

ORIGINAL
UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the matter of:

LONG ISLAND LIGHTING COMPANY

Docket No. 50-322-OL-3

(Nuclear Power Plant)

Location: Riverhead, New York

Pages: 2546 - 2771

Date: Thursday, January 19, 1984

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

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

Docket No. 5-322-OL-3
(Emergency Planning Proceeding)

Suffolk County Legislature
County Center
Riverhead Legislative Meeting Room
Riverhead, New York 11901

Thursday, January 19, 1984

Hearing in the above-entitled case was convened,
pursuant to notice, at 9:10 a.m.

BEFORE:

JAMES A. LAURENSEN, ESQ.
Chairman, Atomic Safety and Licensing Board

DR. JERRY KLINE,
Member, Atomic Safety and Licensing Board

DR. FREDERICK SHON,
Member, Atomic Safety and Licensing Board.

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20 Executive Chamber, Room 209
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23
24
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I N D E X

	<u>Direct</u>	<u>Cross</u>	<u>Redirect</u>	<u>Recross</u>	<u>Board</u>
1					
2					
3	Witness:				
4	Edward B. Lieberman)	(Resumed)			
5	John A. Weismantle)	2551	2752	2763	2746
6	Matthew Cordaro)				
7					
8					
9					

E X H I B I T S

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P R O C E E D I N G S

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2 Whereupon,

3 EDWARD B. LIEBERMAN

4 JOHN A. WEISMANTLE

5 MATTHEW CORDARO

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

8 JUDGE LAURENSEN: We're back on the record now.

9 Mr. Irwin.

10 MR. IRWIN: I have two brief matters. The first
11 concerns Dr. Cordaro's availability. I indicated yesterday
12 to Suffolk County that Dr. Cordaro will necessarily be out
13 of town tomorrow, and is scheduled to leave this evening.
14 His travel plans as currently scheduled will require him to
15 leave here by about 2:00 or 2:30 today.

16 As far as LILCO is concerned, whether he's
17 available for us on redirect is our problem. But I would
18 request other parties, to the extent they may have that are
19 specifically directed to him, to try to ask them in a time
20 when he would still be available.

21 The second matter concerns the participation of
22 the state of New York. On Tuesday the state indicated for
23 the first time to LILCO's knowledge that it might seek to
24 participate on issues other than the state law issues raised
25 by Suffolk County contentions 1 through 10.

lpb2

1 LILCO has been receiving requests from the state
2 for factual information on the Shoreham application for the
3 past several weeks from various state agencies.

4 Now that it appears that the state may participate
5 on factual issues, LILCO is interested in obtaining as soon
6 as possible a specification of those issues and the names of
7 potential witnesses if the state is going to offer testimony.
8 So as neither to be surprised or to delay the proceeding if,
9 in any event, discovery becomes necessary.

10 I've discussed this with Mr. Palomino prior to
11 the start of the hearing this morning. He has indicated he
12 will be meeting with people in Albany and expects, if all
13 goes according to plan to be able to provide me with a
14 specification of issues and potential witnesses by approxi-
15 mately next Tuesday.

16 At that time we will promptly indicate to the
17 Board whether we believe any discovery is necessary.

18 MR. PALOMINO: Of course, Judge Laurenson, I
19 want to participate on all issues. The fact that we are
20 going to provide them with certain lists of witnesses and
21 some contentions, I'd like to participate on all the issues,
22 even when we're not providing witnesses.

23 JUDGE LAURENSON: That's the position we have
24 taken thus far as when called upon the state for cross-examina-
25 tion purposes.

lpb3

1 To continue to do that requires what you are raising today.
2 Mr. Irwin asked if this was something that could be postponed to next
3 week to determine whether you can satisfactorily resolve that
4 among yourselves.

5 MR. IRWIN: That's right, Judge Laurenson. I
6 just wanted to not let significant amount of time lapse
7 between this new information and the course we may have to
8 follow from it.

9 JUDGE LAURENSEN: Before we get started with the
10 questioning of the panel, let's go off the record briefly.

11 (Discussion off the record.)

12 JUDGE LAURENSEN: We're back on the record now.
13 You may resume the cross-examination, Mr. McMurray.

14 MR. MC MURRAY: Just for the record, we have
15 no problem with Dr. Cordaro leaving at 2:00 or whenever.
16 We have no questions that we intend right now to direct to
17 him.

18 MR. BORDENICK: Judge Laurenson, one further
19 thing off the record.

20 (Discussion off the record.)

21 JUDGE LAURENSEN: Back on the record again.

22 CROSS-EXAMINATION (Resumed)

23 BY MR. MC MURRAY:

24 Q Mr. Lieberman, I'd like to refer you to your
25 testimony regarding contentions C, D, E, and H. And

lpb4

1 specifically that portion of your testimony which begins on
2 page 13 regarding contention 23.D.

3 Do you have that testimony in front of you?

4 A (Witness Lieberman) Yes, I do.

5 Q Now you conducted a study, did you not, which
6 purported to analyze the effect of the evacuation shadow
7 phenomenon on evacuation time estimates from the Shoreham
8 EPZ?

9 A That is correct. We conducted several sensitivity
10 studies --

11 Q I think that's yes or no question.

12 A Yes.

13 Q Thank you. Now it's true, isn't it, that that
14 study is described in attachment 11 to your testimony which
15 is KLD TM 77?

16 A That is correct.

17 Q Now you looked at the evacuation shadow phenome-
18 non for both a so-called planned and uncontrolled scenarios;
19 isn't that correct?

20 A That is correct.

21 Q And the planned scenario was where you assumed
22 that prescribed routes were being followed, that traffic
23 control measures as described in Appendix A were in effect,
24 and various EPZ perimeter control measures were in effect.
25 Is that correct?

lpb5

1 A That's correct. We used the same tactics with
2 that set of studies as we did for those prescribed in
3 Appendix A.

4 Q And for the uncontrolled scenarios you assumed
5 that the traffic control devices in Appendix A were not in
6 effect, but rather regular traffic signals were in effect.
7 And there were no such special treatments, such as
8 channelization treatments, continuous flow treatments, and
9 things like that. Is that correct?

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10 A That is correct.
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1 Q It's true that for the planned scenario you
2 assumed that all evacuees from the East End did not enter
3 the EPZ? That is, they were routed onto the Sunrise Highway?

4 A They were routed either onto the Sunrise Highway
5 or to the Montauk Highway.

6 JUDGE LAURENSEN: Let me clarify that last
7 question. Did you mean, by that question, that it's
8 assumed that no evacuees from the East End would enter the
9 EPZ?

10 MR. MC MURRAY: That's correct. That was the
11 assumption that was made for the planned scenario. Isn't
12 that correct?

13 WITNESS LIEBERMAN: Yes. These are voluntary
14 evacuees who have made their own decisions, contrary to
15 instructions. So that is correct. None of these evacuees
16 are assumed to enter the EPZ from the east, assuming that
17 they travel toward the west.

18 BY MR. MC MURRAY:

19 Q I'm not sure if I asked this question. Forgive
20 me if I did. Therefore you are assuming, are you not, that
21 the traffic control posts at the EPZ perimeter, whichever ones
22 there are are working effectively? Isn't that correct?

23 A (Witness Lieberman) No. We don't rely especially
24 or exclusively on the traffic control posts. We feel that if
25 an emergency were to occur, then that information would be

1 broadcast on virtually all channels of information. People
2 would be aware of the fact that an emergence exists and on
3 their own volition primarily they would seek to avoid the
4 EPZ.

5 As a matter of fact, consistent in the entire
6 concept of voluntary evacuation is the understanding that
7 an emergency has occurred. If they were unaware of an
8 emergency, they wouldn't be involved in voluntary evacuation.
9 So we assume that, on their own volition, they would avoid
10 the EPZ. The presence of the traffic control posts are
11 really meant to reinforce this and to help identify the
12 boundaries of the EPZ to those who may not be familiar with
13 them.

14 Q Well it's true, isn't it, that the Long Island
15 Expressway and the Sunrise Highway are the only two major
16 limited access roads running east-west from the East End?

17 A Well, the fact that a road may not be --

18 Q Isn't that the fact, Mr. Lieberman?

19 A No. What you have done is you have combined the
20 term "major" and "limited access" and I reject that. It's
21 not necessary for a road to be limited access in order for
22 it to serve as a major road in that particular area.

23 Q The question is, but aren't they the only major
24 limited access roads?

25 A They are the only limited access roads.

1 Q And of those two roads, isn't it true that the
2 Long Island Expressway has the greater capacity?

3 A Yes, it does.

4 Q And isn't it true that -- strike that question.

5 Now for the uncontrolled evacuation you state that
6 -- and again let me get this clear. The uncontrolled
7 evacuation is where there are no traffic control posts
8 established, isn't that correct?

9 A That is correct.

10 Q Now there you assumed that four percent of the
11 population from the East End enters the EPZ. Is that correct?

12 A That is correct. The area immediately north of
13 exit 72 and just outside the EPZ is the area where we assume
14 that some portion will, in fact, enter the Long Island
15 Expressway, given the absence of traffic control guides.

16 Q Now is this four percent of the East End population
17 or four percent of the voluntary -- the number of voluntary
18 evacuees you are assuming?

19 A I would have to check my figures on that.

20 Q Can you do that quickly?

21 A Excuse me for a moment.

22 Q Mr. Lieberman, maybe I could just refer you to a
23 sentence on page 15 that might clear it up. You state that
24 while an uncontrolled evacuation a small portion, approximately
25 four percent of these evacuees -- and I assume you're talking

1 about the voluntary evacuees -- were assumed to enter the
2 EPZ. So I guess we're talking about four percent of the
3 voluntary evacuees. Is that correct?

4 A Okay. I can accept that. I would have preferred
5 to check the figures, but given that, I will go along on that
6 basis.

7 Q How were these four percent voluntary evacuees
8 treated, once they entered the EPZ? The question I'm
9 asking is were the people who entered the EPZ considered
10 only with respect to their effect on the evacuation times
11 of those people who were leaving from the EPZ or were their
12 times actually considered as part of the total evacuation time
13 estimate? Do you understand what I'm getting at?

14 A Yes. I think I do.

15 Q Well, having entered the EPZ, then they would be
16 considered part of the population that was within the EPZ
17 and consequently any effect they might have on the evacuation
18 time was included?

19 A My recollection is the number vehicles involved
20 was very small, but I can't quantify without referring to
21 the computer listings.

22 Q Now just to get this straight, therefore the
23 evacuation time clock would not stop ticking until the last
24 one of those cars was out of the EPZ? Isn't that true?

25 A The simulation time clock doesn't stop ticking

1 until all people from within the EPZ have left.

2 Q Including those who have entered from the east?
3 The four percent?

4 A There's no distinction made in that respect.

5 Q Now in the uncontrolled scenario, there are no
6 traffic posts to warn people to go down to the Sunrise Highway.
7 Therefore, isn't it likely that a substantial number of
8 people from the East End will try to take the Long Island
9 Expressway, or other routes, through the EPZ?

10 A I think I have already answered that. The
11 very act of voluntary evacuation represents a knowledge that
12 there is an emergency and a knowledge of where that emergency
13 is taking place. And the motivation to evacuate is to
14 avoid the areas which are at risk.

15 I think, consistent with that motivation, it
16 stands to reason that people would take routes which avoid
17 entering the area at risk.

18 Q So therefore you assume that the voluntary
19 evacuees have knowledge of the EPZ boundaries, correct?

20 A By definition.

21 Q And you are assuming that they have knowledge
22 of the area at risk, correct?

23 A That is correct.

24 Q And you are assuming that they have knowledge, or
25 they are perceiving, that they will not be able to pass west

1 of the plant, along the Long Island Expressway, before the
2 plume passes. Isn't that correct?

3 A There are a lot of phrases in your question.
4 First of all, the idea of knowledge about a plume is not
5 assumed. People have indistinct ideas about the nature of
6 the emergency or of the risk and it's not necessary to
7 particularize it. Essentially, the answer I gave previously
8 still applies. If people are strongly motivated to override
9 the recommendations of the media and of the emergency
10 personnel, to leave the security and safety of their homes
11 at a large distance from the EPZ, and take to the roads and
12 travel, they are doing so because they are highly motivated
13 to avoid the area at risk.

14 Consistent with that approach, it follows
15 naturally that they would do so.

16 Q Now the voluntary evacuees, you assume, are moving
17 to the west in order to flee whatever danger they are
18 perceiving? Is that correct?

19 Don't you assume a westerly evacuation for
20 volunteer evacuees?

21 A That is done within the context of our study.

22 Q Now if a voluntary evacuee perceived that he
23 could move west more quickly and more safely by using the
24 Long Island Expressway, isn't it likely that he would take
25 the Long Island Expressway?

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1 A No, I don't think that's a rational presumption.
2 I've already said, several times, that the overriding factor
3 which motivates people to take an action which is contrary
4 to the information given to them is to avoid the risk.
5 And avoiding risk, in this situation, is avoiding a particular
6 area associated with that risk. Consequently, they would
7 not be moving through the EPZ, the very area of risk that
8 they're trying to avoid.

9 John, do you want to take that?

10 A (Witness Weismantle) I would like to add that,
11 as the testimony states up front, these were sensitivity
12 runs based on the presumption that people would do this,
13 which we don't agree with. And the reasons we don't agree
14 with that were spelled out in our human behavior testimony
15 on these issues and litigated in December.

16 No motives were imputed to the people in the
17 development of the particular time elements that are contained
18 in the testimony.

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KI:ki 3:1

1 Q Isn't it true that people who would be evacuated
2 from the east have already perceived they'd be at risk?

3 Isn't that the motivation for evacuating?

4 A (Witness Lieberman) No, I don't think so.
5 You're asking me to analyze the decision processes
6 of people.

7 Q And you have no opinion why people at the east
8 end would evacuate?

9 A I don't believe they would.

10 Q Why did you assume in this study that certain
11 portions of the population would evacuate?

12 A These studies were not conducted as part of the
13 activities for developing the plan.

14 The Appendix A document has nothing to say about
15 the shadow effect. The reason we conducted these studies
16 was in response to contentions raised by the County. As such,
17 they constitute sensitivity studies, rather than studies
18 which are to produce results for the purpose of developing
19 the plan. The plan does not consider voluntary evacuees from
20 the east.

21 (Pause.)

22 Q How did you derive the 4 percent figure? Was it
23 based on any empirical data?

24 A No, it's not based on any empirical data.

25 Essentially what we did is, we took the worst

KI:ki 3:2

1 possibility, and reasoned that under the worst conditions,
2 people in the immediate vicinity just north of the eastern
3 terminus of the LIE and just out the EPZ -- that is, to the
4 east -- would in fact take the Long Island Expressway.

5 There is no basis for that. What we wanted to do
6 was to represent a worst case condition.

7 I'm inclined to feel that in actual fact, they
8 would not take the LIE. But we bent over backwards to load
9 the situation within the context of the sensitivity run to
10 the worst possible conditions.

11 Q You mean it was your assumption, then, that
12 4 percent of the east-enders entering the EPZ was the worst
13 possible condition you could imagine?

14 A It's not a question of using imagination. It's
15 a question, one, of doing an analysis of the underlying
16 factors and coming to some conclusion.

17 If you look at the maps, what you find is that to
18 areas east of the one which we used, where the 4 percent
19 trips were generated, the highway system contains major
20 two-lane arterials which do in fact feed people from the north
21 fork across the Peconic River and south towards Sunrise
22 Highway and Montauk Highway.

23 Consequently, there is available access for these
24 people to travel in this direction.

25 Q Your evacuation times would have been higher, would

KI;ki 3:3

1 they not, if you had assumed that 25 percent of the people
2 from the east end enter the EPZ?

3 A I don't believe so.

4 What our studies do show, and I think at this
5 point, since we're talking about results of studies, we ought
6 to take a look at them -- what I'd like to reference here is
7 Attachment 6 of the testimony, which is a rather concise
8 compilation of those cases which appear in Appendix A; namely,
9 cases 1 through 21 and cases 22 through 36, which constitute
10 the major sensitivity studies that we performed in order to
11 get some quantitative idea of what the effects would be of
12 those conditions hypothesized by the Suffolk County contentions.

13 You will notice that cases 22 and 23, 26, 27, and
14 28 all deal with the so-called "shadow phenomenon."

15 We can compare, for example, the results of
16 case 22 which deals with a summer population, and consistently
17 some of the population both within and without the EPZ, under
18 the assumption that 25 percent of the population in the
19 10 to 20-mile region outside the EPZ will elect to voluntarily
20 evacuate in contradiction to the instructions which are
21 provided to them by the various media.

22 If you compare the results of this case 22 with
23 results of case 12 which is comparable in every respect
24 except for the shadow effect, one sees that the time to
25 evacuate the entire EPZ increases from 4 hours and 55 minutes

KI:ki 3:4

1 to 5 hours and 50 minutes, an increase of 20 minutes.

2 If the shadow effect were to be doubled -- that
3 is, one took the presumption that 50 percent of the people
4 from the east would leave the safety and comfort of their
5 homes and travel in the general direction of the radioactivity,
6 then there is a further increase in the total time to evacuate
7 people from within the EPZ of about 1 hour and 20 minutes.

8 Q Excuse me, Mr. Lieberman.

9 These voluntary evacuees, though -- the 25 percent
10 and 50 percent in cases 22 and 23 -- are not being routed
11 through the EPA: isn't that correct?

12 My question to you was, if you directed 25 percent
13 of the voluntary evacuees from the east end through the EPZ,
14 wouldn't your evacuation times be higher?

15 A It's an academic question.

16 No one directs traffic through, unless you're of
17 the opinion that actually would happen.

18 As I mentioned earlier, first, we don't believe
19 that the number of voluntary evacuees would reach these
20 levels; and second, the very nature of their decisions would
21 preclude such an action on their part to enter the very
22 area that has motivated them to contradict the instructions
23 they were given.

24 I think we're dealing here with essential contra-
25 dictions.

1 Q You didn't conduct any sensitivity analyses, did
2 you, to determine what the effects would be on the evacuation
3 time estimates if you assume that more than 4 percent of
4 the people from the east end entered the EPZ?

5 A No, we did not.

6 (Pause.)

7 Q Just to get this clear, Mr. Lieberman, in cases 22
8 and 23, there were no voluntary evacuees being directed
9 through the EPA. Isn't that correct?

10 A That is correct.

11 Q Now, I believe you stated that in your study
12 KLD 77, you modeled the network outside of the EPZ only out
13 to another 10 miles beyond the edge of the EPZ.

14 Is that correct?

15 A That is correct.

16 This was done --

17 Q Just yes or no, Mr. Lieberman.

18 A Yes, that is correct.

19 Q Thank you.

20 Now, the reason that you did so is because,
21 according to your testimony -- I believe on page 15, you
22 said that if a queue formed at a distance of 20 miles or
23 more from the Shoreham Plant during the time that the EPZ
24 was evacuating, the time for that queue to extend over
25 10 miles back to the EPZ boundary would exceed the time

KI;ki 3:6

1 required to evacuate the entire EPZ.

2 Isn't that the reason why you modeled out just
3 10 miles beyond the EPZ?

4 A I think you're bouncing around here. You've
5 been talking about evacuees from the east, and the statement
6 you just alluded to has to do with evacuees to the west.

7 The basic reason we did this, again, as I mentioned
8 before, was for the purpose of responding to the point of
9 view advanced by the County.

10 It does not reflect a conviction on our part
11 that there is a need to do that sort of thing.

12 Q I understand that, Mr. Lieberman.

13 Don't you state that the 20-mile limit was chosen
14 for the precise reason that I just read on pages 15 and 16?

15 A No.

16 The motivation for the runs had to do with the
17 November '82 report submitted by a consultant to the County
18 which indicated that, in their view, it was necessary to
19 consider the EPZ to 20 miles, and that in fact their analysis
20 considered only the EPZ within the 20 miles.

21 Our work was done to respond to that postulated
22 area at risk.

23 Now, the statement that you quoted is correct.
24 We're speaking here of queue formation to the west of the
25 EPZ by traffic which presumably evacuates to the west of the

1 20-mile boundary of the EPZ.

2 Q And the reason that the 20-mile limit was chosen
3 was because, as you stated, it follows that any congestion
4 occurring beyond 20 miles of the plant would have no effect,
5 according to your testimony. Correct?

6 A No, that's not a correct reason.

7 The reason the 20 miles was chosen was to be
8 responsive to the postulated area at risk indicated by the
9 County. The County considered a 20-mile area; we considered
10 a 20-mile area.

11 Now, having said that --

12 Q Where does it say that?

13 A I'm telling you now. But having said that, the
14 statement in the testimony is correct.

15 (Pause.)

16 Q Therefore, isn't it correct then, in determining
17 the number of voluntary evacuees that you were modeling from
18 the east, you did not include any of the population more
19 than 10 miles to the east of the EPZ?

20 A No, more than 10 miles from the eastern boundary
21 of the EPZ -- a distance out to 20 miles from the EPZ --
22 I'm sorry.

23 Q Just to get that clear, that means that anybody --
24 you assumed that nobody from beyond 10 miles of the eastern
25 boundary of the EPZ voluntarily evacuated to the west. Correct?

KI:ki 3:8

1 A That's correct.

2 It would be fruitless to do so.

3 Q In your opinion?

4 A No, according to the results generated by the
5 model.

6 I think it's important for you to understand what
7 the effects of the presumed voluntary evacuation from the
8 eastern portion of Long Island would have on the evacuation
9 times of people who originate within the EPZ.

10 Q I don't think there's any question on the table
11 right now.

12 A Well, I think there is, because you've asked the
13 question --

14 Q Mr. Lieberman, there's no question on the table
15 right now to address.

16 MR. IRWIN: Judge Laurenson, I'm going to ask for
17 an instruction from the Board.

18 Mr. McMurray's trying to brow-beat the witness and
19 not letting him finish answers to questions. And he's asked
20 him questions which are not susceptible to yes or no answers,
21 and has not given the witness a chance to explain.

22 MR. MC MURRAY: Judge Laurenson, Mr. Lieberman
23 is launching into a speech which does not have anything to
24 do with the question I asked.

25 JUDGE LAURENSEN: I think the witness has completed

KI:ki 3:9

1 the answer to the question.

2 (Pause.)

3 BY MR. MC MURRAY:

4 Q Mr. Lieberman, I believe you said earlier that
5 you hadn't conducted any sensitivity analyses to determine
6 what the effect would be if more than 4 percent of the
7 population were assumed to travel through the EPZ.

8 Correct?

9 A That is correct.

10 Q I'm sorry -- the voluntary evacuees, rather than
11 the population.

12 Now, let me refer you to Attachment 6 of your
13 testimony. Do you have that?

14 A Yes.

15 Q Case 24 -- I'm sorry -- case 25 is the case where
16 there is an evacuation of the 10-mile EPZ under winter
17 conditions, inclement winter conditions, where there is an
18 uncontrolled evacuation, but where there is assumed compliance.

19 Correct?

20 A Well, compliance in the sense that the people do
21 in fact travel along the routes which are recommended to them.

22 That is correct.

23 Q And the evacuation time for that run was
24 7 hours and 55 minutes. Correct?

25 A That is correct. That is time that it took for

1 100 percent of the population within the 10-mile EPZ to be
2 evacuated.

3 Q Now, in case 28 again, we have a 10-mile evacuation,
4 again during the winter, again during inclement weather,
5 again it's an uncontrolled scenario, again there is assumed
6 compliance.

7 And this time we have a 50 percent shadow
8 phenomenon assumed. Isn't that correct?

9 A On both the east and west.

10 Q Now, in case 28, you assumed that 4 percent of the --
11 50 percent of the evacuees enter the EPZ?

12 Correct?

13 A That is correct.

14 Q Okay.

15 So that means that 2 percent of the total of the
16 voluntary evacuees enter the EPZ.

17 Is that correct?

18 A No. That's 2 percent of your total number of
19 evacuees from the 10 to 20-mile region east of the EPZ
20 during the winter months.

21 That's correct.

22 Q I think you said before, that's a relatively small
23 number. Is that correct?

24 A Yes, it is.

25 Q Okay.

KI:ki 3:11

1 And yet that relatively small number of cars
2 entering the EPZ increased the evacuation times by
3 2 hours and 10 minutes.

4 Isn't that correct?

5 A No, that's absolutely wrong. Totally and
6 absolutely incorrect.

7 Q To compare, isn't the evacuation time for
8 case 28, 10 hours and 5 minutes?

9 Isn't 10 hours and 5 minutes --

10 A That 10 hours and 5 minutes, as I indicated
11 earlier, reflects the impact of the shadow effect of both
12 the east and the west.

13 The predominant effect turns out to be evacuation
14 of voluntary -- evacuation of the population to the west of
15 the EPZ.

16 Q Have you conducted a sensitivity analysis?
17 Strike that.

18 Now, it's also -- let me refer you to page 16 of
19 your testimony.

20 You assume, don't you, that evacuees leaving from
21 outside the EPZ have a trip generation period of four hours,
22 but that those within the EPZ have a trip generation period
23 of two hours.

24 Correct?

25 A That is correct.

1 It is our opinion that four hours is probably on
2 the low side, but we used it anyway.

3 Q I believe you state that one reason for the longer
4 mobilization time is that people outside the EPZ will not have
5 sirens to alert them.

6 Isn't that correct?

7 A That's one of many reasons. It's probably of
8 lesser importance than the others.

9 Q Well, let me refer you to Attachment 10 of your
10 testimony.

11 This is entitled, "Development of Time Distributions
12 for Evacuation Events and Activities."

13 Let me refer you to page 3 of that attachment,
14 which is the Time Distribution of the Alert Notification
15 Process.

16 A Did you say Figure 3?

17 Q I'm sorry, page 3.

18 Don't you say in that study, that you assumed that
19 knowledge of an accident would spread quickly?

20 A Yes, I do.

21 Q And that's because you assume that the media will
22 broadcast the facts about the accident rapidly?

23 A Yes.

24 Q And doesn't this time distribution show -- well,
25 first of all, does distribution No. 1 pertain to only

KI:ki 3:13

1 people inside the EPZ, or also commuters who are outside the
2 EPZ?

3 A It pertains to both sets of people, those within
4 the EPZ as well as those outside.

5 Q And from this distribution, can't you infer that
6 there will be very little difference in the amount of time
7 it will take to alert those outside the EPZ, as opposed to
8 alerting those within the EPZ?

9 A No, that's not correct.

10 If you are examining the tabulation of figures in
11 Distribution 1, you'll notice that 50 percent of the population
12 that we're considering here have been notified within
13 10 minues.

14 And the rationale for that is that the sirens
15 within the EPZ have been sounded, and their meaning has been
16 understood. So that is the factor which expedites the
17 notification process.

18 For people who live outside the EPZ in the absence
19 of sirens, one could hardly expect that 50 percent of the
20 population will be notified in 10 minutes.

21 So what you would have then is a delayed time
22 distriktion relative to the one that is given here, because
23 of the absence of the sirens.

24 Q Doesn't this show that people, both within the
25 EPZ and outside the EPZ, will all be notified within 40 minutes?

KI:ki 3:14

1 A That is correct.

2 Q So at the most, the most difference there could
3 be in notification time would be 40 minutes.

4 Correct?

5 A That is correct.

6 Q And isn't it probable that some people outside the
7 EPZ would be notified before people inside the EPZ?

8 A Well, I don't know what the basis of that is. The
9 people inside the EPZ are notified immediately by virtue of
10 the sirens sounding.

11 People outside the EPZ don't have access to that
12 kind of warning mechanism.

13 Q Are you assuming, then, that all people in the
14 EPZ are notified before anybody outside the EPZ?

15 A No.

16 There's always the possibility that there may be
17 a small number of people outside the EPZ who learn of the
18 emergency before all the people within the EPZ learn of the
19 emergency.

20 We're not dealing with here with a sharp stratifi-
21 cation. Certainly, some sirens are located near the edge of
22 the EPA, and people outside will hear it.

23 Q In fact, many people outside the EPZ may learn of
24 the accident within five or ten minutes after the sirens have
25 sounded. Correct?

End 3

1 A It's reasonable to expect that some will.

2 Q Now, another reason that you give for the longer
3 mobilization time of people outside the EPZ is the fact that
4 no special provision is made for transporting children home
5 from school, as is done within the EPZ.

6 Is that correct?

7 A I believe that's what it says.

8 Q Now, that reason wouldn't apply where an evacuation
9 is called for during non-school hours.

10 Correct?

11 A If an evacuation were called for during non-school
12 hours, the entire analysis process would differ.

13 I'm sorry -- not the process, but results.

14 Q Because in both cases, bringing children home from
15 school would not be a factor. Correct?

16 Both inside and outside the EPZ, bringing children
17 home from school would not be a factor if school was not in
18 session?

19 A I think that's by definition.

20 Q Finally, you state that the third reason for the
21 longer mobilization time is that the perceived need to
22 evacuate rapidly is likely to be weaker outside of the EPZ,
23 since media messages and other emergency information would
24 emphasize that these areas are safe.

25 Are you saying here that if somebody decides to

1 evacuate from the east end, they're going to evacuate more
2 slowly or mobilize more slowly, even though they want to
3 evacuate to the west?

4 A I think one has to think about the process of
5 decision-making and what it is based upon.

6 Q Are you qualified to do that, Mr. Lieberman?

7 A To some extent, yes.

8 As part of my work over the past 13 years, I have
9 participated in projects which involve human factor analyses,
10 and have worked closely with some of the foremost experts
11 in that area.

12 I do not consider myself a human factors expert.
13 I consider myself knowledgeable about some basic tenets of
14 human factors as it applies to the traffic environment.

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End 4

1 Q And that experience leads you to believe
2 that people who want to evacuate to the west, who are
3 voluntary evacuees from the east, will for some reason take
4 a longer time to leave their homes because they don't
5 perceive there is as much urgency? Is that correct?

6 A Yes. This is largely reflected, I think, in
7 the testimony of Dr. Milette, with which I concur.

8 Q Is it your understanding that Dr. Milette stated
9 that people who do evacuate from the East End will do so
10 more slowly or with less urgency? That question is directed
11 to Mr. Lieberman.

12 A (Witness Weismantle) I think I co-sponsored this
13 answer in the revised testimony.

14 MR. MC MURRAY: The question is for Mr. Lieberman.

15 JUDGE LAURENSEN: We can only have one person
16 talking at a time. The procedure that we have established
17 is the attorney can direct the question to one witness and
18 that witness can give his answer to the best of his
19 ability. Then to the extent it's a co-sponsored answer,
20 any other witness who is a co-sponsor may then supplement
21 that answer. That is a procedure that has worked fairly
22 well now. I think we will continue with that.

23 WITNESS LIEBERMAN: The basic tenet of Dr. Milette's
24 testimony is that if you provide people with information,
25 which is clear and unambiguous, they will respond accordingly

1 to it. And I think more detail can be given by Mr. Weismantle.

2 Q Mr. Weismantle, I don't see, on page 16 --

3 A (Witness Weismantle) May I respond to the question?

4 Q I don't see --

5 MR. IRWIN: Judge Laurenson, I would like to have
6 Mr. Weismantle respond to the question.

7 JUDGE LAURENSON: He's clarifying whether he's
8 a co-sponsor or not. Let him resolve that question.

9 BY MR. MC MURRAY:

10 Q Are you a co-sponsor of question 12?

11 A (Witness Wismantle) I thought this was one of them
12 we added, but I don't have my copy marked up here.

13 MR. MC MURRAY: Has anybody found the document?

14 MR. IRWIN: I found the document. We are referring
15 to question and answer 12 on the testimony, Contentions
16 23 C, D, and E. Mr. Weismantle is not a co-sponsor of that
17 answer.

18 JUDGE LAURENSON: The question we still don't have
19 resolved is whether you want to allow Mr. Weismantle to
20 supplement that answer now, or do you want to have LILCO wait
21 until they do it on their redirect examination? We clearly
22 have determined that Mr. Weismantle is not a co-sponsor to
23 the answer to question 12.

24 MR. MC MURRAY: I prefer to go on, Judge
25 Laurenson.

51b3

1 MR. IRWIN: I will come back to it on redirect.

2 BY MR. MC MURRAY:

3 Q On page 8 of TM 77, that is Attachment 11, you
4 state I believe that evacuating vehicles originating within
5 the EPZ will gain access to that segment of Sunrise Highway
6 which lies just within the EPZ, well before any substantial
7 traffic originating within the east network. It follows
8 that these voluntary evacuees from the east will trail the
9 evacuating vehicles from within the EPZ, rather than impede
10 them. The conclusion that the voluntary evacuees will trail
11 evacuees from the EPZ is based largely on your assumption
12 that the mobilization time for people outside the EPZ will
13 be longer. Isn't that correct, Mr. Lieberman?

14 A (Witness Lieberman) The quotation you made from
15 the report does contain one error of documentation. That is,
16 the phrase which indicates that Sunrise Highway lies just
17 within the EPZ. If you check back to the Appendix A document,
18 you will find that Sunrise Highway is specifically excluded
19 from the EPZ. So before I answer your question, I would like
20 to get that on the record.

21 The following sentence, which you focus on,
22 reflects, to a great extent, the deployment of population to
23 the east rather than the spread overtime of the loading
24 distribution. If you examine Exhibit 1 of Appendix A --
25 rather, Exhibit 2 of Appendix A -- I think you ought to do

1 that and I think I would then have a basis for responding
2 to your question.

3 Once again, Exhibit 2 contains a graphical
4 representation of the trip table, which in turn reflects the
5 pattern of recommended routes for those people who initiate
6 their evacuation trips from within the EPZ. If you focus
7 on the lower left hand corner of that diagram, you will
8 find that we have delineated as 8007 the destination node
9 or exit node of traffic which either moves along Sunrise
10 Highway or moves south along links 67, 129. You'll notice
11 all the blue lines which are drawn to that exit node, with
12 perhaps one exception, represents areas in which people
13 reside very close to Sunrise Highway. As a matter of fact,
14 a distance of generally within two miles. In a couple of
15 cases it might be as much as -- in one case as much as
16 five miles. In another case, Brookhaven, perhaps two or
17 three miles.

18 So essentially then, Sunrise Highway will service
19 people who are locally distributed relative to that facility.
20 That translates into relatively short distances of travel.

21 Our studies also show that even with Sunrise
22 Highway heavily traveled, the rate of flow of people along
23 the southbound routes which feed that facility take place
24 at such a rate that virtually everyone has reached exit node
25 8007 in approximately three hours following the beginning

51b5

1 of evacuation. And you have to add 20 minutes to that to
2 relate that time to the order to evacuate in the absence of the shadow
3 effect to the east. And it's approximately one-half hour
4 longer if one takes into account the shadow effect, so-called,
5 of voluntary evacuees from the east, who move along Sunrise
6 Highway.

7 Q I'm not sure I understand your answer. Let me
8 see if I can clarify it. Isn't true that the area south
9 of the Sunrise Highway which, as you state, is the southern
10 boundary of the EPZ, is populated?

11 A It certainly is. People live there.

end t5

1 Q And there are people living just about all
2 along the Sunrise Highway, aren't there, as it goes out
3 towards the south fork?

4 A If you give me a moment, I would like to be able
5 to respond to that.

6 (Pause.)

7 Q All right.

8 A Yes, you are referring to primarily the Mastic
9 community.

10 Q Isn't there a concentration of population also
11 in the Eastport area and further to the east along Sunrise
12 Highway?

13 A Yes, according to the map I have in front of
14 me, the density of population there is considerably lighter
15 than in the Mastic area.

16 But you're quite right. People who live along
17 the south coast of Long Island.

18 Q Aren't there concentrations of population in
19 the Moriches area, which is also south of Sunrise Highway?

20 A I think my last answer covers that.

21 Q I thought you were talking about the Mastic
22 area.

23 A I think I used the phrase, all along the south
24 coast of Long Island.

25 Q And for all of these areas, the travel distance

6pb2

1 to the Sunrise Highway is relatively short, is it not?

2 A Yes, it is.

3 Q So therefore, that population which is outside
4 the EPZ could load onto the Sunrise Highway, relatively
5 quickly; isn't that correct?

6 A Under the presumption that they would do so.
7 And I call your attention to the fact that the half hour
8 increase in evacuation time results from the fact that
9 traffic conditions along Sunrise Highway are heavily traveled.
10 That is, they are experiencing congestion.

11 We don't really care, for the purpose of
12 estimating evacuation times for people within the EPZ, where
13 these people come from. Whether they come from Mastic or
14 Mariches or to the east is not relevant.

15 The fact is that Sunrise Highway does become
16 congested with traffic, and the effect of these additional
17 voluntary evacuation as assumed acts to extend the evacuation
18 time approximately one-half hour.

19 Q Isn't it true though, that the population coming
20 from Moriches of Mastic or Eastport is not likely to trail
21 the population coming down from the EPZ that's going to get
22 onto Sunrise Highway. But in fact, will arrive at the
23 Sunrise Highway around the same time period, assuming that
24 there are voluntary evacuees from south of the Sunrise
25 Highway?

6pb3

1 A Again, you use the term "likely." I think there's
2 an essential disagreement here about the number of people
3 who would choose to voluntarily evacuate under the assumption
4 that --

5 Q Let's make that assumption.

6 A All right. Conditioned on that assumption then
7 one has to make the further assumption as to the timeliness
8 of their decision to do so. That has never been established.
9 And one can only try to approximate it by making a
10 reasonable judgmental assumption as to what that may be.

11 So we're dealing here in a very nebulous area.

12 Q Isn't it true that many of the people from
13 outside the EPZ could get to the Sunrise Highway well before
14 many of the evacuees from within the EPZ who are routed
15 down to the Sunrise Highway?

16 A Well, under the conditions that both sets of
17 populations start at the same time and have the same
18 imperatives to evacuate, given that the distances are similar,
19 one can arrive at that conclusion.

20 Again, this is a conditional conclusion.

21 Q Isn't it true that since the Mastic community
22 and the Moriches community and the Eastport community are
23 much closer to the Sunrise Highway than many of the
24 population centers which are routed down to the Sunrise
25 Highway, that even if those communities outside the EPZ left

1 later than those within the EPZ, they would still not trail
2 the evacuees from within the EPZ?

3 A No, that's not true.

4 Q What population centers are routed down to the
5 Sunrise Highway from within the EPZ?

6 A I think if we refer to Exhibit 2 we can identify
7 the associated origin nodes. If you are leading up to a
8 question of asking me to quantify what that is, then I will
9 have to take some data.

10 Is that what you were leading to?

11 Q No. Let me refer you to origin node 42 on
12 Exhibit 2.

13 A Yes, sir.

14 Q Now that traffic is routed down to the Sunrise
15 Highway; correct?

16 A That's correct.

17 Q Now, do you have an idea of the travel distance
18 between origin node 42 and the Sunrise Highway?

19 A I will try to give you as accurate an answer as
20 I can.

21 Q Can you estimate it?

22 A I would say it's about five miles.

23 Q Is that as the crow flies, or along roads?

24 A The road leading down from Middle Country Road
25 to Sunrise Highway is, I think, a direct route. It runs

6pb5

1 north-south. I think five miles is a reasonable estimate.

2 It might be another mile, but that's the most
3 I'll give you.

4 Q Okay. Now the Mastic area is much closer to the
5 Sunrise Highway than five miles; isn't that correct?

6 A That is correct.

7 Q Therefore, even if the people from Mastic took
8 a somewhat longer time to mobilize, isn't it possible that
9 they could reach the Sunrise Highway, either before or in
10 the same time period as those people coming down from origin
11 node 42?

12 A Given the presumption that they do so, it
13 certainly is possible that some of the people in Mastic
14 would in fact reach Sunrise Highway before some of the
15 people from that area, yes.

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End 6.

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1 Q Mr. Weismantle, let me refer you to page 21 of
2 your testimony. You state there that LERO plans to assign
3 personnel at all major entrances to the EPZ, to guide
4 traffic entering and leaving the EPZ at those locations.
5 Do you have that in front of you?

6 A (Witness Weismantle) Yes, I do.

7 MR. IRWIN: Excuse me. This is the testimony
8 back on Contention 65?

9 MR. MC MURRAY: No, we're still on the same
10 document. I believe this refers to 23.H.

11 JUDGE LAURENSEN: Just for clarification, what
12 question number are you referring to?

13 MR. MC MURRAY: I believe it's 23.H, question
14 16.

15 JUDGE LAURENSEN: Thank you.

16 BY MR. MC MURRAY:

17 Q Mr. Weismantle, would you consider the Northville
18 Turnpike a major entrance into the EPZ?

19 (Witnesses conferring.)

20 A (Witness Weismantle) We're looking. Northville
21 Turnpike is not in the EPZ.

22 Q Doesn't the Northville Turnpike dead end, or come
23 directly into the boundary of the EPZ, which is along Roanoke
24 Avenue?

25 A You had better check another map.

71b2

1 Q I'm on map 20 of the Hagstrom, if that will help
2 you.

3 A Yes, it does dead end on Roanoke Avenue, but that
4 is still outside the EPZ.

5 Q Roanoke Avenue is one of the boundaries of the EPZ,
6 isn't it?

7 A No, not down there. Roanoke Avenue -- a short
8 portion of it, about a mile or so north of the point where
9 Northville Turnpike dead ends in Roanoke Avenue, is on the
10 boundary of the EPZ, but that's a mile away from this point.

11 Q Thank you.

12 MR. MC MURRAY: Judge Laurenson, this is as good
13 a time as any for the morning break, if you want to break now.

14 JUDGE LAURENSEN: We'll take our morning recess now.

15 (Recess.)

16 JUDGE LAURENSEN: Let's resume.

17 Please continue, Mr. McMurray.

18 BY MR. MC MURRAY:

19 Q Mr. Weismantle, let me refer you to page 95 of
20 your testimony on Contention 65. We are switching now to a
21 new document. Page 95. You state there that LERO intends
22 to adopt FEMA's recommendation and utilize helicopters for
23 aerial surveillance of evacuation routes. Do you presently
24 have agreements with any helicopter companies, to provide
25 such helicopters?

1 A (Witness Weismantle) Yes, we do.

2 Q What helicopter company is that?

3 A Island Helicopter.

4 Q Do you have a copy of the agreement, with
5 Island Helicopter, with you?

6 A I may. Let me check.

7 Q It's not in Revision 3 of the plan, is that correct?

8 A That's correct. It was signed -- it was too late
9 to get into that revision. It was signed just about at the
10 time the revision went to print.

11 Q You needn't get the agreement at this time. It's
12 true, isn't it, that the helicopter route spotters will not
13 be able to operate under certain inclement circumstances, isn't
14 that correct?

15 A I'm sure there are times when helicopters would
16 not go up in the air because of weather conditions. That's
17 true.

18 Q A day like today might be an example, right?

19 A I'm not a helicopter pilot. I don't see a lot
20 of wind. Just a mild amount of snow. I would imagine they
21 could go up on a day like today.

22 Q Have you done an analysis to determine, on average,
23 how many days out of the year helicopters would be effective
24 and could be used as evacuation spotters?

25 A No, we haven't done such a detailed analysis as

1 that. We will use them whenever we can. And I think it's
2 obvious that a large majority of the time they would be
3 able to fly, just from my knowledge of weather on Long Island.

4 Q Long Island is subject, though, to fogging condi-
5 tions. Isn't that correct?

6 A As far as I know, that's correct.

7 Q Now whether the evacuation route spotting function
8 is performed by helicopters or by personnel on the ground,
9 evacuation routes will not be changed according to -- even
10 if they see congested conditions. Isn't that correct?

11 A They would be -- well, let me say yes, in general.
12 But let me add, just a basic tenet of emergency preparedness
13 is that if circumstances change in a real accident, in such
14 a way that makes it wise to modify your pre-plan, the
15 pre-planned stops you had outlined in your plan, such that
16 you would achieve your objective better, you make the change.
17 And the objective is to reduce does.

18 So if there were a circumstance, it would be
19 highly unlikely that we would require a change in route. And
20 if we were absolutely convinced that change of route would
21 help us meet our objective, serous consideration would be
22 made to making that modification. But as I said, I think
23 that is highly, highly, highly unlikely and I can't imagine
24 that happening.

25 Q There are no procedures in the plan for changing

71b5

1 routes, isn't that correct?

2 A No. There are no pre-plans established to change
3 routes, that's right. It's highly, highly, highly unlikely
4 that it would be appropriate.

5 Q Now the evacuation route spotters on the ground
6 may, in certain circumstances, have to travel along with
7 the evacuation flow. Isn't that correct, Mr. Lieberman?

8 A (Witness Lieberman) The patrol routes are laid
9 out in figure 8.1 on page 4-67 and 68. And since each
10 route is a circular one, then there is a prospect that,
11 certainly, during part of the travel they would be moving
12 with congested conditions.

13 Q Looking at Figure 8.1 of Appendix A, let's look
14 at Patrol Route number 1001. The route spotters directly
15 south on the William Floyd Parkway. That's one of the
16 evacuation routes, is it not?

17 A That particular route moves south on William Floyd
18 Parkway between Route 25A and Route 25. That is part of the
19 evacuation network.

20 Q Patrol Route 1002, the route spotter is sent south
21 on Yaphank Middle Island Road. Is that not one of the
22 evacuation routes also?

23 A Yes, it is. That portion of their route does
24 move in the direction of evacuating traffic. As I indicated
25 earlier, because of the circular nature of each of these

1 routes, it is likely that a portion of all of them would
2 move in the direction of evacuating traffic and the other
3 portion counter-direction.

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1 Q Mr. Lieberman, you recall our discussion prior
2 to the break where we were comparing Cases 25 and 28 that
3 you ran.

4 A Excuse me a moment. I don't have it in front
5 of me.

6 Q I believe the attachment is Attachment 6.

7 A I have it.

8 Q I believe your statement was earlier, that the
9 increase in evacuation times between Cases 24 and 28 -- I'm
10 sorry, 25 and 28 was largely due to the shadow effect to
11 the west of the EPZ. Is that a fair statement?

12 A Let me just check.

13 Yes. Those two runs compare the same conditions
14 with the exception that 50 percent of the population, 10 to
15 20 miles both east and west of the EPZ are assumed to
16 voluntarily evacuate under the conditions of winter,
17 inclement weather and the uncontrolled evacuation scenario.

18 Q The question, Mr. Lieberman, was whether or not
19 the difference in times between Cases 25 and 28 was due
20 largely to the effect of the evacuation shadow phenomenon
21 to the west of the EPZ.

22 A That is correct.

23 Q And you said also, I believe that the fact that
24 in Case 28, 2 percent of the East End population entering
25 the EPZ had very little effect, or did not substantially

8pb2

1 contribute to that increase in evacuation time. Is that
2 correct?

3 A That is correct.

4 Q Have you conducted an analysis to determine how
5 much of an effect the 2 percent of the population entering
6 the EPZ had in relationship to the effect that the western
7 evacuation shadow phenomenon effect had on the EPZ evacuation
8 times?

9 A The way we conducted the analysis of the shadow
10 effect was to focus on the additional impedance to vehicles
11 who are within the EPZ, due to the presence of queues that
12 they encounter in the process of leaving the EPZ.

13 Our analysis showed that the greatest effects
14 on contributing to the increased evacuation time takes
15 place in the northwest of the EPZ. Primarily along the
16 Nesconset Road facility, rather than the Long Island
17 Expressway.

18 Q But you haven't tried to determine how much
19 the increase in time is due to the 2 percent entering the
20 EPZ. You haven't tried to determine whether that caused
21 a half an hour increase in time between Case 25 and 28.

22 Or just whatever amount of time --

23 A Let me clarify the statement I just made. The
24 times that are given here are the maximum times.

25 What I'm saying to you is that these maximum

8pb3

1 times reflect the level of congestion in the northwestern
2 portion of the EPZ.

3 That implies that the Long Island traffic, that
4 is the traffic along the Long Island Expressway, discharges
5 from the EPZ at some earlier point and therefore does not
6 contribute to this figure which you see.

7 Q Let's assume that you increase the population
8 entering the EPZ from 4 percent to 20 percent. That would
9 be a five-fold increase in the number of people entering
10 the EPZ from the east.

11 Would you say that that would have no effect on
12 evacuation times?

13 A I can't make any judgment without an analysis.

14 Q You haven't done that analysis?

15 A No, we have not done that analysis. If you'd
16 like, I can try to do it now and give you a rough estimate.

17 Q I think since time is of the essence, we can
18 move on.

19 Actually, Mr. Lieberman, wouldn't that estimate
20 require running your model?

21 A That would be the best way to do it, but if
22 we made some assumptions, I think I can give you a number
23 which is in the ballpark and reasonable.

24 I can do that in a few minutes if you have the
25 patience for it.

8pb4

1 Q Maybe later. Mr. Lieberman, let me refer you
2 to the portion of your testimony dealing with contention
3 65.A. And specifically, the reference to KLD TM-139 which
4 is Attachment 10 to your testimony.

5 MR. IRWIN: Mr. McMurray, are you referring also
6 to a specific point in the testimony itself?

7 MR. MC MURRAY: The testimony on contention 65.A
8 references KLD TM-139 on page 52 in particular.

9 BY MR. MC MURRAY:

10 Q Do you have that in front of you?

11 A (Witness Lieberman) I have page 52 of the
12 testimony in front of me. And I also have the page
13 of KLD 139.

14 Q Now, KLD TM-139 is entitled Development of Time
15 Distributions for Evacuation Events and Activities; correct?

16 A That is correct.

17 Q And the purpose of this study was to develop
18 time distributions which would show, basically, how --
19 eventually how evacuation trips are distributed over time;
20 correct?

21 A It shows much more than that. It shows the
22 various activities which lead up to the point in time where
23 people begin their evacuation trips.

24 Essentially, it's designed to be consistent
25 with the guidelines presented in NUREG 0654 and specified in

8pb5

1 Appendix 4 of that document.

2 Q Let me refer you to page 3 of KLD TM-139. That
3 is the time distribution of the alert notification process.

4 Now, under distribution 1 -- let me back up a
5 bit. Distribution 1 is the time over which people will
6 become alerted to the fact of the emergency; correct?

7 A Yes, that's correct.

8 Q And the people being considered here, are both
9 people within the EPZ and commuters who live in the EPZ but
10 who are outside the EPZ at the time of the alert; correct?

11 A Yes, that's the population we focused on. That's
12 not to say that other people would not be notified. But
13 essentially, we're dealing with that population.

14 Q Now the column labeled Elapsed Time. That's
15 elapsed time from the time that the siren sounds; is that
16 correct?

17 A Yes. It's actually the time of declaration of
18 the emergency. So that would be coincident with sounding of
19 the siren.

20 Q Okay. On page 3 also you are assuming that the
21 public is alerted at the site area emergency stage through
22 sirens; isn't that correct?

23 A Yes. It is possible that the alert stage might
24 also constitute the point in time when an emergency might
25 be declared and the sirens sounded.

8pb6

1 But within the context of our document, in the
2 interest of defining a point in time, we had stated that
3 that point in time corresponds to the third classification.

4 Q Okay. Now looking at the first row in this
5 trip -- I'm sorry. In the alert notification process
6 distribution, you state that after five minutes, 30 percent
7 of the population would be notified.

8 Do you see that?

9 A Yes.

10 Q And it's true, isn't that, that the basis for
11 your conclusion that 30 percent of the population would be
12 notified in five minutes is based on your findings that
13 about -- and these are your findings in a telephone survey.
14 That about 32 percent of the commuters living in the EPZ
15 also work in the EPZ.

16 A That is one of the inputs to that particular
17 statistic. What we have done, again, to assume conservative
18 posture is to focus only on commuters.

19 We recognize -- and I think I mentioned this in
20 my deposition, that certainly there are other people who
21 reside and work within the EPZ who will have been notified
22 at that time.

23 Q I think we understand the population we're
24 working with. We have defined that.

25 Now, other than the first row -- I'm sorry.

8pb7

1 Other than the findings that about 32 percent of the commuters
2 living in the EPZ also work in the EPZ, isn't it true that
3 for the rest of this distribution you have no empirical data
4 to support that distribution?

5 A Actually, we do have empirical data which can
6 inferentially be translated into additional elements of
7 this distribution.

8 The data I am referring to is the distribution
9 of travel time for commuters as determined by that same
10 NCTR survey.

11 Q I'm talking solely about distribution 1.

12 A I'm referring to distribution 1. And what we
13 are saying here is that the rate of notification is related
14 to the distance of the people from the EPZ, in the sense
15 that they are within range of the sirens, even though they
16 may be outside the EPZ.

17 What we have determined is that approximately
18 50 percent of the commuter population live within 20 minutes
19 of their home. And approximately 67 percent or so live
20 within 30 minutes of their home.

21 Now, what we have done is to translate that
22 into distance and to do that we made some assumptions about
23 a reasonable mean speed of traffic during peak hour
24 conditions.

25 And by doing that we are able to determine that

8pb8

1 20 minutes, for example, at say, 25 miles an hour, translates
 2 into approximately eight or nine miles from their home. And
 3 on that basis, we have developed not all
 4 the rows of that distribution, but the early ones. The
 5 rows that characterized the early times.

End 8.

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ki 9:1

1 Q Is that the extent of the empirical data that
2 you have to support this distribution?

3 A That is correct.

4 Q Let me refer you to Distribution 2 on page 4.
5 This is the distribution for people preparing to
6 leave work. Correct?

7 A This distribution describes the elapsed time
8 between the receipt of the notification that an emergency
9 has occurred at Shoreham and the time that they begin their
10 trips home.

11 Q And isn't it true that you have no empirical data
12 to support this distribution? This is largely based -- this
13 is solely based on your judgment; correct?

14 A It's based upon judgment, which in turn is based
15 upon a knowledge of the relationship between working facilities
16 and the location of automobile transportation.

17 In the Long Island environment, we know from our
18 survey that over 95 percent of the people travel by car to
19 work. Using this -- having this data available and knowing
20 that all work facilities have parking lots which adjoin these
21 facilities, one is able to determine, knowing for example
22 how fast people walk, what the expectation is for people to
23 leave their desks, leave the facility, and walk to their
24 cars.

25 Incidentally, the average walking speed is

1 approximately 4 to 7 feet per second. If you want to multiply
2 that rate by 10 minutes, you have an example of how long it
3 takes to walk a certain distance.

4 Q And that's the extent of the data that you have to
5 support Distribution 2. Correct?

6 A That is correct.

7 Q Now, Time Distribution 3 is the time it takes to
8 travel from work to home over time, isn't that correct?

9 A That is correct.

10 That is obtained directly from a survey which was
11 conducted by NCTR.

12 Q So that the Distribution 3 is based on data that
13 you obtained from a telephone survey by the National Center
14 for Telephone Research.

15 Correct?

16 A That is correct.

17 We took the data, this particular data, and
18 compared it with the same kind of data obtained in the Colesurvey,
19 and found that they matched very precisely, and therefore we
20 have a high degree of confidence in its accuracy.

21 Q Now, the travel time for -- let me back up a bit.

22 There was a questionnaire used to conduct the
23 survey. Correct?

24 A That is correct.

25 Q And in that questionnaire, certain questions were

ki 9:3

1 asked of the responding households.

2 Correct?

3 A Questions were asked of the people, of an adult
4 over 18 years of age, within that household.

5 Q Now, the question was asked -- do you have the
6 questionnaire in front of you?

7 A No, I do not.

8 (Document handed to witness, parties, and Board.)

9 Q Now, let's go to --

10 MR. MC MURRAY: Judge Laurenson, I would have to
11 have this questionnaire marked for identification as
12 Suffolk County Exhibit 5.

13 JUDGE LAURENSEN: It will be so marked.

14 (The document referred to was marked
15 Suffolk County Exhibit No. 5 for
16 identification.)

17 WITNESS LIEBERMAN: I'm not certain this is the
18 entire questionnaire. Are there any additional pages to that
19 questionnaire?

20 BY MR. MC MURRAY:

21 Q I think the questions we're going to refer to are
22 on the first one or two pages.

23 So even if a page is left off, and I don't think
24 there is --

25 Mr. Lieberman, do you recognize Suffolk County

1 A (Witness Lieberman) I'm sorry. Was this identified
2 was this survey instrument identified as Suffolk County
3 Exhibit No. 5?

4 Q Suffolk County Exhibit No. 5, marked for
5 identification.

6 A Yes, I have what apparently is a copy of the
7 survey instrument, developed and implemented by NCTR.

8 Q And the data on page 4, KLD TM-139, were derived
9 from questions asked from this questionnaire. Correct?

10 A That is correct.

11 Q Now, let me refer you to page 2 of this exhibit.
12 Were the travel times set forth on page 4 derived
13 from the answers given to question 8?

14 A Yes.

15 Q And that question asks, approximately how long
16 does it usually take you (the person) to travel home from
17 work?

18 Isn't that what the question says?

19 A That's what it says.

20 Q The question asks or implies, does it not, that
21 it is seeking the amount of time it takes for someone to
22 commute from work to home during an average commuting day.

23 Correct?

24 A I think the word "usually" implies that.

25 Q Now, the Time Distribution No. 3 for work to home

ki 9:5

1 travel is the time that you have estimated it takes for
2 people to travel from work to home after the declaration of
3 a site area emergency.

4 Correct?

5 A That is correct. We think that's a --

6 Q So therefore, that distribution of travel time
7 after an emergency is declared is based upon estimates of
8 travel time under normal commuting conditions.

9 Correct?

10 A Yes. That's the assumption which we use in our
11 plan, and which PRC engineers use in their plan, and we think
12 that's a conservative assumption.

13 MR. MC MURRAY: Judge, I would like to move
14 Suffolk County Exhibit No. 5, marked for identification, into
15 evidence.

16 JUDGE LAURENSEN: Is there any objection to that?

17 MR. IRWIN: For what purposes, Mr. McMurray?

18 MR. MC MURRAY: The purpose is to show the question
19 that was asked on page 8 from which the information on
20 which Distribution 3 is based was derived.

21 MR. IRWIN: No objection.

22 JUDGE LAURENSEN: Any objection from anyone else?

23 MR. BORDENICK: No objection.

24 MR. PALOMINO: No objection.

25 JUDGE LAURENSEN: Suffolk County Exhibit 5 will be

ki 9:6

1 received in evidence and bound into the transcript at this
2 stage.

3 (The document previously marked
4 Suffolk County Exhibit No. 5 for
5 identification was received in evidence.

6 (Document follows.)
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(ASK Q.4-8 FOR EACH PERSON MENTIONED IN Q.3)

4. How do you (does person) travel to work or college most of the time? (CHECK ALL THAT APPLY)
- | | | | |
|------------------------|--------|--------|---------------------|
| Rail..... | (20(| ___-1) | (ANY MENTION, |
| Bus..... | ___-2) | | ASK Q.5) |
| Car (PROBE) Drive..... | ___-3 | | (SKIP TO Q.7) |
| Walk..... | ___-4) | | (IF ONLY PASS. OR |
| | ___-5) | | WALK S/O Q.4 & HAND |
| | | | IN; ASK Q.4-8 FOR |
| | | | OTHER EMPLOYED/ |
| | | | SCHOOL MEMBERS Q.3 |

(IF ANY RAIL OR BUS MENTIONED IN Q.4 ASK:)

5. How do you (does person) get to the station? (CHECK ALL THAT APPLY)
- | | | | |
|-----------------------------|--------|--------|---------------------|
| Walk..... | (21(| ___-1) | |
| Bus..... | ___-2) | | (S/O Q.5 & HAND IN) |
| Car (PRCBE:) Passenger..... | ___-3) | | |
| Drive..... | ___-4 | | (ASK Q.5a) |

(IF DRIVE IN Q.5, ASK:)

- 5a. And, what is the name of the railroad station or bus stop?

Railroad Stations:

- | | | | |
|-----------------------|-------|----------------------------|-------|
| Bellport.....(22(| ___-1 | Riverhead.....(23(| ___-1 |
| Brookhaven..... | ___-2 | Setauket Station..... | ___-2 |
| Calverton..... | ___-3 | Speonk (Collins Station).. | ___-3 |
| East Moriches..... | ___-4 | Upton..... | ___-4 |
| Hamilton Station..... | ___-5 | Yaphank..... | ___-5 |
| Hotsville..... | ___-6 | Other R.R. Station (SPEC). | ___-6 |
| Manorville..... | ___-7 | | |
| Mastic Station..... | ___-8 | Bus Stop (SPECIFY)..... | ___-7 |
| Medford..... | ___-9 | | 24- |
| Port Jefferson..... | ___-0 | | 25- |
| | | | 26- |

6. What is the name of the county that you work in or attend school? (RECORD BELOW)

- 6a. And what is your zip code at work? _____ (29-33)

*****SKIP TO Q.9A*****

7. What is the name of the county that you work in or attend school? (RECORD BELOW)

- 7a. And what is your zip code at work? _____ (29-33) Q.6/7

(CONTINUE WITH Q.8)

- | | | |
|--------------------------|-------|-------|
| Nassau County..... | (27(| ___-1 |
| New York City..... | ___-2 | |
| All other (SPECIFY)..... | ___-3 | |

Irregular (i.e. salesman).(SKIP TO Q.9A).....___-4

Suffolk-What is the name of the town?

- | | | |
|------------------------------|-------|-------|
| Brookhaven..... | ___-5 | |
| Huntington..... | ___-6 | |
| Islip..... | ___-7 | |
| Riverhead..... | ___-8 | |
| Smithtown..... | ___-9 | |
| Southampton..... | ___-0 | |
| Southhold..... | (28(| ___-1 |
| Other Suffolk (SPECIFY)..... | ___-2 | |

8. Approximately how long does it usually take you (the person) to travel home from work?

_____ minutes
 29 30 31
 Refused....(32(___-1

(REPEAT FOR OTHER FAMILY MEMBERS WHO GO TO WORK OR SCHOOL FROM Q.3; OTHERWISE THANK RESPONDENT AND END INTERVIEW)

Hello, I'm _____ from the National Center for Telephone Research, an independent marketing research company. We're talking to different people in Suffolk County on some local issues regarding traffic patterns and would like to speak with someone in your household 18 years or older.

1. First, so I can ask you the correct questions, in what community or village do you live?

- Baiting Hollow-(GO TO GREEN AFTER Q.1a,2,3).....(10(____-1
- Belle Terre-(GO TO PINK AFTER Q.1a, 2 & 3 BELOW).....-2
- Brookhaven National Laboratory-(GO TO GREEN AFTER Q.1a,2 & 3).....-3
- Calverton-Roanoke-(GO TO GREEN AFTER Q.1a,2 & 3).....-4
- Coram/Coram Hill-(ASK:) Do you live north or south of Rt. 25 (Middle County Rd)?
 (IF NORTH ASK:)Do you live east or west of Old Town Road? West (S/O Q.1)
 East-(GO TO PINK AFTER Q.1a,2 & 3).....-5
 (IF SOUTH ASK:)Do you live east or west of Pt. Jefferson-Patchogue Rd?
 West-(S/O Q.1) East-(GO TO PINK AFTER Q.1a,2,3)....-6
- East Shoreham-(GO TO WHITE AFTER Q.1a, 2 & 3).....-7
- Gordon Heights-(GO TO YELLOW AFTER Q.1a, 2 & 3).....-8
- Homestead Village-(GO TO YELLOW AFTER Q.1a, 2 & 3).....-9
- Manorville-(GO TO GREEN AFTER Q.1a, 2 & 3 BELOW).....-0
- Medford-(ASK:) Do you live north or south of the Long Island Expressway?
 North-(CONTINUE)
 South-(SCREEN OUT Q.1)
 (IF NORTH) Do you live east or west of Port Jefferson-Patchogue Rd?
 East-(GO TO PINK AFTER Q.1a, 2 & 3).....(11(____-2
 West-(SCREEN OUT Q.1)
- Middle Island-(GO TO YELLOW AFTER Q.1a, 2 & 3).....-3
- Miller Place-(GO TO YELLOW AFTER Q.1a, 2 & 3 BELOW).....-4
- Mount Sinai-(GO TO PINK AFTER Q.1a, 2 & 3 BELOW).....-5
- Port Jefferson Station-(ASK:) Do you live north or south of Nesconset Rd?
 (IF NORTH ASK:) Do you live east or west of Pt. Jefferson and Patchogue Rd?
 East-(GO TO PINK AFTER Q.1a, 2 & 3).....-6
 West-(SCREEN OUT Q.1)
 (IF SOUTH ASK:) Do you live east or west of Jayne Blvd.?
 East-(GO TO PINK AFTER Q.1a, 2 & 3).....-7
 West-(SCREEN OUT Q.1)
- Port Jefferson Village-(ASK:) Do you live east or west of Main Street?
 East-(GO TO PINK AFTER Q.1a, 2 & 3).....-8
 West-(SCREEN OUT Q.1)
- Reaves Park-(GO TO GREEN AFTER Q.1a, 2 & 3).....-9
- Ridge-(GO TO WHITE AFTER Q.1a, 2 & 3).....-0
- Riverhead-(ASK:) Do you live east or west of Osborn Ave.?
 East-(SCREEN OUT Q.1)
 West-(GO TO GREEN AFTER Q.1a, 2 & 3)..(12(____-1
- Rocky Point-(GO TO YELLOW AFTER Q.1a, 2 & 3 BELOW).....-2
- Shirley-(ASK:) Do you live north or south of Sunrise Highway?
 North-(GO TO YELLOW AFTER Q.1a, 2 & 3)....-3
 South-(SCREEN OUT Q.1)
- Shoreham Village-(GO TO WHITE AFTER Q.1a, 2 & 3 BELOW).....-4
- Sound Beach-(GO TO BLUE AFTER Q.1a, 2 & 3).....-5
- South Manor-(GO TO GREEN AFTER Q.1a, 2 & 3).....-6
- South Yaphank-(GO TO YELLOW AFTER Q.1a, 2 & 3).....-7
- Tanglewood Hills-(GO TO PINK AFTER Q.1a, 2 & 3).....-8
- Terryville-(GO TO PINK AFTER Q.1a, 2 & 3).....-9
- Upton-(GO TO GREEN AFTER Q.1a, 2 & 3).....-0
- Wading River-(GO TO WHITE AFTER Q.1a, 2 & 3).....(13(____-1
- West Yaphank-(GO TO YELLOW AFTER Q.1a, 2 & 3).....-2
- Yaphank-(GO TO YELLOW AFTER Q.1a, 2 & 3).....-3
- Other-(SCREEN OUT Q.1)

1a. What is your zip code? (RECORD ZIP CODE) 13 14 15 16 17

2. In total, how many cars or vehicles are usually available to members of this household?
 (WRITE IN NUMBER) _____ (IF NONE SCREEN OUT Q.2)
 18-

3. How many people in your household commute to a job or to college outside the home at least 4 days a week?
 (WRITE IN NUMBER) _____ (IF NONE SCREEN OUT Q.3)
 19-

(ASK Q.4-8 FOR EACH PERSON MENTIONED IN Q.3)

4. How do you (does person) travel to work or college most of the time? (CHECK ALL THAT APPLY)
- Rail.....(20(___-1) (ANY MENTION, ASK Q.5)
 - Bus.....(___-2)
 - Car (PROBE) Drive.....(___-3) (SKIP TO Q.7)
 - Passenger.....(___-4) (IF ONLY PASS. OR WALK S/O Q.4 & HAND IN; ASK Q.4-8 FOR OTHER EMPLOYED/ SCHOOL MEMBERS Q.
 - Walk.....(___-5)

(IF ANY RAIL OR BUS MENTIONED IN Q.4 ASK:)

5. How do you (does person) get to the station? (CHECK ALL THAT APPLY)
- Walk.....(21(___-1)
 - Bus.....(___-2) (S/O Q.5 & HAND IN)
 - Car (PROBE:) Passenger.....(___-3)
 - Drive.....(___-4) (ASK Q.5a)

(IF DRIVE IN Q.5, ASK:)

5a. And, what is the name of the railroad station or bus stop?

Railroad Stations:

- | | | |
|-----------------------------|-----------------------------------|-----|
| Bellport.....(22(___-1 | Riverhead.....(23(___-1 | |
| Brookhaven..... ___-2 | Setsuket Station..... ___-2 | |
| Calverton..... ___-3 | Speonk (Collins Station).. ___-3 | |
| East Moriches..... ___-4 | Upton..... ___-4 | |
| Hamilton Station..... ___-5 | Yaphank..... ___-5 | |
| Hotsville..... ___-6 | Other R.R. Station (SPEC).. ___-6 | |
| Manorville..... ___-7 | | |
| Mastic Station..... ___-8 | Bus Stop (SPECIFY)..... ___-7 | 24- |
| Medford..... ___-9 | | 25- |
| Port Jefferson..... ___-0 | | 26- |

6. What is the name of the county that you work in or attend school? (RECORD BELOW)

6a. And what is your zip code at work? _____ (29-33)

*****SKIP TO Q.9A*****

7. What is the name of the county that you work in or attend school? (RECORD BELOW)

7a. And what is your zip code at work? _____ (29-33) Q.6/7

(CONTINUE WITH Q.8)

- Nassau County.....(27(___-1
- New York City..... ___-2
- All other (SPECIFY)..... ___-3

Irregular (i.e. salesman).(SKIP TO Q.9A)..... ___-4

Suffolk-What is the name of the town?

- Brookhaven..... ___-5
- Huntington..... ___-6
- Islip..... ___-7
- Riverhead..... ___-8
- Smithtown..... ___-9
- Southampton..... ___-0
- Southhold.....(28(___-1
- Other Suffolk (SPECIFY)..... ___-2

8. Approximately how long does it usually take you (the person) to travel home from work? _____ minutes

- 29 30 31
- Refused....(32(___-1

9a. How many people live in this household? (WRITE IN NUMBER) _____ (33)

9b. Do any children go to a local school (public/parochial/private)? (WRITE IN NUMBER) _____ (34) (0=NONE)

(REPEAT Q.'s 4-8 FOR ADDITIONAL PEOPLE IN HOUSEHOLD WHO WORK OR GO TO SCHOOL ON ADDITIONAL PAGE)

Respondent _____ Telephone # _____

Interviewer _____ Date _____

New BU

FORM OR 325 REPORTERS PAPER & MFG CO 800-626-6313

1 BY MR. MC MURRAY:

2 Q Let me refer you to page 58 of your testimony,
3 Mr. Lieberman.

4 Now, there, the discussion is about preparatory
5 trips which may or may not interfere with evacuation. And
6 you state a potential exists for these trips to restrict the
7 service volume for evacuation trips whenever traffic demand
8 approaches capacity and the associated turning movements at
9 intersections act to reduce the effective capacity of some
10 of the approaches.

11 Do you have that passage in front of you?

12 A (Witness Lieberman) Yes.

13 Q Now, going back to the trip table for the DYNEV
14 model, that trip table describes the number of trips generated
15 from each source node and also describes where those trips --
16 I'm sorry, not where the trips, but the destinations for those
17 trips.

18 Correct?

19 A That is correct.

20 Q Now, it's true, is it not, that the trip table for
21 the traffic assignment model does not include work to home
22 trips?

23 A That trip table considers the evacuation trips.

24 Q Now, you state that traffic demand approaches --
25 strike that.

ki 9:8

1 You state that, on page 58, congested conditions
2 begin to occur approximately 40 minutes after the first
3 evacuees depart from their homes.

4 Do you have that in front of you?

5 A Yes.

6 Q Now, is that information derived from your model?

7 A Yes, that's correct.

8 Q And you also state that reference to Figure 3 of
9 Attachment 10 -- and that is KLD TM-139 -- indicates that
10 87 percent of the work-to-home trips are completed within
11 40 minutes after the start of evacuation?

12 Is that correct?

13 A That is correct.

14 Q Let's look at Figure 3 for a second. It's Figure 3
15 of Attachment 10.

16 Have you been able to assign a value of the level of
17 confidence you have in the time distribution curves that you
18 have generated in KLD TM-139?

19 (Witnesses Weismantle and Lieberman conferring.)

20 Mr. Weismantle, did you have something to say to
21 Mr. Lieberman?

22 (No response.)

23 A Could you specifically tell me what you mean by
24 level of confidence? Level of confidence are usually
25 statistical sets, given data that is being worked upon, or

1 distributions which are postulated.

2 One usually talks about confidence bands.

3 Q Are you able in any way to assign some sort of
4 confidence band to these distributions?

5 A No.

6 What we have here is a combination of distributions,
7 some of which are based on empirical data, others which are
8 based upon judgment.

9 Q So you aren't saying with absolute certainty that
10 these distributions accurately reflect what really will happen
11 during an emergency.

12 Correct?

13 A Mr. McMurray, any statistical analysis implies
14 that absolute certainty is not attainable.

15 Q Are you saying that you're reasonably confident
16 that these distributions represent what will happen during
17 a radiological emergency?

18 A Yes.

19
20
21
22
23
24
25
End 9

1 Q But you are unable to quantify that level of
2 competence, correct?

3 A That is correct.

4 Q Now according to your assumptions, an evacuation
5 starts -- I'm sorry. The evacuation notice begins some
6 25 minutes after time zero here, correct?

7 A That is correct. Th's is based on discussions
8 with LILCO personnel who informed me that 25 minutes
9 represents a rapidly developing accident situation and I use
10 that as a reasonable basis for this purpose.

11 Q Now the 40 minutes after the announcement of the --
12 after the evacuation notice -- would place us where on Figure
13 1? I'm sorry, Figure 3. Let's go back to Figure 3.

14 A That would place us at the one hour and 20 minute
15 mark, relative to the KLD curve and relative to the PRC
16 engineering curve it would be ten minutes later.

17 Q And at that point in time, you say that only
18 30 percent of the commuting population is still on the road
19 and trying to get home, is that correct?

20 A That's correct.

21 Q Now isn't it true, if the work to home curve
22 was shifted to the right, that that number would increase?

23 A That is correct. If you shift that curve in any
24 direction, that figure would change. As a matter of fact,
25 if you shift either of the two curves, that figure would change.

101b2

1 Q So if you shifted the auto owning population
2 leaving home curve to the left, it would also increase the
3 number of cars who are on the evacuation road -- on the
4 evacuation routes at the same time as workers traveling home.
5 Isn't that right?

6 A That's correct, but you're not free to do that
7 because there's a relationship between the two curves. So
8 by shifting those curves relative to one another, you have
9 to understand that you're changing that relationship.

10 Q And those relationships are based on the assumptions
11 that you have made in KLD TM 139, correct?

12 A Specifically it has to do -- I think it's important
13 that we understand these relationships. I think an easy
14 way to look at it is on page 22 of that report, what we
15 call Note B, in which we describe what we are doing here in
16 terms which I think is easy for a reader to understand even
17 without technical background, which is the reason I put it
18 in there.

19 Perhaps it's worthwhile to take some time to
20 review that.

21 Q My question, Mr. Lieberman, was aren't the
22 curves and the relationships between the curves dependent
23 upon the assumptions that you have made in KLD TM 139? I
24 think you can give a yes or no answer to that.

25 A To some extent on assumptions and to some extent

101b3

1 on the empirical data we obtained from survey.

2 Q Mr. Lieberman, your model does account for some
3 traffic being on the roadway network at the time that an
4 evacuation is declared. Isn't that correct?

5 A Yes.

6 Q This is called background traffic and reflects the
7 traffic that just happens to be in the area at the time when
8 the evacuation is announced, correct ?

9 A It represents the trips that -- well, I'm not sure.
10 Your question does not relate directly to how we use model
11 in the position I refer. Essentially, what we say is that
12 before we start accumulating statistics, just scraping the
13 evacuation process, there is an initialization condition
14 which asserts that there are already vehicles on the road.
15 That is, we don't assume a completely empty network at the
16 time the first vehicles begin their evacuation trip.

17 I don't know if your question related to that
18 aspect?

19 Q Yes. Now do you assume that that traffic, that
20 is on the network, is traveling in all different directions?

21 A No. The traffic that is already on the network,
22 that we consider relevant to what we're trying to do, is
23 the traffic that is moving along the roadways in the same
24 direction as the evacuating traffic.

25 Q So background traffic is only represented as moving

1 in the same direction as evacuating traffic, correct?

2 A That is correct.

3 Q Thank you.

4 Let me refer you to page 60 of your testimony.
5 There you state that the -- on the very bottom of page 60 --
6 that the primary purpose of the traffic guides will be to
7 facilitate traffic flow and to assure compliance with
8 routing assignments to the extent possible -- going on to page
9 61. Then you say that route compliance will further be
10 aided by the placement of trailblazer signs throughout the
11 EPZ. Are you familiar with the signs that are referred to
12 here, Mr. Lieberman?

13 A Yes.

14 Q And is it your testimony that the signs, that are
15 referred to here, will aid people and will therefore cause
16 more compliance with recommended routes out of the EPZ?

17 A Yes. I think that the placement of the signs
18 as permanent installations throughout the EPZ will not only
19 aid traffic moving through the EPZ during an evacuation but
20 will also serve as constant reminders that these routes
21 do exist and, in that way, will help shape the perceptions
22 of people, as to which routes to select in the event an
23 evacuation is necessary.

24 Q I believe you just said that these signs would
25 be permanently installed along the evacuation routes?

1 A That is correct.

2 Q Have they been installed yet?

3 A No, they have not.

4 Q Isn't it true that these signs will be subject
5 to vandalism?

6 A All highway signs are subject to vandalism. It's
7 a problem that prevails throughout the country to such an
8 extent that there are many signs that consider highway
9 sign vandalism a felony, rather than misdemeanor. It's
10 a very costly factor to public agency budgets, to have
11 to replace such signs.

12 Q Won't these evacuation route signs be particularly
13 tempting targets for vandals?

14 A I don't see any basis for that. These signs, or
15 signs like this, have been installed in many areas of the
16 country and to my knowledge there is no indication that those
17 signs are vandalized to a greater extent than other types
18 of signs.

19 Q When you say these type, you're talking about
20 signs being put up to show evacuation routes for radiological
21 emergency around other nuclear power plants?

22 A The configuration of the signs provide no indica-
23 tion that they are associated with radiological evacuations.
24 They are standard signs. They are acceptable in any state
25 in the country and again, I don't have any evidence to support

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1 the contention that these signs are vandalized to a greater
2 extent than others.

3 Q I take it, from your previous answer --

4 A (Witness Wisnandle) Since I'm a co-sponser to this
5 question, could I add to that? These signs, for the most
6 part would be put on utility poles at a height out of reach.
7 Since they are on utility poles which most people recognize
8 as constituting a hazard, in other words climbing and getting
9 closer to the utility lines, I think is the basis to indicate
10 they might be less susceptible to vandalism than other signs.

11 Q How high are they going to be placed?

12 A (Witness Lieberman) The height of signs, above
13 the roadway, is specified in the MUTCD. Obviously they have
14 to be low enough so people can see them and high enough so
15 that there is some assurance that the vandalism rate will
16 be kept within bounds.

17 In connection with the vandalism rate, the utility
18 will have the responsibility of surveying these sign
19 installations and replacing any that are defaced or removed
20 in the same way that the highway departments have to perform
21 that function.

22 Q My question again, is how high are these signs
23 going to be placed.

24 A I don't have the figures in front of me. They will
25 be placed at a height that is recommended in the MUTCD.

end t10

ki 11:1

1 Q Are you familiar with the memorandum written by
2 Mr. G. F. King, Mr. Lieberman, regarding Shoreham evacuation
3 signing, and dated September 13, 1983?

4 A I have some document here. Let me check to see
5 if it is the same one.

6 Yes, I have a copy of that document.

7 Q Is the height at which the signs will be placed
8 indicated in this document?

9 A I will have to check it.

10 Q Let me refer you to the fifth page of that document.
11 Now, it states there, does it not, Mr. Lieberman,
12 that these signs will be placed 7 feet above the near edge
13 of the roadway in urban areas and on expressways, and 5 feet
14 above the near edge of the roadway in rural areas?

15 A That's what it says here. But I had not related
16 that specification to the MUTCD, so we're not taking the
17 position that that installation specification is actually
18 going to be implemented.

19 I would have to compare it with the guidelines of
20 the MUTCD and then discuss it with LILCO, and come to a
21 conclusion at that time.

22 As I indicated earlier, the signs have not been
23 installed yet.

24 Q Is there a timetable for installation?

25 A (Witness Weismantle) I can answer that.

1 The decision not to purchase -- the signs haven't
2 been purchased yet. I'm not sure if that has been said.
3 We purposely haven't purchased them yet, to allow this phase
4 of the hearings to be completed.

5 We would wait until any -- as long as we could,
6 as long as we could before any -- wait for any determinations
7 the Board might make about the merits of this case which could
8 affect the location of these signs.

9 JUDGE LAURENSEN: Perhaps to clarify the record,
10 Mr. Lieberman, you can identify for us what is meant by the
11 acronym MUTCD?

12 WITNESS LIEBERMAN: Yes, Judge Laurenson.

13 On this memorandum there's a footnote which
14 identifies that the MUTCD is an acronym for the Manual on
15 Uniform Traffic Control Devices for Streets and Highways
16 which has been developed by the Federal Highway Administration
17 of the U. S. Department of Transportation, and published by
18 the U. S. Government Printing Office in 1978.

19 JUDGE LAURENSEN: Thank you.

20 BY MR. MC MURRAY:

21 Q Mr. Weismantle, was the concern that you were just
22 expressing, that LILCO might not be able to install these
23 signs --

24 A (Witness Weismantle) No --

25 Q I haven't finished the question.

ki 11:3

1 A I'm sorry.

2 Q -- that LILCO might not be able to install these
3 signs because it doesn't have legal authority to?

4 A No. The concern -- and let me try to say it again
5 and be a little bit fuller in my response.

6 The concern was that as a result of these hearings,
7 since this contention related directly to the design of our
8 evacuation route system, there might be some changes that
9 come out of these hearings that are recommended by the Board
10 that could affect the locations of these signs, the size of
11 the signs, the shape of the signs, the height off the ground,
12 things like that.

13 Therefore, we decided -- once we got the speci-
14 fications from Mr. Lieberman last summer -- to put a hold on
15 the purchase of those signs. And that's why they are still
16 not purchased.

17 Q Mr. Lieberman, assuming that the signs aren't
18 installed, you would expect a lower level of compliance
19 with prescribed regs, wouldn't you?

20 A (Witness Lieberman) That's entirely possible.

21 Q In fact, wouldn't it be likely that there would
22 be less compliance?

23 A I really don't have any basis to make that judgment.
24 The signs, in my view, perform the functions I indicated
25 earlier; namely, to form the public's perceptions of the fact

ki 11:4

1 that such routes have been planned for them and what origin
2 they lead to, as well as providing any people who have not
3 taken -- not installed within their cars the public informa-
4 tion bulletins which they receive over a long period of time.

5 I'm not prepared to quantify the effects.

6 A (Witness Weismantle) If I could just add to that.

7 We have signs in this plan because we're attempting
8 to comply with and exceed the NUREG 0654 regulations to provide
9 the most optimum situation for the general public around
10 Shoreham; that is, provide them with everything we can to
11 facilitate the fastest evacuation in the event of an emergency.

12 MR. MC MURRAY: Judge Laurenson, my question was
13 whether or not the absence of those signs would result in
14 less compliance.

15 Mr. Weismantle's answer was not responsive to that
16 question. I ask that it be stricken from the record.

17 JUDGE LAURENSEN: I think it leads to the inference
18 that you're driving at, and that is, if the signs are to
19 improve the evacuation, the absence of them might in fact
20 make evacuation time longer.

21 But to the extent you object to that answer, I
22 think it is somewhat beyond the scope of the question, so it
23 will be stricken.

24 BY MR. MC MURRAY:

25 Q Mr. Lieberman, assuming that the signs, evacuation

ki 11:5

1 route signs, are not placed, you would have to rerun your
2 evacuation time estimates, wouldn't you?

3 A (Witness Lieberman) No.

4 Q Would that factor, I guess, be reflected in the
5 uncontrolled runs, the factor being the absence of signs?

6 A I think there are two sets of sensitivity runs
7 which would be applicable here. One had to do with the
8 effect of noncompliance to the recommended routes, and again
9 I think we ought to identify which these are, if you give
10 me a moment.

11 Turning to Attachment 6 which contains the summary
12 table of the studies that have been made, there are four
13 runs, No. 31 through 34, which examine the impacts of non-
14 compliance under two levels of noncompliance for both the
15 controlled and uncontrolled scenarios.

16 The other set is the sensitivity studies which
17 compare the evacuation times for the uncontrolled scenarios
18 versus the planned scenarios, so we have a combination of
19 two dimensions which are being explored within the context
20 of sensitivity runs.

21 Q Mr. Lieberman, I would like to refer you to
22 page 62 of your testimony.

23 Now, the concern that was expressed in Contention
24 65.C.(2) was to whether or not LILCO traffic guides would
25 screen motorists either for travel in the EPZ or travel in

1 other prescribed routes.

2 Correct?

3 A I would like to return to page 7, where that
4 contention is documented.

5 As I read it, there is a concern about aggressive
6 behavior, and I don't feel that I am qualified to try to
7 quantify whether, in fact, aggressive behavior will occur,
8 the extent to which it would occur, how it affects evacuation
9 times, or any other sociological or psychological aspects of
10 that issue.

11 I believe this was covered in other contentions
12 and testimony.

13 MR. IRWIN: Just for the record, I believe that's
14 covered in the testimony of Dr. Dynes and Milette. That's
15 Contention 65.C.2.

16 MR. MC MURRAY: What I'm trying to do is address
17 the testimony set out on 62 regarding screening and discouraging
18 vehicles from traveling in nonprescribed paths. You do
19 sponsor that testimony on page 62, isn't that correct?

20 If you're not qualified to --

21 WITNESS LIEBERMAN: I read the top half of the
22 page and I'm getting around to the bottom half. So please,
23 be a little more patient.

24 Okay, thank you for your patience. I read that
25 section.

1 I guess we're speaking now of Question 31?

2 BY MR. MC MURRAY:

3 Q That's right.

4 A (Witness Lieberman) Fine.

5 Q You do sponsor that testimony; correct?

6 A That's correct. With Mr. Weismantle.

7 MR. IRWIN: And Dr. Cordaro.

8 BY MR. MC MURRAY:

9 Q I would like to discuss for a second the process
10 of discouraging traffic.

11 In Appendix A -- let me refer you to page 23A,
12 4-23A of Appendix A, under the heading "Movements to be
13 Discouraged," it says, "The LERO traffic guides, aided by
14 deployment of cones, will indicate by arm and hand movements
15 that specified vehicle movements are discouraged."

16 What kind of hand and arm movements are going to
17 be used to discourage traffic that wants to travel in
18 nonprescribed routes?

19 A These are the same hand and arm movements which the
20 traffic guides will use to indicate the preferred direction
21 of travel. As I indicated yesterday, the specifics of that
22 aspect lie beyond my domain and fall under the training
23 aspects of the plan.

24 Perhaps Mr. Weismantle would want to comment on
25 that.

1 A (Witness Weismantle) I have nothing to add.

2 Q You do discuss the fact that traffic is going to
3 be discouraged from making certain movements. Isn't that
4 correct, Mr. Weismantle?

5 A Yes.

6 Q My question is, how are those movements going to
7 be discouraged?

8 A Well, I think the testimony indicates that --
9 as we say in the answer to 31, "LERO traffic guides will use
10 some hand and arm movements in deployment of traffic cones
11 will discourage traffic from entering the EPZ, but will not
12 screen or prevent any vehicle from entering the EPZ or from
13 proceeding in other than prescribed movements."

14 Q Now, Mr. Weismantle, what are the hand and arm
15 movements that are going to be used to discourage traffic;
16 do you know?

17 A I can't tell you the specific hand and arm
18 movements, no.

19 Q Do you agree with Mr. Lieberman that they will be
20 the same ones that will be used to encourage traffic?

21 A I don't know if he said that.

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12pbl

1 A (Witness Lieberman) Physiologically, there are
2 only a limited number of movements one can perform with
3 hands and arms. In that sense, that's a correct statement.

4 Q How do you know that, as a result of hand and
5 arm movements the traffic will be discouraged, Mr. Lieberman?

6 A As I said several times, there is no element of
7 certainty or guarantees in development of the plan or
8 implementing it. These are guides who will be trained in
9 the manner of providing information through these hand
10 movements. If people -- there're several factors here.

11 First of all, the directions of travel associated
12 with this discourage concept are directions toward the
13 plant. That's why we're trying to discourage it.

14 One has to assume that the only reason people
15 would want to override or overrule the implications or the
16 indications of these hand-arm movements would be because
17 they have a specific purpose to perform. Usually, the
18 work to home trip.

19 With the understanding that this is not the case,
20 that people actually would want to evacuate the area, there's
21 no reason to expect why they would act contrary to the
22 indications given to them by the guides.

23 A (Witness Cordaro) I would like to point out
24 that this exact question was asked of the human behavior
25 panel, and answered directly by Dr. Milette, I believe.

12pb2

1 Q Is it your testimony, Mr. Lieberman, that only
2 traffic moving towards the plant will be discouraged?

3 A (Witness Lieberman) No, I didn't say -- I said
4 primarily those are the movements that would be discouraged.

5 There are other movements which are discouraged
6 from the point of view of traffic control posts which are
7 located on the periphery of the EPZ.

8 Again, movements from outside to inside the EPZ
9 will be discouraged in that manner.

10 The particular orientation of that movement may
11 not be toward the plant, so it would be safe from outside
12 to inside the EPZ.

13 Q What about movement of traffic inside the EPZ?

14 A Generally, most of the movements which would be
15 discouraged are those which move toward the plant. There
16 are some cases where a small portion of some evacuation routes
17 do in fact move traffic for a short distance somewhat closer
18 to the plant. And of course, those are exceptions to this
19 general rule.

20 Q Isn't it true that another reason that traffic
21 might take a route that was to be discouraged was that the
22 motorists would perceive that the route he wants to take is
23 a better route than the one that LILCO has assigned?

24 A If that should be the case, then they would be
25 permitted to take that route. As we said, there is no

12pb3

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1 screening or prevention of that route.

2 Q Mr. Lieberman, let me refer you to page 76 of
3 your testimony. Down at the bottom, you state that, traffic
4 guides will no longer attempt to discourage traffic from
5 proceeding in directions other than those encouraged by the
6 plant.

7 A I'm sorry --

8 Q Starting with the second line from the bottom.

9 MR. IRWIN: Excuse me, Mr. McMurray. I believe
10 if you refer to the amendments and corrections to testimony
11 which were filed on Tuesday, you will note that the phrase,
12 "attempted to discourage" has been deleted. And the word
13 "prevent" inserted in its place.

14 Just so we're following the same text. And that
15 four lines up from the bottom, the words "a combination of"
16 has been stricken and the words "and signs" have also been
17 stricken, so that it says, "Accordingly, cones will be used."

18 MR. MC MURRAY: Judge Laurensen, I think that
19 this is a good time to take the lunch break. In the interest
20 of time and efficiency, we would be willing to take only an
21 hour lunch break if the Board would like.

22 I know that all the parties seem to be working
23 towards trying to get this traffic panel done today. And
24 we would be willing to do that.

25 JUDGE LAURENSEN: We'll talk about that in just

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1 a moment. Let me go back to the amendment of the testimony
2 that Mr. Irwin mentioned.

3 If I changed the word "attempt" to "prevent" I'm
4 not sure the sentence makes any sense. It now says, "will
5 no longer prevent to discourage."

6 MR. IRWIN: No, sir. The words "attempt to
7 discourage" should be stricken. And the word "prevent"
8 inserted in their place.

9 JUDGE LAURENSEN: Oh, I see. That's the next
10 line, okay.

11 Let's discuss the scheduling then. Off the
12 record.

13 (Discussion off the record.)

14 JUDGE LAURENSEN: All right. We will recess
15 now and reconvene at 1:15.

16 (Whereupon, at 12:15 p.m., the hearing was
17 recessed, to reconvene at 1:15 p.m., this same day.)
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End 12.

AFTERNOON SESSION

(1:30 p.m.)

1
2 Whereupon,

3 EDWARD B. LIEBERMAN

4 JOHN A. WEISMANTLE

5 MATTHEW CORDARO

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

8 JUDGE LAURENSEN: Back on the record now.

9 You may continue, Mr. McMurry.

10 CROSS EXAMINATION (Continued)

11 BY MR. MC MURRAY:

12 Q Mr. Lieberman, I believe that you stated this
13 morning that you're really not qualified to talk about the
14 training of LILCO's traffic guides. Is that correct?

15 A (Witness Lieberman) I don't remember the exact
16 words I used, but I think using the phrase "not qualified"
17 I was referring to a contention which you referenced and
18 which I read having to do with stress response by motorists.

19 Q I believe it had to do with the way the traffic
20 guides would use their hands and arms in order to discourage
21 motorists.

22 A Oh yes. That comment was made with respect to
23 the precise movements of the hands and arms, which does in
24 fact lie outside my domain of expertise.

25 Q I'm going to refer you to page 74 of your testimony.

1 You state there, in the very last sentence -- and it continues
2 onto the next page -- the presence of LERO guides and the
3 training of these guides helps to provide assurance to the
4 evacuating public that they are under the protection of a
5 planned evacuation which has been carefully developed
6 in their best interest.

7 Now on what basis are you stating that the training
8 of these guides helps to provide such assurance?

9 A I think it's a perfectly generic comment and
10 applies not only to guides but to all personnel who are
11 performing any kind of function. Police have to be trained
12 to perform that same function within their profession. So
13 this is a statement that says that people who are trained
14 perform better than those who are not trained.

15 Q So you weren't referring here to LERO guides
16 in particular?

17 A Certainly I was referring to LERO guides.

18 Q What is your basis then for stating that their
19 training, the training of the LERO guides, will help to
20 provide the assurance that you said will be provided?

21 A Well, the evacuating public is not exposed to the
22 training. They are exposed to the results of the training,
23 in terms of the performance of these guides, in the execution
24 of their functions to the extent that the training improves
25 such functions thereby will provide assurance to the

1 evacuating public. So if they perform the functions properly,
2 this in turn would provide assurance.

3 A (Witness Weismantle) I would like to add something.
4 I agree with everything that Ed said, but I would like to
5 add the fact that we have a large trained ongoing emergency
6 response organization and that is identified to the public
7 in our public information. And in the event of an accident
8 in the EDS messages, and so forth, provides assurance to
9 the public that they're under the protection of a planned
10 evacuation, as it says here, which was developed specifically
11 for the purpose of responding to an accident.

12 Q Mr. Weismantle, have LILCO's traffic guides been
13 trained on public roads during real life traffic conditions?

14 A Well, that's a training question. I think it
15 came up. I'm trying to recall the exact area --

16 Q I think we can get a yes or no answer to this,
17 Mr. Weismantle.

18 A Excuse me, I haven't finished my answer.

19 JUDGE LAURENSEN: The question is can it be
20 answered yes or no? Can you answer that question?

21 WITNESS WEISMANTLE: No, the LERO traffic -- we
22 have not provided the training on public roads for the LERO
23 guides, where they were actually put on public roads.

24 MR. MC MURRAY: Thank you.

25 BY MR. MC MURRAY:

1 Q Mr. Lieberman, let me refer you to page 79. You
2 refer there to a U.S. Environmental Protection Agency report
3 entitled Evacuation Risks and Evaluation by Hans and Sell.
4 Do you see that publication?

5 A (Witness Lieberman) I see the reference to it.

6 Q Now it's true, is it not, that the data in this
7 publication is not based on any actual radiological
8 emergencies?

9 A That is correct. To that point in time there
10 had been none.

11 Q Let me refer you to pages 85 and 86 of your
12 testimony. Now you state, on page 85 that in general all
13 two-way two-lane roads on the evacuation network are
14 sufficiently wide, from one shoulder edge to the other,
15 to permit at least one lane of moving traffic in the
16 outbound direction and one lane in the inbound direction,
17 even if a disabled vehicle is parked on one shoulder or
18 the other.

19 And again, on page 86, you state it can be
20 reasonably assumed that if blockage were to occur on a two-
21 way two-lane road that there would be sufficient room on the
22 shoulders to permit evacuating traffic to move around the
23 blockage, albeit at a lower rate of service.

24 A I'm sorry. Where on page 86 did you pick this
25 up?

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1 Q That's the first full paragraph. Do you have the
2 passage in front of you?

3 A Yes.

4 Q Are you familiar with Edwards Avenue, Mr.
5 Lieberman?

6 A Yes.

7 Q Have you driven that road?

8 A Yes.

9 Q Is it your testimony that along all portions of
10 Edwards Avenue there are adequate shoulders?

11 A Adequate in what sense, Mr. McMurray?

12 Q Let me refer you to page 86, fourth line from
13 the bottom. You use the word "adequate." How did you use
14 the word "adequate" in that sentence?

15 A I was referring there to multi-lane roadways,
16 not two-lane roadways which is the kind of facility that
17 Edwards is. And I use the phrase "adequate paved shoulders"
18 and in the sense that I use it there is explained in the
19 phrase that immediately follows. And I will read it here,
20 "making it likely that a disabled vehicle would be pushed
21 onto the shoulder and the roadway would not lose an entire
22 lane of service."

23 It is in that sense that I use the word
24 "adequate shoulder."

25 Q Is it your testimony then that all along Edwards

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1 Avenue there would be sufficient room on the shoulders to
2 permit evacuating traffic to move around the blockage?

3 A Okay. I just said that. This last sentence
4 pertained to "all multi-lane roadways" and the discussion
5 thereof. The essential feature here, in this discussion, is
6 not --

7 Q Mr. Lieberman?

8 A I've got to explain.

9 Q I'm asking a question about whether or not,
10 on Edwards Avenue, there would be sufficient room on the
11 shoulders all along Edwards Avenue to permit evacuating
12 traffic to move around the blockage.

13 MR. IRWIN: Objection, the question confuses the
14 premise used for multi-lane roads and applies it to single
15 lane roads.

16 MR. MC MURRAY: This is different. We're up to
17 the first full paragraph on page 86. I'm merely asking
18 whether or not Edwards Avenue has the characteristics
19 described in this sentence.

20 JUDGE LAURENSEN: Mr. Lieberman, can you answer
21 that question?

22 WITNESS LIEBERMAN: Yes. The whole subject of
23 shoulders is related to the total width of the pavement and
24 the question that we look at is whether or not a disabled
25 vehicle, which is pushed to the side of the road, would

1 permit enough room for evacuating vehicles to move around
2 it. And my assessment --

3 MR. MC MURRAY: I believe the reference here
4 is not whether or not evacuating traffic can move around
5 the blockage. That's a different one.

6 WITNESS LIEBERMAN: That's correct. The
7 blockage I'm talking about is a vehicle which is being
8 pushed to the side of the road. The sentence says a
9 disabled vehicle would be pushed onto the shoulder. That's
10 what we're talking about here. Given that a vehicles is
11 pushed onto the shoulder, I maintain that there is enough
12 room on Edwards Avenue for a lane of evacuating traffic to
13 proceed about that disabled vehicle.

14 BY MR. MC MURRAY:

15 Q Mr. Lieberman, on page 86, the first sentence
16 of the first full paragraph, aren't you referring to the
17 situation where there is a blockage on a road on a lane and
18 traffic moves around that blockage by traveling on the
19 shoulder? Is that not what you were referring to?

20 A (Witness Lieberman) No, sir.

21 Q Could you read the sentence into the record,
22 please?

23 A "Consequently, it can be reasonably assumed
24 that if a blockage were to occur on a two-way, two-lane
25 road there would be sufficient room on the shoulders to

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1 permit evacuating traffic to move around the blockage,
2 albeit it at a lower rate of service."

3 Q It's your testimony you are not referring there
4 to the situation where there is blockage on a lane and
5 traffic is moving around that blockage by traveling on the
6 shoulder?

7 A That is not the intent of that sentence. The
8 intent of that sentence was that the disabled vehicle would
9 be moved to the shoulder and that the moving stream of
10 traffic would be able to move around that disabled vehicle
11 within the width of the paved section of roadway.

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1 Q Is it your testimony, then, Mr. Lieberman, that
2 at all locations along Edwards Avenue, if a disabled car
3 was pushed over to the side of the road onto the shoulder,
4 that there would be sufficient room to permit evacuating
5 traffic to move around the blockage, I guess, on the lanes?

6 A That is correct.

7 I would like to add to that phrase in the sentence
8 which says, ". . . albeit at a lower rate of service."

9 Q That means, then, that in many cases where there
10 is an accident and it has been pushed over to the side of
11 the road or a vehicle is disabled for other reasons, even
12 though the vehicle is pushed over to the side of the road, it
13 can lower capacity and decrease traffic flow.

14 Correct?

15 A No. I don't accept the interpretation "many
16 places." There are not many places relative to the roadways
17 which have adequate widths of pavement, given that you have
18 a disabled vehicle over to the side of the road.

19 There are some roadways we indicated -- in the
20 previous paragraph we mentioned one of them, which is Shore
21 Road, which is narrow and winding and would, in fact,
22 reduce the capacity of the roadway section in the event the
23 vehicle is pushed over to the side of the road.

24 Q Don't you, in fact say in your testimony that
25 Shore Road is the only except and I'll refer you to the

1 bottom of page 85.

2 A Yes, that is true. I'd like to back off from
3 that.

4 There are some other roadways, such as Lower
5 Rocky Point Road, and a few others which are in fact
6 sufficiently narrow, whereby a blockage associated with a
7 disabled vehicle moved to the extreme edge of the roadway
8 could reduce throughput. And that reduction of capacity is
9 conditional on the presence of oncoming flow.

10 I have to make that apparent. If, in fact, you
11 have a dominant movement of flow, then there would be no
12 reduction in capacity.

13 Q On page 87 of your testimony, Mr. Lieberman, you
14 state that the location and effects of frequency of road
15 repairs are only speculative.

16 Do you have that passage in front of you?

17 A Yes, I see that.

18 Q Now, isn't it true that roadway repairs can
19 significantly slow traffic?

20 A It depends on many factors. Some can; most do not.

21 Q Let me refer you also to page 87 and the following
22 pages where you're discussing the presence of special
23 facility type of vehicles such as buses and ambulances on the
24 roadway network.

25 Can you tell us, Mr. Lieberman, approximately how

1 many bus trips would be involved in the EPZ in the event of
2 an early dismissal from the schools within the Shoreham
3 EPZ? That's as opposed to the number of buses -- we're
4 talking about the bus trips.

5 A I don't have a precise answer to that except that
6 I know that it's several thousand.

7 A (Witness Weismantle) I am a witness on these two
8 questions. I would like to add, while we might not have the
9 precise answer, it is not of any particular interest, since
10 the early dismissals of schools only take place when there's
11 no protective action for the rest of the public, for the
12 general public.

13 Q Would you explain that, please?

14 A Let me try to say it a different way.

15 We are only recommending an early dismissal of
16 schools under circumstances -- under one set of circumstances.
17 Those set of circumstances are an alert for site area, with
18 no protective action recommendations made for the general
19 public.

20 Therefore, the early dismissal of schools would
21 not take place concurrent with an evacuation, which I think
22 was the premise of your question.

23 Q Do you agree with that statement, Mr. Lieberman?

24 A (Witness Lieberman) Yes.

25 Q Let me refer you to Attachment 10 of your

ki 14:4

1 testimony.

2 A (Witness Weismantle) Maybe I could add one more
3 sentence that might explain the whole thing.

4 This was a change made in Revision 3.

5 Q I understand.

6 Mr. Lieberman, doesn't KLD TM-139 assume that at
7 the site area emergency stage, children begin to be bused
8 home, and 25 minutes later there is an evacuation declared?

9 A (Witness Lieberman) Yes, it does.

10 Q Is that an erroneous assumption?

11 A This report was prepared before Revision 3.

12 I am going to have to consult with Mr. Weismantle
13 to see whether or not the assumptions in this report are
14 still accurate with Revision 3.

15 A (Witness Weismantle) Perhaps I could explain
16 further.

17 Previous revisions of the plan explicitly talked
18 about an early dismissal as response from the schools without
19 distinction.

20 Revision 3 set up a matrix which involved early
21 dismissal being a recommended protective action for the
22 schools only in the event that no protective action recommenda-
23 tion was made to the general public.

24 Protective action recommendations were made for
25 the general public that involved sheltering, then the schools

ki 14:5

1 would shelter. Protective action recommendations were made
2 for the general public while school was in session before
3 the early dismissal could be effectuated, if the recommendation
4 for the general public was evacuation, then our recommendation
5 would be evacuation of the schools.

6 The particular premise that was used for this
7 report by Mr. Lieberman assumed a site area evacuation --
8 excuse me -- a site area emergency was declared, I believe,
9 at time zero and 15 minutes later, a general emergency was
10 declared, and 10 minutes after that, something like that,
11 an evacuation advisory was declared.

12 Now, if our recommendation was accepted by the
13 schools, presumably they would have started to initiate their
14 procedures for an early dismissal at time zero. And 20 minutes
15 later or so, the recommendation would have changed. And I
16 might say, as Mr. Lieberman has said before, and I think it
17 is said in the testimony as well explicitly, this is a worst
18 case situation -- worst case in the sense of a very rapidly
19 developing accident, with an evacuation advisory being written
20 within 25 minutes of the initiation of the first indication
21 there was a problem at the plant.

22 While it's true the early dismissal presumably
23 would have been initiated by the schools at time zero, in
24 this particular case I think, almost without exception, you
25 could assume that the schools hadn't actually started to

ki 14:6

1 send the kids home because of the time it takes to get the
2 buses to the schools.

3 And if we're interested in a realistic identifica-
4 tion of the response that would take place under our plan
5 given these conditions, what would happen, that the schools
6 simply wouldn't send the schools home, the buses would come
7 and they would go out of the zone.

8 Q Let me ask you this, Mr. Weismantle.

9 Isn't it possible that if we change the assumption
10 a little bit, that you would have early dismissal buses on
11 the road during an evacuation? For instance, if the alert
12 was sounded at time zero and schools began implementing their
13 early dismissal policy, and an hour and a half later there
14 was an advisory to evacuate, according to KLD TM-139 school
15 buses would be on the evacuation routes, taking children
16 home.

17 Isn't that correct?

18 A I don't know if it's according to this survey,
19 but yes, school buses would be on the road.

20 Q So that could happen?

21 A That could happen. Anything could happen. That
22 is one of the things that could happen.

23 We try to plan for a full range of emergencies.

24 Q Mr. Weismantle, are you saying that the assumption
25 about early dismissal -- that Mr. Lieberman's study is no

ki 14:7

1 longer valid?

2 A Basically what I'm saying is yes, it's no longer
3 valid. It is a worst -- it was a worst case at the time it
4 was prepared, and at this point I think it has gone from
5 being a worst case to something that is even beyond a worst
6 case, given the current plan. So it's even more conservative
7 than a worst case.

8 I might mention that the early dismissal procedure
9 at an alert with protective actions being taken, sheltering
10 and evacuation, as the case may be, consistent with the
11 general public, is something that is right in the State
12 compensating plan for Rockland County.

13 MR. MC MURRAY: Judge Laurenson, I'd like to have
14 that last comment stricken about Rockland County's plans. I
15 don't think it's pertinent to the issue we're discussing.

16 JUDGE LAURENSEN: I think it does raise other
17 matters that would require some additional evidence not
18 pertinent at this point.

19 So I would grant that request.

20 BY MR. MC MURRAY:

21 Q Mr. Lieberman, can you tell me how many bus trips
22 would be involved in the event that all of the schools within
23 the EPZ are evacuated?

24 Again, I'm talking about bus trips, not the number
25 of buses involved.

ki 14:8

1 A (Witness Lieberman) I think I answered that. It's
2 several thousand.

3 Q This is evacuation, not early dismissal.

4 A Oh?

5 We are going to confer for a moment.

6 (Witnesses Lieberman and Weismantle conferring.)

7 After conferring with Mr. Weismantle, the estimate
8 is approximately in the neighborhood of 400 trips based on
9 an estimated school population of 20,000 children and
10 something less than the available capacity of 60 children
11 per bus.

12 Q Sixty children per bus?

13 A Yes

14 Q Is it your testimony that that is generally the
15 capacity of the school buses?

16 A For children.

17 Q For children.

18 A We actually used a figure of 50 in arriving at
19 that estimate.

20 Q Just to clarify, you were talking about the number
21 of bus trips to evacuate the children, not the number of
22 buses?

23 A That's correct.

24 We took the total population of school children,
25 divided by an average of 50 children per bus trip, and arrived

ki 14:9

1 at that estimate of bus trips.

2 Q Now, can you tell us in the event of an evacuation,
3 how many bus trips will be involved in taking people without
4 cars out of the EPZ, without access to cars?

5 A Okay.

6 We identified that as part of an analysis. I
7 don't think that breakdown is in Appendix A, but we do have
8 a very detailed breakdown of the total number of buses
9 required to evacuate people from within the EPZ, given that
10 they require transit services.

11 I'm going to take a moment to identify that.

12 Q Just to clarify, are you getting for me the
13 number of bus trips that are expected, or the number of
14 buses, or what?

15 A Whatever you want.

16 Q I want the number of bus trips.

17 A Fine.

18 End 14

15pb1

1 Q Thank you.

2 MR. IRWIN: Off the record.

3 (Discussion off the record.)

4 MR. IRWIN: Judge Laurenson, as I had indicated
5 earlier, Dr. Cordaro has conflicting commitments that
6 require his traveling this afternoon.

7 We ask the Board's leave for him to be excused
8 at this time, and LILCO, of course, will take whatever
9 consequences may befall from his absence from the panel.

10 JUDGE LAURENSEN: My understanding is that
11 there is no objection to this.

12 MR. MC MURRAY: That's correct.

13 JUDGE LAURENSEN: Thank you, Dr. Cordaro.

14 (Witness Cordaro excused.)

15 BY MR. MC MURRAY:

16 Q Mr. Lieberman, if it would make things quicker
17 I'm also going to ask you about the total number of
18 ambulance and ambulette trips to evacuate nursing homes.

19 MR. MC MURRAY: I think maybe we'd be willing
20 to move on, Judge Laurenson. And Mr. Lieberman can make
21 these calculations during a recess unless I'm very close --

22 WITNESS LIEBERMAN: I'm very close to the
23 buses, I have to get onto the ambulances and ambulettes.

24 BY MR. MC MURRAY:

25 Q Let's go on. I'd like you to make those

15pb2

1 calculations at the break then.

2 MR. MC MURRAY: Judge Laurenson, at this time,
3 Mr. Miller is going to be continuing the cross-examination.

4 JUDGE LAURENSEN: Just so we're clear on this,
5 does that mean that you have completed your questioning of
6 this panel, Mr. McMurray?

7 MR. MC MURRAY: I may want to come back to this
8 one point, Judge Laurenson.

9 JUDGE LAURENSEN: As part of the follow-up on
10 that calculation. But aside from that?

11 MR. MC MURRAY: I am finished.

12 JUDGE LAURENSEN: Fine.

13 MR. MILLER: Judge Laurenson, for the Board's
14 information and for the benefit of the LILCO panel, the
15 great, great majority of my questions are going to focus
16 on two aspects of Appendix A of the LILCO plan, Figure 8,
17 which sets forth the location of the LILCO traffic control
18 posts and the instructions to be given to traffic by LILCO
19 traffic guides.

20 And Table 12 of the Appendix A which deals with
21 the recommended turn movements at traffic node locations --

22 JUDGE LAURENSEN: Can you give us the page number
23 of those figures?

24 MR. MILLER: Figure 8 begins at page IV-52.
25 Table 12 begins at page IV-29.

15pb3

1 JUDGE LAURENSEN: Thank you.

2 MR. MILLER: For the Board's benefit, if the
3 Board would like, we have a map that was provided to us by
4 LILCO. This map, I understand, frankly I haven't looked at
5 it, shows the location of all the traffic control posts
6 based on Figure 8.

7 In addition, the county has a clean copy of a
8 Hagstrom map. It might help the Board follow along with
9 my questions, if the Board would like to see those.

10 JUDGE LAURENSEN: I think if we could have one
11 copy of each, that would be helpful.

12 MR. IRWIN: Mr. Miller, you are referring to
13 a map dated January, 1984 entitled Shoreham Nuclear Power
14 Station Emergency Planning Zone, that's dated January '84.

15 MR. MILLER: Yes, that's right, Mr. Irwin.

16 (Documents handed to Board.)

17 MR. MILLER: Judge Laurenson, for the Board's
18 benefit, what I plan on doing, I have no intention to move
19 into the record, either the Hagstrom or this large map that
20 was produced by LILCO. I just thought it might help the
21 Board to follow along.

22 I'll try to give the pertinent page reference
23 in the Hagstrom map. I understand, Mr. Lieberman, you
24 have available to both the large map and a Hagstrom of your
25 own; is that correct?

15pb4

1 WITNESS LIEBERMAN: Yes, that's correct.

2 MR. MILLER: Okay.

3 BY MR. MILLER:

4 Q Mr. Lieberman, would you look at page 60 of
5 your testimony, please? Testimony on contention 65, and on
6 page 60, Mr. Lieberman, you reference or you state that the
7 plan utilizes special traffic control tactics to limit many
8 potential bottlenecks.

9 Do you see that reference?

10 A (Witness Lieberman) I don't see it.

11 Q On page 60 of your testimony on contention 65,
12 middle of the page.

13 A Yes, I see it.

14 Q I assume, Mr. Lieberman, that one of these
15 special control tactics is the traffic control post that are
16 listed in Appendix A in Figure 8; is that right?

17 A No, it is not a one-to-one relationship between
18 the traffic control posts and traffic control tactics.
19 Traffic control posts identify locations where traffic
20 guides are located to perform the general functions of
21 facilitating, directing traffic as we discussed before.

22 They are also stationed at those locations where
23 such tactics are applied.

24 Q And traffic guides are in part supposed to help
25 implement these control tactics; is that right?

15pb5

1 A That is correct. Within framework of the
2 functions which again go back to facilitating and discouraging
3 idea.

4 Q How is the location -- if you could describe for
5 me briefly, how is the location for traffic control posts
6 determined?

7 A Well, there are several criteria. As I just
8 indicated, any location, or certainly most locations, where
9 special tactics have been developed, those locations are
10 manned by traffic guides.

11 In those locations where such tactics are not
12 in place, but where there are major intersections, heavy
13 volumes, and in a few cases, geometrics which could cause
14 drivers to wander off the recommended route inadvertently,
15 since they're not familiar with that route perhaps. We
16 have in place, traffic control guides.

17 Q Are you saying, Mr. Lieberman, that unless the
18 location is either a major intersection, or there is
19 heavy volume of traffic, or there is a combination of those
20 two, or geometrics of the roadway surface, there would be
21 no traffic guide assigned to that location?

22 A No, that doesn't follow. I'm trying to emphasize
23 those locations where we do put guides. There are other
24 locations, for example, on or near the periphery of the
25 EPZ, where we place guides for the purpose of, again,

15pb6

1 providing some reassurance that people will not inadvertently
2 enter the EPZ.

3 Again, these are limited to major roadways. We
4 also have guides outside of the EPZ, even in the immediate
5 vicinity of the reception centers or on major routes which
6 carry traffic to the reception centers.

7 Q Mr. Lieberman, would you please look at traffic
8 post 51.

9 A Would you locate it for me?

10 Q It is listed on page IV-56, located at the
11 Terryville Road and at the Terryville Elementary School.
12 And if you would explain to me why there is a traffic guide
13 at that location?

14 A That location is one of those that is outside
15 the EPZ. And the reason we have a traffic control post there
16 is that we would prefer that any northbound traffic along
17 Terryville Road would not continue north if they didn't
18 have to, and thereby have the potential to restrict the
19 movement of traffic along Nesconset Road.

20 Nesconset Road being a major arterial roadway
21 that service a good deal of traffic moving out of the EPZ.

22 So this was certainly not a high priority location,
23 but we thought that establishing a guide there to effectively
24 act in such a way as to discourage people from continuing
25 north to Nesconset Road would be somehow beneficial.

15pb7

1 Q I'm sorry. For the Board's benefit, I'm on the
2 Hagstrom maps on page 13. It's about location 18-G and
3 Terryville is very close -- the word is very close to the
4 location we're looking at.

5 It's close to the intersection of Viceroy Place
6 and Terryville Road. Map 13 on page 40.

7 Mr. Lieberman, Jayne Boulevard parallels
8 Terryville Road; is that correct?

9 A That's correct, parallel to and to the east.

10 Q And there is no traffic road on Jayne Boulevard
11 anywhere near the area of traffic guide 51, is there?

12 A That is correct.

13 Q Is there a reason why you would put a guide on
14 Terryville Road and not put one somewhere on Jayne Boulevard?

15 A As I said, the guide that is on Terryville
16 Road is not one of those high priority locations. I would
17 not feel terribly uncomfortable if he were removed. I
18 thought it would be helpful.

19 And the fact that we may have installed a
20 guide to perform a function which is largely perfunctory
21 does not imply that we should assign guides at the same
22 level of need all of the EPZ.

23 Q Mr. Lieberman, if you will look on Figure 8 for
24 the traffic post 51. That traffic guide is given no
25 instruction to facilitate traffic. He is told to discourage

15pb8

1 al' traffic to the north; is that right?

2 A That is correct. That is consistent with what
3 I said a few moments ago.

4 Q Yes, sir, I understand. That's a yes or no
5 question, please.

6 If traffic is to be discouraged along Terryville
7 Road at that location, in essence, you're telling the
8 traffic guide to U-turn traffic; is that right?

9 A Yes. Essentially what we're asking --

10 Q Mr. Lieberman, that's a yes or no question.

11 A No, that's not correct.

12 Q Are you asking the traffic guide to U-turn
13 traffic in that location?

14 A No, sir.

15 Q Are you telling the traffic guide to discourage
16 traffic to the north?

17 A Yes, sir.

18 Q Is there any way to discourage traffic to the
19 north other than having the traffic U-turn?

20 A Yes.

21 Q How?

22 A By indicating that the traffic should enter
23 the school grounds and use those service road facilities
24 as a means for turning the vehicle from its originally
25 northerly course to a southerly course.

15pb9

1 Q Isn't that a U-turn, Mr. Lieberman?

2 A No, sir.

3 Q Okay, let's go on. Mr. Lieberman, before the
4 lunch break, in response to a question from Mr. McMurray,
5 you stated that traffic guides in discouraging traffic are
6 primarily charged with discouraging traffic traveling toward
7 the plant, or traffic traveling from outside the EPZ into
8 the EPZ. Is that correct, do you remember that statement?

9 A That is correct.

10 Q Do you stand by that statement?

11 A I think I qualified it by saying that that's
12 their primary function. There are exceptions, and you
13 picked up one of them.

14 Q I thought your statement, Mr. Lieberman, was
15 that the primary majority of instances where traffic guides
16 are to discourage traffic, it is traffic that would be
17 traveling towards the plant, within the EPZ, or traveling
18 outside the EPZ traveling towards the EPZ.

19 Is that a true statement?

20 A Yes. The word "majority" is the key there.

21
22
23
24
25
end 15.

1 Q Isn't it a fact, Mr. Lieberman, that at many
2 traffic posts inside the EPZ traffic guides, according
3 to Figure 8, are to discourage traffic, evacuating traffic,
4 that would be attempting to get away from the plant and
5 outside the EPZ?

6 A I'm afraid you're going to have to be -- you'll
7 have to show me where that is done.

8 Q Let me give you a few examples.

9 A All right, fine.

10 Q Tell you what, I'll read off some and you take
11 your pick. Traffic posts 6, 8 -- just write them down, if
12 you will. 6, 8, 10, 20, 18, 29, 37, 44, 45, 49, 51, 55,
13 105 --

14 MR. IRWIN: Objection. Mr. Miller, why don't you
15 give him time to write them down?

16 WITNESS LIEBERMAN: You suggest that I write that
17 down and you're proceeding at a rate which makes that
18 impossible.

19 BY MR. MILLER

20 Q Why don't you take traffic post 6, Mr. Lieberman.

21 A (Witness Lieberman) I'd be delighted to.

22 MR. IRWIN: Take all the time you want, Mr.
23 Lieberman.

24 BY MR. MILLER:

25 Q Mr. Lieberman, looking at Figure 8 --

1 MR. IRWIN: Mr. Lieberman, have you had time
2 to look at traffic post 6?

3 BY MR. MILLER:

4 Q Traffic post 6, Mr. Lieberman --

5 MR. IRWIN: Objection. Judge Laurenson, I
6 want to make sure the witness has had time to examine the
7 map.

8 JUDGE LAURENSEN: I think he's trying to explain
9 the area he wants him to focus on.

10 BY MR. MILLER:

11 Q Mr. Lieberman, traffic post 6 is located at the
12 intersection of Route 25A and Ridge Road. It is shown
13 on the Hagstrom map, map 17, on page 48, around G-23.

14 A (Witness Lieberman) Yes, I see it.

15 Q Mr. Lieberman, isn't the traffic guide at that
16 intersection instructed to discourage all traffic toward
17 the west?

18 A There are two directions of discouraging. There's
19 one to the north and there's one to the west.

20 Q And isn't discouraging traffic to the west, at
21 that location, wouldn't that be discouraging traffic that
22 would be heading away from the Shoreham plant?

23 A That is correct.

24 Q Mr. Lieberman, would you look at traffic post
25 8? The intersection of William Floyd Parkway and Whiskey

1 Road, shown on the Hagstrom map at 17, page 48, at H-23
2 roughly. Isn't the traffic guide at that location instructed
3 to discourage traffic from the south, moving toward the west?

4 A Okay, I see the line you're questioning. The
5 answer is yes and we have to respond within the context of
6 what we're trying to achieve here.

7 Q Mr. Lieberman, my only question is is that an
8 instruction to the traffic guide at that location?

9 A Yes, it certainly is, within the context of the
10 overall plan.

11 Q Is that a direction that would be moving away
12 from the Shoreham plant?

13 A A westerly direction, at that location, would in
14 fact be moving away from the plant and into an area of
15 congestion.

16 Q Mr. Lieberman, I will be glad to continue going
17 through these, but I can go back to my original question.
18 Aren't there a great many traffic posts, within the EPZ,
19 where evacuating traffic is instructed to be discouraged
20 when that traffic is attempting to move in directions away
21 from the Shoreham plant?

22 A Again, I don't know what the quantification of
23 "many" is, relative to the total ensemble. The point is that
24 these directions are part of an overall routing plan, which
25 are designed -- the plan is designed to accomplish certain

1 objectives, which is to minimize the overall evacuation time
2 and to move people away from the plant to an extent that is
3 reasonable.

4 Part of the discouraging idea is to try to make
5 this balance between demand and supply. If we discourage
6 traffic from adding to congestion, in our view, that
7 constitutes a beneficial tactic.

8 Q Mr. Lieberman, who made, or how was the decision
9 made as to what instructions are given to what traffic
10 locations, traffic guides at certain locations?

11 A These instructions are consistent with the routing
12 patterns which we developed as part of our plan.

13 Q Are you telling me that the traffic instructions,
14 instructions for traffic guides, are supportive of the
15 model?

16 A It's not supportive of the model. It's supportive
17 of the routing patterns of the plan. The model is a tool.

18 Q If the instructions given to traffic guides,
19 as set forth in Figure 8, would not be complied with, how
20 would that effect the model?

21 A You're speculating.

22 Q No, I'm asking a question. How would it affect
23 the model?

24 A The model is not affected.

25 Q How would it affect the evacuation times produced

1 by the KLD model?

2 A We have studied the effects of non-compliance.
3 Those runs are listed in Attachment 6. I would be glad to
4 review those with you, if you would like to.

5 Q It's different --

6 A It's not different. It's all part of the total
7 plan. You are asking a question. If traffic moves in a
8 direction other than those indicated by the guides, that
9 represents a non-compliance with the plan. It's not
10 separate and distinct entities.

11 Q Mr. Lieberman, take the hypothetical situation
12 where there's an evacuation. Traffic guides are in place.
13 Traffic guides are attempting to implement the instructions
14 set forth in Figure 8. Traffic is disregarding those
15 instructions, going its own way, if you will. Are you saying
16 that situation is equivalent to your non-compliance runs?

17 A The term "non-compliance", as we have used it,
18 described a situation in which the indicated level or
19 percentage of the vehicle population takes routes other
20 than those which are recommended. Within the context of
21 that definition, that is correct, namely they would thereby
22 be violating the movements indicated by the guides.

23 Q I don't know if I got an answer to my question.
24 Are you saying that my hypothetical situation has been
25 studied and an analysis done in your non-compliance runs?

161b6

1 A Yes.

2 Q Isn't it true that in your non-compliance runs,
3 in most cases, motorists still were assumed to take one of
4 two alternate routes out of the EPZ?

5 A No.

6 Q How many routes were motorists assured to take,
7 then?

8 A There is no limit on the number of routes.
9 Essentially, I think what you are confusing here is that
10 for the non-compliance runs we, in addition to the simulation,
11 performed traffic assignment. For this traffic assignment
12 runs, we identified up to two alternative destinations in
13 addition to the one which was assigned as part of the plan.
14 We then performed that assignment run and used the associated
15 turning movements as input to the simulation model.

16 The simulation model is then modified in the
17 spirit of non-compliance, so as to permit motorists to
18 decide on their own if congested conditions prevailed on
19 one receiving link, they had the freedom to move to another.
20 With the exercise of this degree of freedom, the number of
21 routes is much greater than those which were originally
22 determined by the traffic assignment model. One cannot
23 determine, from the output, just how many additional
24 routes were created by virtue of this additional degree
25 of freedom.

161b7

1 Q Mr. Lieberman, under that reasoning, why is it
2 that the LILCO traffic plan provides for traffic locations
3 and traffic guides?

4 A This whole of question started out with a
5 preamble which says "under the hypothesis." That is your
6 hypothesis, not mine. It is our opinion that, to the
7 greatest extent, given the proper information, both before the
8 accident and during the accident, in terms of the signing
9 which is installed, the vast majority of the population would,
10 in fact, adhere to the recommended routes.

11 The purpose of these guides then is to act as
12 reinforcements to the information which the motorists already
13 have and to facilitate the movement of this traffic and to
14 resolve any conflicts that may occur by the appearance of
15 conflicting streams of vehicles.

16 Q But you're saying, Mr. Lieberman, is if motorists
17 don't obey instructions given by traffic guides, it really
18 doesn't make any difference to the evacuation time estimates
19 produced by LILCO?

20 A You've got it. That's exactly what our studies
21 show.

22 Q Then why have the traffic guides? Why provide
23 instructions to the public?

24 A Because -- it's an interesting point. The
25 non-compliance runs were actually performed after the fact.

1 What we have found is the following: that under the planned
2 evacuation, which we have documented in Appendix A, a
3 50 percent non-compliance, which we think is a level that
4 won't be achieved, does in fact extend the evacuation time
5 by something on the order of half an hour or perhaps 40
6 minutes, I forget that. We think that half an hour could
7 be important and it is worthwhile to apply these tactics
8 in the interest of reducing that evacuation time to a
9 minimum.

10 Q Mr. Lieberman, are you telling me then that the
11 traffic guides, and instructions given to the public by
12 these traffic guides, are to save a half an hour to 40
13 minutes of evacuation times? Is that right.

14 A Well, they do actually more than that. Again,
15 you are talking about a situation where traffic guides are
16 out there under the planned control tactics. You have
17 to make a distinction here between traffic guides, which are
18 directing traffic at locations other than those where the
19 tactics are applied, and traffic guides which are stationed
20 at those locations where the tactics are applied.

21 We have found that the difference between the
22 planned evacuation and the uncontrolled evacuation, where
23 there's no traffic guides and no tactics applied, is more
24 serious than a half hour. And I think we ought to refer to
25 Attachment 6 to quantify that difference.

161b9

1 Q Mr. Lieberman, you can talk about those on
2 your counsel's redirect. This doesn't get into my questions.

3 A It does get into your question and I'd like
4 to quantify it, if you don't mind and repeat my response to
5 the previous question.

6 MR. MILLER: Judge Laurenson, I think I
7 received a response to my question. I'd like to move on.

8 MR. IRWIN: Mr. Miller asked a question which
9 required a reply. I think we have to give the witness
10 that choice.

11 JUDGE LAURENSEN: I think we have to give Mr.
12 Lieberman a chance to respond to the answer. If, at that time,
13 you feel it's beyond the scope, we will consider your request.

14 WITNESS LIEBERMAN: The question, as I understood
15 it, was why do we need traffic guides, what function do they
16 perform? The general answer is, the functions they perform
17 is to reduce the time it takes to evacuate the public
18 within the EPZ.

19 I would now like to refer to Attachment 6, which
20 provides quantitative estimates of the effects, the positive
21 effects, of the controlled tactics and of the placement
22 of the traffic guides. I think the two cases I would
23 like to compare at the outset are cases 12 and 24. The
24 only difference between these two cases, both of which
25 pertain to the evacuation of the entire EPZ, is that for

1 case 12 we are implementing the planned evacuation, which
2 includes all the control tactics and the uncontrolled
3 scenarios, which assumes that there are no control tactics.
4 There are no traffic guides out there and traffic is
5 responding to signal traffic control which exists under
6 normal conditions.

7
8 If we compare the time it takes to evacuate
9 everyone from within the EP3 for case 24 it's 6 hours and
10 30 minutes. For case 12 it's 4 hours and 55 minutes. The
11 difference in evacuation time is more than one and one-half
12 hours. In our view, that's an important difference. And
13 in response to the guidelines, presented in the NUREG
14 documents, that exhorts the planner to perform whatever
15 tactics he needs to reduce this to a minimum. We think we
16 have accomplished that.

17
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25
end t16

ki 17:1

1 BY MR. MILLER:

2 Q Mr. Lieberman, in your opinion, you would agree,
3 wouldn't you, that the compliance by motorists with traffic
4 guide instructions will be encouraged if the instructions
5 make some sense to the motorist, are logical?

6 A (Witness Lieberman) Are you referring to the
7 public information instructions or the hand signals by the
8 guides, which are related to one another, of course?

9 Q I'm referring to the hand signals. Take the
10 situation where evacuating motorist approaches an intersection.
11 The guide is instructing that motorist either by trying to
12 discourage or by facilitating the motorist to go in a direction
13 which, to that motorist, will seem illogical or perhaps
14 frustrating of the motorist's purpose in leaving the EPZ.

15 A And the question is?

16 Q The question is, do you think that compliance
17 by evacuation traffic will be encouraged by traffic guide
18 instructions making sense, having some logic, being possible
19 of implementation?

20 A I have to emphasize once again that the role of
21 the traffic guides is to enforce a plan which has already
22 been disseminated to the public in the form of documents.

23 The documents indicate the recommended routes to
24 be traveled. The role of the traffic guide is to facilitate
25 the movement of traffic along these routes. The reasons for

1 these routes will be indicated in the public information
2 documents which are sent out.

3 Q Mr. Lieberman, first of all, you would agree,
4 I assume, that the role of the traffic guide is to facilitate
5 or to discourage evacuating traffic. Isn't that right?

6 A The primary role is to facilitate.

7 Q Does the traffic guide -- is the traffic guide
8 also expected to discourage traffic moving in certain direc-
9 tions?

10 A Yes.

11 Q Now, from the standpoint of motorists approaching
12 traffic guide providing some instruction to that motorist
13 as they approach an intersection, for example, wouldn't
14 compliance be encouraged by the instruction being provided by
15 LILCO's guides making some sense to the motorist?

16 A Absolutely.

17 These hand and arm signals have to be consistent
18 with the information which is provided the public before
19 the accident.

20 Q Fine.

21 Mr. Lieberman --

22 A And, incidentally, with the signing which is
23 installed.

24 Q Mr. Lieberman, would you look at Appendix A at
25 Roman IV-5? That page states, doesn't it, that movement of

1 vehicles in the direction of the power station will be
2 discouraged through the deployment of traffic codes, hand and
3 arm signals by LERO guides?

4 A Correct.

5 Q There are traffic posts where traffic is encouraged
6 or facilitated toward the Shoreham Station, isn't that
7 correct?

8 A There are a limited number of locations where
9 this is the case. And the movement towards --

10 Q Mr. Lieberman, that's a yes or no question. Are
11 there posts where traffic is encouraged toward traveling
12 toward the plant?

13 A There are a limited number of such locations.

14 Q Then, would you agree with me that that statement
15 in Appendix A is an inaccurate statement?

16 A No. I think that in general, it is a true state-
17 ment. It is an accurate statement.

18 Q Mr. Lieberman, that statement is, "Movement of
19 vehicles in the direction of the power station will be
20 discouraged."

21 Is that a true statement?

22 A That's a fair statement, given that it occurs
23 at most locations.

24 We have 140-odd traffic control posts. And if you
25 are concerned about an apparent discrepancy, what I suggest

ki 17:4

1 is that you identify those points and see how many there
2 are.

3 Q I suggest that that's LILCO's job, Mr. Lieberman.

4 JUDGE LAURENSEN: I think we ought to stop the
5 banter back and forth here.

6 If we have a question, let's ask your question.

7 MR. MILLER: Yes, Judge Laurenson.

8 BY MR. MILLER:

9 Q Mr. Lieberman, let's get back, for the moment, to
10 the question about compliance, compliance with traffic
11 guide instructions being encouraged by those instructions
12 making some sense.

13 A (Witness Lieberman) Well, I think we have to
14 identify what you mean by making sense. Please be more
15 specific.

16 Q Let's take some examples. I think maybe this will
17 be the way to do it.

18 Would you look, please, at traffic post No. 7,
19 which is listed on page IV-52 in Figure 8? It's the inter-
20 section of Whiskey Road and Ridge Road.

21 A I see it.

22 Q It's listed in the Hagstrom map, map 17, page 48,
23 I-22 roughly.

24 Sorry, J-22, 23.

25 Mr. Lieberman, that traffic guide is instructed

ki 17:5

1 to discourage all traffic to the east. Is that right?

2 A That is correct.

3 Q And the William Floyd Parkway is the major
4 north-south highway within the EPZ. Is that correct?

5 A No. I wouldn't characterize it as that.

6 I think that CR-83 is a comparable road.

7 Q Is the William Floyd Parkway, Mr. Lieberman, a
8 major north-south highway?

9 A It is one of the major north-south highways within
10 the EPZ.

11 Q Does it lie approximately one-half mile to the
12 east of traffic post 7, where the traffic guide is instructed
13 to discourage traffic to the east?

14 A Let me check that distance.

15 According to the Hagstrom map, it's a little over
16 a mile.

17 Q Approximately one mile, Mr. Lieberman?

18 A Roughly. It's about 1.1, 1.2 miles.

19 Q Okay.

20 Would you expect any evacuating traffic at that
21 intersection to want to continue east to get to the William
22 Floyd Parkway, where it could then proceed south and out of
23 the EPZ?

24 A I think your question reflects the fact that you're
25 not aware of the traffic flow patterns in that area. The

ki 17:6

1 traffic flow pattern in that area is southbound. We use
2 Ridge Road as a major bypass route to the William Floyd
3 Parkway in order to add additional capacity in that direction,
4 which moves away from the power plant.

5 There is no reason at all for traffic to abandon
6 a road which is moving them away from the power plant and
7 towards the EPZ boundary to travel 1.2 miles in the direction
8 of the plant.

9 The intersection of Whiskey Road with William Floyd
10 Parkway is closer to the power plant than the intersection of
11 Ridge Road and Whiskey Road is.

12 Q Mr. Lieberman, I understand how your model works
13 and what flows are produced by your model.

14 My question was, would you expect any evacuating
15 traffic at that intersection to want to continue to the
16 William Floyd Parkway so that it can head south and out of
17 the EPZ. It's a yes or no, I think.

18 Q There is no flow on Whiskey Road, no evacuating
19 flow on Whiskey Road moving eastbound which would continue
20 towards William Floyd Parkway. The flow, as I said, is
21 southbound.

22 To move along Whiskey Road, they would have to
23 make a left turn.

24 Q Is there any traffic -- Mr. Lieberman, I assume that
25 answer is under your model, there is no flow moving through

ki 17:7

1 that intersection.

2 A There's no evacuating flow moving through that
3 intersection in the eastbound direction. That's correct.

4 Q And you would expect no traffic, then, at that
5 intersection?

6 A No substantive traffic.

7 Q How do you define "substantive traffic"?

8 A Well, according to the computer printout, and I
9 can check that if you would like, I believe the flow is
10 zero.

11 Therefore, any flow that would be along that road
12 would probably be people who are completing their work-to-
13 home trips before the onset of any congestion or shortly
14 thereafter.

15 You will notice in that area, there's a fairly
16 sizable housing development. In fact, there are two of
17 them right there, condominium types and private homes as
18 well.

19 End 17
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18pbl

1 Q Mr. Lieberman, is a zero traffic flow expected
2 from the north arriving at that intersection?

3 A I must have said it about four times. The
4 prevailing flow of traffic is southerly. Therefore, they
5 must be coming from the north.

6 Q Would you look at post 8, please. The next one
7 on Figure 8 is William Floyd Parkway -- I'm sorry, post 9.
8 We just did 8.

9 Post 9 is Middle Country Road.

10 A Excuse me, we did 7 not 8.

11 Q I'm confused again. Let's go to post 8. William
12 Floyd Parkway and Whiskey Road, which is shown in the
13 Hagstrom map 17 again around J-23.

14 A I see it.

15 Q Traffic at that intersection is discouraged from
16 the south to the west; is that right?

17 A There is no evacuating traffic coming from the
18 south to the west.

19 Q Mr. Lieberman --

20 A But any traffic that comes from the south is
21 discouraged at that point.

22 Q I assume there's some traffic expected since
23 there's an instruction provided to the traffic guide.

24 A There's no evacuating traffic expected.

25 Q So there would be pre-evacuation traffic, is

18pb2

1 that what you're saying?

2 A There could be some pre-evacuation traffic, yes.
3 The reason we do that, if you're wondering, is that we don't
4 want to interrupt the movement of traffic southbound along
5 William Floyd.

6 Again, I would like to remind you that discouragement
7 doesn't mean prohibition. If there is a vehicle there
8 who wishes to make that movement, he will be allowed to make
9 that movement, but he will be given lower priority to access
10 through that intersection than the southbound traffic which
11 is evacuating.

12 Q Yes, I understand. Mr. Lieberman, traffic at
13 that intersection, coming from the south and traveling to
14 the north is not discouraged, is it?

15 A Yes, it is. You have to look at access points
16 to William Floyd Parkway.

17 Q Mr. Lieberman, I'm looking at Figure 8. On
18 Figure 8 is there an instruction to the traffic guide to
19 discourage traffic from the south to the north?

20 A No.

21 Q And that traffic would be traveling toward the
22 plant if it was allowed to continue north at that point,
23 wouldn't it?

24 A You keep using the term "allowed" as though the
25 traffic guides had a function to prevent. What I'm trying

18pb3

1 to tell you is that that is not their function. They don't
2 prevent any vehicle from moving in any direction it pleases.
3 Because that traffic most likely will be moving in a
4 direction towards his home to gather up his family and
5 initiate the evacuation trip.

6 There could be no rational reason for anybody
7 to be moving north on that road towards the plant, unless
8 of course, he was a LILCO employee and assigned to that
9 post during the emergency.

10 Q I assume, Mr. Lieberman, by using the word
11 "discourage" LILCO expects or would be hopeful that motorists
12 would comply with the instruction given by the guides.

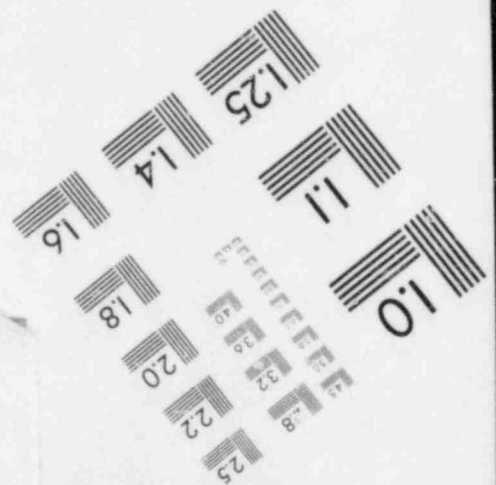
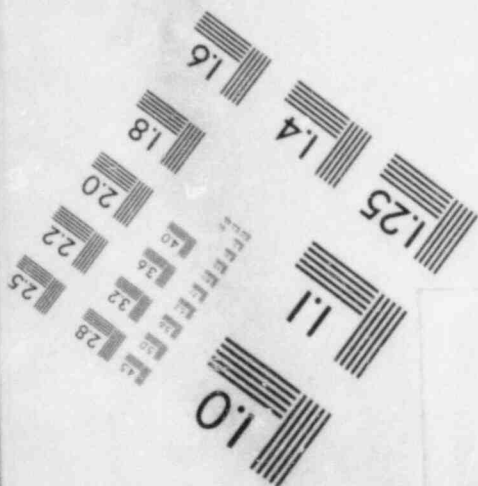
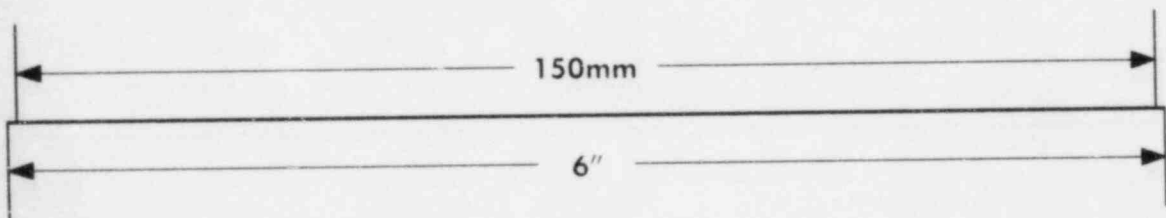
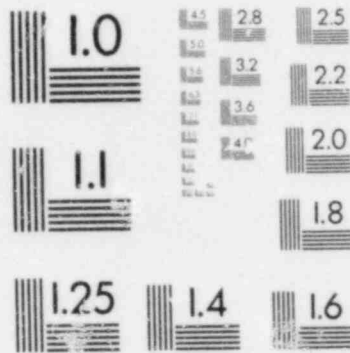
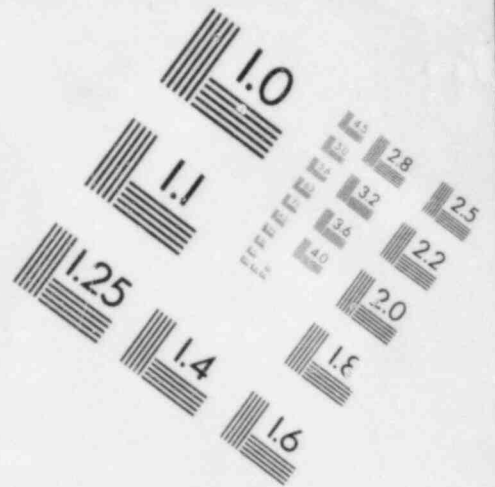
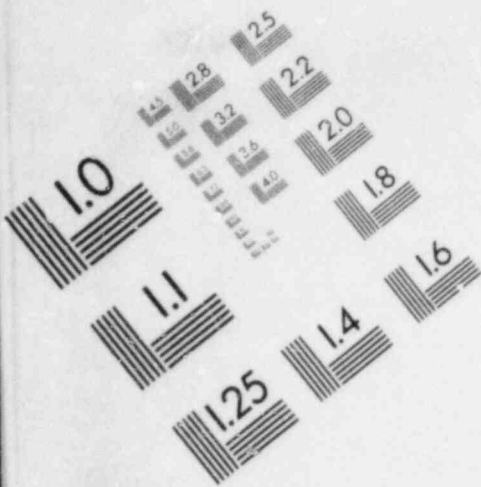
13 A Yes.

14 Q Now --

15 A (Witness Weismantle) I would like to add to
16 that. I agree with Ed's answer with one qualification. We
17 want people who are coming home to unite with their families
18 to do so. And that's why we're placing homes, such that
19 people could pass, because we know that there's going to
20 be traffic in the initial stages after the evacuation is
21 declared, going home. Some of which is heading towards
22 the plant, to reunite with their families, so they can then
23 leave.

24 A (Witness Lieberman) Let me just expand on that.
25 I think it would be useful to look at Attachment 16.

IMAGE EVALUATION
TEST TARGET (MT-3)



18pb4

1 Q Mr. Lieberman, I don't care if you look at
2 Attachment 16. Again, I think Mr. Irwin can come to that
3 on redirect, Judge Laurenson.

4 MR. IRWIN: The difficulty is, by putting these
5 witnesses into a straitjacket, Judge Laurenson, when there
6 is a plan involving more than binary instructions, we're
7 getting very fragmented. And frankly, a confusing record.

8 If there are no explanations for things, we
9 find the left out explanation was preventing the witness
10 from explaining the logic of the system, which is what I
11 understodd the purpose of this question to be..

12 I think it is helpful that they be allowed to
13 explain rather than retracing their numbers later in the
14 day, or with the benefit of the transcripts tomorrow.

15 JUDGE LAURENSEN: There are some competing
16 interests here. One is that generally a lawyer is permitted
17 to conduct his own cross-examination on the terms that
18 he feels are most suited to establishing his case.

19 We have tried to permit that within the rules
20 of the NRC.

21 On the other hand, there is another competing
22 factor which says that the witness should be given the
23 opportunity to prepare a complete answer and submit a
24 complete answer.

25 And the line between the two of them sometimes

18pb5

1 is a very fine one to draw.

2 I think at this point, though, that Mr. Lieberman
3 is about to go into a somewhat different area than counsel
4 for LILCO feels should be developed on redirect examination.
5 He ought to be given that opportunity.

6 In any event, I think we've come to the point
7 where it would be an appropriate time to take a recess. And
8 we will do that.

end 18.

9 (Recess.)
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ki 19:1

1 MR. BORDENICK: Judge Laurenson, if I might, I
2 would just like to indicate that I have served on the Board
3 and parties the NRC Staff objection to Suffolk County's
4 Revised Emergency Planning Contentions.

5 Additionally, I have been able to talk to
6 Mr. Repka, who informs me that based on the fact that as the
7 Board and parties will note, the Staff only objected to two
8 of the revised contentions --

9 JUDGE LAURENSON: Mr. Bordenick, please take the
10 microphone.

11 MR. BORDENICK: Sure.

12 These two contentions -- I don't know whether
13 LILCO has served their responses yet. As I understand it,
14 these two contentions are also two that LILCO objected to,
15 among others, and that Mr. Repka had talked to LILCO, who
16 indicated that they had previously talked to Ms. Letsche,
17 and no progress had been made on that, and therefore he
18 concluded it would just be useless for him to talk to her.

19 Of course, on the other hand, the telephone is
20 a two-way instrument. She could just as well have called him
21 if she felt there was anything to be gained.

22 Of course, she did not know of the two contentions.
23 She did not know his position, in fairness to her.

24 But essentially, as I indicated this morning, he
25 did not call because he did not think it would be worthwhile

ki 19:2

1 to do that, since he had been informed by LILCO that these
2 two contentions had already been discussed.

3 I might point out, there have been numerous
4 occasions where conversations or negotiations or whatever
5 have taken place between the Applicant and the County, and
6 the Staff has been informed after the fact that if we're
7 in agreement with what has been discussed, we have no problem.
8 And this was one of those cases where he felt that it wouldn't
9 be worthwhile to pursue it.

10 There was no slight intended. It was just that was
11 the conclusion he came to.

12 JUDGE LAURENSEN: Well, for the record, the Board
13 has received that objection. At this time, we have not
14 received any filing from LILCO.

15 Do you intend to file such a document today,
16 Mr. Irwin?

17 MR. IRWIN: Yes. The documents are in this
18 building. We arrived, apparently one copy too few.

19 Well, they were going to attempt to borrow
20 Suffolk County's Xerox machine, and they apparently succeeded.
21 Here they are. I'll serve them now.

22 Let me also confirm for the record, Judge Laurenson,
23 that Mr. Repka did discuss with Ms. McCleskey the two
24 contentions he refers to, and also the fact that numerous
25 discussions between the County and LILCO have, in fact,

ki 19:3

1 proceeded, subsequent agreement or disagreement reached, and
2 the Staff simply endorsed those results.

3 JUDGE LAURENSEN: The one thing that the agreed
4 schedule did not include was the length of time necessary for
5 the County to respond to whatever objections are being filed
6 today by the Staff and by LILCO.

7 I would ask at some time either today or tomorrow
8 that the attorneys for the County advise us of the time they
9 think would be necessary to file a written response.

10 I think there should be a written response filed
11 in this matter, and we should not do it orally because of
12 the importance of this question. So before we conclude
13 today's hearing, or at the very latest, sometime tomorrow,
14 I would ask that the attorneys for Suffolk County give us
15 their best estimate of how much time will be necessary to
16 complete that response, so that we can decide the questions
17 and get the rest of the schedule moving again.

18 MS. LETSCHE: Judge Laurenson, I would be glad to
19 do that tomorrow morning.

20 JUDGE LAURENSEN: We have now received the LILCO
21 objections to the Intervenor's proposed emergency planning
22 contentions, et cetera.

23 At this point, we are ready to resume the cross
24 examination of the panel.

25 Mr. Miller.

ki 19:4

1 BY MR. MILLER:

2 Q Mr. Lieberman, let's change the approach here, if
3 we could. If you would look at traffic post 74 on page 4-58
4 of Figure 8, I'm going to ask you some clarification questions
5 about a number of traffic posts.

6 Traffic post 74 advises the traffic guide to
7 facilitate northeast traffic to the northwest to discourage
8 all traffic to the northwest.

9 Now, that's obviously not possible, is it?

10 A (Witness Lieberman) It's a typo. It should be
11 all to the northeast.

12 Q Which is the typo?

13 A The movement to be discouraged.

14 JUDGE LAURENSEN: Perhaps you can use the micro-
15 phone, Mr. Lieberman, so we can all hear you.

16 WITNESS LIEBERMAN: That's something that slipped
17 by the editing process. Under movements to be discouraged,
18 that should be all to the northeast, not to the northwest.

19 Your observation is correct. That's impossible.

20 BY MR. MILLER:

21 Q Mr. Lieberman, would you look at traffic post 1,
22 which is on page 4-52 of Figure 8?

23 Now, that traffic post says that traffic from the
24 southeast should be discouraged to the northeast. Is that
25 right?

1 A (Witness Lieberman) That is correct.

2 Q You cannot approach that intersection from the
3 southeast, can you?

4 A Well, let's check that.

5 Q This is on the Hagstrom map 13, page 41, around
6 F-21.

7 A I'm going to take a moment here to get some
8 diagrams which we were in the process of preparing now, and
9 this would outline the geometric configurations of that post.

10 Q Fine.

11 (Pause.)

12 Mr. Lieberman, we're looking at traffic post 1,
13 which is Lower Rocky Point Road and Sound Beach Boulevard.

14 A If you'll be patient for a moment, there are a
15 lot of streets up there. Can you locate it for me in
16 Hagstrom?

17 Q It's map 13, page 41, F-21.

18 A Okay, I have it.

19 Q And my question was, you really can't approach
20 that intersection from the southeast, can you?

21 A Yes, you can.

22 It is the southeast road. The scale of the
23 Hagstrom is such that the orientation of the approach to that
24 intersection does not come through as coming from the south-
25 east. But if you go out there and take a look at it, that

ki 19:6

1 road bends to the west as you go north, and on the immediate
2 approach it does, in fact, come from that direction.

3 Q Let's look at traffic post 19, Mr. Lieberman.

4 This is the intersection -- well, it's the location
5 of Route 25 at the LIE, exit 72 westbound on ramp -- that's
6 on the Hagstrom map 20, around K-29.

7 I guess my question here, Mr. Lieberman, are those
8 compass directions in the traffic guide instructions correct?
9 Post 19 in the traffic guide is instructed to discourage all
10 traffic to the northeast.

11 A Yes, it is.

12 Again, within the perception of the traffic guide
13 is just the immediate location, plus perhaps 100 feet or so
14 upstream in that particular area; that orientation is correct
15 according to the sketch that we have or are in the process
16 of preparing as part of the traffic guide training.

17 Q Mr. Lieberman, if you discourage traffic to the
18 northeast, aren't you really discouraging traffic from getting
19 on the LIE westbound?

20 I guess it appears to me that you really want to
21 instruct the traffic guide to discourage traffic to the
22 northwest; isn't that right?

23 A I will be back with you in a moment.

24 Q Well, take your time, Mr. Lieberman. My comment
25 was based on the fact that the way I view the maps, the

ki 19:7

1 northwest would be in the direction towards the plant, and I
2 was not assuming that was LILCO's intent here.

3 A The intent is to discourage traffic from proceeding
4 along Route 25 in a westerly direction. That's the intent.

5 And, of course, we don't prevent people from
6 going there. We discourage it. And the role of the traffic
7 guide, coupled with the deployment of cones at that location,
8 is to encourage the approaching vehicles to take the ramp
9 onto the Long Island Expressway, which will move that vehicle
10 not only to the west, but to the south, and he will be at
11 longer distance from the plant if he took that route rather
12 than Route 25.

13 Q So the intent is to encourage traffic onto the
14 LIE westbound?

15 A To the extent that traffic does, in fact, approach
16 that location.

17 It turns out that there is actually no evacuating
18 movement on that approach, but if anyone should get through,
19 that's what we would like him to do; get on the LIE.

20 Q There's no evacuating movement under the model,
21 the KLD model. Is that what you're saying?

22 A The model is a tool. There is no evacuating
23 movement in that direction according to the plan.

24 Q Mr. Lieberman, what about post 23? I think this is
25 a relatively simple question. That is described as Route 53

ki 19:8

1 and Roanoke Avenue. Isn't that in actuality Route 58 and
2 Roanoke Avenue?

End 19

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1 A Yes, it's indicated directly on the sketches
2 which will be given to the traffic guides. Here there is
3 again another typo. It was typed as a three and it should
4 have been typed as an eight.

5 Q Mr. Lieberman, the sketches you're referring to
6 I have never seen, obviously. They're not a part of the
7 LILCO plan, they're not a part of Revision 3, are they?

8 A That's correct. I'm using them as a reference,
9 since what they contain are blowups of each traffic control
10 post location and I'm able to respond better to your questions.

11 MR. IRWIN: Let me note for the record that a
12 slightly earlier version of this set of sketches, to which
13 Mr. Lieberman was referring, was provided to Suffolk County
14 approximately three weeks ago by LILCO.

15 BY MR. MILLER:

16 Q My only point, Mr. Lieberman, is that these
17 sketches are not part of the LILCO plan, are they?

18 A (Witness Weismantle) They are not contained
19 in the four volume set of planned procedures, that's
20 correct. They're materials given to the traffic guides.

21 Q Thank you. Mr. Lieberman, would you look at
22 traffic post 42, which is described on page IV-55 as
23 Lower Rocky Point Road and North Country Road?

24 A (Witness Lieberman) I have it, is that on page 13?

25 Q It's on map 13, page 41, around F-20, 21.

201b2

1 A I have it.

2 Q At that intersection, Mr. Lieberman, the traffic
3 guide is not instructed to discourage traffic to the east,
4 is he? Mr. Lieberman, just by looking at Figure 8, is there
5 any instruction to the traffic guide to discourage traffic
to the east?

7 A No, it is not on those specifications.

8 Q And isn't that location part of the one-way
9 flow treatment proposed by LILCO in Table 8 of Appendix A?

10 A Yes, it certainly is.

11 Q And Mr. Lieberman, if traffic moved to the east
12 of that location it obviously would conflict with that one-way
13 flow treatment, which is one-way flow to the west, isn't
14 that right?

15 A That's correct. That's an omission.

16 Q Mr. Lieberman, would you look at traffic post 91
17 please, described as -- on page IV-60 as Nichols Road
18 and Scott Coleman Road?

19 A I'm sorry. Could you tell me what that number
20 is again?

21 Q 91. I think it's a simple question. I just want
22 to know, Scott Coleman Road, is that supposed to be South
23 Coleman Road? That's on map 13 of the Hagstrom, page 40.

24 A Yes, it is. It is indicated as such on the sketch.

25 Q And would you look, please, at traffic post 135,

1 which is page IV-64 of Appendix A described as Route 25
2 westbound and the ramp to southbound William Floyd Parkway.
3 That's on the Hagstrom map 18, around M -- I'm sorry,
4 around K-23. Is that a correct description of the location
5 for that traffic post, Mr. Lieberman, meaning Route 25
6 westbound at ramp to southbound William Floyd Parkway?

7 A I believe it is. This is the westbound direction
8 of Route 25, which is just west of William Floyd Parkway,
9 at the entrance to the southbound ramp, which carries traffic,
10 which is originally heading west on Route 25, to a direction
11 south along the William Floyd Parkway.

12 Q The directions then are wrong, aren't they
13 Mr. Lieberman, in Figure 8? Traffic is being discouraged
14 from the west to the east. Didn't you just describe traffic
15 post 18, Mr. Lieberman?

16 A No. We're talking about 135, are we not?

17 Q Yes, we are.

18 A And you're taking issue with movements to be
19 discouraged from west to east?

20 Q That's right.

21 A And that looks perfectly correct to me. I
22 think what you are referring to is --

23 Q Mr. Lieberman, why don't you look at post 18 --

24 MR. IRWIN: Mr. Lieberman is trying to finish.

25 WITNESS LIEBERMAN: I guess you're referring to a

1 ty'o next to the 25 number --

2 BY MR. MILLER:

3 Q Let me clarify it. Mr. Lieberman, I think what
4 you're saying is at traffic post 135 the location should be
5 described as Route 25 eastbound and not Route 25 westbound.
6 Is that correct?

7 A (Witness Lieberman) That is correct.

8 Q Mr. Lieberman, to your knowledge, are there
9 conflicts between certain instructions to be provided by
10 traffic guides to motorists at traffic posts and the
11 recommended turn movements for evacuation traffic set forth
12 in table 12 of Appendix A?

13 A Well, that's certainly not the intent.

14 Q Well, why don't we look at traffic post 10,
15 which corresponds, I believe, to traffic node 56 in Table
16 12. Traffic post 10 is listed at IV-52 of Figure 8.
17 Node 56 description is set forth on page IV-43 of Appendix
18 A. It's on the Hagstrom map, map 17, page 49, around
19 J-26.

20 Do you have it, Mr. Lieberman? Maybe we could
21 start with the Figure 8 description which says, in part
22 that traffic from the west to the east is to be discouraged.
23 Do you see that?

24 A You're just a little bit ahead of me. Give me
25 another 30 seconds.

1 Q Okay.

2 A Okay, and the question is?

3 Q Well, let's look first at Figure 8, traffic
4 post 10. Traffic, in part, is to be discouraged from the
5 west to the east, is that right?

6 A That is correct.

7 Q And if you look -- I'm sorry. Also, all traffic
8 to the west is to be discouraged as well, is that right?

9 A That is correct.

10 Q Now if you look at the Node 56 discussion, Table
11 12, Appendix A, which states that -- let me just read it.
12 "All vehicles moving on Middle Country Road, Route 25, light
13 traffic turn south onto Wading River Manor Road 60 percent
14 or continue on Middle Country Road, Route 25, 40 percent."

15 A That's correct. That's an inconsistent description.

16 Q Inconsistent with traffic post number 10?

17 A Inconsistent with what the traffic guide will
18 actually do there, yes. There the traffic will move south
19 along Wading River Manor Road.

20 Q Could you look at traffic post 17, which I
21 believe corresponds to traffic node 128? Traffic post 17
22 is at the intersection of Nugent Drive and Toppings path.
23 Page 51 at L-28 roughly. Do you have that Mr. Lieberman?

24 A Yes, I do.

25 Q Okay. Now traffic post 17, the traffic guide is

1 discourage all traffic to the west. Is that right?

2 A That's correct. Again, we are talking here a
3 very light traffic. There's no evacuation movement in that
4 direction.

5 Q Do you think that's a correct instruction to the
6 traffic guide or should that be all traffic to the north?

7 A Again, if you go out there what you're going to
8 find is Nugent Drive becomes Edwards Avenue South. And just
9 to the west of that point, the road does, in fact, curve
10 to the north. But within the immediate area of that point
11 it is an east-west orientation.

12 Q So at that location, Mr. Lieberman, the intent
13 would be to discourage traffic from proceeding further west
14 or north perhaps?

15 A Towards the EPZ, that's correct.

16 Q Towards the EPZ. Now if you will look at node
17 128, Mr. Lieberman, I think that node 128 was one of the
18 ones that was changed in Revision 3 and was described in
19 Mr. Irwin's letter of December 22, 1983. And Attachment 1
20 to that letter. And the description, as changed, would be --
21 well, let me just read the letter. "People who were previously
22 routed east on the LIE at Edwards Avenue are now routed
23 east on River Road to Osborne Mill Road, then north to
24 Route 25 and then east on Route 25.

25 Does that correspond with your understanding of

201b7

1 new node 128?

2 A Where are you reading from, please?

3 Q This was a letter submitted with Revision 3 of
4 the LILCO plan, prepared I assume by Mr. Irwin.

5 MR. IRWIN: Let me state, for the record, I
6 don't have that letter with me. As I recall, in a subsequent
7 communication to the county, Mr. Miller, there was an
8 error in my characterization of that particular description
9 and a letter to you about ten days or two weeks later.
10 I don't have either piece of correspondence with me.

end t20

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21pbl

1 BY MR. MILLER:

2 Q Let's try this a different way, Mr. Lieberman.
3 Do you have an understanding of the turn movements for
4 node 128? And if you do, what are they?

5 A (Witness Lieberman) Okay. I think what we're
6 going to do is go to page IV-51 on Table 12, where the
7 movements for node 128 are described.

8 Q Okay, Mr. Lieberman. Following with you then,
9 that discussion says, does it not, that all vehicles moving
10 south on Edwards Avenue, turn west onto the Long Island
11 Expressway. 90 percent, east on River Road to Route
12 25, 10 percent.

13 A That's a correct reading.

14 Q Is that in agreement with the instructions to
15 the traffic guide at post 17, where all traffic is to be
16 discouraged to the north?

17 A Certainly.

18 Q I must be confused. Post 17 says, discourage
19 all traffic to the west -- I'm sorry.

20 A They're physically disparied posts, you know.

21 Q Excuse me.

22 A I said they're physically separate locations.

23 Q Where's the location for node 128?

24 A Node 128 is north of the Long Island Expressway,
25 and it encompasses within the context of the modeling

21pb2

1 representation the intersection of Edwards Avenue and River
2 Road, as well as the intersection of Edwards Avenue with
3 the westbound ramp onto the LIE.

4 Post 17 is on Nugent Drive, which is south of
5 the Long Island Expressway, so it is removed by several
6 hundred feet.

7 Q Mr. Lieberman, is it your understanding that
8 the description for node 128 was changed in Revision 3?

9 A Well, we went through this yesterday. It had
10 to do with the way we modeled the roads in that area. I indicate
11 we got a little lazy in the modeling process, in the
12 interest of restricting the number of links and nodes in
13 the model.

14 Since the number of links that we now handle
15 approach the upper bound of the storage rate. We had
16 something like 280 in our storage links. Our projection
17 stated it should be 300.

18 So what we did in recognition of the fact
19 that the expected volume of evacuated traffic
20 during this five-hour period amounted to about 300
21 vehicles, and that this was not an issue in terms of
22 representing evacuation time estimates, we combined within
23 the modeling context the roadway, the Long Island Expressway
24 section from Exit 71 to Exit 72, which parallels River Road.

25 In other words, we're doing this surrogate. We

21pb3

1 used it as a surrogate for River Road.

2 The police testimony expressed concern over this
3 representation. And we therefore, modified it to represent
4 more precisely the roadways in that immediate area.

5 Q Mr. Lieberman, let's see if we can straighten
6 this out.

7 Is it your understanding that the description
8 provided on page IV-51, Revision 3 of the LILCO plan for
9 node 128 is an accurate description?

10 A What was the last phrase of that question?

11 Q Is an accurate description?

12 A That is an accurate description, yes.

13 Q Would you look, please, at traffic post 50,
14 which I think corresponds to node 12. Traffic post 50 is
15 the intersection of Route 112 and Nesconset Road shown
16 on map 13 of Hagstrom, page 40, around F-18.

17 A Right in the middle of the binding of the
18 Hagstrom document.

19 Q Mr. Lieberman, traffic post 50, the guide is
20 instructed to discourage all traffic to the east. Is that
21 right?

22 A That is correct.

23 Q Would you look at the description for node 12
24 on page IV-32 of Appendix A?

25 A Yes.

new bu

21pb4

1 Q Is that an accurate description of node 12
2 recommended turn movements?

3 A I believe it is.

4 Q Mr. Lieberman, node 12 states that 50 percent of
5 traffic will be permitted to travel north on Nesconset Road;
6 is that right?

7 A They would be permitted to travel north. It's
8 highly doubtful that any of them would actually do so since
9 at that particular point, I believe they are right at the
10 edge of the EPZ. And chances are that they would make a
11 left turn.

12 The reason we permit a northerly route is
13 because there's a left turn pocket there that is a bay that
14 accommodates left turn traffic. It's possible some vehicles
15 might decide to continue north and travel westward along
16 Sheep Pasture Road. We're now on the boundary of the EPZ.

17 So we indicate difference in conditions there.

18 Q Mr. Lieberman, the node discussion also permits
19 traffic to travel north on Route 112; is that right?

20 A In order for traffic to move from Canal Road
21 to that intersection, it is necessary for it to meander along
22 Short Creek Road, Lane, which connects only on
23 112.

24 Therefore, the access from Canal Road to that
25 intersection is a stretch of, perhaps, 100 of so along

21pb5

1 Route 112.

2 You will notice -- you don't have it, but on
3 the sketch in front of me we actually indicate the location
4 of the traffic control point 50 just to the south of that
5 traffic control point 145, which is indicated on the map.

6 Q Mr. Lieberman, and then you have traffic post
7 49, which is just north of traffic post 50. Is that right?

8 A That is correct.

9 Q And then traffic post 49, the traffic guide
10 is instructed to discourage all traffic to the north; is
11 that right?

12 A Yes. It harkens back to what I said before.
13 That since the traffic control point number 50 is on the
14 edge of the EPZ, we expect all the traffic from Canal Road
15 to turn left there, but we don't restrict them from going
16 north.

17 The point is, you're on the boundary of the EPZ.
18 You are already out of it. And if there are drivers who
19 perceive a long queue in the left turn road, they're going
20 to turn north to Sheep Pasture Road.

21 We don't see any reason to restrict it.

22 Q How could the traffic get to Sheep Pasture Road
23 from that location?

24 A They'd have to travel north along 25A at node
25 79, which is traffic control post 47. That is the section.

21pb6

1 It could also continue north into Port Jefferson, and then
2 west to 125A. We don't expect very much traffic there.
3 The volume of traffic on Canal Road is not particularly high,
4 and we feel, as I said before, that most traffic will make
5 the left turn from Route 112 onto Nesconset.

6 Q I understand. I guess my question was, at
7 traffic post 49 northbound traffic is being discouraged. It
8 has to go north at that location to get to Sheep Pasture Road,
9 is that right?

10 A That's right.

End 21.

ki 22:1

1 Q Mr. Lieberman, let's talk about the traffic node
2 locations for a minute.

3 It's an accurate statement, isn't it, to say that
4 not all traffic node locations are manned by traffic guides?

5 A Traffic nodes are --

6 Q Mr. Lieberman, I'm sorry; I think that's a yes or
7 no answer.

8 A That's correct.

9 Q And it's also accurate, isn't it, that there are
10 node locations described in Table 12 where turn movements
11 are possible that are not manned by LILCO traffic guides?

12 Isn't that right?

13 A If that is true, it slipped through. That was not
14 the intent.

15 Would you point one out to me?

16 Q I would be glad to.

17 A Incidentally, there are two conditions that have
18 to be satisfied. One is that movements are possible, and
19 the second is that there is evacuation of traffic along that
20 approach.

21 Q Would you look at traffic node 64, which is
22 listed on page IV-45 of Appendix A? It's in the Hagstrom
23 map 20, page 54, at roughly 31-L. That's also traffic post
24 20, isn't it, Mr. Lieberman?

25 A Traffic post 20 is coincident with node 64.

ki 22:2

1 Q Now, Mr. Lieberman, could you read the node
2 description on page IV-45 of Appendix A in terms of the
3 recommended turn movements?

4 A What we recommend there is that vehicles moving
5 east on Nugent Drive at that point continue east out of the
6 EPZ -- I would like to point out that location is on the
7 boundary of the EPZ -- and then turn south on Center Drive
8 and --

9 Q Let me interrupt for a second, Mr. Lieberman.
10 Is there a traffic guide in place to assure that
11 turn movement -- either of those turn movements? Let's take
12 them one at a time.

13 You said -- the node description says all vehicles
14 moving east on Nugent Drive continue east. Is there a
15 traffic guide to enforce that turn movement, or to facilitate
16 that turn movement?

17 A You will have to give me a few moments here.

18 (Pause.)

19 Q Mr. Lieberman, if I could, before you start, why
20 don't you position yourself? You're the motorist. If you
21 would position yourself at traffic post 20, which is Route 25
22 or Main Street and Court Street, and would you follow the
23 node description set forth in Table 12 for node 64, and tell
24 me the movements you have to make, and where there is a
25 traffic guide, if there are any, to facilitate those turn

1 movements?

2 A One of the problems of interrupting me and
3 restricting me to a yes-no answer, that you prohibit me from
4 giving you some insight as to what the modeling activity is
5 and how it relates to the physical layout of the road.

6 If you had let me continue, we would have resolved
7 this issue before, but let's continue.

8 When we represent a roadway system by the network
9 of links and nodes, there is usually, but not always, a
10 one-to-one correspondence between the node location and
11 physical intersections.

12 In this particular case, node 64 actually represents
13 two separate locations which are very close together. One of
14 those locations is where the traffic control post 20 is
15 located, and that is just north of the node.

16 The other location is north of the river, which is
17 the intersection of Nugent Drive and 94-A, which essentially
18 is the bridge.

19 Now, the physical location of that traffic control
20 point, as I said before, is north of the river, and therefore
21 the description in Table 12 for link 65,64 is applicable to
22 that traffic control post, and there is traffic along that
23 link which is guided by the traffic control guide at that
24 point. And he essentially waves all that traffic south
25 across the bridge, around the traffic circle, as indicated by

ki 22:4

1 the signing there, and then down Center Drive.

2 Q Mr. Lieberman, how does traffic get around the
3 traffic circle without a traffic guide there to facilitate
4 it?

5 Is more than one turn possible at that circle?

6 MR. IRWIN: That's a multiple question.

7 JUDGE LAURENSEN: You're asking two questions at
8 a time. You have to give him a chance to answer the first
9 one.

10 WITNESS LIEBERMAN: Which question do you want to
11 talk about?

12 BY MR. MILLER:

13 Q Let me rephrase it.

14 At that traffic circle south of the river, there is
15 more than one way to proceed, isn't there?

16 A (Witness Lieberman) That is correct.

17 Q And there is no traffic guide at that circle, is
18 there?

19 A That is correct.

20 Q So how is it that traffic is to properly find its
21 way down to traffic post 21?

22 A As I mentioned before, we have over 900 signs in-
23 stalled permanently in this network, and at some places
24 outside of the EPZ at the location that you have indicated,
25 we have a sign -- I believe it is No. 705 -- I'm sorry, it's

1 893, there are a lot of signs in that area -- because we
2 want to make sure that the traffic is directed in the proper
3 manner.

4 I have to point out that it isn't physically
5 possible, nor is it necessary to assign a thousand traffic
6 guides all over the network. Signs where they can do the
7 job without the need of a traffic guide, in our opinion,
8 will suffice to give the guidance to the motorists that they
9 need.

10 Q So, Mr. Lieberman, what you are telling me is that
11 LILCO relies on the signs to make sure motorists find their
12 way properly out of the EPZ.

13 Is that right?

14 A The signs play an important part in the information
15 transferred to the motorists. Absolutely.

16 Q Because there won't be traffic guides at some
17 locations where more than one turn movement is possible.

18 Isn't that right?

19 A There won't be traffic guides on hundreds of
20 locations at which signs are installed, yes.

21 Q Where turn movements are possible.

22 A Where turn movements are possible, certainly.

23 Q Thank you.

24 Mr. Lieberman, a couple of clarification questions
25 about Table 12.

1 There are many traffic node locations that are
2 not listed on Table 12 of Appendix A, is that right?

3 A That's correct.

4 Q Could you briefly tell me why traffic nodes are
5 not always listed on Table 12?

6 A There's no mandate that we have to, but the
7 criteria we used to create Table 12 is to identify locations
8 where more than one turnoff is possible, and where there is
9 substitute evacuation traffic.

10 Q Mr. Lieberman, in Revision 3 of the LILCO plan,
11 a number of turn movements described in Table 12 were removed
12 from previous versions of the plan.

13 Isn't that correct?

14 A There were many deletions from the original Table
15 12 performed in this version under Revision 3.

16 Q Would you tell me, please, why turn movements, as
17 described previously in Table 12, were removed in Revision 3
18 of the LILCO plan?

19 A I will be glad to.

20 As I indicated before, there are two criteria which
21 we used to include those in Table 12. First, there have to
22 be substantive amount of evacuation traffic and then this
23 evacuation traffic had to be faced with a choice of turn
24 movements at various intersections.

25 Originally, if you go back to Revision 3, you'll

1 find there are many nodes that are not included here that
2 were there, so there is no intent at all at the outset to
3 include every node in the table.

4 Now, the removing of nodes from Revision 2 to
5 Revision 3 was in the interest of brevity and clarification.
6 Those nodes which had approaches which carried no evacuation
7 traffic were therefore of little interest to us as planners,
8 and there is no point including it into a table which described
9 an evacuation plan.

10 Consequently, they are no longer.

11 There are other nodes which did represent inter-
12 sections with approaches that did carry evacuation traffic,
13 and where no alternative viable turning movement existed, and
14 we removed the node for that purpose.

15 Q Mr. Lieberman, I thought you said yesterday that
16 Table 12 in its description of turn movements was a result of
17 the model output from the KLD model. Is that correct?

18 A That's correct.

19 Q If that's the case, if there were previous
20 discussions of turn movements in Table 12, presumably that
21 meant that the computer indicated that there would be
22 evacuation traffic along those routes.

23 Isn't that correct?

24 A No, it is not.

25 Q Why isn't it?

1 A The way the computer works is as follows.

2 The traffic assignment process takes the trip table
3 and the description of the roadway network and outputs, among
4 other things, the turn movements at each grade intersection
5 which are physically possible.

6 The traffic assignment model does not attempt to
7 distinguish between those approaches which carry traffic
8 and those approaches which do not carry traffic.

9 For those approaches which do not carry traffic,
10 it will arbitrarily assign a turn movement to that approach
11 which has no physical meaning, but has to satisfy certain
12 numerical requirements.

13 What we had done before was to mechanically take
14 the output from the traffic assignment model, which I would
15 like to remind you is used as input as to the simulation, and
16 just mechanically list everything in Table 12.

17 This time, to bring the documentation up to date,
18 we removed all these non-entities. That's the way to
19 describe it.

20 Q And the reason for removing some of these nodes,
21 Mr. Lieberman, again what was that reason? To make a cleaner
22 Revision 2 -- is that what you're saying?

23 A What we wanted to do is to make every entry in
24 the Table 12 relevant, so essentially what we did was to
25 remove all irrelevancies. I believe -- I may be mistaken, but

1 I believe we provided you with a list of all the nodes that
2 we did remove and the reasons therefore.

3 Q Mr. Lieberman, did you read the testimony submitted
4 by Suffolk County Police Department back in November of 1983?

5 A Yes.

6 Q Do you recall some discussion in that testimony
7 regarding conflicts between traffic node discussions in
8 Table 12 and instructions to be implemented by traffic guides
9 at traffic locations, traffic control post locations?

10 A You are stretching my recall capacity. That was
11 a long testimony containing many things, and I can't respond.

12 Q So you don't recall that?

13 A I can't recall, with any degree of specificity.

14 Q Do you recall any discussion in the original
15 police testimony regarding inconsistencies between various
16 traffic node locations set forth in Table 12?

17 MR. IRWIN: I'm going to object to any detailed
18 discussion of the police testimony, as it's outside of
19 Mr. Lieberman's testimony, and he has already said he can't
20 recall it in any detail.

21 MR. MILLER: Judge Laurenson, I think --

22 JUDGE LAURENSEN: Your objection is overruled.
23 You may proceed.

24 WITNESS LIEBERMAN: Could you repeat that question?
25

1 BY MR. MILLER:

2 Q Yes.

3 I asked if you recalled any discussion --
4 inconsistencies between traffic node locations and traffic
5 control posts, and you said you don't recall.

6 Do you recall any discussion --

7 A (Witness Lieberman) I didn't say that. I said I
8 don't recall with any degree of specificity. There was a
9 discussion of that nature.

10 Q You recall in general that the police discussed
11 some conflicts between traffic control posts and traffic
12 node locations and turn movements associated with traffic
13 nodes?

14 A They were generally discussions of that type, yes.

15 Q Do you recall in a general fashion discussion in
16 the original police testimony regarding conflicts between
17 various traffic node locations and turn movements associated
18 with those locations?

19 A Again, you're using the term "conflicts." What
20 kind of conflicts are we talking about?

21 Q Do you recall the discussion in the testimony,
22 Mr. Lieberman?

23 A I recall that that was a topic of discussion in the
24 testimony. I can't do any better than that.

25 Q Isn't it true that Revision 3 of the LILCO plan

ki 22:11

1 removed numerous node discussions in Table 12 because there
2 were conflicts set forth in the police testimony back in
3 November?

4 A I will say this; that there were changes between
5 Revision 2 and Revision 3 which did, in fact, respond to
6 police concerns.

7 Q By removing node discussions and recommended turn
8 movements from Table 12, did you remove, do you think, the
9 police concerns as set forth in their original testimony?

10 A Those police concerns which we felt were valid
11 criticisms of what we had done, and which detected inconsisten-
12 cies in the documentation as it existed at that time, were
13 part of the general upgrading from Revision 2 to Revision 3.

14 I would like to once again reiterate that the
15 major changes between Revision 2 and Revision 3 were to bring
16 the documentation of the plan up to date to properly reflect
17 the plan itself.

18 Many of the criticisms I do recall responded to
19 deficiencies in the documentation which had been resolved
20 since then.

End 22

23pbl

1 Q Mr. Lieberman, would you look, please, at
2 traffic post 29, Figure 8? That's described on page IV-54
3 of Figure 8 of Appendix A. It's on the Hagstrom map, map
4 20, page 54, K-29 roughly.

5 A If I can comment before you ask the question.
6 Those movements are reversed. The southwest-northwest should
7 be moved two columns to the right. And the others to the
8 left.

9 Q Just for my sake, would you clarify,
10 Mr. Lieberman, exactly what the instructions should now be?
11 If you would read them out for me.

12 A Yes. The movements we facilitate are to the
13 southeast. And the movements we discourage are to the
14 northwest.

15 Q Could you give me the whole description? Is
16 that all traffic to the northwest being discouraged?

17 A No, that's southwest and northwest.

18 JUDGE LAURENSEN: Could we go over that again?

19 BY MR. MILLER:

20 Q Let's do it again.

21 A (Witness Lieberman) Let me take item by item.
22 Under the pair of columns which are headed, Evacuation
23 Movements to be Facilitated, for TCP-29, we should have
24 all traffic from an "SE or southeast to." Under the pair
25 of columns headed, Movements to Be Discouraged, we should

23pb2

1 have "SW from" and "NW to."

2 Q Mr. Lieberman, by discouraging southwest traffic
3 -- traffic traveling from the southwest to the northwest,
4 aren't you limiting access to the LIE westbound at traffic
5 post 19?

6 A First, there is no evacuation traffic on that
7 approach.

8 Second, there is no reason why anyone should
9 move in that direction than getting on the LIE to travel
10 through the EPZ. When in fact he is less than a mile from
11 the eastern edge of the EPZ.

12 Therefore, it is in his best interest to not
13 go in that direction. Now, if he were to go through, and
14 again remember, we don't prevent it, he would then be picked
15 up by TCP-19 and then routed westbound and south along the
16 LIE.

17 Q He wouldn't be, would he, Mr. Lieberman, if he
18 is discouraged from traveling to the northeast there?

19 A I'm sorry. It's to the northwest.

20 Q I'm looking at traffic post 19, which says
21 discourage all to the northeast.

22 A I'm talking 29 or 19.

23 Q Well, I was talking about both, in the context
24 of my question, it was if you make the changes you described
25 in traffic post 29, don't you prevent access to the LIE

23pb3

1 westbound at traffic post 19?

2 A No. "You discourage access to Route 25, but
3 you encourage access to the ramp which takes you o. -495
4 southwest.

5 Q And you think that's the case, Mr. Lieberman,
6 even though at traffic post 19, all traffic to the northeast
7 is being discouraged?

8 A If you get out there and look at the orientation
9 of the roadway system -- wait a minute. You talk about 19
10 before, and we corrected it. Northwest, is it? Yes.

11 I think that was the first one on the agenda.
12 Picking up typos as we went through the table, that
13 northeast should be northwest.

14 Q Okay. Now we agree.

15 JUDGE LAURENSEN: Let me make sure that we've
16 got this correct now. For traffic control post number 19,
17 the movements to be discouraged, that should be changed
18 from northeast to northwest?

19 WITNESS LIEBERMAN: Yes, sir.

20 MR. IRWIN: I believe that was the second in
21 the list of typos.

22 BY MR. MILLER:

23 Q Mr. Lieberman, would you look at page IV-8 of
24 Appendix A? The last paragraph on that page deals with the
25 one-way flow treatment, I believe. And it states, the only

23pb4

1 restriction on access will be due to the conversion of a
2 two-mile section of roadway. Specifically, portions of
3 Lower Rocky Point Road and of North Country Road to one-way
4 operation.

5 Even with this restriction, paths exist to all
6 locations in that area.

7 Do you see that?

8 A (Witness Lieberman) Yes, I do.

9 Q Would you tell me what paths exist to locations
10 in that area if you make that a one-way treatment?

11 A Well, you have to come at it from the east
12 westbound.

13 Q What about the locations north and south of
14 that roadway section?

15 A I don't understand the question.

16 Q There are residential areas north and south of
17 that roadway section. Is there access to those residential
18 areas?

19 A Certainly. If you're driving west along that
20 section you have access to it.

21 Q To do that, Mr. Lieberman, you have to be in
22 compliance with the one-way conversion; isn't that right?

23 A That's true.

24 Q Mr. Lieberman, would you go to -- back to
25 Figure 8, traffic post 140. It's on page IV-65, Hagstrom
map 17, page 48, around G-23.

end 23.

241blt

1 A All right. I'm there.

2 Q Mr. Lieberman, would you tell me the approximate
3 distance of traffic post 140 from the Shoreham plant?

4 A Approximately two miles.

5 Q And it lies west of the Shoreham plant. Is that
6 correct?

7 A It lies southwest.

8 Q And according to the instructions for that traffic
9 post, traffic is to be facilitated to the east, is that
10 right?

11 A That is correct. Along Route 25A.

12 Q And to facilitate traffic to the east brings
13 traffic closer to the plant, isn't that right?

14 A By approximately a quarter of a mile, that's
15 correct. Or perhaps a third of a mile.

16 Q The traffic guide at post 140 is also told to
17 discourage all traffic to the south. Isn't that right?

18 A That is correct.

19 Q And to the south is Randall Road, isn't that right.

20 A Yes, indeed. A rather congested environment.

21 Q Would you tell me, Mr. Lieberman, I assume
22 you're saying then that it's being discouraged to the south
23 because Randall Road would be rather congested, in your
24 opinion?

25 A This particular area --

1 Q Mr. Lieberman, that's a yes or no question.

2 A Yes.

3 Q Are you saying that traffic is being discouraged
4 to the south on Randall Road because, in your opinion, that
5 would be a congested roadway?

6 A It's more proper to say that the route we have
7 chosen is a better route for that traffic.

8 Q Mr. Lieberman, why is traffic being discouraged
9 to the south at traffic node 140?

10 A There's a fair amount of residential development
11 in that area. That particular region was very carefully
12 analyzed and we looked at four turn movements at that point.
13 The reason it was carefully analyzed is because the area
14 that we are clearing is within two miles of the plant. We're
15 very anxious to clear those people out of there as rapidly
16 as possible. The last thing we want to happen is to have
17 queues arising through formation of congested conditions
18 to extend back along North Country Road and inhibit the
19 movement from that area.

20 We examined, as part of our analytical procedures,
21 the prospect of traffic moving west along 25A, moving
22 south along Randall Road, or moving east and then south
23 along William Floyd Parkway. As a result of this analysis,
24 we concluded that the best treatment for this traffic is
25 to move them east for about a distance of about a mile and

1 a quarter, which is a straight run with no signals and
2 no major through cross-streets, and then south onto William
3 Floyd Parkway.

4 William Floyd Parkway is a two-lane controlled
5 access facility. Route 25A is a two-way, two-lane facility
6 which provides service for one lane of traffic moving east.
7 According to our analysis, the traffic on North Country
8 Road would make a very fast trip along 25A and then down
9 William Floyd Parkway. It turned out, in our view, based
10 upon the data given to us by the model, to be the best of
11 all options in that area.

12 Q Mr. Lieberman, I can tell you are prepared on
13 this question. I believe this is the roadway section you
14 discussed with Newsday yesterday, isn't it? Did you discuss
15 -- I saw, in the Newsday Today, that you had a discussion
16 about this very roadway section we're discussing.

17 A Just a minute. I don't recall that, but you
18 may be right. Hold on.

19 MR. IRWIN: Excuse me, Mr. Miller. If you're
20 about to refer to a document, do you have copies available?

21 BY MR. MILLER:

22 Q Mr. Lieberman, do you recall talking to Newsday
23 yesterday?

24 MR. IRWIN: Objection, relevance.

25 JUDGE LAURENSEN: Overruled.

1 WITNESS LIEBERMAN: Yes, I did talk with a
2 reporter from Newsday yesterday.

3 BY MR. MILLER:

4 Q Did you talk about this very section of Randall
5 Road?

6 A (Witness Lieberman) I don't recall. I think the --
7 I know the major discussion centered on the county's posture
8 about evacuation. I just don't recall.

9 Q And do you think that Randall Road is going to be
10 a congested road, Mr. Lieberman?

11 A I think that there's going to be some congestion
12 there.

13 Q How would you define "some congestion?"

14 A I think the best way to respond to that is to
15 quantify what the model has pointed out. If you give me
16 a few moments, I'll try to do that.

17 Q Let me ask you this, before you do that. You
18 said earlier that --

19 MR. IRWIN: Excuse me. If the witness is trying
20 to answer a question -- are you trying to lay a foundation
21 for that answer or is it another question?

22 MR. MILLER: I'll try to get into this a different
23 way, to save time, Judge Laurenson, if we can.

24 JUDGE LAURENSEN: Let's proceed.

25 BY MR. MILLER:

241b5

1 Q Any congestion, Mr. Lieberman, for Randall Road
2 would, in your opinion, come from residential areas along
3 Randall Road. Is that correct?

4 A (Witness Lieberman) According to our current plan,
5 yes.

6 Q Where are those residential areas?

7 A They are in the vicinity of Whiskey Road. There
8 are some to the east of Randall Road, but most of them are
9 in that vicinity. Whiskey Road area and south of it.

10 Q Are you referring to south of traffic post 115,
11 which would be the intersection of Whiskey Road and Randall
12 Road?

13 A It's in that neighborhood.

14 Q Well, what about the roadway section between post
15 140 and post 115, which is a distance of approximately
16 two and a half, three miles?

17 A What about it?

18 Q Do you envision congestion along that section
19 of Randall Road?

20 A If traffic from East Shore were permitted to go
21 south, yes. That queueing would take place along that road.

22 Q But you're not going to permit traffic down
23 Randall Road, is that right?

24 A I have to reiterate, we don't prevent anyone from
25 going anywhere. We will discourage that kind of movement.

1 Q You're going to discourage all traffic going
2 south down Randall Road down that section, right?

3 A That's correct. We would encourage all traffic
4 to move east along 25A and then south along William Floyd
5 Parkway.

6 Q I understand, so traffic will be encouraged to
7 move east, toward the plant, and discouraged from moving
8 south, away from the plant. Is that right?

9 A No, sir. The movement --

10 Q You're disagreeing with that?

11 A I'm disagreeing with your characterization that
12 moving east along 25A is toward the plant. It's not. It
13 closes the distance --

14 Q Mr. Lieberman, hold on for a second. I would like
15 for you to explain to me how moving east on Route 25A, from
16 post 140 is not towards the Shoreham plant.

17 A We have different definitions of the word "toward."

18 Q We must.

19 A I said, a few moments ago, that it does, in fact,
20 close the distance from node 140 to the plant, which is a
21 distance of about two miles, to node 125, which is a
22 distance of about one and a half -- possibly a little more --
23 mileage. So there is a closure of distance relative to the
24 plant as the vehicle proceeds east along 25A. The distance
25 he travels along 25A is 1.2 miles. The closure is approximately

1 a half mile. If you were traveling toward the plant, a
2 distance of 1.2 miles, his closure would be 1.2 miles. That's
3 an important difference.

bu side 2

4 Q Would you say, Mr. Lieberman, taking traffic east
5 on Route 125A to traffic post 140 is more toward the plant
6 then allowing traffic to proceed south down Randall Road
7 at that location?

8 A Geographically, that is true.

9 Q Thank you.

10 MR. MILLER: Judge Laurenson, county has no further
11 questions.

12 JUDGE LAURENSEN: Mr. McMurray, did you have
13 any questions concerning the calculations that you asked
14 Mr. Lieberman about?

15 MR. MC MURRAY: Yes, Judge Laurenson. I have
16 been out of the room so I don't know whether Mr. Lieberman
17 has had a chance to make those calculations, yet.

18 WITNESS LIEBERMAN: Yes, I have.

end t24

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1 BY MR. MC MURFAY:

2 Q Do you have them, Mr. Lieberman.

3 A (Witness Lieberman) Yes, I do.

4 Q I believe I asked you for the number of bus
5 trips that would generated by buses taking people without
6 access to cars out of the EPZ. Is that correct?

7 A That's correct.

8 Q How many bus trips would that involve?

9 A That would involve 379 bus trips, plus an
10 additional 60 trips for transit buses, moving from the
11 transfer points which are located within the EPZ to points
12 outside the EPZ.

13 Q For a total of 439 trips?

14 A That is correct.

15 Q And I believe the other calculation I asked you
16 to make was the number of trips generated by evacuation of
17 nursing homes by special vehicles such as ambulances.

18 Have you made that calculation?

19 A Yes, I have.

20 Q And how many is that?

21 A We have a total of 194 ambulance van trips,
22 an additional 17 bus trips. These are for special facilities.
23 And a total of 93 ambulance trips.

24 JUDGE LAURENSEN: I thought it was 140. What
25 was the 140 figure? It wasn't ambulance trips.

25pb2

1 BY MR. MC MURRAY:

2 Q Maybe we should run through the whole thing
3 again.

4 A (Witness Lieberman) I'll go over it again. In
5 terms of bus trips, which include all the bus routes that
6 we have set up within the EPZ, there are a total of 379
7 trips. We have a design which involves transfer points.

8 In addition to those trips we have 60, that is
9 six-zero trips from the transfer points directly out to the
10 relocation center.

11 For special facilities, we had a total of 194
12 trips by ambulance vans, 17 buses are used to accommodate
13 handicapped persons, both at special facilities and within
14 their homes. And an additional 93 ambulances for handicapped
15 persons who require that kind of transportation.

16 Q Now you just referred to the number of vehicles
17 used. Are you actually referring to the number of trips?

18 A These are the number of trips, yes. I might
19 add that some of these trips, and I don't have the exact
20 answer for the special facilities occur after the end of
21 evacuation.

22 Q You're talking about after the end of the
23 evacuation for the general population?

24 A That is correct.

25 Q That's according to your computer model, correct?

25pb3

1 A No. This is a separate analysis.

2 MR. MC MURRAY: County has no further questions,
3 Judge Laurenson.

4 JUDGE LAURENSEN: As I recall, the last time that
5 the Board was faced with the decision on the order of
6 proceeding, that we were called upon to exercise all the
7 judicial acumen that we could come by to resolve that
8 question. Maybe perhaps today we won't have to do that.

9 Is it acceptable that the state goes next,
10 followed by the Staff?

11 MR. BORDENICK: That's fine.

12 MR. PALOMINO: Fine.

13 JUDGE LAURENSEN: Perhaps now that you have
14 given us an estimate before that we have over an hour left
15 to go today, that this would be another appropriate time to
16 take a brief recess, and we can reconvene in 10 minutes if
17 that's agreeable to all.

18 (Recess.)
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end 25.

1 JUDGE LAURENSEN: Back on the record.
2 We are ready for the State of New York.
3 Mr. Palomino.

4 CROSS EXAMINATION

5 BY MR. PALOMINO:

6 Q Mr. Weismantle, isn't it a fact that the evacuation
7 plan contemplates an evacuation in a westward direction?

8 A (Witness Weismantle) Yes. In general, yes.

9 Q And isn't it a fact this morning that you testified
10 you had changed the evacuation routes to reduce dosage?

11 A I don't recall that.

12 Q When you were asked a question about changing routes
13 this morning, didn't you say the routes would not be changed
14 unless it was to reduce dosage?

15 A Oh. All right.

16 What I was doing was drawing a distinction. Our
17 plan has a set configuration of routes. That won't be changed.

18 In order to answer the question as posed, and I
19 can't recall the exact question, I just pointed out that in
20 situations that were very, very, very unlikely or highly
21 unlikely, it is conceivable the emergency response organization
22 would do something to modify the traffic plan if -- and only
23 if -- it was absolutely clear that would result in a reduction
24 in dose to the population, since the whole objective of an
25 emergency response is to reduce dose to the population.

XXXX

1 Q Isn't a fact that on Tuesday, Mr. Cordaro testified
2 it is on page 2363 of his testimony -- that the plume could
3 loop backwards with weather conditions?

4 I can show it to you.

5 MR. IRWIN: If you would like, I will show him
6 my copy of the transcript.

7 (Document handed to witness.)

8 BY MR. PALOMINO:

9 Q It's the next-to-the-last line.

10 A (Witness Weismantle) What page are we looking at?

11 Q 2363, the next-to-the-last line.

12 A Oh, yes.

13 Q Right.

14 Assume that about 40 minutes to an hour after the
15 evacuation commenced westward, the wind was blowing east, as
16 you contemplated in your plan. But the winds aloft caused
17 it to loop backwards to the west, exposing those people to a
18 heavy dose.

19 Does this plan contain any contingency to take care
20 of that?

21 MR. IRWIN: Objection. That gets into the decision-
22 making matrix, which is inherently part of Phase I of this
23 proceeding.

24 MR. PALOMINO: I'm talking about the plan. I asked
25 does this plan --

1 MR. IRWIN: I still think the question -- if he's
2 going to stop at a yes or no answer --

3 MR. PALOMINO: It affects evacuation times.

4 JUDGE LAURENSEN: Objection is overruled.

5 BY MR. PALOMINO:

6 Q It doesn't have any plan, and you don't what the
7 evacuation times --

8 JUDGE LAURENSEN: He has to answer the question.

9 BY MR. PALOMINO:

10 Q All right.

11 A (Witness Weismantle) Maybe I'm misunderstanding
12 something. I don't understand how evacuation times have to
13 do with the wind.

14 Q You would have to change routes, wouldn't you, if
15 you had a heavy dosage of exposure of the plume when it looped
16 backwards in this area towards the west, and you were
17 evacuating everybody?

18 A No. We wouldn't have to change routes.

19 Q You wouldn't have to change routes no matter
20 how heavy the dose?

21 A You're asking a hypothetical question.

22 Q Yes, I am. It is hypothetical.

23 A Without quantifying it, I can imagine, under a
24 large majority of circumstances, we would not change routes,
25 even in that very unusual condition which you described,

ki 26:4

1 which if I understand it correctly, is if the wind is blowing
2 east, we are evacuating people to the west, and the wind
3 takes a 180-degree turn.

4 Q No, no. It loops over. It loops --

5 A To me, that's a 180-degree change in direction of
6 the wind.

7 Describe it differently then.

8 Q Yes, I will.

9 The surface wind is blowing towards the east, and
10 the winds aloft loop the plume over and bring it backwards,
11 and it starts blowing over these people, and a heavy dose --

12 A The only wind of interest is the wind at the
13 level of the plume, so if the wind at the level of the plume
14 or the aloft wind was blowing in one direction, the only
15 way it could loop the plume is if the wind shifted 180 degrees
16 to bring the plume back over.

17 Q What you're doing is describing a condition where
18 a plume could not occur. Is that not correct?

19 A No. I thought I was trying to describe the
20 condition you described. But maybe you could redescribe it.

21 Q I'll assume a different hypothetical.

22 Even if there was a 180-degree shift in winds,
23 winds shift rapidly in this area of Long Island, don't they?

24 A No. I testified yesterday that they don't, relative
25 to other areas.

1 JUDGE SHON: Mr. Palomino, if I could interject
2 myself at this point just a moment perhaps in the interest
3 of clarity, I do not believe, although we have not heard
4 testimony to that effect, I do not believe that the main
5 reason for evacuating people to the west here is because it
6 is anticipated that the radioactivity will always move to the
7 east. A change of wind in a direction of the west would not
8 represent something unplanned for.

9 That seems to be the gist of your questioning.

10 Am I correct that there is no assumption of
11 westerly -- that is, east traveling winds -- embodied in the
12 plan's proposed motion to the west?

13 WITNESS WEISMANTLE: That's correct.

14 That's why if we were evacuating anybody, we would
15 evacuate everybody within two miles of the plant. And as
16 a matter of fact, other configurations that are preplanned
17 for involve everybody within five miles of the plant.

18 BY MR. PALOMINO:

19 Q Isn't that based on the fact that you have made
20 meteorological studies that show, for the last three years,
21 a larger percentage of the prevailing winds are to the east,
22 but it doesn't preclude a plume?

23 A (Witness Weismantle) There's no relationship at
24 all between those studies and our plan.

25 JUDGE SHON: That's exactly what I wanted to bring

1 out, Mr. Palomino; that your questioning might be founded on
2 a misapprehension.

3 BY MR. PALOMINO:

4 Q Assume another hypothetical.

5 Assume an hour after the evacuation has commenced,
6 the plume emerges and it is blowing westward with the traffic,
7 at the rate of the traffic.

8 Would you then change the traffic plan?

9 A (Witness Weismantle) I'm sorry. Could you repeat
10 that to make sure I've got that right?

11 Q Assume one hour after the evacuation has commenced,
12 the plume emerges and it is blowing westward at the same rate
13 that the traffic is moving.

14 Would you then change the routes?

15 MR. IRWIN: Objection. That question is inherently
16 related to the logical protective actions and not to the
17 calculation of evacuation time estimates, which is what
18 Contention 65 is about.

19 MR. PALOMINO: I'm talking about evacuation rates
20 if there's a change in plan that's going to affect them.

21 JUDGE LAURENSEN: This is a followup, apparently,
22 on the answer that was given by Dr. Cordaro on which this
23 is premised, where he stated, and Mr. Weismantle has said
24 today that there might be some conditions under which change
25 may be made.

1 And I think counsel has the right to probe some
2 of those contingencies.

3 The objection is overruled.

4 WITNESS WEISMANTLE: Let me try to explain.

5 As far as the plan is concerned, you preplan
6 certain protective actions. As far as what could occur in a
7 real situation, there is nothing to prevent -- and in fact,
8 it's widely understood among emergency planners and members
9 of emergency response organizations, that if you can identify
10 an ad hoc action that is going to clearly benefit the people
11 you are trying to protect, because it will reduce their dose,
12 you would take that action.

13 That's as simple as that. And that applies to
14 decisions about evacuations or decisions about sheltering or
15 any decision whatsoever, decisions about emergency workers
16 and so forth and so on. It's just a general principle, and
17 that's all I was trying to illustrate yesterday and today.

18 BY MR. PALOMINO:

19 Q I know. I'm making it now specific to C. And
20 you don't have a contingency plan here to take care of it.

21 Isn't it a fact, Mr. Weismantle --

22 MR. IRWIN: Objection. Is counsel testifying?

23 JUDGE LAURENSEN: That last response will be
24 stricken.

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MR. PALOMINO: I was wrong.

BY MR. PALOMINO:

Q Isn't it a fact, Mr. Weismantle, that there isn't any other plan for emergency evacuation in the event of a nuclear accident which, in this state at least, is controlled by size and rigid routes?

A (Witness Weismantle) Let me confer with Mr. Lieberman.

(Witnesses Lieberman and Weismantle conferring.)

To my knowledge, there are no plans in the State which employ signs. To our knowledge, all the plans in this State have predesignated evacuation routes that are established for people in every area within their planning zones.

Q Isn't it a fact in all of these other areas, they don't have mainly east-west roadways -- if such an occasion occurs, then your contingency emergency plan is to let the route drivers pick whatever roads they want to get away from it?

End 26

27pb1

1 (Witnesses conferring.)

2 A I'm just not familiar with the geography upstate.
3 Certainly, Indian Point, there's land 360 degrees around it.

4 As far as the roadways around Ginna and Nine
5 Mile Points, I can't say if the predominant east-west winds --

6 Q You --

7 A Let me answer the rest of the question because
8 I think the question also touched upon whether or not drivers
9 were allowed to pick their routes.

10 Q Well --

11 A Can I finish?

12 Q If you're not competent to answer the question.

13 A I am.

14 Q I assume you're not competent to answer.

15 JUDGE LAURENSEN: Wait a minute, Mr. Palomino.
16 We're not going to get anywhere with this kind of approach.
17 I think you asked a question that has two aspects to it.
18 He's giving you the answer to the first. We'll allow him
19 to give the rest of the answer.

20 MR. PALOMINO: I'm sorry.

21 WITNESS WEISMANTLE: As far as we know, every
22 plan similar to ours has predesignated routes. So if you're
23 a resident of zone D near Nine Mile Point 2 you would have
24 the same sort of information we give residents around
25 Shoreham.

27pb2

1 Also, as far as we know, motorists are allowed
2 to pick routes in the sense that they are not blocked or
3 prohibited from picking certain routes. But that routes
4 are recommended, the ones that are predesignated.

5 So as far as we know the other state plans are
6 just like our plan in that respect. The other plans in the
7 state are just like our plan.

8 BY MR. PALOMINO:

9 Q All right. Mr. Lieberman, isn't it true that
10 you assume in all your computer runs that evacuation trips
11 are generated over an evacuation period of two hours and
12 20 minutes, to almost all of them.

13 A (Witness Lieberman) Yes, the trip generation
14 time period extends over a two-hour period and starts --
15 assumed to start 20 minutes after the advisory to evacuate,
16 which in turn assumes that between the time that the sirens
17 are sounded and this point in time, 20 minutes following the
18 advisory, no one evacuates.

19 Q Isn't it also true that you conducted a
20 sensitivity study of a three-hour trip generation period?

21 A That is true.

22 Q Isn't it true that you haven't made a sensitivity
23 study or a computer analysis for surge traffic? And by
24 that I mean that if 65 to 75 percent of the trips are
25 generated in, say, the first 45 minutes or the first hour.

27pb3

1 A The time distributions which we use are
2 documented. Now sensitivity studies that we perform -- and
3 incidentally --

4 MR. PALOMINO: This can be answered yes or no.
5 I asked him if it was true.

6 JUDGE LAURENSEN: Can you answer that question
7 yes or no, Mr. Lieberman?

8 WITNESS LIEBERMAN: No.

9 JUDGE LAURENSEN: Does that mean, no, you can't
10 answer it yes or no?

11 (Laughter.)

12 WITNESS LIEBERMAN: We have not conducted any
13 sensitivity studies which shrink the time over which the
14 loading of the network takes place. That's tantamount to
15 what I believe to be the substance of the question.

16 MR. IRWIN: Excuse me, Judge Laurensen. I would
17 like the Board to take note to the fact that Mr. McMurray
18 has been writing questions and passing them to Mr. Palomino.
19 I think virtually every question Mr. McMurray has handed
20 Mr. Palomino a question.

21 New York City has a right to ask questions, and
22 we have no objection. However, recross examination in a
23 surrogate fashion is something which LILCO objects.

24 MR. PALOMINO: I would like the Board to note
25 I never ask any questions he passed me.

27pb4

1 (Laughter.)

2 MR. IRWIN: I would like instructions from the
3 Board to invite Mr. McMurray to keep his questions to
4 himself.

5 JUDGE LAURENSEN: Do you want equal time,
6 Mr. McMurray?

7 MR. MC MURRAY: Excuse me, Judge Laurenson.
8 There is absolutely nothing wrong with parties conferring
9 among themselves. I have not been feeding questions to
10 Mr. Palomino. We have been conferring over his questions.
11 This doesn't mean that the state doesn't have an independent
12 line of questioning.

13 MS. LETSCHE: I think Mr. Palomino can certainly
14 also speak for himself. But the fact that there are
15 co-intervenors in this case, and the fact that Mr. Palomino
16 has been involved in this case, as I believe he said, for
17 one week, certainly makes the fact that he might ask a
18 question or two of Mr. McMurray who has been involved the
19 longer, perfectly reasonable.

20 And Mr. Irwin's comments are completely
21 inappropriate.

22 JUDGE LAURENSEN: I think we've heard more than
23 enough on this whole subject. Let's move on.

24 BY MR. PALOMINO:

25 Q Mr. Lieberman, in your studies, you followed your

27pb5

1 trip generation chart, didn't you?

2 A (Witness Lieberman) I don't understand what you
3 mean by followed.

4 Q All your times are all based on that, aren't
5 they? Your evacuation time.

6 A Evacuation times is based on many, many variables.
7 They're not based on any single element.

8 Q Assuming the family were at home at 7:30 in
9 the morning, it was 7:30 in the morning in that area when
10 the siren went off, and everybody was home. It would be
11 possible to have a surge, wouldn't it?

12 A It would be possible for the loading time to
13 be shorter than two hours.

14 Q All right.

15 A And the effect of that, in my view, would be
16 nil relative to two hours.

17 Q Regardless of when it occurred? What's the
18 basis of this statement?

19 A I don't know if you had the opportunity to read
20 my testimony, but in that testimony is a discussion of the
21 way traffic flow functions in a saturated state.

22 Q I read your testimony.

23 A What that says, in effect then, if you read that
24 portion of it you understand that when a network is operating
25 in a saturated mode condition that is where the demand exceeds

27pb6

1 capacity at any location throughout the network, then the
2 details of the queueing process upstream of the bottlenecks
3 are completely irrelevant.

4 So what you are saying is that the queueing
5 will take place in automobiles on local roads, rather than
6 these people are going to be in their home taking a longer
7 time to prepare.

8 As far as the movement of traffic through the
9 network and out of the EPZ, that's not going to be affected.

end 27.

281b1

1 Q All right. Now when people are off the collector
2 roads, or local roads, and get on the network, isn't that
3 where the surge occurs?

4 A No. You cannot route people onto a network at
5 a rate which exceeds capacity. There is just so much
6 storage location on the roadways.

7 Q Isn't it true that you didn't do any computer
8 analysis by dense fog? By that I mean fog in which visibility
9 is less than a quarter of a mile?

10 A The analysis we did -- well, no analysis that
11 you do explicitly considers the weather. But what what
12 you do consider the effect of ambient conditions on the
13 operational performance of the vehicles and of the motorists.

14 We have, in fact, studied the situation of winter
15 inclement weather for those studies, which incidentally
16 the results are indicated I believe in Attachment 16.

17 Q Could you answer yes or no? I've read your
18 testimony and I understand -- and I understood it. You
19 didn't make any computer analysis of dense fog, is that
20 the answer?

21 A We have not attributed the runs for inclement
22 weather to fog. We have attributed it to "inclement weather"
23 without a strong distinction as to what the ambient conditions
24 are.

25 Q And to allow for the inclement weather, what

281b2

1 factor did you use?

2 A We effectively reduced the free flow speed by
3 30 percent and lengthened the discharge headways by 40 percent.

4 Q Doesn't your testimony say that you -- so that
5 the maximum factor that you reduced it by was 30 percent,
6 right?

7 A We reduced capacity by 30 percent.

8 Q Capacity by 30 percent?

9 A That is correct, yes.

10 Q Now that 30 percent factor is used for a surface
11 of roadway, rain and snow.

12 A It doesn't really matter, as far as the model
13 is concerned. You're talking about a reduction in capacity.

14 Q Well, couldn't dense fog, with less than a quarter
15 of a mile visibility, reduce the flow-in capacity by more
16 than the 30 percent maximum factor you used?

17 A The quarter of a mile visibility translates into
18 over 1000 feet.

19 Q Yes, or no?

20 A No.

21 Q Thank you.

22 Mr. Lieberman, when you did your computer analysis
23 for the uncontrolled scenario, you assumed the traffic signal
24 lights were functioning and the drivers obeyed them?

25 A That's correct.

281b3

1 Q Isn't it true that your control plan assumes
2 there will be no confrontation or aggressive drivers?

3 A Are we still talking about the uncontrolled
4 scenario?

5 Q No. I first asked about the controlled, now I'm
6 asking about the uncontrolled.

7 A In the uncontrolled case there are --

8 Q The other way around.

9 A We're now talking about the planned evacuation?

10 Q The controlled.

11 A The controlled, that's a planned evacuation.

12 Now the question is --

13 Q Isn't it true that it assumes that there will be
14 no confrontations or aggressive drivers?

15 A The mode' doesn't model confrontations. Aggressive
16 drivers, which is a term used in traffic engineering, relates
17 to drivers who are willing to move at short headways, relative
18 to the vehicles ahead of them, and to discharge at short
19 headways. This factor tends, and does, increase capacity.
20 And an increase in capacity translates into shorter evacuation
21 times.

22 Q In your control plan, you feel it is optimum, and
23 better than the uncontrolled plan, because of the cones and
24 the traffic guides. They will better handle traffic. Isn't
25 that right?

1 A No. We don't say anything about our plan being
2 optimal. We try to approach an optimal plan as close as we
3 can. The difference between the controlled and the uncontrolled
4 is that for the controlled we are implementing certain
5 tactics which are being implemented by traffic control guides.

6 It's these tactics which act to move traffic more
7 expeditiously, thereby reducing evacuation travel times.

8 Q But you do rely on the guides and the cones for that?

9 A For those control tactics, yes, sir.

10 Q Are you aware that last year New York state had
11 to amend its vehicle traffic law to increase substantially
12 penalties because of the widespread deliberate running of
13 red lights by motorists in the state?

14 MR. IRWIN: Objection. Assumes a fact not in
15 evidence, and also a multiple.

16 MR. PALOMINO: I asked him if he was aware.

17 MR. IRWIN: He also asked whether New York City
18 had to change the law. That's a two part question. And the
19 change of law is a fact not in evidence.

20 JUDGE LAURENSEN: Are we going to get into
21 changes in New York state law? That may be --

22 MR. PALOMINO: It's reflective of the conduct
23 of the people that live in the state and are using the
24 roadways.

25 JUDGE LAURENSEN: As to the form of the question,

1 I'll sustain the objection.

2 BY MR. PALOMINO:

3 Q Are you aware that such a law was enacted?

4 A (Witness Lieberman) To increase the penalties
5 for violation of signals?

6 Q Motorists deliberately running red lights?

7 A I don't know what took you so long. If they
8 deliberately run red lights they should be penalized. Your
9 law is too lax to start with. If your law was strong to
10 start with they wouldn't be running red lights so much.

11 Q Are you aware -- were you aware of it?

12 A I was not aware of that change in the law of
13 New York state.

14 Q Mr. Lieberman, your computer analysis contains
15 background traffic at the commencement of the westbound
16 evacuation, isn't that correct?

17 A That commences --

18 Q At the commencement of the evacuation?

19 A Yes. It asserts that there are vehicles on the
20 roadway at the time the evacuation starts, yes.

21 Q And isn't it true that west of the EPZ there is
22 an extremely dense population?

23 A I don't know what "extremely dense" means.
24 The density --

25 Q Relative to the EPZ.

1 A Density of population increases as you go west
2 from the EPZ?

3 Q Yes.

4 A Yes.

5 Q Isn't it a fact that you didn't make any
6 computer analysis to determine the effect of the westbound
7 roadways west of the EPZ under circumstances where they would
8 be saturated at the commencement of the evacuation?

9 A No.

10 Q Does the no mean you did make such analyses, or
11 you didn't?

12 A The analyses that we made, which consider traffic
13 outside the EPZ, are those which have been documented in the
14 testimony.

15 end t28

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1 Q So you didn't make the analysis?

2 A I did not.

3 We did the study thinking back to the results
4 that were produced by the shadow effect, that at the 50
5 percent assumed level of voluntary evacuations in the
6 network, the roadways there became saturated very rapidly
7 and I think it is fair to say that relative to onset of
8 congestion within the EPZ representing the evacuation
9 process, by the time any substantive amount of traffic
10 reached the western EPZ boundary, that network was saturated.

11 So I think on a de facto basis, we had indeed
12 done as you suggested.

13 Q Did you make computer analysis more than 20
14 miles beyond the Shoreham site?

15 A No, sir.

16 Q Couldn't the saturation of traffic west of the
17 EPZ, of all those westbound roadways, affect your evacuation
18 time?

19 A Yes, those are what the shadow effects showed.

20 Q And it could be substantially longer if you had
21 gone beyond that, couldn't they?

22 A I don't think so.

23 Q Mr. Lieberman, isn't it a fact that yesterday
24 you testified that Oyster Creek --

25 A Please specify the section you are referring to,

mm2

1 please?

2 Q "This approach is used in many areas in the United
3 States, not necessary for evacuation or planning for nuclear
4 plants, but for evacuation planning in coastal areas which are
5 subject to periodic hurricanes. For example, Oyster Creek is
6 one area that I surveyed in some detail and evacuation plans
7 in that area, which is, coincidentally within the Oyster
8 Creek EPZ."

9 That is your testimony, isn't it?

10 A Yes.

11 Q Isn't it true that those signs are installed and
12 maintained by the government in compliance with state and
13 local law?

14 A I am sure the signs are installed by a government
15 agency.

16 Q Isn't it also true that in the event of a hurricane
17 in those areas, evacuations are supervised by state and local
18 governments?

19 A Yes, I believe that is correct.

20 Q On page 80 of your testimony -- that is the
21 testimony you submitted -- you referred to a very successful
22 massive evacuation carried out --

23 A I have several documents here.

24 Q No, it is the November 18th, I believe,
25 testimony, page 80. It is the one with Planning Contention

mm3

1 65. It is about Hurricane Carla.

2 I don't think you need the testimony.

3 A If you are going to ask a question based upon it,
4 I would like to have it in front of me.

5 Q On page 80 of your testimony, you referred to
6 the successful evacuation carried out in several states at
7 the time of Hurricane Carla, isn't that true?

8 A Yes, I referenced that report. Yes.

9 Q Isn't it also true that those evacuations were
10 carried out under the supervision of the states and local
11 governments involved with the aid of the militia?

12 A Yes. They also deputized people to assist the
13 Sheriff's offices.

14 Q But it was under government supervision?

15 A Yes.

16 Q Mr. Lieberman, to your knowledge, is there any
17 existing or proposed nuclear generating plant in the United
18 States, other than Shoreham, which has an offsite emergency
19 evacuation plan which is supervised without the aid of the
20 state or local government, without them participating.

21 MR. IRWIN: Objection. It is outside the scope
22 of the evacuation time estimate testimony.

23 JUDGE LAURENSEN: Overruled.

24 WITNESS LIEBERMAN: Not to my knowledge.

25 MR. PALOMINO. No further questions.

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1 JUDGE LAURENSEN: Mr. Bordenick?

2 MR. BORDENICK: I have no questions.

3 JUDGE LAURENSEN: Mr. Irwin?

4 MR. IRWIN: I would like about 15 minutes, if
5 we could, for a brief recess, to get redirect together. I
6 think we can get redirect over with in a few minutes.

7 JUDGE LAURENSEN: How about ten minutes. Will
8 you settle for ten?

9 MR. IRWIN: I will try.

10 JUDGE LAURENSEN: Strive for that.

11 (Recess)

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6:00 p.m.

1 EVENING SESSION (6:00 p.m.)

2 JUDGE LAURENSEN: We are ready to proceed now.
3 Before we begin with the redirect examination,
4 the Board has a few questions for the panel, to begin with.
5 Judge Kline?

6 EXAMINATION BY THE BOARD

7 BY JUDGE KLINE:

8 Q Mr. Lieberman, earlier today the question of
9 the error of your estimates came on some estimates, I think,
10 related to some trip generation functions or something.
11 I'm not sure just which. But I wanted to pursue the question
12 of error, as it pertains to your Attachment 6, the overall
13 estimate of evacuation times.

14 Is it possible for you to estimate essentially
15 the experimental error or the errors involved in generating
16 these final evacuation times for the various scenarios?

17 A (Witness Lieberman) Whatever errors or whatever
18 disparities between the predicted evacuation times and
19 that which would actually occur would be related primarily
20 to essentially the supply and demand aspects of the whole
21 system. If, in fact, the number of cars which we assume
22 or which we estimate would be evacuated, is in correct, then
23 the change in evacuation time, given that the system remains
24 saturated, would be proportional to the change to the
25 difference in number of vehicles.

1 For example, if the number of vehicles that
2 we have estimated is 10 percent too high then the evacuation
3 time would be some 10 percent lower than what I have computed
4 here. As a matter of fact, in the last week or two we did,
5 in fact, execute a run using the permanent population instead
6 of the summer population and those results confirmed what I
7 have just told you.

8 The reduction in evacuation time was in the same
9 ratio as reduction in the volume. That's only true, of
10 course, when the network is running, for the most part,
11 at saturation flow levels. From the supply point of view
12 which, in our environment, is the aggregate values of
13 capacity. By aggregate I mean you add up all the evacuation
14 routes and capacity of each to whatever extent there's a
15 difference between what we have estimated and what is actually
16 out there, it would have the same effect.

17 If there was -- if our capacity was say 10 percent
18 lower than what they actually are due, either to difference
19 in estimates or a more aggressive driver behavior which
20 translates to lower headways, then you would get a proportional
21 difference in the evacuation time.

22 Q. I understand that. That would effect the point
23 estimate that you have tabulated for each scenario. What
24 I had in mind was accepting the point estimate and attempting
25 to put some kind of confidence interval around that estimate.

1 Is that possible in either a rigorous or an informal way?

2 A Well what one could do is look at the Carlo
3 experiment and come up with a set of points and then draw
4 an envelope around that.

5 Q In the model you have done, I take it, it's not
6 possible to come up with a probabilistically based confidence
7 scenario?

8 A No. The model we have is deterministic.

9 Q Do you have a feeling, based on any other kind
10 of experience? For example, the validation runs you've done,
11 or any other runs, as to what kind of confidence interval --
12 even if not probabilistically based -- might pertain to these
13 numbers?

14 A The environment under which we conducted the
15 validation runs happened to be downtown Washington, D.C., which
16 is a severe environment. There we were interested in certain
17 microscopic measures, such as leak specific delays and
18 vehicle stops. It turns out that the volumes predicted
19 by the model, compared with the measured volume, to within
20 one percent.

21 There was a larger variance between observed
22 delay and delays computed by the model on the order of five
23 or six percent, in some cases, and as low as three percent
24 in others.

25 Q If we look at your scenario 12, which we used as

1 a base before, the time for 100 percent evacuation is 4 hours
2 and 55 minutes. Does this imply then that you know that, say,
3 to the nearest minute or what would you give as a sort
4 of informal confidence interval around let's say the 55
5 minutes.

6 A Certainly not the nearest minute.

7 Q Okay.

8 A I think I could feel comfortable within a range
9 of plus or minus 30 minutes.

10 Q Okay. Thank you, sir.

11 JUDGE LAURENSEN: Judge Shon?

12 BY JUDGE SHON:

13 Q The question I had was a fundamental one, rather
14 related to Judge Kline's in a way. Throughout your testimony,
15 and your description of this, you have characterized your
16 estimates as conservative in a number of different places.
17 Now, as I believe the Byron Board pointed out, if these estimates are
18 indeed used for making decision, then the word "conservative"
19 is a little fuzzy. What does that mean?

20 I think from the context that you meant conserva-
21 tive to be always tending to overestimate the evacuation time.
22 Isn't that right?

23 A (Witness Lieberman) I guess the context in which
24 I used the term really had to do with the degree of comfort
25 I felt and the confidence I had in the answers. Numerically,

1 I can think of an instance where, in fact, we did take a
2 conservative view with respect to capacities.

3 For example, when I went out there and measured
4 discharge headways, I had a range of discharge headways
5 between 2.1 seconds per vehicle to 2.4 seconds per vehicle.
6 I decided to use the latter figure instead of the former.
7 And this, of course, translates into slightly lower capacities
8 which, in turn, would elongate the evacuation times.

9 I then, for surface streets, added another 15
10 percent reduction in capacity to try to represent the fact
11 that we are dealing with an emergency condition and this
12 might produce some uncertainty on the part of motorists
13 decisions in intersections, and this in turn for the lowered
14 capacity. And that, of course, translates or could translate
15 into longer evacuation time.

16 Another possibility is -- although we try very
17 hard to avoid it -- is that there may be some local streets
18 which would be used by residents to evacuate, which we have
19 not modeled. I believe that this effect would be very small,
20 since if you examine the roadway configuration within the
21 EPZ, only in the northwest and along the western edge of
22 EPZ are there local streets which pierce the western boundary.
23 There's no way that anyone who began a trip, say, over three
24 miles of the western boundary could negotiate that trip
25 without encountering one of our evacuation routes.

1 It may have been physically possible but I don't
2 think, from a tactical matter, it could be done. If it is
3 done, you would be losing a few cars. What that tends to do
4 is, having omitted some of these local streets, we may
5 have again slightly overstated evacuation time. There are,
6 basic to this kind of estimation, an element of uncertainty
7 and there's no way of avoiding it.

8 We have tried;to -- if we did err, we did in fact
9 err slightly on the side which led to higher values of
10 evacuation time.

11 Q So then your evacuation time probably represents
12 something in the nature of an upper bound, is that right.

13 A I would like to think so. I wouldn't want to make
14 an absolute statement to that effect.

15 JUDGE SHON: Thank you. That's all I had.

16 JUDGE LAURENSEN: Mr. Irwin, redirect.
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1 MR. IRWIN: Before I do, I want to thank the Board
2 and the Parties for their indulgence. Sorry we took longer
3 during the break.

4 REDIRECT EXAMINATION

5 BY MR. IRWIN:

6 Q Mr. Lieberman, on page 17 of your direct
7 testimony on contention 65, you present 1985 populations
8 for summer and winter. And on Tuesday when questioned about
9 those populations you stated, I believe that they included
10 only residential populations.

11 Do you recall?

12 A (Witness Lieberman) Yes, I remember that.

13 Q When you used that term "residential" did you
14 include transient populations as well as permanent population?

15 A Yes.

16 Q Mr. Weismantle, on Tuesday, I believe transcript
17 pages 1262 and 1263, you were asked about the frequency
18 of wind shifts in the Shoreham area. Do you recall being
19 questioned on that subject?

20 A (Witness Weismantle) Yes, I do.

21 Q On Tuesday, as I recall you indicated that you
22 had recalled having seen or had performed a study of the
23 relative frequency of wind shifts at Shoreham, and various
24 other nuclear plants. Do you recall that you made that
25 statement?

31pb2

1 A Yes, I do.

2 Q Have you had an opportunity to retrieve whatever
3 study or other information you may have been thinking of
4 at that time?

5 A Yes, I have.

6 Q Could you summarize it for the Board, please?

7 A Yes. This was a study that compared some data
8 we had collected at Shoreham with eight other nuclear sites,
9 some meteorological data.

10 And what was studied was a percentage of the time,
11 the average hourly wind direction as determined in 45-degree
12 sector increments, shifted at least into the adjacent sector.

13 A year's worth of data -- a calendar year's worth
14 of data was studied at each of these sites. And then the
15 results were presented in terms of percentage of the time
16 that the wind shifted on an average hourly basis from one
17 45-degree sector to at least the adjacent sector.

18 The results are as follows. For Shoreham, and
19 I might indicate that the data was actually collected at
20 Shoreham West which was where we had our Met tower, which
21 was right adjacent to the Shoreham site, to the west of the
22 Shoreham site, and was at one time a candidate nuclear site.

23 We found that 27 percent of the time, the
24 average hourly wind speed shifted from one 45-degree sector
25 into another.

31pb3

1 Q When you said wind speed you meant wind direction?

2 A Wind direction, I'm sorry.

3 And what I'm going to do simply is to read the
4 results for all nine plants, including Shoreham.

5 For Davis-Besse we found -- which is a plant in
6 Ohio on Lake Erie, I believe, the percentage was 26 percent.
7 For River Bend, a plant in Louisiana, the percentage was
8 45 percent. For Beaver Valley, a nuclear plant in Pennsylvania
9 40 percent. For Millstone Point, a plant across the Sound
10 in Connecticut, 33 percent.

11 For Zimmer, a site in Ohio, 42 percent. For
12 North Anna, a plant in Virginia, 39 percent. For Turkey
13 Point, a plant in Florida, 28 percent. And for Pilgrim,
14 a plant in Massachusetts, 29 percent.

15 Q Thank you. You did not eliminate any of the
16 plants from the results of that study in the reading you
17 just included, did you?

18 A No, I didn't. I read all the plants that were
19 studied.

20 Q Mr. Lieberman, on Tuesday, I believe at transcript
21 page 2364 to 2365, Mr. McMurray was questioning you about
22 your testimony on, I believe page 18 of the direct testimony
23 on contenticn 65 concerning the statement that the Shoreham
24 EPZ highway system is a good roadway system.

25 Do you recall being questioned on that generai

31pb4

17 matter?

2 A (Witness Lieberman) Yes, I do.

3 Q Do you recall Mr. McMurray's questions dealing
4 in the context of free limited access roads, namely, as I
5 recall the Long Island Expressway, the William Floyd Parkway,
6 and the Sunrise.

7 Do you recall those questions?

8 A Yes.

9 Q Would you restrict an evaluation of the roadway
10 system within the EPZ to consideration of those three roads
11 in forming an opinion that the road system is either a good
12 one or not a good one?

13 A Not at all.

14 MR. MC MURRAY: Objection, it's a leading
15 question. I ask that the answer be stricken.16 JUDGE LAURENSEN: Sustained, as to the form of
17 the question.

18 BY MR. IRWIN:

19 Q Are those the only roadways you considered in
20 reaching your conclusion that the roadway system within the
21 EPZ is a good one?

22 A No.

23 Q What other roadways did you consider, and why
24 did you consider them?

25 A Well, of primary importance, of course, are

31pb5

1 those roads which are major highways servicing traffic in
2 a westerly direction, which we assume most evacuees would
3 travel.

4 And if you sum up all the lanes of service which
5 are provided, in addition to the LIE and Sunrise Highway,
6 you find that there is a total of nine lanes of service along
7 roadways which cut the western boundary of the EPZ.

8 Now, each of these -- none of these nine lanes
9 provides the same capacity as a lane of controlled access
10 highway. Nevertheless, when you add up the available
11 capacities of all these nine lanes, our estimate is that
12 they provide somewhere in the neighborhood of 7- to 10,000
13 vehicles per hour for service.

14 Now this is potential service, of course. Such
15 service is only realized if the demand is there to exploit
16 it.

17 Consequently, if we include the five lanes
18 total between the Long Island Expressway and Sunrise Highway,
19 and add their capacities, which are close to 2,000 vehicles
20 per hour per lane, although we used a somewhat more
21 conservative value, to the available capacity on these
22 nine other lanes, which enter the EPZ, you arrive at a total
23 capacity in excess of 15,000 vehicles per hour, aggregated
24 over all those ways that service traffic traveling out of
25 the western boundary of the EPZ.

31pb6

1 One of the first things we did some two years
2 ago when we first started getting our results was to perform
3 the very simple back-of-the-envelope calculation, whereby
4 we took the total number of vehicles, which evacuated. Divide
5 by the total aggregate capacity of 15,000 vehicles per hour,
6 actually more than that. And we came out with a lower bound
7 of evacuation time of roughly 53,000 vehicles divided roughly
8 15- to 16,000 vehicles per hour of service, and you come up
9 with about three-and-a-half hours.

10 That is an absolute lower bound which would be
11 realized if the relationship between supply and demand were
12 equal on all these roads, and implies that the last cars
13 leave the EPZ at exactly the same time.

14 The actual values that we obtained was four hours
15 and 55 minutes, which certainly seemed reasonable relative
16 to this lower bound.

end 31.

ki 32:1

1 Q Do you have, on the basis of your experience,
2 a basis to compare this roadway system with roadway systems
3 within the emergency planning zones of other plants, other
4 nuclear plants?

5 A Well, in my reading on the subject, there are many
6 plants in the country with a great variance in road systems
7 and populations.

8 I think I have emphasized that evacuation times
9 don't reflect capacity alone or population alone, but the
10 relationship between these factors.

11 The case in point, I mentioned that one of the
12 demonstration studies we performed with our model, actually
13 the I-DYNEV model was Main Yankee.

14 Now, Main Yankee, even during the summer months,
15 has about 60,000 people, and it is an EPZ which has almost
16 twice the area of Shoreham. It's a 360-degree EPZ.

17 Despite this low volume -- I'm sorry -- yes,
18 despite this low volume of traffic, our model indicated that
19 the evacuation time was approximately 7-1/2 hours, and upon
20 careful evaluation of the model results, we found that there
21 is a concentration of population in Boothbay Harbor which is
22 a well-known recreational area, and that the road servicing
23 that area was limited to only a single rural road, and that
24 this factor acted to severely increase evacuation time.

25 So here is a situation where the population is

1 less than half that of Shoreham, the EPZ area is double
2 Shoreham, yet the evacuation time is substantially higher.

3 Q Mr. Lieberman, on Tuesday, do you recall being
4 questioned as to whether you had modeled --

5 MR. MC MURRAY: Excuse me a second, Mr. Irwin.

6 May I just confer with counsel for a second,
7 Judge Laurenson?

8 MR. IRWIN: I'm not sure why I should have to
9 interrupt my questions for him to confer.

10 (Counsel McMurray and Miller conferring.)

11 MR. MC MURRAY: Judge Laurenson, I would like to
12 strike the last answer of Mr. Lieberman in its entirety.

13 My cross examination really never went into the
14 issue of comparison of the Shoreham plant with any other
15 plant and the roadway system around it.

16 Therefore, the question was outside the scope of
17 my cross examination.

18 JUDGE LAURENSEN: Your objection is overruled
19 because it's not timely.

20 For the record, let me say that if you have an
21 objection to a question, you have to make the objection before
22 the answer comes in, and we'll rule on it.

23 If your objection is that an answer is not
24 responsive, then you can move to strike it later.

25 But if you're going to object to a question, it

1 must be done prior to the time the answer comes in.

2 BY MR. IRWIN:

3 Q Mr. Lieberman, do you recall being asked on
4 Tuesday, I believe, transcript pages 2369 and 2370, as to
5 whether or not you had modeled the Montauk Highway as an
6 evacuation route around the Shoreham emergency planning
7 zone?

8 A (Witness Lieberman) Yes. There is a discussion
9 which centered on Montauk Highway.

10 Q Did you model that highway as an evacuation route?

11 A No, sir, I did not.

12 Q Why did you not?

13 A Montauk Highway is an east-west route which lies
14 entirely outside the EPZ and south of Sunrise Highway. The
15 reason we did not model it is because it served no useful
16 purpose in the function of evacuating people from within the
17 EPZ.

18 For that reason, we did not consider it.

19 Q If the Montauk Highway had been within the EPZ,
20 would it have met the characteristics or criteria which would
21 have led you to model it as an evacuation route?

22 A If I recall correctly, there was some question
23 about whether it compares with any other roadway within the
24 EPZ, and I think I indicated that it is comparable to either
25 Route 25A or Route 25.

1 So certainly, since I modeled those roads as
2 servicing evacuating traffic, I would have modeled Montauk
3 Highway as well.

4 Q On Tuesday, Mr. Lieberman, do you recall -- I
5 believe the transcript reference is page 2342 -- being
6 questioned as to your role in the training of traffic guides
7 thus far, specifically with reference to a presentation that
8 you delivered to traffic guides?

9 A Yes, I recall that.

10 Q Was that presentation the sole role you have
11 played in traffic guide training thus far?

12 A No, it was not.

13 Q What else have you done?

14 A LILCO submitted for my review elements of the
15 training program associated with the traffic guides. These
16 elements included a draft of the script which eventually was
17 used on a film, a training which was shown to LERO guides.

18 In addition, the workbook, I think they call it,
19 which describes the training material for Lero guides was
20 submitted for my review.

21 In both cases, I penciled in comments and returned
22 them either physically or by telephone to LILCO.

23 Q Yesterday, and I don't have the transcript
24 reference unfortunately, you were asked whether routes which
25 may minimize evacuation times for a 10-mile evacuation radius

ki 32:5

1 necessarily were smaller routes for small radius evacuations.

2 Do you recall such questioning?

3 A Yes, I do.

4 Q Is it possible to optimize with one set of
5 routes evacuation routing for multiple distance evacuations?
6 For example, 2-mile, 5-mile, and 10-mile radii, all on one
7 set of routes?

8 MR. MC MURRAY: Objection. That's a leading
9 question.

10 JUDGE LAURENSEN: Sustained.

11 BY MR. IRWIN:

12 Q Mr. Lieberman, have you an opinion as to whether
13 or not it is possible to optimize with one set of routes
14 evacuation routing for multiple distance evacuations? For
15 example, 2-mile radii, 5-mile radii, and 10-mile radii, all
16 on one set of routes?

17 A (Witness Lieberman) Well, there's always a
18 possibility that the deployment of population and configuration
19 of roads is such that the optimal evacuation routes for
20 individual portions of the EPZ might in fact be the same
21 as optimal routes for the entire EPZ.

22 I think this would be an exception to the rule
23 for the general case of roadways which are not designed
24 expressly for evacuation purposes anyway.

25 Q In your opinion, is such a multidistance

1 optimization, a true sense of optimization, possible in the
2 Shoreham EPZ?

3 A I don't believe so.

4 Q Is it advisable to select different routes for
5 shorter distance evacuations, in your opinion, than for a
6 10-mile evacuation?

7 MR. MC MURRAY: Objection. Leading.

8 BY MR. IRWIN:

9 Q Mr. Lieberman, have you an opinion as to whether
10 or not it's advisable to select different evacuation routes
11 for shorter distance evacuations than for a 10-mile
12 evacuation?

13 A (Witness Lieberman) It's always theoretically
14 possible, but I don't think it's advisable from a practical
15 point of view.

16 Effectively, what you are saying is that for --
17 I think there are some 17 different configurations that are
18 considered for evacuation -- you would have to have, in the
19 strictest sense, up to 17 different routing instructions.
20 And I just don't believe that that is practical.

21 Q Do you know whether different recommended
22 evacuation routes are used for 2-mile or 5-mile radii than
23 for 10-mile radii at any other nuclear power plants other
24 than Shoreham?

25 MR. MC MURRAY: Objection. That's outside of the

ki 32:7

1 scope of my cross examination.

2 JUDGE LAURENSEN: What's the basis for that on
3 the record?

4 MR. IRWIN: The basis for the question goes to
5 the practice within the industry and in the traffic modeling
6 profession of whether or not to use different routes for
7 different radii of an evacuation, and to the extent that
8 practice is followed, whether other plants may be indicative
9 of professional opinion as to utility or validity.

10 MR. MC MURRAY: Judge Laurenson. I never inquired
11 as to industry practice.

12 MR. IRWIN: It was a basis for Dr. Lieberman's
13 opinion.

14 JUDGE LAURENSEN: I think this is beyond the
15 scope of cross examination. The objection is sustained.

16 BY MR. IRWIN:

17 Q Mr. Lieberman, do you recall being questioned
18 yesterday about the splits of traffic occurring at various
19 intersections manned by traffic guides, and in particular
20 about, for example, the split at, I believe, Node 1 and
21 70 percent of traffic going one direction, 30 percent of
22 traffic going in another direction, and being questioned
23 by Mr. McMurray as to whether or not a traffic guide counted
24 seven cars in one direction and three cars in another direction,
25 or something to that effect?

1 A (Witness Lieberman) I recall that exchange, yes.

2 Q Is a traffic guide a means by which traffic is
3 actually allocated in the manner I just described at a
4 node or intersection where there is a traffic split?

5 A No. The traffic guide does not perform that
6 function.

7 Q How is that function performed?

8 A That function is an outcome of the design of the
9 evacuation path. That is, the routes which are recommended
10 to the various regions, zones, and regions within zones in
11 the area about the power plant within the EPZ.

12 In the case in point, which I recall was in
13 Region F, the Appendix A delineates subregions and routes
14 associated with each subregion.

15 The plan identifies the routes for each such
16 subregion, and assuming again 100 percent compliance, the
17 70 percent/30 percent split reflects the assignment or the
18 recommendation of the population to these various routes.

19 My understanding is that the information sent to
20 people within each such region will indicate the routes they
21 are to take by subregion.

22 end 32

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1 Q Mr. Lieberman, in your questioning this
2 morning do you recall being asked whether -- or about the
3 effects of evacuation by the populations of towns along the
4 south coast of Long Island? For instance, Mastic and
5 other towns? I didn't write them down, but do you recall
6 such a line of questioning?

7 A Yes, I do.

8 Q In your modeling of evacuation shadow runs, within
9 the Shoreham EPZ, did you include people or residents living
10 to the south of the Shoreham EPZ?

11 A Yes, we did.

12 MR. IRWIN: No further questions, sir.

13 JUDGE LAURENSEN: Any recross by the county?

14 MR. MC MURRAY: May I have just a moment to confer
15 with counsel?

16 (Counsel McMurray and Miller conferring.)

17 MR. PALOMINO: Your Honor, at this time we will
18 discuss Mr. Weismantle's study of the wind. I'd like
19 to make a motion on the basis for him to study his
20 qualifications. We don't know the altitudes, relative
21 altitudes, they were taken at. We don't know anything about
22 the competence of him. No foundation has been laid for this
23 summary. And furthermore, they're very selective. They
24 are seven, I believe, of some 80 nuclear sites in the country.

25 JUDGE LAURENSEN: I think you would have

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1 the opportunity to pursue that on your recross examination,
2 as to the foundation on the basis for those studies. At
3 that point, you may be able to demonstrate that the evidence
4 is not competent or admissible. At this point, I don't have
5 enough to rule on so the motion is denied at this point.

6 MR. PALOMINO: Than Your Honor, I'm not in a
7 position to properly cross-examine because he's given us a
8 summary.

9 JUDGE LAURENSEN: Well, perhaps you can inquire
10 as to the actual study, if he has it available, as to the
11 basis of it and where it came from. Is it a published
12 document? I think some further questions must be asked
13 before we could make a ruling on it.

14 RECROSS EXAMINATION

15 BY MR. MC MURRAY:

16 Q Mr. Lieberman, I'd like to ask you a question
17 about the last response you gave to Mr. Irwin. I believe
18 you told Mr. Irwin that, in your modeling runs, you considered
19 the population to the south of the EPZ. Is that correct?

20 A (Witness Lieberman) For the studies that we
21 conducted on the effect of this hypothetical shadow condition.

22 Q Would that include all the scenarios in which you
23 took the evacuation shadow phenomenon into account?

24 A Well, all the runs in which we executed the
25 eastern -- what we call the east network. The population

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1 south of the EPZ and east of roughly the western boundary
2 of the EPZ projected south. These nodes were included, yes.

3 Q So as far as the evacuation time estimates in
4 Appendix A go, those estimates do not reflect the population
5 to the south of the EPZ. Isn't that correct, because those
6 time estimates don't take into account the evacuation
7 shadow phenomenon, is that correct?

8 A If your question pertains to runs 1 through 21,
9 which by definition do not include the shadow effect, then that
10 is a correct statement.

11 MR. MC MURRAY: Thank you. I have no further
12 questions.

13 JUDGE LAURENSEN: Mr. Palomino?

14 MR. PALOMINO: Yes.

15 BY MR. PALOMINO:

16 Q Mr. Weismantle, do you have the study with you?

17 A (Witness Weismantle) I have the results with me.

18 Q Only the results?

19 A Yes.

20 Q Then you can't say when these studies were made?

21 A Yes, I can.

22 Q When were they made?

23 A In July of this year.

24 Q In July of this year, in each one of them?

25 A Oh, it was one study. The study was done in July.

1 Q In the month of July?

2 A Well, in the month of July. But it compared
3 annual data. It was a comparison of our annual data. The
4 study was performed in July of 1983.

5 Q What was the basis of the annual data?

6 A The basis of the annual data was published wind
7 direction information at these various sites. Would you like
8 me to elaborate?

9 Q Yes.

10 A I think I can answer your questions as I understood
11 them. This study was done by an environmental scientist at
12 Stone & Webster in Boston. He took information available
13 to him which happened to be information for these plants.
14 He took a year's worth of meteorological data at each plant
15 and manually looked through every hour, 8760 hours, and
16 determined whether, from one hour to the next, it had
17 shifted into an adjacent or beyond 45 degree sector or stayed
18 in the 45 degree sector that the wind direction was in in
19 the previous hour.

20 And he accumulated these numbers. And then when
21 he was done with each plant, developed percentages. And
22 that's the results of that I've presented.

23 Q But you don't know what altitudes they were taken
24 at or what altitudes the plants are at?

25 A All right. I do know that they were taken from

1 meteorological towers that were installed, complying with
2 NRC regulation, at each of these sites. And my understanding,
3 from a conversation --

4 Q I'm not interested in your understanding, I'm
5 interested in what you know.

6 MR. IRWIN: Move to strike that remark.

7 JUDGE LAURENSEN: That remark will be stricken.

8 Let me pursue this, Mr. Weismantle. Is this a
9 printed document that you have or was it an oral summary
10 that was given to you?

11 WITNESS WEISMANTLE: What I have is a telecopied
12 sheet with the results of the studies. This was typed, I
13 believe, in July and what I got was the results of the studies
14 that were performed in July. As far as I know there is no
15 published study that showed all the individual data points
16 that were used to develop these numbers. In other words,
17 it was not a published study. It was something done by
18 Stone & Webster, at LILCO's request. To my knowledge, it
19 hasn't been published, nor is there a thick report where all
20 the workpapers are.

21 But I could be wrong and I certainly can find out
22 tomorrow, if that has any bearing.

23 MR. PALOMINO: I renew my motion to strike it,
24 Your Honor. It can be subject to typographical error and
25 all sorts of things. There's no way to verify it, aside from

1 the eclectic selection of these plants.

2 JUDGE LAURENSEN: I think to move this along,
3 I will direct that LILCO make available to Mr. Palomino
4 and to all parties, in fact, a copy of the page report
5 that you have there, that you have referred to, and we
6 will --

7 MR. PALOMINO: Your Honor, it's no more probative
8 to have a copy. It's in the record already. We heard it.
9 We can't probe the validity of it.

10 JUDGE LAURENSEN: If you're not interested in it,
11 then I won't direct it. Your motion is denied. Any further
12 questions?

13 (No response.)

14 At this point then, we will be adjourned for
15 the day. We'll reconvene tomorrow morning at 8:30, by
16 agreement of all parties.

17 (Whereupon, at 6:50 p.m., the hearing was recessed, to
18 reconvene at 8:30 a.m. on Friday, January 20, 1984.)

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CERTIFICATE OF PROCEEDINGS

This is to certify that the attached proceedings before the
NRC COMMISSION

In the matter of: LONG ISLAND LIGHTING COMPANY
(Shoreham Nuclear Power Station Unit 1)
Date of Proceeding: Thursday, January 19, 1984
Place of Proceeding: Riverhead, New York

were held as herein appears, and that this is the original
transcript for the file of the Commission.

Mimie Meltzer
Official Reporter - Typed

Mimie Meltzer
Official Reporter - Signature