.

Electro-Motive is, of course, vitally interested in the interpretation and conclusions reached by Mr. Kaufmann in his evaluation of this report.

Very truly yours,


 S. A. Ivey
 Manager - Reseller Sales

SAI:jas
 cc: J. Wainrib - 2 copies report
 H. Williams



#12-7-SueT 1

JUDGE MILLER: Okay.

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MR. ROLFE: LIICO calls to the stand, Mr.

3

Cornelius A. Szabo.

4

(The witness, Mr. Cornelius A. Szabo is

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sworn by Judge Miller.)

6

Whereupon,

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CORNELIUS A. SZABO

8

is called as a witness by and on behalf of the Long Island

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Lighting Company and, having first been duly sworn, was

10

examined and testified as follows:

INDEXXXXXX 11

DIRECT EXAMINATION

12

BY MR. ROLFE:

13

Q Mr. Szabo, would you please state your full name and business address?

14

15

A My name is Cornelius A. Szabo. I work for Long Island Lighting Company, 175 East Old Country Road, Hicksville.

16

17

18

Q Mr. Szabo, I'm not sure your microphone is switched on.

19

20

A Okay. My name is Cornelius A. Szabo. I work for Long Island Lighting Company. And my address is 175 East Old Country Road in Hicksville.

21

22

23

Q Mr. Szabo, do you have before you a document entitled "Testimony of Cornelius A. Szabo on Behalf of Long Island Lighting Company" consisting of 15 pages and two

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attachments?

2 A Yes, I do.

3 Q Is that testimony which you prepared, Mr.
4 Szabo?

5 A Yes.

6 Q Is that testimony true and correct, and do you
7 adopt it as your testimony in this proceeding?

8 A Yes, I do.

9 Q Are there any changes you need to make to that
10 testimony, sir?

11 A No.

12 Q Mr. Szabo, will you summarize please your
13 professional qualifications?

14 A These are given in some detail in Attachment 1.
15 I've been with Long Island Lighting Company since 1981. I'm
16 Manager of Resource Evaluation currently, responsible for
17 forecasting oil and coal prices and availability, among other
18 things, and testifying as the Company's expert witness in
19 these areas.

20 I have a Bachelor's in Chemical Engineering from
21 Manhattan College where I was awarded the Carl Prutton
22 Medal for the outstanding chemical engineering graduate.

23 And I have a Master of Science Degree from
24 Columbia University where I was a National Science Founda-
25 tion Fellow. I was also elected in graduate school in

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2 college to the honor societies for Scientific Research,
3 Chemistry and Engineering.

4 I was employed in the oil industry for eight
5 years, from 1963 to 1971, with Mobil, Exxon and Shell;
6 and was a management consultant for ten years from 1971
7 through 1981.

8 While I was a management consultant, my
9 clients included the Arabian American Oil Company,
10 ARAMCO, which produces nearly percent of the oil in Saudi
11 Arabia. And this was involved in a special project for
12 the Chairman of the Board concerning an audit of their --
13 Saudi Arabia's industrialization and the programs to in-
14 crease Saudi Arabia's ability to produce oil.

15 I also consulted to six public service commis-
16 sions in the area of fuel prices, fuel supply and avail-
17 ability, including the New York Public Service Commission.
18 And I've consulted to utility clients in over thirteen
19 states.

20 MR. ROLFE: Thank you, Mr. Szabo. Mr. Szabo is
21 now ready for voir dire.

22 JUDGE MILLER: Voir dire.

23 MR. SEDKY: Just to introduce myself, Your Honor,
24 my name is Cherif Sedky. I'm a member of the firm of
25 Kirkpatrick, Lockhart. This is my first opportunity other
than the brief argument several weeks ago.

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JUDGE MILLER: Thank you. We are glad to see
you.

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3

VOIR DIRE EXAMINATION

4

BY MR. SEDKY:

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Q Mr. Szabo, both your undergraduate and graduate
studies were in chemical engineering; isn't that correct?

7

A Yes.

8

9

Q While you were doing your graduate course of
studies, was your education limited to subjects in the
chemical field?

10

11

A There were studies in the applied mathematics
fields and operations research as well as chemical engineer-
ing.

12

13

14

Q But you don't consider yourself a military
expert, do you?

15

16

A No.

17

18

Q How about in the field of political science? Do
you consider yourself a political scientist?

19

20

21

22

23

24

A I consider myself to be quite knowledgeable of
the situation in the Persian Gulf region, having spent a
time auditing the Arabian American Oil Company for Deloitte,
Haskins and Sells and having maintained an interest in
that part of the world, both before and after that assign-
ment.

25

Q When was that assignment?

#12-11-SueT

A 1977.

2 Q Have you published any papers on the political
3 climate in the Middle East or the Gulf Region?

4 A I haven't published any papers, but I have
5 testified in the Port Jefferson Coal Conversion Studies
6 concerning the possibility of a disruption in that area.
7 I have also --

8 Q Excuse me. My question was whether you have
9 published any papers in the area of the political situation
10 in the Middle East?

11 A No, I haven't.

12 Q Have you taken any courses in graduate school
13 focused on the political conditions in the Middle East?

14 A Not courses, no.

15 Q Now, your testimony at Page 2, if you would
16 direct your attention to it please, states in part, "...my
17 comprehensive chemical engineering education provides in-
18 sight into the economics and availability of residual oil
19 supply."

20 In what way does your chemical engineering bac-
21 ground give you any more insight into the economics than
22 the man on the street?

23 A Okay. Let me explain. Residual oil is produced
24 in a refinery. The first process in a refinery is the
25 process of distillation. That is a chemical engineering

#12-12-SueT

2 in what they call a unit operation. Then, there is a
3 process called vacuum distillation. Again, we studied this
4 in chemical engineering.

5 The products coming out of the refinery process,
6 some of them will go to a solvent extraction process. Again,
7 that is a subject of chemical engineering. Some of the
8 other products in the refinery will go to chemical process
9 reactors. They will be converted via a chemical process
10 into other species. Chemical process reactors or study
11 in chemical engineering.

12 And at Columbia University, I did research into
13 chemical process reactors and was elected into Sigma Xi,
14 the National Scientific Reserarch Honor Society, based on
15 my studies into chemical process reactors.

16 Q I understand that. I understand that to suggest
17 that you understand the process, you are conversant with
18 the technical aspects of conversion of various fossil fuels
19 into various components and so forth.

20 But my question was more narrowly directed, and
21 that is, what does that technical background give you in
22 terms of any expertise in the market of supply and demand,
23 financing of fuel products?

24 A As compared to what?

25 Q Well, as compared to --

JUDGE MILLER: The man on the street was --

#12-13-SueT1

WITNESS SZABO: Compared to the man on the street,

2 I think that technical process is a very key aspect in
3 determining the availability and economics of residual
4 oil.

5 Residual oil is produced in the refinery after
6 certain products such as gasoline, petrochemicals, metal
7 distillates are refined out of residual oil. And also there
8 has been a trend accelerating since the beginning of this
9 decade in the 1980s to convert residual oil to other pro-
10 ducts. This has already impacted the marketplace.

11 Because of my chemical engineering background,
12 I read periodically technical journals in the field with
13 regard to the technology of residual oil conversion and
14 manufacturing. I doubt someone without this background
15 would have either the incentive or the know-how to be fully
16 familiar with this technology.

17 It also enables me to have discussions with our
18 oil suppliers, which we have, concerning their long term
19 plans and their availability in residual oil.

BY MR. SEDKEY: (Continuing)

20 Q During graduate school, did you take any courses
21 in economics?

22 A No. I did take an undergraduate, I did.

23 Q How many?

24 A A year of economics.
25

#12-14-SueT

Q Is that the extent of your economic training?

2

A Formal training?

3

Q Yes.

4

A Yes, formal training but not experience.

5

Q Do you have any informal training in economics

6

such as through banking, houses or brokerage firms or

7

night school?

8

A Well, in terms of experience, I was employed

9

six years by Deloitte, Haskins and --

10

Q Excuse me. I asked for training, not experience.

11

A You mean formal courses?

12

Q Whether formal or informal. I'm talking about

13

training. Did you go to American Banking Institute

14

Seminars? Did you go to Securities Industries Seminars?

15

Anything like that?

16

A No.

17

I should like to add --

18

Q Wait for the question, Mr. Szabo.

19

A Okay.

20

Q And your testimony also referred -- I'm referring

21

now to Page 3, in response to Question Number 4, that you

22

conducted eight utility fuel-related management audits.

23

What is a fuel-related management audit?

24

A A fuel-related management audit is a review of

25

the procurement processing -- procurement process of a

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utility, how they go ahead and how they purchase supplies, whether they do it in the most economical fashion.

Recommendations are also made with regard to what fuel strategy utilities should use. Now, New York State requires that every utility have a management audit every five years. And I conducted the fuel-related portions of the management audit at Central Hudson in both 1979 and the follow-up work at the direction of the New York Public Service Commission in 1981.

Also, as part of my work with the Public Utility Review Board of New York City, I did an audit of the fuel -- procurement operations of the Consolidated Edison Company in 1979 and '80.

Q Would you also describe the nature of the management audit that you conducted for the Board Chairman of ARAMCO?

A Yes. In 1975, ARAMCO, which at that time was a consortium owned by four American oil companies, Mobil, Exxon, Texaco and Chevron, two of whom I had experience with, was given the responsibility by the Saudi government to manage the master gas program, which was a program to capture all of the gas that was being flared from the Saudi fields, and then use that as the basis for the electrification of the oil producing areas, use that gas as the basis for the industrialization, building new plants at Yanbu and Zubail, et cetera, and essentially bring the country into the Twentieth

#12-16-SueTq

2 Century. By 1977 there had been some concern that ARAMCO
was not managing this properly.

3 I would like to put into perspective that the
4 budget for this process was thirty billion dollars, about
5 ten times the budget for the Alaskan pipeline. And Deloitte,
6 Haskins and Sells, whom I was employed with as a manager,
7 in their management advisory services practice, was retained
8 by the Chairman of ARAMCO to do a review of their procure-
9 ment and planning related to the gas program and other
10 projects.

11 Now, other projects were important, too. One
12 was the pipeline to --

13 JUDGE MILLER: Wait. What was the question?

14 MR. SEDKEY: My only question was what was it
15 that he did for -- as part of that management audit, and
16 I believe he said that he was managing a master gas program.

17 WITNESS SZABO: I'm giving you the background. I
18 was performing the audit of that. That's the background.

19 We were reviewing the procurement practices of
20 ARAMCO, the planning practices. We --

21 JUDGE MILLER: Get to the foreground, now. We
22 have got to move along here. It's all very interesting
23 but let's speed it up.

24 MR. ROLFE: Judge, the question was to describe
25 the management audit, and I think he was trying to give a

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complete description as he was --

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end #123

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JUDGE MILLER: But he was starting at the rear end first. We would like to have him go right to the heart of it and he can work his way out to the periphery. Fore-ground first and then we will go from there.

Next question.

BY MR. SEDKEY: (Continuing)

Q Now, you were not individually engaged by ARAMCO, this was part of your responsibilities for an accounting firm?

A Yes, Deloitte, Haskins and Sells, the auditor of ARAMCO.

1 Q On page 5 of your prepared testimony, you
2 refer to the fact that you testified as LILCO's expert
3 witness before the New York Public Service Commission in
4 two rate cases. Could you just briefly describe the nature
5 of that testimony?

6 A Yes. That was testimony with regard to projection
7 of oil prices during the projected fuel year, and also
8 testimony with regard to LILCO's fuel procurement practices
9 in fulfillment of the New York Public Service Commission
10 requirement that testimony be given with regard to fuel
11 procurement practices.

12 Q How about the testimony in your capacity as a
13 Staff member to DELMARVA -- Oh, I am sorry -- the Delaware
14 Public Utility Commission.

15 A Yes. The -- we have two separate proceedings.
16 One related to gas, one related to electric fuel. There
17 were adjustment clauses, and in these proceedings we did
18 an audit in the electric side. An audit of the fuel procure-
19 ment process of DELMARVA, an audit of the numbers that had
20 been submitted in the fuel procurement hearing, fuel
21 adjustment hearing, and made recommendations regarding the
22 fuel adjustment clause.

23 It was a little simpler on the gas side, in
24 that the gas procurement was not as detailed an audit,
25 although there was some in there.

1 MR. SEDKY: That is all I have on voir dire,
2 Your Honor.

3 JUDGE MILLER: Any other voir dire?

4 MR. PERLIS: No voir dire.

5 JUDGE MILLER: In what areas now of expertise,
6 on what basis are you proffering the testimony of this
7 witness?

8 MR. ROLFE: Mr. Szabo is proffered as an expert
9 in the area of oil supply and the pricing of oil as it is
10 needed to generate electricity, specifically with respect
11 to LILCO's usage of oil and the effect of foreign events
12 or the fact that LILCO is dependent on foreign oil and how
13 the possible early commercial operation as might result
14 from the granting of this exemption might lead to public
15 benefit from decreasing the dependence of LILCO on foreign
16 oil for the generation of electricity.

17 MR. SEDKY: Your Honor, I do have an objection
18 at least to a part of that. While Mr. Szabo's background
19 was strictly in chemical engineering, his experience suggests
20 that he certainly may have had an opportunity to observe
21 issues concerning supply and availability of oil to the
22 extent -- and I may have misheard Mr. Rolfe -- but if he is
23 going to be testifying as an expert on the effect of foreign
24 events, we believe that is beyond the intent of his expertise.

25 JUDGE MILLER: I don't think I heard any such

1 proffer.

2 On the other hand, that is a very broad subject,
3 too. There are many degrees of so-called expertise when
4 you get into an area as broad and vague as that. We will
5 just have to wait and see.

6 MR. SEDKY: Having looked at his testimony,
7 I gather he plans to testify concerning the likely or
8 potential impact of the Iran-Iraq war, and with all due
9 deference to Mr. Szabo, I don't believe he is in any better
10 position to evaluate that impact than you or anybody else
11 in this room is.

12 JUDGE MILLER: It is an interesting subject.

13 MR. SEDKY: It is, no doubt.

14 JUDGE MILLER: I am not entirely certain about
15 that, but let's go forward with the testimony, or cross
16 examination.

17 MR. SEDKY: Well, I just reserve my objection
18 to that extent, Your Honor.

19 MR. ROLFE: Your Honor, I won't address Mr.
20 Sedky's objection at this point. Maybe it would be helpful
21 for the witness to summarize his testimony for the Board
22 before being proffered for cross examination.

23 JUDGE MILLER: All right. Birdseye view.

24 WITNESS SZABO: Okay. I testify as to the
25 source of oil for LILCO. How much is foreign versus how

1 much is domestic. The impact of foreign events in the oil
2 market upon the domestic oil that LILCO uses. I testify
3 with regard to the impact of past disruptions in the world
4 oil markets upon prices of domestic oil, and the potential
5 in the future.

6 I also testify with regard to certain trends
7 in both oil production in the United States and refining
8 that will reduce our availability of domestic oil, although
9 it is a fairly minor portion, and then I indicate some of
10 the potential price increase due to a disruption, and some
11 of the factors that will affect the magnitude of that
12 increase.

13 I discuss the amount of oil that Shoreham would
14 back out when it is in operation in 1986, and I indicate that
15 this kind of disruption could happen at any time. Based on
16 my experience, having been in the Middle East, having seen
17 the operation there.

18 I would like to say further, and it is in my
19 qualifications, Saudia Arabia is the world oil price setting
20 leader, with up to ten million barrels of oil a day in spare
21 capacity, and essentially what happens to Saudia Arabia
22 controls the oil market. Having been there, having seen the
23 operation of ARAMCO, their oil producing company, I believe
24 I am qualified to talk about the possibility of a disruption.

25 JUDGE MILLER: Why do you consider Saudia Arabia

1 to be the leader in the world price of oil?

2 WITNESS SZABO: For a number of reasons, Your
3 Honor. First of all, they have the largest proven oil
4 reserves in the world. They have about a quarter of it.

5 Secondly, they have up to ten million barrels
6 of oil capacity that they can swing up or down. In 1979-
7 1980 -- excuse me -- 1980-1981 when the Iran-Iraq war broke
8 out, the Saudis made available oil to the market to create
9 the current oil glut, and keep the price of oil from rising.

10 On the bottom side, the Saudis have also taken
11 steps --

12 JUDGE MILLER: The price of oil from rising
13 following the 1979 doubling of the doubling --

14 WITNESS SZABO: Going from '79 to '81, and then
15 it went down and declined not all the way, but went down
16 from 34 dollars a barrel down to 29.

17 JUDGE MILLER: When did that happen?

18 WITNESS SZABO: They had the 34 dollar a barrel
19 price for --

20 JUDGE MILLER: When it went from 34 to 29, when
21 did that occur?

22 WITNESS SZABO: Okay. The 34 was in October of
23 '81, and the 29 was in March of '83.

24 JUDGE MILLER: Now, at that time there was
25 a glut of oil in the world, both in the Arabian produced

1 as well as the non-Arab oil, wasn't it?

2 WITNESS SZABO: Almost all the glut, Your Honor,
3 was in Saudia Arabia and the adjacent countries.

4 JUDGE MILLER: What about the oil produced by
5 Norway, Great Britain, Alaska?

6 WITNESS SZABO: Those countries, Your Honor, have
7 been producing at maximum capacity. The excess capacity in
8 the world is in the countries on the south shore of the
9 Persian Gulf.

10 JUDGE MILLER: It is excess only because they
11 choose how much to produce, don't they, unless there is a
12 qualifier of their own economic needs, from their own
13 industrial intended expansion?

14 WITNESS SZABO: That is right, Your Honor.

15 JUDGE MILLER: What about Saudia Arabia now?

16 WITNESS SZABO: Well, Saudia Arabia has within
17 the period of let's say 1981 through 1983, has adjusted their
18 oil production from a high of ten and a half, maybe eleven
19 million barrels of oil a day at the peak of the Iran-Iraz
20 war, down to about four, four and a half million barrels a day
21 in the Spring of '83 and Summer of '83, in order to prevent
22 an OPEC oil collapse.

23 They are the residual supply to OPEC. The OPEC
24 agreement states that Saudia Arabia will provide the swing
25 in order to stabilize the market.

JUDGE MILLER: When you say, 'stabilize the market,'

1 you mean for the OPEC producers to try to maintain the higher
2 price of oil, which in spite of that did slip from about
3 34 dollars to about 29.

4 WITNESS SZABO: Your Honor --

5 JUDGE MILLER: That happened, too, didn't it?

6 WITNESS SZABO: Yes, but you see, it is not
7 an objective of oil producers to keep the price of oil high.
8 The Saudis --

9 JUDGE MILLER: Which ones do not strive to
10 keep it high?

11 WITNESS SZABO: Okay. Saudia Arabia, the
12 Emirities, and Kuwait, because they have tremendous financial
13 reserves. They want to keep oil as a viable commodity into
14 the 21st Century so they have a chance to become westernized.

15 JUDGE MILLER: Saudia Arabia also has incurred
16 in the last five to six years very substantial -- in terms
17 of billions, and billions of dollars equivalent of expenditures
18 per year for the national purposes to control their budget,
19 haven't they?

20 WITNESS SZABO: Yes they have, Your Honor.

21 JUDGE MILLER: That has become very extensive
22 in terms of the percent or ratio of the monies spent annually
23 by the budget of Saudia Arabia.

24 WITNESS SZABO: I believe in 1983, Your Honor,
25 they went into a deficit for the first time.

1 JUDGE MILLER: I think so. That was the first
2 time in a number of years, wasn't it?

3 WITNESS SZABO: Right, yeah.

4 JUDGE MILLER: And part of the problem with
5 Saudia Arabia is that contrary to her expressed desires,
6 at least of Sheik Hammeni and others, has been the necessity
7 of holding down its oil production because of the threats
8 of Iran, Libya and others, who because of their own
9 situation -- whether war or non-war -- are interested in
10 boosting their income very substantially, isn't that true?

11 WITNESS SZABO: That is true, yes.

12 JUDGE MILLER: So, therefore, this restraint
13 of Saudia Arabia is not all that voluntary is it?

14 WITNESS SZABO: No, it is not that voluntary.
15 No, I am not saying it is voluntary. It is their deliberate
16 national policy to balance the market, because they are looking
17 at the 21st Century. That is when their oil runs out.

18 JUDGE MILLER: They have plenty of oil though,
19 haven't they, with the current rates of production? The
20 Iotollah and others -- and then Iraq wants to get their
21 pipelines going and they get their war over with in some
22 fashion. Isn't that going to produce even more oil on the
23 world market, and depress prices?

24 WITNESS SZABO: There may be some depressing
25 influence, but also there will be probably an increase in

1 oil demand.

2 There will also be a decline in production in
3 the United States, Russia, and a peaking out of the North
4 Sea during this period.

5 JUDGE MILLER: The year 2000, or where are you
6 looking?

7 WITNESS SZABO: I would say you are looking
8 at the end of the decade, early 1990's.

9 JUDGE MILLER : Okay. Where are we? You were
10 asking questions.

11 MR. ROLFE: Mr. Szabo is ready for cross
12 examination.

13 JUDGE MILLER: You may cross.

14 MR. SEDKY: Thank you, Your Honor.

XXX INDEX

15 CROSS EXAMINATION

16 BY MR. SEDKY:

17 Q Mr. Szabo, is it fair to state that the basic
18 thrust of your testimony is that to the extent that commercial
19 operation of the Shoreham facility displaces foreign oil, that
20 is the benefit you see?

21 A In my testimony, yes.

22 Q That is the basic thrust of your testimony,
23 isn't it?

24 A Right.

25 Q Right. Now, if it turns out that when Shoreham

1 begins to, if ever, operate commercially, is impacted by
2 factors other than whether it gets a low power license
3 now or ninety days from now, then your testimony insofar
4 as this hearing is concerned, just has no bearing, isn't
5 that correct?

6 MR. ROLFE: Objection, Your Honor.

7 WITNESS SZABO: I don't understand your question.

8 MR. ROLFE: Objection. The witness --

9 JUDGE MILLER: I don't know where we are now.
10 There was a question. The witness was permitted to rule on
11 it, and I think he sustained himself if I recall. Let's
12 rephrase things.

13 BY MR. SEDKY: (Continuing)

14 Q The premise behind your testimony is low power
15 testing will, in fact, mean earlier full power operation,
16 isn't that correct?

17 A The premise is that if it does lead to earlier
18 full power operation, then that would be a benefit to LILCO
19 and its consumers.

20 Q Right. So, if earlier testing ends up having
21 no bearing on when full power operation, if ever, occurs,
22 then your testimony wouldn't have any bearing on the grant
23 of the low power license, isn't that correct?

24 A As I understand it, yes.

25 Q And, indeed, your testimony does not address the

1 relationship between low power testing and dependence on
2 foreign oil, does it?

3 A Let's see. My testimony indicates that if the
4 plant can operate sooner, it will provide a measure of
5 energy independence. I do not address whether low power
6 testing will necessarily guarantee an earlier operation.

7 I think other witnesses might be doing that.

8 Q But the availability of oil during the period
9 of low power testing is not the focus of your testimony at
10 all, is it?

11 A No. Unless low power provided incremental
12 electricity to the grid, and I am not sure if it does.

13 Q And to the extent that it does not, then -- your
14 testimony doesn't even address the benefit that comes out
15 of low power testing per se?

16 A None. Just addressing the benefit from early
17 operation.

18 MR. SEDKY: Might I be indulged for just a
19 minute, Your Honor.

20 JUDGE MILLER: Yes.

21 (Counsels confer)

22 MR. SEDKY: Your Honor, based on the witness'
23 last response, I move to strike his testimony. He apparently
24 is only testifying as to the impact of full power operation,
25 which is not being heard here.

1 JUDGE MILLER: I think he thinks he is testifying
2 as to what impact, if any, there would be from earlier rather
3 than later low power operations.

4 MR. SEDKY: I believe not, Your Honor. I asked
5 him that question. He is testifying as to the results that
6 flow from full power operation, in that they -- the customers
7 would be shielded, I gather, from the impact of a cutoff, and
8 this is just not --

9 JUDGE MILLER: That is true, but I understood
10 him also to be testifying as to the difference, if any,
11 between the earlier operation of low power. That is to say,
12 low power by virtue of exemption versus ninety days, or
13 whatever it might be, low power by virtue of whatever happens
14 in the other proceedings.

15 I understood that to be what he was saying.

16 MR. SEDKY: Perhaps I can clarify it with another
17 question, Your Honor.

18 BY MR. SEDKY: (Continuing)

19 Q Mr. Szabo, you recall being deposed in this
20 proceeding, do you not?

21 A Yes.

22 Q Counsel , I am going to refer to his testimony
23 on pages 37 and 38. I will represent to you that I am
24 quoting, and of course, if I am quoting out of context I am
25 sure Mr. Rolfe will correct me.

1 The question is: If I understand you correctly,
2 the availability of oil during the period between low power
3 operation and full power operation, if ever, isn't an issue
4 in your mind. It doesn't impact your conclusions?

5 Answer: I haven't focused on that now aspect.
6 And you go on to state -- I asked: Are you contemplating
7 testifying about that issue?

8 Answer: No. I am contemplating testifying
9 about the fact that Shoreham will reduce LILCO's dependence
10 on foreign oil, and help to shield its -- LILCO in operation
11 -- shield its ratepayers from the impact of a disruption.
12 High prices, and availability.

13 That was your testimony, isn't that correct,
14 in deposition?

15 A Right. And I think the answer to your question
16 is right on page 5, Question 7, in my filed testimony.

17 JUDGE MILLER: What page?

18 WITNESS SZABO: Page 5, Question 7, Your Honor.
19 What is the purpose of your testimony?

20 JUDGE MILLER: The early performance of low
21 power test ng, which might lead to an earlier date for
22 commercial --

23 BY MR. SEDKY: (Continuing)

24 Q Now, where in your testimony do you -- in other
25 words, your prepared testimony states as you quoted: My

1 testimony describes the potential benefit to LILCO and the
2 public arising from the early performance of low power
3 testing, which in turn might lead to an earlier date for
4 commercial operation.

5 Now, where in your fifteen pages of testimony
6 do you discuss any benefit to LILCO and the public arising
7 from the early performance of low power testing?

8 A I don't address those words specifically. I
9 am taking about, as it says here, which might lead to an
10 earlier date for commercial operation.

11 We look at Question 18 on page 15.

12 JUDGE MILLER: Page 15?

13 WITNESS SZABO: Yeah, Question 18. Question:
14 In your Opinion, would LILCO and the public benefit from
15 early operation of Shoreham?

16 Okay, we mention in the first sentence: Shoreham
17 will improve LILCO's ability to protect its ratepayers from
18 price increases.

19 The second sentence is the nub of my testimony:
20 Given the extreme volatility in the Persian Gulf, Middle East,
21 including but not limited to an ongoing major war, such
22 a disruption could happen at any time.

23 End 13
24 Mary fols.

25

Sim 14-1 1

It could happen tomorrow.

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JUDGE MILLER: What is that supposed to mean?

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THE WITNESS: It means, Your Honor, that it is unpredictable, but the disruption could happen next week or tomorrow if low power ---

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JUDGE MILLER: Suppose it happened next week. What would be the effect upon low power operation by virtue of an exemption, which is what this proceeding is?

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THE WITNESS: It would probably not have an effect. I am saying that if the plant was able to go into service early because of low power, it would have a benefit.

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JUDGE MILLER: You mean full-power service?

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THE WITNESS: Yes, right.

JUDGE MILLER: You are now then comparing or contrasting the economic or other benefits from low power operation, including testing, but not limited to, low-power operation by virtue of an exemption request versus the commencement a few months or whatever period of time later of low-power operations by virtue of the removal of the impediments.

21

22

THE WITNESS: No, not economics, just security of supply.

23

24

25

JUDGE MILLER: Now what have you got to say?

MR. ROLFE: Judge Miller, the premise of LILCO's application for exemption is not, as the Board has heard

Sim 14-2

1 through testimony, during low-power testing. The plant
2 will not be connected to the grid.

3 But as the Board has also heard, that if low-
4 power testing can be done early, then it will eliminate ---

5 JUDGE MILLER: Earlier than what?

6 MR. ROLFE: Earlier than if we have to wait
7 for the resolution of the diesel generator licensing
8 proceeding.

9 JUDGE MILLER: For low-power operation?

10 MR. ROLFE: Yes, Your Honor, for low-power
11 operation.

12 JUDGE MILLER: Is it low power to low power
13 that you are looking at now?

14 MR. ROLFE: Well, if low power is conducted
15 early rather than waiting for the conclusion of the diesel
16 generator licensing proceeding, there is a potential that
17 the plant would come on line that much earlier to commercial
18 operation because you would already have low-power testing
19 out of the way when a full-power license was granted.

20 There are obviously uncertainties in this
21 schedule. The public benefit, which LILCO has postulated
22 in its application for exemption ---

23 JUDGE MILLER: Pardon me. It is the same
24 interval of time, the difference between low-power operation
25 and exemption and the commencement of low-power operation,

Sim 14-3

1 including testing under the conclusion of the hearing and
2 decision on the diesel generator question. It doesn't matter
3 however you put it. You are still just shoving forward
4 to save a certain interval of time, aren't you?

5 MR. SEDKY: Your Honor, if the witness could
6 be excused from this discussion. He testified clearly in
7 response to your question. There is argument here on the
8 part of counsel and I just don't want him to be educating
9 the witness.

10 JUDGE MILLER: Well, that is all right. We like
11 educated witnesses.

12 (Laughter.)

13 I don't think it will harm any of us overall.

14 Go ahead.

15 MR. ROLFE: Judge, it will not impact upon the
16 time necessary to conduct low-power testing. The time
17 necessary may be the same or it may not be the same in
18 view of Mr. Gunther's testimony that there may be additional
19 operations performed during low-power testing.

20 But that is not the point. The point is the
21 licensing proceeding continues. There are two things that
22 have to be resolved before LILCO gets a full-power license.
23 One is the diesel generator licensing proceeding, which also,
24 but for this exemption, if it is granted, would have to be
25 resolved prior to LILCO's conducting low-power testing. The

Sim 14-4

1 other is emergency planning.

2 We don't know when those proceedings will be
3 concluded, and we know that without this exemption, if both
4 of those proceedings were concluded around the same time,
5 that LILCO would then have a full-power operating license
6 and it would have to go through the full-power ascension
7 program starting at that time to get to commercial operation.

8 JUDGE MILLER: Starting at that time versus what
9 earlier time?

10 MR. ROLFE: It would take nine to ten months
11 at that time.

12 JUDGE MILLER: Now wait a minute. I said
13 comparing it with starting testing and so forth at what
14 other period of time.

15 MR. ROLFE: Okay. Comparing it with starting
16 testing earlier than when the diesel generators are licensed
17 by virtue of this exemption.

18 JUDGE MILLER: And what period of time would
19 be reasonably contemplated by that?

20 MR. ROLFE: Two to three months is the testimony.

21 JUDGE MILLER: Say three months.

22 MR. ROLFE: All right. Say three months. Now,
23 the point is that if LILCO doesn't have to wait for the
24 diesel generators to be licensed, then they can conduct low-
25 power testing and get that three months of low-power testing

Sim 14-5

1 out of the way so that when the diesel generators and the
2 emergency planning issues are resolved, and let's assume
3 they are resolved somewhere in the same time frame ---

4 JUDGE MILLER: I am curious as to what our
5 adjective is going to be.

6 (Laughter.)

7 MR. ROLFE: Well, they are both uncertain right
8 now.

9 (Laughter.)

10 But if that happens, that is three months of
11 testing that has been gotten out of the way, that has been
12 eliminated from the power ascension schedule and it is
13 possible, LILCO does not say it is certain, but it is possible
14 that as a result then the plant will be in commercial
15 operation three months earlier.

16 All this witness is testifying to is if that
17 eventuality occurs, if that possibility comes into being,
18 that there will be a public benefit from getting the plant
19 into operation three months earlier, that is commercial
20 operation as a result of having gotten low-power testing
21 out of the way before the diesel generator issue and
22 possibly the emergency planning issue ---

23 JUDGE MILLER: He is saying in terms of the
24 price of oil, isn't he?

25 MR. ROLFE: He is testifying, Your Honor, that

Sim 14-6

1 the price and availability of oil are affected by various
2 events beyond LILCO's control and that it would be in LILCO's
3 ratepayers' interest to have the stability as early as
4 possible of the use of nuclear fuel which would displace
5 a certain amount of oil consumption.

6 JUDGE MILLER: That is still in terms of the
7 price of oil.

8 MR. ROLFE: Price and supply, yes, sir.

9 JUDGE MILLER: Now what if the reverse were true?
10 What if the glut deepened and the price is down and then they
11 come out ahead, wouldn't they, in three months? Wouldn't it
12 be better off to wait under that theory?

13 MR. ROLFE: Maybe. They may. The point is, I
14 believe, is that there are a number of uncertainties attendant
15 to the oil market which we could eliminate three months
16 earlier if all of these possibilities come into being and
17 we get to commercial operation three months earlier. That
18 is the oil benefit that LILCO has postulated in its applica-
19 tion for exemption.

20 JUDGE MILLER: And it all hinges upon the theory
21 that there is going to be less availability and a high
22 price of foreign oil to a significant extent.

23 MR. ROLFE: It hinges on a possibility that there
24 may be. That is his testimony, that is right.

25 JUDGE MILLER: I know, but you are giving me

Sim 14-7

1 speculation on speculation, and the way the price of oil
2 has been going and the softening of the market and the
3 fact that the war in the Middle East will probably come to
4 some kind of an end, whatever that might be, and is going to
5 release millions of barrels a day onto the market, if I
6 were a betting man, I would be inclined to wager with our
7 friend here that the price might continue to go down.

8 At any rate,,I would think there would be as
9 much probability of that, and don't get me into probabilities
10 like you did yesterday ---

11 (Laughter.)

12 But I am wondering really if this is advancing
13 the cause. Now that is what is bothering the Board.

14 MR. ROLFE: Judge Miller, you may not accept
15 this, or we may not agree with this witness' testimony, but
16 I think that is a different issue as to whether his
17 testimony is relevant to the application for exemption for
18 the public benefit.

19 JUDGE MILLER: I might not agree with his
20 testimony, but just to the effect that there are a great
21 many uncertainties which we can't really pin down, and if
22 I evaluate his testimony as a whole, I don't think he is
23 telling it is weighted more one way than the other. It is
24 complex and there are a lot of factors which he has described
25 fairly and some go up and some go down in terms of price

Sim 14-8

1 and availability, and I think that is a fair characterization.

2 I am not criticizing the witness' testimony. I
3 am just utilizing it.

4 MR. ROLFE: That is right, Your Honor. My point
5 is that there has been a motion to strike because his
6 testimony is not relevant or material to the low-power
7 license application. It is relevant and material because
8 he is discussing this potential benefit, again whether you
9 agree there is a benefit.

10 He has a professional opinion that there will
11 be a benefit in the event that the plant is able to reach
12 commercial operation three months sooner as a result of
13 this exemption being granted.

14 He is not going to testify that the plant will
15 reach commercial operation three months sooner, and we
16 have already heard testimony ---

17 JUDGE MILLER: Well, I know. He has had
18 experience with that.

19 MR. ROLFE: And that is the benefit that has
20 been postulated in LILCO's application for exemption.

21 Given all the uncertainties, I think that the
22 impact of his testimony is that we can eliminate those
23 uncertainties, whatever they are.

24 JUDGE MILLER: Well, you might eliminate them the
25 wrong way.

Sim 14-9

1 MR. ROLFE: But, Your Honor, then it is LILCO's
2 option as to how they generate electricity using the most
3 inexpensive source.

4 JUDGE MILLER: Not if they have locked in the
5 non-utilization of cheaper oil during a period of time when
6 they are testing and getting on the market, whatever their
7 manifold problems are with getting a nuclear power plant
8 licensed and productive .

9 MR. ROLFE: But, Your Honor, that will occur
10 in any event. In other words, once the diesel generator
11 licensing proceeding has concluded, that low-power testing
12 will go forward.

13 JUDGE MILLER: What if the decision were adverse
14 to LILCO's position?

15 MR. ROLFE: Then it would go forward at just
16 a later date because the Colt diesels are being installed.
17 Of course, LILCO does not believe that the decision will
18 be adverse, but there are additional diesel generator sets
19 being installed at the plant right now.

20 JUDGE MILLER: And besides the Colts what
21 were you hypothesizing with regard to your emergency planning
22 and that decision?

23 MR. ROLFE: I am not hypothesizing anything
24 other than that if the emergency planning and TDI diesel
25 generator licensing proceeding were to conclude in

Sim 14-10

1 approximately the same time frame without the exemption,
2 LILCO would then get, assuming that they conclude favorably
3 to LILCO ---

4 JUDGE MILLER: They would both be concluded
5 favorably to LILCO's position ---

6 MR. ROLFE: Correct.

7 JUDGE MILLER: --- and they would be concluded
8 at approximately the same time.

9 MR. ROLFE: That is correct, Your Honor. And
10 in that event, without this exemption, LILCO would be faced
11 with a power ascension scheduling taking approximately nine
12 to ten months. With this exemption in that event, they
13 would have three months out of the way and they would only
14 have to incur approximately six to seven months of the power
15 ascension schedule.

16 JUDGE MILLER: Does the staff have anything to
17 say?

18 MR. PERLIS: Yes, Your Honor.

19 First of all, it is clear that this witness'
20 testimony is conditional. It is conditional upon full-power
21 operation being made three months sooner because of an
22 exemption than it would be without an exemption.

23 The Commission has asked this Board and the
24 parties to consider a number of findings, many of which
25 are premised on that same condition. Indeed, if that

Sim 14-11

1 condition were not possible, we wouldn't be considering
2 an exemption.

3 Now I don't believe the fact that his testimony
4 is conditional makes that testimony irrelevant. Whether
5 a three-month sooner operation would in fact be a good thing
6 or not is relevant and that is what the witness is available
7 for.

8 I would also point out that the letter from
9 Secretary of Energy, Hodell, which is attached to the
10 witness' testimony, does state that this Nation's policy
11 is to continue to reduce the reliance on foreign oil, and
12 I think we could probably take official notice that that
13 has been official government policy for some time now.

14 But I don't think that is relevant to the
15 County's motion to strike. Their motion to strike, the
16 basic premise of that motion to strike is that because the
17 testimony is conditional, it shouldn't be allowed in, and
18 I think we are faced with a situation here that we have
19 to assume certain things to hear testimony.

20 Now whether those events will occur or not, this
21 Board will have to address that at a later date. But I
22 don't think we could fulfill the Commission's mandate in
23 Footnote 3 if we didn't allow testimony that would address
24 the benefits to going to full power three months sooner.
25 I think that is the core of what this exemption hearing is

Sim 14-12 1

about.

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JUDGE MILLER: Well, I am looking at that same footnote and I am waiting for you to pick up one or more of the issues set forth by the Commission to show me how this relates to it.

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MR. PERLIS: The Commission clearly wants to consider the benefits that will occur from the granting of an exemption.

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JUDGE MILLER: Well, they note that a finding of exceptional circumstances is a discretionary administrative finding which governs the availability of an exemption.

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Now does this bear upon exceptional circumstances in that sense?

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MR. PERLIS: Well, let's go on.

15

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JUDGE MILLER: No, let's take them one at a time.

17

18

MR. PERLIS: Well, I wanted to go on to describe the Commission's ---

19

20

JUDGE MILLER: I am reading what the Commission says. You and I can both read English. Does this bear upon the exceptional circumstances, which is one of the things that we are charged with addressing here?

21

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MR. PERLIS: Insofar as that finding is governed by equities that are considered later on in that paragraph, yes.

25

Sim 14-13

1 JUDGE MILLER: Only insofar as it is subsumed
2 by the equity specification further on; is that right?

3 MR. PERLIS: That is correct.

4 JUDGE MILLER: Okay. Now the recent exercise
5 of this discretion should take into account the equities
6 of each situation, and now they set forth the equities.

7 Do you want to break out any of the equities
8 in this regard, or shall we go on and look at all of these
9 as being factors or facets of the so-called equities? What
10 is your choice?

11 MR. PERLIS: We could do it either way, but I
12 would think that the equities include any financial or
13 economic hardships.

14 JUDGE MILLER: All right. Do you want to look
15 at that?

16 MR. PERLIS: Okay.

17 JUDGE MILLER: What are the financial or economic
18 hardships which are involved either way with the grant or
19 denial of this exemption under the exceptional circumstances
20 that would have to be found?

21 MR. PERLIS: Again, one has to accept the condition
22 under which the testimony is offered which is that a full-
23 power license may be issued three months sooner.

24 I believe this witness is testifying that there
25 is an economic benefit to reducing the reliance on foreign

Sim 14-4

1 oil ---

2 JUDGE MILLER: Now wait a minute. Reliance
3 isn't the same thing as an economic hardship. They are
4 talking about foreign policy and patriotism and all kinds
5 of murky things. Now let's get it right down. These are
6 hard realities, financial or economic hardships. That is
7 not pie in the sky. That is right now and the present
8 value of future dollars.

9 What are you basing it on?

10 MR. PERLIS: I believe this witness, and again
11 he is not my witness, but I believe his testimony did indicate
12 that there would be a financial benefit. I would think
13 if you were denying them a financial benefit, that that
14 would fit in as a financial or economic hardship.

15 JUDGE MILLER: Do you have anything more to
16 say on the financial or economic hardship cause?

17 MR. PERLIS: No.

18 JUDGE MILLER: Okay. Do you have another one
19 that you would like to look at?

20 MR. PERLIS: The only other one would be a
21 lessening of dependence on foreign oil which might fit
22 into the public interest finding which also has to be made,
23 but that would not be one of the exceptional circumstances.

24 JUDGE MILLER: Okay.

25 Now are there any other matters before we go

Sim 14-15

1 on to other counsel? I want to be sure the staff has given
2 me the benefit of their full thinking on the equities, we will
3 put it.

4 MR. PERLIS: I believe we have given you all of
5 them.

6 MR. ROLFE: Judge Miller, may I add just one
7 thing with respect to that footnote?

8 JUDGE MILLER: Yes.

9 MR. ROLFE: If you will note, the footnote
10 also includes the public interest in adherence to the
11 Commission's regulations, and that is where this testimony
12 fits in.

13 JUDGE MILLER: Which regulation does it fit in
14 with?

15 MR. ROLFE: Well, the public interest in this
16 case, in view of this testimony, would warrant the granting
17 of the exemption and not the adherence of GDC 17 or a strict
18 adherence requirement that LILCO have qualified on-site
19 diesel generators before conducting low-power testing.

20 JUDGE MILLER: Well, if I read the footnote,
21 it says we should look at the public interest in adherence
22 to the regulations. You are seeking an exemption from the
23 regulations.

24 MR. ROLFE: That is right, and we are showing
25 that there would not be public interest in adherence to the

Sim 14-16

1 regulation. Indeed, there would be public interest in the
2 granting of the exemption which would come in both through
3 this and through the dictates of 50.12(a) which require
4 that a showing be made that it is otherwise in the public
5 interest.

6 JUDGE MILLER: And the exceptional circumstances
7 and exigent circumstances and all the rest of it?

8 MR. ROLFE: Well, 50.12(a) does not require the
9 exigent circumstances showing that as a showing that the
10 Commission has granted on to 50.12(a) in its May 16 order.

11 JUDGE MILLER: Well, the Commission just didn't
12 pull it out of the sky. The Commission has been using that
13 terminology and it was getting batted around by the Court
14 of Appeals, the Court of Appeals of the D. C. Circuit on
15 Clinch River, for example, on this very question of exigent
16 circumstances.

17 MR. ROLFE: Yes, sir, but that was based on
18 50.12(b) which is a different part of the regulation.

19 JUDGE MILLER: That happened to be 50.12(b) and
20 in another case it happened to be also the early site work.
21 However, this is not early site work and the Commission uses
22 the same terms, and a layman would think that the Commission
23 is using the same term therefore on "A" or "B". That is what
24 a layman might think.

25 MR. ROLFE: Your Honor, I respectfully disagree

Sim 14-17

1 with Your Honor, but I am not sure that the debate is really
2 pertinent here. The pertinent question here is whether there
3 is a public interest showing to be made and whether this
4 evidence is relevant to the public interest showing.

5 Clearly public interest is a factor both as
6 defined in the Commission's footnote and as defined in
7 Section 50.12.

8 JUDGE MILLER: I don't think you can so blithely
9 ignore page 2 of the Commission's order, the paragraph
10 No. 1, the "exigent circumstances," which is a term of art
11 to this Commission that favors the granting of an exemption
12 under 50.12(a), "Should be able to demonstrate that in spite
13 of its non-compliance with GDC 17, the health and safety
14 of the public will be protected."

15 Then they go on to say the exemption authority
16 under 50.12, making no distinction between (a) or (b), is
17 extraordinary and has previously been made available in the
18 presence of exceptional circumstances. Clinch River, that
19 was an early site and that was (b) and so was the other
20 case cited. But it is now blended together, and then it
21 goes right ahead in the same footnote to the things that
22 we have discussed and included is a public interest in the
23 adherence to the regulations, not the exemption from them,
24 but in spite of its non-compliance with the regulations,
25 and so forth, which is a wholly different list I believe from
the course that your argument is taking.

#15-1-SueF

2 MR. ROLFE: Your Honor, two points on that,
3 I guess. First, I don't believe we are ignoring blithely
4 or otherwise the Commission's dictates that we discuss
5 exigent circumstances. We have discussed the exigent
6 circumstances.

7 It's LILCO's position that the Commission's
8 Footnote 3, where they talk about the public interest
9 and adherence to the Commission's regulation, would include
10 whether there is public interest in granting the exemption.
11 But whether that is what the Commission --

12 JUDGE MILLER: Wait a minute. So we don't have
13 a terminological dispute, adherence to the Commission's
14 regulations, as I read it, is different from the language
15 on the previous page and bearing upon the same Footnote
16 in spite of its noncompliance with GDC-17.

17 MR. ROLFE: Yes, sir. But if there is --

18 JUDGE MILLER: In spite of. So, this isn't
19 saying that the public interest and the Commission's
20 regulations mean that the exemption is something that we
21 should look at favorably or otherwise.

22 MR. ROLFE: Well, if there is --

23 JUDGE MILLER: It's saying that we can do that
24 only provided that there is a public interest in the
25 adherence to the regulations, GDC-17, which is overcome by
other factors. And that's why I tried to get you -- it's

#15-2-SueT 1

2 the same paragraph of the Footnote. Those factors now
3 which overcome the Commission's directions to this Board.

4 MR. ROLFE: First of all, Judge Miller, if there
5 is no public benefit in adhering to the Commission's
6 regulation, indeed --

7 JUDGE MILLER: We don't challenge regulation.
8 We don't weigh the benefits of adhering to them. We
9 assume that's given. And then you are going to have the
10 burden of showing why it should be overcome by contrary
11 equities, except not public health and safety or common
12 defense and security.

13 MR. ROLFE: That's correct. What I'm saying
14 is, the Commission in that Footnote, and I want to get to
15 my second point in a minute, but the Commission in that
16 Footnote ordered us to address whether there is public
17 interest in adherence to the Commission's regulations.
18 We say with respect to dependence on foreign oil, there
19 is not only no public interest in adherence to --

20 JUDGE MILLER: There is no regulation either on
21 foreign oils, as far as our regulations are concerned.
22 NRC stands neutral on foreign oil.

23 MR. ROLFE: There is a regulation as the
24 Commission has interpreted it which requires that diesel
25 generators, onsite diesel generators, be qualified before
low power testing can go forward. And in this instance,

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2 there would be no public interest in applying that. One
3 of the factors is that if you don't apply it, there is a
4 negative public interest, if you will, in strict adherence
5 because we will not be able to accomplish this possible
6 early elimination of dependence on oil.

7 But, let me get to the second point which I
8 think may moot this discussion. The Commission ordered us
9 to address exigent circumstances. The Commission ordered
10 us to address in a certain vein the health and safety issue.

11 50-12.A also requires that to get an exemption
12 one must show that the exemption request is "otherwise in
13 the public interest." It doesn't say just exigent circum-
14 stances.

15 So, whether or not the Board agrees with me that
16 the Commission's Footnote would include this evidence, the
17 fact that this evidence is relevant to whether the exemption
18 is otherwise in the public interest makes the testimony ad-
19 missible.

20 JUDGE MILLER: This exemption is otherwise in the
21 public interest? Is that what you say?

22 MR. ROLFE: Yes, sir. And this is one of the
23 factors that makes it otherwise.

24 JUDGE MILLER: Now, why would this witness'
25 testimony with the exemption request be in the public
interest? Three months now is all you are looking at.

#15-4-SueT 1

2 MR. ROLFE: That's correct. Because, again if
3 the plant is allowed to go to commercial operation three
4 months sooner as a result of this exemption being granted,
5 for the reasons that we discussed a moment ago, then in
6 this witness' opinion the public will benefit by having
7 reduced the uncertainties attendant to the generation of
8 electricity on Long Island, because we will be substituting
9 a certain power source with certain fuels; that is, the
10 nuclear plant relying on nuclear fuel, for oil-fired power
11 sources which are subject to a great deal of uncertainties.

12 Now, again you may not agree with this witness'
13 opinion, but I think it is relevant testimony.

14 JUDGE MILLER: Counsel.

15 MR. SEDKY: Your Honor, the only thing I can say
16 is that whatever the arguments the lawyers have made, this
17 witness has testified as to what his testimony is and what
18 it addresses and what it does not address.

19 Your Honor put it quite succinctly to him and
20 straight to him: Does your testimony address low power
21 testing now to full power, low power testing later to full
22 power? Answer: No.

23 I mean, I don't know how much clearer you can be
24 than that. And so as far as we are concerned, you know,
25 we are just wasting our time. We would have extensive
cross-examination on the oil conditions, the politics of the

#15-5-SueT¹

2 Middle East, the likelihood of a cutoff. I mean, it could
3 take a day or so.

4 The fact is that his testimony doesn't address
5 what is before us, the exemption. All his testimony deals
6 with is: Hey, listen, nuclear, it might be better than
7 being dependent on foreign oil.

8 Fine. Well, so what.

9 JUDGE MILLER: New York.

10 MR. PALOMINO: I support, of course, the County's
11 position. And I would like to point out, Mr. Rolfe is
12 talking about public benefit. Now, the only benefits pur-
13 ported to be testified to by this witness is if the plant
14 goes into commercial operation.

15 And he is assuming that that might be contingent
16 upon getting this exemption earlier. The fact is, whether
17 the plant goes into commercial operation has nothing to do
18 with the grant of this exemption. It has to do with the
19 approval of the offsite emergency evacuation plan. And
20 that is tied up in a legal issue that's in the State courts
21 that won't be resolved for several years.

22 And whether you grant this exemption now, three
23 months from now, six months from now, it's not -- they are
24 not going to be involved in it. Aside from any other question
25 that might be involved, the basic safety of the plant.

It's a question of whether they have the legal

#15-6-SueT1

2 power to implement it with their Company employees. And
3 that's in a separate suit in the courts, pursuant to
4 Judge Laurenson's direction and recommendation.

5 And so that the benefits he is talking about
6 are not at all related to this exemption.

7 MR. PERLIS: Mr. Chairman, two points. First
8 of all, although I haven't read it recently, as I recall
9 the exceptional circumstances found in the Clinch River
10 case were primarily two. One was the benefit to the U. S.
11 taxpayer from getting Clinch River in earlier operation,
12 just from starting construction sooner.

13 JUDGE MILLER: It was early site --

14 MR. PERLIS: Correct, but it was the benefit to
15 the taxpayer from starting construction sooner rather than
16 waiting.

17 And, secondly was that it would further U. S.
18 energy policy.

19 JUDGE MILLER: Well, then why did the Court of
20 Appeals overrule twice the finding of exigent circumstances
21 by the Commission, which didn't hold any public hearings?
22 And why for a year did our Board count on this thing to
23 become moot, because in the meantime evidence came out
24 which rendered it moot, and to this day I don't think that
25 the Commission ever showed the exigent circumstances that
the Third Circuit Court of Appeals said they would have to

#15-7-SueT 1

find. And the Court of Appeals finally lifted --

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MR. PERLIS: The --

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JUDGE MILLER: -- their Order, their remand, because a Board had heard the evidence and there was a hearing and so forth.

4

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MR. PERLIS: The only --

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JUDGE MILLER: So, they didn't have to go on the exigent circumstance exemption.

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MR. PERLIS: That's correct. But I believe Clinch River does show that the Commission in its consideration of exigent circumstances believed the national energy policy and financial benefits did fit in there somehow.

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JUDGE MILLER: Then, why did the Court of Appeals twice overrule?

14

15

MR. PERLIS: I'm not familiar enough with the Clinch River case and the Court of Appeals to give you that answer.

16

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JUDGE MILLER: Because it wasn't the necessary finding, according to the Court of Appeals, of the exigent circumstances, although I'm sure that your boss and your whole department certainly -- as I say, the thing got moot because we then did have a hearing --

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MR. PERLIS: Again, all I would say is that the Commission certainly considered it a material issue.

24

25

Secondly --

#15-8-SueT1

JUDGE MILLER: Wait a minute. What -- that?

2 MR. PERLIS: The Commission considered both
3 the financial benefits and furtherance of U. S. energy
4 policy as relevant to that issue. I don't know why the
5 Court of Appeals reversed the Commission.

6 JUDGE MILLER: They apparently didn't agree.

7 MR. PERLIS: I don't know if that was the basis
8 for it. It may just have been the basis of the sufficiency
9 of the evidence in the record rather than the general items
10 to be proved. I don't know.

11 JUDGE MILLER: There wasn't any evidence in
12 the record. They didn't hold a hearing. This is part of
13 what the Court of --

14 MR. PERLIS: Well, what -- whether there was
15 evidence in the record doesn't necessarily mean that the
16 Commission was wrong in setting that up as a relevant
17 standard, as setting up --

18 JUDGE MILLER: Exigent circumstances?

19 MR. PERLIS: No, as setting -- no. As setting
20 up both financial benefits and energy independence as
21 relevant to the standard of exception, of exigent circum-
22 stances. The fact that a court overturned the Commission
23 decision doesn't mean that the Court was overturning whether
24 those two issues could be a part of the exigent circumstances
25 finding.

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2 JUDGE MILLER: What do you think the Court
3 overturned?

4 MR. PERLIS: Frankly I don't know. I'm not
5 familiar --

6 JUDGE MILLER: We are going to take a recess and
7 I want to be sure you have all had a shot at it.

8 Anybody unrequited? Don't repeat but --

9 MR. ROLFE: I won't repeat, Your Honor, but I
10 would like to point out, just in a follow-up to the conver-
11 sation you just had with counsel for the Staff, that if
12 you look at Section 50-12 there are a number of specific
13 findings which must be made under 50-12.B --

14 JUDGE MILLER: That's under B.

15 MR. ROLFE: That's right.

16 JUDGE MILLER: That's what the Commission and
17 the Court were looking at.

18 MR. ROLFE: That's right, sir. And it's notable
19 that the -- well, the absence of those specific findings
20 that must be made from 50-12.A I think is pertinent here.

21 JUDGE MILLER: But why does the Commission now,
22 knowing all that, having gone through that exercise, when it
23 gets to A, which is different from B as you pointed out,
24 bring back exigent circumstances which was the whole bone
25 of contention?

They must have had something in mind.

#15-10-SueT1

2 MR. ROLFE: I agree they must have. I would not
presume to try to --

3 JUDGE MILLER: I don't say it's the most
4 clear expression, by the way.

5 MR. ROLFE: I would not presume to try to explain
6 why the Commission did it. I would say, however, that I
7 think that this testimony is relevant to both the exigent
8 circumstances and the public interest issue which 50.12.A
9 postulates, whether or not you say it's part of the exigent
10 circumstances that the Board has defined in its Order.

11 JUDGE MILLER: Okay. We will take a recess.

12 (Whereupon, the hearing is recessed at 3:07 p.m.,
13 to reconvene at 3:24 p.m., this same day.)

14 JUDGE MILLER: The Board has considered the
15 testimony as proffered and the objections and arguments in
16 relation thereto. We are a long way from being persuaded
17 that this testimony and these factual issues have much of
18 any significance to the fact finding function of this Board
19 as a finder of fact.

20 We have very serious doubts. On the other hand,
21 we see there might be a small sliver of relevance in the
22 sense of whatever public interest means in regard to this
23 decision and in regard to the economic or financial ramifications
24 of a whole series of things happen at a certain time
25 and place and sequence, and we are far from being persuaded.

#15-11-SueT

2 On the other hand, we are inclined to let it in,
3 because the Order we are operating under is not that clear
4 in our minds. So we will let it in, but I might as well be
5 frank with all of you, it's a long way from being very
6 persuasive.

7 However, we will overrule the motion. We will
8 permit it in. We will say also that we do not consider that
9 a great deal of time and effort should go into developing
10 the record on this issue.

11 We overruled the motion to strike everything.
12 The motion was to strike testimony overall.

13 MR. SEDKY: That's correct.

14 JUDGE MILLER: We will let it in for limited
15 purposes. You may proceed.

16 CROSS EXAMINATION

17 BY MR. SEDKY:

18 Q Mr. Szabo, your testimony deals with the dependence -
19 LILCO's dependence on foreign oil. To the extent that LILCO
20 is dependent on foreign oil, what percentage of LILCO's
21 oil is derived from the Middle East?

22 A I would say a very small percentage, in the
23 neighborhood of a percent or so.

24 Q And where does the rest of the oil come from,
25 to the best of your knowledge and information?

A Most of the rest of the oil comes from Venezuela

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2 with maybe about -- this is the foreign oil, with maybe
3 about ten to fifteen percent from Mexico.

4 Something occurred to me. Let me finish it.

5 JUDGE MILLER: What's that?

6 WITNESS SZABO: I was thinking in terms of the
7 high sulfur oil. We also get low sulfur oil from not only
8 Venezuela to a limited extent but from Brazil and Argentina
9 as well. The bulk of it comes from Venezuela and Mexico.

10 JUDGE MILLER: Is most of Venezuelan oil heavy?

11 WITNESS SZABO: It tends to be heavy high sulfur,
12 as is the Mexican oil.

13 JUDGE MILLER: Mexican, too?

14 WITNESS SZABO: Yeah.

15 BY MR. SEDKY: (Continuing)

16 Q But to the extent that it's derived from the
17 Middle East your best estimate is that less than one --
18 around one percent of it is Middle East derived?

19 A In that neighborhood, maybe less.

20 Q All right. Now your testimony also deals not
21 so much with the evil of dependency per se, but with potential
22 for a cutoff in oil sources; isn't that correct?

23 A Not really, no.

24 Q Well, that's why dependency is bad, isn't it,
25 because if somebody cuts it off you might be harmed?

A It also deals with the fact that any disruption,

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2 any significant disruption in the world oil markets will be
3 reflected to a very large extent in the domestic oil
4 markets.

5 Q Right. But I mean it is the disruption or the
6 cutoff that is the evil and not the dependency per se;
7 isn't that fair?

8 I mean, we are dependent on foreign cotton and
9 we are dependent on foreign shoes and leather and so forth
10 and --

11 A I have to disagree with you, because it's
12 national policy to reduce our dependence on foreign oil.
13 As a matter of fact, there is a law, the Fuel Use Act, which
14 forbids the building of new base-load generating plants
15 based on oil. If there was nothing special about foreign
16 oil as opposed to foreign shoes or cotton, why would there
17 be such a law like that?

18 There is a definite evil to being dependent on
19 foreign oil. There is also a price impact. I'm not aware
20 of a law that forbids us to buy -- to import foreign shoes
21 or mandates our reduction of those imports.

22 JUDGE MILLER: Or tariffs or voluntary restraints
23 on automobiles, things like that I suppose.

24 WITNESS SZABO: Some of that but not quite to the
25 same extent.

BY MR. SEDKY: (Continuing)

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Q But the focus of your testimony is the potential for a disruption or a cutoff; isn't that a fair statement?

A Yes. But, also the fact that LILCO, being approximately ninety percent dependent on foreign oil, this also is a negative. The remaining ten percent being domestic will be affected by the affects in the foreign market.

Q Now, the fact is that prices for oil have been steadily declining over the last couple of years or so; isn't that correct?

A They have -- yeah, in general they have actually come down quite a bit, May of '83 come up a bit and now softened a bit.

Q But it's generally recognized, is it not, that there is now a glut in effect in the market?

A Yes. And the glut is largely due to the efforts of Saudi Arabia to create that, that glut.

Q Right. But there is a glut, right?

A Yes, a glut but not a price break by any means.

Q Right. Now, to the extent that -- if you assume, for example, that the question is whether you go into commercial operation today as opposed to commercial operation ninety days from now, any disruption or cutoff in foreign oil after the commencement of commercial operation wouldn't make any difference to your testimony, would it?

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2 MR. ROLFE: Objection, Your Honor. I don't
3 think the question fairly states the circumstances to which
4 this witness has testified. We are not talking about --

5 JUDGE MILLER: This is cross-examination. The
6 witness can himself supply whatever circumstance is. He is
7 an expert witness.

8 MR. SEDKY: It's a hypothetical.

9 WITNESS SZABO: Let me make sure I understand
10 the question. Are you saying that it makes no effect whether
11 the plant starts three months early or not?

12 end #15
13 Joe flws

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BY MR. SEDKY: (Continuing)

1 Q Just to focus the attention of what we ought
2 to be concerned about here is -- you know, you raise the
3 spectre of some cutoff or disruption in the supply of oil.
4 To the extent that that happens after commercial operation
5 commences, then that would have no bearing on what this
6 Board has to decide, which is the granting of --

7 A Yes, I agree.

8 Q Do you have any reason to believe that there
9 is an imminent fear of a cutoff in the next ninety days?

10 A Yes, definitely.

11 MR. ROLFE: Your Honor, I don't think that is
12 a relevant question. This witness is not testifying to
13 events in the next ninety days. We are talking about the
14 impact when LILCO goes to commercial operation, which is
15 by definition at least nine to ten months away.

16 MR. SEDKY: Well, let's take them one at a time.

17 JUDGE MILLER: I think cross examination you
18 can use any -- you have redirect, and the witness certainly
19 is listening --

20 WITNESS SZABO: Yes, I think there is a
21 potential for a serious disruption in the oil markets at
22 any time; within the next three months, perhaps, or within
23 the next ten years. You don't know the exact timing, but
24 you know certain things.

25 Something like three-quarters of all the world's

1 spare productive capacity, the creation of the glut, lies
2 within a hundred to a hundred fifty miles of Iran.

3 BY MR. SEDKY: (Continuing)

4 Q The only question -- it wasn't on the world's
5 capacity. The only question is the potential for a cutoff
6 or disruption in the next ninety days. If you would just
7 simply address yourself to my questions, rather than questions
8 you want to answer, we can get through this faster.

9 A My answer is yes.

10 Q What is it?

11 A Okay. Let me continue what I was saying.

12 Something like three-quarters of the world's spare productive
13 capacity is on the south shore of the Persian Gulf, from
14 Iran through Kuwait through Saudia Arabia, through the
15 United Arab Emirates.

16 Any escalation of the Iran-Iraq war into that
17 part of the Gulf, let's say an Iranian victory, would have
18 an immediate adverse effect.

19 There is another problem, too. And that has
20 to do with the fact that so far, at least since the early
21 '80s, Saudia Arabia has maintained a moderating influence,
22 and they are the only country with the capacity to do that.
23 They have a moderate, Islamic regime which is pro-western.
24 I have been there; I have seen it.

25 But there are strong conservative Islamic
fundamentalists impacts going on there, too. They assassinated

1 the King of Saudia Arabia in 1975 because he introduced
2 television into the country.

3 Okay. If Saudia Arabia were to be replaced with
4 a xenophobic regime, and they were to stop taking the
5 position that they should moderate oil, but cut it off,
6 you have a cutoff right there.

7 Q What information do you have that leads you to
8 believe that any of those scenarios are more likely to happen
9 in the next ninety days than ten years from now?

10 A I didn't say in the next ninety days --

11 Q That was my question, Mr. Szabo. If you will
12 listen to my question.

13 JUDGE MILLER: That is the question.

14 A I said it could happen in the next ninety days.
15 You didn't ask me if it was more likely in the next ninety
16 days or next ten years. It could happen any time in this
17 period.

18 Q All right. With equal probability?

19 A Probably, yeah.

20 Q What do you think the probability is, say, during
21 the next year?

22 A I don't have an estimate of a number like
23 twenty or thirty percent. I think it is small, but a very
24 real possibility.

25 Q What? Less than one change in a hundred?

1 A No, -- well, if we have to give possibilities,
2 maybe it is ten, twenty percent. It is the kind of thing
3 that is hard to quantify in terms of numbers, because it
4 has to do with a number of different factors.

5 An ongoing war right where fifty percent of
6 the world's oil is, right there, you have a potential
7 instability in Saudia Arabia. In 1979 or '80, the Grand
8 Mosque in Mecca was seized by a Kommuni-led regime.

9 There is a majority of Shiah Moslems, which
10 is a pro-Iranian Moslems, in the eastern province of
11 Saudia Arabia where all the oil is produced.

12 The Shiahs are a very large minority in Kuwait
13 and the United Arab Emirates. If there were to be a
14 revolution, something along this line, that could turn that
15 whole thing around.

16 As a matter of fact, it was a year or two ago
17 there was an attempt by the Iranians to overthrow Bahairain
18 which is an island right off the oil producing areas of
19 Saudia Arabia, buy inciting the Shiah minority. Tremendous
20 instability in that area.

21 Q I believe you testified that there was Shiah
22 majority in Kuwait. Is that your testimony?

23 A No, I said it is a strong minority.
24 There is a strong minority. There is a Shiah majority in the
25 eastern province of Saudia Arabia, which produces all the

1 cil.

2 Q Have you ever been to Iran or Iraq?

3 A No.

4 Q So, if there is a disruption, that would affect
5 what, less than one percent of LILCO's oil?

6 A No, I think it would affect all of it in terms
7 of price and availability. Oil is fungible, and any shortage
8 in the Persian Gulf which currently produces twenty percent
9 of the world's oil, and has three-quarters of the spare
10 capacity, a major shortage now would cause a bid up of price.
11 The Japanese would come in. The Europeans. There is some
12 question whether our strategic petroleum reserve could be
13 activated in time.

14 So, only one or two percent might be from Saudia
15 Arabia right now, the impact on world oil prices would be
16 very large, and it will affect us.

17 Q Now, it is a fact, is it not, Mr. Szabo, that
18 the non-OPEC oil producing countries have also been increasing
19 their productive capacity, isn't that correct?

20 A Yes.

21 Q By what factor, approximately, say, for 1983?

22 A Probably in the matter of about a million barrels
23 a day. This would be between principally Mexico and the
24 North Seas.

25 Q Now, you are familiar, are you not, with the

1 strategic petroleum reserve that has been established in
2 the United States?

3 A Yes.

4 Q And do you know what the level is of the reserves
5 at this time?

6 A It is about four hundred million barrels. You
7 have material I gave you that I think says three hundred
8 eighty-five million.

9 Q And that would be enough, would it not, to
10 replace about ninety days of average U. S. imports?

11 A Yes, when it is operating.

12 Q And isn't it also true that there is enough
13 oil to replace almost nine hundred days of U. S. imports
14 from the Persian Gulf?

15 A There is enough oil in the ground if they can
16 get it out.

17 Q And there is enough oil to replace about seven
18 months of net imports from all OPEC nations?

19 A Probably in that range.

20 Q I believe you testified to this before, but
21 perhaps we can get a little more specific. If you look
22 at the spot price for oil, say, between '79 and 1983, are
23 you able to estimate when the high was, and when the low
24 was?

25 A I don't remember the numbers exactly. You have

16-7-Wal

1 something from the Shell Briefing Service I gave you on
2 discovery, and you can read it right there. I don't have
3 that file with me now.

4 Probably around the third or fourth quarter
5 of 1980, but I am not positive.

6 Q I don't want to unnecessarily burden the record,
7 but would you agree with me that in the fourth quarter of
8 1980, the spot price was \$38.40 a barrel, and that in
9 1983, the third quarter, it was down to \$28.90 a barrel.
10 Does that sound within the range?

11 A That sounds within the range.

12 Q And how about the contract price. Does it
13 sound reasonable to you that the price has declined from
14 thirty four dollars a barrel in 1981, to twenty-nine dollars
15 a barrel in 1983?

16 A Yes.

17 Q Isn't it also true that the Soviet Union has
18 been exporting oil at record levels in 1983?

19 A In 1983 they have.

20 Q Does about three point seven million barrels
21 per day sound about right to you during 1983 for the Soviet
22 Union?

23 A Probably. It is probably less than that,
24 because --

25 Q I am just asking about '83.

A Probably.

1 Q Now, many observers believe that even with a
2 cut, or major disruption from the Gulf region, that there
3 would be sufficient oil in the West to survive that cut,
4 isn't that correct?

5 A What do you mean by, 'many observers?'

6 Q Are there any?

7 A There may be some. I have seen estimates that
8 it could affect the price as high as a hundred dollars, some
9 who say a small cutoff would have no effect.

10 Q Well, let me have marked then and see if this
11 helps refresh your recollection. An article that I
12 represent was produced by you, I believe, in response to
13 discovery request appearing in the Journal of Commerce,
14 Monday, April 30, 1983, and I would like to have that
15 marked as Suffolk County --

16 JUDGE MILLER: What is the provision you wish
17 to call the witness's attention to? We may be able to
18 shorten this.

19 MR. SEDKY: Well, there is a statement there
20 that says, quote: Strategic oil reserves held by Western
21 governments and spare crude oil production capacity world
22 wide would be sufficient to make up most of the shortfall
23 resulting from any halt in Persian Gulf oil traffic, industry
24 experts say.

25 And then there are some numbers there that show

1 who might be able to come in and fill in the gap and so forth.

2 A So what is your question?

3 BY MR. SEDKY: (Continuing)

4 Q Are you able to identify that document?

5 A Yes, I gave it to you.

6 MR. SEDKY: I am sorry, Your Honor. We had wanted
7 it marked for identification as Suffolk County LP-12.

8 JUDGE MILLER: What is the purpose now of the
9 identification of this -- story, I take it, from Mr. Sam
10 Glasser?

11 MR. SEDKY: Well, Your Honor, the gist of Mr.
12 Szabo's testimony is that we are dependent on foreign oil,
13 and that if there is a cutoff of supplies in the Middle East,
14 that there would be some adverse effect here, and I have
15 a series of reports, all of which were drawn from Mr. Szabo's
16 files to suggest that there is more than adequate slack in the
17 market to overcome -- I don't want to be testifying, but
18 that is just a proffer, basically, to overcome any shortfall
19 that might occur.

20 WITNESS SZABO: So what is your question to
21 me?

22 MR. SEDKY: I was answering the Judge's inquiry.

23 MR. ROLFE: Judge Miller, LILCO objects. The
24 witness has said that there is a range of opinions. He
25 doesn't dispute that. If this is being offered to impeach

1 the witness, it is not impeaching.

2 If it is being offered for the truth of the
3 article, then it is hearsay, and I think it would be incumbent
4 on the County to bring in the so-called experts who opined
5 as reported in this article for cross examination.

6 JUDGE MILLER: If I understand, this is material
7 that Mr. Szabo said he produced at deposition, is that
8 correct?

9 WITNESS SZABO: Yes, Your Honor.

10 JUDGE MILLER: Why did you produce it? What
11 was it supposed to show, in your judgment?

12 WITNESS SZABO: Your Honor, I routinely follow
13 the oil market in tremendous detail, and I gave to, -- following
14 all sorts of opinions, favorable and unfavorable -- and I gave
15 to Suffolk County everything that I had put together by
16 reviewing my files in the last several months.

17 This article particularly has an opinion that
18 says there is plenty of oil, but also assumes that Saudia
19 Arabia can continue to produce oil and increase by another
20 million barrels of oil a day, going through the Red Sea.

21 Now, if there was a shutoff from Saudia Arabia,
22 you already have two and a half million barrels that are not
23 in here. So, I think it also mentions that inventories
24 are low, and there could be a large disruption.

25 Another predicate in this article is that Nigeria,

1 Mexico, Libya, would make up the shortfall. They are among
2 the pricing hawks.

3 So, there might be a makeup of these people,
4 but they might shoot the price to fifty, sixty dollars
5 a barrel.

6 So, yeah, this has an opinion there could
7 be enough oil, but there are a lot of uncertainties in
8 here, and it does assume Saudia Arabia can ship another
9 two, two and a half million barrels in total through the
10 Red Sea.

11 JUDGE MILLER: Does this reflect your opinion
12 as to the availability, or the danger of disruption of
13 foreign oil supply?

14 WITNESS SZABO: Not in total, Your Honor. Because
15 I read several different things. Mr. Sedky has several things.
16 And using my own independent judgment, I see some things here
17 that are defective.

18 The assumption, as an example, that Saudia Arabia
19 could put another million barrels through their pipeline to
20 Yanbu, which would get you up to two, two point three, two
21 and a half, I question whether they could do that if there
22 is a major disruption.

23 That pipeline terminates at Abqaiq in Saudia
24 Arabia, fifteen hundred miles away from the Persian Gulf.
25 It is almost as subject to disruption as a major Saudi

1 facility at Ras Tanura, which is their main export terminal.

2 So, yes, if there is a blockage of the Strait
3 of Harmooze for a short period of time, then can make it
4 up. If there is a major cutoff, an impacting of Saudia
5 Arabia's ability, then this is an over-simplification,
6 and the oil going to the Red Sea comes from the Persian
7 Gulf fields.

8 So, yeah, I don't agree with these people one
9 hundred percent. This is part of my routine following of
10 ten or so different professional, technical, business journals,
11 and I synthesize all these opinions, and make my own judgment.

12 JUDGE MILLER: Frankly, I think we have spent
13 a lot more time on this whole subject than it is worth.

14 MR. SEDKY: Your Honor, that is why we moved
15 to strike the testimony. They put in issue the question
16 of dependence, likelihood of a cutoff, impact of a cutoff,
17 and we feel that unless the Board is prepared to rule
18 summarily, and perhaps it wants to rule summarily on the
19 fact that that is irrelevant. We feel an obligation to
20 our client to make a comprehensive record on the fact that
21 Mr. Szabo stands out there with his opinion, and that there
22 is a body of other opinion, at least as reported in the
23 publications on which he relies, that flatly contradict
24 his concerns.

25 JUDGE MILLER: Well, he conceded that, I believe.

1 WITNESS SZABO: Yes, I did, Your Honor.

2 JUDGE MILLER: He has his. Others -- some
3 coincide, some are opposed. I think there is no real
4 dispute among any of us on that.

5 MR. SEDKY: But Your Honor, if somebody is going
6 to be looking at this record with a naked eye at some point,
7 you know, either the Commission or some court at some point,
8 and it is important for us to have a record.

9 JUDGE MILLER: We will give you fifteen minutes,
10 and then you put it in the form of an offer of proof or
11 whatever else you want. We don't think it is worth it.

12 On the other hand, we are willing to have some
13 record in case it is looked at with the naked eye or closed
14 eye, or whatever the big eye is, but nonetheless, we don't
15 think we should be spending a lot of time, so we are going
16 to give you, say, fifteen minutes, something like that,
17 to put in what you want.

18 We will give you also an opportunity to make
19 an offer of proof then as to the balance, if you have a
20 balance.

21 MR. ROLFE: Judge Miller, might I just for the
22 record state my objection to this again, to the extent these
23 articles are being offered for their truth, and the truth
24 of the opinions which are reported in them, which by the
25 way are double hearsay, because the article itself is hearsay,

1 and then you have a reporter reporting somebody else's opinions,
2 and that other person is unidentified. They are inadmissible
3 hearsay, and there is no witness here we can cross examine.

4 If they are being offered to impeach, there is
5 no impeachment, because Mr. Szabo has conceded there are
6 other opinions.

7 JUDGE MILLER: Why don't you ask the question
8 first, and then answer it. What do you want to talk about?

9 WITNESS SZABO: I wanted to bring your attention
10 to a point in my testimony that confirms what you said,
11 and can cut this off. Page 12, Question No. 15.

12 End 16.
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Sim 17-1

1 JUDGE MILLER: It would increase the price of
2 oil, but the amount and duration of the increase is subject
3 to great uncertainty. I state that right up front.

4 JUDGE MILLER: And you state it throughout.

5 THE WITNESS: That is right.

6 JUDGE MILLER: There is a myriad a unpredictable
7 factors paragraph after paragraph. That is a tenuous nature,
8 and this is not being critical, but I think that is in
9 fairness what the situation is. That is why we want to get
10 it finite, limited and get it in the record and get on to
11 something else.

12 MR. SEDKY: Your Honor, I would like to do that,
13 and I think probably the most efficient way to do that is
14 just to make one composite exhibit and we can argue about
15 its relevance.

16 Just by way of voir dire though I would like
17 to ask Mr. Szabo whether it is a fact that in arriving
18 at your own opinion with respect to the supply of oil that
19 you review and did review the articles and materials that
20 you furnished to us in discovery.

21 THE WITNESS: Yes, that was part of my effort,
22 but not the total effort.

23 MR. SEDKY: No, I understand that, and I think
24 that overcomes Mr. Rolfe's problem, Your Honor, that this
25 is just simply to show that this is material that he relied

Sim 17-2

1 on, that this expert relied on and we want the record
2 to show that while he may disagree with some of the opinions,
3 that is fine, but we don't want a naked record that simply
4 doesn't show the other side.

5 So what I propose to do, Your Honor, if you
6 would just indulge me maybe for two minutes off the record,
7 perhaps I can make a composite exhibit and get on with this.

8 JUDGE MILLER: Okay.

9 MR. ROLFE: Your Honor, just for the record let
10 me state that I disagree that that obviates LILCO's objection.
11 It is still hearsay. The fact that he reviewed it made
12 it producible and discoverable and it was produced by him
13 in response to Your Honor's orders. It does not make it
14 admissible except for potential impeachment and there has
15 been no impeachment.

16 JUDGE MILLER: Well, as you very well know,
17 the fact that something is hearsay doesn't make it
18 inadmissible.

19 The question of reliability is addressed by
20 the testimony of the witness who has very fairly told us
21 what he relied on and that there were other factors. But
22 there are pros and cons. He says it in his testimony and he
23 has said it now. He produced the materials, and I think
24 that would give us a fair rounded version of whatever it
25 amounts to. But the hearsay doesn't make it inadmissible,

Sim 17-3

1 as you well know. The reliability, however, does always
2 exist, and we are looking now to the witness' own testimony
3 then and now as to the reliability factors.

4 MR. ROLFE: Yes, Your Honor, but for the
5 record I would like to make it clear that it is LILCO's
6 position that this being double hearsay is inherently
7 unreliable hearsay, but I understand Your Honor's ruling.

8 JUDGE MILLER: I suppose it doesn't matter
9 how many times hearsay is repeated, especially among people
10 who claim or purport to be knowledgeable writing in
11 publications which purport to have some interest in commercial
12 matters. The fact that it is repeated from time to time
13 doesn't make it either more or less reliable. We are
14 actually basing our reliability upon the witness' testimony
15 essentially.

16 So your objection will be overruled. We are
17 shortly going to have a series, I take it, of documents
18 expressing varying points of view which were initially
19 furnished by Mr. Szabo and when he examines them he will
20 tell us whether he thinks it shows the range and some he
21 agrees with and some he doesn't. I think that is about it,
22 isn't it?

23 THE WITNESS: Well, in addition, Your Honor,
24 I did work in that area and I had a view into the Aramco
25 operations, plus my oil background. So it is not just a

Sim 17-4

1 bunch of articles. I have processed this through my insight
2 and experience.

3 In addition, these are just part of what I
4 rely on. I routinely in my job follow the oil markets, and
5 I have been doing this for about two and a half years and
6 these are the most recent ones.

7 (Pause while the document is assembled.)

8 MR. SEDKY: Just to describe for the record,
9 Your Honor, what I am having marked, I would like to have
10 marked as Suffolk County Exhibit LP-13 as a composite exhibit
11 a series of articles. Perhaps it ought to be 13-A.

12 A page from the May 21, 1984 issue of Petroleum
13 Intelligence Weekly.

14 As 13-B a copy of a Wall Street Journal article
15 dated May 30, 1984.

16 As 13-C a copy of a page from the June 4, 1984
17 edition of Petroleum Intelligence Weekly.

18 As 13-D a copy of an article appearing in the
19 June 4, 1984 issue of Oil and Gas Journal.

20 As 13-E a copy of a page from the June 11, 1984
21 issue of The Energy Daily.

22 As 13-F a copy of a page from the June 18, 1984
23 issue of the Petroleum Intelligence Weekly.

24 As 13-G a copy of the Wall Street Journal article
25 dated June 20, 1984.

Sim 17-5 1

2 As 13-I in article from the Wall Street Journal
3 in the issue of June 21, 1984.

4 As 13-I an article appearing in the January
5 16, 1984 issue of the Oil and Gas Journal.

6 And I would represent for the record that all
7 of these were produced to us at the time of Mr. Szabo's
8 deposition.

9 JUDGE MILLER: They may be so marked.

10 (The documents referred to were
11 marked Suffolk County Exhibit
12 No. 13-A through 13-I, inclusive,
13 for identification.)

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14 MR. SEDKY: I would also make clear for the
15 record that the dates and various marks that are on any
16 of these articles were that way in the original and they
17 are not our markings.

18 In case I haven't made it clear before,
19 Suffolk County LP-12, which I described earlier, also was
20 produced during the course of discovery from Mr. Szabo.

21 MR. PERLIS: Excuse me, Mr. Chairman.

22 JUDGE MILLER: Yes.

23 MR. PERLIS: I think we might be missing
24 one of them. Could you repeat 13-A and 13-B?

25 MR. SEDKY: "A" is the May 21, 1984 issue
of Petroleum Intelligence Weekly.

Sim 17-6

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MR. PERLIS: Okay. We have that.

MR. SEDKY: 13-B is the Wall Street Journal article of May 30, 1984.

MR. PERLIS: Okay. What was "C" then? Maybe that is what we are missing?

MR. SEDKY: "C" is the Petroleum and Intelligence Weekly of June 4, 1984.

MR. PERLIS: I have that listed as "D" and the last one was "J"?

MR. SEDKY: No, "I".

MR. PERLIS: Never mind.

JUDGE MILLER: All right.

MR. SEDKY: Your Honor, these were documents that were produced by the LILCO witnesses. I know it is your practice to have us move our evidence in our case, but I don't have a witness who would be able to sponsor these particular exhibits.

Mr. Szabo is the only one that can identify them.

JUDGE MILLER: Can you identify these, Mr. Szabo?

THE WITNESS: Yes. These are some but not all of the relevant articles they gave Mr. Sedky.

JUDGE MILLER: Do they tend to give a spectrum of views consistent with your testimony on pages 12 and 13

Sim 17-7

1 showing that in your opinion the price of oil would
2 increase in the event of cut-offs, but that there would be
3 great uncertainties where you list a good many of them?

4 THE WITNESS: In part. They also affect some
5 other ones related to the availability of domestic oil.
6 But I would like to point out that Mr. Sedky has withheld
7 from this group some articles that I gave him which tend
8 to support my position more than these ones.

9 JUDGE MILLER: All right. Let's get those
10 all together and get everything.

11 THE WITNESS: I would like to get everything.

12 JUDGE MILLER: Let cut down on the quantity now
13 if we can. Get one or two of the fairly representative
14 if you think you have a point of view that is not reflected
15 here and which would be consistent with your testimony which
16 does show a range of views.

17 THE WITNESS: I would have to go to my files
18 something of which he has a copy of already.

19 JUDGE MILLER: Okay. And pick out several
20 that would fairly describe your view or nuances and we will
21 have them identified.

22 (Pause while the witness leaves the witness
23 table to comply with Judge Miller's direction.)

24 JUDGE MILLER: Okay. Have you found the documents
25 that you feel reflect your views?

Sim 17-8

1 THE WITNESS: Well, these documents round out
2 some of the positions related to the issue that Mr. Sedky
3 has described. Some are favorable and some are unfavorable.

4 I gave him a balance of everything I look at
5 and I think these ones give a balance rather than just
6 a one-sided position as the sub-set that Mr. Sedky produced.
7 He has all of these materials and I would like to give
8 these to you.

9 (The witness leaves the witness table and
10 begins to approach Judge Miller.)

11 JUDGE MILLER: Well, no. Give them to LILCO.
12 Give them to counsel so he can make the appropriate
13 representations.

14 (The documents were handed by the witness to
15 LILCO's counsel.)

16 MR. SEDKY: Perhaps that ought to come in
17 on redirect just so the record is clear as to who is
18 sponsoring the evidence.

19 JUDGE MILLER: Well, they seemed to let you
20 go without a sponsor.

21 (Laughter.)

22 MR. SEDKY: Really it is just a mechanical
23 matter.

24 JUDGE MILLER: I think it actually is. We
25 will have them marked in such a way as to show that you

17-9

1 were not producing them, but that the witness says they are
2 necessary to give a rounded view and include matters that
3 he furnished in discovery, which was the original basis of
4 them.

5 MR. SEDKY: Right.

6 JUDGE MILLER: I think it might be well just
7 to do it all at the same time. We will let LILCO mark
8 however they wish on the additional documents and then you
9 each make a statement for the record so we can sort out
10 the numbers.

11 MR. ROLFE: Judge, in that case, let me identify
12 them. I guess they will be LILCO's LP Exhibits 3A, B, C
13 and so on.

14 3-A would be an article from an article from
15 Newsweek Magazine dated May 28th, 1984.

16 3-B would be an article from World Oil, the
17 June 1984 issue.

18 3-C would be a December 12, 1983 article from
19 I think it is Petroleum Intelligence Weekly. It is PIW.

20 THE WITNESS: Yes, that is what it is, PIW.

21 MR. ROLFE: 3-D would be an article dated
22 December 6th, 1983 from the Wall Street Journal.

23 3-E will be an article dated May 25, 1984 from
24 the Wall Street Journal.

25 3-F is an article dated June 4, 1984 from

Sim 17-10

1 Petroleum Intelligence Weekly.

2 3-G is an article dated June 8, 1984 from the
3 Wall Street Journal.

4 3-H is an article dated May 25, 1984 from the
5 Wall Street Journal.

6 3-I is an article dated June 18, 1984 from the
7 Wall Street Journal.

8 3-J is an article dated June 18, 1984 from
9 Petroleum Intelligence Weekly.

10 3-K is an article dated June 12, 1984 from the
11 Energy Daily.

12 3-L is an article dated June 4, 1984 from the
13 Energy Daily.

14 3-M is an article dated June 14, 1984 from the
15 New York Times.

16 3-N is an article dated June 20, 1984 from the
17 Wall Street Journal.

18 And 3-O is an article dated June 4, 1984
19 from Petroleum Intelligence Weekly.

20 LILCO will make copies of these and distribute
21 them at the next recess.

22 (The documents referred to were
23 marked LILCO Exhibit LP-3-A
24 through LP-3-O, inclusive,
25 for identification.)

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Sim 17-11 1

JUDGE MILLER: All right.

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Now let's each of you mention for the record what you have brought so somebody reading this can see what we are really doing.

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MR. SEDKY: Your Honor, we have proffered Suffolk County Exhibit LP-13 which is comprised of 13-A through 13-I, and the witness has identified those articles as coming from his files and we move them into evidence at this time.

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JUDGE MILLER: And what is LILCO offering?

MR. ROLFE: Your Honor, preserving and not intending

to waive its waive its objection to the admissibility of any of these, as already stated and ruled upon by the Board, LILCO in an effort to make the record clear has proffered the remainder of those articles identified as LILCO LP Exhibits 3-A through O which the witness feels are necessary to round out the views reported in the various journals he tracks which reflect a well-rounded picture of the various opinions which have been rendered.

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These articles were the additional articles which were produced by the witness to Suffolk County in addition to those which Suffolk County has introduced.

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#18-1-SueT 1

2 JUDGE MILLER: Mr. Szabo, is that statement now
3 that counsel made, correct? Did you understand the meaning
4 of your testimony and exhibits?

5 WITNESS SZABO: Yes, Your Honor. There are some
6 additional ones that were -- which were given.

7 JUDGE MILLER: Quite a few.

8 WITNESS SZABO: You are right, yeah.

9 JUDGE MILLER: But they give a fairly rounded
10 picture and consistent with your testimony which shows
11 a variety of opinion.

12 WITNESS SZABO: I relied in part on them, yes,
13 sir.

14 JUDGE MILLER: They will then all be admitted.
15 That is to say, the County's 13-A through I, LILCO's 3-A
16 through O will be admitted, for the purposes as stated.

17 MR. SEDKY: If you would just add LP-12, Your
18 Honor, I think we forgot, since that was marked separately.

19 JUDGE MILLER: Yes, that will be included.

20 (The documents previously
21 marked as Suffolk County
22 Exhibits LP-13-A through I,
23 and LILCO Exhibits LP-3-A
24 through O, and Suffolk County
25 Exhibit LP-12 for identifica-
tion are admitted in evidence.)

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#18-2-SueT 1

BY MR. SEDKY: (Continuing)

2 Q Now, Mr. Szabo, to the extent that commercial
3 operation of Shoreham provides an earlier shield, if you
4 will, against the vagaries of a potential fuel cutoff, oil
5 cutoff, it is true, is it not, that the earlier termination
6 of operation of Shoreham would just that much sooner ex-
7 pose LILCO to the same vagaries; isn't that correct?

8 A Absolutely not.

9 Q No?

10 A No.

11 Q Why is that?

12 A Okay. Shoreham would probably last thirty some
13 odd years, bringing us into the 2015 range, something in
14 that area. Because of the depleting nature of oil, it is
15 very unlikely that there will be -- that the next plant
16 replacing it will be an oil-fired plant.

17 I called Mr. Sedky's attention to the fact that
18 it is already against the law to build a new oil-fired base
19 load plant. That's the Fuel Use Act. And given the fact
20 that the United States will become increasingly dependent
21 on foreign oil, it's very unlikely that there will be a
22 change in policy and a change in economics that will justify
23 building an oil-fired plant to replace Shoreham.

24 Most probably some other technology, whether it's
25 coal, solar, nuclear, et cetera, but definitely not oil.

#18-3-SueT 1

Q But you don't know that for a fact, do you?

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A No one knows for a fact what's happening, but I know for a fact it's against the law now to build an oil-fired plant. And I know the fact that the oil is depleting and there will be much less of it available at that period of time.

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Q Right. Now, it is a fact though, is it not, Mr. Szabo, that in the absence of a major disruption of oil supplies, LILCO will have no difficulty in obtaining foreign oil?

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A Yes.

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Q And it is your view, is it not, that major disruption would have a price impact on the -- on oil --

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A Yes.

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Q -- that LILCO would acquire?

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A Yes. Yes.

17

Q Now, on the assumption that what is in issue in this particular proceeding is a ninety-day swing, in other words, three months, that to follow the assumption that NRC Staff makes, and that is early testing will mean early commercial operation on a one-per-one basis, have you made any analysis of the price impact that that ninety days would have, or the impact during that ninety-day period that prices might have?

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A Yes. I made this while I was sitting in this

#18-4-SueT 1

2 room. In my testimony, I said there would be a -- subject
3 to tremendous uncertainty, my best judgment, the effect
4 of a major cutoff would be about a ten dollar a barrel
5 change in crude oil. Now, in general on average it's
6 approximate.

7 Residual oil is running about ninety percent
8 of the cost of crude oil. LILCO burns about fifteen million
9 barrels of oil a day. So, fifteen million barrels of oil
10 a year. So, you are talking a little under four million
11 barrels for a three months period. Let's say three million
12 to be conservative, three to four.

13 So, three to four times nine dollars a barrel,
14 we are talking a little under, a little over, thirty dollar --
15 a million dollars. Now, the ten dollars for the crude is
16 in here.

17 The mental calculation I just did now, the
18 assumptions are resid is about ninety percent of the cost
19 of crude, and that LILCO will burn between three and four
20 million barrels of oil during a three month period. So,
21 say three and a half million barrels times ten dollars a
22 barrel for the crude times ninety percent gets you in the
23 ball park of thirty million dollars.

24 Q But, wait a second.

25 A Maybe there is an arithmetic mistake. I haven't
done that on --

#18-5-SueT1

2 Q No, no. I think there is a conceptual problem,
3 too. You are assuming that Shoreham is going to replace
4 a hundred percent of the oil; isn't that true in your
5 answer?

6 A Let me just think this through a second.

7 Q It's true, isn't it, that in your answer you are
8 assuming that in order to come up with those numbers that
9 Shoreham would replace a hundred percent of the oil that
10 LILCO is using?

11 JUDGE MILLER: Yes.

12 WITNESS SZABO: Okay. For that three month
13 period. Yes.

14 BY MR. SEDKY: (Continuing)

15 Q All right.

16 A And that calculation was just done in this room.
17 It may be a little bit lower; it may be a little bit higher.

18 Q But we all know that LILCO is not going --
19 Shoreham would never replace a hundred percent of the oil
20 that LILCO uses; isn't that correct?

21 A It would not replace all of it.

22 Q Right. Now, when would that cutoff have to
23 occur for any savings to be experienced?

24 A It would have to cut off after the plant is
25 operating. Wait a minute. It would have to cut off during
that period -- you are looking at starting potentially three

#18-6-SueT 1

2 months earlier. So, the cutoff would have to be effective
3 during that three month period, so to get the full savings
4 it would have to cut off perhaps a month or two before
5 that.

6 Q So there has to be a cutoff in that window;
7 isn't that correct?

8 A The impact and the cutoff would have to occur
9 a little bit before that.

10 Q Right. But you have testified previously that
11 there is no way of ascertaining whether a cutoff would
12 occur now or ten years from now?

13 A No.

14 Q Now, directing your attention to Page 8 of your
15 testimony, in response to Question 11, you state that you
16 have an understanding based on a letter from Secretary of
17 Energy Hodel.

18 Do you see that?

19 A That's right.

20 Q And it is your testimony, is it not, that what
21 Mr. Hodel says is consistent with your own experience?

22 A Yes.

23 MR. SEDKY: Your Honor, I move to strike the
24 letter as, first of all, being irrelevant to this proceeding.
25 The letter, for which it is offered, is limited to the
statement that New York State burns more oil to produce

#18-7-SueT 1

2 electricity than any other state, I don't know what that
3 has to do with this exemption.

4 And, secondly, the letter itself interjects --
5 has a lot of facts in there that we would want to address
6 and perhaps subpoena Mr. Hodel to come in here, because he
7 gets into the whole question of emergency planning and
8 the FEMA exercises and so forth. To the extent that any
9 of this letter stays in, it ought to be limited -- and I
10 really don't see the relevance -- it ought to be limited
11 to the statement that New York still burns more oil to
12 produce electricity than any other state.

13 But, since Mr. Szabo, you know, is testifying
14 to that as to his own knowledge, it seems to me that the
15 only purpose for this letter is to back door all the hearsay
16 testimony that is in there about matters that are not before
17 this Board.

18 JUDGE MILLER: Is there any factual dispute that
19 New York State burns more oil to produce electricity than
20 any other state?

21 MR. SEDKY: I frankly don't know, Your Honor. I
22 just don't know what bearing it has on the exemption.

23 JUDGE MILLER: That's a different question.

24 MR. SEDKY: I guess what I'm saying is that to
25 the extent it is a true statement, we don't need Mr. Hodel's
letter in here. And Secretary Hodel's letter contains so

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much other material.

2 JUDGE MILLER: Well, I'm inquiring as to whether
3 or not that is disputed, or could it be stipulated? That
4 fact, which I suppose is readily ascertainable.

5 MR. SEDKY: I just don't -- I really don't know,
6 Your Honor. If Your Honor believes it's the case, I will
7 take Your Honor's representation. If Mr. Rolfe believes
8 it's the case, I will take even his representation.

9 JUDGE MILLER: I'm inquiring whether or not
10 if it be a matter that is really not seriously in dispute,
11 why it could not be stipulated and you don't have to have
12 any more testimony on that point.

13 It's an invitation to stipulation.

14 MR. ROLFE: Well, Your Honor, we don't dispute
15 it in our testimony.

16 JUDGE MILLER: Is there any reason why we can't
17 accept that, then, as establishing that fact? Isn't that
18 all that is really necessary, if even that much be neces-
19 sary to your case?

20 MR. ROLFE: Your Honor, I think that much is
21 clearly necessary. I think it's also relevant to show
22 that. --

23 JUDGE MILLER: It may be relevant. You have got
24 a hearsay document here. You just lectured me on the
25 evils of hearsay.

#18-9-SueT1

1 MR. ROLFE: Yes, Your Honor, and you lectured
2 me that hearsay is admissible.

3 JUDGE MILLER: If it's reliable, I said. Is
4 it Hodul or Hodel, by the way?

5 MR. ROLFE: I don't know, Your Honor.

6 JUDGE MILLER: Whatever it is, the gentleman,
7 I think we know who he is. I question whether it is neces-
8 sary to bring his letter in to establish really anything
9 more than the following, that New York State burns more
10 oil to produce electricity than any other state.

11 Now, if that be susceptible to a stipulation as
12 to a fact, we suggest the parties might be willing to
13 accept that stipulation, because we -- I've read most of
14 it, but I don't want to bring in more extraneous, arguable
15 facts if they are not necessary.

16 If they are necessary, you are going to have to
17 have this letter proved --

18 MR. ROLFE: Well, Your Honor, we certainly accept
19 the stipulation about New York State's oil use. We think
20 it's also germane that the Secretary of Energy thinks it
21 is in the national interest to reduce that oil --

22 JUDGE MILLER: Wait a minute. We have got enough
23 people in here now. We don't want to go trying the Secretary
24 of Energy.

25 Staff, what do you have to say about this?

#18-10-SueT

2 MR. PERLIS: Well, as to whether New York State
3 burns more oil than any other state, I must confess I'm
4 not sure that that item is particularly relevant. And --

5 JUDGE MILLER: First, is it true?

6 MR. PERLIS: I have no knowledge as to whether
7 it's true or not. And for the purposes of this exemption
8 proceeding, I'm not sure that it matters.

9 JUDGE MILLER: I would agree with you on that.

10 MR. PERLIS: As to the second portion, as to
11 whether it is the Secretary of Energy's policy and indeed
12 the policy of the whole federal government, to reduce
13 dependence upon foreign oil, I would think that one could
14 almost take judicial notice of that fact. And I don't
15 believe one needs a letter from Secretary Hodel to that
16 effect.

17 I think that that's pretty clear, the existence
18 of the federal policy. We don't object to the striking of
19 the letter.

20 JUDGE MILLER: The Board is inclined to strike
21 the letter. It seems to be an attachment. Is it an
22 attachment to the testimony?

23 MR. ROLFE: Yes, Your Honor.

24 JUDGE MILLER: The Board is inclined to strike
25 the letter upon the stipulation that, "New York State burns
more oil to produce electricity than any other state."

#18-11-SueT1

2 Do you consider that to be a fact by stipulation
3 that's in the record and then strike the Hodel letter,
4 because we don't really see it as necessary and it could
5 raise a lot of other issues, prolonging and cluttering up
6 the record that doesn't lead to anything productive?

6 MR. ROLFE: Your Honor, I understand Your Honor's
7 ruling. LILCO has already noted its objection to it.

8 However, I would like to proffer that, make an
9 offer of proof of that letter so that it will be included
10 in the record for that purpose, with the understanding that
11 Your Honor has excluded it from evidence.

12 JUDGE MILLER: Very well.

13 MR. SEDKY: Your Honor, so that there is no mis-
14 understanding, I have no personal knowledge as to the
15 accuracy of that statement. But all I can state is that
16 it is not going to be contested by Suffolk County in this
17 proceeding.

18 JUDGE MILLER: Well, I'm regarding that --

19 MR. SEDKY: If you take that as a stipulation.

20 JUDGE MILLER: -- as a left-handed stipulation.

21 MR. PERLIS: Mr. Chairman, I would like to
22 offer the same left-handed stipulation. The Staff is
23 not making any representation that New York State does use
24 more oil. We have no knowledge of that.

25 JUDGE MILLER: Well, you go a little further than

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2 that. You are also intimating that you don't think it
3 makes much difference.

4 MR. PERLIS: Yeah.

5 JUDGE MILLER: You just told me that. All right.
6 We will accept all of your statements.

7 Okay. Let's get on with it now.

8 BY MR. SEDKY: (Continuing)

9 Q Mr. Szabo, if you would refer to Page 10 of
10 your testimony, prepared testimony?

11 A (The witness is complying.)

12 Okay.

13 Q You state there, and I quote, "Production from
14 the U. S. Gulf Coast, which supplies essentially all the
15 domestic crude oil from which LILCO's resid is derived, is
16 declining."

17 Do you see that statement?

18 A Yes. I wrote it.

19 Q Now, it's a fact, as I think I read in one of
20 the articles you produced, that people say that oil is
21 fungible; isn't that right?

22 A Yes.

23 Q You say that, don't you?

24 A I say that.

25 Q Right. And so the fact that there is a glut
is that there is a glut, right?

#18-13-SueT

A Yes.

2 MR. SEDKY: Your Honor, if I may have just a
3 few minutes I may be finished?

4 JUDGE MILLER: Yes.

5 MR. ROLFE: Your Honor, while Mr. Sedky is taking
6 a moment, might I inquire of the Board's procedure for
7 marking documents that an offer of proof has been made.

8 Does the Board want those designated as LILCO
9 proffered exhibit so and so, marked refused?

10 JUDGE MILLER: Well, I don't know that you and
11 I are using the term "offer of proof" in the same sense.
12 An offer is when something is excluded, usually on cross-
13 examination, and the examiner offers to prove that if
14 permitted to ask this question he would get this answer,
15 XX.

16 Now, you have got a document hat you have
17 offered. The fact that we have declined to accept it in and
18 of itself is all an offer of proof would ever do for you.

19 MR. ROLFE: That's correct, Your Honor.

20 JUDGE MILLER: So, it may perhaps even be con-
21 sidered to be an offer of proof.

22 MR. ROLFE: That's fine, as long as the document
23 will be bound into the record with the testimony --

24 JUDGE MILLER: No, no.

25 MR. ROLFE: Well, will be a part of the record as --

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2 JUDGE MILLER: Yes. As any other exhibit,
3 whether identification, offered and rejected, or some
4 other disposition.

5 MR. ROLFE: That's fine, as long as it will
6 be included with the record.

7 JUDGE MILLER: It was offered and accepted, the
8 same thing. It would be part of the record in the large
9 sense. It would not be part of the transcript.

10 MR. ROLFE: I understand.

11 JUDGE MILLER: The transcript is picking up
12 only the testimony.

13 You have proffered it, haven't you? Haven't
14 you marked it, given it a number and offered it?

15 MR. ROLFE: Yes, Your Honor. It has been marked
16 as Attachment 2 to the testimony.

17 JUDGE MILLER: Well, you have got to strip it
18 out of the testimony, because the taking of the testimony
19 is only of the witness.

20 If you want to have it in the record, you have
21 got to strip out all of these exhibits, mark them and offer
22 them.

23 We will not admit the Hodel letter and we are
24 replacing it, in lieu of that we have a stipulation.
25 Now, to preserve your record, all you have to do is mark
it, offer it, hear the bad news and get on with it.

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2 MS. LETSCHE: I think the parties have agreed
3 to the procedure that we have always used with respect to
4 striken material, and we will just follow that. It will be
5 striken through with lines drawn through it so that it
6 will show --

7 JUDGE MILLER: No, no.

8 MS. LETSCHE: Because that is part of the
9 testimony.

10 JUDGE MILLER: No. That's not part of the
11 testimony. Testimony is testimony. The witness opens
12 his little lips and says it. The fact that it happens to
13 be written doesn't make it testimony. Now, if he is
14 looking at the document and talks about it, that isn't --
15 unless he reads it and he would have to have leave to do
16 that -- part of the testimony. It's an exhibit, however.

17 I mean, you may preserve your record to accom-
18 plish everything that an offer of proof would do.

19 MR. ROLFE: Yes, Your Honor, I understand that.
20 In other words, when the document is detached from the
21 testimony, all it will say --

22 JUDGE MILLER: It's detached right now.

23 MR. ROLFE: Well, it's bound into the book we
24 put together.

25 JUDGE MILLER: Did it get bound in?

MR. ROLFE: No, not to the record. It's just

#18-16-SueT 1

2 put together in a looseleaf type folder that we have filed
3 our testimony with.

4 JUDGE MILLER: You have filed testimony --

5 MR. ROLFE: Correct.

6 JUDGE MILLER: -- and you have also got exhibits.

7 MR. ROLFE: The exhibits are in that testimony.

8 JUDGE MILLER: No, they are not. I stripped
9 them out. They aren't in here.

10 MR. ROLFE: All right.

11 JUDGE MILLER: Now, if you have some attachments
12 you want as exhibits, handle it as exhibit practice.

13 MS. LETSCHE: Excuse me, Judge Miller, if I
14 could interrupt a second. I believe, and I wasn't here,
15 but I've read the transcript and I believe that during the
16 April hearing a discussion was conducted of whether we were
17 calling attachments to testimony such as this letter an
18 exhibit or an attachment. And I believe at that point,
19 the parties agreed and I think informed yourself, that in
20 the past, just to keep the confusion at a minimum, that
21 things that would normally be called exhibits to the prefiled
22 testimony would be referred to as attachments, would be
23 physically attached to the testimony and would go into the
24 record along with the prefiled testimony as distinguished
25 from what we would term exhibits which would be numbered
LP-1, 2, 3, 4, et cetera, which would be marked and introduced

#18-17-Su#T

into evidence during the actual hearing.

2

That's the way we have been proceeding for the past couple of years.

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JUDGE MILLER: I think you are wrong there, because your testimony, prefiled, becomes the testimony as we let it in, keep it out. It's directly put into the transcript, it has its own number, and that's testimony.

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Now, that's distinguished from, whether you want to call them attachments, exhibits or what. So, I think you better not confuse yourself.

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We are not going to have as part of our testimony any attachments or exhibits. Now, they may be handled separately. We suggest you use normal judicial practices of calling them exhibits with numbers that identify, and they will be traceable by that number, in or out of. And I'm advised the reporter always has a table.

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I suggest if you start getting into informal agreements you are going to get your record fouled up. If we did it before, we ought to straighten it out. But, let's go with where we are now.

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We haven't yet ruled because you haven't yet offered the testimony, have you?

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MR. ROLFE: No, sir.

JUDGE MILLER: But you intend to?

MR. ROLFE: Yes, sir.

#18-18-Suef

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JUDGE MILLER: Now, at that point we are not going to permit you to put in any attachment and so forth.

3

We may, or we will let you mark any of them as exhibits

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and we will rule on them. Now, we already ruled in this

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instance. So, you know what it is.

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end #18

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1 MR. ROLFE: Judge Miller, I have no problem
2 with the procedure. I do want to get straight, however,
3 that in the previous three witness panels, and in the
4 witness panels that testified in April, I believe that
5 the procedure Ms. Letsche has outlined has been carried
6 out, and that there are attachments bound into the
7 transcripts.

8 JUDGE MILLER: Bound into the transcripts?

9 MR. ROLFE: Yes, sir.

10 JUDGE MILLER: We said we didn't want anything
11 bound into the transcripts. We either wanted it verbatim,
12 or we wanted them handled separately as exhibits. We didn't
13 want to have it either encumbered or additional costs by
14 putting them into the transcripts, so let's bring that to
15 a screeching halt if that is what you have been doing.

16 Let me inquire of the Reporter. Let's go off
17 the record.

18 (Off the record discussion ensues.)

19 We wish to discontinue any practice having bound
20 in documents of any kind, and direct written testimony which
21 we are handling as though it were given orally, and has its
22 on independent transcript number. If there has been such
23 a practice, let it cease right now.

24 Let us worry later about trying to straighten
25 out the record. Any so-called attachments, we are going

1 to regard as exhibits. We would like for you to handle it
2 as normal exhibit practice in court. We will have the
3 uniform practice.

4 Go ahead.

5 MR. SEDKY: I have no further questions at
6 this time.

7 JUDGE MILLER: State of New York?

8 MR. PALOMINO: Yes.

9 CROSS EXAMINATION

10 BY MR. PALOMINO:

11 Q Mr. Szabo, your testimony is predicated on the
12 assumption that LILCO will go commercial right, in operation,
13 is that correct?

14 A Yes, it is predicated that there would be a saving
15 if low power testing enables you to start the plant earlier,
16 and applies commercial operation.

17 Q Assuming that the exemption was granted, and it
18 did do the low power testing for the specified period, but
19 it never got commercial operation, how would it affect the
20 price of the nuclear fuel that is in the reactor?

21 A Let me understand this. You are saying that
22 it got testing, but it did not go commercial? There would
23 be some increase in the price of fuel, but I am not testifying
24 in that area. If it was irradiated, it would be less valuable.
25 I don't know the exact numbers.

1 Q What is the market value of it now? You purchased
2 it, didn't you -- you are responsible for --

3 A I haven't been responsible since 1983.

4 Q So you don't know the market value?

5 A Of the fabricated fuel assemblies right now, no.

6 Q And you don't know what the reduction would
7 be?

8 A No, I don't. It may be substantial.

9 Q It might be in excess of the thirty million
10 saving you projected for three months in the event of an
11 interruption, assuming it went commercial?

12 A I don't know.

13 Q You don't know. All right. On the same
14 assumption that a low power license was granted, and that
15 the plant did not get approval for full commercial operation,
16 there would be a cost then for decommissioning then, wouldn't
17 there?

18 MR. ROLFE: Objection. Your Honor, the question
19 is irrelevant.

20 JUDGE MILLER: Sustained. We have held the
21 decommissioning cost is not within this limited inquiry,
22 Mr. Palomino.

23 MR. PALOMINO: Well, it goes to the public
24 interest, doesn't it?

25 JUDGE MILLER: Well, anything goes to the
public interest. Almost anything you can conceive of would

1 be in that grouping.

2 But this has been the subject of some motions
3 and rulings, and we want to be consistent.

4 BY MR. PALOMINO: (Continuing)

5 Q Mr. Szabo, before you talked about an interruption
6 taking a few months. Isn't LILCO now required by the Public
7 Service Commission to have a forty-five day reserve of oil?

8 A That is not strictly true.

9 Q Well, it is recommended they have seventy-five
10 percent of a forty-five day reserve.

11 A Right, which is in about thirty-three to thirty-
12 four days.

13 Q All right. Now, couldn't you offset any
14 possibility of an interruption by increasing the amount of
15 reserves to a hundred percent rather than a recommended
16 seventy-five percent?

17 A Yeah, to the extent that you could buy oil and
18 hold it in the anticipation of a disruption you would save
19 money. You would be also having the carrying cost of that
20 oil.

21 Q You could also lease additional facilities
22 and increase the amount beyond the requirement of the
23 Public Service Commission, couldn't you?

24 A Yes, you could. At a cost.

25 Q All right. Now, instead of storing it, you

1 could also buy a futures contract on the commodities markets
2 couldn't you, from reliable American sources, which would
3 provide for a fixed price for delivery at a fixed period
4 in the future, couldn't you?

5 A Would you define, 'reliable American sources?'

6 Q Ones that have oil in the Gulf or otherwise.

7 A No one trades in residual oil futures at the
8 current time.

9 Q Well, they have crude oil contracts on the
10 Chicago Board of ---

11 MR. ROLFE: Objection, Your Honor. Let Mr.
12 Palomino let the witness complete his answer.

13 WITNESS SZABO: There are no futures in
14 residual oil. There are futures in gasoline, middle
15 distillates, and crude oil, and to the extent you could
16 hedge crude oil against residual oil, you lose automatically
17 some of the benefit, because there is not a hundred percent
18 correlation.

19 BY MR. PALOMINO: (Continuing)

20 Q Well, you said it was ninety percent --

21 A No, I didn't. I said that on average the cost
22 of residual oil was about ninety percent of the cost of
23 crude, on average. But it fluctuates up and down.
24 Maybe you can read the exact words that I said a few minutes
25 ago. It is not a rigid ninety percent.

1 Q Barring that difference, you could hedge against
2 it by doing that without having the cost of storage?

3 A Yes, but you would also have the cost of the
4 hedging, which is no inconsiderable.

5 Q It certainly would be a lot better than the
6 increase you trace as a result of the interruption, wouldn't
7 it?

8 MR. ROLFE: Objection, Your Honor. The question
9 is argumentative.

10 JUDGE MILLER: Well, it is bordering on it.
11 Do you understand the question?

12 WITNESS SZABO: I understand the question.

13 JUDGE MILLER: Are you able to answer it?

14 WITNESS SZABO: I don't think it necessarily
15 follows that it would be cheaper than --

16 JUDGE MILLER : What does follow?

17 WITNESS SZABO: It follows that there is a cost
18 to hedging. Of commissions. There is a cost of buying
19 contracts that expired. I don't know the details of those
20 costs. Those costs, you know, you could lose --

21 JUDGE MILLER: There are some costs, and you
22 don't know the extent.

23 WITNESS SZABO: Right, yes, sir.

24 JUDGE MILLER : All right. Go ahead.

25 BY MR. PALOMINO: (Continuing)

1 Q Does LILCO now purchase and hedge?

2 A We do not hedge oil on the futures markets.

3 Q Do you hedge on any of the markets?

4 A Not that I am aware of.

5 Q All right. How much of LILCO's requirement
6 would Shoreham displace if it were to go into full operation?

7 A That number can vary. We said in our testimony
8 in the neighborhood of seven million barrels of oil a year,
9 given certain assumptions such as no gas availability and
10 no power from Nine Mile Point.

11 It could be less than that. Maybe four, maybe
12 five. It is several million barrels.

13 Q What is the total number that LILCO purchases
14 a year now in barrels?

15 A In the neighborhood of fifteen million barrels.
16 That is a round figure.

17 Q So, it would be displacing less than half of
18 LILCO's use, right?

19 A Yes, less than half.

20 MR. PALOMINO: Fine. Thank you. No further
21 questions.

22 JUDGE MILLER: Staff?

23 MR. PERLIS: The Staff has no questions of this
24 witness.

25 JUDGE MILLER: Anything further?

1 MR. ROLFE: Just one question -- or one topic,
2 Your Honor.

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3 REDIRECT EXAMINATION

4 BY MR. ROLFE:

5 Q Mr. Szabo, do you know whether LILCO has
6 purchased the nuclear fuel for its reactor at Shoreham?

7 A Yes. LILCO has the nuclear fuel, the initial
8 core for the reactor, and I believe about two-thirds to
9 three-quarters of the nuclear fuel for the first reload.

10 MR. ROLFE: No further questions.

11 JUDGE MILLER: Thank you, Mr. Szabo, you may
12 step down.

13
14 MR. ROLFE: Your Honor, LILCO moves the testimony
15 of Mr. Szabo into evidence, and also offers Attachment 1
16 to that testimony, which is Mr. Szabo's statement of
17 professional qualifications, as LILCO Exhibit LP-4, and
18 also offers Attachment 2 to that testimony in its offer of
19 proof as LILCO Exhibit LP-5.

20 JUDGE MILLER: Any objections? Other than
21 those that have been raised and ruled upon.

22 MR. SEDKY: We understand the Board has ruled
23 on the entire scope of the testimony. We continue to have
24 the objection, but we do understand that the Board has
25 ruled and excluded what is LILCO LP-5, Attachment 2 to the

1 testimony.

2 JUDGE MILLER: We will repeat that for the
3 record, but that is correct.

4 JUDGE MILLER: State?

5 MR. PALOMINO: Same objection, Your Honor, for
6 the State.

7 JUDGE MILLER: Staff?

8 MR. PERLIS: The Staff has no objection.

9 JUDGE MILLER: All right. The testimony proffered
10 by Mr. Szabo will be admitted subject to the rulings which
11 have been made by the Board both as to the direct testimony
12 itself and to certain exhibits which have been sometimes
13 called attachments or whatever.

14 Now, as for the exhibit No. 4, was it, that you
15 offered on behalf of LILCO.

16 MR. ROLFE: Yes, Your Honor. Exhibit No. 4
17 was Attachment 1 to the testimony, which is entitled,
18 Professional Qualifications, Cornelius A. Szabo, Manager
19 of Resource Evaluation, Long Island Lighting Company.

20 JUDGE MILLER: Now, what has been our practice
21 on that? I think we have allowed that, haven't we. We
22 have reproduced it in the transcript. Because it is referred
23 to interchangeably with portions of it in the so-called
24 direct testimony.

25 MR. ROLFE: I have no objection to that procedure,

1 Your Honor.

2 JUDGE MILLER: We will continue to follow that
3 practice. In other words, you don't need to mark it as
4 an exhibit. You may offer it and it will be received,
5 together with the testimony, and they are referred to, in
6 fact, in some places.

7 So that is admitted and will be in the transcript,
8 and numbered with the transcript pages.

9

10 (Testimony and Qualifications of Mr. Szabo
11 follows.)

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LILCO, July 16, 1984

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-OL-4 |
| |) | (Low Power) |
| (Shoreham Nuclear Power Station, |) | |
| Unit 1) |) | |

TESTIMONY OF CORNELIUS A. SZABO
ON BEHALF OF LONG ISLAND LIGHTING COMPANY

Q.1. Please state your name and business address.

A. My name is Cornelius A. Szabo. My business address is
 175 East Old Country Road, Hicksville, New York 11801.

Q.2. In what capacity are you employed?

A. I am Manager, Resource Evaluation for the Long Island
 Lighting Company (LILCO). Since joining the company in
 1981, I have also held the positions of Manager of Fos-
 sil Fuel Procurement, Manager of the Fuels and Chemical
 Division and Administrative Assistant to the Vice Pres-
 ident - Purchasing and Stores. I am responsible for
 projecting oil and coal prices and availability, and
 have testified as LILCO's expert witness in these

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areas. In fulfilling these responsibilities, I spend a substantial portion of my time tracking oil-related supply and demand trends and oil-related commercial and technological developments.

Q.3. Please describe your educational background.

A. My professional qualifications are being offered into evidence as Attachment 1 to this testimony. To briefly summarize my educational background, I earned a Bachelor of Chemical Engineering degree from Manhattan College and was awarded the Prutton Medal for the outstanding chemical engineering graduate. I earned a Master of Science degree in Chemical Engineering from Columbia University, where I was a National Science Foundation Fellow.

Residual oil (the primary fuel used in LILCO's steam generating stations) is manufactured via chemical engineering technology, and my comprehensive chemical engineering education provides insight into the economics and availability of residual oil supply. Specifically, and as is discussed later, petroleum refiners, and particularly U.S. refiners, are investing billions of dollars in chemical-engineering-based processes to convert residual oil to higher-valued products. This trend of converting residual oil to higher-valued products is

decreasing the availability of residual oil, and in particular, residual oil derived from domestic crude oil.

Q.4. Please describe your professional experience.

A. I was employed for eight years in the petroleum industry with Mobil, Exxon and Shell in both marketing and planning related functions. I was a management consultant for ten years, and was designated a Certified Management Consultant by the Institute of Management Consultants. As a consultant, my clients included utilities in thirteen states, federal energy agencies and investment bankers involved in the financing of coal and petroleum projects. I conducted eight utility fuel-related management audits. I also served as a consultant to the state public service commissions of Connecticut, Delaware, Georgia, Massachusetts, New York and Pennsylvania in the areas of fuel procurement, supply and prices.

Specifically relevant to my testimony in this proceeding are my eight years of petroleum industry planning and marketing-related experience. That experience provided me valuable insight into the market strategies and tactics employed by the world's fuel suppliers. Furthermore, in 1977 I conducted a special management

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audit for the Board Chairman of the Arabian American Oil Company ("ARAMCO"). ARAMCO is the world's largest oil producing company and produces over 90 percent of Saudi Arabia's oil. Saudi Arabia is the world's largest oil exporter as well as one of the largest suppliers of imported oil to the United States. Saudi Arabia, with up to ten million barrels a day of spare installed oil production capacity, is the world's leader in setting oil prices. Through my ARAMCO assignment, I acquired detailed knowledge of both Saudi Arabian oil operations and the problems involved in pricing fuel and in assuring a continuous, reliable supply of Middle East oil to world oil markets.

Q.5. Do you have experience related to nuclear fuel?

A. Yes. While Manager of LILCO's Fuels and Chemical Division from January 1982 through October 1983, my responsibilities included nuclear as well as fossil fuel. I was also responsible for the management audits of nuclear fuel at Omaha Public Power District, General Public Utilities and Georgia Power Company. The management audit of General Public Utilities was the first audit conducted subsequent to the Three Mile Island accident at the direction of the Pennsylvania Utility Commission.

Q.6. Please indicate your experience as an expert witness regarding utility fuels.

A. Since joining LILCO in 1981, I have testified as the Company's expert witness on fuels before the New York Public Service Commission in two rate cases (case numbers 28176 and 28553) and before the New York Department of Environmental Conservation in two hearings (the Port Jefferson Coal Conversion hearings and the Renewal of Special Fuel Limitations Applicable to Suffolk County Generating Units hearings). While a management consultant, I testified in the capacity of a staff member to the Delaware Public Utility Commission in two hearings (the 1980 Delmarva Power & Light Electric Fuel Adjustment hearings and the 1980 Delmarva Power & Light Gas Production Cost Adjustment hearings).

Q.7. What is the purpose of your testimony?

A. My testimony describes the potential benefit to LILCO and the public arising from the early performance of low power testing which in turn might lead to an earlier date for commercial operation. Specifically, I will describe LILCO's dependence on oil to fire its generating plants and the potential instability of the price and supply of that oil.

Q.8. Are all of LILCO's power plants now in operation oil fired?

A. Yes, however, natural gas can also be burned, when available during the warmer months, at the E.F. Barrett and Glenwood Steam Generator Units and the E.F. Barrett Internal Combustion Units. The total capacity of all dual fired units is 876 MW, less than a quarter of the total system capacity of 3721 MW.

Q.9. What types of oil does LILCO use at these plants?

A. About ninety-nine percent of the oil burned by LILCO at these plants is residual oil, with the remainder being middle distillates. Residual oil is that portion of the crude oil left over after the higher valued products such as gasoline, middle distillates including diesel oil, and petrochemicals are refined out of it. Residual oil (resid) is normally an unavoidable and unprofitable by-product of petroleum refining, and refiners -- particularly those in the United States -- are investing billions of dollars and developing the technology to convert residual oil to higher-valued products. Chemically, residual oil is a colloidal suspension of carbonaceous materials in very high boiling point hydrocarbons, and is not fluid without the application of external heat.

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Q.10. Is LILCO predominately dependent on foreign countries for the residual oil used in generation?

A. Yes. Almost all of LILCO's oil is imported. Although precise numbers are not available, about 90% of LILCO's residual oil is derived from crude oil produced in foreign countries.

About eleven and a half million barrels of high sulfur resid and about three and a quarter million barrels of low sulfur resid are burned yearly by LILCO. The high sulfur resid is essentially all derived from foreign crude oil and essentially all manufactured in foreign refineries. Between 80% and 90% of this crude oil comes from Venezuela with most of the remainder coming from Mexico. Some Saudi Arabian crude oil is also used to derive the high sulfur resid burned by LILCO.

The situation with regard to low sulfur resid is not as clear cut, and not susceptible to precise quantification. In general, the principal refining regions supplying this low sulfur resid to LILCO are the U.S. Gulf Coast and South American countries such as Venezuela, Brazil and Argentina. Essentially all foreign refined resid is derived from foreign crude oil, and some of the resid manufactured in U.S. Gulf Coast refineries is also derived from foreign crude oil.

More than a quarter of the crude oil processed by U.S. refineries is foreign. Based on these factors, I estimate that about half of LILCO's low sulfur resid is derived from foreign crude oil.

Since LILCO's oil is approximately 80% high sulfur resid, essentially all of which is foreign oil, and 20% low sulfur resid, approximately one-half of which is foreign oil, overall LILCO's estimated dependence on foreign oil is 90%.

Q.11. Is LILCO's dependence on foreign oil unique or are other utilities in New York also dependent on foreign countries for the residual oil used in power generation?

A. It is my understanding based on a recent letter from Secretary of Energy, Donald Hodel, to Governor Mario M. Cuomo that New York State burns more oil to produce electricity than any other state (Attachment 2). Secretary Hodel's assessment is not inconsistent with my own experience in the industry.

Q.12. Are the availability and price of the domestic crude oil derived resid burned by LILCO affected by events related to foreign oil?

A. Yes, to a very great, if not total, extent. Crude oil is fungible, although there is some variation in price as a function of quality and transportation costs. Furthermore, the U.S. contains just 6% of the world's oil reserves, produces just 15% of the world's crude oil, and imports about 30% of its own oil requirements. With such a minor proportion of the world's crude oil reserves and production and such a major dependency on imported oil, the United States has little leverage in controlling world oil markets and in insulating itself from disruptions in world oil markets. And this situation is growing worse! For 1982, the latest year for which data is available from the Department of Energy (DOE), U.S. proven oil reserves declined 5.3% to reach their lowest level in 30 years. Furthermore, the United States recently suffered a major setback in efforts to slow down the depletion of its oil reserves. In December 1983, the billion dollar plus Mukluk exploratory effort off Alaska turned out to be a dry hole. With estimated potential reserves as high as five billion barrels, Mukluk had been the most promising oil prospect in the United States since the discovery of Prudhoe Bay, the nation's largest oil field, in 1968.

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Q.13. Will LILCO become increasingly dependent on foreign crude oil for its low sulfur resid requirements?

A. Yes. Structural and irreversible changes in American crude oil production and the American refining industry will make LILCO's dependency increasingly severe.

Production from the U.S. Gulf Coast, which supplies essentially all the domestic crude oil from which LILCO's resid is derived, is declining. This region has been producing oil since early in the century. There is small potential for large new oil discoveries or the economic application of enhanced oil recovery methods beyond those currently being employed. The East Texas Field, the largest ever discovered in the lower 48 states, has been producing oil since 1930 and is already more than three quarters depleted. Latest available data show that March 1984 Texas oil production has already declined 30% from its March 1957 peak.

Furthermore, structural changes in the U.S. refining industry will decrease the amount of U.S. produced resid available to LILCO. During this decade U.S. refiners have invested billions of dollars in processes which convert resid to higher-valued products such as gasoline and diesel oil. They also have closed more than two million barrels a day of less profitable

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refining capacity. In general, these shutdown refineries were the older and less sophisticated ones which yielded a greater percentage of residual oil than the refineries kept in operation. Through the first five months of 1984, Gulf Coast refineries reduced their average resid yield percentage by almost half when compared with the first five months of 1980. Within the next few years, additional major resid conversion investment will come on stream and unprofitable refining capacity will be shut down, further reducing the percentage yield of low sulfur resid derived from the declining supplies of domestic crude oil.

Q.14. Please give examples of foreign oil market disruptions causing major price increases for American consumers.

A. During the 1967 Mideast War, Arab oil producers also attempted an oil embargo; however, the United States still had enough spare oil production capacity to abort it. By 1973, however, the United States had lost its ability to control world crude oil markets and insulate itself from disruptions in world oil markets. The Arab Oil Embargo in 1973 quadrupled oil prices. The Iranian Revolution in 1979 further tripled oil prices. Despite the three-year long current oil glut, prices are still closer to the level reached during the Iranian Revolution than the level before that disruption.

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Should the current hostilities in the Persian Gulf Region between Iran and Iraq result in a cutoff of supplies from all the Persian Gulf oil producers, it would cause a major worldwide oil shortage. Persian Gulf countries not only contain half of the world's entire oil reserves, they also contain about three quarters of the world's spare installed production capacity and produce about 20% of the entire world's output. The world will become increasingly dependent on the Persian Gulf Region. This will occur, in part, because production will be declining in many of the world's major oil producing regions including the U.S.S.R., the world's largest producer, and the U.S., the world's second largest producer. In addition, production will increase substantially in the Persian Gulf Region since its oil is the world's least costly to produce (\$1 per barrel for Saudi Arabia vs \$5-\$25 per barrel for the United States and the North Sea).

Q.15. What effect would a major cutoff of oil supplies from the Persian Gulf oil producers have on the price of oil?

A. It would increase the price of oil, but the amount and duration of the increase is subject to great uncertainty. I have seen references to estimates of prices as

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high as \$100 per barrel, as well as references to estimates in the \$40 per barrel range. Subject to the great uncertainty involved, I estimate that a \$10 per barrel price increase to the \$40 per barrel range would be the likely outcome of a major cutoff of oil supplies from the Persian Gulf oil producers.

A myriad of unpredictable factors would determine the exact price increase. These include: the completeness of the cutoff; the duration of the cutoff; the possibility of military confrontation between the U.S. and U.S.S.R. in the Persian Gulf Region; the extent of panic buying and topping off of tanks; the effectiveness of the Strategic Petroleum Reserve in dampening panic buying psychology; the degree to which oil producers outside the Persian Gulf such as Libya, Nigeria and Mexico show pricing restraint in the face of a booming seller's market; the effectiveness of conservation measures; the ability of governments to resist pressures to impose politically appealing but counterproductive oil price control and allocation measures; the extent of the resulting economic contraction and consequent reduction in oil demand; and the degree to which OPEC and other large oil exporters can successfully restrain production to defend the increased price levels.

Q.16. If there is a major disruption in foreign oil markets, would LILCO likely be able to buy domestic oil?

A. LILCO would find it very difficult, if not impossible, to buy residual oil derived from domestic crude oil. Refiners would use their conversion units to convert as much resid as possible to urgently needed transportation fuels such as diesel oil and gasoline. Because the United States refining industry is the world leader in the technology for conversion of residual oil to higher-valued products, such as diesel oil and gasoline, much more of this emergency-caused conversion of resid to transportation fuels would occur in the United States than elsewhere. It is probable that little or no resid derived from domestic crude oil would be available to LILCO.

Q.17. Will operation of the Shoreham Station reduce LILCO's use of foreign oil?

A. Yes. The exact reduction in LILCO's oil consumption will depend on many factors. For 1986, the first full year of Shoreham operation, the reduction could be in the neighborhood of seven million barrels assuming the Suffolk County Special Limitations are not renewed, no natural gas is available for electric generation and no electricity is available from Nine Mile Point 2. More

than half this reduction will probably be foreign oil. The remaining reduction in domestic oil is also a great benefit as the availability and price of domestic oil is affected to a very great, if not total, extent by events related to foreign oil.

Q.18. In your opinion, would LILCO and the public benefit from early operation of Shoreham?

A. Yes. Shoreham will improve LILCO's ability to protect its ratepayers from the impact of oil shortages and price increases that would result from a major disruption in oil markets. Given the extreme volatility in the Persian Gulf Region and Middle East, including but not limited to an ongoing major war, such a disruption could happen at any time. In contrast, uranium to fuel Shoreham is in plentiful supply, and a major uranium supply disruption having an equivalent impact on LILCO ratepayers as a major oil supply disruption is very unlikely.

ATTACHMENT 1

PROFESSIONAL QUALIFICATIONS

Cornelius A. Szabo

Manager, Resource Evaluation

LONG ISLAND LIGHTING COMPANY

My name is Cornelius A. Szabo. My business address is Long Island Lighting Company, 175 East Old Country Road, Hicksville, New York 11801. As the Manager of Resource Evaluation for the Long Island Lighting Company, I am responsible for forecasting oil and coal prices and availability. Since joining LILCO in 1981, I have testified as the Company's expert witness on fuels in two hearings before the New York Public Service Commission and in two hearings before the New York Department of Environmental Conservation. I received my Bachelor of Chemical Engineering Degree from Manhattan College in 1962 and was awarded the Prutton Medal for the outstanding chemical engineering graduate. I earned a Master of Science Degree in chemical engineering from Columbia University, where I was a National Science Foundation Fellow. I was elected into the national honor societies for Scientific Research; Chemistry; and Engineering.

From 1963 to 1971, I was employed in the petroleum industry with Mobil, Exxon and Shell in both marketing and planning related functions. The former included: customer technical service, market research, and sales. The latter included: new business venture analysis and implementation of process linear

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programming, income projection, and supply-demand marketing planning models. During the eight years that I was employed in the petroleum industry, I gained valuable insight into petroleum industry planning, and the market strategies and tactics employed by the world's fuel suppliers. Furthermore, in 1977 when employed as a management consultant by Deloitte Haskins & Sells, I conducted a special management audit for the board chairman of the Arabian American Oil Company (ARAMCO), the world's largest oil producing company. Saudi Arabia is the world's largest oil exporter as well as one of the largest suppliers of imported oil to the United States and ARAMCO produces over 90% of Saudi Arabia's oil. As the world's largest oil exporter and holder of up to 10 million barrels per day of spare oil production capacity, Saudi Arabia is the world's oil price setting leader. During my ARAMCO assignment, I gained detailed knowledge of both Saudi Arabian oil operations and the problems involved in pricing fuel and in assuring a continuous, reliable supply of oil from the Middle East to world oil markets.

From 1971 to 1981, I was a management consultant with Deloitte Haskins & Sells (1971-77), Management Systems Development (1977-78), and Theodore Barry & Associates (1978-81). In 1981, I was designated as Certified Management Consultant by the Institute of Management Consultants. As a consultant, my

-3-

clients included utilities in thirteen states, federal energy agencies, and investment bankers involved in the financing of coal and petroleum projects. I also served as a consultant to the state public service commissions of Connecticut, Delaware, Georgia, Massachusetts, New York, and Pennsylvania in the areas of fuel procurement, supply, and fuel prices. In 1980, I testified in the capacity of a staff member to the Delaware Commission in the Delmarva Power and Light Electric Fuel Adjustment hearings and Gas Production Cost Adjustment hearings. I conducted eight utility fuel-related management audits.

1 JUDGE MILLER: Now, LP -- 5 becomes 4, then?

2 MR. ROLFE: Yes, Your Honor. LP-4 now would
3 be Attachment 2 to Mr. Szabo's testimony, which is the
4 June 29, 1984 letter from Secretary of Energy Donald Hodel
5 to Governor Mario M. Cuomo.

6 JUDGE MILLER: All right. That will not be
7 admitted. It will, however, be covered so far as the
8 Board is concerned by the stipulation which the Board has
9 previously stated into the record regarding the consumption
10 of oil by New York State, which will be part of the record
11 as a stipulation as to that fact, and the Hodel letter, as
12 such, which is now LILCO Exhibit LP-4, will be denied.

13 It will be not admitted.

14 Now, anything further?

15 MR. ROLFE: Not of this witness, Your Honor.

16 JUDGE MILLER: Thank you, Mr. Szabo, you
17 may step down.

18 (Witness stands aside.)

19 JUDGE MILLER: Okay. Now, I guess your next
20 -- oh, you have another single witness?

21 MR. ROLFE: Yes, Your Honor.

22 JUDGE MILLER: Do you want to call him?

23 MR. ROLFE : Yes. Mr. Anthony Nozzolillo?
24
25

1 Whereupon,

2 ANTHONY NOZZOLILLO,

3 was called as a witness on behalf of LILCO and, having
4 been first duly sworn, was examined and testified as
5 follows:

XXXX INDEX

6 DIRECT EXAMINATION

7 BY MR. ROLFE:

8 Q Mr. Nozzolillo, please state your full name
9 and business address?

10 A My name is Anthony Nozzolillo, and my business
11 address is 250 Old County Road, Mineola, New York.

12 Q Mr. Nozzolillo, do you have before you a
13 document entitled, Testimony of Anthony Nozzolillo on behalf
14 of Long Island Lighting Company which consists of nine pages
15 and one attachment?

16 A Yes, I do.

17 Q Mr. Nozzolillo, did you prepare that testimony?

18 A Yes, I did.

19 Q Is that testimony true and correct, and do you
20 adopt it as your testimony in this proceeding?

21 A Yes, I do.

22 Q Are there any changes or corrections you need
23 to make to that testimony, sir?

24 A No, there are not.

25 Q Mr. Nozzolillo, will you please state for the

1 Board your professional qualifications?

2 A I graduated Summa Cum Laude from the Polytechnic
3 Institute of Brooklyn in 1972, with a Bachelor of Science
4 in Electrical Engineering. I got my MBA Degree from C. W.
5 Post in 1978.

6 In addition to that, I have attended several
7 seminars dealing with engineering economics. In fact, I
8 have taught a course in engineering economics for Long Island
9 Lighting Company.

10 I started with the Company in 1972, as I said.
11 Currently I am the Department Manger of Financial Analysis
12 and Planning. I had served as the Division Manager for the
13 System Planning Division, in addition to being the Division
14 Manager for Distribution Engineering.

15 A lot of my time that I spent with LILCO has
16 been devoted to doing various financial and economic
17 analyses.

18 MR. ROLFE: Judge Miller, Mr. Nozzolillo, is
19 now ready for voir dire.

20 JUDGE MILLER: Voir dire?

21 MR. SEDKY: Your Honor, I would just like to know
22 how long the Board intends to go. I am new to your procedures
23 here.

24 JUDGE MILLER: How long what?

25 MR. SEDKY : You intend to go today.

1 JUDGE MILLER: How long do you intend to go?

2 MR. SEDKY: Well, I have no voir dire, and
3 if we are --

4 JUDGE MILLER: If we have none or short voir
5 dire, we might recess for the day, and then resume the
6 substantive testimony in the morning.

7 Is that a deal?

8 MR. SEDKY: That is fine. If we were going
9 to go, say, to five-thirty or so, I was going to ask for
10 a recess, but if we are not, I think I can wait.

11 JUDGE MILLER: If there is not voir dire, or
12 at least not much -- we don't mean to cut you off completely,
13 but if you don't feel it necessary, we would be --

14 MR. SEDKY: I have no voir dire.

15 JUDGE MILLER: State.

16 MR. PALOMINO: I have no voir dire.

17 JUDGE MILLER: I guess you don't have your
18 mike on, Mr. Palomino. You do not have voir dire?

19 MR. PALOMINO: I do not have voir dire.

20 JUDGE MILLER: Staff?

21 MR. PERLIS: The Staff has no voir dire.

22 JUDGE MILLER: Very well. We consider then that
23 you will describe for us the areas of expertise for which
24 the witness is proffered, and the subject of the expert
25 opinion you intend to elicit from him.

1 MR. ROLFE: The witness is proffered, Your
2 Honor, as an expert in economic modeling and knowledgeable
3 about the economic impact of Shoreham's operation on the
4 revenue requirements of LILCO, which in turn will determine
5 the rates LILCO charges to its customers.

6 The subject of his testimony will be the impact
7 of the potential advancement of the commercial operation
8 date of Shoreham on the ratepayers.

9 JUDGE MILLER: What do you consider to be the
10 advancement? We have had some cross examination. Are you
11 using it in the same sense that counsel did?

12 MR. ROLFE: I am not sure which counsel.

13 JUDGE MILLER: What period of time, what amount
14 of time, what --

15 MR. ROLFE: Your Honor, the predicate for this
16 testimony, and I hesitate to say this, is the same as that
17 for Mr. Szabo's testimony, and that is if that chain of
18 events which we discussed earlier comes into play, and as
19 a result of granting this exemption Shoreham ultimately
20 can go into commercial operation three months earlier,
21 Mr. Nozzolillo will discuss the economic impact of that
22 on LILCO's ratepayers.

23 JUDGE MILLER: Well, does that contemplate
24 a particular date or a range of time? Three months just
25 doesn't flap around in a vacuum. I am trying to get in my

1 mind what three months you are talking about.

2 MR. ROLFE: Well, for purposes of Mr. Nozzolillo's
3 analysis, he has taken three months in 1985. In other
4 words, he has compared attaining commercial operation as
5 of July 1, 1985, with October 1, 1985. He picked those
6 as reasonable dates, but by way of example.

7 In other words, his testimony is not absolutely
8 limited to those two dates.

9 JUDGE MILLER: All right. We will accept the
10 proffer of the expertise of the witness as described by
11 counsel, and with the connection to his substantive
12 testimony, also described.

13 At this point then, if there be no objection,
14 we will recess until nine in the morning.

15 (Whereupon, at 4:52 p.m, the hearing was adjourned,
16 to reconvene at 9:00 a.m., Wednesday, August 1, 1984.)
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CERTIFICATE OF PROCEEDINGS

1
2
3 This is to certify that the attached proceedings before the
4 NRC COMMISSION

5 In the matter of: LONG ISLAND LIGHTING COMPANY

6 Date of Proceeding: July 31, 1984, Tuesday

7 Place of Proceeding: Hauppauge, New York

8 were held as herein appears, and that this is the original
9 transcript for the file of the Commission.

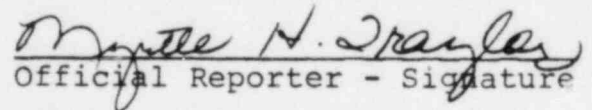
10
11 GARRETT J. WALSH, JR.

Official Reporter - Typed

12
13 
14 Official Reporter - Signature

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16 MYRTLE H. TRAYLOR

Official Reporter - Typed

17
18 
19 Official Reporter - Signature

20
21 MARY SIMONS

Official Reporter - Typed

22
23 
24 Official Reporter - Signature