

ORIGINAL

UNITED STATES NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

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

Docket No.
50-322-OL-3

LOCATION: Hauppauge, New York

DATE: May 27, 1988

PAGES: 20440 through 20554

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1 UNITED STATES NUCLEAR REGULATORY COMMISSION
 2 ATOMIC SAFETY AND LICENSING BOARD

3 In the Matter of:)
 4) Docket No.
 5 LONG ISLAND LIGHTING COMPANY) 50-322-OL-3
 6) (Emergency Planning)
 7 (Shoreham Nuclear Power)) (School Bus Driver
 8 Station, Unit 1)) Issue)

9 Friday,
 10 May 27, 1988

11 State Office Building
 12 Hauppauge, New York

13 The above-entitled matter came on for hearing
 14 at 9:05 a.m.

15 BEFORE: HON. JAMES GLEASON, Chairman of the Board

16 For the Board:

17 JUDGE JERRY KLINE
 18 JUDGE FRED SHON

19 A P P E A R A N C E S :

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(Continued on next page.)

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EXHIBIT NO. IDEN: RECD: DESCRIPTIONNew York State ETE:

No. 1	20479	20520	"Hospitals"
No. 2	20492	20520	Appendix 4
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1 PROCEEDINGS

2 JUDGE GLEASON: Good morning, gentlemen.

3 Any preliminary matters?

4 MR. McMURRAY: Judge Gleason, I have
5 one. I would like to introduce to the Board at this
6 time, Mr. Ronald Ross, sitting to my left, with the
7 firm of Kirkpatrick & Lockhart, representing Suffolk
8 County. He will be conducting County's cross
9 examination of Dr. Urbanik today.

10 JUDGE GLEASON: All right.

11 MR. McMURRAY: In addition, the order
12 today will be that Mr. Zahnleuter will go before the
13 County in its questioning of Dr. Urbanik.

14 MR. SISK: Judge Gleason, with us this
15 morning is Rita Sheffey, also of the firm of Hunton &
16 Williams, representing LILCO. I believe this is her
17 first appearance before the Board.

18 There are approximately four items that
19 we will want to take up today. One of them, of
20 course, is the testimony of Dr. Urbanik. Another is
21 the motion for the filing of surrebuttal testimony on
22 the hospital evacuation times. I understand from Mr.
23 Christman, the Board may have some questions on
24 LILCO's EBS system--

25 JUDGE GLEASON: It is already disposed

1 of.

2 MR. SISK: Okay. The final issue is to
3 advise the Board of some recent developments in
4 discovery on the realism issue and respond at least
5 very preliminarily to the Board's order yesterday
6 concerning scheduling of realism. We would propose
7 to take up those additional issues later in the day.

8 JUDGE GLEASON: Mr. Zahnleuter, did you
9 advise--this is the beginning of a long holiday
10 weekend. Would you advise me of the length of your
11 cross-examination, please?

12 MR. ZAHNLEUTER: I would estimate
13 approximately one hour.

14 JUDGE GLEASON: How about you, Mr. Ross?

15 MR. ROSS: I will follow Mr. Zahnleuter,
16 no more than 15 minutes.

17 JUDGE GLEASON: Proceed, Mr. Bachmann.
18 We will take up the examination and then follow that
19 with the surrebuttal issue and then we will follow
20 that with the other issues.

21 MR. BACHMANN: Judge Gleason, I would
22 like to request that the Board take up the
23 surrebuttal issue at this stage. Ordinarily the
24 staff would go last. We are going first and there
25 might be some interaction with that testimony. So,

1 if we could determine whether or not it is in or out
2 before my witness testifies, I believe it would be
3 helpful.

4 JUDGE GLEASON: They are the same issue,
5 aren't they? Do you mind arguing that motion at this
6 time, Mr. Zahnleuter?

7 MR. ZAHNLEUTER: I think it probably
8 would be preferable under the circumstances.

9 JUDGE GLEASON: All right. Why don't
10 you proceed, then. We can put--well, proceed at your
11 will. Go ahead.

12 MR. ZAHNLEUTER: As the Board and
13 parties are aware, the State of New York filed a
14 motion for leave to file surrebuttal testimony dated
15 May 26th and copies were served from my office in
16 Albany yesterday, but I also provided courtesy copies
17 to everyone here.

18 I think that the motion for leave to
19 file surrebuttal testimony speaks for itself and I
20 can stand on it based on what it says. I will note,
21 though, that the bottom line, when the Board admitted
22 Mr. Lieberman's rebuttal testimony, appeared to be
23 that the rebuttal testimony was proper, because it
24 addressed concerns raised by Mr. Hartgen in his
25 direct testimony. And I submit that in this case,

1 too, Dr. Hartgen's surrebuttal testimony is proper,
2 because it directly addresses what Mr. Lieberman has
3 included in his rebuttal testimony. With that, I
4 have nothing else to add, unless the Board has a
5 question or two they would like to ask me.

6 MR. McMURRAY: Judge Gleason, let me
7 just state briefly, that we support the State's
8 motion. The surrebuttal testimony is clearly timely.
9 It is focused directly on Mr. Lieberman's new
10 analysis, which we had no knowledge of prior to the
11 filing of the initial testimony, and I think it is
12 only fair that it be admitted, because otherwise Dr.
13 Hartgen would not have an opportunity to address in
14 his direct case the new analysis.

15 JUDGE GLEASON: Does the applicant have
16 comments?

17 MR. SISK: Yes. Look, Judge Gleason,
18 LILCO does not oppose, as a general matter, the
19 admission of the surrebuttal testimony. I would,
20 however, like to make certain notes and inform the
21 Board of certain items related to it.

22 First, there are certain computer runs
23 which were conducted by Mr. Lieberman and which were
24 produced to the parties in the case earlier this
25 week--late last week or earlier this week. They are

1 referred to and certain numbers are presented in Dr.
2 Hartgen's surrebuttal testimony from those tables,
3 but the tables themselves are not attached. We would
4 propose at the appropriate time, probably at the
5 beginning of our testimony, to submit those to the
6 Board so that the entire table can be seen, not just
7 the result as reported in this surrebuttal testimony.

8 In addition, LILCO does object to at
9 least two portions of the testimony, which I can
10 identify for the Board right now. There is a section
11 of the surrebuttal testimony which begins at the
12 bottom of page 17, and carries over to almost the
13 bottom of page 18, down to the heading that is
14 labeled "III Summary." That question and answer
15 states, in the first few sentence of the answer,
16 "LILCO's rebuttal testimony does not address many
17 other concerns," and then it lists those concerns.

18 It would be LILCO's position that that
19 portion of the surrebuttal testimony is not proper
20 surrebuttal because it doesn't respond to anything.
21 It expressly, simply says, this is a rehash of what
22 Dr. Hartgen said earlier and a listing of what he
23 said earlier, without responding to anything Mr.
24 Lieberman had in his rebuttal testimony.

25 There is, in addition to that, a very

1 short passage in the middle of page 14 of the
2 testimony. It is the second sentence in the middle
3 paragraph, which says, "The tests show apparently
4 that the evacuation of hospitals is so low in
5 priority, fourth, that even a significant reduction
6 in the number of patients to be evacuated still
7 results in the use of almost 12 hours to evacuate the
8 hospital patients."

9 It is LILCO's position that at least
10 that sentence does not go to the bases and accuracy
11 of the hospital evacuation time estimate, but is
12 simply a general statement that in the State's
13 opinion, the evacuation process is taking too long.

14 With those two exceptions, which we
15 would ask the Board to strike from this testimony, we
16 do not oppose admission of it.

17 Finally, I wish to call to the Board's
18 attention an item of which I was informed at
19 approximately 10 o'clock last night. After we were
20 served with the surrebuttal testimony, we sent a copy
21 of it over to our witness, Mr. Lieberman, and he has
22 informed me as of 10 o'clock last night, that there
23 is one respect in which Dr. Hartgen's testimony has
24 shown that there is an additional glitch or bug of
25 very small proportions in the computations performed

1 in LILCO's rebuttal testimony. It is an error that
2 has been identified by Mr. Lieberman, which will
3 require, we believe, a very small correction to the
4 tables that have been presented.

5 It does not go to the methodology or the
6 construct or the scope of the way the tests were
7 conducted, but there was a failure to account for a
8 short segment of certain trips of vehicles prior to
9 entering the third waive of evacuation. As a result,
10 we are now rerunning the tail end of certain of those
11 tables. We expect to have the results of that this
12 evening or some time over the weekend.

13 Of course, this time we want to be sure
14 that it is absolutely correct. We expect to be able
15 to get those to the parties, hopefully, first thing
16 next Tuesday morning. Those corrections, as I said,
17 will not affect the basic computational methodology,
18 the way the computations were run. It may affect the
19 result slightly.

20 I can tell the Board specifically that
21 it relates to the specific example that is cited by
22 Dr. Hartgen in his testimony which is discussed, I
23 believe--if the Board will bear with me a
24 moment--beginning on approximately page five and six
25 and carrying on thereafter. That will require that

1 Mr. Lieberman, when he takes the stand and is asked
2 the standard question, "Do you have any corrections
3 to make," to say, in all probability, "Yes, I do, and
4 here they are." I want to be sure the Board and
5 parties know that right now, and that we will give
6 the parties the information as soon as we have it
7 ground out of the computer.

8 JUDGE GLEASON: Mr. Bachmann?

9 MR. BACHMANN: The staff does not oppose
4 10 the admission of the surrebuttal testimony. However,
11 we would request that Dr. Urbanik, since he will only
12 be here for today and since the staff usually goes
13 last and is going first, that he be permitted to
14 briefly comment on the surrebuttal testimony,
15 especially given the fact that the surrebuttal is Dr.
16 Hartgen's comment on Mr. Lieberman's testimony and
17 since Dr. Urbanik was only allowed--only got to see
18 the testimony this morning, I believe it would be
19 only fair to allow him to at least make a few brief
20 comments as to his estimation of the testimony, the
21 surrebuttal testimony, in order for the Board to have
22 a more complete record.

23 MR. ZAHNLEUTER: May I respond to the
24 comments of the staff and LILCO?

25 JUDGE GLEASON: Yes.

1 MR. ZAHNLEUTER: It appears that no one
2 is opposing the State's motion for leave to file
3 surrebuttal testimony, but I think I need to address
4 certain other points that each party made.

5 The first one Mr. Sisk raised involved
6 attachments to Dr. Hartgen's testimony, apparently
7 tables. Without having before us which tables Mr.
8 Sisk is talking about, I really don't understand what
9 the problem is.

10 To the best of my knowledge, the tables
11 Dr. Hartgen refers to or relies on are either
12 attached to his surrebuttal testimony or are attached
13 to Mr. Lieberman's rebuttal testimony. So, I don't
14 know what other tables Mr. Sisk seeks to introduce in
15 some fashion at a later date. I just can't respond
16 to that point any more without knowing specifically
17 what tables he is talking about.

18 Mr. Sisk's second point was that he
19 feels that on page 17, he feels some testimony should
20 be struck from the record. My position on that is
21 that this testimony at page 17, responds to plenty.
22 Mr. Sisk's position was that it responds to nothing
23 and was rehash but, in fact, what it seeks to do is
24 to draw an inference. That inference is that Mr.
25 Lieberman had an opportunity to rebut what Dr.

1 Hartgen said in his direct testimony and he chose not
2 to rebut these subject areas.

3 The inference that is drawn or that is
4 attempted to be made by the testimony is that Mr.
5 Lieberman does not have any serious concerns about
6 these concerns Dr. Hartgen had. Also, the last
7 paragraph in the answer, which appears on page 18, is
8 a conclusion that applies to the entire surrebuttal
9 testimony and is not part of the answer that talks
10 about the concerns that Mr. Lieberman did not address
11 in Dr. Hartgen's testimony. I think in any event,
12 the last paragraph should not be stricken.

13 Mr. Sisk raised a comment about a
14 paragraph or phrase or sentence that appears on page
15 14. I believe his objection to that was that it was
16 beyond the scope of this hospital evacuation time
17 estimate issue. I think if you read the sentence you
18 will see it talks about the actual 12-hour hospital
19 evacuation time estimate. I can't see how anything
20 is more relevant and more within the scope of the
21 hospital evacuation time estimate inquiry than a
22 statement about the length of the actual hospital
23 evacuation time estimate.

24 Mr. Sisk also is apparently advising the
25 Board that Mr. Lieberman wishes to file additional

1 testimony. I predicted that this might be the case
2 when I argued that the rebuttal testimony that Mr.
3 Lieberman filed was untimely, because it occurred in
4 the midst of trial and indicated a continuing series
5 of submissions that LILCO would intend to make. We
6 saw that Mr. Lieberman's filing of rebuttal
7 testimony, following that by about one day, an
8 additional computer table was provided to us.

9 Now we have notice that yet another
10 change in computer model is being contemplated. I
11 use the word "change" on purpose, because it appears
12 to me that a change in the computer model, as Mr.
13 Lieberman is contemplating doing, is not really
14 rebuttal, because it does not rebut what Dr. Hartgen
15 talks about in Dr. Hartgen's surrebuttal testimony.
16 What it does is changes the computer model. To me,
17 that is more like supplemental testimony and I submit
18 it is way too late to submit supplemental testimony
19 until this case. We are in the midst of trial. To
20 continue revising the computer model right up to the
21 time of testimony, is becoming prejudicial and has
22 imposed a severe burden on the state.

23 One further point that I would like to
24 make on that topic is that if Mr. Sisk and Mr.
25 Lieberman wish to file--I guess you'd call it another

1 round of rebuttal testimony, even though I believe it
2 is supplemental testimony and should not be allowed,
3 I think that he should follow the ordinary rules and
4 procedures that we have here, and that is to submit a
5 motion to file another round of rebuttal testimony
6 and to attach the substance of what that rebuttal
7 testimony will be, because I can't address the
8 substance of it or know if it is indeed responsive in
9 truth or even what it is, unless we see it.

10 In the past, the parties have always
11 attached their testimony to their covering motions
12 for leave to file, and I think that that procedure
13 should be followed in this case, too. I think that
14 we should also be entitled to an opportunity to
15 respond to the motion and to the substance of the new
16 round of rebuttal testimony at the proper time. I
17 won't be able to say anything more on that because I
18 don't know exactly what Mr. Lieberman's new round of
19 rebuttal testimony is. And it appears that even he
20 doesn't know yet, because he intends to work on it
21 this weekend. I submit that this is all improper
22 supplemental testimony occurring on the eve of the
23 hearing of the issue and should not be allowed. But
24 I request that that procedure be followed.

25 Mr. Bachmann, on behalf of the staff,

1 did not oppose the motion for leave to file Dr.
2 Hartgen's surrebuttal, but he also, in a sense, made
3 another motion for permission to have Dr. Urbanik
4 file rebuttal testimony to Mr. Lieberman or Dr.
5 Hartgen. I, again, am not sure exactly how to phrase
6 that, because it hasn't been characterized adequately
7 by Mr. Bachmann.

8 What I would ask is that Mr. Bachmann be
9 required to make a proffer or an offer of what it is
10 that Dr. Urbanik wishes to say about Mr. Lieberman or
11 about Dr. Hartgen, because I don't know whether or
12 not to oppose it or acquiesce in it, unless I know
13 what it is. To have a witness take the stand and for
14 the first time set forth new testimony without any of
15 the parties having an opportunity to learn what that
16 testimony might be through discovery or through
17 whatever process we normally follow, is unfair.

18 JUDGE GLEASON: Mr. McMurray?

19 MR. McMURRAY: I will be brief.

20 With respect to the motion to strike, I
21 note that with respect to the part of the testimony
22 on page 17, going over to page 18, it is a summary of
23 certain concerns that Mr. Lieberman did not address
24 in his rebuttal. Even if the Board is so inclined to
25 strike that, and I don't think it should, because

1 such summaries have typically been permitted in
2 prefiled testimony to summarize a party's direct
3 case. But even if the Board were so inclined, only
4 the listing of items 1 through 10 are directed to Dr.
5 Hartgen's prior testimony and the paragraphs after
6 that really are focused on Mr. Lieberman's rebuttal
7 testimony.

8 With respect to the other part, on page
9 14, I think that should also stay in. It is
10 pertinent to the hospital evacuation issue and why
11 the time estimates do not have adequate bases.

12 Let me respond to the staff's motion to
13 have Dr. Urbanik respond to Dr. Hartgen's testimony.
14 I think that that would be unfair at this time. We
15 have no idea what Dr. Urbanik is going to say and we
16 have had no opportunity, therefore, to prepare any
17 type of cross-examination. We would, in essence, be
18 presented for the first time with his testimony and
19 be unable to address it at this time. So, I oppose
20 that motion.

21 I have nothing further.

22 JUDGE GLEASON: I think we have heard
23 enough, gentlemen. I really don't need another
24 response, Mr. Sisk. Excuse us a moment

25 (Board confers.)

1 JUDGE GLEASON: Gentlemen, the Board
2 will strike--first of all, it will accept the
3 surrebuttal testimony and will strike the items on
4 page 18--

5 JUDGE SHON: Page 17.

6 MR. SISK: For clarification--

7 JUDGE GLEASON: I see. I am looking at
8 the top which says "18," and the bottom says "17."
9 That is the page that LILCO's testimony does not
10 address, items 1 through 10. The rest of the
11 testimony is in.

12 With respect to filing of the changes in
13 the rebuttal testimony, we believe Mr. Zahnleuter
14 makes a valid point. We have to really put a point
15 of finality at some time to this additional
16 information. Already we are in a position where
17 opposite parties have had very short notice to
18 analyze the rebuttal testimony. If you feel it is
19 necessary for the testimony, you will have to make
20 another proffer for additional rebuttal testimony
21 when we get back here next week. In the meantime, we
22 will hopefully have seen or will have to see what you
23 intend to offer.

24 With respect to Dr. Urbanik's
25 opportunity to comment on the testimony that has been

1 admitted, surrebuttal testimony, once again, Mr.
2 Zahnleuter does make a valid point. I should say
3 that I believe that the presence of Dr. Urbanik here
4 was really for the convenience of all the parties and
5 ordinarily he would go last. So, there is that to be
6 considered. But I think if you would make a proffer
7 of what he intends to say, we can evaluate it and see
8 whether it is going to impose an issue of fairness at
9 that time.

10 MR. BACHMANN: From my discussions with
11 Dr. Urbanik, he indicated to me, and I will make the
12 proffer, that it is his opinion that the surrebuttal
13 testimony adds very little or nothing to the record.
14 That is basically all the he wanted to say.

15 JUDGE GLEASON: You can ask the
16 question, we will get an answer and if it is a matter
17 that causes unfairness, we will get a motion to
18 strike and handle it that way.

19 Did I cover everything? I think so.

20 Let's proceed with the witness.

21 MR. BACHMANN: Would you swear the
22 witness in please, sir?

23 JUDGE GLEASON: Yes.

24 THOMAS URBANIK II,

25 having been first duly sworn, was examined and

1 testified as follows:

2 DIRECT EXAMINATION

3 BY MR. BACHMANN:

4 Q. Dr. Urbanik, do you have before you a
5 document entitled, "Testimony of Dr. Thomas Urbanik
6 II"?

7 A. Yes.

8 Q. I got ahead of myself. Would you for
9 the record, state your name and your occupation and
10 in what capacity you are testifying.

11 A. My name is Thomas Urbanik II. I am a
12 research engineer with the Texas Transportation
13 Institute at Texas A & M University. I am appearing
14 here as a consultant to NRC staff.

15 Q. Referring back to your testimony, do you
16 have any changes or corrections to be made on this?

17 A. No.

18 Q. Was this prepared by you or under your
19 supervision?

20 A. Yes.

21 Q. Is the information contained in that
22 document true and correct to the best of your
23 knowledge and belief?

24 A. Yes, it is.

25 Q. Do you adopt this as your testimony in

1 this proceeding?

2 A. Yes.

3 MR. BACHMANN: Your Honor, at this
4 point, I would move that the document entitled
5 "Testimony of Dr. Thomas Urbanik II," be admitted
6 into evidence and bound into the record as if read.

7 JUDGE GLEASON: Is there objection?

8 Hearing none, the testimony will be
9 received into evidence.

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of)	
)	
LONG ISLAND LIGHTING COMPANY)	Docket No. 50-322-OL-3
)	(Emergency Planning)
(Shoreham Nuclear Power Station,)	(Evacuation Time Estimates)
Unit 1))	

TESTIMONY OF DR. THOMAS URBANIK, II

Q.1 State your name, occupation, and address.

A.1 My name is Thomas Urbanik, II. I am a research engineer with the Texas Transportation Institute, at Texas A & M University, College Station, Texas. A copy of my professional qualifications was previously submitted as an attachment to my direct written testimony filed on April 13, 1987 in the reception center hearings.

Q.2 Briefly summarize your experience with emergency planning for nuclear facilities.

A.2 I was principal author of NUREG/CR-1745, "Analysis of Techniques for Estimating Evacuation Times for Emergency Planning Zones" (November 1980), which described the limitations of several methodologies and some alternatives for determining evacuation time estimates. Also, I provided input to the development of the current guidance for evacuation time estimate studies which appears in Appendix 4 to NUREG-0654, Revision 1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans for Preparedness in Support of

Nuclear Power Plants" (NUREG-0654/FEMA-REP-1, Rev. 1, November 1980). In addition, I reviewed for the NRC the initial evacuation time estimate submittals of approximately 52 operating and near term nuclear facilities against the guidance of NUREG-0654/FEMA-REP-1, Revision 0, the results of which are published in NUREG/CR-1856. I am a coauthor of the CLEAR computer model which is published in NUREG/CR-2054. I also was a coauthor of an independent assessment of the Seabrook Nuclear Power Station Evacuation Times which is published in NUREG/CR-2903. I have appeared on behalf of the NRC Staff at a number of licensing hearings including Shoreham concerning evacuation time estimates.

Q.3 What is the purpose of this testimony?

A.3 The purpose of my testimony is to address the issue of the bases and accuracy of the hospital evacuation time estimates contained in Revision 9 to the LILCO emergency plan.

Q.4 When did you first become involved with reviewing hospital evacuation time estimates for the Shoreham Plant?

A.4 If we go all the way back to the original time estimate studies, hospital evacuation has been a continuing part of the evacuation time estimate process review. More recently, however, my involvement has been in the last three months.

Q.5 Do the hospital evacuation time estimates before the Licensing Board concern the St. Charles Hospital, the John T. Mather Hospital, and Central Suffolk Hospital on Long Island?

A.5 Yes.

Q.6 Is it your understanding that those hospitals are in or near the ten mile EPZ for the Shoreham nuclear power plant?

A.6 They are all very close to the EPZ boundary.

Q.7 Would you define what you mean when you talk about evacuation time estimates, or ETEs, for these hospitals?

A.7 ETEs for hospitals are, in a sense, a part of the overall evacuation time estimate process. But on the other hand, I would say it is at times confusing to some that, in fact, the estimates are largely separate from the issue of the general population evacuation times.

The guidance of NUREG-0654 anticipated the fact that hospitals and other special facilities were fundamentally different than the general population, and that the time to handle these facilities would in all likelihood be different. So the guidance essentially suggests that one has to go through a process of identifying those facilities and the resources and the time that would be involved in doing that evacuation.

In reality, the importance of hospital evacuation is the issue of, "Will it take us longer to evacuate hospitals?" This would be likely where there are long mobilization times, or perhaps inadequate resources to evacuate hospitals. When resources are constrained, one has to make some additional calculations based on fact whether multiple trips would be involved in order to evacuate the hospital. It is essentially a part of the bigger ETE process, but on the other hand it is done quite a bit different than ETEs for the general population.

Q.8 Have you done a review of the LILCO hospital evacuation time estimates in Revision 9, pages IV-172 to IV-187 of Appendix A to the LILCO Emergency Plan?

A.8 Yes. A review in the sense of reviewing the methodology, assumptions and the like. I have not done a review in the sense of making my own independent study of the times.

Q.9 Please describe your review.

A.9 Essentially, I looked at all of the components, and how the analysts laid out their approach to coming up with the time.

To do this requires, more importantly than anything else, a number of assumptions. Unfortunately, we don't have the answers to all of the questions, so we have to begin to assume some things, and one has to make a number of judgments as to whether one could essentially agree to the reasonableness of those assumptions. Then you have to make some judgment in terms of whether or not the overall numbers appear consistent with the methodology that was used. If the estimates appear unreasonable, then you would have to begin probing further to see whether or not some error was made in the process. In this case, I did review the estimates, but I did not feel that there was a need to independently verify all of the calculations as the estimates appear reasonable.

Q.10 Is the reasonableness of evacuation time estimates something you develop a knowledge about over the course of your professional career from experience?

A.10 Yes. I have seen just about all of them that have been done for nuclear power plants.

Q.11 Have you also seen the evacuation time estimates for special facilities for just about every emergency plan for a nuclear plant in this country?

A.11 Yes. I have been actively involved now for approaching nine years in looking at evacuation time estimate studies, and that involves both the general population and the special facility population. So I have seen most of them.

Q.12 Are special facility population ETEs typically treated separately in nuclear emergency plans in this country?

A.12 Yes. They are arrived at in a process that is essentially separate but compatible with the general population ETEs.

Q.13 What are the source of uncertainties in calculations like these?

A.13 Virtually every number that goes into this process has in a sense a probability distribution associated with it. At the beginning of the process, the actual numbers of people that are likely to be in any given hospital, and their characteristics, are going to be highly variable.

Then we have the estimate of the speeds on the roadways that are involved, and we cannot estimate those speeds with any certainty. The evacuation process takes a long period of time, and each one of the individual hospital evacuations is only taking place in a small component of that longer time frame, so we have a reasonable estimate of the overall

speed of the evacuation, but we don't know at any given time what those speeds would be with any degree of certainty. The purpose of this process is not so much the estimate, but identifying the resources, who requires transportation and where to take them.

And that is really what the estimate is all about. It is identifying who to evacuate, and where to take them, and come up with the best number that we can of how long it would take to do that. There is a number that we feel is our best estimate under all the assumed conditions, but there is no way that one would say that on any given day that that would be the time that it would take to do the job.

Q.14 Are the assumptions LILCO's analysts used in calculating the ETEs for hospitals included in the hospital evacuation time study?

A.14 Yes.

Q.15 Given the information in Rev. 9, which consists of such things as assumptions about how long it takes to load the vehicles, locations of the starting point and the ending point, and travel speeds, could you replicate these evacuation times given enough time?

A.15 Yes.

Q.16 Are LILCO's hospital ETE's calculated in accordance with the guidance provided in Appendix 4 of NUREC-0654?

A.16 Yes.

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JUDGE GLEASON: Mr. Zahnleuter?

CROSS-EXAMINATION

BY MR. ZAHNLEUTER:

Q. Dr. Urbanik, I would like to refer you to page two of your testimony, specifically the answer to the fourth question. There you say, "If we go all the way back to the original time estimate studies, hospital evacuation has been a continuing part of the evacuation time estimate process review. More recently, however, my involvement has been in the last three months."

Now, you first became involved with the hospital evacuation time estimate issue for Shoreham sometime in January of this year, didn't you?

A. You are asking me for the first time?

Q. The first time you became involved in the hospital evacuation time estimate issue for Shoreham that we are addressing now.

A. No, sir.

Q. When was that?

A. I don't have all my documents in front of me, but I was involved in the hospital evacuation when the first--whenever the first LILCO evacuation time estimate study was submitted to the NRC for review. And that may be as far back as circa 1980.

1 Q. Do you recall if at that time there were
2 estimates of the time it would take to evacuate
3 hospital patients?

4 A. No. There were not.

5 Q. So, do you recall when you first became
6 involved in addressing or analyzing the actual time
7 estimates of evacuating hospital patients.

8 A. That would be earlier this year, late
9 last year.

10 Q. You became aware of the time estimates
11 through a discussion with your counsel, Mr. Bachmann.
12 Correct?

13 A. That would probably be correct. Yes.

14 Q. And you signed an affidavit on this
15 subject on January 11, 1988. Is that right?

16 A. Somewhere around then.

17 Q. Prior to signing that affidavit, your
18 counsel had provided to you a copy of LILCO's motion
19 for summary disposition of the issue. Is that right?

20 A. That is correct.

21 Q. Prior to signing that affidavit, you had
22 a discussion with Mr. Lieberman about the process he
23 went through in developing the hospital evacuation
24 time estimates, didn't you?

25 A. I think that is probably overstating the

1 case. I had a very brief discussion to ask him
2 whether or not there was any supporting material to
3 sustain his numbers and how they were computed. And
4 he indicated that it was contained in a draft version
5 of Rev 9 to the emergency plan. And that was the
6 basis for which I made a request from NRC that we be
7 provided a copy of that document.

8 Q. So, your discussion with Mr. Lieberman
9 prompted a request for Revision 9. Right?

10 A. That is correct, because the--my
11 recommendation could not be to sustain or--not to
12 sustain. I could make no recommendation other than
13 there was insufficient basis to draw a conclusion
14 and, therefore, one would be in a position of having
15 to conclude that there was inadequate basis for
16 making a judgment concerning his affidavit.

17 Q. Prior to signing your affidavit, you
18 received, through Mr. Bachmann, a copy of revision 9.
19 Correct?

20 A. I believe that's correct. The exact
21 path that that came would probably be hard to
22 determine. At times I do get documents directly. In
23 other words, whether it physically passed through Mr.
24 Bachmann or not, I don't know.

25 Q. If it didn't physically pass through Mr.

1 Bachmann, where would it come from?

2 A. Federal Express, telecopier, any of a
3 number of means of transmitting documents. I seem to
4 recall--this is based on recollection--that it was
5 telecopied from wherever to LILCO's office in
6 Bethesda and that Mr. Bachmann and I picked it up
7 personally there. But that is just a recollection.

8 I do recall for sure that there is a
9 telecopy similar to what is confusing the current
10 surrebuttal testimony. There is a notation of where
11 it was sent and the time and date.

12 Q. I believe you said that it was
13 telecopied to LILCO's office in Bethesda. Do you
14 mean that it was telecopied from LILCO to the NRC
15 staff's office in Bethesda?

16 A. Again, I am going on recollection. And
17 whether or not this document or some other
18 document--there was somewhere in this process, and
19 and it may even have been in another case, there were
20 some documents that were trans--you are asking me to
21 recall. I get, you know, literally dozens of
22 documents. To remember where each document went and
23 goes through seems to me is neither--is of no
24 particular importance for me to remember.

25 Q. Well, in any event, you do recall, don't

1 you, that you received a telecopy version of Revision
2 9 at the NRC staff's office in Bethesda?

3 MR. BACHMANN: Objection, your Honor. I
4 see no relevance in this line--

5 JUDGE GLEASON: Let him answer, Mr.
6 Bachmann. Answer the question, please.

7 A. I don't believe I stated that at all,
8 and I certainly am not sure where the document moved
9 from. I do recall that it was a telecopy document.

10 Q. In any event, you do recall that you
11 received the document and reviewed it prior to
12 signing your affidavit?

13 A. Yes.

14 Q. Do you recall whether the particular
15 pages that you received were pages Roman numeral
16 4-176 through Roman 4-187 and Roman 5-7 and Roman
17 numeral 5-8? This is of the LILCO plan.

18 A. I understand that. I think the best
19 place to find that exact document is in my
20 deposition. Unfortunately, in the process of giving
21 my deposition, I was requested to part with the
22 physical presence of that document, so I don't have
23 it any more.

24 Q. If I showed you the exhibit that is
25 attached to your deposition transcript, would that

1 help you recall whether or not those were the pages
2 you received?

3 A. Yes, sir.

4 Q. I will briefly show you that exhibit to
5 refresh your recollection.

6 MR. BACHMANN: Can you tell me what the
7 Exhibit Number is, Mr. Zahnleuter?

8 MR. ZAHNLEUTER: Urbanik Deposition
9 Exhibit 5.

10 (Pause.)

11 A. Yes. That would appear to be the
12 document.

13 Q. Thank you.

14 So, Dr. Urbanik, I take it that you
15 recall being deposed in March of '88 of this year?

16 A. Yes, sir.

17 Q. Between the time that you signed your
18 affidavit and the time that you were deposed, did you
19 receive any handwritten calculations or work sheets
20 prepared by LILCO?

21 A. I believe that is correct, that I did
22 receive some documents. I believe that is covered in
23 my--I have to go back to the deposition, which would
24 probably have a better record of that. But I think
25 that is correct.

1 Q. According to the transcript of your
2 deposition, on page 42, you stated, "Now, if someone
3 would raise a specific question about a specific item
4 in that set of documents, I would certainly come back
5 to review it. But as of this time, I have no reason
6 to do that, although I certainly would
7 probably--although I didn't ask for the document, now
8 that I have it, I feel obligated to at least get a
9 little more familiar with that."

10 As of today, May 27th, have you reviewed
11 these work sheets and become familiar with them?

12 A. I have looked through them. I
13 guess--have I become familiar with them, would be a
14 rather subjective kind of evaluation as to whether I
15 am or am not familiar with it. I certainly did not
16 go through and check the calculations.

17 Q. Are you saying that you are not familiar
18 with them?

19 A. No. I didn't say that.

20 Q. Do you know who Jeffrey Sobotka is?

21 A. I believe he is a consultant to LILCO.

22 Q. Are you aware that the handwritten work
23 sheets and calculations that we are talking about
24 were prepared by him or under his supervision?

25 A. Yes, I am.

1 Q. Have you ever read the transcript of Mr.
2 Sobotka's deposition on this issue?

3 A. Yes, I have.

4 Q. Have you ever read the transcript of
5 either one of Mr. Lieberman's depositions on this
6 issue?

7 A. Yes, I have read both.

8 Q. That includes the deposition that
9 occurred approximately two days ago?

10 A. Yes.

11 Q. Since you filed your testimony on April
12 13th, have you had any discussions with Mr. Lieberman
13 or anyone associated with LILCO on the subject of
14 hospital evacuation time estimates?

15 A. The only discussion, if you would call
16 it a discussion, was a one way, unsolicited comment
17 this morning by one of the LILCO staff, concerning
18 the issue that they had discovered an error that was
19 mentioned earlier this morning.

20 Q. Who was the LILCO staffperson?

21 A. I'm sorry. I don't--they will have to
22 identify themselves. I am not real good at names and
23 faces.

24 MR. SISK: For the record, I believe
25 that was me, in the hallway this morning.

1 Q. That was the only discussion that you
2 had?

3 A. If one would characterize that as a
4 discussion. I mean, I said nothing. Okay? So,
5 whether that is a discussion or not would be kind of
6 subjective again. I'd say we didn't really have a
7 discussion, but there was a contact and there was a
8 one-way exchange of information.

9 Q. We will let that go.
10 Have you read Dr. Hartgen's April 13,
11 1988 testimony on this issue?

12 A. What was the date?

13 Q. April 13, 1988. It is his direct
14 testimony, filed the same day you filed your direct
15 testimony.

16 A. Yes, I have.

17 Q. I take it that you are aware, based on
18 Mr. Bachmann's comments, that Mr. Lieberman has filed
19 rebuttal testimony on this issue?

20 A. Yes, I am.

21 Q. Have you read that rebuttal testimony?

22 A. Yes, I have.

23 Q. Have you been provided with the
24 underlying computer inputs that Mr. Lieberman used
25 for his rebuttal testimony and the model talked about

1 in it?

2 A. I was provided, subsequent to that, with
3 a number of computer printouts. Whether they are the
4 ones you are referring to, would be hard to know
5 since I don't have them.

6 Q. Subsequent to when?

7 A. Subsequent to receiving that rebuttal
8 testimony, I believe--and going on recollection that
9 someone--you or someone related to
10 you--requested--made a request for documents. And in
11 the process of that being served on you or whoever, I
12 got a copy of those documents, also.

13 Q. Those were tables of computer printouts.
14 Is that right?

15 A. Yes.

16 Q. Have you read them?

17 A. I have scanned through them, yes.

18 Q. Would you say you are familiar with
19 them?

20 A. Again, we would have a definitional
21 problem in terms of what is "familiar." Again, I did
22 not check calculations or anything of that nature,
23 but I did look at what they represented and what was
24 in them.

25 Q. Do you feel that you have an

1 understanding of them?

2 A. I have a general understanding of what
3 they signify. Yes.

4 Q. Could you please summarize what you
5 think the substance of Mr. Lieberman's testimony is,
6 his rebuttal testimony?

7 A. I guess the substance of this rebuttal
8 testimony is to conclude that if you change your
9 assumptions in your analysis, you will get different
10 answers. And I think that is fundamentally the issue
11 in this entire case. We seem to be focusing in on
12 the decimal points of the analysis and spending very
13 little time on the basis for the assumptions. So, it
14 is my conclusion, looking at all of the analyses,
15 that if we make similar assumptions, all of the
16 people making the analysis will come up with similar
17 answers.

18 Q. Do you have any concerns about Mr.
19 Lieberman's rebuttal testimony?

20 A. No. I don't have any particular
21 concerns. No.

22 Q. No criticisms?

23 A. My criticism--yeah, I would have a
24 criticism of the whole--

25 Q. Criticism of Mr. Lieberman's rebuttal

1 testimony?

2 A. Well, his rebuttal testimony and this
3 whole process, yes. That criticism would be that we
4 seem to be more concerned with precision than
5 accuracy and we have been going round and round with
6 a battle of experts on how many decimal points we can
7 take these calculations out to.

8 Q. Do you think that Mr. Lieberman's
9 computer model is an unwarranted exercise in
10 precision?

11 A. That comes to a very subjective kind of
12 evaluation. I think to say that it is of no value
13 would certainly be wrong. I look at, as an engineer,
14 things in a cost-effective kind of measure. Are we
15 getting good value for dollars spent, and I don't
16 think that analysis is providing us good value for
17 dollars spent. But it is, you know, more refinement.

18 The number--each time we go through this
19 process we find another little itty-bitty error here
20 or there and fine tune the numbers one more time.
21 And we are still in the 12-hour time range. But, so,
22 it does provide--it does provide additional
23 illumination, additional checks. But we are, you
24 know, rechecking and rechecking and rechecking and
25 rechecking. If you look in the broader context, we

1 are still coming up with the same answer for the same
2 set of assumptions.

3 Q. Do you know if the computer model Mr.
4 Lieberman put together renders the manual
5 computations obsolete?

6 A. No. I don't believe they render the
7 manual computations obsolete at all. They confirm
8 the manual computations in the relative order of
9 magnitude of the answer relative to its value in the
10 decision-making process for an emergency planner.

11 Q. Does the computer model confirm the
12 manual computations, or does the manual computations
13 confirm the computer model?

14 A. Both.

15 Q. Are you aware that the State of New York
16 has now filed surrebuttal testimony?

17 A. Yes, I am.

18 Q. Have you read it?

19 A. Yes, I have.

20 Q. Are you aware that LILCO has submitted
21 Revision 10 of the LILCO plan?

22 A. I read that in Newsday, that it is
23 either in the process or very close to being
24 submitted, but I have no--no firsthand communication
25 on that.

1 Q. Is your awareness based on Newsday only?

2 A. Yes, sir.

3 Q. Dr. Urbanik, are you familiar with the
4 assumed speeds in Table 13-B, of Appendix A, of the
5 LILCO plan?

6 A. Yes.

7 Q. For your reference, if you wish, I think
8 that page is an attachment to Mr. Lieberman's direct
9 testimony.

10 A. Right. I have that.

11 Q. What data have you reviewed that would
12 justify the assumed speeds in Table 13-B, especially
13 the speeds of vehicles headed away from the EPZ on
14 local streets or nonfreeway routes and the speeds of
15 vehicles headed toward the EPZ?

16 A. I am familiar with speeds throughout the
17 United States and general ability of different
18 classes of street systems to accommodate traffic.
19 So, my judgment of the appropriateness of all of
20 these numbers are based on both general nationwide
21 experience with traffic, familiarity with Long
22 Island, and familiarity with a multitude of analyses
23 that have preceded this particular analysis,
24 including a reception center analysis, the evacuation
25 time estimate analysis, analysis of numerous

1 consultants that have analyzed traffic on Long Island
2 for the last eight years.

3 Q. You haven't reviewed any data that would
4 justify these speeds, have you?

5 A. I certainly didn't think I said that. I
6 think I have stated that I have reviewed an extensive
7 amount of data that justifies these speeds.

8 Q. Can you identify that data specifically?

9 A. I just did. You want me to restate what
10 I just said?

11 Q. Where is the data located?

12 A. The data is located in a variety of
13 documents, the original evacuation time study,
14 subsequent evacuation time studies, studies conducted
15 by Suffolk County, studies conducted by the State of
16 New York, studies conducted by myself, studies
17 conducted elsewhere in the United States by others.
18 I mean, we are talking about all kinds of data that
19 relate to what various classes of street systems can,
20 in fact, provide.

21 Q. According to Table 13-B, speeds change
22 in Brentwood. Correct?

23 A. The...

24 Q. Can you answer that "yes" or "no"? If
25 you can't, you can explain, but it helps me better to

1 understand what you are saying if you say "yes" or
2 "no" first.

3 A. Yes.

4 Q. So, what is so special about Brentwood
5 that warrants a change in speed?

6 A. It is really--probably the simplest way
7 to explain it is, Brentwood is a point in the system
8 and vehicles may be moving toward the facility or
9 away from the facility and the fundamental speed by
10 direction is the most critical aspect of this. So,
11 it's essential that Brentwood be a break point in
12 your analysis because you have to know which way you
13 are going. Are you going outbound with traffic that
14 is evacuating or are you going inbound in the
15 opposite direction? That is the fundamental reason
16 for that.

17 Now, you can go through here and pick up
18 things that you might say are inconsistent, but we
19 are talking about numbers that represent classes of
20 street systems, and they were picked in a basically
21 overall logical manner.

22 Q. Are you aware of any apparent
23 justification for assuming that speeds change at
24 Brentwood?

25 A. I just said I did.

1 Q. Why is Brentwood so special?

2 A. It is a point where vehicles move to and
3 from.

4 Q. What effect would that have on the
5 speeds that they travel at?

6 A. It depends, for one thing, which
7 direction they are going, as I just stated.

8 JUDGE SHON: Dr. Urbanik, you have me a
9 little confused with your answer to Mr. Zahnleuter's
10 question, also. Do I understand you to say that the
11 speeds change at Brentwood because the direction
12 changes; that is, you are considering in this table,
13 which I don't have before me, speeds into and speeds
14 out of the EPZ, hence, the direction changes would
15 lead to the speed also changing there. Is that what
16 you intended?

17 THE WITNESS: The process is more
18 complex than my characterization. And I was trying
19 to give the most simple answer that I could to
20 illustrate that it is logical to break speeds at
21 Brentwood. And in the most simple case, if a vehicle
22 is dispatched from Brentwood or is leaving Brentwood
23 for some reason, the direction of its travel, at the
24 very least, has a very marked effect on speed. So,
25 the Brentwood break is very logical.

1 Now, there are other effects going on in
2 this process. But if you just think of it in those
3 terms, it is logical to think that we ought to break
4 speeds--break speeds at Brentwood.

5 The other part of it is distance
6 from--distance from the power plant has effects on
7 speeds. These speeds are not--can't be quantified
8 with the kind of precision that some would like them
9 to have. We are talking about a lot of uncertainty
10 in the time and spatial distribution of this traffic.
11 So, we make some assumptions as to what we think are
12 attainable speeds at given times and given places
13 relative to the EPZ boundary, relative to Brentwood
14 and relative to the direction of travel. Let me see
15 if I can--if I can have a moment, maybe I can--

16 Q. Dr. Urbanik--

17 THE WITNESS: Let me--

18 MR. ZAHNLEUTER: I think you are
19 referring to Table 13-B and it appears some people
20 may not have that. I have enough copies to
21 distribute. I think it would be helpful if I did
22 that.

11
23 MR. SISK: For the record, that table
24 also appears as the last two pages of Attachment C to
25 LILCO's prefiled testimony dated April 13th.

1 THE WITNESS: Just to be absolutely
2 sure, I will use--

3 MR. ZAHNLEUTER: I think it would be a
4 good idea to mark for identification the document I
5 have just handed out as New York State Hospital
6 Evacuation Time Estimate Exhibit 1.

7 JUDGE GLEASON: All right. The exhibit
8 will be so designated.

9 (The document referred to was
10 marked for identification New York
11 State Hospital Evacuation Time
12 Estimate Exhibit No. 1.)

13 THE WITNESS: Let's take an example.
14 Let's start on the last page. Let's start at the
15 top, and we are talking about westbound traffic,
16 which is leaving the EPZ, headed toward New York
17 City. Let's look at "other roads, normal weather."
18 We see a speed of 10 miles an hour. Now let's turn
19 to the previous page and look at westbound traffic
20 west of Brentwood and let's look at "normal weather,
21 other roads." What is the speed? It is 10 miles an
22 hour.

23 So, the fact that the table is broken up
24 at Brentwood doesn't mean the speeds are necessarily
25 changing in an illogical manner. It was just a point

1 in that certain computations are made. So the speeds
2 are not changing at Brentwood, necessarily. They are
3 only changing under a certain set of circumstances.
4 So, westbound travel from the EPZ past Brentwood
5 doesn't change at that point.

6 Q. All right, Dr. Urbanik. Let's look at
7 eastbound travel. From Table 13-B, you will agree
8 with me, won't you, that the normal weather speeds
9 for eastbound travel west of Brentwood are 40 miles
10 per hour for 495, 30 miles per hour for Route 27 and
11 20 miles an hour for other roads. Do you see below
12 that where it says "Eastbound travel east of
13 Brentwood"?

14 A. Yes.

15 Q. What is the speed under normal weather
16 for Route I495 prior to six hours?

17 A. They reduce that to 20 miles an hour.

18 Q. And that is a change of speed, isn't it?

19 A. Right.

20 Q. The same thing is true for Route 27, the
21 speed is 20 miles an hour. Correct?

22 A. Right.

23 Q. And that is a reduction in speed from
24 the 30 miles per hour that it was west of Brentwood.
25 Correct?

1 A. That is correct.

2 Q. Now, are you aware of any apparent
3 justification for assuming that these speeds change
4 at Brentwood?

5 A. I am not sure why they--what their logic
6 was for that reduction. I would say that the speeds
7 that they assumed east of Brentwood look overly
8 conservative. They had some reason they felt they
9 wanted to reduce that. I would not, probably, have
10 made that judgment. I would have left them at the
11 higher speeds.

12 Q. So, with regard to the actual change
13 that occurred, there is no apparent justification, is
14 there, for the change in speed assumption?

15 A. It is not readily apparent to me in that
16 particular case. No.

17 Q. That change in speed could have occurred
18 at Brentwood or one mile east of Brentwood or one
19 mile west of Brentwood. It could have occurred
20 anywhere. Isn't that right?

21 A. Oh, absolutely. But someone has to
22 make--you know, sooner or later, we have to draw a
23 line on the ground and say, "Which side do you stand
24 on?" They drew the line at Route 111 and that is
25 what they are going with.

1 Q. Without any apparent justification to
2 you, they drew the line at Route 111. Right?

3 A. In the sense that I am not familiar with
4 their logic in doing that. I don't consider it to be
5 reason for concern that I went back to them and asked
6 them to justify that.

7 Q. Excuse me. You said that was not reason
8 for concern to go back and ask them about it?

9 A. Not my judgment, no.

10 Q. I would like to ask you to turn to page
11 five of your testimony, Dr. Urbanik, specifically
12 question and answer 13. The question is, "What are
13 the source of uncertainties in calculations like
14 these?" And the first sentence of your answer says,
15 "Virtually every number that goes into this process
16 has, in a sense, a probability distribution
17 associated with it."

18 Could you please explain to me what you
19 mean by that sentence, and specifically focus on what
20 you mean by "a probability distribution"?

21 A. Well, for any given number that we are
22 assuming, let's say we are assuming the number of
23 persons that are in a hospital on the day that an
24 evacuation order is called. We are taking and coming
25 up with a number that is our best estimate of what

1 the mean, so to speak, of that situation is. But on
2 any given day, the population of that hospital could
3 be higher, could be lower. Unfortunately, we don't
4 have a data base that would allow us to quantify the
5 distributions of variation in all the numbers that go
6 into these calculations. So, we make our best
7 estimate of what we think is a reasonable number to
8 use and go with that.

9 Q. What do you mean when you say you don't
10 have a data base that could be used? What are you
11 referring to?

12 A. A data base that gives us the
13 probability distribution, what the fluctuations in
14 each of the numbers are. In the sense of hospital
15 population, we might be able to come up with a better
16 number than we could with the--than we could with the
17 speed, for example, on a given roadway, at a given
18 point in time in an evacuation. So, some numbers
19 could be quantified, but by and large, a lot of
20 numbers that go into this analysis are subject to
21 random variation.

22 Q. What are some of the numbers that you
23 are referring to that go into this process? Would
24 those numbers include things other than hospital
25 patients, like you have mentioned? Would it include

1 speeds?

2 A. I think if you look at my testimony, I
3 said virtually every number that goes into this
4 process.

5 Q. And that would include highway speeds?

6 A. Oh, absolutely.

7 Q. In the second sentence of your answer,
8 you say, "At the beginning of the process, the actual
9 numbers of people that are likely to be in any given
10 hospital and their characteristics are going to be
11 highly variable."

12 Are you able to quantify how variable
13 the numbers may be?

14 A. It would be possible to do that. The
15 problem is, some numbers we can quantify better than
16 others in terms of their probability, their
17 probability distribution. But on an overall basis we
18 just can't--we can't do it to the point that would
19 make doing any one that we could do of any value.

20 Q. Do you know if Mr. Lieberman quantified
21 how variable the numbers may be?

22 A. I don't think he did if you are talking
23 about hospital numbers.

24 Q. I have to ask you, what do you mean by
25 "hospital numbers"?

1 A. You were referring me to a particular
2 sentence in my testimony, actual numbers of people
3 that are likely to be in any given hospital and their
4 characteristics.

5 Q. The next sentence says, "Then we have
6 the estimate of the speeds on the roadways that are
7 involved and we cannot estimate those speeds with any
8 certainty."

9 Given that we cannot estimate speeds
10 with any certainty, would it be more reasonable to
11 assume that speeds would be variable to the point of
12 being within a particular range rather than assuming
13 that speeds would be fixed?

14 A. If we went back and did the analysis as
15 a probablistic model instead of a deterministic model
16 that we use, yeah, then there would be some value to
17 try to put some ranges on this. But we can't--the
18 reality is that the speed of traffic on that facility
19 at any given time is a function of a whole variety of
20 situations: ambient air conditions, the day of the
21 week, the time of the day. And if we tried to put
22 all these things in and come up with an estimate for
23 every one of these conditions, we'd have more--we'd
24 have a whole lot of data and not a lot of
25 information.

1 So, what we are trying to do is come up
2 with a number that we think is doable, that under
3 typical conditions, barring any unusual, you know,
4 events like major earthquakes or things of that
5 nature, that we could, in fact, achieve the time that
6 we are estimating.

7 So we come up with a number that we
8 believe to be doable as opposed to multitudes of
9 numbers for every possible situation.

10 Q. With regard to speeds, which you said
11 can't be estimated with any certainty, are you able
12 to quantify for me what an appropriate range would be
13 for speeds given a certain road like I495?

14 A. Yes. I can give you--and again, one of
15 the points that gets lost in this process is the
16 speed that we are using in this estimate is a speed
17 that is assumed to exist over both time and space.
18 In other words, this is a speed that is an average
19 speed from the beginning of evacuation to the end of
20 evacuation over the spatial extent as defined in the
21 table. And so, when we say in our number that the
22 speed is 15 miles an hour on Long Island Expressway,
23 we are talking about a speed that
24 averages--averages--15 miles an hour, not a speed
25 that is occasionally 2 and occasionally 35, but a--it

1 could be a speed that is occasionally 2 and
2 occasionally 35, but averages 15.

3 I would tell you, you can look at the
4 most congested parts of just about any freeway in the
5 United States and it is highly unlikely that the
6 speed would drop, sustained, over both time and
7 space, to less than 20 miles an hour.

8 I came in yesterday and did a little
9 study on the Cross Island Parkway. It averaged, in
10 the 30 miles an hour sustained speed over time and
11 space. Occasionally you are doing 5 and 10,
12 occasionally, you are doing 35, 40 and 50. You can't
13 pick--one of the things Mr. Hartgen did is go in and
14 pick one number out of a table and say, "Here is a
15 number that is 9 miles an hour. Therefore, we should
16 assume the speed over both time and space should be 9
17 miles an hour." That is not appropriate.

18 So, to answer your question, I think the
19 speed is going to average 20 miles an hour on Long
20 Island Expressway, or higher, and it is going to
21 range from occasionally dropping down less than 20 to
22 occasionally being higher than that. Next time you
23 drive in congested traffic, just observe what
24 happens. Occasionally you are stop and go and all of
25 a sudden miraculously, you speed up until you run

1 into the back of the next queue. When you look at
2 speed, you can't look at speedometer just when you
3 are at the slowest speed. You have to look at your
4 travel time. How long did it take you to traverse
5 your trip? Did you go 20 miles an hour and it took
6 an hour? Then your speed is 20 miles an hour.

7 Q. Would you agree the speed could range
8 plus or minus 5 miles per hour?

9 A. Oh, I would--

10 Q. For westbound travel on the Long Island
11 Expressway.

12 A. The speed at any given time to vary much
13 more than 5 miles an hour. The critical question in
14 doing the evacuation time estimate is not what is the
15 range of speeds, but what is the overall average
16 sustainable speed over both time and space.

17 Q. Is it your understanding that Dr.
18 Hartgen, in his testimony, considered average speeds
19 and not ranges of speeds?

20 A. Well, he did both. He considered
21 average speeds, but when he picked out of an article
22 written by Mr. Lieberman, his analysis of the free
23 flow model, Mr. Hartgen did not pick average overall
24 sustained speeds. He picked one number at one point
25 in time and space and said, "Lookie, lookie, lookie,

1 here is a number 9 miles an hour. Freeways can be a
2 lot slower than 15."

3 Well, they can instantaneously at any
4 given point, but nowhere in the data Dr. Hartgen
5 cited as being examples of his speeds were there
6 average overall sustained speeds of 9 miles an hour.
7 He was just picking an individual speed, not a
8 sustained average overall speed. So, he did both.

9 Q. Are you aware at all that Dr. Hartgen
10 recommended that average speeds not be considered,
11 but that a range around average speeds be considered?
12 Do you recall that from his testimony?

13 A. I recall from his testimony--one of the
14 things I don't recall from his testimony is that
15 he--well, let me answer your question.

16 Yes, he did offer the idea that we
17 should consider a range of speeds but provided no
18 basis on how to do that other than to say that
19 speeds--speeds could vary. In that sense, he offers
20 no illumination to what is the appropriate speed to
21 use. I think if you're trying to say that we should
22 do estimates for a variety of different speeds, I
23 don't think that offers any value, because at the
24 time that a decision maker makes his decision, he is
25 going to know no more about the speed on Long Island

1 Expressway at that time, than he knows about the
2 speed on Long Island Expressway right now.

3 So offering a whole range of speeds and
4 a whole range of numbers, provides no help in the
5 process. We need to pick a number that we can live
6 with as an average overall sustained speed.

14
7 Q. Let's sum this up with one more
8 question, then. think you are saying that average
9 speeds can vary. Can't they?

10 A. Speeds can vary. When we talk about
11 average, we have to define average of what. Okay?
12 Are we talking about the average speed during an
13 evacuation, or are we talking about the average speed
14 at a given point and given time? Which average are
15 you asking me?

16 Q. Evacuation.

17 A. So, could you ask me the question again,
18 please?

19 Q. Average speeds during an evacuation can
20 vary, can't they?

21 A. Certainly.

22 Q The Cross Island Expressway, by the way,
23 is how far from the Shoreham Nuclear Power Plant?

24 A. I actually misspoke. It was the Grand
25 Central, and it is about 50 miles from the plant at

1 the point I was doing my data collection. The only
2 point I am making is that is just another data point
3 in my wealth of numbers that I have seen on freeways
4 throughout the United States, and you don't find
5 freeways that have average sustained speeds less than
6 20 miles an hour.

7 Q. Neither the Grand Central Parkway nor
8 freeways around the United States are involved in
9 LILCO's hospital time--LILCO's hospital evacuation
10 time estimate analysis, are they?

11 A. No, they are not. But Mr. Hartgen
12 doesn't offer any data concerning the Long Island
13 Expressway of any note that refutes the experience
14 elsewhere. So, the best information that we have is
15 our collective experiences.

16 Q. Let's turn to question and answer 16 in
17 your testimony. The question is, "Are LILCO's
18 hospital ETE's calculated in accordance with the
19 guidance provided in Appendix 4 of NUREG 0654?" And
20 the answer is, "Yes."

21 Is it your testimony that Appendix 4 of
22 NUREG 0654 provides guidance on how to calculate
23 hospital ETE's?

24 A. Yes.

25 Q. What I would like to do at this time is

1 to distribute a copy of the bulk of Appendix 4 of
2 NUREG 0654 and ask it be marked as New York State
3 Hospital ETE Exhibit 2.

4 JUDGE GLEASON: So designated

5 The document referred to was
6 marked for identification as New
7 York State Hospital Evacuation
8 Time Estimate Exhibit No. 2.)

9 Q. Dr. Urbanik, would you please
10 specifically show me in this exhibit, Exhibit 2, what
11 guidance you are referring to?

12 A. Certainly.

13 Q. Thank you.

14 A. First, if you turn to page 4-3.

15 Q. Which section?

16 A. Section C.

17 Q. That says, "An estimate for this special
18 population group shall usually be done on an
19 institution-by-institution basis. The means of
20 transportation are also highly individualized and
21 shall be described. Schools shall be included in
22 this segment."

23 A. Right. Obviously, the statement about
24 schools doesn't apply to hospitals.

25 Q. So, that is one specific piece of

1 guidance that you are referring to.

2 Is there other guidance?

3 A. Yes, sir.

4 Q. Could you show me where that is?

5 A. Page 4-9.

6 Q. Is that the part which appears in the
7 last paragraph, on the page, which says, "Estimates
8 for special facilities shall be made with
9 consideration for the means of mobilization of
10 equipment and manpower to aid in evacuation and the
11 needs for designated employees or staff to delay
12 their evacuation in order to shut down industrial
13 facilities. Each special facility shall be treated
14 on an individual basis. Weather conditions and time
15 of day conditions shall be considered. Consideration
16 shall be given to the impact of peak populations,
17 including behavioral aspects."

18 Is that the relevant section?

19 A. Yes, it is. The consideration
20 about--the last sentence in that doesn't apply to
21 hospitals.

22 Q. Why not?

23 A. Only in the broadest, broadest sense of
24 that. It is really talking about--this is a section
25 under methodology, not a section under special

1 facilities, and it is referring to the issues related
2 to differences that would occur due to peak
3 populations or special events or other things that
4 might be going on.

5 Q. Could it refer to peak populations in
6 terms of hospital occupancy?

7 A. That is not what it is intended to refer
8 to. No.

9 Q. Is there any other guidance that you
10 wish to refer me to?

11 A. I believe that is what specifically
12 relates to hospitals. Obviously, there are things in
13 here that refer to the evacuation time estimates in
14 general.

15 Q. The reference to page 4-3 comes
16 underneath the heading of Roman numeral 2, "demand
17 estimation." Correct?

18 A. Right.

15
19 Q. And it states that the objective of this
20 section is to provide an estimate of the number of
21 people to be evacuated. So, can I conclude that this
22 Section C is specifically addressed to the number of
23 people in hospitals to be evacuated?

24 A. With the proviso that you understand
25 that this is a committee-written document that is not

1 well organized, not well written. But that is the
2 general thrust.

3 Without having--one who didn't have
4 familiarity with the entire process and what was
5 going on could focus in very narrowly on any sentence
6 and any word in this document and draw very erroneous
7 conclusions. I have to caution against trying to
8 read between the lines in this document without
9 having an understanding of how everything was put
10 together and comes about. But what you are saying is
11 in fact true, with the qualification.

12 Q. Are you familiar with the phrase "time
13 motion study under various conditions"?

14 A. Yes.

15 Q. What meaning does it have?

16 A. Well, you are talking about determining
17 for a given set of conditions how long it takes to do
18 something by analyzing what actually transpires in
19 the process of doing that. To use an example, the
20 earlier work that was done in terms of reception
21 centers would be probably a good example of a time
22 motion study to do the--to compute the time it would
23 take to monitor evacuees in their car. That would be
24 a good example of trying to to come up with a number
25 that you could analyze through sort of a drill time

1 and motion study.

2 Unfortunately, we can't do a time and
3 motion study of an evacuation because nobody would
4 stand still for us practicing a full-scale
5 evacuation.

6 Q. Do I understand you to say that a time
7 motion study under various conditions is not possible
8 in terms of an evacuation?

9 A. Only to the extent that we can
10 analyze--if we can compartmentalize, if we can break
11 a part of the process away from interactions with
12 other parts of the process, yes, we could, in fact,
13 do a time motion study of a certain part of the
14 process. But where that part of the process has
15 interactions with other things that we can't make
16 happen at the same time, we have no way--we have no
17 way to validate our estimate. The only way we can
18 validate our estimates would be to go out and call
19 for an evacuation that everybody believed was a real
20 evacuation and where everybody went and evacuated.
21 Then we could go and watch that and validate our
22 model. The only way we can do a true validation
23 would be to call for a full-scale evacuation.

24 Q. It is appropriate, isn't it, to conduct
25 time motion study under various conditions in

1 connection with evacuation time estimates?

2 A. It might in certain cases be appropriate
3 to do limited time motion studies under--to answer
4 particular questions about particular parts of the
5 process that could be isolated.

6 Q. What circumstances would those be?

7 A. Those circumstances where you don't
8 believe you have a reasonable estimate of a
9 particular number or have no way to come up with a
10 reasonable estimate and you believe that you could,
11 in fact, do it in that manner. An example I gave
12 earlier of the reception center monitoring of
13 evacuees would be a good example of --no one had a
14 good estimate on how long it would take to do that
15 process, so they went through a time and motion
16 study.

17 Q. And evacuation times would be another
18 circumstance. Right?

19 A. You are using--evacuation times is a
20 broad term. I gave you an example of a part of the
21 evacuation time estimate process that was done for
22 Shoreham that involved a time and motion type of
23 study. But you then come back and ask me in a
24 generic sense for an evacuation time estimate. I
25 have to say you can't do a time motion study of

1 evacuation time estimates in their toto, no.

2 MR. ZAHNLEUTER: I would like to
3 distribute another document which I would like marked
4 for identification, please, as New York State
5 Hospital Evacuation Time Estimate Exhibit 3.

6 JUDGE GLEASON: So designated.

7 (The document referred to was
8 marked for identification as New
9 York State Hospital Evacuation
10 Time Estimate Exhibit No. 3.)

11 Q. Dr. Urbanik, you recognize this as an
12 excerpt from NUREG 0654. Right?

13 A. Yes, sir.

14 Q. And Section J on protective response,
15 right?

16 A. Right.

17 Q. And turning to item J-10L--

18 A. Right.

16

19 Q. One of the evaluation criteria is that
20 "time estimates for evacuation of various sectors and
21 distances based on dynamic analysis (time motion
22 study under various conditions) for the plume
23 exposure pathway, emergency planning zone, (see
24 Appendix 4.)"

25 You agree with me that that is an

1 evaluation criteria for an emergency plan. Right?

2 A. Right.

3 Q. In that phrase, "time motion study under
4 various conditions," what are some examples of
5 conditions that are implied by that, if you know?

6 A. I think the example that I gave you
7 earlier would be an example of that.

8 Q. What would the condition be?
9 Monitoring? You are saying that is a condition?

10 A. I am saying it is a situation that
11 exists where you have no way to estimate the time and
12 come up with a reasonable number and that you have
13 to, therefore, go through an analysis to come up with
14 a number to use in your analysis.

15 Q. You would agree with me, wouldn't you,
16 that time motion studies under various conditions are
17 indeed suggested by FEMA for time estimates?

18 A. They were parenthetically mentioned as
19 something that you might do. Yes.

20 MR. ZAHNLEUTER: I think this would be
21 an appropriate time for a break, Judge Gleason. I
22 will tell everyone that I have approximately 15
23 minutes of questions left.

24 JUDGE GLEASON: We will take a 10 minute
25 break.

1 (Brief recess.)

2 JUDGE GLEASON: Proceed, Mr. Zahnleuter.

3 MR. ZAHNLEUTER: Before I proceed
4 perhaps I should see if counsel for Suffolk County is
5 close by.

6 (Pause.)

7 Q. Dr. Urbanik, please turn to page three
8 of your testimony. In the last paragraph on the
9 page, in answer to question seven, you state, "In
10 reality, the importance of hospital evacuation is the
11 issue of will it take us longer to evacuate
12 hospitals."

13 Could you tell me, will it take us
14 longer than what to evacuate hospitals?

15 A. Longer than the general population. At
16 the time that the guidance was put together, it was
17 believed that in a number of cases, that the general
18 population evacuation would probably be, you know,
19 extremely short, maybe a couple of hours, but that it
20 would take longer than that to evacuate hospitals,
21 due to the mobilization and other kinds of estimates.
22 So, to make--to have an appropriate decision-making
23 framework, one wanted to have a number, a separate
24 number for hospitals, realizing that in a number of
25 cases the time would be longer than the general

1 population.

2 Q. In this case of Shoreham, it is clear
3 that the hospital evacuation time estimate for
4 hospitals is longer than the general population
5 estimates. Right?

6 A. Yes, for a different reason.

7 Q. What is the different reason?

8 A. That multiple trips are required, so
9 there are not enough resources to make the hospital
10 evacuation in one trip. That would be another reason
11 why the guidance would have presumed that hospitals
12 may in some cases be longer.

13 Q. So, it is important from a planning
14 perspective to know that multiple trips are involved
15 for hospital evacuations?

16 A. Right.

17 Q. You would agree with me, wouldn't you,
18 that accuracy of hospital evacuation time estimates
19 is important?

20 A. Up to a point. Certainly, we want to
21 have a number that we believe is accurate. I don't
22 believe we care whether it is 12, 12.1, 11.93 or 12.,
23 you know, .5 or .7.

24 Q. Given that, you would agree with me
25 still, though, wouldn't you, that the usability of

1 the hospital evacuation time estimate by emergency
2 response personnel is important?

3 A. Yes.

4 Q. Do you know if LILCO's plan does
5 anything to inform LILCO's personnel of how
6 variations in assumptions in the hospital evacuation
7 time estimates may affect evacuation time or
8 protective action recommendations?

9 A. I don't believe there is anything of
10 that nature.

11 Q. You are familiar with the roles of the
12 hospital and ambulance coordinators in implementing
13 the LILCO hospital evacuation plan, aren't you?

14 A. My involvement is less with the plan
15 than with the accuracy of the time estimates. I am
16 not the one who actually reviews the details relative
17 to implementing the estimates.

18 Q. Do you know if in implementing the
19 hospital evacuation plan the coordinators would rely
20 on the manual computations that Mr. Lieberman
21 prepared or the computer model or both or none?

22 A. They are going to rely on the tables
23 that have been provided from the plan, so they are
24 not going to--those tables currently are based on the
25 manual calculations. It would not surprise me at all

1 that over time, as LILCO refines, updates and
2 modifies the plan--one of the reasons for
3 computerizing it is that they can then generate new
4 numbers under new situations more readily using a
5 computer model. That is the primary advantage.

6 But it is not my understanding, nor I
7 think if you look through the depositions--I think
8 Mr. Lieberman stated explicitly that the model would
9 not be used in the actual decision-making process.

10 Q. When you say the model, you mean the
11 computer model discussed in the rebuttal testimony of
12 Mr. Lieberman. Right?

13 A. Right.

14 Q. And when you say the tables, you mean
15 Table 13-B that appears in Appendix A of the LILCO
16 plan. Right?

17 A. I believe it is 13-A. 13-B are the
18 speeds used to calculate 13-A.

19 Q. Does table 13-A tell the emergency
20 response personnel how many vehicle trips will be
21 required?

22 A. Yes.

23 Q. What is the basis for your answer?

24 A. If you turn to page 4-181, for instance,
25 of table 13-A, you see vehicles for evacuation. And

18 1 this is the number of vehicles that will be used.
2 So, a vehicle trip is the number of vehicles that are
3 used.

4 MR. SISK: For the record, table 13-A
5 appears as part of attachment C. to LILCO's direct
6 testimony dated April 13, 1988.

7 Q. Could you look at table 13-A,
8 specifically page Roman 4-184. At the bottom,--well,
9 let me take that back. Look at the next page, Roman
10 numeral 4-185, where an entry for St. Charles
11 Hospital is located. Can you tell me from that
12 document, how would the LERO emergency response
13 personnel, specifically the hospital and ambulance
14 coordinators, know how many trips these ambulances,
15 ambulettes and buses make?

16 A. Well, for each facility, the number of
17 vehicles of each type, you sum up 22, 24 and 2, a
18 total of 48 vehicle trips.

19 I think your confusion--I guess not to
20 belabor this point--is--I am trying to answer your
21 question, okay, and I am answering it very
22 specifically. What you are getting at is which
23 vehicles. But the number of trips, which is the
24 question asked me, is the number of vehicles
25 identified to get those people out.

1 Q. So, you are saying that based on this
2 chart, the hospital and ambulance coordinators will
3 know that St. Charles Hospital will be evacuated in
4 48 trips?

5 A. Right.

6 Q. Do you know what the roles of the
7 hospital and ambulance coordinators are?

8 A. In a general sense, they are to assign
9 vehicles as they become available to the various
10 aspects of the evacuation.

11 Q. Does this document, page 4-185, show
12 those coordinators how to make those assignments?

13 A. Well, there is the plan, the OPIP goes
14 into some of those--some of those implementing
15 procedures. I think that is what the I.P. is.

16 Q. The hospital coordinator under OFIP
17 3.6.5 is supposed to assign evacuating patients
18 requiring ambulances to the closest reception
19 hospitals. You recall that, right?

20 A. Right.

21 Q. Are you aware that Eastern Long Island
22 Hospital is one of the reception hospitals closest to
23 Central Suffolk Hospital?

24 A. No. I don't recall that.

25 Q. Do you have Dr. Hartgen's testimony

1 there?

2 A. I have his testimony but I don't have
3 his attachments.

4 Q. Do you know if Eastern Long Island
5 Hospital is one of the closest reception hospitals to
6 Central Suffolk?

7 A. Not off the top of my head. No.

8 Q. Based on the IPIPs and the table 13-A
9 that you have before you and the other documents, how
10 would the hospital coordinator or ambulance
11 coordinator know that?

12 A. I presume, through his training.

13 Q. So, it is not evident from the plan
14 itself or the OPIPs, is it?

15 A. No. Like I said, my role has not been
16 in the implementing procedures but the reasonableness
17 and the appropriateness of the time estimate.

18 Q. Do you know how many patients LILCO
19 assigns to Eastern Long Island Hospital from Central
20 Suffolk Hospital?

21 A. Not off the top of my head. That number
22 could be found in the various documents.

23 Q. What various documents?

24 A. All the calculations that went into
25 computing these numbers.

1 Q. So, would the hospital or ambulance
2 coordinator need to consult those manual computations
3 in order to find out how many patients LILCO should
4 assign to Eastern Long Island Hospital from Central
5 Suffolk Hospital?

6 A. No.

7 Q. How would he know--how would he or she
8 know?

9 A. Through his--through his or her training
10 to implement the procedures, they would obviously
11 have to become familiar with all of the facilities
12 and where they are. I am not sure I--it is just
13 recollection. I believe that those may be listed in
14 order of distance away, but if they are not, then
15 again, through training or other means they could
16 become aware of which ones.

17 Again, there seems to be a focus on
18 believing that if and when an evacuation takes place,
19 that it has to exactly correspond to the analysis,
20 and that is highly unlikely. Circumstances change
21 over time. We are coming up with a number that we
22 believe is implementable.

23 Q. You referred to a list. What list are
24 you referring to?

25 A. I think there is a list in the OPIP of

1 the--there is a list somewhere of the reception
2 hospitals. I recall that list because one of the
3 hospitals is where I was born.

4 Q. What do you know about LILCO's training
5 program for hospital and ambulance coordinators?

6 A. Nothing.

7 MR. BACHMANN: I object to this line of
8 questioning. The witness has already stated that
9 this is not part of his testimony and I believe Mr.
10 Zahnleuter has gone far beyond the scope of direct
11 testimony.

12 JUDGE GLEASON: He's already answered.

13 Q. Dr. Urbanik, you recognize, don't you,
14 that LILCO's hospital evacuation time estimates are
15 based on a large number of--a large number of
16 assumptions. Right?

17 A. Yes.

18 Q. And you would agree with me, wouldn't
19 you, that as assumptions fail or fluctuate, LILCO's
20 hospital evacuation time estimates can also change?

21 A. Well, I would--you know, fail is--

22 Q. I said fail or fluctuate.

23 A. I want to take exception to the
24 connotation of fail. But certainly, the
25 numbers--there is no belief that the number that has

1 been generated is the exact time that it will take
2 place to do an evacuation. The expectation is it is
3 going to be quicker than that.

4 Q. And the expectation is that it is going
5 to be quicker?

6 A. Right.

7 Q. It could also be slower. Couldn't it?

8 A. Absolutely.

9 Q. You would agree with me, too, wouldn't
10 you, that if conditions such as traffic speed at the
11 time of an evacuation are not in accord with these
12 assumptions, that LILCO's hospital evacuation time
13 estimates could be inaccurate?

14 A. The times, under certain circumstances,
15 could be different. The most likely difference is
16 they could be shorter.

17 Q. The times of what? You mean--

18 A. The times to implement the plan. We
19 have got--every number that we put into the estimate
20 we try to make doable, and there is some likelihood
21 that some of the numbers could be exceeded, but there
22 is a higher likelihood that a bunch of the numbers
23 are going to be shorter. So, the net effect is
24 likely to be that the evacuation time is shorter.

25 There is time that was originally put in

1 for dosimetry and what is going on in each of these
2 centers as the subsequent trips are made. The
3 analysis has nothing built into it for a learning
4 curve, that the next time the guys go through the
5 system that they are not a little smarter than the
6 first time they went through the system. We just
7 assume that each trip, they are doing it again for
8 the first time.

9 So, there are lots and lots of
10 assumptions and in reality, yes, each one of them are
11 going to vary. In net, it is my expectation that the
12 times will, in aggregate, turn out to be less. But
13 that is some of the individual components may in fact
14 be higher.

15 Q. You said earlier the assumptions as to
16 numbers that go into the evacuation time estimates
17 are uncertain or highly variable. What makes you so
18 certain now that it is more likely that the time
19 estimates will be lower?

20 A. Because no one has offered any data,
21 evidence, to indicate that any of the numbers are in
22 fact out of bounds. The numbers have been subjected
23 to intense scrutiny, and the only basis for numbers
24 that are larger are speculation. No one has been
25 able to offer hard data to refute the numbers. The

1 numbers are fundamentally doable numbers.

2 Q. Until an evacuation occurs, all of the
3 numbers are speculative, aren't they, Dr. Urbanik?

4 A. Speculative in the sense that we have no
5 reason to believe that that number is exactly right.
6 But not speculative in the sense that we have a high
7 expectation that if we conducted this accident
8 scenario on multiple occasions-- if we did it 10
9 times, I think we would expect that, on average, the
10 time would be less. But on any one time it could, in
11 all possibility, be larger.

12 Q. Thank you.

13 No other questions.

14 JUDGE GLEASON: Mr. Ross?

15 CROSS-EXAMINATION

16 BY MR. ROSS:

17 Q. Good morning, Dr. Urbanik.

18 A. Good morning.

19 Q. There is a high level of uncertainty
20 associated with special facility ETE's, is there not?

21 A. You are asking for, obviously, a
22 qualitative answer. Yes, there is a lot of
23 uncertainty in the various aspects that go into the
24 analysis, but there is not, in my estimation, a lot
25 of uncertainty to suggest that the estimates are

1 woefully inadequate in their times. I believe, in my
2 estimation, that given all the numbers, the
3 uncertainty that goes into it, that the number errs
4 on the side of being longer than doable.

5 Q. Can you define error band?

6 A. I am not a statistician. I would hate
7 to get myself in trouble by giving a
8 nontechnically-correct answer.

9 Q. I believe you stated in your deposition
10 that the error band for special facility ETE's was
11 significantly larger than for general population
12 ETE's. Do you recall making that statement?

13 A. I don't recall it specifically, but I
14 would not take exception to that.

15 Q. So, you agree with that statement?

16 A. Yes. There is too many additional
17 assumptions in the special population numbers
18 relative to the number of assumptions in the general
19 population to believe that it has the same level of
20 accuracy.

21 Q. When you say that you agree with that
22 statement, could you then define what you have in
23 mind by error band?

24 A. What I have in mind is the fact that we
25 don't have any reason to believe that the number that

1 we are estimating is the number that will occur when
2 or if an order to evacuate was given. Given all of
3 that, the range of the estimate, what we might expect
4 to happen, how much higher or lower we would expect
5 is going to be larger for special facilities.

6 In that sense, it is my judgment that
7 the number actually, probably, overestimates the time
8 more so than one would expect from a general
9 population estimate.

10 Q. You stated in your testimony that the
11 speeds that are estimated can't be estimated with any
12 certainty, did you not?

13 A. Right. There is a...

14 Getting back to the issue of average
15 speed versus specific speed at a given time point--

16 Q. Dr. Urbanik, I think that answers the
17 question. Perhaps your counsel would like to give
18 you an opportunity to discuss that further.

19 When you say that the speeds can't be
20 estimated with any degree of certainty, are you
21 referring to speeds, to use your phrase from earlier,
22 speeds over a period of time and space?

23 A. Right. The analysis is based
24 on--assumes speeds on very specific subsegments of
25 the roadway and at any given time and place in an

1 evacuation, it is likely that the speeds could vary
2 quite significantly.

3 Q. I don't think that responds to my
4 question. My question is this: When you say that
5 speeds can't be estimated with any degree of
6 certainty, are you saying speeds with respect to a
7 period in time and space cannot be estimated with any
8 degree of certainty?

9 A. I guess you have to be more specific.

10 JUDGE SHON: Mr. Ross, if I could, I
11 think the question that is intended here is, do you
12 mean to say that average speeds, averaged over
13 appreciable periods of time and distances, cannot be
14 estimated with accuracy? These are the speeds that
15 actually go into the calculation, and I think he
16 means to ask whether an average speed, an average
17 speed over a time long enough so that it can be said
18 to persist, can be estimated with accuracy. Is that
19 correct?

20 MR. ROSS: Thank you, Judge Shon.

21 A. Thank you for the clarification. The
22 answer to that question is yes, they cannot be
23 estimated with any certainty. The qualification to
24 that is, we, therefore, pick speeds that would be on
25 the lower edge of what we can expect to accomplish to

1 account for that uncertainty. The assumption of 15
2 miles an hour on Long Island Expressway, in my
3 estimation, is on the very low side of what could be
4 sustained over time and space. So, yes, there is a
5 large range of what could be expected to happen. I
6 would expect it to be in the 20 to 30 miles an hour
7 range.

8 Q. Dr. Urbanik, I believe you said you have
9 reviewed the rebuttal testimony of Mr. Lieberman?

10 A. Yes.

11 Q. And you stated earlier that you have
12 scanned through the inputs and outputs which were
13 submitted this week in connection with that rebuttal
14 testimony?

15 A. Yes, sir.

16 Q. Is it your opinion that that computer
17 model conforms to the methodology of NUREG 0654?

18 A. Yes. It would comply to that.

19 Q. And the guidance that you have in mind
20 in making that answer is the guidance you pointed to
21 earlier, that is we discussed pages 4-3 and 4-9?

22 A. Right.

23 Q. I assume, Dr. Urbanik, that you haven't
24 performed any independent review of those inputs and
25 outputs.

1 A. Yes. I believe I stated that
2 previously.

3 Q. And with respect to your knowledge of
4 the accuracy or reliability of these calculations,
5 you don't know if the calculations are correct, do
6 you?

7 A. I don't know what your definition of
8 "correct" is. I think they are the best estimates,
9 most comprehensive, most extensive estimates of this
10 phenomenon that I have seen. This has been taken
11 beyond what anyone has done elsewhere. I think we in
12 this case have done our absolute level best to come
13 up with a number. And it is still subject to
14 extensive variation.

15 Q. Notwithstanding all of that, that number
16 was derived through a series of calculations, of
17 additions, subtractions, of computing various lengths
18 and speeds the traffic will be traveling for those
19 lengths, was it not?

20 A. Yes.

21 Q. And you haven't reviewed those
22 calculations yourself, have you?

23 A. No, I haven't. But--

24 Q. And you don't know if the hospitals used
25 in that analysis are in fact even open and,

1 therefore, available, do you?

2 A. I don't have personal knowledge of the
3 exact state of all the hospitals. That's correct.

4 Q. And you don't know about the distances
5 used in this analysis, that is, whether they were
6 correctly measured, do you?

7 A. Again, correctness is a matter of
8 interpretation. I have seen everything that has been
9 done by Dr. Hartgen relative to what Mr. Lieberman
10 has done, and based on what Dr. Hartgen has done, he
11 has not illuminated any significant errors in those
12 numbers or calculations. So, I--my position is that
13 I can speak to the fact that those numbers have been
14 well established.

15 Q. Perhaps you didn't understand my
16 question. With respect to, say, the distances
17 between the hospitals and Brentwood, do you know the
18 manner by which Mr. Lieberman computed that distance?

19 A. Yes. They were computed off of maps,
20 using, unfortunately the term that has been bandied
21 around in the discussions is planimeter, which is
22 incorrect. It is a little measuring wheel that
23 measures the distance. Essentially, you roll this
24 little wheel along. It has a little dial on it and
25 you get numbers.

1 Q. Do you know the margin for error
2 introduced by that as opposed to actually measuring
3 that on the road?

4 A. Not significant relative to the error
5 range in the analysis. It is, in my estimation, a
6 very reasonable way to do it. It would be the way
7 that I would probably do it if I were to do the job.

8 Q. In your review of the Lieberman rebuttal
9 testimony, specifically of the inputs and outputs,
10 did you uncover any errors?

11 A. No, I didn't. And I don't believe that
12 there are any significant errors that have been
13 identified. So, given that they haven't been
14 identified, the fact that I didn't find any, I guess,
15 is not surprising.

16 Q. So, you are not aware whether or not
17 that analysis neglected to include certain evacuation
18 trips or portions thereof?

19 A. There are a series of very minor errors
20 throughout this entire process. We are talking--

21 Q. Dr. Urbanik, that isn't responsive to my
22 question. My question concerns your review of the
23 rebuttal testimony and those work sheets. I asked
24 you earlier, did you uncover any errors in those
25 sheets? I believe your response--

1 A. I believe I answered the question and
2 was trying to put it in perspective of what--what it
3 is that is my role in this process of reviewing, not
4 computing the numbers. We seem to--I want to make
5 sure that you understand in what relative range I am
6 talking about errors.

7 There have been, certainly,
8 computational errors of very insignificant proportion
9 made in a very extensive process.

10 Q. With respect to your review of the
11 rebuttal testimony, you said that there are certainly
12 computational errors. Which errors are you referring
13 to?

14 A. Well, the rebuttal testimony points a
15 number of them out. I guess I would have to read
16 through it to see, to give you a specific citation.
17 But errors in, I believe, some of the distances are
18 brought forth.

19 Q. And you aren't personally aware of any
20 errors beyond the ones that Dr. Hartgen has pointed
21 out?

22 A. No, I am not.

23 MR. ROSS: Thank you, Dr. Urbanik.

24 MR. ZAHNLEUTER: Excuse me, Judge

25 Gleason. I inadvertently neglected to--

1 JUDGE GLEASON: I was going to ask you,
2 do you want to move your exhibits in?

3 MR. ZAHNLEUTER: Yes. New York State
4 Exhibits 1, 2 and 3 I would like to offer into
5 evidence.

6 JUDGE GLEASON: Is there objection?

7 Hearing ne, New York State ETE
8 Exhibits 1, 2 and 3 will be admitted in evidence.

9 (New York State ETE Exhibits 1, 2
10 and 3 were received in evidence.)

11 JUDGE GLEASON: Mr. Sisk, do you have
12 cross-examination?

13 MR. SISK: Only a couple of questions.

14 JUDGE GLEASON: I want to say a warning.
15 We don't allow any sweetheart type of
16 cross-examination.

17 MR. SISK: I hope I will be able to
18 avoid that.

19 JUDGE GLEASON: I hope it is brief.

20 Proceed.

21 CROSS-EXAMINATION

22 BY MR. SISK:

23 Q. Dr. Urbanik, I will ask you to refer
24 back to the State's Exhibit 1, which is Table 13-B of
25 the LILCO plan. Have you found that document?

1 A. I have at least found a copy of it,
2 assuming there aren't different versions. I am not
3 sure which of this paper pile is the exhibit that was
4 handed me.

5 Q. It is a table that says "Table 13-B" and
6 Roman numerals at the top. It has "Travel speeds
7 with calculation of special facility and school
8 evacuation time estimates."

9 A. Right.

10 Q. Mr. Zahnleuter asked you a number of
11 questions about differences in speed east of
12 Brentwood and west of Brentwood. Do you recall that?

13 A. Yes.

14 Q. I would ask you to look at an example
15 that Mr. Zahnleuter questioned you on, which was,
16 looking first in the top portion of that page to
17 eastbound travel west of Brentwood, Route I495, Mr.
18 Zahnleuter pointed you to a normal weather speed of
19 40 miles an hour. Mr. Zahnleuter then compared that
20 with the next bracket down, eastbound travel east of
21 Brentwood, on the left-hand side, Route I495, 20
22 miles an hour. Do you recall that?

23 A. Yes.

24 Q. Dr. Urbanik, I am going to ask you to
25 look at the next column, which says "prior to" and

1 the label "six hours." Do you know what that column
2 stands for?

3 A. Yes. That is in reference to the
4 evacuation time, I believe, for the general
5 population.

6 Q. Do you know what the six hours
7 represents?

8 A. I'd have to--I'd have to have a copy of
9 the ETE study to be sure, but I believe it is the
10 under-normal-weather evacuation time.

11 Q. Do you see the next column that says
12 "speed afterward" in that same line on I495?

13 A. Let--I am going to have to be careful
14 here, without having all the documents in front of
15 me. But my sense of what I overlooked in looking at
16 the question is speed is after some point in the
17 evacuation, so the 40 miles an hour is in fact
18 consistent with the 40 miles an hour of eastbound
19 traffic. So, we have--again, we have time and space
20 kinds of issues here. At what point in time and
21 space are we comparing the numbers?

22 Now I see why I didn't offer a plausible
23 explanation for the number because I became confused
24 at the table.

25 Q. Dr. Urbanik, I have only one other

1 question. You provided an answer in which you said
2 that the level of analysis of hospital evacuation
3 time estimates for Shoreham was--I don't know if
4 these are the correct words. Correct me if I am
5 wrong--was more extensive than elsewhere. I just
6 want to know what you mean by "elsewhere."

7 A. At other nuclear power plants around the
8 United States.

9 MR. SISK: That is all I have.

10 JUDGE GLEASON: Mr. Bachmann?

11 REDIRECT-EXAMINATION

12 BY MR. BACHMANN:

13 Q. I would like to refer you to New York
14 State Exhibit 3, the Section J of the NUREG 0654
15 That would be page 64. I believe that is J10L.

16 Mr. Zahnleuter asked you questions
17 during cross-examination on the time motion study
18 parenthetical in that particular subsection. It
19 appeared that perhaps there was some confusion
20 between the statements you made earlier about time
21 motion study being doable and what it says here.
22 Could you explain what appears to be maybe a
23 discrepancy?

24 A. Yes. The--I was involved in the draft
25 of Appendix 4 and--but I was not involved in the

1 review of this particular chart which implements
2 Appendix 4. In some of the earlier draft material,
3 there were a lot of things that were put into the
4 document by some others that really couldn't be--you
5 know, sounded good but were very difficult if not
6 impossible to implement because there was no data to
7 do that. So, Appendix 4 was revised to its final
8 form and took some things out.

9 I think there was at one point some
10 reference to time and motion studies in the draft
11 material of Appendix 4, but I believe that really the
12 checklist is supposed to implement the appendix. And
13 in fact there is language there that really refers to
14 things that largely don't exist. There is no
15 reference, I don't believe, to time and motion
16 studies in Appendix 4. There is some reference to
17 dynamic--dynamic analysis, which is just referring to
18 the fact that you have the option--not the
19 requirement, the option to use time distributions, to
20 use--not time. Probability distributions for some of
21 the variables on the study.

22 MR. BACHMANN: I have no further
23 redirect.

24 JUDGE GLEASON: Did you want to follow
25 that question up?

1 MR. ZAHNLEUTER: Yes, please.

2 CROSS-EXAMINATION

3 BY MR. ZAHNLEUTER:

4 Q. Is it your testimony, Dr. Urbanik, that
5 Section J10L in NUREG 0654 is optional?

6 A. Optional would be, obviously, not
7 correct. What I am saying is that you have to do
8 time estimates, and this is a summary of some of the
9 aspects of time estimates. And if you then look
10 back--this is just a checklist to implement Appendix
11 A. This is not the guidance. This is the checklist.
12 I am saying that there is a little bit of
13 inconsistency in the wording of the checklist versus
14 Appendix 4, and that the guiding--the appropriate
15 guidance for doing a process is Appendix 4. To the
16 extent that this statement has some connotations to
17 it, I think it is inappropriate to say that this
18 evaluation criteria, which is a checklist, in fact
19 supersedes or conveys more information than what is
20 in Appendix 4.

21 If you read Appendix 4 methodology, it
22 tells you there are two approaches that are
23 acceptable, and it doesn't use, in the same sense,
24 the dynamic analysis idea because the words "dynamic
25 analysis" were taken out of the final writing of

1 Appendix 4 and it just talks about distribution
2 functions and things like that, which are part of
3 what would be a more dynamic type of analysis.

4 Q. You are testifying today in your
5 capacity as a consultant for the NRC staff, right?

6 A. Yes, sir.

7 MR. BACHMANN: Objection. Beyond the
8 scope of the redirect examination.

9 JUDGE GLEASON: It is not going to shake
10 the world--everybody knows--

11 Q. You have not been vested with any
12 authority by the NRC or FEMA to revise or appeal
13 NUREG provisions, have you?

14 A. No, sir. But I sure did help write
15 them.

16 MR. ZAHNLEUTER: Thank you. No other
17 questions.

18 JUDGE GLEASON: All right.

19 MR. ROSS: I have one brief question, if
20 I may.

21 JUDGE GLEASON: Please.

22 CROSS-EXAMINATION

23 BY MR. ROSS:

24 Q. Dr. Urbanik, has anyone at the NRC told
25 you that Appendix 4 in any manner supersedes

1 criterion J10L?

2 A. Well, I don't think there is anybody at
3 the NRC that could say that. The NRC has wholly
4 relied on me as their consultant since January of
5 1980 to answer any and all questions regarding
6 evacuation time estimates. I am their authority on
7 these matters. They have no expertise in the
8 subject.

9 Q. Is it your testimony that Appendix 4 in
10 some manner supersedes criteria J10L.

11 A. I am saying it doesn't supersede it. It
12 implements it.

13 MR. ROSS: Thank you, Dr. Urbanik.

14 JUDGE GLEASON: Judge Shon?

15 Excuse me.

16 THE WITNESS: It says that. Right in
17 the statement it says--read the last line. It says
18 "See Appendix 4."

19 EXAMINATION BY JUDGE SHON:

20 Q. Dr. Urbanik, I have a couple of,
21 perhaps, detail questions.

22 Earlier on, Mr. Zahnleuter asked you
23 whether Dr. Lieberman's new approach, the
24 computerized spread sheet thing, represented an
25 unwarranted exercise in precision. And you said that

1 in your opinion as an engineer it probably was more
2 precise than its cost would justify under the
3 circumstances, or something like that, didn't you?

4 A. Yes. But I was addressing--you know,
5 the larger issue, going through the calculations one
6 more time to get one more answer with some additional
7 precision. The procedure that he uses is only
8 implementing what he had done previously.

9 Q. What I wanted to ask you about is
10 whether the exercise might not have been worthwhile
11 from a totally different standpoint, not the
12 standpoint of getting an extra decimal place but the
13 standpoint of doing what a spread sheet calculation
14 does very well, which is permit you to play around
15 with the independent variables and see their effect
16 on the dependent variables? This is the kind of
17 thing he has here. He has something that is much
18 more efficient at doing that than a hand calculation,
19 does he not?

20 A. Yes, sir.

21 Q. Now, the name of the game in this whole
22 thing is that you and Dr. Lieberman and Dr. Hartgen
23 all believe that you can guess independent variables,
24 such as average highway speeds and total number of
25 people in a hospital and distances from one place to

1 another, better than you can guess the total
2 dependent variable of how long it takes to get the
3 people out? Is that right? You guess the ones you
4 think you have a handle on, you make a calculation
5 and you see how it comes out. Is that it?

6 A. I believe that's what the process does,
7 yes.

8 Q. So then it would be very useful to know
9 not whether it is 12 hours or 12.1 hours but whether,
10 when you change the speed somewhere by 5 miles an
11 hour, that 12 hours goes up to 18 hours or something.
12 That would be a useful thing to know, wouldn't it?

13 A. Yes. But I need to qualify that in the
14 extent of if we have no basis to answer the question
15 any better, then we don't really have a lot that we
16 can use. It answers the question is there a lot of
17 uncertainty in a number, and I think we knew that
18 going into the process. So all that does is quantify
19 what we suspected or what we believed when we
20 started, that we have a number that is the best that
21 we can come up with, but we don't know that it is
22 exactly right.

23 So, we then go through the process, and
24 it is a--a sensitivity analysis is very good for
25 that. I think it is certainly a good thing to do. I

1 tried to qualify my answer by saying that I didn't
2 think it shouldn't be done. But I think we are--if
3 we are not going to go back and then try to come up
4 with better numbers, what have we really--what have
5 we really accomplished in all this? We have
6 essentially quantified what we knew going in, that we
7 have an estimate with a high level of uncertainty.

8 Q. Well, now, what I wanted to ask, as a
9 sort of a final question in this series, is, assuming
10 that differences like 10 percent aren't of interest
11 but differences like 50 percent are in the final time
12 estimate, or would be to the people that make the
13 decisions, given the kind of sensitivity studies we
14 have seen done by both Dr. Hartgen and Mr. Lieberman
15 and given your personal experience in the accuracy of
16 such things as the measurement of distances off maps,
17 the estimate of speeds at various conditions on
18 highways and so on--your personal experience
19 there--do you feel that the estimates that we see now
20 are reasonably accurate--that is, they are 10 percent
21 estimates, not 50 percent estimates?

22 A. I hadn't thought of it quite that way,
23 but now that you bring it out in that context, I
24 think the analysis does, in my opinion, answer that
25 question, that we are not as far off as we

1 probably--that I would have expected. I think the
2 numbers that generally tend to get much higher are
3 based on what I would consider probably overly
4 speculative in the direction of being not reasonable,
5 like assuming the Long Island Expressway is doing 10
6 miles an hour. I think we have already assumed a
7 number that is very low for the Long Island
8 Expressway.

9 Q. Thank you. That is all I have.

10 JUDGE GLEASON: Judge Kline?

11 EXAMINATION BY JUDGE KLINE:

12 Q. I want to address the question of error
13 uncertainty as well. I think you earlier
14 characterized these models as deterministic models,
15 not probablistic models.

16 When engineers deal with deterministic
17 models, is it not acceptable engineering practice to
18 attempt to estimate uncertainty through the use of
19 sensitivity analysis?

20 (Pause.)

5
21 Q. I am not asking whether you agree or
22 disagree with the bounds actually chosen. I just
23 wonder if it is acceptable engineering practice to
24 take that approach.

25 A. Yes, it is. And I have argued for doing

1 that in the ETE process in general.

2 Q. Thank you.

3 MR. SISK: Judge Gleason, as soon as we
4 are finished with this testimony, we do have a couple
5 of matters of scheduling to discuss.

6 JUDGE GLEASON: Did you want to proffer
7 any additional testimony?

8 MR. BACHMANN: No, sir.

9 JUDGE GLEASON: Dr. Urbanik, we
10 appreciate your testimony. Thank you. You are
11 excused.

12 Mr. Sisk?

13 MR. SISK: Judge Gleason, we have had
14 some discussions during the break concerning the
15 scheduling of the hearings next week. I will let Mr.
16 McMurray, I suppose, address that first since he
17 initially raised it.

18 MR. McMURRAY: Given the fact that the
19 surrebuttal testimony was admitted today and the fact
20 that I think both the rebuttal and surrebuttal
21 testimony have sharply focused the issues and given
22 also the fact I have been able to at least begin
23 preliminarily to look at the scope of the
24 cross-examination of Mr. Lieberman for next week, I
25 don't think that we need a day-and-a-half for Mr.

1 Lieberman. As a matter of fact, I think that his
2 cross-examination and probably even redirect can be
3 done in half a day. I would propose that we begin
4 the hearings on Thursday morning. Otherwise, if we
5 start on Wednesday morning, I think we are going to
6 have a big chunk of dead time on Wednesday and
7 Thursday morning as well because the next panel that
8 is scheduled to come up is the Suffolk County role
9 conflict panel, which is scheduled for Thursday
10 afternoon. I am fully confident that we can get Mr.
11 Lieberman up and down Thursday morning. I have
12 spoken with Mr. Sisk about it.

13 The other witness involved is Ms.
14 Dreikorn. She doesn't have much participation in the
15 testimony. There may be a problem with bringing her
16 here on Thursday. Mr. Sisk said he would make a good
17 faith effort to bring her here if only for a short
18 time, first to swear her in, get her direct testimony
19 in, ask her a few questions and let her go. Even if
20 she weren't able to make it, I think we would just
21 stipulate to the authenticity of her testimony.

22 JUDGE GLEASON: I see. There was a
23 question raised last week as to her availability.

24 MR. SISK: That question remains and I
25 will endeavor to get Ms. Dreikorn here for at least a

1 half hour or so.

2 JUDGE GLEASON: As long as they have
3 agreed to a stipulation, we have no problems.

4 How does that strike you, to start on
5 Thursday rather than Wednesday?

6 MR. BACHMANN: The staff has no problems
7 with that.

8 MR. ZAHNLEUTER: It is acceptable to the
9 State.

10 JUDGE GLEASON: I'm sorry, Mr.
11 Zahnleuter. I just assume somehow Mr. McMurray
12 speaks for both.

13 MR. ZAHNLEUTER: He doesn't.

14 JUDGE GLEASON: It is fine with the--

15 MS. YOUNG: Judge Gleason, one other
16 matter.

17 JUDGE GLEASON: Well, let's finish one
18 matter at a time. Do you have something on this
19 matter?

20 MS. YOUNG: No.

21 JUDGE GLEASON: Then the parties on the
22 Board and the Board will agree to meet together next
23 at 9 o'clock next Thursday.

24 Yes?

25 MS. YOUNG: During the last break I

1 spoke with Bill Cumming, the FEMA attorney. He gave
2 me his qualified assurance that the exercise will be
3 conducted the 7th through 9th, barring some
4 unforeseen event.

5 JUDGE GLEASON: Did he give you any
6 additional information?

7 MS. YOUNG: No. Nothing more than that.

8 JUDGE GLEASON: Did you ask him any
9 additional information?

10 MS. YOUNG: I asked him whether the
11 evaluation period will be impacted and he said he
12 couldn't tell me.

13 MS. YOUNG: That is the \$64,000
14 question.

15 MS. YOUNG: Right.

16 JUDGE GLEASON: I hope you pursue that.

17 MS. YOUNG: Certainly. I understand
18 that counsel for licensee requested at the May 10th
19 pre-hearing conference to be given a two-week period
20 following--

21 JUDGE GLEASON: Go ahead, Mr. Sisk.

22 MR. SISK: Judge Gleason, we have had
23 some very material developments in the discovery in
24 the realism case within the past couple of days. Mr.
25 Irwin has been sorting through some significant

1 documents we have received and we would like to
2 address that because it does impact scheduling of the
3 realism testimony. I would like for Mr. Irwin to do
4 that.

5 MR. IRWIN: Let me address the overall
6 schedule for approaching the hearing on
7 realism-related issues. I have seen the Board's
8 order yesterday and as the Board knows, LILCO wants
9 to bring on the realism issues as fast as possible.
10 We also intended to limit our area of inquiry before
11 trial to the interface aspects as the Board had
12 suggested.

13 As the Board will recall, on May 10th at
14 the pre-hearing conference, Suffolk County and New
15 York State were ordered to provide LILCO forthwith,
16 with all outstanding interrogatory answers and to
17 turn over all plans for New York State and political
18 subdivisions for nuclear power plants, as well as to
19 make Messrs. Halpin and Dr. Axelrod available for
20 deposition. Certain other matters were held in
21 reserve and they were dealt with as to other
22 depositions in the Board's order yesterday.

23 We did not receive any substantive
24 communication from either County or State despite
25 repeated letters and telephone calls until, in the

1 State's case, the afternoon of the day before
2 yesterday and, in the case of the County, yesterday
3 morning. That means that as to interrogatory
4 answers, the interrogatories have been received
5 initially by the County as of the date of the
6 pre-hearing conference. The County and State would
7 be overdue under the regulations to respond. As to
8 document production, it would not be technically
9 overdue but the document inventory was known.

10 What we received yesterday from the
11 County is this document. It is, depending on how one
12 looks at it, entitled "County of Suffolk Disaster
13 Preparedness Plan" or "County of Suffolk Emergency
14 Operations Plan." It is a document of which we have
15 seen from time to time smatterings over the past five
16 years. It was prepared initially in '79. It has
17 been updated from time to time through at least the
18 summer of 1985. It is an integrated document, parts
19 of which were written by the State. It includes at
20 least 15 annexes which proceed agency by agency
21 through the County government. It relates to all
22 types of emergencies, peace time, war time, natural,
23 man-made. It encompasses radiologic incidents. It
24 mentions Shoreham, it mentions LILCO. It is that
25 specifically drafted so as to focus specifically on

1 Shoreham but it is clear that its structures and
2 umbrella and framework for dealing with emergencies
3 through the County government.

4 The annexes start in each case with a
5 statement of admission of the agency. They include
6 procedures, they include rosters, telephone numbers,
7 addresses. They include lines of succession of
8 responsible officers. They include capability
9 inventories. It is a most illuminating document.

10 Why we had never received it before I
11 don't know. We are going through five years of
12 interrogatories, five years of deposition transcripts
13 to see if maybe we just didn't quite ask the right
14 question. This document, I am afraid, will impact to
15 some extent on our ability to bring to a conclusion
16 our preparation for hearing. I am happy to say that
17 the first glimmerings of inquiry into it confirm our
18 belief that a successful interface with a county that
19 is capable of this type of planning is readily
20 accomplishable. There are, however, numerous
21 respects in which the details of the County's
22 planning differ from what we had had to surmise from
23 the blind. In those details, we may wish to sharpen
24 our focus.

25 The document makes clear that the

1 deposition requests which we have made are well
2 founded, that we need to talk again to the county
3 executive, we need to talk to the director of
4 emergency preparedness, need to talk to the director
5 of health, need to talk some more with the police.
6 We may need to talk, in addition, to some other
7 people, including communications experts because the
8 County has broader and more competent communications
9 than we had imagined. We will be promptly and
10 continuously in touch with the Board in this regard.

11 Our first inquiry to the County is
12 obviously going to be, is this document--in effect,
13 how do you use it? We don't know that. But if it is
14 authentic, it will have a material impact. But I
15 don't want it to produce material delay. What we
16 need is the cooperation of the County and State in
17 helping us to understand the document.

18 As a preliminary matter, to come back to
19 the framework we started in place on May 10th, we
20 would request the Board to assist us in this respect.
21 We need the answers to our outstanding
22 interrogatories. They are technically overdue. We
23 would like to have interrogatories answered by the
24 close of business Tuesday. They have been
25 outstanding for months in most cases.

1 Secondly, communications and writings
2 from the lawyers of the County and State indicate
3 they are continuing their document searches. We
4 would like the remainder of those documents to be
5 tendered or at least an estimate of when the document
6 searches will be complete, by the close of business
7 next Tuesday, May 31st.

8 Third, we have not received any
9 available dates for depositions despite our repeated
10 requests. We would like available dates to be
11 tendered to us by the close of business next Friday,
12 June 3rd, or sooner if possible.

13 JUDGE GLEASON: Excuse me. What was the
14 last question again?

15 MR. IRWIN: Available dates for
16 depositions, Judge Gleason.

17 JUDGE GLEASON: Available dates by next
18 Friday?

19 MR. IRWIN: Yes. Sooner if possible.
20 In other words, we don't--

21 JUDGE GLEASON: Just so I understand it,
22 you would like to be advised by the State and the
23 County by next Friday at what time those two
24 individuals and all the other individuals will be
25 available for depositions?

1 MR. IRWIN: Yes, sir. We need the
2 Board's help in getting these matters.

3 At that point we will be in a much
4 better position to assess just how long it will take
5 us to finish our focus. As I say, we have, frankly,
6 greater confidence that an interface can work than we
7 had four hours ago, but we need to know more.

8 In the meantime, as to proceeding with
9 further resolution of matters in June, I suspect that
10 it may be that we can try the EBS issues before we
11 finish our focus on the realism interface. We expect
12 to be in discussions with attorneys for the County
13 and State on this over the weekend and beginning of
14 the week. Since we have one more day before hearings
15 start, I expect we can resolve some things on EBS.

16 That is my report. I ask, as I say,
17 that the Board order the County and State to provide
18 interrogatory answers and finish their document
19 production, to give us available dates for
20 depositions so that we are not unduly delayed in
21 bringing the realism issue on.

22 JUDGE GLEASON: Mr. Irwin, you haven't
23 given us a date when we get to hearings on this
24 issue.

25 MR. IRWIN: Judge Gleason, I wish I

1 could specify. I think it is going to depend to some
2 extent on what we learn further from the County and
3 State. They may say this is an interesting but
4 totally historical document but has no effect any
5 more, the County. My instinct is that the LERO
6 personnel who are experts on this matter will need at
7 least a couple of weeks after the exercise to finish
8 their resolution of matters with FEMA. I am still
9 talking with them about it. The reason I mentioned
10 the EBS issues is that I suspect they will be
11 amenable to trial perhaps as early as June 13th, when
12 the Board indicated a desire to come back to hearing,
13 but at least by June 20th.

14 JUDGE SHON: In light of your letter of
15 last week, do we have a clear definition of what the
16 EBS issues are?

17 MR. IRWIN: I believe that--and I have
18 not had a chance to read Mr. Christman's remarks
19 yesterday--

20 JUDGE GLEASON: I think you really ought
21 to read those before you make any comment on EBS
22 because there was dialogue.

23 MR. IRWIN: I understand that, Judge
24 Gleason. I didn't get the transcript until about an
25 hour ago.

1 I believe that the initiative for
2 submission of further issues beyond that which is in
3 the record is up to other parties to raise at this
4 point, but perhaps I had better reserve.

5 JUDGE GLEASON: You better hold off.
6 Let's let the EBS stay out of this for a moment.

7 MR. IRWIN: The one thing that is going
8 to complicate giving the Board a precise estimate on
9 realism issues is that I am quite confident that in
10 light of this, LILCO will need to make at least some
11 adjustments in its realism interface testimony. I
12 don't think we will have to restructure anything
13 fundamental, but there will clearly be adjustments in
14 detail.

15 JUDGE GLEASON: Excuse me. Would you
16 say the last comment again, please?

17 MR. IRWIN: Yes, sir. If the document
18 that we received yesterday is accurate, we will need
19 to at least make some adjustments in detail in
20 LILCO's interface procedure.

21 JUDGE GLEASON: I understand that. What
22 is the date of the document?

23 MR. IRWIN: The date of the document
24 itself is initially 1979. It has various updated
25 annexes which have been prepared as late as, I

1 believe, July 1985. It contains no notations later
2 than that.

3 JUDGE GLEASON: The title of it?

4 MR. IRWIN: It does not have a formal
5 cover. It is referred to in letter from counsel for
6 the County as being "County of Suffolk Emergency
7 Operations Planning," one of whose annexes is
8 entitled "County of Suffolk Disaster Preparedness
9 Plan."

10 JUDGE GLEASON: Mr. McMurray, can you
11 identify that document?

12 MR. McMURRAY: No. I don't know that
13 document. Discovery matters are being handled by
14 another attorney down in Washington and so I don't
15 know anything about that document. I don't know
16 whether it is as material as Mr. Irwin says, whether
17 its impact is quite as dramatic as he says. I really
18 know nothing about it, but I do have these comments.

19 JUDGE GLEASON: Excuse me. Who is the
20 other attorney handling the discovery phase?

21 MR. McMURRAY: I think Mr. Lanpher
22 probably would be the one who would know more about
23 this document. I think it was his cover letter.

24 MR. IRWIN: That is correct.

25 MR. SISK: Mr. Lanpher and I have been

1 dealing directly with each other on these discovery
2 matters.

3 MR. McMURRAY: I have been in trial and
4 haven't had a chance to--

5 JUDGE GLEASON: Go ahead.

6 MR. McMURRAY: I really can't speak to
7 the document or its impact on the hearings. Mr.
8 Irwin has suggested that interrogatories be filed by
9 Tuesday. We are endeavoring to finish up responses
10 to interrogatories. I don't think we can meet
11 Tuesday. We are endeavoring to file them next week,
12 however. I think we can safely say that, I think,
13 they will be filed by the end of next week.
14 Certainly, we will be in a position next week to give
15 an estimate of when documents, any further documents
16 that are responsive, will be provided.

17 I also understand that there is
18 correspondence that has been sent to Mr. Irwin, and I
19 don't know why he isn't aware of it, proposing some
20 sort of date for Mr. Halpin, a date or a range of
21 dates. I don't know the text of the letter but I do
22 know that there has been some communication. I think
23 it has been in the form of a letter. Maybe there
24 just hasn't been communication between Mr. Irwin and
25 his office. I don't know what the text of it is, but

1 Mr. Halpin is being offered for deposition.

2 JUDGE GLEASON: What about the other
3 witnesses, the other--

4 MR. McMURRAY: I am not quite sure which
5 other witnesses LILCO wants. There were a number
6 that were initially noticed, and I am not sure
7 whether they now want all those witnesses or just a
8 subset of those witnesses. Tell us and we will get
9 back to them with dates.

10 MR. SISK: We can deal with that, Judge
11 Gleason. We do want all the witnesses we have
12 noticed. And based on these documents we may have an
13 additional witness or two we may need to identify and
14 notice.

15 If it will assist the Board any, I have
16 been conducting a number of these depositions and
17 based on the documents I have seen in the past few
18 days and the questions I had planned and was unable
19 to get to in the previous depositions, and the
20 depositions we simply didn't get, such as Mr. Regan,
21 the head of the division of emergency preparedness
22 for the County, I believe we have a solid, hard two
23 weeks' worth of depositions to conduct.

24 MR. IRWIN: Let me add, I have not been
25 in my office since yesterday afternoon, but as of the

1 time I left I had not received a letter from Mr.
2 Lanpher. It is possible it arrived this morning.

3 MR. McMURRAY: Judge Gleason, I haven't
4 finished my comments yet.

5 JUDGE GLEASON: I understand.

6 MR. McMURRAY: Two other points: I
7 think that this does raise two scheduling matters
8 that we should consider. One, yesterday the Board
9 set dates for motions to strike and responses to
10 those motions. It sounds, from what LILCO is saying,
11 that we are certainly not going to be going forward
12 on the 13th, and the need for filing motions to
13 strike next week and responses the week after is not
14 there.

15 In addition, it sounds like LILCO wants
16 to file some supplemental testimony, which may or may
17 not be necessary. That would certainly have an
18 impact on when motions to strike should be filed. I
19 think all motions to strike should be handled as a
20 package, not individually for each individual
21 set--for instance, the initial testimony and then any
22 supplemental testimony. So I don't think that the
23 present schedule for filing motions to strike should
24 be adhered to now.

25 I think that we should also get from

1 LILCO as soon as possible a date as to when it
2 intends to file supplemental testimony.

3 MR. SISK: Judge Gleason, it is going to
4 be difficult to provide a date by which we would file
5 supplemental testimony because that is going to be
6 implemented by documents we have just received and
7 documents we haven't yet received and depositions we
8 haven't yet completed.

9 JUDGE GLEASON: I understand. He didn't
10 ask for that, Mr. Sisk.

11 MR. SISK: I understand. I just want to
12 be clear, this could have been accomplished a long
13 time ago if our responses had been received a lot
14 earlier.

15 JUDGE GLEASON: Mr. Irwin, can I see
16 those documents, please?

17 MR. IRWIN: I only have a couple of
18 copies.

19 JUDGE GLEASON: We will take a
20 five-minute recess.

21 (Brief recess.)

22 JUDGE GLEASON: The question that I
23 addressed before was responded to by Mr. McMurray and
24 I wanted to hear a response from Mr. Zahnleuter as to
25 whether he has knowledge of the nature of this

1 document.

2 MR. ZAHNLEUTER: This document that is
3 the subject of Mr. Lanpher's letter has never been
4 seen by me and I have never known about it. I don't
5 know anything about it. I don't think anyone in the
6 State, to the best of my knowledge, knows anything
7 about it.

8 JUDGE GLEASON: The Board views this
9 information very, very seriously. I have to say it
10 with just a caution because we have a few minutes to
11 look it over. It looks on the surface as if there is
12 an emergency plan that involves the County of
13 Suffolk. I can recall some statements, without right
14 now saying who they were in depositions--that denied
15 or indicated a lack of knowledge with respect to
16 plans like this. We are not sure right at this time
17 what we intend to do about it, to be honest with you.

18 We would like to have copies served on
19 the parties and the Board immediately. We want the
20 intervenors to proceed with the responses to the
21 interrogatories and the lists for people to be
22 deposed as requested by the applicant today, and we
23 would like a briefing paper to be served on us next
24 week, by the middle of the week, let's say, from the
25 intervenors as to what--from both the State and the

1 County as to what this document represents. At that
2 time we will make a decision as to any further action
3 on our part.

4 In the meantime, it is, of course,
5 apparent that we will rescind our order with respect
6 to motions to strike testimony because if there is
7 substance to the document, obviously, testimony will
8 be changed, I presume.

9 With that, that is the way we have to
10 rule.

11 MR. McMURRAY: Just for clarification,
12 with respect to the briefing paper, did you say
13 Wednesday or the middle of the week?

14 JUDGE GLEASON: Wednesday. Close of
15 business on Wednesday.

16 MR. McMURRAY: With respect to the--

17 JUDGE GLEASON: And there are two
18 things. We want to know what the nature of this
19 document is and we'd like to know why it has not been
20 delivered to the parties and the Board prior to this
21 time.

22 MR. McMURRAY: The other matter pertains
23 to interrogatories. Is it acceptable that we file
24 the interrogatories by the end of the week?

25 JUDGE GLEASON: The end of the week.

1 MR. ZAHNLEUTER: Thank you. I would
2 appreciate that.

3 There is also one other matter that
4 doesn't deal with realism that I would like to take
5 up quickly before we all leave.

6 JUDGE GLEASON: Go ahead.

7 MR. ZAHNLEUTER: It deals with Dr.
8 Hartgen's testimony. I mentioned this before, at the
9 time when we talked about motions to strike. It
10 involves Attachment 17 to Dr. Hartgen's testimony.
11 That attachment is a handwritten work sheet prepared
12 by Mr. Sobotka, a LILCO consultant in November of
13 '87. What it does is it sets forth an origin,
14 destination matrix. In other words, it says so many
15 patients from an evacuating hospital will be taken to
16 such and such a reception hospital. As I emphasize,
17 it is a handwritten attachment written by LILCO. Dr.
18 Hartgen found it necessary to incorporate it and
19 attach it to his testimony. LILCO moved to strike
20 it. The only thing--

21 JUDGE GLEASON: When did they do that?

22 MR. ZAHNLEUTER: LILCO's motion to
23 strike was dated April 20th. Dr. Hartgen's testimony
24 was filed April 13th.

25 JUDGE GLEASON: All right.

1 MR. ZAHNLEUTER: The only reference in
2 LILCO's motion to strike is on the very last page, in
3 a column. Next to the words "Attachment 17," LILCO
4 has written, "Previously litigated, outside scope and
5 future developments." I don't understand any one of
6 those three assertions as it applies to this
7 attachment because it couldn't have been previously
8 litigated. It was only drawn up in November '87 by
9 LILCO personnel. It couldn't be outside the scope of
10 the issue because it is a hospital evacuation time
11 estimate work sheet drawn up by LILCO to help prepare
12 its estimate. Future developments makes no sense to
13 me because it occurred November 1987 and it is part
14 of the working papers for the hospital time estimate.

15 In the Board's order on pending motions
16 to strike dated May 9th, on the last page, in the
17 applicable section, which is D1A, the Board stated
18 that it granted the motion to strike and it attached
19 to the list Attachment 17. When the Board issued its
20 subsequent order on May 12th, which is entitled
21 "Supplemental Memorandum and Order," in the
22 applicable section, D1A, the Board made no reference
23 at all to Attachment 17.

24 What I wish to do is to confirm that
25 Attachment 17 is not stricken or to seek

1 clarification of the reasons.

2 JUDGE GLEASON: If we struck it in the
3 first order, did not refer to it in the errata sheet,
4 it is still struck.

5 MR. ZAHNLEUTER: Then I wish to ask the
6 Board for reconsideration of that decision.

7 JUDGE GLEASON: Are you prepared to
8 argue that now?

9 MR. ZAHNLEUTER: I did mention this when
10 we talked about reconsideration I think two weeks
11 ago, when we eventually started the hearings on May
12 16th.

13 JUDGE GLEASON: You may have and I have
14 just forgotten.

15 MR. SISK: Judge Gleason, I was not here
16 for any previous discussion. I, frankly, am not
17 prepared to address it at this time. I will say--

18 JUDGE GLEASON: I wonder if he can hold
19 it until we get to the issue and you can review your
20 motion at that time.

21 MR. SISK: I think that is fine because
22 I think it depends on the purpose for which it is
23 proffered. It may come back in if we understand the
24 purpose for which it is being proffered.

25 MR. ZAHNLEUTER: The next thing we will

1 do in the hearing is cross-examination of Mr.
2 Lieberman. If the testimony is stricken, then I will
3 probably want to ask questions about it to Mr.
4 Lieberman. If it is not stricken, I may rely on it
5 because--

6 JUDGE GLEASON: Did you say it was an
7 attachment to your witness' testimony?

8 MR. ZAHNLEUTER: That's right.

9 JUDGE GLEASON: It is work by Lieberman.
10 I understand that. You can still bring it up and we
11 can make a decision before you cross-examine.

12 MR. ZAHNLEUTER: That would be helpful
13 if we could resolve it before the next hearing.

14 JUDGE GLEASON: Then you will have a
15 chance to reply at that time, when he brings it up
16 again.

17 MR. SISK: That would be fine.

18 JUDGE GLEASON: All right. Let's
19 conclude today's session and we will see you all next
20 Thursday morning at nine o'clock.

21 Thank you.

22 (Time noted: 12:20 p.m.)

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CERTIFICATE

This is to certify that the attached proceedings before the United States Nuclear Regulatory Commission in the matter of:

Name: LONG ISLAND LIGHTING COMPANY

Docket Number: 50-322-OL-3

Place: Hauppauge, New York

Date: May 27, 1988

were held as herein appears, and that this is the original transcript thereof for the file of the United States Nuclear Regulatory Commission taken stenographically by me and, thereafter reduced to typewriting by me or under the direction of the court reporting company, and that the transcript is a true and accurate record of the foregoing proceedings.

IS/ Debra Stevens

(Signature typed): DEBRA STEVENS

Official Reporter

Heritage Reporting Corporation