

ORIGINAL

UNITED STATES NUCLEAR REGULATORY COMMISSION

IN THE MATTER OF:

DOCKET NO: 50-322-OL

LONG ISLAND LIGHTING COMPANY

(Shoreham Nuclear Power Station,
Unit No. 1)

LOCATION: BETHESDA, MARYLAND

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UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

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In the matter of: :

LONG ISLAND LIGHTING COMPANY : Docket No. 50-322-1 (OL)

(Shoreham Nuclear Power Station):

- - - - - :

Nuclear Regulatory Commission

Fifth Floor Hearing Room

4350 East-West Highway

Bethesda, Maryland

Wednesday, February 13, 1985.

The hearing in the above-entitled matter was
reconvened, pursuant to adjournment, at 10:30 a.m.

BEFORE:

JUDGE LAWRENCE BRENNER, Chairman,

Atomic Safety and Licensing Board.

JUDGE PETER A. MORRIS, Member,

Atomic Safety and Licensing Board.

JUDGE GEORGE A. FERGUSON, Member,

Atomic Safety and Licensing Board.

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C O N T E N T S

<u>WITNESSES</u>	<u>DIRECT</u>	<u>CROSS</u>	<u>REDIRECT</u>	<u>RECROSS</u>	<u>BOARD EXAM</u>
George G. Dawe)					
Edward J. Youngling) (Resumed)					
Jack A. Notaro)					
by Mr. Dynner (Continued)		27261			
by Mr. Perlis		27337			
by Judge Ferguson					27380
by Judge Morris					27392
by Judge Brenner					27398
by Judge Morris					27417
by Mr. Ellis			27421		

RECESSES:

A.M. - 27298
 NOON - 27336
 P.M. - 27392

P R O C E E D I N G S

JUDGE BRENNER: Let's go on the record. Good morning.

Whereupon,

GEORGE F. DAWE,

EDWARD J. YOUNGLING,

and

JACK A. NOTARO

resumed the stand and, having been previously duly sworn, were examined and testified further as follows:

JUDGE BRENNER: Are there any preliminary matters before we continue with the County's cross-examination of these witnesses?

MR. PERLIS: Judge Brenner, I have two preliminary matters.

JUDGE BRENNER: I can't hear you very well.

MR. PERLIS: First, and I would like a little bit of guidance from the Board on this, is the matter of the running of the test at 3300 rather than 3500 kilowatts. In our view that matter is not relevant to the Board's ruling on contentions and therefore, we didn't plan any cross-examination on the issue, nor do we plan to present testimony on the issue.

We would like to correct what we believe is a mistaken impression that may have been left by statements

1 that were made yesterday as to what the Staff's view was of
2 testing at 3300 versus 3500, and I would like to make them
3 now if I may.

4 We think the August SER speaks for itself, and it
5 is clear that if the engines were going to be qualified at
6 greater than 185 BMEP, confirmatory testing would be
7 necessary. It is also safe to say that the Staff would not
8 have permitted confirmatory testing at a nominal level below
9 those qualified loads.

10 Beyond those requirements, I would like to make
11 the following very clear:

12 The Staff did not tell LILCO to run the tests at
13 3300 rather than 3500. The Staff, to the best of my
14 knowledge, never even hinted that it would be more
15 appropriate to run the test at 3300 rather than 3500. We
16 don't believe anything in the SER was meant to be read as
17 intimating that the tests should be run at 3300 rather than
18 3500. Had LILCO expressed its desire to run the machines at
19 3500, we would have said go ahead, make the test at 3500.

20 Again, we don't feel a need to put on a witness
21 to testify to that, nor to cross-examine these gentlemen
22 because we don't believe it is relevant to the Board's
23 ruling on contentions. If the Board does believe it is
24 relevant, -- clearly what I have said doesn't qualify as
25 evidence -- we would be happy to make a witness available.

1 JUDGE BRENNER: We allowed the County to ask the
2 questions on cross-examination they asked yesterday, and I
3 will leave it at that. If you are referring to my dialogue
4 with Mr. Ellis, that's not necessarily part of this
5 particular contention. It might be, it might not be. It
6 was in the context of settlement as distinguished from
7 litigation, as I thought I emphasized yesterday. Beyond
8 that, we have other matters pending before us, the entire
9 previous record which discussed the load at 3500.

10 I also have some concern, Mr. Perlis, that your
11 statement this morning doesn't distinguish between a
12 perceived load at 3500 and an actual load at some other
13 value for a test run which, after all, is part of the
14 contention, the allegation that certain loads are not
15 properly accounted for in part because a perceived load may
16 not be the actual load.

17 JUDGE MORRIS: Mr. Perlis, you didn't mention the
18 BMEP. It wasn't clear to me whether or not the Staff either
19 said explicitly or implicitly that testing should be done as
20 close to 185 as possible.

21 MR. PERLIS: As I understand it, the significance
22 of the 185 level is that if the BMEP is below that level you
23 don't need to do confirmatory testing at all. If the BMEP
24 is above that level, and it clearly is at either 3300 or
25 3500, you do need to do a confirmatory test. Now the level

1 of that confirmatory test was one selected by LILCO, not by
2 the Staff.

3 JUDGE MORRIS: Does the Staff have any view about
4 whether it should be as close to 185 as possible?

5 MR. PERLIS: I don't believe so. The Staff has
6 had a view that it should cover the qualified load.

7 JUDGE MORRIS: Thank you.

8 JUDGE BRENNER: Beyond all that, this SER which
9 supposedly speaks for itself to my recollection is not in
10 evidence. Am I correct, Mr. Perlis?

11 MR. PERLIS: You are correct, it is not in
12 evidence.

13 JUDGE BRENNER: We have testimony, including
14 testimony from Staff witnesses, that is in evidence with
15 respect to what the analyses show, for example, for
16 calculations of the crankshaft at certain loads, and that is
17 the record we are relying on. And I am not going to voice
18 an opinion on whether something not in evidence has support
19 for some value of 185 as opposed to any other value.

20 MR. PERLIS: I understand that. We will make a
21 decision as to whether we want to put it in for our case.

22 I just wanted to correct any impression that may
23 have been left that the Staff was in part responsible for
24 the decision to test at 3300 rather than 3500.

25 JUDGE BRENNER: You've got testimony from

1 witnesses here, and if you disagree with that testimony you
2 have to cross-examine them. You heard what they testified
3 to yesterday.

4 MR. PERLIS: I understand that.

5 MR. DYNNER: Judge Brenner, I want to add if I
6 may two thoughts:

7 One is that there is testimony concerning the SER
8 on page 11 in the answer 11 of LILCO's testimony and that
9 was, as you know from my cross plan, the genesis of that
10 line of questioning. And I direct Mr. Perlis' attention to
11 that.

12 Secondly, you mentioned that the SER is not in
13 evidence.

14 JUDGE BRENNER: I said to my recollection it
15 wasn't, but it may be.

16 MR. DYNNER: I don't know the answer to that, but
17 I would point out, as everyone knows, that pursuant to
18 Section 2.743G, the SER should be put in evidence by the
19 Staff.

20 JUDGE BRENNER: No, I am not going to revisit
21 that argument. We've discussed that many times in this
22 case.

23 Just to summarize, in a proceeding in which what
24 we consider are issues in controversy, the only thing that
25 goes into evidence is material which the parties put in,

1 appropriately sponsored, which is material and relevant in
2 the parties' view to what is in controversy. There may be
3 many things in many SERs that have been issued with respect
4 to the Shoreham plant that are not material, and I don't sit
5 in my office and read SERs to determine what should go in
6 and what should not go in.

7 Parties make offers of proof and then, in the
8 context of motions to strike or other similar context, we
9 decide what comes into evidence

10 Many years ago the County took that side of the
11 argument when LILCO thought they should put the entire FSAR
12 into evidence, but that was, I believe, before your time on
13 the case, Mr. Dynner.

14 Why don't you proceed with your
15 cross-examination?

16 MR. PERLIS: Excuse me, Judge Brenner. I had one
17 other matter,--

18 JUDGE BRENNER: I'm sorry.

19 MR. PERLIS: -- and this deals with the question
20 the Board asked yesterday as to whether we wished to submit
21 Mr. Hodges' testimony and affidavit.

22 I have trouble answering that question because I
23 don't know what the Board's ultimate ruling is going to be
24 on what we view as the County's position that the design
25 basis should include either multiple operator errors or

1 operator error plus single failure. In our view there are
2 two separate and independent issues here. One is the
3 adequacy of design, and the other is the adequacy of
4 procedures.

5 Mr. Hodges is the person who would address why
6 those are separate and why the design basis does not include
7 operator error on top of the single failure. If that is
8 still an issue in the proceeding then we certainly want
9 Mr. Hodges as a witness for cross-examination purposes.

10 JUDGE BRENNER: I gave you my opinion as to why,
11 if you want to put testimony in on that subject, it should
12 have been focused on the diesels, and ..is testimony is too
13 abstract and therefore collateral.

14 I'm not saying there may not be some nexus
15 somewhere, but I distinguish the legal argument on how we
16 might decide ultimately the question of the single failure
17 criterion and the applicability or non-applicability to a
18 subpart of the contention from factual matters that I have
19 to make findings on. And I thought an easy resolution would
20 be for you to have it as an affidavit supporting the Staff's
21 position in the legal pleading.

22 Your legal pleading states, presumably fully and
23 accurately, what the Staff's position is. And to the extent
24 some of that position relies on things other than legal
25 precedent, you have the affidavit in there as support.

1 MR. PERLIS: My problem is that what the Staff
2 considers as a design basis can be viewed as a legal issue,
3 but it is also I believe a factual issue which may be called
4 into controversy in this proceeding and in that
5 circumstance, if there is going to be cross-examination on
6 it, Mr. Hodges is the witness who can address that issue.

7 JUDGE BRENNER: Why don't you find out if the
8 parties desire to cross-examine Mr. Hodges' testimony, and
9 then come back to us? In my view I agree with you that the
10 question might not be purely legal, but it's a question
11 going to whether or not we should admit that subpart of the
12 contention as distinguished from factual information that
13 will help us to rule on the merits of that part or any other
14 part of the contention.

15 No factual information is provided in Mr. Hodges'
16 testimony to help us decide whether the diesels are
17 acceptable, given the contention before us, in my view.

18 MR. PERLIS: I have been informed by counsel for
19 Suffolk County that he does have cross-examination for
20 Mr. Hodges. I haven't discussed this with counsel for
21 LILCO, but Mr. Dynner does have some questions.

22 JUDGE BRENNER: You have questions, Mr. Dynner?
23 Is that right?

24 MR. DYNNER: Yes, sir.

25 JUDGE BRENNER: Do you think Mr. Hodges'

1 testimony is material to the issues in controversy as
2 distinguished from being pertinent to a decision on whether
3 or not a part of the contention is a challenge to a
4 regulation?

5 MR. DYNNER: I think there are parts of his
6 testimony that go to factual issues which are in
7 controversy.

8 JUDGE BRENNER: In controversy in the context of
9 making findings on the merits of the contention?

10 MR. DYNNER: Yes.

11 MR. PERLIS: Judge Brenner,--

12 JUDGE BRENNER: I heard you. We'll think about
13 it.

14 MR. PERLIS: Just to muddy the waters a bit
15 further,--

16 JUDGE BRENNER: Don't do that.

17 MR. PERLIS: The problem is that the Board hasn't
18 ruled yet on whether that portion of the contention is or
19 isn't admissible.

20 JUDGE BRENNER: We've ruled. It's in. We simply
21 might reconsider it, but right now it's in.

22 MR. PERLIS: In that case we will continue to--
23 We will plan on submitting Mr. Hodges as a witness, and
24 submitting his evidence in the record as that of a witness.

25 JUDGE BRENNER: "Reconsider" means, I hope you

1 understand, that we will think about whether or not we want
2 to change our mind. When we said that we would reconsider,
3 that doesn't mean that we would change our mind.

4 MR. PERLIS: No, I understand that. In the
5 absence of reconsideration, we would propose to put
6 Mr. Hodges on the stand.

7 JUDGE BRENNER: You are also in my view unlikely
8 to get reconsideration before the hearing. If we were going
9 to do that we would have done it by now. The majority of
10 the Board, on a preliminary basis, admitted it.

11 MR. PERLIS: I'm not arguing with the ruling.
12 I'm just explaining that in that case we would propose to
13 put Mr. Hodges on the stand.

14 (The Board conferring.)

15 JUDGE BRENNER: All right. The situation is as
16 follows:

17 There has not been any motion to strike
18 Mr. Hodges' testimony. If Staff desires to put it on and at
19 least one other party desires to ask questions about it, we
20 will allow him to take the stand. But I think that
21 testimony is very poorly crafted from a procedural point of
22 view in terms of issues that are in controversy with respect
23 to the diesels.

24 And I am going to tell the parties now that they
25 should take care to be sure that their questions are not

1 abstract, that they are focused on and directed to questions
2 in controversy with respect to the diesels.

3 All right. But he will be permitted to take the
4 stand.

5 MR. PERLIS. Thank you.

6 JUDGE BRENNER: Mind you, this is no reflection
7 on Mr. Hodges. His testimony we have enjoyed on other
8 subjects, and I'm sure counsel recognizes that.

9 Mr. Dynner, you can continue cross-examination.

10 MR. ELLIS: Judge Brenner, I had one matter, but
11 I think Mr. Dynner is going to do it in his questions. We
12 had a correction we wanted to make, but I think Mr. Dynner
13 is going to ask some questions.

14 MR. DYNNER: I said I would.

15 CROSS-EXAMINATION (Continued)

16 BY MR. DYNNER:

17 Q Gentlemen, before we begin today, your counsel
18 had a word with me and I understand that there are some
19 corrections you wish to make concerning the procedures, the
20 lesson plan that you are relying upon to support your
21 testimony on the issue as to whether the diesels can exceed
22 3300 kw.

23 Would you like to make those corrections now,
24 please?

25 A (Witness Notaro) Yes, I would.

1 There is one additional procedure that I did not
2 give you yesterday that is significant. The title of that
3 procedure is the containment control emergency procedure.
4 The number is 29.023.03, Revision 9.

5 Additionally--

6 Q Can I just ask you, that Revision 9, has that
7 been approved by LILCO?

8 A (Witness Notaro) Yes, sir, it has.

9 Q And what is the approximate date of the approval?
10 Do you know?

11 A (Witness Notaro) January 29th, 1985.

12 Q Thank you. Go ahead, please.

13 A (Witness Notaro) Yesterday you asked me if the
14 training lesson plan had or was undergoing revision, and my
15 response was to the best of my knowledge that it was not.
16 Last evening I had the training supervisor contacted just to
17 verify that information, and he informed us that the
18 training lesson plan is currently being revised.

19 JUDGE BRENNER: Mr. Notaro, I wonder if you can
20 help me. In the procedures you did give us yesterday you
21 had them in different categories. I'm not sure which
22 category to add this procedure to.

23 Is it a procedure that you have added just a
24 caution to, or is it just a procedure that has undergone
25 more changes than that, similar to the other 29 series of

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1 procedures, if I can call it that, Number 29?

2 WITNESS NOTARO: There were approximately three
3 caution statements added as in the 29.015.01 procedure.

4 JUDGE MORRIS: Would you characterize it as an
5 emergency procedure or a how-to-do-it procedure?

6 WITNESS NOTARO: This is a symptom-oriented
7 emergency procedure.

8 JUDGE MORRIS: Thank you.

9 WITNESS DAWE: I would like to add one comment
10 also, Judge Brenner, and that is that the characterization
11 of procedures is really the emergency operating procedures
12 versus the symptom operating procedures. Even the emergency
13 operating procedures were only a matter generally of adding
14 caution notes. The emergency operating procedures are as
15 they have always been. There are not major overhauls to any
16 of the procedures. It is just inserting the reminder of the
17 load limit on the diesel.

18 WITNESS NOTARO: Judge Brenner, the change to
19 this containment control procedure is almost identical in
20 terms of its caution statement as the 29.023.01 control
21 system-oriented procedure, if that's helpful.

22 JUDGE BRENNER: All right.

23 Just to try to make sure I understand it, if you
24 had remembered this procedure you would have included it in
25 that listing in your testimony at the top of page 25, which

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1 is the paragraph that continued over from page 24?

2 WITNESS NOTARO: That's correct.

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1 BY MR. DYNNER:

2 Q Gentlemen, on page 28 of your testimony,
3 Mr. Youngling, you referred to the calibration of the Weston
4 lock meters on the EDGs.

5 Do you know when the last time was that the lock
6 meters for EDGs 101 and 102 were calibrated, and what the
7 results were of that calibration?

8 A (Witness Youngling) Mr. Dynner, I don't know the
9 results for the 101 and the 102. They should have been
10 calibrated in approximately the fall of 1984. All three of
11 the diesels are on a one-year calibration interval, and the
12 date should have been around the fall of 1984.

13 Q Do you have any basis or knowledge as to your
14 testimony that the lock meters on 101 and 102 were measured
15 to perform with a higher degree of accuracy than plus or
16 minus 140 Kw?

17 A (Witness Youngling) I did not review that data,
18 so I cannot comment on that. However, Mr. Dawe has a
19 comment.

20 A (Witness Dawe) Mr. Dynner, I have reviewed that
21 calibration data, and the 101 and 102 machines on the 3000
22 to 4000 range were very similar within the plus or minus 70
23 ESRV of the 103 machine.

24 Q And when were those calibrations made, Mr. Dawe,
25 approximately?

1 A (Witness Dawe) I don't recall the date,
2 Mr. Dynner.

3 Q Could you briefly describe how the calibrations
4 are performed on these instruments?

5 A (Witness Youngling) The calibration is performed
6 in accordance with an approved station procedure,
7 calibration procedure for this particular instrument. A
8 reference standard is used from the measuring and test
9 equipment program, and that standard is put in parallel with
10 the watt meter and a current and voltage source is applied
11 to the loop.

12 In accordance with the procedure, various wattage
13 levels are put into the loop by the current and voltage
14 source and the measuring and test equipment standard is read
15 and compared to the watt meter on the control room panel.

16 That calibration is done at the major cardinal
17 intervals on the meter, and it is done in an increasing
18 direction and a decreasing direction. And on the decreasing
19 direction a tap is made to the watt panel mounted watt meter
20 being calibrated.

21 I think that's a description of the procedure.

22 Q Could you tell me what you mean by "a tap is
23 made"? What do you mean by "tap"?

24 A (Witness Youngling) Basically what we do is, we
25 decreased -- once we've reached full scale we then bring the

1 instrument down to the next major cardinal division, read
2 the watt meter against the standard, record that data, and
3 then a tap is made on the watt meter to remove the
4 hysteresis in the loop, and a tap reading is made also.

5 Q You mean you tap it with your finger?

6 A (Witness Youngling) Yes.

7 Q Is the voltage level simulated?

8 A (Witness Youngling) I don't understand what you
9 mean by "simulated."

10 Q How do you set the voltage level?

11 A (Witness Youngling) With the voltage and current
12 source.

13 Let me draw a parallel. It would be, for
14 instance, like performing a calibration of a pressure gauge
15 using water. You would have one gauge that you wanted to
16 calibrate, and you would have a reference standard, and you
17 would use a hand pump to provide the pressure. All we're
18 doing is, instead of having a hand pump we are providing the
19 voltage and current source.

20 Q As I understand what you're saying, Mr. Youngling,
21 it is that you're putting in a test signal, you're not
22 actually measuring the watts on the bus; is that right?

23 A (Witness Youngling) That's right; we are putting
24 in the test signal, and that's quite standard procedure;
25 exactly.

1 Mr. Dawe reminds me that we can't get 5600 Kw on
2 the bus. The most important thing also to remember is that
3 during the calibration we are using the potential
4 transformers and current transformers and the transducer
5 which is in the loop. So that whole loop is being
6 calibrated as an entity, not only the watt meter.

7 A (Witness Dawe) Mr. Dynner, if I might just add to
8 an answer I gave you earlier: September '84 was the
9 calibration date for the 101 and the 102 engines, for their
10 watt meters.

11 Q Thank you.

12 MR. DYNNER: Page 7, Judge Brenner.

13 BY MR. DYNNER:

14 Q Gentlemen, am I correct that you believe the EDGs
15 are capable of safe and reliable operation at 3500 Kw and at
16 an overload of 3900 Kw?

17 A (Witness Youngling) Mr. Dynner, our testimony in
18 this early part of this proceeding supports our position
19 that we feel that the engines are reliable for operation at
20 35 and 39, and we feel that upon completion of the Staff
21 review of the entire DRQR effort that that opinion will be
22 sustained by the Staff also.

23 Q Your answer is yes?

24 A (Witness Youngling) Yes.

25 Q Mr. Notaro, do you share that view?

1 A (Witness Notaro) I am not the individual to
2 provide that information, Mr. Youngling is.

3 Q Well, do you as an operator, and do the other
4 operators of the plant, basically share the view that LILCO
5 has put forward here concerning the capability and
6 reliability of the EDGs at those levels?

7 A (Witness Notaro) As an operator, yes, absolutely.

8 Q How many operators would normally be on duty
9 during operation of the plant at full power levels?

10 A (Witness Notaro) I will write a list down and
11 then I will give the list to you; okay?

12 (Pause.)

13 JUDGE MORRIS: Mr. Dynner, perhaps we can avoid
14 some potential confusion if we define what we mean by
15 "operators," "licensed operators," "auxiliary operators,"
16 "maintenance people," and what-not.

17 MR. DYNNER: I'm sorry; my question is unduly
18 vague.

19 BY MR. DYNNER:

20 Q I'm talking about licensed operators who would be
21 in the control room who would have cognizance over the
22 diesel engines, as well as possibly having other views.

23 A (Witness Notaro) During normal operation there
24 would be one watch engineer who has the command control
25 function overall responsibility, and he is a senior licensed

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1 individual.

2 There is a second supervisor called a watch
3 supervisor. He is also a senior licensed individual.

4 There is a lead control room operator. His title
5 is "Nuclear Station Operator," and he holds a reactor
6 operator license.

7 There are two nuclear assistant station operators,
8 each of whom holds a reactor operator license, one of which
9 is required to be in the control room.

10 So within a control room there are up to four
11 licensed operators on shift each shift, three shifts a day,
12 seven days a week.

13 Q So, as I understand it, there are four required to
14 be in the control room at all times; is that correct?

15 A (Witness Notaro) There are a total of five
16 licensed individuals. A minimum of three must be in the
17 control room. Three to five may be in the control room.

18 Q When you say "control room," are you speaking of
19 the actual single physical control room, and you're not
20 including any of the adjacent offices; is that correct?

21 A (Witness Notaro) I'm including the main control
22 room.

23 Q Are all three of the operators who must be in the
24 control room at all times authorized to take action with
25 respect to the EDGs?

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1 A (Witness Notaro) Yes.

2 Q And are all of the five operators that you have
3 mentioned trained with respect to operation of the plant
4 including the EDGs?

5 A (Witness Notaro) That is correct.

6 Q Are the duties divided up in any way so that
7 during a LOOP/LOCA event particular cognizance, let's say,
8 over operation of EDGs or operation of certain pumps or
9 other matters are divided up among the operators, or do they
10 do that on the spot? How is that allocated?

11 A (Witness Notaro) There is a procedure that
12 outlines the responsibility for control room conduct during
13 an abnormal condition, and it specifies what each of the
14 licensed personnel are to do.

15 Q Yes. Could you tell me what that procedure
16 provides in answer to my question?

17 A (Witness Notaro) Certainly.

18 The procedure indicates that the first licensed
19 operator -- that is, either the nuclear station operator or
20 the nuclear assistant station operator, the first one to the
21 reactor panel, the 603 panel, he is responsible for taking
22 care of the reactor, the immediate actions associated with a
23 scram, maintaining level within the reactor, maintaining
24 containment control, and responsible for ECCS initiation if
25 necessary.

1 The second operator is responsible for making an
2 announcement over the page party system that the event has
3 occurred; he is responsible for verifying the AC power
4 distribution of the plant; he is responsible for
5 establishing, or checking that a heat sink is in fact
6 available, and supporting the first operator as he can.

7 The watch supervisor is essentially responsible
8 for taking out the procedures and assuring that the
9 operators who are performing their functions are performing
10 them properly.

11 The watch engineer would then have the
12 responsibility to assume command control function and to
13 have the big picture in terms of the plant and where it is
14 going, and to verify that the three operating personnel are
15 complying with the procedural requirements.

16 That's basically a summary.

17 I have a copy of that procedure, and I can read
18 the words specifically, if you prefer.

19 Q No; I think your summary was very responsive.

20 Could you tell me what the number of that
21 procedure is that you're referring to, though?

22 A (Witness Notaro) 21.004.01.

23 Q And what revision is the latest?

24 A (Witness Notaro) I believe the latest revision is
25 Revision 7.

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1 Q Revision 8 is the one I have, so that would be the
2 latest.

3 A (Witness Notaro) Fine.

4 I would like to add one other point that I believe
5 is significant:

6 In addition to the licensed personnel that you
7 asked for, it is significant to note that on shift every
8 shift is a shift technical advisor who would also be
9 assisting the watch engineer in terms of evaluation of the
10 overall plant effect.

11 Q It's true, isn't it, that the main priority in a
12 LOOP/LOCA situation would be to cool the core; isn't that
13 right?

14 A (Witness Notaro) That's not characterized
15 correctly. It is always the main concern that the plant is
16 operated safely and placed in a safe condition from whatever
17 situation has arisen. The operating crew will function as a
18 team. The procedure is established to assure that the
19 members of the team are utilized efficiently to place the
20 plant in a safe condition if, for example, a LOOP/LOCA
21 occurred.

22 Q Well, if you are in a LOOP/LOCA condition, what is
23 the main priority? What's the most important thing?

24 A (Witness Notaro) Placing the plant in a safe
25 condition.

1 Q And in placing the plant in a safe condition,
2 what's the most important thing to do?

3 A (Witness Notaro) Which individual in the crew
4 that I have explained for you are you referring to?

5 Q Do the operators have a common goal in placing the
6 plant in a safe condition?

7 A (Witness Notaro) The goal is placing the plant in
8 a safe condition.

9 Q All right.

10 Can you tell me what you believe is the most
11 important thing to do in a LOOP/LOCA in order to get the
12 plant in a safe condition?

13 A (Witness Notaro) Again, if you're asking me what
14 one individual member of the crew's most important function
15 is, I can respond to that.

16 As you have asked the question, I have to respond
17 in terms of the crew team approach in handling the evolution
18 that's before them. The goal is to place the plant in a
19 safe condition. Each member of that team has
20 responsibilities to do and achieve that goal.

21 If I was the nuclear station operator, my goal and
22 my responsibility would be to maintain level, assure that
23 the containment is being cared for, initiating ECCS if
24 that were necessary, and implement emergency shutdown
25 immediate actions.

1 If I were the nuclear assistant station operator,
2 my prime responsibility would be to verify that a heat sink
3 were available, to verify AC power distribution, and to make
4 the announcement over the page system.

5 If I were the watch supervisor, my
6 responsibilities would be to assure that the first two
7 operators were in fact performing their functions and
8 meeting the procedural requirements.

9 If I were the watch engineer, I would be
10 responsible for assuring that the crew, as a crew, was
11 functioning efficiently and correctly, and that from a big
12 picture standpoint the plant and the goal of placing the
13 plant in a safe condition are in fact being achieved.

14 If I were the STA, I would be evaluating what was
15 going on within the core, and I would be making
16 recommendations appropriately to the watch engineer.

17 Q If you were the watch supervisor, you said you
18 were concerned principally with making sure the proper
19 procedures were followed?

20 A (Witness Notaro) One of my responsibilities as
21 the watch supervisor would be to assure that the two
22 operators who are functioning are functioning correctly, and
23 to pull out the procedures in support of those activities,
24 yes.

25 Q If the watch supervisor determined that the core

1 was endangered, notwithstanding the actions that had been
2 taken in accordance with procedures, would he ever in that
3 situation do something that the procedures say you shouldn't
4 do?

5 A (Witness Notaro) I'm not sure I understand your
6 question, Mr. Dynner.

7 Q Supposing that the core was not being adequately
8 cooled by following the procedures that were being taken;
9 would the watch supervisor in that situation be permitted to
10 put on another pump, even though putting on the other pump
11 might result in exceeding the EDG load level maximum?

12 MR. ELLIS: I object to the question. It is a
13 hypothetical question for which there has been no
14 foundation. There is no foundation at all to say that an
15 additional pump was not available or had not already been
16 used pursuant to the regular procedures that would be
17 followed.

18 I think the question supposes that at some point
19 the procedures run out, and that hasn't been established, or
20 that the procedures aren't adequate, and that hasn't been
21 established.

22 JUDGE BRENNER: We'll sustain the objection.

23
24
25

1 BY DYNNER:

2 Q Gentlemen, do you believe that there could ever
3 be a situation in which the procedures in the plant as they
4 are now might not be prove adequate to adequately handle an
5 emergency LOOP/LOCA?

6 (Witness panel conferring.)

7 A (Witness Notaro) As an operator, I don't feel
8 that the design basis and our symptom-oriented procedures
9 will ever be tested by scenarios that have already been
10 analyzed.

11 What you are proposing is a hypothetical case far
12 beyond that premise. Within the given analysis and the
13 development of the procedures that we have in place, there
14 is no condition that we can't handle.

15 Q Could you tell me approximately how many
16 procedures are used simultaneously during a LOOP/LOCA?

17 I am talking about the primary procedures. I am
18 not talking about your list of 13 or 14 that might or might
19 not....

20 A (Witness Notaro) There are approximately three
21 or four procedures that would be entered simultaneously for
22 a LOOP/LOCA condition. The initiating event of loss of site
23 power would require the operator to enter 29.015.01. The
24 immediate actions of that procedure would be to verify that
25 automatic actions which should have occurred in fact

2 AGBbur

1 occurred, to enter the emergency shutdown procedure,
2 29.010.01, and to notify the system operator that a loss of
3 site power had occurred.

4 The emergency shutdown procedure, 29.010.01,
5 those immediate actions, would be directing the operator to
6 place the mode switch to shutdown to verify a rapid flux
7 decrease, to verify that control rods had inserted, and to
8 monitor the level within the reactor, and if the level could
9 not be maintained, to enter the level control procedure,
10 which is 29.023.01.

11 The operator would take the actions stipulated in
12 the level control procedure to restore the level to greater
13 than 12-1/2 inches in the reactor. When he had accomplished
14 that, he would then be out of level control procedure. He
15 would then be free to complete the subsequent actions of the
16 procedures that I have already mentioned.

17 Q What about the procedure, loss of coolant
18 accident coincident with a loss of offsite power, 21.015.04?

19 A (Witness Notaro) That procedure has been
20 deleted, and the reason that we deleted that procedure is
21 that it was a combination of the level control procedure and
22 the loss of offsite power procedure. So it was essentially
23 repeating what the two procedures already said.

24 Q Would the emergency diesel generator procedure,
25 23.307.01 also be relevant and used at that time?

1 A (Witness Notaro) The procedures that would be
2 utilized first are those emergency procedures that I have
3 already referenced. The operator is required to take the
4 immediate actions of those procedures first.

5 Q When you say first, within what timeframe before
6 the operators could place their attention to other
7 procedures that are required? Do you mean within the first
8 five minutes or the first two minutes or what?

9 A (Witness Notaro) The plant is designed for
10 automatic operation for the first 10 minutes. The
11 operator's functions during that time is to implement the
12 immediate actions of the emergency procedures.

13 Q So did the other procedures -- for example, main
14 control room conduct of personnel -- that procedure wouldn't
15 come into play until after the first 10 minutes?

16 A (Witness Notaro) That procedure is an operation
17 administrative procedure, and it is always in effect. It is
18 not a system "how to" procedure. It is more of a policy
19 procedure.

20 Q How about the loss of instrument air procedure,
21 29.016.01? Does that come into play only after the first 10
22 minutes?

23 A (Witness Notaro) It is not a matter of it coming
24 into play after the first 10 minutes. The immediate action
25 on the control room instrument air are actions that the

1 operator would in fact also be concerned with taking, and
2 those immediate actions are to make the announcement over
3 the PA system of a loss of instrument air so that any
4 personnel who were on breathing air would cease using the
5 breathing air and to dispatch an operator to try and start
6 operable compressors.

7 That constitutes the immediate actions of that
8 emergency procedure.

9 Q Do the operators during the first 10 minutes have
10 the capability -- not the ability but the capability -- to
11 place additional loads on the EDG's? Can they physically do
12 it, in other words?

13 (Witness panel conferring.)

14 A (Witness Notaro) The answer to that question is
15 yes.

16 A (Witness Dawe) Mr. Dynner, the answer to that
17 question is yes, but it depends upon the components and
18 plant logic, how the components would trip, what type of
19 lockups they have, time delays, and so forth.

20 Some components may be started; some components
21 may not be started -- or "can be" and "cannot be" is more
22 appropriate.

23 A (Witness Youngling) I would like to also add
24 that again the training and the procedures do not require
25 operator action in the first 10 minutes in response to a

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1 LOOP/LOCA. It is merely one of verification of proper
2 starting equipment.

3 Q It is true, isn't it, then, that after the first
4 60 seconds into the accident that the operator would be
5 capable physically of putting on the CRD pumps on EDG's 101
6 and 102? They are locked out -- tripped for 60 seconds, and
7 thereafter you would be physically capable of putting them
8 on, isn't that right?

9 A (Witness Notaro) The CRD pump is locked out on
10 that LOCA signal for 60 seconds.

11 Q And thereafter he could physically --

12 A (Witness Notaro) And thereafter physically he
13 could energize the CRD.

14 Q Yes.

15 A (Witness Notaro) He would not, though.

16 Q I understand your testimony, that he wouldn't do
17 it. I am exploring what might happen or what could be done,
18 and physically the one additional RBSW pump on EDG 103 could
19 be put onto the load in the first 10 minutes also by an
20 operator, isn't that right?

21 A (Witness Notaro) That is correct. But again he
22 wouldn't.

23 MR. ELLIS: May I have the last question?

24 I just need to know the component.

25 JUDGE BRENNER: The reactor building service

1 water pump that is not presently automatically started but
2 could be hooked up to the EDG 103.

3 MR. ELLIS: Thank you.

4 JUDGE BRENNER: The one that used to be hooked up
5 automatically and no longer is.

6 BY DYNNER:

7 Q Can you tell me whether once all the loads are on
8 the LOOP/LOCA that are supposed to go on -- you testified
9 earlier about the operator action to reduce those loads,
10 shut down certain loads -- is it normal procedure that the
11 watch engineer's permission is needed before the operators
12 can reduce or shut down certain loads?

13 A (Witness Notaro) The watch engineer is the
14 single individual in the control room with the command
15 control function, and his decision would be final on taking
16 the pump and shutting it off after the operator had verified
17 that level had in fact returned to above 12-1/2 inches and
18 that had been confirmed on several level instruments.

19 Q I understand that, but would the operator have to
20 obtain the watch engineer's permission before he shut down
21 load?

22 A (Witness Notaro) Yes, he would have to obtain
23 the watch engineer's permission to shut off an ECCS pump
24 that had started in response to the automatic signal.

25 Q Did the watch engineer -- you may have said this

1 already -- is the watch engineer one of the three people
2 that is always required to be in the control room?

3 A (Witness Notaro) There is always a requirement
4 for a senior operator in the control room who has the
5 command control function. That is normally the watch
6 engineer.

7 If in the event the watch engineer went out into
8 the plant, the second supervisor who holds a senior operator
9 license would assume the command control function, such that
10 one supervisor with a senior operator license would always
11 have the command control function in the control room.

12 Q Is there a procedure that says if the watch
13 engineer leaves that whoever the senior person who is
14 licensed is left would be deemed the watch engineer or would
15 become the watch engineer at that point?

16 How is that handled?

17 A (Witness Notaro) There are operations and
18 administrative procedures that direct that someone in the
19 control room have the command control function, that either
20 being the watch engineer or the watch supervisor.

21 JUDGE BRENNER: Mr. Notaro, the watch engineer is
22 a degreed engineer; that is, by education, as distinguished
23 from the watch supervisor, is that correct?

24 WITNESS NOTARO: No, sir, that is not correct,
25 Judge Brenner. The watch engineer is a title that the

1 Long Island Lighting Company uses. It is the same title
2 that another utility may call shift supervisor.

3 JUDGE BRENNER: Thank you.

4 WITNESS NOTARO: We do, Judge Brenner -- because
5 the watch engineer may not have a degree, we have a degreed
6 STA on shift every shift.

7 JUDGE BRENNER: As long as I have interrupted, if
8 the watch engineer for some reason is not in the control
9 room, is there a requirement that he be somewhere in the
10 plant?

11 WITNESS NOTARO: Absolutely. He cannot leave.
12 He cannot leave the property.

13 The only reason he would not be in the control
14 room is if he deemed it important to go out and look at
15 something in the plant or to go to an office. He is always
16 within immediate call of the watch supervisor in the control
17 room.

18 BY DYNNER:

19 Q Would you agree that the best reading accuracy
20 that can be obtained from the watt meter on the EDG is 50
21 KW, assuming that the operators are at normal reading
22 distance?

23 JUDGE BRENNER: Excuse me, Mr. Dynner. You are
24 going now to --

25 MR. DYNNER: Page 9.

1 JUDGE BRENNER: Question 10.

2 Could I back up and ask some questions on the
3 area you were just talking about?

4 MR. DYNNER: Certainly.

5 JUDGE BRENNER: I want to understand a little
6 better the fact that the operators during the first 10
7 minutes following their immediate actions are supposed to
8 verify that the automatic functions have worked properly.

9 And only because it is a component whose name I
10 recognize, I would like to try to use the example of the
11 reactor building service water pump, and if, as we go
12 through it, you think that is an inappropriate example,
13 please be sure to let me know.

14 Now, as I understand it, there will be two
15 reactor building service water pumps that will come on
16 automatically in the event of a LOOP/LOCA if the response is
17 working as it should, is that correct?

18 WITNESS YOUNGLING: No, that is not correct,
19 Judge.

20 There will be three reactor building service
21 water pumps that will respond, one on each diesel
22 generator.

23 JUDGE BRENNER: I am sorry, I had the count
24 wrong. There is a fourth --

25 WITNESS YOUNGLING: There is a fourth pump. It

1 is on the middle engine, the 103 engine, but that pump will
2 be in lockout and will not respond to the LOOP/LOCA event.

3 JUDGE BRENNER: All right.

4 Now, in the event that one of the three pumps
5 that are supposed to come on automatically does not, what
6 does the procedure require the operator to do?

7 WITNESS YOUNGLING: Let me respond to that.

8 Mr. Notaro can add.

9 There are only two service water pumps required
10 to deal with a LOOP/LOCA event.

11 JUDGE BRENNER: I knew there was something less
12 than a full number of automatic.

13 WITNESS NOTARO: The control room operator, Judge
14 Brenner, would then be evaluating the instrumentation that
15 he has in the control room, including the annunciators that
16 are above the meters and the control switches. The
17 indication for the pump either having tripped or not started
18 may be such that the operator can manually just take the
19 control switch to start and get the appropriate response to
20 have the pump start.

21 The pump may just not have started from the
22 automatic signal, whereby manual operation of the equipment
23 is sufficient to get the equipment running. That is one of
24 the things that he is verifying.

25 So the actual response to your scenario would be

1 first to analyze and evaluate that information which is
2 available to him in the control room and to take the
3 appropriate response based on what he has seen.

4 JUDGE BRENNER: Would he try to start a reactor
5 building service water pump manually even if two of them
6 have come on automatically?

7 WITNESS NOTARO: Yes, sir, he would.

8 JUDGE BRENNER: Is there something in the
9 procedure that requires him to manually try to start the one
10 that was supposed to come on automatically but did not, as
11 distinguished from the fourth pump that was not connected
12 for automatic start?

13 WITNESS NOTARO: Yes, sir, because the first
14 immediate action is to verify the automatic actions have
15 occurred properly and to manually initiate any which did
16 not.

17 So he would take that manual initiation.

18 JUDGE BRENNER: When you say "any which did not,"
19 it is tied to the particular component as opposed to another
20 one of the same components?

21 WITNESS NOTARO: Yes, sir.

22 JUDGE BRENNER: If the manual start attempt
23 fails, would the operator then manually start the fourth
24 spare one, if I could call it that?

25 (Witness panel conferring.)

1 WITNESS NOTARO: Judge Brenner, I would like to
2 respond to your question specifically with regard to the 103
3 bus, because that is the bus that has two service water
4 pumps.

5 Let's assume that the "c" pump was supposed to
6 auto-start and it did not. If that "c" pump could not be
7 manually initiated, then the operator would simply take the
8 "c" pump, would pull the lock, and start the "d" pump,
9 thereby actually swapping the pump in-pole lock to the one
10 that did not start.

11 JUDGE BRENNER: By doing that, the "c" pump could
12 then not automatically start after the "d" pump was manually
13 started?

14 WITNESS NOTARO: That's correct.

15 JUDGE BRENNER: What if it was the "a" pump or the
16 "b" pump that failed to start automatically and, again,
17 failed to start on a manual attempt?

18 WITNESS NOTARO: He would stay with just the two
19 service water pumps, because that's all he needs until he
20 had sufficient capability to put a third pump on.

21 JUDGE BRENNER: What do you mean by "sufficient
22 capability to put a third pump on?"

23 WITNESS NOTARO: He had sufficient capability
24 within the diesel limit to put the third service water pump
25 on, because all he needed was two service water pumps to

2 AGBwrb 1 safely shut down the plant.

2 JUDGE BRENNER: Well, as I had meant to ask you
3 the question, I would assume that he would have sufficient
4 capability to put the "d" pump on because either an "a" pump
5 or a "b" pump is not on.

6 WITNESS DAWE: Judge Brenner, the loads do not
7 switch back and forth between the engines.

8 There are three electrical buses that are
9 completely independent of each other. The only loads in the
10 plant that can switch back and forth are the 480-volt LPCI
11 MG set loads. But those aren't really a switchover, because
12 the MG sets are mechanical electrical isolators between
13 buses. But the loads that they feed could end up on one bus
14 or the other.

15 JUDGE BRENNER: I had forgotten that. I had
16 learned that once before a long time ago in this hearing.
17 At least I learned that most of the loads don't switch
18 automatically.

19 WITNESS DAWE: In fact, Judge Brenner, the IET
20 that was run on the 103 machine was run with the two pumps
21 starting. So, in fact, even in the first few minutes of the
22 event we would expect there to be room for the "d" pump
23 even though the "c" pump were running, because that's the
24 way we tested the engine. But the "d" pump or the "c" pump
25 would be in full lock. And, as Mr. Notaro said, if the one

1 selected for automatic didn't start, the operator could
2 shift the selection, start the other, and preclude the first
3 from restarting automatically.

4 If one of the other buses' pumps didn't start, he
5 would have the two required pumps. The third pump is really
6 an optional pump and is not required.

7 WITNESS NOTARO: And if I may add, Judge Brenner,
8 the result of that IET -- because I was on shift the night
9 that we ran it -- with both service water pumps, we only
10 went to 3072 kilowatts.

11 JUDGE BRENNER: Yes, I think that's in your
12 testimony. And you would also want to subtract 358
13 kilowatts, if I recall correctly, for the pump, which would
14 give you approximately 2714 kilowatts, in your view anyway.

15 WITNESS NOTARO: (Nodding affirmatively.)

16 MR. ELLIS: Judge Brenner, Mr. Notaro was nodding
17 his head as you spoke and he just didn't speak, and I don't
18 know whether the Reporter got that or not.

19 JUDGE BRENNER: It's in the testimony. I
20 didn't present the figures; maybe the subtraction at the end
21 was mine, but that's all.

22 All right. Thank you.

23 Mr. Dynner, I believe you had asked a question
24 about--

25 MR. DYNNER: I had asked a question about whether

1 AGBwrb 1 or not....

2 BY MR. DYNNER:

3 Q It's true, isn't it, that the best reading
4 accuracy that can be obtained on the watt meter is 50 Kw,
5 assuming the operators are at normal reading distances;
6 isn't that right?

7 A (Witness Youngling) The instrument can be read to
8 no worse than 50 Kw. However, certain operators will read
9 the instrument to better than that,

10 Q Well, first of all, what's the diameter of this
11 meter, approximately?

12 A (Witness Youngling) It's a rectangular meter in a
13 vertical plane. It is not circular.

14 Q All right.

15 A (Witness Youngling) And the scale length is
16 approximately 5 or 6 inches. 6 inches.

17 Q And within that six inches there are points--
18 What is it; every 50 kilowatts there's a little line?

19 A (Witness Youngling) No; every 100 kilowatts there
20 is a divisional marker.

21 Q And how much space is there between each of these
22 100 kilowatt markers, about?

23 A (Witness Youngling) About 3/8ths of one inch.

24 Q Now, correct me if I'm wrong, but it's true, isn't
25 it, that the meter goes up to 5600 kilowatts; isn't that

1 right?

2 A (Witness Youngling) Yes, that is true.

3 Q Are some of the divisions between the 100
4 kilowatts smaller than others; because if you took 5600
5 kilowatts and the lines were 3/8-inch apart we would have a
6 meter that would be over 20 inches long, according to my
7 rough calculation.

8 A (Witness Youngling) No; each marker on the meter
9 represents 100 Kw. So there would be 56 markers on the
10 scale.

11 Q And if each marker were 3/8-inch apart from the
12 other marker we would have over 20 inches in length,
13 wouldn't we?

14 JUDGE BRENNER: Maybe to simplify the arithmetic:
15 You said 5 to 6 inches before for the total length,
16 Mr. Youngling. And to simplify: if I assume it was
17 approximately between that, namely 5.6 inches, you would
18 have a mark every tenth of an inch. So I see something
19 wrong also with your number.

20 WITNESS YOUNGLING: You're right, Judge Brenner;
21 about a tenth of an inch.

22 BY MR. DYNNER:

23 Q Do you train the operators to be able to read
24 within 1/20th of an inch? In other words, you said some of
25 the operators can read better than 50 kilowatts but some of

1 AGBwrb 1 them can't. How....

2 A (Witness Youngling) Those are certainly basic
3 skills that an operator develops through his years of
4 training and experience.

5 Q So you have some operators that can accurately
6 read this meter within 1/20th of an inch; is that your
7 testimony?

8 A (Witness Youngling) Yes; there are operators who
9 will interpret that meter in that fashion, yes.

10 Q That requires interpretation, doesn't it? I mean,
11 you can't be sure that they aren't reading anything within
12 that 50 kilowatts?

13 A (Witness Youngling) Maybe the choice of
14 "interpretation". is not a proper word. They will read it in
15 that range.

16 Q Just so I'm sure, there are no small markings
17 within the 1/10th of an inch that would get you finer than
18 100 kilowatt distances, is that right?

19 A (Witness Youngling) No, there are not. However,
20 the man will make a mental division of the length between,
21 and read from that point. And that's how he will get the
22 finer reading.

23 Q How far away from the watt meter does the operator
24 normally stand?

25 A (Witness Youngling) Depending upon the height of

1 AGBwrb

1 the operator, he could lean and get extremely close to the
2 meter, certainly within a foot; if he were to stand at the
3 end of the benchboard, three feet, two and a half feet.

4 Q Is the operator supposed to tap the meter before
5 he reads it?

6 A (Witness Youngling) No.

7 Q Do you know what the total connected loads are--
8 Let me strike that and ask you this:

9 According to the FSAR -- this is page 8.3-26.
10 There is a listing there that shows total connected load
11 for the EDGs. I want you to just tell me whether the
12 numbers are approximately correct or not.

13 For EDG-101, 4539.

14 A (Witness Dawe) Mr. Dynner, where are you reading
15 these numbers from, please?

16 Q Page 8.3-26 of the FSAR.

17 MR. ELLIS: Is that a question, Mr. Dynner?

18 MR. DYNNER: Yes.

19 MR. ELLIS: I object to the question, Judge
20 Brenner, on the grounds that it's irrelevant. These
21 connected loads have always been total connected loads from
22 previous ratings of the engine to 35, to 39. And to simply
23 put total connected loads in the record is irrelevant. It
24 has no bearing on the issue, which is the propriety of 3300
25 and the means that LILCO has taken to ensure that that's not

1 AGBwrb 1 exceeded.

2 JUDGE BRENNER: Mr. Dynner.

3 MR. DYNNER: Yes. I think it is relevant. The
4 issue that we're exploring here involves, among other
5 things, the issue of operator error, and therefore it
6 involves looking at the total connected loads to see what an
7 operator, or operators might do if they make one or more
8 errors.

9 MR. ELLIS: I think, Judge Brenner, that makes
10 clear--

11 JUDGE BRENNER: Wait a minute.

12 (The Board conferring.)

13 JUDGE BRENNER: We'll overrule the objection on
14 the basis that it is going to be foundation as you explore
15 the potential operator error.

16 WITNESS DAWE: As we recall the question, which we
17 would like repeated, there is no such number in the FSAR;
18 the number is wrong.

19 BY MR. DYNNER:

20 Q Well, look for a minute, would you, at Table
21 8.3.1-1 of your Revision 34.

22 A (Witness Dawe) The numbers that you just quoted
23 are not on that table, Mr. Dynner. You quoted 45 to 46
24 hundred Kw.

25 Q Yes. Looking at that portion of the FSAR, there

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1 is a heading there that says "Total Connectable Loads;"
2 isn't that right?

3 A (Witness Dawe) That's correct.

4 Q And it's true, isn't it, that the total
5 connectable loads as shown by that table are 4381.3 for
6 EDG-101, 4146.8 for EDG-102, and 4493.7 for EDG-103; isn't
7 that right?

8 A (Witness Dawe) The table says "total connectable
9 loads," which means loads that can be powered. And those
10 numbers are correct.

11 And, of course, as the table also reflects, to
12 connect that load would require combinations of equipment
13 failure and operator failure; more than one of each kind, I
14 might mention, many, many of each kind.

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1 I would also like to say that it is not an
2 uncommon design practice that total connectable loads are
3 higher than ratings of machines.

4 Q On page 35 of your testimony you indicate, as I
5 read this testimony -- and tell me whether it's correct --
6 that you believe in the case of an operator error following
7 a LOOP/LOCA or just following a LOOP that there is
8 reasonable assurance that operator action to correct these
9 errors would occur in a matter of minutes.

10 What is the basis for that assumption?

11 MR. ELLIS: Mr. Dynner, can you show me? For my
12 purposes I would like to know exactly where in the testimony
13 on page 35.

14 MR. DYNNER: Right in the middle of the page, the
15 first full paragraph. It starts with the line "As in the
16 case of...."

17 (Witness panel conferring.)

18 JUDGE BRENNER: Mr. Dynner, after they answer
19 this question, when you get to a convenient stopping point,
20 we will take a mid-morning break.

21 MR. DYNNER: Yes, sir.

22 WITNESS YOUNGLING: Mr. Dynner, in response to
23 your question, the operators -- the timeframe for exceeding
24 3300 would be minimized as a result of having in place in
25 the control room four knowledgeable licensed operators.

1 There is clear and concise indication of diesel generator
2 load. The operators are trained to cope with the load
3 management procedures relative to the 3300 qualified load.

4 In addition, over the course of the past several
5 years now, operators have been very sensitized to loads on
6 the diesel generators and maintaining loads on the diesel
7 generators.

8 In addition, as a result of our human-factors
9 work in the control room, the three control room watt
10 meters, one on each engine, will be banded at the 3300
11 point.

12 And in addition, as a result of the Staff SER of
13 December 18th, 1984, LILCO will install on each engine an
14 alarm at the qualified load level.

15 JUDGE BRENNER: Mr. Youngling, you mean an alarm
16 that enunciates in the control room?

17 WITNESS YOUNGLING: Yes, Judge, there will be an
18 enunciator associated with each engine. Yes, it will be not
19 only an audible-- There will be a visible plus an audible
20 alarm.

21 JUDGE BRENNER: Would this be a good time for the
22 break?

23 MR. DYNNER: Yes, sir.

24 JUDGE BRENNER: Let's break then until 10:45.

25 (Recess.)

1 ACReb

1 JUDGE BRENNER: Back on the record.

2 You may continue, Mr. Dynner.

3 BY MR. DYNNER:

4 Q Gentlemen, can you tell me how many enunciators
5 or alarms are located in the control room, approximately?6 JUDGE BRENNER: He doesn't need a specific
7 number. Give him a ballpark.8 WITNESS YOUNGLING: There are approximately 1500
9 alarms in the control room. However, in the area of the
10 diesel generators there is a small alarm panel, one for each
11 engine, and there is approximately maybe 30 alarms on each
12 of those panels at most.

13 BY MR. DYNNER:

14 Q When you say in the area of the diesel
15 generators, do you mean in the control room area or do you
16 mean in the--17 A (Witness Youngling) In the control room area on
18 the panel board above the diesel controls.19 Q During a LOOP/LOCA, Mr. Notaro, can you estimate
20 for me how many of these 1500 enunciators or alarms would be
21 activated?22 Anyone. I didn't mean to just limit it to you,
23 but you're an operator.

24 (The panel conferring.)

25 A (Witness Youngling) Mr. Dynner, we are not sure

1 AGBeb

1 of the exact number. It might be 10 percent of that
2 number.

3 But one of the things that you have to remember
4 about the Shoreham enunciator system is that we have in
5 place made some very significant human-factors changes on
6 our enunciator system to ensure that the higher-priority
7 alarms are colored different from the remainder. And we
8 basically have I believe two or three different colored
9 alarms.

10 Our plans right now are to make this diesel
11 generator alarm a red alarm, which would distinguish it from
12 the bulk of the alarms which are white. What I mean by
13 white, a white back light, so that they appear like the
14 lights in this room.

15 Q How many red alarms are there, approximately?

16 A (Witness Youngling) None in the area of the
17 diesels and none down even at that end of the panel. Most
18 of the red alarms are in the reactor control panel, 601
19 panel, and I'm going to estimate that there's approximately
20 20 of those.

21 Q Do these alarms all have audible signals as well
22 as visual?

23 A (Witness Youngling) Yes, they do. They have an
24 audible signal associated with their initiation as well as a
25 flashing indication. However, the audible signal is

1 AGBeb

1 different for each section of the control panel.

2 To the best of my recollection there are, I
3 believe, four or five different tones in the control room,
4 and those tones were specifically put in to aid the operator
5 in distinguishing where the general area of the alarm is
6 coming from.

7 Q Is the operator committed to deactivate the alarm
8 or enunciator?

9 A (Witness Youngling) I'm not sure what you mean
10 by "deactivate." He can acknowledge the alarm through a
11 series of response pushbuttons once the alarm has sounded.

12 Q How long does the alarm sound or flash?

13 A (Witness Youngling) For as long as it takes for
14 him to acknowledge it.

15 Q And once he acknowledges it, does it stop
16 flashing and the bells stop ringing and the whistles stop
17 sounding?

18 A (Witness Youngling) Yes, it does. The alarm
19 will go to a solid window configuration and the tone will
20 stop.

21 JUDGE MORRIS: Could I follow up on that,
22 Mr. Dynner?

23 MR. DYNNER: Certainly, sir.

24 JUDGE MORRIS: Mr. Youngling, after
25 acknowledgement does the enunciator light stay on as long as

1 AGBeb

1 the off-normal condition prevails?

2 WITNESS YOUNGLING: Yes, it does, Judge Morris.

3 JUDGE MORRIS: And is there any way the operator
4 can turn that light off?

5 WITNESS YOUNGLING: No, there isn't.

6 JUDGE MORRIS: Until the condition is corrected?

7 WITNESS YOUNGLING: Until the condition is
8 corrected.

9 BY MR. DYNNER:

10 Q On page 36 of your testimony, in the first full
11 paragraph you refer to the design ratings of the EDG. What
12 do you mean by the "design ratings of the EDG"?13 A (Witness Youngling) In the response to this
14 question we have used the words "design ratings" and in this
15 instance we mean the manufacturer's design ratings for the
16 Shoreham diesel generators.

17 Q And what are those as used here?

18 A (Witness Youngling) Those are 3500 continuous
19 rating, the two-hour overload rating -- I'm sorry, the
20 two-hour short-term rating of 3900 kw.21 Q On page 37 you testify that the -- or you make
22 reference to a statement in what you call the low-power
23 licensing proceeding that the restoration time following a
24 loss of offsite power is short.

25 It is true, isn't it, that the case you are

1 AGBeb

1 referring to involved a request by LILCO for an exemption
2 from GDC-17. Isn't that right?

3 A (Witness Dawe) What was your question,
4 Mr. Dynner?

5 Q It is true, isn't it, that the case you are
6 referring to on page 37 involved a request by LILCO for an
7 exemption from GDC-17?

8 A (Witness Dawe) I think that is a reasonably
9 accurate characterization of the proceeding, but it has
10 nothing to do with the facts that were established in that
11 case.

12 Q Let's see. You agree, don't you, that the GDC-17
13 requires that one assumes a complete loss of offsite power
14 in evaluating the adequacy of the onsite AC power system,
15 don't you?

16 A (Witness Dawe) GDC-17 requires an onsite and an
17 offsite source of power, and the function of each is to
18 provide power, given the loss of the other or the absence of
19 the other.

20 Q But you didn't answer my question.

21 A (Witness Dawe) I believe I answered your
22 question. That is what GDC-17 requires.

23 Q I will repeat it:

24 It is true, isn't it, that GDC-17 requires that
25 in evaluating the adequacy of the onsite system that it

1 AGBeb

1 must be assumed that there is a complete loss of offsite
2 power.

3 A (Witness Dawe) I would like to have a copy of
4 the GDC to respond to that question.

5 JUDGE BRENNER: Mr. Dynner, why do you need a
6 factual answer? How would that affect your ability to
7 so argue at any time if you think it is pertinent to make
8 that argument?

9 MR. DYNNER: I think it will.

10 BY MR. DYNNER:

11 Q None of you up there is a lawyer? Are any of you
12 lawyers?

13 A (Witness Dawe) I'm not a lawyer.

14 A (Witness Youngling) No, I'm not an attorney.

15 A (Witness Notaro) I'm not an attorney.

16 MR. ELLIS: I might add for the record that they
17 have all told me in the past that they are delighted at
18 that.

19 JUDGE BRENNER: I can tell that from their tone
20 of voice.

21 WITNESS DAWE: I might also add, though, that I'm
22 a licensing engineer.

23 BY MR. DYNNER:

24 Q Does that mean that you believe that you have the
25 qualifications to testify as to the legal requirements of

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1 10 CFR Part 50, Appendix A?

2 A (Witness Dawe) It means that I believe that I am
3 qualified to testify as to what is required to meet the
4 general design criteria in a nuclear power plant.

5 JUDGE BRENNER: I never thought a law degree was
6 of particular help in understanding that particular section
7 of the regulations.

8 MR. ELLIS: I am proof of that.

9 JUDGE BRENNER: The point, Mr. Dynner, is you are
10 going to argue about what complete loss of power means and
11 how complete is complete, and so on, and I think that is a
12 subject of legal argument if you find an appropriate context
13 in which to make it.

14 MR. DYNNER: I will.

15 BY MR. DYNNER:

16 Q Gentlemen, turning for a minute back to the
17 cyclic or intermittent loads, can you tell me what is it
18 that prevents non-operating motor-operated valves from
19 operating during a LOOP/LOCA, if anything?

20 A (Witness Dawe) They don't receive signals to
21 operate. They would only be operated manually in subsequent
22 actions.

23 Q Are they locked out as such?

24 A (Witness Dawe) They are not locked out. If you
25 look at the FSAR, Table 8.3.1-1, you will see there is a

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1 Footnote 11 next to them, and the footnote says they are
2 connected to the diesel bus, which means they are valves
3 that can be operated, removed manually from the control
4 room, but they are not valves which receive signals to
5 operate.

6 Therefore, when you compute what the diesel is
7 going to do in response to a LOOP/LOCA signal, those valves
8 are there but they don't do anything unless the operator
9 needs to operate that valve. But those valves are not
10 required for the immediate response of the plant.

11 Q Why would the operator need to operate those
12 valves at a particular time?

13 A (Witness Dawe) He may choose to use them in the
14 long term for system configuration. For example, for
15 hydrogen control in the containment in the long term
16 following a design basis loss-of-coolant accident, the
17 primary containment atmosphere control system may be brought
18 into use. The valves in that system are in that
19 non-operating category.

20 That's a system that would be used in the
21 absolute worst case analytically no sooner than 16 hours by
22 analysis into the event. The real expected time is 48 hours
23 or longer before you would use that system.

24 Q Do any of them affect the ECCS systems?

25 A (Witness Dawe) Some of them are in the ECCS

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1 systems, for example, the suction valves from the
2 suppression pool which are not automatic valves. They are
3 always in the position for suction.

4 A (Witness Youngling) I would also like to point
5 out that the County, in their testimony on page 10, has
6 included these non-operating MOVs in their determination of
7 the intermittent and cyclic loads and for the reasons that
8 Mr. Dawe has stated, it is really inappropriate to put them
9 in there.

10 Q It is true, isn't it, that given the calibrated
11 instrument error possibility of plus or minus 70 kilowatts
12 on EDG 103 that the so-called endurance run of 525 hours
13 conservatively should be regarded as a run at 3230
14 kilowatts. Don't you agree?

15 A (Witness Youngling) No, we disagree with that.

16 Q Why?

17 A (Witness Youngling) During the 525-hour
18 endurance run, the engine was operated in the range of 3300
19 kw, as indicated by the watt-hour meter. That meter had an
20 associated accuracy with it.

21 However, over the total range of the 525 hours,
22 the meter was as much in the upper part of the range as the
23 lower part of the range, and it is appropriate that the
24 kilowatt indication for that run is 3300 as indicated.

25 Q I'm a little confused because you say it was as

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1 much in the upper as the lower part. Your testimony
2 indicates 81 hours were reported at loads above 3300
3 kilowatts and a short amount of time was below 3300.

4 What is that short amount of time that you are
5 referring to as being below 3300? How many hours was that,
6 about?

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1 A (Witness Dawe) Mr. Dynner, could you repeat the
2 question, please?

3 Q Yes. Your testimony indicates -- well, maybe I
4 didn't read it carefully enough -- your testimony indicates
5 that 81 hours of the 525 hours were at loads above 3300
6 kilowatts, and that would be indicated loads, right?

7 A (Witness Dawe) That is correct.

8 Q And that 20 hours were reported below 3300
9 kilowatts, is that right?

10 A (Witness Dawe) Yes, that is shown by the
11 half-hour log readings that were taken throughout the
12 endurance run.

13 Q Right.

14 Let's just wipe those out. Let's assume that
15 they don't exist, that they offset each other.

16 And if we look at the other approximately 425
17 hours, which you say show an indicated load of 3300, my
18 question is: given the instrument error of plus or minus
19 70, to be conservative, why would you regard those 425 hours
20 as running at 3230 at best?

21 A (Witness Dawe) It is a plus or a minus error
22 band for tolerance shown by calibration. At any instant in
23 time the instrument can be within that band.

24 When you look at the results of calibration of
25 the performance of a meter, you find, for example, when it

1 is going upscale or coming downscale it may tend to read
2 high or low. At a tap value, taking the hysteresis out, it
3 tends to read more accurately than either upscale or
4 downscale.

5 Throughout the course of that test, and
6 particularly considering the long duration of the test and
7 the fact that the test was run at 3300 plus or minus 100 to
8 allow for variations in the grid load connected, we believe
9 that it is reasonable to assume that that instrument was in
10 the plus or minus -- it would be a mean value of 3300, as
11 much up, as much down at any instant and over that long
12 duration or longer.

13 That is an in-plant instrument. It is run at
14 3300 indicated, and we believe that that is a valid
15 justification of 3300.

16 Q According to your own data, though, you stayed
17 pretty much at 3300 for most of that run, didn't you? You
18 didn't go up and down?

19 A (Witness Youngling) Yes, Mr. Dynner, during the
20 test the majority of the data points recorded were at 3300
21 KW.

22 However, as a result of the dynamic response of
23 the diesel generator, there is a pulsation in the output of
24 the generator which corresponds to the firing of the engine
25 at 3.7 hertz -- 375 hertz. That has resulted in what we

1 AGBbur

1 call a bounce on the meter, and that bounce is approximately
2 60 to 100 KW, and that is the fluctuations which Mr. Dawe is
3 referring to.

4 I should also point out that that bounce
5 phenomena only occurs when the engine is on the grid, and
6 when it runs on the isochronous mode in plant we do not see
7 that bounce. It is a different mode of operation.

8 Q Is it your testimony that the so-called bounce
9 you are referring to meant that the readings were constantly
10 going up and down on the watt meter?

11 A (Witness Youngling) I am saying that the meter
12 fluctuates corresponding to the firing of the engine and,
13 yes, that the meter does bounce continuously when the engine
14 is operated on the grid.

15 Q During that endurance run, were the people
16 reading those meters the same people that would read the
17 meters during normal plant operation?

18 A (Witness Youngling) Yes. The meters were read
19 by control room operators.

20 Q I am curious, given the one-tenth of an inch
21 between each 100 kilowatts, how your operators were able to
22 read such values as 3326 and 3317, things like that.

23 Was that sort of super expert type of
24 interpolation or what?

25 A (Witness Youngling) No, it wasn't. During the

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1 performance of the test, the operators used the control room
2 watt-hour meter on the panel board.

3 However, we had still kept in place a secondary
4 measurement loop of diesel generator output power. That was
5 a temporary setup which we had used during the
6 preoperational testing that consisted of a watt-hour meter
7 down at the switchgear for the diesel generator output.

8 That watt-hour meter sent a digital pulse up to
9 the control room, which was counted in the process
10 computer. The process computer then presented to the
11 control room operator through a printer a kilowatt loading
12 on diesel generators.

13 This loop -- instrument loop -- and I will call
14 it a test loop -- as I said, was in place for the
15 preoperational testing. It is a loop which has a loop
16 accuracy of approximately .6 of 1 percent.

17 The control room operators, during the
18 performance of this test, used a control room instrument,
19 the normally installed panel watt meter, to run the test.
20 However, some of the operators chose to record the more
21 accurate measurement off the process computer.

22 As a result, some of the measurements that you
23 have in the data in front of you were taken off the process
24 computer. The process computer is capable of recording and
25 providing a value for significant figures, such that you

1 AGBbur

1 could read those figures that you have there.

2 JUDGE MORRIS: Mr. Youngling, was that watt-hour
3 meter in place throughout the whole test?

4 WITNESS YOUNGLING: The watt-hour test loop was
5 in place during the entire test. However, there were
6 periods of time when the process computer was down. So the
7 test loop was not available during those periods because it
8 would not have the output indication.

9 JUDGE MORRIS: Thank you.

10 (Witness panel conferring.)

11 BY MR. DYNNER:

12 Q Is that an integrated power reading for this
13 computer?

14 A (Witness Youngling) Yes, it is.

15 Q Were any calibrations done with respect to the
16 readings of the watt meters that took place on the 221 hours
17 the EDG ran prior to the 525-hour endurance run?

18 A (Witness Youngling) Yes, Mr. Dynner. There were
19 calibrations of the watt meter.

20 By our procedures, any special test equipment
21 that we used to implement the preoperational test does have
22 to be calibrated, and there was a calibration of the watt
23 meter as well as the digital pulse feed through the process
24 computer.

25 Q Did that digital pulse -- was that hooked up

1 during the 221 hours of the run which took place, as I
2 understand it, before the new block was installed?

3 Isn't that right?

4 A (Witness Youngling) Yes, within the 220 hours of
5 operation that was prior to the 525-hour run, the watt
6 meter -- watt meter test loop was in lace.

7 However, not every data point was taken off the
8 watt meter. There were other data points that were taken
9 off of other instrument loops that we utilized during
10 preoperational testing.

11 Those loops were also calibrated.

12 Q What was the accuracy of the watt meter during
13 the 221 hours of the EDG operation?

14 A (Witness Youngling) It was the same accuracy
15 that I stated earlier, .6 of 1 percent.

16 Q Was that also the plus or minus 70 on the watt
17 meter on EDG 103, or was it some other accuracy?

18 (Witness panel conferring.)

19 JUDGE BRENNER: While there is a pause in the
20 action, Mr. Dynner, am I correct that you are about ready to
21 wind up your cross-examination?

22 MR. DYNNER: Yes, sir.

23 WITNESS DAWE: Mr. Dynner, could you repeat the
24 question now, please?

25 MR. DYNNER: I will try to even simplify it if I

2 AGBbur 1 can.

2 BY MR. DYNNER:

3 Q You have testified that you did a calibration of
4 the watt meter on EDG 103 before the endurance run and you
5 found that it was -- and then after the endurance run -- and
6 you found that it was plus or minus 70.

7 And my question is: when you gave that
8 testimony, you were talking about the 525 hours, isn't that
9 right?

10 A (Witness Youngling) Yes, sir.

11 Q So my question now is -- that tells me that you
12 say that the plus or minus 70 instrument accuracy during the
13 525 hours.

14 I am trying to find out whether you know what the.
15 instrument watt meter accuracy was on EDG 103 during the
16 previous 220-hour run that was with the old block.

17 A (Witness Youngling) We have calibration data
18 before and after the period, but the 220 hours was put on
19 the engine, and the performance of the indicator was within
20 at least plus or minus 60.

21 MR. ELLIS: May I have that question and answer
22 read back, please?

23 (Whereupon, the reporter read the record as
24 requested.)

25 MR. ELLIS: Thank you.

BY MR. DYNNER:

Q Gentlemen, I note that you are continuing in your testimony to view future surveillance testing as being performed at 3300 kw, plus or minus 100.

Wouldn't testing the engine at 3300 plus 100 violate the technical specification and the FSAR requirement of not running the engine at more than a maximum of 3300?

(Witness panel conferring.)

A (Witness Dawe) Mr. Dynner, again I would like to ask you to repeat the question so that I can be sure I am answering the question accurately.

Q Your testimony indicates that you still intend to test the EDGs during surveillance testing at 3300 kw, plus or minus 100.

Wouldn't the operation of the EDGs at 3300 plus violate the technical specification on the qualified load requirement in the FSAR?

A (Witness Dawe) No, I don't believe it will. The technical specification has not been issued, so I can't quote the technical specification to you.

The purpose for testing at 3300 plus or minus 100 is the practicality of testing, including the ability to control the load as we described. When you connect to the grid to load the machine to 3300 kw, you cannot do that as

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1 a test within plant loads.

2 The operating procedures for testing will reflect
3 the continuous load of 3300. The test procedure will allow
4 3300 plus or minus 100 in the test for the purposes of being
5 able to accommodate instrument motion and ability to
6 actually control the diesel load on the grid.

7 The combination of the instructions of 3300 plus
8 or minus 100 and the continuous load at 3300 means that the
9 operators are trained and instructed that they don't take
10 advantage of that plus or minus 100 to run the test higher
11 or lower. Their test is to be run at a mean 3300. The band
12 is necessary just to ensure that you can do the test.

13 Other experts, and their testimony reflects this
14 for LILCO, have looked at that condition for the length of
15 time testing is required and have assured us that that's
16 acceptable for the diesel.

17 Q You say you can't maintain the power at exactly
18 3300 kw and you need to have that plus or minus 100 band
19 when the engines are running? Is that what you are saying?

20 A (Witness Youngling) Mr. Dynner, our experience
21 with operating these engines over the last several years has
22 shown us that the response of the engine when it is hooked
23 to the grid is such that it is very difficult to control
24 that engine at a steady state situation. Therefore, a
25 tolerance band must be put in place.

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1 That is why we had tolerance bands during the
2 pre-operational testing. That is why we have tolerance
3 bands for the future. The engine is a tiny engine attached
4 to a very large grid. It is very sensitive to that grid and
5 will try to pick up the little fluctuations on that grid.

6 A (Witness Dawe) If I could add to that answer
7 just briefly, we are not implying that there are large load
8 swings on the diesel and that the operator cannot control
9 the diesel. The practicality of it is if you require the
10 operator to test at 3300 with no control band, then any time
11 he looked at the instrument and it read slightly above or
12 slightly below during the duration of the technical
13 specification testing, he would be in violation of the
14 technical specification requirements, and that is not
15 practically what the technical specifications are trying to
16 do.

17 We are not implying large load swings. Any
18 diesel connected to a grid, as Mr. Youngling said, is tiny
19 relative to the number of megawatts that are being generated
20 out on that grid and will be sensitive to it. But we are
21 not implying large load swings within the plus or minus 100
22 kw. That is just the ability to run the test.

23 A (Witness Notaro) I would like to add that as
24 Mr. Dawe has stated, the operator would not produce that
25 tolerance band of plus or minus 100 to operate that diesel

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1 during the test at anything but 3300.

2 Q When the engines are actually operating under an
3 actual configuration they are not attached to the grid.

4 Correct?

5 A (Witness Youngling) That is correct, yes.

6 Q And during that kind of situation, what kind of
7 fluctuation would you expect?

8 A (Witness Youngling) None.

9 Q Why do you need as large a fluctuation as plus or
10 minus 100? Why can't you do it 20 or 30? Is there that big
11 a fluctuation?

12 A (Witness Youngling) As I testified earlier, as a
13 result of our experience with running these engines over the
14 last several years, there are two predominant factors that
15 require the 100, the first being the pulsations of the
16 engine when connected to the grid, and the second being the
17 sensitivity of the engines in response to the grid.

18 That tolerance band is as tight as we can
19 practically get it. We cannot go any tighter than that.

20 (The panel conferring.)

21 I'm sorry, I said-- Mr. Dawe has shown me where
22 I said "pulsations of the engine." I meant pulsations of
23 the megawatt meter as a result of the operation of the
24 engine.

25 Q Those are one of the practical reasons that you

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1 need -- that you would say you need that plus or minus 100,
2 that it is difficult to read the true values within the
3 tenth of an inch provided by the differences in the watt
4 meter?

5 (The panel conferring.)

6 A (Witness Youngling) The reason for the choice of
7 the plus or minus 100 is not because of the readability of
8 the instrument. We have read that instrument-- I have read
9 that instrument myself, and whether that instrument is a
10 tenth of an inch, a twentieth of an inch, we can discern
11 those values. That will tell us that we are plus or minus
12 100.

13 JUDGE BRENNER: I'm not sure you got an answer to
14 the question.

15 I don't think the question is whether you can
16 discern values on the meter plus or minus 100. I think the
17 question is is not the reason for the band of plus or minus
18 100 because you would have difficulty discerning values
19 significantly smaller than plus or minus 100 such as plus or
20 minus 50?

21 WITNESS YOUNGLING: No, Judge Brenner, I think,
22 as I testified, we could and I have had lower numbers than
23 plus or minus 100.

24 JUDGE BRENNER: All right.

25 I want to see if I understand your testimony that

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1 you also gave earlier about the pulsations on the meter in
2 accordance with the firing cycle of the engines.

3 Now am I correct that even if you could
4 hypothetically read with perfect accuracy the load meter,
5 that is, the no-error band on the ability of an operator to
6 read that meter, that nevertheless there is a swing in what
7 the meter is accurately portraying caused by the effect of
8 the pulsations that you talked about of approximately plus
9 or minus 60? Or is it just in one direction? And do I have
10 that number wrong? Will you enlighten me?

11 WITNESS YOUNGLING: No, Judge, I think you
12 characterized it correctly. It is in both directions, plus
13 or minus, and it is a steady pulsation that is associated
14 with the firing of the engine. And it is predictable at its
15 value. And it runs approximately plus or minus 60 to 100
16 kw.

17 JUDGE BRENNER: All right.

18 Now if I stood there looking at the meter for a
19 minute or so, would I see the meter pulsating, the
20 indication varying plus or minus 60, and then infer the
21 approximate mid-range of that? Is that the way it works?

22 WITNESS YOUNGLING: Yes, that's exactly the way
23 it works, yes.

24 JUDGE BRENNER: And that exists when the diesels
25 are being used for backup power in a plant, even though

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1 they are not connected to the grid? Is that correct?

2 WITNESS YOUNGLING: No, it does not. It is only
3 during the period that the engine is operating on the grid
4 during the testing, surveillance testing of the engine.

5 JUDGE BRENNER: Thank you. I thought that was a
6 distinction but that apparently doesn't exist, based on your
7 answer now.

8 WITNESS NOTARO: If I may, Judge Brenner, I would
9 like to add to Mr. Youngling's statement that he has read
10 the meter.

11 I have read the meter also, and there is no
12 difficulty at all discerning between those 100 kilowatt
13 demarcations on that meter.

14 JUDGE BRENNER: I don't think that's in
15 controversy, but maybe I'm wrong. I think people are giving
16 you the plus or minus 100 and asking you about the
17 significance of that, and your ability to support other
18 testimony, given the plus or minus 100.

19 BY MR. DYNNER:

20 Q Gentlemen, you agree, don't you, that prior to
21 Revision 34, which makes the changes in the FSAR, that your
22 initial FSAR before this revision required that the maximum
23 intermittent loads in the first 60 seconds approximately
24 during the operation of the motor-operated valves is less
25 than the two-hour rating of the machine?

1 AGBeb

1 I would direct you to page 8.3-8 of the FSAR
2 before the latest revision that you made.

3 So that it is true, isn't it, that up until the
4 time that you made this recent revision, you did have a
5 requirement for the first 60 seconds that the cyclic or
6 intermittent loads fell within the short-term rating of the
7 diesels? Isn't that right?

8 A (Witness Dawe) Mr. Dynner, we don't have a copy
9 of the FSAR prior to the current revision with us at this
10 time, so I can't look at the page you are referencing me to.

11 Prior to this time we did have a continuous
12 rating and a short-term rating on the diesel as described in
13 that FSAR.

14 Q Do you know whether, prior to this latest
15 revision, there was a requirement that the intermittent
16 loads fell within the short-term two-hour overrating?

17 A (Witness Dawe) Without going back and reviewing
18 that document, my recollection is that the projected maximum
19 automatic loads on the diesels for diesels 101 and 102 never
20 entered the region above the continuous rating, even in the
21 very short term.

22 And diesel 103 did enter that, but diesel 103
23 doesn't have all those valves on it so it's a different
24 situation.

25 Q But that isn't my question. My question is:

1 Do you know whether before the revision the FSAR
2 required that the maximum intermittent load in the first 60
3 seconds during the operation of the motor-operated valves
4 would be less than the short-term two-hour rating?

5 A (Witness Dawe) I would have to look at the FSAR
6 to see how it was rated.

7 MR. DYNNER: I will ask someone to show that to
8 you.

9 (Document handed to the witness panel.)

10 (Witness panel reviewing document.)

11 JUDGE BRENNER: While they are looking at it,
12 Mr. Dynner, you switched subjects at least one question
13 earlier than I thought you would, and I hope my interruption
14 didn't divert you, unintentionally on your part. I don't
15 think you ever asked your last question on page 12 of the
16 cross plan, and I held off because I thought you were going
17 to.

18 MR. DYNNER: I will get to that, sir. Thank
19 you.

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1 AGBwrb

BY MR. DYNNER:

2 Q Do you see that language, now, gentlemen?

3 A (Witness Dawe) I'll be with you in a moment,
4 Mr. Dynner.

5 (Pause.)

6 A (Witness Dawe) The FSAR Revision 31, August of
7 1983, the language you have directed me to states factually,
8 and I quote:9 "The maximum intermittent load in the first
10 sixty seconds, approximate, during the operation of the
11 motor operated valves is less than the 2-hour rating of
12 the machine."

13 In fact it than says,

14 "The loads are given on Table 8.3.1-1."

15 If you look at the table you will find I was
16 correct in my prior statement that we did not exceed 3500
17 for diesels 101 and 102 with the valve loads.18 I might also mention that the loads are not
19 different. The loads that are in there now, with the
20 exception of the service water pump and pull the lock on the
21 103 machine and the spent fuel coolant pumps, which are
22 administratively removed during the first operating cycle,
23 the loads are all the same.24 Q But I'm correct, aren't I, that the FSAR, before
25 the revision, does say that those maximum intermittent loads

1 must be, and are, bounded by the short-term rating of two
2 hours?

3 A (Witness Dawe) It says that they are, Mr. Dynner,
4 it doesn't say that they must be. You're interpreting that
5 wrongly. It says that they are. In the language that
6 you've show me it says,

7 "The maximum intermittent loads in the first
8 sixty seconds, approximately, during the operation of
9 the motor operated valves is less than the two-hour
10 rating of the machine."

11 In fact, it's less than the continuous rating of
12 the machine.

13 Q In fact, that FSAR also says that it's one of the
14 criteria that is used to size the emergency diesel
15 generators, doesn't it?

16 A (Witness Dawe) That is the criteria that was used
17 to size the emergency diesel generators. That is prior to a
18 definition of a qualified load. And we had that discussion
19 yesterday.

20 Q Now, in Revision 34, if you look at the same page,
21 8.3-8, I'm interested in the change that was made to the
22 criteria that were used to size the emergency diesel
23 generators. That same section now says, and I quote:

24 "The maximum coincident demand in the first
25 60 seconds, approximately, during the operation of the

1 motor operated valves is also less than 3500 Kw."

2 So that it's true, isn't it, that up until this
3 revision the criteria required that the short-term load
4 bound the intermittent load, and now with the new revision
5 you don't require that the qualified load bound the
6 short-term motor operated value load; isn't that right?

7 (The panel conferring.)

8 A (Witness Dawe) Could you now repeat the question,
9 please, Mr. Dynner?

10 MR. DYNNER: Could you reread the question, since
11 it has been about four or five minutes since I first gave
12 the question?

13 (Whereupon the Reporter read from the record
14 as requested.)

15 MR. ELLIS: Objection. Asked and answered as to
16 the first part as to whether the previous one required the
17 intermittent loads.

18 JUDGE BRENNER: That's correct. We'll sustain
19 that part of it.

20 WITNESS DAWE: With the definition of "qualified
21 load," the requirement is that the qualified load bound the
22 maximum emergency service load. The maximum emergency
23 service load, as our testimony states, is developed by
24 summing all of the automatic loads that are placed on the
25 diesels, with the exception of three groups of cyclic and

4 AGBwrb

1 intermittent loads which are properly excluded from the
2 MESL.

3 That exclusion from the MESL results from the
4 discussions we had with the Staff, and is documented in the
5 Staff's SER of December 3rd and December 18th.

6 In fact, even with the cyclic loads the qualified
7 load bounds the loads on all machines when there are added
8 cyclic loads plus MESLs, with the one exception in our
9 testimony that I've explained several times.

10 Those statements are not related to this
11 statement, or the definition of "qualified load" is really
12 not related to the statement you're pointing me to in the
13 FSAR. The statement that's currently in the FSAR is still
14 a factually true statement.

15 BY MR. DYNNER:

16 Q With respect to the surveillance testing, you
17 testified as to the need for a band of plus or minus 100
18 kilowatts with respect to the 3300 kilowatt test. Why can't
19 the operator maintain a relatively constant load during the
20 surveillance test, given the fact that operators were able
21 to do so relatively well during the 525-hour endurance run?

22 A (Witness Dawe) He can, and he will, maintain a
23 relatively constant load at a mean value of 3300. But with
24 the instrument pulsating, as Mr. Youngling has described, we
25 need in the tech specs 3300 plus or minus 100 simply for

2 AGBwrb

1 regulatory purposes if nothing else. Because in operating
2 at a mean of 3300, if the resident inspector is in the
3 control room and observes the meter at 3350 during
4 pulsation, if it's not recognized in the technical
5 specifications and the procedures, we would be in
6 violation.

7 That's what we mean by a practical ability to run
8 the test.

9 We believe the operators can, and will, run a mean
10 test at 3300, and will not -- in fact, they're trained not
11 to take advantage of the band.

12 Q It's true, isn't it, that during the 525-hour
13 endurance run that you generally did not have any, you could
14 call them "pulsations," as opposed to 100 Kw, that most of
15 them were in the range of about 30; isn't that right?

16 A (Witness Youngling) Mr. Dynner, before I answer
17 your question I want to correct something Mr. Dawe said.

18 During the testing of the engine, in response to
19 the technical specification, the pulsation effect will be in
20 place, and the pulsations may go outside the plus or minus
21 100 band. It is the mean value which must remain between
22 the plus or minus 100 band.

23 The reason the mean value is moving around is
24 because of the sensitivity of the engine in response to the
25 grid.

1 Now, in response to your question, I have never
2 seen that engine pulsation at 30 Kw. I wish it could be
3 there, but it isn't. The best I've ever seen it is 60, and
4 we were able to achieve that with some very fine-tuning of
5 the engine. But generally it is in the range of 100 Kw.

6 JUDGE BRENNER: If I can interject, this is maybe
7 where I got confused before.

8 I thought there were two phenomena at work, one
9 being the sensitivity of the relatively small diesel engine
10 to the relatively much larger grid, and the other being the
11 pulsation effect from the diesel. And I thought the
12 pulsation effect is caused by the firing cycle of the
13 diesel.

14 Am I right so far?

15 WITNESS YOUNGLING: Yes. Let me try this, Judge--

16 JUDGE BRENNER: Well, let me get to my point, and
17 then you can include it.

18 Given that, I thought that firing cycle pulsation
19 would exist even when the diesel is not being utilized in a
20 configuration connected to the grid. And that's where I was
21 confused before.

22 WITNESS YOUNGLING: As I testified earlier, the
23 pulsations only occur when the engine is operating in a
24 synchronous mode on the grid. There is nothing that the
25 operator can do about the pulsations. The only way the

1 AGBwrb

1 pulsation can be lessened is by tuning the engine. The
2 pulsations are always there.

3 What the operator can do is adjust the load in
4 response to the grid. And that he has to do, because the
5 engine will respond to the grid. So he will essentially
6 adjust the mean value of the pulsating meter within the plus
7 or minus 100 band.

8 JUDGE BRENNER: Could you tell me very simply and
9 concisely what causes the pulsation to exist when it is
10 connected to the grid, as opposed to when it's not, if in
11 fact it's being caused by the firing cycle of the diesel
12 engine itself?

13 WITNESS YOUNGLING: Yes. When the engine is
14 operating isochronous, the mode -- the governor response is
15 in a demand mode, as I remember, and holds the engine at a
16 constant 60 cycles; whereas, when the engine is on the grid
17 it is responding to the grid which varies in frequency
18 slightly.

19 BY MR. DYNNER:

20 Q Is this pulsation effect when the engine is not on
21 the grid, does this reflect itself by the trembling of the
22 needle? Does the needle on the watt meter move around at
23 all in response to that?

24 A (Witness Youngling) As I testified earlier, when
25 the engine is not on the grid there is no pulsation of

1 AGBwrb 1 meter.

2 Q So when the engine is not on the grid there is no
3 trembling of the needle; isn't that correct?

4 A (Witness Youngling) There is no pulsation. I
5 don't think I'd characterize it as "trembling." But no
6 pulsation.

7 Q Well, my question was: Does the needle on the
8 watt meter remain exactly steady, or does it move around as
9 the engine is operated?

10 A (Witness Youngling) The meter is steady. Any
11 movement of the meter would be in response to a load change
12 on the engine.

13 Q Would the meter move in response to a cyclic or
14 intermittent load?

15 A (Witness Youngling) Yes.

16 Q So that to the extent you have a cyclic or
17 intermittend load that exceeded 3300, am I correct that the
18 alarm would go off?

19 A (Witness Youngling) If the kilowatt value
20 indicated exceeds the alarm set point the alarm will go off,
21 yes.

22 Q And what's the alarm set point?

23 A (Witness Youngling) Frankly, we haven't chose a
24 setting for the set point yet. I have not determined where
25 I want to put that set point.

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1 Q I thought you testified that the alarm was to
2 ensure that you didn't exceed 3300 kilowatts. So what kind
3 of set point could there be other than 3300 kilowatts?

4 A (Witness Youngling) The SER requires me to put in
5 place an alarm which will tell the operator that he is
6 exceeding the 3300 point.

7 I may choose administratively to put it below
8 3300. I may choose to put it at 3300. I even have a
9 thought process that says maybe I want to put it above
10 3300. So I have not made a decision yet as to where I want
11 to put it.

12 Q What criteria are you going to use in making that
13 determination, if any?

14 A (Witness Youngling) The criteria that I will use
15 is one of wanting to make the alarm point anticipatory, as
16 opposed to after the fact.

17 I also have to consider the potential for nuisance
18 alarm during surveillance testing.

19 So those are my two major criteria I will be
20 looking at.

21 Q And those are conflicting, aren't they?

22 A (Witness Youngling) No, I don't think they're
23 conflicting, they just are different in their approach. I
24 don't think they're conflicting.

25 Q Well, which do you think is more important, making

1 sure that the EDG doesn't exceed 3300 without an alarm going
2 off, or protecting against the possibility of the alarm
3 going off when there is just a short-term cyclic variation?

4 A (Witness Youngling) I think they are both
5 important. And, as I said, I haven't made up my mind yet.
6 I'm not going to make my mind up on the stand here.

7 MR. DYNNER: I have no further questions at this
8 time.

9 JUDGE BRENNER: Why don't you just shut the alarm
10 off during surveillance testing?

11 WITNESS YOUNGLING: We may very well do that,
12 Judge.

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1 JUDGE BRENNER: Up until your last testimony, I
2 thought the testimony on the record, from you I thought, was
3 that there was going to be an alarm, during the regular
4 operation of the plant at least, that would immediately tell
5 the operator when the diesel load meter exceeded 3300 KW,
6 and now you are telling me that you may change your mind.
7 So I don't know where the record is.

8 WITNESS YOUNGLING: No, Judge. I hope I haven't
9 given you that impression. We do have an alarm, but we may
10 choose administratively to set that alarm earlier. We have
11 to also cope with the surveillance testing concept and the
12 nuisance alarms associated with that. I can achieve that in
13 a couple of ways.

14 One, I can set the set point up out of the way,
15 which has some drawbacks.

16 JUDGE BRENNER: That would conflict with the
17 other testimony, wouldn't it?

18 WITNESS YOUNGLING: Yes. I have to meet the
19 intent of the Staff or I can put in place some bypasses
20 during the surveillance testing.

21 JUDGE BRENNER: I hope counsel knows that once I
22 have testimony from a witness about a certain point there is
23 a limitation on flexibility without informing the Board of
24 changing that testimony.

25 I will leave it at that.

1 Let me make sure, just to be fair to you,
2 Mr. Youngling, that I am understanding it. You think that
3 you may want the flexibility to determine to set that set
4 point for the normal operating situation at something above
5 3300 KW to avoid a nuisance problem?

6 WITNESS YOUNGLING: Judge, I am going to ask you
7 to please repeat the first part. I didn't catch it.

8 JUDGE BRENNER: Do you still -- do you desire to
9 have the flexibility, as you said, to continue your thought
10 process as to where to set that set point to be able to
11 possibly decide to set that set point at a point higher than
12 3300 KW for the normal operation of the plant as
13 distinguished from surveillance testing situations?

14 WITNESS YOUNGLING: No. LILCO would not set that
15 alarm above 3300 for normal operation of the plant.

16 The only concern I would have is during the
17 surveillance program testing.

18 JUDGE BRENNER: That clarifies it for me, and I
19 am sorry, I must have misunderstood what you said earlier.

20 I guess we can take a break and then come back
21 with the Staff's questions after lunch.

22 All right, let's go off the record at this
23 point. I have one matter off the record.

24 Incidentally, we will come back at 1:35.

25 (Whereupon, at 12:00 p.m., the hearing was
26 recessed, to reconvene at 1:35 p.m., this same day.)

AFTERNOON SESSION

(1:37 p.m.)

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JUDGE BRENNER: Good afternoon. We're back on

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the record.

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Whereupon,

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GEORGE F. DAWE,

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EDWARD J. YOUNGLING,

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and

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JACK A. NOTARO

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resumed the witness stand, and, having been previously duly

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sworn, were examined and testified further as follows:

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JUDGE BRENNER: We are up to the Staff's

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cross-examination of LILCO's panel.

14

Are you going to do it, Mr. Perlis?

15

CROSS-EXAMINATION

16

BY MR. PERLIS:

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Q Good afternoon, gentlemen. My policy in asking

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questions is generally the questions will be directed at the

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whole panel, and feel free, whoever thinks they are best

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qualified to answer the question, that is who I would like

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to get the answer from.

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There was testimony this morning that procedures

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won't require anything from operators for the first ten

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minutes. Just to clear up one little matter:

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Are the operators affirmatively told not to do

1 AGBmpb 1 anything for ten minutes?

2 A (Witness Notaro) The operators are required --
3 and I believe we said this this morning -- to implement the
4 immediate actions during the initiation of that event.
5 Those immediate actions include verification of the
6 automatic actions and the implementation of specific
7 emergency procedure functions.

8 The plant, by design, does not require the operator to
9 take any action for the first ten minutes.

10 Q Okay.

11 There is no formal prohibition against their
12 taking any additional action within the first ten minutes?

13 A (Witness Notaro) No, there isn't.

14 Q I'd like to ask a couple of questions about the
15 enunciator that you gentlemen testified about earlier this
16 morning.

17 When was the decision made to put in an alarm?

18 MR. ELLIS: I object. I don't see how that's
19 relevant.

20 JUDGE BRENNER: Mr. Perlis.

21 MR. PERLIS: I'm just curious, for the purposes
22 of both our testimony and the nature of the decision that
23 was made.

24 MR. ELLIS: I don't see the relevance.

25 MR. PERLIS: To go further, Judge Brenner, I'm

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1 not sure that that decision has ever been formally reported
2 to the Staff. The Staff has indicated both in its testimony
3 and I believe in its SER that it had a concern with
4 enunciators. We would just like to know more about it.

5 JUDGE BRENNER: He said he's going to do it.
6 It's better than being told by the Staff. He's under oath
7 here.

8 We'll sustain the objection.

9 Now if you have any questions as to what he means
10 by what he said -- and I asked one or two like that -- you
11 can certainly go ahead.

12 BY MR. PERLIS:

13 Q Do you plan to hook this enunciator to the set
14 point in the control room; I believe the Watt Meter reading?
15 Is the enunciator going to be based on that Watt Meter
16 reading, or will it be based on some other indication of
17 exceeding 3300 or whatever level you eventually decide to
18 set it at?

19 A (Witness Youngling) The design will utilize as
20 an input the Watt measurement from the loop which is feeding
21 the Watt Meter now. So we're going to use the same
22 measurement loop.

23 Q Well, does --

24 A (Witness Youngling) It doesn't relate to the
25 meter. We will be using the CTs and the PTs and the

1 transducer that converts the signal into a watt signal, and
2 then we're going to pick the signal up at that point and
3 take it to an alarm unit which will trip the enunciator.

4 Q Okay.

5 Is this the same loop that you were talking about
6 earlier this morning that was connected to the computer in
7 the control room?

8 A (Witness Youngling) No, it is not. This is the
9 loop that feeds the panel-mounted Watt Meter, the Weston
10 Watt Meter.

11 Q Do you know what the accuracy of that meter -- or
12 of that loop is?

13 A (Witness Youngling) It's about a half a
14 percent. Those are very accurate elements.

15 Q Thank you.

16 A question about the other loop you were talking
17 about earlier this morning, the one that was hooked up to
18 the computer and the one that the operators were using for
19 certain of the figures during the confirmatory testing:

20 Were the operators told which values to use in
21 keeping the logs, whether to use the computer printout or
22 whether to look at the Watt Meter itself?

23 MR. ELLIS: Again, objection; relevancy. I don't
24 see the relevancy.

25 JUDGE BRENNER: I see the relevancy of this one.

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1 The objection is overruled.

2 (Panel conferring.)

3 WITNESS YOUNGLING: Mr. Perlis, I'm going to ask
4 you to please repeat the question.

5 BY MR. PERLIS:

6 Q As I understand the testimony this morning, the
7 logs that were kept during the confirmatory testing were
8 based on readings from two different sources. One would
9 have been the Watt Meter reading in the control room and the
10 other would have been from a computer printout that was
11 connected to some sort of loop output measurement, as best I
12 understand, that actually attached to the engines; but that
13 there were two different measurements, one of which was more
14 accurate than the other. And my question is were the
15 operators told which values to use in keeping the logs, and
16 if so, which values were they supposed to be using?

17 A (Witness Youngling) Yes, they were told which
18 indicator to use in recording the data, and that was the
19 panel-mounted Watt Meter.

20 Q Can you tell me why for some of the values, then,
21 they used the computer output instead of the panel reading?

22 A (Witness Youngling) As I testified this morning,
23 several of the operators chose to write down the more
24 accurate reading which they took off the process computer.

25 During our previous testing the process computer

2 AGBmpb

1 had always been the instrument of record, and I feel that
2 the operators were sensitized to using that. And I think
3 some of the operators chose to use the process computer as a
4 more accurate measurement. However the panel meter was
5 chosen as the instrument of record for this test.

6 Now taking the data off the process computer just
7 leads to more accurate data.

8 Q Thank you.

9 JUDGE BRENNER: Mr. Youngling, when the operators
10 made entries, written entries during the endurance test, in
11 which entries were taken from the process computer, did they
12 also look at the Weston Watt Meter to see if the approximate
13 value reflected there was consistent with the value they
14 chose to write down from the computer?

15 WITNESS YOUNGLING: Judge, we were not able to
16 survey every operator. We made an attempt to survey as many
17 as we could.

18 Our survey shows, for the ones we asked, that
19 they confirmed the reading on the panel-mounted Watt Meter
20 and then took their reading off the computer. However I was
21 not able to confirm that each and every operator followed
22 that procedure.

23 JUDGE BRENNER: I inferred in part from your last
24 answer that there are some large numbers of operators. How
25 many are there, approximately?

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1 WITNESS YOUNGLING: During the course of the test
2 as many as two dozen operators could have taken readings.

3 JUDGE BRENNER: Excuse me, Mr. Perlis. Back to
4 you.

5 BY MR. PERLIS:

6 Q I'd like to switch now, if I may, to some
7 testimony that was made yesterday concerning the testing of
8 the diesel generators at the 3300 load rather than the 3500
9 load.

10 I believe -- and please correct me if I am wrong
11 -- that it was your testimony that 3300 was selected because
12 of an interest in keeping the load as close to 185 BMEP as
13 possible. Is that accurate?

14 A (Witness Youngling) Yes, it is.

15 Q Could you tell me what load level would equate to
16 185 BMEP?

17 A (Witness Youngling) 185 BMEP for the Shoreham
18 engines corresponds to 2877 Kw.

19 Q Thank you.

20 Now I believe you also testified that you
21 believed -- and the basis was the Staff SER of August 13th,
22 1984 -- that it was the Staff's position you test as close
23 to 185 BMEP as possible based on that SER. Is that also
24 correct?

25 A (Witness Youngling) In part. As I testified

1 yesterday, when we got the SER we had discussions with the
2 Staff, and after those discussions were concluded it was our
3 interpretation that we wanted to get as close to 185 as
4 possible, and we chose 3300 Kw.

5 Q I'll get to the discussions in a moment.

6 But can you point me to any specific portion of
7 the August SER which would indicate to you that the test
8 should be run as close to 185 BMEP as possible once you are
9 over that limit? Is there any portion of the SER you could
10 point me to?

11 MR. ELLIS: Judge Brenner, I object to the
12 question as calling for testimony that would be immaterial.

13 JUDGE BRENNER: I didn't hear the last part of
14 your objection. Calling for testimony....

15 MR. ELLIS: That is immaterial.

16 JUDGE BRENNER: It may ultimately prove to be not
17 very important, but I am not prepared to say it is
18 immaterial at this time given their earlier testimony which
19 is on the record, and then objected, as to why they ran the
20 test at that load. So I will overrule the objection.

21 I ruled in your favor, Mr. Perlis.

22 MR. PERLIS: I understand that. I would just
23 like it put on the record that we are asking these questions
24 because there is material already in the record --

25 JUDGE BRENNER: Let's not waste time. You got
26 the question.

1 A (Witness Youngling) You won't find a statement
2 in here that makes that direct statement.

3 However, through the discussions that we had with
4 the Staff and the concern of the Staff for the adequacy and
5 the design margin of the Phase I components, which are the
6 early-on problem components in the engine -- there were 16
7 components -- LILCO felt that the Staff was concerned about
8 the design margin of those components.

9 The 185 limit was placed by the NRC Staff, and
10 LILCO, as a result of those observations plus the
11 interaction that occurred between August and October, felt
12 that we needed to get as close to 185 as possible.

13 BY MR. PERLIS:

14 Q Am I correct that all the SER specifically says
15 on 185 BMEP is that if you are over that level you have to
16 test and if you are at that level or below it you do not
17 have to do confirmatory testing?

18 A (Witness Dawe) That is not exactly true,
19 Mr. Perlis. It says that where the 185 BMEP criterion is
20 exceeded for only a brief period of time. So it is not an
21 absolute.

22 And that is why we mentioned earlier, when we
23 first started discussing this with the Staff, that there was
24 some question perhaps that the qualified load would be
25 something in the range of 185 BMEP, looking like the

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1 long-term profile in these short periods of time would be
2 the initial stage that were higher. It is not that
3 absolute.

4 Q Thank you.

5 (Witness panel conferring.)

6 A (Witness Youngling) Mr. Perlis, when I testified
7 earlier as to the concern for the margins, what I am
8 particularly pointing to is on page 14 of the August '84 SER
9 in the TDI Owners Group.

10 At the bottom of the page there are statements in
11 there relative to -- "The 185 psig BMEP criterion above
12 reflects existing PNL and Staff concerns regarding the
13 limited design margin available to certain key engine
14 components, particularly to piston skirts and crankshafts
15 while the engine is operated at full load.

16 "With regard to the piston skirts, however, AE
17 piston skirts have accumulated in excess of 6000 hours
18 without failure. A substantial portion of this load has
19 been accumulated at loads corresponding to 185 BMEP.

20 "PNL has also concluded that pending the
21 evaluation of crankshaft stresses at higher loads, 185 psig
22 BMEP is considered to be considered."

23 And during our discussions with the Staff, it was
24 our interpretation that because of PNL's concerns as
25 consultant to the Staff, the farther you got from 195 the

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1 more concern they had, and therefore we wanted to get as
2 close as possible.

3 Q I would like to talk a bit about these
4 discussions now, if I may.

5 Who from the NRC Staff was a party to these
6 discussions?

7 And by NRC Staff, I will include PNL consultants,
8 if any.

9 A (Witness Youngling) Certainly, we had
10 discussions with Dr. Berlinger. There were discussions with
11 PNL consultants -- forgive me if I forget the doctors --
12 Mr. Laity, Dr. Sarsten, Mr. Henriksen.

13 (Pause.)

14 Perhaps Dr. Bush was there.

15 Generally, the people who we had been dealing
16 right along on the assessment of the TDI engines.

17 Q During these discussions, was the possibility of
18 performing these tests at 3500 or at some level higher than
19 3500 ever discussed?

20 A (Witness Youngling) I do not remember having
21 discussions on that subject when I was involved. However,
22 there might have been others from LILCO who had discussions
23 with the Staff.

24 I do know that I was involved in discussions with
25 the Staff relative to performing the test at a much lower

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1 level, which I mentioned yesterday, at a value of
2 approximately 2600 KW, based on the long-term loading on the
3 engines being at that value, which would then be consistent
4 with the Staff SER that on a case-by-case basis the Staff
5 could give approval to exceeding the 185 BMEP, which would
6 be consistent with having a maximum load in the 3200 to 3300
7 range.

8 And that particular approach was not acceptable
9 to the Staff, and we abandoned that approach.

10 Q I understand that, but the direct answer to my
11 question is you do not know of any conversations with the
12 Staff or its consultants where the possibility of running
13 the test at a level above 3300 was discussed.

14 Is that your testimony?

15 A (Witness Youngling) No, I testified that I was
16 not involved, but I believe others from LILCO were involved
17 in discussions of that matter.

18 Q I take it the gentlemen from LILCO who are
19 involved are not sitting at that table there?

20 A (Witness Youngling) No, they are not.

21 Q I would like to stay away from hearsay as much as
22 possible. This is the last question I am going to ask in
23 this area.

24 Those gentlemen from LILCO who did participate in
25 the discussions, did any of them indicate to you that the

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1 Staff or its consultants advised that the test not be run at
2 a level higher than 3300, to the best of your knowledge and
3 what the state of your knowledge is?

4 A (Witness Youngling) No.

5 Q Thank you.

6 No further questions on that subject. I would
7 like to turn, if I may, now to the adequacy of procedures
8 and training that LILCO has developed relative to 3300 KW
9 load.

10 My first question is when did LILCO start
11 developing procedures and a training program to deal with
12 downrating the engines to a 3300 load?

13 MR. ELLIS: Objection. Irrelevant and
14 immaterial.

15 JUDGE BRENNER: Sustained.

16 BY MR. PERLIS:

17 Q Are you familiar with the letter that was sent to
18 the NRC Staff on November 19th, 1984, numbered SNRC 11047
19 (Documents distributed.)

20 A (Witness Youngling) Yes. We are familiar with
21 that letter.

22 Q You have been handed a copy of that letter, is
23 that correct?

24 A (Witness Youngling) I have a copy, yes.

25 Q I would ask you to turn to page 2 of

2 AGBbur 1 Attachment 2 to the letter, and in particular to Question
2 3.

3 Have you had a chance to read the answer to
4 Question 3?

5 MR. ELLIS: Judge Brenner, the answer to
6 Question 3, as the Board will see, goes on for about four or
7 five pages.

8 MR. PERLIS: I stand corrected.

9 BY MR. PERLIS:

10 Q In that case, just read the first two paragraphs
11 if you would.

12 MR. DYNNER: Are we going to have this bound in
13 as an exhibit so that it can be followed in the transcript?

14 MR. PERLIS: I was going to offer this as an
15 exhibit. As a matter of fact, why don't I do that now while
16 they are reading it?

17 Unfortunately, I have no idea what number we are
18 up to.

19 JUDGE BRENNER: It is up to you. I was going to
20 wait and see where your cross-examination went to see if it
21 was necessary. If you know now you are going to be asking a
22 lot of questions about this, we will certainly do that.

23 What is the situation?

24 MR. PERLIS: I was only planning on asking a few
25 questions about this, but I have no objection to it being

1 put in the record, and I think it would make the record more
2 complete if it was in there.

3 JUDGE BRENNER: Well, I am trying to make the
4 record less complete with respect to paper, albeit more
5 complete with respect to substance.

6 MR. PERLIS: In that case, I will withdraw the
7 offer of this as an exhibit.

8 JUDGE BRENNER: Why don't we see where it goes?
9 And I will make that comment to you also, Mr. Dynner.

10 Certainly, if it appears it would be an aid to
11 following the record, there is no problem in marking it for
12 identification at least.

13 BY MR. PERLIS:

14 Q I am a bit confused by the first two paragraphs,
15 and what I would like to know is: was it LILCO's position
16 that procedures and training were not needed -- or
17 additional procedures and training were not needed as a
18 result of the 3300 load change?

19 (Witness panel conferring.)

20 A (Witness Youngling) Mr. Perlis, could I have the
21 question again?

22 Q Let me restate it.

23 Was it LILCO's position, as stated in the first
24 two paragraphs of the response to Question 3 in this letter
25 that procedures and training needed to be revised as a

1 AGBbur

1 result of the change in load to 3300?

2 MR. ELLIS: I object to the question insofar as
3 it mischaracterizes what the first two paragraphs said. His
4 original question did not characterize those two
5 paragraphs.

6 JUDGE BRENNER: Forget about this whole letter.
7 Let's just take it as a direct question to the witnesses as
8 to their position.

9 MR. ELLIS: I agree with that.

10 MR. PERLIS: That is fine with me.

11 WITNESS DAWE: When this letter was written, that
12 was a statement, a factual statement, that procedures and
13 training are used or would be used to prevent operators from
14 unnecessarily loading the diesels above the qualified load.

15 That was not, to my knowledge -- and I assisted
16 in preparing this letter -- a statement that a massive new
17 procedural or massive new training program was needed. Just
18 as the tech specs needed to be changed to reflect the 3300,
19 so did the procedures and training program need to be
20 modified to reflect the 3300.

21 There were always procedures and training for the
22 operators for the operation of these diesels. Prior to this
23 the number was 35 as opposed to 33.

24 BY MR. PERLIS:

25 Q First of all, just so we are clear on this, what

1 AGBbur 1 procedures are we referring to here?

2 A (Witness Notaro) The same procedures that we
3 were referring to in this morning's testimony.

4 Q When were the procedures that you referred to
5 this morning last revised?

6 A (Witness Notaro) The latest revision date is
7 January 29th, 1985.

8 Q And before I get back to procedures, let's talk
9 about the training for a second.

10 Is it LILCO's position that additional training
11 was needed for the operators as a result of the change in
12 load to 3300?

13 A (Witness Notaro) The answer to that question is
14 yes.

15 Q Has a training program been developed?

16 A (Witness Notaro) The training program was
17 developed in January, late January.

18 Q Could you tell me generally how the procedures
19 and the training program were revised to reflect the new
20 3300 load, what steps were taken in revising them?

21 A (Witness Notaro) I am sorry, could you --

22 Q Let me try and make the question clearer.

23 Did any of you gentlemen participate in the
24 revision of the procedures or training program?

25 A (Witness Dawe) Yes.

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How did you go about determining how they should

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be revised?

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(Witness panel conferring.)

JUDGE BRENNER: Mr. Perlis, I wonder if I could make a suggestion, or at least ask you something for you to consider.

Is that really what you want to know, because that may or may not take a long explanation? Or don't you really know what you started to ask earlier, which is what changes -- what have they implemented generally with respect to procedures and the training program that gives them assurance that operators will not erroneously load the diesels over the qualified load of 3300 kw?

MR. PERLIS: That is certainly where I'm trying to get.

JUDGE BRENNER: Why don't we direct that question to the witnesses, and then if you need to back up to your earlier question, I will certainly let you.

MR. PERLIS: That's fine.

JUDGE BRENNER: Could you answer the question I just asked?

WITNESS NOTARO: The procedures were modified to add caution statements in the confines of the emergency procedures that I discussed this morning. And I believe it is important to note that in modifying these procedures, we evaluated not only the immediate actions but also subsequent actions.

1 AGBeb

1 The "immediate actions" of these procedures
2 initially is to verify that the automatic actions have
3 occurred as they should have. That would include all of the
4 loading that is contained within the MESLs. Once that has
5 been completed and the immediate actions for the concurrent
6 emergency procedures have been completed, then the operator
7 would go to the subsequent actions of those procedures, and
8 possibly into the system procedures.

9 Contained within the subsequent actions of those
10 procedures, cautions have now been added which will identify
11 for the operator the maximum load that is allowed to be on
12 the diesel prior to him starting one of the discretionary
13 loads that is called for in the subsequent action steps.

14 So it was an evaluation of the emergency
15 procedures, the system procedures, the immediate actions,
16 and the placing of caution statements as appropriate.

17 Q Could you describe--

18 I'm sorry, did you want to add something,
19 Mr. Dawe?

20 A (Witness Dawe) I would just add two things:

21 The procedures were also evaluated to be sure
22 that the steps could be taken, and the caution statements
23 were placed in at 50 kw increments, at the next lower 50,
24 which also assists the operator.

25 Q Could you describe for me how this evaluation

1 AGBeb

1 process was performed?

2 (Witness panel conferring.)

3 A (Witness Notaro) The review of the procedures
4 was essentially the responsibility of the plant staff, and
5 specifically the Operations Section within the plant staff,
6 so those engineers that are responsible for directing the
7 operation of all the equipment in the station and are
8 responsible for the development and implementation of the
9 operating procedures were responsible for reviewing
10 procedures that we had been discussing, and revising them to
11 reflect the 3300 load limit.

12 In addition, the Staff did come up and visit and
13 review those documents, and their comments have been
14 incorporated into the revisions of the procedures.

15 The procedures were reviewed by the Review of
16 Operations Committee, and we took those procedures down to
17 the Limerick simulator and tested them on the Limerick
18 simulator.

19 Q When did you take them down to the simulator?

20 A (Witness Notaro) Approximately the 30th or 31st
21 of January, the end of the month.

22 Q And who took them down to the simulator?

23 A (Witness Notaro) I did, along with the training
24 supervisor, Mr. Rottkamp.

25 Q Okay.

1 Now I believe you have testified that the most
2 recent revisions of those procedures were made some time in
3 late January. When were the cautions and the other
4 revisions that you gentlemen have talked about put into the
5 procedures? Was that also in late January, or was that at
6 some other time?

7 MR. ELLIS: Objection. Relevancy.

8 MR. PERLIS: Your Honor, if I may be allowed to
9 follow this line for a very short time I will be able to
10 demonstrate the relevance.

11 JUDGE BRENNER: Is there a reason why you can't
12 tell me now why it's relevant?

13 MR. PERLIS: There's two things. First of all,
14 the procedures and training that I believe they are talking
15 about are not the ones that were given to the Staff that
16 were used to write the Staff testimony, so I would like to
17 establish when these procedures were submitted.

18 Secondly, there is a statement in the testimony
19 where both Mr. Notaro and Mr. Youngling have testified that
20 the procedures and training give ample assurance that the
21 operators will not load the diesel generators above the
22 qualified load of 3300 kw. That statement was written
23 before the end of January when I've just been told that the
24 training program was revised, and certainly it was written
25 before the last procedural revision was made.

1 I would then like to inquire into the basis of
2 that statement.

3 MR. ELLIS: Judge Brenner, I don't have any
4 problem with either of those two points. If he would ask
5 them directly whether they were submitted prior to the
6 Staff's testimony, I would like to have that answer on the
7 record myself.

8 Secondly, with respect to his second point, I
9 would be delighted to have him ask that directly as well.

10 JUDGE BRENNER: Since there appears to be
11 uncommon agreement here, given the fact that the predicate
12 was an objection, why don't we proceed that way?

13 Back up, and I think perhaps you can get at these
14 more directly, Mr. Perlis.

15 MR. PERLIS: Let me ask it directly then.

16 BY MR. PERLIS:

17 Q Are the revisions to the procedures that you're
18 talking about, that you were talking about to Mr. Dynner
19 yesterday that you were relying upon for safe operation of
20 the plant, were those revisions made after your testimony
21 was filed on January 15th?

22 A (Witness Dawe) Some of them, that's the case. I
23 would have to go back and make a line-by-line comparison.

24 Part of our errata was to change the revision
25 number in our testimony. The procedures that are in our

1 testimony, my recollection is that they were submitted four
2 or five days before the Staff -- maybe as much as a week
3 before the Staff filed its testimony, to the Staff.

4 In either case, our testimony is accurate because
5 we believe that was true about both sets of procedures and
6 believe the difference is mainly in form. For example, the
7 earlier procedures had the caution statements but my
8 recollection is the caution statements in some cases were
9 generic, beginning a series of steps, and much of it I think
10 is subjective.

11 But in response to some of the Staff review
12 comments the cautions were taken from being generic in front
13 of a series of action statements and a specific caution
14 statement was written for each action statement. And the
15 caution previously, rather than specifying the value above
16 which the diesel could not be indicating to add the new
17 component, relied on the value in the table, and we
18 eliminated that mental calculation by the operator.

19 But the testimony is true for either set of
20 procedures, in our mind, but it is now based on the latest
21 set of procedures.

22 Q Well, what training were you talking about?

23 And I would like to direct this to Mr. Notaro and
24 Mr. Youngling, and then you can answer later, Mr. Dawe, but
25 only because they are the two that sponsored this answer in

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1 the testimony. And this is on page 24, your answer to
2 question number 20 where, in the first sentence of that
3 response, it is stated:

4 "The procedures and training give ample
5 assurance that the operators will not load the
6 diesel generators above the qualified load of
7 3300 kw."

8 And my question, specifically referring now to
9 the training, is:

10 Have there been any revisions to the training
11 made before this testimony was filed to reflect the change
12 in load, the 3300 kw?

13 A (Witness Notaro) The answer to your question is
14 we stand by this testimony because we had instituted
15 training in the form of required reading that addressed the
16 3300 load and that we had every intention and had indicated
17 that a formal classroom session training associated with the
18 3300 was to be developed and implemented during the normal
19 requalification schedule that operators have to participate
20 in. So that training had initiated and was going to proceed
21 forward, as will training at the simulator during the course
22 of requalification training for licensed operators.

23 Q Had you developed lesson plans for that training
24 at that time?

25 A (Witness Notaro) At that time, as I have just

1 stated, training based upon required reading, and that the
2 lesson plan, the formally structured lesson plan was to be
3 developed.

4 Q Would you agree as a general rule that a formally
5 structured lesson plan is needed for adequate training?

6 A (Witness Notaro) I believe that required
7 reading, as is stated in our FSAR, is an acceptable method
8 for conducting training, as is also a crew meeting, a shift
9 meeting, a section meeting, and formal classroom training
10 and simulator training.

11 Q I don't think that answers my question.

12 Is your statement then no, you do not believe a
13 formal lesson plan is necessary in order to develop adequate
14 training?

15 A (Witness Notaro) My answer is that we initiated
16 training by an acceptable method, and we had every intention
17 of developing a formal lesson plan to be conducted in a
18 classroom structure, but that the training for that 3300 was
19 initiated using the required reading technique.

20 Q Has LILCO now developed lesson plans for this
21 training?

22 A (Witness Notaro) Yes, a lesson plan has been
23 developed.

24 Q Has LILCO developed a task analysis for actions
25 to be taken by operators with respect to the qualified load

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1 rating?

2 MR. ELLIS: Objection. This is beyond the scope
3 of the contention. There is nothing in the contention about
4 a task analysis.

5 MR. PERLIS: Your Honor, if I may, there is
6 something in the contention and something in the testimony
7 about adequate procedures and training, and I think a task
8 analysis is a part of adequate training.

9 JUDGE BRENNER: I don't even know what it is, but
10 I'll give you the benefit of the doubt, that you want to
11 explore it as part of training.

12 WITNESS NOTARO: I'm sorry, could you please
13 repeat the question?

14 JUDGE BRENNER: The objection is overruled.

15 MR. PERLIS: Yes.

16 BY MR. PERLIS:

17 Q Has LILCO developed a task analysis for actions
18 to be taken by operators with respect to the 3300 load?

19 A (Witness Notaro) LILCO has conducted a job
20 analysis. That job analysis I believe has been submitted to
21 the Staff. We have not, at the time of the job analysis,
22 completed a task analysis and one of the basis for not
23 completing that task analysis is that there were no meter
24 indication changes, light indication changes, control switch
25 indications or position changes such that a task analysis

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1 was not required.

2 We did complete the job analysis and to the best
3 of my knowledge, that job analysis was submitted to the
4 Staff.

5 Q Do you recall when that might have been submitted
6 to the Staff? An approximate time is fine.

7 A (Witness Notaro) I believe the end of the month.

8 Q This is of January?

9 A (Witness Notaro) Yes, the end of January. I
10 believe that was the date. I'm not sure.

11 Q Do I take it from your testimony then--

12 I'm sorry, Mr. Youngling, did you want to add
13 something?

14 A (Witness Youngling) Yes, I wanted to add that as
15 Mr. Notaro has pointed out, there have been no changes in
16 the implementing tools, that is, the position switches, the
17 meter indications, and so forth.

18 As the Staff is also aware, we are committed to
19 do a long-term design review for the Shoreham control room
20 and the diesel generators will be considered in part of that
21 review just as they were going to be before.

22 Q Let me first ask you is it then your testimony
23 that you do not intend to develop a task analysis?

24 JUDGE BRENNER: I guess since you've asked about
25 it again I had better find out what a task analysis is.

1 Can one of the witnesses enlighten me?
2 hope it's simple. If it is complicated, I am then going to
3 ask a little more about why it's pertinent.

4 WITNESS NOTARO: If I may attempt to simplify it,
5 it is something like a time-motion study where the actions
6 that the operator is supposed to take are evaluated,
7 predicated on what the procedures require him to do, where
8 the instrumentation is located for him to perform that
9 action, whether or not a switch movement relative to a meter
10 indication relative to an enunciator going off, within that
11 scope can the operator adequately perform what is being
12 required of him to perform in the procedure.

13 MR. ELLIS: Judge Brenner, with that definition
14 on the record, I think I will renew my objection to this
15 line of inquiry because I think it is clearly irrelevant and
16 immaterial under the circumstances. The LILCO control room
17 has been reviewed under this criterion for everything else
18 in the past. It was part of a settlement.

19 In addition, the human-factors contention on this
20 and what we're talking about here are cautions inserted in
21 emergency operating procedures for the purpose of giving
22 assurance that operators will not inadvertently exceed the
23 3300 load. And therefore, I think the questions about the
24 task analysis are irrelevant to this contention.

25 MR. DYNNER: If I may be heard on this?

1 JUDGE BRENNER: I am going to overrule the
2 objection. Does that help save you some trouble?

3 MR. DYNNER: It certainly does. Thank you.

4 JUDGE BRENNER: We will overrule it, maybe on the
5 merits. Your witnesses have stated and might continue to
6 state why they don't believe a task analysis or studies like
7 that is necessary. And your testimony was very eloquent
8 also, Mr. Ellis. But that doesn't make it irrelevant to
9 questions going towards training and procedures.

10 MR. ELLIS: I appreciate the comment. Mine was
11 not intended as testimony; mine was intended as argument,
12 which I don't think was anything further than what the
13 witnesses had indicated.

14 JUDGE BRENNER: I agree with you on that last
15 point. The only reason I put it the way I did is to
16 emphasize that it is something we can evaluate on the
17 merits.

18 BY MR. PERLIS:

19 Q Let me ask this question:

20 Is it fair to say that a task analysis includes a
21 systematic evaluation of operator actions required to
22 accomplish specified actions over various periods of time as
23 an event takes place?

24

25

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1 A (Witness Notaro) I don't disagree with that
2 statement.

3 Q And just so the record is clear, this was the
4 question I asked before the objection:

5 Is it your testimony that LILCO does not intend
6 to develop such a task analysis for the emergency diesel
7 generators?

8 A (Witness Youngling) Mr. Perlis, LILCO will do a
9 job and task analysis; however not at this time. It will be
10 done as part of the formal long-term control room design
11 review.

12 What is in the control room now is no different
13 than what has been in the control room in the past, and the
14 procedures that are in place are the same procedures that we
15 would have used in the past to operate the diesel generators
16 at the different load ratings. And they work.

17 Q I'd like to shift focus, if I may now, to another
18 area. This morning you testified to certain procedures
19 that would be used in the event of a LOOP/LOCA, and I
20 believe you identified the loss of offsite power procedure,
21 the emergency shutdown procedure and the level control
22 procedure.

23 My first question is: Should you also have
24 included the containment control procedure in your answer,
25 and, if not, why not?

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1 A (Witness Notaro) The containment control
2 procedure would be utilized if any one of the entry
3 conditions required for it are approached or exceeded,
4 namely if the suppression pool were to exceed 90 degrees or
5 the drywell temperature were to exceed 145 degrees or if the
6 drywell pressure were to exceed 1.69 pounds or if the
7 suppression pool level either went to plus-six inches or
8 minus-six inches.

9 If one of those conditions arose as a result of
10 this LOOP/LOCA then the operator would also implement the
11 containment control procedure.

12 Q Okay.

13 JUDGE BRENNER: Excuse me. Did I miss something
14 this morning? Isn't that the very procedure you added this
15 morning?

16 WITNESS NOTARO: I started by adding that
17 procedure this morning.

18 I believe what Mr. Perlis was referring to was
19 when we went through the scenario for implementation on a
20 LOOP/LOCA.

21 JUDGE BRENNER: Thank you.

22 BY MR. PERLIS:

23 Q I would like to ask you a few questions about the
24 specific containment control procedure. I would be happy to
25 hand out a copy if you need it.

(Distributing documents.)

Let me first ask a preliminary question. I have just handed out a document entitled Containment Control Emergency Procedure, SP Number 29.023.03, Revision 9, Effective Date -- I believe that's January 29th as opposed to 28th, 1985.

Let me first ask: Is that the most recent revision of the Containment Control Emergency Procedure?

A (Witness Notaro) Yes, sir, it is.

Q Could you point out in this procedure what specific provisions have been put in to keep the operators from taking actions that might cause the EDG load to exceed 3300 Kw?

A (Witness Notaro) On page two of this procedure a caution has been added that is indicated by the revision nine in the right-hand part of the page that states:

"Do not start an RHR pump if the associated emergency diesel generator load is above 2250 Kw."

On page six of this procedure, the second caution down from the top:

"Do not start a post-LOCA hydrogen recombiner if the associated emergency diesel generator load is above 3150 Kw."

The third caution down from the top:

"Do not start an MSIV leakage control

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1 subsystem if the associated emergency diesel
2 generator load is above 3250 Kw."

3 I believe those are all the changes.

4 (Witness panel conferring.)

5 Q Is that the complete list of cautions in this
6 procedure?

7 A (Witness Notaro) I believe I said that was all
8 the changes.

9 Q Thank you.

10 JUDGE BRENNER: Mr. Notaro, does the copy of the
11 procedure that is in the control room look the same as this;
12 that is, all black writing on white paper?

13 WITNESS NOTARO: Yes, Judge.

14 BY MR. PERLIS:

15 Q I have no other questions on this procedure right
16 now.

17 JUDGE BRENNER: Are you still asking questions
18 about procedures?

19 MR. PERLIS: I have a few more.

20 BY MR. PERLIS:

21 Q Gentlemen, earlier this afternoon, before we
22 convened, I gave you copies of a February 5th letter,
23 Request for Additional Information that the NRC Staff sent
24 to LILCO.

25 MR. PERLIS: Judge Brenner, we are proposing to

1 AGBmpb

1 put this letter in along with Mr. Clifford's testimony, so I
2 won't be offering it as an exhibit right now. We will be
3 putting it in the record later.

4 JUDGE BRENNER: Did you tell the parties that
5 that was part of your testimony?

6 MR. PERLIS: I told them after the luncheon
7 break, yes, we would be offering it as part of our
8 testimony. It is referenced in Mr. Clifford's testimony.

9 BY MR. PERLIS:

10 Q In the portion entitled Request for Additional
11 Information, Shoreham Nuclear Power Plant, Emergency Diesel
12 Generator Loadings -

13 A (Witness Notaro) I'm sorry, could you tell me
14 where it is you are reading from?

15 Q Yes, it is the attachment to the letter from
16 Mr. Schwencer which starts on the first page immediately
17 following that letter.

18 I would like to refer you to question 1C under
19 the heading "General", and that question is:

20 "What evaluations have been performed to
21 determine the operators' capacity to manage the
22 necessary procedures, including correctly
23 prioritizing procedures and actions?"

24 I would like you to answer that question,
25 please.

1 A (Witness Notaro) The answer to that question is
2 that we have conducted a job analysis of the procedures in
3 question. That job analysis, as I stated, I believe has
4 been submitted to the Staff. And we brought those
5 procedures -- the training supervisor, Mr. Rottkamp, and
6 myself -- to the Limerick simulator to review their
7 application in a simulated fashion.

8 In addition to that I would like to add that
9 these procedures again are the same procedures that have
10 been in place for some time, that the operators have been
11 dealing with for some time; and that the additions are the
12 inclusion of the appropriate caution statements that reflect
13 the 3300 loading.

14 JUDGE BRENNER: Mr. Notaro, are you saying that
15 those evaluations -- for example running the procedures on
16 the Limerick simulator -- were performed prior to the
17 revisions that added the caution statements?

18 WITNESS NOTARO: The conduct of the procedures at
19 the simulator by Mr. Rottkamp and myself included the new
20 caution statements. The operator training that has been
21 going on for years now included the procedures as they
22 existed so that the operator familiarity with implementation
23 of this group of procedures is not one that is new or that
24 has changed significantly as a result of this 3300 load
25 limit.

BY MR. PERLIS:

Q Just out of curiosity, do you intend on doing any simulator training with respect to the 3300 EDG loads with any of the other operators who did not go down to the Limerick simulator?

A (Witness Notaro) Absolutely. As part of the normal operator requalification program that every licensed operator at Shoreham is required to complete, each of our licensed operators will go to the Limerick simulator a minimum of two times every year.

This simulator training will be initiated in the first quarter of '85 for the first crew, and training on the simulator relative to the 3300 caution statements which have been added will be conducted for all operators who hold their license at Shoreham.

Q All right. I would like to turn your attention now to page 2 of the request for additional information.

JUDGE BRENNER: Mr. Perlis, if you are just going to ask questions --

MR. PERLIS: A very few more.

JUDGE BRENNER: You didn't let me finish my thought. I wasn't going to tell you you are asking too many.

Why don't you just ask the question? I don't have to refer to a letter from somebody to somebody which

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1 has no status, as far as I am concerned, just because a
2 question was asked in it.

3 BY MR. PERLIS:

4 Q What means are provided to allow the operators to
5 determine priority loads and to keep track of which loads
6 are stopped and which ones are running?

7 A (Witness Notaro) Could you please tell me where
8 you are?

9 JUDGE BRENNER: I give up.

10 MR. PERLIS: It is Question No. 2 on page 2 of
11 the RAI.

12 JUDGE BRENNER: Let me indicate, when we get to
13 the Staff's testimony I am going to ask you what factual
14 information in the way of affirmative testimony is in this
15 letter. So you might think about that.

16 MR. PERLIS: Judge Brenner, we will think about
17 that.

18 I just want to make clear that this letter -- our
19 testimony is based upon procedures which were subsequently
20 revised.

21 JUDGE BRENNER: There is a dispute about that,
22 and we have got the record, and I don't know if I care.

23 WITNESS NOTARO: To respond to your question,
24 Mr. Perlis, the procedure prior to the revision had a
25 different table in the back which listed all loads. That

1 AGBbur 1 table has been deleted and a new table now exists.

2 That new table lists only loads which by design
3 do not start. In addition, the procedure itself now gives a
4 priority listing for the loads that are required. The loads
5 which are off are not needed.

6 BY MR. PERLIS:

7 Q How is he supposed to manage for loads which he
8 turns off, just the parameters that might tell him to later
9 turn it back on?

10 A (Witness Notaro) If he were to take a piece of
11 equipment off of import -- example, if he were to shut off a
12 core spray pump, he would have a white light indicated on
13 the main control board in the area of the core spray
14 system. That light would be indicating to him that he has
15 taken off a piece of equipment which had received an auto
16 signal to start predicated on the LOCA and that he has taken
17 manual action to override that start signal, thereby having
18 to know that for it to restart he would have to take manual
19 action again.

20 Another example is to override signals on the
21 service water system, which would also be indicated by a
22 white light on the main control room saying that the
23 operator has in fact taken a manual action.

24 In addition to that, the operator is required to
25 log all significant events, and this obviously would be

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1 considered a significant event, in the control room log, so
2 that he has a record of the actions that he has taken.

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1 Q How long after an action is taken would that
2 action be noted in a log? What's the lead time before it
3 would be written down?

4 A (Witness Notaro) Which action are you asking me
5 for?

6 Q I believe you just testified about actions related
7 to operating equipment, both turning off and turning on
8 certain pieces of equipment. Those actions would be logged
9 down someplace. What's the time frame for logging them?

10 A (Witness Notaro) The actions that I just referred
11 to would have automatic indication on the control boards.
12 In addition, he would be required to put them in the log.

13 As I testified this morning, we are talking about
14 not an individual operator but a crew, a team effort. We're
15 talking about operators who have very defined
16 responsibilities for implementing specific actions, we're
17 talking about supervisors who are specifically responsible
18 for assuring that the operators are implementing properly.
19 We have a shift technical advisor who is sitting there to
20 monitor and to make recommendations. And we have the watch
21 engineer also in this condition obviously functioning as the
22 emergency director.

23 So the requirements for documentation are not ones
24 that would be dissipated or fall through the cracks, if you
25 will; it's something that would be monitored, identified and

1 AGBwrb 1 logged properly.

2 Also, in this condition we would be under a
3 requirement to notify the NRC within one hour. The
4 information contained, or developed from the scenario would
5 be tracked very, very closely and, in my opinion, very
6 quickly.

7 Q I hate to push you further than that, but can you
8 give me a rough estimate as to how long it would take once
9 an action is made, for that action to be noted in the logs?
10 Are you talking about immediate jotting down in the log
11 books? Is this something that they have to do every so
12 often?

13 A (Witness Notaro) I would bound that number at 15
14 minutes. And the reason I would bound it at 15 minutes is
15 predicated on the requirement for notification of offsite
16 agencies in the event of an emergency, and once that
17 emergency has been classified there is only 15 minutes
18 within which we have to respond to certain groups.

19 So that information would certainly be recorded in
20 that time frame.

21 Q Am I correct that manual loading and unloading
22 actions would be taking place, if they take place, outside
23 of the control room?

24 MR. ELLIS: Objection, again as to relevancy.
25 There's no showing anywhere that any of the changes have

1 anything to do with an operator doing something different
2 from what he would ordinarily do.

3 JUDGE BRENNER: I'm going to overrule the
4 objection. It is relevant to the contention that operators
5 may erroneously start additional equipment, to find out
6 where such additional equipment may erroneously be started.

7 WITNESS NOTARO: A field operator would not go
8 around and start equipment without direction to do so from
9 the control room. Therefore, I believe the answer to your
10 question is that someone within the operating group who is
11 not in the main control room would not be out in the plant
12 overloading the diesel generators.

13 BY MR. PERLIS:

14 Q And the control room operator would have in front
15 of him enough knowledge to know what loads are on the
16 machine at any given time, and what loads are not on the
17 machine at any given time?

18 A (Witness Notaro) He has, as has been testified
19 to, the cumulative, or aggregate loading on each diesel in
20 the main control room available to him.

21 In addition, he has the major equipment that would
22 make up that cumulative load in front of him in the main
23 control room.

24 So the answer is, He would know.

25 Q Thank you.

1 MR. PERLIS: I have no further cross-examination
2 of these witnesses.

3 JUDGE BRENNER: We'll ask our questions now prior
4 to redirect.

5 Judge Morris.

6 JUDGE MORRIS: Give me just a moment to review my
7 notes.

8 (Pause.)

9 EXAMINATION BY THE BOARD

10 BY JUDGE FERGUSON:

11 Q Perhaps I can start by asking a few questions that
12 occurred to me as I heard testimony this morning. Perhaps I
13 will start with what we have just heard, and that was
14 testimony from you, Mr. Notaro.

15 Based on the testimony, I see that your
16 responsibilities include the formulation and implementation
17 of training programs for all Shoreham personnel; is that
18 correct?

19 A (Witness Notaro) At one point in time, Judge
20 Ferguson, I was responsible for that. I am no longer
21 responsible for that.

22 Q You're no longer responsible; but you are familiar
23 with the training programs, as you testified today, are you
24 not?

25 A (Witness Notaro) Yes, I am.

1 Q The question I would have about the training
2 programs I think is rather straightforward and simple.

3 I believe you told us about the simulated
4 training, you told us that there was certain required
5 reading that you thought was important in training, and so
6 forth. But after personnel have completed the things that
7 you thought were important for proper training, who, in
8 fact, certifies that they have done that correctly or
9 satisfactorily?

10 A (Witness Notaro) That is actually a two-fold
11 process. The training organization is responsible for
12 certifying, if you will, that the training has been
13 conducted properly and satisfactorily completed. In
14 addition, through the course of the required requalification
15 training program for the operators, testing may also be done
16 by the NRC itself.

17 Q You say it "may be done?"

18 A (Witness Notaro) After the initial co-license
19 examination program, then the Staff comes out and does
20 reviews and evaluations of the requalification program
21 itself. And that's done on an annual basis.

22 Q That has to do with requalification, is that
23 correct?

24 A (Witness Notaro) That's requalification training
25 of previously licensed operators.

1 In addition to that, there is the internal
2 QA program within the utility itself, and the Nuclear Review
3 Board that also evaluates the training programs.

4 But to be specific to your question, the training
5 organization per se has responsibility for saying that an
6 individual has satisfactorily completed training.

7 Q This training organization that you just referred
8 to, is that a LILCO organization?

9 A (Witness Notaro) Yes, sir, it is.

10 Q Are there any outside reviewers involved in
11 certification at that point?

12 A (Witness Notaro) Outside from training in terms
13 of the Nuclear Review Board and the quality assurance
14 organizations?

15 Q Had you finished?

16 A (Witness Notaro) Yes, sir, I am.

17 Q There are not persons outside of those two; was
18 that your statement?

19 A (Witness Notaro) That's correct.

20 I may add that we have had an individual
21 organization, we use the general physics simulator. So they
22 are part of the evaluation process and an independent
23 consultant who comes in and evaluates the examination
24 process, the questions, the responses to the questions, the
25 grading. So there are at least four or five external

1 organizations in addition to the Staff evaluation of the
2 training organization doing the training of the licensed
3 operators.

4 Q Well, that's the point I'd like to be sure we got
5 in the record, namely, that not only do we spend a lot of
6 time developing a training program, there are independent
7 reviewers to be certain that that training is, in fact,
8 certified by disinterested individuals. And your testimony
9 is that that is true, based on what you have just said; is
10 that correct?

11 A (Witness Notaro) That's absolutely correct, sir.

12 A (Witness Youngling) Judge Ferguson, I'd like to
13 add that on the Nuclear Review Board we do have expertise
14 familiar with nuclear training; in fact, this gentleman has
15 been in training since I've know him in the late sixties:
16 he has always been involved in training; if not longer than
17 that. So he has considerable background in nuclear
18 training.

19 Q Well, my point wasn't so much the length of time,
20 but the fact that they were independent.

21 A (Witness Youngling) Yes. And he is an
22 independent consultant of the Nuclear Review Board, an
23 outside consultant.

24 Q Following that with another line of questioning
25 that has to do with certification: Earlier today we spoke,

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1 or talked about a kilowatt meter on the control panel, a
2 watt meter I think we called it. And I think you,
3 Mr. Youngling, indicated that that watt meter was
4 calibrated. And I think your testimony indicates that in
5 fact that particular watt meter for EDG-102 was calibrated
6 at least four times since October of '82. And I believe you
7 said this morning that the way that's calibrated is that you
8 compare it against a standard; is that correct?

9 A (Witness Youngling) Yes, sir.

10 Q Could you tell me a little bit about that
11 standard; that is to say, how do you know it's a standard;
12 how do you convince yourself that in fact is is a standard?

13 A (Witness Youngling) The standard is a field
14 standard. It is a multi-amp device. I don't remember the
15 model number.

16 Q Maybe we can short circuit that.

17 I assume it's another meter of some kind.

18 A (Witness Youngling) Yes, sir, it is.

19 Q And my question is, What confidence can we have in
20 that meter?

21 A (Witness Youngling) I was going to get to the
22 point that the standard is calibrated and is traceable to
23 NBS, as are all our standards in the plant.

24 Q Sticking with you, Mr. Youngling, just for a
25 moment, I want to try to understand just a little better.

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1 The auxiliary instrumentation circuit that you
2 indicated contained, I believe you said a watt-hour meter
3 together with a process computer. And it was this auxiliary
4 instrumentation loop that gave you the most accurate
5 readings of the EDG loads.

6 Is that a correct understanding?

7 A (Witness Youngling) Yes, that loop consisted of
8 the instrumentation that you mentioned. Its accuracy, of
9 all the loops that we've used to measure the diesels, is the
10 highest degree of accuracy; yes.

11 Q Did I correctly state what you stated, namely,
12 that that particular loop contained a watt-hour meter?

13 A (Witness Youngling) Yes, it's a watt-hour meter,
14 very similar to what you have in your house.

15 Q And was it by some procedure through your computer
16 programming that you were able to convert that to a reading
17 that you could compare to the watt meter on a control panel?

18 A (Witness Youngling) Yes; basically the watt-hour
19 meter is equipped with a digital pulse output which we can
20 then put into a subroutine that is run in the process
21 computer, and we can count the pulses over a period of time
22 and come up with the kilowatt loading over a defined period
23 of time, and, therefore, the kilowatt load.

24 Q You have used the words "process computer" a
25 number of times. Tell me just a word about what you mean by

1 a process computer.

2 A (Witness Youngling) The plant has a number of
3 computers. One of the computers is called the process
4 computer. It's used to monitor the nuclear process, to
5 provide alarms, and it has additional capability which we
6 used in this particular case.

7 Q I understand. Let me ask a very simple question.

8 Why did you choose to go that route, namely, to
9 some way differentiate, if I may use that word, watt-hours
10 into watts?

11 A (Witness Youngling) Into what? I'm sorry.

12 Q You're comparing by a computer procedure
13 watt-hours with watts; right? You're taking the watt-hour
14 meter reading, and somehow you're changing that to a watt
15 reading; is that correct?

16 A (Witness Youngling) Yes.

17 Q I guess my question is, Why do you choose to go
18 that way?

19 A (Witness Youngling) What we're trying to do is to
20 provide the operator an output in kilowatts; okay? Whereas
21 the watt-hour meter is an integrated amount of kilowatts
22 produced.

23 Q I understand that.

24 A (Witness Youngling) All we're doing is doing a
25 simple division process and providing him with a mean value

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1 over a defined period of time; in this particular case it's
2 three minutes.

3 Q I think I understand that.

4 But, again, my question that I do not think you've
5 answered yet, is: Why did you decide to measure this, or
6 use in your auxiliary instrument loop a watt-hour meter?

7 A (Witness Youngling) I'm sorry. The watt-hour
8 meter, in our search for as accurate an instrument as
9 possible to use during the pre-op program, was selected as
10 the best device that we could use to measure the diesel
11 generator load.

12 During the pre-op test program we had some
13 extremely tight tolerances on the testing, especially at the
14 3900 level. And, therefore, we wanted to go out and come
15 up with the most accurate device that we could for that
16 special testing.

17 Q And you're saying, in effect, that a watt-hour
18 meter is more accurate than a watt meter; is that what
19 you're saying?

20 A (Witness Youngling) No; what I'm saying is, the
21 application of the watt-hour meter in the loop that we chose
22 to use it in produced a more accurate loop than the panel
23 meter, which is the normal operating instrumentation on the
24 diesel.

25 However, the watt-hour meter special test loop

1 AGBwrb 1 would not be suitable for normal plant operation because it
2 is not seismically qualified.

3 Q Well, that's another matter that I don't think we
4 need to get into.

5 It still is eluding me, why the watt-hour meter.

6 You have made the statement that in the auxiliary
7 instrument loop that's the most accurate meter that you
8 found to use. And I still don't understand why.

9 A (Witness Youngling) The watt-hour meter uses as
10 its input CTs and PTs, potential transformers and current
11 transformers. So the watt-hour meter uses these input
12 devices. So does the panel meter.

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1 The panel meter then takes those inputs to a
2 transducer which is very accurate also, but then it puts it
3 into a 2 percent gauge indicator on the control board. Once
4 you put it in the 2 percent gauge, the accuracy of your
5 output starts to diminish.

6 The special test loop using the watt-hour meter
7 uses those accurate PTs and CTs. Of course the watt-hour
8 meter itself is a very accurate device. And then we use the
9 process computer to count the pulses, and the process
10 computer is very accurate and therefore, we have a very
11 accurate loop.

12 Q I won't pursue that any further at this time,
13 Mr. Youngling, but I would like to go to the watt meter on
14 the control panel, the one where you measure the 3300
15 kilowatts.

16 Would you help me understand about this bouncing
17 you mentioned this morning? Would it be proper to call that
18 an oscillation of the indicator on the meter?

19 A (Witness Youngling) Yes, sir.

20 Q Okay.

21 Could you tell me what rate this indicator on the
22 meter is oscillating at?

23 A (Witness Youngling) It is oscillating at the
24 frequency of the firing of the engine. That's 3.75 hertz.

25 Q Is it that frequency that we see-- Is that the

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1 frequency that determines the outer limits on the error in
2 the meter reading? Is that the 50 or 70 kw that we've been
3 talking out, or is it something different?

4 A (Witness Youngling) No, it is independent. The
5 limits of accuracy of the meter, the 2 percent of full-scale
6 accuracy of the meter is inherent in the meter design and
7 manufacture.

8 Q I understood that but what-- At least in my mind
9 I am looking at a meter and I see the needle bouncing or
10 oscillating, and what I'm trying to clarify now in my
11 thinking is whether or not the range over which that meter
12 is oscillating is the 50 or 70 kilowatts caused by the 2.75
13 -- 3.75 -- I'm sorry -- cycle pulsing that you just referred
14 to, or is it something else that we should be thinking
15 about?

16 Is my confusion clear?

17 A (Witness Youngling) Our calibrations of the
18 meter have shown us that the meter is accurate to a level of
19 plus or minus 60 to 70 kw. It just so happens that the
20 amount of oscillation due to the firing of the engine is
21 approximately 60 to 100 kw. The numbers are very similar
22 but they are independent processes. They are independent of
23 one another.

24 Q I see.

25 So there is an uncertainty in the actual load of,

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1 say, 50 or 70 kilowatts and then, on top of that, there
2 could be an oscillation around that error -- Is that what
3 you are saying? -- due to the pulsation of the engine?

4 A (Witness Youngling) The pulsation does not lead
5 to an error, in my judgment. The pulsation results in a
6 mean value which is the power output of the engine. It is
7 basically in a sine wave, if you will, but has a mean value.

8 So I would say no, I don't agree with you.

9 Q All right. Let me make this statement and see if
10 you will agree with it.

11 Let me assume that at some particular point the
12 engine is loaded to 3,000 kilowatts and there is no
13 fluctuation that is in the load. The load is not changing,
14 and it is continuously putting out a steady 3,000 kilowatts.

15 If I looked at the meter on the panel I would
16 then see the needle on the panel oscillating around 3,000
17 kilowatts, plus or minus 70 or 100, you say. Is that
18 correct?

19 A (Witness Youngling) Yes, plus or minus 60 to
20 100, yes.

21 Again, Judge Ferguson, that is only if it is
22 connected to the grid during the surveillance testing.

23 Q I see.

24 Just to make sure I have the correct picture in
25 my mind, as I'm looking at that meter do I actually see a

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1 blurred needle or do I see a clear needle moving back and
2 forth every third of a second or something of that kind?

3 A (Witness Youngling) I have observed the
4 indicator, and you see a clear needle moving. You don't see
5 a blur.

6 Q I see.

7 JUDGE FERGUSON: I have nothing further right
8 now, Judge Brenner.

9 JUDGE BRENNER: We have probably got
10 approximately 20 minutes more of questions from the Board so
11 we will take a break at this time, and come back at 3:35.

12 (Recess.)

13 JUDGE BRENNER: Back on the record.

14 JUDGE MORRIS: Gentlemen, I just have a couple of
15 questions.

16 BY JUDGE MORRIS:

17 Q One, I would like to understand how the operator
18 controls the load on the diesels within plus or minus 100?
19 For example, does he have one foot on the accelerator and
20 another foot on the steering wheel, or how is that done?

21 A (Witness Notaro) He has a governor control
22 switch, Judge Morris, and by turning that switch to the
23 "raise" or the "lower" position, either left or right, he
24 can adjust the loading on the engine.

25 Q And how often does he look at the watt meter?

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1 A (Witness Notaro) Fro which situation, Judge?

2 Q Let's take the surveillance test first.

3 A (Witness Notaro) That would be a continuous
4 observation of that load meter. For the conduct of the test
5 he would be positioned in front of that load meter so he
6 would always be observing what the condition of the engine
7 was in terms of what that load meter was reading.

8 Q I assume he does something else other than just
9 stare at the meter.

10 A (Witness Notaro) He would be evaluating all the
11 parameters on that engine based upon all the instrumentation
12 that was available to him: rpm, frequency, voltage,
13 indication of breaker position, amperage, as well as the
14 load on the watt meter.

15 Q During an incident when the load is changing, or
16 at least it changes at some times, what is his action at
17 that time?

18 A (Witness Notaro) As I said this morning, and let
19 me reiterate just a little bit on it, the operators would be
20 functioning as a crew. The operator with the responsibility
21 for verifying the AC distribution would be evaluating the
22 condition of the engine on the loading.

23 Q I understand during the first ten minutes or so.
24 Let's go beyond that.

25 A (Witness Notaro) The operator, by his training

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1 and his qualification, is always required to continuously
2 evaluate all instrumentation for associated equipment that
3 was operating. Any evaluation based upon changes or
4 changing conditions is not something that would be done
5 unilaterally without the knowledge of the other people on
6 that team.

7 The operator are a cohesive unit. They function
8 as a team, as a crew. The command control function as a
9 basis from the watt engineer assures that this group
10 functions as a team, and the operator, by his training and
11 qualifications, would always go back and continuously
12 evaluate what was happening not only to the diesels but to
13 all of the appropriate equipment that was required to
14 mitigate any abnormal condition.

15 So the answer to your question is that they will
16 continuously be evaluating what those meter reading
17 indications are.

18 Q On a different subject, namely the February 5th
19 letter from Mr. Schwencer to Mr. Leonard, you may have told
20 us already but I would like maybe to repeat a summary of
21 where does LILCO stand in answering this letter?

22 A (Witness Notaro) That response is currently
23 going together formally by letter. The information in terms
24 of the revision and the modifications to those procedures
25 was submitted to the Staff previously.

1 Again the information that is contained in those
2 revisions in our opinion is more format than content or
3 substantial change. The indication for the cautions are
4 given in the emergency procedure to function as a guide to
5 the operators. The information is not really required in
6 our opinion as we have modified it. It is more to address
7 the Staff concerns.

8 That information is going to be submitted either
9 by the end of this week or early next week, to the best of
10 my knowledge right now.

11 Q Does that depend on your availability?

12 A (Witness Notaro) To some extent, Judge.

13 Q Is it LILCO's position that they will be
14 completely responsible to everything in this letter?

15 A (Witness Notaro) It is our opinion that we have
16 been very responsive to the requirements requested of this
17 letter. There are interpretations that obviously I cannot
18 answer based upon the Staff review, but it is our position
19 that we have been very responsive to the requests that have
20 been made in this letter.

21 Q Is it true that nothing has been identified where
22 there is a difference of opinion?

23 A (Witness Notaro) There is a difference of
24 opinion, Judge Morris, on the task analysis. And to
25 reiterate, it was our position that a job analysis be

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1 performed, and we did perform the job analysis.

2 And it was also our opinion that the task
3 analysis piece of that was not required at this time because
4 the information that was contained in the changes to the
5 format, the caution statement that provided only redundant
6 information, did not really change any of the meters or the
7 switches or the indicating lights such that the equipment
8 that has always been there, the equipment that the operator
9 has always been trained on, always been responsible to
10 operate, has not in fact changed.

11 Therefore,--

12 Q Excuse me. In fact, his task has not changed.
13 Is that correct?

14 A (Witness Notaro) In our opinion, his task has
15 not changed at all.

16 And additionally, we have to perform complete
17 0700 review of the control room and during that timeframe,
18 the diesels will be included as part of that review.

19 Q Are there any other items?

20 A (Witness Youngling) Yes, Judge. Let me just add
21 something to Mr. Notaro's testimony.

22 The 0700 that he was referring to is the NUREG
23 0700 detailed control room design review. Also another
24 item of discussion with the Staff deals with some procedural
25 formatting changes, but there is not an unwillingness to

1 make those changes once we understand what they are, and so
2 forth. We are in a dialogue on that.

3 Q Anything else?

4 A (Witness Youngling) No. No, there is nothing
5 else, Judge, that we are aware of.

6 A (Witness Notaro) That we're aware of.

7 Q Could you briefly describe the difference between
8 a job analysis and a task analysis?

9 A (Witness Notaro) The job analysis, Judge Morris,
10 was conducted by means of placing the procedures that the
11 operator would be required to go through and to evaluate the
12 steps in those procedures that the operator would be
13 required to accomplish, and evaluate the effectiveness or
14 the capability of the operator to perform those steps
15 required in those procedures. That was in fact done.

16 Q And that's a judgment of somebody by reading the
17 procedure?

18 A (Witness Notaro) That was an evaluation
19 performed by an individual reviewing the group of procedures
20 required to perform the functions necessary following the
21 scenarios.

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JUDGE MORRIS: That is all I have. Thank you.

BY JUDGE BRENNER:

Q Mr. Notaro, you mentioned that the training, to include educating the operators not to exceed 3300 on the diesels, would be part of the requalification training.

Did you mean that the training would not take place until an operator would normally come up for requalification training on a routine schedule?

A (Witness Notaro) The training has commenced already by means of the required reading. It will be expanded upon in formal classroom structure and simulator training as the operators come up for the normal requalification training, which started this week, Judge Brenner.

Q What is that schedule in the context of when would all of the operators have completed the portion of the training relating to keeping the diesel load below below 3300 KW?

A (Witness Notaro) I believe that schedule to be prior to the end of March. The requalification training program consists of one crew going into training each week, and there are six crews. So it is a six-week rotation.

If it starts this week, they would go on for the next six weeks, and then they would start to go to the simulator to start their simulator training.

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1 Q And looking at the emergency procedure that
2 Mr. Perlis asked you about as an example; that is, the
3 containment control emergency procedure, I see that the
4 cautions to which you referred are worded to the effect "Do
5 not start a particular piece of equipment," the equipment of
6 interest at that point in the procedure, "if the associated
7 emergency diesel load is above....," and then whatever level
8 would be appropriate, given the load or the equipment.

9 I understand these cautions are before entries
10 into the other procedure, or at least in some cases if not
11 all cases.

12 Now, what tells the operator what the associated
13 emergency diesel generator is? Which one among the three?

14 A (Witness Notaro) Judge Brenner, the operator is
15 trained and licensed. By his training and his
16 qualification, he knows what RHR pump is associated with
17 what diesel.

18 A (Witness Youngling) Judge, maybe I can add to
19 that.

20 With the three diesels, basically what we have is
21 the 101 is the A diesel, and the corresponding equipment
22 with the A designator is on the A diesel -- the B, and so
23 forth. The C and the D are basically on the middle engine,
24 the 103 engine.

25 So there is correspondence in the numbers as well

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1 as the operator's training and knowledge of the plant.

2 Q Are there any important exceptions to that
3 numbering scheme, numbering and lettering scheme?

4 A (Witness Youngling) Important exceptions? To
5 the best of my knowledge, there are no exceptions, no.

6 A (Witness Notaro) And if I may add something,
7 Judge Brenner, I know from firsthand experience, because I
8 just finished taking my annual requalification exam, one of
9 the objectives of the training program is to know that
10 information from memory.

11 A (Witness Youngling) Judge?

12 Q I am sorry, go ahead.

13 A (Witness Youngling) Maybe I could just add one
14 more thing.

15 Above the pump switch is a number, PO03A. That
16 is an RHR pump, meaning A, 101 engine.

17 Q All right. I knew the equipment for the
18 particular switches were labeled. I didn't know there was a
19 particular scheme organizing the labels for each equipment
20 to a particular diesel, and you have answered that now,
21 also.

22 You mentioned -- I think it was you, Mr. Notaro,
23 that the recent revisions to the procedures, to include
24 these caution statements, were checked out on the
25 simulator. I bel. you said the Limerick simulator, is

1 AGBbur 1 that right?

2 A (Witness Notaro) Yes, sir, that is correct.

3 Q I am trying to find out how that would work, and
4 I will give you the context.

5 Would that simulator simulate the diesel
6 arrangements at Shoreham?

7 A (Witness Notaro) The Limerick simulator has four
8 emergency diesel generators. Shoreham has three emergency
9 diesel generators.

10 When we went to the simulator, we took the fourth
11 diesel generator to pull to lock, so that it would not
12 function at all. We ran the LOOP procedure, the LOOP/LOCA
13 procedure, a LOOP/ATWS procedure, and had the diesels, the
14 three remaining diesels respond.

15 We have been using the Limerick simulator for
16 almost four years now, and the familiarity and the closeness
17 of the simulator to Shoreham is something that we have been
18 working with for a number of years. It is not something
19 that is skewed or has to go through a long evaluation or
20 analysis process.

21 Q All right, but I wanted to focus on just the
22 diesel setup.

23 Are you telling me that the Limerick simulator
24 has the same diesel setup as each unit of the Limerick
25 plant?

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1 A (Witness Notaro) The Limerick diesels are
2 simulated on the Limerick simulator, that is correct.

3 Q All right.

4 Now, isn't the scheme for those diesels
5 different, not only in the number of diesels but in the way
6 the redundant trains of equipment are hooked up to different
7 diesels. That is, it is not just a matter of having the
8 same equipment hooked up to three diesels just as they are
9 at Shoreham and then having a fourth spare diesel, is it?

10 A (Witness Notaro) The load arrangement on those
11 diesels is different than the load arrangement on Shoreham.
12 The equipment that would be operated and that the operator
13 would have to verify in terms of core spray pumps, RHR
14 pumps, CRD pumps, those actions required to implement the
15 SCRAM, the verification of the caution statements, that is
16 very closely representative of what the operator has at
17 Shoreham.

18 Q But wouldn't the "associated diesel" be different
19 in some cases when -- that is, you are starting a particular
20 piece of equipment, say the A RHR pump. That might be
21 associated with the 101 diesel at Shoreham, but a particular
22 RHR pump might not be associated with the same sequencing
23 diesel at Limerick.

24 Isn't that right?

25 In other words, the goal of the procedure -- let

1 AGBbur

1 me give you the overview. I don't want to get too enmeshed
2 in the detail at the beginning. If it is necessary, we will
3 get to that.

4 But the object is to see if operators are
5 verifying that the load does not go over 3300 as the
6 procedure calls for particular equipment to be added at the
7 option of the operator.

8 Did you check out the procedures for that
9 purpose, or did you only stop after the first 10 minutes for
10 automatic use?

11 A (Witness Notaro) Judge Brenner, the reality of
12 testing these procedures was such that we never came
13 anywhere near the load limit on the diesels, that water was
14 returned so quickly by the equipment that the operator's
15 action is actually to remove load, and he never comes close
16 to exceeding a load limit. That is how quickly the unit
17 responds and the equipment responds.

18 Q So in terms of the simulator, you never got to
19 the point of seeing how an operator would react in checking
20 out the caution statement not to exceed a load?

21 A (Witness Notaro) No, I think in utilizing the
22 simulator, Judge Brenner, we saw that the actual response to
23 the plant, much like the response in the IET, is such that
24 the loading would be nowhere near the limit and that the
25 operator would actually be taking initial steps to reduce

2 AGBbur

1 load and that he would not be worried about the caution
2 statements because he would not be near the load limit.

3 I think that is what we saw at the simulator,
4 sir.

5 Q I am trying to understand why you went back to
6 the simulator just for the purpose of checking out the
7 changes to this 3300 qualified load because what you are
8 telling me is everything was the same as your previous
9 checkouts.

10 A (Witness Notaro) We wanted to verify, based upon
11 the Staff concern. We believed that there was no problem
12 whatsoever in the operator managing these procedures. We
13 had not seen a problem in the operator managing these
14 procedures in the past.

15 Based upon the Staff-generated concern, we wanted
16 to verify that what we believed to be the case was in fact
17 still the case. What we found was that what we believed to
18 be the case is in fact the case. The operator will have no
19 problem whatsoever managing the procedures.

20 (Pause.)

21 Judge Brenner, may I add one more thing to try
22 and clarify what I have said?

23 Q Yes.

24 A (Witness Notaro) We found in running these
25 procedures at the simulator that it caused no difficulty or

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1 problem for the operator to utilize the caution statements
2 that had been added, even though we found that the result
3 was that it was not necessary that he be concerned because
4 he did not have a load problem.

5 We found no difficulty with the operator taking
6 the time to evaluate the loading on the diesel,
7 communicating with the other individual operator, and then
8 taking the next appropriate action. There wasn't any
9 conflict or difficulty.

10 Q If you were to perform this task analysis -- and
11 as I understand it, you have explained it, that it is a type
12 of time and motion study -- not just time and motion but to
13 see what is feasible within time and motion -- just for the
14 purpose of checking out these additional caution statements,
15 I am having a hard time visualizing what physically would be
16 added that somebody would have to observe.

17 Could you enlighten me on that?

18 A (Witness Notaro) Judge Brenner, I agree with
19 what you have just said.

20 Q Well, I am just asking a question, but go ahead.

21 A (Witness Notaro) That has been our position,
22 also, and that is why we conducted the job analysis and not
23 the task analysis.

24 Q I suppose one could suggest that one thing that
25 would be observed would be the operator with responsibility

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1 for adding a particular piece of equipment, checking with
2 the operator, who might not be the same person, with
3 responsibility for the load distribution and asking what the
4 load meter indicates.

5 Would that be about it?

6 A (Witness Notaro) We believe that we accomplished
7 that by doing the job analysis and going through the
8 individual procedures, and we believe that the job analysis
9 accomplished that function.

10 And, yes, I agree that that could be one of the
11 things that could be evaluated, and that is why we went
12 ahead and evaluated it.

13 Q How does the operator assure that the load is not
14 above a certain value?

15 I know ultimately you are saying somebody is
16 checking the watt meter, but as a practical matter, they
17 might not be the same operators involved. That is, one has
18 responsibility for determining whether to manually add a
19 particular piece of equipment, while there might be another
20 operator with responsibility for monitoring the load.

21 Is that correct, or is it some other scheme?

22 A (Witness Notaro) This is quite similar to, I
23 believe, what I said this morning in terms of the team
24 concept. We are talking about direct communication here.
25 We are talking about individuals in that control room who

1 AGBbur

1 are working as a very closely knit qualified group, and an
2 individual with coordination responsibility analyzing what
3 the group as a whole is doing, and we are talking about
4 direct communication amongst these people.

5 Q I am trying to recall -- and this may be
6 repetitive to your testimony earlier today.

7 I know you testified that the watch engineer, who
8 is in effect a shift supervisor, has to approve shutting off
9 equipment. I don't recall, and therefore I am asking you
10 now: who has to approve adding equipment on?

11 A (Witness Notaro) The watch engineer in that
12 command control function would be responsible, as directed
13 by procedure for approving the removal of ECCS equipment.

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1 The communication is not something whereby an
2 individual must stop and wait. This is routine
3 communication that is a portion of the required training
4 program and it is something that is constantly drilled. And
5 one of the reasons that we go to the simulator is so that
6 the crew can function as a crew, integrate and communicate.
7 And that functioning is such that the crew itself is
8 developing that communication capability. It's not
9 something that is directed specifically by a procedure
10 statement.

11 Q Maybe I didn't ask it clearly enough:

12 Can any operator add load to the diesel generator
13 once that individual operator is satisfied that the load
14 would not go above 3200 Kw or, more specifically, that that
15 operator is satisfied that the caution statement in a
16 procedure is not violated or does somebody have to approve
17 adding the load?

18 (The witness panel conferring.)

19 A (Witness Notaro) The operator, after verifying
20 that the load would not be exceeded, can add the load. By
21 his training he would be communicating the fact that he was
22 adding the load.

23 Additionally, the procedures requiring the watch
24 engineer approval are only related to the removal of ECCS
25 equipment, which is specifically the core spray pumps, the

1 AGBagb

1 RHR pumps and the like.

2 Q Is there a reason for not requiring approval by
3 the watch engineer to add loads as further assurance that
4 the 3300 Kw load limit would not be violated?

5 A (Witness Notaro) It's not required, predicated
6 on the fact that the personnel we're talking about now are
7 all licensed individuals and we do want the watch engineer
8 to assure that he has the command control function and the
9 big picture and not to be bogged down in a particular event
10 or detail. So it's not specifically written in a
11 procedure.

12 Again, that's certainly not to say that there
13 isn't constant communication between all of these people for
14 all of the actions that are going on in the control room.

15 Q Okay.

16 Now the individual operator . working through an
17 emergency procedure and he wants to add a piece of equipment
18 but he needs to check out whether or not the caution
19 statement is violated. How does he do that?

20 A (Witness Notaro) I will make the assumption that
21 the operator who wants to add the piece of equipment is not
22 the operator who is responsible -- as I talked about this
23 morning -- for verifying the AC loads. That operator would
24 identify that he wanted to add a piece of equipment. The
25 second operator, who is verifying the AC distribution, would

1 check the reading on the watt meter for the diesel and
2 indicate to the first operator what that load reading was.

3 Q They just talk to each other?

4 A (Witness Notaro) Direct communication, yes, sir.

5 Q Do they have any trouble hearing each other
6 during the simulator training while the alarms are going
7 off?

8 A (Witness Notaro) No, there is no problem with
9 the communication and the operator has the capability of
10 silencing the alarms.

11 (Pause.)

12 Judge Brenner, let me add one other thing, as
13 simplistic as it sounds: we're talking about a control room
14 and we're not talking about a great deal of space or
15 something that the operator cannot traverse. We're talking
16 about something where I walk over to you and I ask you what
17 that load is or halfway across the room and you tell me what
18 it is.

19 A (Witness Youngling) Judge, just to perhaps put a
20 perspective on it, the size of the area that we're talking
21 about is probably within the confines of these tables up to
22 the bench.

23 Q Well it happens at least two members of this
24 Board have been in a control room but the record isn't going
25 to be very helped by your description. But it is a finite-

1 AGBagb 1 sized room.

2 (Laughter.)

3 That's a big help, too.

4 MR. DYNNER: That makes it clear, your Honor.

5 JUDGE BRENNER: I'll let you straighten it up on
6 follow-up, Mr. Dynner, since you're so interested.

7 It's a distance that is easily traversed and i.
8 fact the operators can -- well I'll stop there. That's what
9 you're saying.

10 WITNESS NOTARO: That's correct.

11 BY JUDGE BRENNER:

12 Q Changing subjects, looking at page 19 of your
13 testimony, you discuss the IET on that page and in the
14 paragraph that begins near the bottom of that page you
15 state:

16 "Although the IET cannot simulate
17 exactly the conditions that will exist following
18 a LOCA, it does result in the full sequencing of
19 loads, particularly in the short-term, before an
20 operator would be expected to start responding to
21 particular symptoms from a particular accident
22 sequence."

23 I know you have testified about this subject
24 already but I'm not clear as to exactly what you mean by
25 "full sequencing of loads." Can you tell me?

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1 A (Witness Dawe) What we are referring to there,
2 Judge Brenner, is the bus program and load sequencing
3 programs of the plant in that all of the automatic equipment
4 that responds to the loss of off-site power and the LOCA
5 signals of the plant are predetermined to operate in a
6 certain time sequence, and all of that automated equipment
7 is included in the MESL.

8 And by running the IET, which is initiated in
9 certain portions of it anyway with both the introduction of
10 a loss of off-site power signal and a LOCA signal, then the
11 plant goes through that bus program and so in the following
12 of the bus program and the load sequence programs then what
13 happens in the IET is identical to what happens in the
14 LOOP/LOCA event.

15 The concept of responding after that time to
16 particular symptoms of a particular accident sequence was a
17 reference to the removal of equipment or the selection of
18 other equipment if the automatic equipment failed and didn't
19 manually restart when the operator tried to start it; there
20 could be that type. But because it sequences all of the
21 automatic equipment, which is the MESL equipment then it
22 represents the post-LOCA situation.

23 Q If you had a situation occur at the plant where
24 you had a LOCA without a loss of off-site power, and I would
25 further postulate that the operators determined that in

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1 order to control the plant with greater margin, say,
2 added -- were using all equipment which -- not all equipment
3 but a sufficient number of equipment such that if the
4 diesels had been operating the diesel limit of 3300 Kw would
5 be violated, although at that point it's not because you're
6 not relying on the diesels. Then in that LOCA sequence at
7 that point you do in fact suffer a loss of off-site power.

8 What happens to that load which would have been
9 the manually added load to the diesels?

10 A (Witness Youngling) In the situation that you
11 have hypothesized what would happen is you would sustain the
12 loss of off-site power, the bus would strip and go through
13 its loading sequence and the loads, as defined in the MESL,
14 would then resequence onto the bus as a LOOP/LOCA.

15 Q I have just one other small area -- it might be,
16 Mr. Youngling, that I should more properly save this for
17 when you appear in your future life as a member witness of
18 another panel, but I'll ask it now because I'm frankly not
19 sure what it might turn out to be pertinent to in the end.

20 But you have indicated that you are going to be
21 conducting surveillance testing under the qualified load
22 concept. Can you just very briefly tell me what that future
23 surveillance testing would be; that is, if you were given
24 permission to rely on the TDI diesels under the qualified
25 load concept, what the surveillance testing would consist

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1 of?

2 A (Witness Youngling) Judge, the surveillance
3 testing would be defined in the technical specifications.
4 Those specifications would generally follow the pattern of
5 the BWR standard technical specifications which are written
6 generally in response to Regulatory Guide 1.108.

7 The kinds of tests that we would be doing would
8 include a monthly test whereby the engine would be loaded to
9 its qualified load and held for one hour. During that
10 period the test would be run at a load of 3300 plus or minus
11 100 Kw.

12 There are also a set of tests that have to be run
13 each refueling outage, every 18 months. Those tests
14 generally deal with transients on the engine: load
15 sequencing, much like in a LOCA, a LOOP/LOCA; load rejection
16 tests. But in addition there is a load carrying capability
17 test where the engine has to operate for 24 hours and will,
18 under our new technical specifications, at a load of 3300 Kw
19 plus or minus 100. Those are generally the specifications.

20 Now there is some discussion as to the kinds of
21 starts to be put on the engine that the Staff is concerned
22 about, and they may be factored in the tech specs also: the
23 rapid start versus the slow start. But that has nothing to
24 do with the 3300 loading.

25 Q It happens that I have the Reg. Guide in front of

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1 me which you referenced, 1.108, and I certainly don't
2 pretend to know everything that's in it -- I have not even
3 read it carefully recently -- but as I recall it, and a
4 glance has confirmed, that the periodic testing it talks
5 about -- and you said that's monthly, right?

6 A (Witness Youngling) Possibly, yes.

7 Q Did you say monthly? Maybe I misheard.

8 A (Witness Youngling) Yes, monthly. Monthly is
9 the normal surveillance test.

10 Q Right. Okay. I think the Reg. Guide just says
11 periodic.

12 A (Witness Youngling) Yes.

13 Q All right.

14 Doesn't it talk about a 22-hour test and then at
15 two hours, at what I would call short-term or overload?

16 A (Witness Youngling) Yes. The Regulatory Guide
17 does talk about that concept of 22 hours at the continuous
18 rating and two hours at the short term. However, the
19 concept of the qualified load defined in the SER will now
20 replace that requirement such that the engine is run for a
21 full 24 hours at the qualified load.

22 Q That's why I got confused for a minute when you
23 said you would do the testing much in accordance with
24 Reg. Guide 1.108.

25 We're going to be getting testimony, partly from

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1 LILCO and partly from the Staff -- we have received it in
2 prefiled form and it's going to be presented at the hearing
3 -- that even if there is loading above the 3300 for some of
4 the reasons alleged in the County's contention, such as
5 intermittent and cyclic loads and load meter error inherent
6 in the meter and so on, that such short-term operation at
7 those levels postulated over 3300 should not be of concern
8 for the reasons given by these other witnesses who are
9 concerned with things such as the crankshafts and the
10 blocks.

11 And in order to know how to evaluate that
12 testimony in the end and, since LILCO is one of the sponsors
13 of similar testimony -- and, in fact, we know from the legal
14 arguments on the motions to strike that LILCO may intend to
15 argue positions similar to what I just referred -- I want to
16 know whether you are giving any consideration to running the
17 short-term test, that is, the two hours of the monthly 24
18 hours, at a load over 3300, notwithstanding the qualified
19 load concept?

20 A (Witness Youngling) No, we are not. The
21 guidance in the Staff SER specifically talks about
22 developing technical specifications to insure that the
23 qualified load is not exceeded during the periodic testing.
24 We have talked with the Staff and we have their concurrence
25 relative to the plus or minus 100 as a deviation from that.

1 However, there is no thought of running two hours at 3500
2 Kw, which would really be contrary to the Staff position,
3 until they had completed the complete analysis for the DRQR
4 program.

5 JUDGE BRENNER: All right. I'm going to let the
6 subject go now and it may come up again with the other
7 witness panels.

8 And you might factor that into the dialogue we
9 had yesterday, Mr. Ellis.

10 That's all I have. Judge Morris has some
11 questions.

12 BY JUDGE MORRIS:

13 Q I do have one more question. I think you have
14 answered it but not in the context in which I'm going to ask
15 it:

16 Do you have before you the testimony of
17 Messrs. Bush, Henriksen and Sarsten?

18 Seeing that you do, would you please turn to page
19 13?

20 A (Witness Youngling) We have that, Judge Morris.

21 Q In question and answer nine the witnesses quote
22 what they believe to be the loads which the diesels may be
23 subjected to.

24 My question is: Do you agree with that?

25 (The witness panel conferring.)

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1 A (Witness Youngling) Judge Morris, what I'd like
2 to do is go down each one of the five items that are listed
3 there on page 13 of the Staff testimony.

4 Q That would be fine.

5 A (Witness Youngling) Item one deals with load
6 spikes equivalent to 3900 due to sequence starting of large
7 pumps in the first 30 to 60 seconds of a LOOP/LOCA event.

8 (The witness panel conferring.)

9 In one of our SNRC letters, I believe it was
10 1104, that we discussed earlier this afternoon, we talked of
11 the concept of in-rush current to the engine during the
12 sequencing of the large 4KV equipment onto the bus. And
13 during that we were able to show that that sequencing
14 operation does not adversely affect the engine.

15 Q What's the time duration of such in-rush?

16 A (Witness Dawe) Judge, the 30 to 60 seconds in
17 this number one, I think, is certainly misleading. They're
18 not, I don't believe, saying that the machine is going to
19 look as though it's operating at 3900 Kw for a continuous
20 period of time of 30 to 60 seconds in length. They're
21 simply quoting that that's the timeframe after automatic
22 diesel start in which the initial large loads come on during
23 the sequencing.

24 Physical phenomena such as in-rush current is
25 fractions of a second and we don't really agree that there

1 is a loading of 3900 Kw from that effect. And certainly it
2 should not be read to say from 30 to 60 seconds operation at
3 3900 Kw.

4 Q We could skip number two, Mr. Youngling, if
5 you're ready to go on. I believe we have heard enough on
6 that one.

7 A (Witness Youngling) The statement that the Staff
8 makes in item number three regarding the value of 3300 after
9 the first few minutes in response to a LOOP/LOCA is
10 consistent with the MESL evaluation which shows that the
11 MESL's are below 3300. We believe that those values will
12 ever be lower in actuality than the MESL's that we have
13 stated in our testimony as a result of the conservatisms
14 that we have been talking about over the last two days and
15 as further confirmed by the integrated electrical test.

16 Item four deals with results from an operator
17 error during the first hour of the LOOP/LOCA event.

18 (The witness panel conferring.)

19 A (Witness Dawe) With respect to number four,
20 Judge Morris, they have quoted a LOOP/LOCA event in the
21 first hour with 38- to 3900 Kw for times of 40 to 60
22 minutes. My understanding is that that was what they used
23 for the evaluation in their testimony but we do not agree
24 with those numbers.

25 For the LOOP/LOCA event, if you refer to our

1 testimony, if you take the worst-case load on the calculated
2 MESL, we're still below 3500. If you were to assume it with
3 the IET load, we would still be below 3300 and we don't
4 believe that the 40 to 60 minutes is the recognition time
5 for that for the reasons we discussed earlier today. It
6 would be much shorter than 40 to 60 minutes recognition
7 time.

8 Q Do you have the page number of your testimony,
9 just so it's a handy reference?

10 A (Witness Dawe) Yes, Judge Morris, it's on page
11 32 in response to question 28.

12 The loads for the worst-case operator error on
13 101 and 102, we have quoted in our testimony as 3459.4 Kw
14 and 3414.8 Kw and for 103, on page 33, we have quoted 3583.
15 And then we have integrated it with the IET and the numbers
16 are below 3100.

17 Q That's enough.

18 A (Witness Youngling) The last item deals with the
19 periodic testing --

20 Q I think we've heard enough on that too,
21 Mr. Youngling.

22 A (Witness Youngling) Okay. Thank you, Judge.

23 Q Unless you wanted to add something.

24 (The witness panel conferring.)

25 A (Witness Youngling) Judge, we have no further

1 AGBagb 1 comment.

2 Q Fine. Thank you.

3 JUDGE BRENNER: That's all we have at this time.
4 We can go to LILCO for its redirect.

5 REDIRECT EXAMINATION

6 BY MR. ELLIS:

7 Q Gentlemen, the pulsing that has been referred to
8 in testimony, that pulsing exists during actual conditions
9 in a LOOP/LOCA?

10 A (Witness Youngling) No, it does not.

11 Q Is the pulsing that you have referred to in your
12 testimony additive to the plus or minus 60 to 70 Kw
13 instrument accuracy?

14 A (Witness Youngling) No, it is not.

15 Q Are you able to read plus or minus 50 on the
16 meter, 50 Kw?

17 A (Witness Youngling) Yes, you can.

18 Q And can the operators read plus or minus 50 Kw on
19 the meter?

20 A (Witness Notaro) Yes, we can.

21 Q And did you take that into account in your review
22 and revision of any operator procedures designed to insure
23 that the qualified load of 3300 is not exceeded?

24 A (Witness Notaro) Yes, we took that into
25 consideration and the indications for maximum load that is

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1 contained within those caution statements are actually
2 placed at the lower bound 50-Kw reading associated with the
3 load that is being placed on.

4 In addition, the caution statements are strictly
5 guides for the operator to use during the event, and they
6 are actually providing simply redundant information as the
7 indication for control on the loading is bounded by the
8 automatic actions for loads included in the MESL's which the
9 operator would accomplish by accomplishing the immediate
10 actions and making that verification that those automatic
11 loads had in fact come on and performed their function
12 properly. So the caution statements are simply providing
13 additional redundant information.

14 Q Mr. Youngling, there is reference in your earlier
15 testimony in response to questions by several counsel on the
16 220 hours in the endurance run -- Strike that, let me begin
17 again.

18 The 220 hours, Mr. Youngling, that you referred
19 to as having been completed before the 525 hour endurance
20 run, some portion of that was conducted with the watt hour
21 test loop meter with an accuracy of .6 percent, is that
22 right?

23 A (Witness Youngling) Yes, it was.

24 Q Is that .6 percent accuracy better than the plus
25 or minus 60 to 70 Kw associated with the standard plant

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1 instrumentation?

2 A (Witness Youngling) Yes, it is.

3 Q Go ahead.

4 A (Witness Youngling) That accuracy would result
5 in a plus or minus accuracy of approximately 35 to 40 Kw.6 Q Can you estimate in any way how much of the 220
7 hours was conducted using this as a means of verifying the
8 load?9 A (Witness Youngling) The watt hour test loop
10 instrumentation was used as the instrument of record for the
11 pre-operational testing and the majority of the hours, of
12 these 220 hours, was done during the pre-operational
13 testing.14 Q I take it though you don't know of any specific
15 division of hours?16 A (Witness Youngling) No, I don't have the exact
17 numbers.

18 Q Would you say it was a majority of it?

19 A (Witness Youngling) Yes, sir.

20 Q Turn if you would, please, to page 10 of the
21 testimony of Staff witness Knox.

22

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1 You'll see there on page 10 an answer to the
2 question concerning what a 3300 Kw technical specification
3 limit on the deisel means. Mr. Knox makes the following
4 statement:

5 "If 3300 is exceeded at any time by any
6 amount, the associated technical speci-
7 fication action will require the plant
8 to be shut down with a subsequent analysis
9 and inspection performed to demonstrate
10 the capability of the deisel generator
11 before continued plant operation would
12 be allowed."

13 Do you see that, sir?

14 A (Witness Youngling) Yes, I do.

15 Q Do you gentlemen agree with that?

16 A (Witness Youngling) No, we do not.

17 MR. DYNNER: Objection. I don't think this is
18 appropriate for a redirect examination since these witnesses
19 have not been examined in cross-examination on this subject
20 matter or on Mr. Knox's testimony or on what Mr. Knox is
21 talking about here.

22 JUDGE BRENNER: I asked him about that subject
23 matter. I don't know if I was the only one, but I did. I
24 asked him what that limit meant -- In fact, other persons
25 ahead of me had asked him --

MR. DYNNER: I'll withdraw it.

JUDGE BRENNER: Even if that had not been the case we might have allowed it under the approach that we have taken before of where we can get rebuttal of witnesses matched up. And remember that's what the Board likes about the procedure of putting witnesses for different parties together, so that when we don't follow that procedure we like to be able to at least accomodate that approach. Where it becomes extensive and then that causes potentially prejudicial problems to other parties there are several means of adjusting t that also.

BY MR. ELLIS:

Q Mr. Youngling, did you want to continue with your answer?

A (Witness Youngling) That is the first time that we have seen such a position from the NRC Staff relative to exceedance of the 3300 load during surveillance testing. We had discussions with the Staff personnel and had agreement that we would perform the surveillance testing at 3300 plus or minus 100 as we have discussed this afternoon.

In addition, the requirment for plant shutdown on the basis of a situation with one deisel generator is certainly outside the norm of the limiting conditions for operation for deisel generators that are presently in place where I can have one deisel generator out of service

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1 for up to 72 hours before I have to take actions with the
2 plant to shut down the plant. And for those reasons we feel
3 that those requirements are certainly inconsistent.

4 Q Do you have any indication from the Staff
5 concerning the testimony that you have given that the
6 surveillance testing that you have described can be
7 conductive permissivly at 3300 plus or minus 100?

8 A (Witness Youngling) Yes, we have had
9 conversations with the Staff people and LILCO that the
10 surveillance testing could be performed at 3300 plus or
11 minus 100.

12 Q Can you tell me who those conversations were
13 with?

14 A (Witness Youngling) Yes, members of LILCO have
15 talked with Dr. Berlinger at the NRC Staff as well as the
16 project manager, Mr. Caruso.

17 JUDGE BRENNER: Mr. Youngling -- I'm sorry, were
18 you going to continue to ask questions on that same subject,
19 Mr. Ellis?

20 MR. ELLIS: Related to tech specs but I think not
21 directly related to Staff approval or concurrence in the
22 plus or minus 100.

23 JUDGE BPENNER: I suppose I'll learn more when
24 Mr. Knox takes the stand. I think you have assumed in your
25 answers, Mr. Youngling, that the portions of Mr. Knox's

1 testimony to which your Counsel directed you was related to
2 surveillance testing. Am I right so far?

3 A (Witness Youngling) Yes. As we have testified,
4 during the response to a LOOP/LOCA event we will not go
5 above 3300.

6 JUDGE BRENNER: What if -- What if type questions
7 give me trouble but we'll find out more from Mr. Knox --
8 What if what he's talking about there is not limited to or
9 not applied to surveillance testing, would that kind of
10 specification make sense to you?

11 WITNESS DAWE: In that case, Judge Brenner,
12 we've had a LOOP or a LOOP/LOCA and the plant is shut down
13 and we must re-evaluate before we can start up anyway. But
14 we really don't believe in either of those events we are
15 going above 3300. That statement that the tech specs would
16 require us to shut down the plant at any time if we exceed
17 it by any amount is only an inconsistency with respect to
18 surveillance testing, otherwise we are shut down.

19 BY MR. ELLIS:

20 Q One of you gentlemen testified earlier today, I
21 believe, that one of the practical reasons for a plus or
22 minus 100 range for the surveillance testing was that a
23 resident inspector might find the plant in violation of the
24 tech specs or procedures if he saw the meter above 3300.
25 Would the LILCO operators themselves have any responsibility

1 in this connection?

2 A (Witness Notaro) Yes, sir. They would. And
3 they would themselves, with or without an inspector in the
4 control room, declare that that deisel had failed its
5 surveillance test if that limit was only 3300 and it
6 exceeded 3300 and they would be required to do so.

7 Q Mr. Dawe, Mr. Dynner asked you a question
8 concerning the testimony of the panel on page 37 relating to
9 the low power licensing proceedings. Specifically, this
10 statement on page 37 that in the low power licensing
11 proceeding, off-site power has been shown to be reliable and
12 restoration time following its loss is short. And in
13 response to the question by Mr. Dynner I believe you
14 indicated to him that factual testimony did not have
15 anything to do with the context of the hearing, am I
16 correct?

17 A (Witness Dawe) Yes, you are correct. I stated
18 that.

19 Q What did you mean by that?

20 A (Witness Dawe) I simply meant that our testimony
21 at that point states two salient facts for what we were
22 discussing at this point in our testimony. First it shows
23 that off-site power has been shown to be reliable, which the
24 facts of that evidence showed, and it states that the
25 restoration time is short. And we have demonstrated through

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1 our testimony and evidence then that the restoration time
2 was under 30 minutes from various power sources around Long
3 Island surrounding the plant geographically as well as power
4 sources on-site. But even without the power sources on-site
5 that the time frames were very short and that was discussed
6 in a proceeding that was conducted with respect to an
7 exemption request but the facts exist whether you are
8 talking about that or this.

9 And in our testimony at that point those facts
10 are used just to put into context what the requirements for
11 the diesel generator are.

12 Q Mr. Dawe, I think Mr. Dynner asked you also in
13 connection with the total connected loads and in your answer
14 you indicated that there would have to be combinations of
15 equipment failures and operator errors, many of each kind.
16 Am I correct?

17 A (Witness Dawe) Yes, that was my testimony.

18 Q Is that within the regulatory design basis of the
19 plant and if not, why not?

20 A (Witness Dawe) That would not be within the
21 regulatory design basis of the plant. The design basis is
22 to -- on top of the initiating event and all of its
23 consequences -- be able to accept a single failure and all
24 of its consequences. Any one load or group of loads in the
25 connectable but not connected category to remain connected

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1 would require failure of the automatic trips, which are
2 safety-related trip devices, or operator error to bring
3 additional loads on when they should not be added.

4 The plant is designed to accept the loss of the
5 deisel generator. There are three, we require two. If for
6 whatever reason I have lost that deisel generator the
7 regulatory design basis does not require the loss of another
8 deisel. If I assume the loss of the deisel for equipment, I
9 do not have to assume loss of equipment for an operator
10 error concurrently.

11 Further, the plant having been able to withstand
12 that, need not be designed on a regulatory basis for further
13 equipment failure or further operator errors on top of the
14 already failed equipment.

15 Q By "the already failed equipment," what are you
16 referring to?

17 A (Witness Dawe) I could be referring to any
18 equipment but in applying the single failure criterion for
19 an initiating event I must find the worst failure for the
20 LOOP/LOCA, that is the failure of a diesel.

21 Q In testifying that you do not have to design the
22 plant to accept a failure beyond the failure of the first
23 diesel, can you elaborate what that means, that you don't
24 have to design the plant for more than that?

25 A (Witness Dawe) I designed the plant with

1 AGBeb

1 redundancy to accept failure of equipment on top of the
2 initiating event. In my design with the three diesels I can
3 accept the failure of one diesel, whether that failure is
4 due to equipment failure of the diesel or its support
5 equipment or whether that failure is due to an operator
6 error.

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1 Having accepted that failure, it is not necessary
2 to design the plant to then accept additional failures.

3 Q Gentlemen, let me ask, in general, do you believe
4 that there is reasonable assurance that operator errors will
5 not occur so as to load the diesels above the qualified load
6 at the plant either during surveillance testing, normal
7 operation, or accident conditions?

8 MR. DYNNER: I object. That is not proper
9 redirect examination. They have already got that question
10 and the answer in their own prefiled testimony. I don't
11 know what this has to do with redirect examination.

12 JUDGE BRENNER: I am not sure why you need it
13 either, Mr. Ellis.

14 It is the conclusion of all their testimony. It
15 doesn't do me any good to have it in that form of general
16 conclusion. We had better look at the bases.

17 MR. ELLIS: I was going to get to the bases all
18 in one place as a response to all of the cross-examination
19 that has occurred.

20 JUDGE BRENNER: Isn't it in their testimony in
21 essentially that form, also?

22 MR. ELLIS: Judge, I guess the judgment I made
23 was that I think there may be ultimately. When I go through
24 all of the testimony, every piece may be possible to put
25 together. But I think we have had a lot of

1 cross-examination of these witnesses, and I simply wanted to
2 be sure in a question. Plus my follow-up question is going
3 to be why get it.

4 JUDGE BRENNER: And then you are going to have to
5 have them read 37 odd pages of testimony.

6 All right, look, we will give you leeway in
7 redirect. You can ask the question, but as a guide for the
8 future, that general conclusory question is useless in and
9 of itself.

10 Now, if we got a surprising answer, I would sit
11 up and take notice. So at best you won't help yourself with
12 it, and at worst you could get surprised.

13 MR. ELLIS: I hope we are not surprised. There
14 is some precedent for that, though, isn't there?

15 JUDGE BRENNER: Every once in a while it
16 happens.

17 Do you have the question in mind after all that?

18 WITNESS DAWE: After all that, I think we should
19 repeat the question.

20 MR. ELLIS: I will repeat the question.

21 BY MR. ELLIS:

22 Q Gentlemen, do you believe that there is
23 reasonable insurance that operator error will not occur to
24 load the diesels above the qualified load in the accident
25 scenarios that are covered in the testimony?

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1 A (Witness Notaro) I very firmly believe that
2 there is reasonable assurance that that will not occur. I
3 base that on the operator training, the procedures that have
4 been developed, the operators being sensitized to the needs
5 and the concerns associated with these diesels for almost
6 two years now.

7 I have more than reasonable assurance that what
8 has been established will not exceed the load if
9 identified.

10 Q Let me be more specific, then. Look at page 7 of
11 Mr. Clifford's testimony, please.

12 Do you have that before you, Mr. Notaro?

13 A (Witness Notaro) Yes, sir, I do.

14 Q Do you see the answer there in which he says,
15 "The number of procedures that were required to be used by
16 the operators simultaneously raised a concern regarding the
17 manageability of the procedures in a large number of
18 interrelated actions during their execution"?

19 Do you agree with that? Do you share that
20 concern?

21 A (Witness Notaro) I disagree with that statement
22 completely.

23 Moreover, not only do I disagree with it as
24 written, I verified it for myself at the simulator, and I
25 have seen the licensed operators at Shoreham utilize those

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1 same procedures minus the caution statement for a number of
2 years and be licensed and tested by the NRC Staff with their
3 capability to use and management those procedures.

4 So I disagree with it completely.

5 Q When you said you verified this both at the
6 simulator and in watching the Shoreham operators, what are
7 you saying you verified?

8 A (Witness Notaro) I verified the manageability of
9 those procedures, and the operators are not going to be
10 confused. They are not going to be misled. They are going
11 to handle those procedures just fine, and we are never going
12 to approach that load level. This is not a concern.

13 A (Witness Dawe) I would add to that answer one
14 point, that if you consider the LOOP/LOCA, as you did, and
15 when you look at the IET and the knowledge of the equipment
16 that was operated during the IET -- and that is included in
17 the MESL -- and then look at the equipment that remains for
18 operator discretionary operation, there is no single load
19 out there that could possibly bring you from the IET levels
20 to even approach the 3300 qualified load, let alone exceed
21 it.

22 Q Mr. Notaro, also on page 7, do you see the
23 testimony at the bottom by Messrs. Eckengrove and Clifford
24 concerning actions of operators outside the control room?

25 My question to you is: do you agree with that?

1 A (Witness Notaro) I do not agree with that. I
2 have so stated that during my testimony today.

3 The operator that would function outside would
4 not function without direction from the main control room.
5 This isn't anything that is related to 3300. This is normal
6 plant operations.

7 A field operator will take directions from the
8 main control room. It will not cause delay. It will not
9 cause confusion. It will not cause the operator operating
10 the main control room to approach or be concerned about the
11 3300 load, not now nor in the past.

12 Q Gentlemen, yesterday in response to Mr. Dynner's
13 questions on system procedures, you indicated that the
14 caution not to exceed 3300 was not required in those system
15 procedures, in your opinion.

16 Will you explain, please, why that is the case?

17 A (Witness Notaro) I am sorry, could you please
18 say that again?

19 Q Yes. In response to questions from Mr. Dynner
20 yesterday on the systems procedures, you indicated that the
21 caution not to exceed 3300 was, in your opinion, not
22 required for those systems procedures.

23 Would you explain, please, why you think that is
24 not the case?

25 MR. DYNNER: Objection. I think it is a

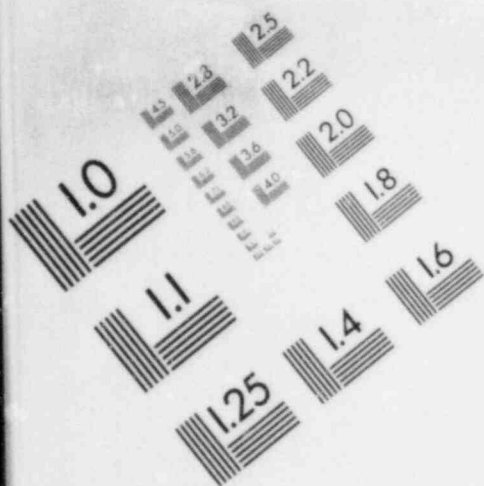
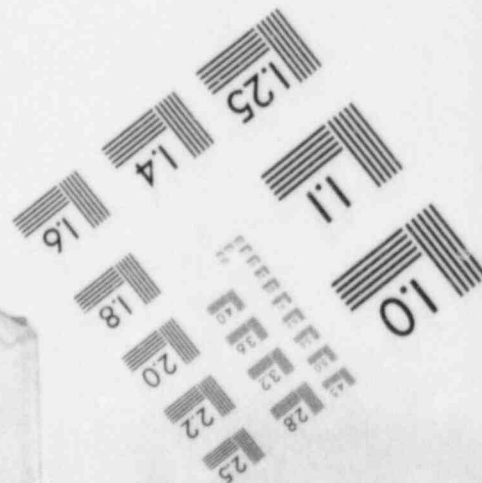
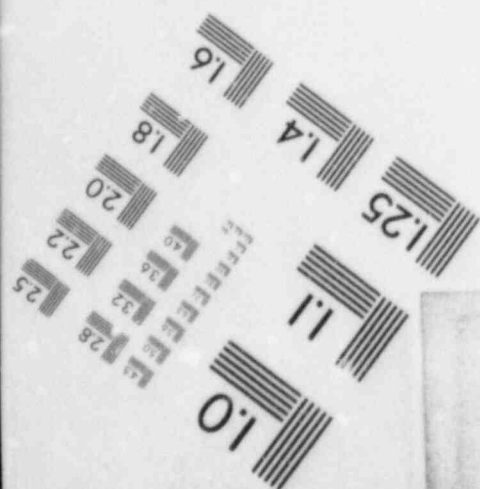
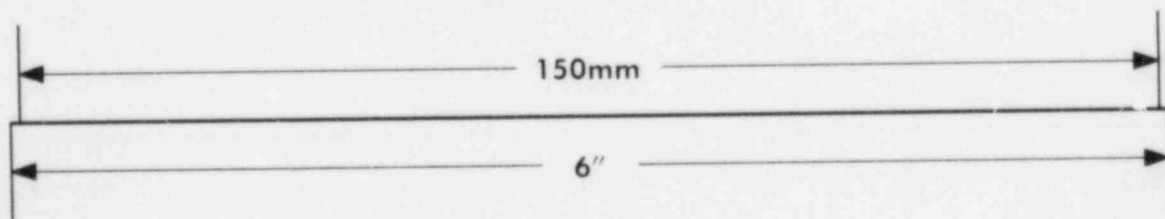
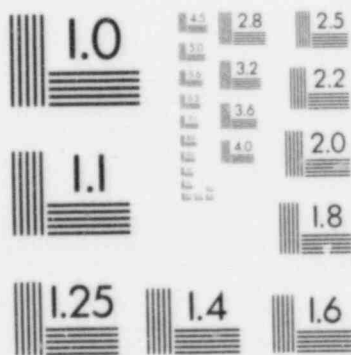
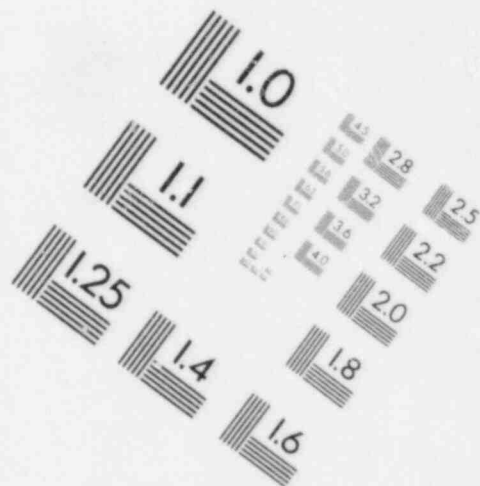


IMAGE EVALUATION TEST TARGET (MT-3)



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1 mischaracterization. As I recall the witnesses' testimony,
2 they said that they were in the process of reviewing those
3 13 or 14 in order to make a determination to add a caution
4 or not.

5 JUDGE BRENNER: My recollection is that the
6 testimony is somewhere in between the two positions, but I
7 think we can avoid all that and have it asked directly.

8 MR. ELLIS: I will rephrase it, Judge Brenner, to
9 avoid that.

10 BY MR. ELLIS:

11 Q Mr. Notaro, in your opinion, is it necessary to
12 insert cautions not to exceed 3300 in the system procedures
13 that you described yesterday?

14 A (Witness Notaro) It is my opinion that it is not
15 necessary. The cautions would be used to guide operators
16 during the event. They don't need to have the specific
17 system procedures contain the same redundant caution. The
18 caution that is controlling the loading is placed right
19 upfront in the loss of offsite power procedure in a
20 subsequent action.

21 It is also included in the other emergency
22 procedures, as we have stated today, going through the
23 procedures during the discussion with Mr. Dynner on the
24 question on what procedures would be used during a LOOP/LOCA
25 event.

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(Counsel conferring.)

2 Q Well, then is the purpose of the review that you
3 referred to yesterday an effort to consider whether to
4 accommodate a Staff concern?

5 A (Witness Notaro) The purpose of the review is to
6 handle a format problem, not a content problem, but we will
7 address it.

8 JUDGE BRENNER: Mr. Ellis, how much more do you
9 have?

10 I ask only to decide whether to adjourn now or
11 after you complete.

12 MR. ELLIS: Five to 10 minutes, Judge Brenner.
13 Maybe five.

14 JUDGE BRENNER: All right, go ahead.

15 MR. DYNNER: Excuse me, Judge. I will have some
16 recross-examination, if you had in mind this particular
17 panel.

18 I assume they are coming back tomorrow?

19 JUDGE BRENNER: Yes, I realized that you might.
20 I was going to ask you at the end of the day.

21 MR. DYNNER: Yes, thank you.

22 JUDGE BRENNER: I didn't forget that
23 possibility.

24 MR. ELLIS: If we are going to come back
25 tomorrow, then maybe I can either -- I could have the

1 AGBbur 1 benefit of having one last look, if I may, Judge Brenner.

2 JUDGE BRENNER: Yes. You can ask some questions
3 now and then have that benefit or take that benefit now,
4 whatever you prefer.

5 MR. ELLIS: I will go ahead and finish a couple
6 that I have here if I may.

7 JUDGE BRENNER: All right.

8 BY MR. ELLIS:

9 Q Mr. Dawe and Mr. Youngling, you were asked a
10 number of questions by Mr. Dynner concerning the Question
11 and Answer 19 on pages 19 and 20 of the County testimony.

12 In the final statement in that answer, the County
13 concludes that the peak load might well be 128 KW higher
14 than LILCO has specified.

15 So that the record is clear, do you agree with
16 that conclusion?

17 A (Witness Dawe) No, we do not agree with that
18 conclusion.

19 In addition to our disagreement with the apparent
20 way they arrived at it, we just do not believe that the peak
21 loads will be as large as the calculated MESL load on the
22 basis of the empirical data obtained in the plant from the
23 IET and from the measured loads.

24 Q Mr. Dawe, you were also asked by Mr. Dynner
25 whether the load was reduced from the MESL by any automatic

1 action that does not require operator action, and you listed
2 a number of such loads.

3 In any event, do you expect in an actual
4 LOOP/LOCA to be at or near the MESL?

5 A (Witness Dawe) No, sir, we do not.

6 MR. ELLIS: Judge Brenner, I might be able to cut
7 a few more, so maybe if I finish in the morning I will be
8 even more expeditious.

9 JUDGE BRENNER: All right. We will adjourn in a
10 moment and resume at 9:00 o'clock tomorrow morning.

11 Just as an advance courtesy to the parties, I
12 want to let you know what the Board is contemplating in the
13 event that we do not complete the hearing in the three days
14 that we have scheduled for next week, and I think -- in
15 fact, I know one of our previous written orders indicated
16 that we would resume the hearing again, if necessary, on
17 March 5th, and we plan to do that in New York, particularly
18 in the Court of Claims at Hauppauge.

19 Judge Morris said if necessary, and I think I
20 have said that three or four times myself. We won't go if
21 we don't have to.

22 But that would be the schedule, and as a further
23 detail, given some change in the airplane schedule, we would
24 probably pick up after lunch rather than starting at 10:30.

25 MR. ELLIS: Judge Brenner, I just wanted to be

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1 clear that I understand the future because we have got a
2 witness coming from Germany, and so forth.

3 It is my understanding that following the LILCO
4 load panel we will have the County load panel, followed by
5 the Staff witnesses on the load, but not the PNL panel, and
6 following that we will then go to the LILCO panel on
7 crankshafts, is that correct -- or blocks. I beg your
8 pardon. I think you wanted to go to the blocks first so
9 that you could start the findings schedule on the block --
10 is my recollection.

11 We just want to try to zero in on Dr. Pischinger
12 to the extent that we can.

13 JUDGE BRENNER: Once we had the change in
14 schedule requested by the Staff -- and you have phrased the
15 first part of the schedule correctly, Mr. Ellis -- as a
16 footnote, the Staff certainly added to my confusion at first
17 by requesting their schedule change, which we granted, and
18 then coming in with testimony labeled load contention, with
19 the very witness at our desk that we shifted around.

20 But after I read all the testimony, I think I
21 figured out what they meant. In any event, you have got the
22 sequence right except that I haven't thought through nor
23 discussed with the Board members the distinction between the
24 crankshaft testimony and the cylinder block testimony as to
25 what sequence to take that in.

1 And why don't you think about it some more and
2 talk to the parties and then let us know, and you can let us
3 know next week.

4 MR. ELLIS: I think our preference would be to do
5 the block first so that we could trigger the findings
6 schedule, but I will discuss it with the parties.

7 And I guess if we have three days scheduled next
8 week, if it looks like we are close, it sure would be nice
9 to finish without having to go to New York for one day or
10 something. But I guess it is nothing we can predict or plan
11 really right now.

12 JUDGE BRENNER: I can agree with your statement.

13 MR. ELLIS: All aspects of it, I am sure.

14 MR. DYNNER: If you are as quick as I was, it
15 will help.

16 MR. ELLIS: I am going to make a real effort.

17 JUDGE BRENNER: Take some time to discuss
18 settlement possibilities with your people, also.

19 MR. ELLIS: Yes, Judge. We took what you said to
20 heart, quite seriously, and I did precisely what you have
21 instructed me to do, and we will follow up, I can assure
22 you.

23 I have some ideas about the finding schedules and
24 adjustment to the recent adjustments, and we can talk about
25 the details probably next week.

1 Let me just tell you what I had in mind. What I
2 had in mind was we could start a regular findings schedule
3 on the load issues as soon as we finish those issues and
4 then coordinate the schedules such that whenever we finish
5 the remaining issues; that is, the block and the crankshaft
6 issues, set an accelerated schedule for those issues such
7 that all the issues would still be filed at the same time.
8 In other words, start looking on the load issues, but you
9 won't have to file it as a separate finding.

10 Then when we finish the other part, that would be
11 on the accelerated schedule that we have warned people about
12 for a long time now, and I think an accelerated schedule
13 would not be unjustified, given the extent of the testimony
14 that we are going to get now compared to what we have had
15 earlier.

16 But the reason I think we had better have it all
17 filed together is -- particularly the way the Staff's
18 testimony is organized. There is some overlap now, and it
19 is not as easy to pigeonhole things as I thought it would
20 be.

21 That is just something that has occurred to me.
22 Some of you or all of you may have reasons as to why it
23 wouldn't work. I mention it now so you can consider that
24 possibility.

25 JUDGE BRENNER: All right, let's adjourn now

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and resume at 9:00 o'clock tomorrow morning.

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(Whereupon, at 5:10 p.m., the hearing was

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recessed, to reconvene at 9:00 a.m., Thursday, February 14,

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1985.)

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CERTIFICATE OF OFFICIAL REPORTER

This is to certify that the attached proceedings before the UNITED STATES NUCLEAR REGULATORY COMMISSION in the matter of:

NAME OF PROCEEDING: LONG ISLAND LIGHTING COMPANY

(Shoreham Nuclear Power Station,
Unit No. 1)

DOCKET NO.: 50-322-OL

PLACE: BETHESDA, MARYLAND

DATE: WEDNESDAY, FEBRUARY 13, 1985

were held as herein appears, and that this is the original transcript thereof for the file of the United States Nuclear Regulatory Commission.

(sig) Anne G. Bloom

(TYPED)

ANNE G. BLOOM

Official Reporter
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